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PATENT AND TRADEMARK OFFICE NOTICES

Board of Appeals Decisions Rendered in the Month of May 1975

Examiner affirmed	230
Examiner affirmed in part	57
Examiner reversed	81
Total	368

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,601,104, A. Douglas, JET PROPULSION AND CONTROL MEANS THEREFOR, **filed** June 17, 1970 (District of Columbia), Court of Claims, Doc. 197–70, *Aubrey E. Douglas* v. *The United States.* Claim 1 held invalid under 35 U.S.C. 103 because of obviousness over the prior art.

2,915,315, J. Rabinow, SERVO ARM FOR PHONOGRAPH PICKUPS, **filed** Jan. 30, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c313, *Harman-Kardon Inc.* v. *Bang & Olufsen of America Inc.*

2,950,775, R. E. Zwayer, EXHAUST NOISE REDUCING AND AIR DIFFUSING MEANS FOR PNEUMATIC MOTORS, **filed** Feb. 2, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c414, *Aro Corporation* v. *Allied Witan Co. and Norman Engineering Co.* Consent judgment, complaint dismissed, counterclaim dismissed, by the Northern District of Ohio, Eastern Division Case No. C–71–468, case received by transfer, Mar. 25, 1974. **Same, filed** Jan. 30, 1975, D.C., N.D. Ohio (Toledo), Doc. C–71–468, *Aro Corporation* v. *Allied Witan Co. and Norman Engineering Co.* Defendants enjoined from not complying with the terms of the settlement agreement. Complaint and counterclaim dismissed, Feb. 5, 1975.

2,724,720, Berger, Ludwig, DICARBOMATES OF SUBSTITUTED PROPANE DIOLS, **filed** Jan. 30, 1975, D.C.N.J. (Newark), Doc. 75–158, *Purepac Pharmaceutical Co.* v. *Carter-Wallace, Inc.*

2,954,814, H. Covy, METHOD AND APPARATUS FOR STRAIGHTENING METALLIC ARROWS AND THE LIKE, **filed** Jan. 24, 1975, D.C., N.D. Calif. (San Francisco), Doc. C–75–168 SAW, *Norman E. Conn and Ethel Conn* v. *Gerald A. Dion and Startec Corporation.*

2,989,837, A. W. Vibber, TWISTING SPINDLE BALLOON CONTROL, **filed** Feb. 3, 1975, D.C.N.J. (Newark), Doc. 75–174, *Alfred W. Vibber* v. *Uniroyal Inc.*

2,993,479, J. Thurley, FLUID HEATERS; **3,265,113,** Thurley, Lowry, GAS BURNER APPARATUS, **filed** Nov. 22, 1974, D.C., W.D. Okla (Oklahoma City), Doc. 74–1004–C, *Black, Sivalls & Bryson Inc.* v. *Keystone Steel Fabrication, Inc. et al.*

3,004,422, R. M. Starrett, KEY HOLDER, **filed** Dec. 13, 1971, D.C., S.D.N.Y., Doc. 71–C–5423, *Swank Inc.* v. *New York Merchandise Co., Inc.* Filed stipulation and order that action is dismissed with prejudice and without costs, Jan. 31, 1975.

3,022,012, Sharp, Streeter, PARTIAL CIRCLE WATER SPRINKLERS, **filed** May 30, 1974, D.C. Ohio (Cincinnati), Doc. C1 74–209, *Rain Bird Sprinkler Mfg. Corp.* v. *John S. Greeno Co., doing business as Skinner Irrigation Company.*

3,032,044, A. L. Pansini, AUTOMATIC SWIMMING POOL CLEANER, **filed** Jan. 22, 1975, D.C., N.D. Calif. (San Francisco), Doc. C–75–0150 WHO, *Airwick Industries Inc.* v. *Arneson Products Inc. and Andrew L. Pansini.*

3,078,052, Olds, Baker, CONDUCTOR WRAPPING DEVICE; **3,143,307,** Baker, CONDUCTOR WRAPPING BIT, **filed** June 28, 1974, D.C., S.D.N.Y., Doc. 74–C–2813, *Gardner Denver Co.* v. *O.K. Machine & Tool Corporation.* Dismissal under Rule 41(a), Nov. 19, 1974.

3,102,875, H. L. Heiss, POLYARETHANE REACTION PRODUCT AND METHOD FOR MAKING SAME, **filed** Mar. 26, 1968, D.C., S.D.N.Y., Doc. 68–C–1227, *The General Tire & Rubber Company* v. *Jefferson Chemical Company, Inc.* Patent invalid as to Claims 3, 4, 5, 6, 8, 9, 10, and 11, defendant's counterclaim is dismissed, Nov. 9, 1973.

3,143,307. (See 3,078,052.)

3,159,916, L. Hunter, VEHICLE WHEEL ALIGNMENT APPARATUS; **3,206,862,** same, **filed** Oct. 22, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c3030, *Lee Hunter and Hunter Engineering* v. *FMC Corporation.*

3,165,215, R. W. Larson, HEEL BOOM LOG GRAPPLING APPARATUS, **filed** Jan. 28, 1975, D.C. Oreg. (Portland), Doc. C–75–80, *Dico Company Inc.* v. *Savage Enterprises Inc.*

3,206,862. (See 3,159,916.)

3,241,876, W. S. Saunders, APPARATUS FOR REDUCING LINEAR AND LATERAL WIND RESISTANCE IN A TRACTOR-TRAILER COMBINATION VEHICLE; **3,309,131,** same, MEANS FOR REDUCING LINEAR WIND RESISTANCE IN SINGLE CHASSIS TYPE VEHICLES, **filed** Feb. 5, 1975, D.C., N.D. Ala. (Birmingham), Doc. CA 75–G–0143–S, *W. Selden Saunders and Rudkin-Wiley Corporation* v. *Avondale Mills and W. W. Murphree.*

3,259,157, E. E. Runnion, PRODUCTION OF DIMENSIONAL LUMBER FROM SMALL-DIAMETER LOGS; **3,344,826,** L. A. Mitten, PRODUCTION OF PULP CHIPS AND STUD LUMBER FROM PEELER CORES, **filed** Apr. 7, 1969, D.C., S.D. Idaho (Boise), Doc. C–1–69–28, *Ernest E. Runnion et al.* v. *Adco West Machinery Manufacturing, Inc.* Stipulation and order of dismissal, Jan. 24, 1975.

3,265,113. (See 2,993,479.)

3,305,273, J. Kilbourne, MINING APPARATUS SUPPORTING AND DRIVING CONSTRUCTION, **filed** Jan. 26, 1972, D.C., W.D. Pa. (Pittsburgh), Doc. 72–77, *National Mine Service Company* v. *Jeffrey Galion Inc.* Stipulation of counsel and order of court dismissing case without prejudice, Feb. 3, 1975.

3,309,131. (See 3,241,876.)

3,312,124, Meier, Meier, STEERING-WHEEL ASSEMBLY FOR AUTOMOTIVE VEHICLES, **filed** Feb. 5, 1975, D.C., C.D. Calif. (Los Angeles), Doc. 75–381–F, *Kamei-Autokomfort and Superior Industries, Inc.* v. *American Racing Equipment.*

3,344,826. (See 3,259,157.)

3,605,366, G. W. Zakim, COMPOSITE LAMINATE PANEL CONSTRUCTION, **filed** Feb. 3, 1975, D.C.N.J. (Camden), Doc. 75–0178, *Gerald Zakim* v. *Formigli Corporation.*

3,606,258, J. C. Fitch, ENERGY ABSORBING DECELERATION BARRIERS, **filed** Jan. 27, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c277, *Fibco Inc.* v. *Energy Absorption Systems, Inc.*

3,622,364, Sugahara, Miyazawa, Nakazawa and Masahiro, COLOR FORMER FOR PRESSURE SENSITIVE RECORDING PAPER AND PROCESS FOR PRODUCING SAME; **3,753,761,** same, PRESSURE SENSITICE RECORDING PAPER, **filed** Feb. 11, 1975, D.C., W.D.N.Y. (Buffalo), Doc. C–75–67, *Mizusawa Hagaku Kogyo Kabushiki Kaisha* v. *Moore Business Forms, Inc.*

3,640,310, G. Ehrlich, MULTIPORT VALVE, **filed** Nov. 11, 1974, D.C., C.D. Calif. (Los Angeles), Doc. CV 74–3328–EC, *Hayward Manufacturing Co., Inc.* v. *KDI American Products.*

3,680,560, Pannier, Reynolds, Sorenson, VACUUM DRAINAGE COLLECTION APPARATUS WITH DISPOSABLE LINER, **filed** Oct. 9, 1973, D.C., W.D. Okla. (Oklahoma City), Doc. 73–680–C, *Sorenson Research Co., Inc.* v. *Deaton Medical Company.* Differences compromised, defendants enjoined from making, using or selling any other apparatus which infringes U.S. patent other than "Deaton Device." Judgment subject to continued supervision of court, cause dismissed, Sept. 20, 1974.

3,696,323, R. J. Kinkaid, DIP HEADER, **filed** Apr. 16, 1973, D.C., S.D.N.Y., Doc. 73–1682, *AMP Incorporated* v. *Industrial Electronic Hardware Corp.* Filed order of dismissal on consent, without prejudice, July 3, 1974.

3,709,752, Wisotzky, Petersen, SUEDE-LIKE PLASTIC MATERIAL AND METHOD OF MAKING SAME, **filed** Jan. 31, 1975, D.C. Conn. (Hartford), Doc. H–75–40, *Pandel-Bradford, Inc.* v. *Pervel Industries Inc., and Timothy F. O'Keefe, Jr. and Walter Yeager.*

3,751,722, P. Richman, MOS INTEGRATED CIRCUIT WITH SUBSTRATE CONTAINING SELECTIVELY FORMED RESISTIVITY REGIONS; **3,806,741,** F. J. Smith, SELF-BIASING TECHNIQUE FOR MOS SUBSTRATE VOLTAGE, **filed** June 5, 1974, D.C., S.D.N.Y., Doc. 74–C–2430 LFM, *Standard Microsystems Corp.* v. *American Micro Systems Inc.,* Stipulation and order of dismissal of Patent No. 3,751,722 on Feb. 7, 1975. Stipulation and order of dismissal of Patent No. 3,806,741, on Dec. 18, 1974.

3,753,761. (See 3,622,364.)

3,785,391, B. C. Miller, SEQUENCING VALVE, **filed** Feb. 4, 1975, D.C., S.D. Fla. (Fort Lauderdale), Doc. (FL) 75–60–C–NCR, *Fimco Manufacturing, Inc.* v. *Bob C. Miller.*

3,806,741. (See 3,751,722.)

3,850,806, H. K. Cohen, FILTER AND WATER RECIRCULATION SYSTEM, **filed** Nov. 5, 1974, D.C., C.D. Calif. (Los Angeles), Doc. C–74–3191 RJK, *Nektonics Research & Development Co., Ltd.* v. *Trico Aquarium Products and Stanley Josephs.*

Re. 24,659, E. H. Clark, Jr., VARIABLE ORIFICE CASING FILLING APPARATUS, **filed** Jan. 29, 1975, D.C., C.D. Calif. (Los Angeles), Doc. 75–295–RJK, *Baker Oil Tools Inc.* v. *B & W Inc.*

D. 206,758, E. E. Radtke, SUPPORT MEMBER FOR A CUTTING BOARD OR THE LIKE, **filed** Jan. 29, 1975, D.C., S.D. Calif. (San Diego), Doc. 75–0056–T, *Terry Craft Enterprises, Inc.* v. *Physical Aids Manufacturing Company and Simon Gaines.*

Certificates of Correction for the Week of July 1, 1975

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3,239,370
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Disclaimer and Dedication

D. 222,763.—*Robert A. Padmore,* Dunmore, Pa. LACE TABLE CLOTH. Patent dated Dec. 21, 1971. Disclaimer and dedication filed Mar. 17, 1975, by the assignee, *The Scranton Corporation.*

Hereby disclaims and dedicates to the Public the remaining term of said patent.

Dedications

PP. 3,183.—*Walter H. Jessel, Jr.,* Doylestown, and *William E. Duffett,* Akron, Ohio. CHRYSANTHEMUM PLANT. Patent dated May 23, 1972. Dedication filed Feb. 6, 1975, by the assignee, *Yoder Brothers, Inc.*

Hereby dedicates to the Public the entire remaining term of said patent.

PP. 3,184.—*Walter H. Jessel, Jr.,* Doylestown and *William E. Duffett,* Akron, Ohio. CHRYSANTHEMUM PLANT. Patent dated May 23, 1972. Dedication filed Feb. 6, 1975, by the assignee, *Yoder Brothers, Inc.*

Hereby dedicates to the Public the entire remaining term of said patent.

PP. 3,212.—*Walter H. Jessel, Jr.,* Doylestown, and *William E. Duffett,* Akron, Ohio. CHRYSANTHEMUM PLANT. Patent dated June 20, 1972. Dedication filed Feb. 6, 1975, by the assignee, *Yoder Brothers, Inc.*

Hereby dedicates to the Public the entire remaining term of said patent.

PP. 3,216.—*Walter H. Jessel, Jr.,* Doylestown, and *William E. Duffett,* Akron, Ohio. CHRYSANTHEMUM PLANT. Patent dated June 20, 1972. Dedication filed Feb. 6, 1975, by the assignee, *Yoder Brothers, Inc.*

Hereby dedicates to the Public the entire remaining term of said patent.

PP. 3,248.—*Walter H. Jessel, Jr.,* Doylestown, and *William E. Duffett,* Akron, Ohio. CHRYSANTHEMUM PLANT. Patent dated Aug. 1, 1972. Dedication filed Feb. 6, 1975, by the assignee, *Yoder Brothers, Inc.*

Hereby dedicates to the Public the entire remaining term of said patent.

PP. 3,262.—*Walter H. Jessel, Jr.,* Doylestown, and *William E. Duffett,* Akron, Ohio. CHRYSANTHEMUM PLANT. Patent dated Dec. 5, 1972. Dedication filed Feg. 6, 1975, by the assignee, *Yoder Brothers, Inc.*

Hereby dedicates to the Public the entire remaining term of said patent.

3,510,436.—*Ronald M. Silverstein,* Parsippany, N.J., *Chester A. Bishof,* North Hills, and *Joseph T. Matey,* Levittown, Pa. CORROSION INHIBITION IN WATER SYSTEM. Patent dated May 5, 1970. Dedication filed Nov. 4, 1974, by the assignee, *Betz Laboratories, Inc.*

Hereby dedicates to the Public the remaining term of said patent.

Disclaimers

3,602,897.—*John J. Igel, Rochester,* and *Myron D. Schettl,* Oronoco, Minn. KEY-ENTRY SYSTEM. Patent dated Aug. 31, 1971. Disclaimer filed July 1, 1974, by the assignee, *International Business Machines Corporation.*

Hereby enters this disclaimer to claim 4 of said patent.

3,654,244.—*Allen G. Pittman,* El Cerrito, and *William L. Wasley,* Berkeley, Calif. POLYMERS FOR SOIL-RELEASE TEXTILE FINISHES. Patent dated Apr. 4, 1972. Disclaimer filed Nov. 3, 1973, by the assignee, *United States of America as represented by the Secretary of Agriculture.*

Hereby enters this disclaimer to claims 1–27 of said patent.

3,732,398.—*James F. Pease,* Dayton, Ohio. ELECTRICAL HEATING ELEMENT AND FITTING ASSEMBLY. Patent dated May 8, 1973. Disclaimer filed June 19, 1974, by the inventor.

Hereby disclaims the term of the patent subsequent to April 18, 1989.

3,774,089.—*Howard B. Lewis,* La Canada, Calif. TEMPERATURE INDICATING APPARATUS USING OPPOSITELY VARYING CAPACITORS. Patent dated Nov. 20, 1973. Disclaimer filed June 27, 1974, by the assignee, *Bell & Howell Company.*

Hereby enters this disclaimer to claims 1, 2 and 3 of said patent.

3,775,628.—*Anders R. Anderson, Anders Bjorklund,* and *Lars-Goran Virsberg,* Vasteras, Sweden. INSULATED COIL FOR ARRANGEMENT IN A SLOT IN THE STATOR OR ROTOR OF AN ELECTRIC MACHINE. Patent dated Nov. 27, 1973. Disclaimer filed Mar. 26, 1974, by the assignee, *Allmanna Svenska Elektriska Aktiebolaget.*

Hereby disclaims the term of the patent subsequent to March 27, 1990.

3,777,249.—*Christ J. Dumas,* Forest View, Ill. MULTIPLIER ASSEMBLY. Patent dated Dec. 4, 1973. Disclaimer filed April 29, 1974, by the assignee, *American Plasticraft Company.*

Hereby disclaims the term of the patent subsequent to Nov. 6, 1990.

3,777,582.—*Peter Robert Durdin,* New Malden, England. TIME SWITCHES. Patent dated Dec. 11, 1973. Disclaimer filed Nov. 25, 1974, by the assignee, *AMF Incorporated.*

Hereby enters this disclaimer to claims 1, 2, 3, 4, 5 and 8 of said patent.

3,830,907.—*George E. Short,* Arlington Heights, Ill. COMPOSITIONS FOR THE SUSTAINED RELEASE OF 17 α-ETHYL-19-NORTESTOSTERONE. Patent dated Aug. 20, 1974. Disclaimer filed Nov. 24, 1974, by the assignee, *G. D. Searle & Co.*

Hereby enters this disclaimer to claim 8 of said patent.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JUNE 7, 1975

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	8-8-74
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HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	6-24-74
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director Coating; Processes and Misc. Products: Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	9-17-74
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	8-22-74
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MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	9-25-74
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	9-23-74
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	7-30-74
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	10-8-74
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	11-18-74

Expiration of patents: The patents within the range of numbers indicated below expire during July 1975, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 2,840,821 to 2,845,624 inclusive
Plant Patents	Numbers 1,722 to 1,739 inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED JULY 1, 1975

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T936,001

NOVEL HYDROXYL-TERMINATED POLYMERS

Robin Nikolas Greene, Apt. 4, 1425 Slate Run Road,
New Albany, Ind. 47120

Filed Mar. 12, 1974, Ser. No. 450,357

Int. Cl. C07c *31/18*
U.S. Cl. 260—635 R

No Drawing. 16 Pages Specification

Liquid, random ethylene/C_3–C_{20} α-olefin copolymers having an average hydroxyl functionality of about 1.8–3.0 and a number-average molecular weight of about 300–3500, useful as starting materials for the preparation of high molecular weight polyurethanes and polyesters, are made from random ethylene/C_3–C_{20} α-olefin copolymers (having about 1.8–3.0 carboxylic groups, 1.0–1.5 chain ester groups, 0.4–1 chain ketone groups, and 1.0–2.0 chain hydroxyl groups per molecule on the average) by a process involving the following consecutive steps:

(1) treating the carboxyl-containing copolymer at about 20° C. to about 100° C. in an inert solvent with about 5–10 moles each of PCl_3 and PCl_5 per mole of polymer to convert substantially all hydroxyl groups to chloride and carbonyl groups to *gem*-dichloride;

(2) removing excess phosphorus chlorides;

(3) contacting the polymeric product of (1) in an inert dry solvent (preferably tetrahydrofuran) with about 3–6 moles of $LiAlH_4$ and 10–60 moles of LiH per mole of polymer to reduce substantially all carboxyl, carboxylic acid chloride, and ester groups to hydroxyl groups and all *gem*-dichloride groups to methylene groups; and

(4) decomposing the unchanged metal hydrides with water or alcohol (preferably in the presence of ions of a neutral metal salt such as NaCl) and recovering the hydroxyl-substituted polymer.

T936,002

HYDROXYL-TERMINATED CHLOROPRENE POLYMERS

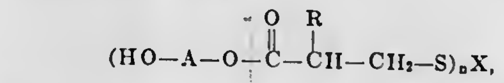
James T. Hill, 509 Rienzi Drive, La Place, La. 70068

Filed Mar. 18, 1974, Ser. No. 452,336

Int. Cl. C08g *22/08*
U.S. Cl. 260—77.5 CR

No Drawing. 11 Pages Specification

Hydroxyl-terminated chloroprene polymers, suitable as starting materials for the preparation of self-extinguishing polyurethanes, are made by hydrolyzing xanthate-terminated chloroprene polymers to mercaptan-terminated polymers, then contacting those with a hydroxy-alkyl acrylate or methacrylate. The polymers can be represented by the following formula



$$(HO{-}A{-}O{-}\overset{O}{\overset{\|}{C}}{-}\overset{R}{\overset{|}{C}}H{-}CH_2{-}S)_nX,$$

wherein A is a C_2–C_6 alkylene radical; R is hydrogen or methyl; *n* has an average value of 2 to 4; and X is a polymer fragment, which is either a homopolymer of chloroprene or a copolymer of chloroprene with up to equimolar amount of a coplymerizable monomer.

T936,003

STABILIZATION OF α,α-DISUBSTITUTED-β-PROPIOLACTONES

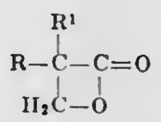
Windell C. Watkins, 1605 Auburn Drive, Longview, Tex. 75601, and James J. Ward, Rte. 1, Box 108B, Henderson, Tex. 75652

Continuation of abandoned application Ser. No. 205,763, Dec. 7, 1971. This application May 2, 1974, Ser. No. 466,363

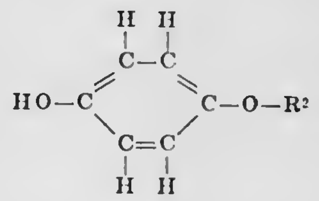
Int. Cl. C07d *3/00*
U.S. Cl. 260—343.9

No Drawing. 10 Pages Specification

α,α-Disubstituted-β-propiolactone having the general formula



wherein R and R^1 are selected from the group consisting of hydrogen, straight- or branched-chain alkyl groups of from 1 to 10 carbon atoms, substituted or unsubstituted cyclic hydrocarbon groups of from 6 to 10 carbon atoms, or wherein R and R^1 join to form a ring of from 6 to 10 carbon atoms, are effectively stabilized against premature polymerization during storage by including in admixture therewith a stabilizing amount of a hydroquinone monoalkyl ether having the general formula



wherein R^2 is a straight-, branched-chain, or cyclic alkyl group of from 1 to 10 carbon atoms.

T936,004

SOLID STATE WATCH DISPLAY

Alan E. Willis, 122 Berrian Road,
Stamford, Conn. 06902

Filed July 1, 1974, Ser. No. 484,481

Int. Cl. G04b *19/30*
U.S. Cl. 58—50 R

1 Sheet Drawing. 9 Pages Specification

A solid state watch display comprises a display mounted to the sloping face of a solid state watch. The display

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JUNE 7, 1975

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry: Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	8-8-74
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director Heterocyclic, Amides; Alkaloids; Azo; Sulfur: Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	4-26-74
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	6-24-74
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	9-17-74
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	8-22-74
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination: Horology; Acoustics; Recorders; Weighing Scales.	12-4-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	3-11-74
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	8-22-74
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	11-15-74
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	5-8-74
DESIGNS, GROUP 290—C. D. QUARFORTH, Director Industrial Arts; Household, Personal and Fine Arts.	3-4-74
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	9-25-74
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HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	10-8-74
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Patents — Numbers 2,840,821 to 2,845,624 inclusive
Plant Patents — Numbers 1,722 to 1,739 inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED JULY 1, 1975

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

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T936,001

NOVEL HYDROXYL-TERMINATED POLYMERS

Robin Nikolas Greene, Apt. 4, 1425 Slate Run Road, New Albany, Ind. 47120

Filed Mar. 12, 1974, Ser. No. 450,357

Int. Cl. C07c *31/18*
U.S. Cl. 260—635 R

No Drawing. 16 Pages Specification

Liquid, random ethylene/C_3–C_{20} α-olefin copolymers having an average hydroxyl functionality of about 1.8–3.0 and a number-average molecular weight of about 300–3500, useful as starting materials for the preparation of high molecular weight polyurethanes and polyesters, are made from random ethylene/C_3–C_{20} α-olefin copolymers (having about 1.8–3.0 carboxylic groups, 1.0–1.5 chain ester groups, 0.4–1 chain ketone groups, and 1.0–2.0 chain hydroxyl groups per molecule on the average) by a process involving the following consecutive steps:

(1) treating the carboxyl-containing copolymer at about 20° C. to about 100° C. in an inert solvent with about 5–10 moles each of PCl_3 and PCl_5 per mole of polymer to convert substantially all hydroxyl groups to chloride and carbonyl groups to *gem*-dichloride;

(2) removing excess phosphorus chlorides;

(3) contacting the polymeric product of (1) in an inert dry solvent (preferably tetrahydrofuran) with about 3–6 moles of $LiAlH_4$ and 10–60 moles of LiH per mole of polymer to reduce substantially all carboxyl, carboxylic acid chloride, and ester groups to hydroxyl groups and all *gem*-dichloride groups to methylene groups; and

(4) decomposing the unchanged metal hydrides with water or alcohol (preferably in the presence of ions of a neutral metal salt such as NaCl) and recovering the hydroxyl-substituted polymer.

T936,002

HYDROXYL-TERMINATED CHLOROPRENE POLYMERS

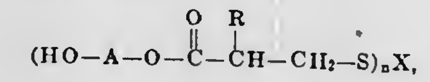
James T. Hill, 509 Rienzi Drive, La Place, La. 70068

Filed Mar. 18, 1974, Ser. No. 452,336

Int. Cl. C08g *22/08*
U.S. Cl. 260—77.5 CR

No Drawing. 11 Pages Specification

Hydroxyl-terminated chloroprene polymers, suitable as starting materials for the preparation of self-extinguishing polyurethanes, are made by hydrolyzing xanthate-terminated chloroprene polymers to mercaptan-terminated polymers, then contacting those with a hydroxy-alkyl acrylate or methacrylate. The polymers can be represented by the following formula



$$(HO-A-O-\overset{\overset{O}{\|}}{C}-\overset{\overset{R}{|}}{C}H-CH_2-S)_nX,$$

wherein A is a C_2–C_6 alkylene radical; R is hydrogen or methyl; *n* has an average value of 2 to 4; and X is a polymer fragment, which is either a homopolymer of chloroprene or a copolymer of chloroprene with up to equimolar amount of a coplymerizable monomer.

T936,003

STABILIZATION OF α,α-DISUBSTITUTED-β-PROPIOLACTONES

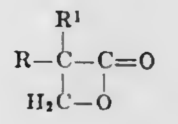
Windell C. Watkins, 1605 Auburn Drive, Longview, Tex. 75601, and James J. Ward, Rte. 1, Box 108B, Henderson, Tex. 75652

Continuation of abandoned application Ser. No. 205,763, Dec. 7, 1971. This application May 2, 1974, Ser. No. 466,363

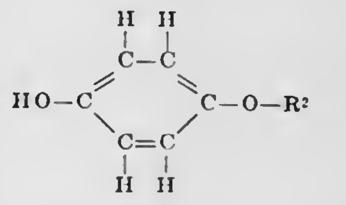
Int. Cl. C07d *3/00*
U.S. Cl. 260—343.9

No Drawing. 10 Pages Specification

α,α-Disubstituted-β-propiolactone having the general formula



wherein R and R^1 are selected from the group consisting of hydrogen, straight- or branched-chain alkyl groups of from 1 to 10 carbon atoms, substituted or unsubstituted cyclic hydrocarbon groups of from 6 to 10 carbon atoms, or wherein R and R^1 join to form a ring of from 6 to 10 carbon atoms, are effectively stabilized against premature polymerization during storage by including in admixture therewith a stabilizing amount of a hydroquinone monoalkyl ether having the general formula



wherein R^2 is a straight-, branched-chain, or cyclic alkyl group of from 1 to 10 carbon atoms.

T936,004

SOLID STATE WATCH DISPLAY

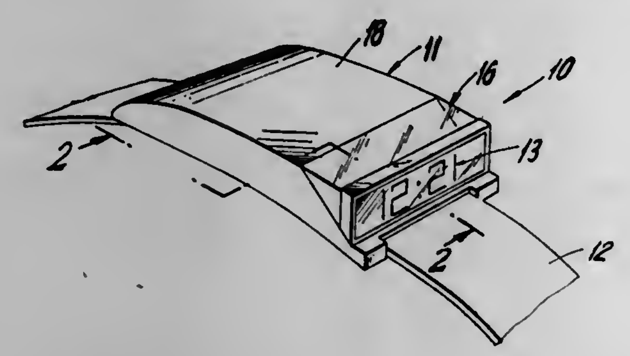
Alan E. Willis, 122 Berrian Road, Stamford, Conn. 06902

Filed July 1, 1974, Ser. No. 484,481

Int. Cl. G04b *19/30*
U.S. Cl. 58—50 R

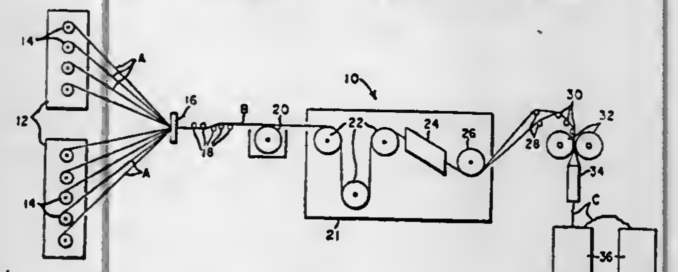
1 Sheet Drawing. 9 Pages Specification

A solid state watch display comprises a display mounted to the sloping face of a solid state watch. The display includes a reflector mounted along the sloping face of the watch, a triangular prism with the hypotenuse of the triangle adjacent to the reflector, a polarizing filter adjacent to the vertical face of the prism and a liquid crystal cell between said polarizing filter and an outer polarizing filter. The light enters the prism through the upper horizontal face thereof, and is reflected outwardly through the vertical face of the prism. The light passes twice through polarizers in contrast to the four passes generally required by conventional front illuminated displays. Thus, there is considerably less loss of light with the subject display.



T936,005
HIGH TENACITY CRIMPED TOW AND PROCESS

Ronald Royce Kramer, 6 Oxford Crescent, P.O. Box 22, Amherstview, Ontario, Canada
Continuation of application Ser. No. 306,920, Nov. 15, 1972. This application Sept. 4, 1974, Ser. No. 503,118
Claims priority, application Canada, Jan. 18, 1972, 132,731
Int. Cl. D02g *1/12*
U.S. Cl. 28—72.14
1 Sheet Drawing. 7 Pages Specification



A process is disclosed for producing a drawn, crimped tow (for staple) having increased tenacity by: combining a multiplicity of ends of drawn high tenacity industrial yarn of a synthetic polymeric material to form a tow, heating and plasticizing the tow and crimping the tow so plasticized.

REISSUE PATENTS

GRANTED JULY 1, 1975

ERRATA

For CLASS	See PATENT NO.
182-016	28,455
260-563	28,456
285-354	28,457
210-080	28,458
034-006	28,459
206-424	28,460
235-061.11 R	28,461
124-001	28,462

REISSUES

JULY 1, 1975

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 28,455

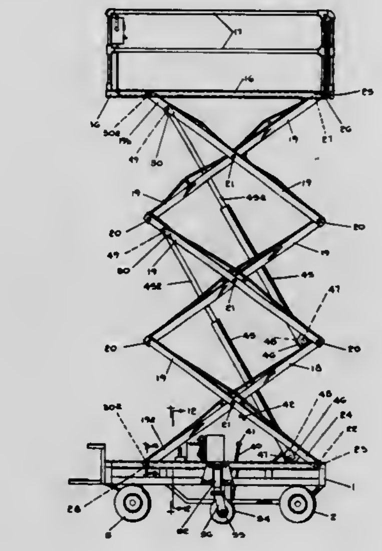
PORTABLE ELEVATOR WORKING AND LOAD-LIFTING PLATFORM

Howard H. Denier; Dennis J. Denier; Thomas Hedger, all of Cincinnati, and Lee R. Garrett, Hamilton, all of Ohio, assignors to Howard H. Denier, Cincinnati, Ohio

Original No. 3,596,735, dated Aug. 3, 1971, Ser. No. 872,542, Oct. 30, 1969. Application for reissue Aug. 2, 1973, Ser. No. 385,078

Int. Cl. E04g *1/22*

U.S. Cl. 182—16 **33 Claims**



1. A lifting vehicle comprising:

a base member resting upon the ground and movable in a horizontal path;

a vertically movable platform disposed above said base member;

a compound lever system interconnecting the base member and platform operable in scissors fashion for raising and lowering the platform vertically relative to the base member at a selected horizontal location;

said compound lever system comprising a plurality of bar members pivotally connected together at the central portion thereof and having ends pivotally connected together;

said lever system having a lower bar member pivotally connected to the base member and having a companion lower bar member connected to the base member for longitudinal motion relative thereto, during the extending or collapsing motion of the compound lever system;

said compound lever system having an upper bar member pivotally connected to the said platform for pivotal movement and having a companion upper bar member connected to the platform for longitudinal motion relative to the platform during the extending or collapsing movement of the compound lever system;

upright rotatable primary power elements mounted on the base member and each having ram elements engageable with concave sockets supported on a portion of the lower companion bars of the compound lever system when the lever system is in the said collapsed position, thereby to provide a direct thrust for shifting the lever system initially from said collapsed position to a partially erected position;

a horizontal shaft extending transversely across the base member, said primary power elements having lower ends connected and secured to said shaft for pivotal motion of the power elements;

and a plurality of paired secondary power elements normally disposed at an acute angle to the base member for erecting the companion bars of the lever system from the said partially erected position;

a pair of said secondary power elements having lower ends pivotally connected to the lower ends of said bar members pivotally connected to said base member and having a ram pivotally connected to an intermediate portion of the compound lever system;

said paired secondary power elements to pivot from said acute angle toward an upright position and to extend the compound lever system to a predetermined height after the primary booster power elements have initially shifted the same from said collapsed position thereby to elevate said platform.

Re. 28,456

INORGANIC LITHIUM AMINE COMPLEXES

Arthur W. Langer, Jr., Watchung, and Thomas A. Whitney, Roselle, both of N.J., assignors to Exxon Research & Engineering Co., Linden, N.J.

Original No. 3,734,963, dated May 22, 1973, Ser. No. 808,328, Mar. 18, 1969. Application for reissue Jan. 4, 1974, Ser. No. 430,770

Int. Cl. C07c *87/14, 87/20, 87/38*

U.S. Cl. 260—563 R **11 Claims**

1. A complex comprising: (a) an inorganic lithium salt having a lattice energy less than 210 kilocalories per mole at 18°C., and (b) a monomeric or polymeric polyfunctional chelating tertiary hydrocarbyl amine containing at least two nitrogen atoms. [atoms and at least 2 tertiary nitrogen atoms.]

Re. 28,457

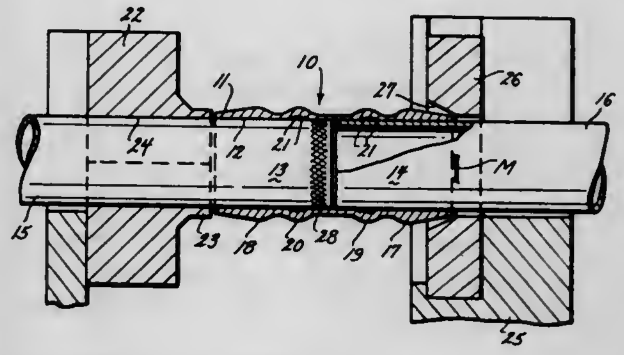
COUPLING FITTING FOR CONNECTING TWO PIPES

James A. Dawson, New Orleans, La., assignor to McDonnell Douglas Corporation, St. Louis, Mo.

Original No. 3,675,949, dated July 11, 1972, Ser. No. 38,355, May 18, 1970. Division of Ser. No. 739,528, June 24, 1968, Pat. No. 3,572,779. Application for reissue Oct. 25, 1972, Ser. No. 300,469. The portion of the term of this patent subsequent to Mar. 30, 1988, has been disclaimed.

Int. Cl. F16l *19/02*

U.S. Cl. 285—354 **7 Claims**



1. A coupling fitting for joining two cylindrical tubes at the adjacent ends thereof, [said fitting including a sleeve engaged on the end of each of said two tubes, one of said sleeves having an enlarged portion with external threads, the other of

said sleeves having a flange thereon presented to abut said enlarged diameter portion of said one sleeve, and internally threaded fitting mounted over said flange and engaged with said external threaded portion to hold said enlarged portion and flange in abutment, and each of said sleeves with an initially cylindrical inner surface telescoped over each end portion of said tubes to be joined, the sleeves being formed with a plurality of axially spaced and radially thickened gripping bands initially formed on the exterior surface circumscribing the end portion of the tubes to be joined and which bands are transposable to said inner cylindrical surface to deform the outer surface configurations of the tubes, thereby leaving said sleeves with a final outer surface configuration of substantially cylindrical extent to conform to the cylindrical outer surfaces of the tubes.], *each tube having a wall of uniform thickness and outer and inner cylindrical surface shape, said fitting including a sleeve engaged on the end of each of said two tubes, one of said sleeves having an enlarged diameter portion with external threads, the other of said sleeves having a flange thereon presented to abut said enlarged diameter portion of said one sleeve, an internally threaded fitting mounted over said flange and engaged with said external threaded portion to hold said enlarged portion and flange in abutment, and each of said sleeves having an initially cylindrical inner surface telescoped over an end portion of said tubes to be joined, the sleeves being formed with a plurality of axially spaced and radially thickened gripping bands initially formed on and externally projecting from the exterior surface circumscribing the end portion of the tubes to be joined and which bands are transposable through to said inner cylindrical surface to deform the outer and inner surface configuration of the tubes, thereby leaving said sleeves with a final outer configuration of substantially cylindrical extent to conform to the cylindrical outer surfaces of the tubes, said transposable bands and sleeves and said tubes being formed of materials in which said tubes have greater spring-back than said sleeves and said sleeves are lengthened differentially relative to said tubes to establish a fluid tight fitting.*

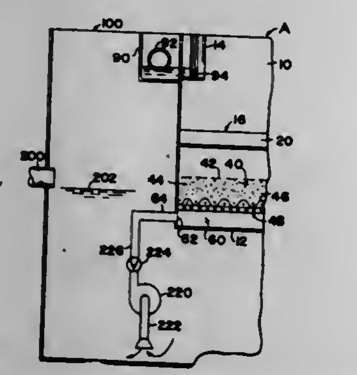
Re. 28,458
APPARATUS AND METHOD OF FILTERING SOLIDS FROM A LIQUID EFFLUENT

David S. Ross, Lorain, Ohio, assignor to Hydro-Clear Corporation, Avon Lake, Ohio

Original No. 3,459,302, dated Aug. 5, 1969, Ser. No. 633,458, Apr. 25, 1967. Application for reissue Feb. 9, 1973, Ser. No. 331,001

Int. Cl. B01d *23/24*

U.S. Cl. 210—80 **6 Claims**



13. A method for removing solids from waste sewage effluent having small and large particles, said method comprising the steps of:

a. providing a particulate filter bed with an upper surface and adapted to block flow of said large particles;

b. developing a body of said effluent above said surface; and,

c. mechanically creating an admixture of air and effluent in said body and over said surface by a diffuser extending adjacent said upper surface, which admixture has a lower specific gravity than said effluent forming said body whereby said admixture rises in said body of effluent and creates positive currents which sweep over said surface while said effluent is being filtered for lifting said large particles from said surface.

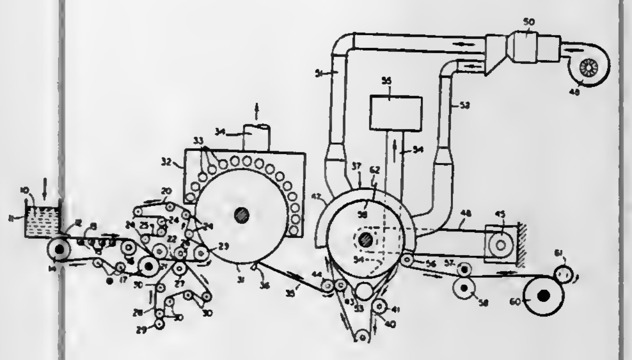
Re. 28,459
TRANSPIRATION DRYING AND EMBOSSING OF WET PAPER WEBS

Richard I. Cole, Springfield, Pa.; Donald E. Holcroft, Claymont; Edward A. Milligan, Wilmington, both of Del., and Samuel Greenhalgh, Philadelphia, Pa., assignors to Scott Paper Company, Philadelphia, Pa.

Original No. 3,432,936, dated Mar. 18, 1969, Ser. No. 649,776, May 31, 1967. Continuation-in-part of Ser. No. 555,748, June 7, 1966, abandoned. Application for reissue Dec. 7, 1972, Ser. No. 313,158

Int. Cl. F26b *3/06*

U.S. Cl. 34—6 **37 Claims**



1. A method for drying a substantially continuous wet web of paper fibers issuing at high speed from a papermaking machine, including the steps of pressing the web into contact with a foraminous surface, advancing said web into a drying zone while supporting it on said foraminous surface, contacting the surface of said supported web most remote from said foraminous surface with a gaseous fluid under a pressure greater than atmospheric pressure, creating a pressure drop and a flow of gaseous fluid through the web from the surface most remote from said foraminous surface to the surface adjacent said foraminous surface, advancing said web out of said drying zone, and withdrawing said web from said foraminous supporting surface.

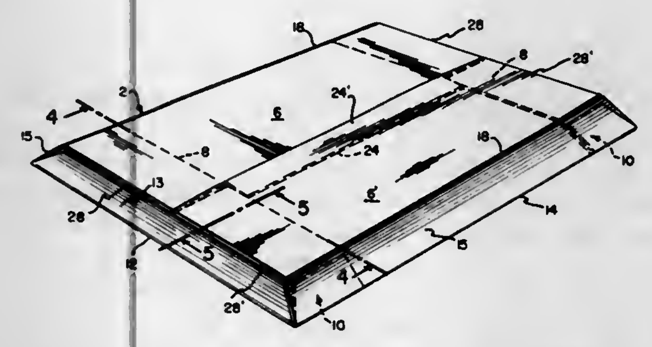
Re. 28,460
CARTON

Benjamin Rous, New York, N.Y., assignor to Stone Container Corporation, Chicago, Ill.

Original No. 3,682,370, dated Aug. 8, 1972, Ser. No. 31,239, Apr. 23, 1970. Application for reissue Sept. 24, 1973, Ser. No. 400,138

Int. Cl. B65d *5/02, 5/08*

U.S. Cl. 206—424 **3 Claims**



1. A carton for packaging an article comprising:

a bottom wall, a first and second pair of walls, each of said first and second pair of walls being joined to said bottom wall, said second walls being oblique with respect to said bottom wall, said oblique second walls forming an air cell for protecting the article in the carton, a first flap being joined to each of said first walls and being parallel to said bottom wall, a second flap being joined to each of said second walls and being parallel to said bottom wall, *at least one of* said first flap*s* including a pair of third flaps, each of said pair of third flaps being positioned at each end of said first flap, each of said pair of third flaps including a first member and a second member, said first and second members being hinged along a common score line, said common score line being positioned to bear against the intersection between said second and bottom walls [.], *at least a portion of said first member bearing against the article for positioning the article centrally of said bottom wall and preventing the article from slipping into the air cell.*

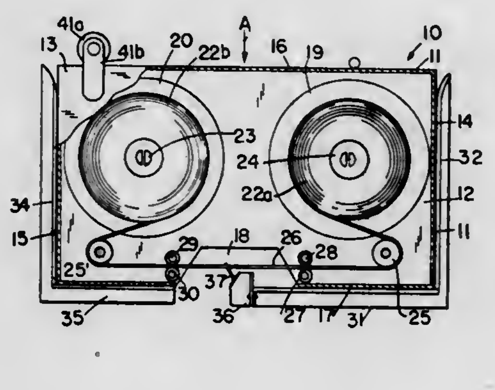
Re. 28,461
TAPE CARTRIDGE AND READER

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 8,840

Original No. 3,555,245, dated Jan. 12, 1971, Ser. No. 463,097, June 11, 1965. Continuation-in-part of Ser. No. 152,702, Oct. 17, 1961, abandoned, which is a division of Ser. No. 449,874, July 28, 1954, abandoned, which is a division of Ser. No. 142,748, Aug. 28, 1961. Application for reissue May 8, 1974, Ser. No. 468,132

Int. Cl.² G06K *7/04;* **B65H** *17/42;* **G11B** *15/32*

U.S. Cl. 235—61.11 R **18 Claims**



8. A tape storage and transducing assembly comprising:

a tape cartridge having a housing having sidewalls and end walls joined to said sidewalls;

an opening in an end wall of said housing;

supply and takeup means within said housing for flexible recording tape;

means for guiding and moving said tape longitudinally past said opening;

a base for supporting said cartridge including means for removably holding and operatively positioning said cartridge on said base;

drive means secured to said base and operative to become coupled to drive said tape when said cartridge is operatively positioned on said base;

transducing means mounted on said support and located so as to be out of coupling relationship with the tape disposed adjacent the opening in said housing when said cartridge is operatively held on said base; and

means supported by said base, for engaging the portion of said tape extending across said opening in said cartridge and withdrawing said tape outwardly from said cartridge housing into engagement with said transducing means to operatively couple the tape with the transducing means.

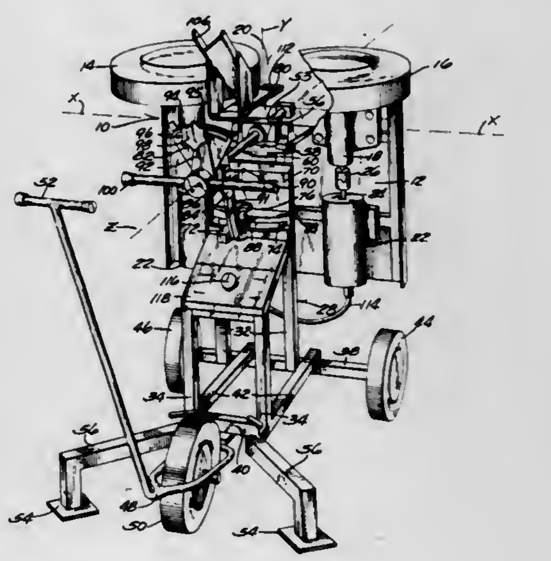
Re. 28,462
BALL THROWING MACHINE

Earl W. Halstead, St. Petersburg, Fla., assignor to Tru-Pitch, Inc., St. Petersburg, Fla.

Original No. 3,724,437, dateE Apr. 3, 1973, Ser. No. 92,080, Nov. 23, 1970. Application for reissue Aug. 14, 1973, Ser. No. 388,249

Int. Cl. F41b *15/00*

U.S. Cl. 124—1 **7 Claims**



1. A ball throwing apparatus comprising

a relatively fixed frame;

an adjustably positioned frame connected to said fixed frame;

a pair of ball propelling wheels mounted on said adjustable frame in substantially coplanar relation for rotation about spaced parallel axes with tread portions of said wheels disposed in operatively spaced relation for throwing a ball placed in the nip between said wheel treads;

separate variable speed motors driving said wheels in opposite directions;

means for introducing a ball to be thrown into the nip between said wheels; and

means for adjusting the position of said adjustable frame with respect to said fixed frame to thereby change the position of said wheels to control the direction of the flight of a thrown ball, said adjusting means including, a universal joint assembly operatively connecting said adjustable frame to said fixed frame and said adjusting means further comprising a first shaft mounted on said fixed frame for rotation about a substantially vertical axis, a second shaft having one end thereof connected to said adjustable frame, means carried by said first shaft for supporting said second shaft for rotation of said second shaft about two horizontal axes perpendicularly disposed relative to each other, said vertical axis and said two horizontal, axes intersecting at a substantially common point; and

means associated with said fixed frame for locking said adjustable frame into position after the desired adjustment about any one of said axes has been made.

PLANT PATENTS

GRANTED JULY 1, 1975

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,736
BOXWOOD PLANT

Constant De Groot, Oakville, Ontario, Canada, assignor to Sheridan Nurseries Ltd., Toronto, Ontario, Canada
Filed June 15, 1973, Ser. No. 370,435
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—54 **1 Claim**

1. A new and distinct variety of Buxus hybrid plant, characterized by its shorter growth cycle, uniform globe shape, dense and compact growth habit, and deep olive green colour; and by its lack of any general tendency to turn brown-coloured through the winter months, and that it produces substantially no flowers or fruit.

3,737
AVOCADO TREE

Harold E. Kendall, P.O. Box 458,
Goulds, Fla. 33170
Filed Feb. 13, 1974, Ser. No. 442,053
Int. Cl. A01h *5/03*

U.S. Cl. Plt.—44 **1 Claim**

1. A new and distinct variety of avocado tree, substantially as shown and described.

3,738
POINSETTIA PLANT

Charles E. Wooldridge, Rustburg, Va., assignor to Paul Ecke, Jr., Encinitas, Calif.
Filed July 10, 1974, Ser. No. 487,248
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—86 **1 Claim**

1. A new and distinct variety of poinsettia plant, substantially as herein shown and described, characterized particularly as to novelty by a unique combination of characteristics which are substantially identical in all respects to those of the poinsettia variety known as "#C–1 Red" (Plant Pat. No. 2,923) except for its bract color, said bracts being a distinctive and attractive dark pink color corresponding to near Geranium Lake, as distinguished from the normal red color of the bracts of the variety "#C–1 Red."

PATENTS

GRANTED JULY 1, 1975

ERRATA

For CLASS	See PATENT NO.
415–001	3,891,999
242–056	3,892,012
032–012	3,892,035
356–121	3,892,052
036–044	3,892,077
036–068	3,892,078
037–056	3,892,079
040–106.1	3,892,080
040–214	3,892,081
042–011	3,892,082
043–043.11	3,892,083
046–114	3,892,084
046–180	3,892,085
046–202	3,892,086
046–116	3,892,087
049–037	3,892,088
051–034	3,892,089
051–101 R	3,892,090
051–170	3,892,091
051–154	3,892,092
051–372	3,892,093
052–063	3,892,094
052–221	3,892,095
052–227	3,892,096
052–233	3,892,097
052–270	3,892,098
052–479	3,892,099
166–251	3,892,270
073–362	3,892,281
356–252	3,892,474
179–001 G	3,892,624
360–132	3,892,727
337–077	3,892,933
340–149 R	3,892,948
307–215	3,893,190
310–076	3,893,191
324–065	3,893,192
333–084	3,893,193
335–202	3,893,194
338–132	3,893,195

PATENTS

GRANTED JULY 1, 1975

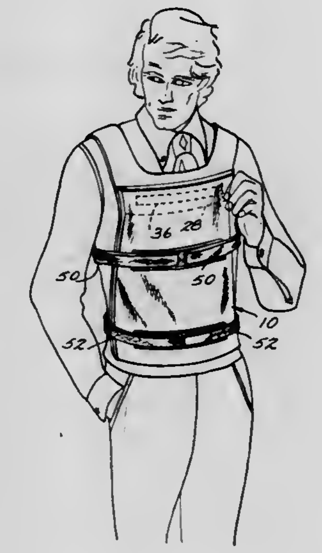
GENERAL AND MECHANICAL

3,891,996

BALLISTIC VEST

Jack Leach, Greensboro, N.C., and William G. Fash, Jamesburg, N.J., assignors to Burlington Industries, Inc., Greensboro, N.C.

Filed July 29, 1974, Ser. No. 492,843
Int. Cl. F41h *1/02*
U.S. Cl. 2—2.5 **11 Claims**



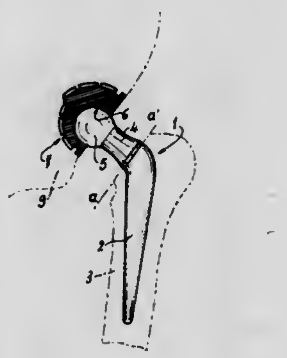
1. A ballistic vest comprising:
at least one member formed of a plurality of layers of alternately placed woven fabric sheets of (1) ballistic nylon fiber and (2) aramid fiber, said member being sewn so as to prevent substantial relative movement between said layers; and
means for securing said member to the torso of a person.

3,891,997

HIP-JOINT PROSTHESIS

Jean Jules Marie Ernest Herbert, 11, Boulevard de la Roche de Roi, Aix-Les-Bains, France

Filed Mar. 11, 1974, Ser. No. 449,841
Claims priority, application France, Feb. 20, 1974, 74.06551
Int. Cl. A61f *1/24*
U.S. Cl. 3—1 **8 Claims**



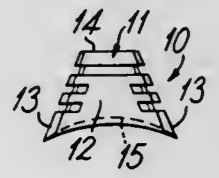
1. A prosthetic hip joint comprising:
a femoral element formed with a ball head and a stem projecting from said head and adapted to be received within the upper end of a femur, and
a generally hemispherical socket element adapted to be secured in a predetermined orientation in an ilium at the acetabulum thereof and having an inner surface formed as a generally hemispherical cavity having a single center of curvature and receiving snugly said ball head, and having an outer surface formed as a lower quarter-spherical region having a center of curvature lying above the center of curvature of said cavity and an upper quarter-spherical region adjoining and above said lower region and having a center of curvature coinciding with said single center of curvature of said cavity, said socket element being of uniform radial thickness throughout said upper region and of upwardly increasing radial thickness at said lower region.

3,891,998

ENDOPROSTHETIC SHOULDER JOINT

William Murdoch Lennox, Cheltenham, England, assignor to National Research Development Corporation, London, England

Filed Jan. 7, 1974, Ser. No. 431,403
Claims priority, application United Kingdom, Jan. 12, 1973, 1788/73
Int. Cl. A61f *1/24*
U.S. Cl. 3—1.91 **9 Claims**



1. An endoprosthetic scapular glenoid component comprising a single body of generally frusto-pyramidal overall shaping, said body having its wider end face dished to define a concave bearing surface of substantially part-spherical shaping to an extent significantly less than hemispherical, and having an elongated circumferential form, and the side surfaces of said body being formed with a low-relief structure to afford a key for a gap-filling medium.

3,891,999

APPARATUS AND METHOD FOR CONTROLLING WATER WHEEL

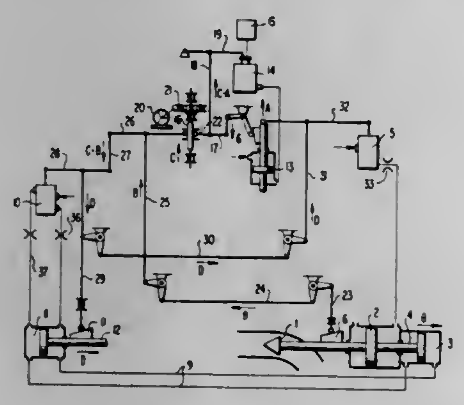
Tsuneo Ueda, and Seiichi Somiya, both of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed May 23, 1974, Ser. No. 472,782
Claims priority, application Japan, May 23, 1973, 48-58089
Int. Cl.^{2} F01D *17/08*
U.S. Cl. 415—1 **8 Claims**

1. Apparatus for controlling the flow control guide vanes of a penstock which directs the water flow to a water wheel power generating device, wherein said guide vanes are movable between an open and a closed position, and having a pressure regulating device to control the water pressure in said penstock comprising;
a. a first actuating means connected to said guide vanes to selectively move said vanes between an open and a closed position,
b. a second acutating means connected to said pressure regulating device to selectively regulate the pressure in said penstock,
c. a third actuating means connected to said second actuating means and said first actuating means,

d. means to control said first and second actuating means in response to the load or speed of said water wheel, and
e. linkage means interconnecting said first actuating means and said second actuating means with each other and with said control means such that when the speed of closing said guide vanes exceeds a predetermined level, said pressure regulating device is opened to reduce the pressure build up in said penstock.

8. A method of controlling the flow of water through a penstock to a water wheel power generating device comprisig the steps of:

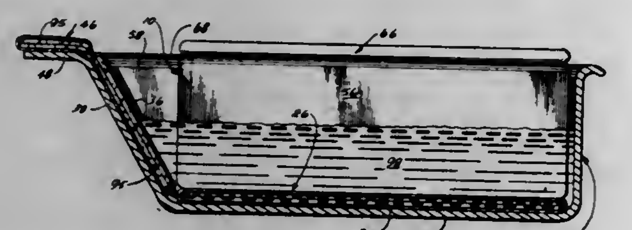


a. sensing the speed of rotation of said water wheel,
b. actuating a governor auxiliary servomotor in response to the speed of rotation of said water wheel,
c. detecting the set position of a load limiting device,
d. actuating a pressure regulator by the difference between the position of said governor auxiliary servomotor and the position of a guide vanes servomotor, and
e. actuating guide vanes by the difference between the position of said pressure regulator and the set position of load limiting device.

3,892,000

SOFT LINER FOR BATHTUBS

Peter Morse, P.O. Box 687, Waipahu, Hawaii 96797
Continuation of Ser. No. 254,569, May 18, 1972, abandoned.
This application Feb. 25, 1974, Ser. No. 445,809
Int. Cl. A47k *3/12*
U.S. Cl. 4—185 F **10 Claims**

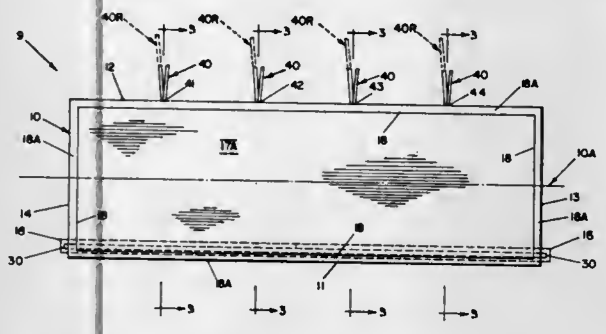


1. A flexible and compressible cushion for use in lining a bathtub having a bottom, spaced apart side walls, and a back wall, the cushion including a first section having a hollow interior and shaped to cover the bottom of the tub, means on the first section for admitting and emptying a substantially incompressible fluid to and from, respectively, the interior of the first section; a second section flexibly joined with the first section and adapted to provide a compressible thickness, the second section being shaped to cover at least a portion of the back wall of the tub, the second section having a hollow interior sealed from the interior of the first section for receiving and maintaining a supply of gas under pressure; and third and fourth sections flexibly joined with opposite sides of the first section, each being shaped to cover at least a portion of a respective side wall of the tub, and each having a hollow interior sealed from the interior of the first section for receiving and maintaining a supply of gas under pressure.

3,892,001

FLEXIBLE PANEL PROTECTOR FOR UPPERMOST SPRINGS OF SOFA BEDS

Charles Schneider, Omaha, Nebr., assignor to Charles, Inc., Council Bluffs, Iowa
Filed Oct. 21, 1974, Ser. No. 516,449
Int. Cl.^{2} A47C *23/00, 17/04*
U.S. Cl. 5—354 R **9 Claims**



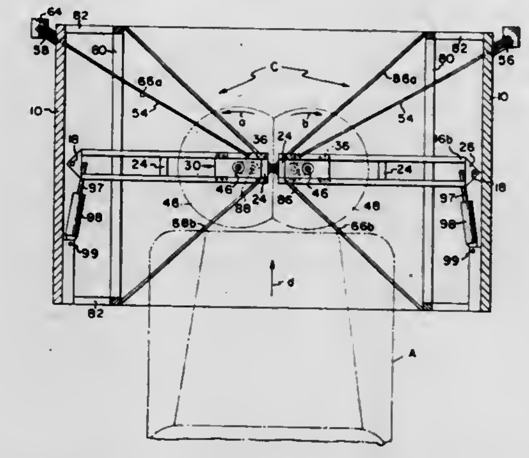
1. An elongate felexible panel protector adapted to lie neatly flatly horizontally between the removable seating cushions and the uppermost springs of closeably-collapsed sofa beds, said protector panel extending along an elongate linear horizontal central-axis and comprising:
A. An elongate flexible horizontal envelope having a pair of opposed horizontal elongated extremities including a front-side and a rear-side, said envelope comprising an elongate flexible base-sheet having a pair of opposed broad surfaces including a top surface and a bottom surface which is directly abuttably superimposeable against the uppermost springs of a closeably collapsed sofa bed, said envelope also comprising a flexible elongate cover-sheet attached to the base-sheet and having a pair of opposed broad surfaces including a lower-surface and an exposed upper-surface for the removable seating cushions to rest upon;
B. Flexible resiliently compressible padding as self-sustaining laminar sheet material enclosed within and extending along the elongate envelope; and
C. Elongate stiffener means attached to and for stiffening the elongate envelope front-side whereby when the stiffened protector is lifted by an upward force applied solely at a frontal central portion thereof, the envelope clongate frontside remains horizontally linear and buckling of the envelope rearward portions is minimized.

3,892,002

CAR CLEANING APPARATUS

John A. Horner, 211 E. Grove Street, Kawkawlin, Mich. 48631, and Harold C. Baldauf, 10361 Lakewood St., Saginaw, Mich. 48603
Filed May 7, 1973, Ser. No. 358,010
Int. Cl. B60s *3/06*
U.S. Cl. 15—21 D **11 Claims**

1. Apparatus for cleaning the outside of a vehicle moving in a longitudinal path forwardly through a cleaning station comprising:
a frame;
a rotary vehicle cleaning brush; and
means mounting the brush on the frame for longitudinal and lateral movement from a rest position in said path longitudinally forwardly and laterally outwardly to an extreme forward position at the side of the path, then rearwardly alongside said path to an extreme rear position, and then laterally inwardly and forwardly to the rest position, said mounting means including:
support means mountd on the frame for swinging movement between a rest position and extreme forward and rearward positions;
carrier means mounting the brush on the support means for swinging movement therewith and for movement thereon in a to-and-fro path of travel from a laterally inner position at one end of said support means to a laterally outer position at the other end thereof, and return, while said support means swings; and

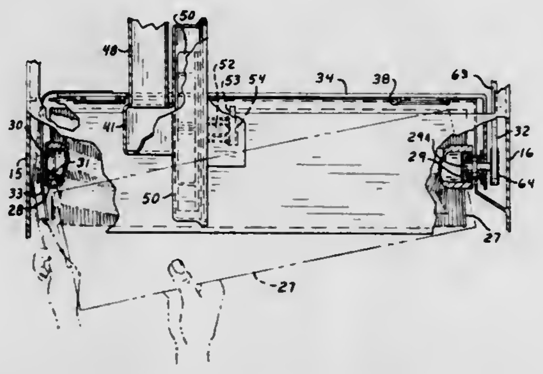


cam means on said frame in the path of one of said carrier means and said brush for controlling the movement of said brush on said support means as said support means swings between said rest position and said extreme forward and rear positions.

3,892,003

POWER FLOOR TREATING APPARATUS

Ralph C. Peabody, Brooklyn Center, Minn., assignor to Tennant Company, Minneapolis, Minn.
Filed Mar. 16, 1973, Ser. No. 341,973
Int. Cl. A47l *11/00*
U.S. Cl. 15—49 C **13 Claims**

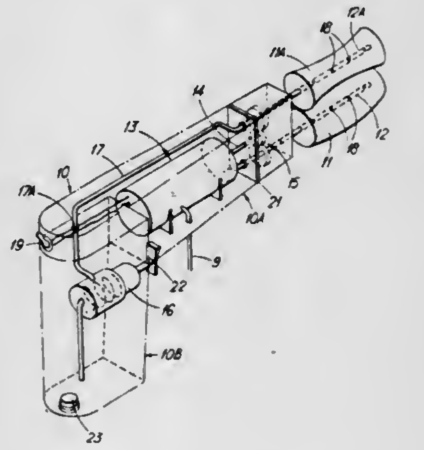


1. Floor maintenance apparatus having a floor treating means operatively coupled thereto and comprising, in combination:
a. rigid frame means having support wheels coupled thereto, a power source mounted on said frame means and having a powered output shaft, and with at least one of said support wheels being drivingly coupled to said power source;
b. implement suspension means coupled to said frame means for journably supporting said floor treating means within said frame, said suspension means including a transverse support member having first and second generally longitudinally extending laterally disposed arms secured thereto, each arm terminating in an outwardly disposed free end and being disposed adjacent said opposed side walls;
c. pivotal mounting means coupling said transverse support member to said frame means and arranged to suspend said transverse support member in free dependent disposition for swinging movement about a support axis extending generally across said frame means;
d. said first laterally disposed arm being generally rigid and having bearing means mounted adjacent the free end thereof, said second laterally disposed arm being longitudinally rigid and laterally flexible and having bearing means mounted adjacent the free end thereof and being normally resiliently biased toward said first arm to a normal disposition spaced a certain first predetermined distance from said first arm, each of said bearing means having inwardly extending boss means;
e. said floor treating means being drivingly coupled to said power source and being of generally cylindrical configuration with an axially extending core means forming an opening at opposed ends thereof for receiving said boss means in driving engagement therewith, said floor treating means having an axial length which exceeds said first predetermined distance;
f. said second laterally disposed arm being arranged for outward flexure to permit removal of said boss means from one end of the core of said floor treating means.

3,892,004

DOMESTIC CLEANING APPARATUS

Thomas Downes, 43 Banchory Pl., Tullibody, Alloa Clackmannanshire, England
Filed Oct. 6, 1972, Ser. No. 295,463
Int. Cl.^{2} A46B *13/04*
U.S. Cl. 15—102 **4 Claims**



1. Portable apparatus for cleaning venetian blinds or the like, comprising a housing adapted to be hand-held, a pair of contiguously-mounted slat-cleaning elements mounted on rotatable hollow shafts projecting from the housing, said shafts being free at their ends remote from said housing, an electrically-operated motor mounted in said housing and coupled to rotate said shafts, a reservoir formed in the housing for storing cleaning liquid and having an outlet port, conduit means coupling said outlet port with the hollow interior of said shafts, and means forming perforations in the walls of said shafts in the region thereof mounting said slat-cleaning elements, to permit said cleaning elements to receive cleaning liquid, there being a plurality of said perforations spaced apart lengthwise along each said hollow shaft, the portions of said elements which are external to the housing being free of mechanical interconnections to permit the apparatus to engage a slat to be cleaned by movement of the apparatus laterally with respect to the slat so that opposite sides of a slat are engaged simultaneously by said elements.

3,892,005

SQUEEGEE OR LIKE CLEANING APPLIANCE, PARTICULARLY FOR CLEANING WINDOW PANES AND FLOORS

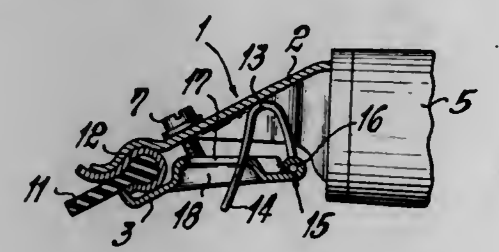
Harald Berns, Wuppertal-Elberfeld, Germany, assignor to Henry Morton Unger, Solingen, Germany
Filed Oct. 24, 1973, Ser. No. 409,120

Claims priority, application Germany, Nov. 6, 1972, 2254248.

Int. Cl. A47l *13/11*
U.S. Cl. 15—245 **7 Claims**

1. A squeegee, particularly for cleaning window panes and floors, comprising

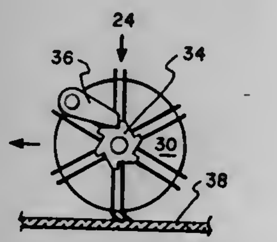
a. an exchangeable substantially strip-shaped cleaning element,
b. first and second clamping jaws,
c. means for pivotally securing said clamping jaws together for movement about a fulcrum,
d. gripping means on each of said first and second clamping jaws on one side of said fulcrum for gripping opposite sides of said cleaning element,
e. an aperture in said first clamping jaw,
f. a clamping lever having a generally U-shaped configuration and including a handle portion at one end thereof,
g. means located at the side of said fulcrum opposite said one side thereof for pivotally securing the end of said clamping lever opposite said handle portion to said first clamping jaw at the side of said first clamping jaw adjacent said second clamping jaw,



h. said clamping lever being arranged to pivot between a locking position in which the portion thereof at about the apex of said U-shaped configuration presses against said second clamping jaw at said opposite side of said fulcrum to bias said gripping means of said clamping jaws towards each other to grip said cleaning element and a release position in which said clamping jaws may freely pivot permitting said gripping means to move away from each other to release said cleaning element,
i. said clamping lever being arranged such that only said handle portion extends through said aperture in said first clamping jaw when said clamping lever is in said locking position and a part of said clamping lever is drawn through said aperture during pivotal movement of said clamping lever to said release position.

3,892,006
MULTI-BLADED WIPER FOR WINDSHIELD-WIPER ASSEMBLY

Michio Yasumoto, 3909 N.E. 135th, Portland, Oreg. 97230
Filed Sept. 16, 1974, Ser. No. 506,469
Int. Cl.^{2} B60S *1/44, 1/38*
U.S. Cl. 15—250.22 **14 Claims**

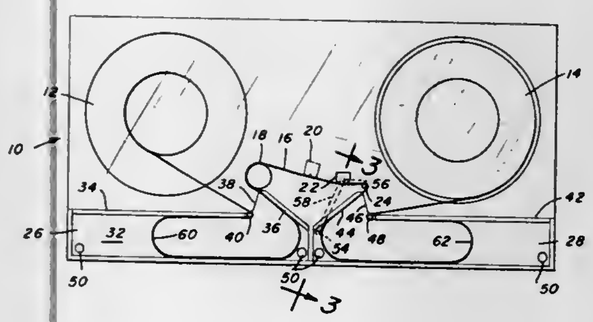


1. A windshield wiper assembly, adapted to be mounted on the oscillating wiper shaft of a conventional vehicle, comprising:
a. a wiper support arm adapted for attachment to a wiper shaft;
b. a flexible shaft member rotatably attached to said wiper support arm;
c. a plurality of radially-projecting planar blades of resilient material spaced about and extending along the longitudinal axis of said shaft member; and
d. means soley carried on said wiper support arm for limiting the rotational movement of said shaft member to one direction only.

8. A windshield wiper comprising:
a. a flexible shaft member;
b. a plurality of radially-projecting planar blades of resilient material spaced about and extending along the longitudinal axis of said shaft member; and
c. a plurality of resilient wedge-shaped spacer members attached to said shaft member and projecting radially a distance slightly less than said blades and extending longitudinally the full length of said shaft member, one of said wedge-shaped spacer members being located between each two blades.

3,892,007
TAPE CLEANER VACUUM INTERLOCK

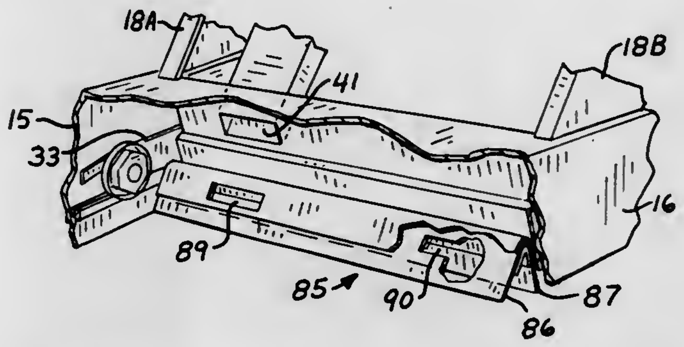
Richard W. Pembroke, Tulsa, Okla., assignor to Telex Computer Products, Inc., Tulsa, Okla.
Filed Apr. 18, 1974, Ser. No. 461,866
Int. Cl. A47l *5/38*
U.S. Cl. 15—306 A **4 Claims**



1. In a vacuum controlled tape transport mechanism having first and second tape reels, and a capstan and a read/write head and a tape cleaner interposed between the reels for receiving the tape therearound, the improvement in apparatus for applying vacuum to the tape cleaner comprising:
a. first and second vacuum columns in constant communication with the vacuum system of the tape transport mechanism, each of said vacuum columns being provided with a mouth in the proximity of the path of travel of the tape, the mouth of each vacuum column being open during threading of the tape from one reel to the other reel whereby the pressure in each vacuum column is substantially atmospheric pressure, the mouth of each vacuum column being closed by a loop of the tape subsequent to the threading of the tape whereby a vacuum is established in each vacuum column; and
b. passageway means providing constant communication between one of said vacuum columns and the tape cleaner whereby the pressure at the tape cleaner is substantially atmospheric pressure during threading of the tape from one reel to the other and a vacuum is established at the tape cleaner subsequent to threading of the tape.

3,892,008
VENTED DOUBLE SKIRT SYSTEM

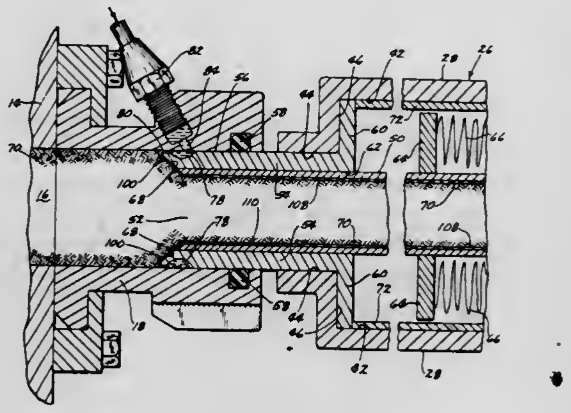
Bryan L. Christensen, and David W. Berg, both of Minneapolis, Minn., assignors to Tennant Company, Minneapolis, Minn.
Filed Mar. 16, 1973, Ser. No. 341,975
Int. Cl. A47l *9/06*
U.S. Cl. 15—368 **11 Claims**



10. The floor sweeping apparatus as defined in claim 1 being particularly characterized in that means are provided for adjustably supporting the elevation of said cylindrical brush.

3,892,009
MEANS OF CONVEYING PLASTIC MATERIAL THROUGH A CONDUIT

Ray T. Townsend, Des Moines, Iowa, assignor to Townsend Engineering Company, Des Moines, Iowa
Division of Ser. No. 222,088, Jan. 31, 1972, abandoned. This applica'ion Aug. 15, 1973, Ser. No. 388,469
Int. Cl.^{2} A22C *11/02*
U.S. Cl. 17—35 **19 Claims**

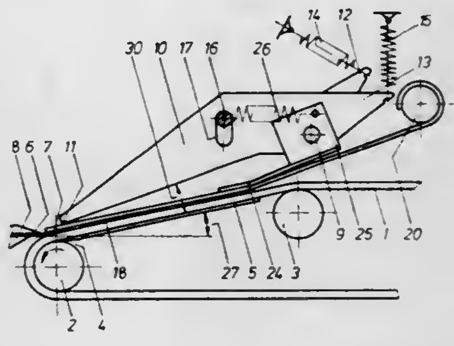


4. The apparatus of claim 1 wherein said means adjacent said conveying passageway includes a filter means through which said liquid flows into said passageway.

3,892,010
SKINNING MACHINE FOR FISH FILLETS

Alfred Friedrich Adolf Bartels, Lubeck-Israeldorf; Gunther Fritz August Heinrich Pinkerneil, Lubeck, and Herbert Dietrich August Köhn, Bad Schwartau, all of Germany, assignors to Nordischer Maschinenbau Rud. Baader, Lubeck, Germany
Filed Oct. 31, 1973, Ser. No. 411,234
Claims priority, application Germany, Nov. 6, 1972, 2254284
Int. Cl.^{2} A22C *25/02*
U.S. Cl. 17—62 **11 Claims**

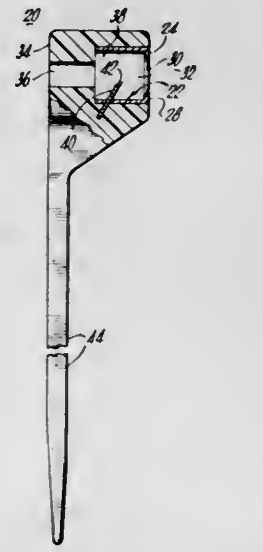
1. A skinning machine for fish fillets including
a flexible conveyor band passing around a roller of small diameter, and having an upper run for receiving fish fillets thereon and transporting said fish fillets toward said roller,
an endless band cutter located proximate to said roller and extending tangentially to said roller and inclined slightly to the direction of travel of the conveyor band,
a guide for the band cutter exposing the cutting edge thereof a selected distance above the upper run of the conveyor band,
a planar rigid and unyielding supporting plate supporting the upper run of the conveyor band and extending into the angle between the roller and said upper run of the conveyor band,



pressing means mounted above the conveyor band and sloping down towards the latter to form a wedge shaped space, said pressing means comprising
a set of presser arms mounted close together side by side and independently pivoted and resiliently biased about an axis, said presser arms having sharply cut off free ends extending close to the cutting edge of the cutter band,
and a flexible apron between the presser arms and the conveyor band, said apron maintaining said fish fillets in flattened condition upon said conveyor band in the vicinity of said band cutter and roller, under downward force of said presser arms.

3,892,011
BUNDLING STRAP WITH SELF-CONTAINED SEVERING MEANS

Stephen J. Kohke, Bridgewater Twsp., N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.
Filed May 22, 1974, Ser. No. 472,109
Int. Cl.^{2} B65D *63/00;* **B26B** *27/00*
U.S. Cl. 24—16 PB **6 Claims**



1. An improved bundling strap comprising: a head portion, a tail portion, and an elongate body portion therebetween; said head portion having an aperture extending therethrough for receiving said body portion; locking means for restricting removal of said body portion from said head portion; and severing means coupled to said head portion and having a sharpened blade cooperative with said head portion aperture for severing said strap body portion thereat, said severing

means comprising a metallic sleeve having a wall portion seated within said head portion aperture.

3,892,012

METHOD OF AND APPARATUS FOR FORMING ROLLS OF CONTINUOUSLY SUPPLIED SHEET MATERIAL

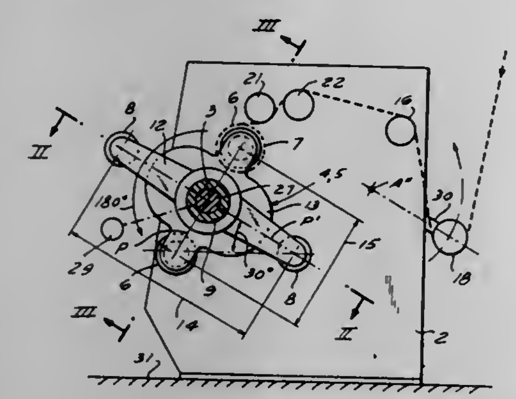
Horst Keferstein, Mullekoven, Germany, assignor to Reifenhauser KG, Troisdorf, Germany

Filed Apr. 8, 1974, Ser. No. 459,049

Claims priority, application Germany, Apr. 6, 1973, 2317325

Int. Cl. B65h *19/20, 75/34*

U.S. Cl. 242—56 A **12 Claims**



1. An apparatus for forming rolls of a continuously supplied sheet, said apparatus comprising:
two mounting assemblies jointly rotatable about a rotation axis and carrying two pairs of holders defining a pair of parallel core axes parallel to said rotation axis and diametrically across said rotation axis from each other, one holder of each of said pairs being provided on each of said assemblies;
a pair of elongated parallel deflecting elements extending parallel to said rotation axis between said assemblies and lying to either side of a core plane including said rotation axis and said core axes;
means for rotating about said core axes cores carried on said holders and each lying along a respective core axis; means for wrapping said sheet around one of said cores, whereby said sheet is wound up on said one core, and for cutting said sheet and wrapping same about the other core when said one core is filled, whereby said sheet is wound up on said other core; and
means for rotating said assemblies and said elements about said rotation axis through substantially 180° after cutting of said sheet and wrapping of same about said other core.

3,892,013

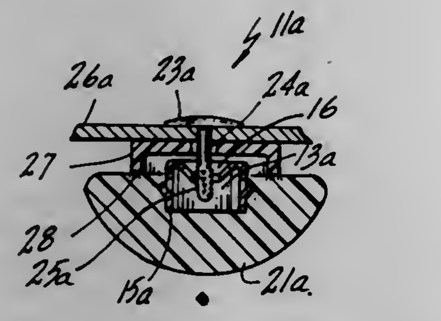
BUTTON MOUNTING DEVICE

Sheldon D. Gould, 1159 Brighton Beach Ave., Brooklyn, N.Y.

Filed Dec. 21, 1973, Ser. No. 427,121

Int. Cl. A44b *1/28, 1/44*

U.S. Cl. 24—90 E **7 Claims**



1. A button mounting device comprising in combination: a male tack means including an elongated barbed shaft having at a distal end portion thereof radially outwardly-extending barbs directed toward a tack head thereof; a female barbed-shaft receiving-means of a metallic composition and for lockably receiving said distal end portion and barbs thereof, having a hollow first cap structure with an open bottom and with an upper cap central aperture defined by inner distal ends of downwardly-directed radially-inwardly-extending tongue-flanges of the first cap structure, the inner distal ends being lockably engageable of said barbs against withdrawal of the barbs, the female barbed-shaft receiving-means including downwardly-extending upright wall structure of said first cap structure, upwardly-directed radially-outwardly-extending flanges being formed from and cut at upper ends thereof from said upright wall structure and being integral at base ends thereof to remaining portions of said upright wall structure.

3,892,014

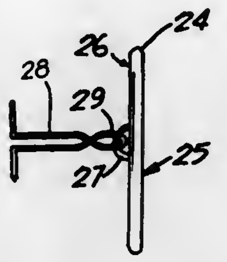
BUTTON-TYPE GRIPPING DEVICE

Josephine Cooley Nolan, Queens Village, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Nov. 16, 1973, Ser. No. 416,491

Int. Cl.² A44B *1/18*

U.S. Cl. 24—103 **2 Claims**



1. A button-type gripping device, comprising
a button having a front and a rear surface;
a coupling member affixed to the rear surface of the button; and
a substantially U-shaped pin having a pair of next-adjacent parallel arms each terminating in a sharp material piercing point, said arms being bent around each other to form a closed loop head releasably coupled to the coupling member and serving to space the button from associated material to which the button is secured, the arms of the pin passing through said material and being bent near the ends thereof outwardly away from each other.

3,892,015

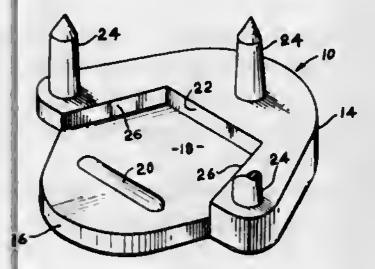
WAISTBAND FASTENER

Donald O. Taylor, Waterbury, Conn., assignor to Scovill Manufacturing Company, Waterbury, Conn.

Filed June 17, 1974, Ser. No. 479,675

Int. Cl. A44b *13/00*

U.S. Cl. 24—201 HH **4 Claims**



1. A waistband fastener comprising identical mating halves, each half including: a flat molded plastic body being formed with a thin flat rounded tongue extending forward from the main portion of the body at substantially the upper surface thereof, the body having a recess, the top of the recess running to the underside of the tongue and co-planar therewith, the recess being of a height at least of the thickness of the tongue and being adapted to receive the tongue of the mating half, the recess being defined by a back surface and converging side surfaces, the latter surfaces being adapted to guide the tongue of the mating part to fully engaged condition when the top and bottom sides of the two halves are oppositely disposed, the undersurface of the tongue being formed with a transverse downward rib adapted to interengage with the rib of the mating part to comprise a lock, a plurality of pins extending downward from the body outward of the recess and integrally formed with the body; and an anchor plate having holes aligned with the pins respectively and adapted to receive the pins so that the pins may thereafter be headed to secure the body-plate assembly to a layer of fabric disposed between the body and plate.

3,892,016

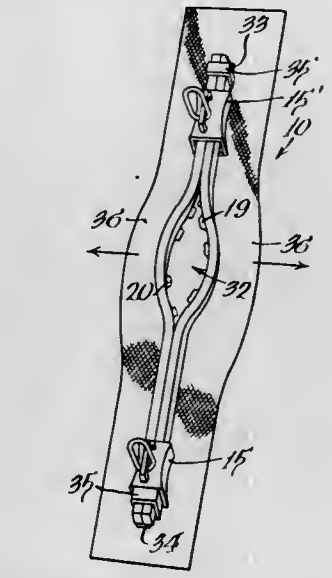
INTERDIGITATED SEALING CLOSURE

Alexander M. Brown, 53 Turin Coach Ct., Daytona Beach, Fla. 32014

Filed Aug. 9, 1974, Ser. No. 496,136

Int. Cl. A44b *19/32, 19/10*

U.S. Cl. 24—205.1 R **17 Claims**



1. An interdigitated sealing closure comprising:
a carrier strip defined by opposed longitudinally extending portions;
a core strip joined to and underlying said carrier strip and defining complementary opposed longitudinally extending portions provided with arrays of interdigitatable teeth, a first array of said teeth being joined to one of said carrier portions, and a second array of said teeth being joined to the other of said carrier portions;
a slider movable along said carrier and core strips for sequentially interdigitating the opposed teeth of the core strip; and
a resilient sealing strip underlying and being joined to said core strip and including a first sealing strip portion joined to said core strip portion defining said first array of teeth and a second sealing strip portion joined to said other core strip portion defining said second array of teeth, said sealing strip portions defining confronting sealing surfaces in sealing abutment when said core strip teeth are interdigitated, said core strip defining a preselected portion free of teeth permitting the sequential separation of the interdigitated arrays of teeth as an incident of application of opposite outwardly directed forces to said core strip portions commencing at said preselected portion, and said slider maintaining said core strip opposed portions juxtaposed at said preselected portion and thereby maintaining said sealing strip portion sealingly abutting adjacent said preselected portion when said slider is disposed at said preselected portion.

3,892,017

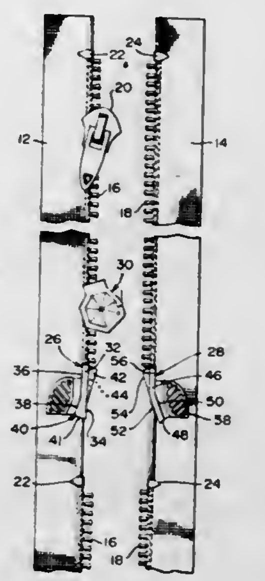
SEPARABLE SLIDE FASTENER AND METHOD OF FORMING THE SAME

David G. Watson, Meadville, Pa., assignor to Textron Inc., Providence, R.I.

Filed Feb. 22, 1974, Ser. No. 445,038

Int. Cl. A44b *19/24*

U.S. Cl. 24—205.11 F **21 Claims**



1. A separable slide fastener comprising
a pair of tapes carrying interengaging elements along inner edges thereof;
a slider movable along said interengaging elements to open and close said slide fastener;
separable end stop means including a support member secured to one of said tapes having a head portion, a pin member secured to the other of said tapes, and a retainer immovably mounted on said support member having first and second opposing side walls, a partition disposed between said first and second side walls to define first and second channels in said retainer for receiving said support member and said pin member, respecitvely, and means in said first channel defining a pocket having a configuration mating with the configuration of said head portion of said support member to lock said head portion in said pocket; said support member having a shank; and
said head portion having a wedge-like configuration extending from said shank and terminating at an end wider than said shank.

3,892,018

DEVICE FOR THE PNEUMATIC SQUEEZING OF A CONTINUOUSLY MOVING THREAD

Jacques H. Rose, Saint Quentin, France, assignor to O.P.I. Textile, rue de Saint Quentin, France

Filed July 23, 1974, Ser. No. 491,036

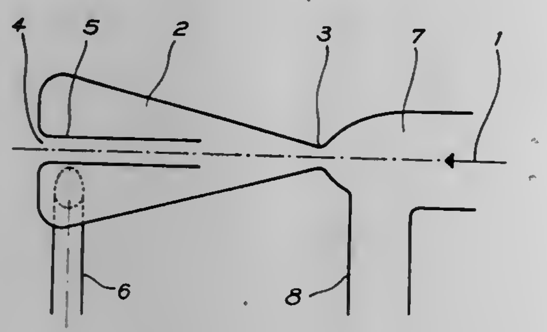
Claims priority, application France, July 24, 1973, 73.26980

Int. Cl. D02j *13/00;* **F26b** *5/04*

U.S. Cl. 28—62 **4 Claims**

1. A device for the pneumatic squeezing of a continuously moving thread comprising a squeezing chamber provided with inlet orifice and an outlet orifice for the thread, these orifices being aligned in the axis of said chamber, and a pipe for feeding the chamber with squeezing fluid, characterised in that
the chamber is substantially cone-shaped
the inlet orifice for the thread is placed at the end of the chamber having the smallest cross-section
the outlet orifice for the thread is placed at the end of the

chamber having the largest cross-section
the squeezing fluid feed pipe communicates with that part



of the chamber having the largest cross-section, tangentally to the inner wall of the chamber.

3,892,019
APPARATUS FOR INTRODUCING YARNS INTO DRAW-EXTURING MACHINES

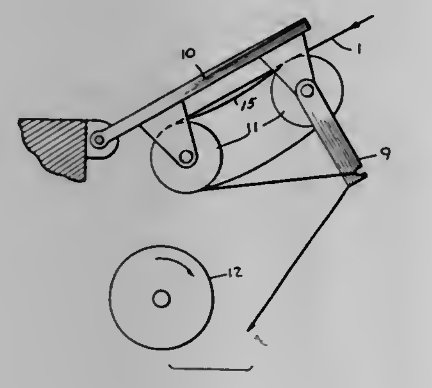
Albert Rebsamen, Wilen, and Paul Gubler, Herisau, both of Switzerland, assignors to Heberlein and Co. AG., Wattwil, Switzerland

Filed June 15, 1973, Ser. No. 370,458

Claims priority, application Switzerland, June 21, 1972, 9347/72

Int. Cl. D02g *1/00*

U.S. Cl. 28—1.2 **2 Claims**



1. Apparatus for introducing a yarn into draw-texturing machines which include delivery devices (2,3) and texturing means (5,6), characterized by yarn holding means (9,11,15) positioned between said delivery devices and said texturing means to provide a yarn guide path longer than the normal yarn guide path between said delivery devices and texturing means, and means (10) shifting said yarn holding means out of engagement with the yarn prior to operation of said texturing means whereby the yarn tension is reduced and a start yarn reserve is provided, one of said delivery devices (3) on the output side of the drawing device including a fixedly located drive roller (12) and said yarn holding means comprising at least one pressure roller (11) around which the yarn passes, said pressure roller being movable between a first yarn insertion position away from the drive roller wherein the yarn is out of contact with the latter, and a second normal position wherein the yarn contacts the drive and pressure rollers, and an additional holder (9) arranged to support the yarn when same is in yarn insertion position and to release same to normal position when said pressure roller moves from its first to its second position.

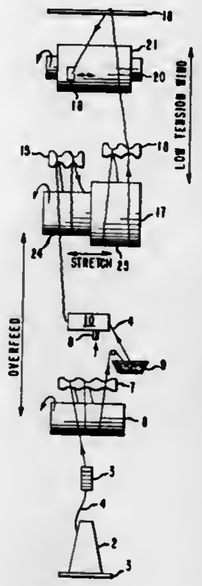
3,892,020
PREPARING A TEXTURED YARN PACKAGE, FOR DYEING

Manfred Gunter Koslowski, Vorhelm/Krels Beckum, Germany, assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.

Filed Dec. 14, 1973, Ser. No. 424,811

Int. Cl. D02g *1/16*

U.S. Cl. 28—72.12 **2 Claims**



1. In a continuous process for texturing then winding yarn on a package support that includes the steps of overfeeding a feed yarn through an air texturing jet with the resultant formation of texture-giving loops and winding the textured yarn on the package support under sufficient tension to stabilize the yarn without eliminating the loops and form a package of yarn, the improvement comprising: stretching the textured yarn between the texturing and winding steps, the degree of stretch being sufficient to stabilize the yarn without eliminating the loops; and winding the yarn under relatively low constant tension less than about 0.04 gram per denier to form a package of yarn suitable for package dyeing.

3,892,021
PROCESS FOR PRODUCING CRIMPED POLYESTER FIBERS OF HIGH MODULUS

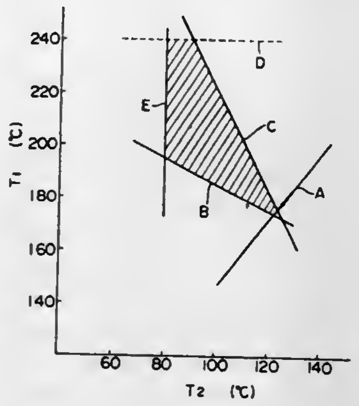
Nobuharu Izawa, Nishikoizumi; Mutsuo Katsu, and Yasuhiro Murase, Takamitsu Kondo, all of Matsuyama, all of Japan, assignors to Teijin Ltd., Osaka, Japan

Filed Oct. 31, 1973, Ser. No. 411,385

Claims priority, application Japan, Nov. 6, 1972, 47-110228

Int. Cl. D02g *1/12*

U.S. Cl. 28—72.14 **3 Claims**



1. A process for producing crimped polyester fibers of high modulus, which comprises drawing an undrawn tow of polyester to 1.15 to 1.45 times the natural draw ratio, heat-treating the drawn tow under tension at a temperature T_1(°C.), feeding it into a stuffer crimper to crimp the tow while maintaining it

at a temperature of 80° to 130°C., and heat-treating the tow at a temperature of T_2(°C.) while allowing free shrinkage of the tow and maintaining the packing density of the tow at at least 200 kg/m³, the T_1 and T_2 satisfying the following relation

$$1.25\,T_2 + 21 \quad T_1 \quad 240$$
$$-2.0\,T_1 + 470 \quad T_2 \quad -0.5\,T_1 + 210$$
$$80 \quad T_2.$$

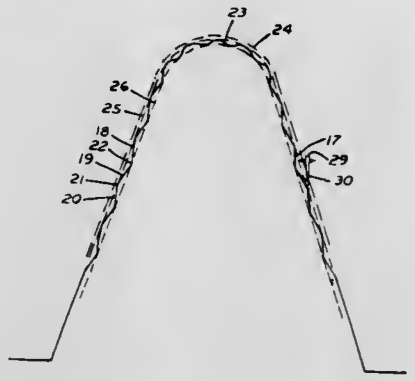
3,892,022
ROUGHING HOB

Stuart J. Johnson, Rockford, Ill., assignor to Barber-Colman Company, Rockford, Ill.

Filed May 10, 1974, Ser. No. 468,914

Int. Cl.² B26D *1/12*

U.S. Cl. 29—103 B **10 Claims**



1. A roughing hob providing for efficient chip breaking in a subsequent finishing operation by leaving a plurality of alternating heavy and light sections to be removed, said hob comprising a cylindrical hub, a thread on said hub, and flutes cut through the thread to form a plurality of teeth in the thread, a cutting edge created on each of said teeth by a respective one of the flutes, a profile of each of said cutting edges comprising a plurality of undulations for generating the alternating heavy and light sections and having a peak envelope approaching a desired finished profile.

3,892,023
PROCESS OF MANUFACTURING A CAPACITOR ASSEMBLY

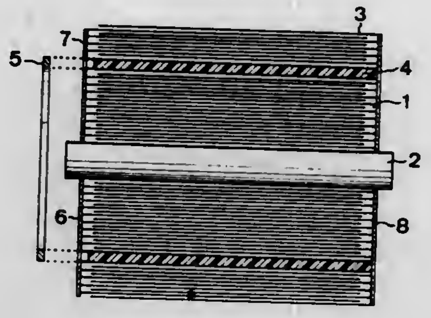
Georges Warmont, Monceau sur Sambre, Belgium, assignor to Ateliers de Constructions Electriques de Charlerol, (ACEC), Charlerol, Belgium

Filed Apr. 20, 1973, Ser. No. 353,123

Claims priority, application Belgium, Apr. 21, 1972, 3965

Int. Cl. H01g *13/06*

U.S. Cl. 29—25.42 **1 Claim**



1. The method of manufacturing an assembly of a roll of wound capacitors, comprising the steps of:

forming a first rolled capacitor with the electrodes offset axially to respectively project from opposite ends of the roll;

placing a layer of insulating material around said first capacitor with at least one edge thereof spaced axially inwardly of the axial edges of the adjacent electrodes;

wrapping at least a second capacitor around said insulation outwardly of said first capacitor in radial alignment therewith whereby said one edge of said insulation defines the bottom of a circular groove in an end face of said roll of capacitors and between said first and second capacitors; placing a masking ring in said groove;

metallizing both axial end faces of said roll of capacitors to electrically connect the electrodes projecting from each end; and

removing said masking ring and its overlying metallization whereby to electrically separate the electrodes at one end of said first and second capacitors.

3,892,024
ARTICLES OF CUTLERY, PAINT SCRAPER AND THE LIKE

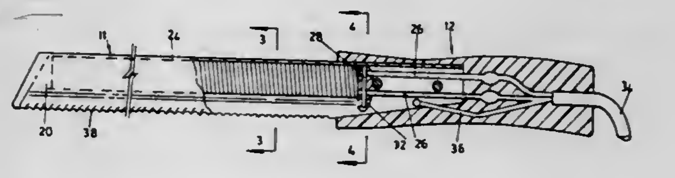
Petrus Corneluis Van Zyl, Roodenpoort, South Africa, assignor to Spreadall (Proprietary) Limited, Randburg, South Africa

Filed Apr. 19, 1973, Ser. No. 352,696

Claims priority, application South Africa, Apr. 25, 1972, 72/2808; July 20, 1972, 72/5002

Int. Cl. B26b *9/02*

U.S. Cl. 30—140 **3 Claims**



1. A knife comprising: a blade formed of a single elongated sheet metal member having two portions of equal size folded one over the other in coextensive relationship, each portion having a longitudinal recess extending through one end so that a chamber is formed within the blade, said chamber being open at one end of the blade; a washer in the chamber spaced from said one end and having the same shape as the chamber so as to divide the chamber into a front chamber portion and a rear chamber portion; an electric heating element in the front chamber portion; a handle formed as a molding of heat and electrically insulating material molded onto and surrounding said one end of said blade, the washer preventing the material of the handle from entering the front chamber portion; and electric cable means connected to said heating element and passing through said washer and through the open end of the chamber.

3,892,025
METHOD OF MANUFACTURING ELECTROMECHANICAL VIBRATION PICK-UPS

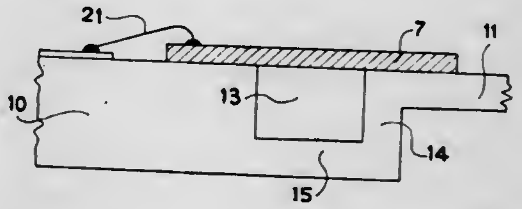
Lucien Lainez; Fokke Duiker; Joel Bayard, and Dominique Di Campli, all of Paris, France, assignors to Thompson-Brandt, Paris, France

Filed Oct. 9, 1973, Ser. No. 404,783

Claims priority, application France, Oct. 10, 1972, 72.35857

Int. Cl. B29d *17/00*

U.S. Cl. 29—169.5 **10 Claims**



1. A method of manufacturing an electromechanical vibration pick-up device comprising a stylus-holder assembled on at least one beam, said beam having at least one flat face and comprising a first portion to be fixed in a damper, a second

portion for carrying a stylus-holder, and a transistor having a substrate respectively mechanically connected to said flat faces of said first and second beam portions, said method comprising the following steps:

forming a transverse slot on said flat face of said beam, said slot having walls;

securing said transistor substrate to said flat faces astride said slot; and subsequently

cutting through one of said slot walls to create a gap and thus to split the beam into two separate portions mechanically connected together solely by said transistor substrate.

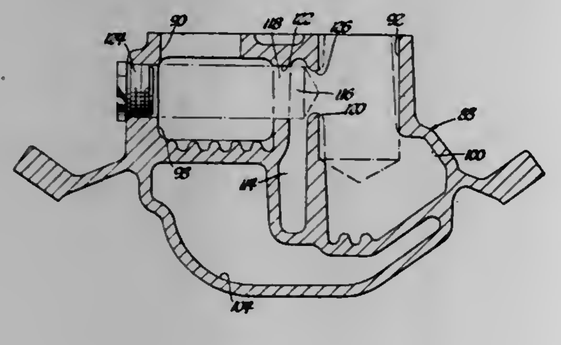
3,892,026
METHOD OF MANUFACTURING AN INTAKE MANIFOLD FOR EXHAUST GAS RECIRCULATION

William F. Thornburgh, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 189,345, Oct. 14, 1971, Pat. No. 3,717,130, which is a continuation-in-part of Ser. No. 43,537, June 4, 1970, abandoned. This application Oct. 13, 1972, Ser. No. 297,496

Int. Cl. B23p *13/02*

U.S. Cl. 29—156.4 R **5 Claims**



1. The method of manufacturing an intake manifold for supplying air and exhaust gas to an internal combustion engine comprising casting a manifold having an induction passage including a riser passage and having a metered exhaust passage extending to an area adjacent said induction passage, said area being at least partially separated from said induction passage by a portion of an induction passage wall, and extending a machining tool into said riser passage along an axis parallel to said portion of said induction passage wall and thereby simultaneously machining said riser passage and removing said portion of said induction passage wall to provide a finished riser passage and to provide an opening from said area into said induction passage through said induction passage wall.

3,892,027
INDUSTRIAL TECHNIQUE

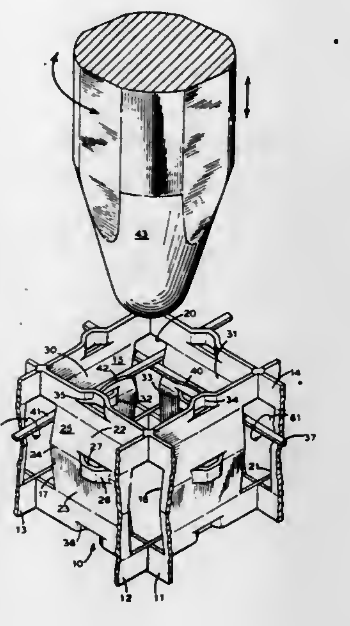
Felix S. Jabsen, Lynchburgh, Va., assignor to The Babcock & Wilcox Company, New York, N.Y.

Division of Ser. No. 193,383, Oct. 28, 1971, Pat. No. 3,795,040. This application Dec. 14, 1973, Ser. No. 425,033

Int. Cl. B23p *19/00, 19/04;* **G21c** *21/00*

U.S. Cl. 29—200 P **8 Claims**

1. Fuel element asembly apparatus for use in a cellular grid structure with resiliently mounted detents that protrude toward centers of the respective cells comprising cam means for insertion in one direction into at least one of the cells, the surface of said cam means fitting generally within the confines of said cell, means for shifting the position of said cam sufrace to engage at least a portion of the grid structure to deflect the resiliently mounted detents away from the center of said cell, and key means for insertion into said cell in another direction, said key means having at least one dimension to engage the grid structure and sustain the resiliently mounted detent deflection.



3,892,028
METHOD FOR PRODUCING A HOUSING CASING FOR A ROTARY PISTON INTERNAL COMBUSTION ENGINE

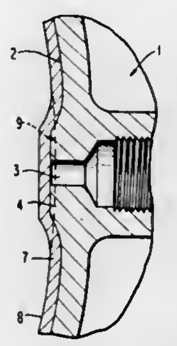
Helmut Dobler, Esslingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany

Filed Feb. 1, 1973, Ser. No. 328,534

Claims priority, application Germany, Feb. 1, 1972, 2204560

Int. Cl. B23p *15/00, 13/00*

U.S. Cl. 29—156.4 WL **3 Claims**



1. A method for producing a housing casing for a rotary piston internal combustion engine, the engine casing consisting of a light metal and including a piston running surface consisting of a coating of a hard material, and a spark-plug-firing channel terminating in the piston running surface, the method comprising the steps of: machining the inner wall of the housing casing to a predetermined contour, leaving during the machining of the inner wall of the housing casing a material island of the light metal material of the housing casing projecting out from the inner wall of the housing casing within the area assigned to the discharge opening of the spark-plug-firing channel, providing a coating of hard material along the inner contour of the housing casing in the machined condition, said material island having a height corresponding at least to the thickness of said coating material, applying the coating of the hard material provided along the inner contour of the housing casing also over the material island, and removing the portion of the hard material coating lying on the material island during the finish-machining operation of the running surface formed by the hard material coatihg.

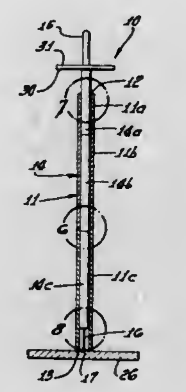
3,892,029
METAL DECKING PUNCH AND METHOD

Vincent J. Militello, 1737 Ash Dr., Monterey Park, Calif. 91754

Continuation of Ser. No. 220,046, Jan. 24, 1972, abandoned. This application May 21, 1973, Ser. No. 361,997

Int. Cl. B21d *28/26*

U.S. Cl. 29—428 **1 Claim**



1. In the method of attaching hangers to sheet metal decking, the decking forming a laterally extending trough, and wherein apparatus is employed to punch openings in the decking that extends generally horizontally, said apparatus comprising an elongated upright tubular guide having opposite open ends, an elongated metallic rod movable endwise in the guide and a handle on one end of the rod projecting from the upper end of the guide and a cross-piece on the rod above the guide, and a punch in the form of a blade integral with the opposite and lower end of the rod, the steps that include

a. selecting a location for forming a hole in the sheet metal decking and placing the punch tip on said location with the rod and guide extending thereabove, rotating the punch and rod to orient the cross piece and thereby orient the blade in the direction of the trough and of an opening to be formed in the decking by the blade.

b. manually lifting the handle to elevate the rod and punch relative to the sleeve while maintaining the lower end of the sleeve in engagement with the decking proximate said location,

c. dropping the handle to drop the rod for developing momentum acting to propel the punch blade through the decking to form said opening therein at said location, guiding the rod to prevent rotation thereof during said dropping, limiting said dropping by allowing the cross-piece to engage the guide, and removing the punch from the opening, and

d. extending a hanger through said opening to be supported by the upper side of the decking.

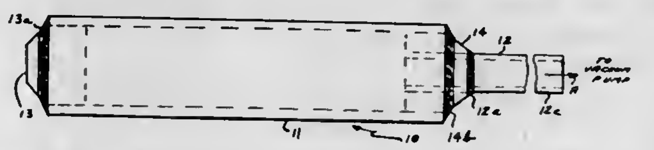
3,892,030
METHOD OF FABRICATING A BILLET FROM METAL PREFORMS AND METAL POWDER

Vincent De Pierre, and Ferdinand J. Gurney, both of Dayton, Ohio, assignors to United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 29, 1974, Ser. No. 464,874

Int. Cl. B22f *3/24*

U.S. Cl. 29—420 **1 Claim**



1. In a method for fabricating billets, raw stock and the like in preparation for the production of various parts, components and products to be assembled therefrom, the steps comprising; initially preparing a metal powder-receiving tube device by, first, selecting a rather easily deformable, first, relatively thin-walled and open-ended, hollow primary metal tube of a desired length, predetermined diameter and particular wall thickness, and forming a metal powder-receiving chamber therewithin, thereafter forming a closed bottom at one end of said primary tube, as by welding a first, solid metal end piece thereto, then affixing a second, readily removable, relatively elongated and reduced diameter-hollow, open-ended and centrally-disposed, temporary metal powder-storage, passage containing and feeding auxiliary metal tube in the opposite open end of said first, primary tube, as by sealing thereinto a second, relatively enlarged metal end piece having a central passage, an inner end extending substantially into said primary tube-chamber and rigidly mounting said second, auxiliary tube in the said central passage with a first, inner passage end extending inwardly into the primary tube passage a significant degree to a position of exact alignment with the inner end of said second, metal end piece, and a second, outer passage end projecting outwardly a substantial distance of the outer end of said second, metal end piece and adapted to be releasably attached to a vacuum line and vacuum pump; subsequently introducing a predetermined supply of loose metal powders into the chamber of said primary tube, by way of and as may be measured by the amount thereof being respectively and initially admitted into, and temporarily stored by one or more fillings of, and further being selectively controlled by the selected size of said second, auxiliary tube; evacuating and heating the loose metal powders having been previously admitted into the primary tube-chamber to eliminate substantially all air, moisture and other gas particles from within the chamber per se and from the surfaces of the metal powders; sealing off the open outer end of the second, auxiliary tube at a position thereof adjacent or substantially adjacent its entry into its mounting-second, metal end piece, while simultaneously maintaining the evacuation being applied to the primary tube-chamber, by way of the vacuum pump and vacuum line adapted to be interconnected with the opposite outer, projecting end of said second, auxiliary tube, until the sealing off operation has been completed; and finally deforming said first, primary tube, as by swaging, a predetermined amount to thereby reduce both the outside and inside diameters a proportional amount relative to each other to thereby squeeze and thus compact together the loose metal powders within the primary tube-chamber into a solid mass exhibiting a given degree of porosity previously determined and specifically controlled by initially pre-selecting the material, diameter and wall thickness of the particular primary tube being deformed, as well as the particular material and size of the loose metal powders being compacted, and thereafter controlling the degree of deformation being applied respectively to both the outside and inside diameters and already found to give a particular porosity to the compacted metal powders in a test sample thereof.

3,892,031
METHOD OF CAPTURING SCREW FASTENER

Robert H. Bisbing, Springfield, Pa., assignor to Southco, Inc., Lester, Pa.

Continuation of Ser. No. 241,194, April 5, 1972, abandoned. This application Mar. 15, 1974, Ser. No. 451,466

Int. Cl. B23p *11/00*

U.S. Cl. 29—437 **10 Claims**

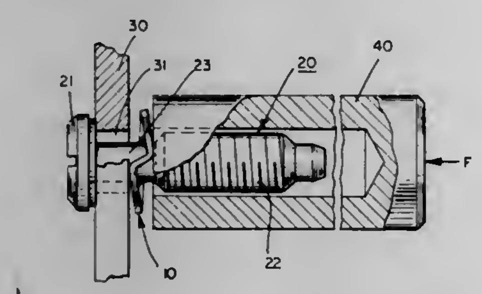
1. A method of removably securing a panel or the like to another member by means of a fastener assembly which includes:

A. A screw having a shank and an enlarged head;
  a. said diameters; having a raised threaded portion having major and minor diameterse;
  b. a non-threaded throat portion between said head and said threaded portion, said throat portion having a diameter not larger than the minor diameter of said threaded portion;

B. A closed annular washer for retaining said screw captive in said panel, said retaining washer being of readily deformable material and having a center aperture having a diameter corresponding to the minor diameter of said threaded portion;
- a. said washer being continuous;
- b. said washer being helical at its outside diameter portion as well as at its inside diameter portion;

Said method including the steps of:

C. Providing a hole in said panel;



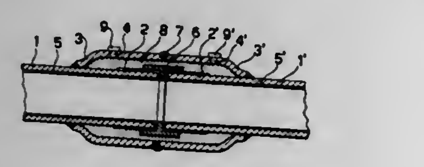
D. Inserting the shank of said screw through said hole, the enlarged head of said screw being larger in cross dimension than the cross dimension of said hole and not passing therethrough;

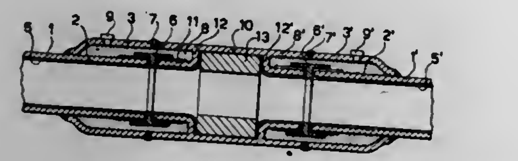
E. Threading said helical washer over the threaded portion of said shank onto said non-threaded throat portion;

F. Applying a force in the axial direction against the outside diameter portion only of said helical washer to flatten said entire annulus against the panel, thereby to make said washer captive on said throat portion of said screw between the panel and said threaded portion and not removable by unthreading over said threaded portion.

3,892,032
METHOD FOR FORMING CONDUITS HAVING A CONTINUOUS CORROSION-RESISTANT LINING

Luigi Bagnulo, Via Alessandro Volta No. 18, Milan, Italy
Division of Ser. No. 270,571, July 10, 1972, Pat. No. 3,843,170. This application Apr. 24, 1974, Ser. No. 463,780
Claims priority, application Italy, July 9, 1971, 26857/71
Int. Cl. B21d *39/00*
U.S. Cl. 29—455 **8 Claims**

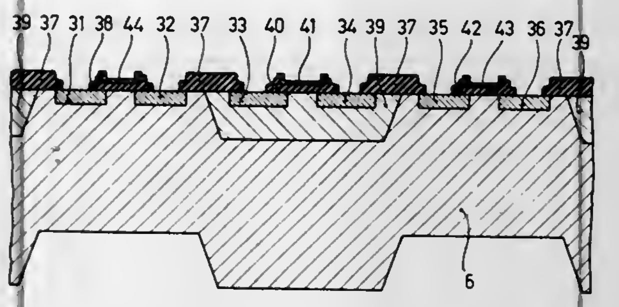




1. A method of connecting metal pipe sections to form a continuous conduit for conveying corrosive liquids therethrough comprising the steps of integrally connecting a pair of sockets respectively at one end to each pipe section spaced from the respective end of the latter with the other end of each socket projecting beyond the respective pipe end, each of said sockets having at said one end an inner diameter substantially equal to that of the outer diameter of the respective pipe section and at the remainder thereof a greater inner diameter; providing a corrosion-resistant coating on the inner surface of each pipe section which covers also the end faces thereof and part of the outer surface located within the socket; providing a sleeve of a material resistant to heat and to the corrosive influence of the liquid to be conveyed between facing ends of two pipe sections; and connecting the other ends of said sockets by at least one weld seam, said sleeve having a portion located inwardly of said weld seam, whereby damage to the coating by the heat during forming of the weld seam is prevented.

3,892,033
METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE

Else Kooi, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Continuation of Ser. No. 111,357, Feb. 1, 1971, abandoned. This application Nov. 20, 1972, Ser. No. 308,033
Claims priority, application Netherlands, Feb. 5, 1970, 7001607
Int. Cl. H01l *7/50*
U.S. Cl. 29—576 **6 Claims**



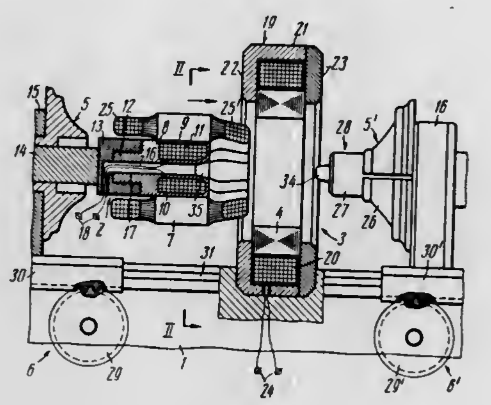
1. A method of manufacturing a semiconductor device comprising the steps of:
- a. providing a semiconductor wafer comprising a first layer of low-ohmic material having a plane surface and a second layer of high-ohmic monocrystalline semiconductor material of a first conductivity type disposed on said plane surface, said second layer comprising a major surface and at least one recess at said major surface, said recess extending only partially through said second layer;
- b. depositing a further semiconductor layer having one of said first conductivity type and a second conductivity type at said high-ohmic second layer to fill said recess and to form a semiconductor junction with said second layer, at least that portion of said further semiconductor layer disposed at said recess being monocrystalline;
- c. removing a portion of said semiconductor wafer from the opposite major surface of said semiconductor wafer by selective electrolytic etching of said low-ohmic first layer to said plane surface to reach said second layer and thereafter chemically etching a portion of said second layer to at least said monocrystalline semiconductor material deposited at said recess; and
- d. forming a semiconductor circuit element in at least one of said deposited monocrystalline semiconductor material and said second layer.

3,892,034
METHOD OF ASSEMBLING SLOTLESS STATOR OF ELECTRICAL MACHINE

Mikhail Alexandrovich Arakelov, ulitsa Oktyabrskaya, 303; Eduard Galaktionovich Gersamia, ulitsa Oktyabrskaya, 34, kv. 14.; Tengiz Grigorievich Zedgenidze, prospekt 1, Chavchavadze, 76, and Gennady Pavlovich Nozadze, ulitsa Lenina 76, all of Tbilisi, U.S.S.R.
Filed Feb. 26, 1974, Ser. No. 445,998
Int. Cl. H02k *15/02*
U.S. Cl. 29—596 **2 Claims**

1. A method of assembling a slotless stator of an electrical machine provided with an active distributed layer whose coil groups are cemented to a stator yoke, comprising the following steps to be effected in the described succession:

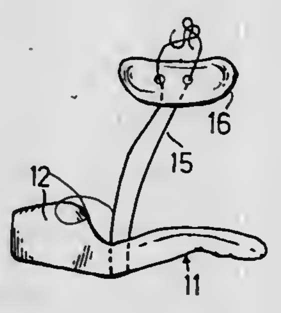
- a. bringing preliminarily manufactured coil groups to an assembling template in a number required for the provision of the active distributed layer of the slotless stator of the electrical machine under assembly;
- b. establishing a stationary magnetic field to magnetize the assembling template;
- c. fixing the coil groups by a stationary magnetic field on the assembling template to assure their given relative positioning;
- d. accomplishing all electrical connections resulting in the provision of the active distributed layer;
- e. coating a surface of the yoke of the slotless stator under assembly with a cementing compound;



- f. introducing the assembling template with the coil groups disposed thereon inside the yoke of the slotless stator under assembly;
- g. establishing a magnetic field to magnetize said yoke while the assembling template is freed of its magnetic field to effect a simultaneous transfer of all the coil groups of the active distributed layer onto the surface of the yoke and their pressing with a force sufficient for holding thereof in the course of cementing;
- h. curing the slotless stator under assembly during a time period sufficient for polymerization of the cementing compound;
- i. removing the magnetic field from the side of the yoke;
- j. and forming head portions of the coil groups by bending said head portions toward the end faces of the yoke of the stator under assembly and pressing.

3,892,035
METHOD AND DEVICE FOR MINIMIZING OR ALLEVIATING THE EFFECTS OF LOSS OF TEETH IN ANIMALS

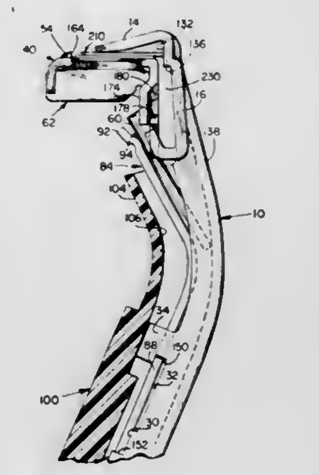
Russell George Hall, and Keith Lea, both of Colwyn Bay, Wales, assignors to Alan George Hall, Llaududno, Wales
Filed July 26, 1973, Ser. No. 383,018
Claims priority, application United Kingdom, July 27, 1972, 35069/72
Int. Cl. A61c *5/08*
U.S. Cl. 32—12 **16 Claims**



1. A method for alleviating the effects of loss of teeth in the lower front jaw portion of a sheep by facilitating the gripping of feedstuff by the sheep which, for feeding, is dependent on a hard surface gripping against a soft surface, comprising insertion of at least one moulded plate into the mouth of the sheep and securing the plate in position against the palate and upper jaw of the sheep by passing tie means through the soft tissue only of the sheep adjacent the jaw thereof, said tie means being secured to said plate and externally of said soft tissue, said plate being formed so as to reduce the free space between the upper and lower jaws of the sheep and to provide a hard surface to enable the sheep to feed.

3,892,036
SAFETY RAZOR

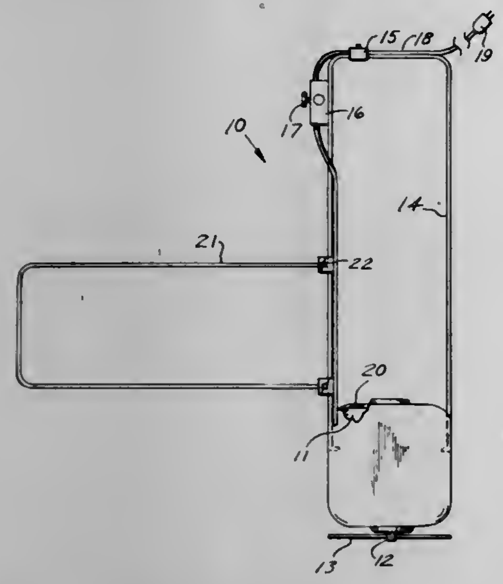
Roger L. Perry, Lynnfield Center, Mass., assignor to The Gillette Company, Boston, Mass.
Filed June 4, 1973, Ser. No. 366,378
Int. Cl. B26b *21/24*
U.S. Cl. 30—62 **8 Claims**



1. An injector type razor comprising
- a main frame member that includes a transversely extending cap portion and a depending handle portion,
- a platform structure mounted for movement relative to said main frame member and adapted to support a blade unit against the underside of said cap portion,
- said platform structure including a platform portion adapted to support a blade unit against the underside of said cap portion,
- associated blade aligning structure for locating a blade edge in a predetermined position on said platform portion, and a guard portion of material different than the material of said platform portion positioned forward of said platform portion in spaced relation from the predetermined blade edge position as defined by said blade aligning structure, said guard and platform portions each including a reference surface and said platform portion including deformable structure which is placed in firm frictional engagement with a surface of said guard portion to secure the two said reference surfaces firmly in engagement with one another,
- a ramp surface integral with said platform structure and extending downwardly from said platform portion at a rearwardly inclined angle thereto,
- and a biasing member secured to said handle portion and flexed in slidable engagement against said ramp surface, effective to urge said platform structure rearwardly to urge said blade aligning structure rearwardly into engagement with an edge portion of a blade unit on the platform portion and simultaneously to urge said platform structure upwardly to secure the blade unit on said platform portion against the underside of said cap portion in proper shaving position and to permit sliding of said ramp surface along said biasing member to release the blade unit on said platform portion in response to insertion of the key of a blade injector magazine between said main frame member and said platform structure.

3,892,037
GRASS CUTTING, TRIMMING AND EDGING DEVICE

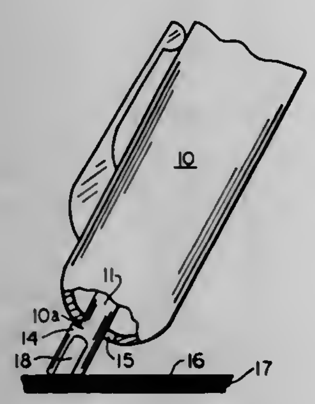
Jimmy L. Brown, Gen. Del., Silverton, Oreg. 97381
Filed Nov. 23, 1973, Ser. No. 418,666
Int. Cl. B26b *7/00, 27/00*
U.S. Cl. 30—276 **1 Claim**



1. A grass trimming, edging and cutting device, comprising in combination, an electric motor, a motor shaft driven by said motor, a nylon cord secured at its longitudinal center on said shaft for rotation therewith in order to cut blades of grass, a first U-shaped handle secured at its ends to said motor and extending upwardly about an axis of said motor, said first U-shaped handle comprising parallel, spaced apart legs and an intermediate leg therebetween, a second U-shaped handle removably supported at its ends on one said leg of said first U-shaped handle by means of wing nuts and bolt fasteners, said second U-shaped handle extending horizontally at right angle respectively to said first U-shaped handle, said first U-shaped handle also supporting a speed control rheostat and a switch, said rheostat and switch being along an extension cord from said motor and a free end of said extension cord having a plug for connection to an electric source.

3,892,038
SINGLE SHEET PAPER SLITTER

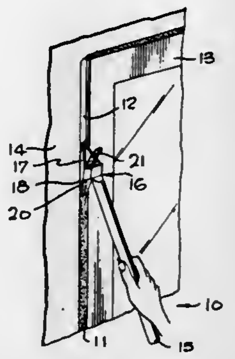
Phillip J. Novak, 3123 Lehman Ave., Salt Lake City, Utah 84119
Filed June 25, 1973, Ser. No. 373,242
Int. Cl. B26b *29/00*
U.S. Cl. 30—294 **5 Claims**



1. A writing instrument device for cutting a single sheet of paper at a time without danger of cutting the user, comprising a ballpoint pen having an elongate pen body, and a manually-depressible plunger extending axially of said pen body, with an exposed end of said plunger projecting through an opening in an end of said pen body and surrounded by a lip defining said opening, for extending and retracting a ballpoint at the other end of the pen body, said exposed end of the plunger serving as a blade-holding member and having a gauging surface adapted to be pressed flatwise against and drawn across a sheet of paper to be cut; and a blade fixedly secured in and having a cutting edge sloping down to and terminating at said surface and protruding therefrom a distance substantially equal to the thickness of a sheet of paper to be cut, said surface having an area flanking said blade and sufficient in extent to serve as a gauge that limits penetration of said blade to a single sheet of paper and prevents penetration of said blade into the skin of a user when said plunger is finger-operated to extend or retract the ballpoint.

3,892,039
COMPOUND REMOVAL TOOL

Fred W. Fisher, 6207 Costello Ave., Van Nuys, Calif. 91401
Filed Jan. 21, 1974, Ser. No. 434,866
Int. Cl. B26b *3/00*
U.S. Cl. 30—279 R **5 Claims**

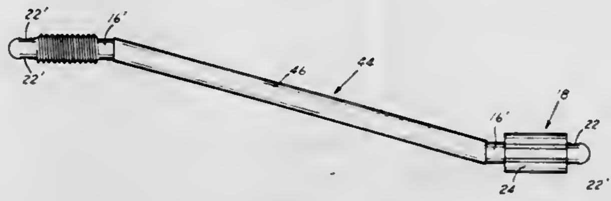


1. A tool for removing sealing compound or the like comprising the combination of:
an elongated handle;
a tool head fixly secured to one end of said handle;
said tool head comprising:
a body having a substantially V-shaped cross section sidewalls formed with an open-ended passageway extending along its entire length for accommodating a continuous strip of removed sealing compound;
said body further provided with at least two pointed ends defined by upwardly, angularly sloping cutting edges leading toward said one end of the handle;
said body is composed of a thin-walled sheet folded about a base line extending along the center of said head and constituting the apex of said V-shaped cross section whereby said two pointed ends are defined at the opposite ends of said base line lying in the plane of longitudinal center axis of said head and are defined by cutting edges upwardly diverging from said two pointed ends respectively;
said open-ended passageway is defined by the interior opposing surfaces of said sidewalls of said body;
said body further includes an outwardly flared attachment portion interconnecting said sidewalls to said handle; and said cutting edges extending from each of said two pointed end and said base line are angularly disposed with respect to each other.

3,892,040
TOOTHPICK HOLDER

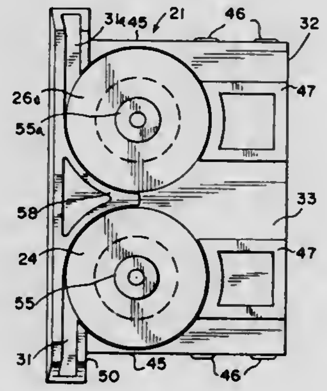
John C. Marquis, 13796 E. Dakota Ave., Aurora, Colo. 80012
Filed Mar. 26, 1973, Ser. No. 344,588
Int. Cl. A61c *3/00*
U.S. Cl. 32—40 R **5 Claims**

1. A dental appliance for releasably holding a toothpick and the like for cleaning between the teeth, said dental appliance comprising:
an elongated body having a handle portion and a solid, generally cylindrical forward extension adjacent to one end of the body, said forward extension including a transverse passage therein, said passage being wedge-shaped in cross-section and tapering outwardly away from said handle, and
gripping collar means including a raised annular edge for wedging a toothpick in the wedge-shaped passage, said gripping collar means being threaded on said forward extension for threaded advancement of said raised annular edge against the toothpick to urge the toothpick into the outwardly tapering portion of said passage whereby the toothpick is positively held in said passage by the raised annular edge of said gripping collar means and the toothpick can be inserted into the mouth for cleaning between the teeth.



3,892,041
DRAFTING BOARD STRAIGHT EDGE ASSEMBLY

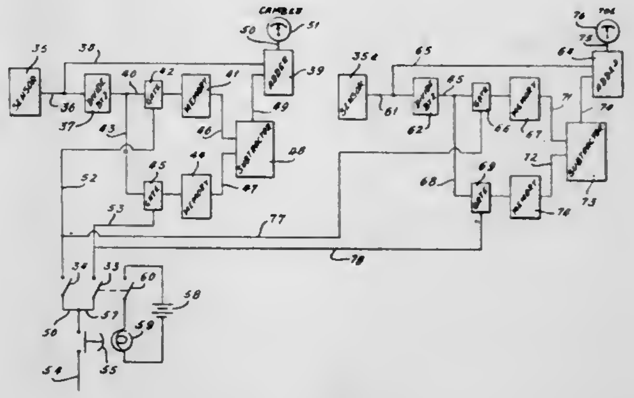
William A. Adair, Des Plaines, and Richard F. Pollowy, Schaumburg, both of Ill., assignors to Teledyne, Inc., Los Angeles, Calif.
Filed Mar. 11, 1974, Ser. No. 449,958
Int. Cl. B43l *13/02*
U.S. Cl. 33—80 **3 Claims**



1. In a straight edge assembly for cord mounting on a drafting board the improvement comprising a permanently assembled body including an edge providing portion and a grasping portion, and a pulley block unit located at each end of said assembly which is manually removable and replaceable without the use of tools, each said pulley block unit including an integrally formed pulley block and at least one sheave mounted therein, said block having an end cap portion for covering at least a part of the end of said body, a sheave mounting portion adjacent said end cap portion including a spindle on which said sheave is mounted and retained in place by said contiguous body part, a recess through which said mounting cord passes, and means for frictionally retaining each said pulley block unit to a contiguous body part at the end of said assembly and allowing releasable sliding engagement therebetween including a nub extending from an outside surface of said portion which frictionally engages said contiguous body part.

3,892,042
ELECTRONIC RUN-OUT COMPENSATOR AND METHOD OF ELECTRONICALLY COMPENSATING FOR WOBBLE RUN-OUT IN A ROTATING BODY

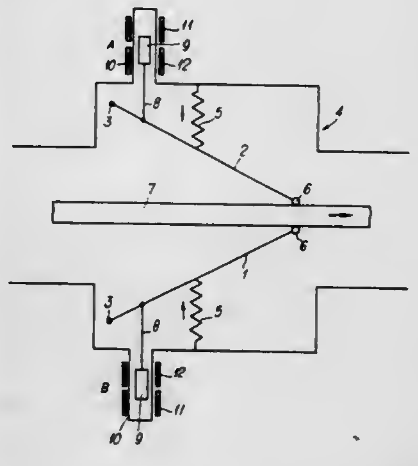
David A. Senften, Florissant, Mo., assignor to Hunter Engineering Company, Bridgeton, Mo.
Continuation-in-part of Ser. No. 235,599, March 17, 1972. This application Jan. 14, 1974, Ser. No. 433,212
Claims priority, application United Kingdom, Jan. 31, 1973, 4972/73
Int. Cl. G01b *11/26*
U.S. Cl. 33—301 **8 Claims**



1. A method for finding the wobble run-out of a rotary body relative to its true axis of rotation, said method consisting in providing a pair of signal generating sensor means sensitive to orientation of the rotary body at 90° to each other, rotating the body into two predetermined positions 180° apart to generate corresponding sensor signals at each said position of the body, said signals being separate and independent and indicative of the body orientation at said predetermined positions, and electronically subtracting the sensor signals corresponding to the positions 180° apart to find the wobble run-out relative to the true axis of rotation, and displaying the sensor signals, corrected by half the difference obtained from said signal subtraction, as an angular relation between the true axis of rotation and the desired axis.

3,892,043
OBSERVATION METHOD AND EQUIPMENT

Zbigniew Bonikowski, London, England, assignor to British Insulated Callender's Cables Limited, London, England
Filed Dec. 4, 1973, Ser. No. 421,737
Claims priority, application United Kingdom, Dec. 7, 1972, 56427/72
Int. Cl. G01c *7/04, 7/12*
U.S. Cl. 33—143 L **17 Claims**

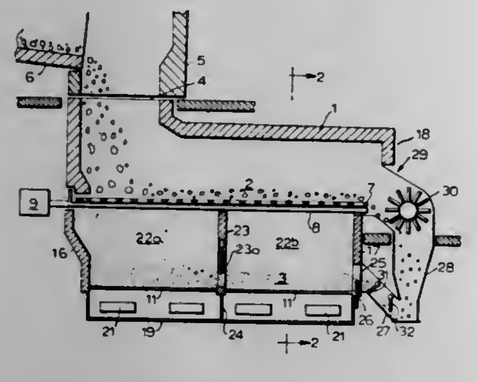


10. Measuring apparatus suitable for sensing the position of a surface of an extruded product passing through an enclosure as it is being formed comprising a feeler which is connected to means for moving a ferromagnetic element located within

the enclosure in response to movements of said feeler, means for biassing said feeler into contact with said surface and electromagnetic detecting means located outside the enclosure for detecting the position of said ferromagnetic element.

3,892,044
METHOD AND APPARATUS FOR COOLING

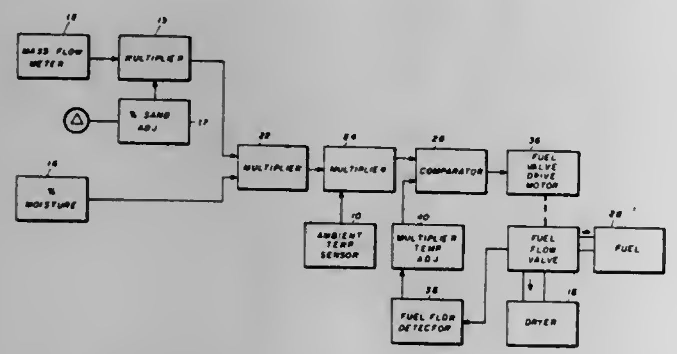
Karl-Heinz Kayatz, Hamburg-Nienstedten, Germany, assignor to Claudius Peters AG, Hamburg, Germany
Filed Feb. 13, 1974, Ser. No. 442,253
Claims priority, application Germany, Feb. 14, 1973, 2307165
Int. Cl. F26b *7/00*
U.S. Cl. 34—20 **10 Claims**



1. A method for cooling mixed coarse and fine granular solids from a burning process comprising
  a. classifying the mixed solids in a bed in an upper zone;
  b. collecting the finer of the classified solids in a fluidized bed at a lower zone;
  c. passing a cooling gas first through said fluidized bed;
  d. subsequently passing said cooling gas from said fluidized bed in countercurrent heat exchange with the fines being passed from the classifying step toward the fluidized bed;
  e. thereafter passing the cooling gas from the countercurrent exchange step in cross-flow through said classifying bed, and
  f. introducing said cooling gas from said cross-flow step to the burning process as preheated gases.

3,892,045
FUEL ALLOCATION SYSTEM AND METHOD FOR INDUSTRIAL DRYERS AND THE LIKE

William T. Hage, Orlando, and Emanuel J. Elliott, Altamonte Springs, both of Fla., assignors to Mechtron International Corporation, Orlando, Fla.
Filed May 10, 1974, Ser. No. 468,993
Int. Cl. F26b *3/00*
U.S. Cl. 34—28 **26 Claims**

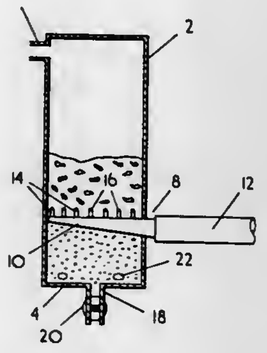


1. In combination:
means for measuirng the mass flow rate of a moving material and providing a first output representative thereof;
means for measuring the amount of moisture in said material and providing a second output representative thereof;
means for heating said material; and
means for regulating said heating means responsive to said first and second outputs.

26. A method for regulating the amount of heat in a heater adapted for drying a moving aggregate, said method comprising the steps of:
measuring the mass flow rate of said aggregate and providing a first output representative thereof:
measuring the amount of moisture in said aggregate and providing a second output representative thereof; and
regulating said heater responsive to said first and second outputs.

3,892,046
FLUIDISED BED APPARATUS

Michael Jonathan Cooke, Cheltenham, England, assignor to Coal Industry (Patents) Limited, London, England
Filed May 14, 1974, Ser. No. 469,637
Claims priority, application United Kingdom, June 8, 1973, 27325/73
Int. Cl. F26b *17/10*
U.S. Cl. 34—57 A **6 Claims**

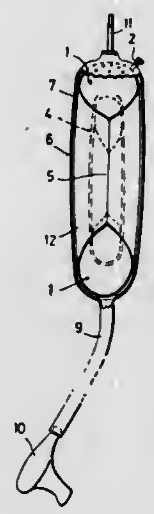


1. Fluidised bed apparatus including a body, a base connected to the body, a grid located in the body above the base to define a discharge space between the base and the grid, a discharge outlet in the base below the grid, the grid comprising a plurality of fluidising medium manifolds, and fluidising medium inlet means on the manifolds of the grid, means spacing said manifolds apart so as, in use, to allow the passage of agglomeraed particles through the grid between the manifolds into said discharge space and then through the discharge outlet.

3,892,047
APPARATUS FOR DRYING CLOTHES

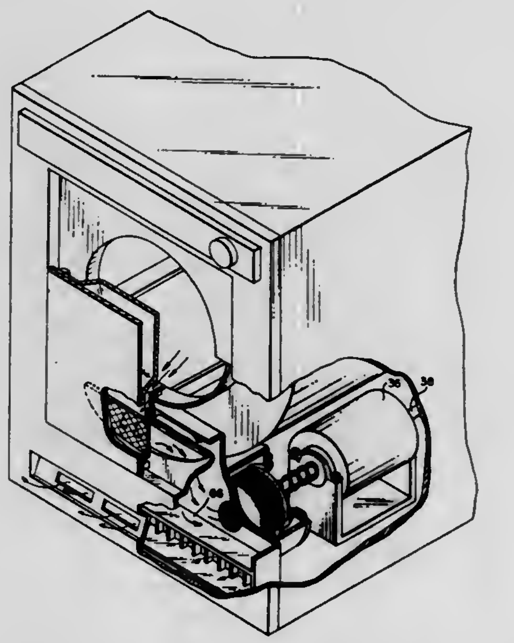
Wolf Georg Müller-Scherak, Vincenz-State-Str. 8, 5 Cologne 41, Germany
Filed May 15, 1974, Ser. No. 470,190
Claims priority, application Germany, May 18, 1973, 2325150
Int. Cl. F26b *25/00*
U.S. Cl. 34—103 **10 Claims**

1. Apparatus for drying clothes such as skirts, dresses, pants or the like comprising a body contoured to the general configuration of a garment to be placed thereover, said body being constructed from collapsible, foldable, air impermeable material, means for introducing air into said body to inflate the same to a desired inflated configuration, an envelope in external telescopic relationship to said body, said envelope being constructed from air permeable material, and means for introducing air into said envelope between the latter and an exterior of said body whereby air exiting through said envelope permeable material will dry a garment telescoped thereover.



3,892,048
CLOTHES DRYER

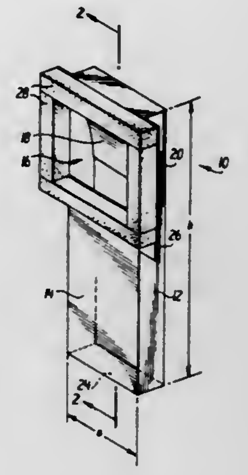
Jerome G. Jacobsen, Jr., Mansfield, Ohio, assignor to Westinghouse Corporation, Cleveland, Ohio
Filed May 29, 1974, Ser. No. 474,286
Int. Cl. F26b *11/04*
U.S. Cl. 34—133 **7 Claims**



1. An improved air circulation system for a clothes dryer having a cabinet structure housing a rotatable clothes basket with a forwardly facing opening, drive means for rotating said basket, said cabinet including a front panel having a first opening comprising an access opening generally concentric with said basket opening, a second opening generally subadjacent said access opening and a third opening spaced from said second opening, a door hingedly mounted on said panel for covering both said first and second openings when said door is in a closed position and means including said door and said front panel defining a confined air flow passage between said first and second openings on the forward face of said front panel when said door is closed and wherein the improvement comprises:
  a molded one-piece air duct and fan scroll defining in cooperation with the inner face of said panel
  an air inlet chamber in effective sealing engagement with said panel surrounding said second opening;
  an air exhaust duct in effective sealing engagement with said panel surrounding said third opening, and;
  a fan scroll means for housing a rotatable fan, said means having a wall common to both said inlet chamber and said exhaust duct including an inlet opening between said inlet chamber and said fan housing and an outlet between said housing and said exhaust duct.

3,892,049
CLOTHES DRYER VENT ATTACHMENT

Paul Adams, Jr., Hwy. 49 East, P. O. Box 207, Yazoo, Miss. 39194
Filed Apr. 11, 1974, Ser. No. 460,087
Int. Cl. F26b *19/00*
U.S. Cl. 34—235 **6 Claims**



1. A clothes dryer vent attachment adapted to be mounted upon the rear wall surface of a clothes dryer appliance within a limited spacial environment, such as for example, a mobile home, comprising:
  a clothes dryer appliance disposed within said mobile home;
  elongate, substantially flat, hollow housing means for defining a vent shaft, the width of said housing means being several times greater than the depth of said housing means;
said housing means including uniplanar front and rear wall surfaces;
exhaust air inlet means defined within said front surface of said housing for receiving said exhaust air from said appliance which is exhausted through an exhaust air outlet defined within said rear wall surface of said appliance;
baffle means disposed interiorly of said housing and opposite said exhaust air inlet means for deflecting said exhaust air into said shaft;
means for securing said housing to said appliance in a vertically disposed fashion whereby said front surface of said housing will be flush with said rear wall surface of said appliance; and
exhaust air outlet means defined within the lower end portion of said shaft, said lower shaft portion being adapted to be inserted through the floor of said mobile home when said appliance and said attachment secured thereon are disposed near a particular wall of said mobile home,
said housing shaft thereby having an exhaust air volumetric capacity equal to that of conventional vent attachments yet permitting said appliance to be positioned relatively flush with respect to said particular wall of said mobile home.

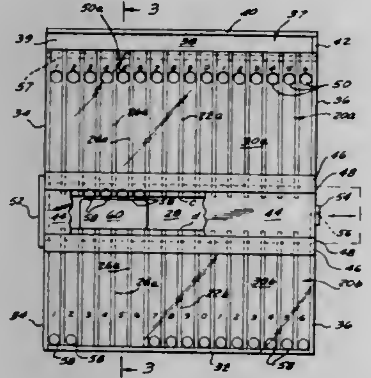
3,892,050
DEVICE FOR TEACHING

Frank Micciche, Floral Park, N.Y., assignor to Frank Micciche, Floral Park, N.Y.

Filed Mar. 21, 1974, Ser. No. 453,519

Int. Cl. G09b *1/02*

U.S. Cl. 35—8 R **12 Claims**



1. A teaching aid for improving indirect observation skills comprising, in combination, means defining a plurality of channels intersected by a main channel, exclusive thereof, through which they communicate, means for blocking at least a portion of said intersecting channel from view, whereby at least one test object, adapted to block at least one channel of said plurality, can be hidden from view in said intersecting channel and indirectly observed by guiding a projectile in each respective channel of said plurality and by determining in which channels of said plurality the movement of said projectile therethrough is affected, whereby by observing said movement a hypothesis can be formed as to the identity of the test object, the forming of said hypothesis being helpful for improving indirect observation skills; and at least one test object for use in said teaching aid, wherein said test object has a generally straight surface adapted to stop a projectile in a channel, whereby said hypothesis can be formed by determining in which channels of said plurality the projectile is stopped.

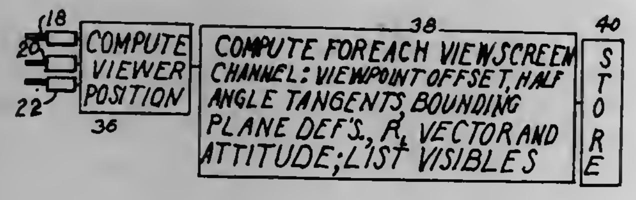
3,892,051
SIMULATED COLLIMATION OF COMPUTER GENERATED IMAGES

William M. Bunker, Ormond Beach, Fla., assignor to General Electric Company, Fairfield, Conn.

Filed Oct. 31, 1973, Ser. No. 411,519

Int. Cl. G09b *9/08*

U.S. Cl. 35—12 N **1 Claim**


18
20
22
COMPUTE VIEWER POSITION
36
38
COMPUTE FOR EACH VIEWSCREEN CHANNEL: VIEWPOINT OFFSET, HALF ANGLE TANGENTS, BOUNDING PLANE DEF'S., R, VECTOR AND ATTITUDE; LIST VISIBLES
40
STORE

1. In an aircraft trainer apparatus for simulating a view of a distant three-dimensional environment by a nearby numerically controlled two-dimensional presentation, comprising:

a. a store of numerical data descriptive of the environment, comprising numerically encoded geometric and visual parameters of the environment together with their three-dimensional coordinates therein;

b. a two-dimensional viewscreen adapted to be controllably illuminated at numerically described viewpoint coordinates;

c. a store of numerically encoded view window data descriptive of the attitude and location relative to the environment recited in (a) of a fictitious aircraft view window which is simulated by the viewscreen;

d. data processing means connected to the store of environmental data recited in (a) and to the store of view window data recited in (c) to receive data from the said two stores and to calculate therefrom the viewscreen coordinate points which, referred to a given observer viewpoint, simulate points in the environment visible through the view window from a given fictitious station point, and to control the viewscreen to be illuminated at those points to simulate the encoded visual parameters of the simulated points;

the improvement comprising:

e. linear displacement measuring means for measuring three-dimensional displacements of an observer from the given observer viewpoint recited in (d), and for generating responsively thereto numerical signals respresentative of the said displacements, connected to data processing means recited in (d), which responsively thereto calculates the viewscreen coordinate points which, referred to the observer viewpoint displaced from the given observer viewpoint, simulate points in the environment visible through the view window from a correspondingly displaced fictitious station point, and to control the viewscreen of said aircraft trainer to be illuminated at those points to simulate the encoded visual parameters of the simulated points.

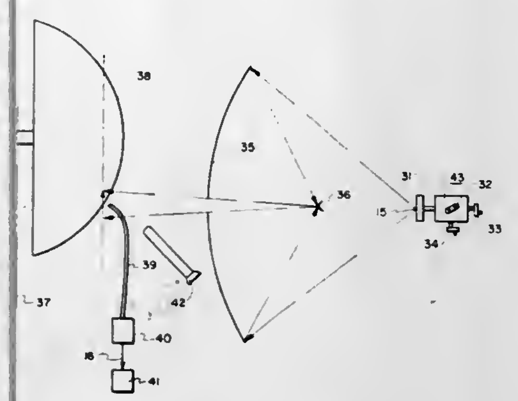
3,892,052
BRIGHTNESS CONTOUR PLOTTER

Franklin C. Wolfgram, Annandale, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 3, 1974, Ser. No. 466,766

Int. Cl.² G01J *1/42*

U.S. Cl. 356—121 **6 Claims**



1. An apparatus for mapping the contours of a sample source with a very small light emitting surface comprising:

an optical platform;

mounting means attached to said platform for securing the emitting surface of said sample source in a level position; a short focal length high magnification optical lens system mounted on said platform with its optical axis normal to said emitting surface;

a pantograph mounted on said platform parallel to said emitting surface spaced therefrom a small distance greater than the distance from said platform to the image of said surface formed by said optical system and having demagnification and magnification pivot points;

a light sampling means attached to said demagnification pivot point to measure the light emitted by a small fractional area of said emitting surface and to display said measurement;

a hemispherical reflector probe attached to said demagnification pivot point facing said emitting surface and intersecting said image thereof;

a light to direct current conversion and direct current display device mounted on said platform; and

an optical light conducting fiber interconnecting said probe and said conversion and display device.

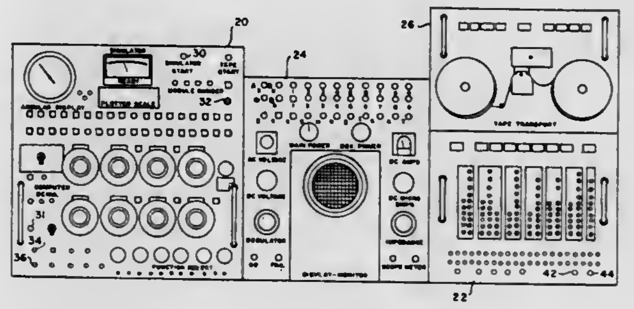
3,892,053
PROGRAMMABLE PSYCHOMOTOR TASK SIMULATOR SYSTEM

Harold R. Booher, Garrett Park, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 24, 1974, Ser. No. 436,227

Int. Cl.² G09B *19/00*

U.S. Cl. 35—22 R **7 Claims**



1. A psychomotor task simulator to measure the relative effectiveness of different presentation techniques comprising: an array of controls and displays arranged to give a sense of reality to a test subject such that the setting is readily generalizable to actual man-machine interface situations;

diode matrix means connected to said array for energizing the controls and displays in a plurality of selective manners in order to allow the programming of a plurality of consecutive tasks;

subject control means for making a response in accordance with a set of instructions and for altering the diode matrix connections so that said array of controls and displays are energized in a different one of said plurality of selective manners of energization so that a different task may be performed;

experimenter controls for altering the diode matrix connections in the same manner as said subject controls and including means for preventing the subject from changing the diode matrix connections if desired.

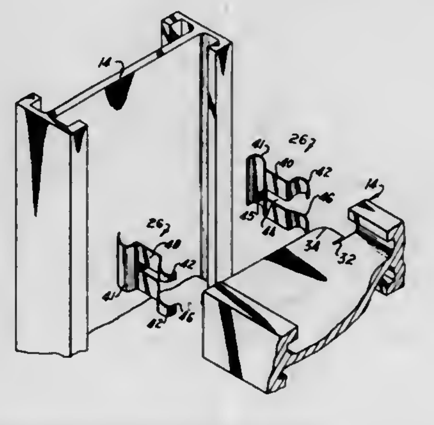
3,892,054
STRUCTURAL PANEL JOINT

Robert P. Matson, 1790 Old Tasso Rd., Tasso, Tenn.

Continuation-in-part of Ser. No. 227,883, Feb. 22, 1972, abandoned. This application Nov. 2, 1973, Ser. No. 412,170

Int. Cl. E04c *2/42*

U.S. Cl. 52—665 **6 Claims**



1. A structural building panel including:

A plurality of beam elements interlocked together to form an open grid frame, all of said beam elements having the same general cross-sectional configuration including a central web, a pair of flanges along opposite edges of said central web, and a pair of inwardly turned lips along opposite edges of each of said flanges; said beam elements defining an inwardly opening locking recess between said central web, each said flange and each said lip; certain of said beam elements including a tongue formed on the end of said central web projecting beyond the ends of said flanges and lips of said certain beam elements; and, each of said tongues sized to be slidably received between opposed said lips on the same side of said central web of another of said beam elements and defining outwardly opening notches in opposite edges thereof; and,

resilient interlocking means carried by opposite sides of each of said tongues attaching said certain beam elements to said another beam element, each of said resilient interlocking means comprising:

a resilient body defining a slot therein, said central web of said certain beam element received in said slot and said body adjacent said slot engaging said central web of said certain beam element to laterally locate said interlocking means with respect to said central web of said certain beam element;

a resilient locking tab on said body slidably received in said notch in said tongue of said certain beam element to locate said resilient interlocking means with respect to said tongue; and,

resilient retaining means on said body adjacent said slot engaging said flange of said certain beam element to maintain said locking tab within said notch.

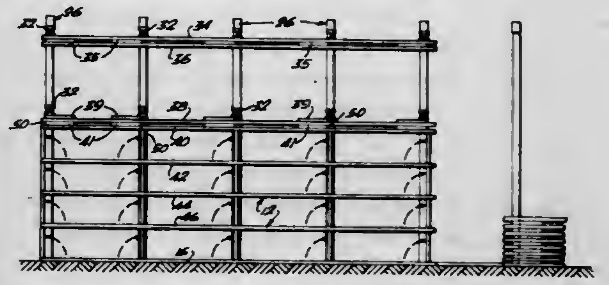
3,892,055
METHOD FOR MANUFACTURING MULTI-STORY HOUSING WITH FLOOR-SLABS, BEARING WALLS AND PARTITIONS CAST ON THE GROUND LEVEL

Torsten Nickolaus Ljung, Hognasvagen 15, 181 43 Lidingo, Sweden

Filed Jan. 27, 1971, Ser. No. 110,162

Int. Cl. E04g *21/14*; **E04b** *5/02*

U.S. Cl. 52—745 **2 Claims**



1. In the method of errecting and constructing multi-story buildings, at the construction site, whereby the ceiling and flooring elements are supported on vertically-disposed bearing walls and in which the elements may be manufactured in horizontal relation by casting on site, and in which the elements are errected to their installed positions by pivoting the bearing walls to a vertical position between the floor and ceiling elements, characterized by the steps of:

A. temporarily installing a plurality of removable columns in geometric arrangement relative to the size and shape of the building being errected;

B. pivotally connecting adjacent edges of certain of the bearing elements and floor and ceiling elements;

C. elevating certain of the bearing elements and floor and ceiling elements, as a sandwiched unit, relative to the temporary columns and temporarily retaining them thereat whereby the elements have sufficient strength in their sandwiched relationship to resist strains placed thereon;

D. pivoting the bearing elements into vertical load-bearing relation relative to the floor and ceiling elements;

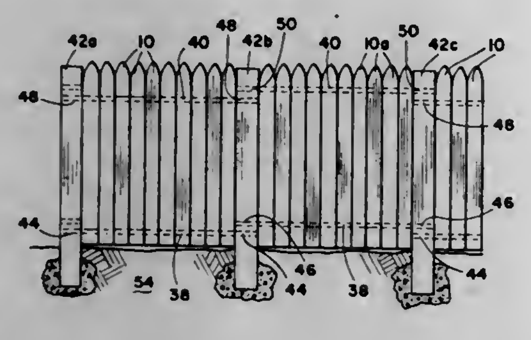
E. lowering the floor and ceiling elements into simple beam-supported relationship relative to said bearing elements; and

D. removing the temporary columns whereby the primary bearing load support, ceiling and floor skeleton of the building is assembled without using columns and the like in the multi-story building.

3,892,056

METHOD OF CONSTRUCTING A BOARD-TYPE FENCE

William C. Mann, P.O. Box 263, Broken Arrow, Okla. 74012
Continuation-in-part of Ser. No. 319,216, Dec. 29, 1972. This application Aug. 15, 1973, Ser. No. 388,614
Int. Cl.^{2} E04B *1/00*
U.S. Cl. 52—745 **3 Claims**

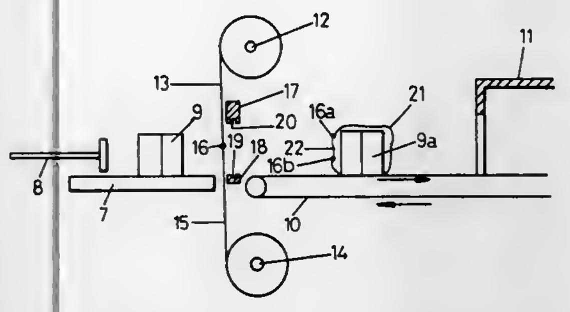


1. A method of constructing a board-type fence without nails and bolts from a plurality of substantially identically sized fence boards and a plurality of substantially identically sized fence posts which comprises assembling a plurality of first fence panels, each first panel being assembled by arranging a predetermined number of fence boards in aligned side-to-side relation, passing a pair of spaced parallel rods through aligned holes in said predetermined number of fence boards so that the rod ends project outwardly from the sides of each first panel, the rods in each first panel being spaced a predetermined distance from each other and at predetermined distances from a reference end of said first panel, assembling a plurality of second fence panels, each second panel being assembled by arranging a predetermined number of fence boards in aligned side-to-side relation, passing a pair of spaced parallel rods through aligned holes in said predetermined number of fence boards so that the rod ends project outwardly from the sides of each second panel, the rods in each second panel being spaced a predetermined distance from each other equal to the predetermined distance of spacing with respect to said first panel, the rods in said second panel being spaced at predetermined distances from a reference end of said second panel which are respectively different from the predetermined distances of the rods of the first panel from the reference end of said first panel, erecting a first fence post with one end thereof in the ground attaching a first fence panel to said first fence post by inserting the rod ends at one end of said first panel into and through a first pair of spaced holes in said first fence post, erecting a second fence post with one end thereof in the ground at the opposite end of said first panel from said first fence post and attaching said second fence post to said first fence panel by inserting the rod ends at said opposite end of said fence panel into and through a first pair of spaced holes in said second fence post, attaching a second fence panel through said second fence post on the opposite side thereof from said first fence panel by inserting the rod ends into and through a second pair of spaced holes in said second fence post, said second pair of holes in said second fence post being offset with respect to the first pair of holes thereof, erecting a third fence post at the opposite end of said second panel from said second fence post and attaching said third fence post by inserting the rod ends at said opposite end of said second panel into and through a pair of spaced holes in said third fence post and repeating the operation by alternating first and second fence panels on opposite sides of each intermediate fence post with the rod ends of each first fence panel being inserted into and through a pair of holes in said intermediate fence post offset from a pair of holes provided for the rod ends of said second fence panel.

3,892,057

PACKAGING METHOD AND APPARATUS

Jeffrey Leonard Goode, Sandy, England, assignor to Imperial Chemical Industries Limited, London, England
Filed Oct. 11, 1973, Ser. No. 405,456
Int. Cl. B65b *61/18*
U.S. Cl. 53—14 **5 Claims**

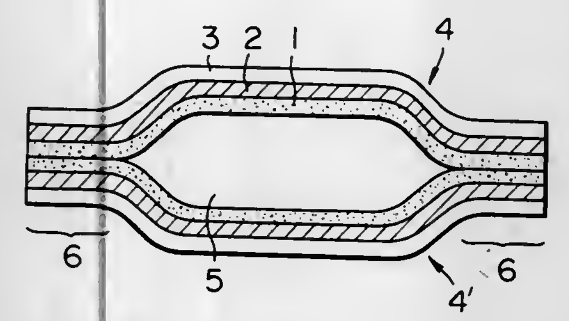


1. A method of forming a package from a plastic-film wrapper provided with a tear-tape heat sealed along each edge to the film by an edge-to-edge seam that comprises: advancing an article to be wrapped into a curtain formed by a web of heat-shrinkable plastics film and a web of the tear-tape material drawn from opposite sources and transversely heat-sealed together to form a continuous curtain across the path of the article; further advancing the article, with withdrawal of said webs from their sources, until the curtain extends round the article to beyond its trailing end, the tear-tape material being withdrawn from its source at a linear speed not exceeding one-fourth of the linear speed of withdrawal of the heat-shrinkable plastics film; transversely heat-sealing and severing the two webs together behind the article so as to leave, on one side of the line of severance, the article at least partially enveloped in a sleeve formed from the webs and on the other side the two webs sealed together to form again a curtain; and subjecting the sleeve to heat sufficient to shrink it upon the article.

3,892,058

PROCESS FOR THE PREPARATION OF HIGH-TEMPERATURE SHORT-TIME STERILIZED PACKAGED ARTICLES

Yoshihiro Komatsu, and Kanemichi Yamaguchi, both of Yokohama, Japan, assignors to Toyo Seikan Kaisha Limited, Tokyo, Japan
Filed Sept. 20, 1973, Ser. No. 399,346
Claims priority, application Japan, Sept. 22, 1972, 47-95314; Dec. 13, 1972, 47-124393
Int. Cl. B65b *55/02*
U.S. Cl. 53—21 FC **24 Claims**



1. A process for the preparation of high-temperature short-time sterilized packaged articles which comprises the steps of providing a flexible container having a heat-sealable resin film at least on an area to be heat sealed of the inner surface thereof with the heat sealable resin being a crystalline thermoplastic resin having a softening or melting point of from 130° to 250° C., filling an article to be sterilized in the flexible container, removing non-condensable gases present in interior

voids of the flexible container, hermetically sealing the flexible container by application of heat in such a manner that the coefficient of flatness in the resulting sealed packaged article is maintained at a level not exceeding 0.25, said coefficient of flatness being defined by the following formula

$$K_F = \frac{l}{L}$$

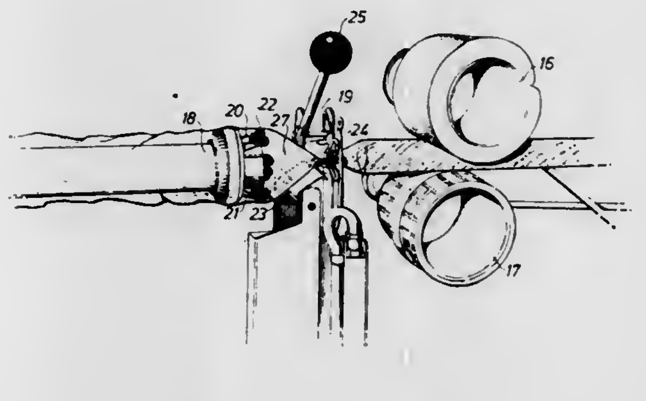
in which l indicates a maximum thickness (cm) in the sealed packaged article, L designates a maximum distance (cm) across the surface of the container, and K_F stands for the coefficient of flatness,

maintaining the sealed packaged article for 1 to 8 minutes in a heating medium of a temperature of 130° to 160°C. to thereby sterilize the article packaged in the container, and cooling the so heat-treated packaged article under a pressure higher than the saturated vapor pressure corresponding to the sterilization temperature.

3,892,059

WRAPPING OF ARTICLES IN A TUBULAR WRAPPING MATERIAL

Sven Holger Widigs, Morbyvagen 13, S 780 10 Gustafs, Sweden
Continuation-in-part of Ser. No. 205,122, Dec. 6, 1971, abandoned. This application May 17, 1974, Ser. No. 471,169
Claims priority, application Sweden, Dec. 11, 1970, 16840/70
Int. Cl. B65b *43/00, 9/10, 7/12*
U.S. Cl. 53—29 **15 Claims**

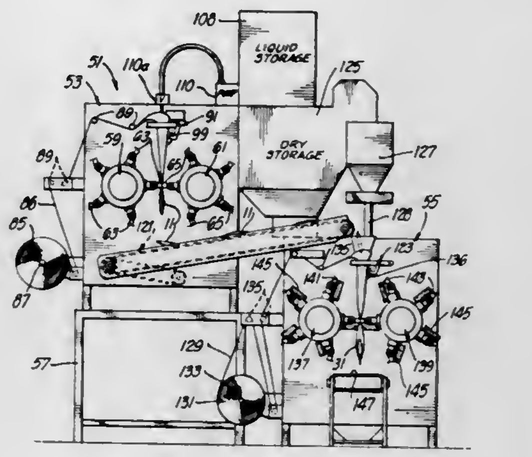


1. A method of wrapping articles in tubular wrapping material, comprising the steps of pleating said tubular material onto the outer surface of an elongated pipe, thereafter feeding a stream of articles to be wrapped into said tube through the interior of said pipe toward an outlet end, continuously rotating said pipe during the feeding of the articles while simultaneously stretching said tubular material radially outwardly of the circumference of said pipe adjacent the outlet end to be out of contact with said pipe and to be conjointly rotated therewith, jointly withdrawing said tubular material and said article from the outlet end of said pipe without rotating the same, said tubular material being thereby twisted relative to said article to continuously enclose said article in a helical wrap, and thereafter sealing and cutting said tubular material when the rear end of said article has passed the outlet of said pipe.

3,892,060

HOT OR COLD PACK AND APPARATUS FOR AND METHOD OF MAKING SAME

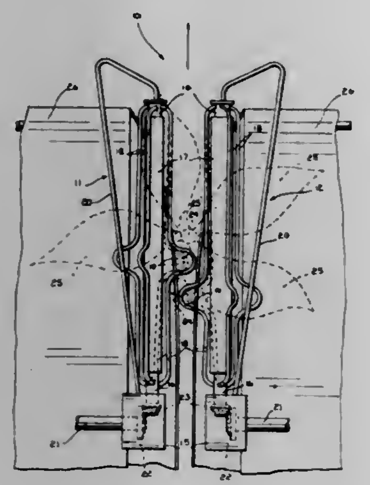
Joseph Stanley, Jr., Topanga, Calif., assignor to Kay Laboratories, Inc., San Diego, Calif.
Division of Ser. No. 23,598, March 30, 1970, abandoned. This application Sept. 18, 1972, Ser. No. 290,003
Int. Cl. B65b *41/18*
U.S. Cl. 53—127 **17 Claims**



1. A machine for making a pack for adding heat to, or removing heat from, an object comprising:

a supporting structure;
means for mounting a first elongated strip of heat sealable plastic material on said supporting structure;
a first heat sealing station on said supporting structure;
means for feeding said first strip of heat sealable material to said first heat sealing station to form a plurality of first containers;
means on said supporting structure for depositing a quantity of a first chemical in each of the first containers as each of said first containers is formed;
means at said first heat sealing station for heat sealing said first containers to seal the latter with a quantity of said first chemical therein, said first containers being rupturable;
means for preheating said first chemical to a particular temperature above ambient prior to the sealing and cutting of the first strip to form the plurality of first containers;
means for heating the heat sealing means to a particular temperature above the temperature for heat sealing the first containers to provide for the absorption of heat by the first chemical during the sealing operation;
means for mounting a second elongated strip of heat sealable plastic material on said supporting structure;
a second heat sealing station on said supporting structure; means for feeding said second strip of heat sealable material to said second heat sealing station to form a plurality of second containers;
means on said supporting structure for depositing a quantity of a second chemical in each of said second containers prior to any sealing of the second containers, said first and second chemicals being chemically reactive to absorb or give off heat;
conveyor means for converging said first containers to said second heat sealing station in timed relationship with the rate of formation of said second containers and for depositing at least one of said first containers in each of said second containers prior to any sealing of the second containers; and
means for heat sealing each of said second containers with each of said second containers having said quantity of said second chemical and at least one of said first containers therein whereby each of said second containers and the contents thereof at least partially forms a pack.

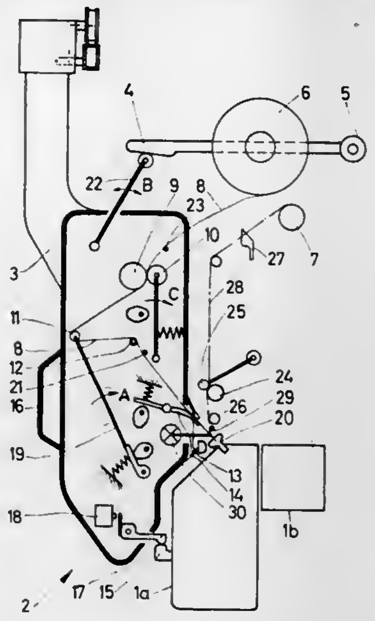
3,892,061
DEFOLIATOR MECHANISM
Andrew Whitley, Highway 64, Zebulon, N.C. 27597
Filed Dec. 18, 1972, Ser. No. 315,907
Int. Cl. A01d *45/16*
U.S. Cl. 56—27.5 **8 Claims**



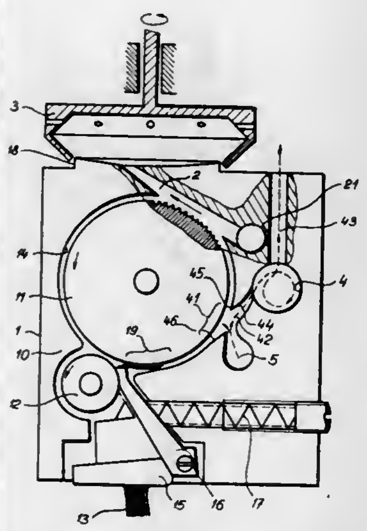
1. A defoliating means for removing the leaves from at least a portion of the stalk of a row of plants comprising: a support means moveable along a predetermined path adjacent the row of plants; a rotatable means rotatively mounted to said support means; at least one finger-like elongated, resilient defoliating member fixedly secured at one end only to said rotatable means and extending therefrom where to other end is unsupported and held in cantilever fashion such that said finger-like defoliating member may flex and move independently of said rotative means as said defoliating member engages leaves on respective plants during the defoliating operation, wherein said rotative means with associated defoliating members are disposed in lateral spaced apart relationship and wherein a plurality of said defoliating members are circumferentially spaced about each rotative means, each defoliating member being of a single piece construction and spaced outwardly from the axis of rotation of the rotative means supporting the respective defoliating member such that an open space lies between each defoliating member and the rotative means supporting the respective defoliating member; and means to rotatively drive said rotatable means whereby said defoliating member can engage and remove leaves from the stalks of the plants as said support moves therepast.

3,892,062
APPARATUS FOR START-SPINNING ON AN OPEN-END SPINNING MACHINE
Fritz Stahlecker, Josef-Neidhart-Strasse 18, D-7341 Bad Uberlingen, and Hans Stahlecker, Haldenstrasse 20, D-7334 Suessen, both of Germany
Filed Apr. 22, 1974, Ser. No. 463,151
Claims priority, application Germany, Apr. 30, 1973, 2321775
Int. Cl. D01h *13/14*
U.S. Cl. 57—34 R **15 Claims**

1. An apparatus for start-spinning, movable along an open-end spinning machine to a spinning unit, which returns a thread to a spinning rotor of said spinning unit and removes said thread therefrom again after spinning has been started, containing means for controlling the moment the start-spinning operation is commenced in such a manner that said start-spinning operation is performed during the period in which the previously braked spinning rotor of said spinning unit starts up and at a speed which is lower than the operating speed of said spinning rotor.

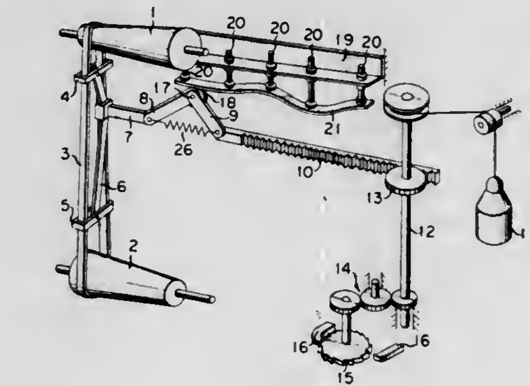


3,892,063
SPINNING MACHINE CONSTRUCTION
Ctibor Doudlebsky; Frantisek Jaros; Frantisek Ferkl; Antonin Cap; Josef Ripka, and Jan Junek, all of Usti nad Orlici, Czechoslovakia, assignors to Vyzkumny Ustav Bavlnarsky, Orlici, Czechoslovakia
Filed May 30, 1973, Ser. No. 365,165
Claims priority, application Czechoslovakia, June 7, 1972, 3926-72
Int. Cl. D01h *11/00, 1/12*
U.S. Cl. 57—56 **7 Claims**



1. In an open-end spinning machine construction, a combination comprising a feeding roller for feeding fibers which may contain contaminants; a fiber separating roller for engaging said fibers and advancing them towards a spinning chamber in a predetermined path, said path being constituted of a upstream and an adjoining downstream path section in which said fibers are respectively separated by and doffed from said fiber separating roller; a cleaning slot communicating with said path intermediate said feeding roller and said spinning chamber in the region of a juncture between said path sections; a converging channel communicating with said cleaning slot and being elongated in direction outwardly from said path, said converging channel being bounded by an upstream wall and by a convexly curved downstream deflection wall having a doffing edge adjacent said path, so that the convergence of said converging channel causes said impurities to be accelerated therethrough away from said cleaning slot; an air channel extending through said upstream wall and communicating with said slot and said converging channel; a collecting chamber substantially tangentially communicating with said converging channel for collecting said contaminants entering the same from said path; and a suction channel communicating with said collecting chamber.

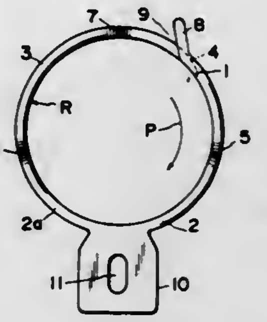
3,892,064
DEVICE FOR COMPENSATING CHANGES IN ROVING WINDING TENSION IN SPINNING MACHINE
Eijiro Araki, Toyoake; Mitsuo Mori, Toyota, and Toshio Morishita, Kariya, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan
Filed May 14, 1974, Ser. No. 469,886
Claims priority, application Japan, May 25, 1973, 48-58933
Int. Cl. D01h *1/26, 1/36*
U.S. Cl. 57—96 **7 Claims**



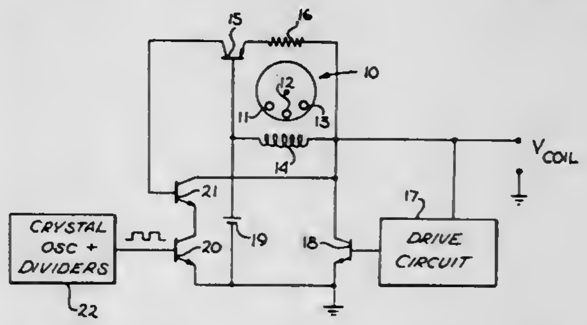
1. A device for compensating changes in roving winding tension in a spinning machine, comprising a pair of cone drums mounted for rotation in said spinning machine, a belt-like member stretched around said cone drums to transmit rotation of one of said cone drums to the other, a belt shifter associated with said belt-like member to move said belt-like member along the length of said cone drums, a moving member capable of movement to energize said belt shifter, a link mechanism including at least two link elements pivotably connected together, said belt shifter being connected through said link elements with said moving member, and guide means having a cam surface at a position apart by a predetermined distance from the movement locus of said link mechanism, a part of said link mechanism being engaged with the cam surface of said guide means so that the movement of said moving member is transferred to said belt shifter while being subject to the influence of said cam surface.

3,892,065
BALLOON CONTROL RING
Hiroyuki Kanai, No. 3-15, Matsunouchi-cho, Ashiya-shi, Hyogo-ken, Japan
Filed May 21, 1974, Ser. No. 471,984
Claims priority, application Japan, June 1, 1973, 48-61695
Int. Cl. D01h *13/04, 13/12*
U.S. Cl. 57—108 **8 Claims**

1. A balloon control ring comprising a ring member made of a wire rod whose portion to be contacted with a yarn has a round shape, said ring member being formed into a corrugation having at least two ridges protruding in the axial direction thereof, and a mounting member for supporting said ring member on a machine frame.



3,892,066
SYNCHRONIZED WATCH MOVEMENT
Boyd G. Watkins, San Francisco, Calif., assignor to Microna Inc., Cupertino, Calif.
Filed Feb. 27, 1974, Ser. No. 446,240
Int. Cl. G04b *1/00*
U.S. Cl. 58—28 R **4 Claims**



1. In an electric timepiece containing a balance wheel and drive means for causing such wheel to oscillate at substantially its natural frequency, an improvement comprising:

a. a coil adjacent such balance wheel and electrically coupled to such drive means;
b. three magnets mounted on such balance wheel whereby at least one positive and one negative polarity voltage pulse is generated in said coil upon each motion of said magnets past said coil;
c. a source of synchronizing waves of precisely controlled frequency;
d. a battery in series with said coil, said battery being coupled such that said negative polarity voltage pulse will increase the voltage across said coil and said battery;
e. circuit means coupled to said source of synchronizing waves for limiting the coil voltage with respect to said negative polarity voltage pulse during the coincidence of said synchronizing waves and said negative polarity voltage pulse comprising:
   1. a first transistor having its emitter coupled to said battery and its base coupled to said source of synchronizing waves whereby said coil, said battery and said first transistor present a low impedance to said negative polarity voltage pulse during the time interval of said synchronizing waves;
   2. a second transistor of the same generic type as said first transistor having its emitter coupled to the collector of said first transistor and its collector coupled to said coil whereby said coil, said battery and said first and second transistors form a closed series circuit;
   3. a third transistor of opposite generic type to said first and second transistors, said third transistor having its base coupled to the junction of said coil and said battery, its collector coupled to the base of said second transistor, and its emitter resistively coupled to the junction of said coil and said second transistor;

whereby the period of oscillation of such wheel is changed so as to substantially match the period of said source of precisely controlled frequency.

3,892,067
DAY-DATE WATCH CORRECTION MEANS

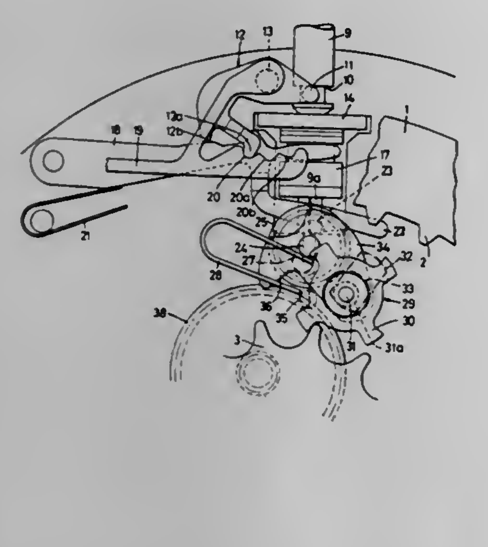
Marius Meylan-Piguet, L'Orient, Switzerland, assignor to Societe Suisse pour l'Industrie Horlogere Management Services S.A., Bienne, Switzerland

Filed Aug. 5, 1974, Ser. No. 494,883

Claims priority, application Switzerland, Aug. 17, 1973, 11903/73

Int. Cl. G04b *19/24*

U.S. Cl. 58—58 **6 Claims**



1. A calendar watch movement comprising two coaxial indicator members indicating the day and the date, respectively, a control stem capable of occupying several positions determined by axial displacement, a setting-lever cooperating with said control stem, a clutch-wheel mounted on a square of said stem, a yoke controlled by said setting-lever and controlling said clutch-wheel, and a setting-wheel which is engaged with said clutch-wheel in at least one of the positions of said stem, wherein said setting-wheel is integral with an arbor which projects from each of its faces, a correction lever pivots by friction fitting on said arbor and carries a correction wheel-and-pinion provided with a toothing engaged with said setting-wheel, said arbor is movable in translation, at least one of its ends being engaged in an elongated slot in a fixed frame element, and cooperates with said clutch-wheel in two positions of said stem, and said yoke has an auxiliary arm which extends at the level of one of the projecting portions of said arbor and displaces said arbor in said elongated slot when said stem is moved between one of said positions, being the correction position, and the other of said positions, being the setting position.

3,892,068
TIMEPIECE HAVING A MOTOR SPRING AND A BARREL

Raoul-Henri Erard, La Chaux-de-Fonds, Switzerland, assignor to Ebauches S.A., Neuchatel, Switzerland

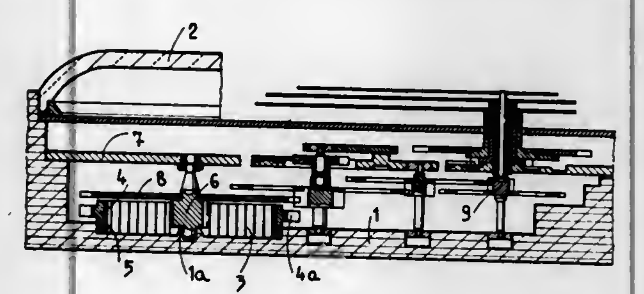
Filed May 8, 1974, Ser. No. 467,882

Claims priority, application Switzerland, May 10, 1973, 6784/73

Int. Cl. G04b *1/16*

U.S. Cl. 58—86 **8 Claims**

1. A timepiece comprising, a casing with a bearing surface element, a movement and frame therefor, a motor spring and a barrel surrounding the spring, the barrel being open on both ends, the barrel including a ring rotatably mounted on the bearing surface such that the side of the barrel facing the bearing surface is closed thereby.



3,892,069
PROPULSION UNITS

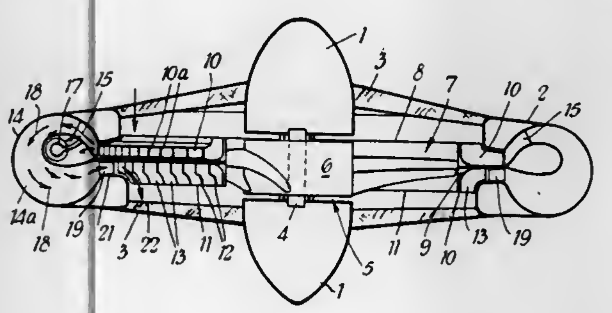
Robert Julian Hansford, Sherwood Cottage, Clifton Reynes, Olney, Buckinghamshire, England

Filed Oct. 30, 1972, Ser. No. 301,819

Claims priority, application United Kingdom, Nov. 5, 1971, 51607/71

Int. Cl. F02k *3/02;* **F02c** *3/08*

U.S. Cl. 60—226 **10 Claims**



1. A propulsion unit including rotor means incorporating a multi-bladed fan which over an outer peripheral region thereof defines centrifugal flow compressor passages and centripetal flow turbine passage and an annular combustor encircling the rotor means wherein the upstream ends of the compressor passages are located in a circular pattern around the rotor means, and immediately radially adjacent the ends of the fan blades so that the flow path of air entering the compressor passages and the flow paths of air passing between the blades of the fan are adjacent one another at the ends of the fan blades, the combustor having inlet means adapted to direct air from the compressor passages into the combustor and outlet means adapted to direct combustion gases from the combustor into the turbine passages to drive the rotor means.

3;892,070
AUTOMOBILE ANTI-AIR POLLUTION DEVICE

Ranendra K. Bose, 1554 N. Danville St., North Arlington, Va. 22201

Continuation-in-part of Ser. No. 35,658, May 8, 1970, abandoned. This application Feb. 5, 1973, Ser. No. 329,884

Int. Cl.² F02M *25/06*

U.S. Cl. 60—279 **11 Claims**

1. In combination with an internal combustion engine, apparatus for separation of combustible and non-combustible gases in the exhaust gas mixture of the engine, comprising a turbine having a housing and inlet connection thereto from said engine to receive flow of exhaust gas mixture to drive said turbine and to be separated into generally combustible and non-combustible portions in said apparatus;

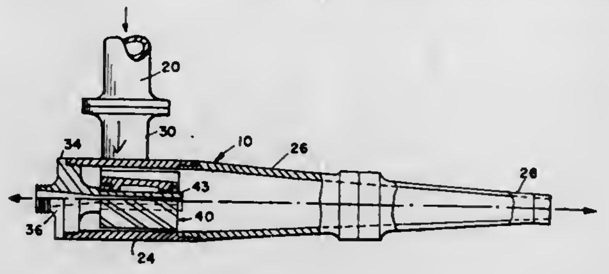
said turbine having a tapering hub with blades mounted thereon exposed to flow of said gas mixture to rotate said turbine wherein said gas mixture is moved in a helical

path having an axial component towards the smaller end of said tapering hub causing expansion of said gas mixture and increasing peripheral velocity;

a tapering vortex tube having a larger end and a smaller end, the larger end having means operatively connected with said turbine to receive the expanded gas mixture flow from said turbine and said vortex tube effecting an increase in peripheral speed towards the smaller end thereof thus centrifugally stratifying said gas mixture into a core of a substantially lighter and generally combustible gas component and an outer layer of a substantially heavier and generally non-combustible gas component, wherein said core component flows in a reverse direction from said outer layer component for effecting separation; said outer layer component flowing towards the smaller end of said vortex tube for egress therefrom;

and passage means communicating with the larger end of said vortex tube and said engine for effecting egress of said core component to said engine;

including supplemental air supply means connected for mixing with said core component.



3,892,071
DEVICE FOR REGULATING THE RATE OF FLOW OF THE AIR BLOWN INTO THE EXHAUST DUCT OF AN INTERNAL COMBUSTION ENGINE

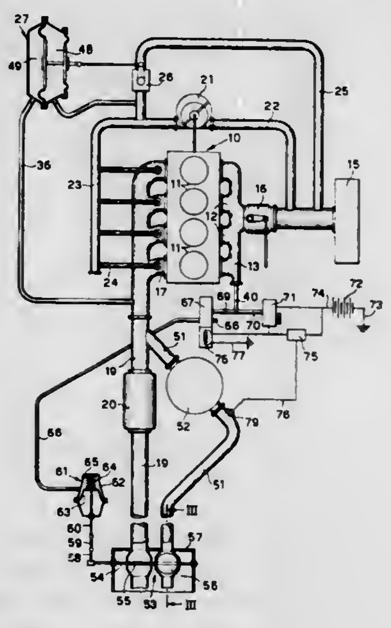
Giampaolo Garcea, Milan, Italy, assignor to Alfa Romeo S.p.A., Milan, Italy

Filed Feb. 5, 1973, Ser. No. 329,823

Claims priority, application Italy, Feb. 8, 1972, 20343/72

Int. Cl. F02b *75/10*

U.S. Cl. 60—288 **5 Claims**



1. An internal combustion engine comprising an intake piping, an exhaust piping, a pump driven by the engine for drawing air from the atmosphere and discharging through a delivery duct the compressed air into said exhaust piping, means for varying the rate of delivery though said delivery duct, the improvement including first means sensitive to the differential between the pressure in the delivery duct of the pump and the pressure in the exhaust piping, said first means being connected to said means for varying the rate of delivery in the sense of diminishing said rate of flow as the differential is increased, second means sensitive to the differential between one at least of said pressures in the exhaust piping and in the delivery duct and the outside atmosphere pressure; said second means being connected to said means for varying the rate of delivery of the pump in the sense of diminishing the rate of delivery of the pump as the differential is increased, said first and second sensitive means being formed by a casing having a surface consisting of a first deformable diaphragm and partitioned in two half spaces by a second deformable diaphragm which is substantially parallel to said first diaphragm, the half space comprised between the two diaphragms being connected to the delivery duct of the pump, the other half space being connected to the initial portion of the exhaust piping, the diaphragms being mechanically interlinked and connected with said means for varying the rate of flow delivered through the delivery duct.

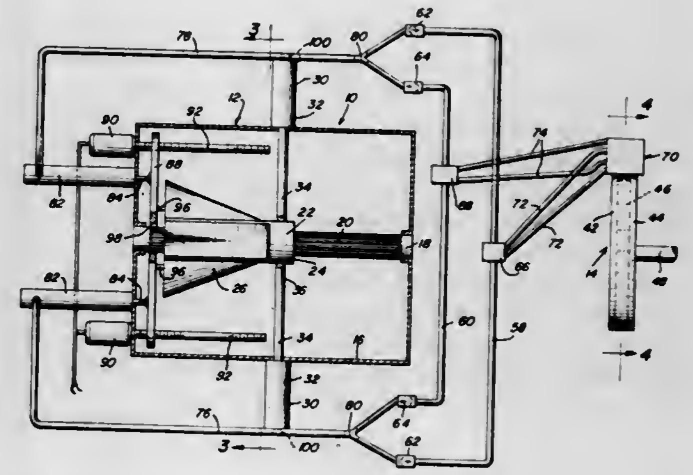
3,892,072
VARIABLE SPEED HYDRAULIC TRANSMISSION

Benjamin F. Harvey, F-61 Country Corners, Athens, Ga. 30601

Filed May 10, 1973, Ser. No. 358,937

Int. Cl. F16h *39/46*

U.S. Cl. 60—487 **4 Claims**



1. In combination, a rotary input shaft, a cam body mounted on said shaft for rotation therewith and adjustable shifting therealong, said cam body including radially outwardly projecting and axially tapering cam means, liquid pump means including reciprocal piston means and back and forth shiftable actuator means having a follower portion engaged with said cam body, said pump means including liquid inlet and outlet means, a liquid motor including a liquid inlet and a liquid outlet, liquid conveying means communicating said liquid inlet and said liquid outlet with said liquid inlet and outlet means, closed variable volume liquid reservoir means communicated with said liquid conveying means and including shiftable operator means operative to vary the effective volume of said reservoir means, and motion transmitting means operatively connecting said shiftable operator means and said cam body for shifting the former in response to shifting of the latter to increase and decrease the effective volume of said liquid reservoir means for receiving and expelling liquid displaced from said outlet means and to be drawn into said inlet means, respectively, as a result of reciprocal shifting of said piston means upon back and forth shifting of said actuator means.

3,892,073
PYROTECHNIC POSITIONING DEVICE

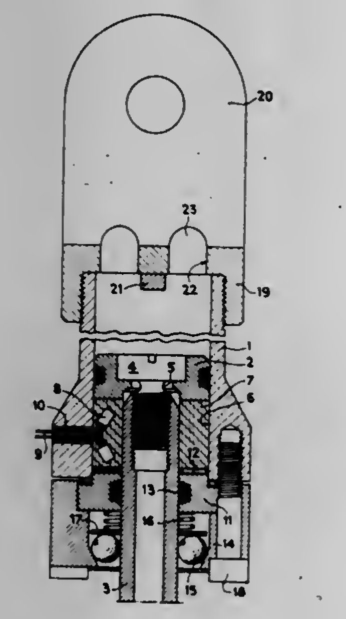
Bernard E. Plantif, and André H. Hiss, both of St. Medard En Jalles, France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

Filed May 24, 1973, Ser. No. 363,490

Claims priority, application France, June 16, 1972, 72.21927

Int. Cl. F01b *29/8;* **F02m** *13/00*

U.S. Cl. 60—635 **7 Claims**



1. A pyrotechnic positioning device which comprises a cylinder, a piston disposed for movement in one direction within said cylinder, a rod connected to said piston for movement therewith and extending beyond said cylinder to impart such movement to a means to be positioned by the device, a pyrotechnic charge having an annular configuration and disposed within said cylinder in laterally surrounding relation to said rod and behind said piston, said charge being detonatable by means operable from outside said cylinder to propel the piston and rod in said one direction, and unidirectional acting blocking means disposed to allow movement of the rod in said one direction and block movement thereof in the opposite direction.

3,892,074
ROTARY ENGINE OPERATING ON REFRIGERATION CYCLE

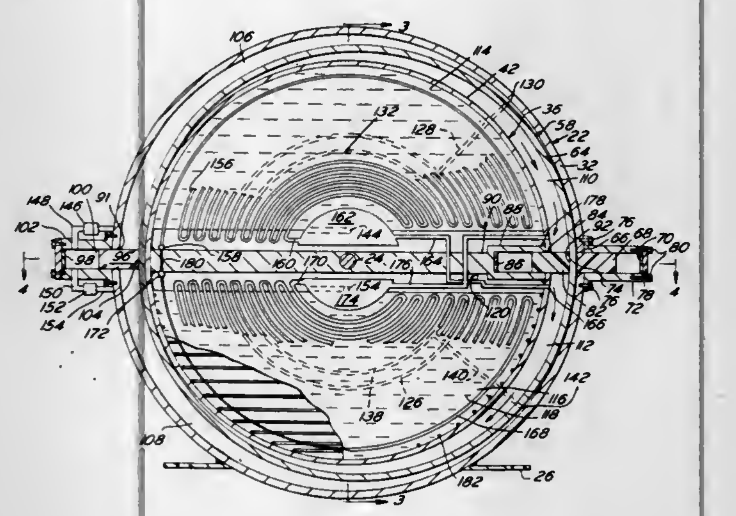
Frederick W. Yoos, Jr., 5008 F St., Philadelphia, Pa. 19124

Filed Feb. 4, 1974, Ser. No. 439,509

Int. Cl. F01k *11/04*

U.S. Cl. 60—669 **17 Claims**

1. A pollution-free engine comprising a first chamber which expands in response to the evaporation of a first voltile refrigerant gas, shaft means connected to said first chamber to provide mechanical power when said first chamber expands, said first gas being provided to the first chamber from an evaporation chamber wherein a first volatile liquid is boiled off to form said first gas, a second chamber which contracts as said first chamber expands, said second chamber serving to recycle gas used in the first chamber by providing such gas to a condensation chamber, said condensation chamber acting to condense said first gas to said first liquid and means for providing the condensed first liquid to the evaporation chamber, said evaporation chamber comprising a first exchanger connected through passageway means to a third chamber, said third chamber containing a second volatile fluid in the form of a gas and contracting as the first chamber expands, whereupon said second fluid condenses to form a second liquid in the first heat exchanger to thereby provide heat to the first liquid within the evaporation chamber to cause said first liquid to evaporate, said condensation chamber comprising a second heat exchanger connected to the first heat exchanger by a passageway to receive condensed liquid therefrom, said second heat exchanger also being connected through passageway means to a fourth chamber which expands as the third chamber contracts, whereupon the condensed second liquid evaporates in the second heat exchanger, to thereby extract heat from the first gas within the condensation chamber to cause said first gas to condense into said first liquid.



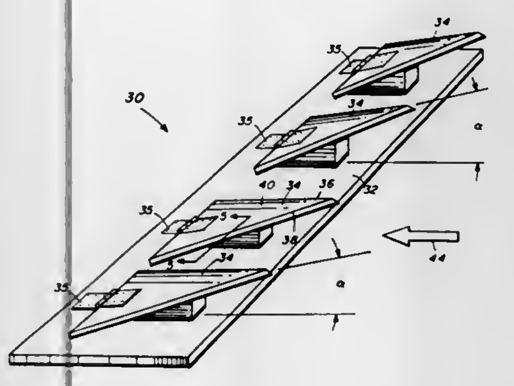
3,892,075
APPARATUS FOR VORTEX GENERATION TO PRECIPITATE SUSPENDED PARTICLES IN FLUID BODIES

Michael Edward Tibbett, 1035 - 33rd St., Vero Beach, Fla. 32960

Filed Oct. 29, 1973, Ser. No. 410,788

Int. Cl. E02b *3/04*

U.S. Cl. 61—4 **6 Claims**



1. Apparatus for precipitating particles suspended in a moving fluid body comprising:
- a delta hydrofoil vortex generator;
- means for supporting said hydrofoil vortex generator from the bottom of said fluid body substantially transverse to the direction of adjacent fluid flow, whereby particles suspended in said moving fluid are precipitated therefrom and deposited on the bottom thereof behind said hydrofoil by vortex generation across said hydrofoil; and wherein
- said supporting means includes means rendering said delta hydrofoil vortex generator movable responsive to said fluid flow thereby said vortex generator changes its attack angle responsive to said fluid flow to attain a maximum lift-to-drag ratio.

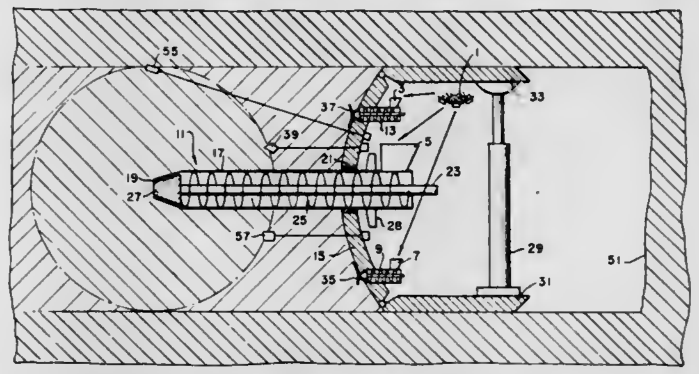
3,892,076
LONG SHIELD MINING METHOD

Martin S. Oudenhoven, Lakewood, Colo., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Apr. 1, 1974, Ser. No. 456,509

Int. Cl.² E21C *41/00;* **E02D** *3/12*

U.S. Cl. 61—35 **7 Claims**



1. A long shield mining method for filling in previously mined out areas comprising the steps of: conveying processed mined waste material to the mining area where a long shield is placed near a mine wall; forcing the material through the shield under pressure behind said shield to form a spent material wall until a predetermined high pressure is reached and an overburden supporting high pressure zone formed; detecting the amount of predetermined high pressure developed and the appropriate location of said zone; forcing additional waste material through said shield at a lower pressure after said predetermined high pressure is detected to enable disengagement of the shield from the spent material wall; and repeating the forcing step to develop a high pressure zone and the forcing disengagement step so as to create a different high pressure zone that overlaps with said first zone.

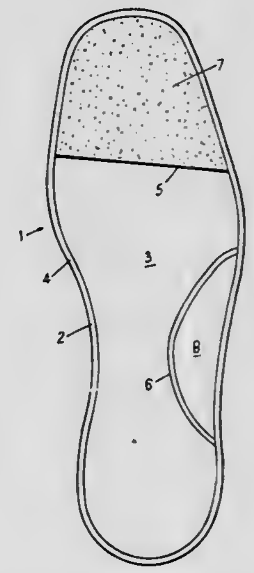
3,892,077
INSOLE

James Graham Wolstenholme, 2 Vicarage Ln.; George Watts, 26 Paddock Ln., both of Mears Ashby, Northamptonshire, and Philip Robert Hunter, 3 Shepherds Fold, Holmer Green, Buckinghamshire, all of England

Filed Apr. 19, 1974, Ser. No. 462,548

Int. Cl. A43b *13/38*

U.S. Cl. 36—44 **10 Claims**



1. An insole defined by an envelope having at least one flexible side generally shaped like at least a portion of a foot and welded about the perimeter;
- a first zone in said envelope defining a single cavity bounded at the front by a transverse line forward of the metatarsal heads of the toes of the foot, by arcuate perimeter portions concave in plan view on either side of the foot in the vicinity of the instep of the foot and a substantially semicircular end perimeter portion in the vicinity of the heel, and said first zone containing a liquid sealed inside; and a second zone in said insole defining an empty zone bounded by a portion of the perimeter of said insole at an area of arch support and by a weld inwardly of said portion also in said area of arch support.

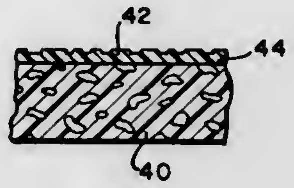
3,892,078
TEXTURED SHOE STIFFENER BLANK

Addison W. Closson, Jr., c/o Proctor Laminar Division 32 Calvin Rd., Watertown, Mass. 02172

Filed Aug. 17, 1972, Ser. No. 281,291

Int. Cl. A43b *13/42;* **B32b** *3/26*

U.S. Cl. 36—68 **21 Claims**



1. A flexible laminate sheet structure suitable for use in forming a shoe counter stiffener and having a (a) relatively thick substrate formed of a closed-cell foam of a thermoplastic elastomer of from 30 to 70 mils in thickness and comprising 20 to 70% of void volume and (b), adherently and directly bonded to said substrate, a relatively thin textured coating of a single crosslinked and thermoset resin coating composition having a Shore A durometer value of from 20 to 70, said coating being coextensive with said laminate sheet wherein the maximum thickness of said textured coating is from 0.5 to 6 mils, wherein the coating comprises a ratio in thickness between high spots and low spots of at least 1.5 to 1.0.

6. A molded shoe counter stiffener formed of the laminate defined in claim 1.

3,892,079
CONTROL SYSTEM FOR AMPHIBIOUS HYDRAULIC EXCAVATOR

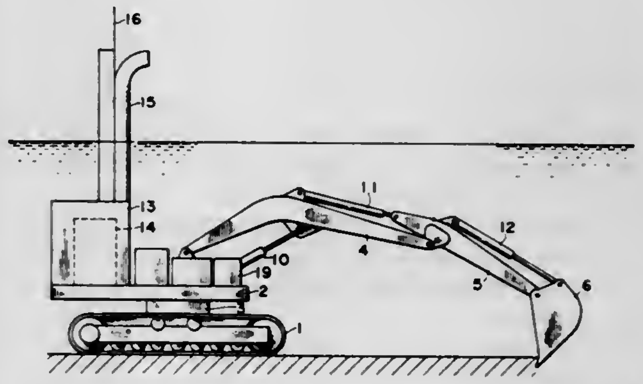
Kinichi Hirano, Tsuchiura, and Yoshiaki Metsugi, Tokyo, both of Japan, assignors to Hitachi Construction Machinery Co., Ltd., Japan

Filed Dec. 26, 1972, Ser. No. 318,700

Claims priority, application Japan, Dec. 27, 1971, 46-105322

Int. Cl. E02f *3/32, 5/28*

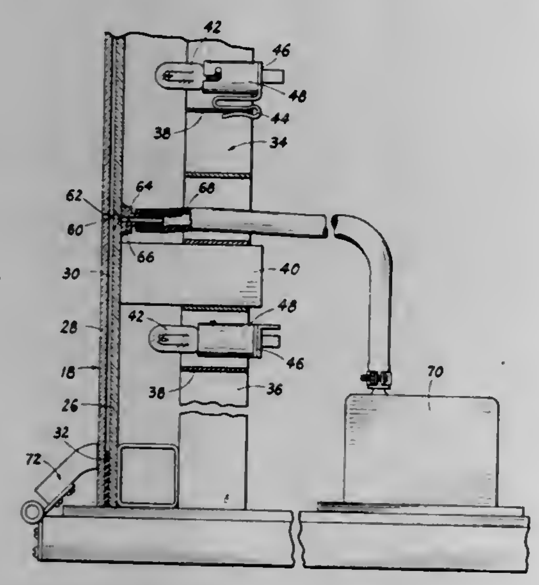
U.S. Cl. 37—56 **1 Claim**



1. An amphibious hydraulic excavator comprising: an amphibious crawling truck; hydraulic motors for driving said crawling truck; a revolving platform mounted rotatably on said truck; a further hydraulic motor for rotating said revolving platform; a shovel assembly mounted on said revolving platform and composed of a boom, an arm and a bucket which

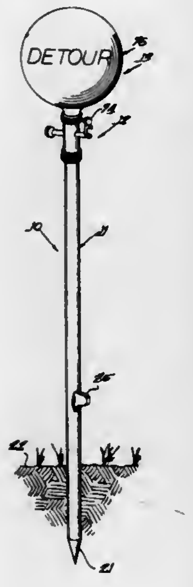
are actuated by respective hydraulic cylinders; an engine room mounted on said revolving platform; a prime mover installed in said engine room; hydraulic pumps driven by said prime mover for delivering pressure fluid; pilot operated directional control valves for controlling the flows of pressure fluid to and from said hydraulic motors and said hydraulic cylinders, respectively; a snorkle means extending upwardly from the engine room for serving as an air suction and exhaust conduit for said prime movers; means for actuating said directional control valves, said actuating means being activated by radio signals and including a radio receiver for receiving triggering signals; a source of pilot pressure fluid; fluid lines connecting said source of pilot pressure fluid with the respective directional control valve; solenoid valves provided on the respective fluid line for actuation in response to the triggering signals received by said receiver so as to control the flows of pilot pressure fluid to said directional control valves, respectively; shuttle valves positioned on the respective fluid lines downstream of said solenoid valves; by-pass fluid lines connecting between said source of pilot pressure fluid and the respective shuttle valves; and manual control valve means provided on the respective by-pass fluid lines for controlling the flows of pilot pressure fluid to said directional control valves, said manual control valve means being provided for adjusting the flow rate of pilot pressure fluid to said respective directional control valve; and wherein every part of said excavator is fabricated water-tight whereby said hydraulic excavator can be operated either in a remote radio-controlled manner or by normal manual operation.

3,892,080
BACK LIGHTED PANEL
John K. Koch, P.O. Box 7575, Tulsa, Okla. 74105
Filed Dec. 18, 1972, Ser. No. 315,797
Int. Cl. G09f *13/10*
U.S. Cl. 40—106.1 **1 Claim**



1. A back lighted display device comprising a translucent panel, a support structure spaced from said panel and provided with lighting means for transmitting light to the panel, said panel comprising a first substantially flat translucent plate secured to the support structure, a second substantially flat translucent plate disposed adjacent said first flat plate on the opposite side thereof from said lighting means, art work sheet means interposed between said first and second flat plates and having selective opaque portions and selective transparent portions thereon for selectively transmitting light through said second flat plate for providing a lighted pattern, suction means communicating with the space between said flat plates for releasably securing said second flat plate to said first flat plate, said art work sheet means being responsive to said suction means for releasably adhering to one of said flat plates, said panel including sealing means extending around the outer periphery thereof between said two plates, said suction means comprising aperture means provided in said first flat plate, pump means, and conduit means connected between the pump means and the aperture means for transmitting suction thereto upon actuation of the pump means.

3,892,081
INFLATABLE PORTABLE SIGN
Alvin G. Goral, 2362 Deckner Ave., Green Bay, Wis. 43202
Filed July 1, 1974, Ser. No. 484,543
Int. Cl. G09f *21/06*
U.S. Cl. 40—214 **7 Claims**



1. An inflatable portable sign comprising:

an elongated tubular rigid support post having a bottom end and a top end, the bottom end adapted to be embedded into the ground, roadway or the like to support the post therein, and the top end provided with screw threads extending circumferentially the exterior portion thereof;

a valve mechanism having a cylindrical housing with a top end and a bottom end, the bottom end being of a cylindrical closed top configuration having threads extending circumferentially about its interior surfaces adapted to be threadedly engaged on the threaded top end of the support post;

an air intake valve connected to the valve mechanism housing;

an air discharge valve connected to the valve mechanism housing;

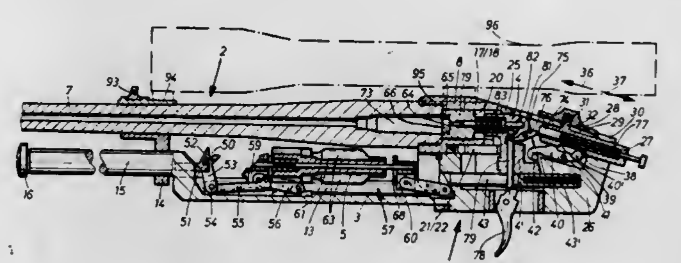
a cylindrical collar shaped clamping band having an interior diameter greater than the exterior diameter of the top end of the valve mechanism housing and adapted to be placed thereover and concentric therewith;

a balloon having a mouth portion to be engaged over the top end of the valve mechanism housing beneath the clamping band;

means for adjusting the clamping band to detachably secure the mouth of the balloon to the valve mechanism housing; a source of air for connection to the air intake valve for inflating the balloon; and

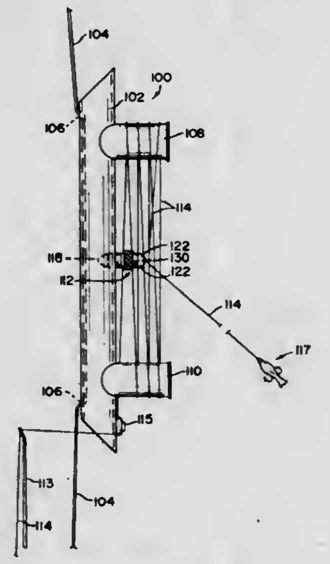
message conveying indicia imprinted on the balloon and clearly visible upon inflation of the balloon.

3,892,082
BREECH AND LOCK MECHANISM FOR SINGLE-SHOT OR MULTIPLE SHOT REPEATING HUNTING RIFLES
Gerold Domhan, Volkerstrasse 28, 7000 Stuttgart 1, Germany
Filed Dec. 19, 1973, Ser. No. 426,344
Claims priority, application Germany, Dec. 23, 1972, 2263378
Int. Cl.² F41C *13/00;* F41D *3/00*
U.S. Cl. 42—11 **21 Claims**



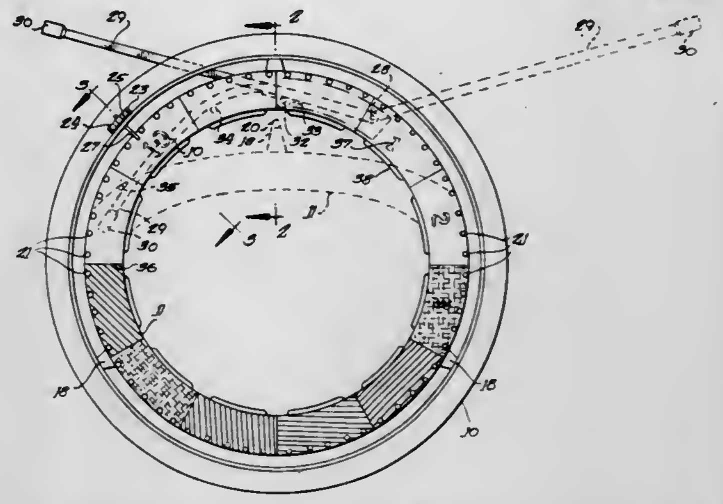
1. In a breech and lock mechanism for single shot and multiple shot repeating rifles particularly used in hunting, the combination of a first unit comprising a frame and a second unit comprising a barrel having a breech on the end thereof, mutually slideably engageable longitudinal guide means on said first and second units below and parallel to said barrel for slideably guiding said first and second units within limited longitudinal movement with respect to each other between closed and open positions thereof, a bolt head having a rear portion on said frame, a pair of cylinders pivotably mounted in said breech and pivotable between positions corresponding to the open and closed positions of said first and second units, means on said cylinders lockingly engageable with said bolt head rear portion in the closed position of said units and released therefrom when the units are sliding toward the open position thereof, a laterally extending side bar on each of said cylinders, and a cross bar on said frame enclosing said cylinder bars in the closed portion of said units to prevent pivoting of said cylinders during firing of the rifle.

3,892,083
RELEASE MECHANISM
Carmen A. Peterson, 38 Pilot Pl., New Port Richey, Fla. 32355
Filed Jan. 11, 1974, Ser. No. 432,579
Int. Cl. A01k *91/00*
U.S. Cl. 43—43.11 **5 Claims**



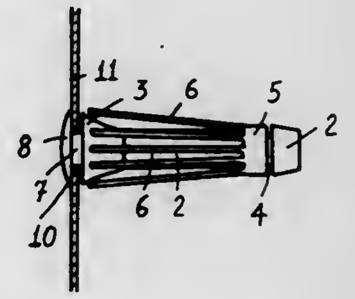
1. A line release means used in combination with outrigger means, said release means fixedly attached to said outrigger means intermediate its ends; said outrigger means comprising substantially elongated, substantially hollow tubular base means including a plurality of substantially hollow tubular finger means rigidly affixed to and outwardly extending from said elongated base means and oriented substantially perpendicular to the longitudinal axis thereof; said base means further comprising a plurality of aperture means arranged in spaced relation and substantially aligned whereby a support element is connected between said apertures in supporting relation to said base means.

3,892,084
PLAY HOOP
Stefan Hanysz, Chicago, Ill., assignor to Stefan Hanysz, Chicago, Ill.
Filed Nov. 8, 1973, Ser. No. 413,899
Int. Cl. A63h *5/00*
U.S. Cl. 46—114 **9 Claims**



1. A play hoop comprising a pair of annular members in a mutually concentric relation, and providing a central opening of a size to accomodate the body of a person playing therewith, said annular members being capable of rotary spinning motion one independently of the other, means for guiding the rotary spinning motion of one of said annular members with relation to the other of said annular members, a plurality of spaced pegs extending throughout the entire circumference of one of said annular members and extending in a lateral direction from said annular member, and a prong mounted upon the other of said annular members, said prong being in a radial relation with both of said annular members and having its free end extending within the plane defined by said pegs whereby a rattling sound may be produced when said free end of said prong rides upon said pegs when one of said annular members is caused to rotatably spin with relation to the other of said annular members.

3,892,085
VOICE FOR DOLLS OR PUPPETS, PROVIDED WITH AN ANCHORING ORGAN
Arnaldo Palumbo, Via Faenza 10, Milan, Italy
Filed Mar. 13, 1973, Ser. No. 340,935
Claims priority, application Italy, Nov. 7, 1972, 031368/72
Int. Cl. A63h *5/00*
U.S. Cl. 46—180 **5 Claims**



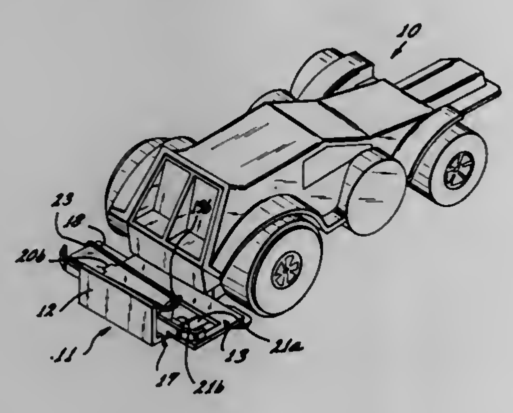
1. A voice device for a toy, comprising, in combination, a tubular member having a first end portion of frusto-conical configuration and a second end portion longitudinally spaced from said first end portion and provided with a recess; a

sound-generating reed inserted into said tubular member; and an anchoring element having a collar accommodated in said recess of said second end portion and a plurality of flexible rod-like members attached to said collar and extending therefrom toward said first end portion.

3,892,086
FLIPPER MECHANISM FOR TOY VEHICLES

Derek J. Gay, Palos Verdes Peninsula, and William H. Smedley, Los Angeles, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Aug. 9, 1973, Ser. No. 387,092
Int. Cl. A63h *11/10*
U.S. Cl. 46—202 **3 Claims**



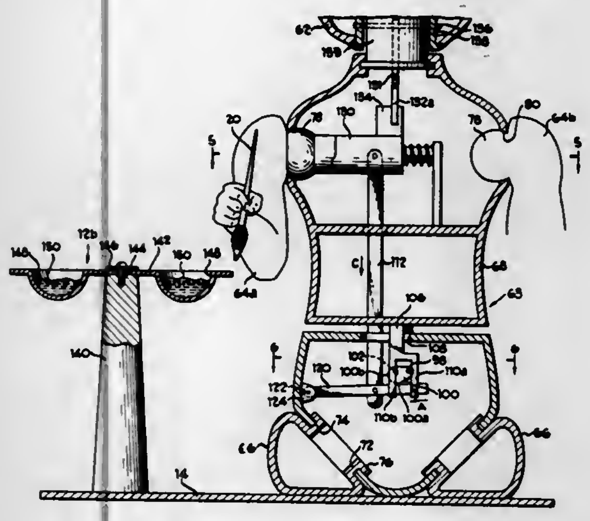
1. A flipper mechanism for a toy vehicle comprising:
a target area;
actuating means for flipping a toy vehicle upon impact of said target area by an external source, said actuating means including a stationary member, a movable member, and a spring means, said movable member including said target area and being rotatably mounted to said stationary member, said stationary member having an L-shaped tab and said movable member having an underside surface in the flipper mechanism's unactuated state, the L-shaped tab receiving the underside surface of said movable member, said spring means connecting said stationary member to said movable member and upon impact of said target area by an external source, said underside surface is urged away from said L-shaped tab under the force of said spring means to allow the movable member to rotate away from said stationary member; and
means for removably mounting the flipper mechanism to one of the ends of said toy vehicle.

3,892,087
DOLL CARRYING A MARKING MEANS, WITH PAINT RECEPTACLE AND ACCESSORY HAVING MOVABLE MARKING SURFACE

Jeffrey D. Breslow, Highland Park, and Eugene Jaworski, Park Ridge, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Division of Ser. No. 326,874, Jan. 26, 1973, Pat. No. 3,834,070. This application June 26, 1974, Ser. No. 483,366
Int. Cl. A63h *13/04*
U.S. Cl. 46—116 **6 Claims**

1. In combination, a doll and accessory set, comprising:
an accessory comprising means defining a marking area including means defining a movably mounted marking surface for holding material to be marked;
means defining a doll body positionable adjacent said marking area including a torso having a head mounted on the top thereof and arms connected to said torso with a hand at the end of at least one of the arms, said one arm being mounted for movement relative to said torso, said doll and accessory including selectively actuatable drive means for moving said arm between a first position wherein said hand is generally over said marking surface and a second position away from said marking surface defining a substantially constant path of travel therebetween;
a paint brush mounted on the hand of the movable arm for movement therewith so that said paint brush will contact material on said marking surface when said arm is in said first position;

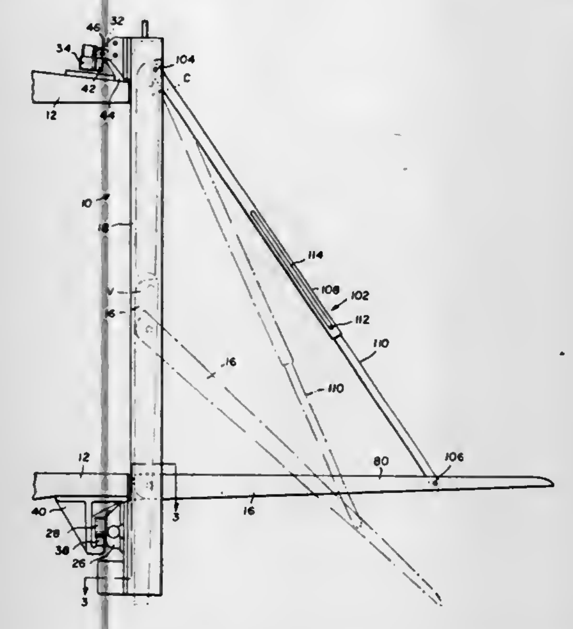


said drive means being operably connected to said movable arm and said marking surface for moving said arm between said positions while, at the same time, moving said marking surface relative to said paint brush when said movable arm is in said first position; and
means defining a receptacle for paint positioned adjacent said doll, the paint brush receiving paint from said receptacle when said movable arm is in the second position.

3,892,088
DOOR MOUNTING FOR CARGO HANDLING MECHANISM

Warren O. Fleenor, 8250 W. Bergen Rd., Leroy, N.Y. 14482

Filed May 3, 1973, Ser. No. 356,767
Int. Cl. B60p *1/00*
U.S. Cl. 49—37 **13 Claims**



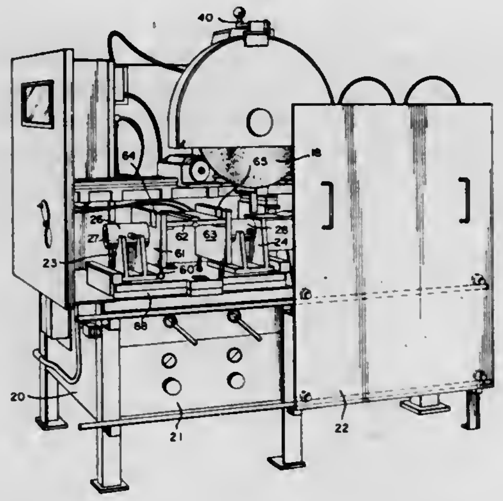
1. In a cargo handling mechanism, the combination comprising:
support frame means defining an opening;
a door movable between open and closed positions for opening and closing said opening, and having a front end and a rear end;
means for movably mounting said rear end of said door to said support frame means adjacent one end of said opening;

said door mounting means comprising a guideway in said support frame means, a gear rack in said guideway, a spindle on said rear end of said door, a pinion gear on said spindle, and a shoe pivotally mounted on said spindle and slidably mounted in said guideway for holding said pinion gear into meshing engagement with said gear rack; and
means for driving said spindle and said pinion gear for reciprocally moving said rear end of said door relative to said support frame means for moving said door between said open and closed positions.

3,892,089
WELD COUPON SAMPLE CUTTER

Robert N. Coulstring, Hanover, Mass., assignor to Triangle Engineering, Inc., West Hanover, Mass.

Filed July 2, 1974, Ser. No. 485,221
Int. Cl. B24b *27/06*
U.S. Cl. 51—34 D **10 Claims**



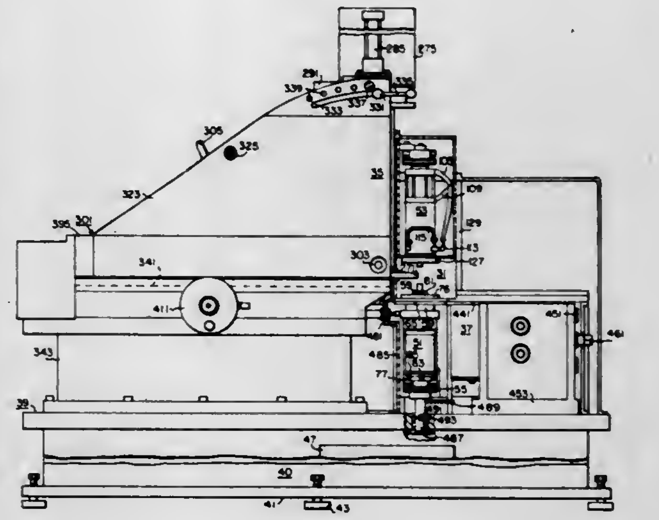
1. A weld coupon sample cutter comprising a frame, a horizontal table support mounted for limited translation back and forth in one horizontal direction on said frame, controllable actuator means operable for positioning said table support, a pair of spaced pedestals mounted on said table support and aligned in the horizontal direction normal to the direction of motion of said table support, a pair of opposed clamp plates respectively mounted on said pedestals, at least one of said clamp plates being mounted for axial motion toward and away from the other said clamp plate, second controllable actuator means operable for axially positioning the movable said clamp plate, horizontal guide rails mounted on said frame above said pedestals and parallel with the axis of alignment of said pedestals, a carriage mounted for horizontal translation on said guide rails normal to the direction of motion of said support table, an abrasive cutting wheel and power drive means for driving said wheel mounted on said carriage, said wheel rotating in a vertical plane parallel to the axis of alignment of said pedestals, means for adjusting the vertical position of said cutting wheel on said carriage for controlling depth of cut relative to said pedestals, and means operable for advancing and retracting said carriage along said rails to make a cut through a weld coupon clamped between said clamp plates.

3,892,090
WORK SHAPING APPARATUS

Harry J. Armitage, 1546 Cavitt Rd., Monroeville, Pa. 15146

Filed Oct. 24, 1973, Ser. No. 409,314
Int. Cl. B24b *9/14*
U.S. Cl. 51—101 R **11 Claims**

1. Apparatus for shaping work including a cam for determining the final shape of said work, flexible pivot means including at least one member having a resilient web from which arms extend oppositely, said web being flexible to permit one of said arms to pivot relative to the other, said flexible pivot means defining a first axis of said web about which said one arm is pivotal relative to said other, a rocker support connected to said one arm pivotal back and forth with said one arm about said axis as a center, clamping means for said work rotatable about a second axis and connected to said support pivotal therewith, means mounting said cam rotatable

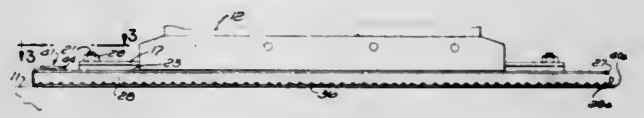


about said second axis with said work, a cam follower rotatable in engagement with said cam and pivoting said cam and said work in accordance with the shape of said cam, and grinding means in grinding engagement with said work as said work is pivoted and rotated to shape said work.

3,892,091
ABRADING TOOL UTILIZING A SELF ADHESIVE ABRADING SHEET

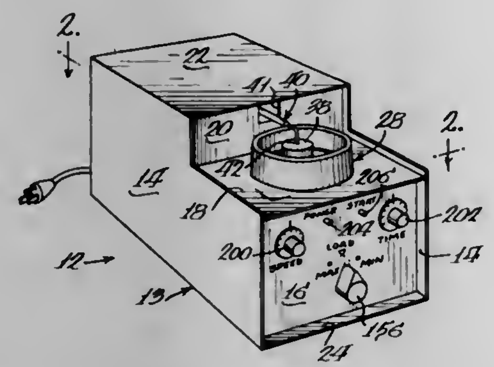
Alma A. Hutchins, 49 N. Lotus Ave., Pasadena, Calif. 91107

Filed Oct. 17, 1974, Ser. No. 515,657
Int. Cl. B24b *23/00*
U.S. Cl. 51—170 TL **18 Claims**



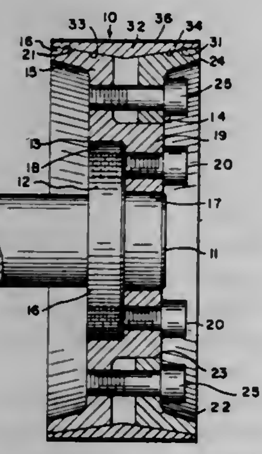
14. The combination comprising:
a shoe including a backing plate which is to extend essentially horizontally when abrading an upwardly facing work surface, and a cushion carried at the underside of said backing plate and having an undersurface to which a layer of adhesive on a self adhesive abrading sheet can detachably adhere;
said undersurface of the cushion being formed of a substance to which said adhesive will adhere tightly in use but from which the adhesive can be stripped with said sheet for replacement;
said cushion having a forward end face past which said abrasive sheet can extend upwardly at said forward end of the shoe and to which said adhesive of the abrasive sheet can adhere; and
means carried at the upper side of said backing plate near the forward end thereof and defining a locating recess into which a forward end portion of the abrasive sheet can project generally rearwardly without being clamped therein;
said recess having upper and lower walls between which said end portion of the sheet can be received and which are fixed relative to one another at a predetermined spacing which remains the same during an abrading operation as during insertion of said end portion of the sheet into said recess and removal therefrom.

3,892,092
AUTOMATIC POLISHING APPARATUS
Marvin W. Keith, Jr., Evanston, Ill., assignor to Buehler Ltd., Evanston, Ill.
Filed May 17, 1974, Ser. No. 471,022
Int. Cl. B24b *7/04*
U.S. Cl. 51—154 **15 Claims**



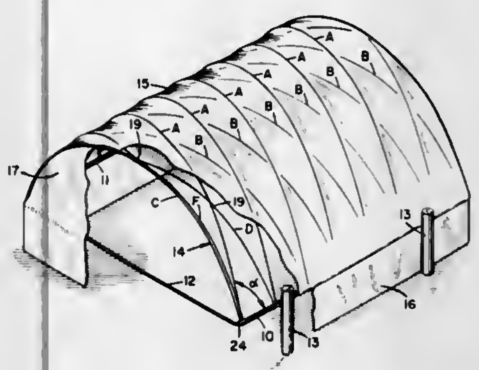
1. In an automatic polishing apparatus of the type for polishing specimens for purposes of microstructural analysis including a housing and a generally cup-shaped member mounted on the housing and having a flat base or polishing surface on which abrasive slurry or the like is dispersed and over which a specimen is moved during a polishing operation, the improvement comprising, in combination, a specimen drive arm supported on said housing for composite axial and pivotal movement and having an outer end engageable with a specimen for moving the same over said polishing surface, first drive means mounted in said housing for rotation about a fixed axis, a drive motor connected to said first drive means for rotating the same, second drive means rotatably mounted eccentrically on said first drive means, means interconnecting said first and second drive means causing said first drive means to rotate said second drive means relative to said first drive means, means connecting an inner end of said specimen drive arm to an eccentric portion of said second drive means, and guide means associated with said drive arm intermediate the ends thereof whereby a composite motion is imparted to said inner end of said drive arm and a related composite motion is imparted to said outer end of said drive arm and a specimen engaged therewith.

3,892,093
TREAD GRINDING WHEEL
Gustav M. Waller, Geneva, and Kenneth L. Landmark, St. Charles, both of Ill., assignors to Amsted Industries Incorporated, Chicago, Ill.
Filed July 22, 1974, Ser. No. 490,684
Int. Cl. B24d *9/02*
U.S. Cl. 51—372 **7 Claims**



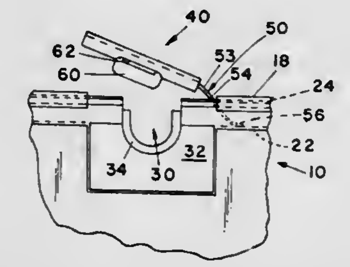
1. A grinding wheel assembly for a tire tread grinding apparatus having a drive shaft, said grinding wheel assembly comprising a first hub section, first fastening means for directly fastening said first hub section to the drive shaft for rotation therewith, a second hub section, second fastening means for fastening said second hub section only to said first hub section, each of said fastening means being exposed and accessible for independent disassembly, complementary aligning and orientating means for axially aligning and angularly orienting said first and second hub sections thereby to maintain said hub sections in the same alignment and orientation upon reassembly of said hub sections after said hub sections are disassembled, said hub sections each having oppositely directed peripheral flanges having tapered wedging surfaces, said tapered wedging surfaces being formed to provide a circumference in true round about the axis of rotation of the drive shaft, and an expansible collet mounted on said wedging surface and an abrading band of fixed diameter frictionally retained on said collet when said fastening means are drawn tight to fasten said first hub section and said second hub sections thereby to wedgingly expand said collet.

3,892,094
SHELTER HAVING A STRESSED FRAME WITH A FLEXIBLE SHEATHING THEREON
William N. Spray, R.D. 1, Fredericktown, Pa. 15333
Filed June 4, 1973, Ser. No. 366,509
Int. Cl. E04b *1/347*
U.S. Cl. 52—63 **18 Claims**



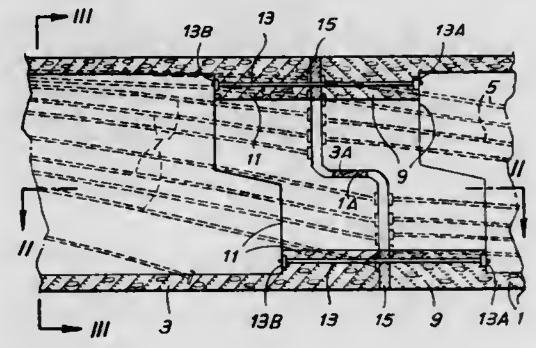
1. A generally semi-cylindrically shaped skeleton-frame for a shelter comprising a pair of laterally spaced side rails, means for maintaining the side rails in substantially equally spaced relationship throughout their length, a first series of longitudinally substantially equally spaced substantially parallel spring steel rods attached at one end to one side rail and at the other end to the other side rail, the point of attachment of one end of a rod to a side rail being spaced longitudinally from the point of attachment of the other end of the rod to the other side rail, a second series of longitudinally substantially equally spaced substantially parallel spring steel rods attached at one end to one side rail and at the other end to the other side rail, the point of attachment of one end of a rod to a side rail being spaced longitudinally from the point of attachment of the other end of the rod to the other side rail a distance which is substantially equal to the spacing between the opposite ends of the rods of the first series but in a direction opposite to the direction of spacing between the ends of the rods of the first series whereby a rod of one series crosses at least two rods of the other series, the spacing between rods of the second series being substantially1 equal to the spacing between the rods of the first series, the length of all of said rods being substantially equal and greater than the spacing between the side rails whereby the said rods are substantially arcuate shaped and under tension and support all of any load on the frame above the side rails and transfer the load to the side rails, and means for securing rods together adjacent to a cross-over point whereby the segments of each rod between cross-over points is deflected from its normal path and is under compression and tension.

3,892,095
WIRING ACCESS COVER
Dirk J. Vankuik, Jenison, and Glae F. Wilcox, Wayland, both of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.
Continuation of Ser. No. 371,305, June 18, 1974, abandoned.
This application Sept. 23, 1974, Ser. No. 508,543
Int. Cl. EO4f *19/08, 17/08*
U.S. Cl. 52—221 **12 Claims**



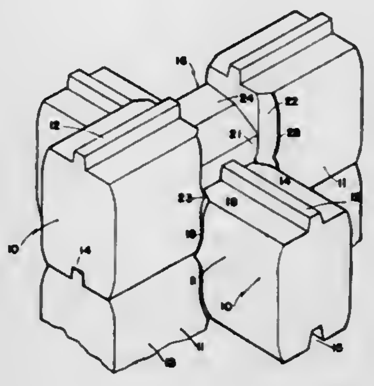
2. In a panel structure for an article of furniture or the like, said panel including an open interior, an access opening into said interior and a closure for said opening, said opening including a peripheral edge, the improvement comprising: said closure including a cover portion having a configuration corresponding to that of said access opening; a resilient spring arm extending laterally outwardly and downwardly at an inclined angle from said cover portion and generally to one side thereof and having top and bottom surfaces, said spring arm being adapted for positioning through said access opening into said interior of said panel; said panel including a cavity within said interior generally adjacent and positioned laterally and generally to one side of said peripheral edge of said access opening, said cavity including spaced top and bottom walls said spring arm extending into said cavity between said spaced top and bottom walls of said cavity, said top wall engaging said top surface of said spring arm and said bottom wall engaging said bottom surface of said spring arm at spaced points along the length of said spring arm whereby said spring arm tends to force said cover downwardly into position on said access opening as a result of its spaced engagement with said top wall and said bottom wall of said cavity.

3,892,096
BEAM STRUCTURES
Romualdo Macchi, Via S. Paolo 31, Pisa, Italy (56100)
Division of Ser. No. 276,022, July 28, 1972, Pat. No. 3,788,023. This application Jan. 10, 1974, Ser. No. 432,207
Claims priority, application Italy, Aug. 2, 1971, 9633/71
Int. Cl. E04c *3/26*
U.S. Cl. 52—227 **6 Claims**



1. A beam structure, comprising
two beams
means supporting the two beams in end to end relationship, each beam having elongate reinforcing members extending under tension between opposite end portions,
reinforcing means coupling the adjacent end portions of the two beams under tension, the reinforcing members and reinforcing means in each said adjacent end portion overlapping one another, and
means anchoring the reinforcing members and reinforcing means at axially spaced locations in the end portion to place under compression that portion of the beam lying between the anchorings.

3,892,097
JOINT CONSTRUCTION FOR LOGS AND THE LIKE
David Bain, 2404 - 48th St. S.E., Calgary, Alberta, Canada
Filed July 16, 1973, Ser. No. 379,580
Claims priority, application Canada, Aug. 25, 1972, 150230
Int. Cl. E04b *1/10*
U.S. Cl. 52—233 **8 Claims**

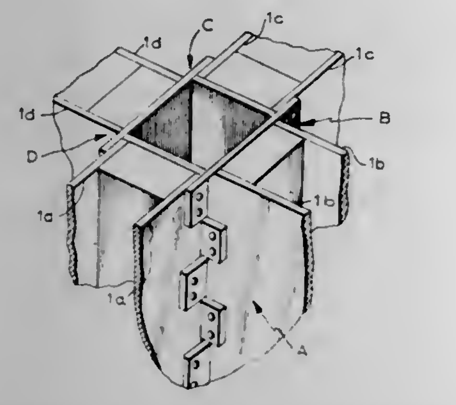


1. An elongated construction member having a substantially rectangular cross section, said member having a member intersecting portion of reduced cross section formed thereon, said portion having a width less than the width of said member, said width being defined between side edges, and a depth less than the depth of said member, said portion having an angled upper surface which, when viewed in transverse cross section, slopes downwardly from one side edge of said portion to the other side edge thereof and angled lower surface situated at right angles to said upper surface, said portion being bordered by upper and lower pairs of vertical end walls, the junction between said end walls and vertical side faces of said member being beveled, the upper and lower longitudinal corners of said member being arcuately curved thereby increasing the area of contact when two members are in intersecting relationship one with the other, said beveled junction between said end walls and said vertical side faces following the arcuate curvature of said corners of said members.

3,892,098
PROCESS AND A DEVICE FOR BUTT JOINTING AND ASSEMBLING PANELS OF A BUILDING
Rinei Kobori, 13-2 Takakura-cho, Nishinomiya, Japan
Continuation-in-part of Ser. No. 159,832, July 6, 1971, abandoned. This application Sept. 11, 1973, Ser. No. 396,309
Claims priority, application Japan, July 24, 1970, 45-65289
Int. Cl. E04b *1/56, 2/32*
U.S. Cl. 52—270 **7 Claims**

5. A butt jointing assembly for joining a plurality of building panels at right angles to each other in the construction of a building, said assembly comprising:
four joining boards, each of said boards having a length equal to the length of the side edge of a panel to be joined, each of said boards having two parallel rows of alternating sunken and raised portions, one row on each side thereof, said portions having the same pitch, the distance between the sunken portion in one row and the corresponding sunken portion in the other parallel row being equal to the thickness of panels to be joined, and the height of each raised portion being substantially greater than the thickness of said boards;

two of said joining boards having the same shape and being positioned face to face in parallel to each other;
the remaining two joining boards being positioned face to face and at right angles to said first two boards;
said remaining two boards having their sunken and raised portions arranged so that said portions intersect at right angles with the first two boards;



the raised portions of one board being positioned in adjoining sunken portions of the next board, thereby forming four pairs of parallel rows of projecting raised portions;
at least one building panel positioned between each of said pairs of rows of projecting raised portions with the entire length of the side edge of each thus positioned panel in contact with a respective of said boards; and
said projecting raised portions being firmly secured to the faces of each said thus positioned respective building panel.

3,892,099

MEANS FOR FASTENING OF SANDWICH PANELS TO SUPPORTS

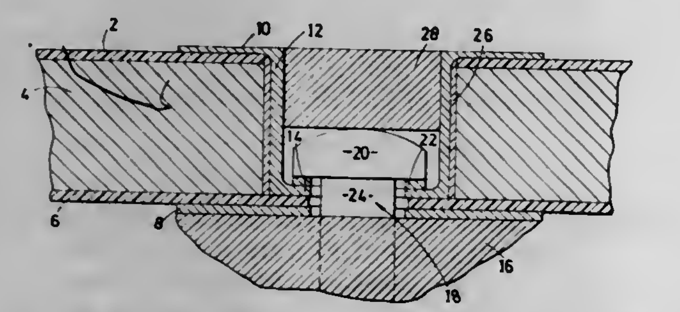
Gordon Peter Worgan, Yate, and Gordon John Lane, Henleaze, both of England, assignors to Rolls-Royce (Composite Materials), Bristol, England

Continuation of Ser. No. 161,537, July 12, 1971, abandoned. This application Sept. 7, 1973, Ser. No. 395,064

Claims priority, application United Kingdom, July 16, 1970, 34588/70

Int. Cl. E04c *2/34*

U.S. Cl. 52—479 **11 Claims**



1. A panel removably secured to a support by a fastener means; the panel comprising a first and a second skin of a material reinforced by fibers, on either side of a cellular core, with a hole through the first skin and the core and a smaller concentric hole through the second skin, reinforced by a flat annulus adhesively bonded to the outer face of the second skin around the smaller hole, and by an insert comprising a hollow tubular portion extending axially into and lining the hole in the core, an external flange at one end of the tubular portion and adhesively bonded to the outer face of the first skin, and a radially inwardly extending internal flange at the other end of the tubular portion and adhesively bonded to the inner face of the second skin around the smaller hole; the annulus engaging the support; and the fastener means including a shank passing through the holes in the internal flange, the second skin, and the annulus into the support, and a head portion having a clamping face within said hollow tubular portion exerting a clamping force on the internal flange, second skin, and annular against the support, the said head portion having radial clearance within the tubular portion.

3,892,100

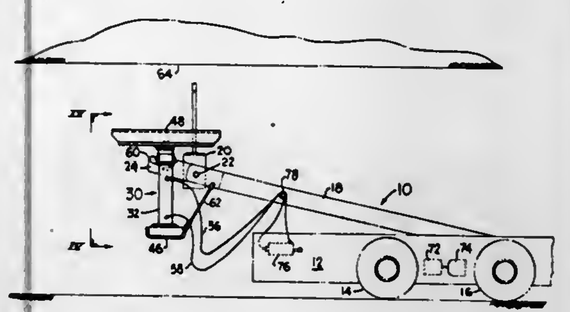
METHOD AND APPARATUS FOR MINING AND SUPPORTING THE MINE ROOF

Will B. Jamison, Bethel Park, Pa., assignor to Consolidation Coal Company, Pittsburgh, Pa.

Division of Ser. No. 391,032, Aug. 23, 1973, which is a continuation-in-part of Ser. No. 286,744, Sept. 6, 1972, abandoned. This application Oct. 7, 1974, Ser. No. 512,674

Int. Cl. E21d *15/59*

U.S. Cl. 61—45 R **6 Claims**



1. A method for inserting permanent roof supports in a mine roof at a preselected location while providing temporary roof support adjacent the preselected location comprising,
carrying a temporary roof support to a preselected location on a portion of a self-propelled vehicle, said self-propelled vehicle having apparatus thereon for inserting permanent roof supports in a mine roof,
maneuvering said self-propelled vehicle to position said temporary roof support adjacent said preselected location,
providing power from a power operated means on said self-propelled vehicle to extend said temporary roof support into abutting relation with said mine roof and the mine floor to provide support for said mine roof at said location,
disengaging said portion of said self-propelled vehicle from said temporary roof support, and
maneuvering said self-propelled vehicle adjacent to said portable roof support to insert permanent roof supports at different locations adjacent said temporary roof support.

3,892,101

METHOD OF ANCHORING AN ANCHORING BOLT IN A BORE HOLE

Rudolf Gruber, Karnten, Austria, assignor to GD-Anker Gebirgs-Duebel-Anker GmbH & Co. KG, Karnten, Austria

Filed June 25, 1973, Ser. No. 373,189

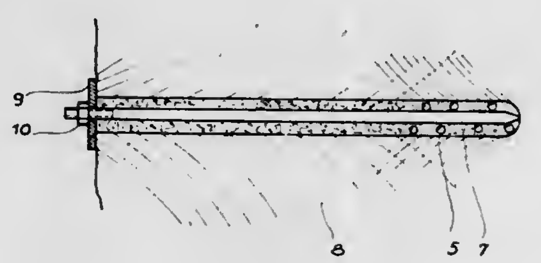
Claims priority, application Austria, June 26, 1972, 005473/72

Int. Cl. E21d *20/00*

U.S. Cl. 61—45 B **1 Claim**

1. A method of anchoring an anchor bolt having a pointed end in a bore hole having a bottom, comprising the steps of:
a. filling a container of a frangible material with balls having a diameter at most equal to the difference between the radius of said bore hole and the radius of said bolt and with an agent capable of reacting with mortar to accelerate the hardening thereof;
b. fitting a container into an end of a hose;
c. inserting said hose into said bore hole substantially to the bottom thereof;
d. forcing cement mortar activatable by said agent through said hose to drive said container out of the end of said hose against the bottom of said bore hole;

e. gradually withdrawing said hose while continuing to force cement mortar therefrom, thereby completing filling the bore hole ahead of said container with said cement mortar; and



f. driving said bolt into said bore hole through the cement mortar ahead of said container and into said container to rupture same and release said agent for reaction with said mortar and simultaneously release said balls, said pointed end of said bolt wedging said balls against the wall of said bore hole.

3,892,102

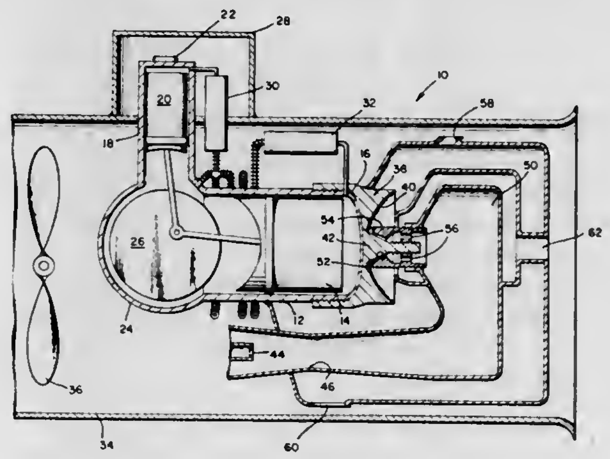
VUILLEUMIER REFRIGERATOR HOT CYLINDER BURNER HEAD

Bruno S. Leo, Santa Monica, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Mar. 7, 1974, Ser. No. 449,182

Int. Cl. F25b *9/00*

U.S. Cl. 62—6 **3 Claims**



1. A Vuilleumier-type refrigerator comprising:
a hot cylinder having a head, a concave curved thermal heat transfer surface on said head, a solid cone extending from said curved heat transfer surface;
a fluid fuel burner formed around said cone so that combustion flame impinges along said cone and onto said curved heat transfer surface so that products of the combustion pass along said heat transfer surface so that heat is provided for the hot cylinder of the Vuilleumier refrigerator.

3,892,103

LIQUEFYING REFRIGERANT FOR WATER DESALINATION WITH LIQUEFIED NATURAL GAS AND AN INTERMEDIATE ENERGY CYCLE

Attilio Antonelli, Florence, Italy, assignor to Nuovo Pignone, S.p.A., San Donato Milanese, Italy

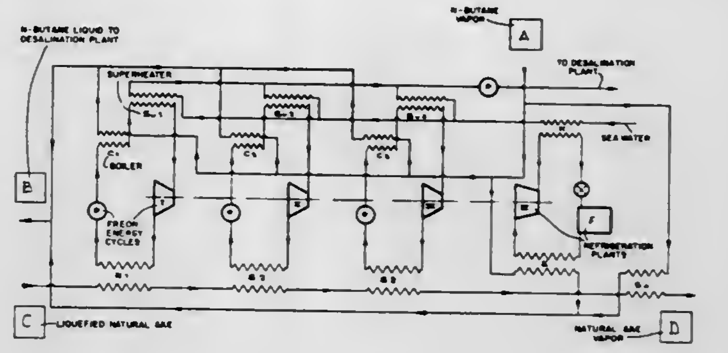
Filed June 12, 1973, Ser. No. 369,185

Claims priority, application Italy, June 13, 1972, 25580/72; July 13, 1972, 26927/72; Jan. 30, 1973, 19770/73

Int. Cl. B01d *9/04*

U.S. Cl. 62—58 **10 Claims**

1. In a process for producing desalted water wherein liquified natural gas is converted to the vapor state and refrigeration units are released therefrom and transferred to a higher hydrocarbon in the vapor state which is converted to the liquid state and then delivers to water to be desalinated and refrigeration units necessary for desalination, the improvement which comprises transferring said refrigeration units from the liquified natural gas to said higher hydrocarbon by means of at least one closed energy fluid circuit which includes a heat exchanger for the absorption by said enerby fluid of refrigeration units from the liquified natural gas, a boiler for the absorption of heat from said higher hydrocarbon and the attendant delivery of refrigeration units thereto by said energy fluid, a superheater for delivering heat to said energy fluid, and a turbine adapted to transfer energy from said heater energy fluid to a compressor.



3,892,104

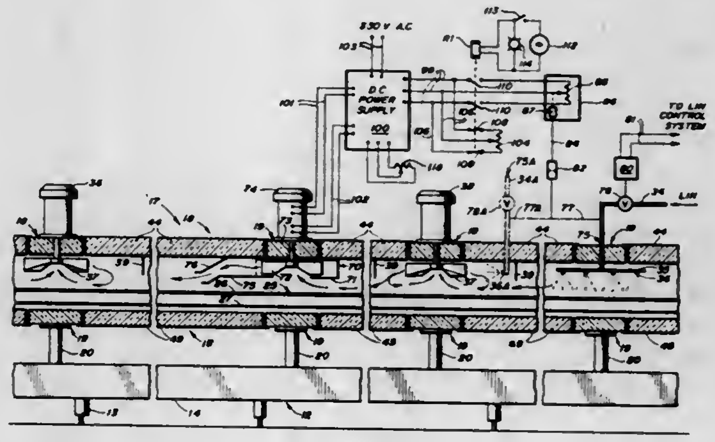
CRYOGENIC FREEZER WITH VARIABLE SPEED GAS CONTROL SYSTEM

David J. Klee, Emmaus, and Roger A. Howells, Orefield, both of Pa.

Filed Sept. 20, 1973, Ser. No. 399,769

Int. Cl. F25d *17/04*

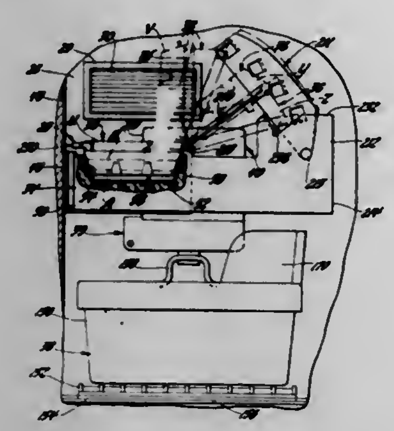
U.S. Cl. 62—186 **13 Claims**



1. A cryogenic freezer for freezing a product comprising an elongated insulated tunnel including a conveyor belt, a cryogenic liquid injection system and a plurality of gaseous cooling zones through which the product is passed in heat exchange relationship with the gas resulting from vaporization of the injected cyrogenic liquid, each of said plurality of cooling zones including recirculation fan means for recirculating said gas in contact with the product, gas control fan means for controlling the net forward flow of gas through said cooling zones, variable speed motor means for driving said gas control fan means at various speeds, and a control system operatively connected to said variable speed motor means and to said cryogenic liquid injection system for automatically varying the speed of said gas control fan means as a function of the amount of cryogenic liquid being injected into said freezer.

3,892,105
HARVESTING APPARATUS FOR AUTOMATIC ICE MAKER

James A. Bernard, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 21, 1974, Ser. No. 516,687
Int. Cl. F25c *1/14*
U.S. Cl. 62—353 **2 Claims**



1. An automatic ice maker comprising a warpable grid in a tray adapted to contain water, refrigerating means for the freezing of ice in said grid, drive means for periodically pivoting the grid about one end corner thereof and the adjacent corner of said tray for removing the grid and ice cubes from said tray, a rapper assembly including rapper support means extending from said tray pivoted end, a rapper arm having one end pivotally supported on said rapper support means, resilient means biasing said rapper arm to a first position contacting stop means, said rapper arm having a plurality of longitudinally extending members thereon arranged along an arcuate path centered on said grid pivotal axis, a striker bar pivotally mounted on said grid extending radially outwardly from the free end of the grid front wall and resiliently biased for pivotal movement in one direction only, whereby upon said grid being rotated from a horizontal position in said tray to an overcenter position said bar engages the first one of the arm members momentarily halting the pivoting of said grid, said drive means continuing to power said grid imparting a warping force thereto prior to said bar overcoming said arm resilient biasing means pivoting said arm away from said stop means and permitting said bar to snap past the first arm member and impact on the next succeeding arm member to release ice cubes from said grid, and so forth insuring the release of all the ice cubes therefrom, said drive means being operative to cause reverse rotation of said harvested grid whereby said resiliently biased bar engages said arm members resulting in the bar pivoting in said one direction allowing said grid to be freely returned to said tray.

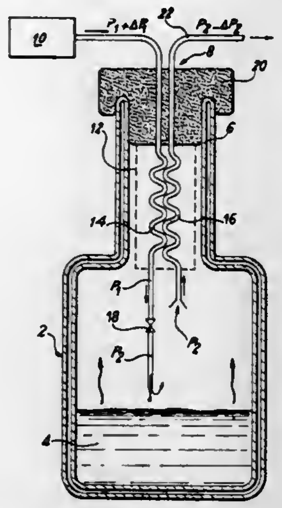
3,892,106
METHOD FOR REDUCING THE CONSUMPTION OF A CRYOSTAT AND A DEVICE FOR CARRYING OUT SAID METHOD

Pierre Roubeau, Palaiseau, France, assignor to Commissariat a l'Energie Atomique, Paris, France
Filed Mar. 26, 1974, Ser. No. 455,004
Claims priority, application France, Mar. 27, 1973, 73.10885
Int. Cl. F25b *19/00*
U.S. Cl. 62—514 **7 Claims**

1. An auxiliary refrigeration unit for reducing the consumption of a fluid existing in liquid and vapor phases within a cryostat, the unit adapted to be connected to a source of high pressure fluid for supply at a temperature which is higher than the Joule-Thomson effect inversion temperature of the fluid, comprising:

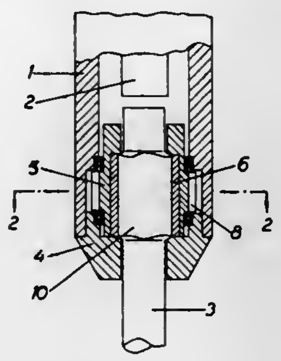
a hollow cylinder adapted to be disposed in the cryostat and having an inlet connected to the source of pressurized gas to establish a high pressure flow circuit for the pressurized gas, a gas expansion unit connected to the outlet of said cylinder for expanding said pressurized gas in accordance with the Joule-Thomson effect, the pressure of the expanded gas at the outlet of said unit being at the pressure which prevails within the cryostat, and the liquefied portion of said expanded gas being returned into the liquid contained in said cryostat, and

a plurality of tubes extending through said cylinder and adapted to receive both the nonliquefied portion of said gas after expansion and the vaporized portion of the liquid contained in the cryostat to establish a low pressure flow circuit for said portions and pass said portions in a heat exchange relation to said pressurized gas passing through said cylinder.



3,892,107
DEVICE FOR TRANSFERRING TORQUE FROM A DRILL-SLEEVE TO A DRILL-TOOL

Ebbe Sigfrid Adolfsson Handen, and Carl Gosta Bernhard Ekwall, both of Saltsjobaden, Sweden, assignors to Atlas Copco Aktiebolag, Stockholm, Sweden
Filed July 2, 1973, Ser. No. 375,351
Claims priority, application Sweden, July 7, 1972, 9063/72
Int. Cl. F16d *3/06*
U.S. Cl. 64—23 **2 Claims**

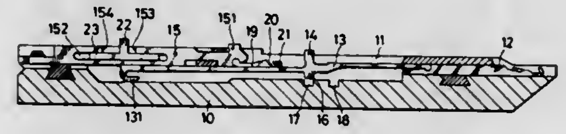


1. A coupling for transferring the torque to a drill tool which is reciprocated by percussive impacts in the housing of a rock drilling machine, comprising;

a. a drill sleeve mounted to rotate within the housing while being restricted against axial movement therein;
b. said drill sleeve having an exterior circular toothed surface meshing with a driven gear wheel;
c. an intermediate sleeve loosely fitted telescopically in an interior recess in said drill sleeve to permit substantially non-forcible removal therefrom while being restrained from any substantial axial movement therein;
d. the exterior surface of said intermediate sleeve and the facing surface of said recess having substantially corresponding non-circular contours to provide driving engagement therebetween;
e. said intermediate sleeve having an interior surface of non-circular contour telescopically engaging a substantially correspondingly contoured portion of the drill tool to transfer the torque thereto while permitting axial reciprocation within the confines thereof;
f. said intermediate sleeve being restrained against axial movement by a shoulder defining the upper limit of said recess and by a removable cap member on the housing defining the lower limit of said recess.

3,892,108
KNITTING MACHINE, AND IN PARTICULAR FLAT KNITTING MACHINE

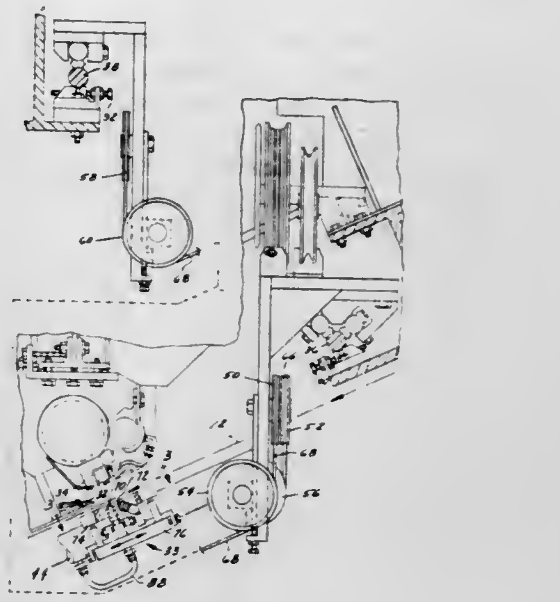
Wilhelm Hadam, Reutlingen, Germany, assignor to H. Stoll and Co., Reutlingen, Germany
Filed Mar. 26, 1974, Ser. No. 454,904
Claims priority, application Germany, Mar. 28, 1973, 2315334
Int. Cl.² D04B *7/00, 15/66*
U.S. Cl. 66—75 **5 Claims**



1. In a flat knitting machine having needle controlling butts which are movable transversely in a tricked needle bed and can thereby be moved out of the needle tricks relative to controlling lock parts, and jacks which are displaceable into a latching position in which they hold the needle controlling butts in a depressed position relative to said lock parts, the jacks, which are arranged to be retracted from the latching position by other lock parts, having control butts, the improvement wherein the control butt of each jack constitutes itself a magnetic armature, the control butt of each jack is provided on a slide mounted for longitudinal displacement in the jack, the maximum range of this displacement being smaller than the maximum corresponding extent of the control lock passageway into which the said control butt projects, such that the control butt of each jack is mounted for limited longitudinal displacement relative to the jack, and projects into a control lock passageway which is defined in terms of travel by magnetic poles of at least one controllable magnet, said control lock passageway having a plurality of selection zones, controlled by magnetic poles and associated with particular phases of a knitting program for the needles, which selection zones are followed in the direction of travel of the jack control butts by deflector elements, and there being arranged at the end of the said control lock passageway an advancing cam which brings about displacement of all the jacks into their latching positions.

3,892,109
JET DYEING AND WASHING APPARATUS

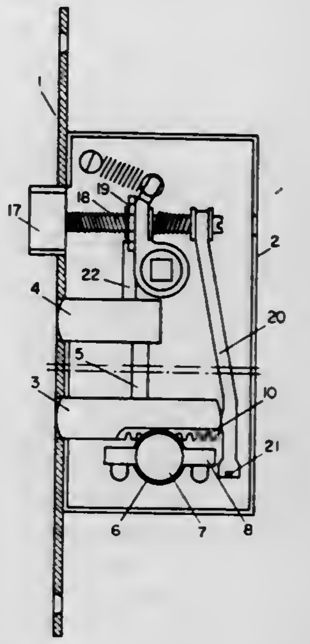
Norman E. Klein, Inman, and Herbert R. King, Spartanburg, both of S.C., assignors to Deering Milliken Research Corporation, Spartanburg, S.C.
Filed May 17, 1974, Ser. No. 471,121
Int. Cl. B05c *5/00, 11/00*
U.S. Cl. 68—205 R **11 Claims**



8. The apparatus of claim 6 wherein said apparatus includes at least four spaced apart frame members forming generally a rectangular shape, said cable system including at least two cables with the ends of each cable being fixed to diametrically opposite corners of said frame members.

3,892,110
CYLINDER LOCKS

Valerio A. Poli, Bustamante 88, Santiago, Chile
Filed Feb. 6, 1974, Ser. No. 440,098
Int. Cl.² E05C *1/16*
U.S. Cl. 70—107 **4 Claims**

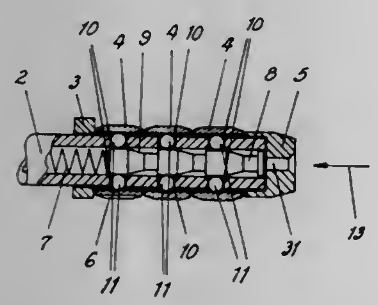


1. A lock comprising a case which houses: at least one dead bolt, a cylinder constituted by a key-operated rotatable plug provided on its periphery with gear means, pin tumblers to block rotation of said plug, an exterior shell mounted on the walls of said case, a latch bolt having an axle, a mechanism to operate said latch bolt, a bar joined integrally to said dead bolt and displaceable to connect with the latch bolt axle, and rack means engaging and cooperating with said gear means through

a groove provided in said shell to operate said dead bolt so that when said plug is key-operated, said gear means operate said rack means displacing longitudinally said dead bolt to blocking and unblocking positions, and when said dead bolt is displaced to a blocking position said bar is displaced simultaneously to a blocking position of said latch bolt, said pin tumblers being the only blocking means to prevent nonauthorized movement of said dead bolt.

3,892,111
VARIABLE LOCKING DEVICE

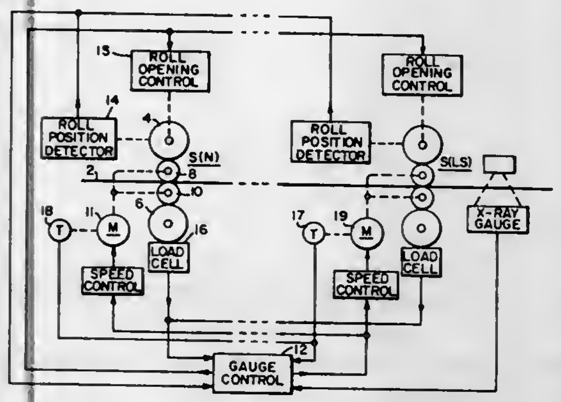
Horst Bresler, Penzberg, Germany, assignor to G.A.O. Gesellschaft fur Automation, Germany
Filed Jan. 4, 1974, Ser. No. 430,702
Claims priority, application Austria, Jan. 23, 1973, A565/73
Int. Cl. E05b *19/18*
U.S. Cl. 70—358 **6 Claims**



1. In a variable locking device with the key thereof, instead of the bit or web, comprising two or more adjusting rings which are seated on the stem of the key and are only capable of revolving freely after the key has been inserted in the lock, and in which, moreover, the lock comprises a number of test rings corresponding to the number of adjusting rings, with said test rings concentrically surrounding the adjusting rings subsequently to the insertion of the key, and with said test rings, along their circumference, comprising a number of tumbler means permitting an arbitrary, but between the adjusting rings and the test rings, only a compulsory turning in discrete steps, the key comprises a hollow stem (2) on which the adjusting rings (4) are arranged next to each other, and inside which there is provided an axially displaceable spindle (8) divided into a number of sections corresponding to the number of adjusting rings (4), with each of said sections comprising a tapering (9), that the key stem (2) per spindle section, comprises along its circumference a certain number of bores (16) in which balls (11) are supported for engaging the internal toothings (12) of the adjusting rings (4), and blocking the turning thereof and which, when the key is inserted, owing to the displacement of the spindle (8) into the tapered portion, drop out of the bores, thus permitting the adjusting rings to be revolved, that moreover the lock comprises a number of test rings (17) corresponding to the number of adjusting rings (4), as well as a core socket (16) capable of revolving inside the lock cylinder (14) and surrounding the test rings (17) in their entirety and that the tumbler or securer means consist of several bores (25 . . . 27) uniformly distributed over the peripheral area of the lock cylinder (14), the core socket (16) and the test rings (17), with said bores each being associated with a locking pin (28 . . . 30) and, in the defined angular positions of both the adjusting rings and the test rings, in alignment with one another, with one of the bores (27) of the test rings (17) having a long locking pin (31), and that moreover the locking pins (30, 31) are so designed as to be capable of engaging the notch (6) extending along the peripheral area of the adjusting ring (4).

3,892,112
ROLLING MILL GAUGE CONTROL

Andrew W. Smith, Jr., Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Mar. 27, 1974, Ser. No. 455,159
Int. Cl. B21b *37/08*
U.S. Cl. 72—11 **10 Claims**



1. A method of controlling the delivery gauge of a work strip passing through at least one roll stand of a tandem rolling mill in accordance with a desired delivery gauge leaving the last rolling stand of said rolling mill, with said one roll stand having a pair of work rolls and a roll force measurement device, said method including the steps of

establishing a target delivery gauge for said work strip leaving said one roll stand in relation to said desired delivery gauge, the speed setting of said one roll stand and the speed setting of the last roll stand,

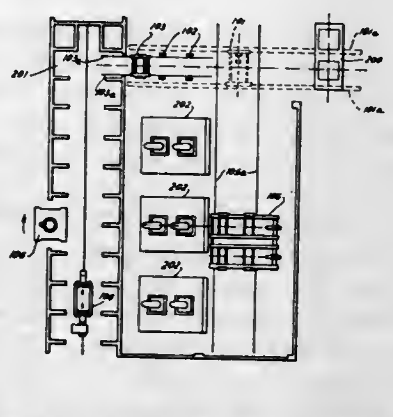
establishing the actual delivery gauge of said work strip leaving said one roll stand in relation to the measured roll force of said one roll stand,

comparing said target delivery gauge with said actual delivery gauge to determine a work strip gauge error leaving said one roll stand, and

establishing the roll opening between said pair of work rolls of said one roll stand in relation to said gauge error.

3,892,113
METHOD AND APPARATUS FOR TRANSPORTING AND STORING HEAVY COMMODITIES

Heinrich Bauer; Karl-Heinz Dörner, both of Grevenbroich; Helmut Eberlin, Wyhlen; Hans Kaulen, Grevenbroich; Werner Pazurek, Grenzach-Horn; Heinz Richarz, Grevenbroich; Harro J. Taubman, Rheinfelden, and Gerhard Wolf, Grevenbroich-Neuenhausen, all of Germany, assignors to Eisenbau Wyhlen AG, Wyhlen and Vaw Leichtmetall GmbH, Bonn, both of, Germany
Division of Ser. No. 399,182, Sept. 20, 1973. This application July 22, 1974, Ser. No. 490,299
Int. Cl. B21b *39/00*
U.S. Cl. 72—250 **7 Claims**

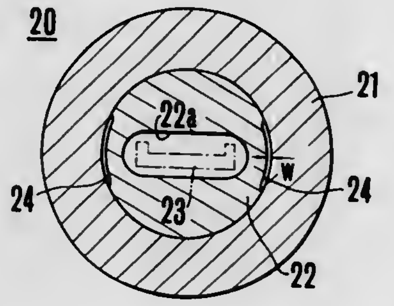


1. Apparatus for manipulating heavy commodities, especially convoluted bulky metallic band stock or the like, in a plant wherein the commodities are treated at several stations

of at least one production line having a receiving end and a discharge end and being located at a first level, comprising first and second commodity storing magazines respectively provided at said receiving and discharge ends of the production line, said production line also comprising a battery of rolling mills and a depository for commodities adjacent to each of said rolling mills; and a plurality of transporting devices arranged to transport the commodities between said magazines and to and from said stations on at least one second level which is located above or below said first level while holding said commodities against swinging so that they can be rapidly accelerated or decelerated, said transporting devices including at least one lifting device movable along and at a level below said rolling mills and arranged to deliver to said depositories commodities which are withdrawn from said first magazine.

3,892,114
CONTAINERS FOR USE IN EXTRUSION PRESS AND METHOD OF MANUFACTURING THE SAME

Hiroyoshi Taniguchi; Toshio Wakabayashi; Takuma Maeda, and Kenzi Ishimoto, all of Ube, Japan, assignors to Ube Industries, Ltd., Ube, Japan
Filed July 10, 1974, Ser. No. 487,049
Int. Cl. B21c *27/00*
U.S. Cl. 72—272 **14 Claims**

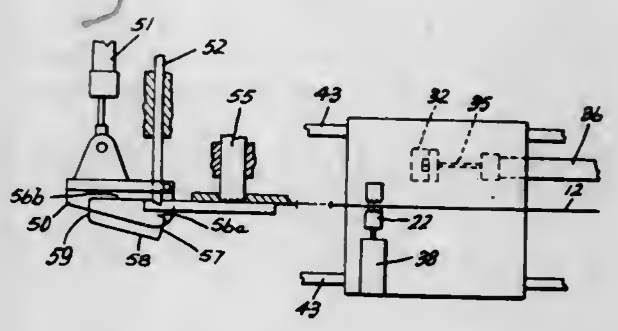


1. In a container for use in an extrusion press of the type comprising an inner cylinder having an opening of a noncircular cross-sectional configuration and an outer cylinder applied about said inner cylinder by shrinkage fit, the improvement wherein the interface between said inner and outer cylinders is provided with a plurality of circumferentially recesses at portions corresponding to the portions of said noncircular opening having small pressure receiving areas, each recess having a predetermined peripheral width and a predetermined radial depth and extending along the entire axial length of said inner and outer cylinders.

11. A method of manufacturing a container for use in an extrusion press of the class including an inner cylinder having a noncircular axial opening and an outer cylinder surrounding said inner cylinder, said method comprising the steps of forming a plurality of axial recesses on the outer surface of said inner cylinder at portions corresponding to the portions of said non-circular opening having small pressure receiving areas, each recess having a predetermined circumferential width and a predetermined radial depth, and applying said outer cylinder about said inner cylinder by shrinkage fit, thus causing inner surface of said outer cylinder to partially protrude into said recesses.

3,892,115
METHOD AND MACHINE FOR FORMING LAMINATIONS FOR USE IN SELF LOCKING CORES

Robert D. Mees; Armin F. Mittermaier, both of Fort Wayne, and Albert F. Wilcox, Yoder, all of Ind., assignors to Construction Materials Division, General Electric Company, Indianapolis, Ind.
Division of Ser. No. 378,999, July 13, 1973, Pat. No. 3,850,468. This application Mar. 20, 1974, Ser. No. 452,960
Int. Cl. B21d *43/28*
U.S. Cl. 72—294 **7 Claims**

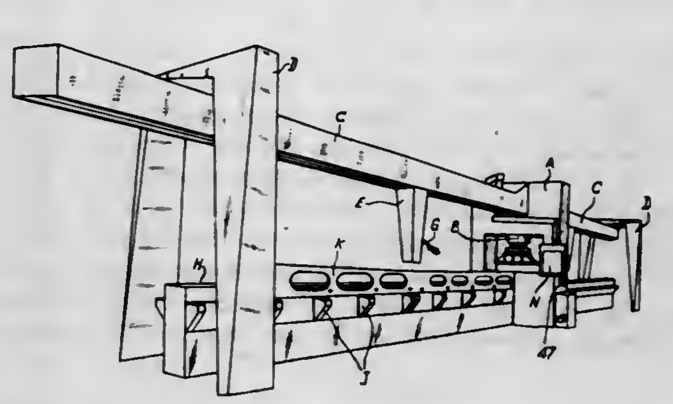


1. A machine for making laminations from strip material for magnetic cores formed of a plurality of individual laminations, each of the laminations being generally rectangular and having one discontinuous side; said machine including:

- a. a forming station for forming a section of the strip material into a generally rectangular configuration and severing the formed section from the strip;
- b. a first powered gripper for advancing the strip to said forming station for formation of a first pair of sides of the lamination;
- c. a second powered gripper for advancing the strip to said forming station for formation of a second pair of sides of the lamination;
- d. first stop means for interrupting strip advancing motion of said first gripper, second stop means for interrupting strip advancing motion of said second gripper; and
- e. auxiliary stop means cooperating with said first gripper for providing strip advancing motion of said first gripper less than that allowed by said first stop whereby one of the first pair of lamination sides is provided with two discontinuous portions.

3,892,116
SHAPING PRESSES

Michel Maurice Gerard Sentourens, Saint-Nazaire, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France
Filed June 1, 1973, Ser. No. 365,868
Claims priority, application France, June 8, 1972, 72.20607
Int. Cl. B21d *11/04*
U.S. Cl. 72—305 **11 Claims**



1. A press device for stepwise curve shaping panels of elongate construction comprising

a vertical substantially rectangular press frame,
punch means displaceable in said frame for acting locally on the panel,
two beams extending perpendicularly on one side and on the other side of said press frame, respectively, at the level of the higher side of said frame, each beam being provided with a primary carriage supporting a rigid hanging bracket adapted to bear one of the opposed ends of the panel, displacements of said primary carriages being conjugated and measured when carrying the same panel.

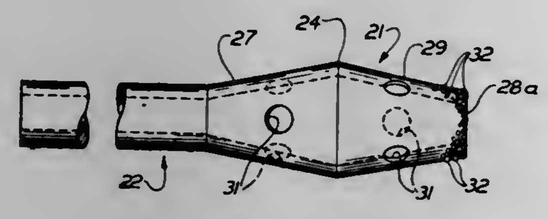
3,892,117
METHOD OF MANUFACTURING LIGHTWEIGHT DENTAL DRILL FOR HIGH-SPEED DENTAL HANDPIECE

Milton E. Nelson, 2302 Sandpiper Way, Pleasanton, Calif. 94566

Continuation-in-part of Ser. No. 345,482, March 28, 1973, Pat. No. 3,842,632. This application July 19, 1974, Ser. No. 490,000

Int. Cl. B21k *5/02*

U.S. Cl. 72—367 **8 Claims**



1. A method of manufacturing a lightweight dental drill suitable for use with a high-speed, air turbine, dental handpiece, said drill having a hollow head portion and an integrally formed hollow shank portion, comprising the steps of:
a. selecting a metal tubular member having:
i. an outside diameter at least about equal to the largest diameter of said head portion in the formed drill;
ii. an overall length at least about equal to the length of the formed drill; and
iii. a wall thickness sufficient to provide the necessary strength as said largest diameter of said head portion for drilling at air turbine speeds;
b. radially inwardly deforming said tubular member proximate a first end thereof to form said shank portion and to form a first area of said head portion extending from said largest diameter of said head portion to said shank portion, said first area sloping toward said shank portion; and
c. radially inwardly deforming said tubular member proximate a second end thereof to form a second area of said head portion extending from said largest diameter of said head portion toward said second end and sloping away from said shank portion.

3,892,118
METHOD OF MANUFACTURING BISTABLE MAGNETIC DEVICE

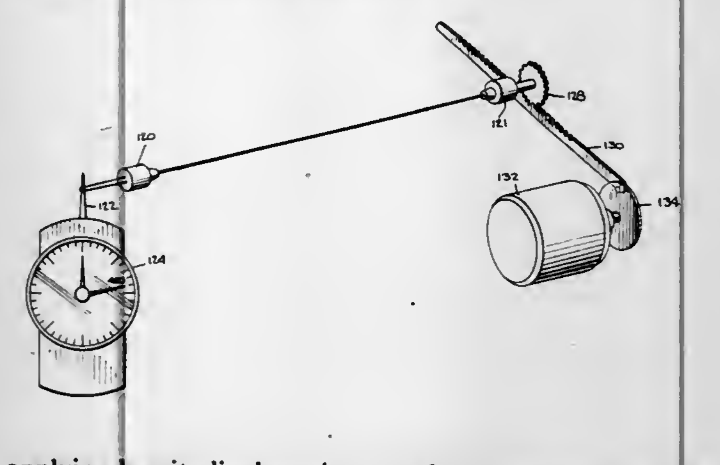
John R. Wiegand, Valley Stream, N.Y., assignor to Milton Velinsky, Atlantic Highlands, N.J. and John R. Wiegand, Valley Stream, N.Y., part interest to each

Continuation-in-part of Ser. No. 247,356, April 25, 1972, Pat. No. 3,820,090, and a continuation-in-part of Ser. Nos. 173,070, Aug. 19, 1971, abandoned, and Ser. No. 137,567, April 26, 1971, abandoned, and Ser. No. 86,169, Nov. 20, 1970, abandoned, and a continuation-in-part of Ser. No. 5,631, Jan. 26, 1970, Pat. No. 3,602,906, and Ser. No. 5,632, Jan. 26, 1970, abandoned. This application June 20, 1974, Ser. No. 481,226

Int. Cl. B21f *7/00, 45/00*

U.S. Cl. 72—371 **18 Claims**

1. The method of manufacturing a bi-stable ferro-magnetic wire having first and second portions with differing magnetic characteristics including relatively low and high coercivity, respectively, comprising the steps of:



applying longitudinal tension to a ferro-magnetic wire, and applying cycling torsional strain to said wire.

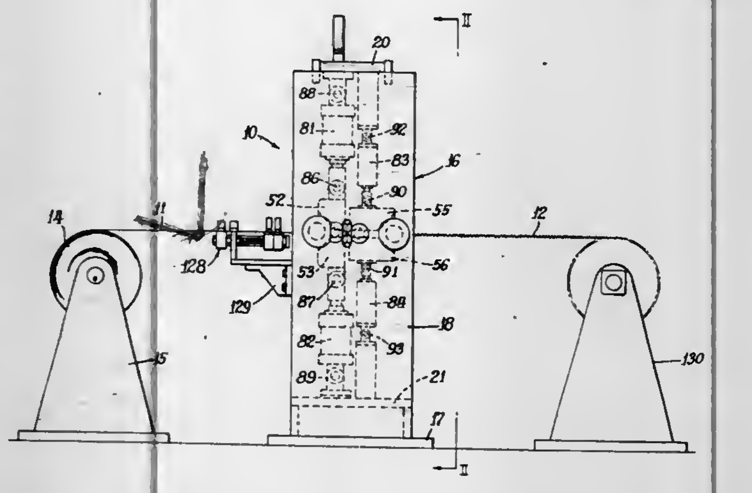
3,892,119
FORMING APPARATUS FOR SHEET MATERIAL

Kenneth J. Miller, Peoria; Paul H. Merritt, Morton, and Francis W. Fuller, Peoria, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 4, 1974, Ser. No. 447,973

Int. Cl. B21d *13/02*

U.S. Cl. 72—385 **10 Claims**



1. A forming apparatus for transforming substantially flat, relatively thin deformable metal sheet material into narrowly grooved corrugations across such material, comprising:
means for feeding said sheet material along a predetermined path from an inlet to an outlet;
opposed first and second clamping members spaced on opposite sides of the path;
means for selectively moving said clamping members into engagement against opposite sides of the sheet material for clamping the material therebetween with said second clamping member defining a reaction member in abutting engagement against one side of the material and having an inlet-facing side generally normal to said path;
opposed first and second forming members spaced on opposite sides of said path in juxtaposition to their corresponding first and second clamping members and on the inlet side thereof, said first forming member including a relatively thin forming blade having opposite inlet and outlet sides, said second forming member being on the same side of the sheet material as the reaction member and including a die forming portion having an outlet-facing side facing the inlet-facing side of the reaction member and in predetermined laterally spaced relation thereto, and said forming blade being spaced intermediate the outlet-facing side of the die forming portion and the inlet-facing side of the reaction member in offsetting relation on the opposite side of the sheet material;

means for mounting each of the forming members for limited pivotal movement about an axis spaced a predetermined distance from their respective forming blade and die forming portion in a direction toward the inlet;
first means for moving the first forming member about its axis so that its forming blade is moved through an arc between a first position in which it is spaced from the sheet material and a second position in which it is in substantially parallel, closely spaced side-by-side relation with the inlet-facing side of the reaction member;
second means for moving said second forming member about its axis so that its die forming portion is moved through a similar arc between a first position in which it is spaced from the sheet material and a second position in which its outlet-facing side is in substantially parallel, closely spaced side-by-side relation with the adjacent side of the forming blade; and
means for sequentially operating said first and second means so that said sheet material is first folded in one direction about said reaction member by said forming blade and is subsequently folded in an opposite direction about said forming blade by said die forming portion so as to sequentially form the opposite sidewalls of said corrugations as the sheet material is fed through the apparatus.

3,892,120
RIVETING APPARATUS

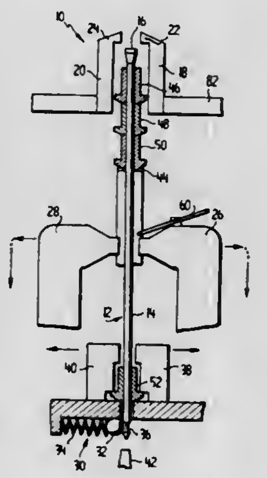
David John Sheffield, St. Albans, Hertfordshire; Paul Edward Prosser, Hemel Hempstead, and Bernard William Charman, Weybridge, all of England, assignors to Aerpat A.G., Switzerland

Continuation-in-part of Ser. No. 257,200, May 26, 1972, Pat. No. 3,828,603. This application July 10, 1974, Ser. No. 487,157

Claims priority, application United Kingdom, May 28, 1971, 18178/71; July 27, 1973, 35856/73

Int. Cl. B21j *15/34*

U.S. Cl. 72—391 **5 Claims**



1. Blind riveting apparatus comprising:
a mandrel including an elongated stem and a head at one end thereof;
a plurality of rivets slidably supported upon said mandrel, each of said rivets having a head end and a tail end;
abutment means for supporting the leading one of said rivets at a rivet setting station;
gripping means for moving said mandrel and said rivets toward said rivet setting station; and
means for advancing said rivets relative to said mandrel whereby said leading rivet is advanced to a position adjacent said rivet setting station at which position the tail end of said leading rivet abuts said head end of said mandrel while the head end of said leading rivet is adjacent to said abutment means and is adapted to engage said abutment means during a rivet setting operation.

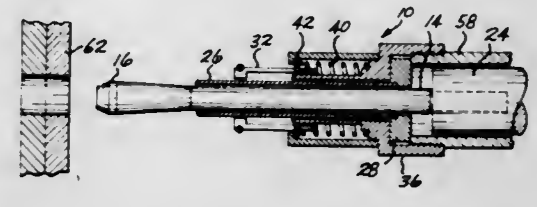
3,892,121
APPARATUS FOR COLD-WORKING HOLES

Louis A. Champoux, Seattle; Horace E. Hill, Renton, and Joseph L. Phillips, Bellevue, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Sept. 12, 1973, Ser. No. 396,637

Int. Cl. B21d *41/02*

U.S. Cl. 72—393 **5 Claims**



1. An apparatus for cold-working holes comprising:
a. a sleeve of a plurality of lengthwise strips restrained around the periphery at one end, wherein the restraint to the sleeve comprises a longitudinally split sectionalized quill to which the sleeve is fastened,
b. a mandrel tapering to an enlarged diameter and thence to a reduced diameter slideably mounted inside the sleeve to act in combination inside a hole in a workpiece to radially expand the sleeve and cold-work the hole as the enlarged diameter of the mandrel passes through the hole, and
c. means for constraining the sleeve wherein said means comprises a ring encircling the quill and an elastic annular section between the ring and the quill.

3,892,122
HYDRAULIC PRESSES

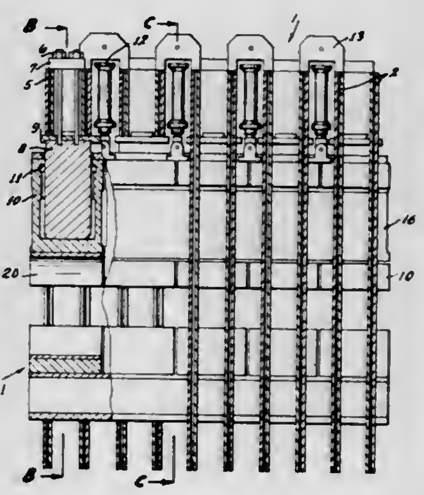
Donald Noel Snell, Bournemouth, England, assignor to Mannesmann-Meer Aktiengesellschaft, Monchengladbach, Germany

Filed Aug. 23, 1972, Ser. No. 283,167

Claims priority, application United Kingdom, Aug. 27, 1971, 40308/71

Int. Cl. B21j *9/12*

U.S. Cl. 72—453 **4 Claims**



1. In a press for the production of pipes, wherein the several parts are mounted in a frame the improvement comprising:
means defining a first shaped tool in the frame;
a plurality of parallelly disposed hydraulic cylinder/ram assemblies, each of the rams being mounted in stationary disposition in the frame
and hydraulically cooperating with the cylinder of the respective assembly for moving the respective cylinder towards the first tool upon application of hydraulic pressure to the cylinder;
each cylinder constructed to support a second press tool facing the first tool; and

means for interconnecting the cylinders of the assemblies to obtain alignment of the second tools in direction transverse to the direction of cylinder movement and to obtain common movement in the alignment disposition upon application of hydraulic pressure to the cylinders of the assemblies.

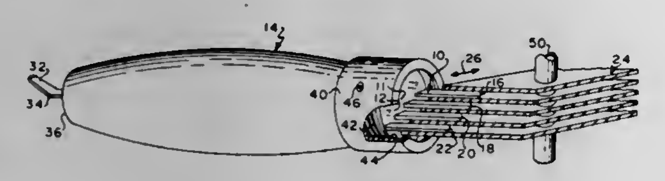
3,892,123
FIX A FIN TOOL

Claude M. Baldwin, 3400 Whitesburg Dr., Huntsville, Ala. 35802

Filed Oct. 5, 1973, Ser. No. 404,014

Int. Cl. B21d *1/10*

U.S. Cl. 72—478 **5 Claims**



1. A fin straightening tool comprising:
a handle adapted to be gripped by the hand;
a mounting base on one end of said handle; and
a plurality of relatively flat spaced blades attached to said mounting base, each of said blades having a pair of relatively flat opposite surfaces, said surfaces of the different blades lying in substantially parallel planes, and said blades being positioned in different columns and rows, wherein a column would be along a line perpendicular to said surfaces of a said blade and a row would be along a line perpendicular to a said column.

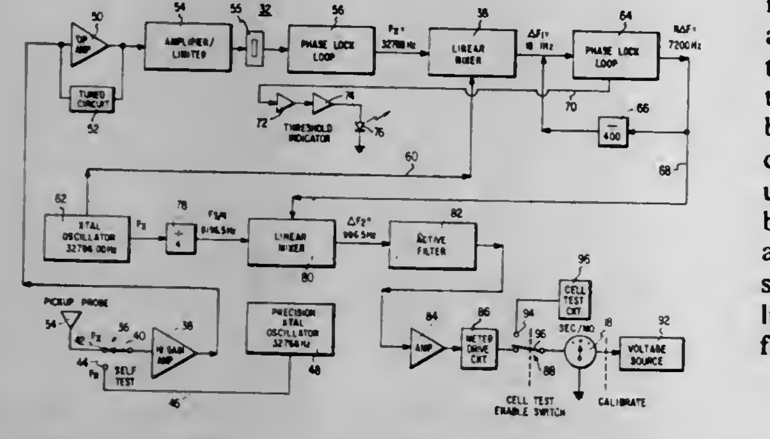
3,892,124
WRISTWATCH ANALYZER

Robert O. Reese, Lancaster, Pa., assignor to Time Computer, Inc., Lancaster, Pa.

Filed June 14, 1974, Ser. No. 479,439

Int. Cl. G04b *17/00*

U.S. Cl. 73—6 **25 Claims**



1. A timing rate tester for wristwatches having an electrical time standard comprising a wristwatch support including an antenna for sensing electrical energy from the time standard of an operating wristwatch mounted on said support, a reference frequency source, means coupled to said antenna and said reference frequency source for comparing the frequencies of electrical signals from them, and a meter coupled to said comparison means for indicating the results of a comparison.

3,892,125
APPARATUS FOR USE IN MEASUREMENT OF THERMAL CONSTANT OF MATERIALS

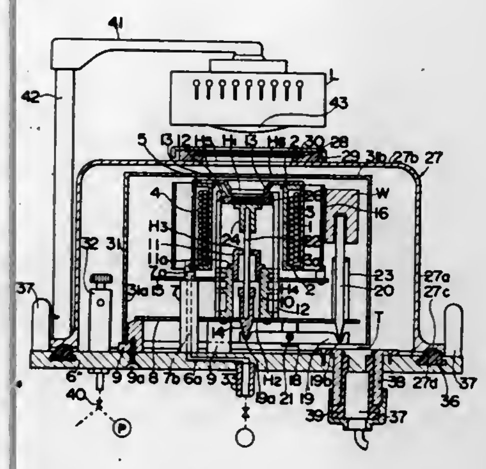
Yoshiaki Nunogaki, Nagaokakyo, Japan, assignor to Sanki Engineering Ltd., Japan

Filed June 7, 1974, Ser. No. 477,468

Claims priority, application Japan, Aug. 10, 1973, 48-94474

Int. Cl. G01n *25/18*

U.S. Cl. 73—15 A **15 Claims**



1. An apparatus useable in measurement of a temperature transient characteristic of any of such materials as metals, alloys, synthetic and natural resins, ceramics and others, which comprises a source of light which emits a beam of light of relatively high temperature for a predetermined period of time; a testpiece cell positioned below said light source in alignment with a path of travel of said light beam, said cell including a base plate and an enclosure for defining a closed cell chamber, said enclosure having a light entrance opening closed by a transparent shield, said cell further including a support table rigidly supported above said base plate within said closed cell chamber, a first support rod having a lower end situated within a space between said support table and said base plate and substantially vertically extending in alignment with said light entrance opening, means for supporting said first support rod for up and down movement, a lever means pivotally supported within said space between said support table and said base plate and having one end pivotally connected to the lower end of said support rod, the other end of which is adapted to receive an external force, a receptacle adapted to support a sample of the material of a predetermined size thereon and carried by said first support rod at the other, upper end thereof, at least one pair of clamp finger members 180° spaced from each other about the lingitudinal axis of said support rod and being cooperative with said receptacle for, so long as the external force is continuously applied to that end of said lever means, clamping the sample material between said receptacle and said finger means under pressure determined by said external force while said support rod is upwardly biased, said sample material on said receptacle being in alignment with the path of travel of said light beam; and means for detecting variation of the initial temperature of said sample material which is caused by application of the light beam to said sample material held in position by said finger members and said receptacle.

3,892,126
METHOD AND APPARATUS FOR FACILITATING TESTING THE LIQUID ABSORPTIVITY OF SOIL

John J. Curtin, Main St., South Britain, Conn. 06487

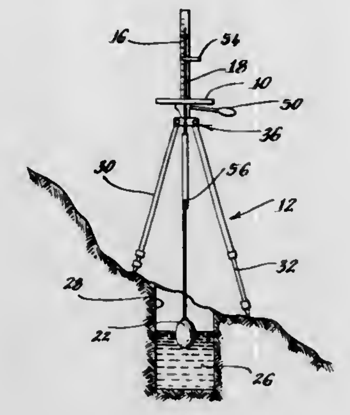
Filed Mar. 14, 1974, Ser. No. 451,051

Int. Cl.² G01F *23/08*

U.S. Cl. 73—38 **3 Claims**

3. The method of testing the liquid absorption quality of soil which comprises,
forming a hole of predetermined size in the soil at the test site and initially placing therein a predetermined volume of liquid,

providing a table top having an aperture extending through it and positioning the said top above the said hole,
providing a ruler extending up from the top substantially at a right angle to the top, and substantially at the level of the eyes of the person performing the test,
inserting a rod extending through the aperture in the top and providing guide means so that the rod can move up and down through the aperture in the top while remaining close to the ruler and in substantially parallel relation thereto,



disposing at the lower end of the rod below the top a float adapted when placed in the body of liquid in the hole to support the rod at a level determined by the level of the liquid in said hole,
and providing the rod with marker means above the top coacting with the ruler means above the top for indicating the extent of movement of the rod and thus providing a measurement of the change in the liquid level within the hole within a measured period of time.

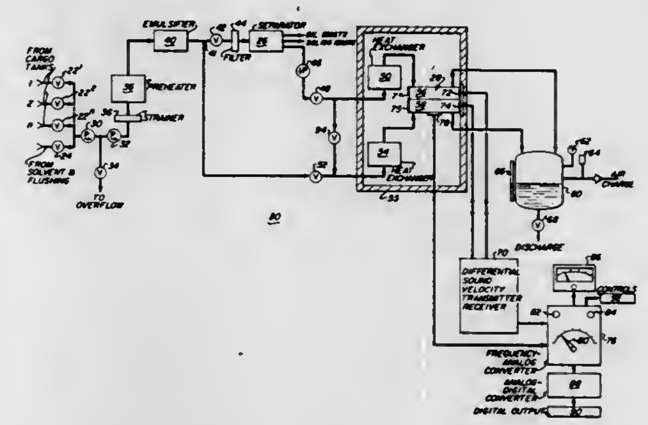
3,892,127
OIL DETECTION SYSTEM

Uldis Cirulis, Midland Park, and Ellis M. Zacharias, Jr., Ridgewood, both of N.J., assignors to Nusonics, Inc., Paramus, N.J.

Filed July 27, 1973, Ser. No. 383,405

Int. Cl. G01n *29/02*

U.S. Cl. 73—61.1 R **20 Claims**



1. In a system for measuring the concentration of hydrocarbons in water while the liquid is flowing from a source thereof, the improvement comprising:
means for selecting a continuous sample of the flowing liquid;
separator means for separating the hydrocarbons from the water to deliver a standard solution at its output;
means for diverting a portion of said sample to the separator means;
a differential transducer assembly having a first transducer assembly having a first electroacoustic transducer and a first housing, and a second transducer assembly having a second electroacoustic transducer and a second housing; a liquid collector;
first connecting means connecting the standard solution output of the separator to the first housing and second connecting means connecting the first housing to the liquid collector such that the standard solution flows through the first housing;
third connecting means connecting the second housing to the source of the sample (unknown) and fourth connecting means connecting the second housing to the liquid collector such that the unknown flows through the second housing;
excitation means for exciting the first transducer and the second transducer to thereby produce an acoustic wave in each of the housings;
difference measuring means for measuring the difference between the sound velocity in the seeond housing and that in the first housing which difference is a function of the concentration fo hydrocarbons in the unknown.

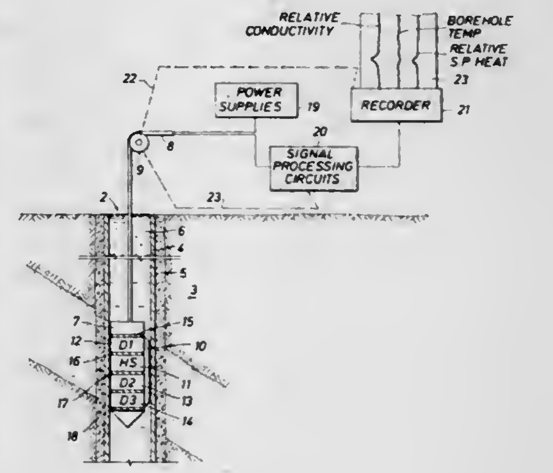
3,892,128
METHODS FOR THERMAL WELL LOGGING

Harry Davis Smith, Jr., Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Continuation-in-part of Ser. No. 272,266, July 17, 1972, Pat. No. 3,807,227. This application Aug. 6, 1973, Ser. No. 385,773

Int. Cl. E21b *47/06*

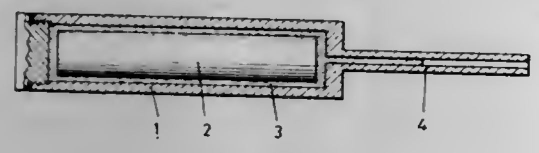
U.S. Cl. 73—154 **6 Claims**



1. A method for thermal logging of a well borehole to provide a measure of the specific heat, the borehole ambient temperature, and the thermal conductivity of earth formations in the vicinity of the borehole comprising the steps of:
measuring the ambient temperature of earth formations in the vicinity of the borehole at a selected depth level;
heating the earth formations at said selected depth level by imparting a predetermined quantity of heat thereto;
measuring a first temperature of the earth formations at said selected depth level substantially simultaneously with said heating step and determining the temperature increase therein due to said heating step;
measuring, after a predetermined time interval, a second temperature of earth formations at said selected depth level and determining the temperature decrease therein due to thermal conductivity losses of heat to other surrounding formations;
combining said ambient temperature measurement and said first temperature measurement according to a first predetermined relationship and deriving an indication of the specific heat of earth formations at said selected depth level; and
combining said first and second temerature measurements according to a second predetermined relationship and deriving an indication of the ratio of thermal conductivity to the square of the specific heat of earth formations at said selected depth level.

3,892,129
TEMPERATURE SENSING DEVICE

Mario Posnansky, Horgen, Switzerland, assignor to Haenni & Cie Aktiengesellschaft, Jegensdorf, Switzerland
Filed Sept. 17, 1973, Ser. No. 397,821
Claims priority, application Switzerland, Sept. 25, 1972, 13954/72; July 17, 1973, 10401/73
Int. Cl. G01k *5/00*
U.S. Cl. 73—371 **2 Claims**



1. A temperature sensing device serving as a thermal-switch with a vessel containing an expansible liquid and at which merges a capillary, the improvement comprising two bodies possessing different coefficients of expansion in such a way that during a temperature change the volume of the vessel formed by said bodies and containing the expansible liquid changes, one body being a sleeve which essentially forms a wall of the vessel and the other body being arranged in said sleeve, the expansible liquid comprising a current-conducting liquid, and wherein a first contact element is secured in the sleeve, this contact element always being contacted by the liquid, the capillary is constructed in said other body which is arranged in the sleeve, and said capillary at its end remote from its opening into the vessel extends up to the tip of a contact pin defining a second contact element fixedly seated at said other body, and wherein the sleeve comprises a primary portion constructed as an elongate, rotationally symmetrical hollow body in one end section of which there is centrally inserted the first contact element which is sealed towards the outside and threadably adjustable, said sleeve having a substantially tubular-shaped section which forms the jacket wall of the vessel filled with the expansible liquid, said vessel being bounded at the inside by said other body which possesses said capillary and at the region of the contact pin a widened inner compartment, said other body fixedly supporting said contact pin, said sleeve possessing a closure disk pierced by the contact pin and fixedly connected with the other body, the closure disk being fixedly seated at a step-shaped widened end section of the sleeve primary portion.

3,892,130
DEEP SEA MICROBIOLOGICAL SAMPLING AND CULTURING APPARATUS AND METHOD

Clifford L. Winget; Kenneth W. Doherty, both of Woods Hole, and Carl O. Wirsen, Pocasset, all of Mass., assignors to United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Feb. 11, 1974, Ser. No. 441,729
Int. Cl.^{2} G01N *1/12*
U.S. Cl. 73—425.4 R **5 Claims**

1. A microbiological specimen sampler for acquiring samples of deep ocean water under ambient conditions comprising:

initially pressurized dual chamber means for receiving a water sample under ambient pressure at a controlled rate of flow in one of the dual chambers;

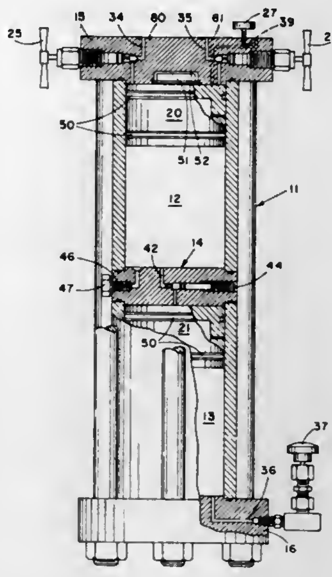
said controlled flow accomplished by further pressurizing a partially pressurized gaseous medium in the other of the dual chambers and a snubbing fluid exposed to said pressurized gaseous medium in said one of said chambers;

means at one end of said one chamber for admitting said ambient water thereinto and for accomodating recovery of the sample received in said sampler;

sample recovery means adapted for connection to said means at one end of said apparatus in sealing relationship therewith;

said recovery means including a chamber and passages communicating with said chamber and with passages to the sample in said apparatus;

aa slidable piston in said chamber dividing said chamber into separate cavities; and

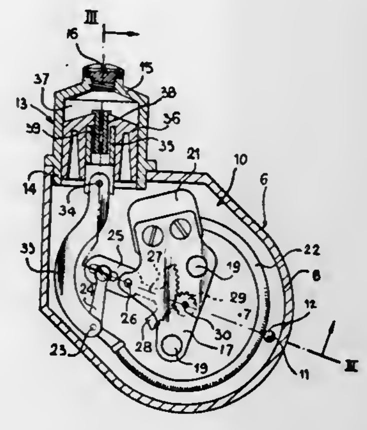


means for providing selective access to said cavities, whereby one of said cavities and the passages connected thereto may be filled with a selected inert fluid and thereafter closed and the other cavity may then be filled with a portion of said sample,

said portion recoverable from said other cavity by closing the passage connecting said one cavity and said sample and opening the access means for said other cavity.

3,892,131
INSTRUMENT FOR INDICATING THE DURATION AND DEPTH OF DECOMPRESSION STOPS IN DIVING

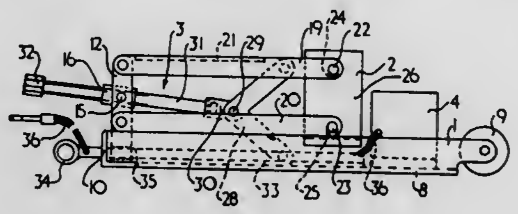
Carlo Alinari, Turin, Italy, assignor to Under Sea Industries, Inc., Compton, Calif.
Filed Oct. 19, 1973, Ser. No. 408,131
Claims priority, application Italy, Nov. 29, 1972, 70757/72
Int. Cl. G06g *5/00*
U.S. Cl. 73—432 R **10 Claims**



1. An instrument for indicating the depth and duration of decompression pauses during diving, comprising at least one analogic tissue simulator comprising a casing defining a fluid-tight sealed chamber filled with liquid, said casing having at least one portion deformable under the action of external pressure; pressure gauge means provided with a pointer contained in said chamber and mechanical non-elastic brake means contained in said chamber, and operatively connected to said pressure gauge to effect a truly aperiodical movement of the pointer of the pressure gauge means and having a semiperiod similar to that of the human tissue to be imitated.

3,892,132
VEHICLE JACK

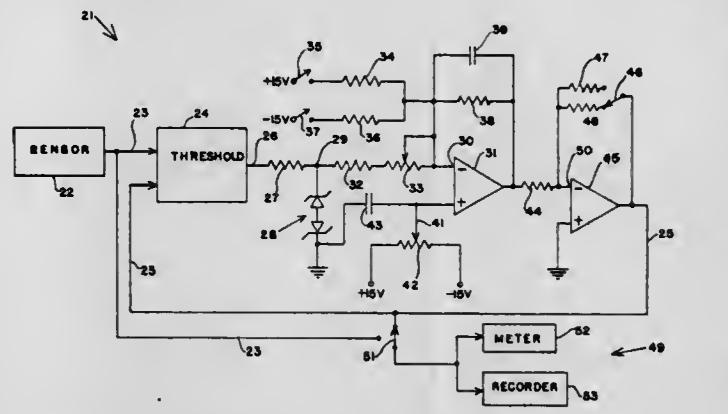
William Henry Coton, Bartley Green, England, assignor to Dunlop Limited, London, England
Filed Apr. 16, 1973, Ser. No. 351,362
Claims priority, application United Kingdom, Apr. 22, 1972, 18805/72
Int. Cl. G01m *1/16;* **B60p** *1/48*
U.S. Cl. 73—457 **10 Claims**



1. A vehicle jack comprising a support member to engage a vehicle member to be raised, means, to which the support member is connected, for raising and lowering the support member and a stand by means of which the support member may be supported after having been raised, the raising and lowering means being movable when the support member is supported by the stand between a first position wherein at least some of the vertical forces acting on the support member are taken by the raising and lowering means, and a second position wherein the whole of the vertical forces acting on the support member are transmitted to the stand.

3,892,133
STATISTICAL SOUND LEVEL ANALYZER

Robert W. Quinn, Swampscott, Mass., assignor to The United States of America as represented by the Secretary of the Department of Transportation, Washington, D.C.
Filed Sept. 13, 1973, Ser. No. 396,769
Int. Cl. G01r *19/16;* **G01l** *1/00*
U.S. Cl. 73—556 **10 Claims**



1. A sensor system comprising:

a sensor for providing a sensor signal indicative of the amplitude of a preselected stimulus;

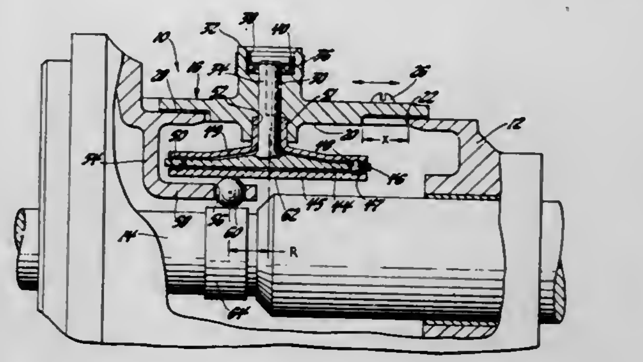
threshold means for comparing an adjustable threshold signal to the sensor signal and providing a test signal with an amplitude of a first level if the sensor signal exceeds the threshold signal and of a second level if the threshold signal exceeds the sensor signal, whose duty cycle is indicative of the percent of time that the sensor signal exceeds the threshold signal;

comparator means for receiving the test signal and comparing the duty cycle thereof to a predetermined ideal duty cycle, and wherein said comparator means generates an error signal which responds to the duty cycle comparison by adjusting the threshold signal as required to cause the duty cycle of the test signal approach the ideal preselected duty cycle; and

output means for sampling the threshold signal, which is indicative of the level exceeded by the sensor signal a percentage of the time equal to the present ideal duty cycle, and providing an output indicative thereof.

3,892,134
SPEEDOMETER DRIVE ARRANGEMENT

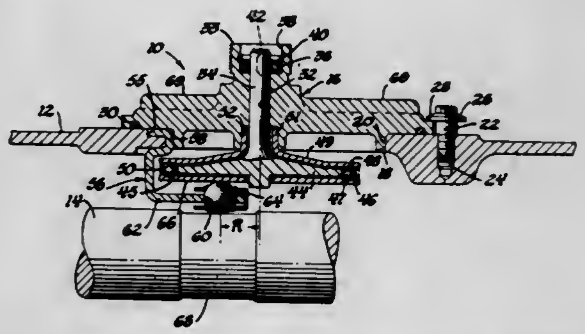
Lubomyr O. Hewko, Port Clinton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed June 13, 1974, Ser. No. 478,840
Int. Cl. F16h *37/00, 15/08, 13/06*
U.S. Cl. 74—12 **4 Claims**



1. A continuously variable speedometer drive arrangement comprising a transmission extension housing, a transmission output shaft extending through said extension housing, a rectangular opening formed in a side of said extension housing, a speedometer drive housing slidably mounted on said extension housing, rectangular guide means formed on said speedometer drive housing and mounted in said rectangular opening, said guide means being a predetermined amount shorter than said rectangular opening, fastener means for securing said speedometer drive housing on said extension housing, a speedometer take-off shaft opening formed through said drive housing, a speedometer take-off shaft rotatably mounted in said take-off shaft opening, a belleville spring-type planetary unit operatively connected to said speedometer take-off shaft, a reaction member connected to said extension housing, and a drive-member rotatably mounted on said reaction member and maintained by said belleville spring-type planetary unit in a driving relationship intermediate said transmission output shaft and said speedometer take-off shaft, the distance between the center of said drive-member and the axis of said take-off shaft being variable in response to manual linear movement of said guide means in said rectangular opening in said extension housing.

3,892,135
SPEEDOMETER DRIVE ARRANGEMENT

Lubomyr O. Hewko, Port Clinton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed June 13, 1974, Ser. No. 478,843
Int. Cl. F16h *37/00, 15/08, 13/06*
U.S. Cl. 74—12 **5 Claims**



1. A continuously variable speedometer drive arrangement comprising a stationary housing, a drive shaft rotatably mounted in said stationary housing, an opening formed in a side of said stationary housing, a speedometer drive housing movably mounted on said stationary housing, guide means

formed on said speedometer drive housing and mounted in said opening, fastener means for securing said speedometer drive housing on said stationary housing, speedometer take-off shaft mounting means formed on said speedometer drive housing off-set from the center of said housing, a speedometer take-off shaft rotatably mounted in said take-off shaft mounting means, a belleville spring-type planetary unit operatively connected to said speedometer take-off shaft and to said speedometer drive housing, a reaction member connected to said stationary housing, and a drive-member rotatably mounted on said reaction member and maintained by said belleville spring-type planetary unit in a driving relationship intermediate said drive shaft and said speedometer take-off shaft, the distance between the center of the drive-member and the axis of said take-off shaft being variable in response to manual movement of said guide means in said opening in said stationary housing causing said take-off shaft to move with respect to said drive-member.

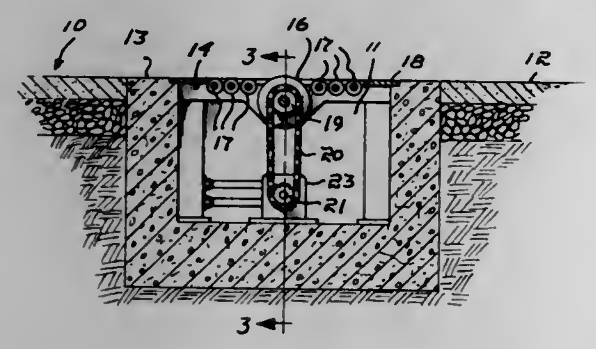
3,892,136
ROTATABLE DRIVE OPERATED BY HIGHWAY TRAFFIC

Joseph R. MacDonald, 200 Leisure Ln., Apt. 108, Stoneham, Mass. 02180

Filed Dec. 26, 1973, Ser. No. 427,717

Int. Cl. F16h *37/00*

U.S. Cl. 74—14 **10 Claims**



1. A traffic operated rotatable drive for a machine comprising a chamber below but having an opening through the surface of a highway, traffic supporting means spanning said opening and including a main roll extending transversely of the path of vehicles travelling along said highway in one direction and a plurality of idler rolls on both sides of and parallel to said main roll providing flanking areas dimensioned to prevent the engagement of a tire wheel and it and the pavement at the same time, all of said rolls exposed to be engaged by the wheels of said vehicles, a drive shaft for said machine, and a connection between said main roll and said shaft.

3,892,137
TRANSFER BAR DRIVE MECHANISM

Klaus Menzel, Orchard Lake, Mich., assignor to The Bendix Corporation, Southfield, Mich.

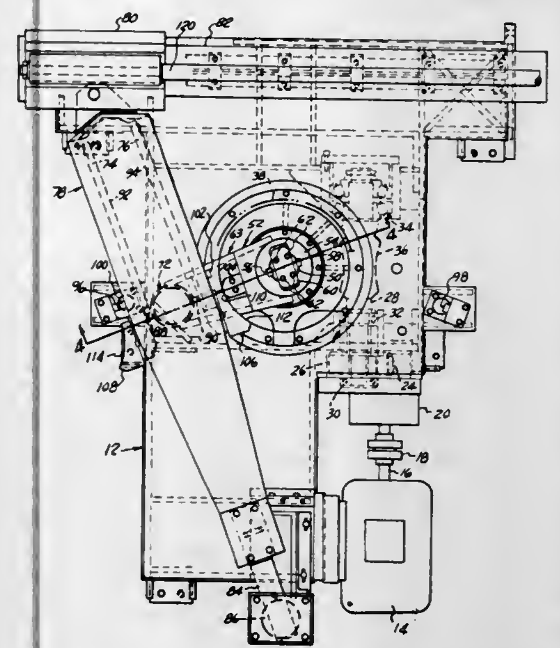
Filed July 9, 1973, Ser. No. 377,360

Int. Cl. F16h *21/44*

U.S. Cl. 74—99 R **14 Claims**

1. In a transfer machine of the type including a transfer bar engaging transferred objects with said transfer bar during advancing linear movement thereof, the improvement comprising:

- a transfer bar drive mechanism comprising:
- a transfer arm;
- means drivingly connecting said transfer arm with said transfer bar;
- means supporting said transfer arm for oscillating movement;
- drive means oscillating said transfer arm including a drive member, and means oscillating said transfer arm in response to movement of said drive member including cooperating cam surfaces formed on said drive member and said transfer arm providing a driving engagement between said transfer arm and said drive member, said drive means also including means discontinuing said oscillation of said transfer arm after a predetermined movement of said drive member in said at least one direction by disengagement of said driving engagement of said cooperating cam surfaces formed on said transfer arm and said drive member upon further movement of said drive member in addition to said predetermined movement;



- means restraining said transfer arm from oscillatory movement whenever said drive means discontinues said driving engagement between said cooperating cam surfaces formed on said transfer arm and said drive member after said predetermined movement of said drive member.

3,892,138
TEXTILE MACHINE WITH PERIODICALLY RECIPROCATING PARTS

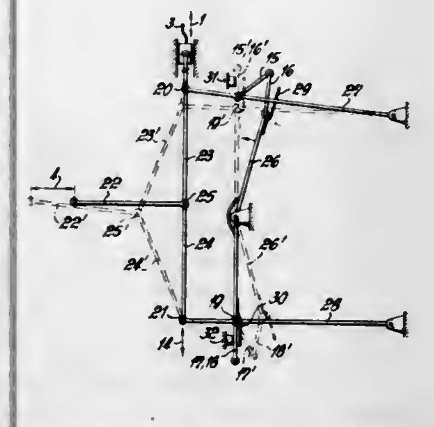
Rainer Vomberg, Monchen-Gladbach, Germany, assignor to W. Schlafhorst & Co., Monchen-Gladbach, Germany

Filed Nov. 15, 1972, Ser. No. 306,573

Claims priority, application Germany, Dec. 24, 1971, 2164557

Int. Cl. F16h *21/44*

U.S. Cl. 74—110 **8 Claims**



3. Apparatus according to claim 2 wherein said shifting lever means (**15–18, 26–28**) comprise a first (**15, 16, 27**) and a second (**17, 18, 28**) group of pivotally mounted control levers movable into a dead center position in which at least three of the pivotal axes of each group connecting the levers of each group are generally aligned, whereby either of said first (**15, 16, 27**) and second (**17, 18, 28**) group of levers are selectively held stationary as said actuating means (**22, 23, 24**) continue to operate.

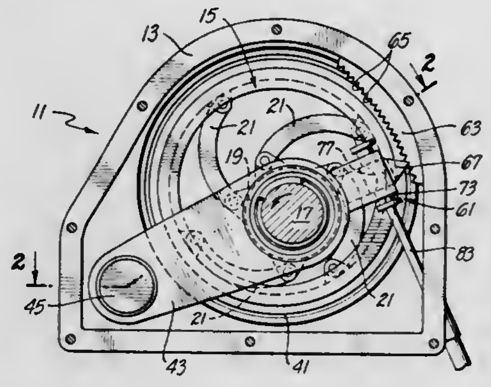
3,892,139
VARIABLE SPEED TRANSMISSION

Trevor L. Harris, Costa Mesa, Calif., assignor to Harris Dynamics, Costa Mesa, Calif.

Filed May 9, 1974, Ser. No. 468,412

Int. Cl. F16h *29/00, 29/04, 27/02*

U.S. Cl. 74—116 **17 Claims**



1. A variable speed transmission comprising:
- first and second rotatable members;
- mounting means for mounting said first and second rotatable members for rotation about first and second rotational axes, respectively;
- at least one drive element;
- first means for drivingly coupling the drive element to the first rotatable member;
- second means for drivingly coupling the drive element to the second rotatable member at a predetermined location;
- said first means including one-way clutch means mounted on and substantially circumscribing the first rotatable member for providing a driving connection between said drive element and the first rotatable member in one direction about said first rotational axis and to allow the first rotatable member to rotate about said first rotational axis in the opposite direction whereby one of said rotatable members can drive the other of said rotatable members; the rotation of said second rotatable member causing said predetermined location to circumscribe a region, said first rotational axis extending through said region; and
- said mounting means including means for allowing adjustment in the relative radial position of said rotational axes whereby the drive ratio between said members can be varied.

3,892,140
ROTARY DRIVE APPARATUS

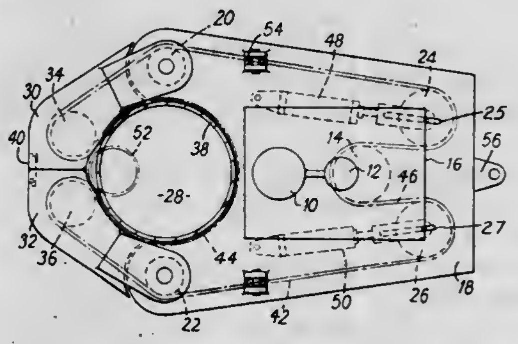
Roy K. N. Fox, and Rowan W. Patterson, both of Norfolk, England, assignors to Weatherford Oil Tool (UK) Ltd., Norfolk, England

Filed May 1, 1974, Ser. No. 465,947

Claims priority, application United Kingdom, May 7, 1973, 21753/73; Nov. 2, 1973, 51078/73

Int. Cl. F16h *7/00*; **E21b** *3/04*

U.S. Cl. 74—224 **8 Claims**



1. A rotary drive apparatus, for applying rotational torque to a cylindrical member, comprising a body structure including a recess to receive said cylindrical member, a drive wheel journalled on said body structure, a plurality of idler wheels journalled on said body structure, an endless loop trained round said drive wheel and around said idler wheels and adapted to form a re-entrant bight in said recess, said body structure including at least one jaw bearing at least one of said idler wheels and positioned adjacent said recess, said jaw being pivotable between an open position in which said recess is open for insertion and removal of said cylindrical member from said bight and a closed position in which said bight is clasped about said cylindrical member, means for retaining said at least one jaw in said closed position, and means for displacing at least another of said idler wheels remote from said jaw for adjustment of the size of said bight and to tension said loop.

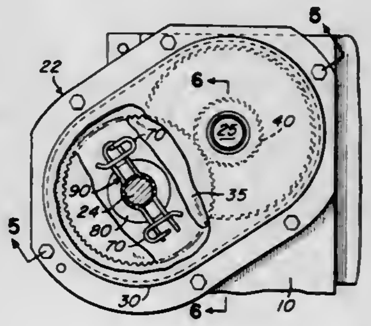
3,892,141
LANDING GEAR WITH SHAFT DETENT CLIP RETAINER

Charles Edward Phillips, Jr., Mason, and Thomas Robert Wells, Cincinnati, both of Ohio, assignors to Dayton-Walther Corporation, Dayton, Ohio

Filed Nov. 19, 1973, Ser. No. 417,119

Int. Cl. G05g *9/12*; **F16h** *3/30*

U.S. Cl. 74—475 **4 Claims**



1. In a geared speed reduction crank mechanism for a semi-trailer landing gear, the improvement comprising a gear case having a wall, means in said wall defining a bearing opening, a bearing removably received in said opening, a hand crank shaft received in said bearing and supporting gear means thereon, said shaft being movable axially in said bearing to select different gear ratios for raising and lowering the landing gear, means in said shaft defining axially-spaced grooves corresponding to selectable axial shaft positions, a generally C-shaped elongated detent spring clip on said shaft having a pair of parallel legs with opposite ends overlying said wall and a central portion thereof selectably engageable with said grooves, and a pair of clip retainers on said wall positioned on diametric opposite sides of said opening and defining therebetween a space for access to insert and remove said bearing, said retainers each having a leg portion extended axially of the shaft in the space between said clip legs and terminating in a laterally turned retainer portion overlying said wall in spaced relation thereto defining with said wall a clip-receiving space, said retainer portions being positioned to engage said clip adjacent the opposite ends thereof and restrain it against axial movement while permitting unrestricted opening and closing movement of the legs thereof with said shaft movement.

3,892,142
COMPACTOR

Robert F. Karls, Hales Corners, and James H. Enright, Racine, both of Wis., assignors to Emerson Electric Company, St. Louis, Mo.

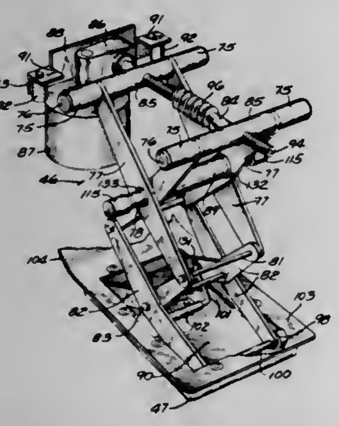
Division of Ser. No. 177,385, Sept. 2, 1971, Pat. No. 3,772,984. This application Apr. 23, 1973, Ser. No. 353,846

Int. Cl. G05g *1/04*

U.S. Cl. 74—521 **5 Claims**

1. A scissors linkage comprising laterally spaced sets of scissors links each set comprising inner and outer interconnecting links, a first laterally extending torque arm rigidly

interconnecting the innermost links of said sets and free of connection to the outermost links of said sets, a second laterally extending torque arm rigidly interconnecting the outer-



most links of said sets and free of connection to the innermost links of said sets, said torque arms transmitting forces between interconnected links of said sets to balance forces as between said sets.

3,892,143
PITMAN ADJUSTABLE IN LENGTH FOR A PRESS WITH HYDRAULIC OVERLOAD SAFETY MECHANISM

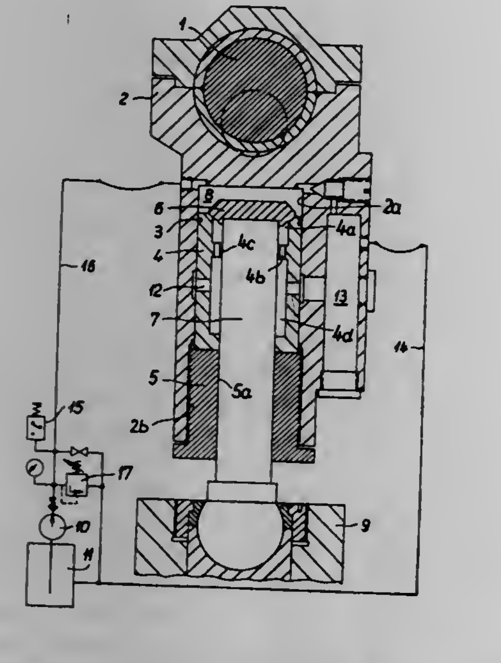
Heinz Kleister, and Walter Sommer, both of Essen, Germany, assignors to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Aug. 27, 1973, Ser. No. 392,022

Claims priority, application Germany, Aug. 26, 1972, 2242067

Int. Cl. G05g *15/08*

U.S. Cl. 74—583 **3 Claims**



1. In combination with a press, a hydraulic overload safety device comprising a pitman adjustable in length for presses and similar machine tools, which includes: pitman housing means having a central blind bore opening in one direction and having its open end on the inside thereof provided with threads, sleeve means reciprocable in said bore, threaded spindle means threadedly engaging said threaded open end of said pitman housing means, and supporting said sleeve means, sealing means resting on said sleeve means, a connecting rod having one of its ends connected to said sealing means and being reciprocably guided by and in said sleeve means and in said threaded spindle means, the other end of said connecting rod being connectable to a ram, said sealing means together with the adjacent portion of said sleeve means and said pitman housing means defining a pressure chamber, pump means having a suction side, liquid storage means communicating with said suction side, said pump means also having a pressure side for communication with said pressure chamber to deliver liquid under pressure thereto and establish a pressure in said pressure chamber sufficient to press said sealing means in a liquid-tight manner against said sleeve means while pressing said sleeve means against said threaded spindle means thereby establishing a firm frictional locking connection between the threaded portion of said spindle means and the thread of said open end of said pitman housing means, said sleeve means having recess means surrounding said connecting rod and normally sealed relative to said pressure chamber by said sealing means, and means establishing communication between said recess means and said storage means, said connecting rod being operable in response to a pressure encountered during a pressing stroke and exceeding and acting counter to the pressure in said pressure chamber to lift said sealing means off said sleeve means to thereby establish communication between said pressure chamber and said recess means and relieve the pressure in said pressure chamber.

3,892,144
DRUM MOTOR

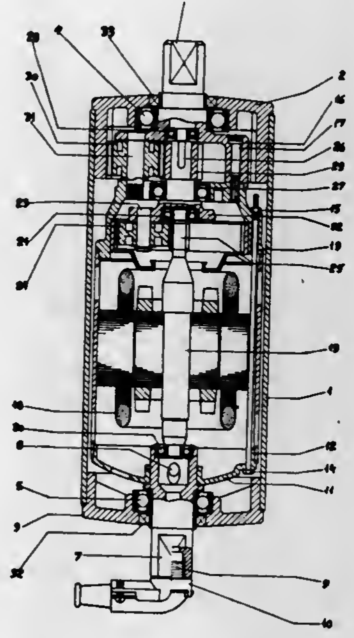
John Kirk Kirkegaard, Hoje Sandbjerg DK, Holte 2840, Denmark

Filed May 1, 1973, Ser. No. 356,181

Claims priority, application Denmark, May 4, 1972, 2211/72

Int. Cl. F16h *1/28*

U.S. Cl. 74—805 **4 Claims**



2. A drum motor as recited in claim 1, and further comprising end covers on said outer drum through which said journals extend.

3,892,145
CABLE END STRIPPING DEVICE

Edward H. Richie, Downers Grove, Ill., assignor to Industrial Development & Experimental Associates, Inc., Villa Park, Ill.

Filed July 11, 1974, Ser. No. 487,549

Int. Cl. H02g *1/12*

U.S. Cl. 81—9.51 **7 Claims**

1. A device for stripping the ends of electrical cable, said device comprising:

a hub defining a central axis and having a central aperture extedning therethrough aligned with said axis through which the cable end may be extended from one side of said hub to the stripping position of same,

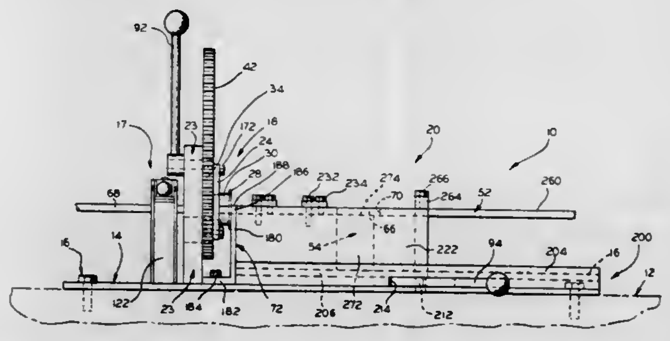
means for clamping the cable end against movement laterally and longitudinally thereof,

a plurality of swing levers pivotally mounted on said hub,

said levers each carrying a cutting blade at one side of same, an actuator mounted for pivotal movement about said axis relative to said hub,

said levers each being pivotally connected to said actuator with said cutting blades disposed for swinging movement toward and away from said axis on pivotal movement of said actuator member about said axis between positions in cutting relation with the jacket for cutting the jacket and positions disposed to be free of the cable jacket when disposed in said aperture,

means for moving said actuator about said axis of said hub to move said blades between said positions,



a slide structure positioned on the other side of said hub, said slide structure comprising:

a slide member mounted for movement toward and away from said hub in substantial parallelism to said axis,

said member carrying a stop aligned with said axis against which the cable end may be disposed relative to the hub to define the stripping position of the cable end,

said member mounting a pair of opposed clamping jaws disposed on either side of said axis, between said stop and said hub, for gripping the jacket of a cable end extended through said hub to said stop,

and means for moving said slide member away from said hub when the jacket has been severed by said blades for stripping the severed jacket end from the cable end.

3,892,146
ELECTRIC CONTROL FOR AN ELECTRIC MOTOR OPERATED NUT FASTENING TOOL

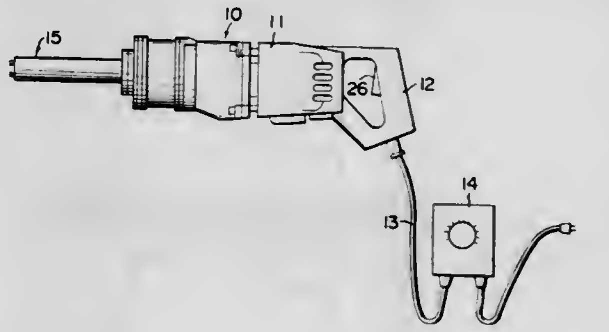
Hiroshi Yasoshima, Chigasaki, Japan, assignor to Shibaura Engineering Works, Ltd., Tokyo, Japan

Filed Aug. 28, 1974, Ser. No. 501,341

Claims priority, application Japan, Aug. 31, 1973, 48-97874; Nov. 28, 1973, 48-133764

Int. Cl. B25b

U.S. Cl. 81—52.4 R **7 Claims**



1. A nut fastening tool adapted for use with a nut setting adaptor, comprising:

a body portion enclosing said nut fastening tool, said body portion adapted to have said nut setting adaptor removably mounted thereon,

a reversible electric motor for driving said nut setting adaptor mounted in said body portion,

a manual switch for energizing said motor; and,

an electric control circuit coupled to said motor for controlling the operation thereof, said control circuit including a forward driving circuit and a reverse driving circuit, at least a pair of thyristors, one of which is used for switching said forward driving circuit on and off, and the other of which is used for switching said reverse driving circuit on and off, said control circuit further including means responsive to a predetermined forward driving current flowing through said motor for controlling said thyristors to switch said forward driving circuit off and said reverse driving circuit on;

whereby a nut is tightened by said fastening tool and then automatically released from nut setting adaptor when completely tightened.

3,892,147
APPARATUS FOR SCREWING HEADLESS THREADED FASTENERS

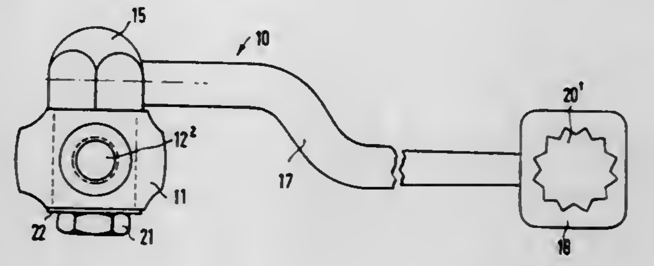
Christian Flaig, Muhlstrasse 1, Aldingen, Germany

Filed Oct. 31, 1973, Ser. No. 411,305

Claims priority, application Germany, Mar. 19, 1973, 2313609

Int. Cl. B25b *13/50*

U.S. Cl. 81—53.2 **11 Claims**



1. A screwing tool suitable for screwing a headless threaded fastener such as a staybolt or studbolt, the tool comprising:

a receiver head having at least one threaded hole for threadingly receiving the inner free end of the threaded fastener;

a tensioning eccentric pivotally connected to said receiver head;

the pivotal axis of said tensioning eccentric being arranged transversely to the axis of the threaded hole;

said tensioning eccentric including eccentric means arranged to be brought into axial alignment with said threaded hole upon rotation of said tensioning eccentric for directly contacting the inner free end of a threaded fastener and exerting a force on the inner free end of the threaded fastener, when such fastener is threadingly inserted in said threaded hole, to lock the fastener against rotation relative to said hole; and

a hand lever connected to said tensioning eccentric to rotate said eccentric means.

3,892,148
ADJUSTABLE POWER SPINNING TONG

Mark H. Wiley, Pasadena, Tex., assignor to Byron Jackson Inc., Long Beach, Calif.

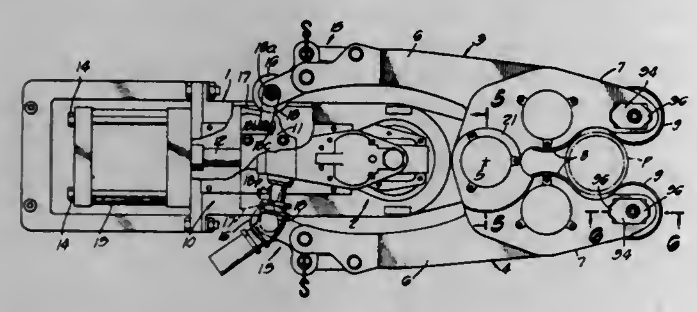
Filed Aug. 1, 1974, Ser. No. 493,993

Int. Cl. B25b *17/00*

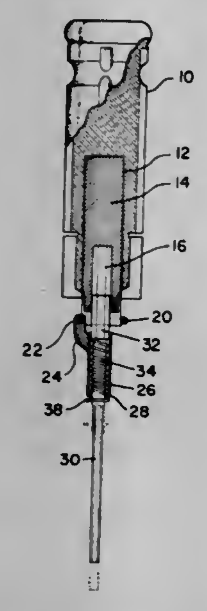
U.S. Cl. 81—57.18 **18 Claims**

1. A powered pipe spinning tong comprising: a frame structure, a pair of elongated levers, pivot means pivotally mounting said levers on said frame structure with said levers extending in opposed laterally spaced relation, said levers having opposed actuating arms at one side of said pivot means and opposed pipe gripping arms at the other side of said pivot

means, pipe gripping roller means carried by said gripping arms for actuation into gripping engagement with a pipe upon spreading of said actuating arms, actuator means for spreading said actuating arms, drive means for rotation of said pipe gripping roller means and a pipe gripped thereby, and adjustor means for adjusting said actuating arms relative to said actuator means to enable said pipe gripping roller means to grip and rotate pipe of a range of sizes.



3,892,149
MULTIPLE HAND TOOL
Allan Rydberg, 76 Chapman Ave., Warwick, R.I. 02886
Filed Jan. 6, 1975, Ser. No. 538,509
Int. Cl.^{2} B25B *13/48*
U.S. Cl. 81—71 **10 Claims**



1. A multiple hand tool construction comprising a cylindrical handle, a socket member mounted axially in said handle, said socket member having an axial, hexagonal opening, a plurality of sleeve holders pivotally mounted around the lower end of said socket member, a tool having a hex base mounted in each sleeve holder, means for resiliently retaining said tools in said holders, whereby said holders may be pivoted into axial alignment with said socket member to insert a tool base into said socket opening, and means for retaining said tools in pivoted position on said handle.

3,892,150
SELF-ADJUSTING OPEN OR CLOSED-END RATCHET WRENCH
Billy M. Horton, 3238 Rodman St., N.W., Washington, D.C. 20008
Continuation-in-part of Ser. No. 203,310, Nov. 30, 1971, abandoned. This application May 2, 1973, Ser. No. 356,429
Int. Cl. B25b *13/12*
U.S. Cl. 81—179 **26 Claims**

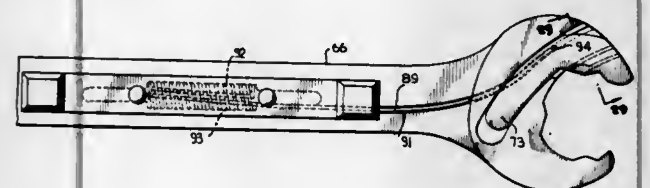
1. A ratcheting end wrench having

a handle terminating at at least one end in a nut engaging jaw member,

said jaw member having interior surfaces defining nut engaging surfaces,

a pawl having a generally arcuate body member and an elongated body member including an arcuate end surface adjacent said arcuate body member generally transverse to the elongated dimension of said elongated body member, said elongated body member defining nut engaging surfaces in opposition to said nut engaging surfaces of said jaw member,

said wrench having at least one generally arcuate recess opening into the interior of said jaw member, and having approximately the same curvature as said arcuate body member of said pawl,



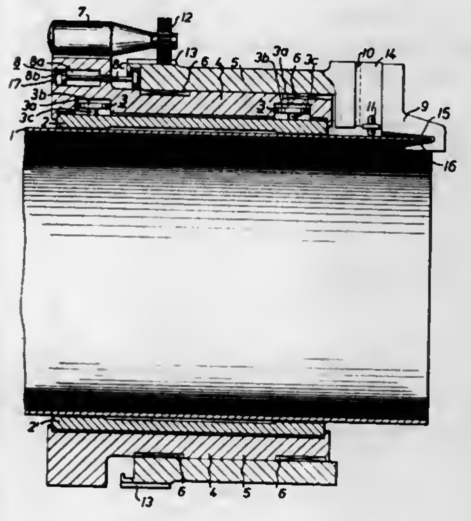
means for retaining said arcuate body member in sliding contact within said at least one arcuate recess in said wrench for movement within said arcuate recess between innermost and outermost nut engaging positions,

means biasing said pawl towards its innermost nut engaging position,

the center of curvature of said generally arcuate recess lying approximately along the perpendicular bisector of a line defined by the path of movement between innermost and outermost nut engaging positions of a nut engaging region of said pawl,

said center of curvature lying at a distance from said line equal to approximately 3 to 4 times the distance from the center to a flat surface of a nut to be engaged by said wrench.

3,892,151
TUBE TAPERING APPARATUS
Karl Kriechbaum, and Karl Ahrens, both of Kassel, Germany, assignors to Licentia-Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany
Filed June 18, 1974, Ser. No. 480,923
Claims priority, application Germany, June 23, 1973, 2332120; June 23, 1973, 23463
Int. Cl. B23b *3/22*
U.S. Cl. 82—4 C **14 Claims**



1. An apparatus for conically tapering an end of a tube having an axis, comprising in combination:

a. support means engaging the outer face of said tube;

b. tightening means for clamping said support means to said tube;

c. a cylindrical carrier member surrounding said support means and having an axis coinciding with the tube axis when in place on the tube;

d. connecting means for stationarily attaching said carrier member to said support means;

e. a cylindrical mounting member surrounding said carrier member;

f. bearing means supporting said mounting member on said carrier member;

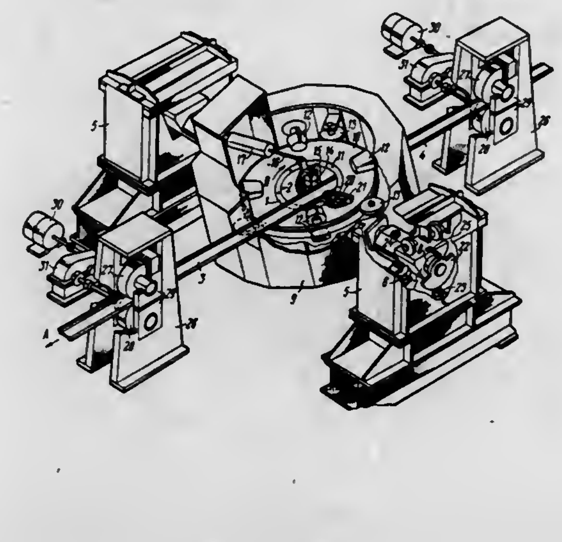
g. first motor means mounted on said carrier member and connected to said mounting member for rotating the latter relative to said carrier member;

h. second motor means connected to said mounting member for linearly displacing the latter relative to said carrier member;

i. a machining tool disposed adjacent an end of said mounting member for moving together with said mounting member to provide a conical taper on the tube end; and

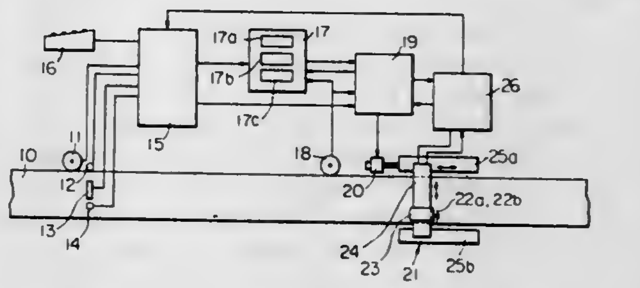
j. securing means for attaching said machining tool to said mounting member.

3,892,152
METHOD OF REMOVING EXCESS METAL FROM CURVED SURFACES OF LONG-SIZED ARTICLES AND AN INSTALLATION TO REALIZE SAME
Iosif Abramovich Almen, ulitsa Chubarya, 9, kv. 89; Efim Elevich Krasner, ulitsa Karla Marxa, 43, kv. 42; Vladimir Izrailevich Dunaevsky, ulitsa Oktyabrskoi revoljuts 11, 27, kv. 9, all of Slavyansk, and Ivan Nikitich Kireev, ulitsa Lenina 159, kv. 21, Cherepovets, all of U.S.S.R.
Filed May 16, 1974, Ser. No. 470,554
Claims priority, application U.S.S.R., May 17, 1973, 1924590; Nov. 14, 1973, 1966307
Int. Cl. B23d *1/00;* **B26d** *1/12*
U.S. Cl. 83—56 **7 Claims**



1. A method of removing production-caused excess metal from curved surfaces of long-sized metal articles, consisting in that a ring-shaped tool with a cutting edge at the intersection of the inner and end surfaces thereof is slipped over an article to be machined and positioned at an angle to the longitudinal axis of said product, and then a relative displacement is imparted to said cutting tool and said article to provide for the interaction of the cutting tool and the work surface, such that the article moves only progressively, while the cutting tool is only rotating, the angle of inclination of said cutting tool to the longitudinal axis of said product being selected depending on the curvature of the surface being machined.

3,892,153
SYSTEM FOR CUTTING PIECES FROM A TRAVELING STRIP OF SHEET MATERIAL
Tetsuji Kato, Otake, Japan, assignor to Mitsubishi Rayon Co., Ltd., Tokyo, Japan
Filed Jan. 17, 1974, Ser. No. 434,065
Claims priority, application Japan, Jan. 18, 1973, 48-8170
Int. Cl. B29c *17/10;* **B23d** *45/02*
U.S. Cl. 83—100 **15 Claims**



1. A system for cutting sheet pieces from a traveling strip of sheet material comprising:

means for measuring a length of the traveling strip of sheet material, said measuring means emitting an electric signal in response to measurement of a length of the traveling strip;

means for detecting a faulty portion in the traveling strip of sheet material, said detecting means emitting an electric signal upon detection of a faulty portion;

means for presetting into the system at least two different lengths for the sheet pieces to be cut from the traveling strip of the sheet material;

computing means connected to the length measuring means, the faulty portion detecting means and the presetting means, said computing means carrying out a specified computation comprising confirming the position of each said faulty portion in the traveling strip in response to signals from said length measuring and faulty portion detecting means, detecting each length of each usable longitudinally extending portion between adjacent said confirmed positions of said faulty portion in the traveling strip or between said confirmed positions of said faulty portions and the immediately previous or subsequent severed end of the sheet material, and determining a ratio of numbers of sheet pieces of said at least two different lengths in said presetting means for obtaining an entire combined length which is closest to the length of each said usable sheet portion, said computing means further storing the ratio of numbers of sheet pieces for each said usable sheet portion of the traveling sheet and then sequentially emitting signals, each indicative of a command for initiation of severing of each of said different lengths of sheet pieces from each said usable sheet portion on the basis of said stored sheet number ratio; and

severing means connected to said computing means for severing sheet pieces from the traveling strip of the sheet material in response to respective said sequential signals indicative of commands from said computing means.

3,892,154
STRUCTURAL STEEL PUNCH
Marcus L. Duffy, 3105 N.W. 29, Oklahoma City, Okla. 73107
Filed Dec. 12, 1973, Ser. No. 424,243
Int. Cl. B26d *5/02, 5/12*
U.S. Cl. 83—368 **6 Claims**

1. An apparatus for punching the flanges of an elongated structural I-beam having its web horizontally disposed and being arranged for movement lengthwise in a horizontal travel path, comprising:

means defining a punching station including a main frame having side wall surfaces normal to the travel path and having a top and a bottom edge surface, said frame extending transversely of the travel path and having a transverse aperture characterized by an intermediate throat portion partially describing and surrounding an intermediate portion of an I-beam workpiece,

said frame having a through slot extending between its top and bottom edge surfaces and between its side wall surfaces in intersecting relation with respect to one end portion of the transverse aperture and an adjacent portion of the aperture throat;

first and second punch head means slidably supported by said frame within the through slot for vertical movement toward and away from each other in a plane normal to the travel path,

said first and second punch head means comprising,

a U-shaped punch head body with the legs defining the respective U-shape projecting toward each other on opposite sides of the horizontal plane of the I-beam web and being respectively disposed on opposite sides of the I-beam flange to be punched,

one leg of each U-shaped punch head being slidably supported, against movement in the same plane in a direction away from the other leg of the respective U-shape, by that portion of the through slot intersecting the aperture throat forming portion of said frame, and a gauge rod adjustably connected to and movable with each said punch head body;

punch assembly means including a punch die supported by the end portion of the leg of each said first and second punch head means disposed adjacent the web of an I-beam workpiece,

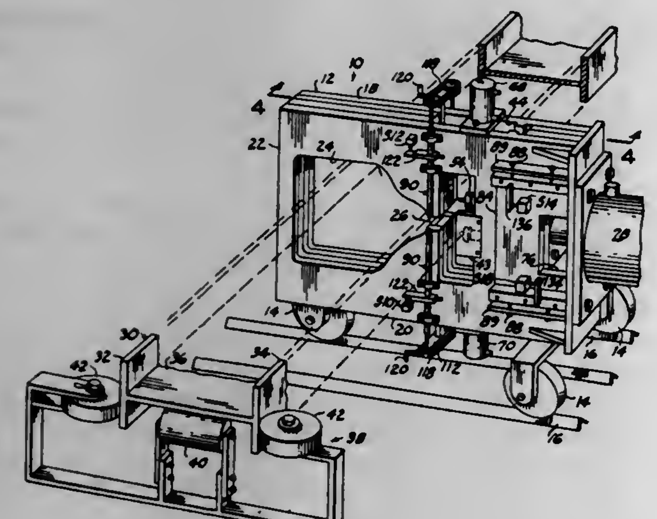
one end of said gauge rod projecting toward the adjacent surface of an I-beam web disposed in the travel path for disposing the respective punch die a predetermined distance from a plane defining the web center of an I-beam workpiece,

said frame having a transverse slot in one end intersecting the through slot;

pressure head means slidably supported by said frame within the transverse slot for horizontal movement in a direction transverse to the travel path toward and away from said punch head means;

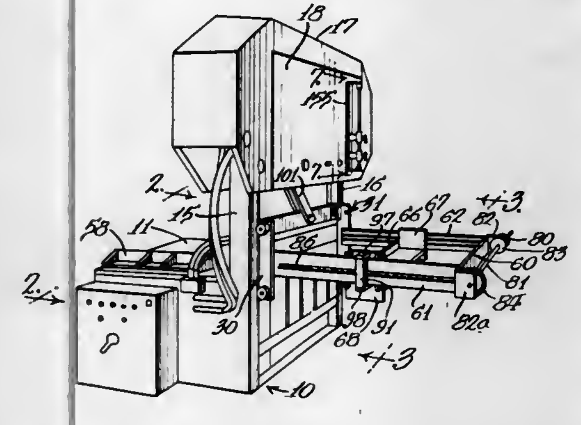
means for vertically moving said first and second punch head means toward and away from each other; and,

means for horizontally moving said pressure head means.



3,892,155
ADJUSTABLE METAL SHEARING MACHINE

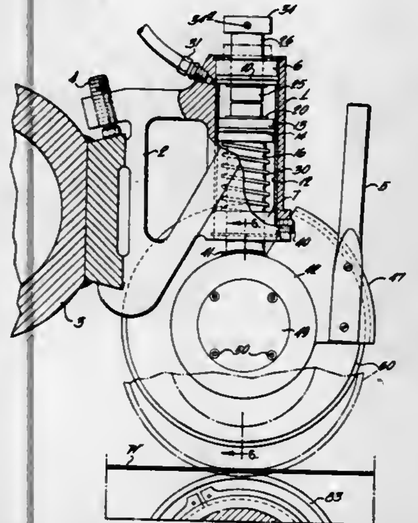
Hans W. Gerlach, Greenfield, Wis., assignor to Summit Metal Fabricating, Inc., Cudahy, Wis.
Division of Ser. No. 410,801, Oct. 29, 1973. This application Sept. 18, 1974, Ser. No. 507,133
Int. Cl. B23d *15/08*
U.S. Cl. 83—460 **3 Claims**



1. A metal working machine having a base with a table, a pair of spaced-apart columns on the base extending vertically above and below said table, a fixed shear blade extending along an edge of said table, a ram carrying an upper shear blade for coaction with said fixed shear blade, means mounting said ram for vertical movement including a pair of carriages one at each end thereof and a plurality of rollers on each of said carriages and engageable with an adjacent column, and means for adjusting the position of certain rollers on a carriage relative to the last-mentioned carriages to horizontally adjust the clearance between said blades.

3,892,156
KNIFE HOLDERS FOR SLITTER WINDING MACHINES AND THE LIKE

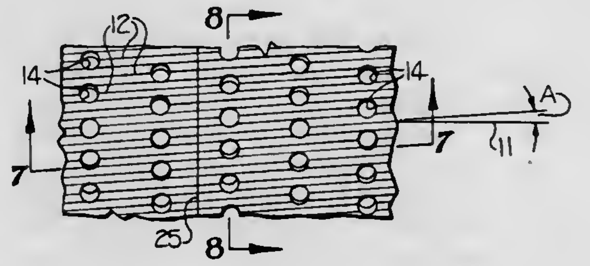
Bruce V. Johnstone, Gap, Pa., assignor to Johnstone Engineering & Machine Company, Parkesburg, Pa.
Filed Feb. 11, 1974, Ser. No. 441,207
Int. Cl.^{2} B23D *19/00;* **B26D** *1/14*
U.S. Cl. 83—469 **21 Claims**



1. A pressure fluid actuated knife holder comprising a cylinder, a piston rod extending axially through said cylinder beyond the ends thereof and having a pressure fluid passage extending coaxially therein, a piston in the cylinder secured on said piston rod, intercooperating means on the piston rod and the cylinder operable to determine retracted and projected limit positions of travel of the piston and rod axially in said cylinder, a knife head on one end of said piston rod for movement therewith between retracted and projected positions, knife support means in said knife head axially shiftable therein between inner and outer positions along an axis perpendicular to the axis of the cylinder, pressure fluid actuatable means in the knife head operable to shift said knife support means from said inner position to an outer position, means in said knife head defining a pressure fluid passage communicating between the coaxial pressure fluid passage in said piston rod and said pressure fluid actuatable means in the knife head, means to admit pressure fluid to the cylinder to actuate said piston from said retracted position to said projected limit position, means in the piston rod adjacent the other end thereof defining a pressure fluid inlet passage therein having an inner opening communicating with the coaxial pressure fluid passage in said piston rod and an outer opening for communication with the cylinder interior, the outer opening of said pressure fluid inlet passage being disposed axially in the piston rod so that said outer opening is normally closed by the cylinder in the intermediate and retracted positions of the piston rod and is open and in communication with the cylinder interior only in the projected limit position, and means in the piston rod defining a vent passage having an inner opening communicating with said coaxial fluid passage therein and an outer opening for communication with the external atmosphere, said vent passage being disposed axially in said piston rod and spaced with respect to the pressure fluid inlet opening therein so that the vent outer opening is closed by the cylinder in the projected limit position of the piston rod and is open to the atmosphere in the intermediate and retracted limit positions of said piston rod, whereby pressure fluid can flow from said cylinder to the knife head to axially shift the knife support from said inner position only in the projected limit position of the piston rod and the knife head is vented to atmosphere in said intermediate and retracted positions of the piston rod.

3,892,157
SLITTING ROLL

Grover C. Currie, 901 Ridgecrest Dr., N.E., Lenoir, N.C. 28645, and Brendan L. Doll, Box 8, Patterson, N.C. 28661
Division of Ser. No. 343,677, March 22, 1973, Pat. No. 3,823,623. This application July 15, 1974, Ser. No. 488,437
Int. Cl. B26d *1/32;* **B26f** *1/20*
U.S. Cl. 83—672 **7 Claims**

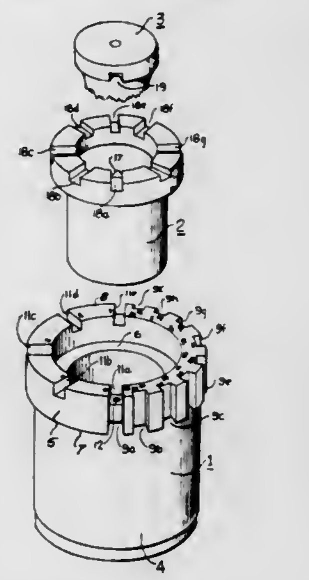


1. A slitting roll suitable for slitting an advancing sheet of elongate flexible foam material or the like to form a pattern of spaced apart laterally directed rows of spaced incisions in the web and with the incisions in adjacent rows being in staggered relationship, said roll comprising

a cylindrical peripheral surface defining a central axis and including a plurality of adjacent ribs formed therein, said ribs having an inverted V-shaped profile and being curved along a helix such that at least three ribs are adapted to simultaneously contact a mating anvil roll or the like, and a plurality of equally spaced, radial apertures extending along the length of each rib and with the adjacent apertures of adjacent ribs being in staggered relationship to define a plurality of rows of spaced cutting blades and with the blades of adjacent rows being in staggered relationship.

3,892,158
ANGULARLY ADJUSTABLE PUNCH ADAPTOR

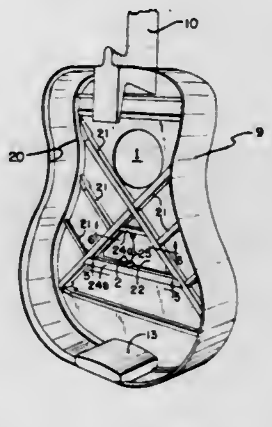
Gerard Gaston Frans Smeets, Peterborough, Canada, assignor to Producto Machine Company, Bridgeport, Conn.
Filed June 3, 1974, Ser. No. 475,861
Claims priority, application Canada, Oct. 29, 1973, 184521
Int. Cl. B26f *1/14*
U.S. Cl. 83—699 **8 Claims**



1. An angularly adjustable adaptor for a punch member comprising a first cylindrical member mountable in a supporting surface of a punch press and provided with plurality of circumferentially spaced slots substantially parallel to the axis of the cylinder, the slots are individually selectable to cooperate with a key member to fix the position of the first member with respect to the supporting surface, a plurality of radial slots are provided on one end surface of the first member, a second cylindrical member is mounted within the first member, the second member having an end surface provided with a plurality of radial slots at least individually alignable and keyable with respect to each end slot of the first member, the second member, being adapted to hold therein an active punch member in a predetermined angular position with respect to the second member.

3,892,159
SOUNDBOARD-BRIDGE CONFIGURATION FOR ACOUSTIC GUITARS

Adrianus J. M. Houtsma, Cambridge, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.
Filed Aug. 5, 1974, Ser. No. 494,662
Int. Cl. G10d *3/04*
U.S. Cl. 84—307 **4 Claims**



1. A stringed musical instrument of the lute type having a hollow body consisting of a top, a back and sides, a neck, strings tuned to increasing pitches from low on one side to high on the other side running generally parallel to said neck and terminating on a bridge attached to the top, the improvement comprising said bridge being also flexibly attached to a

structure of at least one brace extending between said sides, neck or tailblock, said brace structure being separate from said top leaving a space between said brace structure and said top over the entire, or nearly entire, surface area of said top.

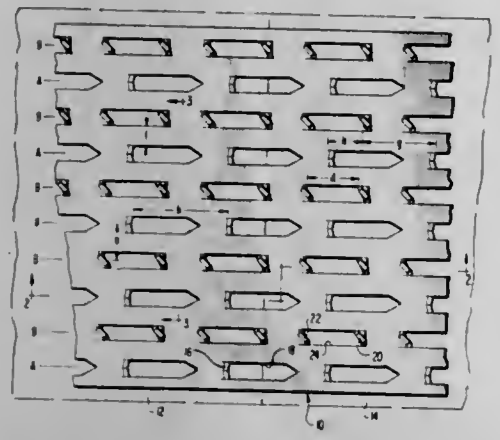
3,892,160
CONNECTOR PLATE

John Calvin Jureit, 8901 Arvida Ln., Coral Gables, Fla. 33156, and Benjamin H. Kushner, 12575 N. Miami Ave., Miami, Fla. 33168

Filed Apr. 19, 1974, Ser. No. 462,442

Int. Cl. F16b *15/00*

U.S. Cl. 85—13 **7 Claims**



1. A connector plate for joining wooden members one to the other comprising:

an elongated sheet metal plate, a plurality of elongated nail-like teeth struck from said plate to project to one side thereof, said teeth being struck in longitudinally extending generally parallel rows, the teeth in alternate rows being struck such that the slots left thereby extend from the teeth in like longitudinal directions, the teeth in the rows between said alternate rows being struck to form a plurality of longitudinally spaced sets of two teeth each, the teeth in each set being struck such that a continuous slot is left in said plate between said teeth with the portions of the slot left by each tooth extending therefrom toward the opposite tooth, successive teeth in said alternate rows thereof being spaced longitudinally one from the other and relative to said sets of teeth in next adjacent rows such that each successive tooth lies substantially medially between the pair of teeth forming a set thereof in a next laterally adjacent row of teeth whereby the number of teeth in each said alternate row is substantially one-half the number of teeth in each said next adjacent row, the teeth in said alternate rows thereof being longer in length than the teeth in the next adjacent rows with the latter teeth being approximately 0.5 to 0.7 the length of the former teeth.

3,892,161
BRAIDING MACHINE WIRE CONTROL

Vincent Sokol, 93 Sunnyside Dr., Yonkers, N.Y. 10705

Filed June 6, 1974, Ser. No. 476,798

Int. Cl. D04c *3/12, 3/40, 3/24*

U.S. Cl. 87—29 **15 Claims**

1. A machine for braiding wire, filaments or the like, comprising:

a central core at a central axis on which said core the wire is braided;

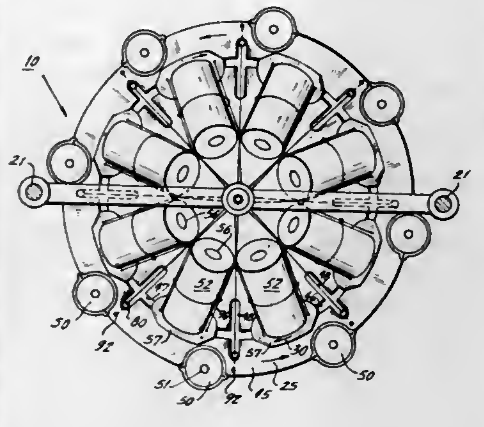
a first array of first bobbins, each for carrying wire to be braided; first moving means for supporting and for moving said first bobbins annularly around said axis in a first direction;

a second array of second bobbins each for carrying wire to be braided; a respective wire guide means for each said second bobbin; the wire from each said second bobbin being guided by its said wire guide means; second moving means for supporting and for moving said guide means annularly around said axis in a second direction opposite said first direction;

cam means for shifting all said guide means radially of said axis; said cam means being mounted to and being rotatable with said first bobbins;

cam follower means on at least some of said guide means, said cam follower means being in engagement with said cam means for being shifted by said cam means; each said cam follower means being so connected with its said guide means that shifting of said cam follower means in a third direction shifts said guide means radially inwardly of said axis and shifting of said cam follower means in a fourth direction opposite said third direction shifts said guide means radially outwardly of said axis;

said cam means being shaped so as to cause each said cam follower means to cause its said guide means to shift radially inwardly of all said first bobbins, thereby enabling said guide means to pass by said first bobbins radially inwardly thereof and to cause each said guide means to shift radially outwardly of all said first bobbins, thereby enabling said guide means to pass by said first bobbins radially outwardly thereof;



said cam means comprising at least one cam follower guide pathway having first cam follower shift sections which shift said cam followers in said third direction, first cam follower travel sections over which said cam followers travel after they have moved in said third direction, second cam follower shift sections which shift said cam followers in said fourth direction and second cam follower travel sections over which said cam followers travel after they have moved in said fourth direction; said cam follower first and second shift sections being located on said cam means so as to radially shift said guide means through the space between neighboring said first bobbins without engagement between said first bobbins and said guide means.

3,892,162
ROTATABLE STRUCTURES SUPPORT METHOD AND MEANS

Carroll D. Phillips, Weston, Mass., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 1, 1973, Ser. No. 412,371

Int. Cl. F41f *3/04*

U.S. Cl. 89—1.815 **2 Claims**

1. A system for independently and rotatably suspending two spaced missile launch assemblies comprising:

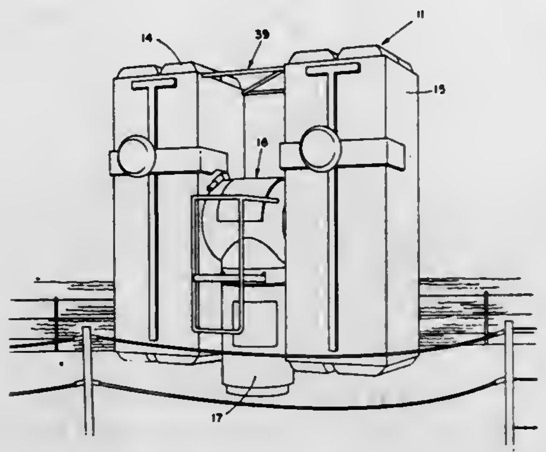
a central structural cylindrical housing disposed between said assemblies with the longitudinal axis of said housing collinear with common transverse axes of said assemblies; a circumferential flange secured to each end of said housing adjacent each assembly for providing cantilevered, rotatable support of said assemblies thereon;

a motor in said housing for driving at least one of said assemblies about its said common transverse axis,

said one assembly driven internally with respect to said housing so that said motor may be coupled directly to said means for providing support of said assemblies,

said housing providing internal space for cables and electronic components and other equipment associated with the control of said motor and said assemblies;

means external to said housing coupling the other of said assemblies to said driven assembly so that both assemblies will rotate in unison; and



a pedestal supporting said housing and means in said pedestal connected to said housing for rotating said housing about an axis orthogonal with respect to said collinear axis,

whereby assemblies such as twin missile launch guide assemblies may be substantially powered and controlled by internally contained equipment to provide azimuth and elevation control of said assemblies and launch control of the missiles in said assemblies.

3,892,163
LIGHT MORTAR FOR FIN-STABILIZED PROJECTILES

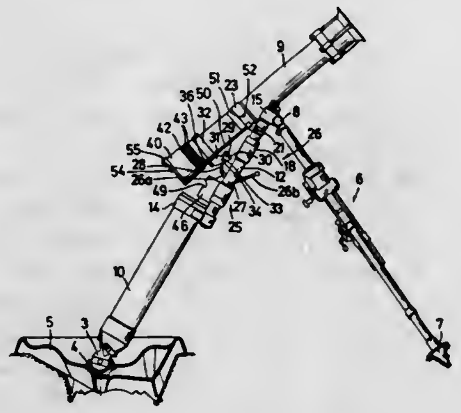
Niilo Klaervo Asikainen, Tampere, Finland, assignor to Oy Tampelle AB, Tampere, Finland

Filed July 26, 1973, Ser. No. 382,940

Claims priority, application Germany, Aug. 4, 1972, 2238345

Int. Cl. F41f *1/06*

U.S. Cl. 89—37 C **10 Claims**



1. A light mortar for projectiles comprising a mortar barrel defined by upper and lower tubes of generally equal length, said upper and lower tubes having upper and lower ends, a base plate at the lower end of said lower tube, rigid support means connected to the upper end of said lower tube and projecting therebeyond, at least a single supporting leg, first means pivotally mounting said leg to said rigid support means whereby the inclination of said lower tube can be selectively varied dependent upon the angle included between said lower tube and said supporting leg, second means pivotally mounting said upper tube between its upper and lower ends to said rigid support means for pivoting movement about an axis transverse to the axis of said mortar barrel thereby providing relative pivotal movement between said upper and lower tubes, said second pivot means being located between said first pivot means and the upper end of said lower tube, linkage means connected to said rigid support means between said second pivot means and said lower tube upper end, said linkage means being farther connected to said upper tube lower end for moving the upper tube into and out of coaxial relationship with said lower tube, and means at the upper tube lower end for preventing a projectile inserted therein from falling by gravity into said lower tube when said upper and lower tubes are not coaxially aligned and until such time as said upper and lower tubes are in coaxial relationship.

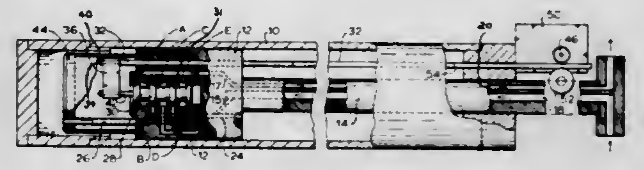
3,892,164
SERVO CONTROL FOR MACHINE TOOLS

Lincoln Stoddard Magor, Cambridge, Canada, assignor to Mimik Limited, Cambridge, Canada

Filed Dec. 19, 1973, Ser. No. 426,205

Int. Cl.^{2} F15B *9/10*

U.S. Cl. 91—378 **6 Claims**



1. A servo-mechanism for control of the position of a piston relative to a cylinder, in a machine tool control system,

a piston rod, designed to be connected to said piston and constructed to extend out of one end of said cylinder,

means designed to provide hydraulic fluid supply and return conduits through bores in said piston range

and extending from locations located to be on the exterior of said cylinder, (throughout the ange of movement of said piston rod) to said piston,

said piston being designed and constructed to mount a servo valve comprising two members, relatively movable with respect to each other,

said two relatively movable members and the fluid conduits in said piston being designed so that: said relatively movable members, at one relative position, direct pressure and return fluid so that said piston is moved in one direction; and so that relatively movable members at another relative position direct pressure and return fluid so that said piston is moved in the opposite direction and defining a position intermediate said relative positions,

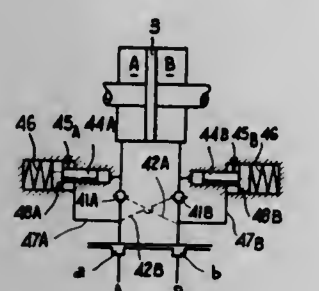
one of said relatively movable members being arranged to be connected to be movable with said piston,

the other of said relatively movable members being arranged to be connected to be movable with a control rod, said control rod being mounted on said cylinder and also movable in measured increments relative thereto, and arranged to extend longitudinally outside of and substantially parallel to said piston rod and to extend from the vicinity of said piston through an end of said cylinder,

said piston and said relatively movable members being designed so that movement of said control rod relative to said piston in one direction causes flow of oil from and to said supply and return lines, respectively, in a direction which will move said piston relative to said cylinder in a direction to place said relatively movable members in said intermediate position,

wherein said control rod is arranged to extend out of the same end of said cylinder of said piston rod.

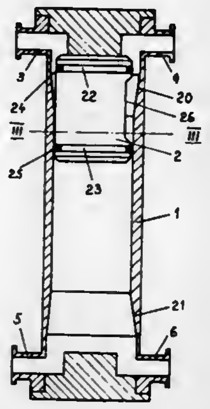
3,892,165
ROTARY HYDRAULIC JACK DEVICE
Jean Lioux, Rueil-Malmaison, France, assignor to La Precision Industrielle, Hauts de Seine, France
Filed Apr. 6, 1973, Ser. No. 348,598
Claims priority, application Italy, Apr. 11, 1972, 12621/72
Int. Cl. F15b *11/08, 13/042*
U.S. Cl. 91—420 **2 Claims**



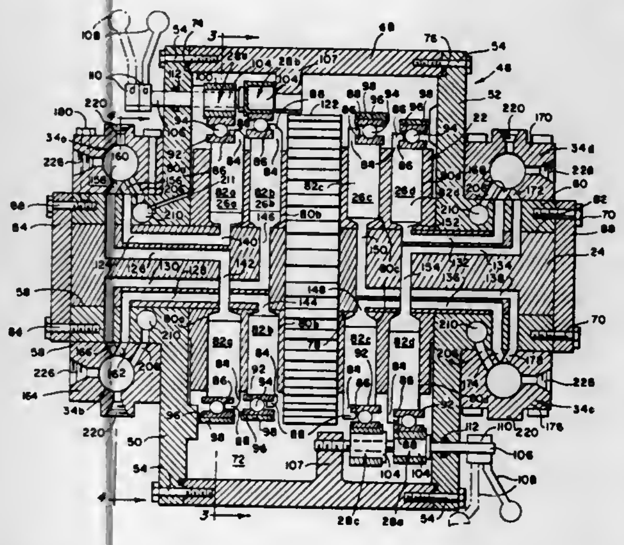
1. A hydraulic jack device comprising
a rotary cylinder,
a piston in said cylinder parting the same into two compartments,
conduit means including rotary joint means for connecting each of said compartments to a source of liquid under pressure, said conduit means including, between said rotary joint means and each compartment, a liquid flowpath provided with a pressure responsive nonreturn valve, pressure operated piston means for forcibly opening a respective non-return valve in one flow path responsive to pressure in the other flow path,
first duct means connecting said piston means with each flow path upstream of said non-return valves,
associated with each flow-path, means defining a stepped cylindrical cavity comprising a first portion of small diameter and a second portion of large diameter forming an extension of said first portion,
second duct means connecting the end of said first portion remote from said second portion with the associated flow-path downstream of the corresponding said non-return valve,
a differential piston in said cavity having two sections secured to one another and respectively cooperating with both cavity portions,
a spring in said second portion urging said piston toward said first portion,
third duct means connecting the annular space comprised between the junction of said portions and the two sections of the differential piston with the associated path upstream of the corresponding non-return valve.

3,892,166
PISTON AND CYLINDER APPARATUS ARRANGED FOR CLEANING
Bjorn-Olow Johansson, Lomma, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden
Filed June 12, 1973, Ser. No. 369,303
Claims priority, application Sweden, June 19, 1972, 8043/72
Int. Cl. F15b *11/08, 13/04*
U.S. Cl. 91—454 **7 Claims**

1. Apparatus comprising a cylinder, a piston adapted to reciprocate in the cylinder between two end positions and having an annular seal at each end of the piston, whereby said seals are interposed between interior portions of the cylinder on opposite sides of the piston, the cylinder having at least one opening on each side of the piston, said openings serving as inlet and outlet for liquid, and means for controlling the flow of liquid into and out of the cylinder through said openings, the inside of the cylinder having at each end position of the piston an annular zone in which the internal diameter of the cylinder along a substantial part of its periphery is larger than the outer diameter of said annular seals, said zones communicating with respective cylinder openings and being located so that when the piston is in each end position, the piston seal nearest the corresponding cylinder end is opposite the corresponding zone while the other piston seal is in sealing engagement with the inside of the cylinder.

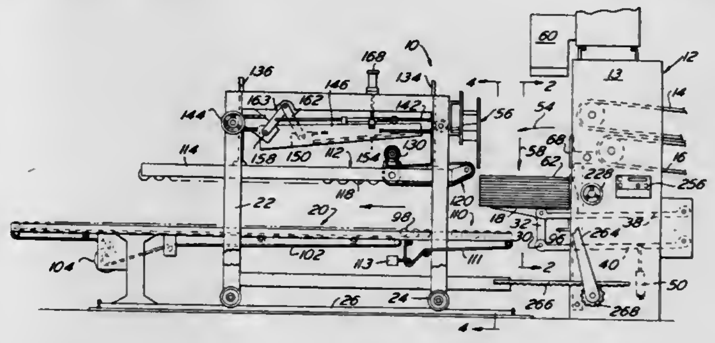


3,892,167
HYDRAULIC CONTROL SYSTEM
Lester J. Becker, Alexandria, Va., assignor to Kate C. Lainof, Alexandria, Va.
Division of Ser. No. 858,290, Sept. 16, 1969, Pat. No. 3,601,986. This application Mar. 25, 1971, Ser. No. 127,961
Int. Cl. F01b *13/06*
U.S. Cl. 91—497 **2 Claims**



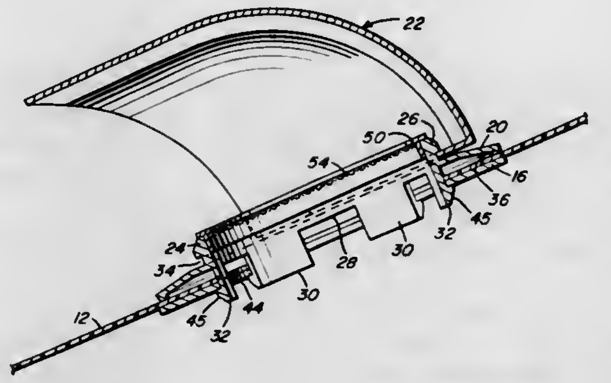
1. A hydraulic control system comprising: drive means; a stationary shaft, rotor means mounted for rotation about said stationary shaft and driven by said drive means and including a plurality of radial pump units, each pump unit having a plurality of radial bores and a piston in each bore; conduit means for conducting fluid to and from said pump units; said conduit means including a first conduit within said shaft communicating with a first port extending about a first substantial portion of the circumferential portion of the circumference of said shaft and adapted to receive fluid from or supply fluid to said radial bores as said bores pass thereover and a second conduit within said shfat communicating with a second port extending about a second substantial portion of the circumference of said shaft and adapted to receive fluid from or supply fluid to said radial bores as said bores pass thereover, and individual control means for each radial pump unit for adjusting the radial stroke of the pistons of each unit, whereby the direction and magnitude of fluid flow in said conduit means from each of said pump units is controlled independently of the direction and magnitude of flow in the remaining pump units and the direction of rotation of said rotor means, said individual control means comprising a ball bearing race having inner and outer rings with bearings positioned therebetween, said inner ring constituting a guide ring which is capable of rotary movement with respect to said outer ring, the outer extremity of said pistons being interengaged with said guide ring, and means for adjusting the eccentricity of said guide ring with respect to the axis of rotation of said rotor means.

3,892,168
COUNTER EJECTOR
William Grobman, Philadelphia, Pa., assignor to Molins Machine Company, Inc., Camden, N.J.
Filed Jan. 14, 1974, Ser. No. 433,328
Int. Cl. B31b *1/98*
U.S. Cl. 93—93 C **19 Claims**



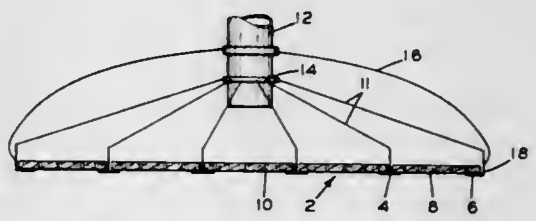
1. Apparatus for accumulating a stack of sheets such as folded boxes comprising an elevator having a surface on which sheets may accumulate to form a stack, a first conveyor means for feeding sheets to said elevator, circuitry including fluid means for sequentially causing the elevator to descend in discrete increments correlated with the number of sheets fed to the elevator, second conveyor means for receiving a stack from said elevator, pusher means for transferring a stack from said elevator to said second conveyor means, a backstop facing said first conveyor means, and means above said elevator to apply a downwards compressive force to a stack while a stack is on the elevator.

3,892,169
READILY INSTALLED VENT FOR FLEXIBLE COVER PANEL
Frank R. Jarnot, 205 Nichols Ave., Huntington, Conn. 06484
Filed Feb. 26, 1974, Ser. No. 446,024
Int. Cl. F24f *7/00*
U.S. Cl. 98—37 **11 Claims**



1. A vent for a flexible panel, said vent comprising first and second separable members, said first member defining a central opening and being adapted to abut the inner surface of a panel having a vent opening formed therethrough of a size and shape corresponding to the size and shape of the first mentioned opening and with said openings in registry, said second member defining a central opening and being adapted to abut the outer surface of said panel with said central openings registered, one of said members including a plurality of arms spaced about the central opening thereof and projecting outwardly therefrom and through the central opening in the other member, said arms being stiff but slightly flexible and resilient and including outwardly projecting outer end abutments overlying opposing surfaces of said other member disposed about its central opening and facing away from said one member, at least one of said members including an outwardly projecting stiff but flexible and resilient flange having first outer peripheral surface portions facing toward the other member extending continuously about the central opening thereof, said other member including second surface portions facing toward and opposing said first surface portions and extending continuously about the central opening of said other member, said first and second surface portions being adapted to clampingly engage said panel therebetween with said flange slightly flexed away from said second surface portions, said free ends of said arms being inwardly flexible toward each other sufficient to withdraw said abutments through the central opening of said other member, said first member further including weather protection means projecting outwardly from the side thereof remote from said second member and at least partially overlying the central opening therethrough and including means for inwardly deflecting air flowing across the last-mentioned opening into the latter.

3,892,170
INFLATABLE AIR PLENUM FOR A SUSPENDED CEILING SYSTEM
James E. Hazeley, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.
Continuation of Ser. No. 189,508, Oct. 15, 1971, abandoned. This application Mar. 15, 1974, Ser. No. 451,342
Int. Cl. F24f *13/06*
U.S. Cl. 98—40 D **1 Claim**

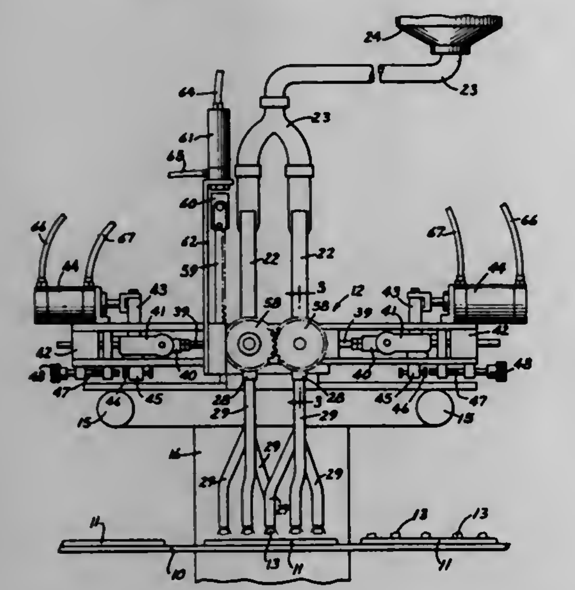


1. In a suspended ceiling system wherein a support network is provided for supporting a plurality of ceiling components which constitute the suspended ceiling system, said ceiling components being able to pass air from the area above the suspended ceiling system to the area below the suspended ceiling system, said suspended ceiling system being supported from the structure of a building, the improvement consisting of an impermeable membrane being placed over the suspended ceiling system, said membrane being sealed to the peripheral edge of the suspended ceiling system to define an air impermeable plenum chamber above the suspended ceiling system whereby air may be provided to the plenum area of a controlled size and then from the plenum area into the area below the suspended ceiling system by passing through the components of the suspended ceiling system, and an air inlet duct means for air and utility services positioned above the ceiling system and passing into the impermeable membrane, said air and utility inlet duct means having fastened thereto the means which supports the suspended ceiling system so as to hold the suspended ceiling in position supported by the inlet duct means alone.

3,892,171

APPARATUS FOR MAKING PIZZAS OR THE LIKE

Clifford E. Fitch, 279 Homewood Ct., and Clifford E. Fitch, Jr., 38 W. 23rd St., both of Chicago Heights, Ill. 60411
Filed Sept. 7, 1973, Ser. No. 395,069
Int. Cl. A21c *9/04;* **B67d** *5/54*
U.S. Cl. 99—450.7 **16 Claims**



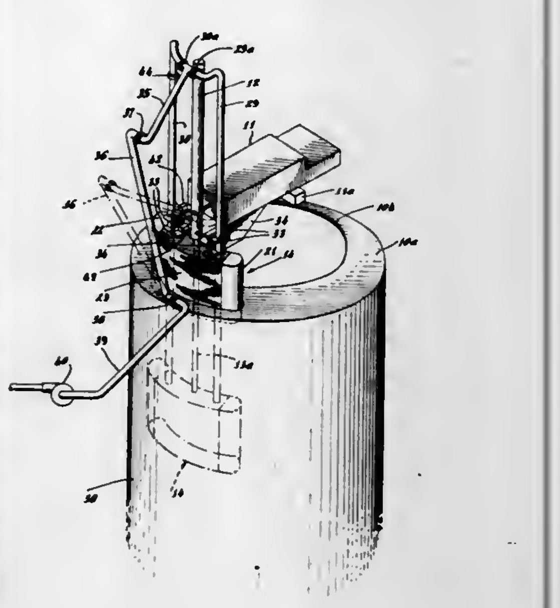
1. An apparatus for metering and distributing meat or the like in a desired pattern onto pizzas or the like including a conveyor for advancing the pizzas, a metering and distributing head for the meat above the advancing pizzas on the conveyor comprising a housing having a supply station and means for feeding meat thereto, a distributing station having distributing tubes for distributing meat in a desired pattern onto the pizzas, a metering station having movable metering pistons for metering the meat portions to be distributed to the pizzas, an air supply station having means for supplying air under pressure, a movable core in the housing which, when moved to a first position, communicates the air supply station with the distributing station and communicates the supply station with the metering station, and which, when moved to a second position, communicates the metering station with the distributing station, and means including control means for moving the core and the metering pistons and operating the air supply means in timed relation so that when said core is in its said first position, metered portions of the meat are distributed by air pressure from the distributing station to the pizzas and the metering pistons are retracted to receive meat in the metering station from the supply station, and so that when said core is in its said second position, the metering pistons are advanced to project metered portions of the meat from the metering station to the distributing station.

3,892,172

APPARATUS FOR MAKING CHEESE AND THE LIKE

Reynold M. Hakala, St. Paul, Minn., assignor to The De Laval Separator Company, Poughkeepsie, N.Y.
Filed Apr. 3, 1973, Ser. No. 347,421
Int. Cl. A01j *25/11*
U.S. Cl. 99—458 **7 Claims**

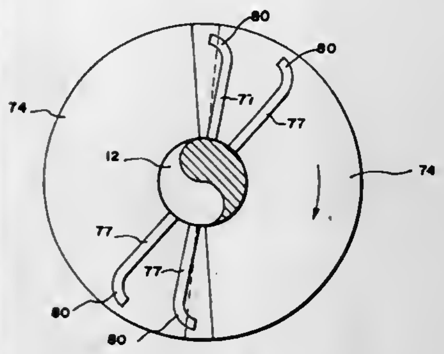
1. The combination of a tank for holding a mass of cheese curds and whey, a strainer box having a whey-collecting chamber with a perforated wall adapted for straining of whey from said mass and into the chamber, the strainer box also having float means for supporting the box in a partially submerged operating position in said mass to effect said straining, the box being movable downward to and upward from said operating position, a downwardly extending tube which opens into said whey-collecting chamber and which is secured to said box for up and down movements therewith, a suction duct outside the tank and connected to the upper end of said tube for withdrawing whey from said chamber, a power source for lowering the strainer box to said mass and then allowing the box to descend freely in said operating position in the mass as the level thereof is lowered by said whey withdrawal, and control means associated with said power source for operating the same to raise the strainer box in response to said mass reaching a low level in the tank.



3,892,173

HORIZONTAL SCREW PRESS

Howard W. Hall, and William A. Avilla, both of Santa Rosa, Calif., assignors to Rietz Manufacturing Co., Santa Rosa, Calif.
Filed Oct. 15, 1973, Ser. No. 406,475
Int. Cl. B30b *9/12, 15/00, 3/02*
U.S. Cl. 100—117 **7 Claims**

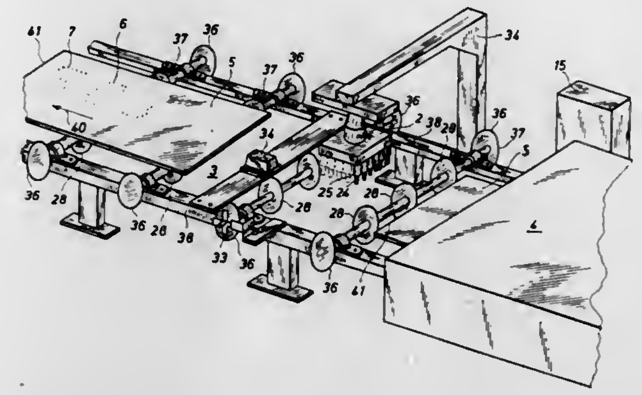


1. In a dewatering press, rotatable screw conveyor means consisting of a shaft having disconnected conveyor flights secured to the same, a cylindrical screen assembly surrounding the screw conveyor means, means for supplying material to be dewatered to one end portion of the screw conveyor means whereby the material is caused to progress through the screen with progressive dewatering, discharge means at the other end of the screw conveyor means, said discharge means serving to permit discharge of dewatered cake under pressure, stationary interrupter bars having portions extending into the screen assembly and disposed between interrupted flights, each of the interrupted flights having a trailing edge and a face serving to act upon material to urge the same toward the discharge means, and material engaging means fixed to said face of at least one of the interrupted flights, said means forming a shoulder protruding from said flight face and faced in the direction of rotation and extending in a general radial direction from the inner portion of said one flight to a region near the outer perimeter of the same, said means serving to act upon the material in conjunction with interruptor bar portions express water from the material.

3,892,174

ELECTRICALLY CONTROLLED APPARATUS FOR MARKING OBJECTS

Jorgen Marcher, Snogegardsvej, Denmark, assignor to H. Nielsen & Son Maskinfabrik A/S, Herlev, Denmark
Continuation-in-part of Ser. No. 118,901, Feb. 15, 1971, abandoned. This application Dec. 11, 1972, Ser. No. 313,723
Int. Cl. B41f *17/00*
U.S. Cl. 101—35 **5 Claims**



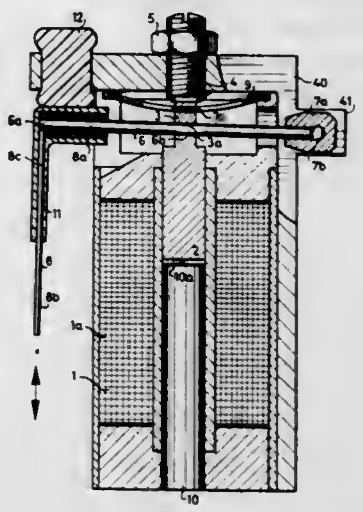
1. In a electrically controlled apparatus for marking an object travelling at a speed which may vary along a conveyer, having a selectively operable marking mechanism for marking the object with a code consisting of selected characters such as letters and/or figures, code selection means connected to a storage register through read-in means for storing code characters selected by said selection means and read-out means for reading out the stored characters from said storage register and for supplying to the marking mechanism actuating signals corresponding to said characters, first sensing means for sensing the presence of said object along said conveyer, second sensing means for sensing the speed of travel of said object along said conveyer, and control means connected to said first and second sensing means and to said storage register, said control means being responsive to the presence of said object along said conveyer as detected by said first sensing means for causing said actuating signals to begin to read out from said storage register, said control means further including means for controlling the rate of read-out of said actuating signals in accordance with the variable speed of travel of the object along the conveyer as sensed by second sensing means so that said characters are marked on said object at a rate dependent on the rate of travel of said object.

3,892,175

PRINTING NEEDLE DRIVE

Armin Heindke, Pfaffenweiler; Gerhard Mutz; Albert Hirt, both of Villingen, and Werner Winkler, Furtwangen, all of Germany, assignors to Klenzle Apparte GmbH, Villingen, Germany
Filed June 14, 1973, Ser. No. 370,059
Claims priority, application Germany, June 23, 1972, 2230810
Int. Cl. B41j *3/10;* **H01f** *7/08*
U.S. Cl. 101—93.05 **13 Claims**

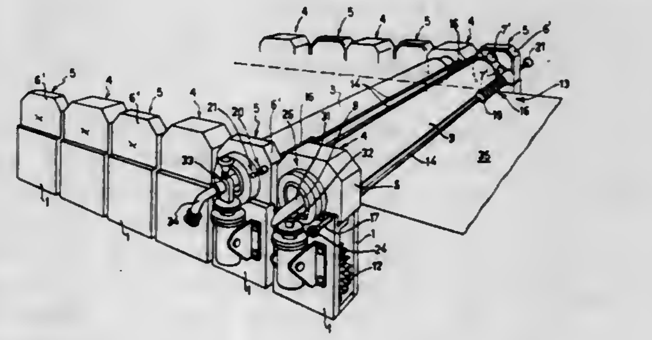
1. Printing needle drive comprising supporting means; elongated lever means having a fulcrum mounted on said supporting means and being formed over the whole length thereof from resilient material; printing needle means secured to a first portion of said lever means and projecting therefrom transversely to said lever means; and electromagnetic means including a movable armature connected with a second portion of said lever means spaced from said fulcrum a smaller distance than said first portion so that when said armature is moved in an armature stroke of predetermined length, said needle means is moved in a needle stroke of proportionally greater length, and at a higher speed than said armature, the mass of said needle means having a predetermined magnitude to prevent movement of said first portion of said lever means during the first part of said armature stroke whereby said resilient lever means is resiliently deformed and tensioned so that said resilient lever means recoils during the second part of said armature stroke and accelerates said needle means faster than said armature is accelerated when said electromagnet means is energized.



3,892,176

ROTARY SCREEN TENSIONER FOR SINGLE SIDED DRIVE

Johannes Bernardus Van der Winden, Amstelveen, Netherlands, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 108,394, Jan. 21, 1971, abandoned, which is a continuation of Ser. No. 608,438, Jan. 10, 1967, abandoned. This application Sept. 5, 1973, Ser. No. 394,645
Claims priority, application Netherlands, Feb. 4, 1966, 6601488
Int. Cl.^{2} B41F *15/38*
U.S. Cl. 101—116 **16 Claims**



15. In a rotating screen printing machine comprising a frame, means on said frame for supporting a web to be printed while advancing from one end of the machine to the other, a cylindrical seamless perforated screen of a thin flexible material extending transversely of the direction of travel of the web, relatively rigid hollow sleeves connected to opposite ends of said screen, a pair of spaced aligned bearing assemblies on said frame supporting said sleeves and said screen for rotation so that the screen bears in continuous printing relation upon the web during printing, means for positively and rotatably driving one of said sleeves at only one end of said screen while the sleeve at the opposite end of the screen is freely rotatably supported, and means for maintaining said screen under tension axially thereof while being driven whereby the sleeve at the said opposite end of the screen is rotated by a positive driving torque transmitted through the screen.

3,892,177
ADJUSTABLE ROTARY SCREEN SUPPORT WITH TELESCOPING DRIVE

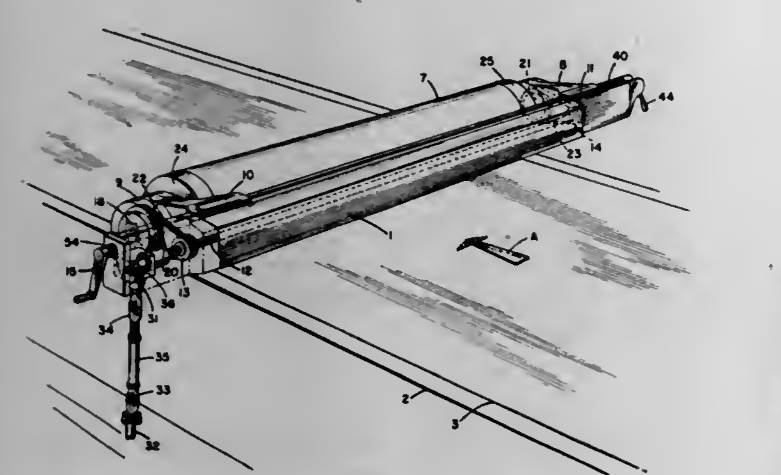
Adolfo Giani, Bergamo, Italy, assignor to Reggiani, S.p.A., Quartiere Reggiani, Bergamo, Italy

Continuation-in-part of Ser. No. 218,749, Jan. 18, 1972, abandoned. This application Sept. 12, 1973, Ser. No. 396,557

Claims priority, application Italy, Jan. 21, 1971, 19591/71

Int. Cl. B41l *13/16;* **B41f** *15/10, 15/38*

U.S. Cl. 101—116 **10 Claims**



1. Apparatus for supporting and driving cylindrical screens of a printing machine for fabrics and ribbon-like materials, in which the material to be printed is carried by an endless belt over a printing table, comprising:

a frame;
a cross member mounted on said frame;
a pair of printing screen support heads mounted on said cross member for supporting a cylindrical printing screen mounted therebetween, the longitudinal axis of the screen extending substantially parallel to the cross member;
means adjustably mounting one of said heads for axial movement along said cross member toward and away from the other head which is held stationary with respect to the axial movement of said adjustably mounted head;
end support means, rotatably hinged to the frame, for supporting the ends of said cross member, said support means being provided with means to permit slidably displacing said cross member in a direction substantially normal to the plane of said belt;
ball joint supporting means, recessed in said supporting heads, for supporting and aligning the opposite ends of said printing screen during rotation thereof;
first transmission means for rotatably driving said printing screen, including a horizontal shaft supported by the cross member, two pinion gears mounted on said shaft, and two sprockets mounted one on each end of said screen, said pinion gears and sprockets being coupled for rotation through respective transmission belts;
second transmission means for driving said first transmission means, and including a double universal joint interconnected by a telescopic shaft, one joint being coupled to said first transmission means and the other to a source of motive power; and
tensioning means coupled between the stationary supporting head and said frame for applying tension to said printing screen.

3,892,178
ROTARY PRINTING MACHINE

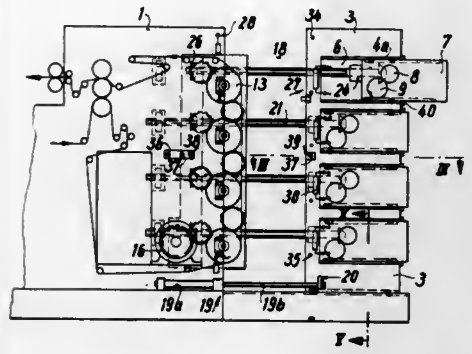
Otto Staamann, Berlin, Germany, assignor to Firma Automatic Druckmaschinenfabrik, Germany

Filed June 25, 1973, Ser. No. 373,039

Claims priority, application Germany, July 8, 1972, 2234089

Int. Cl. B41f *5/16, 13/26*

U.S. Cl. 101—177 **6 Claims**



1. In an offset rotary printing machine, for printing a continuous web, including a bed frame and a main frame, and having printing units, each including a plate cylinder, a blanket cylinder and an inking mechanism, with the printing units being arranged one above the other in a printing unit support stand and respective impression cylinders associated with the blanket cylinders and mounted one above the other in the main frame of the machine, each at the level of the associated blanket cylinder, and with the printing units and the impression cylinders all driven from a main drive: the improvement comprising, in combination, guide rails mounting said stand on said bed frame for shifting, with said printing units, away from said impression cylinders to provide a man-size space between said printing units and said impression cylinders for ready access of an operator thereto; means operable to shift said stand along said guides; a respective drive shaft connecting each printing unit to the associated impression cylinder, each drive shaft being splined and mounted on the associated printing unit against axial displacement relative thereto; a respective single tooth clutch drivingly connecting each drive shaft to the associated printing unit; each splined drive shaft being slidably engaged through a respective splined gear member mounted on said main frame and driven by said main drive; each printing unit being displaceable, on said support stand, to an inoperative position; and respective back stops limiting displacement of each printing unit on said support stand; each drive shaft, when said support stand is shifted to provide such man-size space and the associated printing unit is further displaced into engagement with the respective back stop, remaining drivingly connected to the associated splined gear member on said main frame.

3,892,179
QUICK-ACTION CLAMPING DEVICE USED IN ROTARY CYLINDERS OF PRINTING MACHINES

Hans-Georg Jahn, Wiesloch, Germany, assignor to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Germany

Filed Apr. 18, 1973, Ser. No. 352,196

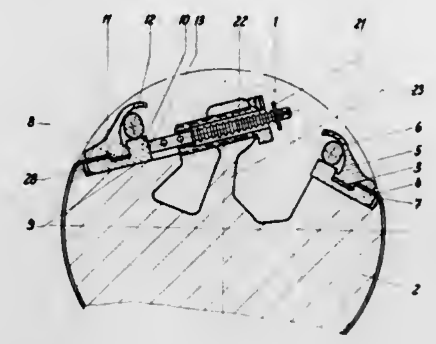
Claims priority, application Germany, Apr. 21, 1972, 2219546

Int. Cl. B41f *27/12*

U.S. Cl. 101—415.1 **2 Claims**

1. In a quick-action clamping device for use in rotary cylinders of printing machines for clamping flexible printing plates comprising a stationary and a secant displaceable clamping bar assembly disposed in a channel in the plate cylinder, said displaceable clamping bar assembly being adapted to be selectively held in a first position which applies tension to the pressure plate and in a second position which does not apply

tension to the pressure plate; at least two guide rods affixed to the back side of the displaceable clamping bar assembly, said guide rods being constantly under spring tension in clamping direction of the plate, a latch pivotably mounted on an axis extending perpendicularly to the axis of rotation of said cylinder, a clamping rib provided in the channel of the plate cylinder, at least one clamping screw affixed to the back of the displaceable clamping bar assembly and extending parallel to said guide rods, said clamping screw extending through a bore of said clamping rib, said clamping screw having a clamping nut on its free end, bushings threadedly engaged in said clamping rib, said guide rods being guided in said bushings, springs disposed in said bushings, said bushings having a bottom portion against which said springs are biased, said bushing being threadedly adjustable in said clamping rib in a direction for applying tension to said plate.



3,892,180
LIGHT ACTIVATING IMAGING PROCESS

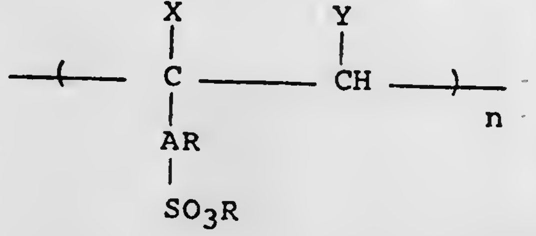
Alan R. Monahan, East Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 245,276, April 18, 1972, Pat. No. 3,834,906. This application May 29, 1974, Ser. No. 474,271

Int. Cl. G03f *7/02*

U.S. Cl. 101—456 **8 Claims**

1. A printing member comprising a support substrate having fixed to the surface thereof in imagewise configuration photoinsoluble alkyl esters of polyvinylaryl sulfonic acids, said esters satisfying the formula:



$$-\!\!\left(\!-\underset{\substack{|\\ AR\\ |\\ SO_3R}}{\overset{\substack{X\\ |}}{C}}-\!\!\!-\overset{\substack{Y\\ |}}{CH}-\!\right)_{n}\!\!-$$

wherein R may be any straight or branced chain alkyl group including halogen substituted groups up to and including ten carbon atoms;
wherein n is an integer having a value of from 10 to infinity; X and/or Y are hydrogen, halogen, alkyl or halogen substituted alkyl groups;
wherein Ar may be any polynuclear aromatic fused ring hydrocarbon up to an including 5 benzene rings.

3. A method of printing from a contact printing member which comprises:

a. coating the surface of a support substrate with alkyl esters of polyvinylaryl sulfonic acids;
b. selectively exposing said composition to actinic radiation; c. developing said exposed polymer by dissolving away the unexposed portions of said polymer;
d. applying to the imaged surface of said member a printing ink; and
e. contacting said inked image with a receiver sheet.

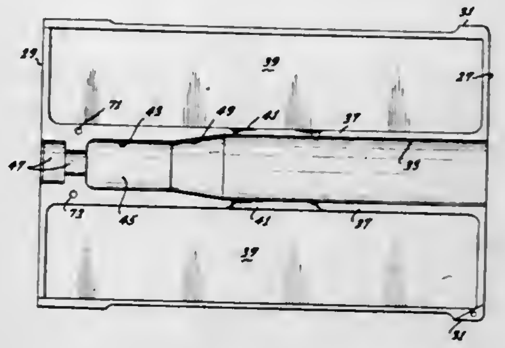
3,892,181
FLAT TELESCOPED CARTRIDGE CASING

Morris Goldin, Orange, Calif., assignor to Summa Corporation, Culver City, Calif.

Filed Mar. 26, 1973, Ser. No. 344,842

Int. Cl. F42b *5/26*

U.S. Cl. 102—40 **4 Claims**



1. A cartridge casing comprising
a projectile guide tube therein having
  means for seating a projectile in a fully telescoped relationship with said casing,
booster charge receiving means in axial alignment with said projectile guide tube,
primer receiving means in axial alignment with said booster charge receiving means,
means, laterally offset from the axis of said projectile guide tube, for receiving a main propellant charge, and
window means, normally completely obturated by a projectile fully seated in said guide tube and located at a position removed from each end of said propellant charge receiving means, providing communication between said guide tube and said main propellant charge receiving means so that combustion of a propellant charge in said propellant charge receiving means commences in two different directions only after projectile movement has occured sufficiently to uncover said window means.

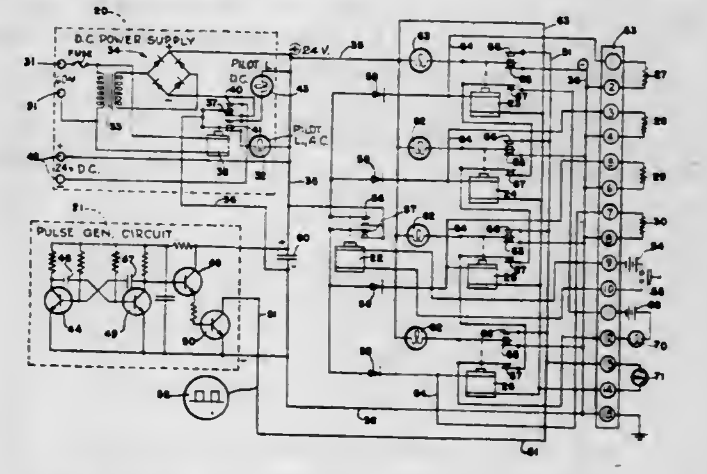
3,892,182
SQUIB CONTROL CIRCUIT

George Salvador Covarrubias, La Puente, and Ernest Charles Slater, La Verne, both of Calif., assignors to CBF Systems Inc., Covina, Calif.

Filed Dec. 10, 1973, Ser. No. 423,082

Int. Cl. F42c *15/40*

U.S. Cl. 102—70.2 R **11 Claims**



1. A squib control and indicating means for indicating the condition of a squib filament by means of an indicating lamp before and after firing comprising:

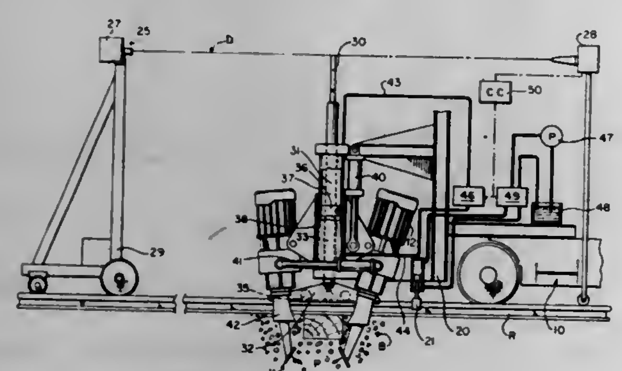
a. a source of direct current power;
b. a source of pulsating current;
c. a lamp relay including a winding connected in series between the source of direct current and the squib fila-

ment for activating the relay, said relay also including a pair of contacts connected in series between the source of direct current and the indicating lamp for lighting the lamp whenever the relay is actuated;

d. means for firing the squib filament; and

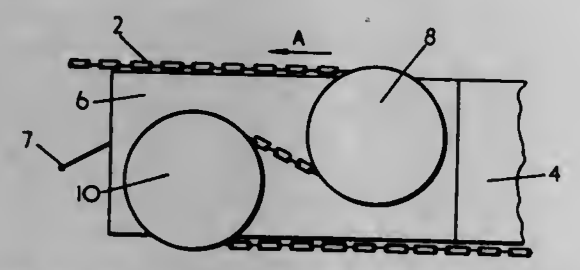
e. means for indicating when the squib filament has been fired, including a pair of relay contacts on said lamp relay connected between the lamp and said source of pulsating current.

3,892,183
METHOD AND MEANS FOR CONSOLIDATING BALLAST
Helmuth von Beckmann, Columbia, S.C., assignor to Canron, Inc., Phillipsburg, N.J.
Filed Mar. 18, 1974, Ser. No. 452,371
Int. Cl. E01b *27/00*
U.S. Cl. 104—12 **10 Claims**



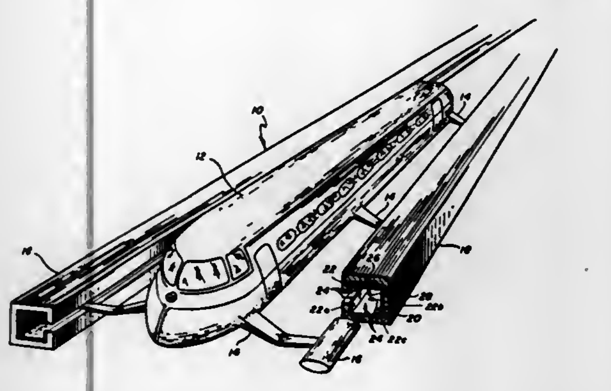
3. Apparatus for lifting a rail of railroad track and tamping ballast therebeneath comprising a track surface reference system to provide a track surface datum; track travelling frame means; track jacking means on said frame; rail-engaging stop means in continuous engagement with the rail and floatingly mounted on said frame means for free up and down movement thereon; reference system detecting means connected to said stop means; means responsive to the detection of said datum by said detecting means to generate a signal to terminate a track jacking operation of said jacking means and simultaneously to lock said stop means relative to said frame means; and ballast tamping means mounted on said frame means to tamp the ballast beneath the rail against the reaction of said locked stop means.

3,892,184
DRIVE ARRANGEMENTS FOR MINING MACHINES
Robert Charles Kenn, Lichfield, and David Arthur Tate, Burton Upon Trent, both of England, assignors to Coal Industry (Patents) Limited, London, England
Filed Aug. 8, 1973, Ser. No. 386,648
Int. Cl. B61b *13/00*
U.S. Cl. 104—147 R **11 Claims**



1. A drive arrangement for a machine adapted to haul itself to and fro along a haulage chain extending along a machine's path, comprising a machine, a plurality of sprockets mounted on the machine and arranged for engagement with the chain, and drive means connected to the sprockets and adapted to drive at least a currently leading sprocket irrespective of direction of travel of the machine along the chain.

3,892,185
LOW DRAG MAGNETIC SUSPENSION SYSTEM
Charles A. Guderjahn, Northridge, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.
Division of Ser. No. 97,232, Dec. 11, 1970, Pat. No. 3,717,103. This application Apr. 24, 1972, Ser. No. 247,195
Int. Cl. B61d *13/08*
U.S. Cl. 104—148 LM **5 Claims**



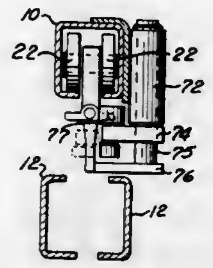
1. An improved composite guide-way for providing lift forces to bodies, which bodies have attached thereto at least one magnet which is adapted to move in a predetermined path along the course of said guide-way comprising:

a. a first layer containing nonferromagnetic conductor material, said layer being disposed above said predetermined path;

b. a second layer containing ferromagnetic material, said layer being positioned intermediate said first layer and said predetermined path, and

c. supporting means to rigidly support said first and second layers, said supporting means being so arranged as to allow maximum flow of magnetically induced current in said first layer.

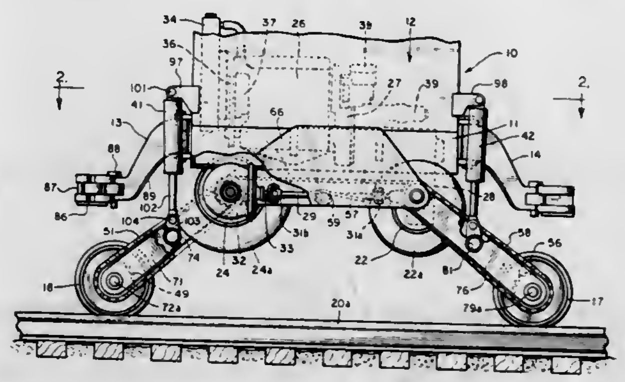
3,892,186
FREE AND POWER CONVEYOR SYSTEM
George R. Pipes, South Euclid; James D. Peppers, Wickliffe, and Wayne T. Mormile, Mayfield Heights, all of Ohio, assignors to Eaton Corporation, Cleveland, Ohio
Division of Ser. No. 241,116, April 5, 1972, Pat. No. 3,795,200. This application Aug. 8, 1973, Ser. No. 386,667
Int. Cl. B61b *13/12*
U.S. Cl. 104—249 **6 Claims**



1. A conveyor system of the type having an endless power chain supporting a plurality of spaced apart front and rear pusher assemblies and carriers supported by front and rear trolleys for movement along a track adjacent the power chain, said rear pusher assemblies being supported from said power chain independently of said front pusher assemblies and spaced apart therefrom with said carriers normally being towed by engagement of a front pusher assembly with the front trolley, the improvement comprising,

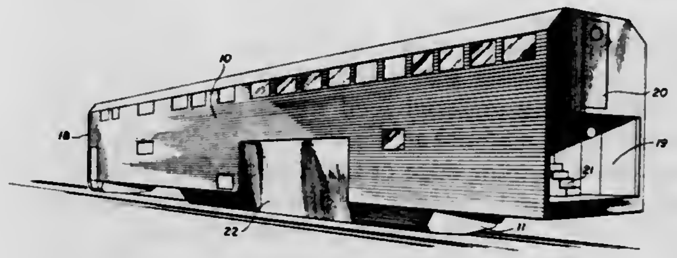
qualifier means positionable in the path of travel of said carriers for halting movement of any carrier being propelled by the rear pusher assembly, said qualifier means comprising positive stop means located at one or more predetermined sections of said track where a rear pusher assembly is engageable with a trolley.

3,892,187
RAIL TRACTION VEHICLE
Eugene B. White, Jr., 406 Indiana St., Park Forest, Ill. 60466
Filed Aug. 9, 1974, Ser. No. 496,259
Int. Cl.² B61C *11/00*
U.S. Cl. 105—75 **42 Claims**



1. A rail traction vehicle of the type adapted for transferring weight from a coupled railway car to the traction vehicle comprising: a main frame having opposed side members, at least two pairs of road wheels mounted on said vehicle in generally rectangular configuration along axes generally transverse to said side members, at least two pairs of flanged rail wheels also mounted on said vehicle in generally rectangular configuration along axes generally parallel to but spaced from said road wheel axes, means for selectively and alternatively supporting said vehicle either wholly on the road wheels or wholly on the rail wheels, a single differential axle on the vehicle generally parallel to the axes of the road and rail wheels, a power train including an engine for driving said single differential axle, and power transmitting means interconnecting the differential axle in driving relationship with said wheels for driving said two pairs of rail wheels and one pair of road wheels, whereby the driven wheels on one side of the traction vehicle are differentially driven with respect to the driven wheels on the opposite side of said vehicle.

3,892,188
AUTO TRANSPORTING PASSENGER TRAIN CAR
George A. Warren, 80 South St., Shrewsbury, Mass. 01545
Filed Jan. 18, 1974, Ser. No. 434,396
Int. Cl. B61d *1/06*
U.S. Cl. 105—368 R **7 Claims**



1. A railroad car adapted to form one of a series of cars for transporting vehicles and passengers in a train, comprising:

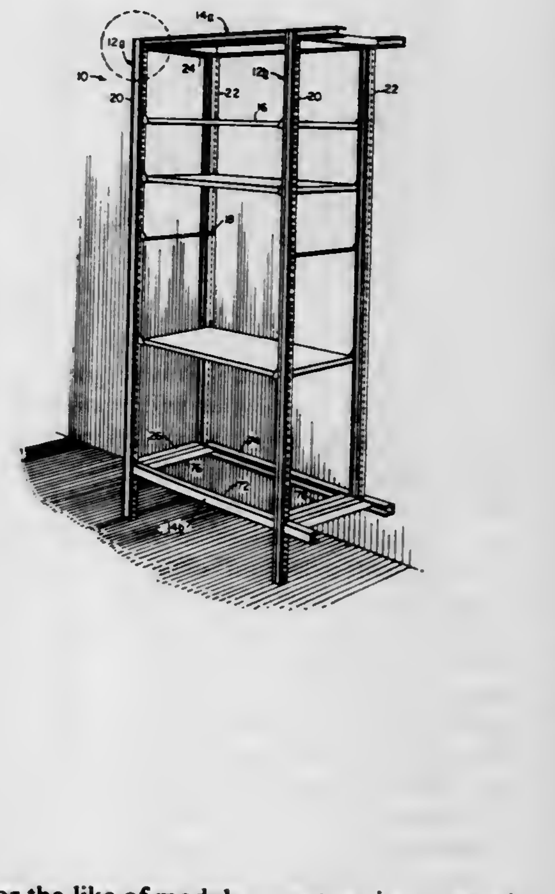
a. an elongated bed supported on draft gear,

b. first and second storage levels for a plurality of autos over the bed,

c. a lifting ramp, entirely within the car, the ramp having a first end hingedly connected to the second level, and a first end movable between the first and second level, and

d. a first means for moving the second end of the ramp between the first level and the second level.

3,892,189
MODULAR SHELF CONSTRUCTION
Oliver P. Killam, 269 Pleasant St., Marblehead, Mass. 01945
Filed July 9, 1973, Ser. No. 377,258
Int. Cl. A47b *47/02, 57/16*
U.S. Cl. 108—109 **3 Claims**



1. A bookcase or the like of modular construction, comprising

a. at least a pair of rectangular vertical side frames,

b. at least a pair of rectangular horizontal top and bottom frames rigidly connected at their opposite ends to a pair of said side frames at their upper and lower portions to form a rectangular frame assembly in which the side frames are mounted in spaced parallel relation by said top and bottom frames,

c. shelf support means mounted to said side frames, and,

d. a shelf mounted horizontally on said support means,

e. each of said side frames being fabricated from a plurality of extrusion members each of a U-shaped cross-section and including spaced parallel side walls and a connecting transverse base wall, said side walls being formed with a pair of oppositely facing longitudinal grooves along the free edges thereof and a longitudinal rib formed along the centerline of the inner face of said base wall, said rib being formed with a longitudinal passage therein of C-shaped cross-section to engage screws connecting adjacent members, said rib being further formed with a longitudinal slot opening facing the open side of said extrusion member,

f. a substantially flat facia strip mounted in said grooves,

g. each of said members being formed with a second pair of oppositely facing grooves in the outer face of said base wall,

h. a connecting tongue of a T-shaped cross-section mounted with the head thereof in said second pair of grooves, and,

i. an edge grooved panel mounted within said side frames, the leg of said tongue extending into the grooved edges of said panel.

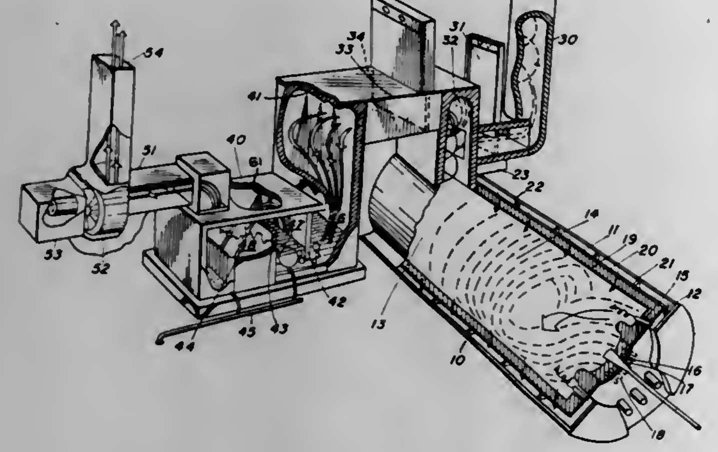
3,892,190
THERMAL OXIDATION OF WASTES AND APPARATUS THEREFOR

Peter S. Sharpe, Joliet, Ill., assignor to Brule' C. E. & E., Inc., Blue Island, Ill.

Continuation-in-part of Ser. No. 289,095, Sept. 14, 1972, Pat. No. 3,805,714. This application Apr. 1, 1974, Ser. No. 457,102

Int. Cl. F23g *3/00*

U.S. Cl. 110—8 R **11 Claims**



1. A process for thermal oxidation of gaseous, liquid and solid chemical wastes comprising:

pre-heating an air stream;

introducing the pre-heated air stream tangentially into a cylindrical oxidation chamber so that the air stream moves as a swirling mass in a spiral and rotating motion to the exhaust end of the oxidation chamber and forms an air layer along the side wall of the oxidation chamber;

introducing fuel into said swirling mass for combustion through the feed end of the oxidation chamber;

igniting the introduced fuel;

introducing chemical waste into said swirling mass through the feed end of the oxidation chamber;

maintaining relative amounts of air, fuel and chemical waste in said swirling mass sufficient to effect oxidation of the introduced waste, combustion of the fuel and to provide air in excess of the amount needed for said oxidation and combustion;

passing the fuel, air and chemical waste through the oxidation chamber in an intimate mixing, spiraling, rotating motion at low pressure to effect high efficiency oxidation of the waste in the central portion of the combustion chamber while maintaining said air layer along the side walls of the oxidation chamber; and

passing the products of oxidation and combustion and excess air from the oxidation chamber through an open exhaust end.

3,892,191
VAPOR GENERATING SYSTEM IN WHICH RECIRCULATED FLUE GASES ARE INJECTED INTO THE COMBUSTION AIR STREAM OF A STEAM GENERATOR

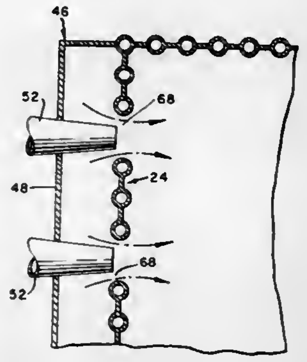
Robert P. Welden, Jr., Westfield, and Walter P. Gorzegno, Florham Park, both of N.J., assignors to Foster Wheeler Corporation, Livingston, N.J.

Filed May 13, 1974, Ser. No. 469,261

Int. Cl.² F23J *5/02*

U.S. Cl. 110—49 R **12 Claims**

1. A vapor generating system comprising a furnace section, duct means connecting the interior of said furnace section with a source of air, a plurality of mixing pipes disposed in said duct means, and additional duct means for introducing combustion gases from the outlet of said furnace section into said mixing pipes, said mixing pipes having a plurality of slots extending therethrough for discharging said gases into the path of air flowing through said duct means in a direction perpendicular to the direction of the flow of said air to mix said gases and air before they are introduced into said furnace section.



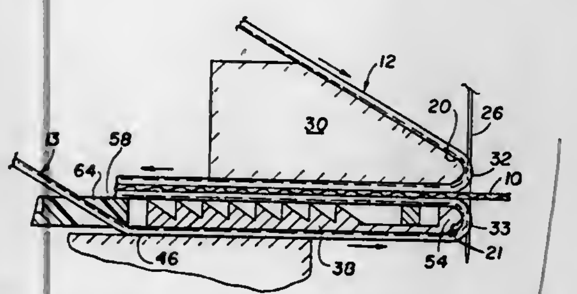
3,892,192
APPARATUS FOR MAKING TOP AND BOTTOM BLIND STITCHED FACING

Ronald J. Boser, 19 Branwood Dr., Dix Hills, N.Y. 11746

Filed Feb. 5, 1973, Ser. No. 329,832

Int. Cl. D05b *35/06*

U.S. Cl. 112—140 **1 Claim**



1. In a sewing machine of the needle-feed type adapted to produce blind stitched facing on opposite sides and along an edge of a fabric, a pair of spaced needles operating in unison, a presser-foot and a feed dog arranged in facing relation to each other, and each of said presser-foot and said feed dog having a blind-stitch forming edge lying closely adjacent the path of travel of said needles, a stationery throat plate having an enlarged needle opening therein cooperating with said feed dog, said forming edge on said feed dog extending into and reciprocating within said enlarged opening facilitating movement of a facing material therethrough, at least two folders respectively designed to fold the edges of a first and a second arrangement of facing material to form in each said arrangement a top ply and under ply at each longitudinal edge thereof, a fabric feed means including the feed movement of said needles and of said feed dog in unison to contribute to the feeding of fabric in an interposed position between said first and second facing material arrangements to said needles, separate facing material feed means to feed said first and second facing material arrangements respectively around said blind-stitch forming edge of said presser-foot and around said blind-stitch forming edge of said feed dog in a path permitting each needle on its penetrating stroke, to enter and emerge from the lower surface of the respective under ply without penetrating the top ply of each said first and second facing material arrangements, said facing material arrangement which is fed relative to said feed dog being threaded initially from the rear and then in a reverse direction through said feed dog so as to form a reverse curvature at said feed dog blind-stitch forming edge to thereby facilitate the selective penetration of said needles relative to the plies of said facing material arrangement, whereby both edges of the facing are blind stitched on opposite sides of a fabric fed between said presser-foot and said feed dog and each masks the blind stitching on the side of the fabric to which it is attached.

3,892,193
DRIVING GEAR FOR THE LOOPER OF A CHAIN STITCH SEWING MACHINE

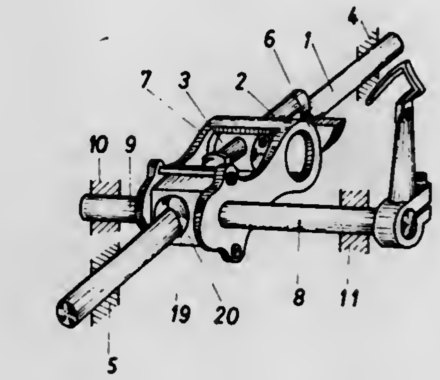
Ernst Lienemann, Kaufungen, Germany, assignor to VEB Nahmaschinenwerk Wittenberge, Wittenberge, Germany

Filed July 11, 1974, Ser. No. 487,688

Claims priority, application Germany, July 23, 1973, 172443

Int. Cl. D05b *57/32*

U.S. Cl. 112—200 **7 Claims**



1. In a chain stitch sewing machine, a looper driving gear comprising a drive shaft, a crank on said drive shaft, a slide pivotally mounted on a crank pin of said crank for rotation relative thereto, said slide being slidably mounted in a slideway of a rocker element, said rocker element being secured to a looper axle normal to the axis of the drive shaft and parallel to said slideway to impart rotary reciprocating motion to said axle, an eccentric on said drive shaft, a coupling element rotable on said eccentric and coupling said eccentric to said rocker to impart reciprocating movement to said rocker and said looper axle in the direction of the axis of that axle, the crank and eccentric being constituted as means imparting elliptical movement to a looper element secured to said axle.

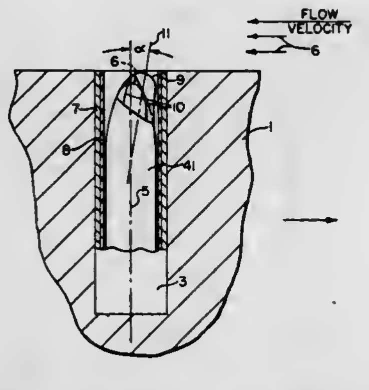
3,892,194
CAMBERED MISSILE NOSE

Edmund F. Goedde, San Jose; Gary D. Hoover, and Edward J. Barakauskas, both of Saratoga, all of Calif., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 23, 1973, Ser. No. 408,959

Int. Cl. F42b *15/20*

U.S. Cl. 114—20 R **4 Claims**



1. A missile for undersea launching from a moving submarine, said missile comprising a nose portion forming a leading end thereof, said nose portion having a symmetrical outer surface and an axisymmetric cambered nose portion overlaying said symmetrical nose portion, the axis of the cambered nose portion forms an angle of approximately 5° to approximately 15° with respect to the axis of the missile for reducing undesirable hydrodynamic forces and moments when said missile is being launched from said moving submarine.

3,892,195
WATERCRAFT COUPLING SYSTEM

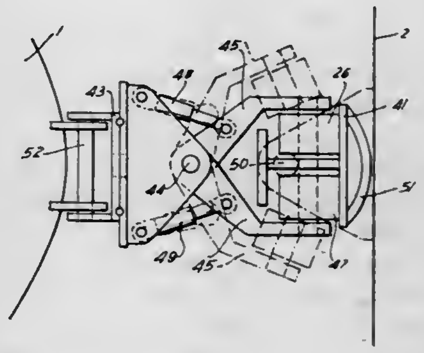
Hans-Georg Janssen, Bremerhaven, Germany, assignor to Aktien-Gesellschaft "Weser", Bremen, Germany

Division of Ser. No. 362,185, May 21, 1973, which is a continuation of Ser. No. 104,249, Jan. 6, 1971, abandoned. This application Sept. 5, 1973, Ser. No. 394,449

Claims priority, application Germany, Jan. 17, 1970, 2001996; Jan. 14, 1970, 2012289; Nov. 30, 1970, 2058738

Int. Cl. B63b *21/00*

U.S. Cl. 114—235 R **4 Claims**



1. A watercraft coupling system, particularly for coupling tugs and barges, comprising a first watercraft having a bow; a second watercraft having a stern; elongated flexible coupling elements releasably secured to and extending laterally along said first watercraft and having end portions connectable with said stern; and a shifting unit releasably and articulately connected with said bow and said stern, respectively, for enabling relative shifting movements of said watercraft with reference to one another, said unit comprising one component in form of an elongated upright post mounted on said stern and defining a vertical guide track, and another component comprising a roller mounted for turning movement about an at least substantially horizontal axis and having a profiled portion in form of an outer circumferential recessed groove which at least partially embraces said post for freely slidable displacement along said guide track defined by the same, during relative movements of said watercraft.

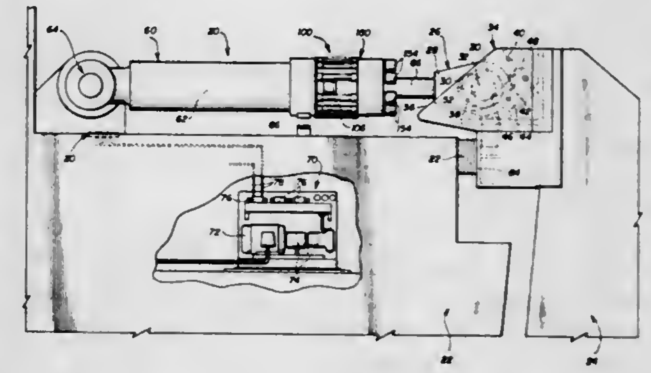
3,892,196
TUGBOAT-BARGE CONNECTION SYSTEM

John J. Swoboda, Jr., and Lawrence T. Boatman, both of Victoria, Tex., assignors to Victoria Machine Works, Victoria, Tex.

Filed Oct. 19, 1973, Ser. No. 408,091

Int. Cl.² B63B *21/60*

U.S. Cl. 114—235 A **12 Claims**



1. A boat-barge connection system comprising:

first latching means mounted on the barge;

second latching means mounted on the boat for cooperation with the first latching means to couple the boat to the barge;

cylinder means supporting the second latching means on the boat and adapted for actuation by fluid pressure to extend the second latching means and thereby facilitate coupling and uncoupling of the first and second latching means and to retract the second latching means and thereby draw the boat and the barge together and into a predetermined positioning with respect to each other;

said cylinder means including a housing comprising a main portion secured to the boat and a locking portion and a piston rod extending from the housing to the second latching means and including a locking portion, said locking portion of the housing and the piston rod operable for locking the cylinder means in the retracted condition; and

emergency release means independent of the locking means for selective actuation to permit operation of the cylinder means to extend the second locking means and thereby uncouple the boat from the barge even though the locking means remains in the locked condition, said emergency release means including a plurality of bolts extending from the housing parallel to the piston rod and through the locking portion of the housing and a plurality of expandable nuts each normally threadedly secured to the distal end of one of the bolts for cooperation therewith to normally retain the locking portion of the housing secured to the main portion thereof, said nuts responsive to the receipt of a predetermined emergency signal to disconnect the locking portion of the housing from the main portion thereof.

3,892,197

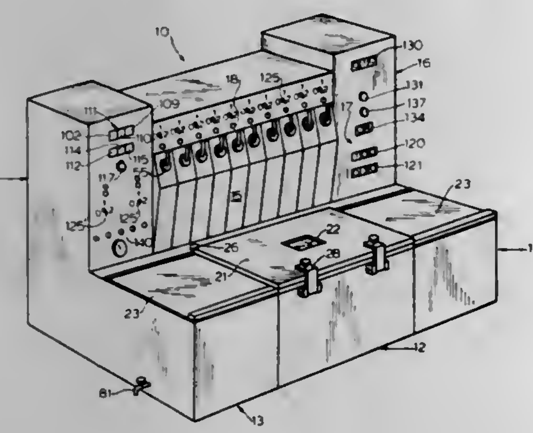
LIGHT MICROSCOPY PROCESSING APPARATUS

Thomas D. Kinney, 3120 Devon Rd., Durham, N.C. 27707, and John E. P. Pickett, 3323 Pinafore Dr., Durham, N.C. 27705

Filed Apr. 22, 1974, Ser. No. 463,055

Int. Cl. B05c *3/109*

U.S. Cl. 118—7 **14 Claims**



1. A closed processing system enabling a plurality of individual specimens of tissue to be separately contained while being bathed simultaneously for varying lengths of time in successive selected tissue solutions including melted paraffin so as to fix, dehydrate and clear the specimens preparatory to embedding, comprising:

a. a plurality of uniform tissue receptacles each being adapted to contain and physically isolate a group of tissue specimens having at least one specimen per group, each receptacle having a body portion defining an open cavity adapted to receive and retain specimens and closure means removably received by said body to enclose said cavity, the material forming said receptacles being inert to all of said solutions and having for each of said solutions at least some portion through which each of said solutions may be transferred;

b. a cabinet;

c. an electrically heated, temperature controlled container mounted in said cabinet and having a movable cover and being adapted for melting and holding melted paraffin;

d. a plurality of closed solution containers mounted in predetermined order in a storage compartment in said cabinet proximate said paraffin container, each solution container containing a particular tissue processing solution and with said melted paraffin container collectively containing all of the said tissue solutions in which said specimens are processed;

e. air pump means having associated remotely electrically controllable first valve means mounted proximate said cabinet and associated interconnected piping means, said pump means providing a pressure and vacuum source and said first valve means being selectively operable to connect said source whereby to produce a selected pressure or vacuum condition in said piping means;

f. a processing chamber mounted in said chamber and having an end wall immediately adjacent an end wall of said melted paraffin container, said chamber having a pressure sealable top cover and being adapted to receive and process therein selected numbers of said receptacles simultaneously said chamber being temperature controlled and electrically heated and being connected to said piping means thereby enabling the corresponding selected pressure and vacuum condition in said piping means to be produced in said chamber;

g. a second remotely electrically controllable valve means mounted in said cabinet and having on one side a fluid connection to said chamber and on the other side a fluid connection to said paraffin container enabling the paraffin contents thereof to be exchanged between the chamber and said paraffin container, said fluid connections for said second valve means being of minimal length and being electrically heated and maintained at a temperature above the melting point of said paraffin;

h. a third remotely electrically controllable valve means mounted in said cabinet and having on one side a fluid connection of minimal length to said chamber and on the other side a port for transfer of solutions therethrough;

i. fourth remotely electrically controllable solution transfer valve means positioned in said cabinet between said processing chamber and said storage compartment, said fourth valve means being fluid connected on one side to said third valve transfer port and on the other side having separate fluid connections to each of said solution containers and being remotely electrically controllable for enabling each solution container connection on the one side of the fourth valve means to be selectively and independently connected to said transfer port for a predetermined time while all other solution container connections are isolated therefrom and at other times to isolate all of said solution container connections from said tranfer port;

j. an electrical power source; and

k. remotely operable electrical control means connected to said power source and mounted proximate said chamber for remotely powering and electrically operating each of said valve means and temperature controls in a predetermined time sequence program whereby with a selected number of said receptacles installed in said chamber and said cover sealed on said chamber, said solutions and said paraffin are successively, selectively and independently drawn from said solution and paraffin containers, are measured by timing the withdrawal and admitted to said chamber under a vacuum condition in a predetermined volume, retained for predetermined times at a predetermined pressure and at the end of each processing step being forced back to a respective said solution and paraffin container by pressure from said pump means source in a corresponding processing sequence such that selected of said solutions and said melted paraffin are separately and independently exchanged with each said group of specimens while maintaining said system closed, said paraffin transferred a minimal distance, and each said group physically isolated.

3,892,198

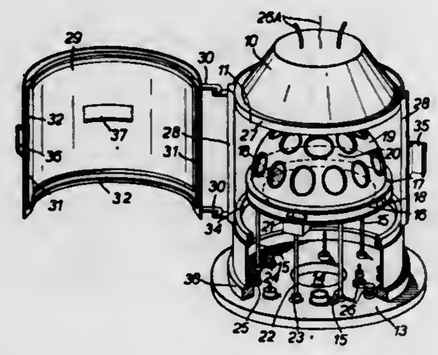
ENCLOSURES FOR VACUUM COATING

Christopher David Dobson, 157 Linden Ct., Newbridge, Monmouthshire, England

Filed June 27, 1974, Ser. No. 483,501

Int. Cl. C23c *13/08*

U.S. Cl. 118—49 **5 Claims**



1. A cylindrical vacuum enclosure for vacuum coating processes comprising a main body portion of part-cylindrical form including part of the side wall of the cylindrical enclosure which is shaped to define a lateral opening extending around substantially 180° of the periphery of the cylindrical enclosure, said enclosure including top and bottom circular plates, said bottom plate defining apertures to accommodate electrical, mechanical or other inputs to the enclosure, said top and bottom plates connected to said main body portion with an air-tight seal, a workholder within said enclosure arranged to support devices for coating, and means for supporting and rotating said workholder, a movable access closure member of approximately semi-cylindrical shape arranged to form a seal with the body portion around said lateral opening, mutually cooperating vertical flanges being provided between said body portion at the two sides of the lateral opening and at the two sides of the closure member, the mutually cooperating flanges being provided at an angle of from 15° to 60° from the tangent to the side wall of the cylindrical enclosure and to the closure member respectively, a hinge for the closure member provided between one pair of said mutually cooperating flanges on one said side, and a locking flange on the other pair of flanges for retaining the closure member in sealing relationship to the peripheral walls of the opening in the body portion, and a sealing ring between the cooperating surfaces of the closure member and the peripheral walls of the opening in the main body.

3,892,199

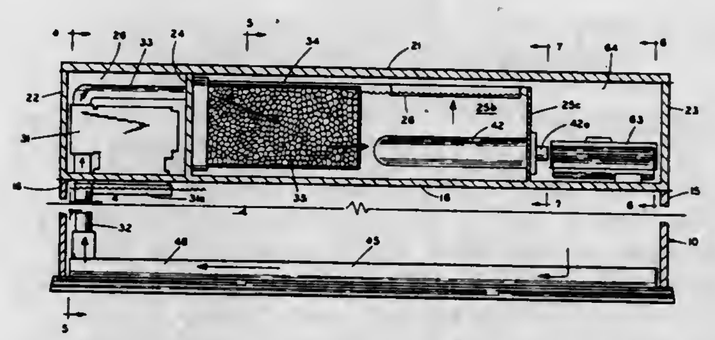
AQUARIUM

Jerome F. Huyler, Winnetka, Ill., assignor to Aquatium, Inc., Winnetka, Ill.

Continuation-in-part of Ser. No. 258,706, June 1, 1972, abandoned. This application June 29, 1973, Ser. No. 374,911

Int. Cl. A01k *63/00*

U.S. Cl. 119—5 **21 Claims**



1. An aquarium module for filtering, heating, and aerating water in an aquarium including a water tank having a bottom and an open top, said module comprising:

a housing mounted on the top of the water tank, said housing having a top and a bottom and an open interior positioned over the water tank, with the open interior comprising a pump compartment and a water compartment, the water compartment having an open interior formed by a bottom and raised side walls extending around the periphery of the water compartment, said water compartment further comprising inlet means for receiving water and outlet means for delivering water back to the tank, said outlet means comprising an elongated opening in the bottom of the water compartment that leads downwardly to the tank;

mechanical pump means mounted in the pump compartment and having an inlet in communication with the water in the tank and an outlet in communication with the inlet means of the water compartment, said pump means being adapted to mechanically pump water from the tank, circulate the water through the water compartment, and return the water back to the tank at a sufficient rate of speed to permit the development of a biological filtration environment in filter means mounted in the water compartment;

high capacity gravity filter means comprising a removable filter tray resting in the water compartment, said filter tray having a raised perforated bottom and raised side walls, said filter tray having an open top fitted with a removable cover and having an open interior that is adapted to be at least partially filled with a filter medium means for removing impurities from the water, said filter tray having inlet means for receiving unclarified water at the top of said filter medium from the pump means outlet and outlet means at a lower portion thereof for delivering clarified water to the interior of the water compartment, said inlet and outlet means being positioned such that the water flows downwardly through the filter medium means under the influence of gravity as it passes from the inlet means to the outlet means;

water heater means mounted beside the filter means in the interior of the water compartment, said water heater means positioned adjacent the water compartment outlet means such that water passing from the filter means outlet means must first pass in proximity to the heater means before it can return to the tank through the water compartment outlet means; and

natural aeration means mounted in the water compartment and comprising a raised partition means mounted along the edge of the water compartment outlet means and separating the water compartment outlet means from the rest of the interior of the water compartment, said partition means extending upwardly to a position above the height of the water heater means in the water compartment and being adapted to disperse clarified and heated water in the water compartment into a thin sheet and direct it downwardly in waterfall fashion through the water compartment outlet means back to the tank, said natural aeration means being adapted to aerate the water as it falls downwardly into the tank.

3,892,200

AQUARIUM HOUSING

Larry R. Ramsauer, 5862 Paddon Cir., San Jose, Calif. 95123

Filed Apr. 29, 1974, Ser. No. 465,128

Int. Cl. A01k *64/00*

U.S. Cl. 119—5 **10 Claims**

1. An aquarium housing for use in an aquarium to house aquarium devices while allowing proper operation of the housed devices and to act as a conduit for tubing and/or wiring being routed from outside the aquarium to a device inside the aquarium, comprising:

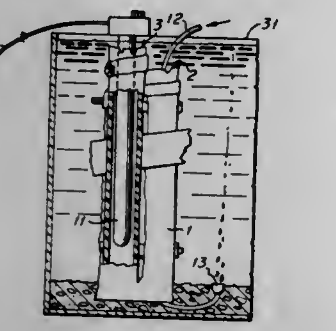
a structure having a decorative exterior, said structure forming at least one internal cavity;

at least one orifice in the top of said structure for providing device, tubing and/or wiring entry into each of said cavities;

at least one orifice in the bottom of said structure for providing device, tubing and/or wiring entry into each of said cavities;

at least one first flow hole in the top one third portion of at least one of the sides of said structure for providing water flow through said cavities;

at least one second flow hole in the bottom one third portion of at least one of the sides of said structure for providing water flow through said cavities;



said cavity or cavities acting as a decorative protective housing for aquarium devices placed into the cavity through either said top or bottom orifices;

said cavity and said top and bottom orifices coacting to form a conduit for tubing and/or wiring to be routed from outside the aquarium to inside the aquarium;

said first and second flow holes providing proper circulation of water through the cavity to allow the proper efficient operation of heaters and/or filters housed within said cavity.

said structure hiding the detractiveness of any device, tubing and/or wiring being housed or routed through said structure when being viewed from any viewing side of said aquarium.

3,892,201
BROODING AND REARING OF POULTRY

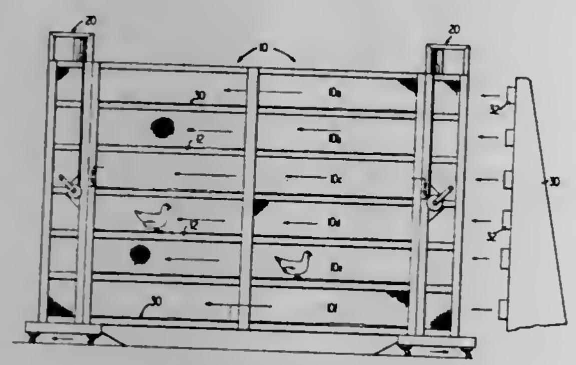
Lloyd B. Crawford, Wynyard, Canada, assignor to Crawfords Foods Ltd., Saskatchewan, Canada

Filed Nov. 30, 1973, Ser. No. 420,466

Claims priority, application Canada, Dec. 18, 1972, 159320

Int. Cl.^{2} A01K *31/06*

U.S. Cl. 119—17 **9 Claims**



1. A method of rearing poultry in a cage unit including a floor having a substantially continuous surface comprising the steps of:

a. positioning a number of infant poultry in said cage unit such that they are supported directly on said continuous floor surface;

b. supplying food and water to said poultry and maintaining the cage unit as a temperature adequate as to provide for growth of said poultry;

c. permitting the poultry to remain in said cage unit for a selected growing period;

d. the droppings produced by the growing poultry being allowed to continuously build-up on said continuous floor surface during said selected growing period substantially in the absence of litter to form a layer of substantially litter-free manure thereon with said poultry being supported directly on said layer of manure;

e. and effecting drying of said layer of manure throughout the growing period of said poultry to maintain the average moisture level of said manure layer below a preselected level thus to provide for the comfort and health of said poultry.

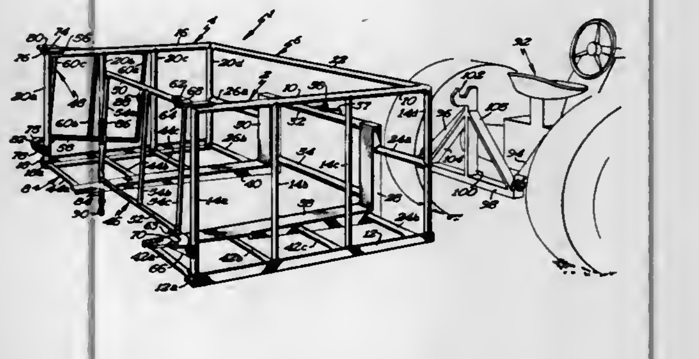
3,892,202
BALE HANDLING AND FEEDING CONTAINER

Leon G. Feterl, 411 W. Center, Salem, S. Dak. 57059

Filed Mar. 18, 1974, Ser. No. 452,440

Int. Cl. A01k *5/00*

U.S. Cl. 119—60 **9 Claims**



1. Bale pickup and feeding apparatus for cattle comprising: a container having a pair of upright, spaced apart side walls, an upright rear wall extending between said side walls, and a front end with an opening therein opposite said rear wall;

a plurality of vertically extending, animal feeding spaces along the length of said side walls defined by a plurality of horizontally spaced, upright rigid members forming a portion of said side walls, whereby livestock may project their heads through said feeding spaces to feed on a large hay bale within said container;

gate means hingedly mounted on the forward ends of said side walls for swinging movement to a closed position across said front end opening of said container; and

elongated bale lift and support means on the bottom of said container comprising a pair of elongated, spaced apart, pickup arms positioned inwardly from said side walls and extending generally parallel thereto from said rear wall toward said open front end of said container for insertion under a large hay bale.

3,892,203
HEADGATE

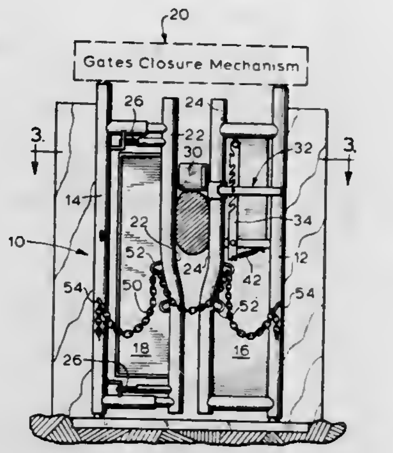
James B. Tieben, 106 Cottonwood, Dodge City, Kans. 67801

Filed July 30, 1973, Ser. No. 383,830

Int. Cl. A61d *3/00*

U.S. Cl. 119—99 **7 Claims**

1. In a livestock headgate including a pair of upright support members and a pair of gate sections, each gate section pivotally mounted to one of the support members and having a substantially vertical, outer, animal engaging edge, whereby a confined animal's neck may be secured between said edges when said gate sections are in a closed position, the improvement comprising: means cooperating with said gate sections for restraining the vertical movement of the confined animal's head, and self-tightening means for positioning said restraining means at different levels, said self-tightening means also including means for locking said restraining means at any one of said levels whereby said restraining means can only move into further restraining position to minimize the vertical movement of the confined animal's head.



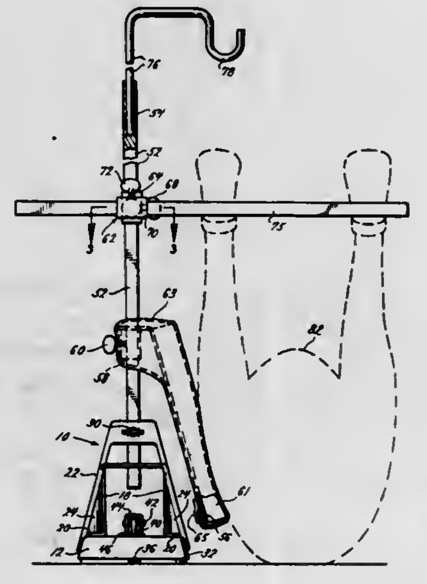
3,892,204
ADJUSTABLE SUPPORT

Paul V. Belkin, 5320 North Highway 140, Florissant, Mo. 63033

Filed May 11, 1973, Ser. No. 359,619

Int. Cl. A61d *3/00*

U.S. Cl. 119—103 **19 Claims**



1. A support that is releasably securable to a table regardless of the thickness of the top of said table, said top of said table having an upper surface on which an animal is to be held and supported while said animal is insensible and is resting on its back, said support being releasably securable to said table regardless of the cross sections of the edges of said top of said table and comprising a base which has all portions thereof disposed atop said upper surface of said top of said table, said base being releasably securable to any desired area of said upper surface of said top of said table, including areas which are located substantial distances inwardly of the closest edge of said top of said table, whereby said base can be releasably secured to whatever area of said upper surface of said top of said table is optimum for free and full access to desired portions of the anatomy of said animal, an upright which is supported by and which extends upwardly from said base, and a means which receives its support from said upright but which extends laterally outwardly from said upright and which is spaced above the level of said base to releasably hold the upwardly-extending legs of said animal while said animal is insensible and is resting on its back atop said upper surface of said top of said table.

3,892,205
STEAM GENERATOR

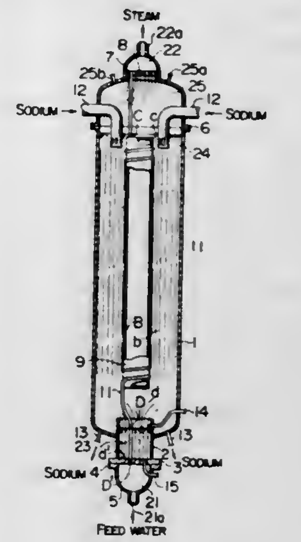
Masanori Naitou; Hiraku Nakano; Shinichi Kashiwai; Chikara Satou, and Motoaki Utamura, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Feb. 5, 1974, Ser. No. 439,699

Claims priority, application Japan, Feb. 16, 1973, 48-18265

Int. Cl. F22b *1/06*

U.S. Cl. 122—32 **15 Claims**



1. A steam generator of a vertical multitubular (bushing) type having at least one tube plate at the lower end of the tubes and using two fluids flowing inside and outside said tubes respectively and reacted by contact with each other.

characterized by a reservoir located outside said tubes and on said tube plate at the lower end of said tubes, and an intermediate heating medium disposed in said reservoir, said medium being physico-chemically inert to said both fluids, and is greater in density than said both fluids, and has melting point of not higher than 300°C.

3,892,206
COMBUSTION DEVICE FOR HEAT MOTORS

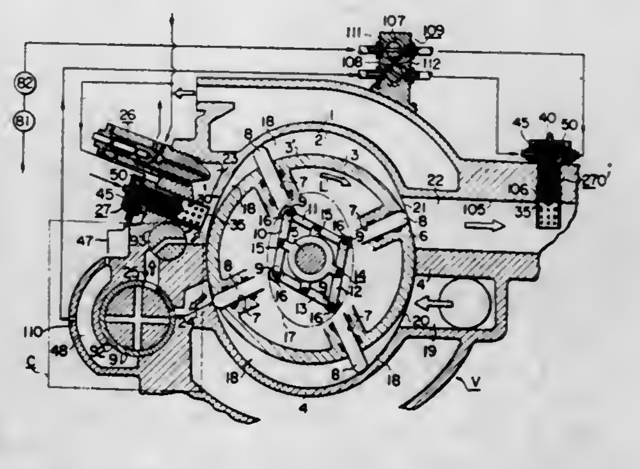
Akira Kobayashi, Nagoya, Japan, assignor to Kabushiki Kaisha Toyota Chuo Kenkyusho, Nagoya, Japan

Filed Mar. 20, 1973, Ser. No. 343,150

Claims priority, application Japan, Mar. 23, 1972, 45-29493

Int. Cl. F02b *53/12*

U.S. Cl. 123—8.09 **3 Claims**



1. In combination, a vane-type rotary engine and a combustion device for igniting fuel-air mixture in a combustion chamber of the vane-type rotary engine, comprising

a cylindrical body air-tightly fitted to the wall of the combustion chamber and projecting into the combustion chamber,

a hollow cylinder coaxially attached to the inner end of said cylindrical body for defining therein a plug chamber opening to the combustion chamber,

an air supply passage extending through said cylindrical body and having an air discharge port opening at the inner end of said cylindrical body to said plug chamber for supplying compressed air to the plug chamber,

a fuel supply passage extending through said cylindrical body and having a fuel discharge port opening at the inner end of said cylindrical body to said plug chamber adjacent to said air discharge port for supplying fuel to the plug chamber,

a fuel permeating member or wick fitted into said fuel discharge port with one end thereof facing said plug chamber,

spark ignition means disposed in said plug chamber adjacent to said air and fuel discharge ports and connected to an electric power source for generating a spark to ignit fuel-air mixture in said plug chamber, and

means for cutting off the electrical connection between said spark ignition means and said electric power source when the speed of said engine reaches a predetermined speed, and further including a first fuel source for a high grade fuel, a second fuel source for a low grade fuel, a directional control valve for communicating either of said first and second fuel sources with said fuel supply passage, and means for controlling said directional control valve to communicate said first fuel source with said fuel supply passage when the speed of said motor is less than a predetermined value and said second fuel source with said fuel supply passage when the speed of said motor is more than said predetermined value.

3,892,207

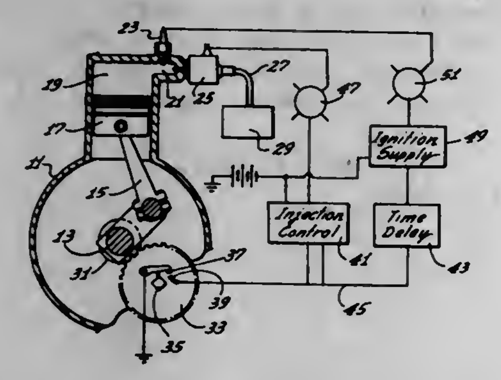
INTERNAL COMBUSTION ENGINE

Carl A. Weise, deceased, late of San Pedro, Calif., and Helen C. Weise, administratrix, 6 Diamonte Ln., San Pedro, Calif. 90732

Continuation of Ser. No. 5,214, Jan. 23, 1970, abandoned. This application Feb. 3, 1972, Ser. No. 223,381

Int. Cl. F02b *3/00*; **F02p** *5/04*

U.S. Cl. 123—32 SA **22 Claims**



1. The method of controlling the time at which ignition occurs in a fuel-injected, spark ignited, engine comprising the steps of

creating a first timing signal during each engine cycle,

initiating injection of fuel into a combustion chamber of the engine in response to the first signal,

deriving a second signal from said first signal, which second signal occurs later than said first signal by a predetermined, fixed, clock-time interval after each said creation of the first signal, which clock-time interval does not vary with change of engine speed or the frequency of occurrence of the first signal, and

creating a spark in the combustion chamber of said engine in response to the second signal while the fuel is so positioned in the combustion chamber that it may be ignited by the spark.

3,892,208

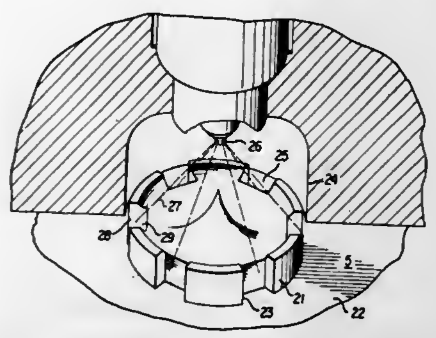
MODIFIED INJECTION SPRAY CHARACTERISTICS FOR SPACED BURNING LOCI ENGINES

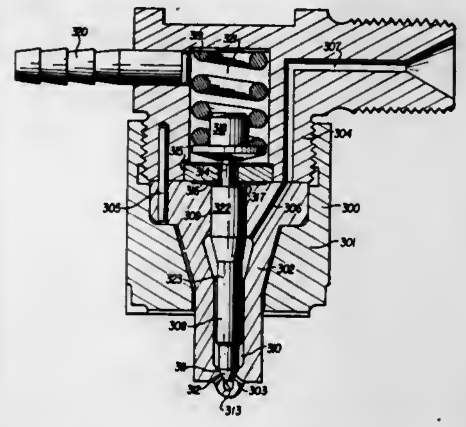
Harold Elden Anderson, Playa Del Rey, and Perry Lester Kruckenberg, Los Angeles, both of Calif., assignors to McCulloch Corporation, Los Angeles, Calif.

Filed July 5, 1972, Ser. No. 269,232

Int. Cl. F02b *3/04*

U.S. Cl. 123—32 R **1 Claim**





1. In a method of effecting combustion in internal combustion engines, which method is characterized by the steps of:

generating, within internal combustion engine means, and in energy communicating relation with engine piston means movable in cylinder means of said engine means, a plurality of generally mutually distinct burning loci, with said burning loci defining generally spaced centers of burning;

concurrently, and during a working stroke of said engine piston means,

transmitting combustion supporting gas, heated by compression and combustion, into said burning loci, and

generating and transmitting streams of combustible fuel into said burning loci,

each said burning loci substantially receiving at least one of said fuel streams and at least some of said heated gas;

limiting the time duration of the generation of said fuel streams so that at least the majority of fuel in said streams passes into said burning loci during a working stroke of said engine piston means;

providing a plurality of spaced wall means, with each such wall means peripherally confining and defining

a fuel and heated gas agitation zone individually associated with and communicating with a said burning loci;

each said peripherally confined agitation zone and a burning loci associated therewith receiving fuel from at least one fuel stream directed thereinto during said working stroke of said engine piston means;

maintaining the existence and a generally discrete relation of said burning loci during said working stroke of said engine piston means and

utilizing energy generated through operation of said burning loci to induce said working stroke of said engine piston means;

the improvement comprising, in combination with said steps, the additional steps of:

providing a fuel injection nozzle with a plurality of orifices, all of which orifices are located in a common plane and are each directed toward a respective burning loci,

slidably disposing a spring-biased valve tip in said nozzle such that said valve tip is subjected to and is responsive to the pressure of fuel being fed through said nozzle to open said orifices against its spring bias;

transmitting fuel through passage means leading from fuel pump means to said fuel injection nozzle means to generate said fuel streams through said orifices such that said fuel streams are directed into said respective agitation zones and burning loci associated therewith;

during a relatively lower engine speed and/or load condition maintaining a portion of said valve tip within said common plane of said orifices and adjacent said orifices to partially obstruct an inlet of each of said orifices to provide a partial obstruction to the entry of fuel into said orifices in a manner restricting said flow of fuel toward said orifices to a relatively thin flow path extending transversely of each of said inlet means of said plurality of orifices to:

eliminate relatively quiescent, stagnant flow zones within said orifices, and

produce a generally diverging and relatively atomized spray of fuel leading from said orifices to said burning loci; and

during a relatively higher engine speed and/or load condition displacing said valve tip means free of said common plane to remove said flow obstruction in a manner permitting said fuel to flow substantially axially toward said orifices and form generally solid configurations of fuel streams leaving said orifices and directed toward said agitation zones and burning loci associated therewith.

3,892,209

LIQUID-COOLED RECIPROCATING ENGINES, MORE PARTICULARLY MARINE ENGINES

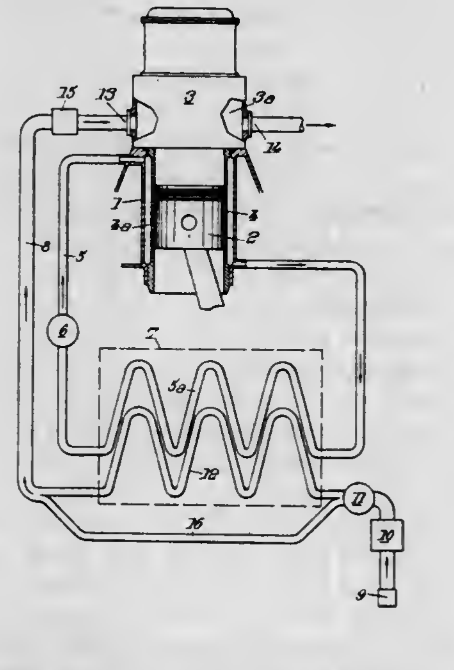
Felix Amiot, 2, rue Georges Leygues, Paris, France

Filed Mar. 11, 1974, Ser. No. 450,159

Claims priority, application France, Apr. 3, 1973, 73.11905

Int. Cl. F01p *3/00*

U.S. Cl. 123—41.29 **9 Claims**



1. A liquid-cooled reciprocating engine having a head; and a body connected to the head;

the head and the body respectively being formed of differing metals;

cooling chambers being provided in said head and body; the body being formed of metal more prone to corrosion than the metal forming the head; and wherein

a liquid cooling system is provided for the engine and said system comprises;

at least a first circuit and a second circuit with means for receiving, respectively, a first coolant in said first circuit and a second coolant, different from said first coolant, in said second circuit, the first circuit being closed and connected in fluid communication with the cooling chamber of said body of the engine, said first circuit including a heat exchanger, and the second circuit being open and connected in fluid communication with the cooling chamber of the said head of the engine;

the arrangement being such that the second coolant for said second open circuit is more corrosive than the first coolant for said first closed circuit;

said heat exchanger being provided to permit cooling of the coolant of the first closed circuit.

3,892,210

COOLED EXHAUST VALVE FOR AN INTERNAL COMBUSTION ENGINE

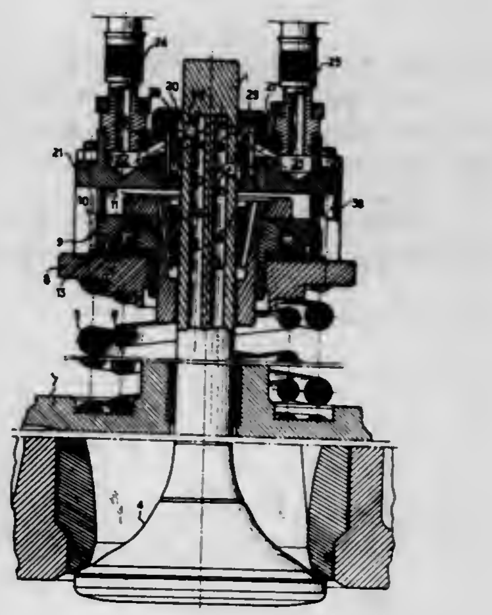
Karl Kuhn, Saint-Germain-en-Laye, and Jean-Claude Bouquet, Pantin, both of France, assignors to Societe d'Etudes de Machines Thermiques, Saint-Denis, France

Filed Feb. 14, 1974, Ser. No. 442,648

Claims priority, application France, Mar. 13, 1973, 73.08917

Int. Cl. F01l *1/32*

U.S. Cl. 123—90.3 **5 Claims**

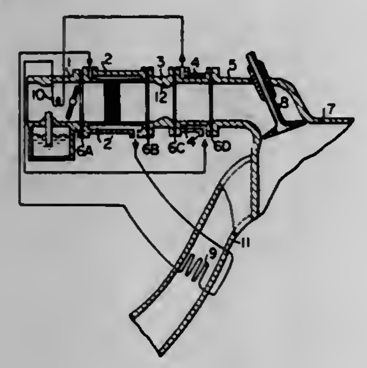


1. An internal combustion engine valve having a valve stem and head of the type cooled by circulating a fluid in channels provided in the valve stem and head, comprising valve springs mounted about the valve stem, a valve rotating device including an annular plate mounted around the valve stem and receiving the load of the valve springs, a rotary joint mounted around the valve stem and having passage means therein connecting the channels of the valve stem to fluid supply and return conduits, said rotary joint being secured to said annular plate whereby said rotary joint and said annular plate are movable axially jointly with the valve and are substantially retained against rotation relative to the valve stem.

3,892,211
FUEL-AIR MIXTURE HEATING DEVICE FOR INTERNAL COMBUSTION ENGINES

Yoshishige Oyama, Hitachi, Japan, assignor to Hitachi, Ltd., Japan

Filed Dec. 13, 1972, Ser. No. 314,500
Int. Cl. F02m *31/00*
U.S. Cl. 123—122 R **13 Claims**

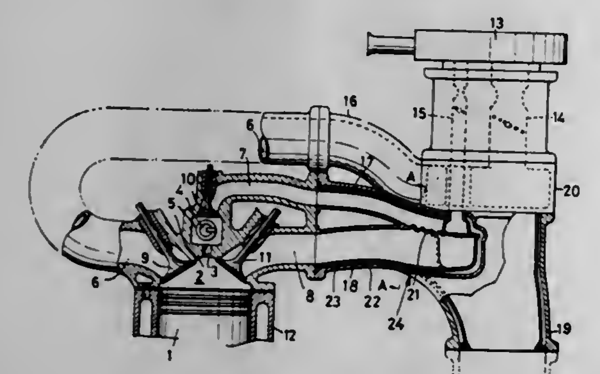


1. A fuel-air mixture treating device adapted to be interposed between a carburetor and an intake manifold of an internal combustion engine comprising:
- a. fuel-air mixture heating means disposed downstream of said carburetor,
- b. fuel flow control means disposed downstream of said fuel-air mixture heating means for forcing vaporized low-volatile components of fuel heated and vaporized by said fuel-air mixture heating means to concentrate toward and flow close to the axis of said fuel-air mixture heating device and said intake manifold, and
- c. cooling means disposed downstream of said fuel flow control means for cooling the fuel-air mixture flowing toward said intake manifold using a cooling medium which does not directly contact the fuel-air mixture.

3,892,212
INTEGRAL INTAKE AND EXHAUST CONDUIT FOR INTERNAL COMBUSTION ENGINE

Hisashi Tamai, Tokyo, and Yoshitoku Iizuka, Toda, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed June 22, 1973, Ser. No. 372,746
Claims priority, application Japan, June 28, 1972, 47-76212
Int. Cl. F02b *19/10, 19/18*
U.S. Cl. 123—122 AB **7 Claims**

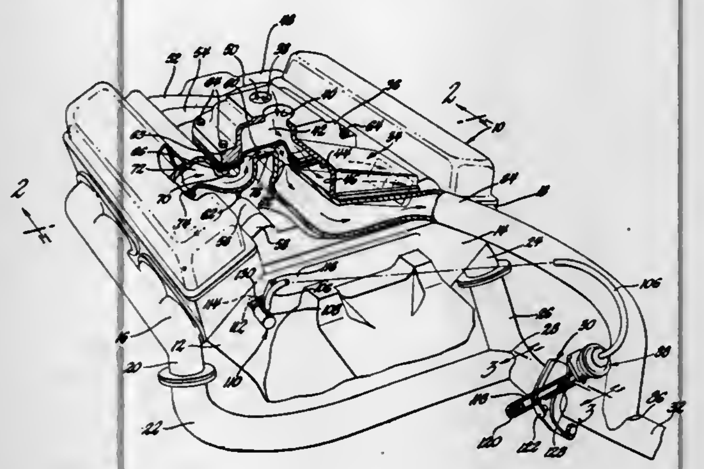


1. An integral intake and exhaust conduit for an internal combustion engine comprising means forming an intake passage for directing an air-fuel mixture to a combustion chamber, means forming an exhaust passage for emitting the exhaust from said engine, partition means disposed between said intake passage means and said exhaust passage means for transferring heat from said engine exhaust to said air-fuel mixture, said partition means having corrugations therein for impeding the flow of air-fuel mixture within said intake passage means while transferring heat thereo, said partition means being located at a distance from said engine, said intake passage means and said exhaust passage means being displaced from one another between said partition means and said engine, a housing, said intake passage means and said exhaust passage means being displaced within said housing and heat insulating means disposed within said housing and about said intake passage means and said exhaust passage means whereby the heat generated by said engine is retained within said housing, said intake passage means and said exhaust passage means being of low thermal capacity.

3,892,213
QUICK HEAT MANIFOLD

Edward N. Cole, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 5, 1973, Ser. No. 394,459
Int. Cl. F02m *31/00*
U.S. Cl. 123—122 H **2 Claims**

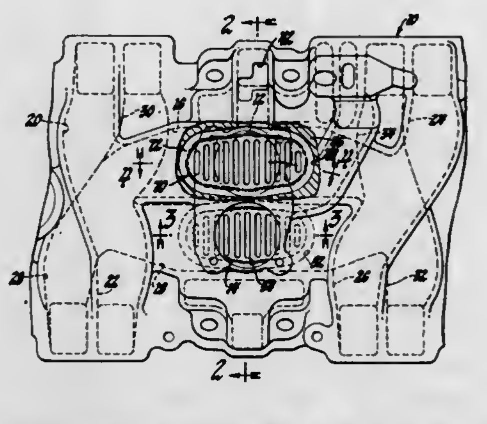


1. In a heated manifold for a V-8 internal combustion engine of the type having first and second banks of cylinders each with an exhaust manifold, and an intake manifold having riser bores therein and an induction passage for supplying air-fuel mixture to intake valves the improvement comprising: a first pair of transverse runners supplying air-fuel mixture to cylinders in the first bank of cylinders, a second pair of transverse runners supplying air-fuel mixture to cylinders in the second bank of cylinders, an insert plate in the intake manifold located below the riser bores for collecting fuel droplets during engine start, a manifold crossover plate connected to the underside of the intake manifold having a crossover passage with first and second inlets thereto, means for communicating each of said inlets with the exhaust manifold of one of the cylinder banks, said crossover plate including an outlet thereon in communication with said crossover passage between said first and second inlets thereto at a point between said first and second pairs of transverse runners, a Y-configured exhaust pipe having first and second branches each having an inlet connected to the exhaust manifold of the first and second banks of cylinders, respectively, means including an outlet pipe for combining the flow from each of said first and second branches into a single exhaust stream, thermally responsive valve means in said outlet pipe downstream of each of said first and second branches, a second exhaust pipe connected between said crossover plate outlet and the outlet pipe downstream of said valve means at a point between and underlying said first and second pairs of transverse runners, for defining a flow path for exhaust heat from the crossover passageway, said thermally responsive valve means being operative during cold engine start to block flow through said separate exhaust branches and divert exhaust flow through said first and second inlets, said crossover passage and said crossover plate outlet for directing exhaust from eight cylinders against said insert plate to quickly increase the temperature of the insert plate for evaporating fuel droplets collected thereon during cold engine start.

3,892,214
CAST-IN E.F.E. HOT PLATE

Walter C. Heidacker, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 29, 1973, Ser. No. 410,767
Int. Cl. F02m *31/00*
U.S. Cl. 123—122 AC **2 Claims**



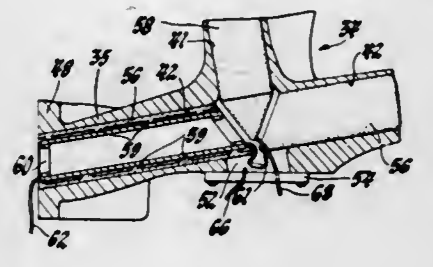
1. An engine manifold construction comprising: a first induction manifold casting portion having riser bores therein for receiving an air-fuel mixture from a carburetor, means forming an induction plenum in said first manifold casting portion located below said riser bores, means defining transverse runners in said induction manifold portion in communication with said induction plenum, a second intake manifold casting portion formed integrally with said first portion and having means forming an exhaust heat crossover passage therethrough with openings at opposite ends thereof in communication with exhaust manifolds of the vehicle, said second portion including a pair of spaced segments thereon deformed inwardly of the crossover passageway and underlying each of said riser bores, said first intake manifold casting portion including a floor therein having a pair of spaced apart oval shaped depressions therein, a cup-shaped thermally conductive fuel evaporation plate located within each of said oval shaped openings including a continuously formed oval shaped peripheral flange thereon cast in place within said floor to provide a sealed joint between the induction plenum and the crossover passage, said inwardly formed segments forming a restricted passage under each of said plates to concentrate exhaust heat against said plates at a point directly underlying said riser bores, said second casting portion including convolutions formed therein on either side of said inwardly deformed segments thereon to reinforce the cast in place flange and to reduce impingement of exhaust heat at the flange thereby to maintain a positive seal joint therebetween during engine operation.

3,892,215
ELECTRICALLY HEATED INTAKE MANIFOLD

Robert Hickling, Royal Oak, Mich.; Joe W. Posey, Newport News, Va., and Irvin D. Wilken, Sterling Heights, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 7, 1973, Ser. No. 413,521
Int. Cl. F02m *31/00*
U.S. Cl. 123—122 F **10 Claims**

1. A heated intake manifold for an internal combustion engine said manifold comprising
- a housing including passage defining means forming a plurality of connecting passages terminating in individual runners adapted to be connected to the respective inlet ports of an associated engine, the portion of said passage defining means forming at least the inner surfaces of said individual runners being made of an electrical and heat insulating material,
- an electrical heating element in each of said runners, each said element comprising a thin walled tube insertable in its respective runner and covering a major portion of the wall surface thereof so as to define paths for air-fuel mixture to flow within said heating elements and prevent contact of at least a major portion of the air-fuel mixture passing through said manifold with the walls of said runners, and

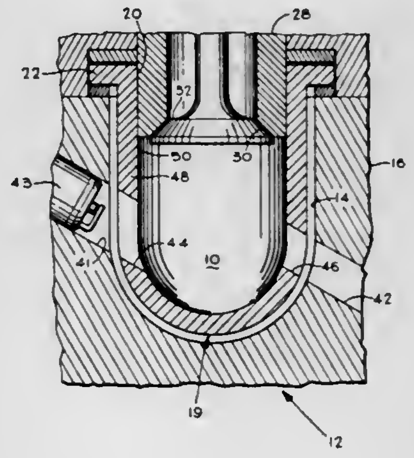


- spacing means maintaining an insulating clearance between substantial portions of the walls of said heating elements and said passage defining means.

3,892,216
COMPOSITE ARTICLE AND METHOD OF MAKING SAME

Louis J. Danis, Battle Creek, Mich., assignor to Eaton Corporation, Cleveland, Ohio

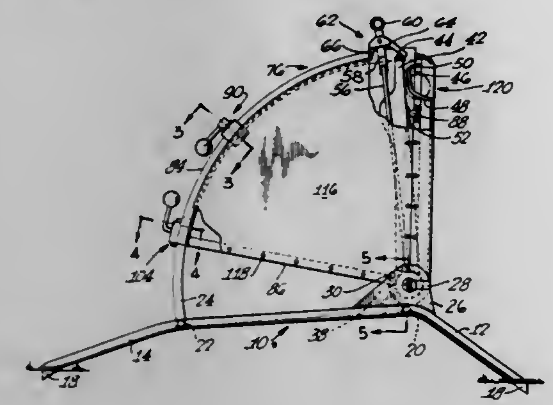
Filed Oct. 23, 1973, Ser. No. 408,697
Int. Cl. F02b *19/16, 19/10*
U.S. Cl. 123—191 S **9 Claims**



5. A member for defining an auxiliary compartment of the combustion chamber of an internal combustion engine comprising:
- a. a core of generally tubular configuration having one end closed and the other end open, said tubular core being formed of metallic material having a thermal conductivity not less than 130 BTU/Ft²/Ft/°F/Hr. and having
  - i. at least two apertures formed in the wall thereof;
  - ii. a mounting portion formed adjacent said open end and adapted for mounting to the engine combustion chamber; and,
- b. an outer surface portion encasing said core, said surface portion being formed of metallic material selected from the group consisting of aluminum, aluminum-rich alloy, nickel, or nickel-rich alloy, such that said member has
  - i. progressive oxidation resistance not less than that of AISI type 303 stainless steel when exposed for at least 2 hours to 0.1 atmosphere oxygen at 800° C,
  - ii. a bulk thermal conductivity of not less than 40 BTU/Ft²/Ft/°F/Hr.

3,892,217
BASEBALL PITCHING MACHINE

Pertti Tapani Raty, 160 The Donway West, Apt. 111, Don Mills, Ontario, Canada
Filed Dec. 27, 1973, Ser. No. 428,933
Int. Cl. F41b *7/00*
U.S. Cl. 124—7 **13 Claims**



1. A device for throwing projectiles such as baseballs, comprising:

1. a support frame adapted for ground mounting,
2. a fixed horizontally disposed shaft carried by said support frame,
3. a fixed horizontally disposed axle carried by said support frame and extending coaxially within said shaft,
4. a throwing arm rotatably mounted at a first end upon said axle and having a projectile carrying basket adjacent a second end,
5. a mechanism mounted upon said shaft and rotatable therewith for releasably lockably engaging said throwing arm,
6. spring means engaging said shaft and said throwing arm and adapted to store energy as said throwing arm is rotated between first and second positions,
7. said mechanism includes a detent means adapted to releasably engage the throwing arm at said first postion,
8. a release means spaced from said first position for causing disengagement of said throwing arm from said detent means at the second position when a pre-selected amount of energy has been stored in the spring by rotational movement of the activating mechanism and said throwing arm about the fixed shaft, and
9. an upper frame rotatably carried by said shaft, said upper frame including a stop to halt rotational movement of said pitching arm at said first position, said upper frame having a lock for locking the upper frame to said support frame in an attitude giving a desired trajectory to a thrown projectile, said upper frame further including an arcuate channel within which an end portion of the mechanism travels during rotation thereof about said shaft, said arcuate channel having adjustably mounted therein the release for causing throwing arm disengagement from said mechanism.

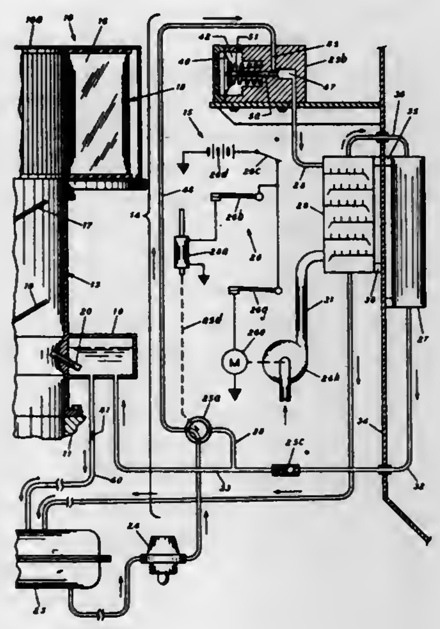
3,892,218
COLD START METHOD AND APPARATUS FOR CARRYING OUT SAME

John F. Senger, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Continuation of Ser. No. 295,041, Oct. 4, 1973, abandoned. This application Nov. 12, 1973, Ser. No. 415,070
Int. Cl. F02m *1/16*
U.S. Cl. 123—127 **1 Claim**

1. Apparatus for reducing exhaust and inoperative pollutants produced by a spark ignition internal combustion engine of the type including an air intake system, fuel intake system, and a carburetor interconnected therebetween for mixing said full-range fuel with air to form a combustible mixture for delivery to combustion chambers of said engine, comprising:

i. a stripping column adapted to selectively strip higher molecular weight constituents from said full-range fuel at all engine start conditions during flow through said column so as to provide a cold start fuel vapor effluent composed essentially of only low molecular weight constituents and a bottom liquid product composed essentially of only high molecular weight constituents,

ii. valve and conduit network means attached between said stripping column, a reservoir means for said full-range fuel and said carburetor, for providing selective flow conditions, said network means including a first plurality of conduit and valve means including first and second valve means controlling flow of said full-range fuel relative to said stripping column and said carburetor so as to allow, (a) in a first operating state, flow of said full-range fuel from said reservoir means to said stripping column and flow of said cold start fuel vapor effluent to a fuel well of said carburetor to provide for rapid starting of said engine without producing excessive exhaust pollutants and, (b) in a second operating state, full-range fuel to flow directly from said reservoir means to said fuel well of said carburetor bypassing said stripping column after said engine is in a normal running condition,



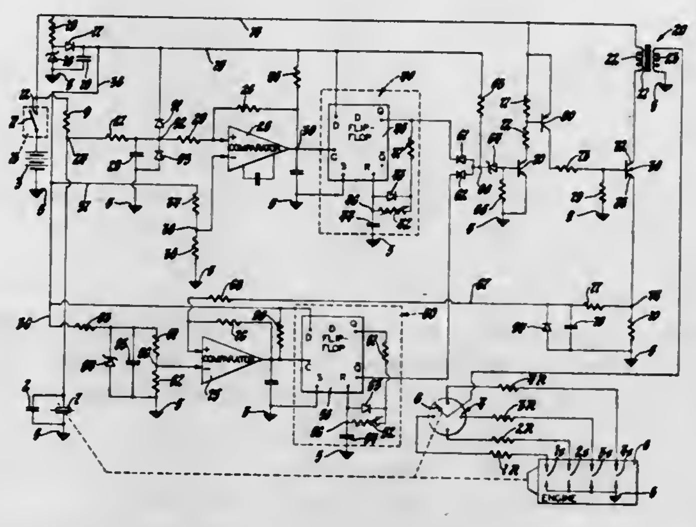
iii. condenser means positioned between said second valve means and said stripping column in operative contact with said cold start vapor effluent for providing liquefaction thereof,

iv. control means operatively connected to said first valve means of said valve and conduit network for changing operating state thereof so as to direct fuel flow relative to said stripping column, said reservoir and carburetor as a function of engine operating temperature,

v. said network means also including a metering means positioned between said first valve means and said stripping column for metering flow of said full-range fuel to said column as a function of temperature, said metering means including a housing having an inlet opening in fluid contact with said first valve means, movable rod means projecting into said opening and a spring-loaded bimetallic-diaphragm means permanently attached both at a central region to said rod means and at an outer edge to said housing, for controlling movement of said rod means relative to said inlet opening whereby full-range fuel flow to said stripping column is accurately controlled as a function of temperature.

3,892,219
INTERNAL COMBUSTION ENGINE IGNITION SYSTEM

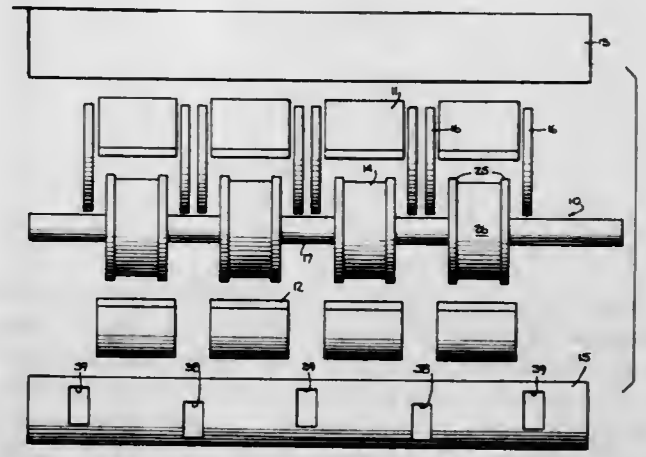
Mark E. Preiser, Santa Barbara, Calif.; Richard W. Johnston, Troy, and John G. Neuman, Grosse Pointe, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Sept. 27, 1973, Ser. No. 401,505
Int. Cl. F02p *1/00*
U.S. Cl. 123—148 E **2 Claims**



1. An internal combustion engine ignition system comprising in combination with a source of direct current potential and an ignition distributor having an electrical contact rotated in timed relationship with the engine through which ignition spark potential is applied to the spark plugs of the engine individually; a first monostable multivibrator circuit for producing a timing signal corresponding to each spark plug of said engine in timed relationship with and during each revolution of the crankshaft of said engine of a duration corresponding to the period of time ignition spark energy is to be applied to the said spark plug to which it corresponds; an ignition coil having a magnetic core, a primary winding which, during the buildup of the flow of an energizing current therethrough, produces a magnetic flux in said core and a secondary winding, connected to said electrical contact of said distributor, in which an ignition spark potential of sufficient magnitude to initiate an arc across the spark gap of each of said spark plugs is induced upon the interruption of the flow of energizing current through said primary winding, said primary winding having an inductance value which, with a predetermined magnitude of energizing current, will provide sufficient stored energy to maintain the arc initiated across each spark plug spark gap for a predetermined duration of time and said ignition coil having a primary to secondary winding turns ratio such that, during the buildup of energizing current through said primary winding, a potential sufficient magnitude to maintain the arc initiated across each spark plug spark gap is induced in said secondary winding; an ignition coil primary winding energizing circuit through which energizing current flows from said source of direct current potential through said ignition coil primary winding; an impedance element included in said ignition coil primary winding energizing circuit for producing an electrical potential signal of a magnitude proportional to the magnitude of said flow of energizing current; a second monostable multivibrator circuit for producing a plurality of control signals during each said timing signal, each in response to said electrical potential signal of a predetermined magnitude; and means reponsive to said timing signal for establishing and to each of said control signals for interrupting said ignition coil primary winding energizing circuit.

3,892,220
ROTARY VALVE

Dennis L. Franz, Rt. 1, Box 1198-B, Selah, Wash. 98942
Filed Dec. 28, 1973, Ser. No. 429,357
Int. Cl. F01l *7/16*
U.S. Cl. 123—190 E **18 Claims**



1. The combination of a rotary valve and an internal combustion engine having cylinder openings and intake openings and exhaust openings arranged to communicate with said cylinder openings, comprising

rotor means rotatable in the engine adjacent to said cylinder openings, said intake openings and said exhaust openings, said rotor means comprising rotatable shaft means and rotor units secured to said shaft means for rotation therewith,

said rotor units having sides and portions which are exposed to combustion in the engine cylinders and port means therein for opening and closing communication between the intake and the cylinders and the exhaust and the cylinders of the engine timed with the rotation of the engine,

means at both sides of said rotor units for sealing said rotor units substantially perpendicularly to the axis of rotation thereof,

ring means on said rotor units having a greater diameter than the portions of said rotor units which are exposed to combustion in the cylinders,

said ring means being positioned on both sides of said exposed portions,

bearing means in the engine for supporting said ring means for rotation therein,

said ring means having groove means thereon commencing at the trailing edge of said rotor unit port means and continuing for a substantial arc on said ring means,

groove means in the engine for the passage of lubricant to said sealing surfaces,

said ring means being positioned adjacent said engine groove means to prevent the passage of lubricant through said engine groove means to said sealing surfaces except when the groove means on the ring means is adjacent said engine groove means.

3,892,221
CONSTRUCTION ARRANGEMENT OF COMBUSTION CHAMBER FOR USE IN DIRECT FUEL INJECTION TYPE DIESEL ENGINE

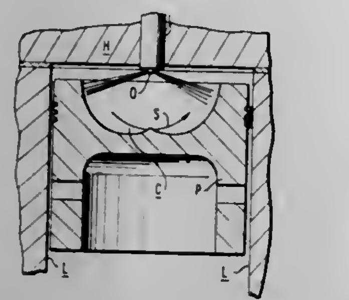
Motoyasu Kimbara, Yokohama, and Yoshitaka Yoshida, Tokyo, both of Japan, assignors to Isuzu Motors Ltd., Tokyo, Japan

Filed Sept. 18, 1973, Ser. No. 398,503

Claims priority, application Japan, Sept. 18, 1972, 47-93463

Int. Cl. F02b *3/00*

U.S. Cl. 123—32 ST **2 Claims**



1. In a diesel engine of the direct fuel injection type with a combustion chamber which is defined by a cylinder liner, a cylinder head, a piston being slidable within said cylinder liner and having a cavity at its crown portion, and having a circular air swirl path within the combustion chamber, and said engine further including a fuel injection nozzle so attached at a cylinder head that its tip portion is disposed at the upper portion in the combustion chamber on the center of the cavity and having a plurality of orifices so as to timely inject metered fuel jets into said cavity, the improvement wherein: said cavity has its inner peripheral wall surface formed by five inner side wall surfaces, each being in a straight line and of the same length in its horizontal cross-section with respective two straight lines adjacent to each other being at an angle of 108° to each other, and five inner corner wall surfaces, each being in a substantially arc in its horizontal cross-section and being interposed between respective adjacent straight line inner side wall surfaces and being so formed that the ratio of the radius of the arc to that of a circle, which is inscribed with said straight line wall surfaces, is in the range of from 0 to 0.55, and wherein: said orifices are circumferentially spaced and face respective straight line inner wall surfaces with the fuel injection direction of each of said orifices so defined that fuel is injected from each orifice against said straight line inner peripheral wall surface of said cavity at a slant angle in the swirl direction in a cross-sectional plane at right angles to the piston axis.

3,892,222
FOLDING COMBINED BROILER, OVEN AND STOVE

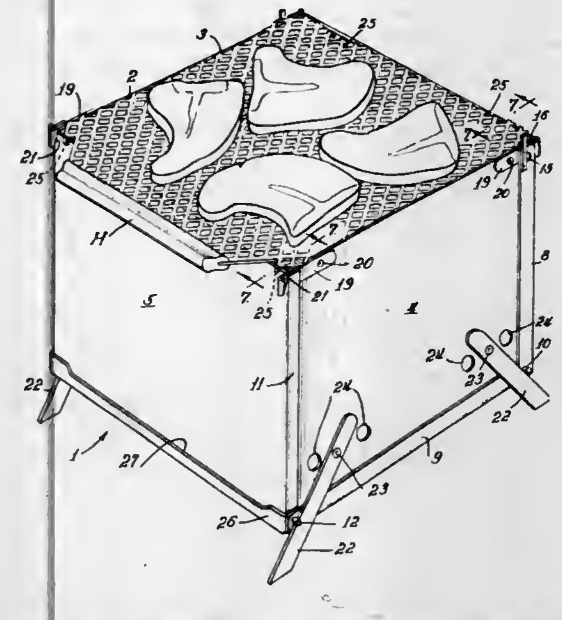
Rolf E. Darbo, P.O. Box 2158, Madison, Wis. 53701

Filed July 5, 1974, Ser. No. 486,064

Int. Cl.^{2} F24C *1/16;* **A47J** *37/01;* **F24B** *3/00*

U.S. Cl. 126—9 R **8 Claims**

1. A folding combined broiler, oven and stove comprising a firebox composed of front, rear and side walls and a floor extending over the area enclosed by said walls, a grille covering the otherwise open top of said firebox, said side walls being respectively hinged to said floor along opposite sides thereof whereby said side walls may be sequentially lowered about their respective hinges to lie flat superjacent said floor, said floor and said front and rear walls each having flanges along the opposite sides thereof, pivot pins pivotally mounting said front and rear walls respectively at the front and rear ends respectively of said floor flanges, the arrangement being such that said front and rear walls may be sequentially lowered about their respective pivotal mountings to lie flat superjacent said side walls when the latter are in lowered position, said pivot pins extending outwardly from the firebox, two pairs of legs pivotally mounted respectively to the side walls, the location of the pivotal mountings for said legs being such that each leg may be rotated to rest against an associated pivot pin to provide a leg extending beyond the floor of said firebox and may be rotated in the opposite direction to lie in retracted position entirely alongside the side wall to which it is mounted.



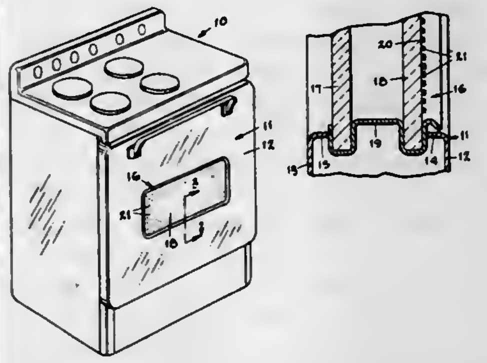
3,892,223
OVEN DOORS

Harold E. McKelvey, Plymouth, Mich., assignor to Shatterproof Glass Corporation, Detroit, Mich.

Filed Dec. 9, 1974, Ser. No. 530,659

Int. Cl.^{2} F23M *7/00*

U.S. Cl. 126—200 **12 Claims**



1. An oven door comprising a main body portion having a substantially rectangular opening therein, a window unit mounted in said opening and comprising inner and outer transparent glass panels, with the inner panel being adjacent the oven and the outer panel exposed to the atmosphere, a plurality of discrete areas formed of heat radiating particles adhered to the outer surface of the outer glass panel, with the spaces therebetween forming unobstructed viewing areas through which the interior of the oven can be observed, said particles presenting a myriad of exposed minute surfaces which radiate heat emanating from the oven to the surrounding atmosphere to thereby reduce the temperature of the outer glass panel.

3,892,224
OVEN DOORS

Harold E. McKelvey, Plymouth, Mich., assignor to Shatterproof Glass Corporation, Detroit, Mich.

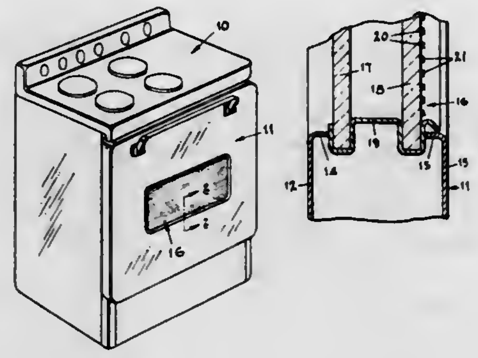
Filed Sept. 3, 1974, Ser. No. 502,366

Int. Cl. F23m *7/00*

U.S. Cl. 126—200 **11 Claims**

1. An oven door comprising a main body portion having a substantially rectangular opening therein, a window unit mounted in said opening and comprising inner and outer

transparent glass panels, with the inner panel being adjacent the oven and the outer panel exposed to the atmosphere, a plurality of spaced stripes formed of innumerable heat radiating particles adhered to the other surface of the outer glass panel, with the spaces therebetween forming unobstructed viewing areas through which the interior of the oven can be observed, said particles presenting a myriad of exposed minute surfaces which radiate heat emanating from the oven to the surrounding atmosphere to thereby reduce the temperature of the outer glass panel.



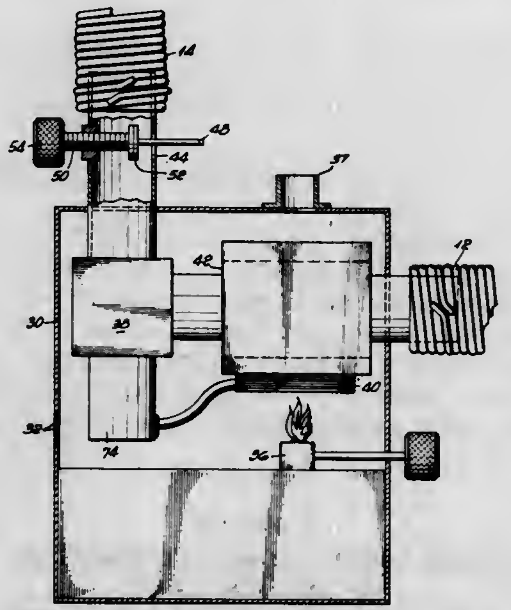
3,892,225
COLD WEATHER CLOTHING SUIT

Mike Twose, P.O. Box 648, Westport, Conn. 06880

Filed Sept. 28, 1973, Ser. No. 401,817

Int. Cl. A61f *7/06*

U.S. Cl. 126—204 **5 Claims**



1. A cold weather clothing suit incorporating air tight fabric which forms an insulated wall between the body of the user and the outside, the wall being so shaped as to have small openings at the hands, feet and chest of the user in addition to a large opening at the user's face, the suit comprising:

- a combined air blowing and heating unit with a first input port and a second output port, the unit inducting air in the first port, heating the inducted air, and discharging the heated air through the second port;
- tubing means connected to the second port and secured to the inside of the suit wall, the tubing means being vented at the hands and feet openings to direct heated air inside the suit;
- a hollow tube with a vent to the outside disposed intermediate its ends, the tube being connected at one end to the chest opening and connected to the first port at its other end, thus enabling previously heated air from the interior of the suit to be withdrawn through the chest opening and mixed with incoming air from the outside, the mixture passing through the air blowing and heating unit for recycling; and
- manually operable means extending into the tube through the vent and adapted to vary the relative proportions of previously heated air and incoming air in the mixture.

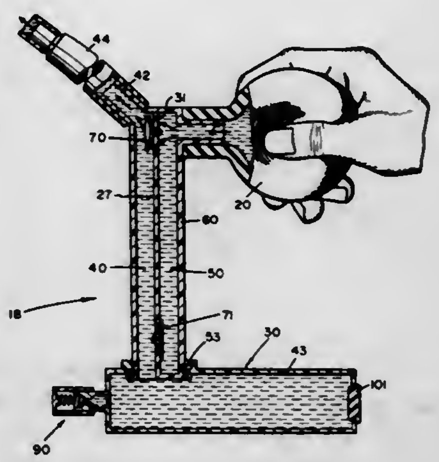
3,892,226
UROLOGICAL IRRIGATION-EVACUATOR

Irwin Charles Rosen, 717 Summit, Connersville, Ind. 47331

Filed Oct. 29, 1973, Ser. No. 410,716

Int. Cl.^{2} A61M *7/00*

U.S. Cl. 128—2 F **11 Claims**



1. A urological irrigation-evacuator for alternately introducing fluid into and withdrawing fluid from a body cavity through a resectoscope, comprising a fluid-receptive, manually compressible bulb; a specimen collecting receptacle; a first fluid conduit one end of which is in open communication with the interior of said receptacle, and the other end of which includes means providing connection to and establishing communication with a resectoscope; a second fluid conduit in substantial parallelism with said first fluid conduit, the upper end of said second conduit having means providing connection to and establishing open communication with said bulb; valve controlled means establishing communication between the upper portions of said conduits; valve controlled means establishing a fluid connection between the lower portions of said first and second conduits; said valving means being constucted and arranged whereby to preclude transportation of fluid from said bulb to said receptacle via said first conduit during those periods of time when fluid is being transported from said bulb into a body cavity, and to preclude transportation of fluid withdrawn from the body cavity directly into said bulb and second conduit during those periods of time when fluid withdrawn from the body cavity is being transported into said first conduit; and means for filtering particulate matter from fluid transported from the first conduit into said second conduit.

3,892,227
SYSTEM FOR STIMULATION AND RECORDING OF NEUROPHYSIOLOGIC DATA

David B. Coursin, 1503 Hillcrest Rd., Lancaster, Pa. 17604, and Anthony Marmarou, 7 Valley Rd., Norristown, Pa. 19401

Filed Mar. 12, 1973, Ser. No. 340,560

Int. Cl.^{2} A61b *5/04*

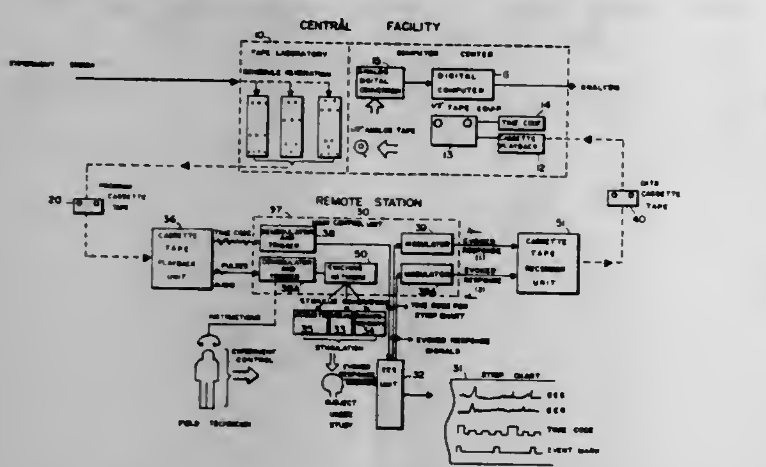
U.S. Cl. 128—2.1 B **6 Claims**

1. Apparatus, using a first tape containing electronic control signals and audio instructions, for collecting neurophysiological data from a patient at a remote station on a second tape in form for analysis of the data at a processing facility a substantial distance away from the remote station, comprising:

- tape playback means for playback of the first tape;
- stimulus generator means for the presentation of stimuli to the patient in response to the electronic control signals on the first tape played back by said tape playback means;

electroencephelograph means for sensing evoked responses of the patient to the stimuli presented by said stimulus generator means;

tape recorder means for the recordation of the evoked responses of the patient as sensed by said electroencephalograph means onto the second tape; and



main control means for synchronizing the recordation of the responses of the patient on the second tape by said tape recorder means with the playback of the electronic control signals on the first tape by the tape playback means.

3,892,228

APPARATUS FOR ADJUSTING THE FLEXING OF THE BENDING SECTION OF AN ENDOSCOPE

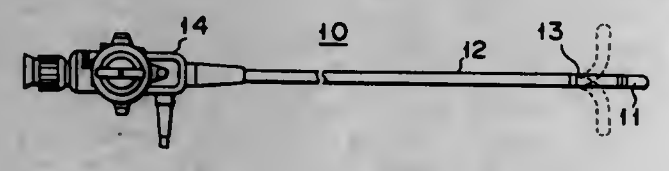
Kazuhiko Mitsui, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 3, 1973, Ser. No. 403,159

Claims priority, application Japan, Oct. 6, 1972, 47-115999; Oct. 25, 1972, 47-123333

Int. Cl.² A61B *1/00*

U.S. Cl. 128—4 **8 Claims**



1. An endoscope comprising:

a distal end;

a bending section;

a flexible tube connected to the distal end through the bending section;

said bending section being flexible to deflect the distal end relative to the flexible tube;

a control unit for operating the distal end, said control unit having guide channels therein; and

apparatus for adjusting the flexing of the bending section comprising:

a pulley rotatably received in the control unit;

a pair of operating wires at least partly wound about the pulley in opposite directions on the opposite sides of said pulley, said operating wires being fixed to said pulley at one end and connected to the bending section at the other end thereof, and said operating wires being cut off at an intermediate part thereof; and

a pair of wire sagging-preventing devices slidably received in said guide channels of said control unit, and each including a pair of slidable members respectively coupled between the cut ends of said cut operating wires whereby when one wire sagging-preventing device is drawn toward the pulley via the wire by rotating the pulley in one direction, one of the slidable members of the other wire sagging-preventing device is moved away from the pulley, independently of said other wire sagging-preventing device, to prevent the loosening of the wire connected to said other wire sagging-preventing device.

3,892,229

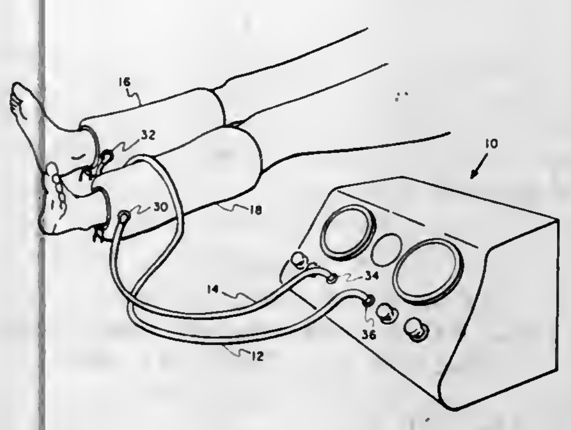
APPARATUS FOR AUGMENTING VENOUS BLOOD FLOW

Duane F. Taylor, 680 Winter St. S.E., Salem, Oreg. 97301; Richard C. Everett; Harry F. Everett, both of 6159 S.W. Fernbrook Cir., Lake Oswego, Oreg. 97034, and Norman C. Williams, Rt. 1, Box 134, West Linn, Oreg. 97068

Filed Dec. 6, 1973, Ser. No. 422,208

Int. Cl. A61h *1/00*

U.S. Cl. 128—24 R **20 Claims**



1. An alternating leg compression control unit adapted to be coupled with a pair of pressure leggings, said unit comprising:

a. inlet port means adapted for coupling to a source of pressurized fluid;

b. a pair of outlet port means adapted for coupling to said respective leggings; and

c. control means for conducting said fluid from said inlet port means to said respective outlet port means in periodic flow increments alternating between said respective outlet port means, said control means including fluid-operated timing means for starting each said flow increment in a predetermined periodic sequence, said timing means having no electrically actuated components.

3,892,230

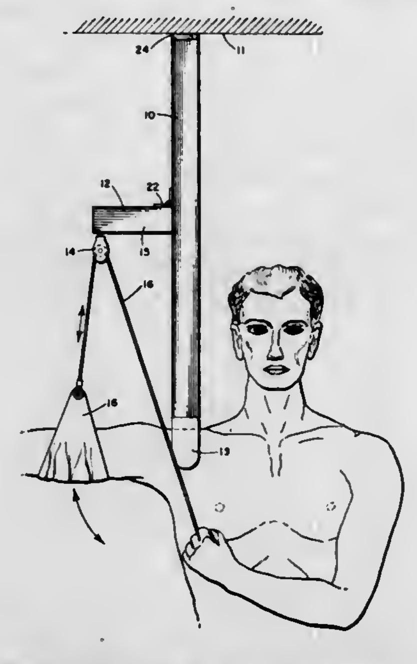
ORTHOPEDIC DEVICE FOR LOOSENING STIFFENED SHOULDER JOINT

Fredrick A. Baker, deceased, late of Falls Church, Va., and Virginia B. Baker, executor, 5900 Boston Dr., Falls Church, Va. 22041

Filed Sept. 18, 1974, Ser. No. 506,995

Int. Cl. A61h *1/02*

U.S. Cl. 128—25 R **4 Claims**



1. An orthopedic device for exercising a stiffened shoulder joint by the unaffected arm comprising:

a rigid bar member for extending from the shoulder of the stiffened joint to a firm surface;

a padded member mounted on the inner end of said bar member for resting against said shoulder;

a support member mounted on said bar member substantially orthogonal thereto for extending outwardly in the plane of said shoulder;

pulley means on the surface of said support member for facing said shoulder;

a sling for supporting the upper arm adjacent said stiffened shoulder joint; and

a flexible member attached to said sling and guided through said pulley, said flexible member having sufficient length to be reciprocated through said pulley by the unaffected arm without twist on the unaffected arm or other members of the body, whereby a person having a shoulder joint stiffened by disease may exercise the upper arm in the affected joint by merely moving the unaffected arm.

3,892,231

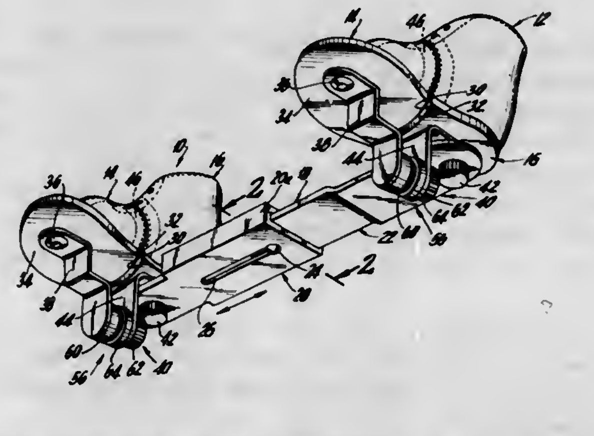
FOOT AND LEG CORRECTIONAL DEVICE PARTICULARLY FOR INFANTS

Dominick Tummillo, 22 Oak Dr., Upper Saddle River, N.J.

Filed June 6, 1974, Ser. No. 476,876

Int. Cl.² A61F *3/00*

U.S. Cl. 128—80 A **11 Claims**



1. A correctional shoe comprising a shoe rear heel portion and a shoe forward toe portion, said rear heel portion and said forward toe portion each including a sole part and a top body part over said sole part for receiving the shoe and bracket means connecting said forward toe part and said heel part permitting pivotal movement of said parts in respect to each other, a first bracket connected to the sole of said forward toe part, a second bracket connected to the sole of said rear heel part, and universal means interconnecting said brackets permitting universal pivoting movement between said parts.

3,892,232

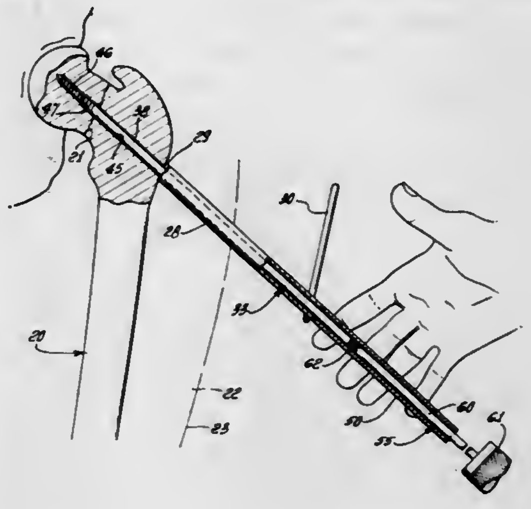
METHOD AND APPARATUS FOR PERFORMING PERCUTANEOUS BONE SURGERY

Alonzo J. Neufeld, 1650 Parway Dr., Glendale, Calif. 91206

Filed Sept. 24, 1973, Ser. No. 400,198

Int. Cl. A61f *5/00*

U.S. Cl. 128—92 EB **11 Claims**



1. For use in pin implant in bone structure, the combination of: an elongated tubular guide adapted to be inserted through a small diameter skin incision and positioned with its inner end in direct contact with the bone surface and its outer end extending outwardly from the skin surface, an implant pin of a length generally corresponding to the depth of a bore made by a drill bit, the pin embodying a threaded section and having tool interlock means at a rearward end, said pin being slidably engaged within said guide with its rearward end directed outwardly, and a pin driver tool slidably engaged in said guide and comprising an elongated shaft embodying at a forward end means engaging the interlock means on the pin.

3,892,233

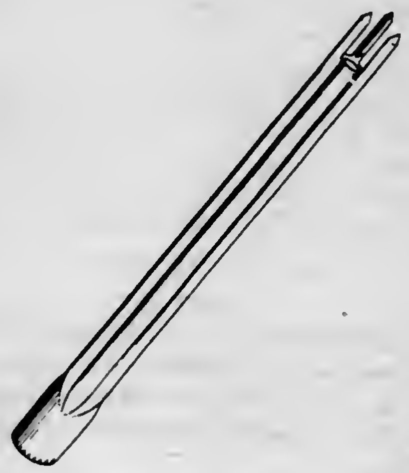
HIP NAIL

Gunnar W. Vestby, Eckersbergsgate 4, Oslo 2, Norway

Continuation of Ser. No. 266,373, June 26, 1972, abandoned. This application Jan. 9, 1974, Ser. No. 431,911

Int. Cl. A61f *5/04*

U.S. Cl. 128—92 BA **2 Claims**



1. A hip nail adapted to be inserted into the femoral head of the bone, said nail comprising

an elongated hollow body having a given minimum diameter and having along a substantial part of its length a plurality of axially directed continuous radially projecting fins,

means for facilitating precutaneous intraosseous venography and for minimizing bone crushing upon nail introduction into bone and for minimizing the force necessary for introduction, said means including:

a longitudinal projection of each of said fins extending at least a distance corresponding to the minimum diameter of the nail body beyond the end of said body and having a cross-section corresponding generally in size, shape and radial position to the cross-section of its respective fin so that an open field of visibility exists between said projections when said nail is viewed from one side.

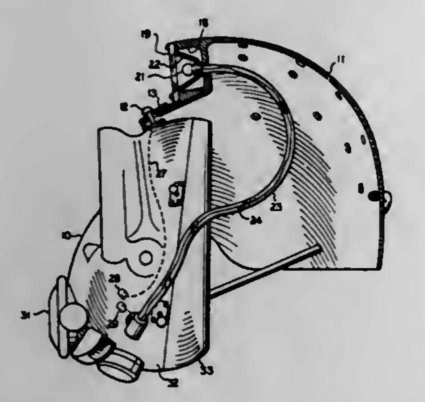
3,892,234
DIVER'S PRESSURIZED EQUIPMENT HOUSINGS

Richard F. Jones, Santa Barbara, Calif., assignor to General Aquadyne, Inc., Santa Barbara, Calif.

Continuation-in-part of Ser. No. 367,586, June 6, 1973, and a continuation of Ser. No. 456,204, March 29, 1974. This application Nov. 18, 1974, Ser. No. 524,535

Int. Cl.^{2} A62B *7/04*

U.S. Cl. 128—142 **8 Claims**



1. Diving equipment of the type where the gas pressure breathed by the diver is substantially the same as the hydrostatic pressure of the water depth at which he operates, comprising:
  a. means for providing an air space for the face of a diver at the region of at least one of his mouth and nose;
  b. an air supply means connected to the air space means, said air supply means including pressure regulating means for regulating the pressure delivered to the air space means to be always within about 1 or 2 pounds of the hydrostatic pressure;
  c. a windowed watertight housing lightly constructed to withstand only about said 1 or 2 pounds per square inch pressure;
  d. means for securing the housing to the diver's body;
  e. a conduit connecting the interior of the housing to the interior of the air space means; and
  f. a light utilizing apparatus disposed in the windowed housing, whereby said lightly constructed housing is subject only to the differential pressure determined by the difference between the hydrostatic pressure and the internal pressure on the housing, and whereby the diver's hands are free and relieved of the necessity to hold the housing.

3,892,235
MULTI-USE INHALATION THERAPY APPARATUS

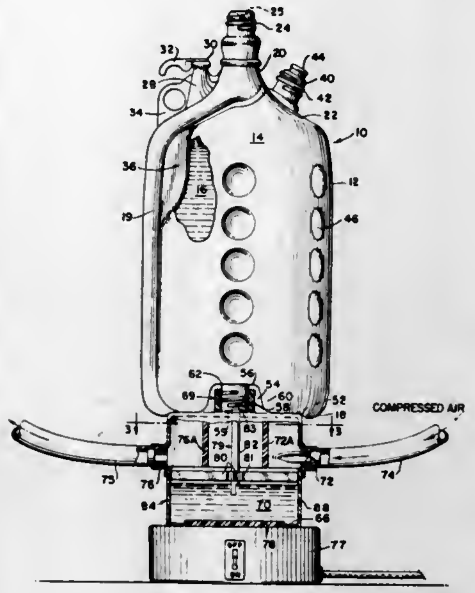
Edward Van Amerongen, Wilmette; Glenn Lee Beall, Gurnee; John Charles Clark, Zion, and Richard Joseph Reilly, Deerfield, all of Ill., assignors to Respiratory Care, Inc., Arlington Heights, Ill.

Division of Ser. No. 166,417, July 27, 1971, Pat. No. 3,804,280. This application July 31, 1973, Ser. No. 384,267

Int. Cl. A61m *15/00*

U.S. Cl. 128—194 **9 Claims**

1. Nebulizing apparatus adapted particularly for use in ultrasonic-vibration-induced nebulizing inhalation therapy systems, said nebulizing apparatus comprising in combination:
a. a liquid container having a body defining a nebulizer reservoir chamber for and containing a predetermined amount of liquid;
  b. said container body having an upper portion with at least one neck portion and a lower portion with a generally planar bottom provided with a pronounced recess therein extending longitudinally toward said upper portion;
  c. a duct integral with said body generally centrally within said recess, and communicating with a lower interior part of said reservoir chamber and the liquid therein;
  d. said duct having an axis and extending axially downward, and terminating in a closed breachable seal defining an integral penetratable sterile barrier for aseptically isolating the liquid in said chamber;
e. a container-supporting housing having a bottom and upwardly extending side walls defining a cup-like nebulizing chamber beneath said container, said housing side walls having upper portions in physical contact with said container bottom during nebulizing operation;
f. penetrating-and-conduit means for penetrating said breachable seal in a generally axial manner, and connected with and supported by housing-connected support means for disposition in a generally vertical manner;
g. said penetrating-and-conduit means including a generally vertically oriented elongated tubular member having an upper seal-penetrating end, and an opposite lower end extending downwardly within said nebulizing chamber but spaced above said housing bottom thereof, whereby



h. said seal-penetrating end penetrating said breachable seal of said duct when the liquid-filled container is operatively mounted on said housing, whereby the liquid in said reservoir chamber is permitted to flow by gravity into said housing; through a part of said conduit means thereof; and
i. said housing having inlet means for introducing of a gas thereinto, and further having outlet means through which moisture-laden gaseous fluid is discharged during nebulizing operation.

3,892,236
APPARATUS FOR FILTRATION-LEUKOPHERESIS FOR SEPARATION AND CONCENTRATION OF HUMAN GRANULOCYTES

Isaac Djerassi, 2034 Delancey Pl., Philadelphia, Pa. 19103

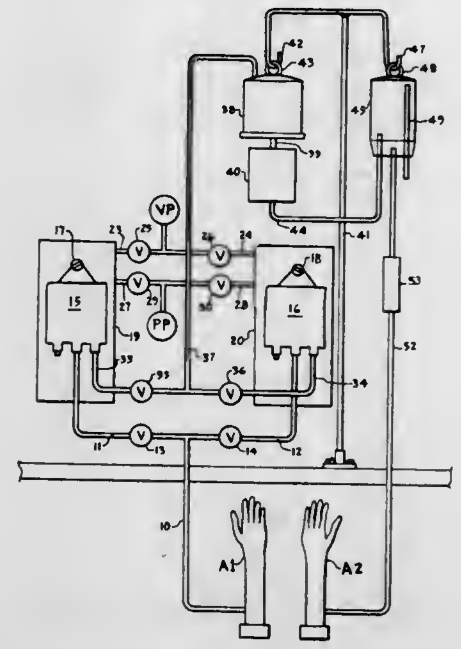
Filed Apr. 2, 1973, Ser. No. 346,729The portion of the term of this patent subsequent to Apr. 9, 1991, has been disclaimed.

Int. Cl. A61m *01/03*

U.S. Cl. 128—214 R **8 Claims**

1. Apparatus for filtration-leukopheresis comprising
a venous blood supply connection adapted to be connected to a donor,
a venous blood return connection adapted to be connected to the donor,
a leukocyte separating and retaining filter interposed in series with said connections and in fluid communication therewith for extracting leukocytes from blood passing therethrough,
a permanently vented receptacle in continuous communication with the atmosphere interposed in series between said filter and said return connection and in fluid communication therewith,

fixedly mounted detachable supporting members for said filter and said vented receptacle, and



power driven pump means upstream of said receptacle for continuously delivering blood from said supply connection to and through said filter and to said vented receptacle.

3,892,237
SELF-INJECTING SYRINGE

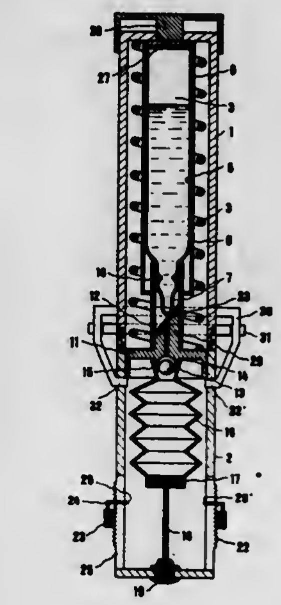
Maurice Steiner, 40 bis avenue de Suffren, 75015 Paris, France

Filed Apr. 17, 1974, Ser. No. 461,605

Claims priority, application France, July 17, 1973, 73.26167

Int. Cl. A61m *5/24*

U.S. Cl. 128—216 **2 Claims**



1. An injecting device comprising a protecting casing, and inside this casing an empty plastics collapsible ampoule, a needle having a canal and fitted onto said empty ampoule, said needle canal opening into said empty ampoule, a glass ampoule sealed inside the casing and containing the liquid to be injected, means to break the end of the glass ampoule, means to provide for the filling of the collapsible ampoule with the liquid coming out of the glass ampoule, mechanical resilient means for both propelling said needle through said casing and ejecting through said needle the liquid of the collapsible ampoule by compressing said collapsible ampoule after it has been filled up, compressioning means for said mechanical resilient means, and outside said casing, means for releasing said resilient means.

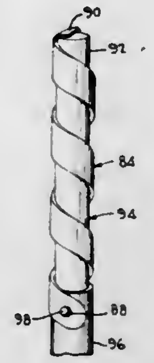
3,892,238
DRUG SUPPORTING ANCHOR

John A. Banford, Lake Bluff; Ronald H. Moyer, McHenry, and Russell E. Mauer, Gurnee, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Continuation of Ser. No. 181,007, Sept. 16, 1971, abandoned. This application Jan. 14, 1974, Ser. No. 433,062

Int. Cl. A61m *31/00;* **A61f** *5/46*

U.S. Cl. 128—260 **17 Claims**



11. In combination, an insertion rod having a distal end and a proximal end, an anchor for supporting a drug including an elongate strip of flexible, resilient material spirally wound around said insertion rod to form a plurality of spaced coils having flat peripheral drug supporting surfaces, said strip of material engaging said distal and proximal ends to have a spiral configuration, and a slow release drug material carried on said flat peripheral drug supporting surfaces.

3,892,239
QUINOHYDROTHERMIC BODY COVERING ELEMENT

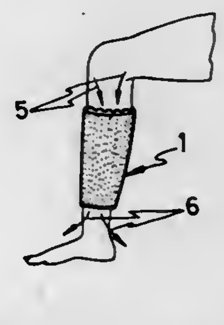
Jose Ma Masso Remiro, Ganduxer, 10-12 5° 1ª, Barcelona, Spain

Filed Nov. 13, 1973, Ser. No. 415,396

Claims priority, application Spain, Nov. 23, 1972, 196410; Oct. 2, 1973, 195808

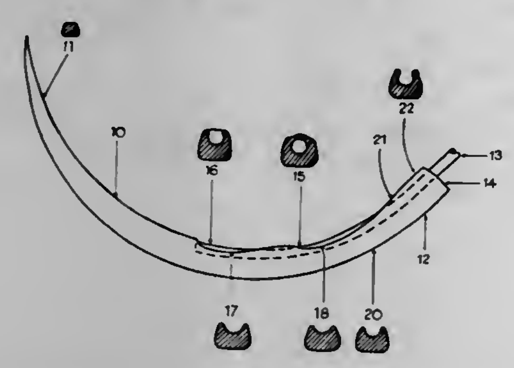
Int. Cl. A61f *7/00*

U.S. Cl. 128—293 **6 Claims**



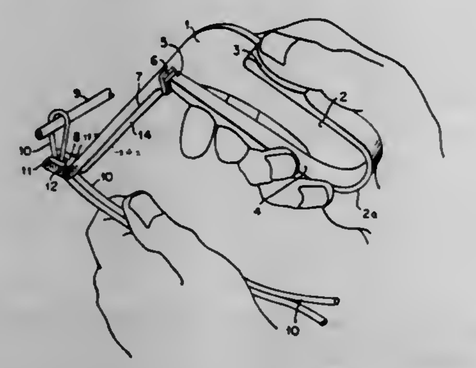
1. A quinohydrothermic body covering element comprising:
a stratified element including:
  a thin layer of rubber material having opposite surfaces, said rubber layer being non-porous and highly elastic, said rubber layer having a thickness progressively decreasing from a maximum at one dimensional extremity thereof to a minimum at a second opposite dimensional extremity thereof; and
  a layer of knitted fabric material having opposite surfaces, one of which covers one of said surfaces of said rubber layer, the other of said surfaces of said fabric layer having extending therefrom a plurality of substantially parallel ribs, said ribs forming channel means for the circulation of air longitudinally of said element when said element is positioned on the person of a user.

3,892,240
SURGICAL NEEDLE APPARATUS
Charles Lanier Park, 1904 E. Second St., Sanford, Fla. 32771
Filed Mar. 21, 1974, Ser. No. 453,328
Int. Cl.² A61B *17/06*
U.S. Cl. 128—339 **3 Claims**



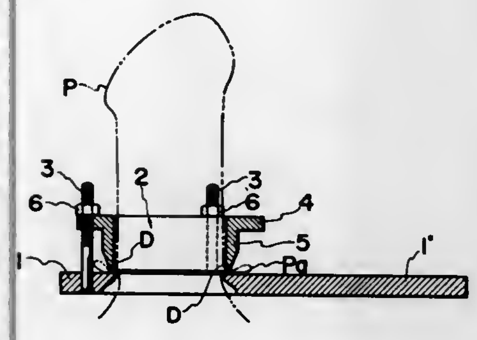
1. An atraumatic surgical needle comprising:
an elongated arcuate body having a tapered end portion and a blunt end portion, said elongated body having a first groove therein extending from the tip of the blunt end portion a predetermined distance parallel the elongated axis of said body;
said elongated body having a bore therein extending from the opposite end of said first groove from said blunt end portion tip a predetermined distance parallel to the elongated axis of said body;
said elongated body having a second groove therein extending from the opposite end of said bore from that end abutting the first groove a predetermined distance parallel to the elongated axis of said elongated body; and
a portion of said elongated body first groove forming a frictionally engaging snap slot for engaging suture material whereby suture material may be inserted into said bore through the end facing said first groove, passed through said bore into said second groove, and snapped into said frictionally engaging snap slot.

3,892,241
DISPOSABLE PLASTIC BLOOD VESSEL CLAMP
Harry H. Leveen, 800 Poly Pl., Brooklyn, N.Y. 11209
Filed Apr. 9, 1973, Ser. No. 349,110
Int. Cl. A61b *17/12*
U.S. Cl. 128—325 **2 Claims**



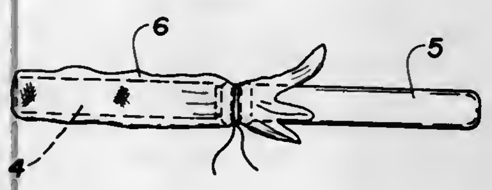
1. An adjustable blood vessel clamp which comprises:
a. a base frame having, thereon, on one end a handle means connected by a single extender arm terminated by a bifurcated foot on the opposite end and
b. a stretchable filament attachment means interposed between said handle means and said bifurcated foot,
c. the said filament attachment means of (*b*) being a clamp whose jaws are releasable by compression of the handle means and
d. a stretchable filament member attached at both ends to the said filament attachment clamp and having its median point pass through the bifurcated foot of the device in substantial attachment thereto.

3,892,242
CIRCUMCISION INSTRUMENT
Michitaro Honjyo, 279, Ougimachi, Imadegawa-sagaru, Teramachi, Kamigyoku, Kyoto, Kyoto urban Prefecture, Japan
Filed Dec. 13, 1973, Ser. No. 424,476
Int. Cl. A61b *17/326*
U.S. Cl. 128—346 **3 Claims**



1. A circumcision instrument comprising:
a base plate having a circular opening;
a tubular member and means mounting said tubular member to said base plate with the axis of said tubular member aligned with the center of said circular opening;
said tubular member having a flange portion adjacent said base plate around said circular opening whereby a penis can be inserted through said opening and said tube with a portion of the skin of the penis disposed between said flange portion of said tube and said base plate; and
said mounting means being operable to draw said tube toward said base plate to thereby crush the skin disposed between said flange portion and said base plate; and
said mounting means further comprising means permitting the tubular member to be drawn toward said base plate to provide varying degrees of compression between said tubular member and said base plate at different portions around said flange portion.

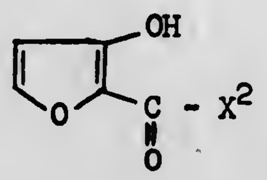
3,892,243
METHOD OF MAKING A BABY PACIFIER
Harold E. Bell, Decatur, Ga., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed June 21, 1974, Ser. No. 481,682
Int. Cl. A61j *17/00*
U.S. Cl. 128—359 **2 Claims**



1. A method of making a baby pacifier, comprising the steps of
impregnating gauze with one of the group consisting of margarine and butter;
applying one of the group consisting of honey and sugar to the impregnated gauze; and
affixing the impregnated gauze to a handle supported ring portion.

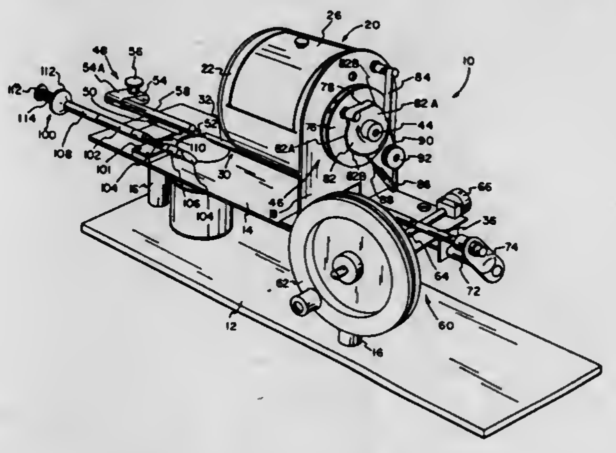
3,892,244
SMOKING MIXTURES
Robert Craig Anderson, and Alain Calder, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England
Division of Ser. No. 308,743, Nov. 22, 1972. This application Sept. 20, 1974, Ser. No. 507,935
Claims priority, application United Kingdom, Dec. 15, 1971, 58230/71
Int. Cl. A24b *15/00, 15/04*
U.S. Cl. 131—2 **6 Claims**

1. A smoking mixture comprising a thermally degraded carbohydrate tobacco substitute and, as a flavourant, a compound of the formula



wherein X^2 represents an alkyl radical preferably of one to four carbon atoms said thermally degraded carbohydrate being obtained by subjecting a carbohydrate material to a catalysed degradation process at a temperature of at least 100°C until the weight of the degraded material is approximately 90% or less of the dry weight of the original carbohydrate.

3,892,245
CIGARETTE MACHINE
Clarence M. Asbill, Jr., 2627 Dover Rd., Raleigh, N.C. 28526
Filed Oct. 11, 1973, Ser. No. 405,687
Int. Cl. A24c *5/02, 5/32, 5/42*
U.S. Cl. 131—75 **5 Claims**

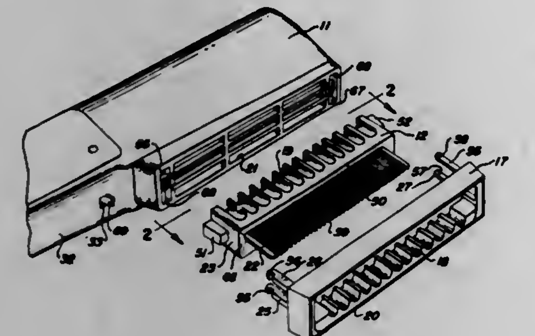


1. A cigarette machine adapted to fill individual cigarette paper wrapper tubes with shredded tobacco, said cigarette machine comprising:
a. a frame structure;
b. a filler tube mounted on said frame structure and open at one end, said open end being adapted to receive individual cigarette paper wrapper tubes;
c. a tobacco storage unit mounted on said frame structure and operative to feed shredded tobacco therefrom into said filler tube;
d. plunger means reciprocally mounted within said filler tube for moving shredded tobacco through said filler tube into the respective cigarette paper wrapper tube disposed about the open end thereof;
e. drive means for reciprocally driving said plunger means and including an actuation wheel fixed to a drive shaft, a crank assembly operatively connected to said drive shaft, a slidably mounted slide operatively connected to said crank assembly and movable fore-and-aft in response to the actuation of said crank assembly; and a connecting rod assembly interconnected between said slide and said plunger means for reciprocally driving said plunger means as said slide is moved fore-and-aftly;
f. a density control mechanism disposed adjacent said filler tube and including, a frictional holder mounted outwardly of the open end of said filler tube and including an opening formed therein, an elongated member means frictionally held and slidably mounted within the opening of said frictional holder and projecting therefrom for engagement with the outer end of the respective cigarette wrapper tube associated with said filler tube for movably yielding with the respective cigarette wrapper tube in response to shredded tobacco being compacted therein, and means associated with said frictional holder for adjusting and varying the frictional holding force being applied to said elongated member means; and
g. agitating means rotatively mounted within said tobacco storage unit and operative to agitate and mix the shredded tobacco therein during the operation of the cigarette machine; a ratchet drive assembly operatively connected to said agitating means; a bell crank pivotably mounted in alignment with said slide of said plunger drive means and engageable therewith as said slide moves fore-and-aftly, and a cable drive operatively interconnected between said bell crank and said ratchet drive assembly for driving said ratchet drive assembly and consequently said agitating means in response to the engagement of said slide with said bell crank.

3,892,246
METHOD AND APPARATUS FOR DOING AFRO HAIRDOS
Robert Woodard, 5003 Wynnefield Ave., Philadelphia, Pa. 19131
Filed Apr. 4, 1974, Ser. No. 457,749
Int. Cl.² A45D *7/00*
U.S. Cl. 132—7 **1 Claim**

1. A process for styling curly hair comprising the steps of:
a. wetting the hair;
b. parting the hair and combing it flat against the scalp;
c. stretching a stretchable, imperforate cap over all of the hair and adjusting the cap to hold all of the hair in place flat against the scalp;
d. drying the hair with the cap in place on the scalp;
e. removing the cap;
f. combing out the hair so that it stands straight out from the scalp;
g. placing a highly elongated comb against the scalp and lifting it straight away from the scalp through the hair and repeating the last step over the entire scalp to give the hair an Afro style.

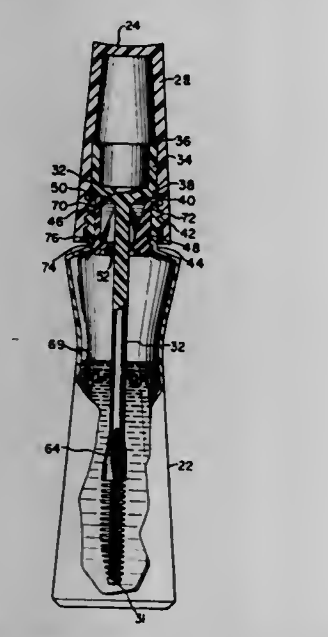
3,892,247
ELECTROSTATIC COMB
Margaret J. Andersen, 3314 N. Lake Shore Dr., Chicago, Ill. 60657
Filed May 13, 1974, Ser. No. 469,318
Int. Cl. A45d *24/00*
U.S. Cl. 132—11 R **21 Claims**



1. An electrostatic comb assembly having a comb with a plurality of teeth, an elongated electrically conductive bar mounted on one side of said comb and positioned substantially transverse to the teeth of said comb, and a non-absorbent dielectric block positioned between said bar and the comb, the block having an elongated edge substantially parallel to the bar and spaced from the comb and the bar, wherein the improvement comprises,

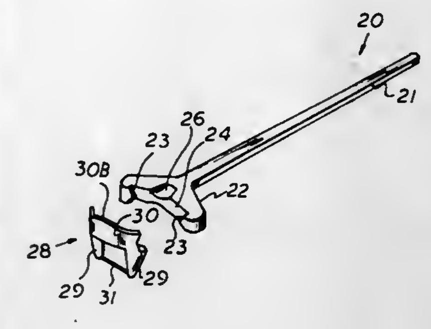
an electrically conductive material having a recognizable resistance forming said bar.

3,892,248
EYELASH-COSMETIC APPLICATOR
Ted I. Kingsford, Memphis, Tenn., assignor to Plough, Inc., Memphis, Tenn.
Filed Mar. 15, 1974, Ser. No. 451,649
Int. Cl.^{2} A45D *40/26*
U.S. Cl. 132—88.7 **14 Claims**



1. An eyelash-cosmetic applicator comprising:
a. a shaft;
b. handle means attached to one end of said shaft; and
c. an applicator head with a plurality of flat, substantially triangular projections each extending to a vertex at most one centimeter from said shaft, the triangular surfaces of said projections being normal to the axis of said shaft, at least three of said projections spaced circumferentially about said shaft in a coplanar arrangement forming a regular geometric pattern, said pattern repeated axially starting from the shaft end opposite said handle means with corresponding vertices of adjacent patterns being coplanar with said axis, adjacent sides of said corresponding coplanar projections defining smooth, discontinuous channels along said shaft, said adjacent patterns leaving axial spaces therebetween of not less than 0.25 millimeter.

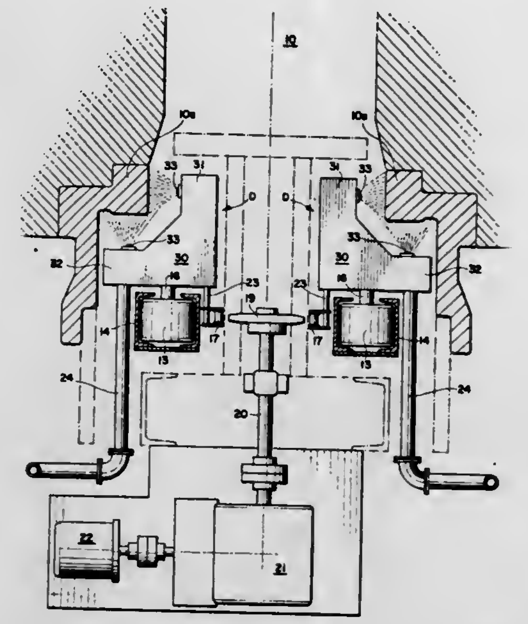
3,892,249
DENTAL FLOSS DEVICE
Franklin R. Jones, 80 Gorham Rd., Fairfield, Conn. 06430, and Robert D. Ferguson, 55 Tanglewood Rd., Trumbull, Conn. 06611
Filed Apr. 24, 1974, Ser. No. 463,455
Int. Cl. A61c *15/00*
U.S. Cl. 132—89 **14 Claims**



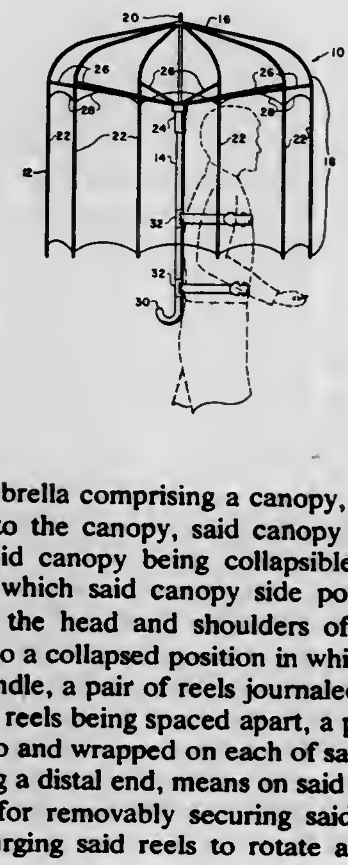
1. A dental device comprising
a handle means,
means defining a head portion connected to said handle means,
said head portion having oppositely disposed jaw portions, a readily disposable dental floss holder adapted to be detachably connected to said head portion,
said floss holder including opposed extension arms and a flexible bridge interconnecting said extension arms,
said bridge being slightly convexly curved so that the distance measured along the curve is slightly greater than the distance between said oppositly disposed jaw portions of said head portion,
a length of dental floss extended between said extension arms,
and said holder being detachably connected to said head portion between said jaw portion by deflexion of said convexly curved bridge toward said head portion whereby said bridge is tightly wedged between said jaw portions.

3,892,250
HYDRAULIC CLEANER FOR DOORS AND THE LIKE
Stephen John Miko, Toronto, Canada, assignor to Industrial High Pressure Systems Inc., Gravenhurst, Canada
Filed July 2, 1973, Ser. No. 375,951
Claims priority, application Canada, Aug. 11, 1972, 149195
Int. Cl. B08b *3/02;* **C10b** *43/08*
U.S. Cl. 134—168 R **9 Claims**

1. Apparatus for cleaning divergent adjoining surfaces of doors, door jambs and the like, such as doors and door jambs for ovens and the like and adapted to be mounted on movable support means for moving from place to place whereby to align said apparatus for use on a particular location said apparatus comprising;
hoist means vertically movable in registration with a said door or door jamb between upper and lower positions, whereby to effectively traverse the vertical extent of said door or door jamb;
water jet nozzle means mounted on said hoist means and oriented to direct the jets emitted therefrom onto said divergent surfaces and moving in unison with said hoist means whereby to effectively traverse the vertical extent of said divergent surfaces of a said door or door jamb during said upward and downward movement of said hoist apparatus, said jet nozzle means including at least two jet nozzles mounted and oriented in different directions so as to direct jets simultaneously in two directions onto at least two said divergent surfaces; means for traversing said nozzle means from side to side across said door or door jamb, adjacent the upper and lower limits thereon whereby to effectively traverse the horizontal extent of said divergent surfaces, and,
pump means, connected to said nozzle means at least in part by movable hose connection means.

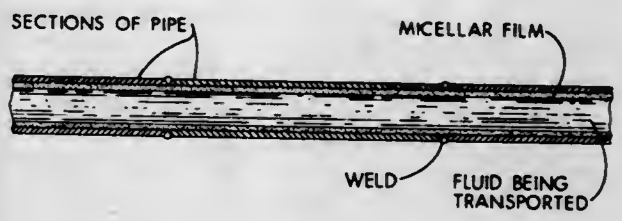


3,892,251
COLLAPSIBLE UMBRELLA WITH RETRACTABLE FASTENING MEANS
James R. Warfield, 242-½ Suttenfield, Fort Wayne, Ind. 46806
Filed Mar. 8, 1974, Ser. No. 450,078
Int. Cl. A45b *11/02*
U.S. Cl. 135—20 R **10 Claims**



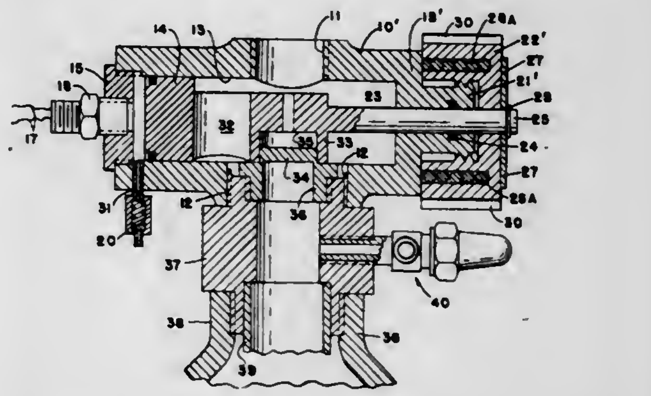
1. An umbrella comprising a canopy, an elongated handle connected to the canopy, said canopy having top and side portions, said canopy being collapsible from an expanded position in which said canopy side portions surround said handle and the head and shoulders of a person using the umbrella into a collapsed position in which said canopy overlays said handle, a pair of reels journaled for rotation in said handle, said reels being spaced apart, a pair of flexible straps connected to and wrapped on each of said reels, each of said straps having a distal end, means on said straps adjacent their distal ends for removably securing said pair together, and means for urging said reels to rotate and wrap said straps thereon.

3,892,252
MICELLAR SYSTEMS AID IN PIPELINING VISCOUS FLUIDS
Fred H. Poettmann, Findlay, Ohio, assignor to Marathon Oil Company, Findlay, Ohio
Filed Dec. 18, 1972, Ser. No. 316,188
Int. Cl. F17d *1/16*
U.S. Cl. 137—13 **7 Claims**



1. A method for increasing flow capacity of pipelines for transport of fluids, said method comprising introducing a micellar system into the fluid flow of such a pipeline at a point near the periphery of said pipeline to form a self-sustaining, substantially continuous, adhering film, said micellar system comprising surfactant, hydrocarbon, and water.

3,892,253
SHEAR VALVE WITH FRANGIBLE FITTING
George Salvador Covarrubias, La Puente, Calif., assignor to C. B. F. Systems Inc., Covina, Calif.
Filed July 20, 1973, Ser. No. 380,946The portion of the term of this patent subsequent to Sept. 11, 1990, has been disclaimed.
Int. Cl. F16k *13/06;* **B67b** *7/00*
U.S. Cl. 137—68 **15 Claims**



1. A shear valve for opening a pressurized conduit comprising:
a. a housing including a bore for enclosing valve components, and entrance port, and an exit port intersecting the housing bore;
b. an elongated valve member movably positioned within the bore and including a piston, a shear tool, a pilot pin, and a portion formed with a cylindrical hole whose axis is transversely aligned with the bore axis and adapted to register with said ports;
c. a plug closing one end of the bore including an explosive cartridge for creating pressure within the bore for moving the piston;
d. a cylinder head closing the other end of the bore formed with a central hole therein for supporting the pilot pin;
e. a threaded nut attached to the cylinder head and coupled to said valve member for moving same and adapted to be unscrewed from the head when the valve is to be opened by manual control, and means for moving the elongated valve member when released by said nut, and
f. a frangible plug secured in the entrance port and formed with a closure disc for sealing fluid in the entrance port when the valve is unactuated and for releasing fluid when the valve is actuated and the shear tool removes the disc from the frangible plug;

g. and a bleeder hole in communication with the atmosphere and said bore contiguous to said plug whereby when said piston moves slightly atmospheric air will be drawn into said bore.

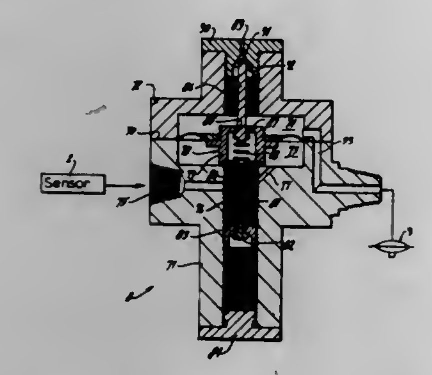
3,892,254
DIAPHRAGM VALVE APPARATUS AND CONTROL SYSTEMS EMPLOYING SUCH VALVE APPARATUS

Adolph J. Hilgert, Mequon, Wis., assignor to Johnson Service Company, Milwaukee, Wis.

Division of Ser. No. 222,603, Feb. 1, 1972, abandoned. This application Oct. 12, 1973, Ser. No. 405,847

Int. Cl. G05d *16/06*

U.S. Cl. 137—116.3 **8 Claims**



1. A diaphragm valve apparatus comprising a valve body having a pair of chambers separated by a common flexible diaphragm member, an inlet passageway means terminating in a first of said pair of chambers, control passageway means connecting said first chamber to said second chamber, said diaphragm member having a first valve means associated with said inlet passageway means and adapted to open and close said inlet passageway means, said diaphragm member resiliently holding the first valve means to close said inlet passageway means and responsive to a preselected inlet pressure in said inlet passageway means to move said diaphragm member and said valve means to transmit pressure to said first chamber and through said control passageway means between the first and the second of said pair of chambers, said second chamber includes an exhaust passageway means aligned with the valve means and spaced outwardly thereof, a secondary valve means closing said control passageway means, said secondary valve means including operating means to sequentially close said exhaust passageway means and to open said secondary valve means in response to predetermined movement of said first valve means to open said inlet passageway means, and an outlet passageway means interconnected to the second chamber.

3,892,255
INLET ORIFICE DEVICE TO CONTROL THRUPUT FLOW FOR PRESSURE REGULATORS

Dwight N. Johnson, Anaheim, Calif., assignor to The Singer Company, New York, N.Y.

Filed Dec. 19, 1973, Ser. No. 426,294

Int. Cl. G05d *16/18*

U.S. Cl. 137—116.5 **8 Claims**

1. A pressure regulator operative responsive to inlet pressure and outlet pressure comprising:

a. a housing having an inlet, an outlet in communication with the inlet and a chamber formed on the outlet side,

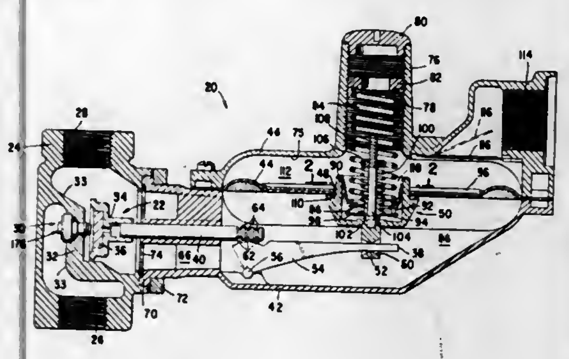
b. a flexible diaphragm having one side in communication with the outlet connected in the chamber,

c. a valve means having a valve operatively actuated by the diaphragm to shift the valve toward or away from the inlet responsive to the pressure in the chamber,

d. a control means movably connected in the housing to limit the thruput flow from the inlet to the outlet responsive to the inlet pressure,

e. the control means includes a body having an orifice therethrough to communicate the inlet and the outlet,

f. an inlet piston carried by the body to urge the body to move towards the outlet responsive to increases in inlet pressure, and



g. a nozzle carried by the housing disposed about the inlet piston and to coact therewith to limit the inlet thruput flow.

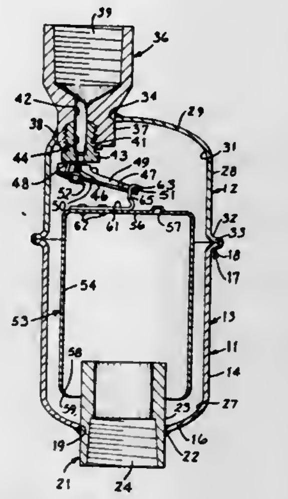
3,892,256
INVERTED BUCKET STEAM TRAP

Ronald D. Schlesch, Three Rivers, Mich., assignor to Armstrong Machine Works, Three Rivers, Mich.

Filed Nov. 27, 1973, Ser. No. 419,438

Int. Cl. F16t *1/30*

U.S. Cl. 137—185 **8 Claims**



1. In an inverted bucket steam trap, comprising a casing having side, top and bottom walls defining a water-tight generally cylindrical chamber, a vertically movable inverted bucket substantially coaxially disposed in said chamber and having a cylindrical vertical wall which is open at its bottom and which has a wall at its top, a substantially coaxial inlet for steam and condensate in the bottom wall of said casing and communicating with the interior of said bucket, an outlet in the top wall of said casing, said outlet being laterally offset from the longitudinal axis of said chamber and having a valve seat thereon, a valve member movably disposed in said chamber and adapted to be moved into and out of sealing engagement with said valve seat, and operating lever means disposed in said chamber and extending laterally from around the center of the top wall of said bucket to a position below said valve seat and having said valve member coupled thereto so that the raising and lowering of said bucket in said chamber moves said valve member toward and away from said valve seat, the improvement which comprises:

said casing consists of first and second casing sections, each of said casing sections being made of a single metal sheet and having the shape of a cylindrical cup of uniform thin wall thickness, the first casing section being open at its top and closed at its bottom by a downwardly bowed spherical-segment-shaped bottom wall and having a coaxial central first opening extending through the vertex of said bottom wall, the second casing section being open at its bottom and closed at its top by an upwardly bowed spherical-segment-shaped top wall whose vertex is coaxial with the vertex of said bottom wall, said top wall having a second opening extending therethrough at a location laterally offset from the vertex of said top wall, the bottom end of said second casing section being welded to the top end of said first casing section to define said chamber; a separately formed tubular inlet fitting extending through said first opening into the lower end of said chamber to provide said inlet for steam and condensate; a separately formed tubular outlet fitting extending through said second opening into the upper end of said chamber to provide said outlet and said valve seat.

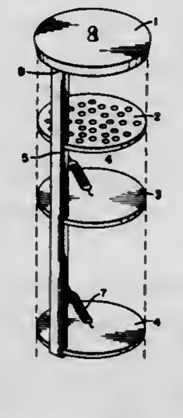
3,892,257
VERTICAL SANITARY TRAP ASSEMBLY FOR DRAIN PIPES

Yee C. Zia, 6 Sheffield Dr., Willingboro, N.J. 08046

Filed Sept. 20, 1973, Ser. No. 399,256

Int. Cl. F16k *15/03*

U.S. Cl. 137—247 **5 Claims**



1. A vertical sanitary trap assembly including a plug, a strainer, and an upper and a lower disc duly spaced from each other to form a water trap inside a drain pipe of the same diameter, all parallelly, perpendicularly and tangentially attached to a rod at a point on their outermost circumference in such a way as to enable the bottom part of said plug to revolve around said point in a level plane, said strainer being securely attached to said point yet easily snapped off and on, and each of two said discs so attached being additionally held over its center area by a spring-operated arm stemmed from the rod thereby permitting either disc only a downward movement under pressure; the entire assembly must fit inside a drain pipe in a watertight manner, yet allow itself to be detached and pulled out for cleaning, repairing or replacement.

3,892,258
HIGH PRESSURE SAFETY VALVE

Fred W. Hendrick, Long Beach, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Nov. 29, 1973, Ser. No. 420,178

Int. Cl. F16k *17/02*

U.S. Cl. 137—461 **9 Claims**

1. A high pressure safety valve comprising

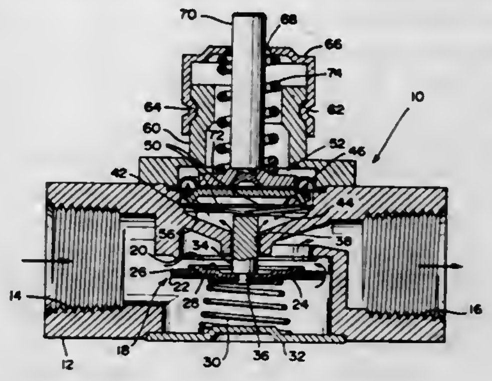
a casing having inlet means, outlet means and a flow passage therebetween;

valve means disposed in said flow passage to control flow therethrough;

snap-acting operator means movable between first and second states to control opening and closing of said valve means, respectively;

pressure sensing means exposed to pressure in said flow passage and controlling said operator means, said pressure sensing means being movable in response to the sensing of a predetermined high pressure to place said operator means in said second state and close said valve means whereby said valve means prevents flow through said casing under predetermined high pressure conditions;

said operator means including a snap-acting disc, said snap-acting disc having an outer rim means supported on said



casing and a central portion formed of spaced leg means to permit flow therethrough; and

said pressure sensing means including a fulcrum member disposed in engagement with said central portion throughout movement of said pressure sensing means and said operator means between its first and second states.

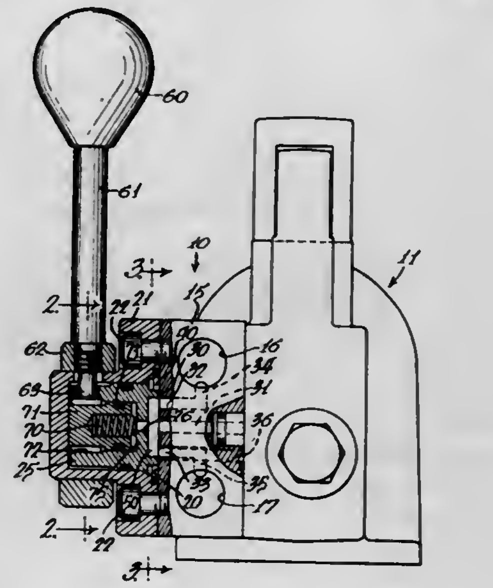
3,892,259
ROTARY CONTROL VALVE

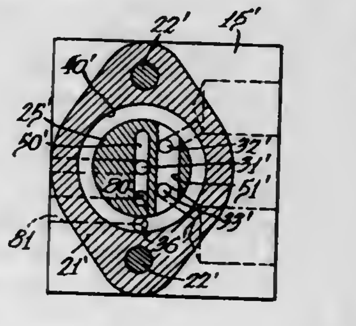
Samuel B. McClocklin, Owatonna, Minn., assignor to Owatonna Tool Company, Owatonna, Minn.

Filed Jan. 16, 1974, Ser. No. 433,799

Int. Cl. F16k *11/02;* **F15b** *13/04*

U.S. Cl. 137—625.21 **10 Claims**





1. A rotary control valve having a body and a valve member with opposing generally planar contacting surfaces, means mounting the valve member for rotation about a central axis normal to said surfaces, a plurality of ports in said body opening to said surface thereof including a pressure port concentric with said axis, an annular space around the periphery of said

valve body, a return port connecting with said annular space, a pair of control ports, said valve member having a first fluid passage groove opening to the body surface and extending through and with ends equidistant from said central axis to connect said pressure port with one or the other of said control ports, a pressure chamber in said valve member having a pressure responsive area, a reaction member in said pressure chamber, a passage connecting said groove and said pressure chamber whereby fluid pressure acting against the reaction member and the pressure responsive area urges the valve member toward said body surface, and said valve member having a second fluid passage groove to connect one of said control ports to the annular space and to the return port.

3,892,260

ELECTRO-HYDRAULIC SERVO-DISTRIBUTOR

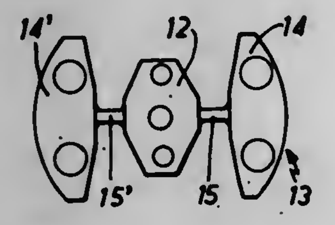
Rene Lucien, 56, Boulevard Maillot, 92200 Neuilly sur la Seine, France

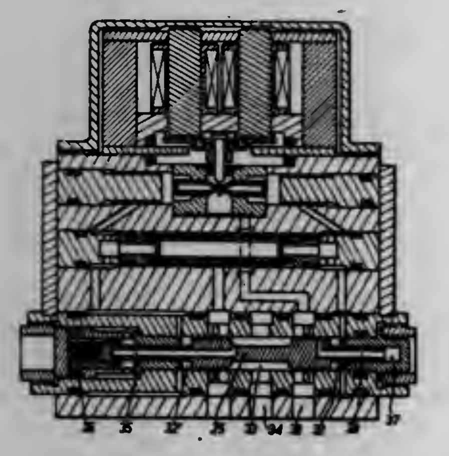
Filed Dec. 27, 1973, Ser. No. 428,766

Claims priority, application France, Dec. 29, 1972, 72.47007

Int. Cl. F15c *3/02;* **F16k** *11/07;* **G05d** *16/20*

U.S. Cl. 137—625.62 6 Claims





1. An electro-hydraulic servo-distributor comprising a primary or pilot stage including a drive means constituted by a magnetic circuit which comprises two parallel polar cores, two rectilinear magnets parallel to said cores and connected magnetically to one end of the cores by means of at least one metal plate, two control coils wound around said cores, a movable metal plate assembly arranged opposite the other ends of the polar cores, forming therewith equal air gaps, the arrangement of the different components of the magnetic circuit being such that the flux produced by the control coils and the flux of one of the magnets pass across the corresponding air gap in the same direction, while the flux produced by the control coils and the flux produced by the other magnet pass across the other air gap in opposite directions, a support member provided with a central part on which is fixed the movable plate assembly and two lateral torsion rods which are each terminated by a lateral portion engaged in the fixed structure of the servo-distributor, the support member also carrying in its central part a hydraulic closure member which is substantially perpendicular to the plate assembly and which is intended to close, according to the direction of magnetic turning moment to which the movable plate assembly is subjected, one or the other of two jets which are supplied with hydraulic fluid, by a secondary or hydraulic stage controlling flow rate or controlling pressure.

3,892,261

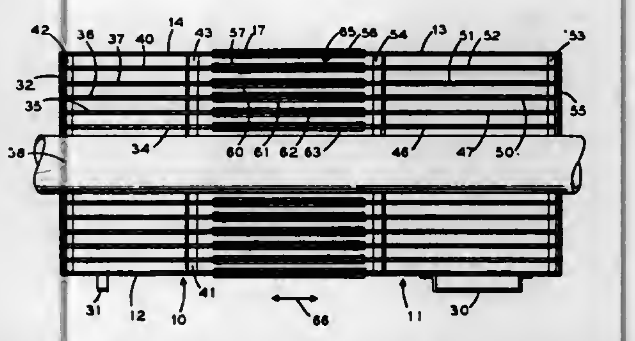
INSULATING CONDUIT

Terry E. Hoeman, Lancaster, Ohio, assignor to The Babcock & Wilcox Company, New York, N.Y.

Filed Jan. 26, 1973, Ser. No. 326,931

Int. Cl. F16l *59/08*

U.S. Cl. 138—149 2 Claims



1. An insulating element having at least two relatively movable portions comprising a pair of abutting inner cases, a pair of abutting outer cases spaced from said respective inner cases, a plurality of keys for separating each of said inner cases from said respective outer cases, a plurality of proximately abutting pairs of spaced highly reflective metal sheets said proximately abutting pairs of sheets being supported by said keys and interposed between said inner and outer cases, a plurality of splice piece sets, each of said sets overlapping a respective pair of proximately abutting cases and sheets, said sets being secured to a respective one of said cases and sheets, the other of said proximately abutting cases and sheets in each of said associated pairs being slidably received between said respective splice pieces in order to obstruct convective heat flow therethrough.

3,892,262

SLIDE-FASTENER STRINGER HALF WITH WOVEN-IN COUPLING ELEMENT AND METHOD OF MAKING SAME

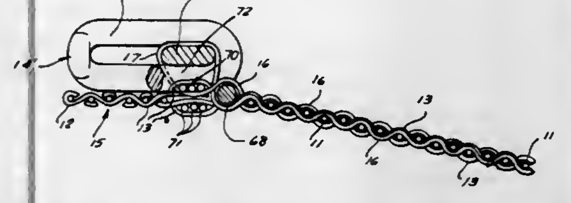
Julius Dahlmann, Sprockhovel, and Gunter Volter, Suppertal, both of Germany, assignors to Opti-Holding AG, Glarus, Switzerland

Filed Jan. 25, 1974, Ser. No. 436,628

Claims priority, application Germany, Jan. 27, 1973, 2304011; July 5, 1973, 2334242

Int. Cl. A44b *19/42*

U.S. Cl. 139—384 B 13 Claims



1. A slide-fastener stringer half comprising:

a plurality of primary parallel warp filaments forming a primary band and a plurality of secondary warp filaments forming a secondary band extending longitudinally alongside said primary band and forming therewith an elongated strip;

a continuous synthetic-resin coupling element extending longitudinally in said strip between said bands;

a first weft filament woven back and forth across the full width of said strip between said warp filaments; and

a second weft filament woven back and forth across said primary band and having at the longitudinal edge of said primary band turned toward said secondary band a plurality of bights looped around said coupling element and having at the opposite longitudinal edge of said primary band a plurality of knitted-together bights.

3,892,263

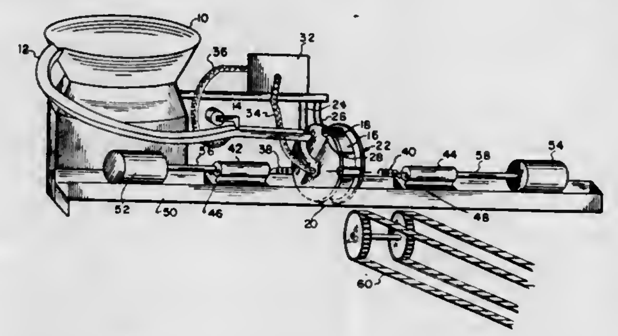
AXIAL COMPONENT LEAD STRAIGHTENER

Lewis P. Martin, and Lynn E. Trent, both of Huntsville, Ala., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Sept. 13, 1974, Ser. No. 505,807

Int. Cl. B21f *1/02*

U.S. Cl. 140—147 10 Claims



1. Apparatus for straightening the leads extending longitudinally from axial leaded electrical components, said apparatus comprising

first and second closed helical lead straightening elements disposed on a common longitudinal axis,

means for driving said first and second lead straightening elements in counter-rotation with respect to one another, means for conveying said electrical components into axial alignment with said first and second lead straightening elements and retaining said components in axial translation,

means for driving said first and second lead straightening elements along said longitudinal axis such that the ends thereof engage said component leads whereby said leads are drawn into said straightening elements due to the rotation thereof, and

means for axially withdrawing said lead straightening elements from said electrical components to thereby straighten said leads and release said components.

3,892,264

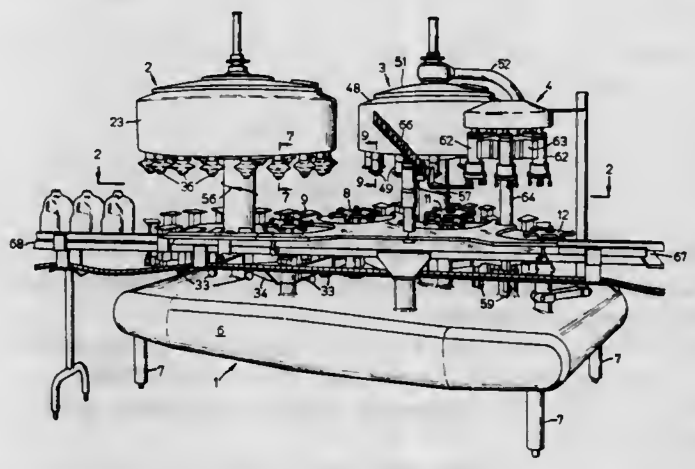
METHOD AND APPARATUS FOR FILLING BOTTLES

Chester W. Held, Bayside, Wis., assignor to Federal Manufacturing Company, Milwaukee, Wis.

Filed Oct. 10, 1973, Ser. No. 404,938

Int. Cl. B65b *3/04*

U.S. Cl. 141—5 8 Claims



1. The method of filling open-mouthed receptacles with liquid, which comprises the steps of inserting a first liquid discharge nozzle into the mouth of the receptacle; advancing the receptacle and inserted nozzle along a first path of predetermined length; establishing liquid flow by gravity from said first nozzle into said receptacle at a rate which will initially fill said receptacle to less than its full content during said advancement thereof along said first path; terminating said gravity liquid flow; removing said first nozzle from and inserting a second nozzle into the mouth of said initially filled receptacle; advancing said initially filled receptacle and inserted second nozzle along a second path of predetermined length; and establishing vacuum assistsed liquid flow by gravity from said second nozzle into said initially filled receptacle at a rate which will complete filling of said receptacle to its full content during said advancement thereof along said second path.

3,892,265

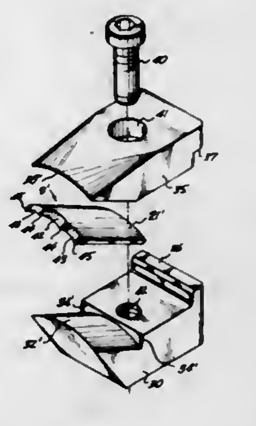
CHIPPER BIT AND HOLDER

Stanley Donald Vanek, Seattle, Wash., assignor to Nicholson Manufacturing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 141,595, May 10, 1973, Pat. No. 3,757,839, which is a continuation-in-part of Ser. No. 883,038, Dec. 8, 1969, Pat. No. 3,661,192. This application Apr. 6, 1973, Ser. No. 348,858

Int. Cl. B27l *11/02;* **B27g** *13/00*

U.S. Cl. 144—230 14 Claims



1. A bit for mounting in an aperture of a rotary chipping drum comprising an arcuate plate body approximately 90° in extent, of substantially uniform thickness over at least most of its area, having substantially parallel opposite edges, being substantially smoothly curved throughout its width between said opposite edges and having a cutting edge extending transversely of said opposite body edges and between said opposite body edges, said cutting edge having two bevels meeting in a ridge and forming adjoining concave cutting edges meeting in a cusp, and said plate body being discontinuous between said opposite edges opposite said cutting edge, enabling chips cut by said cutting edge to pass directly radially of said arcuate plate body through the aperture in the chipping drum.

3,892,266

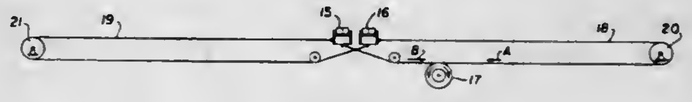
METHOD AND MEANS FOR REMOVING SURFACE MATERIAL FROM TREES

Erich Puna, Gavle, Sweden, assignor to Brundell Och Jonsson AB, Gavle, Sweden

Filed Sept. 10, 1973, Ser. No. 395,856

Int. Cl. B27c *9/00*

U.S. Cl. 144—309 AC 54 Claims



1. Apparatus for removing surface material from trees comprising:

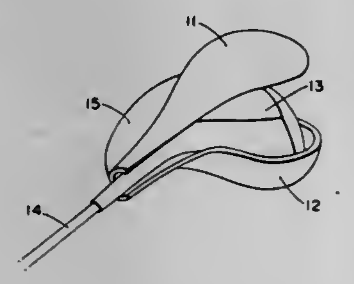
a boom structure;

a pair of surface material removing heads slidably connected to said boom structure, said heads each carrying removal means for removal of surface material from a tree;

means coupled to said surface material removing heads for selectively causing said removal means of said heads to engage a tree; and
means for moving said heads along said boom in opposing directions, said heads simultaneously removing surface material from the upper and lower portions of the tree.

3,892,267
GOLF CLUB COVER

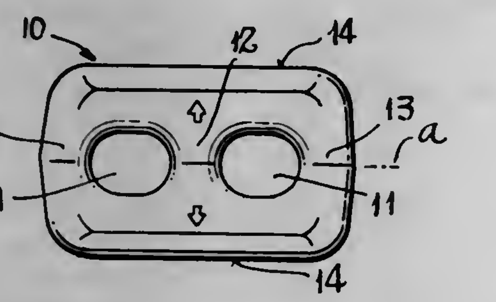
Emile L. Bibeau, 5 Colony Way, Nashua, N.H. 03060
Continuation-in-part of Ser. No. 368,851, June 11, 1973, abandoned. This application Aug. 9, 1974, Ser. No. 496,081
Int. Cl. A63b *57/00*
U.S. Cl. 150—52 G **6 Claims**



6. In a cover for the wood of a golf club, a cover of a molded plastic generally conforming to the shape of said wood and the bottom portion of the shank thereto, said cover generally conforming to the shape of the particular wood to be contained therein and being composed of two cover halves mating on a line following the front of the shank over the mid-portion of the top of said wood, across the toe to the mid-portion of the heel and thence up the back of the shank, said cover halves being pivotedly joined at the back of the shank portion by a finger operable pop-together ball and socket hinge joint, said hinge joint including two rearwardly directed finger clasps extending over and covering said hinge joint, said finger clasps being spread apart when said cover is in the closed position and serving as lever arms to open said cover about said hinge joint as a fulcrum, one half of said hinge joint and a clasp being of the same material and being integrally molded into each of said cover halves.

3,892,268
PROTECTIVE TIRE AND TRACTION CHAIN FOR TIRE-QUIPPED SERVICE VEHICLES

Heinz Asbeck, Markusstrasse 42, 46 Dortmund-Syburg, Germany
Filed Jan. 24, 1972, Ser. No. 220,264
Int. Cl. B60c *27/06*
U.S. Cl. 152—172 **4 Claims**



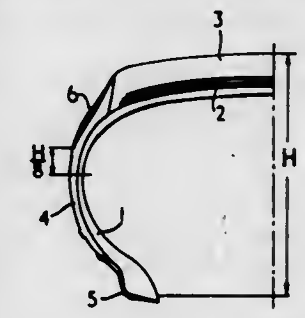
1. A protective tire and traction chain combination adapted for use on tire-equipped vehicles comprising of:
a plurality of generally rectangularly shaped working links, having a length and width greater than the thickness thereof,
each of said working links being formed with opposed working surfaces along the longitudinal edges thereof,
the thickness of the respective working links progressively increasing from a horizontal center line outwardly toward the respective working surfaces thereof,
the two opposed working surfaces of the working links having substantially the same width,
said working links each having a pair of apertures disposed between the opposed working surfaces and extending through the thickness of said working links,
each working link having a transversely extending central bridge portion to separate said pair of apertures, and opposed end bridges,
each of said working links being symmetrically formed about its respective horizontal and vertical axes,
each working link having its end portions substantially ellipsoidal in shape whereby the curvature of the ellipsoidal ends approximates the radius of said end bridges,
connecting links for interconnecting said working links to form a chain mesh having a predetermined design,
said connecting links being defined as circular rings closed by welding, and that said connecting rings have a cross-sectional area which is smaller than the area of said apertures, whereby said circular rings are loosely received in adjacent apertures of adjacent working links for interconnecting said working links to form a predetermined mesh design,
said connecting links being disposed substantially parallel to the tire and normal to the longitudinal plane of said working links,
readily detachable terminal links for interconnecting the ends of said chain mesh along a line transversely to the direction of travel to define an annular net,
said terminal link functioning as a working link in the assembled position of said chain,
each of said terminal links comprising a substantially rectangular body similar to outline to said working link,
said terminal link having a longitudinally extending aperture communicating with a transversely extending slot formed in one longitudinal surface of said terminal link,
each of said terminal links being formed with opposed working surfaces along the longitudinal edges thereof,
the thickness of said terminal links progressively increasing from a horizontal center line outwardly toward the respective working surfaces of the terminal links,
a fastener having opposed end portions adapted to extend through said terminal link aperture for closing said slot to secure the connecting links in the assembled position of said chain,
said terminal link having a recess formed in the opposed side surfaces thereof for accommodating the end portions of said fastener,
and said terminal link having its end portions generally ellipsoidal in shape.

3,892,269
PNEUMATIC TIRE

Leslie Vernon Powell, Lichfield, and Reginald Harold Edwards, Coldfield, both of England, assignors to Dunlop Holdings Limited, England
Continuation of Ser. No. 150,561, June 7, 1971, abandoned. This application July 13, 1973, Ser. No. 378,825
Claims priority, application United Kingdom, June 20, 1970, 30030/70
Int. Cl. B60c *9/02, 17/00*
U.S. Cl. 152—330 **7 Claims**

1. A pneumatic tire and wheel assembly capable of being run in a deflated condition having a single inflation chamber comprising:
a. a wheel having a wheel rim with a pair of annular flanges;
b. a pneumatic tire comprising sidewall portions and a tread portion whose width is greater than the width of the wheel rim measured between the flanges;

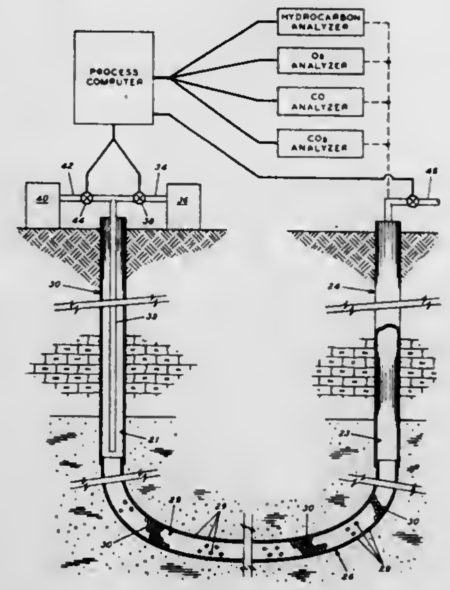
c. means to prevent the tire from becoming dislodged from the wheel when running deflated;
d. a lubricant which, when the assembly is used with the tire in a deflated condition, will facilitate relative movement of contacting interior surfaces of the tire; and



e. means to facilitate folding between said sidewall portions and tread portion, said means comprising an annular layer of soft rubber having a thickness of at least 1 mm extending over a major proportion of the outer region of each of the sidewall portions, said soft rubber having a hardness of 45 B.S.I. or softer, the outer region of each sidewall being free of discontinuities of thickness which lead to concentration of stresses during severe flexing.

3,892,270
PRODUCTION OF HYDROCARBONS FROM UNDERGROUND FORMATIONS

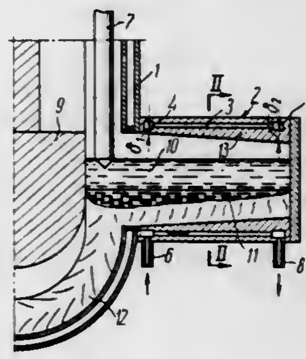
Robert H. Lindquist, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Filed June 6, 1974, Ser. No. 476,836
Int. Cl.² E21B *43/24*
U.S. Cl. 166—251 **8 Claims**



1. A method for converting petroleum within an underground formation into combustible product gas and bringing the so-formed product gas to the Earth's surface for subsequent distribution comprising connecting at least one input well with at least one producing well by a lateral connecting hole which at least in part penetrates an underground formation containing petroleum; packing said connecting hole with a permeable material so that said connecting hole has a permeability in excess of the permeability of said underground formation; injecting oxidizing gas and steam down said input well into said lateral connecting hole to react with petroleum in said formation by partial oxidation and by thermal cracking to form a product gas containing sufficient fractions of at least one of the components carbon monoxide, hydrogen and methane to be combustible, producing said product gas from said formation through said producing well; analyzing said product gas for values of C_1 and C_2 hydrocarbons, carbon monoxide and carbon dioxide; and controlling the reactions within said connecting hole based on said values to optimize the Btu value of said product gas.

3,892,271
MOULD FOR MAKING AN ARTICLE WITH A BRANCH PIPE BY THE ELECTROSLAG REMELTING PROCESS

Boris Izrailevich Medovar, Bulvar Lesi Ukrainki, 2, kv. 8; Ilya Iosifovich Kumysh, Vozdukhoflotsky prospekt, 42, kv. 51; Georgy Alexandrovich Boiko, ulitsa Vladimiro Lybedskaya, 16, kv. 106, all of Kiev; Volf Iudovich Rabinovich, ulitsa Gagarina 74, kv. 27, Chekhov Moskovskoi oblasti; Alexandr Ivanovich Sapozhnikov, ulitsa Mosfilmovskaya 17/25, kv. 63, Moscow; Georgy Sergeevich Marinsky, ulitsa Tatarskaya, 1, kv. 9, Kiev, and Jury Nikolaevich Kriger, ulitsa Oktyabrskaya, 38, kv. 59, Chekhov Moskovskoi oblasti, all of U.S.S.R.
Filed Mar. 6, 1973, Ser. No. 338,570
Claims priority, application U.S.S.R., Mar. 7, 1972, 1754963
Int. Cl. B22d *27/02*
U.S. Cl. 164—252 **3 Claims**



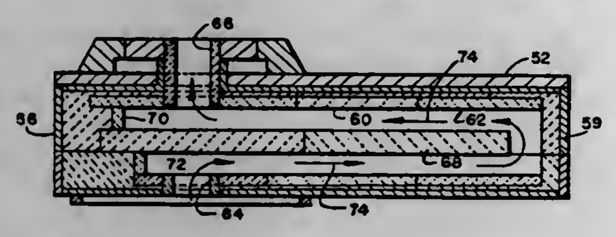
1. A mould to be used in an electroslag remelting process for making an article with a branch pipe, which comprises in combination: a first part having walls to form a body of the article; a second part having walls to form the branch pipe of the article and having a portion thereof disposed adjacent to said first part forming the body of the article; passages for a cooling agent being disposed in said walls of said first and second parts forming the body and branch pipe of the article; a first pipe connection to supply the cooling agent into said passages disposed in said walls of said second part forming the branch pipe of the article, the pipe connection being disposed within an area adjacent to said first part forming the body of the article in a zone wherein a consumable electrode is located; and a second pipe connection to withdraw the cooling agent from said passages disposed in said walls of said second part forming the branch pipe said second pipe connection being further disposed at the remote end thereof.

3,892,272
APPARATUS FOR THE REMOVAL OF NON-METALLIC IMPURITIES FROM MOLTEN METAL

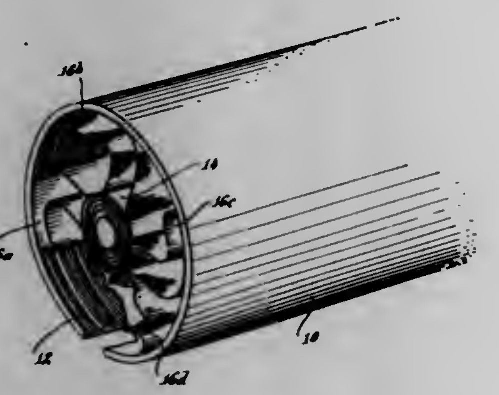
Walter C. Troy, Evanston, Ill.; James J. Novak, Miami, Fla.; Richard C. Costello, West Chicago, and Raymond J. Dearth, Roselle, both of Ill., assignors to Amsted Industries Incorporated, Chicago, Ill.
Filed Mar. 14, 1969, Ser. No. 807,192
Int. Cl. B22d *17/06*
U.S. Cl. 164—306 **2 Claims**

1. In a bottom pressure casting arrangement including means for forcing molten metal vertically upward from a ladle through a pouring tube and into the casting cavity of a mold by the application of super atmospheric pressure to said metal, apparatus for removal of non-metallic impurities from said molten metal comprising a body disposed between said pour-

ing tube and said mold, said body composed of a refractory material that is isomorphic with at least a portion of said impurities, a passage through said body, an outlet from said passage in communication with said casting cavity, an inlet into said passage communicating with said pouring tube, said passage being substantially horizontal and constructed to divert metal flow there through away from vertical flow to allow relatively light impurities in said molten metal to rise therein and adhere to said body, and a substantially horizontal weir in said body dividing said passage into an upper passage and a lower passage, said inlet communicating with said lower passage proximate one end thereof, said outlet communicating with said upper passage proximate the same end thereof as said inlet, and said weir being spaced from said body at the other end of said upper and lower passages to provide a vertical passage between said upper and said lower passages.



3,892,273
HEAT PIPE LOBAR WICKING ARRANGEMENT
Burke Edward Nelson, Ridgefield, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.
Filed July 9, 1973, Ser. No. 377,728
Int. Cl. F28d *15/00*
U.S. Cl. 165—105 **5 Claims**



1. A heat pipe comprising: a thermally conductive tube having circumferential grooves in its inner surface; a liquid contained within said tube; a primary wick extending substantially axially through said tube to transport said liquid therealong; and a secondary wick comprising a screen formed into radial lobes deformed between said primary wick and said inner surface, said lobes contacting said inner surface at circumferentially spaced, discrete regions thereof to transport said liquid between said primary wick and said inner surface.

3,892,274
RETRIEVABLE SELF-DECENTRALIZED HYDRA-JET TOOL
Floyd E. Dill, Midland, Tex., assignor to Halliburton Company, Duncan, Okla.
Filed May 22, 1974, Ser. No. 472,238
Int. Cl. E21b *37/00*
U.S. Cl. 166—222 **10 Claims**

1. A retrievable self-decentralized hydra-jet tool for seating in a seating nipple within and proximate to the lower end of a tubing string in a well bore for use with a source of pressurized treating fluid communicating with the tubing string for jet treating the well bore, comprising:

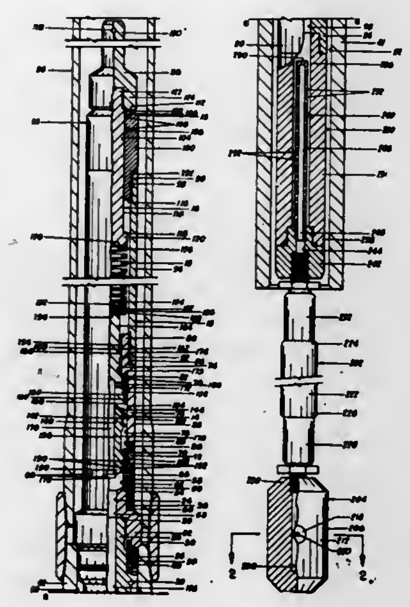
a. a tubular member, having an upper end portion and a lower end portion and slidably receivable within the tubing string, said tubular member having annular shoulder means formed on the outer periphery thereof for engaging the seating nipple to limit downward movement thereof within the tubing string;

b. a flexible conduit having an upper end portion and a lower end portion;

c. connecting means for connecting the lower end portion of said tubular member to the upper end portion of said flexible conduit to provide communication therebetween;

d. a jet treating head having a cavity formed therein and connecting means formed thereon for connecting the lower end portion of said flexible conduit to said jet treating head in communication with the cavity formed therein;

e. first nozzle means, formed in said jet treating head and extending outwardly from the cavity therein in a first direction, for ejecting pressurized treating fluid therethrough in the first direction and exerting a first reaction force on said jet treating head in a direction substantially opposite said first direction;



f. second nozzle means, formed in said jet treating head and extending outwardly from the cavity in a second direction substantially opposite said first direction of said first nozzle means, for ejecting pressurized treating head in the second direction and exerting a second reaction force on said jet treating head in a direction substantially opposite said second direction, said second reaction force being greater than said first reaction force; and

g. means, carried by said tubular member and extending upwardly therefrom, for engaging an external retrieving device, for unseating said tubular member from the seating nipple in response to operation of said retrieving device and for retrieving said tool from the tubing string in response to further operation of said retrieving device.

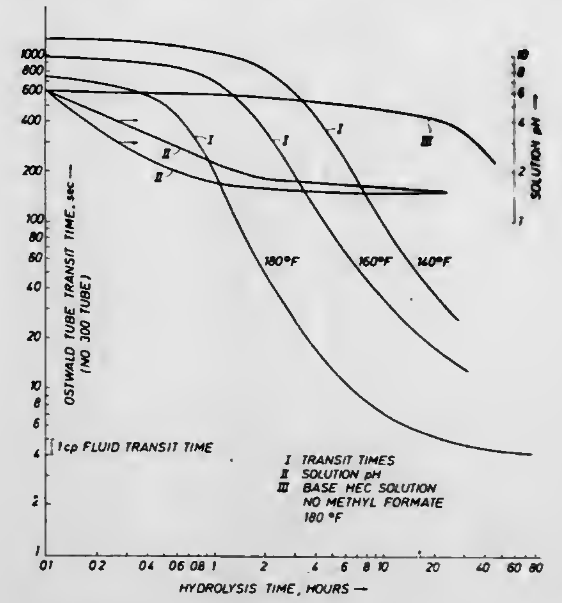
3,892,275
SELF-THINNING AND NEUTRALIZING THICKENED AQUEOUS LIQUID
James H. Lybarger, Metairie, La., and Ronald F. Scheuerman, Bellaire, Tex., assignors to Shell Oil Company, Houston, Tex.
Filed Jan. 24, 1974, Ser. No. 436,290
Int. Cl.² E21B *43/04, 43/27*
U.S. Cl. 166—250 **5 Claims**

1. A well treating process which comprises:

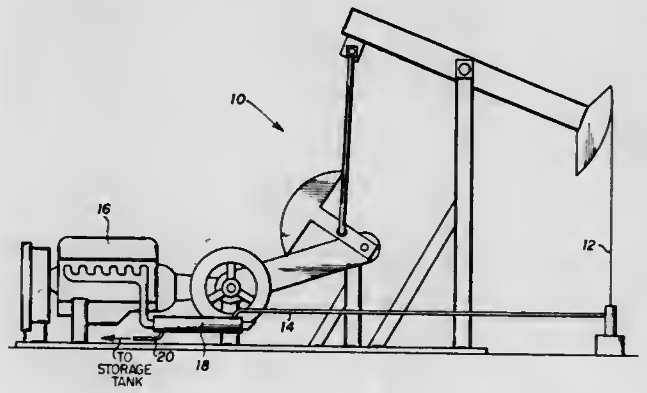
determining the approximate time and temperature to which a fluid will be subjected when the fluid has a selected viscosity and is pumped at a selected rate to a zone to be treated within the well;

compounding an aqueous liquid that contains (a) enough dissolved acid-reactive cellulosic water thickener to provide the selected viscosity, (b) an amount and composition of substantially homogeneously distributed acidifying material sufficient to cause a decrease in the solution viscosity at a selected time after the solution reaches said zone when pumped at said rate; and (c) an amount of substantially homogeneously distributed relatively slowly reactive pH-increasing material sufficient to raise the pH of the solution to a selected substantially neutral value within a selected additional time; and

pumping the compounded aqueous liquid into the well at a rate substantially equalling the selected rate.



3,892,276
METHOD AND APPARATUS FOR HEATING OIL PUMPED FROM AN OIL WELL
Arthur B. Wells, P. O. Box 489, Jacksboro, Tex. 76056
Filed Nov. 29, 1973, Ser. No. 420,213
Int. Cl. E21b *43/00*
U.S. Cl. 166—267 **7 Claims**



1. A method of breaking down water-paraffin emulsion in oil comprising:

moving oil from a well with a motor which emits heated exhaust gases;

passing the exhaust gases from the motor through a plurality of confined paths in a heat exchanger;

passing all of the oil pumped from the well around said confined paths in said heat exchanger in order to heat the oil to an extent that the water-paraffin emulsion is broken.

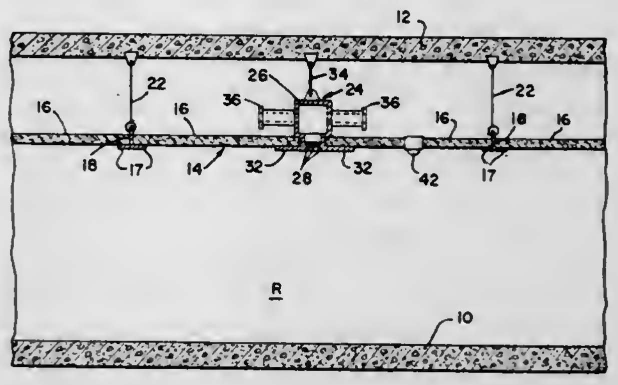
2. An apparatus for breaking down the water-paraffin emulsion in oil as the oil is removed from an oil well comprising:

an oil well pump motor which emits heated exhaust gases as said motor pumps the oil from the well;

a shell having an inlet for receiving all of the oil pumped from the well and an outlet for discharging the oil;

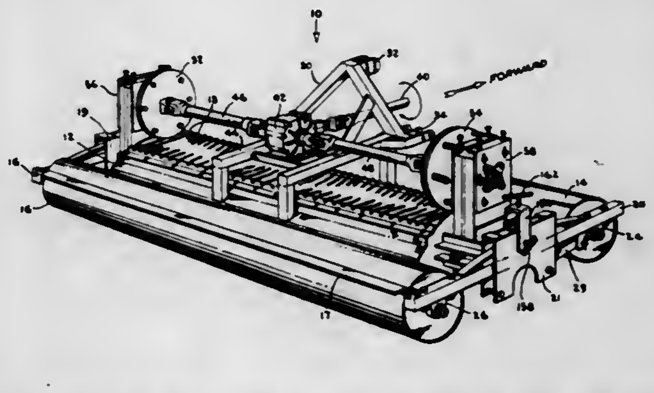
at least one tube member disposed within said shell with both ends of said tube protruding through said shell and with the first end of said tube being adapted to receive the exhaust gases from the motor whereby all of the oil pumped from the well is heated by the exhaust gases to an extent that the water-paraffin emulsion is broken.

3,892,277
FIRE PROTECTION SYSTEM
Jeremiah M. Curran, 2021 Gorman St., Philadelphia, Pa. 19116
Continuation-in-part of Ser. No. 358,890, May 10, 1973, abandoned. This application July 3, 1974, Ser. No. 485,681
Int. Cl. B05b *15/06;* **A62c** *35/00, 37/06*
U.S. Cl. 169—16 **17 Claims**



1. An integral fire protection system and ceiling structure comprising a plurality of discrete ceiling tiles, a supporting grid for supporting the ceiling tiles, a hollow, elongate conduit incorporated into said supporting grid for carrying extinguishant under pressure, a source of extinguishant under pressure, valve means for maintaining the conduit empty of extinguishant when the system is in an inactive state, detector means for detecting a fire, said valve means being responsive to the detecting means for causing the valve means to supply extinguishant to the conduit upon the detection of a fire by said detecting means, and the conduit including means for spraying extinguishant outwardly of the conduit.

3,892,278
ROTARY TILLER-MULCHER
Alexander Smith, and Burton D. Baggs, Jr., both of Sanford, Fla., assignors to Smitty's Incorporated, Sanford, Fla.
Filed Dec. 27, 1972, Ser. No. 319,039
Int. Cl. A01b *33/00*
U.S. Cl. 172—70 **20 Claims**



1. In a tiller having a bladed rotor driven in the opposite rotative direction to that of supporting wheels, the improvement comprising said bladed rotor having at least one helical row of radially-disposed blades, each of a majority of said blades having a pair of essentially radially disposed working faces thereon, the working faces of each pair residing in differ-

ent planes, and together forming a vertex, each pair of working faces being disposed at essentially equal angles to a plane passing through the vertex orthogonal to the axis of said bladed rotor, said bladed rotor being disposed in a fixed cooperative cover embracing approximately the upper half of the sweep of said bladed rotor, said cover having a gap therein disposed essentially parallel to and spaced above the axial center of said bladed rotor, and a plurality of essentially parallel lengths of chain attached to said cover so as to span the gap, the motion of said chains, taking place during the operation of said tiller, preventing the buildup of earth on the underside of said cover.

3,892,279

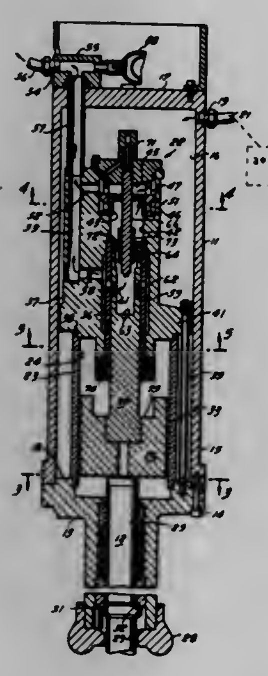
RECIPROCATING HYDRAULIC HAMMER

Lester A. Amtsberg, Utica, N.Y., assignor to Chicago Pneumatic Tool Company, New York, N.Y.

Division of Ser. No. 165,539, July 23, 1971. This application Dec. 6, 1973, Ser. No. 422,259

Int. Cl. B25d *9/04*

U.S. Cl. 173—13 **13 Claims**



1. In a reciprocating hydraulic hammer including a housing to which a fronthead is attached adapted to receive a slidable work steel, and including a piston hammer reciprocable in the housing to pound the work steel, an outer jacket within which the housing has a fixed position defines a reservoir in surrounding relation to the housing, an inlet to the reservoir adapted for connection to a pressure oil supply system for filling and maintaining the reservoir constantly pressurized with oil, the piston hammer having a driving end, a first chamber in the housing about the driving end of the piston hammer, valve means in the housing having response to a return stroke of the piston hammer to communicate the reservoir with the chamber, a pressure oil discharge line in the housing adapted for connection with an external sump of the supply system, the valve means having response to movement of the piston hammer on a work stroke to communicate the chamber with the discharge line and to block communication of the chamber with the reservoir, a slidable return plunger constantly subject to pressure of oil in the reservoir so as to constantly abut a bottom face of the piston hammer, the piston hammer having a lower section defining a hammer member providing said bottom face, the housing having a lower section defining an air chamber in which the hammer member reciprocates, and the return plunger having response to pressure of oil in the reservoir following blocking of communication of the said first chamber with the reservoir to move the piston hammer on a return stroke.

3,892,280

PORTABLE PNEUMATIC IMPACT TOOL

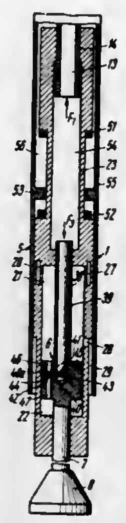
Nikolai Alexandrovich Klushin, ulitsa Narodnaya, 1, kv. 23; Petr Avramovich Maslakov, ulitsa Voskhod, 7, kv. 42, and Vladimir Petrovich Kotov, 9 Trikotazhny pereulok, 27, all of Novosibirsk, U.S.S.R.

Filed May 2, 1974, Ser. No. 466,511

Claims priority, application U.S.S.R., Oct. 30, 1973, 1963901

Int. Cl. B25d *9/00*

U.S. Cl. 173—162 **8 Claims**



1. A portable pneumatic impact tool comprising: a casing; a housing in said casing axially movable relative thereto and having a space in constant communication with a compressed air source; a main piston mounted in said casing and received in the space of said housing for axial movement together with said casing relative to said housing, the compressed air pressure in the space of said housing resulting in the development of a force applied to said casing so as to urge it away from said housing; a hammer piston mounted for axial movement in said housing for imparting useful blows; said housing and said hammer piston defining working chambers which are alternately communicated with a compressed air source and atmosphere; means for alternately feeding compressed air into said working chambers for thereby imparting reciprocations to said housing and said hammer piston, whereby said hammer piston imparts useful blows; an additional piston; drive means for imparting reciprocations to said additional piston substantially in the antiphase relation to the reciprocations of said housing; said additional piston being received in the space of said housing during the reciprocations so that variations in the volume of the space of said housing caused by the reciprocation of said housing are substantially compensated for by the reciprocations of said additional piston, whereby the volume of the space of said housing remains substantially unchanged, and hence the pressure fluctuations of the compressed air in the space of said housing are reduced, whereby the force applied to said casing is maintained constant and vibration of said casing is lowered.

3,892,281

TEMPERATURE MEASURING SYSTEM HAVING SENSOR TIME CONSTANT COMPENSATION

Neil L. Brown, Sippiwissett, Mass., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 31, 1974, Ser. No. 494,000

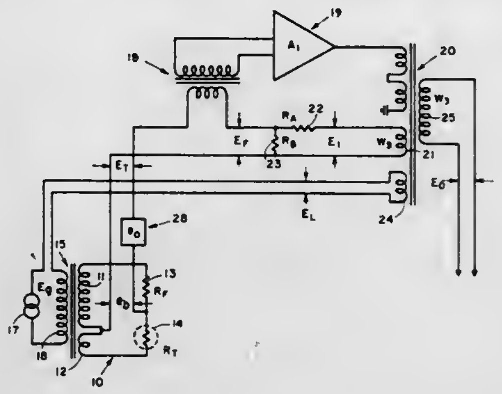
Int. Cl. G01k *7/16*

U.S. Cl. 73—362 AR **9 Claims**

1. A method for improving the response of a platinum resistance temperature sensor which is being employed to produce a signal indicative of the temperature of a medium, comprising the steps of

measuring the temperature of the medium with a thermistor which also produces a signal indicative of the temperature of the medium;

modifying the amplitude of the signal produced by said thermistor so as to have it correspond to the response of a simple high-pass RC filter to a DC step input signal; and



adding the modified amplitude signal from the thermistor to the signal produced by said platinum resistance temperature sensor thereby to obtain a composite signal which has the speed of response of said thermistor and the stability of said platinum resistance temperature sensor.

3,892,282

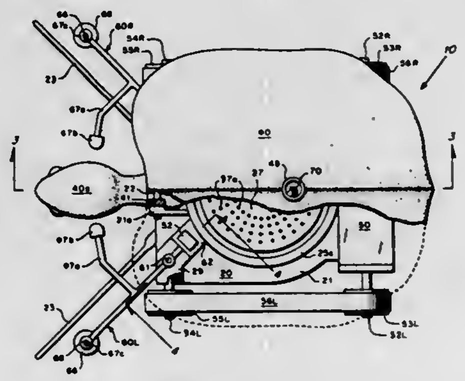
RANDOM MOTION SUCTION CLEANER

Stanley S. Wulc, Rydal, Pa., assignor to Total Enterprises, Inc., Hatboro, Pa.

Division of Ser. No. 28,453, April 14, 1970, Pat. No. 3,676,774. This application July 18, 1972, Ser. No. 272,846

Int. Cl. B62d *11/04*

U.S. Cl. 180—6.5 **4 Claims**



1. A random motion vehicle having a forward end and normally adapted to move in a straight line with said forward end leading across a horizontal surface, to sense an obstacle, to turn away from said obstacle, and to continue to move in a changed direction with said forward end leading, said vehicle comprising,

a base, said base supporting the following means,

only a left side forward end obstacle contact sensing means and a right side forward end obstacle contact sensing means,

a left side independent drive means and a right side independent means, each said drive means including at least one motor and at least one wheel, each said wheel being rotatable only in a plane parallel to the direction of motion of said vehicle and driving a horizontal surface-contacting traction belt,

a logic and control means operatively connected to said drive means and said sensing means to turn said vehicle to change said direction of motion, by sensing an obstacle contact sensing signal from one of said sensing means causing said logic and control means to initiate a programmed cycle of instruction signals to said drive means, said cycle being; left and right drive means pause, left and right drive means reverse; left and right drive means pause; one of said drive means drive reverse and the other of said drive means drive forward, left and right drive means pause; left and right drive means resume normal forward drive.

3,892,283

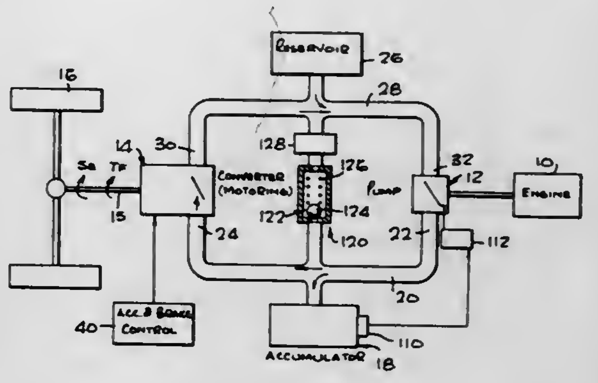
HYDRAULIC DRIVE

John W. Johnson, Manhattan Beach, Calif., assignor to Advanced Power Systems, Los Angeles, Calif.

Filed Feb. 19, 1974, Ser. No. 443,220

Int. Cl. B60k *17/10*

U.S. Cl. 180—66 R **6 Claims**



1. In a vehicle which includes an output shaft coupled to at least one wheel for propelling the vehicle, and a brake pedal means which is operated when it is desired to slow the vehicle, the improvement comprising:

an engine;

a hydraulic pump coupled to the engine to be driven by it; a hydraulic converter coupled to the output shaft, said converter having first and second ports;

an accumulator for storing and releasing hydraulic fluid under pressure, said accumulator coupled to the outlet of said pump and the first port of said converter;

a hydraulic fluid reservoir coupled to the inlet of said pump and the second port of said converter;

said hydraulic converter including means operable as a motor to drive the output shaft in a forward direction in response to the passage of hydraulic fluid from the first to the second port thereof, said means of said converter also being operable as a braking pump to pump fluid from the second to the first port thereof in response to torque from said output shaft as said output shaft turns in a forward direction; and

operating means coupled to said brake pedal means for operating said means of said hydraulic converter as a braking pump, whereby to use braking energy from the output shaft to pump hydraulic fluid into the accumulator for future use without requiring an additional pump or complicated valve system.

3,892,284

WHEEL SUSPENSION FOR MOTOR VEHICLES

Hans-Hermann Braess, Stuttgart-Stammheim, and Rudolf Kronewitter, Boblingen, both of Germany, assignors to Dr. Ing. h.c.F. Porsche, AG, Germany

Filed Jan. 4, 1973, Ser. No. 320,907

Claims priority, application Germany, Jan. 5, 1972, 2200351

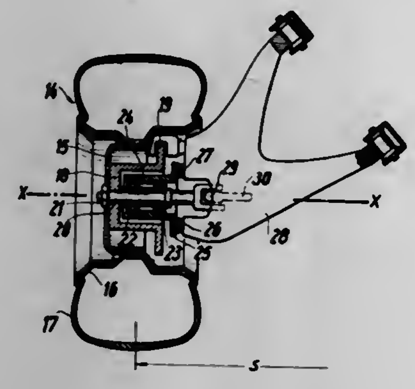
Int. Cl. B60k *17/32*

U.S. Cl. 180—73 D **25 Claims**

1. A wheel suspension for a vehicle comprising:

wheel guide means retained at a relatively fixed one of a vehicle body having a longitudinal direction and a vehicle frame, wheel carrier means for rotatably supporting a vehicle wheel in use,

plural elastic support means interconnecting said wheel carrier means and said wheel guide means, at least two of



said elastic support means being, respectively, of different elasticities and arranged in such a manner as to yield a wheel steering moment pole of elastic wheel movement which is located so as to permit only toe-in wheel adjustment in response to forces acting on the wheel in use.

3,892,285
DUST PROTECTION DEVICE FOR REDUCTION UNITS AT THE DRIVE WHEELS OF LARGE AGRICULTURAL MACHINES

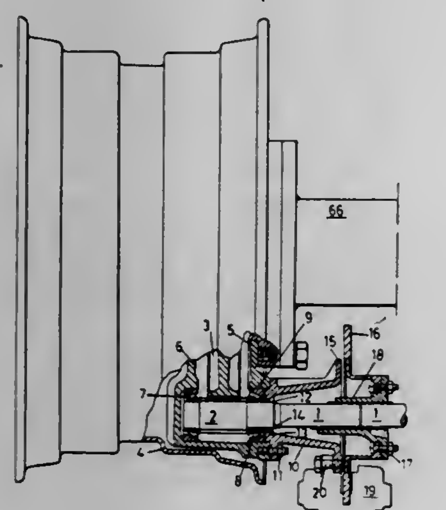
Mario Bruni, Sesto S. Giovanni, Milano, Italy, assignor to White Farm Equipment Company, Wilmington, Del.

Filed May 7, 1974, Ser. No. 467,826

Claims priority, application Italy, May 18, 1973, 46850/73

Int. Cl. B60t *17/00*

U.S. Cl. 180—75 **1 Claim**



1. Dust protection device for reduction units at the drive wheels of large agricultural machines, substantially of the type in which the wheel rim rotates idly on a stub axle rigid with the machine chassis and is rigid with a gear wheel of large diameter which engages with a small pinion gear present at the end of the drive shaft for said wheel, the reduction unit being contained in an oil tight housing having an inlet opening for the drive shaft, said device comprising in combination with the friction disc of a braking device which rotates rigidly with the drive shaft, a fixed hollow bell shaped body extending from said inlet opening and terminating in a flat circular rim parallel and very close to said friction disc, so that said disc, on rotating, induces a centrifugal vortex of air inside said bell.

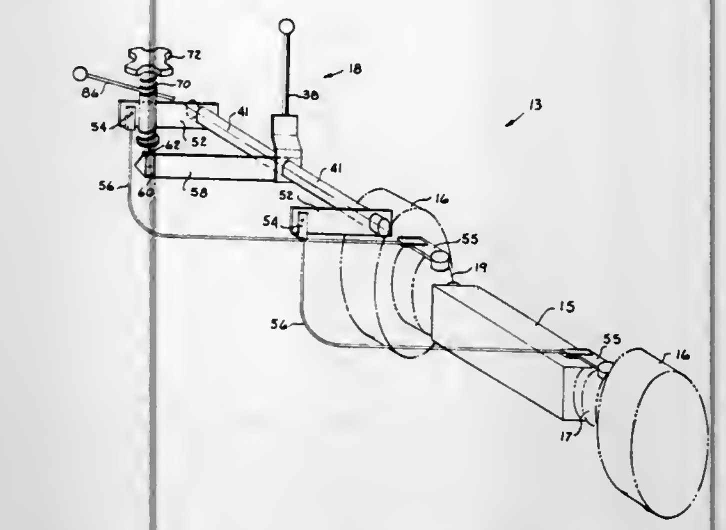
3,892,286
FINE SPEED CONTROL FOR A VEHICLE

James T. Clevenger, Jr., Lancaster, and Gary C. Snyder, New Holland, both of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.

Filed June 26, 1973, Ser. No. 373,831

Int. Cl.² B60K *41/00*; G05G *11/00*

U.S. Cl. 180—77 R **10 Claims**



1. Improved vehicular control apparatus comprising, in combination,

A. a frame,

B. ground engaging means mounted on the frame,

C. drive means operably connected to the ground engaging means,

D. control means mounted on said frame and associated with said drive means, said control means comprising

1. a coarse speed control having means to vary over a full range of positions the power to said drive means for controlling speed of the vehicle,

2. a fine speed control having a main body portion comprising a spring adapted to respond to changes in the position of said coarse speed control varying means, and means for engaging the spring to permit said fine speed control to set said coarse speed control at any one of a plurality of positions over said full range, whereby said drive means is allowed to automatically respond to changing power requirements; and

3. means for interconnecting said coarse and fine speed controls, so that movement of one will directly effect the movement of the other.

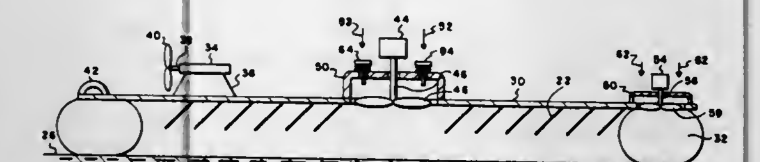
3,892,287
VACUUM ICE ANCHOR

John Bennett, Denton, Tex., assignor to Sun Oil Company, Dallas, Tex.

Filed Sept. 20, 1973, Ser. No. 399,239

Int. Cl. B60b *39/00*

U.S. Cl. 180—115 **8 Claims**



1. Ice anchor for providing horizontal restraint, comprising a planar member having a large surface area; means extending downwardly from the periphery of the planar member for sealing said periphery to the ice and for providing an enclosed area under the planar member; means for evacuating air from the enclosed area to hold said anchor against the ice; and a multiplicity of downwardly-directed, rigid elongated spikes attached to the underside of the planar member and slanted

at an angle thereto, said spikes being uniformly spaced across said planar member and of such length as to penetrate the ice.

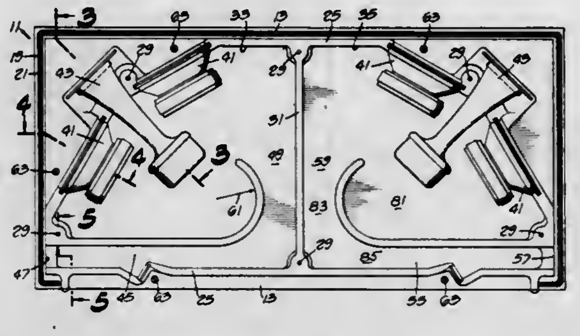
3,892,288
SPEAKER ENCLOSURE

Arnold I. Klayman, and Leonard J. Genest, both of Huntington Beach, Calif., assignors to Monitron Industries, Inc., Santa Ana, Calif.

Continuation of Ser. No. 167,903, Oct. 2, 1971, abandoned. This application June 18, 1973, Ser. No. 370,717

Int. Cl. G10k *13/00*; H04r *1/28*

U.S. Cl. 181—156 **10 Claims**



1. Speaker apparatus comprising:

a. an enclosure adapted to have at least one speaker mounted on a surface thereof; and

b. duct means having a first terminus which is open and a second terminus having a smoothly flared opening into said enclosure, said first terminus being spaced and directed away from the front of the speaker to be mounted on said surface so as to prevent sound from said speaker from being propagated through said first terminus into said duct means, and the boundary of said flared opening having a non-linear curvature which produces a Venturi effect between the volume of air in said enclosure and the volume of air in said duct means.

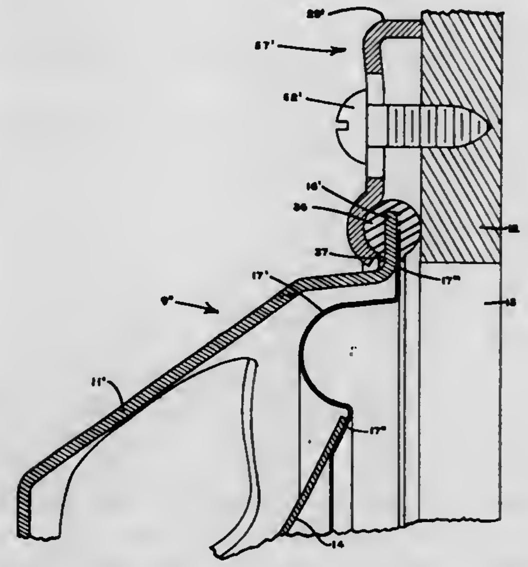
3,892,289
LOUDSPEAKER

William L. Rollins, Monroe, Wis. 53566

Filed July 2, 1973, Ser. No. 375,729

Int. Cl. G10k *13/00*; H04r *7/00*

U.S. Cl. 181—171 **3 Claims**



1. In a loudspeaker embodying means reciprocally driven responsively to signal current biasing, an improvement for rendering more nearly constant the ratio of acoustic output to input power throughout the range of acoustic response, comprising in combination,

a. a structural basket,

b. a voice coil disposed for axial movement within a force field responsively to biasing force created by a signal current in said voice coil,

c. a diaphragm aligned and connected integrally to said voice coil, said diaphragm being recessed rearwardly from the forward extremity of said basket to be drivable not substantially forward thereof,

d. an annular suspension collar fixed at its inner peripheral extremity to the circumferential extremity of said diaphragm and at its outer peripheral extremity to the forward extremity of said basket and configured with an annular corrugation having a minimum depth in the direction of drive of said diaphragm at least substantially as great as the amplitude of such drive from rest,

e. a moisture non-absorbent gasket disposed for seating the forward extremity of said basket upon a baffle to provide a vapor proof, distortion free mounting therefor,

f. fastening means anchorable to a baffle and configured to forcibly compress said gasket and retain said basket immobile upon such baffle wherein contact of said fastening means is made in substantial incidence with the projection of said gasket normal to the plane of such baffle.

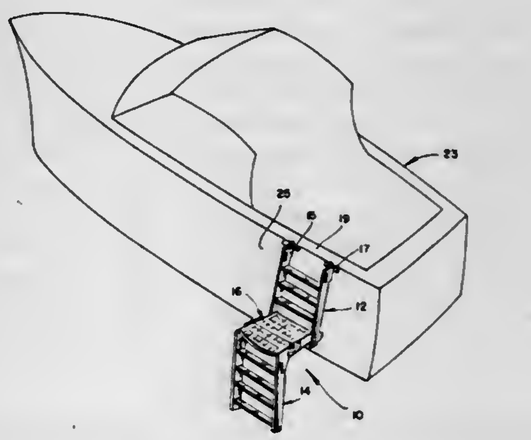
3,892,290
BOAT LADDER

Irving M. Lang, 61 Franklin St., Tenafly, N.J. 07670

Filed Sept. 16, 1974, Ser. No. 506,254

Int. Cl.² E06C *1/36*, *1/383*

U.S. Cl. 182—22 **10 Claims**



1. A portable marine ladder securable to a boat deck or hulland extendible along the side of the hull for boarding or disembarking, said ladder comprising an upper ladder section having plural spaced foot rungs extending between two parallel stiles, attachment means on the upper ladder section for suspending the ladder downwardly toward the water surface, a lower ladder section having plural spaced foot rungs extending between two stiles, platform means connected to said upper and lower ladder sections for providing a substantially horizontal support surface between the upper and lower ladder sections, said platform having a transverse width greater than the width of the ladder rungs wherein the platform defines a bottom rung of the upper ladder section and a coincident top rung of the lower ladder section, said platform further being positionable into a substantially horizontal orientation projecting outwardly away from the hull and having an open space thereabove and adjacent the upper ladder section with the upper ladder section and the lower ladder section each being in distinct substantially vertical planes horizontally spaced a distance approximating the transverse width of the platform when the ladder is extended to provide a landing for standing or resting during ascent or descent from the boat.

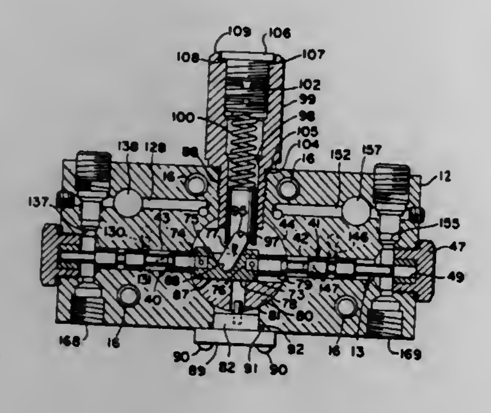
3,892,291
REVERSING VALVE

Peter H. Acker, Chesterland, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Filed May 3, 1974, Ser. No. 466,561

Int. Cl. F16r *7/14;* **F01m** *1/00*

U.S. Cl. 184—7 E **9 Claims**



6. In a pressurized lubrication system including a source of pressurized lubricant, at least one pair of conduits leading to lubricant distributors, and a reversing valve including a primary valve for directing the flow of pressurized lubricant alternately to the conduits and a secondary valve for activating the primary valve, the secondary valve including a pair of spaced apart pistons reciprocally movable in unison along the same axis, the improvement comprising:

a toggle mechanism disposed between the pistons and operatively attached thereto for axial movement in unison with the pistons, said toggle mechanism coacting with the pistons for retarding the pistons initial movements and accelerating the pistons final movement, the toggle mechanism comprising:

a slider block interposed between the pistons and attached for axial movement in unison with the pistons, said slider block having a first generally V shaped groove running transverse the axis of the pistons and a generally smooth first surface radially opposite the first groove, said first surface extending in a direction parallel to the axis of the pistons;

a fixed slipper plate mounted to said reversing valve, said slipper plate having an axially extending groove for receiving said slider block, the bottom surface of said axially extending groove being generally smooth and corresponding in shape to said first smooth surface for sliding receipt of same and the side walls of said axially extending groove coacting with the slider block to prevent rotational movement of said slider block;

a guide block having a second generally V shaped groove therein, said second V shaped groove being in spaced apart concave opening relation with said first U shaped groove;

a throw link interposed said guide block and said slider block, said throw link having one end pivotally mounted in said first V shaped groove and the opposite end pivotally mounted in said second V shaped groove; and

biasing means for biasing said guide block towards said slipper plate to apply a compressive force on the opposite ends of said throw link.

3,892,292
HYDRAULIC ELEVATORS

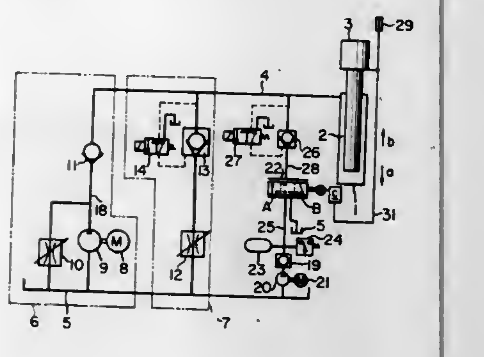
Mitsuaki Takenoshita, Katsuta; Fumio Fujisawa, Mito, and Ichiro Nakamura, Katsuta, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Sept. 12, 1972, Ser. No. 288,305

Claims priority, application Japan, Sept. 17, 1971, 46-71801

Int. Cl. B66b *11/04*

U.S. Cl. 187—17 **36 Claims**



1. A fluid operated elevator comprising:

a load accommodating cage,

a plunger and a cylinder which are movable with respect to one another in response to supply of pressurized fluid therebetween, said cage being connected to one of said plunger and cylinder for movement therewith,

pressurized fluid conduit means communicating with a space between said cylinder and plunger for supplying said pressurized fluid to said space with a consequent movement of said cage in a first direction and for discharging said pressurized fluid from said space with a consequent movement of said cage in a second direction opposite said first direction,

main fluid control means for controlling the supply and discharge of said pressurized fluid to said space such that said cage is moved between a plurality of predetermined stop positions at respective spaced loading and unloading stations,

detecting means for detecting displacement of said cage in said first and second directions from respective stop positions of said cage,

cage position adjusting means responsive to signals from said detecting means which indicate displacement of said cage from the respective stop position for automatically returning said cage to said respective stop position by controlling the respective supply and discharge of pressurized fluid from said space,

said detecting means including: a first member operatively connected to said adjusting means for actuating said adjusting means in response to movement of said first member, a second member connected to said cage such that said second member is moved whenever said cage is moved, and clutch means for selectively coupling and uncoupling said first and second members to one another such that said first and second members move together when said clutch means is engaged and such that said second member and cage move independently of said first member when said clutch means is disengaged,

and clutch control means for engaging said clutch means only after said cage has arrived at a respective stop position for loading and unloading of said cage,

wherein said control means includes means for automatically engaging said clutch means after said cage has arrived at a respective stop position and before initiation of any loading or unloading of said cage and for automatically disengaging said clutch means after completion of any loading or unloading of said cage and before movement of said cage to another stop position, whereby said

clutch is engaged only when said cage is in a condition for accommodating loading and unloading thereof such that said adjusting means is operative for accommodating changing loads on said cage,

wherein said adjusting means includes an auxiliary fluid circuit for supplying pressurized fluid into said space independently of the operation of the main fluid control means, said auxiliary fluid circuit including:

an auxiliary conduit communicating with said space,

an auxiliary pump for supplying pressurized fluid to said auxiliary conduit,

a check valve in said auxiliary conduit for preventing backflow of fluid to said auxiliary pump,

a direction control valve for controlling the flow of pressurized fluid through said auxiliary conduit,

and an accumulator interposed between said auxiliary pump and said control valve for accumulating a supply of pressurized fluid,

and wherein said control valve is movable in response to said signals from said detecting means for controlling communication of said accumulator with said space.

3,892,293
DISC BRAKES

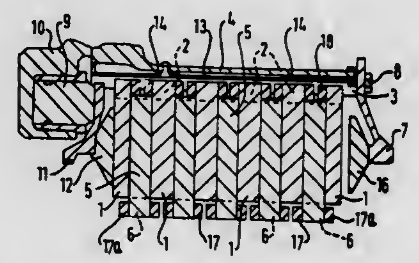
Frederick Sidney Dowell, Coventry, England, assignor to Dunlop Limited, England

Filed Dec. 18, 1973, Ser. No. 425,854

Claims priority, application United Kingdom, Dec. 21, 1972, 59246/72

Int. Cl. F16d *55/36*

U.S. Cl. 188—71.5 **8 Claims**



1. A multi-plate wheel disc brake comprising a disc pack comprising a plurality of interleaved annular rotor and stator discs each of substantially constant thickness throughout its radial cross section and each of a highly oxidizable, heat absorptive carbon material, the rotor discs having annular peripheral torque-taking portions which are keyed to key means rotatable with the wheel for rotation therewith and which extend radially beyond the stator discs so that free spaces exist between the torque-taking portions of each adjacent pair of rotor discs, the stator disc therebetween and the key means, the stator discs having inner peripheral torque-taking portions which are keyed to a non-rotatable torque tube which extends radially inwardly of the rotor discs so that free spaces exist between said torque-taking portions of each adjacent pair of stator discs, the rotor discs therebetween and the torque tube, said stator and rotor discs being axially slidable but non-rotatable relative to the torque tube and wheel, respectively, thrust applying means arranged at one end of the disc pack and reaction means at the other end of the disc pack, said thrust applying means being actuable to displace the stator and rotor discs into frictional engagement to engage the brake, wherein oxidation retarding carbon filler pieces formed separately from the brake discs are located in circumferentially spaced relation between circumferentially adjacent pairs of torque tube keys in the free spaces between the torque-taking portions of adjacent pairs of stator discs, said filler pieces being shaped and arranged to lie between the torque tube keys and occupy at least the greater part of said free spaces between the rotor discs and the torque-tube.

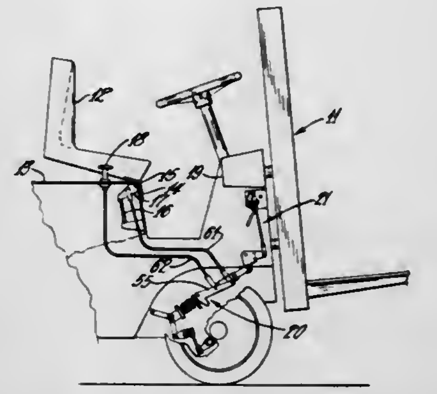
3,892,294
DEAD-MAN PARKING BRAKE

Robert A. Nieminski, Philadelphia, Pa., assignor to Eaton Corporation, Cleveland, Ohio

Filed Feb. 28, 1974, Ser. No. 446,999

Int. Cl. F16d *65/30*

U.S. Cl. 188—109 **9 Claims**



1. In a vehicle including a braking mechanism associated with one or more wheels of said vehicle an operator's station on said vehicle movable between an occupied position and an unoccupied position, brake linkage means movable between a brake applied position and a brake released position for controlling actuation of said braking mechanism, biasing means operatively connected to said brake linkage means and applying a force tending to move said linkage means to its brake applied position to actuate said braking mechanism to prevent movement of said vehicle, latch means engageable with said brake linkage means to hold said linkage in its brake released position, means operatively connected to said operator's station for releasing said latch means when said operator's station moves toward its unoccupied position permitting said brake linkage means to move toward its brake applied position, and means independent of said operator's station for returning said brake linkage means to its brake released position to release said braking mechanism and for returning said linkage means into position for re-engagement by said latch means, said latch means being effective to re-engage said brake linkage means only when said operator's station is in its occupied position.

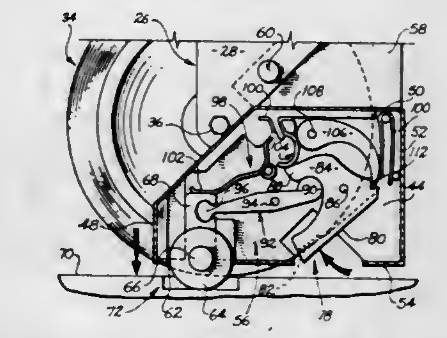
3,892,295
BOUNDARY-RESPONSIVE WHEEL LOCK FOR A WHEELED VEHICLE

Charles Hahto, 1755 N. Berendo St., Los Angeles, Calif. 90027

Filed Apr. 24, 1974, Ser. No. 463,572

Int. Cl. B60t *7/18*

U.S. Cl. 188—111 **8 Claims**



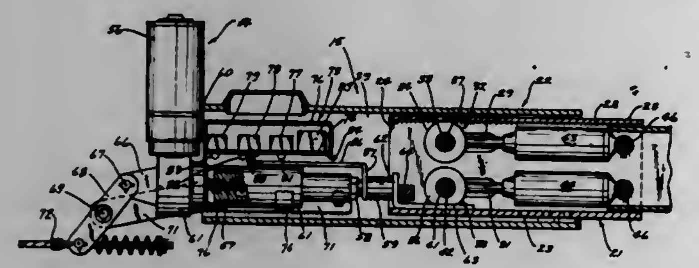
1. Boundary-responsive wheel lock for a wheeled vehicle provided with and rollably supported by multiple wheels, at least one of which is provided with said boundary-responsive wheel lock, comprising: wheel-lock housing means defining a hollow interior wheel-lock mounting chamber therein and provided with a rigidly connected attachment member and fastener means cooperable for rigidly fastening said attach-

ment member to a main wheel mounting bracket carried by a leg of said wheeled vehicle, said housing means being provided with a vertically slidably mounted, small actuating wheel connected to an actuating arm which is vertically slidably carried by and positioned within the hollow interior wheel-lock-mounting chamber within said housing means, with said actuating wheel being positioned vertically adjacent to and aligned with a bottom-positioned actuating wheel opening in said housing means for vertical movement of said small actuating wheel from a normal upper position protruding slightly downwardly through said opening for rollable contact with an underlying supporting surface during simultaneous rollable contact of main wheels of said wheeled vehicle along such a supporting surface while rolling simultaneously therewith and for downward vertical movement through said opening into a downwardly extended wheel-locking position whenever sufficient downward clearance is encountered by said small actuating wheel below the level of the bottom edge of the corresponding main wheels of such a wheeled vehicle; brake means movably mounted with respect to the hollow interior of said housing means for movement between two extreme positions, one comprising a wheel-unlocking position with respect to and spaced from the corresponding periphery of at least one of the main wheels of such a wheeled vehicle and a second extreme wheel-locking position in locking engagement with a peripheral portion of at least one main wheel of such a wheeled vehicle; and brake-operating linkage means positioned within said hollow housing means and having an input end effectively connected with respect to said actuating arm carrying said small actuating wheel and having an output end effectively connected with respect to said brake means in a manner normally moving said brake means from said wheel-unlocking position into said wheel-locking position in response to said movement of said small actuating wheel from said normal upper position into said downwardly extended wheel-locking position; latching means movably mounted within said hollow housing means and provided with effective biasing means normally biasing said latching means into latching relationship with respect to said brake means whenever said brake means is in said wheel-locking relationship; and latching means unlocking key means controllably manually engageable with respect to said latching means for forcibly disengaging same with respect to said brake means when said brake means is to be effectively released and caused to move from said wheel-locking relationship to said wheel-unlocking relationship thereof.

3,892,296
TRAILER HITCH AND BRAKE ACTUATOR ASSEMBLY

Frank A. DePuydt, and Eugene P. Conradi, both of Des Moines, Iowa, assignors to Dico Company, Inc., Des Moines, Iowa

Filed Apr. 1, 1974, Ser. No. 456,902
Int. Cl. B60t *7/20*
U.S. Cl. 188—112 **9 Claims**



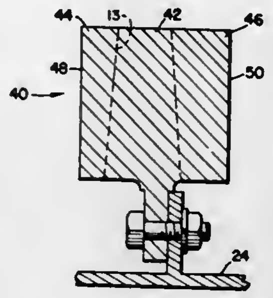
1. A hitch and trailer brake actuator assembly for use between tractor and trailer vehicles comprising:

a. a pair of tubular telescoping members a first one of which is secured to the tractor vehicle and a second one of which is secured to the trailer vehicle,
b. a power actuating unit includiing an electric motor and a primary actuator member for the trailer brakes located within the rear end portion of said second telescoping member, said primary actuator member driven by said motor for extendible and retractible linear movement relative to the front end of said actuating unit,
c. a secondary actuator member for said trailer brakes movably supported on said second telescoping member at a position rearwardly of said actuating unit,
d. means operatively connecting said second actuator member with said trailer brakes,
e. means movably connecting said secondary actuator member with the rear end of said power unit,
f. an abutment member on said first telescoping member and adjacent the rear end thereof in a position for abutting engagement with said primary actuator member,
g. coacting means for limiting relative longitudinal movement between said pair of telescoping members and
h. a control circuit for said electric motor incuding switch means for operating said motor to move said primary actuator to predetermined positions relative to said abutment member to provide for movement of said secondary actuator member to corresponding positions wherein the trailer brakes are operable in response to deacceleration of the tractor vehicle, are rendered inoperative, or are operated for parking the trailer vehicle.

3,892,297
BRAKE DISC COVERING STRUCTURE

Nelson R. Brownyer, 3731 Peabody Dr., Birmingham, Mich. 48010

Continuation of Ser. No. 320,712, Jan. 3, 1973, abandoned. This application Feb. 12, 1974, Ser. No. 441,796
Int. Cl. F16d *65/12, 65/84*
U.S. Cl. 188—218 XL **5 Claims**

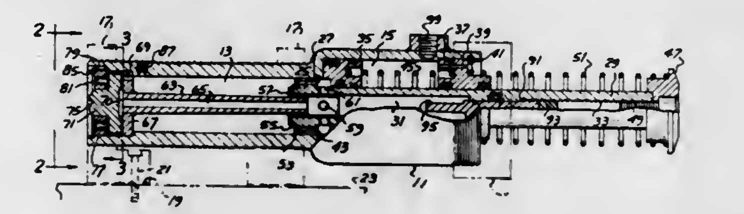


1. A disc brake assembly having a metal rotor selected from a series of metal rotors of the same construction and the same overall axial thickness, each one of said series of metal rotors having a pair of oppositely facing radial metal braking surfaces directly engageable by brake pads and separate heat sink means for absorbing and dissipating heat integral with the respective braking surfaces and backing each of said braking surfaces, said heat sink means being of different mass predetermined solely by desired heat sink characteristics for each of said heat sink means and both said heat sink means being of predetermined thickness increasing radially outwardly of the rotor center, the heat absorbing and dissipating characteristics of the two heat sink means differing to a predetermined degree and the heat absorbing and dissipating characteristics of the heat sink means of each metal rotor in said series differing from one another, whereby a metal rotor having the desired heat sink characteristics may be selected from said series and incorporated into a disc brake assembly to suit operational requirements.

3,892,298
VARIABLE ORIFICE SHOCK ABSORBER

Leland F. Blatt, 31915 Groesbeck Hwy., Grosse Pointe Shores, Mich. 48026

Filed Feb. 13, 1974, Ser. No. 441,962
Int. Cl. F16f *9/48*
U.S. Cl. 188—289 **8 Claims**



1. A shock absorber comprising a body having a bore terminating in an enlarged counterbore, the bore completely filled with liquid, and the counterbore partially filled with liquid;

said counterbore being closed by an apertured gland vented to atmosphere;
a piston having an axial passage and adjacent one end a plurality of radial ports communicating therewith and with said counterbore, and a plurality of bleed passages interconnecting said bores;
said piston being movable within said bore and including a hollow piston rod extending through said counterbore and axially outward of said body;
an end cap on said rod adapted to be engaged by a moving mass toward the end of a longitudinal stroke;
a coiled spring, interposed between said cap and said gland, normally biasing said rod outwardly of the body;
a float valve in said bore, movable upon said piston, in registry with said passages and closing the same on retraction of said piston and opening said passages on forward return movement of said piston, permitting flow of liquid from said counterbore to said bore;
a disc-like head with axial apertures anchored in said body at one end of said bore defining at one end of the body a return chamber to receive liquid on retraction of said piston;
a metering plate sealed and rotatably adjustable in said body outwardly of said head closing the body and defining said return chamber; there being a series of radial metering passages in said metering plate having inner and outer ends and at their inner ends in communication with said return chamber and with their outer ends in variable registry with said head apertures to provide for a pre-adjusted return flow of fluid into the return chamber;
an axially apertured metering pin at one end anchored to said head and communicating with said return chamber; the other end of said pin extending into said piston; said retraction of said piston over said pin displaces liquid from said return chamber through the full length of the metering pin into said piston and piston rod and through said radial ports to said counterbore.

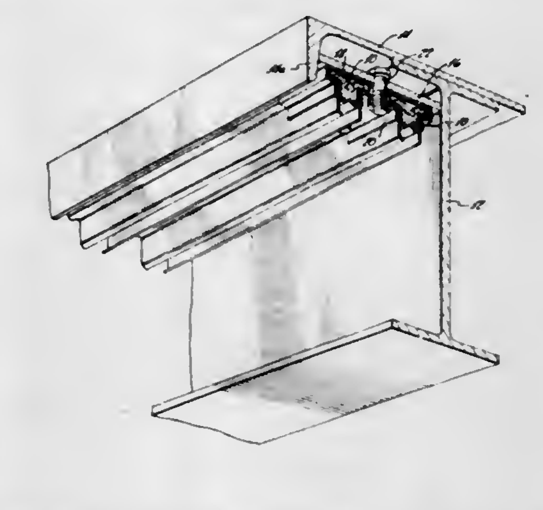
3,892,299
MOBILE ELECTRIFICATION CONDUCTOR SYSTEM

Ronald J. Kilburg, Belmont, Calif., assignor to The Rucker Company, Oakland, Calif.

Filed Apr. 19, 1974, Ser. No. 462,371
Int. Cl. B60m *1/34*
U.S. Cl. 191—29 R **11 Claims**

2. An electrical conductor for use in a trolley electrication system comprising:

an elongated bar having an elongated slot opening to an elongated surface of the bar, said slot being shaped to receive and retain the head of a fastener while the fastener shank extends outwardly through the slot for connection to a splice element, said bar being formed of a good electrically conductive material such as aluminum;
a cap made of a more wear resistant conductive material such as stainless steel positioned over a portion of said bar to form a contact surface for the bar adapted to engage a sliding conductor on an electrical collector, said slot opening to the surface of the bar opposite from said contact surface; and

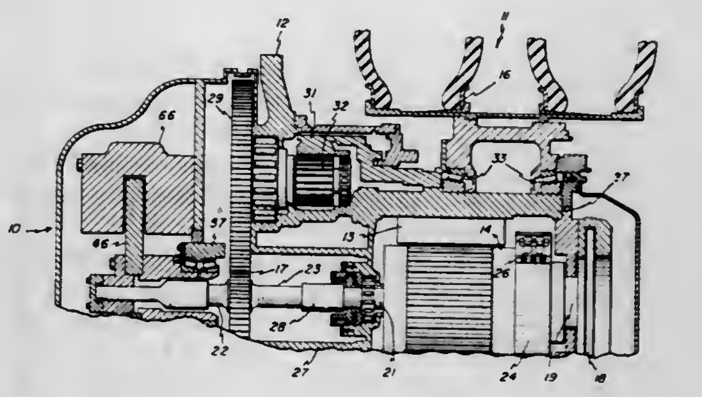


said bar having a pair of elongated grooves formed in the surface of the bar covered by said cap, the grooves being adapted to receive alignment pins for maintaining adjacent conductors in end-to-end alignment.

3,892,300
MOTORIZED WHEEL BRAKE SYSTEM

Martin Jay Hapeman, and Joseph Anthony Kobylinski, both of Erie, Pa., assignors to General Electric Company, Erie, Pa.

Filed Aug. 22, 1973, Ser. No. 390,552
Int. Cl. B60k *29/02, 7/00*
U.S. Cl. 192—2 **20 Claims**



1. A motorized wheel drive system for propelling a vehicle comprising:

a. a frame adapted to be secured to the vehicle;
b. an electric motor mounted to said frame with its rotor aligned transversely to the direction of intended vehicle travel;
c. a drive shaft extending from one end of said rotor;
d. wheel means in outer concentric relationship to said motor and mounted so as to be rotatable in respect to said frame;
e. gear means drivably connecting said drive shaft to said wheel and comprising a sun pinion having first and second shaft portions extending from opposite sides of the pinion;
f. first coupling means drivably coupling said drive shaft to said first shaft portion so as to permit axial misalignment between said drive shaft and said first shaft portion;
g. braking means comprising a rotatable brake member secured for rotation about a predetermined axis;
h. second coupling means drivably coupled at one of its ends to said second shaft portion and at the other of its ends to said rotatable brake member so as to permit said second coupling means to be in axial misalignment with

both said rotatable brake member and said second shaft portion whereby said sun pinion is free to float in its radial direction.

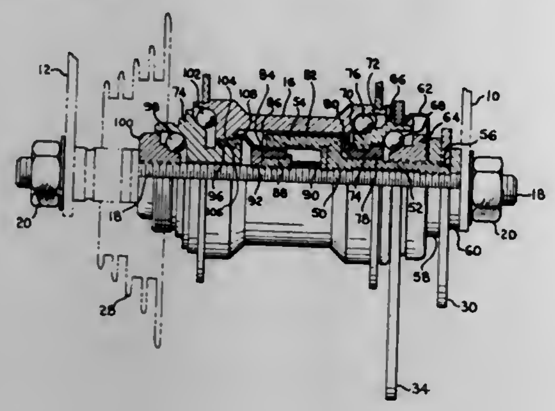
3,892,301
BICYCLE BRAKE

Karl Frei, Horseheads, and Gerald E. Ripley, Painted Post, both of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Mar. 29, 1971, Ser. No. 129,095

Int. Cl. F16d *67/02*

U.S. Cl. 192—6 R **1 Claim**



1. A bicycle hub contained drive and coaster brake mechanism comprising: a fixed axle adapted to be secured to the bicycle frame;

a wheel hub of generally cylindrical configuration rotatably mounted about said fixed axle;

bearing means supporting said wheel hub about said axle at each side thereof;

drive means rotatably supported on said fixed axle on one side of said wheel hub operative to rotate said wheel hub with rotation of the drive means;

brake fixed anchor means supported on said fixed axle on the other side of said wheel hub and adapted to be secured to the bicycle frame;

at least one arcuate brake shoe disposed within said wheel hub operative to selectively and frictionally engage the inner surface of said hub;

a brake torque reaction member fixedly connected to said brake anchor means and having at least one projecting finger restraining circumferential movement of said brake shoe;

a brake expander member concentrically mounted on said brake torque reaction member and movable in an axial direction to selectively force said brake shoe into and out of frictional engagement with said wheel hub; and

a rotatable brake actuating member concentrically disposed about said brake torque reaction member at the same hub side containing said brake anchor means; said brake actuating member having a threaded connection with said brake expander member to impart axial movement to said expander member in response to rotational movement of said rotatable brake actuating member.

3,892,302
VEHICLE DISC CLUTCH WITH PLURAL RELEASE LEVERS

Michel Rist, Boulogne, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France

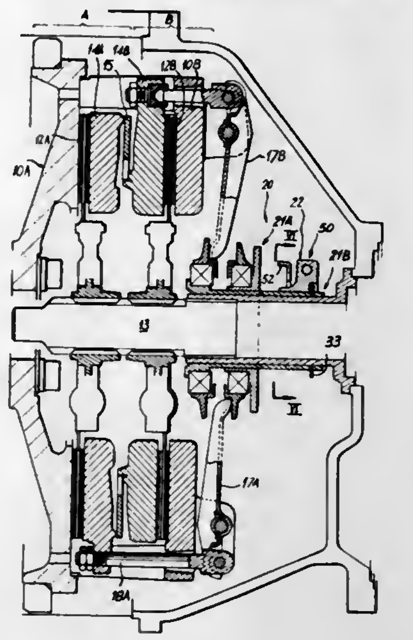
Filed Jan. 22, 1974, Ser. No. 435,581

Claims priority, application France, Feb. 2, 1973, 73.03677

Int. Cl. F16d *25/04*

U.S. Cl. 192—91 A **17 Claims**

1. A clutch comprising two coaxial clutch assemblies each of the said clutch assemblies including a reaction plate adapted to be fastened for rotation with a first shaft, a friction disc movable axially with respect to the reaction plate and adapted to be fastened for rotation with a second shaft, a driven shaft to which both friction discs are fixed, a pressure plate movable axially with respect to the reaction plate and fastened for rotation thereto, resilient means urging the pressure plate toward the reaction plate in order to grip the friction discs, and at least one pivotally mounted clutch release lever, in combination with control means adapted to effect the pivoting of said at least one clutch release lever of each clutch assembly, in order to release the corresponding friction discs, said control means including two operative elements mounted for movement parallel to the axis of the clutch, one said operative element acting on said at least one clutch release lever of a first one of said clutch assemblies axially in a first direction, and the other said operative element acting on said at least one clutch release lever of a second one of said clutch assemblies axially in a second direction opposite to said first direction, and operating means to effect the simultaneous operation of said two operative elements in opposite directions.



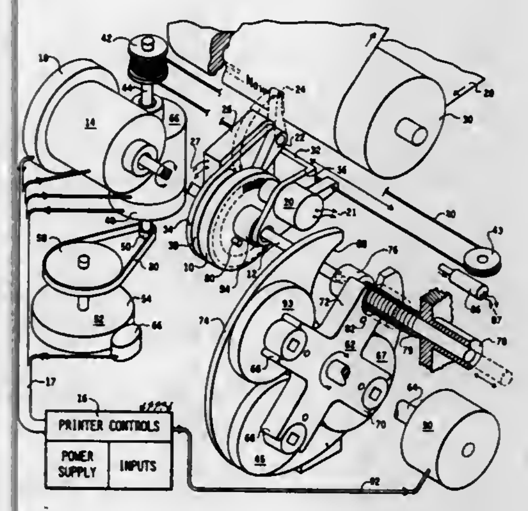
3,892,303
TYPE FONT CHANGING MECHANISM AND CONTROLS

Frederick P. Willcox, 565 Oenoke Ridge, New Canaan, Conn. 06840

Filed Apr. 3, 1973, Ser. No. 347,456

Int. Cl. B41j *23/04*

U.S. Cl. 197—18 **11 Claims**



1. In a printer for producing printing along a writing line on a recording material, and of the type having a changeable type font unit normally installed in operational position therein which can be removed therefrom and exchanged with a second font unit having a different set of characters, and having signal responsive means for effecting and controlling character selection, printing and non-printing functions such as spacing, tabulation, line feeding the recording material, and the like, the combination comprising:

a. character selection means having driving means for positioning an installed type font unit to bring a selected character into position for the printing thereof;

b. carriage means, movable parallel to said writing line and along the length thereof, for supporting a type font unit in installed position in engagement with said driving means for character selection and in position for printing and spacing;

c. carriage positioning means for moving and incrementally positioning the carriage means to printing positions along the writing line, and also to a limit of travel in one direction which is at least one positioning increment beyond the end of the writing line whereat type font units can be exchanged; and

d. means for removing a type font unit from said installed position for exchange with a second font unit, and for installing said second font unit in said installed position, said means comprising said carriage means which does said removing as it approaches said limit of travel and, after said exchange, does said installing as it leaves said limit of travel,

e. said last-named means further comprising

  1. means receiving a type font unit from the carriage means as it approaches the limit of travel, and holding said font unit when it is disengaged,

  2. means exchanging said font unit with a second font unit, and

  3. means positioning said second font unit for engagement with the driving means, and removal from said receiving and exchanging means by said carriage means as it leaves said limit of travel.

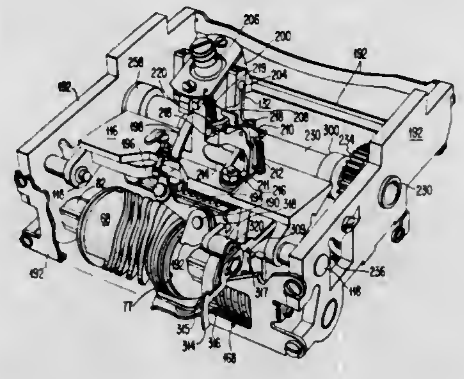
3,892,304
SINGLE PRINT ELEMENT PRINT CARRIER WITH SELF-CONTAINED SELECTION FUNCTION

Iraj D. Shakib, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 29, 1973, Ser. No. 375,277

Int. Cl. B41j *23/04*

U.S. Cl. 197—18 **7 Claims**



1. A selection mechanism for a printer of the single element type, having a single print element carried by a print carrier, comprising:

a multicam surfaced rotational barrel cam rotationally and slideably supported for rotational movement and axial movement with respect to said carrier;

at least one selectably operable follower means spacially fixed with respect to said carrier for selective engagement with one of said surfaces;

means for creating motion between said selected follower means and said selected cam surface to create cam controlled motion of said cam with respect to said carrier;

said motion comprising an axial translation and reverse axial translation from and to a predesignated position;

first means for transmitting said motion of said cam to a second means cooperating with said print element for converting said cam controlled motion of said cam into a selected directional rotational motion of said type element, thereby producing the selected rotation of said element in one of two selectable directions from an original at rest position, said selected rotation resulting from a single axial directional motion of said cam with respect to said follower means.

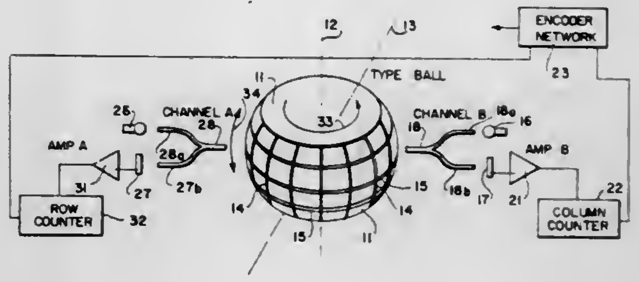
3,892,305
ELECTRICAL ENCODING ARRANGEMENT FOR TYPEWRITERS HAVING SINGLE ROTARY PRINTING ELEMENT

Leonard James Higgins, Watervliet, N.Y., assignor to Datacq Systems Corporation, Latham, N.Y.

Continuation of Ser. No. 3,782, Jan. 19, 1970, abandoned. This application Feb. 9, 1973, Ser. No. 331,178

Int. Cl. B41j *1/60*

U.S. Cl. 197—52 **18 Claims**

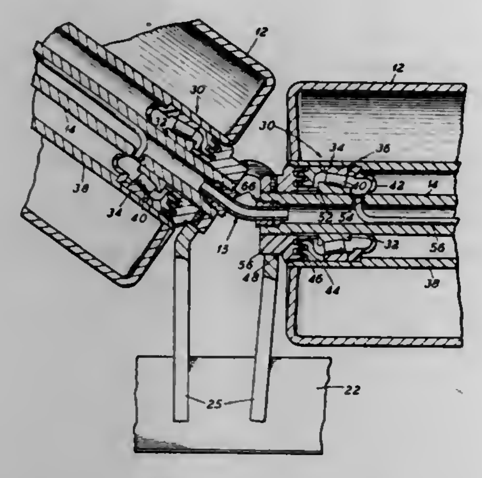


1. A typewriter for producing both hard-copy printout of data recorded with the typewriter and coded electric output signals representative of the characters being printed out, said typewriter assembly being of the kind having a single rotary printing element, encoding means driven synchronously with the single rotary printing element for encoding each individual character printing movement of the single rotary printing element with a unique and identifiable code, said encoding means comprising serially arrayed alternate light reflecting and minimal reflecting code marks physically arranged in predetermined sequential patterns representative of each individual character, a single electro-optic light responsive sensing device for each orthogonal direction of rotation of said rotary printing element, each of said signal light responsive sensing devices having a single light path coupled to said encoding means for serially sensing all of the respective code marks in sequence, and respective coded electric signal processing circuit means responsive to each of the single light responsive sensing devices for deriving serially coded electric output signals representative of the characters being printed-out by the single rotary printing element and suitable for use with electronic data processing systems.

16. A typewriter attachment according to claim 15 wherein each of the single electro-optic light responsive sensing devices comprises at least a source of light, light transmitting means forming a single light path for directing light from said source of light onto the pre-determined pattern of light reflecting and minimal light reflecting code marks as the same are moved serially past the light transmitting means, light receiving means for receiving back light pulses reflected from the code marks and directing the received light to a light sensitive member in said single electro-optic light responsive sensing device, said light sensitive member comprising a single photo-electric conversion element having a light sensitive surface that converts the received light pulses into corresponding serially coded pulsed electric output signals representative of characters being printed-out by the typewriter.

3,892,306
CONVEYOR LUBRICATION LINE CONNECTION ARRANGEMENT

Francois X. Bertaud, Aurora, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Mar. 30, 1972, Ser. No. 239,475
Int. Cl. F16n *7/24*
U.S. Cl. 198—192 R **5 Claims**

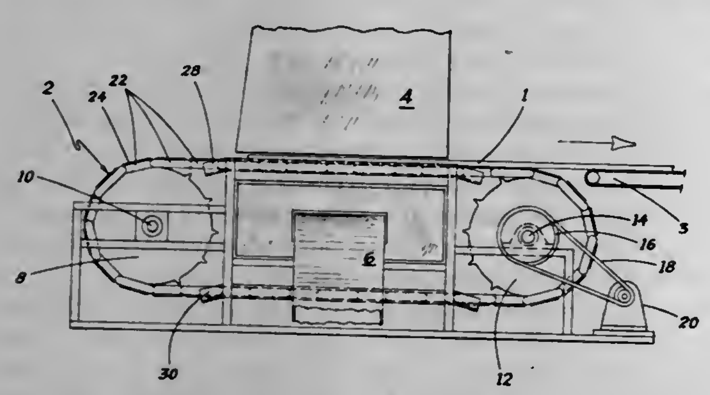


3. In an idler assembly for belt conveyors and the like having at least a pair of idlers in side-by-side relationship, each idler being rotatably mounted on a hollow shaft by spaced bearing means and having means communicating each bearing means with the interior of the shaft, each bearing means being lubricated by forcing lubricant through the shafts and through the communicating means into the bearing means, the adjacent idler shafts being joined together, the improvement comprising:

a unitary flexible tube between the shafts, a compression fitting on each end portion of the flexible tube and connected to the adjacent shaft, said fitting having a portion crimped onto the flexible tube and in abutting sealing engagement with a portion of the hollow spindle.

3,892,307
CONVEYOR HAVING ADJUSTABLE FLIGHTS

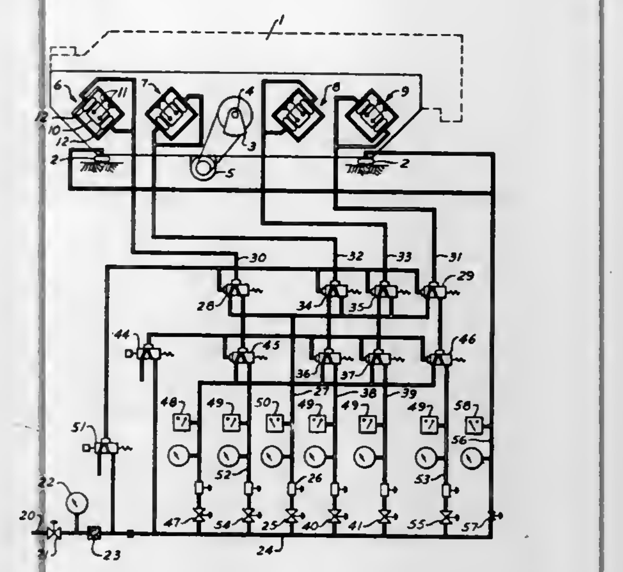
Howard O. Scholl, Louisville, Ky., assignor to American Air Filter Company, Inc., Louisville, Ky.
Filed Sept. 5, 1972, Ser. No. 286,330
Int. Cl. B65g *15/30*
U.S. Cl. 198—195 **2 Claims**



1. A conveying apparatus comprising: (a) an endless loop of rotatably mounted transversely extending conveyor flights; (b) means for moving said endless loop of rotatably mounted flights; and, (c) crank means for adjusting the rotatably mounted flights about their transversely extending axis, said crank means being attached at one end to a transversely extending flight and a longitudinally extending slidable member at the opposite end, the angular position of said flights being determined by the slidable movement of said longitudinally extending member.

3,892,308
CONTROL OF REVERSIBLE VIBRATORY EQUIPMENT

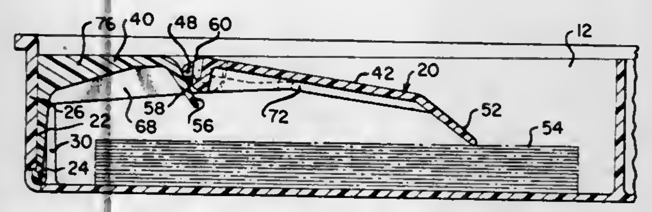
Preston Henry Schrader, Middletown, Ky., assignor to Rexnord Inc., Milwaukee, Wis.
Continuation-in-part of Ser. No. 200,892, Nov. 22, 1971. This application July 2, 1973, Ser. No. 375,786
Int. Cl. B65g *27/00*
U.S. Cl. 198—220 CC **4 Claims**



1. A method of controlling the vibration of an elastically supported work member in response to vibratory force of rotating eccentric weights journalled in the member and equipped with tunable dynamic absorbers arranged in sets each operative along a particular path that comprises, tuning a first set of said absorbers to oppose motion of said work member along a first path and simultaneously tuning a second set of said absorbers to form a two mass vibratory system to control the amplitude of the vibratory motion of said work member along a second path.

3,892,309
REPLACEABLE CURRENCY OR BILL HOLDER FOR A TILL TRAY

Donald E. Coffey, Vandalia; Robert E. Harrington, Miamisburg, both of Ohio, and Jeffrey L. Felton, Lansing, N.Y., assignors to NCR Corporation, Dayton, Ohio
Filed Oct. 18, 1973, Ser. No. 407,439
Int. Cl. B65d *1/34, 25/10*
U.S. Cl. 206—74 **16 Claims**



11. The combination of a till tray having at least one currency compartment therein and a bill holder for said compartment;

said till tray having an end wall in said compartment with a vertically aligned recess therein;

said bill holder comprising bracket means having a leg portion for detachably securing said bill holder in said recess;

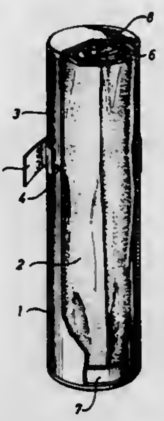
a bill lever means having a first end pivotally joined to said bracket means and a second end for contacting bills in said compartment;

said bracket means having a resilient means associated therewith; and

said bill lever means having means at said first end cooperating with said resilient means to resiliently urge said second end into contact with said bills to resiliently compress and retain them in said comartment.

3,892,310
PACKAGE FOR WET NAPKIN

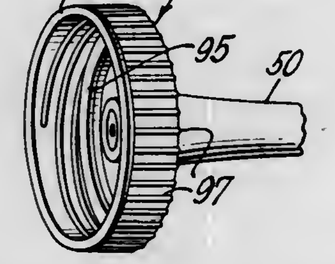
John Henrik Guy Welin-Berger, Box 88, 19063 Orsundsbro, Sweden
Filed Mar. 27, 1972, Ser. No. 238,265
Int. Cl. B65d *3/00, 5/54*
U.S. Cl. 206—210 **2 Claims**



1. A package for disposable wet napkins comprising: a foil of generally tubular shape, circular in section, the foil having a longitudinal seal along a side of the tubular shape and a plane seal at one end, a cylindrical rigid insertable seal at the other end of the tubular foil, a rod of rigid material inside the package capable of functioning as a swab, and a disposable wet napkin formed into a cylindrical configuration within the tubular foil.

3,892,311
DISPOSABLE SYRINGE KIT

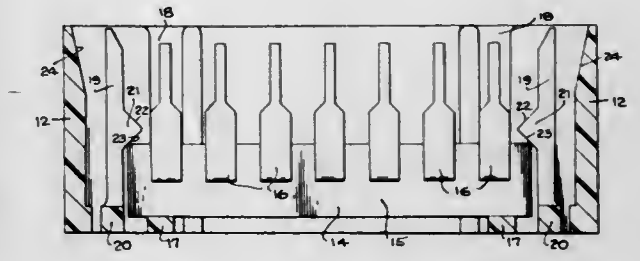
Vincent R. Sneider, 3422 Hallcrest Dr. N.E., Atlanta, Ga. 30319
Continuation-in-part of Ser. No. 153,885, June 16, 1971, abandoned, which is a continuation of Ser. No. 795,574, Jan. 31, 1969, abandoned, said Ser. No. 795,574 is a continuation-in-part of Ser. No. 704,105, Feb. 8, 1968, abandoned. This application Nov. 6, 1972, Ser. No. 304,115 1972, Ser. No. 304,115
Int. Cl. B65d *79/00;* **A61m** *3/00, 7/02*
U.S. Cl. 206—229 **9 Claims**



1. As an article of manufacture, a disposable syringe kit package containing a flexible and readily foldable bag having fluid-retaining properties and sized so as to be readily grasped and squeezed for the administration of the syringe, said bag being collapsed and compacted and having an open end of predetermined size, and removably attachable end-fitting means including a tubular sleeve sized to accept and removably retain said bag at said open end; said end-fitting means including a closure with a dispensing nozzle and a circumferential flange selectably securable in telescoped relation with only an end part of the tubular sleeve, said closure and sleeve having such a circumferentially continuous interfit when secured in sandwiched relation to the end of the bag that a liquid-sealed connection is established upon such assembly; said bag comprising a length of tubular plastic material closed only at one end, thereby defining said open end at the other end of said material, said length being of generally rectangular planiform when flattened in readiness for assembly to said end-fitting means, said bag being openably sealed at said open end and with a predetermined sealed content of water-soluble material.

3,892,312
INTEGRATED CIRCUIT CARRIER

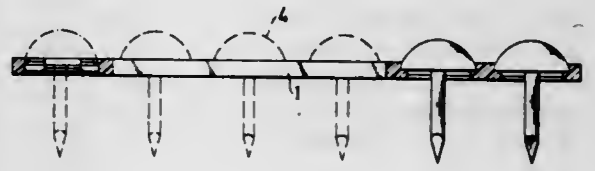
Adam Tems, Philadelphia, Pa., assignor to Milross Controls, Inc., Southampton, Pa.
Filed June 11, 1973, Ser. No. 368,749
Int. Cl. B65d *85/00;* **H01n** *13/54*
U.S. Cl. 206—328 **14 Claims**



1. A dual-in-line integrated circuit carrier adapted to receive therein an integrated circuit module of the dual-in-line type including a dielectric body member encapsulating the integrated circuit and two parallel rows of longitudinally spaced circuit leads respectively disposed in opposed relation along opposite sides of said body member and extending upwardly therefrom, said carrier comprising a box-like structure having side and end walls defining therebetween an open-topped cavity, said structure being provided at its bottom end with support means for the module disposed in underlying relation with respect to the module body to support the same upon its flatwise insertion into the carrier with its leads extending upwardly, at least one pair of internal vertically extending grooves or channels respectively formed in the opposite side walls of the cavity in registering alinement with predeterminedly selected leads of the module for receiving said leads to limit end-wise shift of the module in the carrier, and means resiliently engageable with opposite ends of the module body to releasably hold the same captive in the carrier.

3,892,313
MAGAZINE STRIP FOR ORNAMENTAL NAIL DRIVING APPARATUS

Wilfried Lange, Altenhagen, Germany, assignor to Dieter Haubold Industrielle Nagelgerate, Hemmingen, Germany
Filed Mar. 8, 1973, Ser. No. 339,169
Claims priority, application Germany, Mar. 10, 1972, 2211511
Int. Cl. B65d *85/24*
U.S. Cl. 206—346 **1 Claim**



1. A magazine strip of cuttable material for nails having ornamental nail heads with rims, said strip comprising a plurality of apertures to receive each nail, each aperture having alternate upper and lower arcuate peripheral projections for engaging, supporting and locking said rims, said nail heads extending out of said strips.

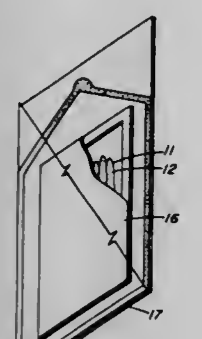
3,892,314
STERILE RUBBER GLOVE OR CATHETER PACKAGE

Bernard Albert Semp, Richmond, Va., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 117,998, Feb. 23, 1971, Pat. No. 3,728,739 which is a continuation-in-part of Ser. No. 770,792, Oct. 25, 1968, abandoned. This application Apr. 10, 1973, Ser. No. 349,890

Int. Cl. A61l *17/02*; **A41d** *19/00*

U.S. Cl. 206—363 **7 Claims**



1. A sterile surgical element package comprising a strippable laminate container having therein
- a surgical element of natural or synthetic rubber;
- having on the surface of said element in a small but lubricity imparting quantity;
- a finely divided biodegradable powder consisting essentially of a polymer containing hydrolytically degradable glycolic acid linkages,
- whereby in surgical use, any of the lubricity imparting powder which is transferred into a wound is readily absorbed by living tissue without adverse side effects.

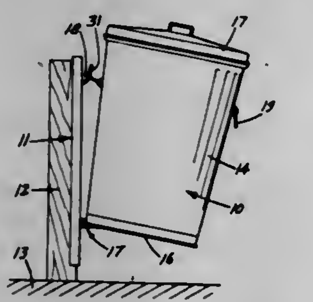
3,892,315
HOLDER

Anton E. Johnson, 1061 Rice Creek Ter., Fridley, Minn. 55432

Filed Aug. 27, 1973, Ser. No. 391,857

Int. Cl.^{2} A47G *29/00*

U.S. Cl. 211—71 **12 Claims**



1. A holder for supporting a container having a bottom portion and a grip means adjacent the top portion of the container comprising: an elongated generally upright member adapted to be secured to a fixed support, said upright member comprising a channel shaped member having an upright front wall and rearwardly directed side flanges, corner sections securing the side flanges to opposite sides of the front wall, said front wall being recessed between said corner sections, a plurality of vertically spaced transverse bands extended across said front wall, each of said bands having a first end secured to one corner section and a second end secured to the other corner section, and vertically spaced transverse slots including an upper slot and lower slot for each band located between said bands and wall, means on the upper portion of said member engageable with the grip means for holding the container in a generally upright position, bracket means engageable with the bottom portion of the container for supporting the container, said bracket means having an inverted U-shaped hook positioned about a band with parts of the hook extended through said upper and lower slots and engageable with said front wall to mount the bracket means on the upright member, said hook having a width substantially the length of the slot, and said hook adapted to be selectively positioned about a band to change the location of the bracket means on the upright member whereby different sized containers can be supported on the holder.

3,892,316
CRANE WITH FOLDING MAST AND JIB

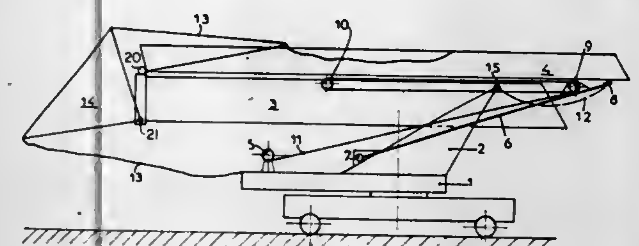
Jean Noly, La Clayette, France, assignor to Potain, Chevilly Larue (Val de Marne), France

Filed Jan. 11, 1973, Ser. No. 322,664

Claims priority, application France, Jan. 14, 1972, 72.01979

Int. Cl. B66c *23/68*

U.S. Cl. 212—46 R **7 Claims**



1. A folding crane including an undercarriage, a stand integral with said undercarriage and provided at its top with a first transverse pivot pin, a mast having a top portion and a lower portion, the lower portion of said mast being pivotally mounted on said first pivot pin for movement between a vertical working position and a horizontal transport position, a second transverse pivot pin secured to the top portion of said mast, a jib pivoted to the top of said mast on said second pivot pin and capable of being folded back horizontally against said mast in the transport position, a raising winch carried by said undercarriage, a third pivot pin on said stand adjacent said undercarriage, a compensation bar having an upper end and a lower end, said lower end of said bar being pivoted to said third pivot pin, means secured to the upper end of said bar for movement along a side of said jib which is disposed adjacent said mast in the transport position, first pulley means carried by said compensation bar adjacent the upper end thereof and second pulley means carried by said mast between said first and second pivot pins, said winch including a cable extending about said first and second pulley means, a flexible member having one end secured to the top end of said compensation bar and the other end secured to said stand to limit the pivotal movement of said compensation bar as said cable is taken up by said winch.

3,892,317
HORIZONTAL MANIPULATION ARM

Bernard Veron, Savigny Sur Orge, France, assignor to Groupement pour les Activities Atomiques et Avancees, LePlessis Robinson, France

Filed June 19, 1974, Ser. No. 480,773

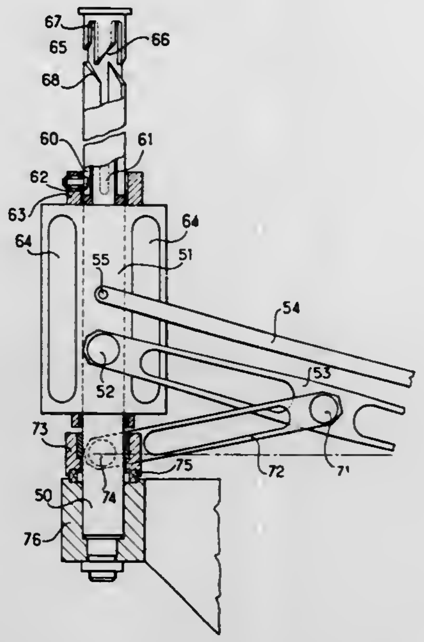
Claims priority, application France, June 29, 1973, 73.23976

Int. Cl. B66c *1/10*

U.S. Cl. 214—1 BC **6 Claims**

1. Horizontal manipulation arm (1) ensuring the passing, by retraction, rotation and extension of the said arm, from one work unit to another, comprising essentially:
- a fixed, vertical column (50) having a circular cross-section,
- a sleeve (51) slidable along the vertical column (50) and rotatable thereabout,
- means (64) for driving the sleeve in a linear movement along the vertical column,

- a connecting rod (53), connected, at one of its ends, to said sleeve and supporting, at the other end, a prehension means (57),
- a link (72) whose length is equal to half that of the connecting rod (53) having one of its ends pivotably connected at a point (74) by means rotatably about but longitudinally fixed on the vertical column and the other end pivotably connected to the middle of the connecting rod (53),



- vertical groove means 6 on said column (50),
- a roller (62) movable with the sleeve (51) and slidable within said groove means (6) of the vertical column, and helical ramp means (7, 9, 11, 13) joined to one end of said groove means so as to guide the manipulation arm (1) in a rotating movement through a predetermined angle about the axis (yy') of the column (50) as the sleeve is slid therealong.

3,892,318
DEVICE FOR STACKING BRICKS IN LAYERS

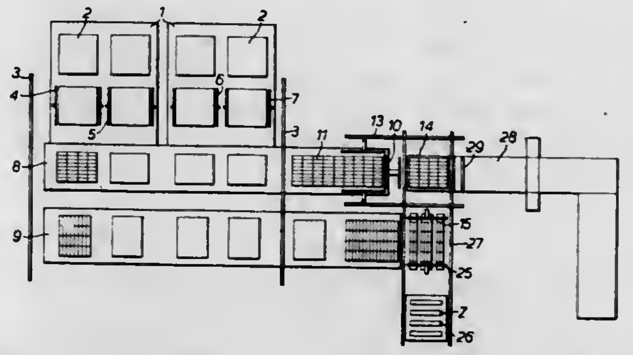
Walter Berndt, Laggenbeck, Westfalia, Germany, and Helmut F. Lauff, Furlong, Pa., assignors to C. Keller & Co., Westfallen, Germany

Filed Apr. 19, 1974, Ser. No. 462,514

Claims priority, application Germany, Oct. 26, 1973, 2353752

Int. Cl. B65g *57/24*

U.S. Cl. 214—6 A **3 Claims**



1. A device for forming a stack of bricks comprising a plurality of first layers of bricks, a second layer of bricks in which passages are provided to receive the arms of fork-lifting means, and an intermediate layer arranged between the second layer and the first layers above the second layer, said device comprising
- first and second conveyor means,
- first gripper means operative to deposit layers of bricks on the first conveyor means and to deposit layers of bricks on the second conveyor means,
- stop means for the brick layers, said stop means being arranged at the downstream end portion of the first conveyor means,
- a stacking table arranged to be lowered stepwise,
- second gripper means operative to transfer layers of bricks from the first conveyor means and to deposit same on the stacking table whereby to form the first layers,
- gap-forming means arranged beyond the downstream end portion of the second conveyor means, said gap-forming means including
- stop means for the brick layers on the second conveyor means, said gap-forming means being movable in the direction of movement of the second conveyor means to separate the bricks in order to form said passages in the layer of bricks thereon whereby said layer of bricks forms said second layer, and
- third gripper means operative to remove one said intermediate layer from a stack thereof and to deposit same on the said second layer present on the gap-forming means, and to deposit the said second layer with the intermediate layer thereon on the uppermost first layer on the stacking table.

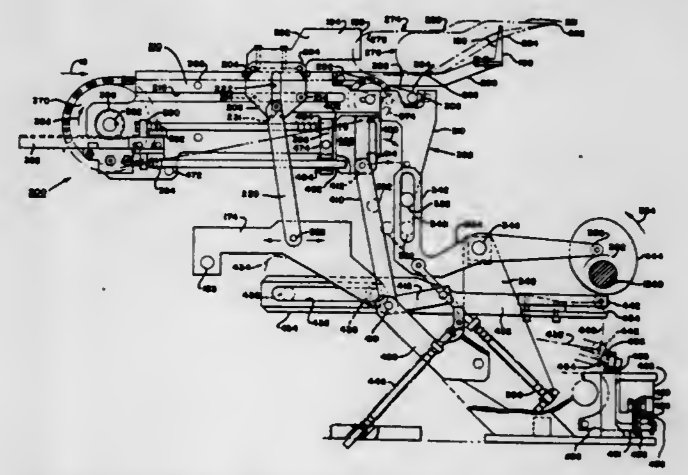
3,892,319
FEED, TRANSPORT AND DELIVERY MECHANISM FOR BOOK TRIMMERS AND THE LIKE

Ernest J. Sarring, Western Springs, Ill., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Division of Ser. No. 114,225, Feb. 10, 1971, Pat. No. 3,722,336. This application Oct. 16, 1972, Ser. No. 298,131

Int. Cl. B65g *59/06*

U.S. Cl. 214—8.5 F **11 Claims**

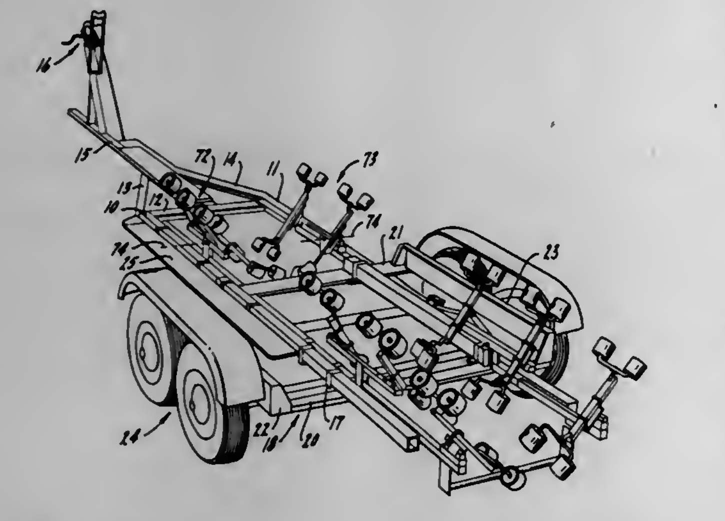


1. A mechanism for feeding objects to another means comprising, a hopper for holding a stack of the objects;
- a pusher for pushing an object from a stack location beneath the stack to a first station; said pusher comprising, an abutment surface supported by an arm; said pusher arm being capable of horizontal traversal under the influence of a horizontal traverse means thereto connected, and being movable from said stack location in a direction so as to push an object to said first station, and being movable in a recovery direction;
- said pusher arm being pivotally mounted on a pivot mount so as to be pivotal vertically, for raising and lowering said abutment surface; a pusher elevator connected with said pusher arm for pivoting same;
- said pusher elevator comprising a link which is mounted to pivot in a plane parallel to the plane in which said pusher arm pivots; said elevator link being connected to said pusher arm to pivot same;
- a drive link connected with said elevator link for causing same to pivot; a cam surface in engagement with said elevator link drive link for operating same to drive said elevator link in one direction and a biasing means con-

nected with said elevator link for driving said elevator link in the other direction, alternately raising and lowering said pusher arm;
said elevator link including an elongated receiving means for connecting with said pusher arm; said pusher arm engaging said elevator link through said receiving means; said receiving means being elongated along a path paralleling the horizontal traverse of said pusher arm, whereby said pusher arm can remain in operative engagement with said elevator link over its entire horizontal pathway;
said elevator link being a parallel link so that while it pivots vertically, the entire length of said receiving means moves through the same height location at the same time.

3,892,320
BOAT TRAILER WITH MULTIPLE ROCKING BOOM SUSPENSION

Benjamin T. Moore, Box 4513, Fort Worth, Tex. 76106
Filed Mar. 29, 1974, Ser. No. 456,170
Int. Cl. B60p *3/10*
U.S. Cl. 214—84 **14 Claims**

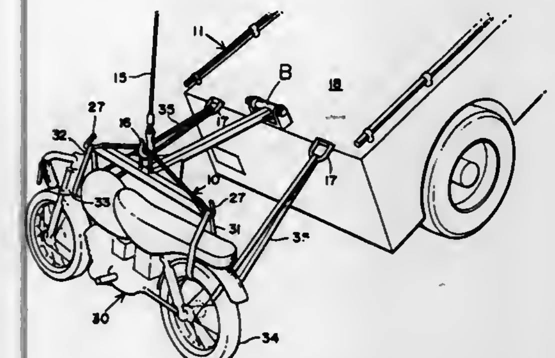


1. For use in an over-the-road trailer, a rocking cradle load support assembly, said assembly including, in combination,
a rigid, generally U-shaped primary rocker arm structure,
means for pivotally connecting said U-shaped primary rocker arm structure to a base structure for pivotal movement about a horizontal axis located transversely with respect to the longitudinal axis of the primary rocker arm structure, and,
a pair of secondary rocker arm structures,
each secondary rocker arm structure including
a rocker arm,
means for pivotally connecting said rocker arm to a leg of the U-shaped primary rocker arm structure, and
a pair of load contacting support assemblies, one support assembly being located on each side of the point of connection of the rocker arm to its associated leg of the U-shaped primary rocker arm structure,
each support assembly being pivotable about both a generally horizontal longitudinal axis, and a generally horizontal transverse axis, whereby it can be adjustable to conform, moment to moment, to variations in the contour of the supported load.

3,892,321
MOTORCYCLE CARRIER FOR WRECKERS

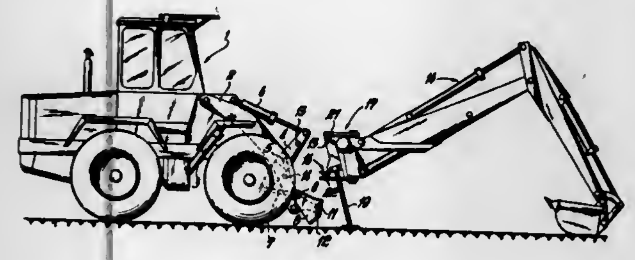
Edward L. Westbrook, Jr., 6049 W. 14th Ln., Hialeah, Fla. 33012
Filed Nov. 1, 1974, Ser. No. 520,109
Int. Cl.² B60P *3/12*
U.S. Cl. 214—86 A **4 Claims**

1. A motorcycle carrier for wreckers comprising an elongated tow bar, a bracket adapted to be mounted on the rear portion of the wrecker, connecting means mounted at one end of said tow bar rotatably secured to said bracket, a cross member mounted at the other end of said tow bar, closed hook means mounted on said cross member in substantially vertical alignment with said tow bar and extending upwardly at an obtuse angle thereto for receiving a winch hook for lifting said motorcycle above the ground, open hook means mounted at each end of said cross member, strap means extending about each of said hook means and adapted to engage said motorcycle for supporting said motorcycle and further means extending from substantially the front and rear portions of said motorcycle to said wrecker whereby said motorcycle will be prevented from swinging as the motorcycle is being carried by said wrecker.



3,892,322
SCRAPER AND DIGGER ATTACHMENT FOR A TRACTOR LOADER

Alfons Drennhaus, Holzbuttgen, Germany, assignor to International Harvester Company, Chicago, Ill.
Filed Jan. 7, 1974, Ser. No. 431,463
Claims priority, application Germany, Mar. 29, 1973, 2315581
Int. Cl. E02f *3/30*
U.S. Cl. 214—131 A **12 Claims**

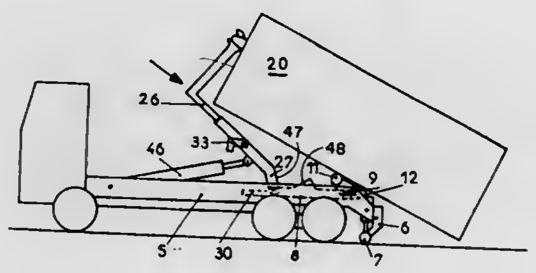


1. Loader with a pair of loading booms raisable and lowerable by means of a pair of lifting cylinders, a rocker arm carried between and pivotally mounted to the booms to control an implement connectable to the front end of the booms, and a backhoe having a swing mechanism connectable to the front end of the loader, thereby characterized that — by means of its swing mechanism (17) — the backhoe (18) is connected to the rocker arm (4) and at the same time a scraper blade (8) or similar implement is connected to the loading boom (2).

3,892,323
CONTAINER-HANDLING DEVICE FOR A SELF-LOADING VEHICLE

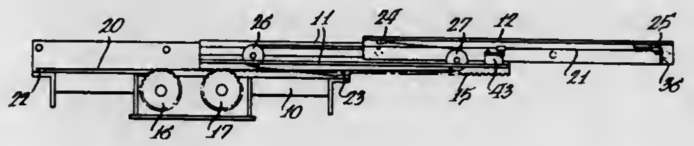
Antoine Corompt, Saint-Etienne, France, assignor to Bennes Marrel, Saint-Etienne (Loire), France
Filed Apr. 24, 1974, Ser. No. 463,621
Int. Cl. B60p *1/28*
U.S. Cl. 214—505 **4 Claims**

1. Container-handling device for a self-loading vehicle, comprising:
an L-shaped bracket having an upper and a lower arm perpendicular to each other with the free end of said upper arm provided with a container handling hook, and one lower arm adapted to slide inside a tiltable sleeve;
a tiltable sleeve mounted longitudinally on the vehicle, with its rear end pivoted on the front end of a tiltable connecting frame;
a tiltable connecting frame the rear end of which is pivoted to the rear part of the vehicle chassis;
independent selectively operable hydraulic rams for sliding said L-shaped bracket in said tilting sleeve and for pivoting said tiltable sleeve with respect to the vehicle chassis; a container having at its front end a loop member for receiving said handling hook, and at least two lower longitudinal beams under its floor wall,
characterized in that the rear part of the vehicle chassis has at least two tiltable bogie each of them provided with at least two rollers so that each container longitudinal beam rolls on the rollers of its own bogie during loading and unloading operations, while on said tiltable sliding sleeve is pivoted a locking hook adapted to engage a nose member at the front end of said tiltable connecting frame in order to keep said tiltable sleeve in line with said tiltable connecting frame when said container is used as a dumping bucket on said vehicle, means for automatically disengaging said locking hook when said lower arm is beginning to slide into said tiltable sleeve for initiating an unloading operation.



3,892,324
SHUTTLE FORK MECHANISM WITH PROBE MEANS

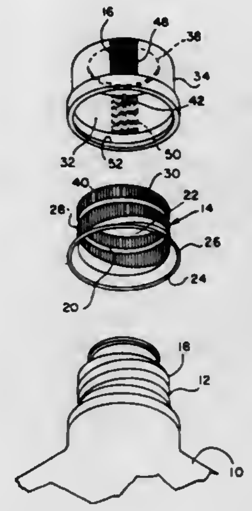
Vincent R. Faletti, Jr., Spring Valley, Ill., assignor to Conco Inc., Mendota, Ill.
Filed Sept. 7, 1973, Ser. No. 395,633
Int. Cl. B66f *9/14*
U.S. Cl. 214—730 **18 Claims**



1. A shuttle fork mechanism for operation in association with a plurality of storage racks for insertion and removal of loads from said racks comprising, a base section, an intermediate section and a load-supporting top section mounted for movement relative to said base section, means for extending said intermediate and top sections relative to the base section with the top section moving relative to the intermediate section, movable means carried by and at the outer end of the top section for detecting the presence of an obstruction in a storage rack, and means operable in response to movement of the top section relative to the intermediate section for temporarily moving said detecting means to a detecting position extending outwardly from the top section.

3,892,325
CHILD PROOF CONTAINER CLOSURE

Daniel J. Maguire, Blue Bell, Pa., assignor to Closure Industries, Inc., Brooklyn, N.Y.
Filed Apr. 16, 1973, Ser. No. 351,963
Int. Cl. B65d *55/02, 85/56;* **H61j** *1/00*
U.S. Cl. 215—219 **3 Claims**



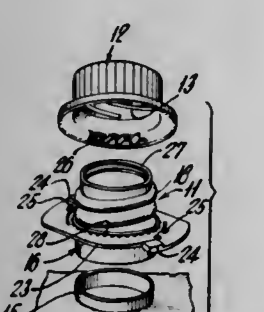
1. In a child proof container closure, the combination of
A. a cap threadedly engaged upon the container,
  1. said cap including a generally cylindrical sidewall,
  2. said sidewall terminating downwardly in a peripheral lip and upwardly in a cap top,
    a. said lip projecting outwardly beyond the periphery of the said sidewall,
  3. a portion of the sidewall near the top being knurled continuously about the periphery for turning purposes;
  B. a resilient cover overfitting the cap,
  1. the said cover being normally rotative relative to the cap,
  2. said cover including a generally cylindrical sidewall, the cover sidewall terminating downwardly in an open bottom and upwardly in a cover top;
C. cap engaging means provided in the cover to hold the cover in rotative association with the cap,
  1. the cap engaging means being formed in the cover sidewall,
  2. the cap engaging means including an inwardly open peripheral groove,
    a. the said groove being outwardly closed by a peripheral groove bottom,
  3. the groove receiving the peripheral lip therein,
  4. the groove being of sufficient diameter to overfit and receive therein the cap lip in a rotary sliding engagement, said cap and said cover having no relative axial movement therebetween; and
D. gripping means formed in the cover to grip the knurled portion of the cap upon the application of radially inwardly directed forces upon the cover,
  1. said gripping means including a diametrically opposed pair of projections extending inwardly from the cover sidewall,
    a. the projections defining a diametrical distance therebetween that is normally slightly greater than the diametrical distance across the cap at the knurled portion thereof whereby the cover may be turned relative to the cap without the projections engaging upon the knurled section,
    b. the projections being positioned in the cover sidewall adjacent the said cover top and extending downwardly therefrom,
    c. the projections radially outwardly overlying at least part of the knurled portion of the cover to engage therein for cover turning purposes,

2. said gripping means including diametrically opposed grasping areas provided in the exterior of the cover,
   a. each grasping area being in radial alignment with a projection wherein the application of radially inwardly directed forces upon the cover at the grasping areas causes the cover sidewalls to deform until the projections engage any portion of the knurled portion of the cap.

3,892,326
SAFETY CLOSURE FOR A METAL CONTAINER

Seth R. Schneible, South Salem, N.Y., assignor to Eyelet Specialty Co., Inc., Wallingford, Conn.

Filed Nov. 9, 1973, Ser. No. 414,448
Int. Cl. B65d *55/02, 85/56;* **A61j** *1/00*
U.S. Cl. 215—221 **3 Claims**



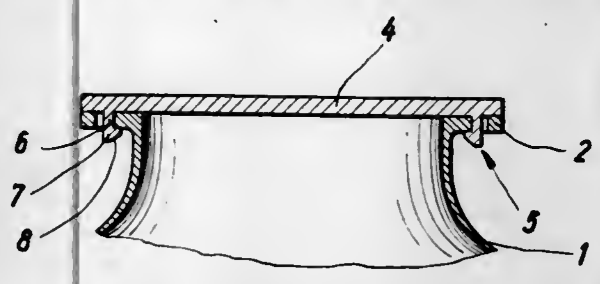
1. In combination, a metal container including a threaded neck part, said part comprising a cylindrical portion having said threads predominantly near the dispensing end and having means for attachment to a container-body part at the other end, there being an intermediate region of axial separation between the region of said attachment means and the region of said threads, first and second outwardly projecting bead means at each of two axially spaced radial planes of said intermediate region between said first and second bead means, said key means projecting outwardly at least substantially to the extent of radial projection of that one of said first and second bead means which is more near said threads, a plastic locking ring of relatively stiffly yieldable material having a splined bore engaged to said intermediate region and to said key means, said locking ring being axially confined by said first and second bead means, and a closure cap having a threaded bore coacting with the threaded region of said neck part, said cap and ring having releasable formations engageable with escaping ratchet action upon approach to the fully engaged relation of said threads and cap, said bead which is more near to said attachment means being of greater maximum diameter than the other of said beads, whereby said greater-diameter bead may act as a stop for assembling application of said ring over said lesser-diameter bead and into said keyed enegagement.

3,892,327
COVER, ESPECIALLY FOR PLASTIC CONTAINERS

Wilfried Leitz, Kapellenstrasse 2, 7812 Bad Krozingen, Germany

Filed June 24, 1974, Ser. No. 482,394
Claims priority, application Germany, June 27, 1973, 2332714
Int. Cl. B65d *41/32*
U.S. Cl. 215—253 **9 Claims**

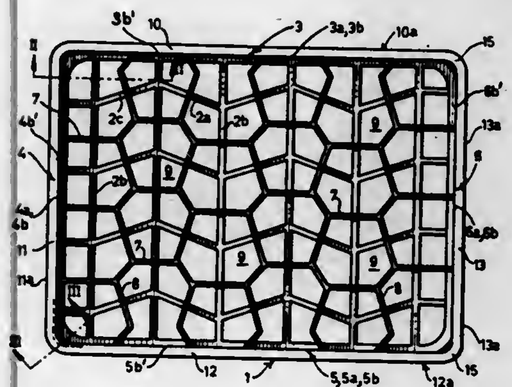
1. A container seal with a cover capable of being fastened on the container orifice by snapping it on, characterized in that the container orifice is surrounded by a flange having a rim of through perforations pierced axially, said cover having a rim of integral resilient barbs corresponding to said perforations, said barbs passing through said perforations and adapted to latch beneath the flange when the cover is placed on the container.



3,892,328
PLASTICS MADE CRATE FOR BOTTLES

Zwier Steenbergen, 15, Jan van Arkelstraat, Hardenberg, Netherlands

Filed May 4, 1972, Ser. No. 250,242
Claims priority, application Netherlands, May 5, 1971, 7106121
Int. Cl. B65d *1/24*
U.S. Cl. 220—21 **5 Claims**



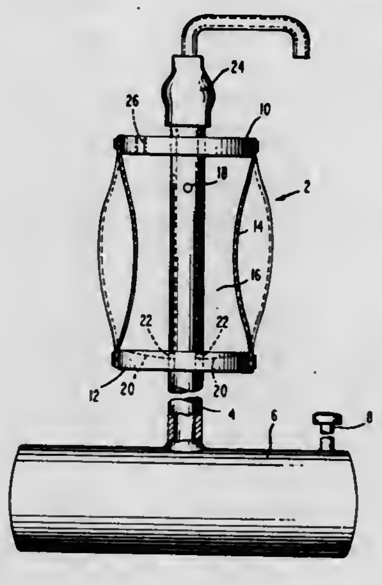
1. A plastic crate for bottles comprising
a bottom
first upright side walls projecting from two opposite edges of said bottom and having upper ends which converge towards each other
second upright side walls, projecting from two other opposite edges of said bottom, and having upper ends which converge towards each other
corner bridge parts which interconnect adjacent first and second side walls, said bridge parts diverging outwardly, said side walls and bridge parts arranged so that the circumference of the crate in any plane parallel to the bottom is at least the same as the circumference at the bottom.

3,892,329
VAPOR SEAL UNIT

Anton F. Panacek, Harbourton Woodsville Rd., Box 191, R.D. 1, Lambertville, N.J. 08530

Filed Mar. 29, 1974, Ser. No. 456,147
Int. Cl.² B65D *25/00;* **F16L** *55/04*
U.S. Cl. 220—85 VR **2 Claims**

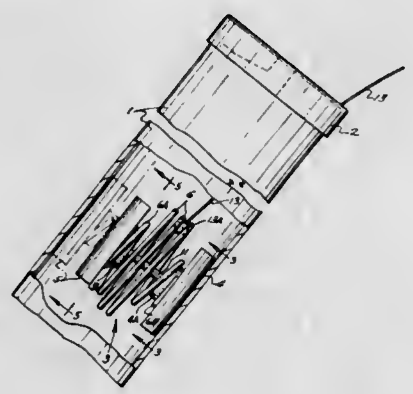
1. In combination with a tank for volatile liquid having an inlet and a vent pipe, a vapor seal device located above said tank and embodying a normally closed chamber adapted to receive and retain vapors arising from said tank, there being a passage from said vent pipe opening into the upper portion of said chamber for the delivery of vapors to the chamber and a return passage leading from the lower portion of said chamber to said vent pipe for return of liquid to the tank, a wall of said chamber being formed of flexible material and subjected exteriorly to atmospheric pressure which being subjected interiorly to the pressure of vapors in said vent pipe, said wall being movable in response to variations in such pressures to vary the capacity of said chamber, a check valve communicating with said chamber and operable to relieve excessive pressure developed in said chamber and a second check valve operable to admit ambient air to said chamber upon reduction in pressure in the chamber below a predetermined minimum whereby rupture of the flexible material forming said wall is prevented.



3,892,330
VEHICLE ANTI-SIPHONING DEVICE

Manford D. Hotchkiss, 879 J St., and Ronald G. Proctor, 999 9th St., both of Washougal, Wash. 98671

Filed Apr. 24, 1974, Ser. No. 463,521
Int. Cl. B67c *3/00*
U.S. Cl. 220—86 AT **7 Claims**

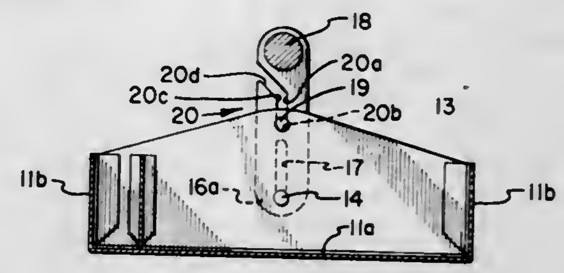


1. An anti-siphoning device for installation within a gas tank filler pipe to block the passage of a pipe inserted siphon hose without obstructing normal gasoline passage, said device comprising,
  a spiral spring in lengthwise compression with the axis of said spring disposed transversely within the filler pipe,
  end members oppositely mounted to the ends of said spring confining same in compression to permit insertion and passage of the device along the filler pipe,
  retention means extending intermediate said end members holding same against the biasing action of the spring, said retention means including a component soluble upon contact with gasoline for disconnecting said end members permitting spring expansion and forceful seating of the end members into engagement with the filler pipe, and
  the expanded spring having spaced apart coil segments extending transversely across the interior area of the pipe to prevent hose passage.

3,892,331
TOOL BOX TRAY

Roy Z. Beck, 360 West 2650 North, Layton, Utah 84041

Filed Aug. 20, 1973, Ser. No. 390,100
Int. Cl. B65d *25/28*
U.S. Cl. 220—96 **2 Claims**

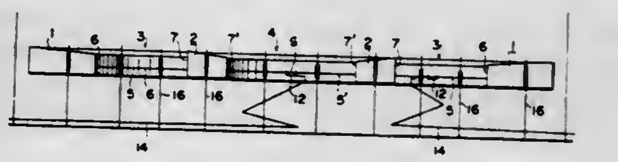


1. A tool box tray comprising
a box having a bottom, spaced upright side walls and spaced, upright end walls interconnecting the bottom and side walls, and an open top;
a handle including a bar having risers connected to the opposite bar ends;
means for pivotally connecting the ends of said handle risers, opposite to said bar, to said box such that said handle is pivotable between an elevated attitude wherein the risers form an angle normal to said box bottom and the bar is spaced above the walls, and a folded attitude where the handle rests within said box at the level of the walls, said means comprising
  a pair of spaced, transversely extending wall sections, upstanding from the box bottom,
  a pair of aligned pivot posts each projecting from one of said walls, and
  a longitudinal elongate pivot slot in each riser, each said slot fitting over one of said pivot posts, and means to hold said risers on said pivot posts; and
releasible locking means for maintaining said handle in said elevated attitude, said releasible locking means being spaced from said means for pivotally connecting the ends of said handle risers to said box.

3,892,332
PONTOON TYPE FLOATING ROOF FOR LIQUID STORAGE TANK

Masao Iwagami, Tokyo, and Satoshi Miyashita, Yokohama, both of Japan, assignors to Chiyoda Kako Kensetsu Kabushiki Kaisha, Japan

Filed Oct. 17, 1973, Ser. No. 407,272
Claims priority, application Japan, Oct. 20, 1972, 47-104395
Int. Cl. B65d *87/18*
U.S. Cl. 220—219 **12 Claims**



1. A pontoon type floating roof for liquid storage tanks comprising a pontoon, at least one annular tension buffer assembly concentrically disposed within and with respect to the pontoon, and roof decks located at or under the level of liquid stored in a tank extending between the pontoon and the annular tension buffer assembly and also within the annular tension buffer assembly, the roof decks having a lower surface in continuous contact with the stored liquid to prevent the formation and accumulation of vapor under the decks, and wherein the pontoon and the annular tension buffer assembly

include elastically deformable side walls to which the roof decks are connected.

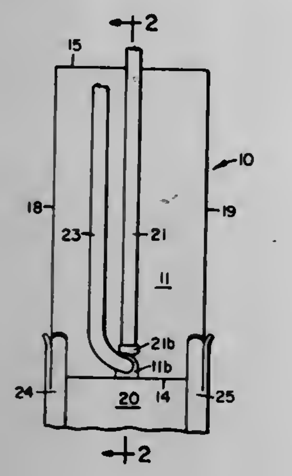
3,892,333
CONTAINER AND METHOD OF USING SAME

Howard S. Best, Horseheads; Daniel J. Bustraan, Big Flats, and Paul H. Philippon, Horseheads, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed May 17, 1974, Ser. No. 470,835

Int. Cl. B65h *3/60*

U.S. Cl. 221—200 **3 Claims**



1. In a container for tubular-like articles and including front, back, two sides and one end enclosed with the end opposite the enclosed end being open and a plurality of baffles arranged on the interior surfaces of said front and back to provide a sinusoidal-like pathway between said ends, such pathway being of a size to permit said articles to pass or flow therealong freely due to gravity, the improvement comprising;

A. a plurality of holes embodied in and extending through the walls of said front and back of said container with one such hole located immediately above the center of the upper surface of each said baffle when the container is vertically disposed with said open end being the lower end thereof, said holes being provided for issuing jets of aeriform fluid therethrough to provide an agitation and lubrication effect to articles in said container and thereby aid in free flow of such articles; and

B. a hole embodied in and extending through one of said walls of said container opposite one of said baffles near said lower end of the container, such hole being provided on the vertical centerline of said wall for issuing a jet of aeriform fluid therethrough for stopping a leading article of said articles and thereby stopping said free flow of all of the articles.

3,892,334
GOLF TEE CONTAINER

Claude E. Hand, II, P.O. Box 1106, La Grande, and Claude E. Hand, III, 1402 3rd St., Eugene, both of Oreg. 97850

Continuation of Ser. No. 183,974, Sept. 27, 1971, abandoned. This application Sept. 27, 1973, Ser. No. 401,254

Int. Cl. B65g *59/00*

U.S. Cl. 221—281 **2 Claims**

1. A golf tee container for receiving a plurality of tapered golf tees and orienting same for manual removal in a one-at-a-time fashion, said container comprising:

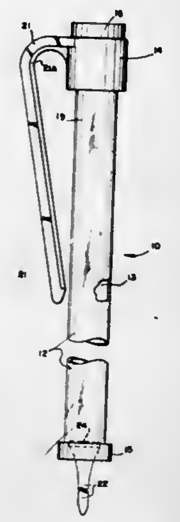
an open-ended tubular member of transparent plastic material having a length and diameter suitable for loosely receiving a plurality of stacked golf tees, said tubular member being adapted for upright attachment to a supporting surface, and

a pair of identical tee retainers located at the upper and lower ends of the tubular member, each retainer being of one-piece molded plastic material and including:

first annular internal wall means adhesively secured adjacent a respective end of said tubular member, and

an end wall disposed perpendicular to said first internal wall means and having second annular internal wall means arranged co-axially with said tubular member, said second internal wall means comprising inner and outer beveled surfaces which converge to produce an annular edge defining a resilient tee-receiving opening, said opening being smaller than the largest cross-section of a tee utilized in conjunction with said tubular member;

the lower tee retainer being disposed such that the inner beveled surface thereof retains and supports the lowermost tee of a stack of tees in said tubular member such that a shank portion of the lowermost tee projects outwardly beyond said tee-receiving opening in an operable orientation of said tee container;



the outer beveled surface of said upper retainer being resiliently compressible under the influence of a tee being manually pushed shank-first through the tee-receiving opening thereof to permit the tee to be inserted into said tubular member;

the inner beveled surface of said lower retainer being resiliently compressible under the influence of a tee being manually pulled shank-first through the tee-receiving opening thereof to permit the tee to be removed from said tubular member.

3,892,335
BEVERAGE DISPENSER

Alfred A. Schroeder, San Antonio, Tex., assignor to William V. Braley and R. A. Harman, Jr., both of San Antonio, Tex.

Filed Nov. 30, 1973, Ser. No. 420,665

Int. Cl. B67d *5/56*

U.S. Cl. 222—129.1 **10 Claims**

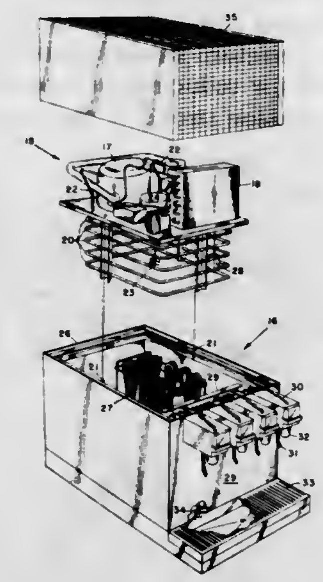
1. A beverage dispenser for dispensing cool beverages from a supply stored at ambient temperatures, said dispenser comprising:

a receptacle having a wall and containing a cooling liquid; beverage conduits for conducting said beverages through said receptacle, said beverage conduits being immersed in said liquid and located around the center of said receptacle;

cooling unit for cooling said liquid having cooling conduits immersed in said liquid around said beverage conduits, said cooling unit being removable without disconnecting said beverage conduits;

a baffle plate in said receptacle adjacent to but spaced from said wall providing a tempering space, said beverage conduits passing through said tempering space for a substantial distance and then exiting from said receptacle said baffle also permitting a circulation of said cooling liquid between said tempering space and said cooling conduits, said baffle plate protecting said beverage conduits from

freezing, yet helping to maintain every dispensed drink below a predetermined temperature for serving; and



means for dispensing said cool beverages from said beverage conduits.

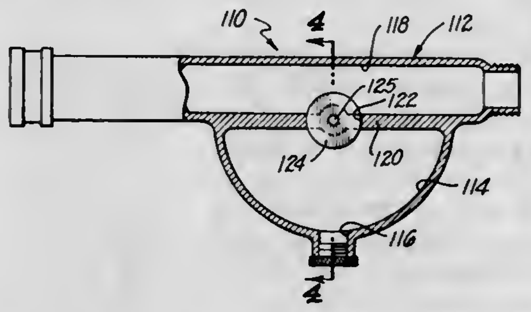
3,892,336
DISPENSING DEVICE HAVING A ROTOR FOR METERING A MATERIAL INTO A FLUID STREAM

William R. Butler, 1401 N. Decatur Blvd., Las Vegas, Nev. 89108

Filed May 10, 1974, Ser. No. 468,928

Int. Cl. B05b *7/28*

U.S. Cl. 222—193 **6 Claims**



1. In a device for metering a material into a fluid stream, the combination of:

a. a reservoir for the material;

b. passage means for the fluid stream adjacent said reservoir;

c. means separating said passage means from said reservoir and having a connecting passage therethrough between said passage means and said reservoir;

d. a rotor in said connecting passage and having a generally arcuate surface projecting into said passage means and exposed to the material in said reservoir and rotatable by a fluid stream flowing through said passage means to transfer the material from said reservoir to the fluid stream flowing through said passage means, said connecting passage being complementary to and partially housing said rotor and having at least one arcuate wall conforming to and in close proximity to said arcuate surface of said rotor; and

e. means for substantially preventing flow through said connecting passage from said reservoir to said passage means when metering of the material is not desired.

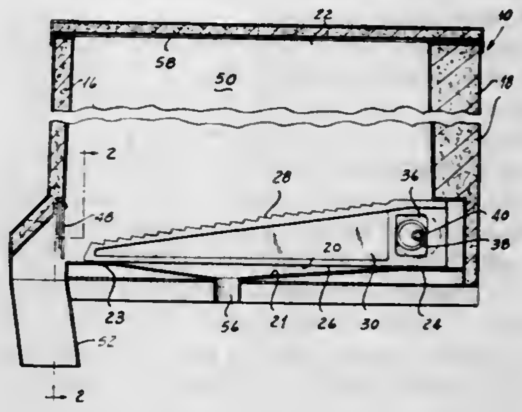
3,892,337
BIN ICE DELIVERY MECHANISM

Charles G. Neumann, Palatine, Ill., assignor to Reynolds Products Inc., Schaumburg, Ill.

Filed Nov. 21, 1973, Ser. No. 417,875

Int. Cl. F25c *5/18*

U.S. Cl. 222—199 **14 Claims**



1. Apparatus for storing a supply of ice in pieces and for delivering pieces of ice from said supply including in combination, a generally rectangular container for holding a supply of ice in pieces, said container having a front wall and a back wall, each of said front and back walls being slightly inwardly directed from the bottom thereof to the top thereof, said container having a bottom, said container formed with a delivery opening adjacent to said bottom, a plurality of ice delivery members, means mounting said members on said bottom for movement toward and away from said delivery opening, and means for driving said members to move pieces of ice from said supply toward said delivery opening.

3,892,338
MEANS FOR DISPENSING METERED QUANTITIES OF FOOD PRODUCTS FROM A RESERVOIR TO A RECEPTACLE

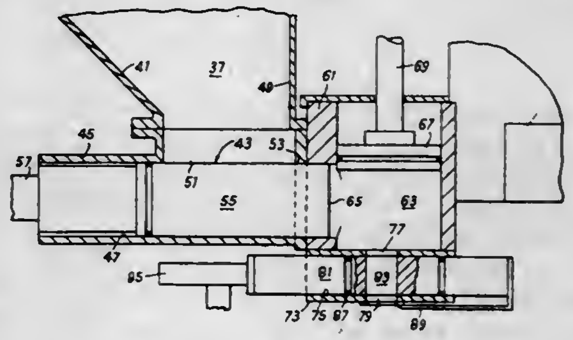
Frederick Ranson Trueman, 11, High St., Fareham; Roy George Swain Couzens, 3, Charlesworth Grdns., Waterlooville, and Brian Henry Islip, 11, High St., Fareham, all of England

Filed Jan. 26, 1973, Ser. No. 327,103

Claims priority, application United Kingdom, Jan. 26, 1972, 3740/72

Int. Cl. G01f *11/06*

U.S. Cl. 222—254 **6 Claims**



1. A dispenser for a food product which comprises a solid or a highly viscous liquid, the dispenser comprising:

a dispensing chamber having an inlet and an outlet for the said product;

means for supplying the said product to said dispensing chamber via said inlet and for closing said inlet after a predetermined quantity of the said product has entered said chamber;

a dispensing member slidably mounted within said dispensing chamber and acting, upon movement towards said outlet, to force food product within said dispensing chamber outwardly via said outlet;

a closing cylinder disposed adjacent to said dispensing chamber with the axis thereof extending transversely of the direction of movement of said dispensing member within said dispensing chamber and including a pair of aligned apertures formed in opposite sides, respectively, of said closing cylinder comprising said outlet of said dispensing chamber; and

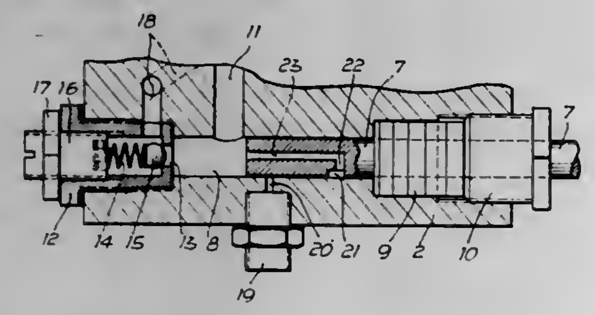
means for closing said outlet from said dispensing chamber after the said movement of said dispensing member is complete, to substantially preclude flow of excess food product from said outlet, comprising:

a closing piston slidably mounted within said closing cylinder and formed with a bore which extends transversely of the axis of said closing piston, said closing piston being movable between an operative position, wherein the said bore is aligned with said aligned apertures in said closing cylinder, to allow food product to flow from said dispensing chamber via said aligned apertures and said bore, and an inoperative position, wherein said piston closes said outlet; and

a cut-off plate secured relative to said closing piston for sliding movement therewith, said cut-off plate being moved across the path of food product emerging from said outlet from said dispensing chamber during movement of said closing piston towards the said inoperative position thereof, to crop the said food product emerging from said outlet.

3,892,339
EQUIPMENT FOR POINT BY POINT APPLICATION OF AN ADHESIVE

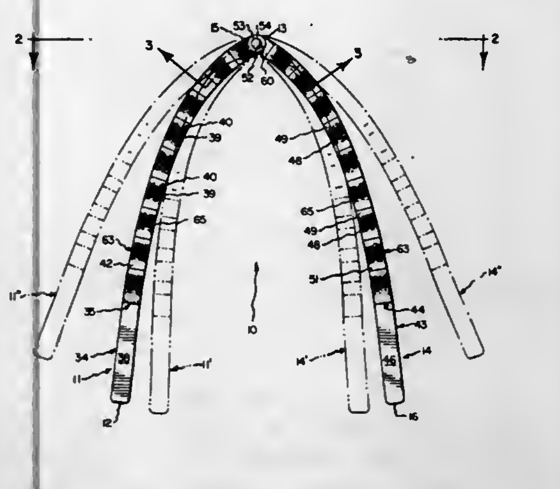
Horst Idler, Grossheppach, Germany, assignor to Hans Paal, Grossheppach, Germany
Filed Nov. 5, 1973, Ser. No. 412,829
Claims priority, application Germany, Nov. 4, 1972, 2254033
Int. Cl. G01f *11/00*
U.S. Cl. 222—318 **6 Claims**



1. Apparatus for the point by point application of a viscous substance, such as a thermoplastic adhesive, comprising a feeder device including a piston slidable in a cylinder, means for reciprocating said piston through a compression stroke and a return stroke in a predetermined timed work cycle, means for introducing the substance into the interior of said cylinder during the return stroke of said piston, means connecting the interior of said cylinder with an application nozzle whereby the substance is moved under pressure from said cylinder to said nozzle during the compression stroke of said piston, means blocking said connecting means except during the end phase of the compression stroke and the beginning phase of the return stroke of said piston, said connecting means including a conduit extending through said piston into the interior of said cylinder and a bore extending through said cylinder communicating with said nozzle, said conduit including a first section which extends axially through said piston and a second section extending transversely from said first section to an opening in the outer surface of said piston, said opening being defined by a slot extending axially along the surface of said piston and adapted to be positioned in communication with said bore during the end phase of the compression stroke and the beginning phase of the return stroke of said piston, said slot extending for a greater axial dimension than said bore whereby the communication therebetween will be maintained during a predetermined phase of the compression stroke and the return stroke of said piston, and pressure responsive means for reducing the pressure in said cylinder during the compression stroke of each cycle.

3,892,340
SEWING AID DEVICE FOR SETTING A SLEEVE IN THE ARMHOLE OF A BODICE

Regina Reidy, 258 W. Seventh St., Emporium, Pa. 15834
Filed Oct. 29, 1974, Ser. No. 518,566
Int. Cl. A41h *43/00*
U.S. Cl. 223—1 **11 Claims**



1. A sewing aid device for setting a sleeve in the armhole of a bodice, comprising:

an elongated first strip member having a first end and a second end;

an elongated second strip member having a third end and a fourth end,

each of said strip members having a first surface on one side arranged to be covered by the marginal portion of said bodice at said armhole, and also having for a portion of its longitudinal extent a second surface on its opposite side arranged to cover the cap portion of said sleeve, each of said second surfaces having a series of depressions extending transversely of its strip member and spaced from one another longitudinally therealong;

connecting means operatively joining said first strip member proximate said second end thereof to said second strip member proximate said third end thereof to enable said first and fourth ends to be moved toward and away from one another;

means for holding such bodice marginal portion against said first surface of each of said strip members; and

means for holding such sleeve cap portion against said second surface of each of said strip member,

whereby the material of said sleeve cap portion may be gathered relative to said bodice marginal portion.

3,892,341
CLOTH TURNER

Sam M. Goodson, 1107 Fleetwood Dr., Lookout Mountain, Tenn. 37350
Filed Nov. 5, 1974, Ser. No. 521,154
Int. Cl. A41h *43/00*
U.S. Cl. 223—43 **11 Claims**

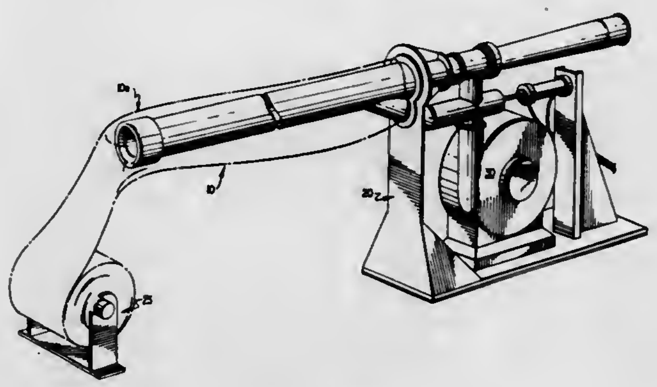
1. An everting apparatus for tubular fabric comprising:

a first elongated duct defining a first fluid passageway therewithin,

a second elongated duct disposed about said first duct and defining a second fluid passageway therebetween,

an air flow redirecting member adjacent one end of each of said first and second ducts,

a first pneumatic means for moving air through said first passageway in a direction from said one end of said first duct toward the other end thereof,

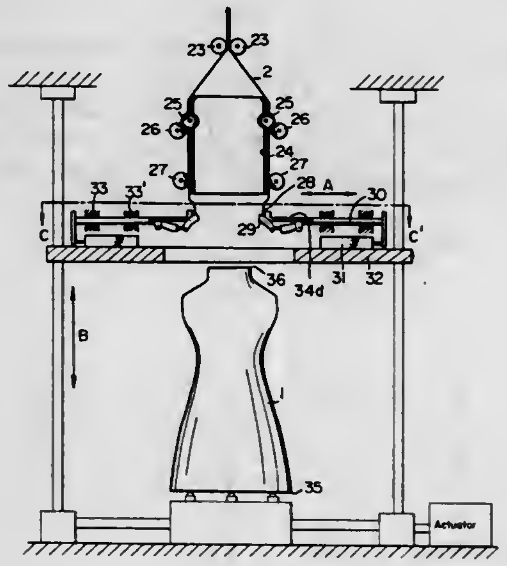


a second pneumatic means for moving air through said second passageway in a direction from said other end of said first duct toward said one end thereof, and

said member being adapted to redirect the air moving through said second passageway in a substantially longitudinal direction from the one end to the other end of said second duct along the exterior of said second duct.

3,892,342
APPARATUS FOR MAKING TUBULAR KNITTED FABRICS

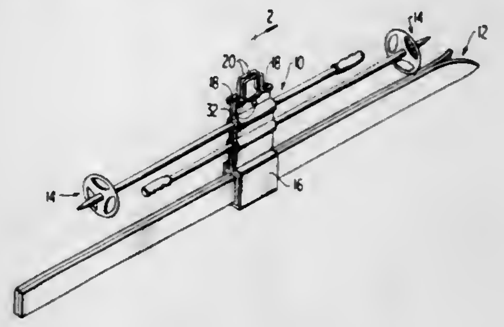
Kiyoshi Ogawa; Seiji Koyama, and Takehiko Michihara, all of Osaka, Japan, assignors to Teijin Ltd., Osaka, Japan
Division of Ser. No. 189,918, Oct. 18, 1971, Pat. No. 3,819,638. This application Dec. 19, 1973, Ser. No. 426,024
Int. Cl. D06c *15/00*
U.S. Cl. 223—57 **1 Claim**



1. A molding form and an apparatus for mounting a tubular knitted fabric on said molding form so as to cover its side circumferential surface, said apparatus comprising a tubular member having a conveying means which permits the passing of a tubular knitted fabric having open ends thereover; and a plurality of hold means disposed at position which permit the holding of the edges of the open ends of said tubular knitted fabric delivered from said tubular member, a reciprocable stand radially supporting said hold means and having an opening larger than the sectional area of the molding form and movable from the bottom end to top end and top end to bottom end of the molding form, and being stretchable in the direction of the diameter of the molding form.

3,892,343
SKI-TOTE DEVICE

Walter John Warner, Westford, Vt. 05494
Filed June 15, 1972, Ser. No. 263,102
Int. Cl. B65d *45/04*
U.S. Cl. 224—45 S **11 Claims**



1. A hand-carried device for transporting a pair of skis and poles comprising:

a pair of opposed elongated clamping members each having a substantial predetermined width, each of said members being of unitary structure having wall portions defining three discrete inwardly opening recesses, mutually spaced therealong and disposed in respective lateral registry with the recesses of the opposed members, the first recesses adapted to receive a central portion of said pair of skis and the second and third recesses adapted each to receive a central portion of one of said poles so that when the central portions of said skis and poles are disposed therein the longitudinal axes thereof will extend perpendicular to the longitudinal axes of said members and the skis and poles are retained in said device solely by said pair of clamping members;

hinge means connecting said members at an end thereof for permitting pivotal movement between an open position wherein the central portions of said skis and poles may be received in the recesses, and a closed position wherein the wall portions of said members abut, retaining the skis and poles against movement out of the recesses; each of said wall portions being substantially coextensive in width with the corresponding member to prevent substantial pivotal movement of the skis and poles when retained in said device about axes other than their long axes;

locking means carried by said device for releasably holding said members in a closed position so that when said skis and poles are received in the recesses, and said members are in a closed position, said locking means will secure said skis and poles therein; and

handle means carried by at least one of said members adjacent an end thereof for carrying said device of the skis and poles carried thereby.

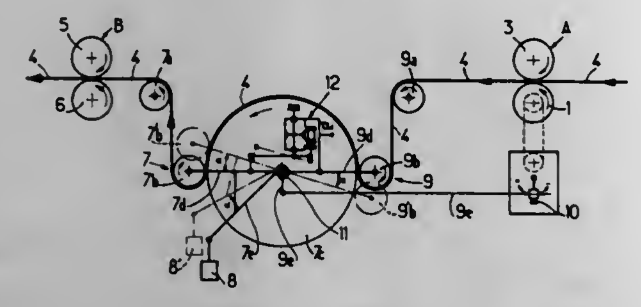
3,892,344
METHOD AND DEVICE FOR REGULATING THE TENSION AND LENGTH OF A SHEET OF MATERIAL

Louis Corse, 6, rue Auguste Rodin, Orleans, France (45018)
Filed Jan. 9, 1974, Ser. No. 431,979
Claims priority, application France, Jan. 11, 1973, 73.00899
Int. Cl. B65h *25/04*
U.S. Cl. 226—44 **5 Claims**

1. Apparatus for maintaining and regulating tension in a sheet of material, travelling from an upstream area to a downstream area, to keep the length of the sheet between said areas constant, comprising;

upstream sheet engaging means for delivering a travelling sheet; downstream sheet engaging means for receiving the delivered sheet; drive means for driving at least one of said sheet engaging means;

a jockey roller unit disposed between the upstream and downstream sheet engaging means comprising a drum rotatable about an axis transverse of the travelling sheet and having an arcuate surface portion concentric with said axis and engageable with the sheet; upstream jockey roller means engaging the sheet to guide it from the upstream sheet engaging means onto an upstream part of said arcuate surface portion; downstream jockey roller means engaging the sheet to guide it from a downstream part of said arcuate surface portion to the downstream sheet engaging means;



means for biasing one of the jockey rollers to maintain tension in the sheet engaged thereby; and
servo-control means for adjusting a position of the other jockey roller in response to a change of position of said one jockey roller and for thereby controlling said drive means to compensate corresponding variations of the length of said sheet between said upstream and downstream sheet engaging means;
whereby said compensating is performed both promptly and accurately.

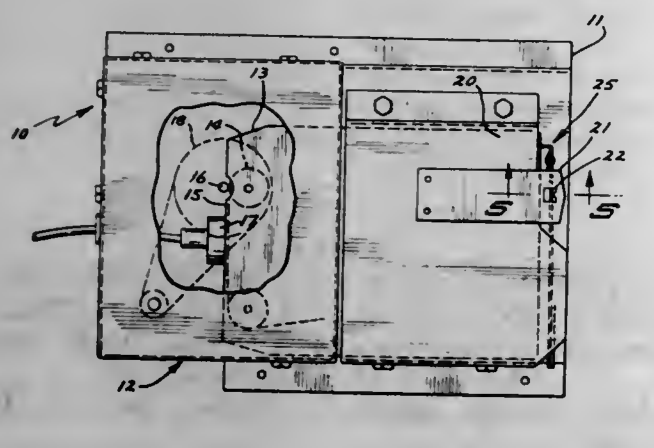
3,892,345
CARTRIDGE LATCH

Kermit W. Pietenpol, Minneapolis, Minn., assignor to Telex Communications, Inc., Minneapolis, Minn.

Filed Dec. 26, 1973, Ser. No. 428,409

Int. Cl. B65h *17/20*

U.S. Cl. 226—89 **18 Claims**



1. In tape handling apparatus of the class above described; a tape cartridge receiving chamber having inner and outer ends;
a tape cartridge holding means including resilient lever means engaging the outer end of a cartridge in said chamber in at least two laterally spaced apart positions relative to a capstan in the inner end of said chamber; and
means pivotally mounting said lever means intermediate the ends thereof.

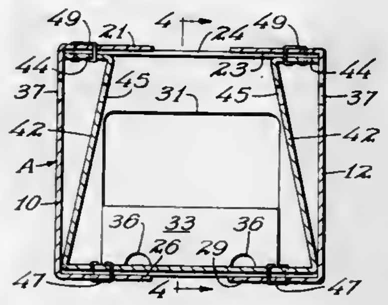
3,892,346
ASPARAGUS CONTAINER

Walter R. Hughes; John P. Vear, and Elmer G. Swanson, all of Salinas, Calif., assignors to Hoerner Waldorf Corporation, St. Paul, Minn.

Filed Feb. 16, 1973, Ser. No. 333,276

Int. Cl.² B65D ,

U.S. Cl. 229—14 BE **9 Claims**



1. A container for asparagus and the like including:
an outer container having side and end walls connected in rectangular tubular relation,
bottom closure flaps hingedly connected to the lower edges of said side and end walls and folded inwardly therefrom,
top closure flaps hinged to the upper ends of side and end walls and folded inwardly therefrom,
a liner including a liner bottom panel substantially coextensive with the area between said side and end walls and resting upon said bottom closure flaps,
liner side walls hinged to opposite sides of said bottom panel and inclining upwardly and inwardly therefrom to form an asparagus compartment of substantially trapezoidal vertical section, and
liner flaps hinged to the upper edges of said liner side walls and folded outwardly beneath said top side and end wall closure flaps.

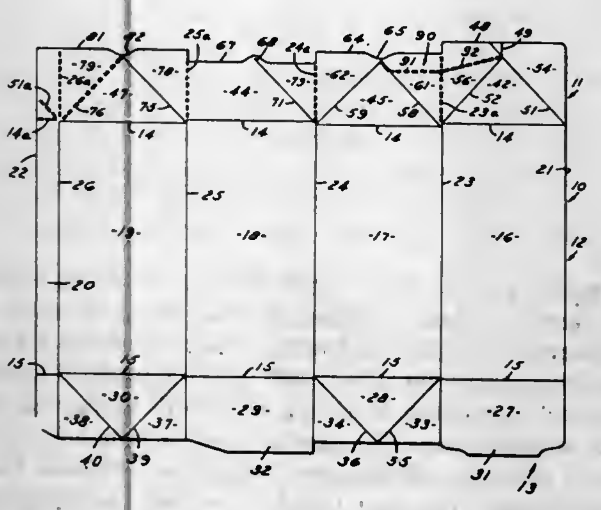
3,892,347
FLAT END CLOSURE CONTAINER WITH RECLOSABLE POUR SPOUT

Harry B. Egleston, 14625 Flamingo, Livonia, Mich. 48154

Continuation of Ser. No. 187,364, Oct. 7, 1971, abandoned. This application Dec. 20, 1972, Ser. No. 316,798

Int. Cl. B65d *5/72*

U.S. Cl. 229—17 R **8 Claims**



1. A container blank having body portion with an end closure, comprising, in combination:

a. said container blank defined by first and second side edges and first and second end edges;
b. a horizontal score line on said container blank separating said body portion and said end closure;
c. four vertical score lines extending substantially the length of said container blank;
d. a first, second, third and fourth body panels and a side seam flap defined by said vertical score lines and said side edges;
e. said end closure having an outer side panel connected to first said body panel, a first triangular panel member connected to said second body panel, and inner side panel connected to said third body panel and a second triangular panel member connected to said fourth body panel;
f. said first triangular panel member having a pair of first and second second fold back panels connecting it to said outer side panel and said inner side panels, respectively;
g. said second triangular panel member having a pair of third and fourth fold back panels connecting it to said inner side panel and said side seam flap;
h. said outer side panel having a edge portion as part of said first end edge extending between one side edge and one of said vertical score lines, a distance substantially the width of said first body panel and being positioned from said horizontal score line greater than one half the width of said second and fourth body panels;
i. said inner side panel having a edge portion as part of said first end edge and extending between two of said vertical score lines defining said third body panel and being positioned a distance from the horizontal score line less than one half the distance across said second and fourth body panels;
j. said first and second fold back panels having a common edge portion extending between two of said vertical score lines across the width of said second body panel and being positioned a distance from said horizontal score line greater than one half the width of said second and fourth body panels;
k. said third and fourth fold back panels having common edge portion as part of said first end edge and extending between two vertical score lines across the width of said fourth body panel, said edge portion being positioned from said horizontal score line, a distance greater than one half the width of said second and fourth body panel;
l. the distance from said edge portion of said first fold back panel from said horizontal score line and the distance from said edge portion of said inner side panel from said horizontal score line substantially equals the distance across said second and fourth body panels;
m. the distance from said edge portion of said fourth fold back panel from said horizontal score line plus the distance of said edge portion of said inner side panel substantially equals the distance across said second and fourth body panels;
n. a perforated score line crossing the common vertical score line of said first and second body panels and having a first perforated portion extending onto said outer side panel and having a second perforated portion on said first fold back panel, said perforated score line intersecting said vertical score line at a distance from said horizontal score line which will substantially equal the distance across said second body panel less the distance said edge portion of said second fold back panel is positioned from said horizontal score line, and said second perforated portion terminates at the apex of said first triangular panel member; and
o. said first perforated portion extending diagonally across said outer side panel and terminating approximately half the distance across said outer side panel and terminating a distance from said horizontal score line greater than one half the distance across said second and fourth body panels.

3,892,348
FOLDING CONTAINER

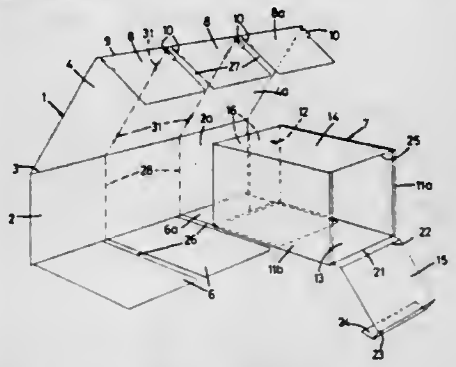
Benedikt Rohner, Zurich, Switzerland, assignor to Neher A.G., Switzerland

Filed June 28, 1973, Ser. No. 374,514

Claims priority, application Switzerland, Aug. 17, 1972, 12201/72; Germany, May 17, 1973, 2324897

Int. Cl. B65d *13/04*

U.S. Cl. 229—23 R **7 Claims**



1. A folding storage file comprising:
a plurality of individual containers, each having in its closed position two side walls, a rear wall, a bottom integral with said side walls and spaced slightly from the lower edge of said rear wall to provide a gap therebetween along the rear edge of said bottom, a top wall, and a front hinged cover being integrally connected to the front edge of said bottom and pivotable about said front edge;
a carrier in its closed position having a rear wall being connected along one longitudinal edge via a fold line to a cover wall and being provided along another longitudinal edge with a plurality of pivotable bottom tongues, said cover wall of said carrier being provided along its longitudinal edge which is remote from its rear wall with a plurality of top tongues, such that the tongues serve to connect the carrier to the individual closed containers when the same are to be enclosed therewithin, with each bottom tongue being received through said gap between the rear wall and the bottom of a respective one of said containers to overlay the bottom of said respective one of said containers and each top tongue being disposed against the inside surface of the top wall of a respective one of said containers, being folded along the longitudinal edge of said carrier cover wall remote from its rear wall about the top front edge of said respective one of said containers.

3,892,349
CARTON BOX

Karl Rune Persson, Halmstad, Sweden, assignor to Sprinter Pack AB, Halmstad, Sweden

Filed Apr. 1, 1974, Ser. No. 456,848

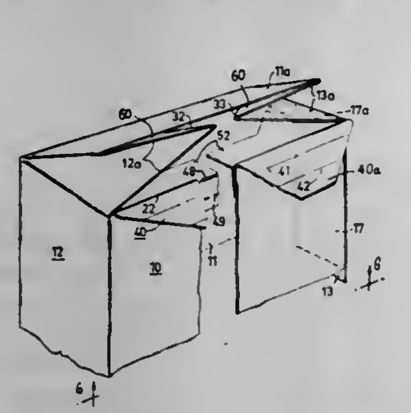
Claims priority, application Sweden, Apr. 13, 1973, 052953/73

Int. Cl. B65d *5/02*

U.S. Cl. 229—37 R **4 Claims**

1. A carton box having a rear panel, a front panel and a pair of opposite side panels, said panels being at one end of the box extended with corresponding end flaps foldable along transverse end edge fold lines to enable closing and sealing the end of the box, the rear panel being at one of its edges extended with a side edge flap which is secured to the inside of the adjacent side panel, the end flap of the front panel being hingedly connected with the end flaps of the side panels along side edge fold lines, said end flaps being double-folded along 45° to fold lines so that they may be folded inwardly together with the end flap of the associated front panel, characterized in that the side edge flap also is extended with a side edge end flap, shorter than the other end flaps, and which along at least part of its one side edge is hingedly connected with the corresponding portion of the side edge of the end flap of the rear flap, for forming a side edge hinge; that the rear panel end flap

is connected by means of a corresponding and equally located side edge hinge at its opposite side edge with a corresponding portion of the side edge of the adjacent side panel end flap; that a slit is provided in the rear panel end flap, defining an opening flap having side edges which extend to the end edge fold line between the rear panel and its end flap; that two intermediate fold lines parallel with lastmentioned end edge fold line are aligned with each other on opposite sides of the opening flap, and extend between the outer ends of the side edge hinges to their respective inner end points at the slit, dividing that portion of the end flap which is located between the slit and the end edge of the end flap, into two side end areas joining onto the side edge hinges and a flap end portion, which is separated by an edge slit from the adjacent side panel end flap, and has an edge glueing flap, foldable along a fold line parallel with the end edge fold lines; that the flap end portion is folded into the box, and is secured with the edge glue flap to the inside of the rear panel in a position where its fold line substantially coincides with the end edge fold line of the opening flap; and that from each end of the fold line of the edge glue flap a 45° fold line extends to the inner end point for the respective intermediate fold line and defines a triangular side area, lying against the inner side of the adjacent side end area, the arrangement being such, that when folding down the front panel end flap together with associated side panel end flaps this will result in a portion of the end flap of the rear panel lying between the edge hinges being folded inwards to a position at right angles to the rear panel, to form a supporting flap which at its ends is double folded along said 45° fold lines and which, after folding down the opening flap over the end flap of the front panel, will serve as an abutment or support for that pressure which is exerted on the flaps of the box end when sealing the same.



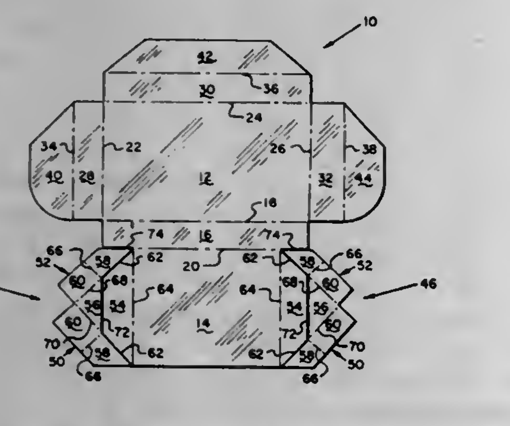
3,892,350
SHIPPING CONTAINER

William G. Sieffert, Joliet, Ill., assignor to Olinkraft Inc., West Monroe, La.

Filed Sept. 20, 1972, Ser. No. 290,724

Int. Cl. B65d *5/18, 85/54*

U.S. Cl. 229—40 **7 Claims**



1. In a shipping container for a book or the like and of the type comprising a top panel, a plurality of end panels hingedly attached to the top panel, a plurality of cover panels hingedly attached to the end panels and a bottom panel hingedly attached to at least one of the end panels, the improvement comprising:

a. the bottom panel having formed on each of two opposite sides thereof a substantially vertical cushioning panel, said cushioning panels being hingedly attached to the opposite sides of the bottom panel; and

b. each cushioning panel having formed thereon at least one reinforcement panel, said reinforcement panels being hingedly folded along a fold line in the shape of a V and perpendicularly attached to the cushioning panel.

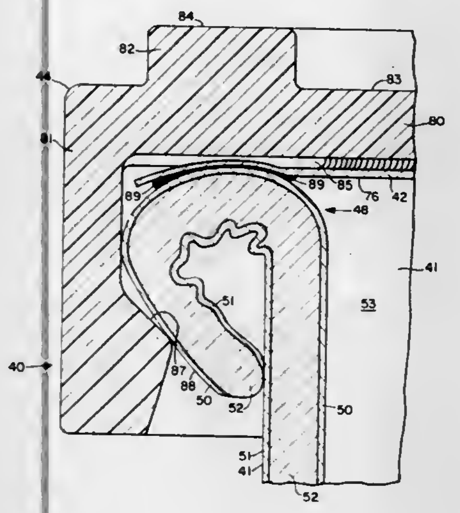
3,892,351
CONTAINER SUBASSEMBLY HAVING A MEMBRANE-TYPE CLOSURE

Charles Louis Johnson, and Charles Donald Stuard, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed July 12, 1974, Ser. No. 488,101

Int. Cl. B65d *5/64, 43/00*

U.S. Cl. 229—43 **12 Claims**



1. A container subassembly comprising a membrane-type closure, a composite tubular body having an outwardly rolled top rim, and heat activatable sealant and electrical insulation means disposed intermediate said closure and said rim of said body,

said closure comprising an electrically conductive sheet which is configured to provide a disc portion and an integral radially extending tab, said tab being folded so that it extends radially inwardly from the perimeter of said disc portion and is disposed superjacent the top surface of said disc portion,

said body comprising a liner formed form a web of electrically conductive material which is spindled into a tabular shape so that oppositely disposed side edge portions are sealingly secured together in overlapped relation to form a body seam, and

said closure being sealingly secured by said heat activatable sealant to said rim along a circumferentially extending seam with said electrical insulation means disposed therebetween so that the peripheral section of said disc portion conforms radially and circumferentially to an upwardly facing annular-shape area of said rim.

3,892,352
TARGET SIMULATOR FOR A SIGHTING APPARATUS

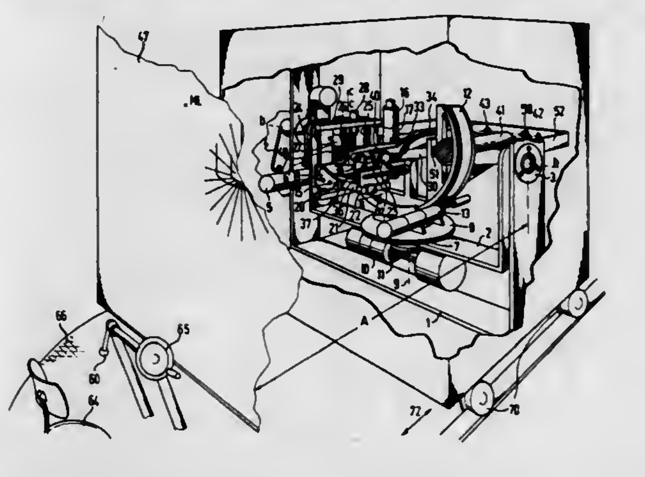
Hans Eglin, Geneva, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG, Zurich, Switzerland

Filed Feb. 19, 1974, Ser. No. 443,819

Claims priority, application Germany, Feb. 24, 1973, 2309344

Int. Cl. F41g *3/26*

U.S. Cl. 235—61.5 S **11 Claims**



1. A target simulator for a sighting device of a gun comprising;

a light source (**41**) for transmitting a light beam;

a ground-glass plate (**47**);

a first movable mirror (**45**) arranged in the path of said light beam for portraying at said ground-glass-plage (**47**) by means of a first light mark (ML) the apparent movement of a target (M) which is to be attacked;

a scond movable mirror (**54**) arranged in the path of said light beam for generating a second light mark (TL) which is effective for indicating an aiming error arising during adjustment of the sighting device;

a first lever arm (**40**), the first mirror (**45**) being arranged at an end of said first lever arm (**40**);

a second lever arm (**30**), the second mirror (**54**) being arranged at an end of said second lever arm (**30**);

drive means (**23, 31, 32, 33, 36, 37, 38**) for operatively interconnecting both lever arms with one another;

means for mounting said two lever arms (**30, 40**) so as to be movable about three axes (*a—a, b—b, c—c*) which are perpendicular to one another;

means for motor driving (**5, 10, 13, 16, 27**) said movable lever arms (**30, 40**) about each such axes (*a—a, b—b, c—c*) by an amount corresponding to:

a. a programmable distance (*e*W) from the gun (G) to a crossing point (W) of the linear flight path (FW) of the target,

b. a programmable inclination angle (τ) of the flight plane (FE) within which there is located the target to be simulated,

c. a programmable target velocity for generating the apparent target movement; and

manual adjustment means (**65, 66**) provided for the azimuth angle (δ) and the elevation angle (γ).

3,892,353
SLIDE RULE

Charles H. Schuh, 430 Appian Way N.E., St. Petersburg, Fla. 33704

Filed Aug. 3, 1972, Ser. No. 277,793

Int. Cl. G06g *1/02*

U.S. Cl. 235—64 **3 Claims**

1. In a multi-scale slide rule pen in which a post molded thermoplastic laminate covers the surface of the pen and in which the laminate is in the form of two longitudinal strips, a narrow one attached to the pen, and a wider one, the laminate slide, which slides along the pen and has a segmental tubular form, the improvement comprising the use of a continuous laminate as the surface layer of the pen, said continuous laminate having a total thickness of 17 to 24 mils and a rigidity suitable for molding to the curvature of the pen, said continuous laminate being comprised of a printed laminating core sheet selected from the group consisting of paper, metal and thermoplastic, said continuous laminate comprising further, clear, thermoplastic overlay sheets selected from the group consisting of vinyl resin, cellulose acetate, cellulose acetate butyrate and polyester said continuous laminate being free of any delamination, and free of any distortion of the scale printing on the laminate, said laminate slide, having a diameter when removed from the pen of 5 to 9 mils less than the diameter of the pen, said laminate slide being under constant spring-like tension on the pen due to the diameter difference between the slide and the pen, said laminate slide having a constant sliding resistance on the pen suitable for satisfactory slide rule operation, and said laminate slide having a rigidity suitable for satisfactory slide rule manipulation.

3,892,354
FILM COUNTER ASSEMBLY

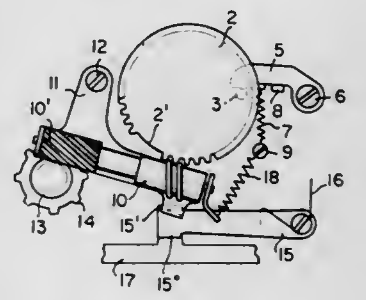
Takumi Nagao, and Manabu Sugano, both of Tokyo, Japan, assignors to Kabushiki Kaisha Yashica, Tokyo, Japan

Filed Dec. 21, 1973, Ser. No. 427,214

Claims priority, application Japan, Dec. 28, 1972, 47-2977

Int. Cl. G06m *1/32*

U.S. Cl. 235—91 C **3 Claims**



1. A film counter assembly for a camera which comprises: a gradation counter disc mounted on a worm gear, said worm gear having a cutaway portion thereof;

a worm means for rotatably engaging said worm gear; and a stop means for idling said worm means at said cutaway portion of said worm gear means to prevent further rotation thereof during rewinding operation of film in said camera.

3,892,355
LOCK FOR SELECTION MECHANISM FOR A POSTAGE METER

Arthur J. Malavazos, deceased, late of Hayward, Calif.; by Gregory A. Malavazos, administrator, San Leandro, Calif., and Jan Urdal, San Mateo, Calif., assignors to AJM Research Corporation, Hayward, Calif.

Filed Apr. 3, 1974, Ser. No. 457,591

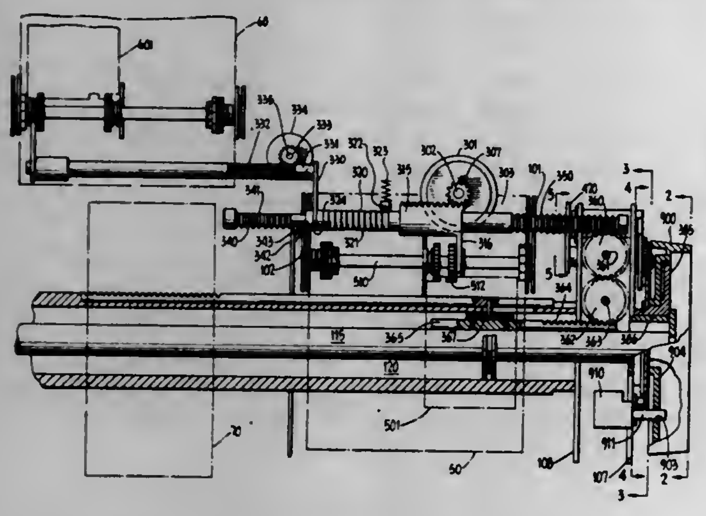
Int. Cl.^{2} **G07G** *1/00*

U.S. Cl. 235—101 **9 Claims**

1. In a postage meter, the combination which comprises:

1. manually set and ordinally arranged value selection members for determining the value to be stamped upon mail

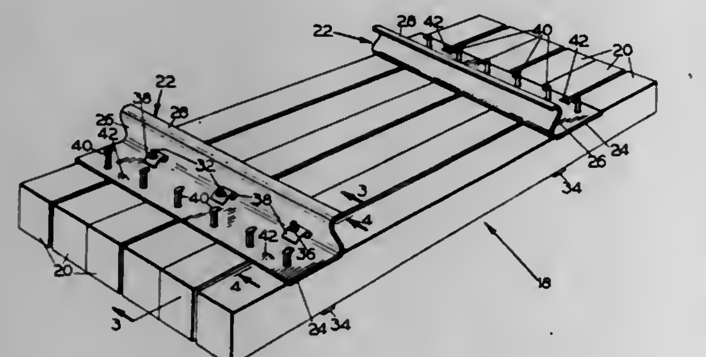
matter and to be registered in suitable registers; and
2. selectively operable means for locking selected ones of



said value selection members in a differentially set position.

3,892,356
MODULAR RAILROAD GRADE CROSSING

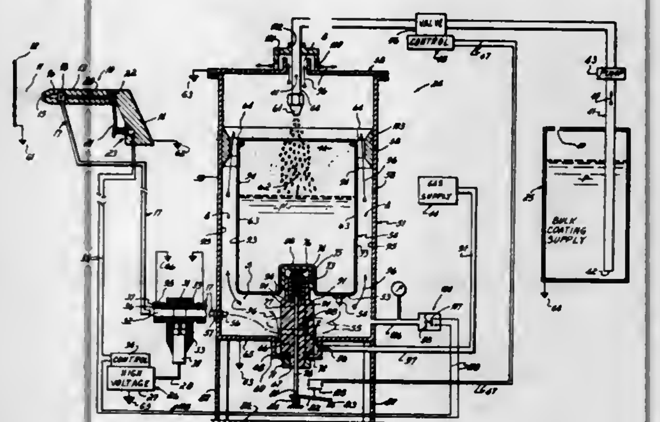
Paul G. Harmon, Portland, Oreg., assignor to Railco, Inc., Portland, Oreg.
Filed June 12, 1974, Ser. No. 478,723
Int. Cl. E01b *2/00*
U.S. Cl. 238—8 **2 Claims**



1. A modular railroad grade crossing comprising in combination:
   a. a railroad grade crossing base,
   b. superimposed on the base a pair of spaced, parallel flangeway guards each comprising an integral plate angularly shaped in tranverse cross section to provide
      1. a substantially horizontal outwardly directed base segment disposed flat on the upper surface of the grade crossing base,
      2. a reversely bent upright rail guard segment, and
      3. an inwardly directed substantially horizontal cap segment,
   c. a pair of spaced, parallel railroad rails superimposed on the base plate segments of the flangeway guards in substantially parallel laterally spaced relation thereto,
   d. first securing means securing one side of the base plate segments to the grade crossing base, and one side of the rails to the base plate segments,
   E. the reversely bent upright rail guard segment providing a pocket between the lower ends of the rail and guard segment for reception of said first securing means while spacing the upper end of the guard segment closer to the upper end of the rail for reception of the flange of the railroad car wheel,
   f. second securing means securing the other side of the base plate segments to the grade crossing base and the other side of the rails to the base plate segments, and
   g. paving material supported on the grade crossing base between the upright rail guard segments and beneath the cap segments of the railway guards by which the paving material is retained and capped, respectively.

3,892,357
ELECTROSTATIC SPRAY APPARATUS AND METHOD

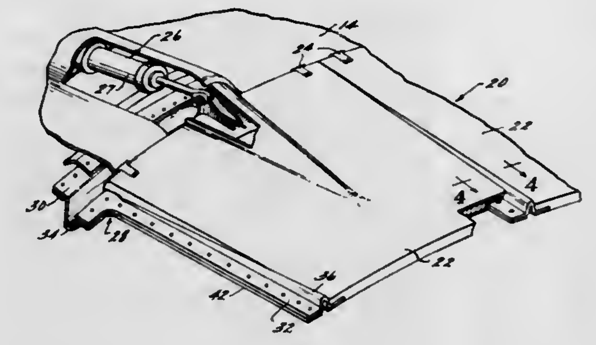
Simon Z. Tamny, Lorain, Ohio, assignor to Nordson Corporation, Amherst, Ohio
Filed Apr. 30, 1974, Ser. No. 465,539
Int. Cl. B05b *5/00;* **F23d** *11/28*
U.S. Cl. 239—15 **22 Claims**



1. An electrostatic coating system operable on a continuous basis for coating articles with electrically conductive material supplied from an electrically grounded bulk coating source comprising:
   a material spray device for emitting electrostatically charged coating material for application to an article maintained at an electrostatic potential different from that of said emitted coating material,
   an electrically grounded source of uncharged bulk coating material,
   an inner container for storing coating material within the interior thereof, said inner container having an outer wall, coating material transmission means for transferring uncharged coating material from said bulk source to said inner container without establishing an electrically conductive path between said bulk source and said inner container,
   an electrically grounded outer container enclosing said inner container and spaced therefrom to provide a gas flow path between the inner wall thereof and said outer wall of said inner container, said gas flow path communicating with said interior of said inner container,
   a conduit interconnecting said inner container and said spray device for conveying coating material from said inner container to said spray device, said conduit being constructed of insulative material sufficient to withstand dielectric breakdown when conveying electrostatically charged coating material,
   a high voltage source having an output connected for electrostatically charging said coating material emitted by said spray device,
   an electrically nonconductive support structure physically contacting both said inner and outer containers for supporting said inner container in electrically isolated relation relative to said outer container, and
   a source of gas connected to said gas flow path for providing a gas flow in said flow path to prevent deposition of a film of coating material on said support structure sufficient to conduct a substantial level of electrical current from said inner container to said outer container.

3,892,358
NOZZLE SEAL

Jan M. Gisslen, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio
Filed Mar. 17, 1971, Ser. No. 125,277
Int. Cl. B64c *15/02*
U.S. Cl. 239—265.39 **4 Claims**

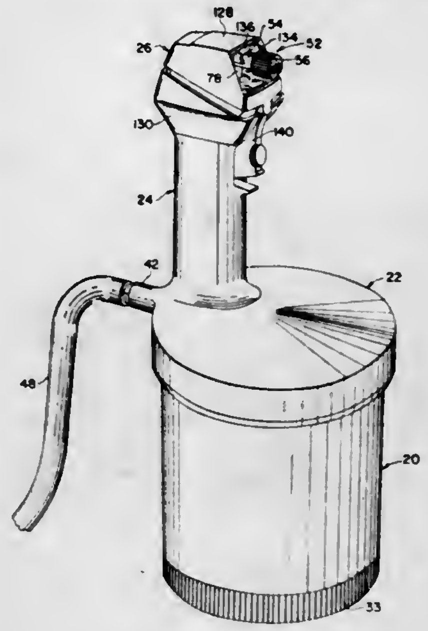


1. A variable area nozzle for a gas turbine engine of the type adapted to generate propulsive thrust by producing a motive fluid stream and effluxing same from a passage of said engine, said nozzle comprising:
   a plurality of flaps arranged in an annular array and hingeably connected to a supportive portion of said engine so as to define a downstream extension of and an outlet for said motive fluid passage;
   means for pivoting each said flap about its hinge connection to vary the cross-sectional area of said outlet; and
   seal means for preventing motive fluid leakage between peripherally adjacent ones of said flaps and at said hinge connections, said seal means comprising means forming a plurality of axial strips and an annular band having a preformed flex loop, said band secured on one side of said flex loop to said supportive engine portion and on the other side of said flex loop to said flaps, each said strip having a preformed flex loop and secured along its length to a respective pair of flaps with said flex loop disposed between said flaps, said flex loops sized to permit the desired pivotal movement of the flaps.

3,892,359
SPRAY APPARATUS OPERABLE BY PRESSURIZED AIR

John Robert Dwyer, Jr., Timonium; Alvydas Petras Karasa, Baltimore; Jonathan Durand Bell, Towson, and James Lawson Allen, Cockeysville, all of Md., assignors to The Black and Decker Manufacturing Company, Towson, Md.
Filed Oct. 24, 1973, Ser. No. 409,188
Int. Cl. B05b *7/30*
U.S. Cl. 239—342 **8 Claims**

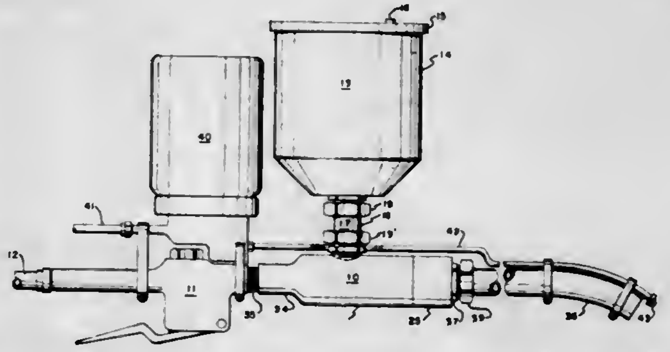
1. A paint spray apparatus, including:
   a container for holding paint and pressurized air, said container comprising a canister-like base including an open end for receiving the paint and a cover for closing said open end of said canister-like base;
   said cover including an air inlet for receiving pressurized air to be supplied to said canister-like base and an integral handle extending upward from said cover to enable the paint spray apparatus to be manually gripped, said handle having a hollow interior in fluid communication with said canister-like base;
   a paint spray head mounted at the top of said handle for receiving paint and pressurized air from said container and for mixing the paint and air to produce a paint spray; first conduit means extending downwardly from said paint spray head through the interior of said handle into said canister-like base to permit paint to flow from said canister-like base to said paint spray head; and
   second conduit means for connecting said paint spray head to the interior of said handle to permit pressurized air to



flow from said canister-like base through said handle to said paint spray head.

3,892,360
APPARATUS FOR DRY PACKING OF SURFACES

Roy Otto Schlottmann, 10810 Estate Dr., Boise, Idaho 83705, and Paul Edward Yadon, P.O. Box 425, Parma, Idaho 83360
Continuation-in-part of Ser. No. 26,992, April 9, 1970, abandoned, and a continuation of Ser. No. 194,254, Nov. 1, 1971, abandoned. This application Sept. 4, 1973, Ser. No. 377,371
Int. Cl. B05b *7/30*
U.S. Cl. 239—345 **4 Claims**



1. An apparatus for dry packing surfaces, comprising a cylindrical tube having a chamber-like portion formed by a venturi-like portion in one of its terminal ends and by a wall portion at the terminal end opposite said venturi-like portion, said venturi-like portion issuing into an orifice-like distributing portion said wall portion including an inlet disposed therein, a jet-like orifice tube selectively distally disposed in said inlet causing air under pressure from a suitable source to be blown at high velocity into said chamber portion of said cylindrical tube, a material discharge portion disposed in said cylindrical tube between said venturi-like portion and said wall portion discharging material into said cylinder portion, said chamber portion both suspending material particles therein and blowing said material particles through said venturi-like portion and said orifice-like distributing portion.

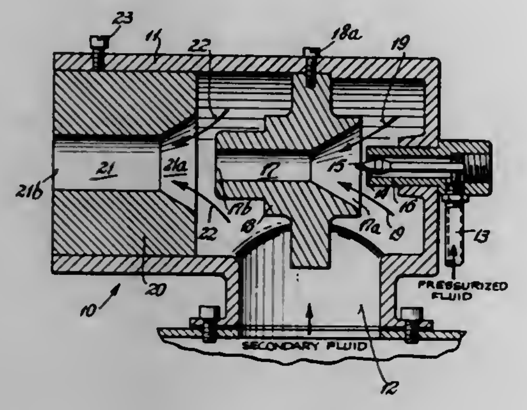
3,892,361
TWO STAGE NOZZLE

Zenon R. Mocarski, Easton, Conn., assignor to S.R.C. Laboratories, Inc., Fairfield, Conn.

Filed Apr. 18, 1974, Ser. No. 461,843

Int. Cl. B05b *7/06*

U.S. Cl. 239—432 **2 Claims**



1. A two stage nozzle comprising a first stage means having a first passageway formed with an exit, means connectible to a source of pressurized fluid for directing a flow of pressurized fluid into the first passageway and means for communicating the first passageway with a source of secondary fluid whereby flow of pressurized fluid through the first passageway induces flow of secondary fluid therethrough to have both fluids be discharged from the exit; a second stage means having a second passageway formed with an exit, means for directing the flow from the first stage means into the second passageway and means for communicating the second passageway to a source of secondary fluid, said flow of fluid from the first passageway into the second passageway being the sole energizing force for inducing the flow of secondary fluid into and through the second passageway with the fluids being discharged from the second passageway exit, in which the sources of secondary fluid are the same, in which the two passageways are elongate and aligned and in which the second stage means passageway has an entrance positioned adjacent the exit of the first stage means passageway and in which the second stage means is capable of relative movement with respect to the first stage means and there are means for fixing the stage means in one relative position.

3,892,362
FUEL INJECTOR

John Roland Gayfer, Alcester, England, assignor to British Leyland UK Limited, London, England

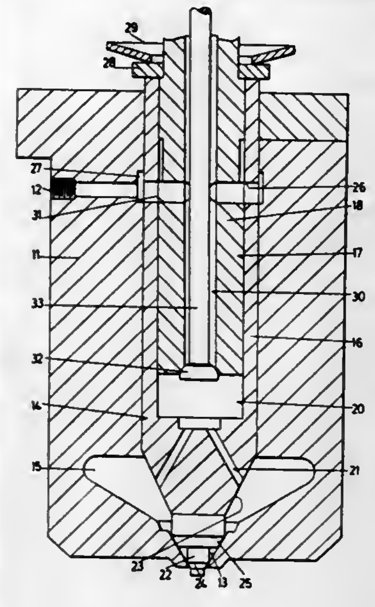
Filed June 28, 1974, Ser. No. 484,111

Claims priority, application United Kingdom, June 30, 1973, 31262/73

Int. Cl. B05b *1/30*

U.S. Cl. 239—533 **5 Claims**

1. A fuel injector comprising:
- a. a body member incorporating a fuel inlet, and a fuel outlet nozzle communicating with a bore by way of a plenum chamber;
- b. a needle slidably disposed within the bore between a first position in which the outlet nozzle is closed and a second position in which the outlet nozzle is open;
- c. biassing means resiliently loading the needle towards the first position;
- d. a metering plunger in a plunger bore in the needle;
- e. pressure sensitive means operable to isolate the plenum chamber from fuel inlet; and
- f. a metering plunger displacing means operable:
  - i. to cause the pressure sensitive means to isolate the plenum chamber from fuel inlet;
  - ii. to pressurise fuel within the plenum chamber to the extent necessary to cause displacement of the needle from the first to second position against the action of the biassing means and allow output from the nozzle of a given amount of fuel from the plenum chamber.



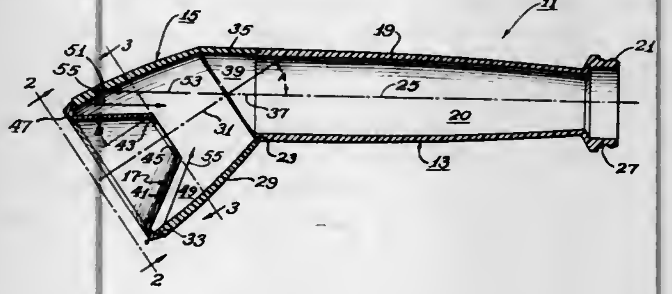
3,892,363
ATTACHMENT FOR HYDROTHERAPY BATH

Ronald O. Hilger, Elmhurst, Ill., assignor to Associated Mills, Inc., Chicago, Ill.

Filed Aug. 5, 1974, Ser. No. 494,403

Int. Cl. B05b *1/08*

U.S. Cl. 239—590 **8 Claims**



1. An improved pulsating nozzle assembly for acqueous liquid being pumped under pressure by a liquid pump, comprising:

handle means including a first tubular side wall which has a first end and a second end and which defines a first, liquid flowpath therethrough from the first end to the second end, with the longitudinal axis of the first tubular side wall constituting a straight line and with the longitudinal axis of the first tubular side wall constituting the centerline of the first liquid flowpath;

means adjacent to the first end of the first tubular side wall for connecting said first liquid flowpath with the outlet of the liquid pump;

nozzle head means including:

- a second tubular side wall which has a first end and a second end, with the longitudinal axis of the second tubular side wall constituting a straight line; and
- means, including a third tubular side wall, for interconnecting the second end of the first tubular side wall with the first end of the second tubular side wall, the interconnection means defining a second liquid flowpath therethrough, with the longitudinal axis of the third tubular side wall constituting a straight line and being substantially coaxial with the longitudinal axis of the first tubular side wall, and with the longitudinal axis of the second tubular side wall intersecting, at an acute angle, the longitudinal axes of the first and third tubular side walls;

frustro-conical cap member including a truncated, conical side wall having a first end and a second end, a circular end wall at and closing the first end of the conical side wall and an annular base extending radially outwardly from the second end of the conical side wall, with the mean diameter of the annular base being less than the diameter of the second tubular side wall, adjacent to its second end, and being greater than the diameter of the end wall of the frustro-conical cap member;

an aperature formed in the end wall of the frustro-conical cap member, with the axis of the aperature being coaxial with the longitudinal axis of the second tubular side wall and with the center of the end wall;

means for attaching the annular base of the frustro-conical member with the second end of the second tubular side wall so that the frustro-conical member is disposed within the second tubular side wall, with the end wall of the frustro-conical member projecting toward the first end of the second tubular side wall, so that an annular space, having a generally triangular cross-section, is defined between the annular base wall, the second tubular side wall and the conical side wall of the frustro-conical member, and so that the longitudinal axis of the first tubular side wall, as extended, is intersecting of this annular space.

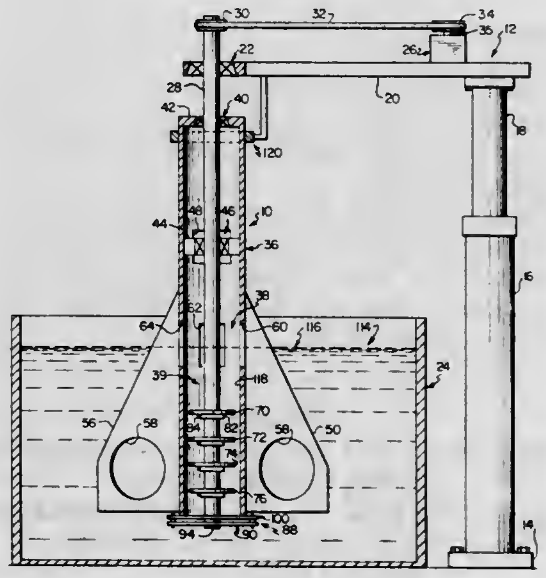
3,892,364
APPARATUS AND METHOD FOR DISPERSING AND COMMINUTING THE SOLID IN A SOLID-LIQUID MIXTURE

Henry L. Lomasney, P.O. Box 29077, New Orleans, La. 70189

Filed May 9, 1974, Ser. No. 468,576

Int. Cl. B02c *17/16*

U.S. Cl. 241—15 **21 Claims**



1. A method for dispersing and comminuting the solid in a solid-liquid mixture comprising the steps of

charging a container with the mixture,

introducing the mixture from the container into a chamber located within the container, said chamber containing a large number of particulate attritive elements;

agitating the solid and the liquid in the chamber and grinding the solid in the chamber by agitating said attritive elements, and expelling the solid and liquid from the chamber back into the container.

3,892,365
APPARATUS FOR PREPARING FOOD

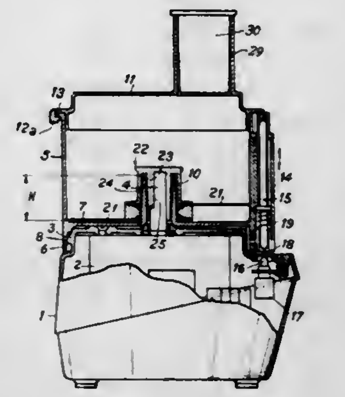
Pierre Verdun, 4 bis Ave. de la Belle-Gabrielle, Fontenay-Sous-Bois, France

Continuation of Ser. No. 228,513, Feb. 23, 1972, abandoned. This application Jan. 24, 1974, Ser. No. 436,198

Claims priority, application France, July 23, 1971, 71.27039

Int. Cl. B02c *18/12*

U.S. Cl. 241—92 **13 Claims**



1. Apparatus for preparing foods, which comprises a working vessel mounted on top of a motor casing, said motor casing having a motor therein and an energizing circuit for said motor with an ON-OFF switch in said circuit, said working vessel having a bottom wall with a hole therein and said motor casing having a rotary motor-driven shaft adapted to extend up through said hole with a working tool having a hub portion mounted on the upper end of said shaft, said working tool being located in said vessel for working food in said vessel, complementary fastening means on said motor casing and vessel for removably fastening them together, said vessel including on its outer peripheral wall a substantially vertical channel extending throughout the height of said vessel, a push member slidably mounted in said channel and adapted when said vessel and casing are properly fastened together by said fastening means to have its lower end aligned with a control member on the ON-OFF switch in said energizing circuit, said vessel including a detachable lid provided with cam means, securing means engageable between said lid and said vessel for anchoring said lid on said vessel, said cam means being adapted to depress the upper end of said push member to cause the lower end of said push member to hold said ON-OFF switch in its ON position when said lid is properly placed on said vessel with said securing means engaged between said lid and said vessel.

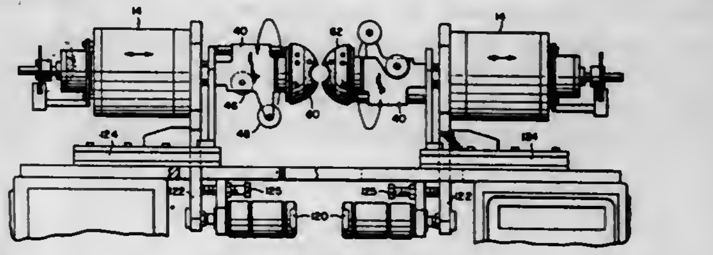
3,892,366
ARMATURE WINDING MACHINE FORMS

Marinus G. Ott, Dayton, Ohio, assignor to Ott-A-Matic, Inc., Dayton, Ohio

Filed Sept. 27, 1973, Ser. No. 401,152

Int. Cl. H02k *15/09*

U.S. Cl. 242—7.05 B **7 Claims**



1. In an armature winding machine including means for holding an armature core in a winding position and means for winding coils of wire in slots extending longitudinally of an armature core held in said winding position, an improved wire guide form comprising:

- a. a substantially geometrically hemispherically shaped head positioned intermediate said winding means and said winding position,
- b. said head having a generally convex surface facing toward a core held in said winding position by said holding means,
- c. means defining a core-receiving channel extending across said generally convex surface of said head,
- d. all cross sections of said head taken through an axis extending substantially centrally through said head being, with the exception of that portion of the head occupied by said channel, substantially semi-circular, and
- e. said head thereby presenting to wire being wound into a core and engaging said head a smoothly curved surface of substantially constant curvature thereby providing higher winding speed and higher wire tension.

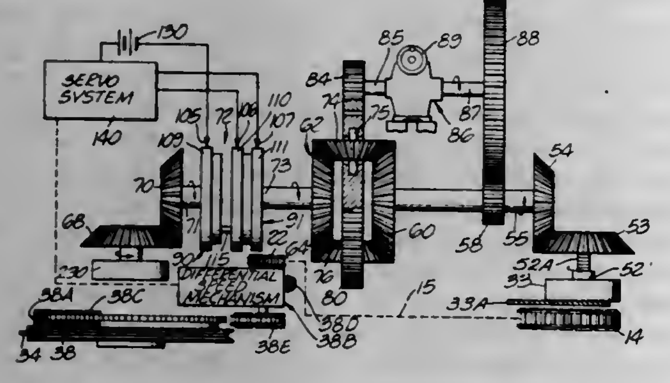
3,892,367
TANK WINDING AND PRESTRESSING APPARATUS

Maximiliaan J. Dykmans, 4434 Mayaxan Dr., La Mesa, Calif. 92041

Continuation of Ser. No. 105,056, Jan. 8, 1971, abandoned, which is a continuation of Ser. No. 718,464, April 3, 1968, abandoned. This application June 2, 1973, Ser. No. 375,452The portion of the term of this patent subsequent to Mar. 30, 1988, has been disclaimed.

Int. Cl. B21f *17/00*

U.S. Cl. 242—7.22 **8 Claims**



1. In a system of the character described, a carriage movable on a structure; a wire feeding mechanism on said carriage; a differential system including a first and a second axle gears, a ring gear, spider gear means journaled for rotation on said ring gear and meshing with said axle gears; means for moving said carriage on said structure; means responsive to the speed of said carriage on said structure and coupled to said first axle gear; gear reduction means coupled between said first axle gear and said ring gear to produce a speed of rotation of said second axle gear commensurate with the speed of said first axle gear; means responsive to the speed at which said wire is being laid by said wire feeding mechanism on said structure when said carriage moves on said structure and producing rotation of an element in accordance with the last-mentioned speed; and means comparing the related speed of said element and said second axle gear and producing an output when said relative speed exceeds a nominal value; and means receptive to said output and restoring said relative speed to said nominal value in accordance with said output.

3,892,368
TISSUE DISPENSER

Charles Robert Ricards, 369 Mt. Lake Road, Belvidere, N.J. 07823

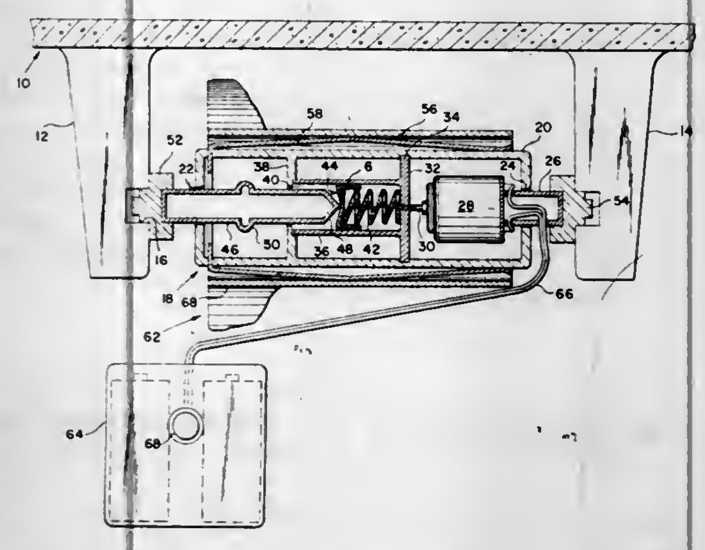
Filed Mar. 1, 1974, Ser. No. 447,427

Int. Cl.² A47K *10/38*

U.S. Cl. 242—55.2 **9 Claims**

1. A tissue dispenser comprising:

- A. a holder body member engageable in a roll of tissue for mounting the roll;
- B. stationary end attachment means rotatably mounting said body member;
- C. motor drive means operatively mounted in the interior of said body member, having an output shaft operatively attached to said body member for driven rotation thereof, wherein said holder body member is hollow and having end openings therethrough, a motor mount extending through one said end opening and operatively mounting a motor interiorly of the body member, a pivot shaft mounted within the body member and having an end thereof extending through the opening at the opposite end of said body member, the exterior ends of said motor mount and said pivot shaft being operatively associatable with said stationary end attachment means, said body member being rotatable by said motor upon energization thereof; a spring housing having a web attached to the interior of said body member and a tubular hollow extension thereon, a coil spring mounted within said tubular extension and engaged between said web and the interior end of said pivot shaft with said spring being compressible through inward movement of said pivot shaft, said motor having an output shaft attached to said web, an indented end spring cap on said spring, the interior end of said pivot shaft being pointed and engaged within the indentation and providing a pivot therebetween for permitting rotation of said body member with respect to said motor and said pivot shaft,



- D. selectively operable actuating means for said drive means adapted upon actuation to rotate said body member and a roll of tissue mounted thereon with respect to said stationary end attachment means for dispensing tissue from a roll thereof.

3,892,369
TAPE DISPENSER RELEASABLY SECURABLE TO A SUPPORTING SURFACE

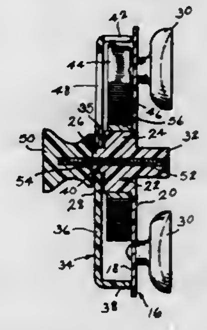
Eugene Fujawa, 422 Edison St., South Bend, Ind. 46619

Filed Feb. 11, 1974, Ser. No. 441,039

Int. Cl.² B65H *19/00*

U.S. Cl. 242—55.53 **4 Claims**

1. A dispenser in combination with a roll of tape, comprising a back plate having front and rear faces, cover means positioned over said back plate front face, spindle means positioned between said back plate and cover means, said roll of tape being coiled upon itself about an open center and being rotatatively supported upon said spindle means at its said open center for rotation relative to said cover means and back plate, suction means carried at the rear face of said back plate for releasably securing said dispsenser to a supporting surface as said tape is pulled from said dispenser, means for securing said cover plate over said back plate front face and means journaling said cover means for rotation relative to said back plate and tape, said cover means having an opening therein to accommodate the loosened end of said tape as said tape is pulled from the dispenser with said dispenser secured to said supporting surface by said suction means whereby said tape may rotate separately from or as a unit with said cover means.



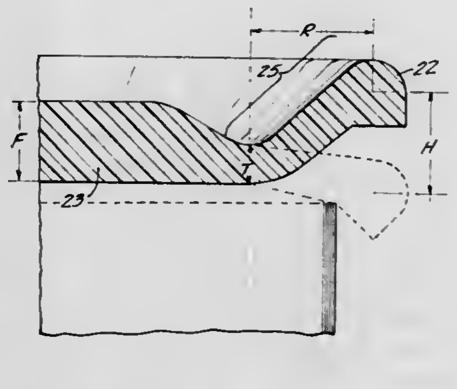
3,892,370
FILM SPOOL

Norman E. Nelson, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 58,071, July 24, 1970, abandoned. This application Nov. 26, 1973, Ser. No. 418,912

Int. Cl. B65h *75/28, 75/14*

U.S. Cl. 242—71.8 **1 Claim**



1. An integrally molded plastic spool for containing a supply roll of predetermined film comprising

1. a barrel;
2. a circular flange attached to each of the two ends of the barrel and extending transversely to the barrel, the inwardly facing surfaces of the flanges being substantially parallel to one another and separated over most of their extent by at least a distance equal to the width of said predetermined film; and
3. a low ridge extending around the whole circumference of the inwardly facing surface of each flange, radially spaced from the barrel and projecting toward the other flange; the thickness of the flanges being reduced in an area that is spaced inwardly from the outer edge of the flanges and extends circumferentially around the flanges, whereby the edge-portions of the flanges that carry the ridges are pivotable between two stable positions in which the edge-portions will remain until pressure is applied to move them to the other of the two stable positions, said stable positions comprising a) a first molded position in which the distance between the ridge on one flange and the ridge on the other flange is at least as great as the distance between the rest of the inwardly facing surfaces of the flanges and b) an operative position in which the distance between the ridges is slightly less than the width of said predetermined film, said edge-portions of the flanges having a circumference in the first and operative positions that is less than the circumference to which they are momentarily and resiliently stretched during pivoting from the first position to the operative position, whereby the edge-portions tend to remain in their operative position and the ridges hold the outer winding of film in a supply roll on the spool, but the free end of the film may be drawn between the ridges with a uniform moderate pulling force.

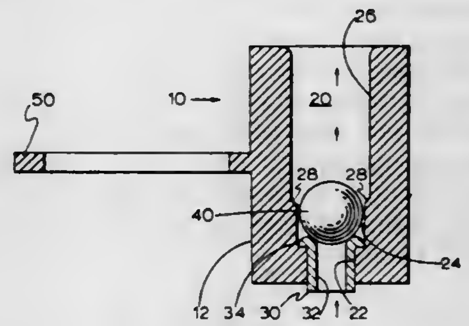
3,892,371
YARN TENSIONING DEVICE

Otto Zollinger, 120 Pine Acres Dr., Spartanburg, S.C. 29302

Continuation-in-part of Ser. No. 297,995, Oct. 16, 1973, Pat. No. 3,753,535. This application June 11, 1973, Ser. No. 368,735

Int. Cl. B65h *59/22*

U.S. Cl. 242—152.1 **15 Claims**



1. A tension device comprising:

- a. a housing, said housing having a yarn passageway extending therethrough, said yarn passageway having a small diameter section and a large diameter section;
- b. an uninterrupted annular seat located in said large diameter section of said passageway at the junction of said large and small diameter sections, said seat having an annular opening passing therethrough and presenting a smooth arcuate surface extending from said opening outwardly therefrom, the curvature of said arcuate surface being in a direction opposite the curvature of a spherical element receivable thereat; and
- c. a spherical element receivable in said large diameter section of said passageway, said spherical element having a diameter less than the length of said large diameter section of said passageway and said large diameter section of said passageway at said seat and said spherical element being comparatively sized such that said spherical element may reside at said seat out of contact with walls of said large diameter section of said passageway when no yarn is passing through said opening and such that substantial lateral movement of said spherical element is precluded whereby said spherical element continuously controls tension on a yarn passing thereby.

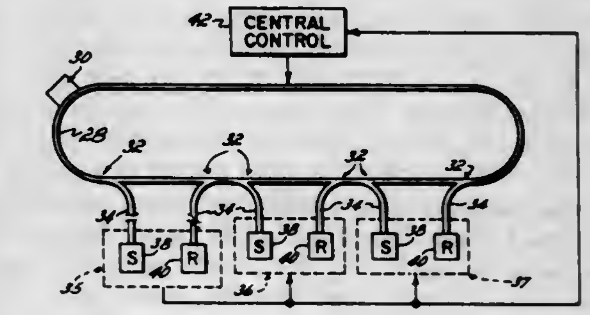
3,892,372
PNEUMATIC CARRIER SYSTEM WITH STATION CONTROL

Werner Hauber, Nutley, N.J., assignor to The Mosler Safe Company, Hamilton, Ohio

Filed Aug. 30, 1973, Ser. No. 393,122

Int. Cl. B65g *51/36*

U.S. Cl. 243—5 **22 Claims**



1. In a station-controlled pneumatic carrier system having

at least two spaced-apart stations a control system comprising, in combination:

- a destination selector at each station, physically independent of a carrier, for selecting the destination for a carrier inserted into the pneumatic carrier system at the station; a central controller associated with at least said two stations for controlling the pneumatic carrier system;
- signal means at each station for signalling said central controller when a carrier is ready to be sent from the station; and
- said central controller including an interrogation circuit for determining the destination station to which a carrier is to be sent pursuant to selection thereof by its associated destination selector, said interrogation circuit being operative to transmit to said associated station selector an interrogate signal and monitor the response thereto to thereby determine the identity of said destination station selected by said associated station selector,
- said central controller including a selector circuit for selectively connecting to said interrogation circuit only one station at a time in response to a signal from said signal means at a station.

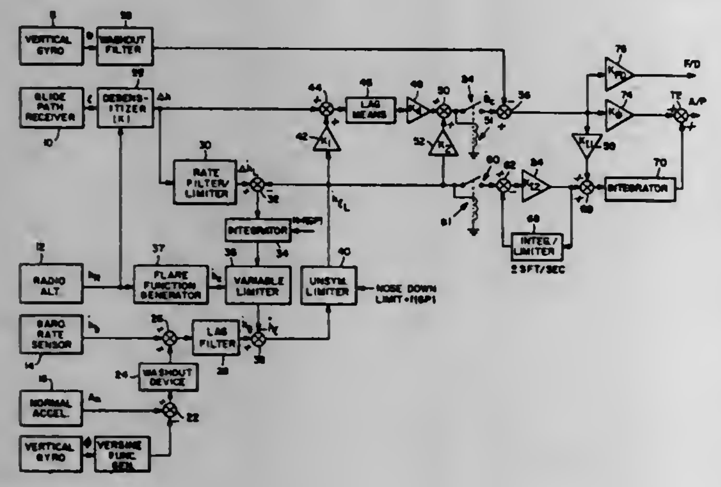
3,892,373
INTEGRATED GLIDE PATH/FLARE AUTOMATIC FLIGHT CONTROL SYSTEM

Jerry Doniger, Montvale, N.J., assignor to The Bendix Corporation, Teterboro, N.J.

Filed Dec. 7, 1973, Ser. No. 422,948

Int. Cl. B64c *13/18*

U.S. Cl. 244—77 A **9 Claims**



1. A system for controlling an aircraft when landing the craft, comprising:

- means for providing an aircraft rate of descent signal;
- means for providing a glide path beam rate signal;
- means for limiting the glide path beam rate signal in accordance with predetermined flare mode flight parameters; means connected to the aircraft rate of descent signal means and to the glide path beam rate signal limiting means for combining the signals therefrom and for providing a rate of descent error signal;
- means for limiting the rate of descent error signal in accordance with predetermined glide-path mode flight parameters, said means including, means for providing a signal corresponding to the altitude of the aircraft, means for shaping the altitude signal in accordance with the flare mode flight parameters and for providing a shaped signal, means for providing a glide path beam rate signal, and feedback means connected to the beam rate signal means including means for combining the beam rate signal and the limited rate of descent error signal, means for integrating the combined signal, means for limiting the integrated signal and the limiting means connected to the shaping means, with the limit of the limiting means being varied in response to the shaped signal;
- means for providing a glide path beam displacement signal; means connected to the rate of descent error signal limiting means and to the beam displacement signal means, and responsive to the signals therefrom for providing a pitch rate command signal;
- means for providing a signal corresponding to the pitch attitude of the craft; and
- means connected to the pitch rate command signal means and to the pitch attitude signal means and responsive to the signals therefrom for controlling the aircraft.

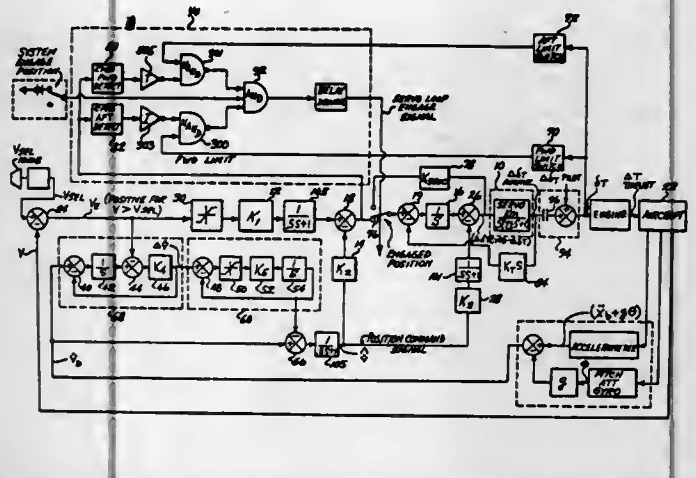
3,892,374
TURBULENCE COMPENSATED THROTTLE CONTROL SYSTEM

Antonius A. Lambregts, Renton, Wash., assignor to The Boeing Company, Seattle, Wash.

Division of Ser. No. 342,917, March 19, 1973, Pat. No. 3,840,200. This application Nov. 16, 1973, Ser. No. 416,540

Int. Cl. B64c *13/18*

U.S. Cl. 244—77 D **15 Claims**



6. In combination in an autothrottle control system utilizing a signal control channel for processing signal representative of longitudinal acceleration of an aircraft:

- circuit means for detecting a sustained windshear and providing a windshear correction signal which for a sustained windshear is representative of a difference between a signal representative of the inertial longitudinal acceleration and a signal representative of rate of change of air speed error; and
- means for subtracting said windshear correction signal from the signal representative of longitudinal acceleration to provide signals in said signal control channel compensated for windshear.

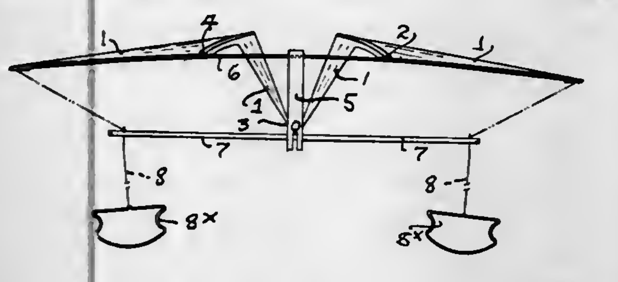
3,892,375
CONTROLLED FLYING KITE

Donald Dunford, 554 Bandbury Rd., Oxford, England

Filed Aug. 6, 1973, Ser. No. 386,034

Int. Cl. B64c *31/06*

U.S. Cl. 244—153 R **3 Claims**



1. A kite comprising a sail, means holding the sail in extended condition and consisting of a plurality of bars extending longitudinally of the sail in its position of use, and at least one transverse bar engaging the side margins of the sail, a transverse control bar to the ends of which two kite lines may be attached, and means projecting and holding said control bar substantially spaced from the kite sail, in combination with a control strut forming the means for projecting the control bar, said strut holding and spacing said control bar relatively to the sail and holding and spacing the transverse bar from the control bar, at least one of the bars extending longitudinally of the sail being carried by said strut and held therby longitudinally spaced forwardly of said transverse bar said sail having a substantial opening in its center area, said longitudinal bar carried by the strut crossing said opening and forming V-shaped channels of the sail meeting said opening therein.

3,892,376
METAL WIRE FELT

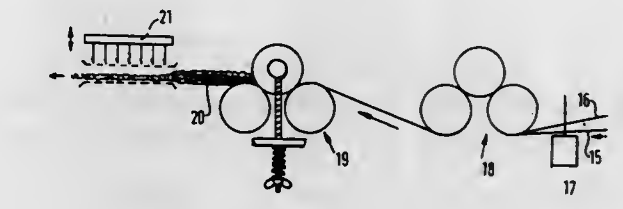
Glyn Beresford Redmond, Birmingham; Ernest John Harold Hill, Wolverhampton, and Maurice James Evans, Sutton Coldfield, all of England, assignors to Dunlop Limited, England

Filed June 18, 1974, Ser. No. 480,388

Claims priority, application United Kingdom, June 26, 1973, 30254/73

Int. Cl. B21f *27/02*

U.S. Cl. 245—6 **38 Claims**



1. A method of making a felt comprises crimping continuous metal wires or bunches of wires, each individual wire having a torsional rigidity greater than 2 × 10^{-7} Nm^2, by passing each wire or bunch of wires under tension over a curved surface, at least some of the wires or bunches of wires being passed over the surface in a manner such that the predominating resultant helix is in the opposite direction to that of the remaining wires or bunches of wires, continuously assembling the crimped wires or bunches of wires in substantially aligned relationship under tension, continuously relaxing the assembly of wires so formed to allow interpenetration thereof to form a mat.

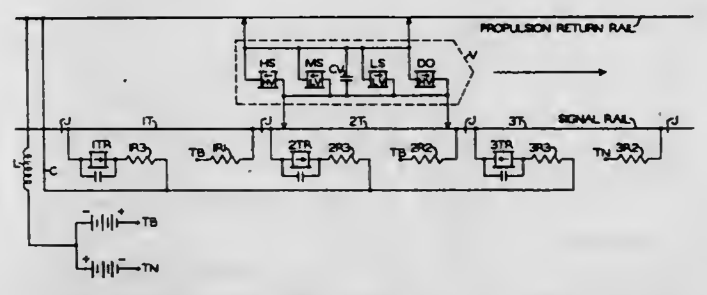
3,892,377
TRAIN DETECTION AND CONTROL SYSTEM

Homer L. Hathaway, Export, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.

Filed Oct. 9, 1973, Ser. No. 404,751

Int. Cl. B61l *21/06*

U.S. Cl. 246—62 **9 Claims**



1. A vehicle detection system, for a transportation system in which the vehicles move on a fixed right-of-way, comprising in combination,

- a. a communication channel including a pair of conductors extending along said right-of-way and including,
    - 1. a signal conductor divided into insulated sections of predetermined length to establish channel sections corresponding to selected sections of said right-of-way, and
    - 2. another conductor being continuous and connected to a common bus,
- b. a signal source coupled between each signal conductor section and said common bus for transmitting through each channel section a signal having a predetermined characteristic,
- c. control apparatus on each vehicle coupled across said conductors for receiving the signal transmitted in each channel section, and
- d. a wayside detection means for each section operable between first and second conditions and connected between the corresponding signal conductor section and said common bus for normally receiving the signal transmitted through that section and responsive thereto for operating to said first condition to indicate the nonoccupied condition of the corresponding right-of-way section,
- e. said control apparatus on each vehicle further effective to shunt the signal transmitted through a signal conductor section away from the associated detection means into said common bus when that vehicle occupies the corresponding right-of-way section,
    - 1. the associated detection means responsive to said signal shunt for operating to its second condition to indicate the occupancy of that right-of-way section by that vehicle.

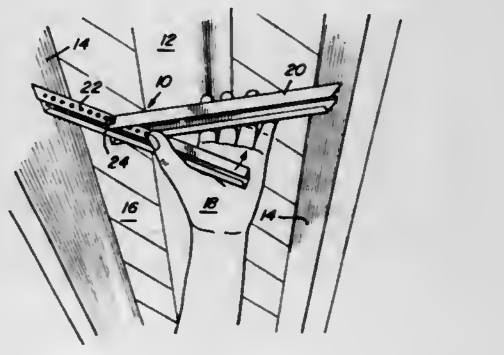
3,892,378
HANGER

Byron D. Lane, 212 16th Ave., Southwest, Minot, N. Dak. 58701

Filed Feb. 21, 1973, Ser. No. 334,206

Int. Cl. E04g *25/06*

U.S. Cl. 248—71 **8 Claims**

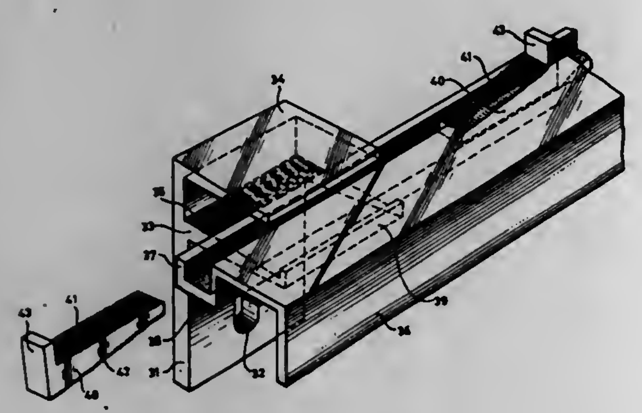


1. A hanger for supporting articles between spaced supports, comprising, in combination:

- a. first and second members arranged for engaging one another and forming a support, the members each including a longitudinal web having a pair of spaced edges, longitudinal side walls extending codirectionally from the web edges to edge portions parallel to the web edges, the edge portions of the side walls of the members turned inwardly toward one another and in reverse direction to the extent of the associated side wall substantially throughout the length of the edge portions for forming substantially U-shaped channels providing rounded, strengthened edges, one of the members being arranged for receiving in the channels thereof the edge portions of side walls of the other member and snap the members into rigid locked engagement; and
- b. means for pivotally attaching the members to one another and permitting the members to pivot with respect to one another and snap into an engaging and supporting position wedged between spaced supports, with the pivot arranged relative to the members for always causing a substantial portion of the members to overlap in the engaging and supporting position.

3,892,379
FIXATION FOR A PLATE SHEATHING

Jan Hoes, Maastricht, Netherlands, assignor to Globe-Lak, N.V., Geverik, Netherlands
Filed May 9, 1972, Ser. No. 251,812
Claims priority, application Netherlands, May 11, 1971, 7106479
Int. Cl. F16m *13/00*
U.S. Cl. 248—225 **4 Claims**



1. Apparatus for fixing plate sheathing to a wall, comprising: a first fixing member having a first leg and a second leg extending from said first leg substantially at a right angle thereto, said second leg having serrations on at least one surface thereof;

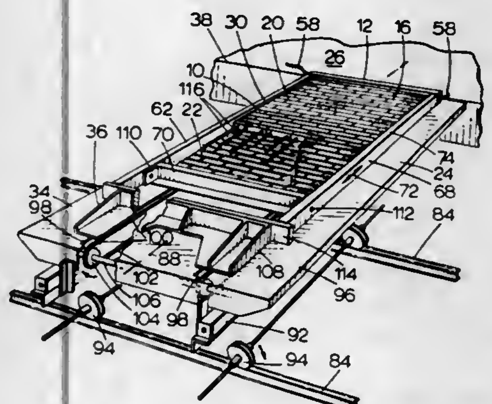
a second fixing member having a first leg disposed substantially parallel to said first leg of said first fixing member and a pair of second legs spaced from each other and extending outwardly from said first leg substantially at a right angle thereto, said second leg of said first member being located between said second legs of said second member, at least one of said second legs of said second fixing member having serrations on at least one surface thereof which are complementary to and engage the serrations on said second leg of said first fixing member; a substantially U-shaped clamping member engaging said pair of said second legs of said second fixing member and clamping said pair of second legs of said second fixing member to said second leg of said first fixing member; and

means for locking said U-shaped clamping member to said pair of second legs.

3,892,380
MEANS AND METHOD FOR PREFABRICATING AND CONVEYING CERAMIC PANELS

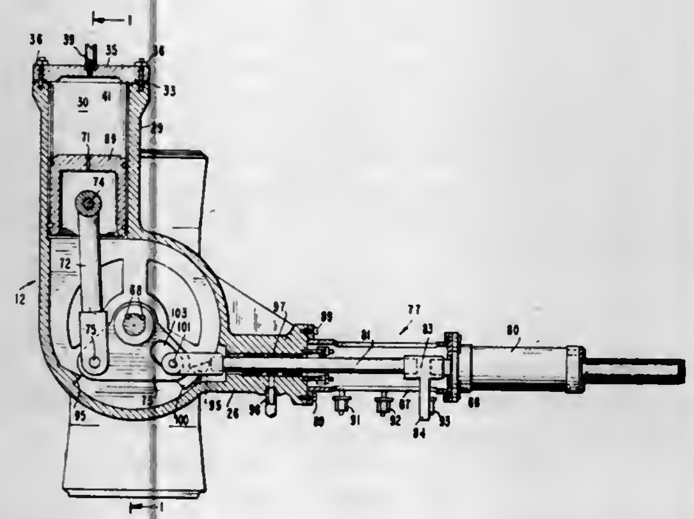
Yngve R. Anderson, Streetsville, Canada, assignor to Canadian Structural Clay Association, Willowdale, Canada
Division of Ser. No. 109,760, Jan. 26, 1971, abandoned. This application Dec. 22, 1972, Ser. No. 317,598
Int. Cl. B22d *19/00, 33/00*
U.S. Cl. 249—83 **3 Claims**

1. Apparatus for facilitating the prefabrication of ceramic panels comprising a travelling prefabricating table and means in association with said table for transferring said panels from said travelling table to an adjacent panel-receiving station for rotation thereat into the vertical, a brick panel assembly frame, brick-spacing means movable between substantially coplanar horizontal panel-supporting surface-areas upon said table and said receiving station means in association with said frame for spacing apart bricks being assembled therein by the desired width of mortar-joints between said bricks, said brick-spacing means comprising essentially a flexible sheet on which said bricks are assembled between mortar-joint defining and brick positioning means upon an exposed surface of said sheet, and which includes in combination means for conveying finished self-supporting panels to a storage and curing area in vertical position in the plane thereof, and means for stripping said brick spacing means from adherence to said panels while said panels are in conveying motion.



3,892,381
FAIL-SAFE VALVE

Norman F. Prescott, Wenham, and Alexander J. McKay, Lynn, both of Mass., assignors to Atwood & Morrill Co., Salem, Mass.
Filed Oct. 23, 1973, Ser. No. 408,333
Int. Cl. F16k *31/383*
U.S. Cl. 251—26 **9 Claims**



1. A valve including:

a housing means having a flow passage for a fluid medium under pressure with an inlet and an outlet, said housing further having a cylinder therein, said cylinder having an inside end and an outside end, said outside end having a discharge port therein;

a piston slideably mounted within said cylinder, said piston having an orifice through it;

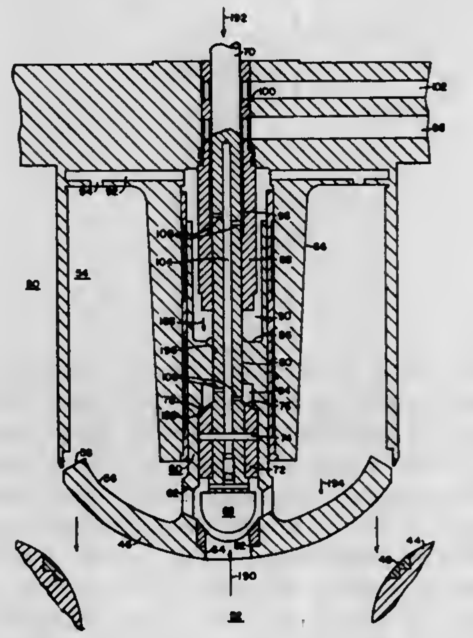
stop means located in said flow passage for opening and closing said flow passage, said stop means having an opening through it, said stop means and said housing means having a conduit means connecting said opening in said stop means with the inside end of said cylinder;

actuating means mounted in said housing means and connected to said stop means and piston for actuating said stop means when the piston is moved toward the outside end of said cylinder;

means for opening and closing said discharge port whereby the pressure of the fluid medium moves the piston when the pressure in the outside end of the cylinder is released through the discharge port.

3,892,382
HOLDING ARRANGEMENT FOR A MAIN VALVE PLUG AND A PILOT VALVE PLUG

Thomas L. Dresner, Prospect Park, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed June 22, 1973, Ser. No. 372,720
Int. Cl. F16k *15/02*
U.S. Cl. 251—28 **9 Claims**



1. A valve comprising:

a body member having an inlet port and an outlet port therein;

a flexible main plug movable from an open to a seated position within said body member;

a pilot plug movably disposed within said main plug; and,

pressure responsive means for holding said main plug to said pilot plug, said pressure responsive means for holding said main plug to said pilot plug comprises:

a first chamber disposed between said pilot plug and said main plug;

a high pressure region disposed within said body member, said main plug being surrounded by said high pressure region;

a low pressure region disposed within said body member;

first communication means connecting said first chamber to said lower pressure region, said first communication means providing a low pressure within said first chamber, the high pressure in said high pressure region and the low pressure within said first chamber producing a pressure differential, said pressure differential exerting a force on said main plug to hold said main plug to said pilot plug.

3,892,383
VALVE STEM WITH ROTATABLE HEAD FOR COMPRESSION FAUCET

Paul R. Hesse, St. Paul, Minn., assignor to Union Brass & Metal Manufacturing Co., St. Paul, Minn.
Continuation-in-part of Ser. No. 402,766, Oct. 2, 1973, abandoned, which is a continuation of Ser. No. 240,257, March 30, 1972, abandoned. This application July 15, 1974, Ser. No. 488,788
Int. Cl.^{2} F16K *25/00*
U.S. Cl. 251—88 **2 Claims**

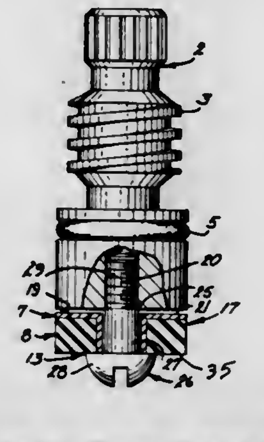
2. In a valve of the type having a valve stem mounted in a screw for moving against a valve seat in a common axis, to throttle flow at the valve seat, a valve head comprising the following mechanical elements:

a flat circular face on the end of the valve stem, machined normal to the valve stem axis;

a cylindrical axle centrally fixed in the flat circular face and extending on the axis from the flat circular face;

a washer situated on the flat circular face, the axle extending completely through the washer, the washer having a plastic face toward the flat circular face of the valve stem and a rubber face toward the valve seat, wherein the plastic and the rubber are selected to provide that the coefficient of friction of the flat circular face against the plastic face is less than the coefficient of friction of the rubber face against the valve seat, the washer being assembled from

a plastic flanged bushing having a flat circular flange at one end of the bushing, the flange being equal in diameter to the flat circular face of the valve stem, and



a rubber ring of external diameter substantially equal to the external diameter of the flat circular flange and of internal diameter slightly smaller than the external diameter of the bushing, the rubber ring having plane parallel faces, wherein the washer is assembled by insertion of the free end of the plastic bushing into the central aperture of the rubber ring, the rubber ring clutching the plastic bushing by elastic contraction;

a keeper, fixed to the free end of the axle, to retain the washer on the axle,

wherein the diameter of the axle is smaller than the internal diameter of the washer and the length of the axle is greater than the height of the washer, thereby providing for unimpeded rotatability of the washer on the axle and also affording a space between the keeper, the axle and the valve stem on the one hand and the washer on the other hand.

3,892,384
DOUBLE SEATED CAGE VALVE WITH FLEXIBLE PLUG SEAT

Edward B. Myers, Oreland, Pa., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Apr. 12, 1974, Ser. No. 460,456
Int. Cl. F16k *1/44*
U.S. Cl. 251—282 **3 Claims**

1. A double seated cage valve for controlling the flow of fluids, said valve comprising

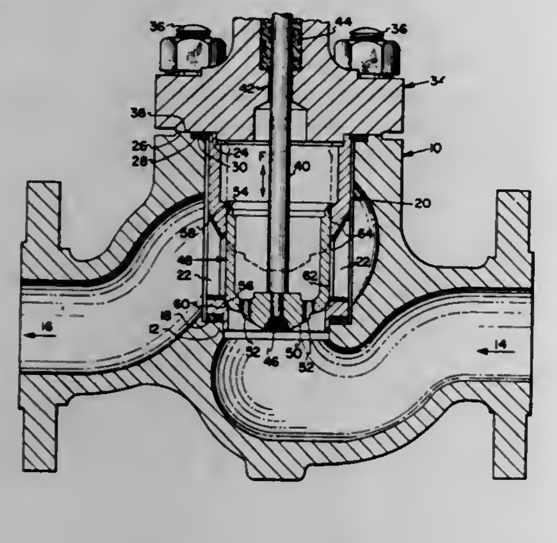
a unitary cage member and a complementary hollow plug member formed of one piece construction,

said cage member having an upper and a lower rigid seat, said plug member having a first seat means arranged for sealing engagement with said upper seat of said cage member and a second seat means arranged for sealing engagement with said lower seat of said cage member,

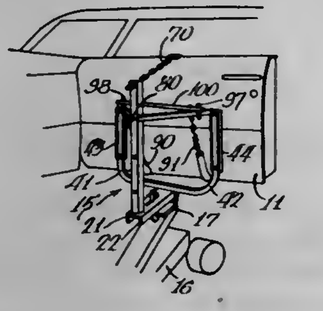
said second seat means of said plug member being of rigid construction,

said first seat means of said plug member being of a resiliently deformable frusto-conical construction and being of a thinner construction than the rest of the plug,

said first and second seat means of said plug member being so spaced that as said plug is moved in a closing direction with respect to said cage member, said first seat means of said plug member engages said upper seat of said cage member before said second seat means of said plug member engages said lower seat of said cage member, whereby further movement of said plug member in said closing direction deforms said frusto-conical first seat means into intimate engagement with the associated upper seat and moves said second seat means into sealing engagement with said lower seat.

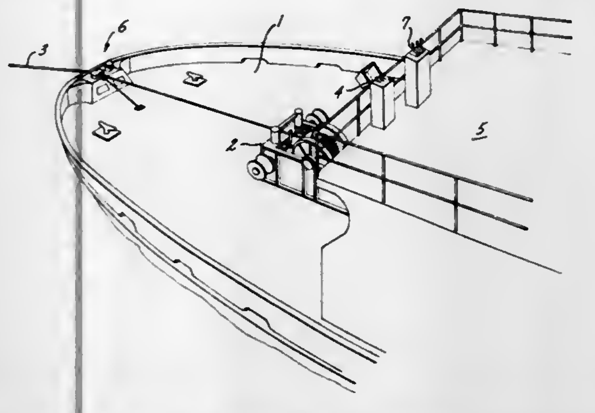


3,892,385
AUTOMOTIVE TOOL
Willard L. Andrist, and Richard T. Anderson, both of Owatonna, Minn., assignors to Owatonna Tool Company, Owatonna, Minn.
Filed May 17, 1974, Ser. No. 470,987
Int. Cl. B66f *7/10*
U.S. Cl. 254—133 R **2 Claims**



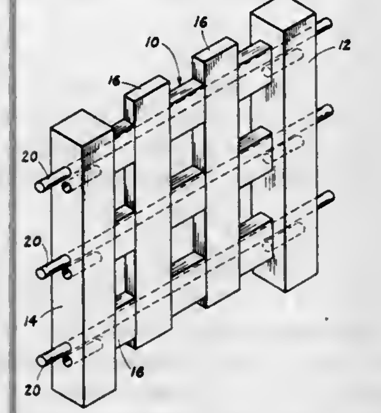
1. An automotive tool for holding automobile bumpers, doors and the like for removal from the automobile comprising, a frame having a base supportable on the lift plate of a service floor jack, an upwardly open generally U-shape first frame section extending upwardly from the base and having a pair of spaced vertically-extending legs, a cushioning abutment fixed to the front of each leg, a column extending up from the base and located rearwardly of said first frame section, a pair of members connected between the upper ends of said legs and said column and defining an acute angle therebetween, a first adjustable connector fastened to said column, said first connector being extendable to the top of a door or a bumper, a pair of pins extending upwardly one from each of said pair of members at a distance behind said first frame section, and second and third adjustable connectors held in position by said pins and extendable downwardly at an angle to the bottom of a bumper or a door.

3,892,386
MARINE TOWING LINE GUIDE
Elmer R. Hogan, Bellevue, Wash., assignor to Smith-Berger Manufacturing Corporation, Seattle, Wash.
Filed Nov. 5, 1973, Ser. No. 412,745
Int. Cl. B66d *1/36*
U.S. Cl. 254—190 R **20 Claims**



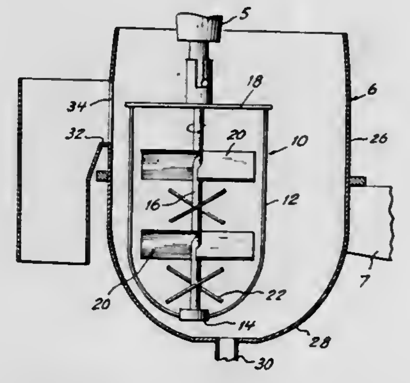
18. A line guide for a towing line extending over the stern of a towboat comprising a mounting located at the stern of the towboat, an upright guidepost carried by said mounting and including a roller rotatable about an upright axis forming an upright guide surface engageable by movement transversely of its length of a stretch of towing line extending lengthwise of a towboat aft from a location forward of said mounting toward the stern of the towboat and a nonrotative cap carried by said guidepost above said roller and having a portion projecting laterally beyond the periphery of said roller forming laterally unobstructed shoulder means constituting abutment means engageable by the line during its upward movement alongside said guidepost for deterring upward movement of the line beyond said abutment means without preventing such upward movement of the line past said abutment means by application of an excessive upward force on the line transversely of its length.

3,892,387
FENCE STRUCTURE
William C. Mann, P.O. Box 263, Broken Arrow, Okla. 74012
Filed Dec. 29, 1972, Ser. No. 319,216
Int. Cl. E04h *17/14*
U.S. Cl. 256—24 **1 Claim**



1. A fence structure comprising a plurality of substantially identical fence sections secured in end to end relation, each fence section comprising a plurality of picket members interposed between a pair of spaced post members, each picket member being provided with a plurality of transversely extending bores, each post member being provided with a first plurality of transversely extending bores, a plurality of connecting rod means extending through the transversely extending bores in the picket members and through the first plurality of bores in said post members and beyond said post members for engagement with the post members of the adjacent fence sections, each post member being provided with a second plurality of transversely extending bores offset from said first plurality of bores of said fence section for receiving the ends of connecting rod means from an adjacent fence section.

3,892,388
AGITATING WHIPPER AND METHOD
James J. Wass, Carmel, and Joseph G. Meehan, Hopewell Junction, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.
Filed Mar. 5, 1973, Ser. No. 337,808
Int. Cl. B01f *7/30*
U.S. Cl. 259—5 **16 Claims**

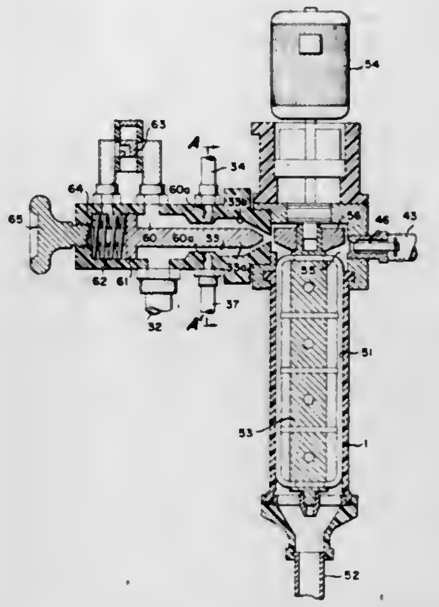


1. An agitator whipper comprising a bowl and a tine whipper assembly mounted for planetary movement in said bowl, said assembly comprising a plurality of tines mounted upon a common shaft and baffle means also mounted on said shaft within the perimeter defined by said tines, said baffle means being of sufficient radial width to intercept, obstruct and deflect liquid ascent within said assembly, said baffle means comprising a plurality of baffles each of whose planes are poised at an acute angle with respect to the shaft, and means for admitting a whippable composition intermediate the bowl wall and said assembly at a location beneath said assembly whereby said baffle means restrict axial flow within said assembly.

3,892,389
DEVICE AND METHOD FOR INJECTING LIQUIDS INTO A MIXING HEAD
Andre Contastin, Severac Gare, France, assignor to N. V. Bekaert S.A., Zwevegem, Belgium
Filed Nov. 29, 1972, Ser. No. 310,562
Int. Cl. F16k *19/00*
U.S. Cl. 259—8 **7 Claims**

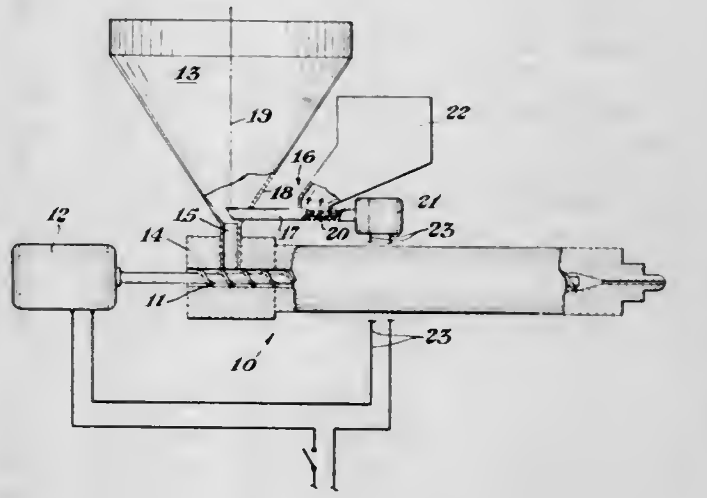
1. An apparatus for introducing and mixing liquids of various viscosities comprising:

a. a mixing head having a mixing chamber,
b. mixing means in said mixing chamber,
c. a first inlet means for said mixing chamber for injecting a high viscosity first liquid into said mixing chamber on demand including first controlled inlet valve means,
d. a second inlet means for said mixing chamber for injecting an atomized low viscosity second liquid into said mixing chamber on demand,
e. said second inlet means including an atomizing chamber immediately adjacent said mixing chamber and connected directly thereto by an inlet orifice in the wall of said mixing chamber,
f. second controlled inlet valve means in said atomizing chamber for closing said inlet orifice,
g. a plurality of inlet orifices radially disposed in the wall of said atomizing chamber selectively controllable for injecting said second liquid into said atomizing chamber on demand including a controlled valve member for each of said inlet orifices,



h. gas inlet means in the wall of said atomizing chamber for injecting compressed gas into said atomizing chamber for atomizing said second liquid in said atomizing chamber.

3,892,390
METHOD AND MEANS FOR PUTTING ADDITIVE IN PLASTIC AND OTHER MATERIALS
Thomas J. Eauclaire, 4181 Richmark Ln., Bay City, Mich. 48706
Division of Ser. No. 353,819, April 23, 1973. This application Aug. 15, 1974, Ser. No. 497,565
Int. Cl. B29b *1/06*
U.S. Cl. 259—192 **3 Claims**



1. The method of homogenously mixing an additive with a granular material during the screw-extrusion thereof which comprises: by means of an auger feed tube having a hooded terminus metering the additive material horizontally into the feed hopper of the screw extruder above and adjacent the screw and delivering the additive from the hooded terminus of the tube at a point within about one-twelfth of the diameter distance from the vertical axis of the hopper, said diameter being of the hopper section at the auger feed tube level; and controlling the auger and the screw with a common switch whereby the operations thereof are coordinated.

3,892,391
COOLING APPARATUS FOR STEEL INGOTS OR BLOOMS USING HIGH-SPEED JET STREAMS

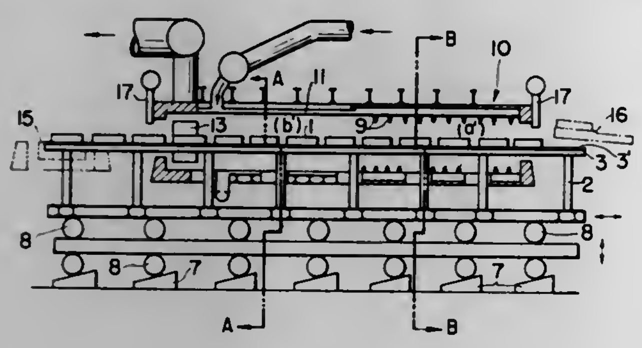
Ryuzo Okuno, Kobe, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Dec. 6, 1972, Ser. No. 312,457

Claims priority, application Japan, Dec. 6, 1971, 46-98908; Feb. 29, 1972, 47-21383

Int. Cl. C21d *1/00*

U.S. Cl. 266—2 A **14 Claims**



1. A cooling apparatus comprising in line, a radiation cooling chamber; a high-speed jet chamber in which substances to be treated, such as steel ingots or blooms, are subjected to contact with high-speed jet streams of a cold fluid gushing out from a large number of nozzles located therein, thereby carrying out a heat transfer between the substances and the cold fluid to cool the former, the substances being conveyed in the apparatus during the course of the cooling; a cooling tank in which the substances carried out from the said high-speed jet chamber are rapidly cooled nearly to normal temperature by increasing the flowing speed of water or a cold liquid in the tank; and a carriage which operates to convey the said substances from the said high-speed jet chamber into the said cooling tank.

3,892,392
EVAPORATIVE COOLING APPARATUS FOR COOLING STAVE

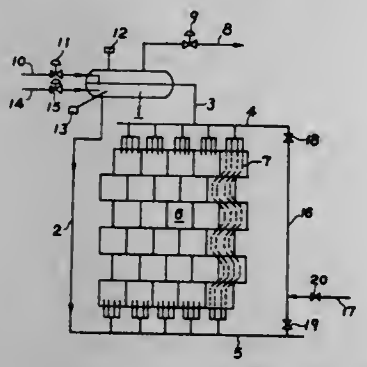
Takeo Yamada; Kazuo Kunioka; Shunichi Sugiyama, and Toyokazu Teramoto, all of Yokohama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 14, 1974, Ser. No. 523,825

Claims priority, application Japan, Nov. 19, 1973, 48-129146

Int. Cl.^{2} C21B *7/10*

U.S. Cl. 266—32 **7 Claims**



1. In an evaporative cooling apparatus for a cooling stave including a steam separator (1), a downcomer (2) coupled to said steam separator (1), a cooling stave (6) coupled to said downcomer and a riser (3) coupling said cooling stave (6) to said steam separator (1), the improvement comprising:

heating means (14, 15) for maintaining the temperature of water in said steam separator (1) at substantially the boiling point thereof,

circulation activating pipe means (16) in fluid communication with said cooling stave (6) for imparting a circulating force to cooling water in said cooling stave (6), and

steam feeding means (17) connected to feed steam to said circulation activating pipe means (16).

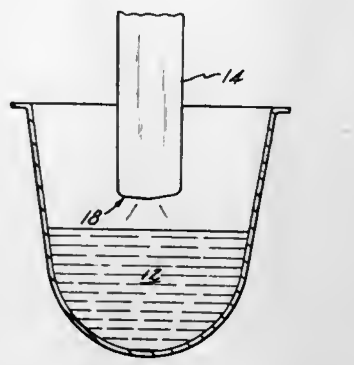
3,892,393
LANCE TIP

John T. Carroll, New Boston, and Nathan G. Harris, Wyandotte, both of Mich., assignors to John T. Carroll, New Boston, Mich.

Filed Feb. 7, 1973, Ser. No. 330,289

Int. Cl. C21c *7/00*

U.S. Cl. 266—34 L **2 Claims**



1. In an oxygen lance of the type comprising an oxygen delivery tube having fluid circulation means circumferencially disposed therearound, a lance tip therefor, comprising in combination:

Central means for deflecting the oxygen issuing from said lance, said means for deflecting the oxygen being affixed to said oxygen delivery tube, said means for deflecting the oxygen having a plurality of means for absorbing heat therefrom disposed about the periphery thereof and being formed therewith;

at least one rib for absorbing the heat generated about the end of said lance, said rib being disposed within and extending from the outer wall of said fluid circulation means to said oxygen delivery tube; and

said means for deflecting the oxygen comprises a conical member and the area proximate the apex of the conical member is formed from steel and the area proximate the base of the conical member is formed from copper.

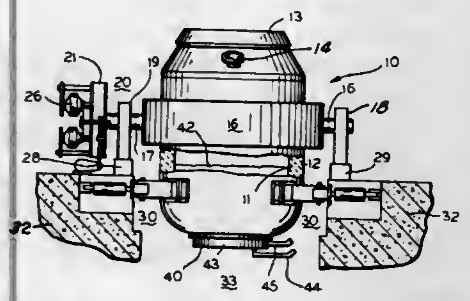
3,892,394
METALLURGICAL VESSEL HAVING RESTRAINING MEANS

Richard P. Krause, and Harry T. Montgomery, both of New Castle, Pa., assignors to Pennsylvania Engineering Corporation, Pittsburgh, Pa.

Filed Aug. 6, 1973, Ser. No. 385,993

Int. Cl. C21c *5/46*

U.S. Cl. 266—36 P **23 Claims**



1. A metallurgical vessel,

support means for said vessel,

pivot means coupled to said vessel for pivoting the same about a generally horizontal axis,

means for delivering at least one process gas to said vessel, and

a plurality of restraint means including a first portion mounted on said vessel and a second portion relatively movable into and out of engagement with said first portion for stabilizing the vessel against rocking motion when said portions are in engagement and allowing said vessel to pivot when said portions are out of engagement, said second restraint portion including at least one arm means pivotally mounted adjacent said vessel for pivotal movement into and out of engagement with said first portion of said restraint means.

3,892,395
STOPPER RODS

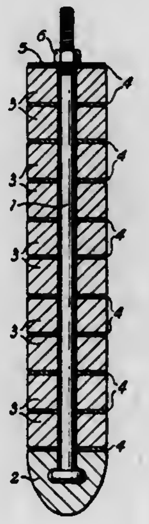
Ian James Hazlehurst, Guelph, Canada, assignor to Foseco International Limited, Birmingham, England

Filed Sept. 26, 1973, Ser. No. 400,737

Claims priority, application United Kingdom, Sept. 29, 1972, 44887/72; May 30, 1972, 25862/72

Int. Cl. F27d *3/15*

U.S. Cl. 266—38 **4 Claims**



1. A stopper rod formed of a central metal bar threaded at one end and carrying at its other end a head of refractory material, a plurality of sleeves of refractory material, and a plurality of preformed rings of a fibre-containing refractory material filling the interstices between the head and the adjacent sleeve and between each of the sleeves, the assembly of head, sleeves and rings being held axially compressed by a nut engaged on the threaded end of the bar with a compression spring interposed between the nut and the adjacent sleeve, a heat-reflective shield surrounding said spring, the space between said shield and said plate being filled with a heat insulating material selected from the group consisting of particulate refractory material, fibrous refractory material and mixtures thereof.

3,892,396
LINING FOR HIGH TEMPERATURE FURNACES

George J. Monaghan, Lewiston, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.

Filed Dec. 26, 1973, Ser. No. 428,649

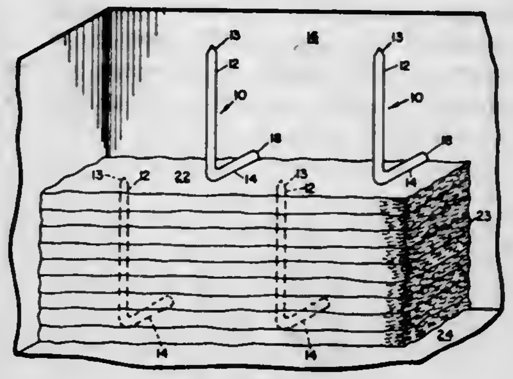
Int. Cl. F27d *1/16*

U.S. Cl. 266—43 **8 Claims**

1. A lining for the interior surface of a furnace, comprising:

a. at least one metallic hanger for attachment to the interior surface of the furnace, said hanger having a first portion attached to said surface and a second portion projecting within said furnace and disposed in substantially parallel relationship to said surface; and

b. at least one insulation panel comprised of flexible fibrous refractory material, said panel being impaled over and completely penetrated by said second portion of said hanger, one longitudinal edge of said panel being held by said hanger in firm longitudinal contact with the interior surface of said furnace to form the lining.



3,892,397
TELESCOPIC SUSPENSION UNITS

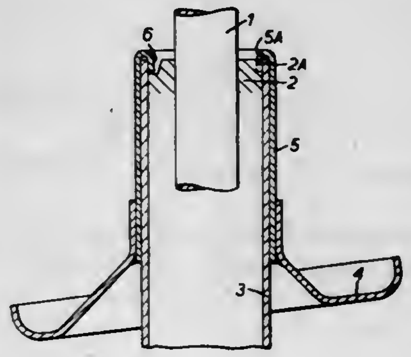
Lawrence George Nicholls, Birmingham, England, assignor to Girling Limited, Birmingham, England

Filed Dec. 27, 1973, Ser. No. 428,853

Claims priority, application United Kingdom, Jan. 4, 1973, 644/73

Int. Cl. B60q *13/00*

U.S. Cl. 267—8 R **5 Claims**



1. A monotube suspension unit comprising a tube and an external flange member surrounding said tube for supporting one end of an external coil compression spring, and means for detachably mounting said flange member to said tube intermediate the ends of the working space thereof comprising stop means carried by said flange member in axially spaced relationship thereto, abutment means carried by said tube beyond one end of said working space and engageable by said stop means, said stop means and said abutment means being adapted to be held in engagement with each other to retain said flange member on said tube in its position of use by the force of the spring which said flange member supports.

3,892,398
COMPRESSION SPRING

Gerald Leonard Marsh, Indianapolis, Ind., assignor to The Firestone Tire & Rubber Company, Akron, Ohio

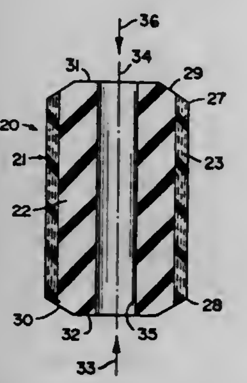
Division of Ser. No. 262,819, June 14, 1972, abandoned. This application Feb. 1, 1974, Ser. No. 438,804

Int. Cl.^{2} F16F *1/36*

U.S. Cl. 267—153 **5 Claims**

1. A compression spring comprising a hollow body of elastomeric material having a height to width ratio of approximately two to one in unstressed condition, said body having a substantially cylindrical configuration throughout the major portion of its height, and having at at least one end a shaped portion of diminishing cross-section and having an outer surface inclined at an angle to the major axis of said body, reinforcing means extending axially of said body at least coextensive in height with the height of said cylindrical configuration

and comprising at least two layers of elastomer coated cords integrally bonded layer to layer and to said body, the cords of each layer being parallel to one another and extending at an angle to the major axis of said body with the angular relationship of the cords of one layer being opposite to that of the cords in the other layer whereby in response to compressive force exerted in a direction parallel to the major axis of said body, the elastomeric material of said shaped portion takes up the initial compressive force as the height of said body is decreased and said reinforcing means having such a bonded relationship with said body as to resist radial expansion to such an extent that the major portion of said body retains its substantially cylindrical configuration up to loads of at least 70,000 pounds.



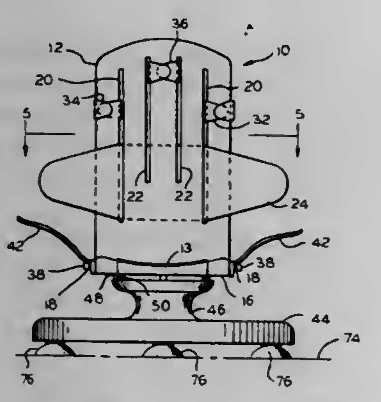
3,892,399
APPARATUS FOR IMMOBILIZING INFANTS AND SMALL CHILDREN

Edwin Cabansag, 3937 Johnson Ln., Western Springs, Ill. 60558

Continuation-in-part of Ser. No. 401,364, Sept. 27, 1973, abandoned. This application Jan. 17, 1974, Ser. No. 434,351

Int. Cl. A61g *15/00*

U.S. Cl. 269—328 **17 Claims**



1. An apparatus for use in taking X-ray exposures of a subject including:
a substantially vertical radiotransparent member;
a substantially horizontal platform rigidly affixed to the lower end of said vertical member to form a seat adapted to support said subject;
a base adapted to be fixed to a support means against relative movement therewith;
bearing means disposed between said platform and said base for rotatably mounting said platform and said seat on said base about a vertical axis;
radiotransparent restraining means slidably and operatively connected to said vertical member and variably positionable in a vertical direction;
said restraining means adapted to extend around a portion or portions of the subject's body to secure said portion or portions of said body in said seat against movement;
a second substantially vertical radiotransparent member disposed normal to said first vertical member and to said platform;
first and second X-ray film support means mounted rearward of said first and second vertical members respectively relative to said seat;
elongated slot means disposed in said second vertical member;
said slot means adapted to receive said radiotransparent restraining members for vertical movement therein; and said restraining means when in said second vertical member adapted to extend around and secure the upper portions of said subject's body to said second vertical member when said subject is supported by said seat in a position 90° from the position in which said subject is supported by said first vertical member.

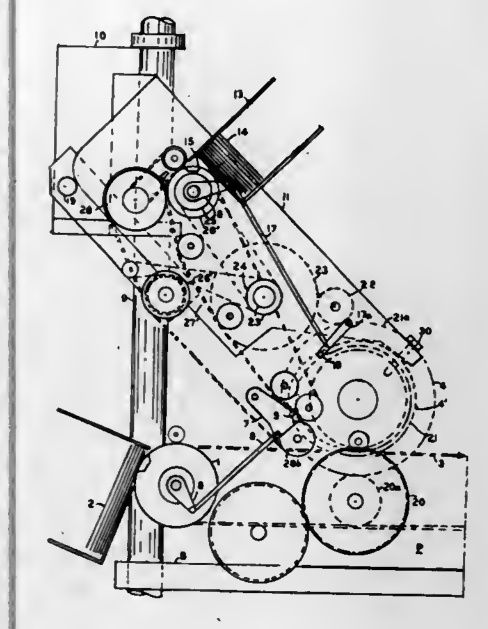
3,892,400
PAPER FEEDER MEANS FOR PRINTING PRESS

Henry Harrison, Locust Valley, N.Y., assignor to Halm Instrument Co., Inc., Glen Head, N.Y.

Filed Apr. 30, 1973, Ser. No. 355,793

Int. Cl. B65h *3/44*

U.S. Cl. 271—9 **2 Claims**



1. In a printing press having a first roller type paper feeder for first size papers, and first drive means to drive said first paper feeder:
a second roller type paper feeder for second size papers,
a vertical post mounted on said press,
first mounting means pivotally mounted on said post for horizontal rotation,
second mounting means pivotally mounted on said first mounting means for vertical rotation,
said second paper feeder being mounted on said second mounting means,
wherein said second mounting means has second drive means to drive said second paper feeder so that when second mounting means is rotated into operative position, said second drive means engages said first drive means.

3,892,401
JUMPING PIT

Bill W. Sorenson, Jefferson, Iowa, assignor to AMF Incorporated, White Plains, N.Y.

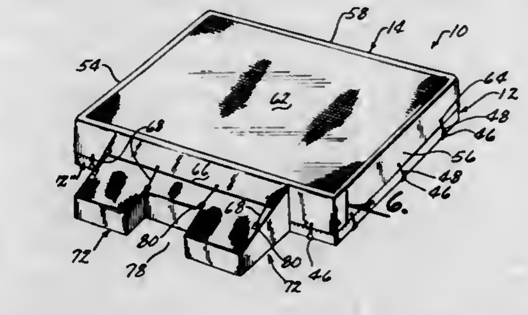
Filed Aug. 6, 1970, Ser. No. 61,753

Int. Cl. A63b *69/00;* **A47c** *27/00*

U.S. Cl. 272—59 R **1 Claim**

1. A jumping pit, comprising,

a plurality of resilient modules arranged in a side-by-side relationship,
each of said modules comprising a resilient body member and a module cover enclosing the same, each of said body members comprising a lower rectangular foam section and an upper rectangular foam section positioned thereon, said lower section having a plurality of vertically disposed openings formed therein and extending completely therethrough,
said upper rectangular foam section being positioned immediately adjacent said lower rectangular foam section,
and a cover means at least partially enclosing said plurality of modules and being secured thereto to prevent the separation of said modules with respect to each other,
a resilient auxiliary module secured to said plurality of modules and extends from one side thereof, said auxiliary module having a length less than the distance between the bar supports of a pole vault apparatus, said auxiliary module having a recessed area at its center length to permit said auxiliary module to partially extend around the vaulting box, said auxiliary module having a tapered upper end portion which extends downwardly and outwardly from the plurality of modules; and a flap member extending from said cover means partially over said upper end portion of said auxiliary module, said flap member being normally secured to said auxiliary module, said flap member also being able to be positioned in a vertically disposed condition adjacent said one side of said plurality of modules when the auxiliary module is not secured to said plurality of modules when the pit is being used for high jump events,
and a plurality of resilient members detachably securing said flap member to said auxiliary module when the said auxiliary module is positioned at said one side of said plurality of modules.



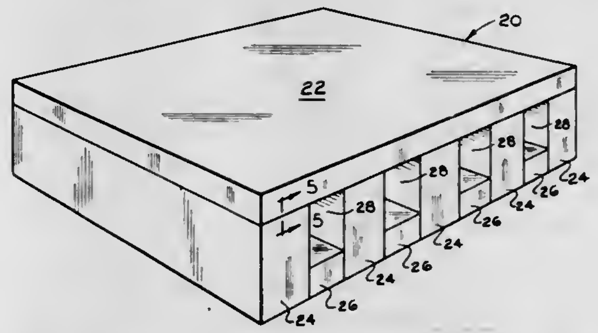
3,892,402
LANDING PAD

James L. Montour, 5520 Percheron St., Richmond, Va., and Wilfred N. Montour, 610 Dartmoor St., Ann Arbor, Mich. 48103

Filed Sept. 7, 1973, Ser. No. 395,237

Int. Cl. A63b *5/18*

U.S. Cl. 272—59 C **9 Claims**



1. A landing pad for athletic events comprising a flexible cover defining when fully distended a moisture impervious enclosure having top, bottom and side walls, and a plurality of separate blocks of resilient foamed material positioned within said enclosure to fully distend the cover, said blocks including a top block dimensioned so that it extends under the full surface of the top wall, a plurality of support blocks positioned in parallel spaced apart relation on said bottom wall and upon which said top block is supported, and a plurality of spacer blocks positioned on said bottom wall between said support blocks for maintaining said spaced apart relation, each spacer block extending between a pair of adjacent parallel support blocks and having less elevation than the adjacent parallel support blocks so that said plurality of separate blocks define between them a plurality of parallel air spaces within said cover.

8. A landing pad for athletic events comprising a flexible cover defining when fully distended an enclosure having top, bottom and side walls, and a plurality of separate blocks of resilient foamed material positioned within said enclosure to fully distend the cover, said blocks including a top block dimensioned so that it extends under the full surface of the top wall, a plurality of support blocks in spaced apart relation upon which said top block is supported, and a plurality of spacer blocks between said support blocks for maintaining said spaced apart relation, said blocks defining between them air spaces within said cover, each of said blocks being enclosed in a thin wrapping material having a relatively low coefficient of friction to facilitate recoil of the blocks so that after a load has been imposed they can readily recover their original positions, said thin wrapping material being polyethylene sheet material.

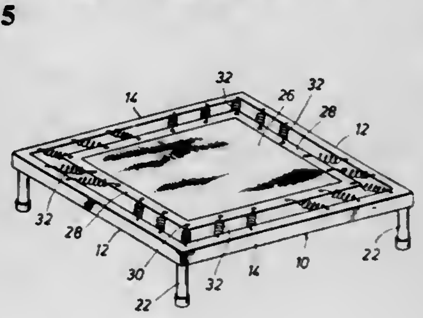
3,892,403
EXERCISE APPARATUS

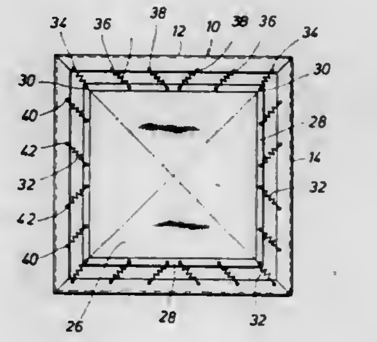
Victor J. Green, 8121 Barkley Dr., Houston, Tex. 77017

Continuation of Ser. No. 9,643, Feb. 9, 1970, abandoned. This application Nov. 23, 1971, Ser. No. 201,325

Int. Cl. A63b *5/08*

U.S. Cl. 272—65 **6 Claims**





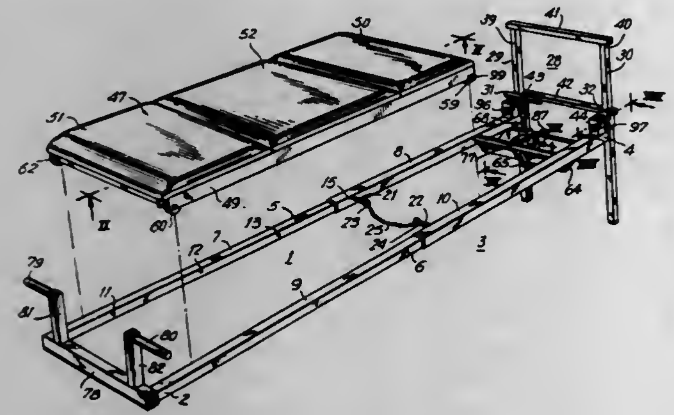
1. Exercising apparatus comprising:
a rectangular frame, said frame formed of opposite side frame portions and opposite end frame portions,
a rectangular bed formed of flexible fabric disposed in said frame having side margins and end margins spaced inwardly from the side frame and end frame portions, respectively,
means for supporting said frame in a substantially horizontal plane, and
coil springs connected at their inner ends to be margins of said bed and connected at their outer ends to said frame, all said springs being connected so that the springs to the right of the center of said side and end frame are connected to said frame at a point to the right of an imagnary line perpendicular to said frame through the point where the spring is connected to said bed and the springs to the left of center of said side and end frame are connected to said frame at a point to the left of an imaginary line

perpendicular to said frame through a point where the spring is connected to said bed.

3,892,404

EXERCISE DEVICE

Theodore Martucci, 44 Grace Ln., Levittown, N.Y. 11756
Filed Oct. 30, 1974, Ser. No. 519,112
Int. Cl. A63b *23/00*
U.S. Cl. 272—79 R **6 Claims**



1. An exercise device, comprising

adjustable variable length track means having one end supportable on a supporting surface and an opposite other end;

adjustable variable track elevating means foldably affixed to the other end of the track means supporting said other end of said track means at a selected distance above the supporting surface thereby supporting the track means in angular relation with the supporting surface;

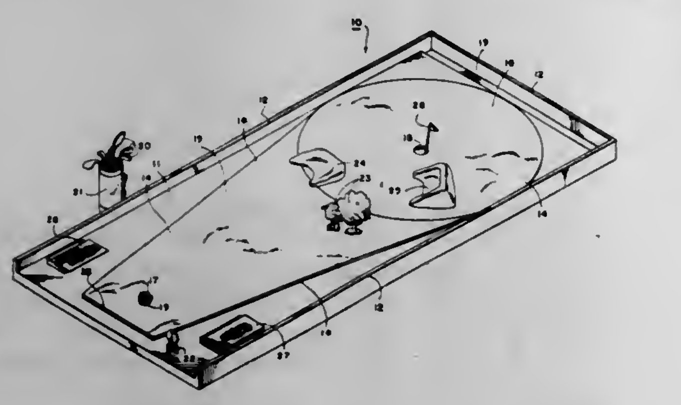
carriage means movably mounted on the track means for supporting a user in generally seated position; and

foot resting means mounted on and extending between the track means in the area of the other end thereof whereby a user seated on the carriage means presses his feet against the foot resting means and propels himself against his own weight along the track means via the carriage means and by use of every major muscle group in his body thereby exercising such muscles.

3,892,405

GOLF GAME

Manuel C. Trevino, 4173 Beechwood Ln., Dallas, Tex. 75220
Filed Feb. 5, 1973, Ser. No. 329,713
Int. Cl. A63 *7/06*
U.S. Cl. 273—87.2 **3 Claims**



1. A golf game, comprising in combination:

a. a hitting board having oppositely disposed ends and a shaped playing surface located thereon longitudinally extending between said ends,

b. said playing surface having a portion adjacent one of said ends defining a driver line and a recessed hole longitudinally spaced from said driver line toward said other end defining a cup; said playing surface additionally having indicia means marked thereon dividing said playing surface into a first set of longitudinally extending areas and a first set of laterally extending areas transversely intersecting said first set of longitudinally extending areas, respective ones of said first set of longitudinally extending areas serving to indicate discrete at rest lateral positions of an object being driven across said playing surface, respective ones of said first set of laterally extending areas serving to indicate discrete at rest distance positions from said driver line of an object being driven across said playing surface,

c. a plurality of cards, each card having a graphic illustration representing the layout of a different hole of a golf course, said graphic illustration including a portion defining a tee and an area longitudinally spaced from said tee defining a cup; each card additionally having indicia means thereon dividing said card into a second set of longitudinally extending areas aand a second set of laterally extending areas transversely intersecting said second set of longitudinally extending areas, respective ones of said second set of longitudinally extending areas serving to indicate discrete lateral positions of an object on said card, respective ones of said second set of laterally extending areas serving to indicate discrete distances from said tee toward said cup on said card,

d. said first and second sets of longitudinally extending areas of said playing surface and said card both having lateral position identifying indicia, the lateral position identifying indicia of the playing surface corresponding to, and being the same as, the lateral position identifying indicia of the card; said first and second sets of laterally extending areas of said playing surface and said card both having distance indicating indicia respectively indicating distances from said driver line and from said tee, the distance indicating indicia of said card indicating distances in excess of that of the distance indicating indicia of said playing surface, whereby each of said cards can be used to continuously plot the movement of a point on said card by distance and lateral position, corresponding to the movement of an object successively driven from said driver line across said playing surface toward said recessed hole,

e. at least one miniature golf club; and

f. object means simulating a miniature golf ball adapted to be driven by said miniature golf club across said playing surface.

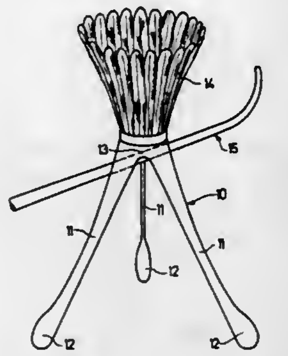
3,892,406

PROJECTOR AND PROJECTING MEMBER

Jurgen Georg Baier, Elisabethstr. 3/IV, 8 Munich 40, Germany

Filed Mar. 21, 1974, Ser. No. 453,291
Claims priority, application Germany, Mar. 28, 1973, 2315548

Int. Cl. A63b *71/00*
U.S. Cl. 273—96 B **36 Claims**

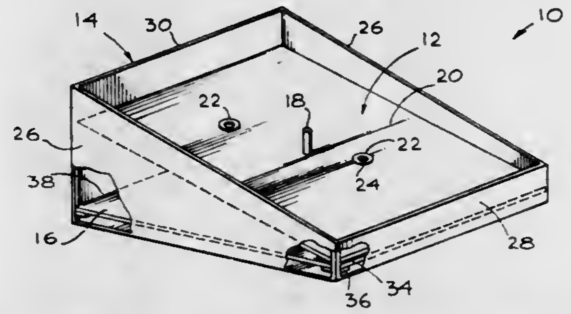


1. A sport and games apparatus comprising a throwing and catching-rod having a handle at one of its ends, and a flying member therefor having a longitudinal axis, said flying member including a heavier end and a lighter end disposed at opposite extremities of said axis, means on said lighter end stabilizing the flight of said member, said heavier end including a plurality of arms which extend out from said lighter end generally in the direction of the longitudinal axis, the said arms opening from said lighter end towards said heavier end of said flying member so that said flying member can ride on said throwing rod with the point of attachment of each of said arms on said lighter end of said flying member in stable equilibrium.

3,892,407

MAGNETIC RING TOSS APPARATUS

Edward Higgins, 155 W. White St., Summit Hill, Pa. 18250
Filed Aug. 5, 1974, Ser. No. 494,848
Int. Cl.^{2} A63B *71/02*
U.S. Cl. 273—100 **3 Claims**



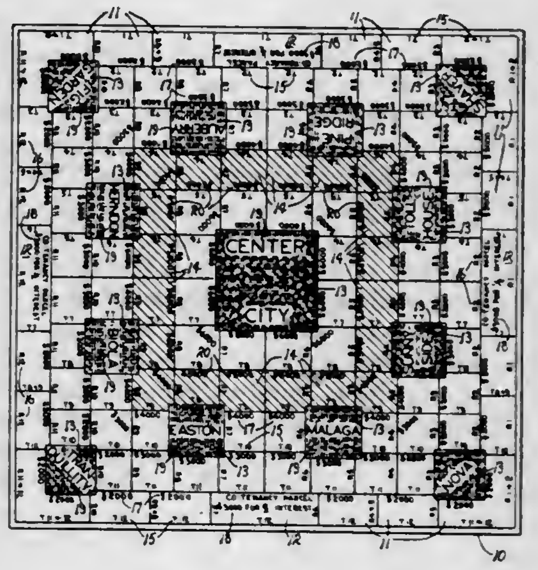
1. An improved game of skill, said game comprising, in combination, an inclined game board, means supporting said game board in said inclined position, a peg secured to and rising above the upper surface of said game board, a magnet disposed below said game board in a predetermined position relative thereto, and a plurality of apertured throwing plates, the apertures thereof being sufficiently large to receive said peg, said apertured plates comprising magnetically attractable material, wherein said means supporting said game board includes a frame and wherein said magnet is secured in said frame, wherein said magnet comprises a generally flat plate extending under at least a portion of said board, wherein said peg is spaced inwardly from the front, rear and sides of said board and wherein said magnet extends only from adjacent one end of said board to adjacent said peg.

3,892,408

EDUCATIONAL GAME

Charles E. Small, 1314 W. San Bruno, Fresno, Calif. 93704; Lawrence E. Small, 3314 Sawtelle, Apt. No. 13, Los Angeles, Calif. 90066; Charles R. Small, 1314 W. San Bruno, Fresno, Calif. 93704, and Harlan F. Ellis, 14730 Ave. 313, Visalia, Calif. 93277
Filed Nov. 12, 1973, Ser. No. 414,929
Int. Cl.^{2} A63F *3/00*
U.S. Cl. 273—135 AB **6 Claims**

4. A game for a plurality of players which simulates the acquisition of property rights in establishing a path comprising a game board having a playing area continuous between opposite side edges thereof simulating a region to be traversed by the path from a side edge to an opposite side edge and being partitioned into a plat of contiguous, intermingled groups of interfitted, polygonal parcels, said parcels being of different sizes and having common boundaries so that the boundaries of some of the parcels extend along the boundaries of more than one contiguous parcel and successively adjacent boundaries on the invididual parcels are angularly related to form corners with the corners of adjacent parcels being contiguous and extended one into the other to provide common angularly related boundaries, the parcels forming a multiplicity of potential paths from each parcel to a plurality of contiguous parcels with such potential paths extending between opposite side edges of the playing area; sets of markers individual to the players adapted individually to occupy the parcels to designate acquisition of rights therein and the markers of each set being visually distinct from the markers of the other sets; and

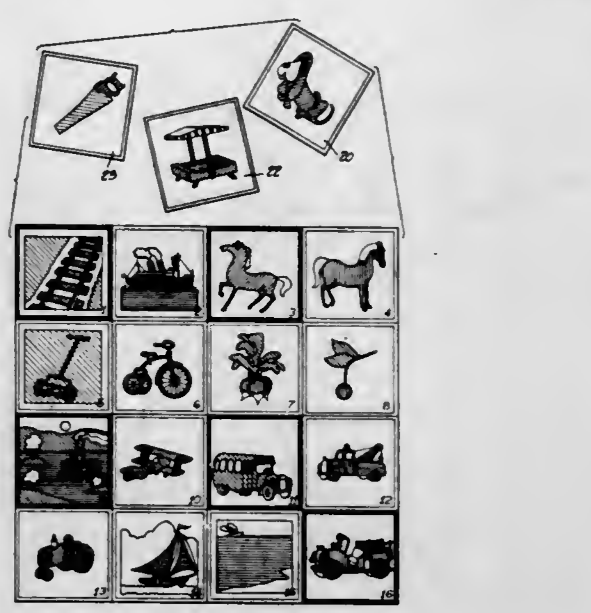


chance means to award the players opportunities to place their respective markers individually on selected parcels.

3,892,409

GAME BASED ON CATEGORIES OF SUBJECT MATTER OF PLAYING TILES

Charles H. Herbert, Jr., 890 E. Marshall Blvd., San Bernardino, Calif. 93404
Continuation-in-part of Ser. No. 338,214, March 5, 1973, abandoned. This application Sept. 23, 1974, Ser. No. 508,227
Int. Cl. A63f *3/00*
U.S. Cl. 273—135 AC **3 Claims**



1. A game comprising the combination of:

a single playing board for use by a plurality of players, said board being marked into a plurality of equal size squares defining parallel rows of squares extending normal to each other, said board having no other indicia for playing the game imprinted thereon;

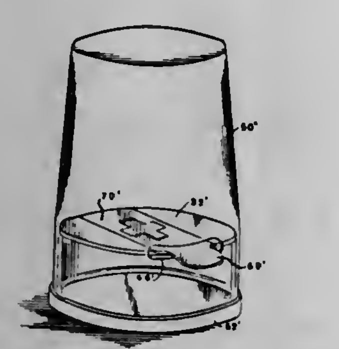
a set of tiles each having an external dimension complementary with a single square of said board and adapted to be placed as a single and complete entity on one of said squares, the number of said tiles being at least equal to the number of squares, each of said tiles having a first and second face, said first face of each tile having a multi-colored element of play thereon, each element of play including a plurality of parts, each part being defined by lines completely enclosing a two dimensional area, each part including indicia enclosed within said two dimensional area, no part of the element of play of one tile being duplicative of any part of the element of play of any other tile, each element of play being complete in and of itself and requiring no other element of play to complete said first face, the elements of play of said tiles being classifiable in an infinte number of categories, the collective elements of play on the tiles being non-duplicates of each other creating the infinite number of categories, each category chosen for play being determined at the optional declaration of a player drawing a tile, said second face of each of said tiles being devoid of any identifying relationship to the subject element of play on the first face, the number of said set of tiles falling within a given player determined category being variable;

said set of tiles at the start of play being played from a position where said first face is face down and the first player selects a tile at random, exposes said elements of play and plays the tile in any square of the playing board he chooses, and each succeeding player in turn selects at random a face down tile exposes the element of play and if that element on the selected tile may be construed to represent a category shown by a tile previously played and declared and there is an open square horizontally or vertically contiguous to the last mentioned tile or tiles the player may place his tile in one of said contiguous horizontal or vertical squares, provided the play made progresses or completes a row of tiles in said same declared category, or in the alternative if the element of play on the tile selected by the succeeding player or players is representative of a new category which may be related to the element of play on a previously played tile it may at the option of the player be declared and played adjacent to the tile in the category previously established on the board so long as the positioning of the tile on the board adjacent to a previously established category establishes a different horizontal or vertical direction from said previously established category.

3,892,410
DICE GAME

John H. Hoetzel, 650 Americana Dr., Apt. 108, Annapolis, Md. 21403

Division of Ser. No. 344,877, March 26, 1973, abandoned.
This application May 24, 1974, Ser. No. 473,213
Int. Cl.² A63F *9/04*
U.S. Cl. 273—145 C **3 Claims**

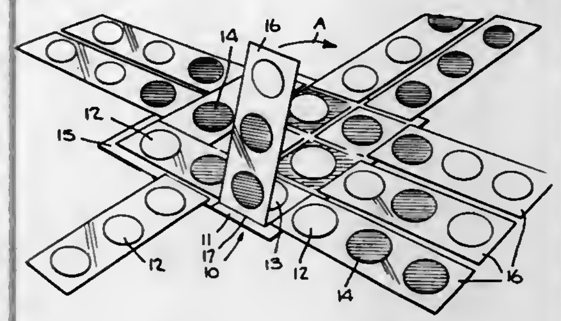


1. A dice agitator comprising a transparent closed hollow container having a base supporting said container in an upright position; a plate-like platform parallel to said base extending between the inner side walls of said container dividing said container into an upper and lower chamber, said platform having an opening therethrough interconnecting said chambers; a reciprocal sliding closure extending through an opening in the side of said container, said closure being in sliding engagement with said platform to form a substantially planar top surface with said platform to close said platform opening when in one reciprocated position and establishing communication through said platform opening between said chambers in a second reciprocated position thereof; and a plurality of dice in said container, each being of a smaller dimension than said platform opening, whereby the dice in the upper compartment may be shaken and read with the reciprocated closure being utilized to provide the desired number of dice in said upper compartment.

3,892,411
GAME BOARD PUZZLE WITH OVERLAPPING TRANSPARENT STRIP MEMBERS

Carl E. High, 110 Sullivan St., New York, N.Y. 10012

Continuation-in-part of Ser. No. 380,467, July 18, 1973, abandoned. This application Sept. 16, 1974, Ser. No. 505,979
Int. Cl.² A63F *9/08*
U.S. Cl. 273—155 **6 Claims**

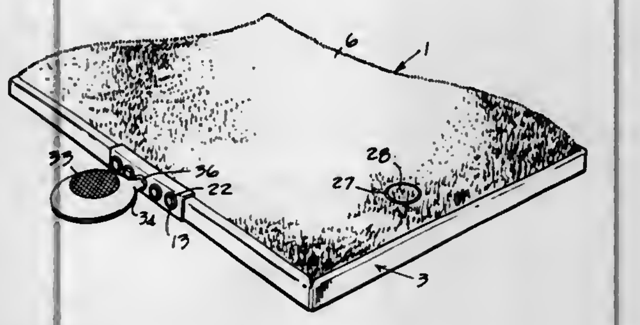


1. A puzzle comprising a planar member having a playing surface thereon, a plurality of strip members pivotally mounted at their respective ends in an array around said playing surface, said strip members each comprised of transparent material and carrying a plurality of indicia disposed at spaced positions thereon generally along the longitudinal axis of the strip, said strip members being deployable in overlapped relationship with one another against said playing surface to provide a preselected arrangement of the indicia on adjacent strip members and an overall relative pattern and sequence.

3,892,412
PUTTING PRACTICE GREEN

Bonny B. Koo, 1016 Austin Ave., Pacific Grove, Calif. 93950

Filed Sept. 3, 1974, Ser. No. 502,387
Int. Cl.² A63B *69/36, 57/00*
U.S. Cl. 273—176 H **2 Claims**

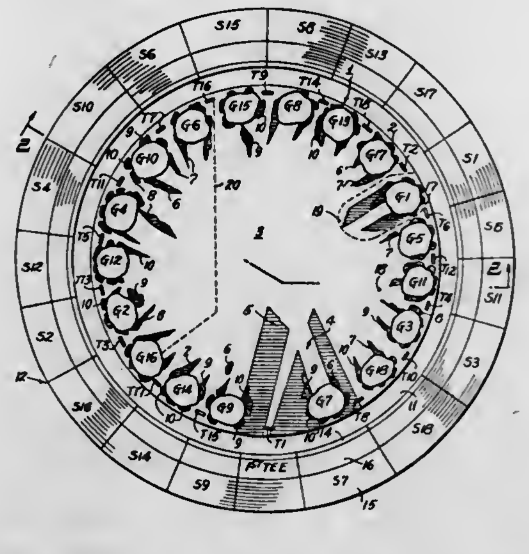


1. In a putting practice green,
a, baseboard,
a resiliently flexible element forming a simulated putting surface, on the board,
and selectively manipulatable means for producing selected undulations of said putting surface,
a putting hole in the putting surface,
and releasable means to plug said hole at will so as to complement the putting surface,
said selectively manipulatable means including
a plurality of inflatable bags,
a conduit extended from each bag,
valve means for each of said conduits located at an edge of the board in a position accessible from the outside of said board,
and manipulatable inflating means connectable selectively to the respective valve means.

3,892,413
GOLF COURSE PLAYING METHOD

Frank J. Rotolo, 1515 E. Broadway, Tucson, Ariz. 85719

Division of Ser. No. 59,992, July 31, 1970, Pat. No. 3,719,361.
This application Mar. 2, 1973, Ser. No. 337,743
Int. Cl. A63b *69/36, 67/02*
U.S. Cl. 273—176 AB **3 Claims**



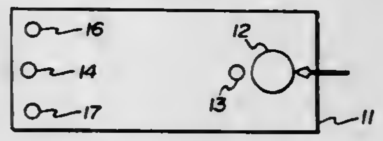
1. A method of playing golf on a course having a perimeter, putting greens in spaced apart relation to each other along the perimeter, tee areas adjacent selected ones of said spaced apart greens, each of said tee areas having an associated green across the course, and a way along said perimeter for movement of players from a tee area to a green area without crossing the course, comprising the steps of:
  playing a first hole by
    hitting a golf ball across the course, using a lofted golf club, toward an associated first green, from a first tee area to a ball landing area adjacent the first green,
    using the way to travel along the perimeter of the course to a location adjacent the associated first green,
    entering the course within said perimeter from a location adjacent said associated first green and walking to a position adjacent the ball previously hit to the ball landing area, and
    playing the ball toward the first green from its lie in said ball landing area and completing play for the hole on the green;
  playing a second hole by
    moving to a second tee area on the same side of the course as the first green just played,
    hitting the ball using a lofted golf club, from said second tee area toward an associated second green on the other side of the course,
    using the way to travel to a location adjacent the second green, and
  completing play for the second hole in the manner followed to complete play for the first hole; and
  repeating the sequence of steps for play of the first and second holes to play the remaining holes of the golf course.

3,892,414
GOLF BALL DIRECTION INDICATOR

William J. Glasson, 355 S. Granados Ave., Solana Beach, and Robert L. Janssen, 900 S. Six Ave., Hacienda Heights, both of Calif. 92075

Filed Mar. 20, 1974, Ser. No. 453,012
Int. Cl. A63b *69/36*
U.S. Cl. 273—185 R **5 Claims**

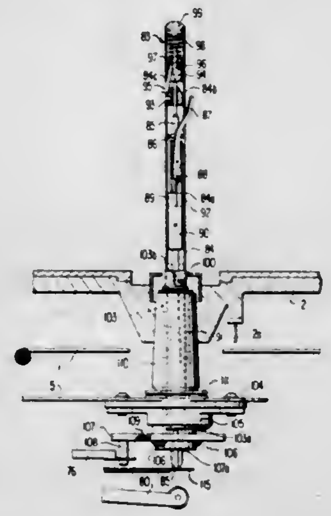
1. A golf ball direction indicator comprising:
a plurality of photosensitive elements spatially disposed in proximity with a golf tee;
a direction indicator lamp corresponding to each of said photosensitive elements;
a plurality of switching means, said plurality of switching means coupled between each of said photosensitive elements and said indicator lamps and operable for energizing the associated indicator lamp when a golf ball passes over one of said plurality of photosensitive elements indicating a general direction of trajectory of a golf ball; and
said switching means includes lock-out means innerconnected for locking out any remaining indicator lamps when one has been energized.



3,892,415
RECORD CHANGER

Yoshio Takahashi; Kunio Abe, and Haruhiko Tanaka, all of Fukuroi, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Oct. 25, 1973, Ser. No. 409,516
Claims priority, application Japan, Oct. 25, 1972, 47-107001
Int. Cl. G11b *17/04, 17/12*
U.S. Cl. 274—10 S **6 Claims**



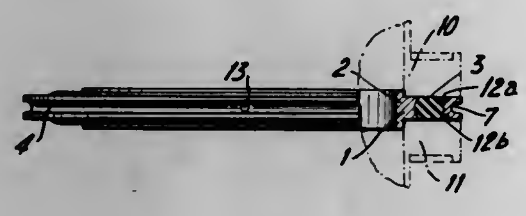
1. A record changer including a tone arm and a turntable and comprising:
a. a hollow record spindle for receiving a stack of records;
b. upper claw means mounted within said spindle and having a closed position which permits records to slide over said upper claw means, and having an open position wherein said upper claw means extend through a window in said spindle for supporting records above said claw means;
c. lower claw means mounted within said spindle below said upper claw means and having a closed position which permits a record to slide thereover and fall upon the turntable, and having an open position for initially supporting records on said spindle said lower claw means being normally kept in the open position;
d. spindle shaft means mounted within said spindle for axial and rotational movement;
e. upper claw operating means mounted within said spindle for opening and closing said upper claw means in response to up and down movement of said shaft;
f. lower claw operating means mounted within said spindle for opening and closing said lower claw means in response to rotational movement of said shaft;

g. rotatable cam means for controlling the movement of the tone arm and having a first and a second cam surface;
h. first cam follower means controlled by said first cam surface for imparting up and down axial movement to said shaft for opening and closing said upper claw means;
i. second cam follower means controlled by said second cam surface for imparting reversible rotational movement to said shaft for opening and closing said lower claw means;
j. means for rotating said cam; and
k. means for keeping said second cam follower means from engagement with said second cam surface to prevent the rotation of said shaft during a manual operation;

whereby with said lower claw means kept in the open position, axial movement of said shaft in one axial direction closes said upper claw means so that records on said spindle are initially supported by said lower claw means; and whereby axial movement of said shaft in the opposite axial direction opens said upper claw means so that all but the lowermost record are supported thereby, and rotation of said shaft in one angular direction closes said lower claw means so that the lowermost record falls upon the turntable.

3,892,416
SEALING MEMBER FOR FLANGED JOINTS

Jochen Ruhe, and August Beck, both of Triesen, Liechtenstein, assignors to Balzers Patent-und Beteiligungs Aktiengesellschaft, Liechtenstein
Filed Dec. 3, 1973, Ser. No. 420,895
Claims priority, application Switzerland, Aug. 22, 1973, 012103/73
Int. Cl. F16j *15/10*
U.S. Cl. 277—29 **2 Claims**

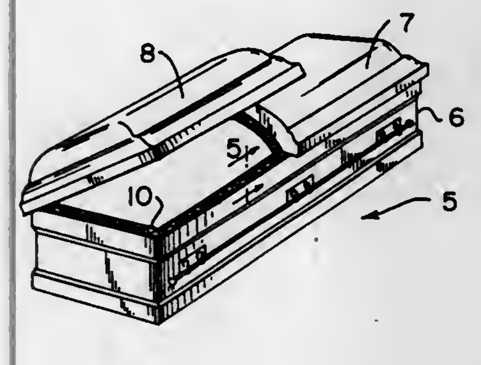


1. A sealing member for sealing the area between flange connections comprising an inner backing ring, a seal ring disposed around the periphery of said backing ring, an outer ring disposed around the periphery of said seal ring, said outer ring having a rabbet in the form of a groove adjacent the seal ring, said outer ring having an opening establishing communication of the groove with the outside, said outer ring being provided with a groove on each side face, the opening establishing communication with the exterior of said outer ring comprising a separate passage for each groove.

3,892,417
GASKET FOR SEALING A CASKET

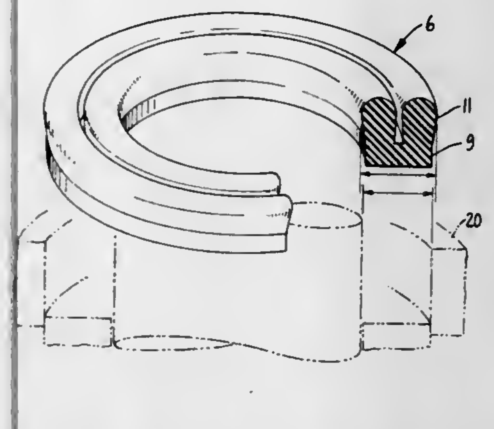
Marvin Courtland Clayton, Springfield, Mo., assignor to American Funeral Supply Corporation, Springfield, Mo.
Filed Aug. 27, 1973, Ser. No. 391,936
Int. Cl. F16j *15/00*
U.S. Cl. 277—207 R **4 Claims**

1. A gasket for a burial casket comprising, a flexible resilient solid rubber-like body in strip form having upper and lower sealing surfaces and inner and outer edges, a downwardly projecting rib on the lower sealing surface at the inner edge of the body, an upwardly projecting rib on the upper sealing surface at the outer edge of the body, a diamond shaped rib pattern on the upper sealing surface generally centrally positioned between the inner and outer edges of the body and in the form of a single chain of diamonds joined point to point, and said upwardly projecting rib extending above the diamond shaped rib pattern.



3,892,418
SEAL RING

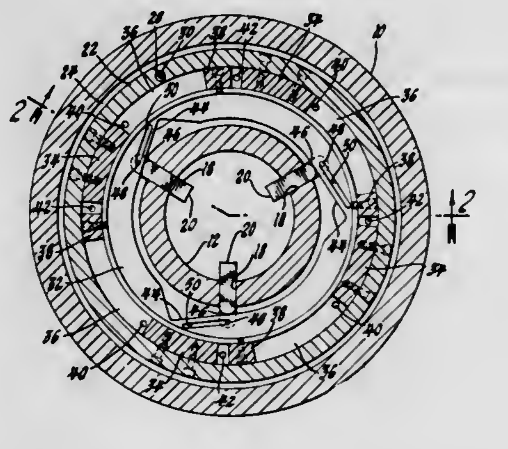
Maurice D. Felt, Carson City, Nev., assignor to Sacomo Sierra Inc., Carson City,, Nev.
Filed Apr. 4, 1973, Ser. No. 347,836The portion of the term of this patent subsequent to Apr. 4, 1989, has been disclaimed.
Int. Cl.² F16J *15/24*
U.S. Cl. 277—205 **1 Claim**



1. In a sealing ring having a cross sectional configuration consisting of a generally rectangular base having a flat bottom portion and two shoulders of equal height extending generally upward from said flat base, said shoulders forming the arms of a U, said shoulders having a space between them extending upwardly from a root, the outward surface of the said shoulders tapering outwardly from the level of the root and the upper surfaces of said shoulders being symmetrically rounded 180°, the improvement comprising a ring designed for nominal dimension, said ring having an uncompressed cross sectional width substantially greater than said nominal dimension and said shoulders having an open space between them wherein the space between the shoulders is substantially less than the difference between said nominal dimension and the actual distance between the extremities of said shoulders in an unstretched condition whereby said U will close and flatten the abutting surfaces of said shoulders when said ring is installed in a space substantially equal to said nominal dimension, said ring having an unstressed cross sectional width of about 110 percent nominal, said root having a width of about 12½ percent nominal and the distance between the shoulders being about 6¼ percent nominal at their closest approach.

3,892,419
BALANCED FLOATING MACHINE TOOL CHUCK

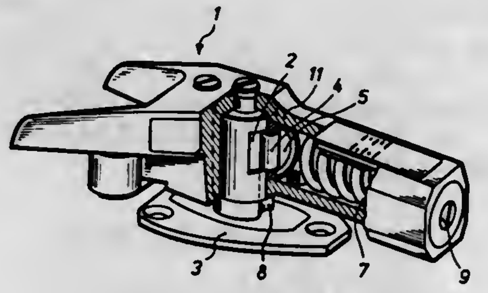
Richard C. Jackson, Bloomfield Hills, and Eberhard E. Wasserbaech, Sterling Heights, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed June 19, 1974, Ser. No. 480,936
Int. Cl. B23b *31/16, 31/30*
U.S. Cl. 279—4 **3 Claims**



1. A balanced floating chuck for a machine tool for concentrically or eccentrically clamping a workpiece therein comprising
- a chuck housing,
- floating chuck means mounted in movable relationship within the housing for allowing radial movement of the mechanism to eccentric locations relative to the center of said housing,
- a chamber surrounding the chuck means defined by the housing and the chuck means, and
- a liquid filling the chamber, the density of the liquid being substantially equal to the average density of the chuck means so that the chuck means remains balanced when the chuck means is eccentrically located within the chuck housing.

3,892,420
SUPPORT DEVICE FOR SKI SAFETY BINDINGS

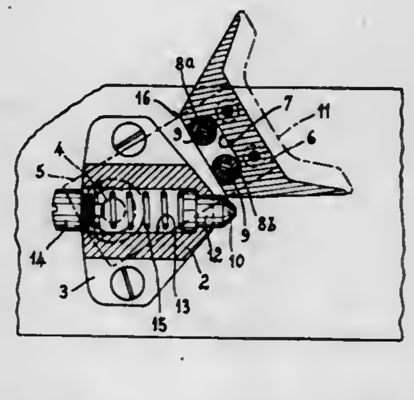
Brigitte Sittmann, Stuttgart, Germany, assignor to Vereinigte Baubeschlagfabriken Gretsch and Co. GmbH., Germany
Filed Aug. 15, 1973, Ser. No. 388,463
Claims priority, application Germany, Aug. 16, 1972, 2240159
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 T **20 Claims**



1. A support mechanism for safety ski bindings with a disengageable support jaw means, a bearing pin means for fixedly holding the support jaw means at a ski, said bearing pin means being provided with a detent groove into which engages a detent member constructed as roller means under the pressure of detent spring means, characterized in that a guide member for absorbing laterally directed forces is disposed in the support jaw means and fixed with respect thereto, the guide member is arranged between the bearing pin means and the spring means, said guide member approximately surrounding the roller means which is slidable in the longitudinal direction of the support mechanism, and in that a spring plate means for absorbing the longitudinally directed forces is provided and disposed in the support jaw means between the roller means and the detent spring means, the spring plate means is angularly movably supported against the roller means.

3,892,421
SAFETY TOW-END DEVICE FOR SKI BINDING

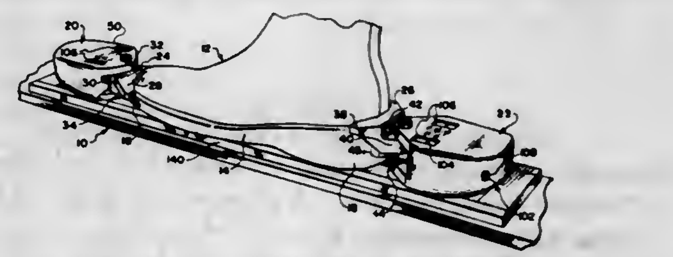
Rene Ramillon, 3, rue Emile Zola, Grenoble, France
Division of Ser. No. 333,297, Feb. 16, 1973, Pat. No. 3,831,957. This application June 17, 1974, Ser. No. 480,202
Claims priority, application France, May 16, 1972, 72.07773
Int. Cl. A63c *9/08*
U.S. Cl. 280—11.35 T **2 Claims**



1. A safety toe-end device for a ski binding comprising
- a support mounted upon the upper surface of a ski;
- a shaft carried by said support and defining a pivot axis extending perpendicular to said surface of said ski;
- a thrust element on said support for movement parallel to said surface and perpendicular to said axis;
- a spring on said support biasing said thrust element in one direction;
- an abutment disposed ahead of said support in said direction and provided with a recess opening toward said support, said abutment being shaped to engage the toe of a ski boot;
- a pair of rollers on said abutment received in said recess and having axes parallel to said pivot axis; and
- means mounting said abutment on said shaft for swinging movement about said pivot axis, said thrust element having an end receivable between said rollers and yieldably indexing said abutment in a position in which said abutment engages said toe of said boot.

3,892,422
ADJUSTABLE SAFETY BINDINGS FOR SKIS

Richard E. Jaques, Glenview, and Burton L. Siegal, Skokie, both of Ill., assignors to Richard E. Jaques, Glenview, Ill.
Filed Mar. 13, 1974, Ser. No. 450,723
Int. Cl. A63c *9/08*
U.S. Cl. 280—11.35 T **16 Claims**



1. A binding assembly for releasably retaining toe or heel portions of a ski boot positioned on a ski, said assembly comprising, a housing having at least parallel top and bottom walls and front and rear end walls disposed generally normal to the top and bottom walls, a toe or heel clip retained on the housing adjacent said front end wall, cavity on the undersurface of

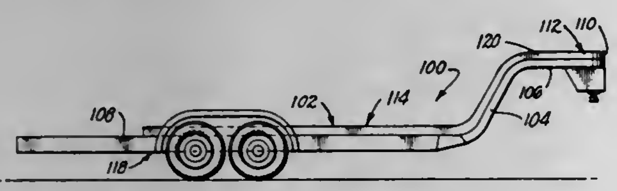
the housing opening to the bottom wall, a vertically disposed restraining member positioned at a first end thereof in the cavity and secured at a second end thereof to the ski to restrain movement of the assembly except upon exertion of an impact force of pre-selected magnitude thereagainst, the restraining member including a pivot standard terminating at the second end and a spherical portion mounted on the standard at the first end, said spherical portion being positioned at a location in the cavity closer to said rear end wall than said front end wall, a horizontally disposed engagement bar retained in the cavity juxtaposed the spherical portion for releasably maintaining the assembly in the first rest position, said rear end wall having a generally arcuate shaped portion cojoined with the bottom wall, the assembly being pivotal in opposite directions along the horizontal plane parallel to the ski surface and in the upwardly direction in the vertical plane normal to the ski surface, said pivotal movement in the upwardly direction being effected by pivoting of the housing about said arcuate portion when an upward force is exerted upon the toe or heel clip spaced from the spherical portion, whereby exertion of the force against the assembly will release the spherical portion from the engagement bar to permit the assembly to move to a second release portion to release the boot toe or heel.

3,892,423
TRAILER
Marjorieann M. Smith, 3825 Valley Blvd. No. 59, Walnut, Calif. 91789

Filed Oct. 29, 1973, Ser. No. 410,536

Int. Cl. B60p *1/28*

U.S. Cl. 280—106 T **3 Claims**



1. A trailer to be towed by a pickup truck or the like having a rear cargo space mounting a fifth wheel coupling, comprising:

a frame having a rear normally generally horizontal cargo bed and a front normally generally horizontal hitch tongue located above the level of said cargo bed,

said frame including main longitudinal frame members having generally parallel and normally generally horizontal rear end portions along the sides of said cargo bed and opposite end portions which curve upwardly and inwardly toward one another and then forwardly and inwardly toward one another and are joined at their front extremities to form said hitch tongue, and cross frame members joining said longitudinal frame members,

ground wheels mounted on said frame at opposite sides of said cargo bed, and

a coupling member mounted on the underside of said hitch tongue adjacent its front end for pivotal connection to said fifth wheel coupling.

3,892,424
VEHICLE-HEIGHT CONTROL DEVICE
Noriyuki Takahashi; Hiromitsu Miyahara, both of Tokyo, and Hidehiko Inoue, Oimachi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

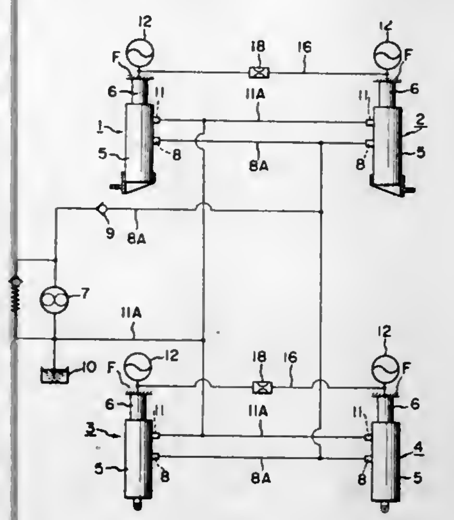
Filed Mar. 8, 1974, Ser. No. 449,469

Claims priority, application Japan, Mar. 12, 1973, 48-28785

Int. Cl. B60g *11/26*

U.S. Cl. 280—124 F **9 Claims**

1. A vehicle-height control device for use on a vehicle between the body and the wheels thereof, said device comprising telescopic hydraulic shock absorbers arranged between the body and respective wheels of the vehicle, each including a hollow inner cylinder, an outer cylinder slidably fitted over said inner cylinder and in fluid communication therewith, a buffer valve between said cylinders to provide a resistance to flow of fluid in the shock absorber between said inner and outer cylinders upon relative sliding movement thereof, during extension and contraction of the shock absorber, said outer cylinder having a fluid inlet port in communication with a source of fluid under pressure, said outer cylinder also having a fluid outlet port in communication with ambient atmosphere, and control valve means between said inner and outer cylinders for placing said fluid inlet port in communication with the interior of the shock absorber upon contraction thereof below a predetermined axial length and for placing said fluid outlet port in communication with the interior of the shock absorber upon extension thereof above said predetermined axial length, said control valve means providing a resistance to fluid flow larger than that of said buffer valve, said control valve means comprising a body mounted between said cylinders and having a pair of upper and lower annular grooves facing said inner cylinder, said upper and lower grooves having a predetermined vertical spacing with a land portion formed therebetween, said inner cylinder having a through aperture disposed in a position to be closed by the land portion between said upper and lower annular grooves with the shock absorber in a normal length configuration, said upper and lower annular grooves being in communication with said outlet and inlet ports, respectively.



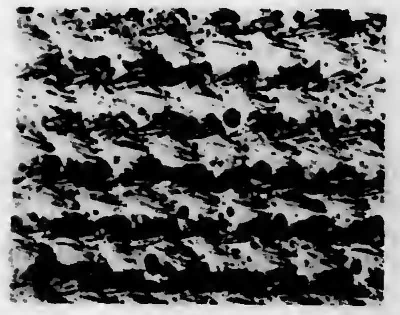
3,892,425
AIR BAG
Hiroshi Sakairi; Tetuyosi Tezuka, and Noboru Watanabe, all of Kyoto, Japan, assignors to Gumze Ltd., Japan

Filed Dec. 26, 1972, Ser. No. 318,479

Claims priority, application Japan, Dec. 23, 1971, 47-2602

Int. Cl. B60r *21/10*; B32b *5/04*, *5/18*

U.S. Cl. 280—150 AB **4 Claims**



1. A vehicle safety device comprising an inflatable confinement normally stored in a non-operating state and means coupled to the confinement to inflate the confinement, and wherein the confinement is adapted to receive an occupant when the occupant is moved relative to the vehicle upon the vehicle being abruptly brought to a halt; said confinement being made of a composite material comprising a gas permeable stretchable nylon or polyester knitted fabric and an elastomer coating layer on one surface of the knitted fabric and having microporous openings, the knitted fabric having higher stretchability than the elastomer coating layer such that the loops of the knitted fabric and the microporous openings of the elastomer coating layer are enlargeable by stretching as the confinement is inflated when the vehicle is brought to an abrupt halt to maintain the internal pressure of the inflated confinement at a substantially constant level, and at the time the occupant is forced into the inflated confinement in striking contact therewith are further enlargeable by the resulting energy of impact causing the formation of new openings in the elastomer coating by the difference in stretchability between the knitted fabric and the coating layer thereby maintaining the internal pressure of the confinement at a constant level.

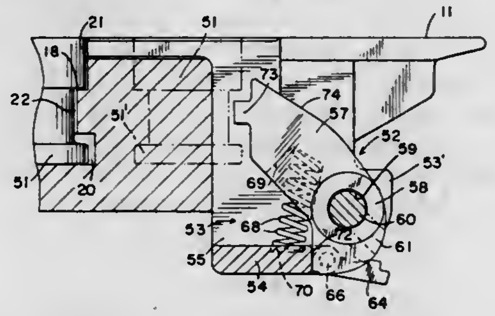
2. A vehicle safety device comprising an inflatable confinement normally stored in a non-operating state and means coupled to the confinement to inflate the confinement, and wherein the confinement is adapted to receive an occupant when the occupant is moved relative to the vehicle upon the vehicle being abruptly brought to a halt; said confinement being made of a composite material comprising a gas permeable stretchable nylon or polyester knitted fabric and an elastomer coating layer on one surface of the knitted fabric and having macroporous openings, the knitted fabric having higher stretchability than the elastomer coating layer such that the loops of the knitted fabric and the macroporous openings of the elastomer coating layer are enlargeable by stretching as the confinement is inflated when the vehicle is brought to an abrupt halt to maintain the internal pressure of the inflated confinement at a substantially constant level, and at the time the occupant is forced into the inflated confinement in striking contact therewith are further enlargeable by the resulting energy of impact causing the formation of new openings in the elastomer coating by the difference in stretchability between the knitted fabric and the coating layer thereby maintaining the intermal pressure of the confinement at a constant level.

3,892,426
FIFTH WHEEL PLATE ASSEMBLY FOR TRAILER HITCH
Ray L. Ferris, Thornton, Ill., assignor to Pullman Incorporated, Chicago, Ill.

Filed June 21, 1974, Ser. No. 481,714

Int. Cl.^{2} B62D *53/10*

U.S. Cl. 280—432 **9 Claims**



1. A fifth wheel plate assembly for connection with the kingpin of a trailer,

comprising a plate having a substantially circular opening for receiving said king pin and an entry slot in communication therewith,

locking means on said plate movable into engagement with said king pin for releasably locking the same within said circular opening to connect the kingpin and the trailer,

the improvement comprising,

an auxiliary lock including a locking member positioned within said entry slot in longitudinally spaced relation relative to said circular opening, said locking member including an abutment,

means connecting said locking member to the underneath side of said plate for hinging movement from a position blocking release of a kingpin within said circular opening to a position wherein a major portion of said locking member is disposed in an out-of-the-way position and said kingpin is free to move through said slot relative to said circular opening,

means biasing said locking member to said blocking position,

latch means being disposable in engagement with said abutment when said locking member is moved from said blocking position to said out-of-the-way position, said biasing means urging the abutment of said locking member into engagement with said latch means to hold said locking member in said out-of-the-way position, and

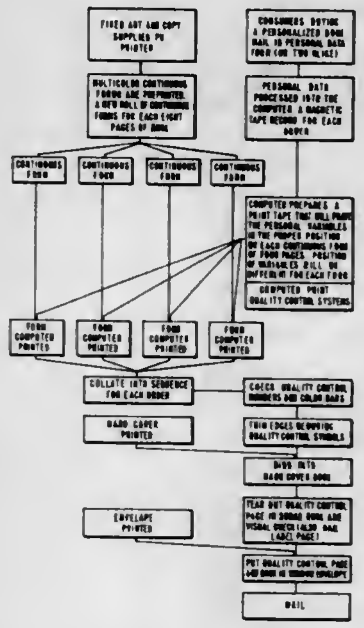
said locking member including means extending across the slot and engaged by said kingpin moving through said slot for moving said locking member to effect disengagement of said abutment with said latch means whereby said biasing means returns said locking member from said out-of-the-way position to said blocking position.

3,892,427
PERSONALIZED COMPUTER PRINTED HARD COVERED BOOK
Joseph Stephen Kraynak, Van Nuys, Calif., and Arthur Blumenfield, East Chester, N.Y., assignors to Dart Industries, Inc., Los Angeles, Calif.

Filed Dec. 20, 1972, Ser. No. 317,016

Int. Cl. B42d *1/00*

U.S. Cl. 281—15 R **8 Claims**



1. The method of preparing a personalized hard covered story book having variable printed data of a personal nature and non-variable printed copy which utilizes a computer to print at least the personalized portions of the text comprising the steps of:

a. preprinting the pages of a book with non-variable copy and art materials on continuous form computer printing sheet material to produce a preprinted continuous form computer printing sheet material;

b. inputting to a computer variable data for each personalized copy of the book;

c. introducing said preprinted continuous form sheet material into a computer printer in a manner such that a completed printed text will be produced for each set of variable data;

d. printing said variable data including quality control indicia on said preprinted continuous form sheet material;

e. cutting said continuous form printout materials to a size to form pages;

- f. collating the pages from the printer into the proper sequence for each individual personalized book;
- g. inspecting the quality control indicia on each of said collated pages to determine that the book is properly collated;
- h. trimming away portions of said pages to remove quality control marks therefrom; and,
- i. binding said pages into a hard cover book.

3,892,428
SELF-REGENERATIVE CARBOGRAPHIC ARTICLES COMPRISING A LAYER INTERPOSED BETWEEN THE SUPPORT AND THE INK-RELEASING COATING

Sergio Sala, Via Pinamonte da Vimercate, 6, and Cuneo Ambrogio, Via Durini 7, both of, Milano, Italy

Filed Apr. 12, 1971, Ser. No. 133,399

Claims priority, application Italy, Apr. 13, 1970, 23224/70

Int. Cl. B41c *1/06*

U.S. Cl. 282—28 R **7 Claims**

1. Self-regenerative carbographic articles comprising a support and an inked cellular coating having improved characteristics of longevity and reproduction and interposed between said support and inked coating, a homogeneous layer consisting essentially of sperm oil and a film-forming polymer suitable to adhere both to the support and to the inked coating and selected from the group consisting of polyvinylidene chloride, chlorinated rubber, and acrylic polymers, the amount of sperm oil being from about 30 to 50% based on the weight of the polymer.

3,892,429
LOAD-CARRYING PUSH-CARRIAGE

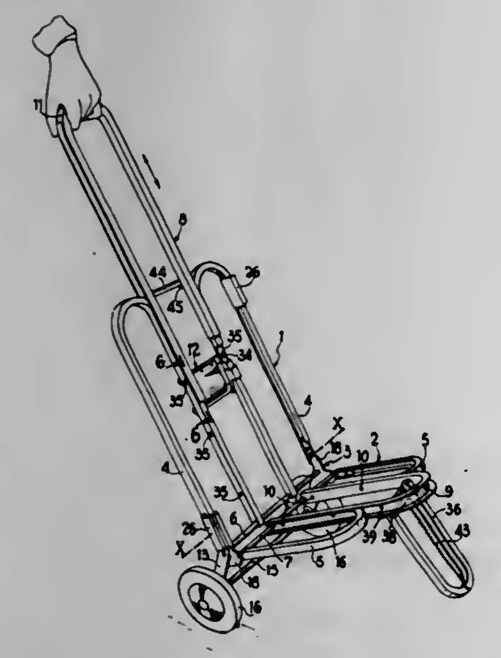
Max Hercovici dit Dalmy, 2 Rue St. James, 92 Neuilly-sur-Seine, France

Filed Jan. 24, 1974, Ser. No. 436,121

Claims priority, application France, Jan. 24, 1973, 73.02530

Int. Cl. B62b *1/00*

U.S. Cl. 280—36 C **3 Claims**



1. A foldable load-carrying push-carriage capable of being put selectively in a folded up position and an unfolded position and comprising a first platform and a second platform, each platform having a transverse edge, a pivot device interconnecting the platforms for relative pivotal movement about an axis adjacent said transverse edges of the platforms, holding means carried by the first platform for pushing and handling the push-carriage, two cranked strips integral with the first platform, two rotatable wheels respectively mounted on the strips adjacent opposite ends of the transverse edges, the strips extending in parallel directions downwardly and rearwardly of the first platform on a side of the first platform opposed to the second platform when the push-carriage is in said unfolded position and rests on the ground in a stable position, the wheels being mounted on lower end portions of the strips, said strips being part of said pivot device, the pivot device comprising two pivot plates integral with the second platform, each plate having an arm portion which is pivoted to the corresponding cranked strip at a point located beyond the crank of the strip with respect to said lower end portion of the strip, and a heel portion, an abutment on each strip, the heel portion of each plate being capable of bearing, in the unfolded position of the push-carriage, against the abutment of the corresponding strip.

3,892,430
HINGED PIPE JOINT

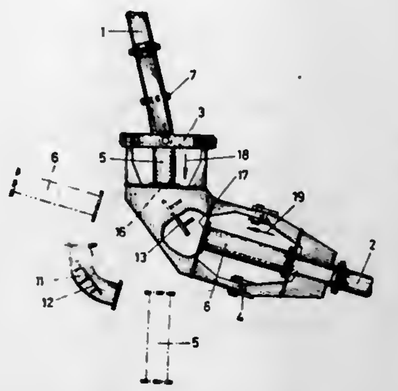
Cornelis van der Gaag, Delft, Netherlands, assignor to N.V. Industrieele Handelscombinatie Holland, Rotterdam, Netherlands

Filed Apr. 22, 1974, Ser. No. 463,202

Claims priority, application Netherlands, Apr. 26, 1973, 7305854

Int. Cl. F16l *27/00*

U.S. Cl. 285—31 **3 Claims**



1. A hinged pipe joint between two rigid pipes which extend at an angle with respect to each other, said joint comprising a rigid frame having ends disposed at an angle to each other and disposed between the ends of the two pipes, each pipe being pivotably connected to one of the opposite ends of the frame and pivotably at said connection about an axis perpendicular to and co-planar with the axis of the respective pipe, said frame having cheeks to which detachably are connected the cheeks of a rigid pipe section, a flexible hose connected between each said pipe and the adjacent end of said pipe section, each hose being connected to its pipe and said pipe section by flanges at the ends of the pipes, the hoses and the pipe section, said frame having an opening between its ends and adjacent to said pipe section and shaped and sized such that through said opening the detachment and removal of said pipe section and said hoses can take place.

3,892,431
AIR HOSE ANTI-DISCONNECT

Larry H. Booth, Huntington, W. Va., assignor to The Chesapeake and Ohio Railway Company, Cleveland, Ohio

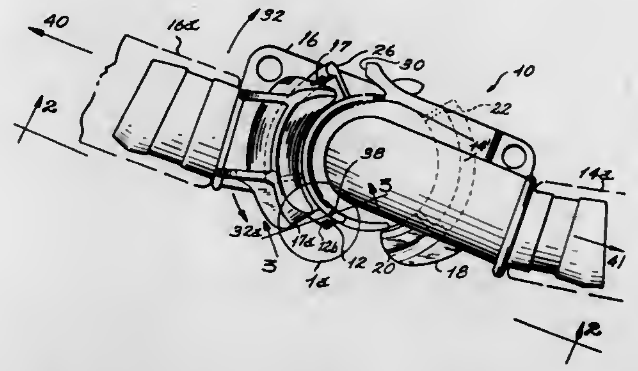
Filed Dec. 13, 1973, Ser. No. 427,011

Int. Cl. B60d *1/08;* **B61g** *5/08;* **F16b** *55/00*

U.S. Cl. 285—79 **4 Claims**

1. An interlocking hose coupling having at least first and second rotatably engaging housings which couple respectively associated hoses, said coupling being disengageable when sufficient separating forces are exerted axially along said hoses, said coupling comprising:

- a. a first stop means disposed on said first housing arranged to contact said second housing and to thereby impede rotation of said second housing with respect to said first housing when said second housing is rotated in a first direction so that said housings do not become inadvertently separated by rotational movement in said first direction; and
- b. a second releasable stop means permanently secured to one of said housings and normally urged to a position for contacting the other housing and thereby impeding rotation of said second housing with respect to said first housing when said second housing is rotated in a second direction so that said housings do not become inadvertently separated by rotational movement in said second direction;



- wherein said first and second stop means limit rotational movement in said first and second directions to a predetermined rotational arc when said housings are rotatably engaged;
- wherein said second releasable stop means controllably permits the rotational disengagement of said second housing from said first housing when actuated; and
- wherein neither of said first and second stop means impedes separation of said first and second housings by separating forces exerted axially along said hoses.

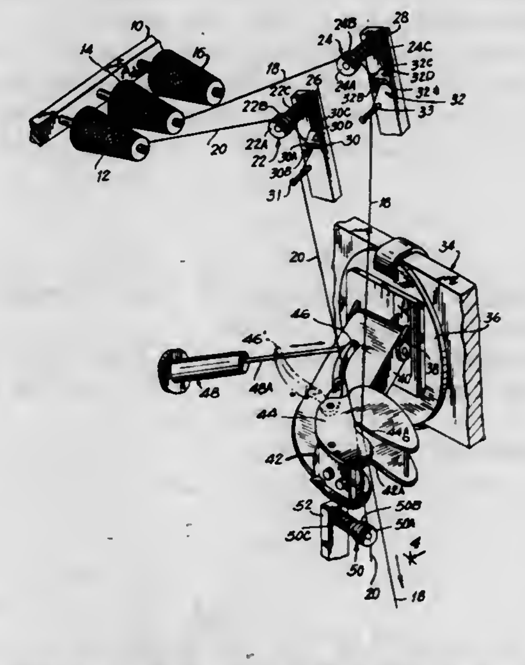
3,892,432
CONTINUOUS YARN DRAWING METHOD AND APPARATUS

George A. Ingus, 44 Birch St., Englewood Cliffs, N.J. 07632

Filed Mar. 1, 1974, Ser. No. 447,099

Int. Cl. A01d *59/04*

U.S. Cl. 289—1.5 **16 Claims**



1. Apparatus for providing a continuous supply of yarn to an end use location comprising a plurality of yarn packages furnishing respective active and inactive yarn elements, means for guiding said yarn elements toward said end use location, means for monitoring the tension in said active yarn element between said guiding means and said end use location, and connecting means responsive to said monitoring means detecting a change in tension in said active yarn element for coupling said inactive yarn element to a segment of said active yarn element.

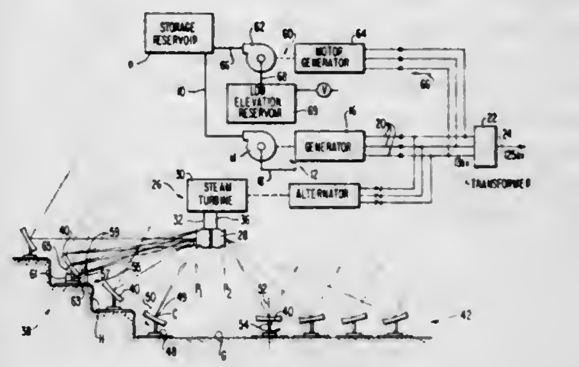
3,892,433
DIRECT SOLAR HYDRO-ELECTRIC INTEGRATED SYSTEM AND CONCENTRATING HELIOSTAT FOR SAME

Floyd A. Blake, Littleton, Colo., assignor to Martin Marietta Corporation, New York, N.Y.

Filed Sept. 21, 1973, Ser. No. 399,669

Int. Cl. G02b *5/10*

U.S. Cl. 290—52 **11 Claims**



1. In an existing hydro-electric power plant including a hydro-electric generator means of given capacity powered by water stored in a reservoir upstream of said hydro-electric generator means, an electrical transmission network connecting said hydro-electric generator means to an electrical load, the improvement comprising:

- a solar power generator means having a capacity matching that of said hydro-electric generator means, and said transmission network including means for selectively connecting either or both of said generator means to said electrical load,
- whereby, integrating the solar and existing hydro-electric power plant permits the output of the power installation to be increased without an overall increase in the use of water stored by said reservoir.

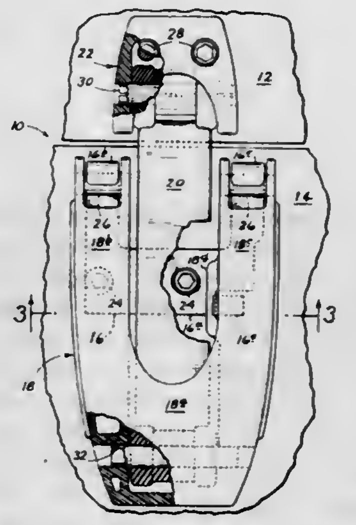
3,892,434
TOGGLE-ACTION FASTENER

William F. Caldwell, Portland, Oreg., assignor to Huntington Rubber Corporation, Portland, Oreg.

Filed Jan. 9, 1974, Ser. No. 432,080

Int. Cl.² E05C *5/02*

U.S. Cl. 292—247 **11 Claims**



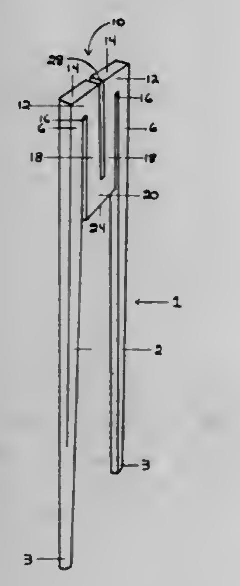
1. In an overcenter-type draw fastener for releasably securing a pair of structural bodies together, comprising

a catch element mountable on one of said bodies,
an anchor mountable on the other of said bodies in opposed relation to said catch element,
a latch element engageable with said catch element and movable in a plane relative to it, and
a link operatively interconnecting said anchor and latch element and locating the latch element for pivotal movement in said plane into and out of an overcenter position for the fastener wherein said latch and catch elements are disposed in releasable, fastened interengagement,
means for releasably locking said fastener in said overcenter position, including means forming first and second lock components in said catch and latch elements, respectively, for engaging and interlocking upon said pivotal movement of the latch into said overcenter position, and, once interlocked in said position, for disengaging only upon first movement of said latch element relative to said catch element in a plane substantially different from said first-mentioned plane, movement of said latch element in said first-mentioned plane from said position being otherwise prevented.

3,892,435
EATING UTENSIL

Shawn Huey, 410 Atkinson Dr. - No. 461, Honolulu, Hawaii 96814

Filed June 21, 1973, Ser. No. 372,300
Int. Cl. B25b *9/02*
U.S. Cl. 294—16 **5 Claims**

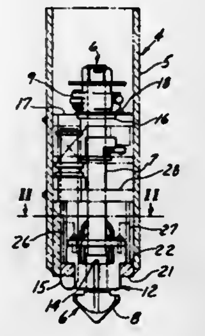


1. Eating utensil apparatus comprising a single, unitary, continuous generally square cross-section rod-like member formed in two elongated generally parallel first and second straight chop-stick members having spaced distal ends which may be moved toward each other and having joint means integrally formed at a proximal end, the joint means comprising a re-entrantly bent integrally formed portion which extends from a proximal end of the first stick member sequentially inward toward the second stick member and downward in a general direction of the distal ends and then extends over and upward then over toward a proximal end of the second stick member, where the portion is integrally connected with the second stick member, for permitting movement of the distal ends toward each other and for encouraging separation of the distal ends.

3,892,436
RETRACTABLE LATCH MECHANISM FOR CARGO CONTAINER SPREADERS

Jack E. Fathauer, Roxboro, N.C., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Apr. 11, 1974, Ser. No. 460,112
Int. Cl. B66c *1/00*
U.S. Cl. 294—81 SF **11 Claims**

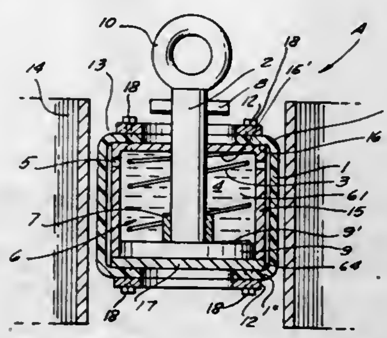


1. Retractable latching mechanism for a cargo container spreader comprising:
a housing having a floor, said floor having an opening;
a twistlock member comprising a shaft supported for rotation about its longitudinal axis and extending vertically within said housing, and a horizontally oblong latch head fixed to the lower end of said shaft;
guide means for laterally supporting said member through movements lengthwise of said axis through said opening between a position locating said latch head in spaced subjacent relation to said floor and a position at least partly within said housing and said opening;
retractable boss means for protecting said member from lateral forces connected with said member to be carried thereby upwardly from and downwardly to a lowest position wherein a lower portion of the boss means projects through said opening at the lowest position of said member into close proximity with the head, said lower portion having a transaxial cross sectional contour in general conformity with the transaxial maximum horizontal cross section of the head;
stop means in said housing for laterally engaging an upper portion of said boss means at said lowest position of said member to fix the boss means against movement in a direction transversely of said axis; and
power means connected with and reacting between said member and supporting means in fixed relation with said housing for effecting said vertical movements of said member and said boss means.

3,892,437
CENTER HOISTING DEVICE

Pentti Vainamo Makinen, Haukilahti, Finland, assignor to Oy Finnlines Ltd., Helsinki, Finland

Continuation-in-part of Ser. No. 331,258, Feb. 9, 1973, abandoned. This application Aug. 2, 1974, Ser. No. 494,371
Int. Cl. B66c *1/54*
U.S. Cl. 294—93 **4 Claims**

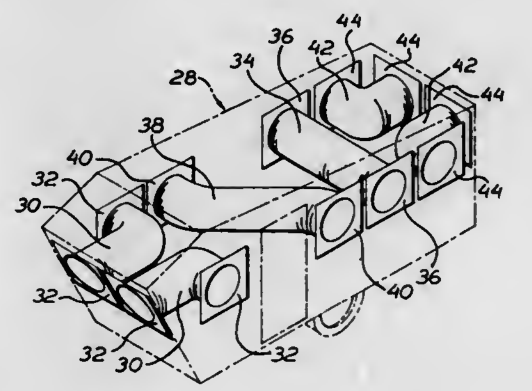


1. An improved center hoisting device for rolls and similar pieces having a hollow core member, said device comprising a hydraulic cylinder having first and second opposite ends and adapted to be inserted inside of the core of said roll and including a piston located within the cylinder for movement between two extreme positions, and a piston rod secured to said piston and extending through said first end of the cylinder; a resilient cover attached on the hydraulic cylinder and enclosing at least a portion of the exterior of the hydraulic cylinder facing the core member of the roll to define an expandable space between the cover and the exterior of said cylinder, said cylinder having an aperture formed therein adjacent said first end of the cylinder beyond the extreme positions of said piston for providing communication between said space and the inside of the cylinder whereby, application of a pulling force to said piston rod causing said piston to move towards said first end, fluid in said cylinder between said piston and said first end is urged through said aperture into said space to expand said space and said resilient cover thereby to engage said cover with said core member and allow said pulling force to lift said roll.

3,892,438
AIR CHANNELING MEANS

Chester H. John, P.O. Box 713, Perris, Calif. 92370

Continuation-in-part of Ser. No. 856,097, Sept. 8, 1969, abandoned. This application July 12, 1972, Ser. No. 271,174
Int. Cl. B60j *9/00*
U.S. Cl. 296—1 S **2 Claims**



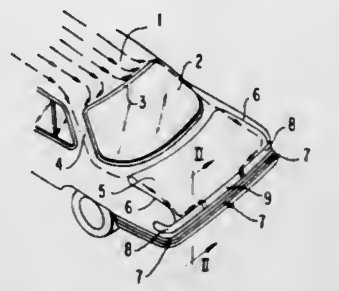
2. In a land recreational vehicle, means for channeling the flow of air normally surrounding said vehicle from any higher pressure zone in the exterior areas adjacent the front and sides of the vehicle to any lower pressure zone in the exterior areas adjacent the sides and rear of the vehicle, other than from a higher pressure zone adjacent the front to a lower pressure zone adjacent the rear of said vehicle, said means comprising flexible tubing of the type which can be expanded and collapsed in accordion-like fashion for bending and length adjustment purposes, and accessory means to permit the temporary installation of said tubing between recreational vehicle window openings positioned so that said channeling of the flow of air from higher to lower pressure areas adjacent the outer walls of the vehicle takes place through said tubing.

3,892,439
ARRANGEMENT FOR PREVENTING THE SOILING OF DEVICES ARRANGED AT THE REAR END OF MOTOR VEHICLES

Hans Gotz, Boblingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany

Filed Dec. 15, 1972, Ser. No. 315,456
Int. Cl. B62d *25/08*
U.S. Cl. 296—137 R **18 Claims**

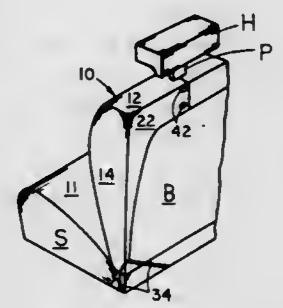
1. In an arrangement for preventing the soiling of vehicle devices, said devices being mounted on the rear end of motor vehicles, the improvement comprising a collecting channel means for collecting soiled water forming at the rear end of the motor vehicles, said collecting channel means being mounted on said rear end above said devices and extending at least over distances corresponding to structural lengths of the devices, said collecting channel means discharging the soiled water within an area free of said devices, wherein the collecting channel means extends over the entire width of the rear end of the vehicle and is provided with discharge aperture means within areas free of said devices, wherein the collecting channel means is constructed as a decorative rod, and wherein said decorative rod includes an upwardly directed projection forming part of the collecting channel means and containing the discharge aperture means.



3,892,440
AUTOMOBILE SEAT COVER

Richard J. Dudley, and Harold A. Dudley, both of Fremont, Ohio, assignors to S. E. Hyman Company, Fremont, Ohio

Filed Feb. 19, 1974, Ser. No. 443,360
Int. Cl. A47c *31/10*
U.S. Cl. 297—229 **6 Claims**

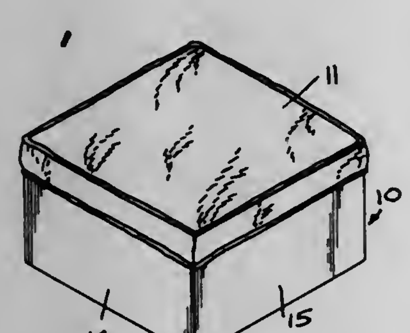


1. A throw type seat cover for at least the back of a seat of a vehicle having a headrest supported by at least one post above the top of the back, said cover comprising:
A. a front cover panel portion,
B. peripheral edge cover portions,
C. a flange portion along the rear section of said edge portion, and
D. at least one pair of spaced snap fastener parts on said flange portion adjacent the post for the headrest said fastener parts comprising:
  a. a stud part with a stud extending outwardly from one side of said flange portion, and
  b. a cap part with its concave portion extending inwardly from the other side of said flange portion,
said fastener parts being spaced inwardly from the outer edge of said flange portion, whereby said fastener parts can not be fastened until a slit is made inwardly from the free edge of said flange portion between said fastener parts to the post so that the edge portion can surround said post and the edges of said slit flange portion may be overlapped so that said snap fastener parts may be snapped together to hold said slit in said flange together around the post, and whereby said cover also can be used without slitting when there is no headrest.

3,892,441

PAPER BOARD SEAT STRUCTURE

Benjamin Roeshman, 206 Rodney Cir., Bryn Mawr, Pa. 19010
Filed Jan. 9, 1974, Ser. No. 431,940
Int. Cl. A47c *3/00, 9/12*
U.S. Cl. 297—461 **2 Claims**



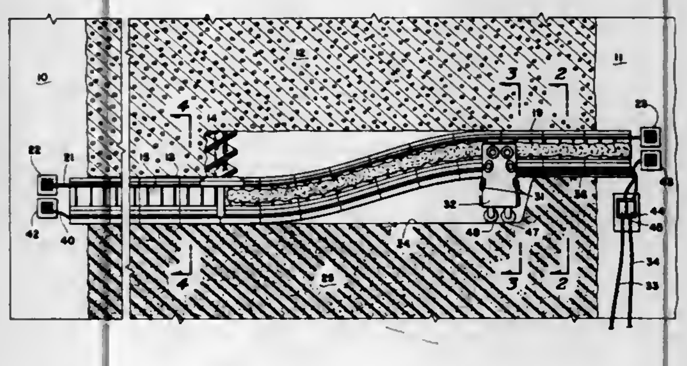
1. A seat assembly comprising a four-side box-like structure formed basically of a flat blank of stiff sheet material which is cut and scored to provide a plurality of right-angularly related side wall panels each having at its opposite ends corresponding relatively foldable top and bottom closure panels, the closure panels associated with one opposed pair of said side wall panels being each split into two relatively foldable panels and those associated with the other pair of said side wall panels being unsplit, all of said closure panels having relatively short end flaps adapted to be inturned normal to the planes of their associated panels, the split pair of closure panels being individually inwardly foldable from their associated side wall panels into coplanar relation to conjointly constitute an inner layer of closure panels at the bottom and top ends of said structure, the unsplit pair of closure panels being also individually inwardly foldable from their associated side wall panels into coplanar relation to conjointly constitute an outer layer of closure panels closely overlying each said inner layer of closure panels, all of said inwardly foldable closure panels having convergingly tapered edges to render the same non-interfering with one another as the same are infolded into their closed positions, each said split pair of closure panels providing a tapered slot between their proximate edges terminating short of their respective fold lines and being further separated from one another by a short slit extending to said fold lines from the apex of said tapered slot in longitudinal continuation thereof, each of said tapered slots formed between each split pair of said inwardly folded closure panels being in horizontal alinement to conjointly provide an opening extending crosswise of the structure between a spaced pair of said short slits into which said inturned end flaps of said unsplit panels may be inserted to secure the same in their closed positions at the top and bottom ends of the structure.

3,892,442

MINING METHOD

Albert T. Janssen, Thousand Oaks, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.
Filed Aug. 16, 1973, Ser. No. 388,747
Int. Cl.² E21D *11/00*
U.S. Cl. 299—11 **5 Claims**

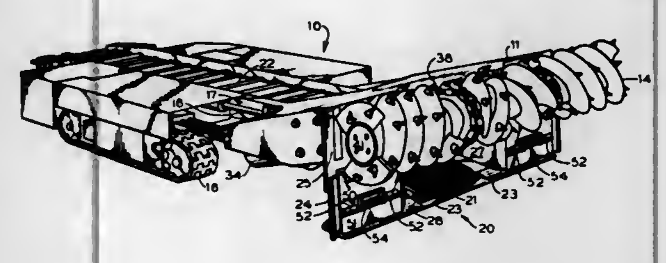
1. A method for underground mining comprising advancing a cutting device along one longitudinal wall of a mine shaft to remove a mining product therefrom and substantially concurrently advancing a foam support material dispensing device within said shaft behind said cutting device and in the same direction to progressively fill at least a portion of the enlarged void of said shaft created by the removal of said mining product so as to control roof fall and subsidence of the overlaying earth.



3,892,443

CONTINUOUS CUTTING AND GATHERING APPARATUS FOR A CONTINUOUS MINING MACHINE

E. M. Arentzen, Charleroi, Pa., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed Nov. 5, 1973, Ser. No. 412,608
Int. Cl. E21c *35/20*
U.S. Cl. 299—67 **10 Claims**

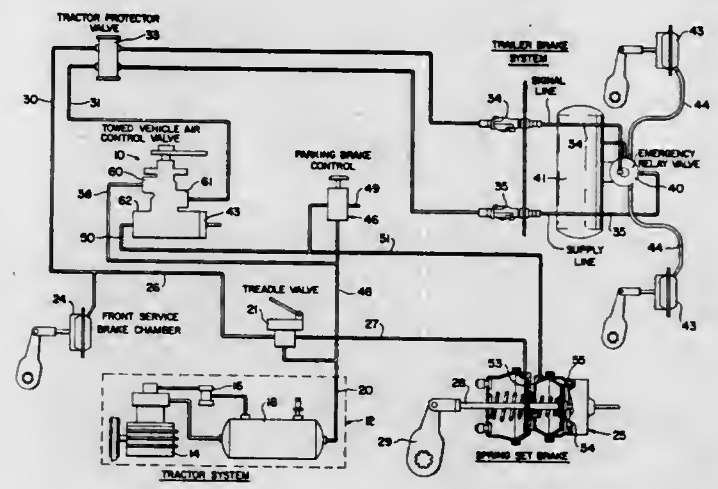


1. A low seam, continuous mining machine, comprising:
a main frame provided with tractor crawlers for propelling the machine;
a sump frame slidably mounted on the forward end of the main frame for movement toward a mine face while the main frame is stationary;
hydraulic means for sliding the sump frame forward of the main frame;
a mining head mounted on the forward end of the sump frame for movement therewith into a mine face, the mining head being long enough to cut a path wider than said machine and including a shaft mounted for rotation at the forward end of the sump frame and disposed transverse to the direction of movement of the sump frame;
a plurality of helical cutter members mounted about the rotatable shaft, the helical cutter members being shaped to direct mined material inwardly of the ends of the shaft;
means for rotating the shaft and associated cutter members mounted thereon;
a backup panel mounted near the forward end of the sump frame just rearward of the periphery of the helical cutters and substantially parallel thereto;
a gathering conveyor mounted on said sump frame and having its forward end disposed beneath and in close proximity to the mining head for gathering the mined material fed to it by the helical cutter members, said conveyor extending perpendicular to the mining head toward the rear of the machine; and
substantially vertical dozer blades disposed at each side of the conveyor just rearward of the periphery of the helical cutter members and substantially parallel thereto, the dozer blades extending upwardly to overlap the backup panel to provide a vertical surface against which the helical cutter members may move mined material inwardly to the central gathering conveyor.

3,892,444

PNEUMATIC BRAKE SYSTEM

Harold Durling, Elsie, Mich., assignor to Midland-Ross Corporation, Cleveland, Ohio
Filed Mar. 11, 1974, Ser. No. 449,707
Int. Cl. B60t *15/16*
U.S. Cl. 303—13 **4 Claims**



1. A control valve in combination with a tractor-trailer pneumatic brake system for braking said tractor during normal operating and parked phases when said tractor is either coupled to or uncoupled from a trailer equipped with a trailer pneumatic brake system, said tractor system including a continuous source of compressed air when said tractor is operating, a spring-set actuator for braking said tractor, a parking control valve having an inlet connected to said source, an outlet connected to said actuator and a vent, said parking valve being manually operable from a released position communicating said inlet with said outlet to an applied position communicating said outlet with said vent, and coupling means operable to couple said tractor system with said trailer system, said control valve comprising:

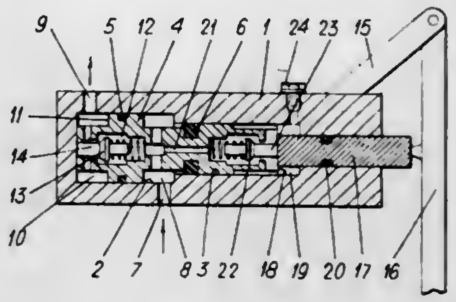
a valve body having
  a first port in fluid communication with said source of compressed air,
  a second port in fluid communication with said coupling means,
  a third port in fluid communication with said outlet of said parking control valve,
  a fourth port in communication with atmosphere,
first plunger means and second plunger means with said valve body, said second plunger means manually operable to a valve fill mode position to provide fluid communication between said first and second ports when said parking valve is in an applied position whereby said trailer air system is supplied with air while said tractor spring-set actuator remains braked; and
said first plunger means automatically operable when said parking brake is moved to a released position to disengage said second plunger means from said fill mode position to seal said second port and provide fluid communication between said second and third ports for normal highway operation when said trailer is coupled with said tractor by said coupling means.

3,892,445

LOAD-DEPENDENT BRAKE PRESSURE PROPORTIONING VALVE

Heinrich Oberthur, Offenbach-Rumpenheim, Germany, assignor to ITT Industries, Inc., New York, N.Y.
Filed Nov. 15, 1973, Ser. No. 416,339
Claims priority, application Germany, Dec. 15, 1972, 2261381
Int. Cl. B60t *8/22*
U.S. Cl. 303—22 R **2 Claims**

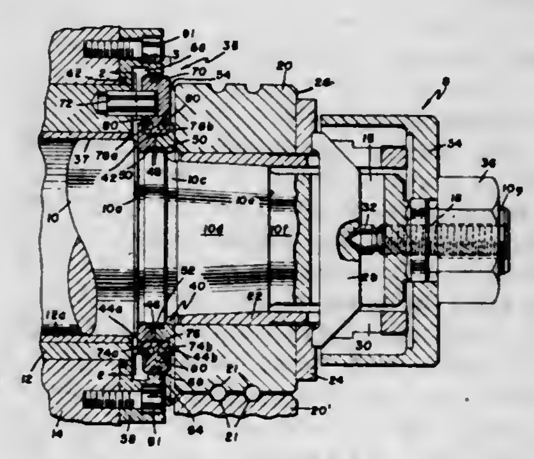
1. A brake pressure proportioning valve comprising:
a stepped cylinder having a pressure medium inlet and a pressure medium outlet to brakes to be controlled;
a stepped piston disposed axially movable in said cylinder relative to said inlet and said outlet to proportion the pressure medium coupled to said outlet dependent upon the load of the axle having said brakes to be controlled;
a control tappet disposed coaxially within said cylinder to control the axial movement of said piston dependent upon a force applied to said control tappet proportional to said axle load, said control tappet having a smaller diameter than the adjacent end of said piston;
a lever mechanism connected to said control tappet to apply said force thereto; and
a first pressure medium connection disposed internally of said piston to interconnect said control tappet and said inlet and to apply pressure medium to the end of said control tappet adjacent said piston to improve the control action of said control tappet.



3,892,446

SHAFT SEAL

Charles A. Rich, Jr., Southboro, Mass., assignor to Morgan Construction Company, Worcester, Mass.
Filed Apr. 29, 1974, Ser. No. 464,836
Int. Cl. F16c *1/24, 33/72*
U.S. Cl. 308—36.1 **6 Claims**



1. For use in combination with a roll shaft journalled for rotation in an eccentric sleeve which is in turn journalled for rotation in a housing, with one end of the shaft protruding axially from the housing to receive a roll in removable engagement thereon, apparatus for providing a seal between the roll shaft and the housing, comprising: a circular first sealing assembly mounted on the roll shaft for rotation therewith, said first sealing assembly having a peripheral first groove formed between a pair of opposed first flanges extending radially outwardly from a base section, a second sealing assembly surrounding said first sealing assembly, said second sealing assembly having an outer section fixed relative to said housing, an annular inner section supported by said outer section with a portion thereof protruding into said first groove, said protruding portion having axially opposed second grooves formed between the center thereof and second flanges located adjacent to said first flanges, and means seated in said second

grooves for urging said second flanges into frictional contact with said first flanges.

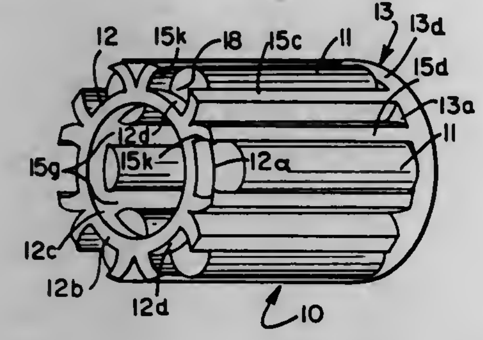
3,892,447
PLASTIC CAGES FOR ROLLER BEARINGS

Peregrinus Gruber, and Gerald Seidelman, both of 3382 N. Avondale Ave., Chicago, Ill. 60618

Division of Ser. No. 315,622, Dec. 15, 1972. This application Oct. 17, 1973, Ser. No. 407,214

Int. Cl. F16c *19/20*

U.S. Cl. 308—217 **1 Claim**



1. A one-piece molded plastic roller bearing cage comprising two spaced coaxial annuli in spaced parallel planes, each annulus having flat side faces and inner and outer cylindrical faces, a plurality of equally spaced ribs extending between said annuli, the outer diameter of one smaller annulus being equal to the inner diameter of the other larger annulus, each rib extending radially between the coaxial cylindrical surfaces defined by the inner diameter of said one smaller annulus and outer diameter of said other larger annulus, said ribs extending parallel to the axis of the annuli, each rib having a Y section, the Vee top being radially beyond the straight part of the Y, the Vees extending radially inward to the cylindrical surface defined by the outer surface of the smaller annulus and extending from the inner flat face of the larger annulus to the plane determined by the outer flat face of the smaller annulus, the Vee tops each having Vee sides curved to provide a suitable cradle region between adjacent Vee portions, the sides of a rib radially inward of the Vee being concave so that one entire rib side provides a concave cradle wall to cooperate with an opposed cradle wall from an adjacent rib, a complete cradle side wall having radially innermost and outermost longitudinal edges to define an inner and outer window between adjacent ribs, the inner and outer windows respectively being terminated by the opposed side faces of the smaller and larger annuli, said rib portion radially inward of the Vee extending from the plane of the outer flat face of the larger annulus to the inside flat face of the smaller annulus, the inner window of each cradle being narrow enough to retain a suitably sized roller within the cradle region, the outer window being wider than the inner window but narrow enough to require the roller to be sprung into a cradle, the cradle sides having a radius of curvature somewhat greater than that of a roller in the cradle region, said cage being characterized by minimum plastic material, strength and ready springing of a roller into or out of its cradle.

3,892,448
SPHERICAL PLAIN BEARING

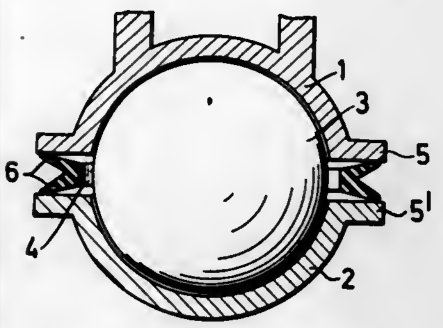
Nikolaus Laing, Hofener Weg 35 bis 37, 7141 Aldingen bei Stuttgart, Germany

Filed Aug. 10, 1973, Ser. No. 387,455

Int. Cl. F16c *17/06*

U.S. Cl. 308—230 **7 Claims**

1. A spherical bearing for the mutual support of two machine elements comprising two cups each having a concave spherical sliding surface which cups are universally pivotable with respect to each other through limited arcs of travel, a single body having a convex spherical surface slidable on the convex sliding surface of each cup and axially separating said cups for a limiting clearance, and a sealing device positioned axially between said cups and surrounding said limiting clearance for preventing entry of particles between the concave surfaces of said cups and the convex surface of said body.



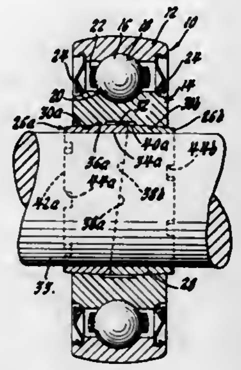
3,892,449
BEARING RING WITH SHAFT LOCKING MEANS

Peter J. Baker, Huron, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 26, 1973, Ser. No. 410,034

Int. Cl. F16c *33/30*

U.S. Cl. 308—236 **8 Claims**



1. A bearing race ring or the like with shaft locking means comprising,

a ring having a generally concave bore which includes a first conical portion and a second conical portion, said first and second conical portions being inclined in opposite direction toward each other,

a first split ring having a tapered outer surface and a helical end face, said first split ring being disposed in said bore with its tapered outer surface engaging said first conical portion of said bore, and

a second split ring having a tapered outer surface and a helical end face, said second split ring being disposed in said bore with said tapered outer surface engaging said second tapered conical portion of said bore and said helical end face engaging said helical end face of said first split ring whereby said first and second split rings are displaceable axially with respect to said ring responsive to relative rotation between said split rings.

3,892,450
COMBINATION STORAGE AND DISPLAY RACK

Edward J. Kolster, Lexington; Jess C. Bushyhead, Kansas City, and Harvey L. Kolster, Grain Valley, all of Mo., assignors to Hallmark Cards, Incorporated, Kansas City, Mo.

Filed Feb. 22, 1974, Ser. No. 444,905

Int. Cl. A47b *47/00, 87/02*

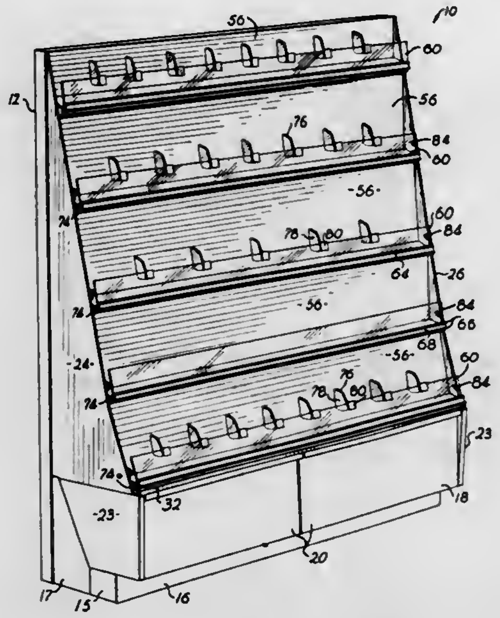
U.S. Cl. 312—117 **10 Claims**

1. A combination storage and display fixture, comprising:

a back wall;

stationary pocket-defining structure attached to the forward face of said back wall and presenting a plurality of superposed, stationary, transversely extending storage pockets;

an elongated, generally transversely J-shaped display rack in covering disposition to each of said storage pockets, and including a forward keeper of lesser height than the back wall of said rack which extends substantially the entire length of the latter for retaining display merchandise within said rack;



means pivotally mounting each of said racks in said disposition and permitting pivotal movement thereof with respect to the stationary storage pocket therebehind in order to allow selective access to the latter; and

frame structure supporting said back wall and display racks in inclined, merchandise receiving and displaying disposition.

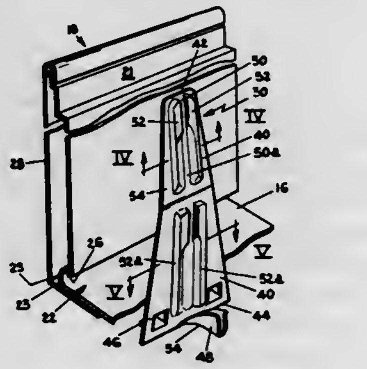
3,892,451
DRAWER

Roger C. Bruins, Jension, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.

Filed Oct. 11, 1973, Ser. No. 405,391

Int. Cl.^{2} A47B *88/00*

U.S. Cl. 312—330 **12 Claims**



1. A drawer construction including means for mounting a divider partition therein comprising in combination:

said drawer having a bottom wall and a pair of spaced-apart side walls, each of said side walls having a generally continuous recess formed therein, said recess extending along the length of said side walls;

a plurality of tab-receiving slots formed within said recess, said tab-receiving slots being spaced apart and extending along at least a portion of the length of said recess;

partition mounting means positionable in said drawer adjacent said side walls, said partition mounting means having tab means extending outwardly from the lower surface thereof, said tab means being adapted for selective positioning in said tab-receiving slots in said recess; and

engaging means on said partition mounting means for holding a divider partition therein between said side walls.

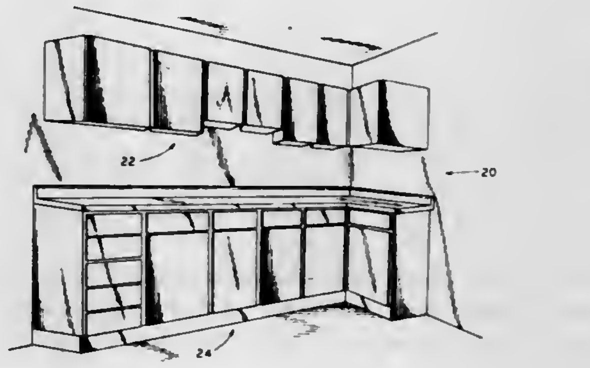
3,892,452
MODULAR CABINET ASSEMBLY

Chauncey L. Williams, Beverly Hills, Calif.; Alfonso Villa, and David H. Humphrey, both of Santurce, all of P.R., assignors to Duraform Inc., San Juan, P.R.

Filed Mar. 28, 1973, Ser. No. 346,680

Int. Cl.^{2} A47B *47/04*

U.S. Cl. 312—330 **5 Claims**



1. A container unit comprising a first wall;

a second wall substantially perpendicular to the first wall;

a third wall perpendicular to the first wall and attached to the second wall at a first predetermined obtuse angle;

a fourth wall perpendicular to the first wall and attached to the second wall at a second predetermined obtuse angle; a fifth wall attached to the third and fourth walls and attached to the second wall at a third predetermined obtuse angle, so that multiple container assemblies can be nested inside each other for storage and shipment;

the first wall comprising a front drawer wall;

the second wall comprising a bottom drawer wall;

the third wall comprising a left-hand side drawer wall;

the fourth wall comprising a right-hand side drawer wall;

the fifth wall comprising a rear drawer wall, said walls being integrally molded;

an upper left-hand drawer guide having an inner edge and having a lower planar surface;

a lower left-hand drawer guide having an upper planar surface parallel to the lower planar surface of the upper left-hand drawer guide;

an upper right-hand drawer guide having an inner edge and having a lower surface coplanar with the lower planar surface of the upper left-hand drawer guide;

a lower right-hand drawer guide having an upper surface coplanar with the upper planar surface of the lower left-hand drawer guide;

a left-hand drawer slide connected to the left-hand drawer wall and adapted to slide on the upper planar surface of the lower left-hand drawer guide;

a right-hand drawer slide connected to the right-hand side drawer wall adapted to slide on the upper planar surface of the lower right-hand drawer guide;

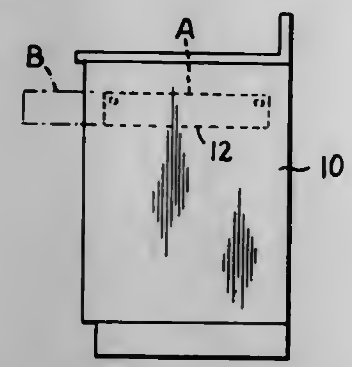
means for defining an arcuate surface connected to one of said drawer sidewalls and adapted to slide against the lower planar surface of the upper left-hand or upper right-hand drawer guide, so that vertical chatter is eliminated as the drawer is operated;

a left-hand upstanding member connected immobile with respect to the left-hand side drawer wall and adapted to slide along the inner edge of the upper left-hand drawer guide; and

a right-hand upstanding member connected immobile with respect to the right-hand side drawer wall and adapted to slide along the inner edge of the upper right-hand drawer guide, whereby horizontal chatter is eliminated as the drawer is operated.

3,892,453
DISHRACK ADJUSTMENT

Thomas Edward Dally, Herrin, Ill., assignor to Fedders Corporation, Edison, N.J.
Filed Oct. 7, 1974, Ser. No. 512,403
Int. Cl.^{2} A47B *88/00, 95/00*
U.S. Cl. 312—351 **12 Claims**



1. In a dishwasher having a frame, a tub, upper and lower dishracks mounted in the tub, an improvement in the mechanism for adjusting the height of the upper dishrack comprising:

first and second vertically movable dishrack support brackets on opposite sides of the tub, said movable brackets having a tub facing surface and an outboard surface,

first and second dishrack support means attached to the tub facing surfaces of said first and second dishrack support brackets respectively, said support means being adapted to be attached to the side of a dishrack to hold said dishrack against vertical movement relative to said vertically movable support brackets,

first and second rack gears attached to said outboard surfaces of said first and second movable support brackets respectively, each of said rack gears extending vertically along said outboard surfaces of said movable brackets,

first and second vertically stationery support brackets coupled to the frame of the dishwasher for horizontal movement relative to the frame of said dishwasher, said vertically stationery support brackets spaced outboard from said outboard surfaces of said first and second vertically movable support brackets respectively,

first and second rotatable pinion gears, each having an horizontal shaft, said shafts being mounted on respective ones of said vertically stationery support brackets, said pinion gears being permanently in engagement with said first and second rack gears respectively,

said vertically movable support brackets being supported solely by the engagement of said rack gears and said pinion gears,

first and second rotatable manual control means connected respectively to said first and second pinion shafts to permit operator rotation of said pinions to cause said movable support brackets to move vertically, and

first and second holding means to hold said first and second pinion gears respectively against rotational movement.

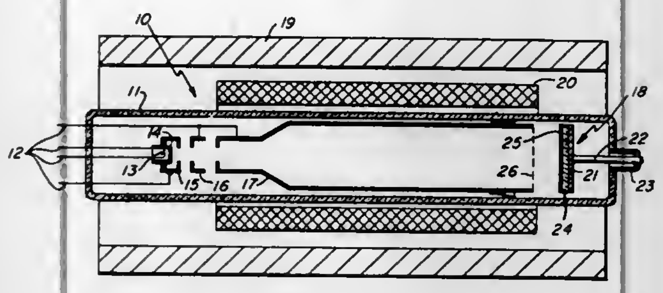
3,892,454
METHOD OF FORMING SILICON STORAGE TARGET

Amos Picker, Sharon, Mass., assignor to Raytheon Company, Lexington, Mass.
Division of Ser. No. 266,863, June 28, 1972, abandoned, which is a continuation of Ser. No. 76,957, Sept. 30, 1970, abandoned. This application Sept. 10, 1973, Ser. No. 396,028
Int. Cl. H01j *9/18*
U.S. Cl. 316—19 **11 Claims**

1. A method of forming an information storage device comprising:

forming a target structure by the steps comprising attaching a metal support structure to one side of a semiconductor wafer and oxidizing the other side of said semiconductor wafer;

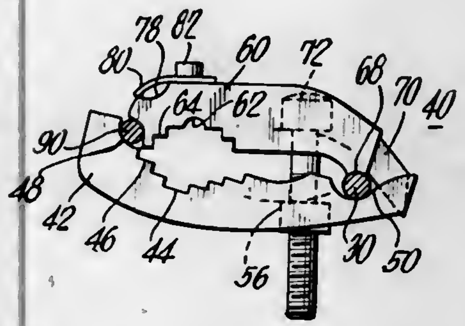
supporting said target structure with an electrically conductive structure extending through an insulating portion of an envelope and providing an electrical connection from the exterior of said envelope to said metal support structure spaced from an electron source facing said oxide layer; and



evacuating said envelope.

3,892,455
GROUND CLAMP CONNECTOR

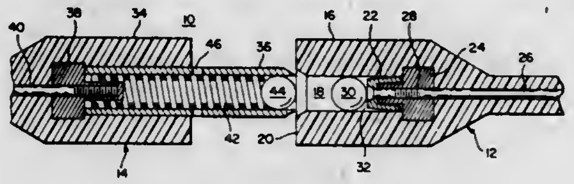
Thomas J. Sotolongo, Red Bank, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.Y.
Filed Mar. 26, 1974, Ser. No. 454,977
Int. Cl. H01r *3/06*
U.S. Cl. 339—14 L **5 Claims**



1. A clamp for electrically and mechanically connecting together at least two electrical conductors comprising: a first generally arcuate jaw member having a first end, a second end and a first recess defined by a plurality of V-shaped teeth therebetween; said first jaw member having a first nest adjacent said first end and a second nest adjacent said second end; a second generally arcuate jaw member having a first end, a second end and a second recess defined by a plurality of V-shaped teeth therebetween; said second jaw member having a third nest adjacent said first end of said second jaw member and a fourth nest adjacent said second end of said second jaw member; said first and second nests lying serially within the curvature of said first jaw member, and said third and fourth nests lying serially within the curvature of said second jaw member; said second jaw member first end terminating in a bifurcated turned up portion having an inner surface and extending selectively forwardly of said first jaw member first end, said third nest being defined by said second jaw member turned up portion inner surface and lying serially within the curvature of said second jaw member; and selectively operable fastening means pivotally coupling said first and second jaw members together whereby at least two electrical conductors placed in the conductor receiving cavities formed by said first and second recesses, said first and third nests and said second and fourth nests are coupled together when said selectively operable fastening means is tightened appropriately.

3,892,456
ELECTRICAL CONNECTOR ASSEMBLY

Julius C. Westmoreland, 7204 Plaza de la Costa, Carlsbad, Calif. 92008
Filed Dec. 26, 1973, Ser. No. 427,485
Int. Cl.^{2} H01R *13/44*
U.S. Cl. 339—40 **8 Claims**



1. An electrical connector assembly comprising:

a first member including:

a body member formed from a resilient, elastic material and having a cavity therein having a predetermined cross-section,

a first contact member positioned in the cavity,

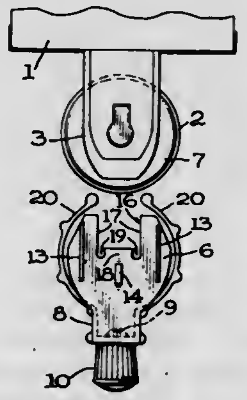
a shield member formed from a rigid material positioned in the cavity, the shield member having a cross-section conforming to the cross-section of the cavity and normally closing the cavity and the first contact member to the environment outside the body member, and

means for supporting the shield member in the cavity such that the shield member can move axially along the cavity, and

a second member including a second, tubular contact member having a hollow interior whose cross-section also conforms to the cross-section of the cavity and which can receive the shield member into its hollow interior, whereby the second contact member can penetrate between the shield member and the walls of the cavity to make electrical contact with the first contact member.

3,892,457
LOCKING MEANS FOR DOUBLE PIN FLUORESCENT LAMPS

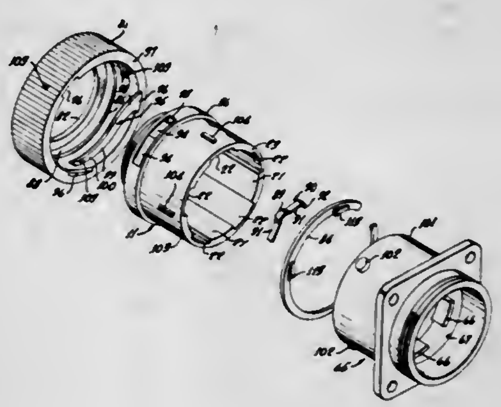
Lewis Detch, and Olive A. Detch, both of 2133 Chalfant St., Pittsburgh, Pa. 15221
Filed Dec. 4, 1973, Ser. No. 421,658
Int. Cl.^{2} H05B *33/02;* **H01R** *33/10*
U.S. Cl. 339—54 **4 Claims**



1. Locking means for a fluorescent lamp for holding said lamp in operative electrical assembly with a lamp holder means in which the lamp is mounted, comprising a base plate having a major surface for insertion between the cylindrical end portion of the lamp and the adjacent face of the lamp holder means, said base plate having means for engagement with end pin means of the lamp and provided also with first means offstanding in one direction axially of the lamp for engagement with the lamp holder means, second means extending axially of the lamp in the opposite direction for embracing the cylindrical end portion of the lamp, said means comprising a pair of resilient, radially expansible, arcuate arms, each arm being axially displaced, and separate, from the major surface of the base plate, said locking means serving, when inserted, to prevent axial rotation of the lamp with respect to the lamp holder means and insure retention of the lamp in the lamp holder means and thus to provide for operative electrical engagement of said pin means with complemental contact means of the lamp holder means, and to prevent inadvertent disengagement of the lamp from the lamp holder means.

3,892,458
COUPLING FOR ELECTRICAL CONNECTOR OR THE LIKE

Kenneth M. Clark, Beaumont, Calif., assignor to The Deutsch Company Electronic Components Division, Banning, Calif.
Continuation of Ser. No. 347,821, April 4, 1973, abandoned, which is a division of Ser. No. 167,317, July 29, 1971, Pat. No. 3,727,172, which is a continuation-in-part of Ser. No. 83,782, Oct. 26, 1970, abandoned. This application Dec. 26, 1973, Ser. No. 427,801
Int. Cl. H01r *13/54*
U.S. Cl. 339—90 R **1 Claim**



1. In combination with a first body and a second body, an arrangement for coupling said first body to said second body comprising

an annular member circumscribing said first body, means retaining said annular member to said first body so that said annular member is rotatable relative to said first body and substantially axially fixed relative to said first body including

a first radially extending shoulder on said first body,

a second radially extending shoulder on said first body,

an inwardly directed flange on said annular member adjacent said first shoulder for preventing movement of said annular member relative to said first body in one direction,

said annular member having an internal annular recess, and a snap ring received in said recess and extending therefrom to a position of adjacency with said second shoulder so that said snap ring engages said first body and said annular member for preventing movement of said annular member relative to said first body in the opposite direction,

said snap ring including at least one resilient tab extending outwardly therefrom for engaging said second body and exerting a resilient force thereon when said first and second bodies are coupled and providing an electrical connection to said second body,

said annular member having an inner circumferential surface having at least one groove therein,

said groove having an opening at one end of said annular member providing an entrance thereto, said groove having an inner portion and an inclined portion interconnecting said entrance and said inner portion of said groove,

said inner portion of said groove being circumferential relative to said annular member, the longitudinal axis of said inner portion falling in a plane that is substantially radial relative to said annular member,

a pin on said second body projecting outwardly therefrom, said pin being adapted to enter said groove and to be transmitted through said entrance and said inclined portion to said inner portion of said groove upon rotation of said annular member relative to said

first body and said second body,

said second body having an annular portion adapted to circumscribe a part of said first body intermediate said first body and said annular member when said pin so enters said groove,

and resilient detent means engaging said first body and said annular member to resist rotation of said annular member relative to said first body when said pin is in said inner portion of said groove.

3,892,459

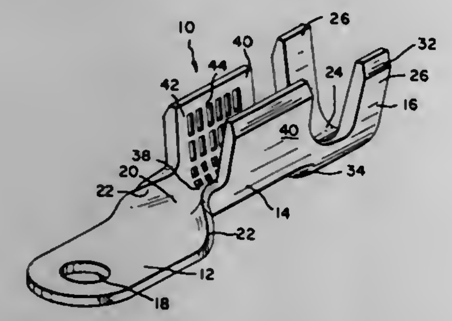
OPEN BARREL TERMINAL AND METHOD FOR TERMINATING AN ELECTRICAL WIRE THEREIN

Larry Eugene Dittmann, Harrisburg, and Timothy Allen Lemke, Dillsburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed June 21, 1974, Ser. No. 481,590

Int. Cl. H01r *11/08*

U.S. Cl. 339—95 R **1 Claim**



1. A terminal for receiving an electrical wire therein, which comprises:

a. a wire barrel having a floor bounded on either side by a generally vertical sidewall and with the inner surface of the floor and sidewalls containing a plurality of cavities, the cavities on the upper portion of the sidewalls being longer in one dimension than the cavities on the floor and lower portions of the sidewalls.

3,892,460

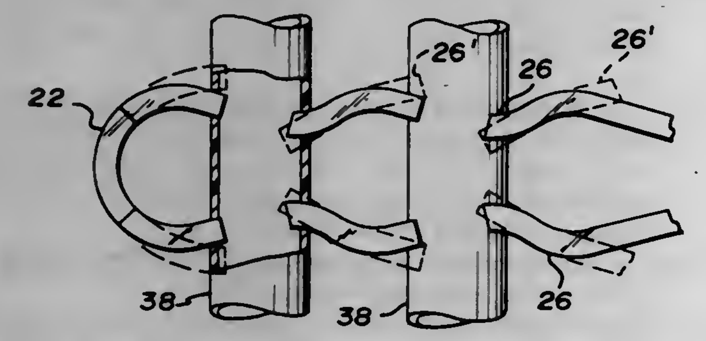
CONTACT MEANS

Hyman Izraeli, West Caldwell, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.

Filed Feb. 19, 1974, Ser. No. 443,912

Int. Cl.² H01R *13/38*

U.S. Cl. 339—98 **12 Claims**



1. Contact means for an electrical connector comprising: a metallic member formed from electrically conducting material and having a base portion and leg portions, said base portion being generally planar, said leg portions being bisected by a common plane and being integral with and extending from said base portion in generally spaced parallel relationship, there being a conductor receiving slot intermediate each two adjacent ones of said leg portions, said leg portions being skewed at a similar given angle about their respective central longitudinal axes out of the plane of said base portion and planarly oriented substantially parallel to one another to cause the rotational displacement of each of said leg portions in a similar direction about its longitudinal axis upon engagement with a conductor inserted within an associated slot intermediate two adjacent ones of said leg portions.

3,892,461

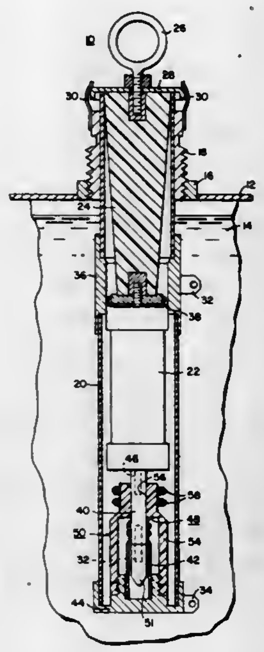
LOAD-BREAK CONNECTOR

August I. Keto, Jefferson City, Mo., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed July 10, 1974, Ser. No. 487,349

Int. Cl. H01r *13/52*

U.S. Cl. 339—111 **9 Claims**



1. An electrical load-break connector comprising:

first and second disengageable portions;

A probe attached to said first portion; and,

a probe receiver attached to said second portion;

said probe including a longitudinal conducting member and a longitudinal insulating member which are attached together;

said probe receiver including a contact which is engageable with said longitudinal conducting member to provide an electrical connection, a sleeve constructed of an insulating material and disposed in relation to said contact in such a manner that the probe extends through an opening in said sleeve when said contact is engaged with said probe, and magnetic means for placing a magnetic field between said sleeve and said longitudinal insualting member, said magnetic field influencing the path of any arc which develops between said sleeve and said longitudinal insulating member.

3,892,462

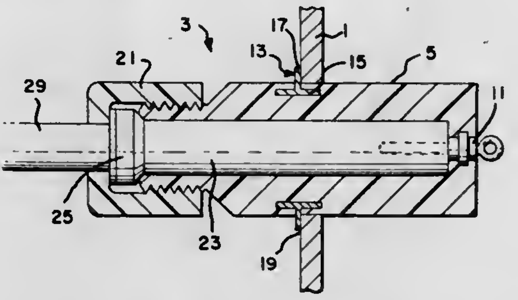
PLASTIC HIGH VOLTAGE RECEPTACLE WITH EMBEDDED METAL FLANGE

Douglas Wade Glover, Harrisburg, and Robert Eden Fry, Mechanicsburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed July 25, 1973, Ser. No. 382,611

Int. Cl.² H01R *9/16*

U.S. Cl. 339—126 **2 Claims**



1. A high voltage electrical receptacle which comprises in combination,

a. a body of plastic electrically insulating material having a hollow interior region closed at one end by an integral wall and an electrical contact extending through said plastic material of said wall into said hollow region at one end of said cavity, and

b. a metal flange member electrically isolated from said contact and having a head and a leg, said head being embedded in said plastic material and said leg extending externally of said plastic material, said plastic material being in compression about said flange member, said material of leg being of small crosssectional area relative to said head to minimize heat transfer into said body.

3,892,463

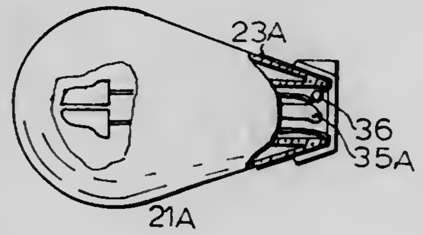
SNAP-LATCHING, SNAP-LIGHTING ELECTRIC LAMPS AND METHODS FOR MAKING SAME

John J. Horan, 420 Quigley Ave., Willow Grove, Pa. 19090

Continuation-in-part of Ser. Nos. 883,854, Dec. 8, 1969, abandoned, and Ser. No. 888,214, Dec. 8, 1969, Pat. No. 3,722,088. This application Sept. 13, 1971, Ser. No. 179,677

Int. Cl.² H01R *13/66*

U.S. Cl. 339—144 R **13 Claims**



1. A method for endowing a baseless glass electric-lamp body with a snap-latching, snap-lighting characteristic,

said method being applicable to a lamp body having a plurality of conductive leads issuing from the lower end thereof and comprising;

reverting said leads divergently upward from said end and along the surface thereabove of said body; and

depositing upon said surface near said end and upon said leads below the upper ends of said leads camming overlay of insulative material,

said overlay being applied with its upper edge sufficiently thick as to constitute an outward step discontinuity with respect to said surface,

said leads extending upwardly beyond said upper edge of said overlay and being exposed to form electrical terminals thereabove,

whereby said body is converted to a snap-latching and snap-lighting lamp via the insulative separation of said terminals from said end by said overlay.

3,892,464

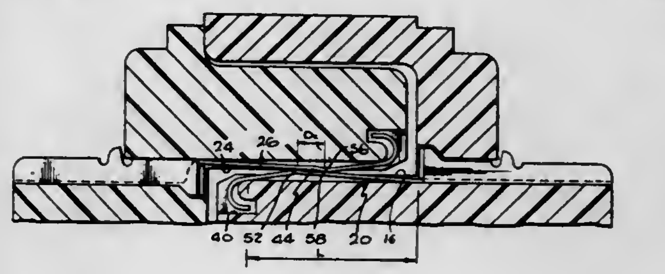
CONTACT ELEMENT FOR ELECTRICAL CONNECTOR

Wendell L. Griffin, Burbank, Calif., assignor to Viking Industries, Inc., Chatsworth, Calif.

Filed Mar. 19, 1973, Ser. No. 342,841

Int. Cl. H01r *25/02, 13/64*

U.S. Cl. 339—184 M **3 Claims**



1. An electrical connector comprising:

a pair of frames, each having at least one contactor surface with a plurality of uniformly spaced elongated grooves and a plurality of pockets formed at the front end of each groove below the level of the bottom wall of the groove, said frames being interfittable so that their grooves face one another; and

a plurality of contact elements, each having a shank fixed to a frame and a blade extending forwardly from the shank along one of the grooves;

each blade having a straight root portion with a rear end lying against the bottom wall of the groove, said root portion extending forwardly at an incline of less than 45° with the bottom wall of the groove and with its front end lying above the groove when the frames are disengaged from each other, said blade having a contact region with at least a rear half which extends substantially straight and at a constant height above the groove and with a front end that is convexly curved uniformly across the entire width of the blade and which forms a projection that projects above said substantially straight rear half of the contact region by less than the thickness of the blade, and said blade having a forward portion with a rear region which extends substantially straight from said projection at an incline towards the bottom of the groove and with a front region that forms a horseshoe bend and projects in a pocket of the frame.

3,892,465

HOLOGRAPHIC SYSTEMS FOR RECORDING AND READING OUT REFRACTIVE INDEX GRATINGS WITHIN THE BODY OF A PHOTOSENSITIVE ELECTRO-OPTICAL MATERIAL

Francois Micheron, and Guy Bismuth, both of Paris, France, assignors to Thomson-CSF S.C.P.I., Paris, France

Filed Sept. 7, 1973, Ser. No. 395,079

Claims priority, application France, Sept. 8, 1972, 72.31873

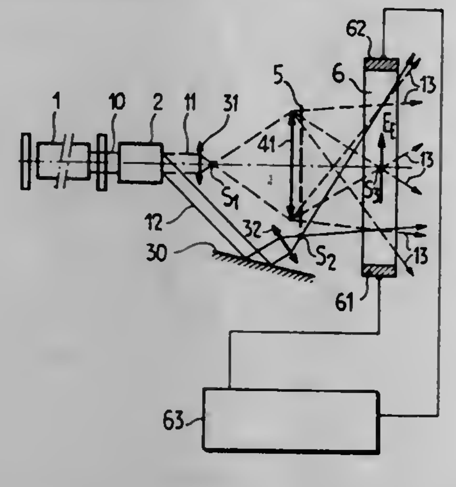
Int. Cl. G02b *27/00*

U.S. Cl. 350—3.5 **6 Claims**

1. Holographic system for recording and reading out, within the volume of a photosensitive electro-optical material, an optical grating; said optical grating being constituted by refractive index variations of said material and presenting an electrically variable optical efficiency; the operation of said system including a recording phase and a read-out phase and said system comprising:

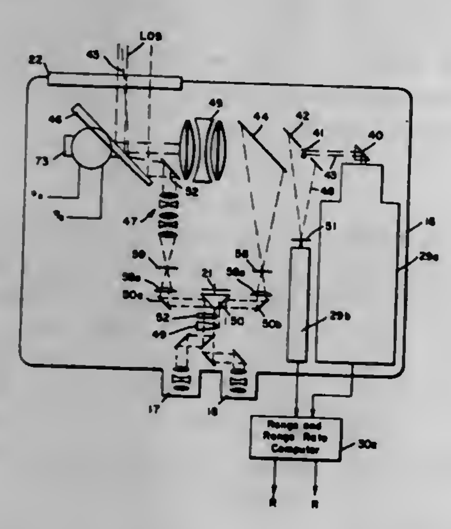
optical means for producing, during said recording phase, photo-excitation of said material by at least one interference fringes pattern and for illuminating, during said read-out phase, said material by a monochromatic light beam;

bias means for applying a variable electric D.C. field;
said photoexcitation of said material generating said index variations thereof, said fringes pattern thus constituting said optical grating;
said material exhibiting a non-linear relationship between the values of its double refracting property and of the local electric field;



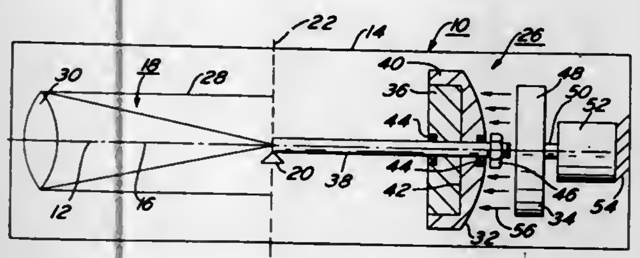
said variable electric field controlling said refractive index variations and having one recording value during said recording phase and at least one read-out value during said read-out phase,
and at least one said read-out value being distinct from said recording value and from any value included between said recording value and the inverse of said recording value.

3,892,466
LASER-SIGHT AND COMPUTER FOR ANTI-AIRCRAFT GUN FIRE CONTROL SYSTEM
Leonard Kendy, Palos Verdes Peninsula, and Richard L. Frey, Los Angeles, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Division of Ser. No. 209,268, Dec. 17, 1971, Pat. No. 3,845,276. This application July 12, 1974, Ser. No. 488,086
Int. Cl.² G02B *27/32, 23/04*
U.S. Cl. 350—10 **1 Claim**



1. In a gun fire control system, a gunner's sight comprising:
a. first and second telescopic optical paths, said first path having a field of view which is wider than said second path and having a magnification that is lower than said second path,
b. both of said paths including common biocular members for said gunner and a common gimbal mounted mirror as its output member;
c. said second path including means for transmitting and receiving a laser beam along a portion of said path which includes said gimballed mirror and excludes said biocular members;
d. each of said paths including sight defining reticle means, the reticle for said first optical path having an inner circle which defines the total field of view avialable from said second path, and the reticle for said second path having an inner circle equal in diameter to the diameter of said laser beam.

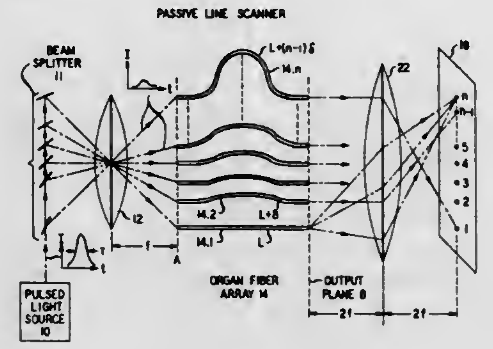
3,892,467
INERTIAL STABILIZATION SYSTEM
Ihsuk Shin, Berwyn, Pa., assignor to Dynasciences Corporation, Blue Bell, Pa.
Filed May 15, 1973, Ser. No. 360,614
Int. Cl. G02b *23/00*
U.S. Cl. 350—16 **9 Claims**



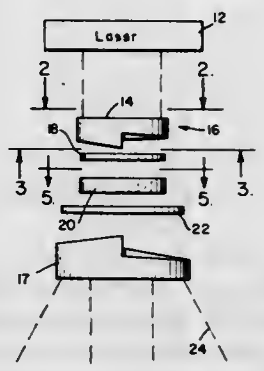
1. In an image motion compensator for an optical system having an objective supported within a housing subject to random angular motion with respect to the optical axis, a high and low frequency inertial stabilizer comprising:
a. means for angularly decoupling the objective from the housing about mutually perpendicular axes transverse to the optical axis and defining a pivot longitudinally spaced from the objective,
b. a first magnetic member rotatably supported coaxially with respect to the optical axis and arranged on the opposite side of the pivot from the objective in counterbalancing disposition therewith,
c. a second magnetic member rotatably supported on an axis fixed with respect to the housing and in spaced-apart, magnetically-coupled disposition with respect to said first magnetic member such that rotation of said second magnetic member produces corresponding rotation of said first magnetic member,
d. drive means for rotating said second magnetic member so that the axis of rotation thereof is coextensive with the optical axis in the absence of angular displacement of the housing relative to the optical axis, and
e. an electrically conductive member rotatable with said first magnetic member in detached disposition with respect to said second magnetic member and including a surface traversed by the magnetic field thereof,
whereby gyroscopic precession forces produced by said first magnetic member as a result of angular displacement of the housing are counteracted by restorative precessional forces produced in said electrically conductive member by eddy currents generated therein when a relative difference in surface velocities exists between said electrically conductive member and said second magnetic member as a consequence of axial misalignment caused by such angular displacement.

3,892,468
OPTICAL SCANNER UTILIZING ORGAN ARRAYS OF OPTICAL FIBERS
Michel Albert Duguay, Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Sept. 28, 1973, Ser. No. 401,635
Int. Cl. G02b *5/14*
U.S. Cl. 350—96 B **4 Claims**

1. A passive optical scanner comprising, in combination, means for producing from a light pulse of duration T a plurality of light pulses propagating along spatially separate paths, each of said plurality being substantially identical in transverse shape to the light pulse from which it is produced,
a first array of optical fibers of different lengths with the difference in length between functionally adjacent fibers being uniform, each of said fibers being arranged so that one end thereof terminates in an input plane and the opposite end thereof terminates in an output plane for emitting each light pulse in a direction perpendicular to said output plane, said difference in length producing a substantially uniform difference in time delay $\Delta\tau_1$ between functionally adjacent fibers so that $\Delta\tau_1 > T$, and
means for coupling each of said plurality of light pulses into separate ones of said fibers at said input plane so that said plurality of light pulses arrive at said output plane at different times and in different spatial locations, thereby to scan said output plane.

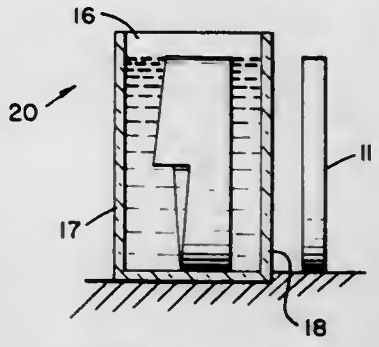


3,892,469
ELECTRO-OPTICAL VARIABLE FOCAL LENGTH LENS USING OPTICAL RING POLARIZER
James F. Lotspeich, Malibu, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed Feb. 1, 1974, Ser. No. 438,900
Int. Cl. G02f *1/26*
U.S. Cl. 350—150 **11 Claims**



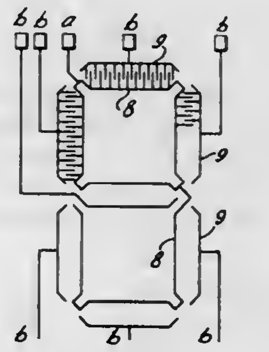
1. An electrically controlled variable focal length lens system for controlling the divergence of polarized light such as the output of a laser, said lens system comprising:
a. a solid body of crystalline material having a plurality of electrodes embedded therein, said electrodes being positioned in said crystal to produce at every internal point therein a birefringence proportional only to the square of the radial distance from the center of the lens to the given point, the slow axis of said crystal being everywhere tangent to its circle of consant refringence, said electrically controlled crystal thereby being adapted to affect ring-polarized light;
b. means positioned ahead of said lens for receiving linearly-polarized light and for converting said light into ring-polarized light; and
c. means to apply control voltages to said electrodes.

3,892,470
OPTICAL DEVICE FOR TRANSFORMING MONOCHROMATIC LINEARLY POLARIZED LIGHT TO RING POLARIZED LIGHT
James F. Lotspeich, Malibu, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed Feb. 1, 1974, Ser. No. 438,899
Int. Cl. G02b *27/28*
U.S. Cl. 350—157 **5 Claims**



1. A polarization converter for light of a predetermined wavelength comprising in combination:
a. a quarterwave plate;
b. a disc of birefringent material, said disc having one planar surface and a second opposed ramp surface, said ramp surface being cut so that the thickness of the disc varies linearly through a range of 2π radians as a function of the angle from an arbitrary radial line at zero radians between an initial thickness b_0, and a final thickness equal to b_0 plus 2λ divided by the birefringence of the crystal where λ is the predetermined wavelength of the radiation to be transmitted through the polarization converter.

3,892,471
ELECTRODES FOR LIQUID CRYSTAL COMPONENTS
Manfred Biermann; Bernd Brauer; Wolfgang Heidborn; Bernd Monno, and Klaus Thiessen, all of Berlin, Germany, assignors to VEB Werk fur Fernsehelektronik, Berlin, Germany
Filed Nov. 2, 1973, Ser. No. 412,364
Claims priority, application Germany, Nov. 6, 1972, 166682
Int. Cl. G02f *1/28*
U.S. Cl. 350—160 LC **13 Claims**



1. In a liquid crystal display device having first and second electrodes, both of the electrodes being optically transparent, and wherein a layer of a liquid crystal material is provided between the electrodes, the improvement comprising first and second spaced apart substrate support plates, the first and second electrodes being on said first and second plates, respectively, and wherein the area of one of said first and second electrodes is separated into a plurality of small partial regions of a size not discernible from a normal viewing distance of said device.

3,892,472

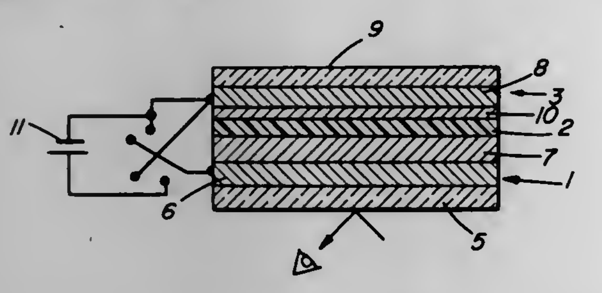
SELF-SUPPORTING PIGMENT LAYERS FOR ELECTROCHROMIC DISPLAY

Robert Domenico Giglia, Rye, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Dec. 26, 1973, Ser. No. 428,563

Int. Cl. G02f *1/36*

U.S. Cl. 350—160 R **8 Claims**



1. A varaible light transmission device which comprises light transmitting substrate having a persistent electrochromic material as a light modulating material, a counter-electrode, and a self-supporting layer comprising a pigment and an ion-conducting material in contact with said material and counter-electrode.

3,892,473

METHOD OF WRITING ADDITIONAL INFORMATION IN READ-ONLY MEMORY

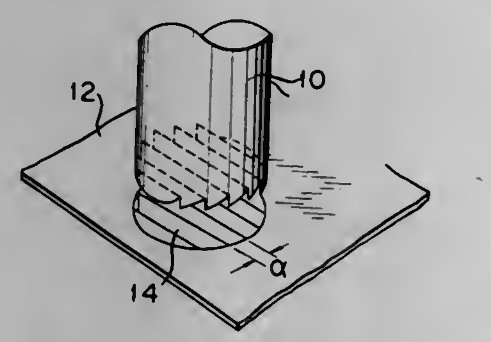
Shigeru Ando; Kazunaru Tomishima, and Akira Nishikawa, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Feb. 15, 1973, Ser. No. 332,764

Claims priority, application Japan, Feb. 15, 1972, 47-15812

Int. Cl. G02b *27/28*

U.S. Cl. 350—162 R **15 Claims**



1. A method of writing an additional bit of information in a read-only memory, including the step of superimposing, upon a phase diffraction grating defining a memory formed on a record medium of plastic material, a separate phase diffraction grating through a plastic deformation of the plastic material due to a pressure applied to the record medium, the separate phase diffraction grating having a selected one of parameters defining the direction of diffraction as determined by an additional bit of information to be written from that of the preceding diffraction grating.

3,892,474

OPTICAL WEAPON SIGHT HAVING CONTROLLED UNIVERSALLY MOVEABLE MIRROR

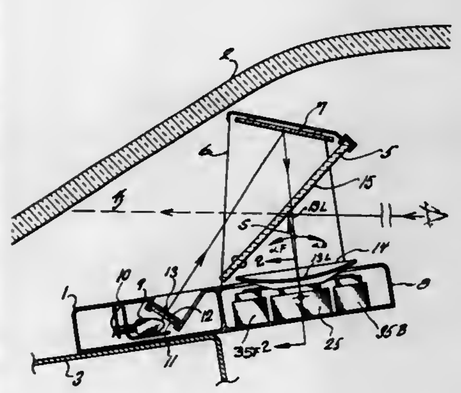
Hans Arne Ingvar Nilsson, Jonkoping, Sweden, assignor to Saab-Scania Aktiebolag, Linkoping, Sweden

Filed Nov. 8, 1973, Ser. No. 413,832

Claims priority, application Sweden, Nov. 13, 1972, 14679/72

Int. Cl. G01n *21/00*

U.S. Cl. 356—252 **8 Claims**



1. An optical sight device for weapon aiming, comprising a fixed frame that carries a viewing screen, means fixed on the frame for generating a sighting symbol image which is to be visible on the screen and to be used as an aiming reference, a mirror which reflects the sighting symbol image onto the screen and which is constrained to universal tilting about a pair of perpendicular coplanar tilt axes, and demand signal means for producing outputs signifying the magnitude and direction of displacement of the mirror about each of said axes that will so orient the mirror that the sighting symbol is positioned on the screen in accordance with conditions that affect aiming, said optical sight being characterized by:

A. two pairs of reversible linear motors, one pair for tilting the mirror about each of said tilt axes,

  1. each of said motors being connected between the frame and the mirror to react between them,

  2. the two motors of each pair being located

    a. substantial and equal distances to opposite sides of the intersection of the tilt axes, and

    b. on one of said axes;

B. position transducer means for producing an output that corresponds to the angular orientation of the mirror about each of said tilt axes, said position transducer means comprising

  1. an exciter element spaced to one side of the plane containing the tilt axes and located on a perpendicular to said plane that extends through the intersection of said axes,

  2. two pairs of fixed detector elements, one pair for each of said tilt axes, the two detector elements of each pair thereof being spaced equal distances to opposite sides of the plane that contains said perpendicular and their tilt axis and being located on the plane that contains said perpendicular and the other tilt axis, and

  3. an element at said one side of the first mentioned plane, constrained to move in unison with the mirror and having portions in opposing relationship to the exciter element and normally in partial opposing relationship to all of said detector elements to vary an electrical characteristic of a circuit comprising each pair of detector elements in accordance with the orientation of the mirror; and

C. circuit means connected with said demand signal means and connected in feedback relationship with said position transducer means for producing control outputs for the linear motors that correspond in magnitude and sign with any departure of the mirror from an orientation signified by the output of the demand signal means and for feeding said control outputs to the linear motors to cause them to maintain the mirror in the last mentioned orientation.

3,892,475

LASER BEAM ADJUSTMENT APPARATUS

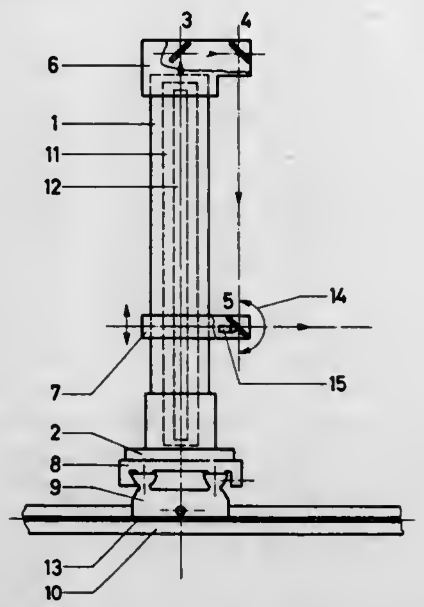
Arpad Bardocz, Munich, Germany, assignor to Physik Instrumente (PI) GmbH, Munich, Germany

Filed Sept. 5, 1973, Ser. No. 394,549

Claims priority, application Germany, Sept. 12, 1972, 2244578

Int. Cl. G01c *3/00*

U.S. Cl. 350—285 **11 Claims**



1. A laser beam adjustment apparatus, comprising:

a. base means;

b. a housing, mounted on said base means, substantially enclosing and holding a laser;

c. a first holder, mounted on one end of said housing;

d. first reflecting means, mounted on said first holder and pivotable around at least one axis of rotation, for intercepting the light beam emanating from said laser and for changing its direction of propogation;

e. second reflecting means, mounted on said first holder and pivotable around at least one axis of rotation for intercepting the light beam reflected from said first reflecting means for changing its direction of propogation;

f. a second holder, mounted on said housing;

g. third reflecting means, mounted on said second holder and pivotable around at least one axis of rotation for intercepting the light beam reflected from said second reflecting means and for changing its direction of propogation.

3,892,476

CATOPTRIC SYSTEM FOR SIMULTANEOUS CONCENTRATION OF LIGHT, LASER, AND OTHER TYPE PARAXIAL RAYS INTO BEAMS

Benjamin F. Sherman, Jr., 6329 Mori St., McLean, Va. 22101

Filed Apr. 18, 1973, Ser. No. 352,466

Int. Cl. G02d *5/10*

U.S. Cl. 350—294 **8 Claims**

1. A concentrator of rays into at least one concentrated output beam, comprising:

at least two warped truncated shells, including an outer concave shell, provided with at least one inner reflecting surface and

an inner convex paraboloidal shell of a diameter, smaller than that of said outer shell provided with at least one outer reflecting surface;

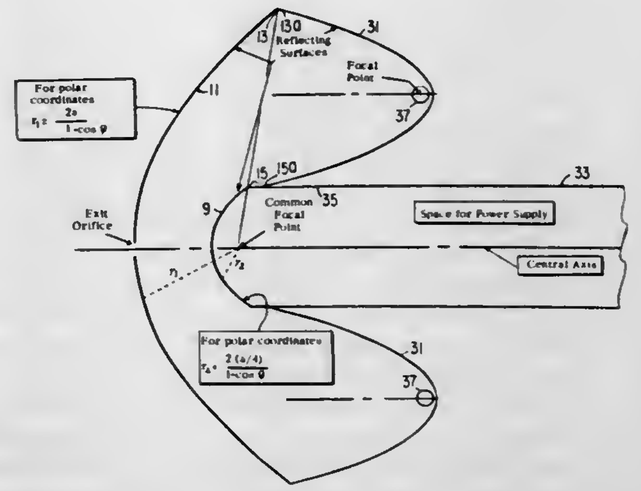
means to mount said shells about the common focal point on their central axis;

the extremities of said shells being aligned on a conical surface and being defined by an imaginary cone whose surface is traversed by the limiting rays and whose vertex is at the common focal point, and whose axis coincides with the central axis,

said extremities defining the limiting rays impinging upon said reflecting surfaces;

an exit orifice in the vertex of said outer shell at the intersection with the said central axis;

the reflecting surfaces of the shells being mounted spaced from each other and substantially facing each other at angles and at distances providing at least two successive reflections from each surface of said rays impinging upon them;



the ratio of the diameter of the exit orifice to the outermost diameter of the outer shell being less than 1/'R^2 where R is the ratio of the dimension of the outer shell to that of the inner shell and

at least one radiating source of paraxial rays located rearwardly from the concentrator, the vertex of the inner shell being a one way mirror.

3,892,477

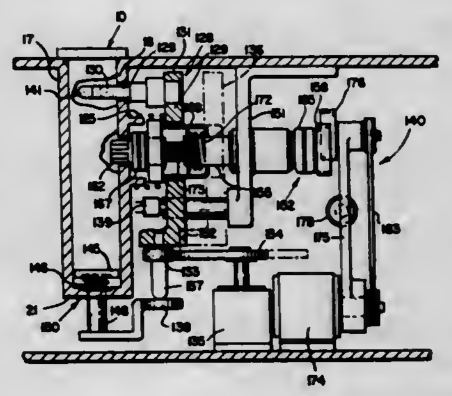
VIEWER PROVIDING AUTOMATIC CASSETTE EJECTION

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 227,093, Feb. 17, 1972. This application Jan. 2, 1974, Ser. No. 429,719

Int. Cl. G03b *23/02*

U.S. Cl. 352—74 **1 Claim**



1. Photographic projection apparatus for use with a cassette containing a first and second rotatably mounted spool and an elongated image-bearing film strip having its ends respectively connected to the spools and being initially substantially entirely coiled around said first spool, said apparatus comprising: a housing having a slot formed therein, said slot being configured to have at least a major portion of the cassette inserted thereinto;

means within said housing fixedly located with respect thereto for receiving the cassette as it is inserted through said slot and locating the cassette at an operative position within said housing in alignment with said slot.

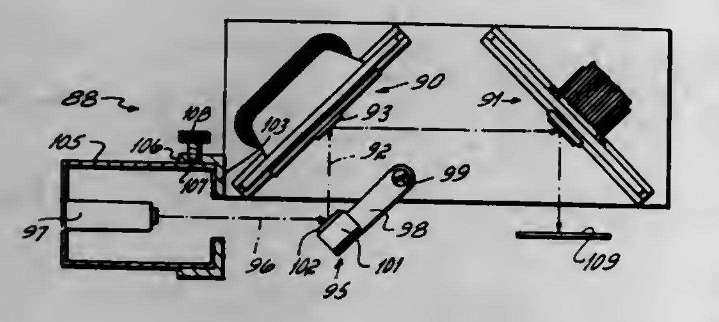
a pair of drive shafts initially positioned within said housing so as not to be contacted by the cassette as it is inserted

through said slot into said receiving and locating means;
normally unenergized film image projection means;
means within said housing automatically responsive to the insertion of the cassette into said receiving and locating means for displacing said drive shafts from their said initial positions into respective engagement with the cassette's spools, means responsive to movement of said drive shafts into engagement with said spools; for energizing said film image projection means and for energizing said drive shaft engaged with said second cassette spool to facilitate the progressive advancement of the film strip into operative relationship with said film image projection means and the coiling of the film strip around said second cassette spool, and means for energizing said drive shaft engaging said first cassette spool to effect the return of the film strip to its original position within the cassette, for returning said drive shafts to their original positions within said housing, for deenergizing said drive shafts and said film image projection means and for displacing the cassette outwardly from its operative position within said housing through said slot, the initiation and termination of the entire operation and control of said apparatus thus being solely and completely responsive to the single manual step of an operator's inserting the cassette into said slot and said apparatus thus serving automatically to condition the cassette for repetitive such use in said apparatus prior to its automatically effecting said displacement of the cassette.

3,892,478
SOUND TO IMAGE TRANSLATOR

James G. Lampkin, Cincinnati, Ohio, assignor to Lissatronic Corporation, Cincinnati, Ohio

Filed Sept. 27, 1973, Ser. No. 401,416
Int. Cl. G03b *31/00*
U.S. Cl. 353—15 **25 Claims**

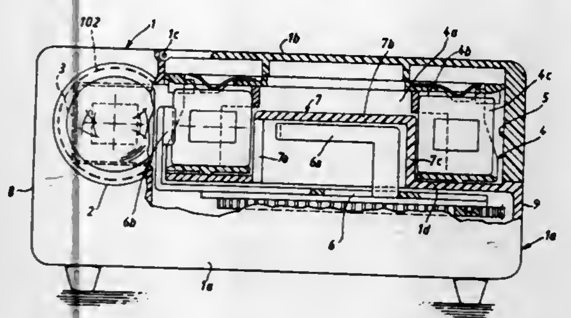


1. A visual sound system comprising:
a source of electrical audio frequency sound signals, and
an improved sound to image translator for producing a moving beam of light which, when projected on a screen, forms Lissajous patterns correlated to the sound, said translator including:
a light source for providing a beam of light,
a screen upon which a beam of light can be projected,
a first light reflector positioned to reflect said beam of light, from said source, said first reflector being pivotally supported for movement about a first pivot axis;
means responsive to electrical audio sound signals provided by said sound source for oscillating said first reflector about said first pivot axis;
a second light reflector positioned to reflect light reflected by said first reflector, said second reflector being pivotally supported for movement about a second pivot axis arranged at a 90° angle to said first pivot axis, and
means responsive to electrical audio sound signals provided by said sound source for oscillating said second reflector about said second pivot axis, the light reflected from said second reflector, when projected on said screen, forming a moving dot of light which makes Lissajous patterns correlated to the sound from said source.

3,892,479
SLIDE PROJECTOR FOR USE WITH RING-SHAPED MAGAZINES

Alfred Winkler; Wolfgang Geisslinger, both of Munich, and Peter Ungnadner, Unterhaching, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 23, 1974, Ser. No. 435,855
Claims priority, application Germany, Jan. 30, 1973, 7303400[U]
Int. Cl.² G03B *23/06*
U.S. Cl. 353—117 **10 Claims**

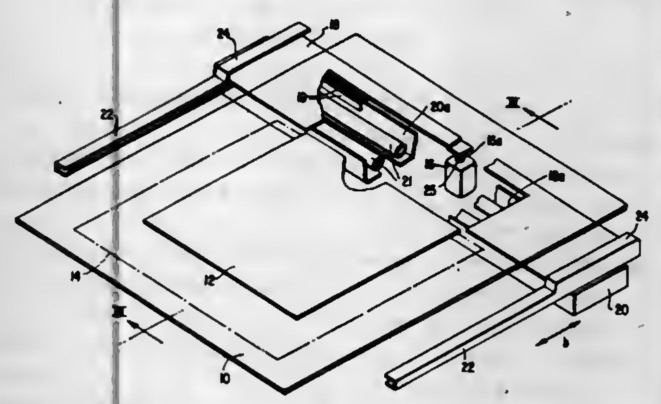


1. In a slide projector for use with ring-shaped magazines having radially extending compartments for photographic transparencies, a combination comprising a housing having a hollow section which extends into and is surrounded by a ring-shaped magazine when the latter is mounted in said housing, said hollow section of said housing comprising a substantially cylindrical upright wall and a top wall at the upper end of said cylindrical wall, and said hollow section having an opening provided in said cylindrical wall in register with a compartment of a magazine surrounding said section; and a slide changing mechanism including a portion located in the interior of said hollow section and being movable outwardly through and beyond said opening to engage and expel a photographic transparency from that compartment which registers with said opening, said outwardly movable portion of said slide changing mechanism being located in its entirety below the level of said top wall of said hollow section, whereby if the magazine is removed and then carelessly or inaccurately reinserted into the slide projector housing said top wall will prevent said outwardly movable portion of said slide changing mechanism from being hit and damaged by the magazine.

3,892,480
EXPOSURE DEVICE FOR COPYING MACHINE AND THE LIKE

Ryuzo Okada, Yamato, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Nov. 21, 1973, Ser. No. 417,719
Claims priority, application Japan, Dec. 27, 1972, 47-148094[U]
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 **6 Claims**

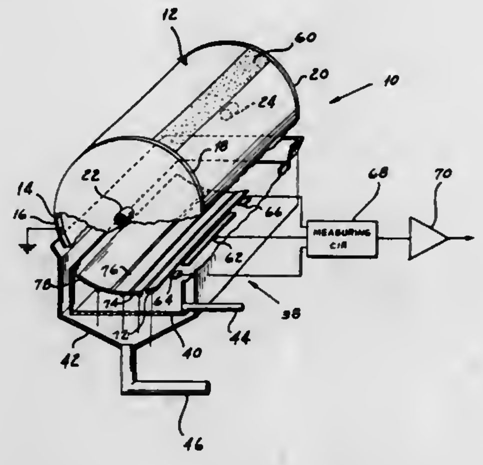


1. In an electrostatic copying machine where an original of a first size positioned on a transparent platen is illuminated by a light source and the image thereof is reflected onto a uniformly charged photosensitive layer to form a latent electrostatic image on the photosensitive layer, which is subsequently toner developed, the improvement of preventing toner deposition at a predetermined, marginal area of said photosensitive layer when an original of a second size smaller than said first size is copied by said machine, the predetermined marginal area corresponding to the excess area of said first size original with respect to said second size origianl, the improvement comprising a plate movably mounted with respect to said light source, said plate including an opening therein and moving means for moving said plate to: (1) a first position interposed between said light source and said transparent platen when said second size is copied, and (2) to a second position not interposed between said light source and said transparent platen when said first size original is copied, the size of the opening in said plate being such that it reduces the area illuminated by said light source to substantially that of said second size original when said plate is in said first position, the remaining light from said light source being affected by the area of said plate adjacent said opening to prevent toner deposition at said predetermined marginal area of the photosensitive layer by causing the predetermined marginal area of said photosensitive layer to be exposed in the same manner as the non-image areas of said latent electrostatic image so that when said image is toner developed, toner will deposit only on the image areas.

3,892,481
AUTOMATIC DEVELOPMENT ELECTRODE BIAS CONTROL SYSTEM

Louis F. Schaefer, Palo Alto, and Kenneth W. Gardiner, Menlo Park, both of Calif., assignors to Savin Business Machines Corporation, Valhalla, N.Y.

Filed June 17, 1974, Ser. No. 479,659
Int. Cl. G03g *9/04*
U.S. Cl. 355—10 **26 Claims**

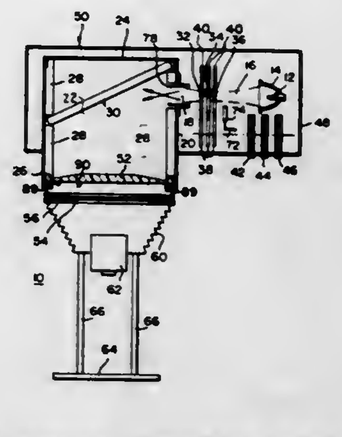


1. A system for automatically controlling the biasing potential on a developer electrode in an electrostatic copying machine including in combination, a support, a surface layer of photoconductive material on said support adapted to receive a latent electrostatic image to be developed, a developer unit for contacting developer fluid with said image to develop the same, a biasing electrode in said developer unit, a sensing electrode insulated from ground, means mounting said sensing electrode in said developer unit at a location at which developer fluid is positioned between and in contact with both said photoconductive surface and said sensing electrode to enable said sensing electrode to assume substantially the potential on said surface by conduction, and means responsive to the potential of said sensing electrode for applying a biasing potential to said biasing electrode.

3,892,482
COLOR CORRECTING ILLUMINATION SYSTEM FOR COLOR ENLARGERS AND THE LIKE

Louis L. Weisglass, New York, N.Y., assignor to Berkey Photo, Inc., New York, N.Y.

Filed Mar. 7, 1974, Ser. No. 448,912
Int. Cl. G03b *27/76*
U.S. Cl. 355—35 **35 Claims**

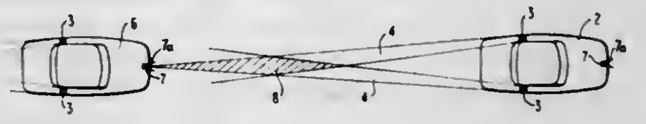


1. An illuminating system, comprising source means for forming a beam of light, mixing chamber means for receiving the beam, filter means for coloring a part of the beam, said mixing chamber means having opaque reflective dispersing means for mixing the light in said chamber means, said chamber means having an exit window for allowing egress of the light from said chamber means, diffusion means covering the window for diffusing light as it leaves said chamber means, said diffusion means having a plurality of portions, and coloring means located in said chamber means near the window for imparting a color change to light emerging from the chamber, said coloring means being sufficiently closer to one portion of the diffusion means than another portion to impart a greater color change to the one portion than to the other portion.

3,892,483
DISTANCE WARNING DEVICE FOR VEHICLES

Helmut Säufferer, Esslingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany

Filed Nov. 10, 1972, Ser. No. 305,318
Claims priority, application Germany, Nov. 11, 1971, 2156001
Int. Cl. G01c *3/08;* G08g *1/00*
U.S. Cl. 356—4 **17 Claims**

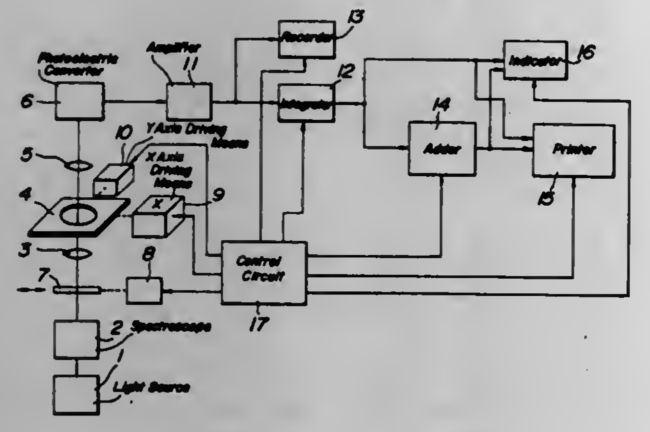


1. A distance warning installation for vehicles, especially for motor vehicles, characterized in that each vehicle is equipped with two transmitter means mounted substantially at roof height to the left and right of the vehicle for transmitting radiant energy toward the rear and with a forwardly directed receiver means disposed at the front end of the vehicle for receiving the same type of radiant energy, said transmitter means radiating each a directional beam rearwardly with predetermined inclination both with respect to the plane of the road surface as well as with respect to the vehicle longitudinal center plane and thus an area of increased radiation intensity results at a predetermined distance to the rear of the vehicle which can be detected by a receiver means of a following vehicle, and in that upon impingement of the increased radiation intensity area of the directional beams transmitted by the transmitter means of a preceding vehicle on the receiver means of a following vehicle, a control signal is automatically produced by said receiver means.

3,892,484

AUTOMATIC DRIVING AND CONTROL CIRCUIT FOR A MICROSCOPE STAGE OF A MICROPHOTOMETRIC APPARATUS

Kosaku Tsuboshima, and Ryoichi Orimo, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Aug. 13, 1973, Ser. No. 387,807
Claims priority, application Japan, Aug. 15, 1972, 47-81633
Int. Cl. G01j *3/42;* **G01m** *21/22*
U.S. Cl. 356—96 3 Claims



1. A scanning and integration type microphotometric apparatus comprising an optical system essentially consisting of a light source, a spectroscope, a condenser lens, a stage on which is disposed a specimen and mounted movable in given directions, a driving means for driving said stage in the given directions, an objective lens, and a photoelectric converter for receiving incident light rays penetrated through the specimen and generating a corresponding electric signal output, an amplifier for amplifying the output from said photoelectric converter, an integrator for integrating the output from said amplifier and obtaining the amount of light absorbed by the specimen, a recorder receiving the output from the output from said amplifier and recording a light absorptivity curve plotted at each light spot scanning on a record sheet, an adder adding the output from said integrator to obtain the total amount of light absorbed by the overall specimen, a printer receiving the outputs from said integrator and from said adder and printing the amount of light absorbed by the specimen and the total amount of light absorbed by the overall specimen, respectively, an indicator receiving the outputs from said integrator and from said adder and indicating the amount of light absorbed by the specimen and the total amount of light absorbed by the overall specimen, respectively, and a control circuit interconnecting said driving means, integrator, recorder, adder, printer and indicator to control all of these devices in operative relationship with each other.

3,892,485

MONITORING APPARATUS FOR MEASURING PARTICLES SUSPENDED IN LIQUID AND FOR MEASURING THE OPACITY OF THE LIQUID

Robert Bruce Merritt, Sharonville, and Norbert John Hester, Cincinnati, both of Ohio, assignors to General Electric Company, Wilmington, Mass.
Filed May 6, 1974, Ser. No. 467,286
Int. Cl. G01n *21/22*
U.S. Cl. 356—103 8 Claims

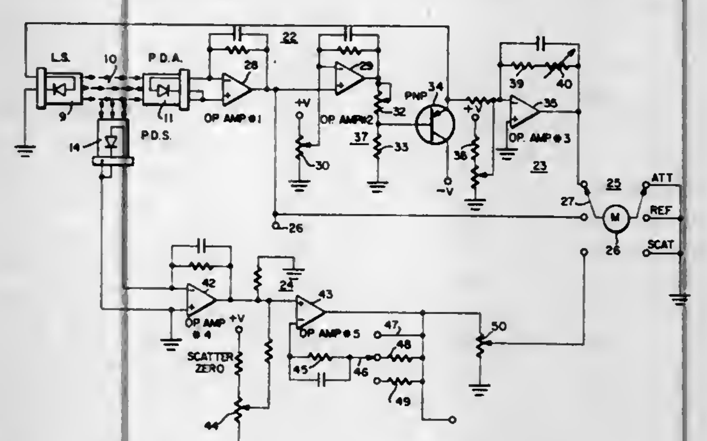
7. A monitor for indirectly measuring the opacity of a liquid comprising,

a. a body adapted for immersion in a liquid and having means defining a passage for receiving liquid to be monitored;

b. a source of radiation positioned in said body and communicating with said passage for transmitting a beam of radiant energy through said liquid;

c. radiation detection means for receiving radiant energy transmitted through said liquid;

d. means for varying the output from said source of radiation as a function of the transmission characteristics of said liquid including a control loop for varying the supply voltage to said radiation source in response to the output of said detection means to maintain the illumination at said detection means constant with changes in the opacity of the liquid; and

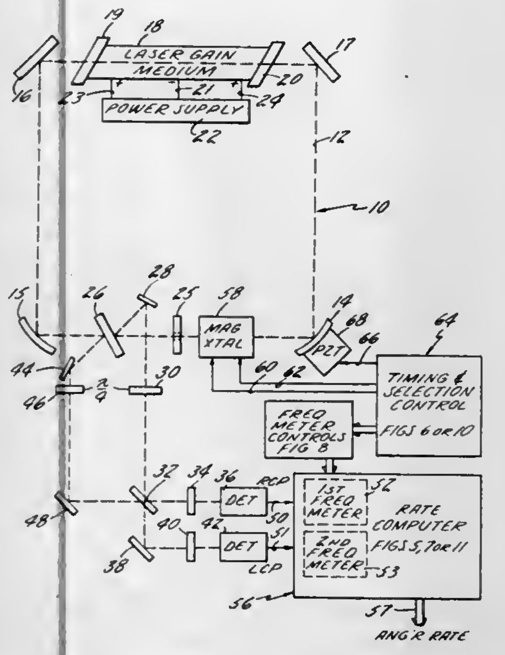


e. means to measure the supply voltage to said radiation source to provide an indication of the transmission characteristic and opacity of said liquid.

3,892,486

SEQUENTIALLY SWITCHED LASER GYRO

Carl M. Ferrar, Rockville, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Apr. 23, 1973, Ser. No. 355,348
Int. Cl. H01s *3/10*
U.S. Cl. 356—106 LR 12 Claims



1. A sequentially switched laser gyro comprising:

a closed loop optical cavity including a plurality of mirrors defining an optical path, and including selectively operable means for adjusting the length of said optical path and the commensurate isotropic cavity resonance frequency of said optical cavity and having a laser gain medium disposed in said optical path;

a polarization anisotropy disposed in said optical path, wherein said optical cavity sustains laser oscillations in two different substantially mutually opposite polarizations at different frequencies;

means for extracting counterclockwise waves from said cavity;

means for extracting clockwise waves from said cavity;

means for mixing the clockwise and counterclockwise waves extracted from said cavity and for separating said waves into waves of a first one of said polarizations and waves of a second one of said polarizations;

means responsive to said first polarization waves for providing first signals at a frequency proportional to the difference in frequency of the clockwise and counterclockwise waves of said first polarization;

means responsive to said second polarization waves for providing second signals at a frequency proportional to the difference in frequency of the clockwise and counterclockwise waves of said second polarization;

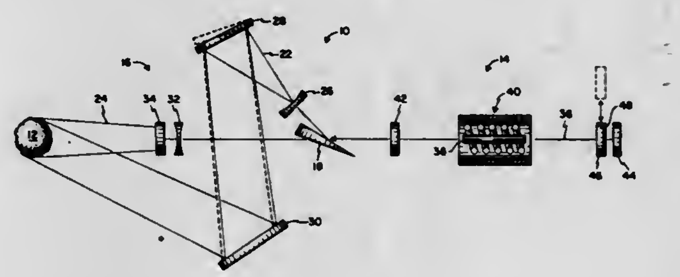
frequency control means including cyclically operable means for selectively operating said optical path length adjusting means thereby to adjust the length of said optical path to support waves of said first polarization during first increments of time interspersed with second increments of time, said increments of time being of equal duration, and for selectively operating said optical path length adjusting means to adjust the length of said optical path to support waves of said second polarization during said second increments of time; and

output means providing an output manifestation of angular rate of said sequentially switched laser gyro as a function of a combination of said first signals provided in response to waves of said first polarization during said first increments of time and said second signals provided in response to waves of said second polarization during said second increments of time.

3,892,487

HOLOGRAPHIC CONTOURING WITH A MULTIFREQUENCY LASER

Ralph F. Wuerker, Palo Verdes Estates, and Lee O. Heflinger, Torrance, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.
Division of Ser. No. 310,858, Nov. 30, 1972, Pat. No. 3,818,372. This application Mar. 18, 1974, Ser. No. 452,170
Int. Cl. G01b *9/02;* **G02b** *27/00*
U.S. Cl. 356—109 6 Claims



1. Holographic contouring apparatus comprising:

a multifrequency laser oscillator comprising:

an active lasing medium capable of being pumped to a population inversion which creates light emission at first and second optical frequencies; means for pumping said lasing medium to said population inversion to produce light emission at said two optical frequencies; an optical cavity containing said lasing medium including an output reflector at the front end of said cavity, a first reflector at the rear end of said cavity for selecting said first frequency, and a second reflector at the rear cavity end for selecting said second frequency; and means for causing said medium to lase at said frequencies in rapid succession comprising at least one rear end reflector movable between an active position where it reflects the laser beam and an inactive position where said beam is reflected by the other rear end reflector;

a beam splitter for splitting the output beam from said laser oscillator into a reference beam and a scene beam;

light sensitive means disposed in a predetermined plane for recording a hologram of an object;

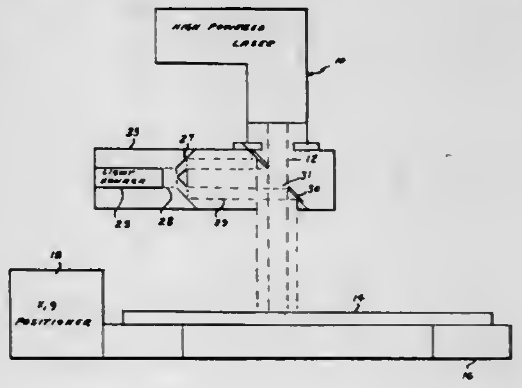
first fixed optical means for directing said reference beam toward said light-sensitive means; and

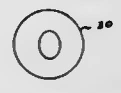
second optical means for directing said scene beam onto the object to be recorded and thence onto said light-sensitive means, the difference in frequency of said wavelengths being such that range contours of a predetermined spacing are produced on the object.

3,892,488

LASER SITE MARKING SYSTEM

Walter R. Edmonds, Fairborn, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Feb. 22, 1974, Ser. No. 445,004
Int. Cl. G01b *11/26*
U.S. Cl. 356—153 1 Claim





1. In combination with a high powered laser providing a beam for cutting a work piece which is adapted to be moved relative to the laser beam path, a laser site marking system, comprising: means for providing a high intensity annular visible light beam; means surrounding the laser beam path, for directing the annular beam along a path in close proximity and substantially conforming to the outer circumference of the laser beam; said means for providing a high intensity annular visible light beam including means for providing a high intensity solid light beam and means for converting said solid light beam to an annular light beam; said means for directing the annular beam along a path substantially conforming to the outer circumference of the laser beam comprising a flat mirror having a hole therein in the shape of a 45° ellipse whereby the hole presents a circular profile to the laser beam and said high intensity annular beam.

3,892,489

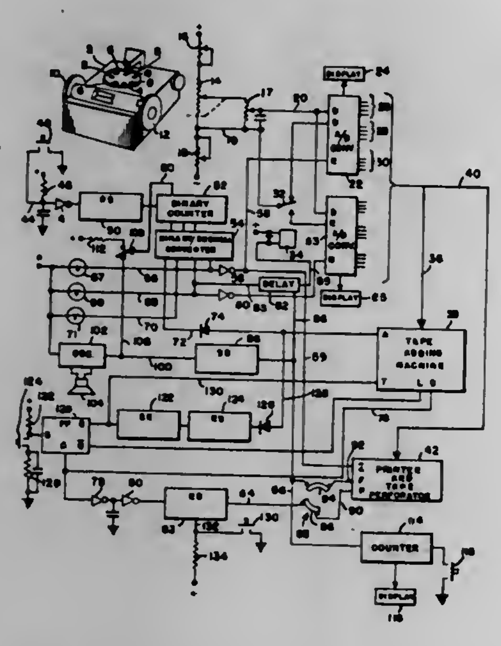
DATA ACQUISITION SYSTEM

Francis E. Wdzieczkowski, Barrington, N.J., assignor to Smith-Kline Corporation, Philadelphia, Pa.
Filed Aug. 17, 1973, Ser. No. 389,113
Int. Cl. G01b *11/08*
U.S. Cl. 356—157 5 Claims

1. A data acquisition system for use in antibiotic testing by the serial measurement of zones on a bacteria culture in which growth of bacteria is inhibited alternately by standard antibiotics, and antibiotics of unknown properties, comprising:

means for successively measuring said zones, comprising means for producing an image of each of said zones, means providing a reference index, means for moving said image and said reference index relative to each

other, and means for producing an electrical signal representative of the extent of such relative movement, whereby there may be produced for each zone an electrical representation of its diameter;
first storage means, connected to said measuring means, for temporarily storing a representation of the diameter of a zone for the purpose of display of said representation;
second storage means, connected to said measuring means, for temporarily storing a representation of the diameter of a zone for the purpose of display of said representation;
means for displaying the representations stored in said first and second storage means;



means, connected to said first and second storage means, for recording said representations; and
sequencing means responsive to operator-initiated impulses for effecting temporary storage by said first storage means of a representation of the diameter of the first of a pair of successively measured zones upon the initiation of a first impulse, effecting temporary storage by said second storage means of a representation of the diameter of the second zone of said pair upon the initiation of a second impulse, and effecting recording of the stored representations by said recording means simultaneously upon the initiation of a third impulse.

3,892,490
MONITORING SYSTEM FOR COATING A SUBSTRATE

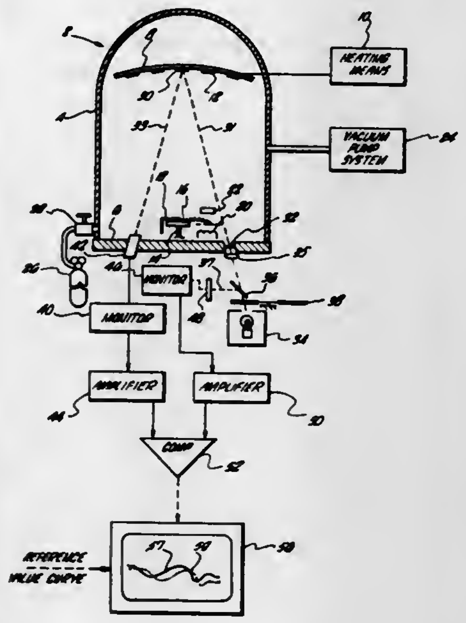
Toshio Uetsuki; Mitsuo Okajima, both of Osaka, Japan, and Yoshio Yuasa, Redondo Beach, Calif., assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

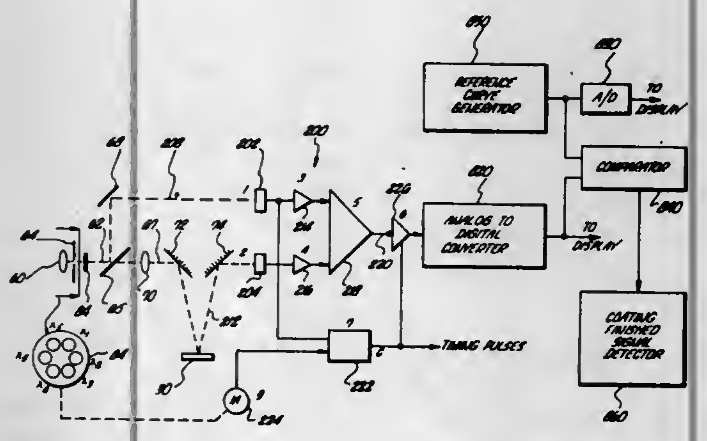
Filed Mar. 6, 1974, Ser. No. 448,683

Int. Cl. G01b *11/00*

U.S. Cl. 356—161 **19 Claims**

1. A monitoring system for controlling the depositing of a layer of material on a substrate comprising:
a source for producing a beam of energy having a variable wavelength across a predetermined range;
means receiving at least a portion of the beam of energy after it has contacted the material on the substrate for providing corresponding monitoring signals across the predetermined range representative of the material deposited on the substrate;
means for comparing the corresponding monitoring signals with a predetermined range of values representing a desired thickness of material; and
means for indicating when each of the monitoring signals are respectively matched with predetermined values whereby the desired thickness of material has been deposited on the substrate including a visual display screen




REFERENCE CURVE GENERATOR
A/D
TO DISPLAY
COMPARATOR
ANALOG TO DIGITAL CONVERTER
TO DISPLAY
TIMING PULSES
COATING FINISHED SIGNAL DETECTOR

for displaying both the monitoring signals and the predetermined range of values.

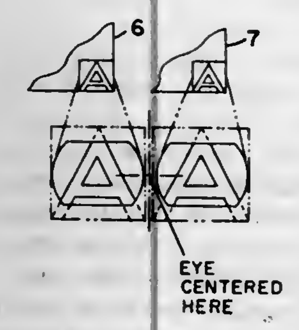
3,892,491
COMPARATOR, OPTICAL INSPECTION

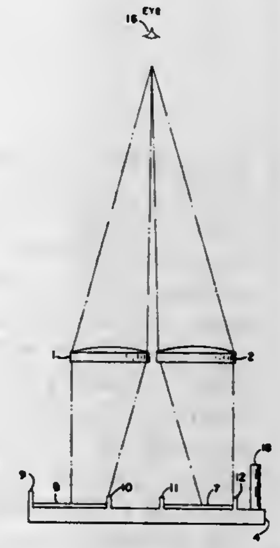
Albert E. Kanode, Longwood, Fla., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed July 2, 1974, Ser. No. 485,175

Int. Cl. G01b *11/24*

U.S. Cl. 356—168 **1 Claim**





1. A method of comparing a first object with a second object with the use of first and second lenses comprising the steps of aligning said first and second objects in predetermined spacial relationship to each other in a first plane; choosing first and second lenses which are identical in their optical and physical characteristics; aligning said first and second lenses in a second plane which is parallel to the first plane such that from a fixed point an image is formed due to the first lens which is a first portion of the first object and a second image is formed due to the second lens which is a portion of the second object which corresponds to said portion of said first object; placing said fixed point on a centerline between the two lenses and at a distance of double their focal lengths; locating said first and second planes at a distance equal to the focal length of the lenses; observing the two images alternately with a single observation means located at said fixed point; moving the plane of the first and second lenses relative to said first and second objects so as to provide for more precise focusing of the images to be viewed; moving the second lens in the second plane so as to provide precise alignment of the image of the portions of the second object with respect to the image of the portions of said first object viewed through said first lens; and moving said first and second objects simultaneously so that all corresponding portions of said first and second objects can be compared.

3,892,492
OPTOELECTRICAL APPARATUS WITH DIRECTIONAL LIGHT SOURCES FOR DETECTING REFLECTION BEHAVIOUR OF AN OBJECT

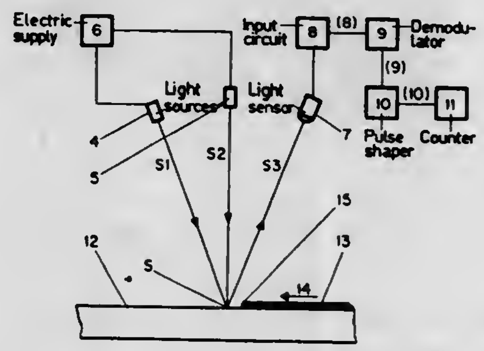
Werner Eichenberger, Zurich, Switzerland, assignor to Aktiengesellschaft Gebruder Loepfe, Wetzikon, Switzerland

Filed July 9, 1973, Ser. No. 377,824

Claims priority, application Switzerland, Oct. 16, 1972, 15184/72; Dec. 21, 1972, 18649/72

Int. Cl. G01n *21/18, 21/30*

U.S. Cl. 356—199 **3 Claims**



1. An optoelectrical apparatus for distinguishing a surface condition of predominantly diffuse light reflection from a surface condition of predominantly regular light reflection of an object, comprising, in combination:
light transmitting means including two directional light sources for generating first and second scanning light beams having different paths and intersecting at a predetermined object scanning location, means for pulsing the scanning light beams in a manner that the light pulses of each beam follow the light pulses of the other beam in alternate sequence; and
light receiving means including light sensing means responsive to light from the pulsed scanning light beams and disposed at a distance from said predetermined object scanning location is such a manner that a regularly light reflecting surface of an object arranged in said predetermined object scanning location and in a definite angular position relative to said light beams reflects light from one of said scanning light beams onto said light sensing means, whereas light from the other of said scanning light beams is reflected from such a positioned light reflecting surface in a direction where it does not impinge on the light sensing means.

3,892,493
LIGHT MEASURING PROCESS AND APPARATUS

Hans-G Pallingen; Alex Vinatzer, and Wolfgang Kapfinger, all of Brixen, Italy, assignors to Durst Ag. Fabrik Fototechnischer Apparate Bozen, Bozen, Italy

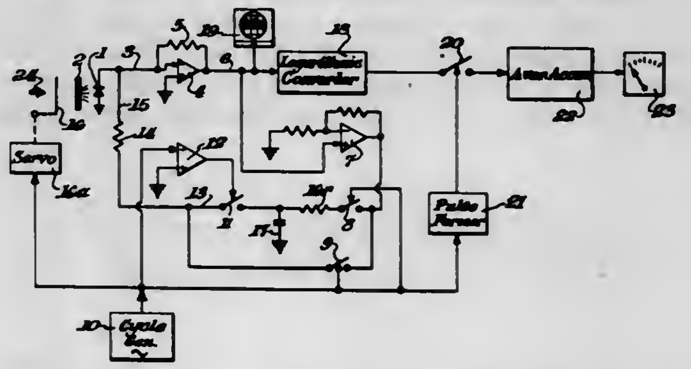
Filed June 25, 1973, Ser. No. 373,391

Claims priority, application Italy, June 24, 1972, 26164/72; May 23, 1973, 4842/73

Int. Cl. G01j *1/46*

U.S. Cl. 356—226 **17 Claims**

1. A process for measuring light with great sensitivity in graphic and photographic applications by a photoelectric transducer connected to an indicating circuit which comprises the steps of utilizing a photodiode as the photoelectric transducer, cyclically and alternately shielding the photodiode from the light and exposing it to the light, storing the signal from the indicating circuit while the photodiode is shielded from the light, amplifying the output of the photodiode in the indicating circuit, discharging the stored signal into the indicating circuit before it is amplified simultaneous with generation of the light measuring signal while the photodiode is exposed to the light whereby the error portion of the light measuring signal is cancelled, and the error portion of the



signal resulting from changes in amplification is also cancelled.

3,892,494
DETECTION OF OPTICAL MICRO-DEFECTS WITH FOCUSED RETROREFLECTED SCANNING BEAM

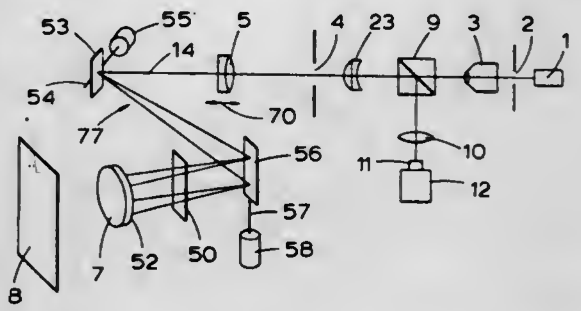
Lionel R. Baker, Orpington; Anthony J. Kirkham, Bromley; Stanley Martin, Catford; Daniel R. Lobb, Farnborough, and Christopher P. Rourke, Petts Wood, all of England, assignors to Sira Institute, Chislehurst, Great Britain

Filed July 23, 1973, Ser. No. 381,457

Claims priority, application United Kingdom, July 26, 1972, 34851/72; Dec. 16, 1972, 58217/72; Mar. 8, 1973, 11386/73

Int. Cl. G01n *21/16, 21/32*; **G01j** *1/00*

U.S. Cl. 356—239 **29 Claims**



7. An apparatus for inspecting an optical component to detect scratches, sleeks and like micro-defects therein comprising: (a) means for supporting the optical component, (b) a light source, (c) means for producing an incident beam of light focussed on part of the component when so supported, (d) means for relatively moving the beam and the component to scan successive parts of the component, (e) retroreflective means for retroreflecting light derived from the beam which has been influenced by the component so that the light is

retroreflected in the form of a cone of small angle whose axis passes back through the same part of the optical component, (f) means for collecting and separating the retroreflected light from the incident light beam, and (g) photo-electric means to derive an electric signal in dependence on the separated retroreflected light.

3,892,495

PUSH TYPE MECHANICAL PENCIL

Takeo Naruse, Koshigaya; Junichi Hashimoto, and Hideaki Oikawa, both of Tokyo, all of Japan, assignors to Pentel Kabushiki Kaisha, Tokyo, Japan

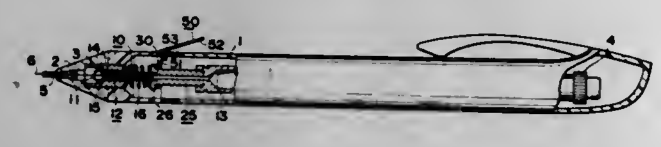
Filed Nov. 18, 1974, Ser. No. 524,673

Claims priority, application Germany, Mar. 2, 1973, 2310573

Int. Cl. B43k *21/16, 21/22*

U.S. Cl. 401—65 **8 Claims**

1. In a push type mechanical pencil comprising an outer casing; an inner casing having at its fore end a lead gripping chuck means and also formed with a lead passage communicated with said chuck means and a spare lead housing tube; and a spring means adapted to press said inner casing rearwardly along its axis, wherein said push type mechanical pencil further comprises a hole formed at a part of said outer casing at which user's fingertip is positioned when the user grasps said outer casing in writing position, a push member formed from a lever composed of an inner engaging portion, and an outer push portion which are arranged forming a certain angle relative said inner engaging portion, said lever being pivoted to the outer casing through said hole at its angled portion, said inner engaging portion of said push member having forked portions striding over said inner casing and being cooperable with an enlarged portion of said inner casing, whereby when the user pushes said outer push portion of said push member downwardly, said inner engaging portion of said push member pushes said inner casing to move forwardly against the resisting force of said spring, thereby to push out the lead into a writing position.



3,892,496

VIBRATING ROLLER

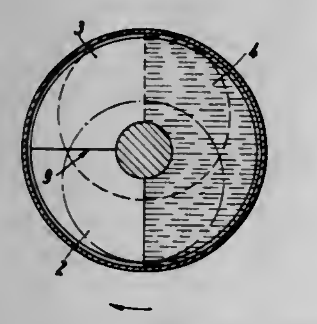
Isidoro Lebrero Martinez, Avda. Fco. Caballero, 23, Zaragoza, Spain

Filed May 3, 1974, Ser. No. 466,901

Claims priority, application Spain, May 3, 1973, 414348

Int. Cl. E01c *19/28*

U.S. Cl. 404—117 **6 Claims**



1. In a vibrating roller device provided with a rotatable shaft having an eccentric mass mounted therearound, and wherein, in each of the possible directions of said shaft, the centrifugal force can be selectively adjusted by automatically adjusting said eccentric mass; said device further including a damping means; the improvement wherein:

said eccentric mass comprises:

a pair of outer masses defining therebetween a chamber; an inner mass positioned in a portion of said chamber; the remainder of said chamber defining a liquid receiving container;

one of said inner mass or said pair of outer masses being rigidly fixed to said shaft, and the other being idly mounted on said shaft; and

said inner mass and said pair of outer masses being relatively arranged such that, upon a reversal of direction of rotation of said shaft, the respective centers of gravity thereof take distinct positions, and the centrifugal forces thus generated attain respective predetermined levels; and

said damping means comprises liquid filling said liquid receiving container.

3,892,497

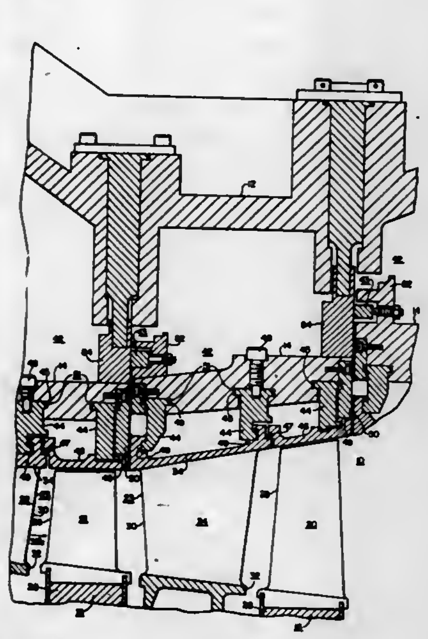
AXIAL FLOW TURBINE STATIONARY BLADE AND BLADE RING LOCKING ARRANGEMENT

Richard P. Gunderlock, Prospect Park, and Ted H. Knutzen, Rutledge, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 14, 1974, Ser. No. 469,928

Int. Cl. F01d *25/24*

U.S. Cl. 415—134 **6 Claims**



1. An axial flow turbomachine comprising:

an outer generally cylindrical casing;

a generally coaxial inner casing, said inner casing and said outer casing generally defining a plenum chamber therebetween;

an annular array of stationary blades disposed within said inner casing said stationary blades having an outer shroud portion;

a rotor having an array of rotatable blades on its periphery, said rotatable blades being mounted coaxial and adjacent said stationary blades;

an array of arcuate blade ring segments disposed radially outwardly of said rotatable blades;

said array of stationary blades comprising arcuate integral vane segments thereof;

said stationary blades being supported from said inner casing by arcuate support segments disposed on the upstream portions and intermediate portions, of said inner casing, all of said arcuate support segments and said innner casing having a track and channel interlock means therebetween, said arcuate support segments and said outer shroud portion of said stationary integral vane segments and said blade rings having a track and channel interlock means therebetween, the downstream edge of said blade rings supported by an array of arcuate support segments, each arcuate support segment having means to fixedly attach at least one point of its radially outer periphery to the inner casing to permit free circumferential expansion and contraction of said arcuate support segments;

said inner and outer casings being separable longitudinal into generally upper and lower halves;

said vane segments and blade rings being separable into generally equally segmented arcuate semi-annular arrays, each semi-annular array having one of said arcuate support segments at each respective end thereof, said arcuate support segments at each end of each semi-annular array being fixedly attached to said inner casing by a locking plate.

3,892,498

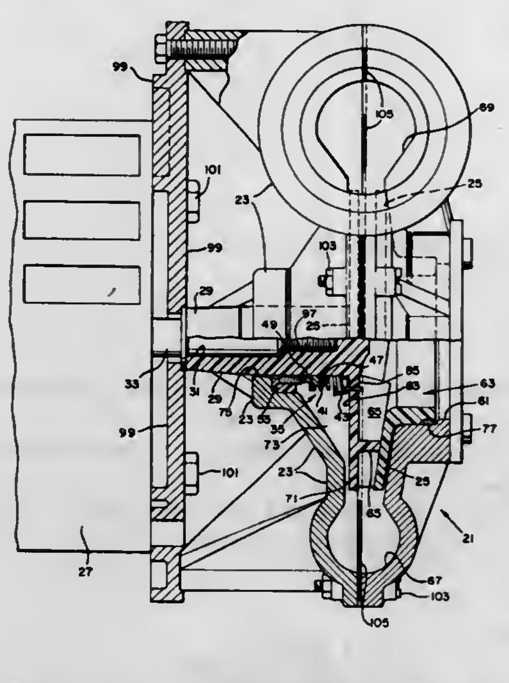
FLUID PUMP WITH ROTARY SEAL ASSEMBLY

Roy A. Jacuzzi, Moraga, and Peter L. Kosta, Lafayette, both of Calif., assignors to Jacuzzi Research, Inc., Berkeley, Calif.

Filed Nov. 28, 1973, Ser. No. 419,719

Int. Cl.² F04D *29/08*

U.S. Cl. 415—170 A **6 Claims**



1. A fluid pump comprising: a housing, impeller means rotatably mounted in said housing and including drive connecting means adapted to connect said impeller means to an external source of power, and a rotary seal assembly mounted about said drive connecting means between said impeller means and said housing and adapted to effect sealing against the passage of fluid from said housing proximate said drive connecting means, said rotary seal assembly further including means for anchoring said rotary seal assembly to positively preclude rotation of said impeller means with respect to said rotary seal assembly upon acceleration of said impeller means whereby wear between said rotary seal assembly and said impeller means as a result of relative slippage or rotation is essentially eliminated.

3,892,499

MULTISTAGE TURBOCOMPRESSOR HAVING AN INTERMEDIATE COOLER

Rene Strub, Winterthur, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed July 12, 1973, Ser. No. 378,428

Claims priority, application Switzerland, July 13, 1972, 10517/72

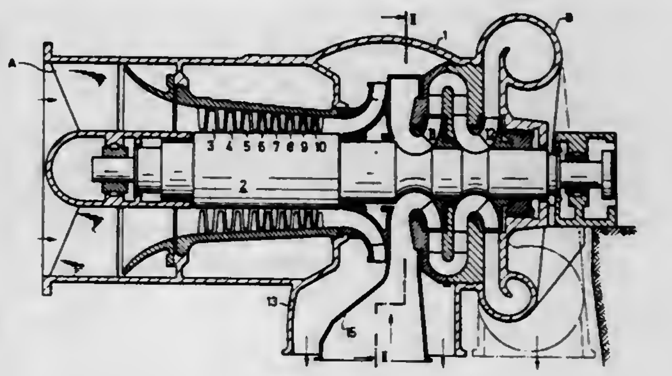
Int. Cl. F01d *5/08*

U.S. Cl. 415—179 **11 Claims**

1. In a multistage turbocompressor having a compressor housing including an inlet and an outlet and an intermediate cooler outside said housing;

a casing duct connected between said housing and said cooler downstream of said inlet for passing a flow of heated compressed gas from said housing to said cooler for cooling therein, and

a central duct enclosed within said casing duct and connected between said cooler and said housing upstream of said outlet for passing the flow of cooled compressed gas from said cooler to said housing for passage out of said outlet.



3,892,500

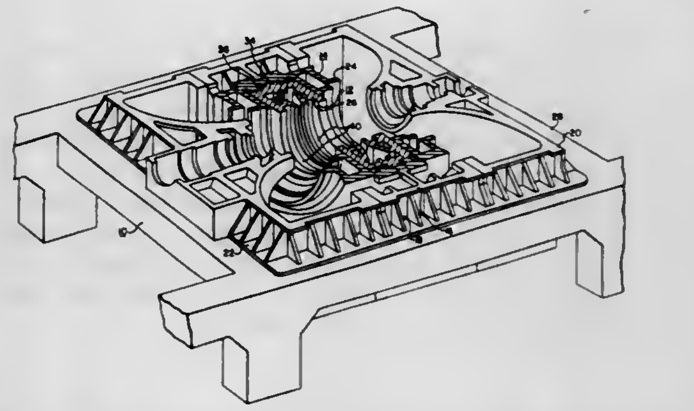
ADJUSTABLE AXIAL POSITIONING DEVICE

Lewis J. Miller, Wallingford, and William H. Coleman, Broomall, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed July 10, 1974, Ser. No. 487,348

Int. Cl. F04d *29/40*

U.S. Cl. 415—219 R **8 Claims**



1. A casing for an axial flow turbine apparatus comprising: an inner cylinder,

an outer cylinder surrounding and mating with said inner cylinder, and,

means for positioning said inner cylinder with respect to said outer cylinder, said positioning means being disposed within said inner cylinder, said positioning means being adjustable after said inner cylinder is mated with said outer cylinder.

3,892,501

WIND-DRIVEN MOTIVE APPARATUS

Edwin K. Hillman, 907 W. Desert Cove, Phoenix, Ariz. 85029

Filed Jan. 23, 1974, Ser. No. 435,876

Int. Cl.² F03D *3/02*

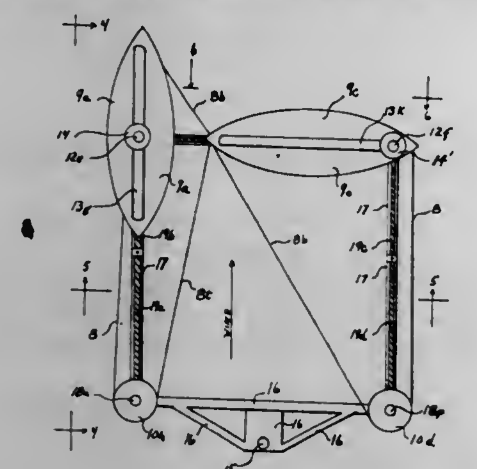
U.S. Cl. 416—65 **10 Claims**

1. Apparatus for utilizing the force of the wind to induce rotational movement of at least one power takeoff pulley, said apparatus comprising in combination:

- a. a framework, said framework including a pair of masts and stanchion means;
- b. pivot means for orienting said framework into the eye of the wind;
- c. a first vane mounted upon one of said masts, said first vane being pivotable about said one mast when said first vane extends transverse to the wind and slidable lateral to the longitudinal axis of said one mast when said first vane is essentially in alignment with the wind;
- d. a second vane mounted upon another of said masts, said second vane being pivotable about said other mast when said second vane extends transverse to the wind and

slidable lateral to the longitudinal axis of said other mast when said second vane is essentially in alignment with the wind;

e. pulley means mounted upon said stanchion means;
f. a power takeoff pulley means attached to said pulley means, said power takeoff pulley means rotating in response to rotation of said pulley means; and
g. a loop of flexible material engaging and extending from about said first vane, to said pulley means, to said second vane, to said pulley means and back to said first vane, said flexible material being in non-slidable engagement with each of the engaged elements such that rotational or rectilinear movement of one of the engaged elements will result in travel of said flexible material and corresponding pivotal or rectilinear movement of the remaining engaged elements; whereby, the force of the wind is translated to said power takeoff pulley means through movement of said flexible material where such movement is cyclically brought about by one of said first and second vanes alternately pivoting about its respective mast in response to the wind and simultaneously inducing slidable repositioning of the other of said first and second vanes into the wind preparatory to rotation thereof.



3,892,502
CONTROL OF EXPANSION RATIO IN ROTARY MOTORS

Edward Pritchard, 339 Balaclava Rd., Caulfield, Victoria, Australia

Continuation-in-part of Ser. No. 162,237, July 13, 1971, abandoned, which is a continuation of Ser. No. 8[illegible]9,271, Oct. 24, 1969, abandoned. This application May 10, 1973, Ser. No. 359,023

Claims priority, application Australia, Oct. 28, 1968, 45464/68

Int. Cl. F01c *21/00;* **F04c** *29/00*

U.S. Cl. 418—15 **7 Claims**

1. In a rotary motor driven by expansion of a compressible working fluid introduced from a working fluid inlet supply line under pressure through an inlet port of the motor into a first expansion stage, said motor having at least one additional expansion stage between said first expansion stage and an outlet port spaced from said inlet port, the improvement in a motor control system associated therewith comprising:

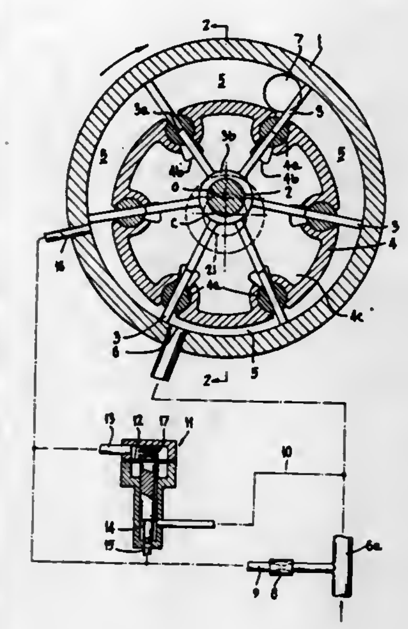
a bleed passage means connected to said working fluid inlet supply line for continuously transmitting additional working fluid to said at least one additional expansion stage thereby increasing the amount of working fluid within the motor to do work;

said bleed passage means having therein a restriction having a predeterminable minimum fluid passage control area;

a pressure sensitive valve in a passage connected in parallel to said restriction, between said at least one expansion stage and said working fluid inlet supply line;

said restriction forming means for automatically passing to said at least one additional expansion stage a continuous flow of working fluid in predetermined amounts effective at low motor speeds; and

said pressure sensitive valve providing means for automatically passing increased amounts of working fluid to said at least one additional expansion stage during periods of abnormal load.



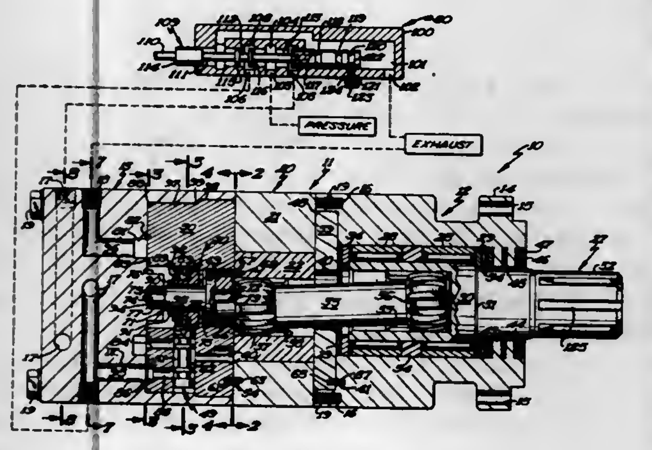
3,892,503
APPARATUS AND METHOD FOR MULTIPLE MODE MOTOR

Ronald K. Getman, Hopkins, Minn., assignor to Sperry Rand Corporation, Troy, Mich.

Filed Jan. 23, 1974, Ser. No. 435,831

Int. Cl. F01c *1/02;* **F03c** *3/00*

U.S. Cl. 418—61 B **9 Claims**



1. In a fluid motor, of the type which accepts fluid from a pressure source, converts the fluid energy into mechanical energy and then exhausts the fluid, having:

a Gerotor unit capable of relative rotational and orbital movement to define a plurality of expanding and contracting chambers;

a like plurality of pressure ports, wherein each said pressure port is associated with a single chamber;

a like plurality of exhaust ports, wherein each said exhaust port is associated with a single chamber and is in communication with exhaust; and

valve means for placing said pressure ports in communication with their respective associated chambers when said associated chambers are expanding and for placing said exhaust ports in communication with their respective associated chambers when said associated chambers are contracting;

the improvement comprising:

selector means for selectively connecting predetermined ones of said pressure ports to the pressure source or to exhaust.

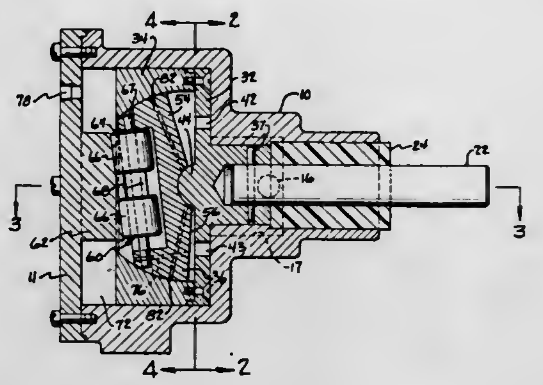
3,892,504
ROTARY PUMP

Robert D. Wehr, deceased, late of Tarpon Springs, Fla., and by Elsie Deshely Wehr, executrix, Tarpon Springs, Fla., assignors to Elsie Deshely Wehr, Tarpon Springs, Fla.

Filed Jan. 3, 1974, Ser. No. 430,500

Int. Cl.² F04C *9/00*

U.S. Cl. 418—68 **17 Claims**



1. A rotary pump comprising a housing having inlet and outlet ports and a chamber having an inner surface at least a portion of which has an arcuate cross-sectional shape; a drive shaft extending out of the housing; a rotor plate fixed to the drive shaft for rotation therewith and having ports which alternately communicate with the inlet and outlet ports in the housing; the arcuate cross-sectional shaped inner surface of the chamber being formed by a rotor body in the chamber and mounted for rotation with the rotor plate; an impeller in said chamber and having a rear side which is shaped complementary to the arcuate surface of the chamber; said impeller having a front side adjacent the rotor plate and having a driving connection therewith; said front side of the impeller having two faces which diverge away from the driving connection; cooperating means at the rear of the impeller to effect an oscillating movement of the impeller as it is rotated thereby moving said faces alternately toward and away from the rotor plate to provide a pumping action; and a portion of said cooperating means being on the impeller and another portion being on the housing.

3,892,505
MEANS FOR HEATING A MOLD

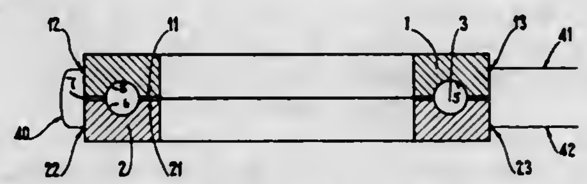
Jacques Doucherain, and Bernard Baumann, both of Paris, France, assignors to Cebal GP and Societe de Traitements Electrolytiques et Electrothermiques, France

Continuation of Ser. No. 232,956, Sept. 17, 1971, abandoned, which is a continuation of Ser. No. 842,132, July 16, 1969, abandoned. This application June 4, 1974, Ser. No. 476,307

Claims priority, application France, June 23, 1968, 68.160223

Int. Cl. B29h *5/02*

U.S. Cl. 425—41 **6 Claims**



1. A heated mold for heating a material comprising at least two electrically conductive mold elements, each of said elements having a face substantially corresponding to the face of the other element, each of said faces having a recess therein defining a closed molding cavity when said elements are positioned in face-to-face relation, and each of said faces being electrically insulated from the other, conducting means electrically connecting said elements together and means supplying a radio-frequency alternating current with a frequency within the range of 100 kHz to 10 MHz to said elements causing said current to flow from one of said elements to the other through said conducting means generating heat on the faces of said elements adjacent said cavity thereby heating said material.

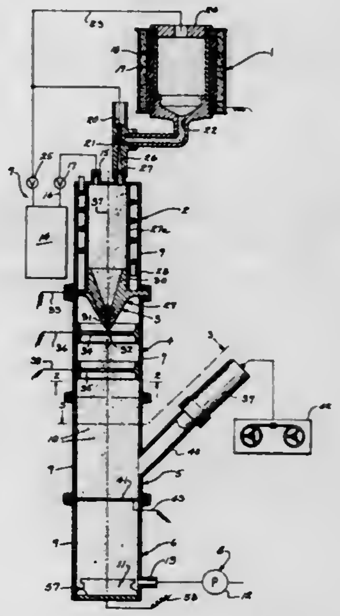
3,892,506
PROJECTION FORMING OF THREE-DIMENSIONAL METAL OBJECTS

Fred M. Dann, 130 Cliff, Sun Prairie, Wis. 53590, and James Reigel, 4725 Cottage Grove Rd., Madison, Wis. 53716

Filed June 28, 1973, Ser. No. 374,307

Int. Cl. B29c *11/00*

U.S. Cl. 425—78 **16 Claims**



1. An apparatus for projection forming of a threedimensional object from metallic particles such as metal powder and the like, comprising, in combination:

a. means to form a moving stream of the said particles,
b. means to heat said stream of particles to a coherent bonding state,
c. planular image generating means disposed and operative to continuously impose a variable two-dimensional image on said stream of heated particles,
d. and a target disposed downstream from said planular image generating means for impingement thereon by said particles and build-up thereon of a three-dimensional object corresponding in shape to the image continuously imposed on said particles by the planular image generating means.

3,892,507
METHOD AND MEANS FOR MOLDING A FASTENER ONTO A PIECE OF FABRIC

Maria Cruz Hernandez Garcia, Madrid, Spain, assignor to Cinva S.A., Madrid, Spain

Continuation-in-part of Ser. No. 183,480, Sept. 14, 1971, abandoned. This application Feb. 20, 1973, Ser. No. 333,504

Claims priority, application Spain, Dec. 28, 1970, 161985.

Int. Cl. B29d *31/00*

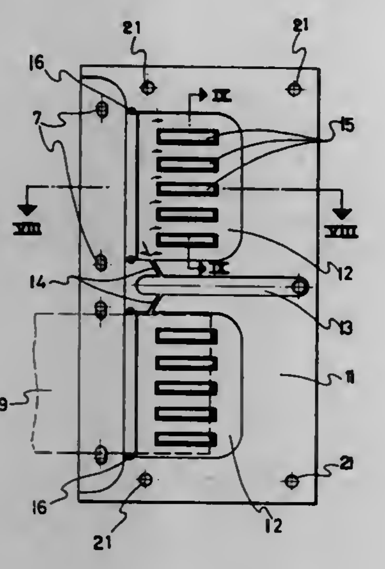
U.S. Cl. 425—129 **2 Claims**

1. An apparatus for molding a fastener onto a piece of fabric, said apparatus comprising:

a mold adapted to surround that portion of a piece of fabric to which the fastener is to be attached;

said mold having therein a cavity of a shape to form the desired fastener, said portion of said piece of fabric extending into said cavity along an edge thereof;

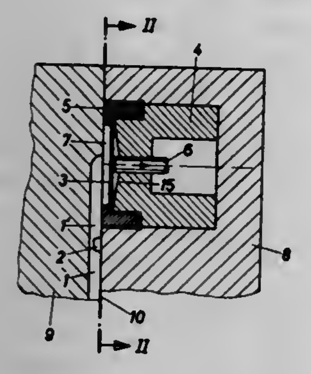
means within said cavity for centering said portion of fabric between opposite walls of said mold;



means for guiding the position of the edges of said piece of fabric, said means for guiding comprising a plurality of truncated pivots situated to contact and guide said edges of said piece of fabric; and

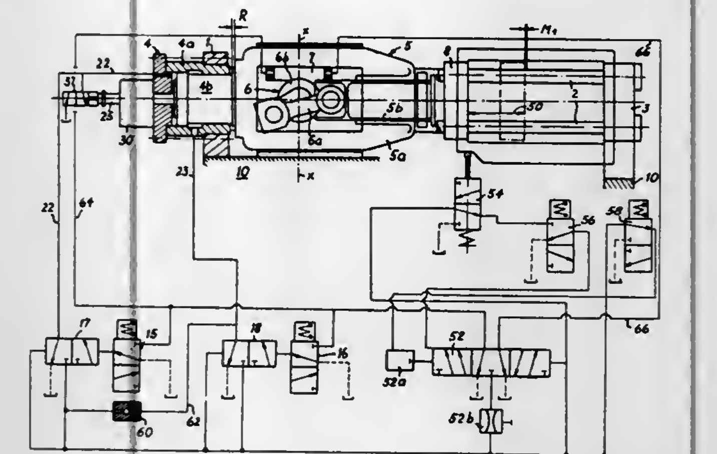
a single injection opening entering into said cavity for injecting molten material therein for forming said fastener, said single injection opening entering into said cavity at an acute angle to said edge thereof and in a plane corresponding to the plane of said portion of said piece of fabric when positioned in said cavity.

3,892,508
CASTING MOULD HAVING A VENTILATION DUCT
Fritz Hodler, 28 Ave. de Collonge, Territet, Switzerland
Filed June 25, 1973, Ser. No. 373,141
Claims priority, application Switzerland, Sept. 29, 1972, 14260/72
Int. Cl. B29c *1/00;* **B22d** *17/14*
U.S. Cl. 425—135 **10 Claims**



1. A casting mold having a ventilation duct, a ventilation valve in the duct, a recess in communication with the mold cavity, a pressure-sensitive membrane forming part of the wall of the recess, and actuating means responsive to flexion of the membrane, under the influence of the pressure of casting material entering the recess, to initiate closure of the valve.

3,892,509
INJECTION MOLDING MACHINE HAVING SEPARATE MOLD MOVING AND MOLD CLOSURE FORCE APPLYING MEANS WHICH ARE RESETTABLE
Edwin Ruegg, Netstal, Switzerland, assignor to Maschinenfabrik und Giesserei Netstal AG., Switzerland
Filed Oct. 31, 1973, Ser. No. 411,205
Claims priority, application Switzerland, May 23, 1973, 7307/73
Int. Cl. B29f *1/06*
U.S. Cl. 425—136 **3 Claims**

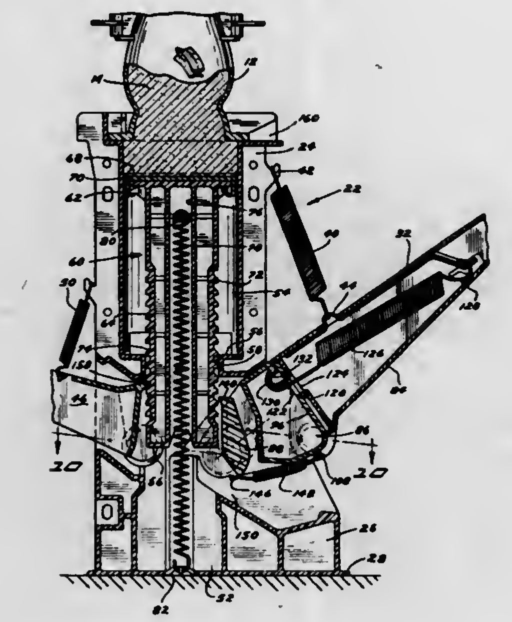


1. An injection molding machine, comprising a fixed mold clamping plate, a movable mold clamping plate movable toward and away from said fixed mold clamping plate, first guide means for guiding said movable mold clamping plate for backward and forward movement in respect to said fixed mold clamping plate, a movable guide housing having one end connected to said movable mold clamping plate, a crosshead piston being movable on said guide housing and having an end connected to said movable mold clamping plate for effecting closing and opening movement thereof, a hydraulic motor including a cylinder and a drive piston movable in said cylinder and being connected to said guide housing for displacing said guide housing with said movable clamping plate to apply a closing force to said mold, a rotary drive assembly within said guide housing including a rotatable crank shaft connected to said crosshead piston to displace said piston and said movable clamping plate in closing and opening directions, a fixed power member axially arranged in respect to said drive piston and spring means acting between said fixed power member and said drive piston and concentrically arranged in respect to said drive piston and acting on said piston along the axis thereof to restore it to a neutral position after the closing force is applied to the movable mold clamping plate by said drive piston, said drive piston being provided with a hollow portion having a bushing therein, said power member extending through said bushing and through said cylinder and terminating in a collar located in spaced relationship to the interior of said bushing, said spring means comprising a spring pack located between said collar and said bushing.

3,892,510
TOY EXTRUDER
Harry Meth, and Allen A. Greenberg, both of Cincinnati, Ohio, assignors to General Mills Fun Group, Inc., Minneapolis, Minn.
Continuation of Ser. No. 167,860, July 30, 1971, abandoned, which is a division of Ser. No. 2,126, Jan. 12, 1970, Pat. No. 3,685,936. This application Aug. 16, 1973, Ser. No. 388,879
Int. Cl. B29f *1/06*
U.S. Cl. 425—173 **4 Claims**

1. A toy extruder comprising an elongated housing having first and second ends and a bore open at said first end, for receiving varying amounts of a material to be extruded, said bore extending from said first end toward said second end, said opening in said first end permitting the material to be

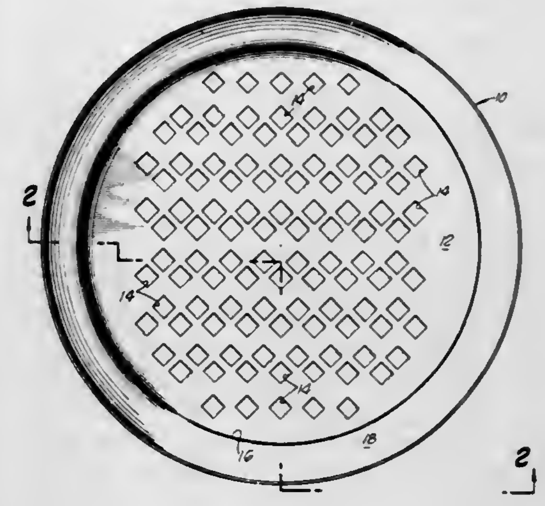
readily introduced into said bore, a movable plunger positioned within said bore, the cross-sectional size and shape of said plunger being substantially the same as that of the bore, means for biasing said plunger toward the second end of said housing, a handle member pivotally connected to said housing, a portion of said handle member adapted to engage a portion of the plunger and cause it to move in a first direction toward the first end of said housing in response to pivotal



movement of said handle from a starting position in a first direction, releasable means for preventing said plunger from moving toward the second end of the housing as the handle member is pivoted in a second direction and as said handle is positioned in said starting position, a hollow mold having a prescribed shape and configuration, and means proximate the first end of the housing for detachably securing said hollow mold to said housing in such a manner that the interior of said mold communicates with the bore in the housing.

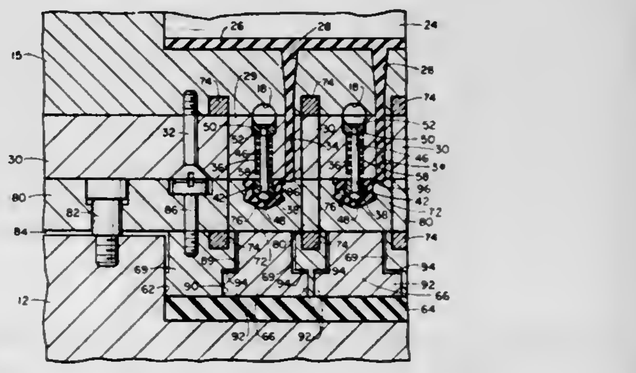
3,892,511
EXTRUSION ORIFICE PLATE FOR EXTRUDING POTATO MIX
David A. Farrant, Northridge, and Francis A. Dedona, Sherman Oaks, both of Calif., assignors to The Scionics Corporation, Culver City, Calif.
Continuation of Ser. No. 147,816, May 28, 1971, abandoned. This application Sept. 26, 1973, Ser. No. 400,851
Int. Cl. A21c *11/16*
U.S. Cl. 425—464 **2 Claims**

1. In apparatus for producing french fries from a potato dough in which the potato dough is extruded under pressure through apertured portions of an extrusion type die means wherein the improvement comprises, (In an arrangement for extruding potato dough for use in the process of making french fries, shoestring potatoes and the like,) said die means being a plate of uniform thickness having a series of extrusion apertured portions punched therethrough by conventional punching means, the thickness of the plate and correspondigly the length of each of said apertured portions being no greater than approximately one-eighth of an inch and not less than approximately 0.109 of an inch, each of said apertured portions (each having a lenght equal to the thickness of said plate and each apertured portion) being of substantially uniform cross-sectional area and shape throughout its length, and said plate being positioned in said apparatus so that the surface thereof through which the material punched therefrom exited



during a punching operation is the surface for entrance of said dough to be extruded through said apertured portions.

3,892,512
TRANSFER MOLDING APPARATUS WITH RESILIENT PAD TO DISTRIBUTE MOLDING PRESSURE
Alan V. Diehl, 11144 Wystone Ave., Northridge, Calif. 91324
Filed Sept. 13, 1973, Ser. No. 396,698
Int. Cl. B29h *3/12*
U.S. Cl. 425—251 **10 Claims**



1. Molding apparatus for producing a molded material comprising:

upper and lower mold sections movable relative to one another between a together position and a spaced apart position, each of said mold sections having a cavity portion which forms a closed cavity when said mold sections are in said together position, said cavity portion of said lower mold section being formed within a lower cavity insert, said insert being movable in respect to said lower mold section, said insert being movable toward said upper mold section;

an enlarged chamber formed within said lower mold section;

a biasing means taking the form of a pad of resilient material connected to said insert located within said enlarged chamber for exerting a force against said insert tending to move such toward said upper mold section; and

an intermediate block interconnecting said insert and said pad, said intermediate block being movable relative to said lower mold section, whereby the cooperation between said intermediate block and said insert functions to maintain even firm contact between said insert and said upper mold section.

3,892,513
APPARATUS FOR MAKING BLOW-MOLDED CONTAINERS HAVING HANDLES

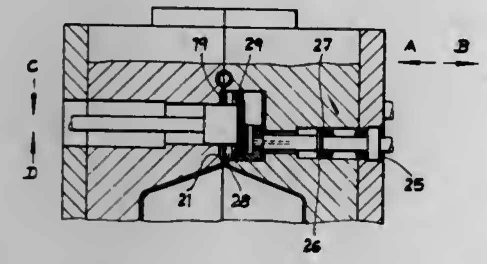
Gottfried Mehnert, Berlin, and Klaus-Dieter Koetke, Luder, Orfsteil, Reinstorf, both of Germany, assignors to Bekum Maschinenfabriken GmbH, Berlin, Germany

Filed Dec. 22, 1972, Ser. No. 317,651

Claims priority, application Germany, Dec. 24, 1971, 7148683

Int. Cl. B29c *1/00*

U.S. Cl. 425—302 B **10 Claims**



1. In an apparatus for making blow-molded containers having handles, a combination comprising mold means including two mold sections for making a blow-molded synthetic plastic container; and handle-forming means comprising a rigid first surface in one of said mold sections and having the outline corresponding to the center opening of a generally annular handle to be formed, a first component in the other of said mold sections for resilient guided movement toward and away from said first surface and having a second surface of predetermined dimension, said first and said second surface being surrounded by cutting means cooperating with each other for forming a web-shaped severed flashing in the center opening of the handle to be formed, and a second component within the outline of said first surface having a third surface of a dimension smaller than said second surface and movable relative to said first and to said second surface for squeezing bending and thereby withdrawing the severed flashing from the handle; said first and said third surface together defining a first recess in said one of said mold sections while said second surface bounds a second recess in said other of said mold sections, said recesses delimiting a space surrounded by said cutting means for the flashing of the opening to be produced.

3,892,514
APPARATUS FOR PRODUCING CORRUGATED PLASTIC PIPE WITH HOLES IN THE PIPE WALL

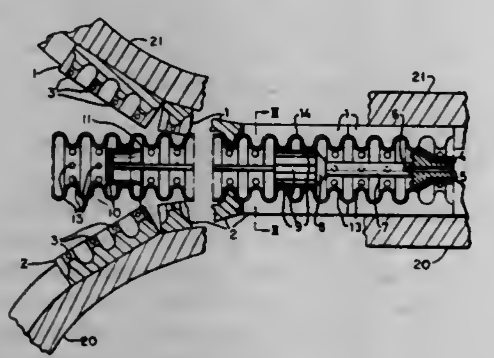
Erik Gustav Wendel Nordström, Box 84, 84020 Ange, Sweden

Filed June 12, 1973, Ser. No. 369,247

Claims priority, application Sweden, June 13, 1972, 7738/72

Int. Cl. B29d *23/18*

U.S. Cl. 425—308 **6 Claims**



1. Apparatus for producing corrugated plastic pipe having a plurality of holes through the pipe wall spaced along the length of the pipe comprising:

an extrusion nozzle;

a pair of complementary mold jaws mounted in guide tracks for movement together at the nozzle and for separation at a downstream station with each mold jaw having aligned ridges separated by grooves to form corrugated pipe walls;

a plurality of radially inwardly directed projections on the inside surfaces of the mold ridges, the radial length of the projections being relatively short and the shape of the sidewalls of the projections being such that by separation of the mold jaws the projections are withdrawn from inwardly directed bubbles formed on the interior pipe walls; and

cutting means located inside the formed pipe and downstream of said nozzle and beyond where the projections are withdrawn from the formed bubbles for cutting off the bubbles so that holes through the pipe walls are obtained.

3,892,515
GRANULATING APPARATUS

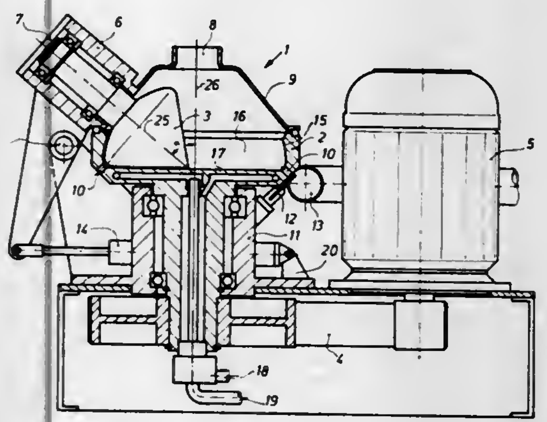
Horst Bremer, Lage, Lippe, Germany, assignor to Gunther Papenmeier KG, Maschinen-und Apparatebau, Detmold, Germany

Filed Apr. 12, 1974, Ser. No. 460,556

Claims priority, application Germany, Apr. 26, 1973, 2321204

Int. Cl. B29b *1/03*

U.S. Cl. 425—314 **15 Claims**



1. Granulating apparatus consisting of a rotatable container formed with a multiplicity of shaped holes through which the material to be granulated is forced by means of at least one rotatable pressure means, a separating device comprising at least one blade adjacent the outside wall of the container for separating the material leaving the shaped holes characterized by: said container being disposed for rotation about a substantially vertical axis, is pot shaped and open at the upper end; a bearing means disposed outside said container for journalling said rotatable pressure means in overhung manner; a rocking device engaging and mounting said bearing means for selective rocking of said pressure means so it can be rocked and pressed to rotate against the inside base portion of said container; and the container axis and the axis of said pressure means or their projections intersecting one another.

3,892,516
BATTERY MOLDING APPARATUS WITH TROLLEY TRANSPORTING MEANS

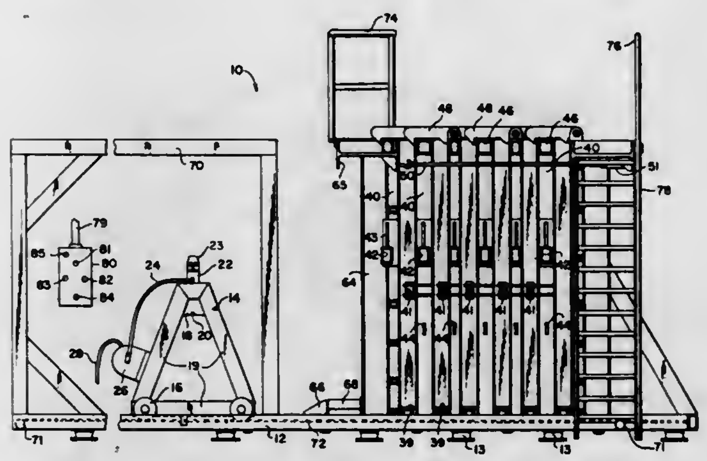
John P. McGrew; Larry W. Foster; John David Katzer, all of Franklin, Tenn.; Ian S. Wilson, Windsor, England, assignor Span-Deck, Inc., Franklin, Tenn.

Filed Mar. 2, 1973, Ser. No. 337,430

Int. Cl. B28b *7/26*

U.S. Cl. 425—443 **15 Claims**

1. A battery molding apparatus for simultaneously molding a plurality of concrete slabs or panels including a frame, a plurality of mold plates movably supported within said frame and arranged in spaced, face-to-face relation and having base channels and side plates therebetween, said mold plates being movable towards and away from each other along the longitudinal axis of the apparatus, means to position said mold plates relative to each other in spaced relation to thereby define with said base channels and end plates upward opening mold cavitites therebetween adapted to receive an admixture of concrete prior to hardening, means for displacing said mold plates along the longitudinal axis of said apparatus, said mold plates each having a first set of horizontally extending ears, said second set being positioned below said first set, said means for displacing said mold plates comprising a first and a second trolley movable along opposite sides of said mold plates and parallel to said longitudinal axis, each said trolley including hydraulic jack means supported thereto and having means for engaging one of said first set of ears to lift the corresponding mole plate upon actuation of the hydraulic jack means and means on said trolley cooperating with said second set of ears for inhibiting non-vertical motion of the lifted mold plate.



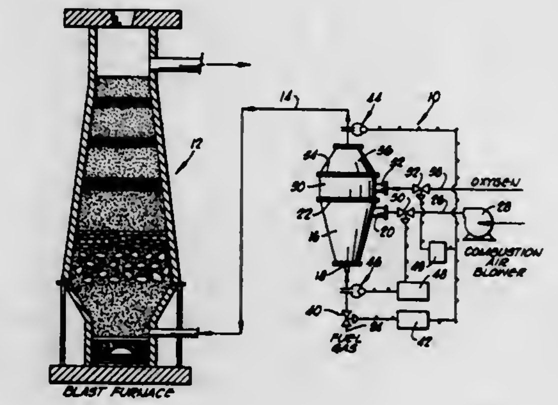
3,892,517
APPARTUS FOR GENERATING A HEATED OXYGEN ENRICHED GAS STREAM

Harold O. Ebeling, and Russell D. Smith, both of Oklahoma City, Okla., assignors to Black, Sivalls & Bryson, Inc., Houston, Tex.

Division of Ser. No. 299,083, Oct. 19, 1972. This application June 1, 1973, Ser. No. 366,088

Int. Cl. F23n

U.S. Cl. 431—90 **2 Claims**



1. Apparatus for generating a heated oxygen enriched gas stream under superatmospheric pressure for use in blast furnaces and the like which comprises:

a high intensity combustion burner having a fuel gas inlet, a combustion air inlet, a chamber wherein fuel gas and combustion air are mixed and the mixture is combusted to produce combustion gases essentially free of flame and an outlet for discharging said combustion gases;

a mixing chamber having an inlet for receiving combustion gases, an inlet for receiving a stream of oxygen and an oxygen enriched combustion gas outlet, the combustion gases inlet of said mixing chamber being connected to said combustion gases outlet of said high intensity combustion burner so that all of the combustion gases produced by said high intensity burner are caused to flow into said mixing chamber;

a conduit connected to a source of fuel gas and to said burner fuel gas inlet;

a combustion air blower for generating a stream of combustion air under superatmospheric pressure connected to the combustion air inlet of said burner;

means attached to said combustion air blower for controlling the rate of combustion air introduced to said combustion burner in response to the flow of fuel gas supplied to said fuel gas inlet so that a substantially stoichiometric combustion air-fuel gas mixture results;

a conduit connected to a source of oxygen and to said mixing chamber oxygen inlet; and

means disposed in said conduit connected to a source of oxygen and responsive to the flow of gases leaving said mixing chamber for controlling the rate of oxygen introduced to said mixing chamber so that the combustion gases produced by said apparatus contain a desired concentration of oxygen.

3,892,518
LIQUID FUEL BURNER FOR BURNING LIQUID FUEL IN GASIFIED FORM

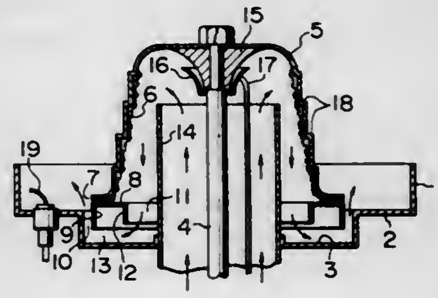
Kingo Miyahara, Tokyo, Japan, assignor to Dowa Co., Ltd., Tokyo, Japan

Filed Aug. 20, 1974, Ser. No. 499,027

Claims priority, application Japan, Nov. 26, 1973, 48-132367; Apr. 20, 1974, 49-44727; Apr. 20, 1974, 49-44728; Nov. 26, 1973, 48-135872[U]; Apr. 11, 1974, 49-41384[U]

Int. Cl. F23d *11/04*

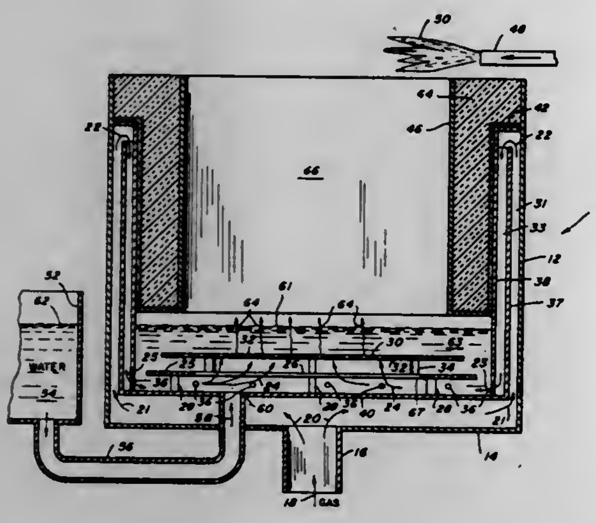
U.S. Cl. 431—168 **4 Claims**



1. A liquid fuel burner for burning liquid fuel in gasified form comprising a main body formed with a recess in its bottom wall, a fuel gasifying member rotatably disposed in said main body, a gasified fuel-air mixing member mounted at the open end portion of said fuel gasifying member as a unit therewith, a scattering gap defined between said fuel gasifying member and said gasified fuel-air mixing member, said gasified fuel-air mixing member being inserted in said recess such that a gasified fuel blowing passageway is defined between said gasified fuel-air mixing member and said recess and a gasified fuel-air mixture storing chamber is formed by said recess and said gasified fuel-air mixing member, and an air supply duct having a forward end portion inserted in said fuel gasifying member.

3,892,519
LIQUID BUBBLE SCREEN SEAL FOR CONTROLLING COMBUSTIBLE GASES

Robert D. Reed, Tulsa, and Eugene C. McGill, Skiatook, both of Okla., assignors to John Zink Company, Tulsa, Okla.
Filed Apr. 15, 1974, Ser. No. 460,948
Int. Cl. F23d
U.S. Cl. 431—202 9 Claims

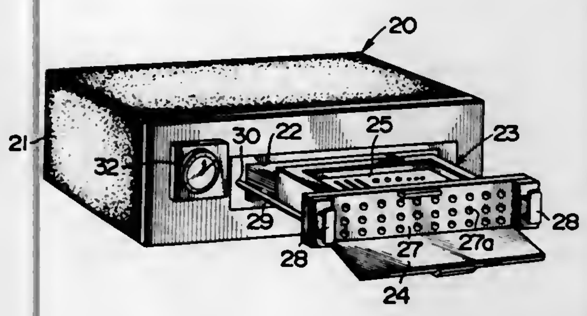


1. Apparatus for controlled burning of combustible gases, comprising:

a. a cylindrical tank, and means for maintaining a selected level of non-combustible liquid in said tank;
b. a first wall outside of said tank wall forming first annular space surrounding said tank for the downflow of said combustible gases;
c. a plurality of circumferentially spaced small openings in the wall of said tank near its base communicating with said first annular space;
d. baffle means inside said tank above said openings but below the surface of said liquid, said baffle means including at least a first horizontal plate with a plurality of spaced small openings;
e. cylindrical shell means inside of said tank above the surface of said liquid, and thermal insulation means between said shell and the wall of said tank;
f. means to supply said gas to the top of said annular space, and means to ignite said gas above the level of said liquid.

3,892,520
ANNEALING OVEN FOR THERMOLUMINESCENCE DOSIMETER

Kiyohiko Masujima; Noboru Kotera, and Teiichi Hitomi, all of Kanagawa, Japan, assignors to Dai Nippon Toryo Co., Ltd., Osaka, Japan
Filed Apr. 10, 1974, Ser. No. 459,717
Claims priority, application Japan, Apr. 26, 1973, 48-47488
Int. Cl. F27b *3/02, 3/18*
U.S. Cl. 432—225 12 Claims



1. An annealing oven for thermoluminescence dosimeters comprising:

a housing,
a heating box having a hollow space, said heating box being positioned in said housing,
a thermoluminescence dosimeter holder having a high thermal conductivity, movable between a first position in which the holder is in the hollow space of said heating box and a second position in which at least a part of the holder is out of the hollow space of the heating box,
said thermoluminescence dosimeter holder having a plurality of faces, a first face comprising means for receiving thermoluminescence dosimeters without a grip therein and a second face having outwardly facing holes therein, said second face comprising means for accomodating a rod shaped portion of a thermoluminescence dosimeter having a grip, and
an air space formed between said thermoluminescence dosimeter holder and said heating box when the thermoluminescence dosimeter holder is in said first position, said air space having a width sufficient to insure uniform heating of the thermoluminescence dosimeters in said holder.

CHEMICAL

3,892,521
PROCESS FOR DYEING CELLULOSIC MATERIALS

Jean Paul Dalle, Saint Quentin, France, assignor to Omnium de Prospective Industrielle, S.A., Neuville Saint Amand, Aisne, France
Filed May 17, 1973, Ser. No. 361,255
Claims priority, application France, May 18, 1972, 72.17912
Int. Cl. D06p *3/60*
U.S. Cl. 8—82 7 Claims

1. A process for the dyeing of a material composed of cellulosic fibers deep colors, which process comprises treating said material in a bath of liquid ammonia to impregnate the fibers of said material with said ammonia, and thereafter dyeing the ammonia-impregnated fibers of said material in an aqueous dyebath containing a dyestuff for said cellulosic fibers.

3,892,522
WASHING OR DYEING WITH A NON-TERMINAL, VICINAL ALKANEDIOL ADDUCT OF ETHYLENE AND PROPYLENE OXIDES

Wolfgang Schade, Hilden; Peter Krings, Krefeld, and Heimold Batka, Dusseldorf-Reisholz, all of Germany, assignors to Henkel & Cie, GmbH, Dusseldorf, Germany
Filed Dec. 13, 1972, Ser. No. 314,688
Int. Cl. D06p *1/68*
U.S. Cl. 8—93 7 Claims

1. In the process of treating textiles which comprises contacting said textiles with an aqueous textile treating bath containing a wetting agent and recovering said treated textiles, the improvement which consists in utilizing from 0.1 to 5 gm/liter of a poorly foaming alkylene oxide adduct of from 5 to 20 mols of ethylene oxide and from 1 to 10 mols of propylene oxide in a mol ratio of 1:0.1 to 1 to a nonterminal, vininal alkanediol having from 10 to 20 carbon atoms, as said wetting agent.

3,892,523
BLEACHING OF ALDEHYDE-TANNED LEATHER WITH SODIUM BOROHYDRIDE

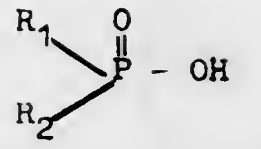
George H. Redlich, Norristown, and Michael L. Alderman, Broomall, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.
Filed Jan. 8, 1973, Ser. No. 321,904
Int. Cl. C14c *3/28;* **D06l** *3/10*
U.S. Cl. 8—94.2 5 Claims

1. In a process for tanning leather by treating the leather with a solution of an aldehyde thereby producing a tanned leather, the improvement which comprises bleaching the tanned leather with an effective amount of sodium borohydride.

3,892,524
MERCERIZING SOLUTIONS

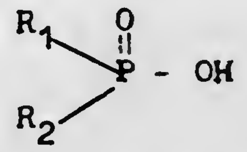
Hans-Jerg Kleiner, Bad Soden, Taunus; Karl-Heinz Schneider, Kelkheim, Taunus, and Gerhart Schneider, Schneidhain, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany
Filed June 21, 1973, Ser. No. 372,330
Claims priority, application Germany, June 26, 1972, 2231147
Int. Cl. D06m *1/02*
U.S. Cl. 8—127 4 Claims

1. An aqueous mercerizing solution essentially consisting of about 10 to 400 g/l of sodium, potassium or lithium hydroxide or a mixture thereof, and 0.1 to 5 g/l of a phosphinic acid of the formula



in which R_1 stands for a methyl or ethyl group and R_2 stands for an aliphatic linear, branched or cyclic hydrocarbon radical having 4 to 12 carbon atoms, in the form of its alkali metal salt.

4. A process for treating with lyes and mercerizing cellulosic fibrous material, which comprises treating the fibrous material with an aqueous alkaline mercerizing solution essentially consisting of about 10 to 400 g/l of sodium, potassium or lithium hydroxide and as a wetting agent 0.1 to 5 g/l of a phosphinic acid of the formula

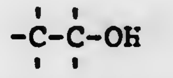


in which R_1 stands for a methyl or ethyl group and R_2 for an aliphatic linear, branched or cyclic hydrocarbon radical having 4 to 12 carbon atoms, preferably 6 to 10 carbon atoms, in the form of its alkali salt.

3,892,525
TERTIARY ALKANOLAMINES TO REDUCE OZONE FADING OF DYED POLYAMIDE FIBERS

Robert Alden Lofquist, Richmond, Va., assignor to Allied Chemical Corporation, Petersburg, Va.
Filed Oct. 30, 1972, Ser. No. 302,385
Int. Cl. D06p *5/02*
U.S. Cl. 8—165 2 Claims

1. A composition of matter comprising from about 92 to about 99.9% by weight of a polycarbonamide and from about 0.1 to about 8% by weight of a compound coated on said polycarbonamide selected from the group consisting of compounds having at least two



$$-\overset{|}{\underset{|}{C}}-\overset{|}{\underset{|}{C}}-OH$$

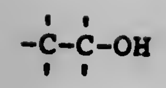
groups attached to nitrogen atoms and created by the reaction of

A. a polyepoxide with a secondary alkyl amine,
B. a diepoxide with a primary alkyl monoamine and/or ammonia and/or a secondary alkyl amine.

3,892,526
TERTIARY ALKANOLAMINES TO REDUCE OZONE FADING OF DYED POLYAMIDE FIBERS

Robert Alden Lofquist, and Peter Reginald Saunders, both of Richmond, Va., assignors to Allied Chemical Corporation, Petersburg, Va.
Filed Oct. 30, 1972, Ser. No. 302,384
Int. Cl. D06p *5/02*
U.S. Cl. 8—165 3 Claims

1. A composition of matter comprising from about 92 to about 99.9% by weight of a polycarbonamide and from about 0.1 to about 8% by weight of a compound coated on said polycarbonamide selected from the group consisting of compounds having at least one



$-\overset{|}{\underset{|}{C}}-\overset{|}{\underset{|}{C}}-OH$

group attached to a nitrogen atom and created by the reaction of

A. a monoepoxide having greater than 4 carbon atoms provided said monoepoxide is not styrene oxide with ammonia and/or
  a primary alkyl amine, and/or
  a secondary alkyl amine, and/or
  a primary-secondary alkyl diamine, and/or
  a disecondary alkyl diamine, and/or
  a secondary-tertiary alkyl diamine, and/or
  a primary-tertiary alkyl diamine, and/or
  a diprimary alkyl diamine, and/or
  a polyamine,
B. a monoepoxide having four or less carbon atoms and/or styrene oxide with
  a secondary alkyl amine, and/or
  a disecondary alkyl diamine, and/or
  a secondary-tertiary alkyl diamine, and/or
  a primary-tertiary alkyl diamine, and/or
  a polyamine having greater than 2 carbon atoms per nitrogen atom, and
C. styrene oxide with ammonia.

3,892,527
PROCESS FOR LOWERING THE DYESTUFF AFFINITY OF FIBRE MATERIALS MADE OF POLYACRYLONITRILE

Ergun Tamer, Bergisch, Neukirchen; Udo Hendricks, Cologne, and Mathieu Quaedvlieg, Opladen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Germany

Filed Feb. 16, 1970, Ser. No. 11,917

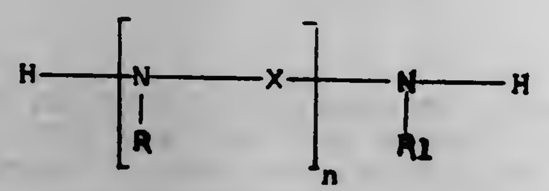
Claims priority, application Germany, May 31, 1969, 1927920

Int. Cl. D06p *5/06*

U.S. Cl. 8—172 **8 Claims**

1. Process for lowering the dyestuff affinity of polyacrylonitrile or polyacrylonitrile copolymer fiber materials comprising the step of treating said fiber materials before dyeing with an aqueous composition containing a water-soluble polyamide obtained by the reaction of

A. an aliphatic polyamine of the formula



$H-\left[\underset{R}{\underset{|}{N}}-X\right]_n-\underset{R_1}{\underset{|}{N}}-H$

in which

R and R_1 independently of one another are hydrogen, alkyl of 1 to 5 carbon atoms or hydroxyalkyl of 1 to 3 carbon atoms;
X is an alkylene radical of 1 to 6 carbon atoms; and
n is an integer from 1 to 4; with

B. α,β-unsaturated aliphatic monocarboxylic acid, aliphatic polycarboxylic acid, or a functional derivative of said acids capable of amide formation said functional derivative selected from the group consisting of acid halides, amides, anhydrides, and esters.

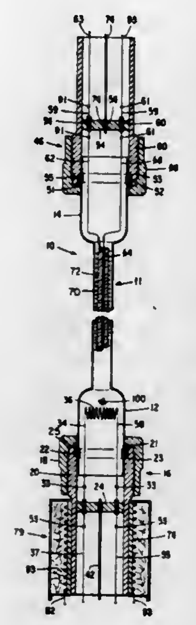
3,892,528
METHOD AND APPARATUS FOR VAPORIZING LIQUIDS TO BE CONTACTED WITH A CARRIER GAS

Alan D. Fredericks, College Station, Tex., assignor to Oceanography International Corporation, College Station, Tex.

Filed Apr. 2, 1973, Ser. No. 346,905

Int. Cl. G01n *31/12*

U.S. Cl. 23—230 PC **3 Claims**



2. In a method of reacting chemical substances in a liquid with a carrier gas by injecting the liquid into a chamber through which the gas flows and heating the liquid in the chamber to a sufficient temperature to cause reaction between the chemical substances and the carrier gas, the improvement which comprises:

injecting the liquid into the chamber onto a first current conductive filament so formed that it will retain the liquid thereon by capillary action;
impressing a voltage across the first filament to raise the temperature of the filament to a relatively low temperature to prevent substantially instantaneous volatilization of the liquid retained on the filament;
directing the carrier gas over said first filament to permit it to entrain the volatilized liquid and carry it over a second filament contained within the chamber;
impressing a voltage across the second filament to raise the temperature sufficiently to cause reaction between substances in the volatilized liquid and the carrier gas; and
discharging the unreacted components and by-products of the reaction from the chamber.

3,892,529
RAPID DIGESTION PROCESS FOR DETERMINATION OF TRICHINELLAE IN MEAT

Paul M. Giles, Los Alamos, assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Apr. 1, 1974, Ser. No. 456,995

Int. $Cl.^2$ G01N *33/16*

U.S. Cl. 23—230 B **6 Claims**

1. An improved digestion process for determination of *trichinellae* in meat comprising placing the meat in a blender, adding at least a digestant selected from the class consisting of sodium hypochlorite, hydrochloric acid and pepsin, papain, bromelin, or trypsin, said digestant having a pH range of 2.0 to 7.2, blending for about 1 minute, pouring the solution into a receptacle allowing any particulate to settle to the bottom of said receptacle, extracting samples from the bottom of said receptacle, visually or automatically counting any *trichinellae* that may be present, and the total digestion period is of the order of a few minutes.

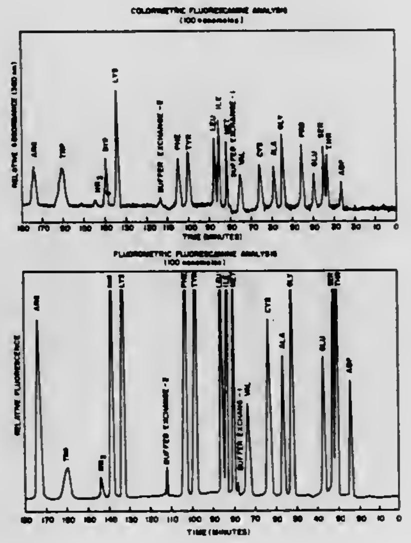
3,892,530
COLORIMETRIC AND FLUOROMETRIC METHOD

Arthur Martin Felix, West Caldwell; Voldemar Toome, Nutley, and Manfred Weigele, North Caldwell, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Sept. 23, 1974, Ser. No. 508,599

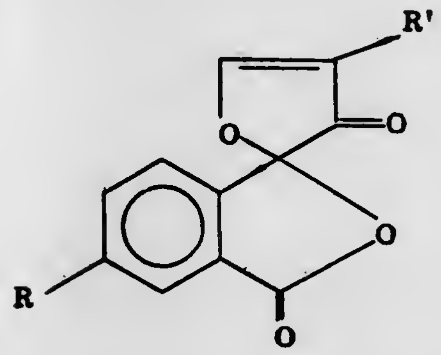
Int. Cl. G01n *21/52, 31/22*

U.S. Cl. 23—230 R **8 Claims**



6. An assay method for detecting primary and secondary amino acids which method comprises:

a. treating a sample containing amino acids with a compound of the formula



I

wherein R is hydrogen, halogen, lower alkyl or lower alkoxy and R′ is lower alkyl or aryl
so as to produce a mixture of fluorophors and chromophors; and,

b. simultaneously detecting said chromophors and flurophors, respectively, colorimetrically and fluorometrically wherein any primary amino acids in said sample will be detected both fluorometrically and colorimetrically and any secondary amino acids present in said sample will be detected only colorimetrically.

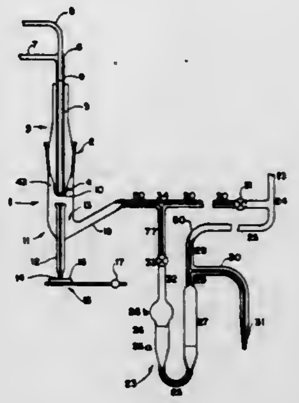
3,892,531
APPARATUS FOR SEQUENCING PEPTIDES AND PROTEINS

Paul T. Gilbert, Santa Barbara, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed July 5, 1973, Ser. No. 376,794

Int. Cl. G01n *33/16*

U.S. Cl. 23—253 R **20 Claims**



1. A sequencer comprising a reaction chamber having inlet and outlet openings, a sample holder extending downwardly into said chamber and serving to retain a sample on a lower surface thereof, means for selectively heating and cooling said sample holder, and means for selectively introducing chemical vapors and inert gas into said reaction chamber whereby said chemical vapors can be condensed on the sample holder when said sample holder is cooled and the liquid on said sample holder can be evaporated by the inert gas when said sample holder is heated.

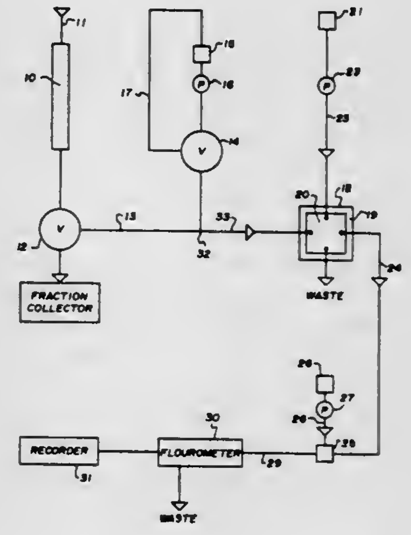
3,892,532
FLUORESCAMINE PEPTIDE ANALYZER

Peter Bohlen, Haledon, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Oct. 24, 1973, Ser. No. 409,221

Int. Cl. G01n *33/16;* **F16k** *3/08*

U.S. Cl. 23—253 R **7 Claims**



1. An improved fluorescence peptide analyzer which analyzer comprises in combination:

a. peptide sample separation means wherein a peptide containing sample is eluted into an eluent stream of varying peptide content;
b. discontinuous two-position sampling valve means in operative fluid flow relationship with said peptide sample separation means whereby said eluent stream is brought

to said sampling valve means wherein in a first valve position said eluent stream is sent to a fraction collector and in a second valve position said eluent stream is diverted as a sample stream;

c. alkaline solution addition valve in operative fluid flow relationship with said diverted sample stream wherein alkaline solution derived from an alkaline solution storage means in operative fluid flow relationship with said addition valve is added to said diverted sample stream so as to produce an alkaline sample stream;

d. hydrolyzer component in operative fluid flow relationship with said alkaline sample stream, said hydrolyzer component comprising an outer enclosure containing heating means and an inner hydrolyzer valve, said hydrolyzer valve comprising

  i. a cylindrical plate having a plurality of channels bored through its longitudinal axis and disposed symmetrically around its center axis said cylindrical plate being rotatably mounted between an upper and a lower fixed plate, one of said fixed plates having alkaline sample stream inlet means and buffer solution inlet means wherein buffer solution is provided from a buffer solution storage means which is in operative flow relationship with said buffer solution inlet means and the other having waste outlet means and detection system outlet means, said inlet and outlet means being so constructed and arranged as to be in operative fluid flow relationship with any two suitably opposed channels in said cylindrical plate and in particular said alkaline sample stream inlet means and said waste outlet means are in operative fluid flow relationship with each other through a suitably opposed channel in said cylindrical plate and said buffer solution inlet means and said detection system outlet means are in operative fluid flow relationship with each other through a suitably opposed channel in said cylindrical plate, and

  ii. a stepping motor operatively connected to said cylindrical plate, said stepping motor having a step corresponding to the number of channels in said cylindrical plate which stepping motor upon activation will cause corresponding rotation of said cylindrical plate, wherein rotation of said cylindrical plate will cause entrapment and transfer of alkaline sample stream contained in the channel opposing said alkaline sample stream inlet means and waste outlet means, said entrapment and transfer continuing with concomitant hydrolysis of the peptides in said alkaline sample stream to form a hydrolyzed sample stream containing hydrolysis products having primary amino groups until said channel has been rotated to a position opposing said buffer solution inlet means and said detection system outlet means where said hydrolyzed sample stream is washed out from said hydrolyzer component by buffer solution from said inlet means; and,

e. fluorescence detection means in operative fluid flow relationship with said detection system outlet means wherein said hydrolyzed sample stream is treated with a fluorogen provided from a fluorogen storage means in operative fluid flow relationship with said hydrolyzed sample stream which produces a fluorophor by reaction with the primary amino group of the hydrolysis products in said hydrolyzed sample stream, said fluorophor is excited and the resulting fluorescence measured.

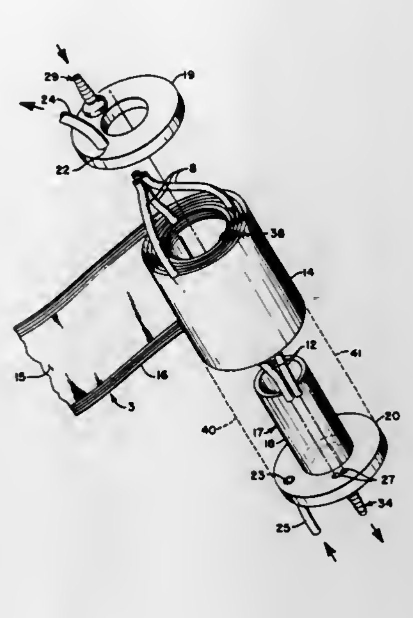
3,892,533

OXYGENATOR GAS DISTRIBUTION HEADER

Frank B. Freedman, St. Louis Park, and Keith A. Ufford, Osseo, both of Minn., assignors to Sci-Med, Inc., Minneapolis, Minn.

Filed Mar. 2, 1973, Ser. No. 337,677
Int. Cl. A61m *1/03*
U.S. Cl. 23—258.5 **2 Claims**

1. A blood oxygenator assembly comprising a spool having a cylindrically shaped core with upper and lower disk shaped end plates at opposite ends thereof, an elongated rectangularly shaped envelope made of gas permeable membrane sheets and defining an enclosed space, inlet and outlet tubing means attached to said envelope for conveying gas to, from and within said enclosed space substantially in one direction, said envelope being spirally wound on said core to define a second space for the flow of blood between adjacent turns of said spirally wound envelope, said end plates each having a port communicating with said second space to which blood carrying tubing may be attached for conveying blood to, from and within said second space in a direction substantially countercurrent to said first-mentioned direction, aperture means in said end plates through which said inlet and outlet tubing extends, said aperture means in each of said end plates including a set of at least two holes, each of said end plates having a collar extending therefrom in surrounding relation to the set of said holes therein, and tubing connector means attached to each of said collars.



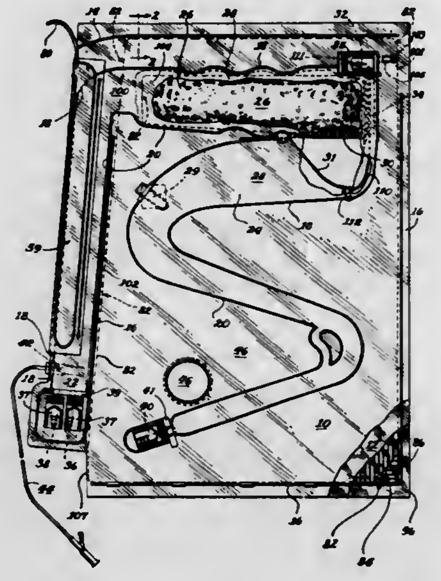
3,892,534

RIGIDLY MOUNTED BUBBLE-TYPE BLOOD OXYGENATOR HAVING FLEXIBLE FLOW CHANNELS

Ronald J. Leonard, Elk Grove Village, Ill., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed Jan. 2, 1974, Ser. No. 430,104
Int. Cl. A61m *1/03*
U.S. Cl. 23—258.5 **9 Claims**

1. In a bubble-type blood oxygenator which comprises: a flexible envelope having sealed portions defining in said envelope a flow passage with a blood oxygenating portion and a blood defoaming portion, and which has means for introducing a stream of blood and a stream of oxygen bubbles into one end of said flow passage, and means for removing blood from the other end of said flow passage, the improvement comprising: rigid backing means operatively associated with and carrying and maintaining said envelope in flat, stretched-out configuration, whereby said flow passage, when filled with blood, exhibits reduced outward distension and sagging.

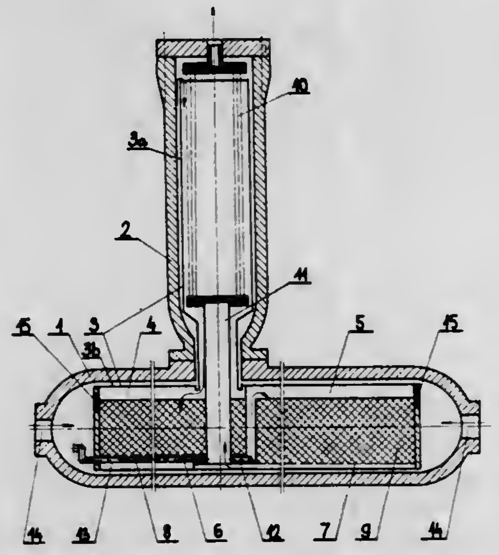


3,892,535

AMMONIA SYNTHESIS CONVERTER

Waclaw Hennel, Pulawy; Jan Cyrus-Sobolewski, Tarnow, and Zbigniew Bartosik, Lublin, all of Poland, assignors to Instytut Nawozow Sytucznych, Pulawy, Poland

Filed May 8, 1973, Ser. No. 358,287
Claims priority, application Poland, May 10, 1972, 155277
Int. Cl. B01j *9/04*
U.S. Cl. 23—288 K **6 Claims**



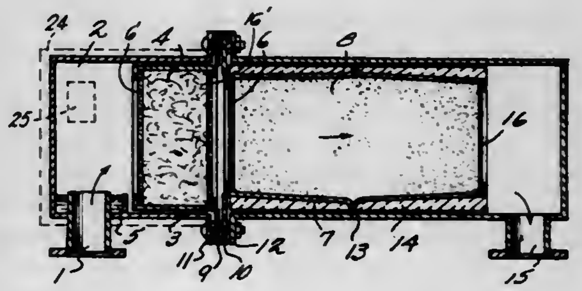
1. In an ammonia synthesizing converter apparatus embodying fluid inlet and outlet passages, and a heat exchanger (**10**) in communication with at least a pair of low-pressure reaction chambers (**4,5**) having catalyst beds (**6,7**), the improvement wherein said converter apparatus is of unitary inverted generally T-shape comprising unitarily-interjoined horizontal (**1**) and vertical (**2**) high-pressure outer vessel components including wall means forming respectively intercommunicating horizontal and vertical outer chambers; said horizontal outer vessel component having fluid inlet passages near longitudinally opposite end portions for fluid flow communication of a feed gas into said outer chambers; said vertical outer vessel component having a fluid outlet passage at a top end portion thereof; said horizontal outer vessel component having disposed therein, in radially spaced relation, separate wall means defining a horizontal inner low-pressure vessel (*3b*) including means forming at least first and second low-pressure reaction chambers (**4,5**) in longitudinal disposition for housing said catalyst beds; said high-pressure outer vertical vessel component (**2**) having therein separate wall means spaced radially inward thereof and defining a vertical inner low-pressure chamber (**3a**) for housing upright heat-exchanger means (**10**) therein; said first and second chambers being generally on opposite sides of said vertical outer and inner chambers; said heat exchanger means having first and second sides; means serially connecting one end portion of said first reaction chamber (**4**) with an adjacent end portion of the second reaction chamber (**5**) for fluid flow communication therebetween; said vertical inner chamber (*3a*) having open upper and lower portions, said open upper portion being in direct communication via said radial spatial disposition with said outer vertical chamber (**2**) and with said horizontal chamber (**1**); said open lower portion connected unitarily to and for fluid communication with said first reaction chamber (**4**); said first side of said heat-exchanger means being in open communication at the upper end with said vertical horizontal outer chambers and at the lower end with said first reaction chamber (**4**), and said second side of said heat exchanger means being in open communication at the upper end with said fluid outlet passage in the vertical outer high-pressure vessel component, and at the lower end with said second reaction chamber (**5**); means connecting said fluid outlet passage for fluid flow communication with said second side of said heat-exchanger means; said reaction chambers (**4,5**) and inner vertical chamber (*3a*) collectively also being of inverted generally T-shape; said heat-exchanger means disposed uprightly within said inner vertical chamber (*3a*), and combined fluid conduit and support means supporting said heat-exchanger means in spaced generally coaxial relation therewith so as to permit engagement-free lateral and vertical movement to accommodate any dimensional changes occasioned by thermo-expansion of said apparatus; and said inner and outer pressure chambers, said catalyst beds, and said heat-exchanger means collectively disposed so as to provide fluid gas-flow entering opposite ends of said horizontal outer vessel component in communication with said heat-exchanger means so as to flow past said first side of said heat exchanger means into said first reaction chamber (**4**), passing therethrough and serially into said second reaction chamber (**5**), and thence serially past said second side of said heat-exchanger means and out of said outlet passage of said outer vertical high-pressure vessel component.

3,892,536

APPARATUS FOR THE PURIFICATION OF WASTE GASES FROM INTERNAL COMBUSTION ENGINES

Helmut Roeser, Frankfurt; Herbert Völker, Wolfgang, and Hans-Dieter Brand, Hanau, all of Germany, assignors to Decatox, GmbH, Frankfurt, Germany

Filed Nov. 26, 1973, Ser. No. 419,098
Claims priority, application Germany, Nov. 27, 1972, 2257968
Int. Cl. F01n *3/14;* **B01d** *46/30;* **B01j** *9/04*
U.S. Cl. 23—288 F **13 Claims**



1. Apparatus for the purification of exhaust gases from internal combustion engines comprising

a. a first housing structure having interior walls and a gas inlet, the downstream end wall of said first housing being open and adapted for connection to a second housing structure,

b. a second housing structure having an open upstream end wall and being adapted to be connected to said first housing structure for gas flow therebetween and having interior walls and a gas outlet,

c. means connecting said first housing downstream end wall to said second housing upstream end wall with means providing a gas-tight communication therebetween,

d. means for providing for oxidation of combustible exhaust gas components, said means comprising a casement member disposed within said second housing structure, said casement member containing a catalyst and providing a flow channel for gases,

e. means for prolonging the useful life of catalyst within said casement member and minimizing the chances of untreated gases passing through said apparatus by minimizing the introduction of soot, water vapor, and unburned hydrocarbons during startup and by buffering gas thrusts, said means including a buffer casement having buffering means contained therein disposed within said first housing structure and providing a path through which gases must pass before entering said casement member, and

f. means for preventing damage to catalyst contained within said casement member due to vibration, said means including (i) means for mounting said casement member for oscillation about a pivot, said means including flat spring means mounted to the upstream end wall of said second housing structure, and (ii) a vibration damping and heat insulating jacket surrounding said casement member thereby being disposed between said casement member and the interior walls of said second housing structure.

3,892,537

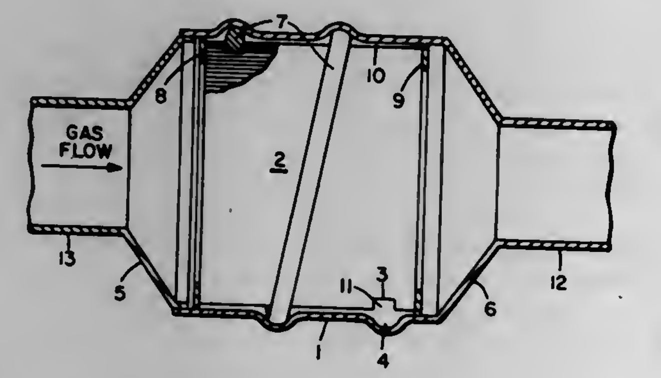
PRELOAD MEANS FOR CERAMIC SUBSTRATE IN EXHAUST GAS PURIFIERS

Suresh T. Gulati, Elmira; Henry E. Hagy, Painted Post, and John S. McCartney, Corning, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Nov. 28, 1973, Ser. No. 419,540

Int. Cl. B01j *9/04;* **B32b** *3/20;* **F01n** *3/14*

U.S. Cl. 23—288 FC **4 Claims**



1. A catalytic converter comprising

a. a cylindrical casing having a radially outward helical channel in the casing inner surface and first and second end closures on opposite ends of the casing terminating, respectively, in inlet and outlet pipes for allowing gas flow between opposite ends of the catalytic converter,

b. a cylindrical, monolithic, honeycombed ceramic substrate having a plurality of open ended cells extending between opposite ends of the substrate and a catalytically active coating thereon, the substrate having a lesser diameter than and being contained axially within the casing, and further having a helical groove on the periphery of the substrate complementarily aligned with and defining a helical conduit with the radially outward helical channel in the casing,

c. an elongated, resilient, flexible means slidable within the helical channel and being disposed and compressed within the helical conduit and having a greater cross-sectional area in an uncompressed state than the cross-sectional area of the helical conduit, but being compressible to yield a cross-sectional area lesser than the cross-sectional area of the conduit; the elongated, resilient, flexible means being capable of remaining elastic and in compression within the helical conduit at the operating temperatures of the catalyst support, and

d. additional securing means fixed to the casing at opposite ends of the substrate for restricting the axial movement of the substrate in the casing and preventing the entrance of gases into an annular space between the casing and the substrate.

3,892,538

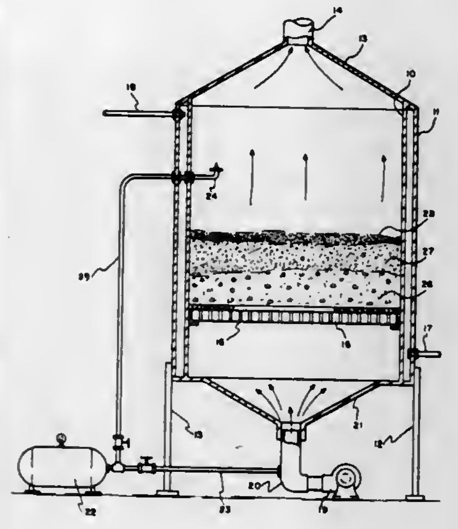
METHOD AND APPARATUS FOR GENERATING HIGH TEMPERATURE ZONE USING FIXED-FLUIDIZED BED

Ram Gopal Seth, 1112 Yardley Rd., Cherry Hill, N.J. 08034

Filed Feb. 28, 1973, Ser. No. 336,408

Int. Cl. F27b *15/00;* **B01d** *9/00*

U.S. Cl. 23—295 **3 Claims**



1. The method of generating high temperatures within a defined zone comprising the steps of:

interdisbursing larger fixed particles within the lower region of a bed of smaller particles capable of fluidization; and passing and maintaining a combustible gas mixture through the bed at a steady state superficial velocity at or slightly below the minimum fluidization velocity of the smaller particles whereby, upon ignition of the gas mixture, the larger unfluidized particles will stabilize the incipient fluidization of the smaller particles and a high temperature zone of gas combustion will occur in the top zone of the bed of smaller particles.

3,892,539

PROCESS FOR PRODUCTION OF CRYSTALS IN FLUIDIZED BED CRYSTALLIZERS

Michael Midler, Jr., Clark, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 861,231, Sept. 26, 1969, which is a division of Ser. No. 626,749, March 29, 1967, Pat. No. 3,510,266. This application Dec. 20, 1971, Ser. No. 210,220

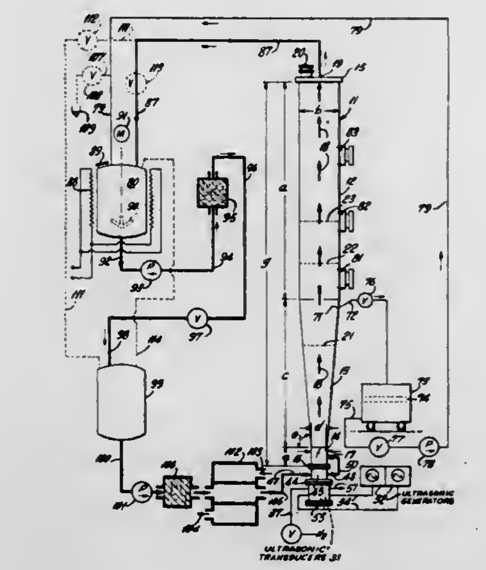
Int. Cl. B01d *9/02*

U.S. Cl. 23—301 R **13 Claims**

1. An improved method of operating a fluidized bed crystallizer that includes a column (i) in which a bed of crystals of a solid product is fluidized by the upward flow therethrough

of a fluidizing liquid that is super-saturated with the same solid product, so that some of the product in the fluidizing liquid crystallizes out onto the fluidized crystals, which thereupon increase in size and weight, the fluidizing liquid being fed in such super-saturated condition under pressure from outside the column into the column near its bottom, and (ii) in which some of the crystals on which product from the fluidizing liquid has deposited become sufficiently heavy to migrate downward, against the upward flow of the fluidizing liquid, to the bottom portion of the column, said improvement comprising:

a. bleeding some of the fluidizing liquid from the column at a point below the top of the fluidized bed of crystals so



that some of the fluidized crystals are carried out of the column; and

b. creating in the bottom portion of the crystallizer a cavitation zone vibrating at ultrasonic frequency and of sufficient intensity to cause crystals which reach said bottom portion of the column against the suspending action of the fluidizing liquid, to break into two or more smaller crystals which move upwardly in the column with the upward flow of the fluidizing liquid, with the result that prolonged operation of said crystallizer may be effected, and bleeding of the crystals from the fluidized bed effected during such prolonged operation, without introducing seed crystals into the column to replace crystals withdrawn by such bleeding.

3,892,540

PRODUCING MONOCRYSTALLINE BODIES BY THE VERNEUIL METHOD

Arnaldo Cioccolani, Champl sur Drac, France, assignor to Ugine Kuhlmann, Paris, France

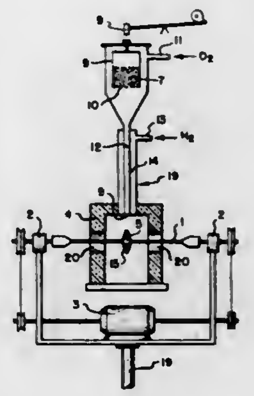
Continuation-in-part of Ser. No. 100,577, Dec. 22, 1970, abandoned, which is a continuation-in-part of Ser. No. 584,168, Oct. 4, 1966, abandoned. This application Dec. 8, 1972, Ser. No. 313,270

Claims priority, application France, Oct. 4, 1966, 33.725.

Int. Cl. B01j *17/00, 17/20*

U.S. Cl. 23—301 SP **8 Claims**

1. A flame fusion process for the production of synthetic monocrystalline bodies which comprises horizontally supporting a monocrystalline rod within a furnace, the rod having been machined to provide at least one preformed radially enlarged portion to orient the lattice of the synthetic bodies, passing powdered material of substantially the same composition as the rod through a flame to fuse the same, directing the flame at the outer periphery of the preformed radially enlarged portion of the rod thereby depositing and building up the fused material by crystallization on such outer periphery, rotating the rod about its axis at a rate fast enough so that the part of the outer periphery of the radially enlarged portion of the rod which is in contact with the flame is in a sufficiently molten state to produce a radially outwardly enlarging crystal of increasing diameter, and varying the distance between the



flame and the outer periphery of the radially enlarged portion of the rod as the diameter of the crystal increases to maintain a predetermined relationship between the flame and such outer periphery whereby a monocrystalline body having a diameter of as much as about 120 mms. may be produced.

3,892,541

HIGHLY CASTABLE, WELDABLE, OXIDATION RESISTANT ALLOYS

Robin Mackay Forbes Jones, Suffern, N.Y., and Walter Adrian Petersen, Ridgewood, N.J., assignors to The International Nickel Co., Inc., New York, N.Y.

Continuation-in-part of Ser. No. 384,799, Aug. 2, 1973, abandoned. This application Dec. 13, 1974, Ser. No. 532,330

Int. Cl.² B23P *3/00;* **C22C** *19/05, 38/44, 38/54*

U.S. Cl. 29—196.1 **11 Claims**

1. A highly castable and weldable heat resistant alloy affording high temperature oxidation resistance consisting essentially of (by weight) up to about 1.4 percent carbon, less than 8.5 percent molybdenum, the carbon and molybdenum being specially correlated according to the following relationship:

$$\%Mo + 6(\%C) < 8.5$$

from about 1.5 to about 4 percent silicon, up to about 4.5 percent manganese, from about 16 to about 30 percent chromium, up to about 50 percent iron, from about 0.1 to about 1 percent boron for alloys containing molybdenum and from about 0.1 to about 0.5 percent for alloys without molybdenum, and the balance, in an amount of at least about 35 percent, essentially nickel, the nickel being further correlated such that for alloys not containing molybdenum, the nickel content does not exceed about 49 percent.

3,892,542

REACTOR FOR PRESSURE TYPE GASIFICATION OF COAL

Fritz Zimmerman, Essen-Steele, and Hans-Joachim Pogrzeba, Essen, both of Germany, assignors to Steag AG, Essen, Germany

Filed Sept. 9, 1974, Ser. No. 504,690

Claims priority, application Germany, Oct. 17, 1973, 2352078

Int. Cl. C10j *3/76*

U.S. Cl. 48—67 **7 Claims**

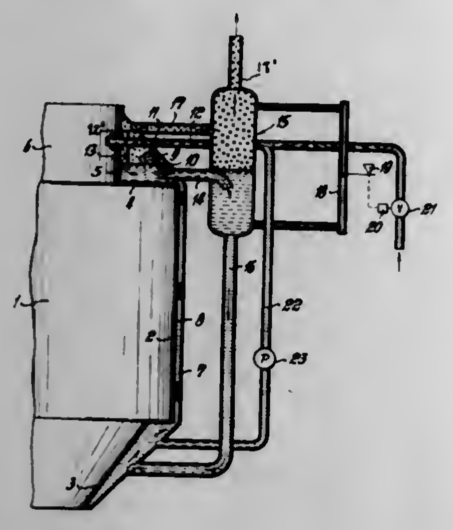
1. A reactor for pressure type gasification of coal comprising

a reactor housing having an outer wall,

a shell spaced from said outer wall to provide a cooling water jacket,

means providing a collector chamber on the upper portion of said reactor housing and receiving cooling water from said jacket,

pipe means leading from the upper portion of said chamber for conveying saturated steam therefrom to said reactor housing,
a compensating tank spaced from the reactor housing,
a tube connection between the lower end of said tank and the lower portion of said cooling water jacket,



a sensor for indicating the cooling water level in said tank,
a side wall of said collector chamber having an overflow lip, said side wall being disposed inside said shell, and
an open ended pipe extending from said collector chamber through said shell to said compensating tank enabling cooling water to flow from said chamber to said tank.

3,892,543

METHOD OF THE REMOVAL OF CHEMICALLY ACTIVE COMPONENTS FROM DUST-LADEN GAS STREAMS

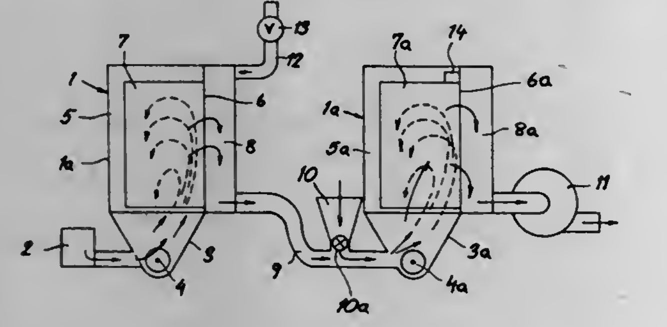
Adolf Margraf, Im Haberkamp 196, 4961 Wendthagen, Germany

Filed Oct. 9, 1973, Ser. No. 404,748

Claims priority, application Germany, May 26, 1973, 2327020

Int. Cl. B01d *46/04*

U.S. Cl. 55—96 **3 Claims**



1. A process for removing substances from a particle-containing gas stream having a noxious component capable of interaction with and retention by a particulate-solid additive, said process comprising the steps of:

a. passing the particle-containing gas stream through a first pocket filter to remove the particles therefrom and produce a prepurified gas;
b. feeding into and admixing with the prepurified gas emerging from said first filter and freed from said particles a predetermined quantity per hour of said particle-solid additive capable of binding said component in the form of solid particles of the additive and said component;
c. passing the prepurified gas admixture with said additive through another pocket filter to trap said particles of additive and said component upon a surface thereof;
d. periodically dislodging said solid particles of additive and said component from said surface and re-entraining them with the prepurified gas onto said surface until the quantity of the additive on said surface is 100 to 1,000 times greater than said predetermined quantity, said prepurified gas thereafter passing through the layer thus formed on said surface; and
e. maintaining the steady state of said layer by removing particles of additive and said component from the surface as recited in step (d) and from the gas stream at substantially the hourly rate that said additive is supplied to said layer by said prepurified gas.

3,892,544

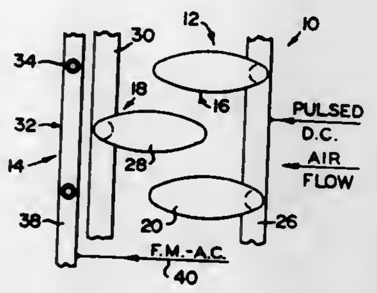
ELECTRODYNAMIC ELECTROSTATIC GAS CHARGE

Hans O. Haupt, Indianapolis, Ind., assignor to CRS Industries, Inc., Tampa, Fla.

Filed July 16, 1973, Ser. No. 363,487

Int. Cl. B03c *3/66*

U.S. Cl. 55—106 **18 Claims**



1. An electrodynamic/electrostatic gas charge system configured for operation within a gas stream, said electrodynamic/electrostatic gas charge system comprising a first and second electrode means, signal generator means including first and second output signal generator means generating a first and second output voltage signal respectively, said first electrode means operatively coupled to said first output·signal generator means to receive said first output voltage signal, said second electrode operatively coupled to said second output signal generator means to receive said second output voltage signal, said signal generating means further including control means to vary said second output voltage signal with changes in environmental conditions, said first and second electrode means generating a first and second voltage gradient field respectively.

3,892,545

ARRANGEMENT FOR SUSPENDING AND CONTROLLING PRECIPITATION ELECTRODES

Rolf Goransson, Vaxjo, Sweden, assignor to Aktiebolaget Svenska Flaktfabriken, Nacka, Sweden

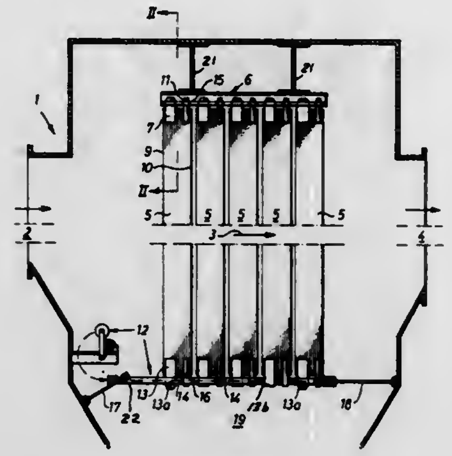
Continuation of Ser. No. 248,048, April 27, 1972, abandoned. This application Sept. 13, 1974, Ser. No. 505,903

Claims priority, application Sweden, May 12, 1971, 6187/71

Int. Cl. B03c *3/76*

U.S. Cl. 55—112 **5 Claims**

1. An electrostatic precipitator having a casing, vertical elongated substantially flat collecting electrodes disposed in at least one row in said casing with their vertical edges disposed forwardly and rearwardly in the direction of gas flow through said casing, and emission electrodes disposed in a parallel row adjacent said one row, a supportin beam above said row of collecting electrodes, upper suspension means on said collecting electrodes suspending said electrodes on said beam, at least one rapping bar underlying said collecting electrodes, lower suspension means on said collecting electrodes suspending said rapping bar thereon, and means to hammer said rapping bar to displace said collecting electrodes edgewise and dislodge the dust particles adhered thereto; said supportinb beam having an open-top groove tehrein substantially the length of the beam formed by a transverse web and upstanding sidewalls on opposite edges of said web, one of said sidewalls having a free upper edge parallel to said web, said upper suspension means comprising an upstanding suspension iron on each electrode having a width less the width of the electrode between the vertical edges, said web having a series of spaced longitudinal slots therein, each slot corresponding to the cross section of an iron associated therewith to slidably receive the iron therethrough, each of said irons above said web having a transverse passageway, said upper suspension means for each electrode comprising a pin in said passageway having a length slightly less than the distance between said sidewalls and greater than the width of said slot, the pin projecting from opposite sides of its associated iron to bear upon the upper surface of the web and thereby support the collecting electrode on said beam, said iron having a length below the transverse web and above the top of said electrode greater than the height of said free upper edge above said web to permit upward displacement of said iron and said electrode within the plane of the electrode to position said pin above said free edge of removal from said passageway.



3,892,546

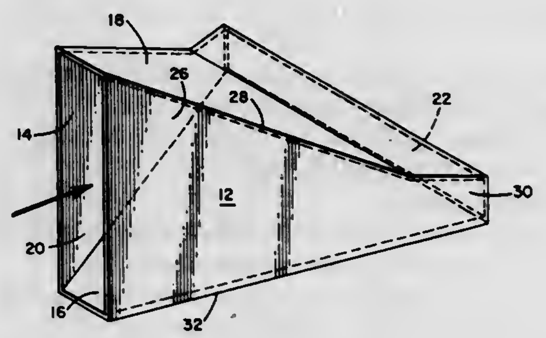
ELECTROSTATIC PRECIPITATOR

Charles P. Grisell, Homewood, Ala., assignor to Rust Engineering Company, Birmingham, Ala.

Filed May 31, 1974, Ser. No. 475,124

Int. Cl. B03c *3/36*

U.S. Cl. 55—129 **10 Claims**



7. An electrostatic precipitator comprising:
a gas passage defined by a top panel, a bottom panel, and a pair of opposed side panels attached to said top panel and said bottom panel and having an inlet and an outlet, said top panel and said bottom panel converging from said inlet to said outlet such that the aspect ratio remains constant from said inlet to said outlet,
discharge electrode means positioned in said gas passage, and
collection electrode means positioned in said gas passage.

3,892,547

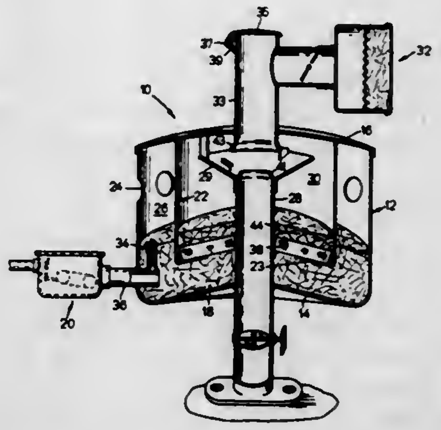
VAPORIZING CARBURETOR

Oliver M. Tucker, 1613 E. Blackthorne Pl., Milwaukee, Wis. 53211

Filed July 20, 1973, Ser. No. 381,221

Int. Cl. F02m *17/34*

U.S. Cl. 55—178 **13 Claims**



1. A carburetor comprising:
a housing having a liquid fuel reservoir at the bottom,
means for admitting liquid fuel into said reservoir,
a vaporized fuel outlet tube projecting above said liquid fuel in said reservoir,
a primary air inlet in said housing,
an open cell plastic wet vaporizing filter partially immersed in the liquid fuel in the bottom of said reservoir,
a baffle between said air inlet and said air outlet tube for directing primary air through said wet filter,
a bubble break screen downstream from said wet vaporizing filter,
a secondary air inlet in said housing for admitting secondary air into said vaporized fuel path downstream from said bubble break screen,
means on said outlet tube for directing air pulses from said outlet tube into said secondary air inlet, said secondary air inlet comprising a tube aligned with said outlet tube, and means for controlling the flow of secondary air into said housing.

3,892,548

APPARATUS FOR DEGASSING A CONDENSER OPERATING IN A THERMAL CYCLE

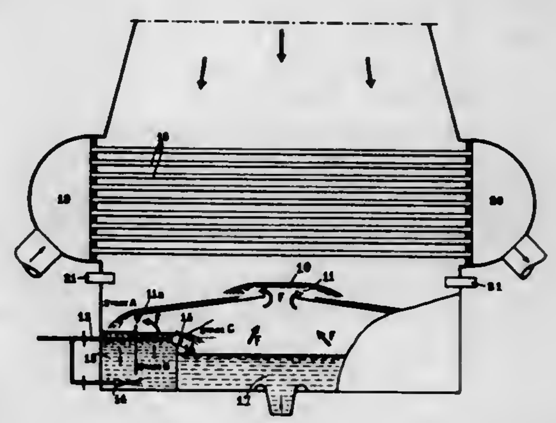
Robert Gardey, Le Bourget, France, assignor to Compagnie Electro-Mecanique, Paris, France

Filed May 3, 1974, Ser. No. 466,827

Claims priority, application France, May 5, 1973, 73.16334

Int. Cl. B01d *19/00*

U.S. Cl. 55—194 **6 Claims**



1. A composite structure operating under a vacuum for condensing steam discharged from a turbine unit of a thermal power plant and de-gassing the condensate prior to feeding the condensate back to the boiler for re-cycling which com-

prises a casing having an inlet for the steam, a cooling tube bundle across which the steam passes in heat exchange relation therewith to effect its condensation and a three-stage de-gasifier for treating the condensate to remove non-condensables such as oxygen therefrom, said first stage being established by means injecting steam issuing from the subsequent stages into condensate flowing over a downwardly sloping roof located below the cooling tube bundle thereby to atomize the condensate, said second stage being established by means injecting steam into a first tank filled with the condensate falling from said roof thereby to effect a bubbling action in the condensate, and said third stage being established by means injecting steam into a layer of the condensate flowing across a weir from said first tank into a second tank to effect atomization thereof.

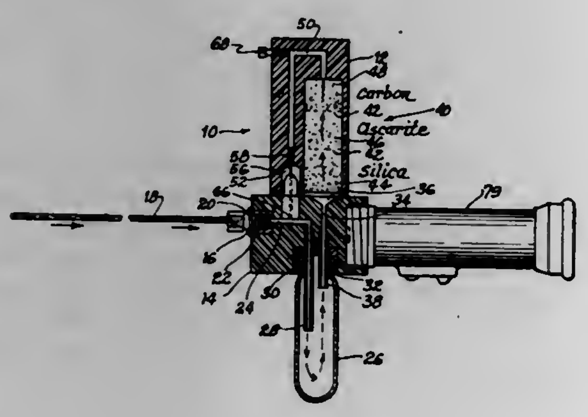
3,892,549
GAS DILUTION APPARATUS

Norman A. Lyshkow, Chicago, Ill., assignor to Combustion Equipment Associates Inc., New York, N.Y.

Division of Ser. No. 441,170, Feb. 11, 1974, Pat. No. 3,853,516. This application June 13, 1974, Ser. No. 478,881

Int. Cl. B01d *51/10*

U.S. Cl. 55—267 **14 Claims**



1. Apparatus for diluting fluids comprising a body, gas inlet means for receiving a gas stream containing a pollutant gas, first passage means in the body communicating with the gas inlet means, trap means mounted on the body and communicating with the first passage means to receive the gas stream flowing therethrough, gas scrubbing means adapted to remove the pollutant gas from the gas stream flowing therethrough, via second passage means which communicate with the trap means and the scrubbing means, gas discharge means adapted to be connected to a zone of reduced pressure, scrubbed gas passage means communicating with the scrubbing means and the discharge means and restricted flow passage means extending into the scrubbed gas passage means and extending into the first passage means whereby reduced pressure applied at the discharge means draws the gas stream through the inlet means and through the first passage means to provide flow of the bulk of the gas stream through the first passage means to the trap means and then through the gas scrubbing means for removal of pollutant gas therefrom and to form an inert diluent gas and to provide flow of a small amount of the gas stream containing pollutant gas through the restricted flow passage means to permit admixture of the small amount of the gas stream containing pollutant gas, with the restricted flow passage means including heating means operatively connected thereto to maintain the temperature of the restricted flow passage means above the due point of the gas stream.

3,892,550
APPARATUS FOR SEPARATING CONDENSATION OF WAX FROM GAS

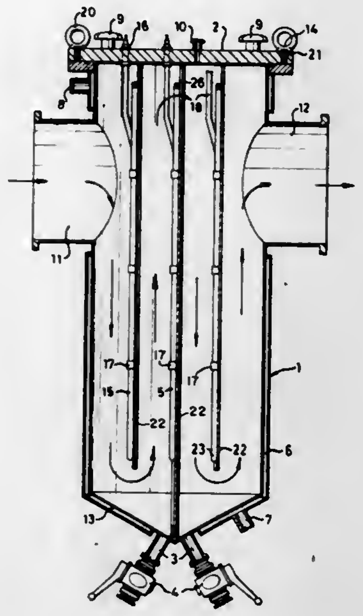
Soren Riis, Fagersta, Sweden, assignor to Seco Tools AB, Fagersta, Sweden

Filed June 19, 1974, Ser. No. 480,937

Claims priority, application Sweden, July 6, 1973, 73095762

Int. Cl.² B01D *45/08*

U.S. Cl. 55—269 **10 Claims**



1. An apparatus for condensation and separation of wax, paraffin etc. from a gas flow, in connection with a vacuum dewaxing furnace for powder metallurgical production, said apparatus being placed between furnace and vacuum pump and comprising a container having inlet and outlet openings for the gas flow and baffle means defining a tortious path therebetween to separate the wax from the gas, characterized by means for vaporizing the wax comprising heater elements mounted inside the container for heating the gas flow from the furnace to a temperature above the boiling point of the wax, means for condensing the wax comprising means for heating the inner walls of the container to a temperature above the fusing point of the wax but below the boiling point of the same and means for draining off the wax thus condensed.

3,892,551
APPARATUS FOR COUNTERCURRENT GAS-SOLID CONTACT

John S. Burnham, Denver, Colo., assignor to The Superior Oil Company, Houston, Harris County, Tex.

Filed June 24, 1974, Ser. No. 482,493

Int. Cl. B01d *53/06*

U.S. Cl. 55—390 **19 Claims**

1. Apparatus for contacting a flowing gas with a granular solid material, said apparatus comprising:

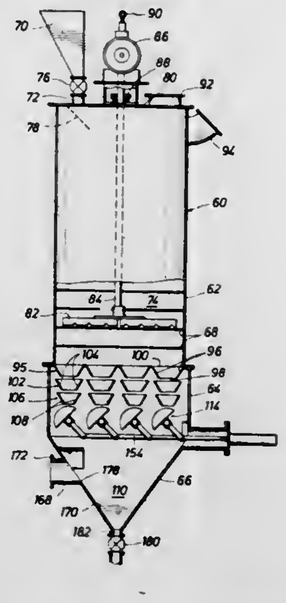
an enclosure defining a closed chamber having a solids entry section and a solids discharge section;

a plurality of louvers mounted within said chamber and defining trough means for directing flow of solid material from said solids entry section toward said solids discharge section, said trough means defining flow passage means for gas flowing through said chamber;

receptacle means disposed within said chamber below said trough means and receiving measured quantities of granular solid material from said trough means, said receptacle means being movable from a position receiving granular solid material from said trough means to a position dumping said granular solid material into said solids discharge section;

gas inlet means being defined in said enclosure for introducing untreated gas into said chamber on one side of said trough means;

gas outlet means being defined in said enclosure on the other side of said trough means;



means for introducing granular solid material into said solids entry section; and

means for discharge granular solid material from said solids discharge section.

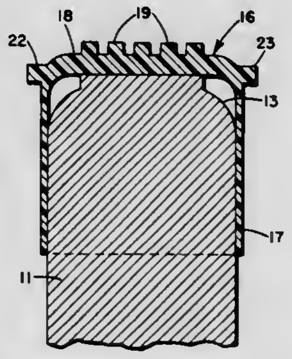
3,892,552
FERTILIZER

Jacob Douglas Gay, Jr., Fayette County, Ky., assignor to International Spike, Inc., Lexington, Ky.

Filed July 6, 1973, Ser. No. 377,120

Int. Cl. C05c *9/00*

U.S. Cl. 71—1 **13 Claims**



1. A one-piece generally wedge-shaped spike comprising particles of fertilizer source materials bound together by a cured thermoset resin, said spike having an elongated body which is substantially elliptical in cross-section, a blunt end and a substantially hemi-ellipsoidal shaped end.

3,892,553
PRODUCT FOR PROVIDING A PHYSICAL MEDIUM FOR PLANT GROWTH

Robert V. Goordman, 16 Laurie Ter., Hackettstown, N.J. 07840, and Fred Ferber, P.O. Box 338, Hewitt, N.J. 07421

Continuation-in-part of Ser. No. 433,848, Jan. 16, 1974, abandoned. This application July 31, 1974, Ser. No. 493,454

Int. Cl. C05f *7/00, 9/00, 13/00*

U.S. Cl. 71—13 **17 Claims**

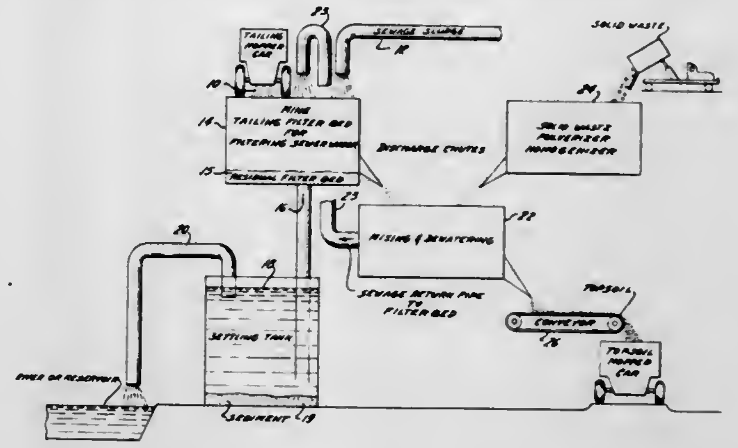
14. A product for providing a physical medium for plant growth by the steps consisting essentially of:

a. mixing pulverized rock and organic sewage sludge in order to form an organically enriched material;

b. adding pulverized garbage to the mixture of step (a);

c. dehydrating the mixture of step (b) to remove any remaining moisture therefrom;

d. crushing the resultant mixture into particles having a diameter of no more than about 2.0 millimeters; and



e. mixing of the mixture of step (d) in order to obtain a bulk density in which the volume of solid material approimates the volume of the air spaces trapped within said material, thereby obtaining a sufficiency of molecular surface area and lattice structure that will permit a water and nutrient retention as well as an ion exchange necessary for the extended physical and chemical support of plant life.

3,892,554
2-AMINO-4-ISOPROPYLAMINO-6-CHLORO-PYRIMIDINE IN MAIZE, WHEAT, POTATOES, ONIONS AND LEEKS

Rupert Schneider, Riehen, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

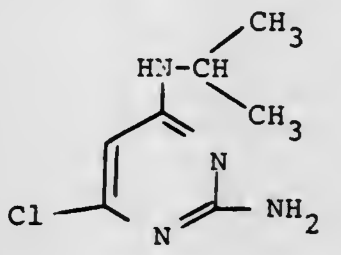
Continuation-in-part of Ser. No. 10,056, Feb. 9, 1970, abandoned. This application Aug. 24, 1971, Ser. No. 174,568

Claims priority, application Switzerland, Feb. 14, 1969, 2234/69

Int. Cl. A01n *9/22*

U.S. Cl. 71—92 **10 Claims**

1. The method of combating weeds in a maize locus comprising applying to such a locus the compound of the formula:



or an agriculturally acceptable acid addition salt thereof, in an amount between 1 to 12 kilograms per hectare.

3,892,555
HERBICIDAL AGENTS

Herbert A. Pass, Toronto, Canada; Hans-Rudolf Gerber, Pratteln, and David Howard Green, Birsfelden, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 25, 1972, Ser. No. 256,953

Claims priority, application Switzerland, May 28, 1971, 7847/71; Oct. 8, 1971, 14718/71

Int. Cl. A01n *9/22*

U.S. Cl. 71—93 **4 Claims**

1. A herbicidal agent comprising a herbicidally effective amount of a mixture of 2-chloro-4-ethylamino-6-isopropylamino-s-triazine and 3,5-dibromo-4-hydroxybenzaldoxime-(2′,4′-dinitrophenyl)-ether, the weight ratio of the 2-chloro-4-ethylamino-6-isopropylamino-s-triazine and the 3,5-

dibromo-4-hydroxybenzaldoxime-(2′,4′-dinitrophenyl)-ether being from 1:1 to 1:8.

3,892,556
COMPOSITION AND METHOD FOR CONTROLLING WILD OATS

Elmer H. Stobbe, 97 Linacre Rd., Winnipeg, Manitoba, Canada

Filed Nov. 19, 1973, Ser. No. 417,313
Claims priority, application Canada, Dec. 4, 1972, 157964
Int. Cl. A01n *9/20*
U.S. Cl. 71—111 **6 Claims**

1. A composition for the control of wild oats comprising a herbicidally effective amount of:

a. 1 to 4 parts by weight 4-chloro-2-butynyl-m-chlorocarbanilate,
b. 4 to 20 parts by weight ethyl 2-N-benzoyl-N-(3,4-dichlorophenyl)-2-aminopropionate, ethyl 2-N-benzoyl-N-(3-chloro-4-fluorophenyl)-2-aminopropionate, or isopropyl 2-N-benzoyl-N-(3-chloro-4-fluorophenyl)-2-aminopropionate and
c. an inert, agriculturally acceptable carrier.

3,892,557
PROCESS FOR THE PRODUCTION OF GOLD POWDER IN PLATELET FORM

Klaus Lutz, Bergen-Enkheim, and Manfred Golla, Grossauheim, both of Germany, assignors to Demetron Gesellschaft fur Elecktronik-Werkstoffe mbH, Frankfurt, Germany

Filed May 31, 1974, Ser. No. 475,280
Claims priority, application Germany, June 15, 1973, 2330413
Int. Cl. C22b *11/06*
U.S. Cl. 75—0.5 A **9 Claims**

1. A process for the production of gold powder in flake form comprising reducing an aqueous hydrochloric acid solution of chloroauric (III) acid with an ethylenically or acetylenically unsaturated alcohol in the presence of a protective colloid.

3,892,558
BRIQUETTE FOR PRODUCING ALUMINUM-SILICON

Dmitry Vladimirovich Ilinkov, ulitsa Tregubenko, 13, kv. 5; Pavel Ilich Volpin, prospekt Lenina, 210, kv. 16; Vasily Petrovich Rumyantsev, ulitsa Sportivnaya, 25, kv. 62; Stanislav Arsenievich Artemenko, ulitsa Stalevarov, 25a, kv. 27; Miro Alivoivodich, ulitsa 40 let So etskoi Ukrainy, 46, kv. 21; Raisa Ivanovna Ragulina, prospekt Metallurgov, 21, kv. 40, all of Zaporozhie; Vasily Grigorievich Zadorozhny, ulitsa Gornyakov, 18; Viktor Viktorovich Varen, ulitsa Gornyakov, 17, both of Volnogorsk Dnepropetrovskoi oblasti; Boris Ivanovich Emlin, ulitsa Dzerzhinskogo, 22, kv. 9, Dnepropetrovsk; Mikhail Ivanovich Gasik, Zaporozhskoe shosse, 6, kv. 9, Dnepropetrovsk; Spiridon Iosifovich Khitrik, prospekt Gagrina, 2, kv. 12, Dnepropetrovsk; Nikolai Semenovich Klimkovich, ulitsa 40 let Oktyabrya, 1, kv. 18, Dnepropetrovsk; Anatoly Yakovlevich Novikov, ulitsa Stasova, 26, kv. 1, Dnepropetrovsk, and Ljudmila Ivanovna Gasik, Kosmichesoke shosse, 19a, kv. 22, Zaporozhie, all of U.S.S.R.

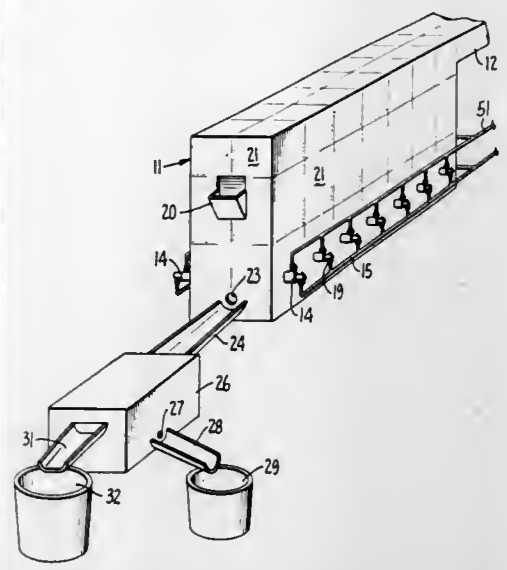
Filed Sept. 18, 1972, Ser. No. 289,945
Claims priority, application U.S.S.R., Sept. 17, 1971, 1695232
Int. Cl. C22c *21/02*
U.S. Cl. 75—10 R **2 Claims**

1. A briquette for producing aluminum-silicon by the ore reducing smelting process in an electric-arc furnace, the briquette composition comprising, in weight per cent:

carbonaceous reducing agent, 30 to 40;
kaolin, 8 to 40;
alumina 4 to 25; and the remainder
disthene sillimanite.

3,892,559
SUBMERGED SMELTING

Thomas A. A. Quarm, Lafayette, Calif., assignor to Bechtel International Corporation, San Francisco, Calif.
Continuation-in-part of Ser. No. 858,997, Sept. 18, 1969, abandoned. This application Jan. 5, 1973, Ser. No. 321,220
Int. Cl. C22b *15/00, 19/20*
U.S. Cl. 75—21 **16 Claims**



1. A process for smelting a mineral product in a furnace, said product being selected from the group consisting of a concentrate, a rich ore and a calcine, and containing as its major metal constituent copper, zinc or a mixture thereof, said process comprising the steps: preparing a bath of molten slag in a furnace; agitating the bath to maintain a state of turbulence therein by injecting directly into the molten slag finely divided flux and mineral product, an oxygen-bearing gas and optionally a fuel; regulating the amount of fuel, if any, and oxygen-bearing gas injected into the agitated molten slag to control oxidation-reduction reactions and to vaporize at least one component of the mineral product, the amount of oxygen-bearing gas being limited so that any copper matte present in the bath is not oxidized beyond Cu_2S; and recovering the vaporized component.

3,892,560
PROCESS AND DEVICE FOR FLASH SMELTING SULPHIDE ORES OR CONCENTRATES

Esko Olavi Nermes; Timo Tapani Talonen, both of Kokkola, and Olavi August Aaltonen, Pori, all of Finland, assignors to Outokumpu Oy, Outokumpu, Finland

Filed Oct. 24, 1973, Ser. No. 409,261
Claims priority, application Finland, Oct. 26, 1972, 2977/72
Int. Cl. C21b *1/04;* **C22b** *1/10*
U.S. Cl. 75—23 **12 Claims**

1. In a process for flash smelting a raw material selected from sulphide ores and concentrates, the steps of:

a. feeding into an oxidation zone molten matte from the flash smelting furnace and at least one oxidizing gas selected from the group consisting essentially of air and oxygen;
b. withdrawing roasting gases at roasting temperature from the oxidation zone;
c. feeding to an upper part of a reaction shaft of a flash smelting furnace said roasting gases together with fuel and said raw material; and
d. controlling temperature in the oxidation zone for maintaining the oxygen content in the roasting gases between about 5 percent and about 18 percent by volume and for maintaining the SO_2 content in the roasting gases between about 1 percent and about 10 percent by volume to control the relationship between the oxidation capacity of the oxidation zone and the smelting capacity of the flash smelting furnace reaction shaft.

3,892,561
COMPOSITION FOR TREATING STEELS

Masaru Takashima, Tokyo, Japan, assignor to Aikoh Company, Ltd., Japan

Filed Feb. 12, 1973, Ser. No. 331,871
Claims priority, application Japan, Feb. 28, 1972, 47-020819The portion of the term of this patent subsequent to Feb. 11, 1992, has been disclaimed.
Int. Cl. C21c *7/00;* **C22b** *9/10;* **B23k** *35/34*
U.S. Cl. 75—58 **2 Claims**

1. A composition for treating molten steel consisting essentially of 2 to 40 wt. % lithium fluoride, 60 to 98 wt. % sodium fluoride, 6 to 38 wt. % calcium fluoride, 1 to 3 wt. % of K_2TiF_6, said composition having a melting point between 600° and 950°C.

3,892,562
PROCESS FOR PRODUCING HIGH PURITY SILVER

Jaydee W. Miller, Wallingford, Pa., assignor to Pyromet, Inc., Wallingford, Pa.
Continuation-in-part of Ser. Nos. 4,335, Jan. 20, 1970, abandoned, and Ser. No. 93,750, Nov. 30, 1970, abandoned. This application Aug. 21, 1972, Ser. No. 282,029
Int. Cl. C22b *11/00*
U.S. Cl. 75—83 **7 Claims**

1. A process comprising

a. producing a melt of silver having a purity of about **99.5%** and having, as an impurity, about **0.5%** sulfur, the surface of said melt being kept free from slag, flux or other substance which will decrease the surface area,
b. injecting and/or passing oxygen of **15–100%** purity through and/or over said melt, thereby causing an oxygen-silver interface and violent boiling action at the surface of said melt due to escaping sulfur dioxide,
c. maintaining a gas-liquid interface by continuing said oxygen injection and/or passing until said violent boiling motion on the surface of said melt ceases, and
d. recovering silver having a purity above **99.9%**.

3,892,563
METHOD AND APPARATUS FOR SEPARATING THE CONSTITUENTS OF LEAD-ACID STORAGE BATTERIES

Albert E. La Point, Socorro, N. Mex., assignor to Albert E. La Point, Socorro, N. Mex.

Filed May 14, 1973, Ser. No. 359,732
Int. Cl. B02c *9/00;* **C22b** *7/00*
U.S. Cl. 75—97 **15 Claims**

1. The method of separating the constituents of a lead-acid storage battery of the type having at least grid plates of antimonial lead, active material consisting of lead, lead oxide and lead sulfate, a case and separators of organic material and acid, comprising the steps of:

a. crushing whole batteries into fragments in a ball mill in the presence of water and sodium carbonate, to form with the active material a heavy medium suspension of density in which the organic material floats and the fragmented grid plates sink; and to react the sodium carbonate chemically with the lead sulfate to transpose it into lead carbonate and to neutralize the acid;
b. the organic material and the suspension continually through an opening at one end of the ball mill onto a first screen adapted to retain the organic material and to pass the suspension therethrough;
c. advancing the fragmented grid plates toward the opposite end of the ball mill; and
d. discharging said fragmented grid plates mechanically through an opening in said other end of the ball mill onto a second screen adapted to retain said fragmented grid plates and pass therethrough any active material adhering thereto, thereby separating the battery constituents into three distinct streams consisting respectively of antimonial lead, active material and organic material.

2. The method of separating the constituents of lead-acid storage batteries of the type having grid plates of antimonial lead, active material consisting of lead, lead oxide and lead sulfate, and cases and separators of organic material which comprises the steps of:

a. charging a cylindrical drum with a quantity of grinding balls;
b. feeding the batteries into the drum together with water;
c. rotating the drum to fragmentize the batteries by impact with the grinding balls, and to agitate the water to form with a portion of the particles of active material a heavy medium suspension of density in which the organic materials floats and the remaining battery fragments including the grid plates sink;
d. removing the organic material and a fraction of the suspension from the drum through an opening at one end thereof;
e. thereafter passing said organic material and suspension fraction over a first trommel screen adapted to retain the organic material and pass the suspension therethrough;
f. advancing the remaining fragments toward the other end of the drum;
g. segregating said remaining fragments by size into smaller and larger fragments;
h. discharging said smaller fragments through an opening in said other end; and
i. passing said smaller fragments over a second trommel screen adapted to retain smaller fragments and pass therethrough any active material adhering to said smaller fragments.

3,892,564
DENTAL ALLOYS

John Sidney Hatswell, and Mieczyslaw Herman Sloboda, both of London, England, assignors to Johnson, Matthey & Co., Limited, London, England

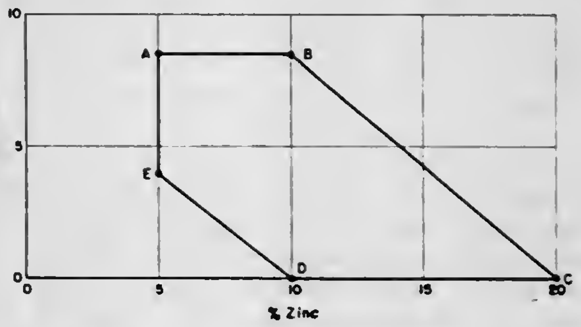
Filed Oct. 2, 1973, Ser. No. 402,778
Claims priority, application United Kingdom, Oct. 3, 1972, 45543/72
Int. Cl.[2] C22C *5/02*
U.S. Cl. 75—165 **13 Claims**

1. An alloy containing, apart from impurities, 5 to 10 wt percent gallium, 3 to 15 wt percent copper, 0 to 6 wt percent zinc, 0 to 19 wt percent silver and 75 to 95 wt percent gold.

3,892,565
MAGNESIUM ALLOY FOR DIE CASTING

George S. Foerster, Monmouth Junction, and Charles D. Statham, Trenton, both of N.J., assignors to N L Industries, Incorporated, New York, N.Y.

Filed Oct. 1, 1973, Ser. No. 402,019
Int. Cl. C22c *23/00*
U.S. Cl. 75—168 C **2 Claims**



1. A die cast alloy of magnesium having good castability and improved creep extension, said alloy consisting of zinc, aluminum, copper, manganese, silicon and magnesium, said zinc and aluminum present in amounts which fall within the pentagon ABCDE in the accompaning drawing defined by the lines AB, BC, CD, DE and EA, said alloy also containing copper in amount from 0.6 percent to 6.0 percent, manganese in

amount from 0.05 percent to 3.0 percent, silicon in amount from 0.0 percent to 2.0 percent, the remainder magnesium, all of the percentages expressed on a weight basis.

3,892,566
ELECTROSTATIC PROCESS WHERE THE DEVELOPER IS THE PHOTOSENSITIVE MEDIUM

Alan J. Brock, and John D. Brock, both of North Adelaide, Australia, assignors to Repco Research Proprietary Limited, Dandenong, Australia

Filed Feb. 14, 1973, Ser. No. 332,396

Claims priority, application Australia, Feb. 18, 1972, 8003/72

Int. Cl. G03g *13/22*

U.S. Cl. 96—1 C **14 Claims**

1. The method of producing images on a surface which comprises:

a. wetting and maintaining a film of photoconductive developer material on said surface, which developer comprises a carrier liquid with an electrical resistivity in excess of 10^6 ohm centimeter and a toner medium which can receive a charge from a corona but which charge is modified by light when and where the said toner medium is subjected to light whereby the electrical resistivity of the said toner medium varies in light and dark areas and thus varies in retention delay characteristics on the said surface when in a field,

b. exposing the said surface with the wet film of photoconductive toner thereon to a light image,

c. simultaneously directing a corona from an electrode remote of the said surface to the said surface to extend uniformly over the surface by using an electrode behind said surface whereby the light image and corona field exist simultaneously and on the same area of the said surface,

d. simultaneously terminating both the corona discharge and the light image,

e. fixing the said image so produced to said surface while under the influence of said corona discharge and light image, and

f. washing toner medium from the said surface where not firmly held to the said surface while maintaining dark conditions.

3,892,567
ELECTROSTATICALLY DEFORMABLE MATERIALS

Roger N. Ciccarelli, and Dale R. Ims, both of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 133,732, April 13, 1971. This application Jan. 22, 1973, Ser. No. 325,488

Int. Cl. G03g *13/00*

U.S. Cl. 96—1.1 **10 Claims**

5. In a method of surface deformation imaging comprising providing a thermoplastic material overlying a conductive substrate, imagewise exposing said material, and softening said material thereby allowing said material to deform imagewise under the influence of an applied electrical field, the improvement which comprises employing as a thermoplastic material a blend comprising a non-polar thermoplastic polymer and a thermoplastic polymer containing polar groups comprising the lithium salt of a carboxylic acid chemically associated therewith, the amount of said polymer containing polar groups blended with said non-polar polymer being such that the thermoplastic material contains from about 100 to 10,000 ppm lithium.

3,892,568
ELECTROPHORETIC IMAGE REPRODUCTION PROCESS

Isao Ota, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 17, 1970, Ser. No. 29,414

Claims priority, application Japan, Apr. 23, 1969, 44-31600; June 12, 1969, 44-46698; June 12, 1969, 44-46700; Apr. 23, 1969, 44-31601; June 12, 1969, 44-46699; June 12, 1969, 44-46701

Int. Cl. G03g *13/22*

U.S. Cl. 96—1.3 **17 Claims**

1. An electrophoretic image reproduction process which comprises: uniformly applying a D.C. voltage to an electrophoretic suspension layer, said suspension layer being selected from the group consisting of (1) a suspension including at least one electrophoretic material suspended in a colored suspending medium which is capable of hiding said at least one electrophophoretic materials, (2) a suspension including at least one electrophoretic material suspended in a suspending medium having further a colored material forming a porous layer therein which is porous to said at least one electrophoretic material and is capable of hiding said at least one electrophoretic material, (3) a suspension including at least two electrophoretic materials suspended in a suspending medium, one of said at least two electrophoretic materials differing in charge polarity and color from the other electrophoretic material and being capable of hiding the other electrophoretic material, (4) and a suspension including at least two electrophoretic materials suspended in a suspending medium, one of said at least two electrophoretic materials differing in electrophoretic mobility and color from the other electrophoretic material and being capable of hiding the other electrophoretic material, the average size of said electrophoretic material in each of said suspensions being from 0.1 to 50 microns, whereby said D.C. voltage changes the optical reflective color of said electrophoretic suspension layer; and applying an electric field in a given image to said changed electrophoretic suspension layer, whereby said electrophoretic material struck by said electric field moves electrophoretically in accordance with the direction of said electric field and reproduces said given image on said electrophoretic suspension layer.

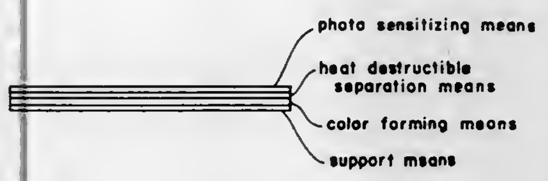
3,892,569
PHOTOSENSITIVE SHEETS COMPRISING ORGANIC DYES AND SENSITIZERS

Daniel E. Speers, Westport, Conn., assignor to General Film Development Corporation, Southport, Conn.

Filed Dec. 4, 1972, Ser. No. 312,216

Int. Cl. G03c *1/76, 3/00, 1/72*

U.S. Cl. 96—67 **9 Claims**



1. An ordinarily light stable copy sheet capable of being rendered sensitive to light upon heating above a predetermined threshold temperature comprising a support means having thereon a coating including a photo-sensitizable color forming organic dye insensitive to light at ambient temperatures without a sensitizing means but sensitive to light at ambient temperatures with a sensitizing means, a sensitizing means selected so as to be capable of sensitizing said color forming organic dye only upon the application of heat to the copy sheet, said sensitizing means being physically kept from effective contact with the color forming organic dye until the application of the heat to the copy sheet by a physical segregation means which is heat destructible at the threshold temperature and a desensitizing means for rendering the copy sheet light stable upon an application of heat greater than that necessary for sensitization.

3,892,570
LIGHT ACTIVATING IMAGING PROCESS

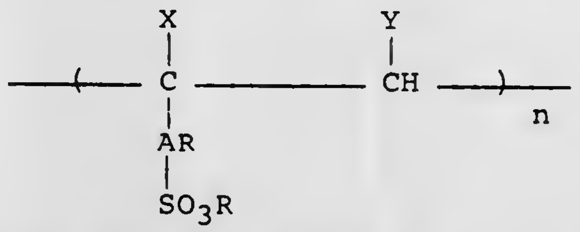
Alan R. Monahan, East Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 245,276, April 18, 1972. This application May 29, 1974, Ser. No. 474,272

Int. Cl. G03c *1/76*

U.S. Cl. 96—67 **2 Claims**

1. A projection member comprising a support substrate having coated on the surface thereof a uniform layer of the alkyl esters of polyvinylaryl sulfonic acids containing photoinsoluble areas in imagewise configuration, said esters satisfying the formula:



$$\left(\begin{array}{c} X \\ | \\ C \\ | \\ AR \\ | \\ SO_3R \end{array} \text{———} \begin{array}{c} Y \\ | \\ CH \\ \\ \\ \\ \\ \end{array}\right)_n$$

wherein R may be any straight or branched chain alkyl group including halogen substituted groups up to and including 10 carbon atoms;

wherein *n* is an integer having a value of from 10 to infinity; X and/or Y are hydrogen, halogen, alkyl or halogen substituted alkyl groups;

wherein Ar may be any polynuclear aromatic fused ring hydrocarbon up to and including 5 benzene rings.

3,892,571
PHOTOMASKS

Vasil Dragomirov Simeonov; Borislav Dimitrov Mednikarov, and Jordan Petrov Malinowski, all of Sofia, Bulgaria, assignors to Zlafop Pri Ban of Bulgaria, Bulgaria

Filed July 5, 1973, Ser. No. 376,712

Claims priority, application Bulgaria, July 17, 1972, 20980

Int. Cl. G03c *1/76, 5/00*

U.S. Cl. 96—68 **20 Claims**

1. A photographic material for use in the direct production of photomasks which photographic material comprises:

i. a glass substrate;

ii. a layer of metal or metal oxide selected from the group consisting of nickel, chromium, Nichrome and iron oxide deposited on said glass substrate;

iii. a photoresist deposited on said layer of metal or metal oxide;

iv. a layer of phenol-formaldehyde resin deposited on said photoresist; and

v. a layer of optically homogenous light-sensitive silver halide from 0.1 to 1 micron thick deposited by evaporation on the synthetic resin.

3,892,572
MULTILAYER COLOR PHOTOGRAPHIC MATERIAL

Keisuke Shiba, and Takeshi Hirose, both of Minami-Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

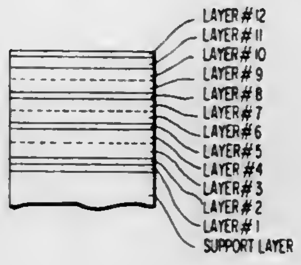
Filed July 1, 1974, Ser. No. 484,742

Claims priority, application Japan, June 29, 1973, 48-73445

Int. Cl. G03c *7/32, 1/02*

U.S. Cl. 96—74 **14 Claims**

1. A multilayer color photographic material suitable for high temperature development comprising a support having coated thereon at least one photosensitive emulsion layer containing an interlayer color correction coupler or an organic accelerator for the interlayer interimage effect, the multilayer color photographic material having a colloid layer for adsorbing an organic development inhibitor on the photosensitive emulsion layer or between the photosensitive emulsion layer and the support, said colloid layer containing silver halide grains which are substantially not developed by color development.



3,892,573
METHOD OF IMPROVING THE SURFACE OF A HIGH MOLECULAR WEIGHT SUPPORT

Sumitaka Tatsuta, and Wataru Ueno, both of Minama-Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minama-Ashigara, Japan

Filed Dec. 22, 1971, Ser. No. 211,058

Claims priority, application Japan, Dec. 24, 1970, 45-11808

Int. Cl. B44d *5/02, 5/04*

U.S. Cl. 96—67 **16 Claims**

1. A method of improving the surface of a hydrophobic high molecular weight resinous support having a roughened surface which comprises contacting the surface with a liquid in which a hydrophilic resin is dissolved or dispersed while subjecting said liquid to ultrasonic vibrations.

3,892,574
CONTROLLED REDUCTION OF SILVER HALIDE GRAINS FORMED DURING PRECIPITATION

Frans Henri Claes, Edegem, Belgium; Eberhard Klein, Opladen, Germany; Marcel Jan Libeer, Mortsel, Belgium, and Erik Moisar, Cologne, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen-Bayerwerk, Germany

Filed Jan. 23, 1973, Ser. No. 326,126

Claims priority, application Germany, Jan. 26, 1972, 2203462

Int. Cl. G03c *1/28*

U.S. Cl. 96—107 **9 Claims**

1. In a process for the production of direct-positive photographic emulsions having silver halide grains of composite structure, the steps of first mixing components including a solution of a soluble halide salt and a soluble silver salt in the presence of an inert colloid to form a precipitate of a silver halide, chemically sensitizing the said silver halide and continuing precipitation to form an outer-shell of silver halide and finally fogging the surface of the outer-shell to form spontaneously developable fog nuclei wherein the improvement comprises precipitating the silver halide for the outer-shell at a pH of up to 9 and a pAg of up to 9.8 and subjecting the silver halide for the outer-shell during precipitation to a controlled reduction reaction by treatment with a reducing agent or light or by silver digestion to obtain silver halide grains in the silver halide emulsion of the outer-shell which silver halide grains contain silver nuclei which are not spontaneously developable without exposure to light upon treatment of a layer of said emulsion having a silver halide content corresponding to 3 g of silver nitrate per m^2 with a surface developer of the following composition:

p-Monomethylaminophenol	1.5	g
Sodium sulfite (anhydrous)	25.0	g
Hydroquinone	6.0	g
Sodium carbonate (anhydrous)	40.0	g
Water up to 1000 ml		

for a development time of 4 minutes and at a development temperature of 20°C.

8. A direct-positive photographic silver halide emulsion with silver halide grains having composite grain structure and consisting of a core of a silver halide which is chemically sensitized and an outer-shell of a silver halide the surface of which contains spontaneously developable fog wherein the said outer-shell is produced by mixing components including a solution of a soluble halide salt and a soluble silver salt in the presence of an inert colloid to precipitate the silver halide of the outer-shell onto the silver halide of the said core at a pH of up to 9 and a pAg of up to 9.8 and finally fogging the surface of the outer-shell to form spontaneously developable fog and wherein during precipitation the silver halide of the outer-shell is subjected to a controlled reduction reaction by treatment with a reducing agent or light or by silver digestion to form within the silver halide of the outer-shell silver nuclei which are not spontaneously developable without exposure to light upon treatment of a layer of said emulsion having a silver halide content corresponding to 3 g of silver nitrate per m^2 with a surface developer of the following composition:

p-Monomethylaminophenol sulfate	1.5	g
Sodium sulfite (anhydrous)	25.0	g
Hydroquinone	6.0	g
Sodium carbonate (anhydrous)	40.0	g
Water up to 1000 ml		

for a development time of 4 minutes and at a development temperature of 20°C.

3,892,575
METHOD OF MODIFYING THE SURFACE PROPERTIES OF A SUBSTRATE

Ronald E. Watts, and Louis A. Errede, both of Harlow, England, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 7, 1972, Ser. No. 312,954

Claims priority, application United Kingdom, Dec. 13, 1971, 057849/71

Int. Cl. B44d *1/50*

U.S. Cl. 96—84 R **6 Claims**

1. A process for modifying the surface properties of a substrate by bonding to said substrate a coating of a mixture of two modifying materials in an amount giving no more than negligible increase in weight and a final thickness of no more than about 0.1 μ comprising

A. coating said substrate with said mixture in which one modifying material is selected to provide finally desired surface properties and the other is selected to be readily bondable to said substrate under the influence of ultraviolet light and is present as an emulsion in a solution of the first said modifying material, drying said coating and

B. irradiating through said coating at a temperature of 60° to 180° C to the interface with said substrate with ultraviolet light of wavelength about 180 to 400 nm. for a time sufficient to give effective bonding of modifying material to said substrate without substantial degradation of the molecules of modifying materials or substrate.

3,892,576
PHOTOGRAPHIC WATER-INSOLUBLE COMPOUNDS HAVING A HYDROPHOBIC DIFFUSION-FAST SUBSTITUENT

Raphael Karel Van Poucke, Berchem, and Arthur Henri De Cat, Mortsel, both of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

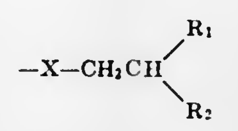
Filed Feb. 8, 1971, Ser. No. 113,646

Claims priority, application United Kingdom, Feb. 24, 1970, 8840/70

Int. Cl. G03c *1/40*

U.S. Cl. 96—100 **12 Claims**

1. Photographic material comprising a support, a light-sensitive silver halide emulsion layer on said support and a photographic water-insoluble component wherein said component is rendered fast to diffusion in hydrophilic colloid media by the presence in its molecule of a group corresponding to the formula:



wherein:

X represents an ether group, a thioether group, a sulphonyl group, a CONH group, an NHCO group, or an SO_2NH group, and

each of R_1 and R_2 represents a branched-chain C_4—C_{12} alkyl group.

3,892,577
WHITE PIGMENT EXCELLING IN RESISTANCE TO FLAME AND CORROSION

Yujiro Sugahara, Tokyo; Yoshibumi Noshi, and Hiroyuki Naito, both of Tsuruoka, all of Japan, assignors to Mizusawa Kagaku Kogyo Kabushiki Kaishi, Osaka, Japan

Filed Nov. 23, 1971, Ser. No. 201,483

Int. Cl. C09d *5/08, 5/14;* **C23f** *11/18*

U.S. Cl. 106—14 **7 Claims**

1. A white pigment excelling in flame resistance as well as corrosion resistance, said white pigment consisting of a phosphate having the composition of the formula

$$M^1O_2.xY.\left(0.1 \sim 1.5 + \frac{mx}{2}\right)P_2O_5$$

wherein

M^1 is an atom selected from the group consisting of silicon, titanium and zirconium,

Y is a member selected from the group consisting of a nitrogen-containing base selected from the group consisting of ammonia, urea, ammonium carbamate, guanyl urea, aminourea and biurea and an oxide of the formula $M^2O_{n/2}$

wherein M^2 is a metal selected from the group consisting of alkali metals, alkaline earth metals, aluminum, lead and zinc, and n is the valence of said metal M^2,

x is a positive number up to 6, including 0, and

m is 1 when Y is said nitrogen-containing base and is n when Y is M^2On_2;

said phosphate having a water solubility of 0.1–20 percent, said phosphate having a rate of aggregation of not more than 50 percent as defined by the following formula

$$Q = \frac{A - A'}{A} \times 100$$

wherein

A is the weight of powder passing through a sieve of 100-mesh size,

A' is the weight of this powder passing through the same sieve after standing for 24 hours at room temperature in air of relative humidity 90 percent, and

Q is the rate of aggregation in percent.

3,892,578
PHOSPHORUS CONTAINING VINYL ETHERS

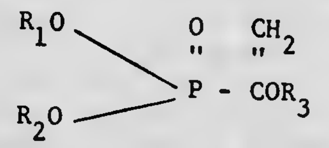
Peter Golborn, and James L. Dever, both of Lewiston, N.Y., assignors to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Division of Ser. No. 142,075, May 10, 1971, abandoned. This application Aug. 7, 1972, Ser. No. 278,506

Int. Cl. C09k *3/28*

U.S. Cl. 106—16 **10 Claims**

1. A process for imparting flame resistance to a textile material comprising combining, from 5 to 40 percent by weight of textile material, a compound of the formula



wherein R_1, R_2 and R_3 are lower alkyl radicals independently containing from 1 to 8 carbon atoms, with a textile material selected from the group consisting of cellulosic material and proteinaceous material.

3,892,579
ADHESIVE REFRACTORY PROTECTIVE COMPOSITION FOR INVESTMENT CASTING

Curtis P. Mabie, Jr., Frederick, Md., assignor to American Dental Association, Chicago, Ill.

Filed Mar. 22, 1973, Ser. No. 343,856

Int. Cl.^{2} B28B *7/34*

U.S. Cl. 106—38.3 **6 Claims**

1. An organic solvent dispersion useful in investment casting to secure preforms to a pattern comprising methylene chloride having dissolved therein zirconium octoate, said solution having dispersed therein very fine granules of a refractory material having a particle size predominately in the range of 2–5 microns mean diameter, said zirconium octoate comprising 20–40% by weight of the dispersion.

3,892,580
METHOD OF MAKING POROUS INORGANIC BODIES

Ralph A. Messing, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Mar. 26, 1973, Ser. No. 344,964

Int. Cl. C03c *11/00*

U.S. Cl. 106—41 **6 Claims**

1. A method for producing porous bodies from Al_2O_3, TiO_2, ZrO_2, SiO_2, and mixtures thereof having pore diameters ranging between about 100A–1000A, wherein the skeletal density of the porous body approaches the theoretical density of the oxide and at least about 90 percent of the pores have pore diameters which fall within ± 10 percent of the average pore diameter value, which comprises:

a. forming a slurry consisting of particulate Al_2O_3, TiO_2, ZrO_2, SiO_2, and mixtures thereof, wherein the particle diameters thereof approximate the desired average pore diameter and range between about 100A–1000A, and a solution selected from the group consisting of acetic acid, propionic acid, magnesium acetate, zinc acetate, and sodium acetate;

b. drying said slurry; and

c. firing the dried material at about 450°–800°C.

3,892,581
GLASS FIBER COMPOSITIONS

Jerome A. Burgman, Murrysville; Edward M. Hunia, Pittsburgh, and Homer E. Neely, Jr., Tarentum, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sept. 10, 1973, Ser. No. 395,791

Int. Cl. C03c *3/12*

U.S. Cl. 106—50 **9 Claims**

1. A glass fiber composition consisting essentially of 53 percent to 57.3 percent by weight as SiO_2, 16.3 percent to 18.5 percent by weight as Al_2O_3, 6.6 percent to 10.5 percent by weight as MgO, 8.5 percent to 12.7 percent by weight as CaO, 0.6 percent to 0.8 percent by weight as TiO_2, 2.0 percent to 4.1 percent by weight as B_2O_3, and 0.8 percent to 3.3 percent by weight as Na_2O having a tensile strength of greater than 570,000 pounds per square inch formed from a glass composition having a softening point below 1,650°F. and a liquidus temperature below 2,210°F.

3,892,582
PROCESS FOR CHANGING THE TINT OF A PHOTOCHROMIC MATERIAL AND MATERIAL FORMED THEREBY

Robert A. Simms, 449 Ithaca Rd., Horseheads, N.Y. 14845

Filed Feb. 1, 1974, Ser. No. 438,838

Int. Cl. C03c *3/20*

U.S. Cl. 106—52 **10 Claims**

1. A process for changing the tint of a photochromic inorganic silicate glass article containing microscopic particles of silver halide without adverse effect on photochromic properties which comprises the steps of heating the article to a temperature of at least about 300°C to about 600°C for a time from about 4 minutes to about 15 minutes in a reducing atmosphere having a free energy of formation greater that about 1½ to about 2 electron volts to permanently achieve the tint alteration.

3,892,583
PRODUCTION OF SHAPED ARTICLES OF SILICON CARBIDE AND SILICON NITRIDE

Gerhard Winter; Wolfgang Verbeek, and Manfred Mansmann, all of Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 22, 1973, Ser. No. 390,450

Claims priority, application Germany, Sept. 5, 1972, 2243527

Int. Cl. C04b *35/52, 35/58*

U.S. Cl. 106—55 **8 Claims**

1. A process for the production of a shaped article comprising a homogeneous mixture of silicon carbide and silicon nitride comprising producing a silazane by reacting ammonia with at least one halogenosilane at a temperature of up to about 200°C, forming said silazane into a shaped article, and heating said shaped article to a temperature between about 800° and 2,000°C in an inert atmosphere, whereby said silazane decomposes into silicon carbide and silicon nitride.

3,892,584
MONOLITHIC REFRACTORY MATERIALS

Kenzo Takeda; Kazuhiko Takahashi, and Kunihiko Shiraishi, all of Osaka, Japan, assignors to Nippon Crucible Co., Ltd., Tokyo, Japan
Filed May 18, 1973, Ser. No. 361,724
Claims priority, application Japan, May 19, 1972, 47-49198
Int. Cl. C04b *35/10, 35/52, 35/56*
U.S. Cl. 106—56 **9 Claims**

1. Refractory materials for ramming and solid casting consisting essentially of 55–75 percent of an alumina material; 10–30 percent of silicon carbide and 5–20 percent of carbon, based on the total 100 wt percent, and 5–12 percent, based on the total weight of said alumina material, silicon carbide and carbon, of a chemical binder of a sol having a solids content of more than 5 percent by weight selected from the group consisting of a silica sol, an alumina sol and a mullite sol.

3,892,585
SEMI-SOLID COATING COMPOSITION

Masahiko Sagane, Hiratsuka, Japan, assignor to Kansai Paint Co., Ltd., Amagasaki and New Japan Chemical Co., Ltd., Kyoto, both of, Japan
Filed June 20, 1973, Ser. No. 371,575
Claims priority, application Japan, June 27, 1972, 47-06368
Int. Cl. C08b *27/42;* **C08h** *9/00;* **B01j** *13/00*
U.S. Cl. 106—187 **5 Claims**

1. In a coating composition which includes an organic fluid, film-forming material such as boiled oils; ready mixed paints based on boiled oils; natural resin varnishes and enamels; cellulosic clear lacquers and lacquer enamels; alkyd resin varnishes, paints and enamels; epoxy resin varnishes and enamels; acrylic resin varnishes and enamels; melamine-formaldehyde resin varnishes and enamels; polyurethane varnishes and enamels; and unsaturated polyester varnishes and enamels; the improvement comprising:

a thixotropy imparting material which is at least one member selected from the group consisting of hydrogenated castor oil and condensation products of a sugaralcohol with an aromatic aldehyde, said sugaralcohol being a member selected from the group consisting of pentahydric, hexahydric and heptahydric alcohols, said aromatic aldehyde being a member selected from the group consisting of benzaldehyde, ortho-, para- and meta-tolualdehyde, anisaldehyde and substituted benzaldehydes having 1 to 3 of amino groups, nitro groups or halogen atoms in their benzene nucleus;

said thixotropy imparting material being present in an amount ranging from 0.5 to 20 percent by weight;

said coating composition is a semi-solid, shapable mass which is fluidizable under shear and has a penetration value of not more than 2,000 and a viscosity of not more than 10^5 centipoises, at 25°C, respectively.

3,892,586
PROCESS FOR THE PREPARATION OF BUILDING UNITS

János Vládar; Ilona Vládar nee Szepes; Mihály Juhász; Peter Vládar, and Gábor Vládar, all of Budapest, Hungary, assignors to Licencia Talalmanyokat Ertekesito Vallalat, Budapest, Hungary
Filed Apr. 24, 1973, Ser. No. 354,146
Int. Cl. C08b *27/60*
U.S. Cl. 106—200 **20 Claims**

1. A process for preparing building units from cellulose-containing base materials and oil distillation residues, comprising mixing 15 to 85 % by weight of cellulose-containing base material with 1 to 20% by weight of a member selected from the group consisting of alkali metal ozide, alkali metal hydroxide, alkaline earth metal oxide, alkaline earth metal hydroxide and a mixture thereof, then adding 10 to 65% by weight of a 120° to 250°C. melt of oil distillation residue selected from the group consisting of bitumen having a softening point of about 80°C., black pitch and acid sludge and a mixture thereof to the obtained mixture at a temperature of 120° to 250°C., then mixing for at least one minute, and then shaping the obtained material at a temperature above 80°C.

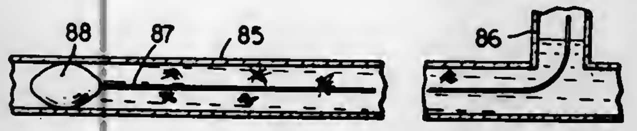
3,892,587
METHOD FOR CONTROLLING THE VISCOSITY OF DISPERSED CLAY SLURRIES

William F. Abercrombie, Jr., Macon, Ga., assignor to J. M. Huber Corporation, Locust, N.J.
Filed June 17, 1974, Ser. No. 479,719
Int. Cl. C08h *17/06;* **C09c** *1/42*
U.S. Cl. 106—288 B **6 Claims**

1. A method for controlling and maintaining the viscosity of an aqueous slurry of finely divided particulate clay pigments at a substantially uniform and low level, said method comprising the steps of forming an aqueous slurry of finely divided particulate clay pigments having a clay solids content in the range of from about 60 to 72% by weight and contacting said clay slurry with ascorbic acid in an amount in the range of from about 0.1 to 5.0 pounds acid per ton of said clay pigments, based on the dry weight of said clay pigments.

3,892,588
METHOD OF KILLING ROOTS AND ORGANIC GROWTHS IN SEWER PIPES

Frederick F. Horne, Carmel Valley, Calif., assignor to Airrigation Engineering Company, Inc., Carmel Valley, Calif.
Division of Ser. No. 122,738, March 10, 1971, Pat. No. 3,741,807, which is a continuation-in-part of Ser. No. 850,321, Aug. 6, 1969, abandoned, which is a continuation-in-part of Ser. No. 760,822, Sept. 19, 1968, abandoned. This application Apr. 30, 1973, Ser. No. 355,761
Int. Cl. B08b *9/02*
U.S. Cl. 134—24 **5 Claims**



1. A method for treating sewer pipes and the like for killing roots and other organic materials therein and keeping the pipes relatively clear and clean, comprising

temporarily plugging a sewer pipe,

filling the pipe upstream from the temporary plug with an aqueous solution containing a mixture, in an effective amount sufficient to kill such roots and organic materials, of phytocidal fumigant and nonionic surfactant,

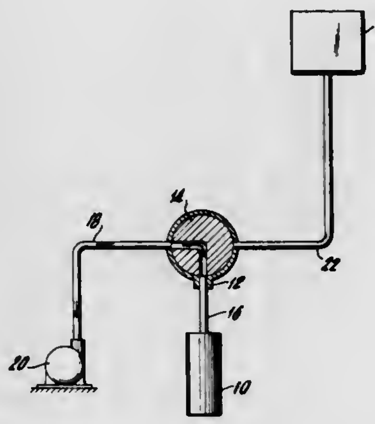
soaking the pipe and its organic contents with the solution for an effective time interval sufficient to kill such roots and organic materials, and

unplugging the pipe and letting the solution flow on.

3,892,589
SEALED BATTERY CONSTRUCTION

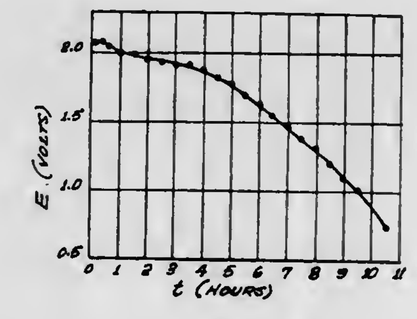
Martin G. Rosansky, Monsey, and Bruce E. Jagid, Whitestone, both of N.Y., assignors to Power Conversion, Inc., Mount Vernon, N.Y.
Division of Ser. No. 203,976, Dec. 2, 1971, Pat. No. 3,748,186. This application Apr. 24, 1973, Ser. No. 353,961
Int. Cl. H01m *35/00*
U.S. Cl. 136—6 LN **1 Claim**

1. A non-aqueous electric current-producing cell comprising a sealed battery casing containing a negative electrode made from a material selected from the group consisting of alkali metals and alkaline earth metals, a positive electrode, a separator for insulating the electrodes from each other, a liquid electrolyte that expands substantially when heated, including SO_2 in the form of an anhydrous liquid mixed with a cosolvent of at least one anhydrous liquid organic compound that is inert with respect to the negative electrode, and a predetermined quantity of dry air that does not react with other components of the cell whereby the liquid electrolyte is permitted to expand without escaping from the sealed casing by compressing the dry air.



3,892,590
CATHODE MATERIAL FOR USE IN NON-AQUEOUS ELECTROLYTES

Ronald G. Gunther, Mystic, Conn., assignor to Yardney International Corporation, Los Angeles, Calif.
Filed July 16, 1973, Ser. No. 379,257
Int. Cl. H01m *13/02, 17/00*
U.S. Cl. 136—83 R **7 Claims**

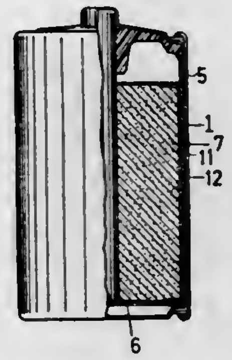


1. In a primary cell comprising (a) a negative electrode having as the active material an electrochemically active metal and (b) a non-aqueous electrolyte, the improvement which comprises: a positive electrode having as its principal active material a fluorinated carbon represented by the formula $(CF_x)_n$, where x has a value greater than 1 but not greater than 2 and n is an indefinite large number.

3,892,591
DRY CELL AND MANUFACTURE OF THE SAME

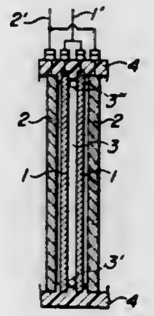
Yoshio Uetani; Rokurou Ikebata; Kentaro Kashiwaya; Syoetsu Sugihara, and Kaoru Hisatomi, all of Ibaraki, Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan
Filed Feb. 20, 1973, Ser. No. 333,709
Claims priority, application Japan, Dec. 7, 1972, 47-12314
Int. Cl. H01m *3/02*
U.S. Cl. 136—102 **17 Claims**

1. A dry cell containing a zinc anode, a depolarizer and a separator disposed therebetween, said separator being composed of a base paper comprising a layer of very fine paper having a thickness of at least about 10 microns and a density of about 0.65 to 0.85 g/cm³, the side of said base paper facing the zinc anode being coated with a paste material, and the opposite and uncoated side thereof facing the depolarizer.



3,892,592
METHOD OF MANUFACTURING ELECTRODES FOR FUEL CELLS

Masataro Fukuda, Takatsuki, and Tsutomu Iwaki, Kyoto, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Continuation-in-part of Ser. No. 146,126, May 24, 1971, abandoned, which is a continuation of Ser. No. 794,157, Jan, 27, 1969, abandoned. This application Oct. 23, 1973, Ser. No. 408,560
Claims priority, application Japan, Jan. 31, 1968, 43-6320; Sept. 19, 1968, 43-68981; Sept. 20, 1968, 43-69028
Int. Cl. H01m *27/10*
U.S. Cl. 136—120 FC **16 Claims**



1. A method of manufacturing fuel electrodes for fuel cells which carry a catalyst comprising a layer of a mixture of copper and nickel, and at least one metal selected from the platinum group consisting of palladium, platinum, iridium and rhodium and carried by said mixture layer; said method comprising the steps of reducing a mixture of salts of copper and nickel onto an electrode substrate by means of a chemical reducing agent to produce said layer of said mixture on said substrate, and immersing the resulting electrode substrate into a solution of a salt of the metal of the platinum group to deposit said metal of the platinum group onto the surface of the said layer on said substrate due to differences in oxidation potentials between said platinum group metal and said mixture layer.

3,892,593
ALKALINE CELLS

Mitsuru Ieki, Daito; Kenji Inoue, Hirakata, and Toshio Shimizu, Daito, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed June 5, 1973, Ser. No. 367,130
Claims priority, application Japan, June 20, 1972, 47-62224
Int. Cl. H01m *1/02*
U.S. Cl. 136—133 **6 Claims**

1. An alkaline cell comprising a metal case containing electricity-generating elements therein, a metal sealing plate sealing the open end of said case, and an insulating gasket inter-

posed between the open end of said case and said sealing plate, said gasket being made of a resin composition comprising a halogenated butyl rubber as the main constituent and a styrenic resin and a phenolic resin incorporated therein.

3,892,594

PROCESS OF MAKING A SELF CONTAINED ELECTRODE SEPARATOR FOR PRIMARY AND SECONDARY ELECTROLYTIC CELLS

Arthur Charlesby; Peter John Fydelor, both of Swindon, and Adele Patricia Morris, New Malden, all of England, assignors to National Research Development Corporation, London, England

Filed Dec. 22, 1970, Ser. No. 100,828

Claims priority, application United Kingdom, Dec. 22, 1969, 62234/69

Int. Cl. H01m *3/00*

U.S. Cl. 136—148 **22 Claims**

1. A process for the production of an electrode encapsulated in a selectively semi-permeable membrane for an electrolytic cell comprising the steps of
   a. totally encapsulating the electrolytic cell electrode in a base polymer,
   b. immersing the encapsulated electrode of step (a) in an ethylenically unsaturated carboxylic acid monomer selected from the group consisting of acrylic acid and its lower alkyl homologues, and
   c. causing the monomer of step (b) to copolymerize with the base polymer of step (a) while the base polymer and the monomere encapsulate the electrolytic cell electrode, whereby an electrode for an electrolytic cell totally enclosed in a encapsulating selectively semi-permeable membrane is produced.

3,892,595

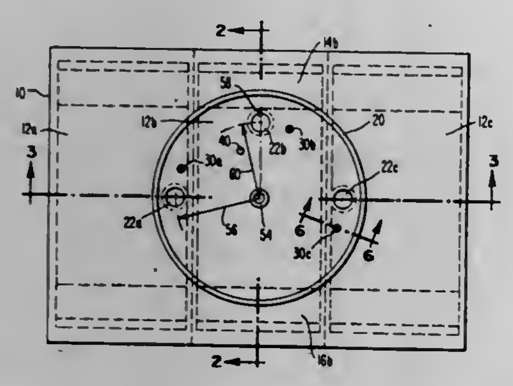
STORAGE BATTERY WITH SINGLE FILL VALVE

James E. Bell, Canoga Park, Calif., and Robert P. Laczko, Cuyahoga, Ohio, assignors to ESB Incorporated, Philadelphia, Pa.

Filed Apr. 5, 1974, Ser. No. 458,108

Int. Cl. H01m *1/02*

U.S. Cl. 136—162 **8 Claims**



1. A storage battery including a container with a first end cell compartment, a second end cell compartment and at least a center cell compartment located between the end cells, a cell element including positive plates, negative plates, separators and electrolyte located in each compartment; a single cover fastened to the container the single cover having a first section closing the first end cell compartment, a second section closing the center cell compartment and a third section closing the second end cell compartment; a disc valve rotatable about an axis perpendicular to the cover, located upon and in contact with the cover, areas of the disc covering selected positions of the three sections of the cover; a first filling well located in the portion of the first section of the cover covered by the valve disc, at a distance *a* from the axis of the disc, the first filling well including a first dependent collar extending downwards from the underside of the cover, a first vent opening through the cover in the portion of the first section of the cover covered by the disc valve at a radius *a* from the axis of the disc; a second filling well located in the portion of the second section of the cover covered by the valve disc, at a distance *b* from the axis of the disc the distance *b* being less than the distance *a*, the second filling well including a second dependent collar extending downwards from the underside of the cover, a second vent opening through the cover in the portion of the second section of the cover covered by the disc valve at a radius *b* from the axis of the disc; a third filling well located in the portion of the third section of the cover covered by the valve disc at a distance *c* from the axis of the disc the distance *c* being greater than the distance *b*, the third filling well including a third dependent collar extending downwards from the underside of the cover, a third vent opening through the cover in the portion of the third section of the cover covered by the disc valve at a radius *c* from the axis of the disc;
   the first filling well and the third filling well being located on a straight line passing through the axis of the disc valve, the first vent opening and the third vent opening being located on a straight line passing through the axis of the disc;
   the disc further including a first access hole, a second access hole and a third access hole therethrough the location of the holes being such that when the valve disc is in a first position the first filling well is exposed through the first hole in the disc, the second filling well is exposed through the second hole and the third filling well is exposed through the third hole and when the disc is in a second position, the first vent opening is opened by the first hole, the second vent opening is opened by the second hole and the third vent opening is opened by the third hole.

3,892,596

UTILIZING ION IMPLANTATION IN COMBINATION WITH DIFFUSION TECHNIQUES

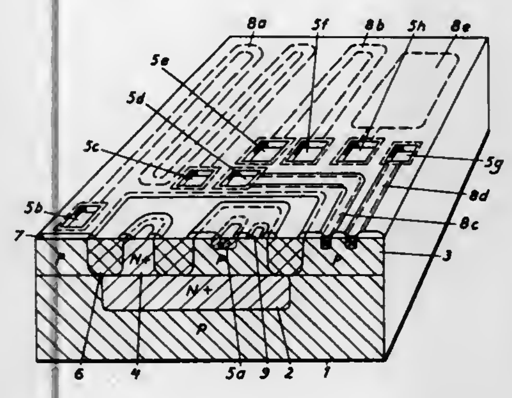
Fritz Lars Gunnar Bjorklund, Tyreso, and Eva Matzner, Stockholm, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Oct. 25, 1973, Ser. No. 409,761

Claims priority, application Sweden, Nov. 9, 1972, 14522/72

Int. Cl. H01l *7/54, 27/02*

U.S. Cl. 148—1.5 **2 Claims**



1. The method of making an integrated circuit of at least one resistor and one transistor comprising the steps of providing a crystalline substrate of a first type of semi-conductor material having diffused into a first region of one surface thereof impurity atoms of a second type, epitaxially growing on said one surface a layer of said first type of semiconductor material, diffusing impurity atoms of second first type into a second region of said layer within said first region to such a depth to electrically contact said first region andinto a third region of said layer within said first region to a depth insufficient to electrically contact said first region, etching said epitaxially grown layer away in a first annular region surrounding said second region and a second annular region connected to said first annular region and surrounding said third annular region, filling said annular regions with a high resistance material, and injecting a beam of impurity ions of a second type along a line in the surface of said epitaxially grown layer outside the area enclosed by said annular regions to form passive elements.

3,892,597

METHOD OF NITRIDING

Joseph A. Lincoln, and Joseph A. Riopelle, III, both of Toledo, Ohio, assignors to Midland-Ross Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 243,824, April 13, 1972, abandoned. This application Nov. 1, 1973, Ser. No. 411,850

Int. Cl. C23c *11/16*

U.S. Cl. 148—16.6 **1 Claim**

1. A process for nitriding ferrous parts to produce a thin compound layer of complex nitrides containing principally epsilon phase without the presence of Fe_4N comprising the steps of:
   placing said parts in a furnace containing an atmosphere defined as a noncombustible carrier gas consisting essentially of 95–97 percent nitrogen, ½ to 1½ percent carbon monoxide and 2–4 percent hydrogen;
   heating said parts to an approximate temperature of 1,000°F;
   introducing ammonia gas to said carrier gas to form a nitriding atmosphere within the furnace, said nitriding atmosphere containing 5–25 percent ammonia gas by volume; maintaining the hydrogen gas in said nitriding atmosphere at a value no greater than 10 percent by volume in said nitriding atmosphere by introducing additional quantities of carrier gas while withdrawing portions of said nitriding atmosphere; and
   subjecting said parts to said nitriding atmosphere for a period between ½ to 10 hours until a compound layer of approximately 0.0005 inch thickness and composed principally of epsilon phase exists at the surface of said parts.

3,892,598

COBALT-RARE EARTH MAGNETS COMPRISING SINTERED PRODUCTS BONDED WITH SOLID COBALT-RARE EARTH BONDING AGENTS

Donald L. Martin, Elnora, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 7, 1974, Ser. No. 431,126

Int. Cl. H01f *1/04*

U.S. Cl. 148—31.57 **2 Claims**

1. A cobalt-rare earth alloy permanent magnet having an area greater than 4 square inches and substantially uniform permanent magnet properties throughout, said magnet consisting essentially of a sintered product consisting essentially of at least two compacts bonded together by a magnetic bonding agent, each said compact being produced by providing a permanent magnet type alloy of cobalt and rare earth metal in particulate form having an average particle size up to about 10 microns, subjecting said particulate alloy to a magnetic field to align the particles along their easy axis of magnetization, and compressing said particulate alloy into a compact having a density of at least 70%, said sintered product being produced by depositing a layer of particles ranging in size up to 10 microns of a magnetic bonding agent on the bonding surface of one of said compacts substantially covering said surface with said agent, said agent being a solid at sintering temperature and consisting essentially of cobalt-rare earth alloy containing the rare earth component in an amount at least 5 atom % greater than that of the alloy of each said compact with the maximum amount of rare earth component being 55 atom %, contacting the bonding surface of the second compact with said deposited bonding agent substantially coextensively therewith, and sintering and bonding the resulting assembly at a temperature ranging from 900°C to 1250°C in an atmosphere in which it is substantially inert producing a solid sintered composite product having a density of at least 87%.

3,892,599

AIR-STABLE COMPACT OF COBALT-RARE EARTH ALLOY PARTICLES AND METHOD

John G. Smeggil, Elnora, and Richard J. Charles, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 372,690, June 22, 1973, Pat. No. 3,856,582. This application Mar. 14, 1974, Ser. No. 451,029

Int. Cl.² C04B *35/00;* **C23C** *11/00*

U.S. Cl. 148—31.57 **4 Claims**

1. An air-stable porous magnetic compact comprised of compacted cobalt-rare earth alloy particles, the exposed surfaces of said compacted alloy particles having a continuous adherent coating of metal which is interconnecting and which provides said compact with an effective barrier to the atmosphere, said magnetic compact being produced by a process for depositing a substantially interconnecting adherent coating of a metal having a melting point above 500°C on the exposed surfaces of pressed particles of cobalt-rare earth alloy without significantly deteriorating their permanent magnet properties producing a magnetically air-stable compact which comprises providing particles of cobalt-rare earth alloy having an average size up to about 10 microns, providing an organometallic compound which is a solid or liquid at room temperature and which at a temperature below 500°C decomposes and yields products of decomposition consisting of gaseous non-metallic product and a metal vapor, admixing said organometallic compound and said particles of alloy to form a substantially intimate mixture, said organometallic compound being used in an amount which on decomposition produces the metal in an amount ranging from 1 to 5% by weight of said cobalt-rare earth alloy particles, pressing said mixture to form a green body, heating said green body in a substantially inert atmosphere which is a flowing atmosphere or a substantial vacuum at a temperature below 500°C and substantially completely decomposing said organometallic compound and producing said gaseous product of decomposition and metal vapor, said metal vapor depositing a substantially interconnecting continuous coating of metal having a melting point above 500°C on the exposed surfaces of said pressed particles substantially uniformly throughout said body and having no significant deteriorating effect on the magnetic properties of said alloy particles, said deposited metal supporting said particles and providing the resulting compact with an effective barrier to the atmosphere, said non-metallic gaseous product of decomposition diffusing away from said body leaving the resulting compact porous in an amount ranging from about 5 to 40 percent by volume of said compact.

3,892,600

ANNEALED COATED AIR-STABLE COBALT-RARE EARTH ALLOY PARTICLES

John G. Smeggil, Elnora, and Richard J. Charles, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 372,688, June 22, 1973, Pat. No. 3,856,581. This application Mar. 14, 1974, Ser. No. 451,028

Int. Cl.² C04B *35/00;* **C23C** *11/00*

U.S. Cl. 148—31.57 **4 Claims**

1. Annealed magnetically air-stable cobalt-rare earth alloy particles coated with a metal having a melting point above 500°C or an oxide of said metal and having an increased intrinsic coercive force for the manufacture of a permanent magnet, said annealed particles being produced by a process which comprises annealing the coated particles in an inert atmosphere or in a substantial vacuum or in air at a temperature ranging from about 50°C to 200°C for a period of time ranging from 30 minutes to 100 hours, said annealing increasing the intrinsic coercive force of said coated cobalt-rare earth alloy particles by at least 10 percent, said magnetically air-stable particles being produced by providing particles of cobalt-rare earth alloy having an average size up to about 10 microns, providing an organometallic compound which at a tempera-

ture below 500°C decomposes and yields products of decomposition consisting of gaseous non-metallic product and a metal vapor, placing said compound and said particles in a substantially inert atmosphere which is a flowing atmosphere or a substantial vacuum, heating said organometallic compound at a temperature below 500°C and substantially completely decomposing it and producing said gaseous product of decomposition and a metal vapor, contacting the resulting metal vapor with the cobalt-rare earth alloy particles depositing a coherent substantially uniform metal coating which at least envelops the particles providing an effective barrier to the atmosphere and which has no significant deteriorating effect on their magnetic properties and diffusing away the non-magnetic gaseous product of decomposition, said organometallic compound being used in an amount which on decomposition yields a partial pressure of metal vapor of at least 10^{-7} atmosphere and produces the metal in an amount ranging from 1 percent to 5 percent by weight of said cobalt-rare earth alloy particles and said deposited metal having a melting point above 500°C.

3,892,601
COATED AIR-STABLE COBALT-RARE EARTH ALLOY PARTICLES AND METHOD

John G. Smeggil, Elnora, and Richard J. Charles, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 372,691, June 22, 1973, Pat. No. 3,856,580. This application Mar. 14, 1974, Ser. No. 451,030
Int. Cl.^{2} C04B *35/00;* C23C *11/00*
U.S. Cl. 148—31.57 4 Claims

1. An air-stable product for the manufacture of a permanent magnet, said product being comprised of particles of cobalt-rare earth alloy enveloped by a coating impervious to air, said coating being selected from the group consisting of a vapor-deposited metal having a melting point higher than 500°C or an oxide of said vapor-deposited metal, said product being produced by a process for coating a metal having a melting point above 500°C on cobalt-rare earth alloy particles without significantly deteriorating their permanent magnet properties producing magnetically air-stable particles which comprises providing particles of cobalt-rare earth alloy having an average size up to about 10 microns, providing an organometallic compound which at a temperature below 500°C decomposes and yields products of decomposition consisting of gaseous non-metallic product and a metal vapor, placing said compound and said particles in a substantially inert atmosphere which is a flowing atmosphere or a substantial vacuum, heating said organometallic compound at a temperature below 500°C and substantially completely decomposing it and producing said gaseous product of decomposition and a metal vapor, contacting the resulting metal vapor with the cobaltrare earth alloy particles depositing a coherent substantially uniform metal coating which at least envelops the particles providing an effective barrier to the atmosphere and which has no significant deteriorating effect on their magnetic properties and diffusing away the non-metallic gaseous products of decomposition, said organometallic compound being used in an amount which on decomposition yields a partial pressure of metal vapor of at least about 10^{-7} atmosphere and produces the metal in an amount ranging from 1 to 5% by weight of said cobalt-rare earth alloy particles and said deposited metal having a melting point above 500°C.

3,892,602
AS-WORKED, HEAT TREATED COLD-WORKABLE HYPOEUTECTOID STEEL

Helmut Kranenberg, Bethlehem, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Division of Ser. No. 242,473, April 10, 1972, Pat. No. 3,762,964. This application May 9, 1973, Ser. No. 358,751
Int. Cl. C22c *39/00;* C21d *7/14*
U.S. Cl. 148—36 2 Claims

1. A heat treated hypoeutectoid steel consisting essentially of about 0.30 to about 0.80% carbon and the remainder iron and incidental impurities characterized by having good formability and a microstructure comprising fine well-dispersed spheroidal carbides having a size of not more than 0.3 microns in a ferritic matrix, said ferritic matrix being free of lamellar carbides and having a grain size of about three microns to about ten microns.

3,892,603
METHOD OF MAKING MAGNETS

William R. Reid, Wollaston, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Sept. 1, 1971, Ser. No. 177,025
Int. Cl.^{2} C21D *1/04*
U.S. Cl. 148—108 1 Claim

1. A method of making magnets of a size less than about .078 inch in diameter and less than about .020 inch in thickness comprising the steps of

forming a multitude of perforations of a size and shape corresponding to the size and shape of the magnets to be produced in a rigid sheet of material which will not contaminate the material of the magnets during fabrication; placing the perforated sheet on the negatively polarized end of an electromagnet and electrically energizing the coil of the electromagnet;

filling said perforations with deposits of a powder mixture containing cobalt and samarium;

laying a flexible film over the sheet and deposits;

inserting the assembled sheet, deposits and film in a press; applying fluid under pressure of up to 5 tons per square inch to the film to compact the deposits thereunder while continuing to electrically energize the electromagnet;

placing the sheet and compacted deposits in a sintering furnace;

applying heat of about 1,100°C to the compacted deposits to sinter same;

and removing the resultant individual magnets from the sheet.

3,892,604
METHOD OF PRODUCING NORMAL GRAIN GROWTH (110) [001] TEXTURED IRON-COBALT ALLOYS

Donald R. Thornburg, and Karl Foster, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 228,071, Feb. 22, 1972, Pat. No. 3,843,424. This application June 17, 1974, Ser. No. 480,075
Int. Cl. H01f *1/00*
U.S. Cl. 148—120 11 Claims

1. In the method of producing improved magnetic characteristics in iron-cobalt alloys, the steps comprising, melting a composition within the range between about 5% and about 35% cobalt, up to about 3% of an element which improves volume resistivity and the balance iron with incidental impurities and controlling the sulfur content thereof to a value of less than about 0.005%, hot working the alloy material at a temperature within the range between about 1000°C and about 1100°C to an intermediate gauge, subjecting the intermediate gauge material to an annealing treatment at a temperature within the range between about 600°C and 800°C, pickling, cold working the annealed material in one or more steps to a desired finish gauge, at least the last of said cold working steps effecting a reduction in cross sectional area of between about

40 and about 75% and thereafter annealing at a temperature within the range between about 800°C and the A$_{c1}$ temperature, said process being effective for producing a high grain volume of (110) [001] texture by primary recrystallization and normal grain growth.

3,892,605
METHOD OF PRODUCING PRIMARY RECRYSTALLIZED TEXTURED IRON ALLOY MEMBER HAVING AN OPEN GAMMA LOOP

Donald R. Thornburg, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

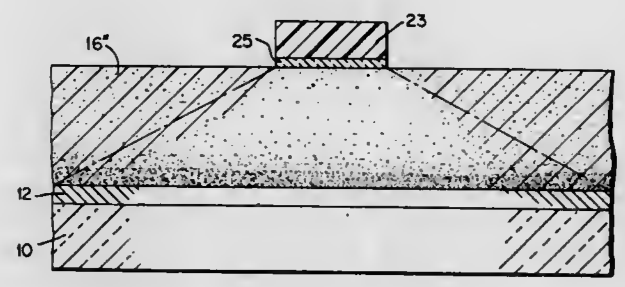
Continuation-in-part of Ser. No. 228,318, Feb. 22, 1972, abandoned, and Division of Ser. No. 312,681, Dec. 11, 1972, Pat. No. 3,849,212. This application July 17, 1974, Ser. No. 489,324
Int. Cl. H01f *1/00*
U.S. Cl. 148—120 15 Claims

1. In the process for producing (110)[001] texture in iron base alloys which are suitable for use as transformer core materials, the steps comprising melting a composition including up to 0.03% carbon, up to 1% manganese, from 0.3% to 4% of at least one of the volume resistivity improving elements selected from the group consisting of up to 2% silicon, up to 2% chromium, up to 3% cobalt the balance essentially iron with incidental impurities, casting the melt, hot working the casting at a temperature within the range between about 1000°C and 1100°C, cold working the hot worked material in two or more operations to finish gauge, the last cold working operation effecting a reduction in cross-area of between about 50% and about 75%, with an intermediate anneal interposed between each of said cold working operations, said intermediate anneal being at a temperature within the range between about 750°C and the Ac$_1$ temperature of the composition, and final annealing the finish gauge material at a temperature within the range between about 800°C and the Ac$_1$ temperature of the composition, the material exhibiting a preponderance of the grains having a (110)[001] orientation and primarily recrystallized and normal grain growth microstructure.

3,892,606
METHOD FOR FORMING SILICON CONDUCTIVE LAYERS UTILIZING DIFFERENTIAL ETCHING RATES

Ronald E. Chappelow, Pleasant Valley; Donald A. Doney, Poughkeepsie; Joseph Doulin, Newburgh; Paul T. Lin, Wappingers Falls, and Frank A. Schiavone, Marlboro, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 28, 1973, Ser. No. 374,425
Int. Cl. H01l *7/50, 29/78*
U.S. Cl. 148—174 14 Claims



1. A method for fabricating a silicon electrode atop a substrate, said electrode having a gradual slope at the sides thereof, so that the area encompassed by the electrode at the substrate is larger than the area at the opposite surface of said electrode, comprising the steps of:

varying the concentration gradient of boron dopant impurity of said silicon electrode such that the dopant concentration decreases from the substrate outward toward the opposite surface; and

etching said doped electrode in a mixture of HF, HNO$_3$ and acetic acid, the etch rate of said electrode material being a function of impurity concentration, thereby achieving said sloped pattern.

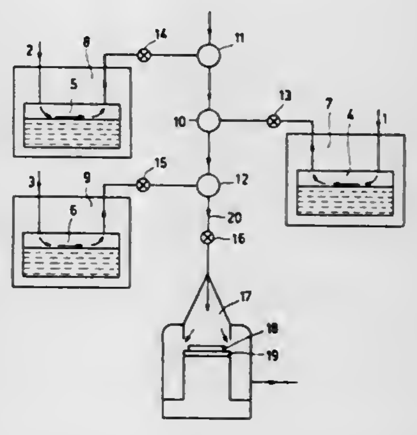
3,892,607
METHOD OF MANUFACTURING SEMICONDUCTOR DEVICES

Franciscus Cornelis Eversteijn, and Hermanus Leonardus Peek, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 126,337, March 19, 1971, abandoned, which is a continuation of Ser. No. 718,564, April 3, 1968, abandoned. This application Dec. 15, 1972, Ser. No. 315,644

Claims priority, application Netherlands, Apr. 28, 1967, 6706005

Int. Cl. C23c *11/00;* H01l *7/00*
U.S. Cl. 148—186 12 Claims



1. A method of producing a device including a semiconductor body, said method comprising the steps of:

a. providing an oxysilane compound and a tri-alkyl aluminium compound, said oxysilane compound containing sufficient oxygen to oxidize the aluminum of said aluminum compound;

b. reacting in the gaseous phase said oxysilane compound and said tri-alkyl aluminum compound to produce aluminum silicate; and

c. depositing said aluminum silicate as a layer on a surface of said body.

3,892,608
METHOD FOR FILLING GROOVES AND MOATS USED ON SEMICONDUCTOR DEVICES

Gregory L. Kuhn, Tempe, Ariz., assignor to Motorola, Inc., Chicago, Ill.

Filed Feb. 28, 1974, Ser. No. 446,834
Int. Cl.^{2} H01L *7/34, 7/36, 7/50*
U.S. Cl. 148—188 18 Claims

1. A method for filling an evacuated space with an insulated filler on a substrate of the type which is able to withstand temperatures above 900°C, comprising the steps of:

providing a substrate having an upper surface and an evacuated space extending from said upper surface into the body of said substrate;

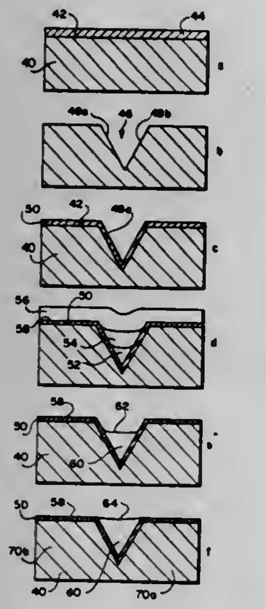
forming an insulating layer on said upper surface including said evacuated space;

forming a layer of P+ doped oxide on said surface including said evacuated space;

etchably removing said P+ doped oxide from said upper surface and leaving said P+ doped oxide within said evacuated space;

forming a layer of undoped polycrystalline silicon on said upper surface including said P+ doped oxide layer remaining within said evacuated space;

heating the resulting substrate to a temperature sufficient to drive the P+ doping impurities from said P+ doped oxide into a portion of the overlying layer of polycrystalline; and



etchably removing the undoped portion of the polycrystalline layer by an etchant which selectively stops etching when the P+ doped polycrystalline is reached by said etchant.

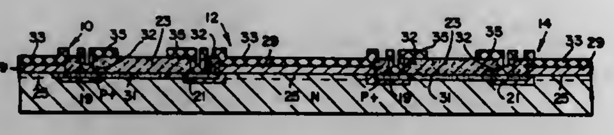
3,892,609
PRODUCTION OF MIS INTEGRATED DEVICES WITH HIGH INVERSION VOLTAGE TO THRESHOLD VOLTAGE RATIOS

Peter J. Coppen, Newport Beach, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Continuation of Ser. No. 187,255, Oct. 7, 1971, abandoned. This application June 24, 1974, Ser. No. 482,046

Int. Cl.² H01L *7/34*

U.S. Cl. 148—188 **5 Claims**



1. A method of treating an MISFET device comprising the steps of:
  a. forming directly on a surface of a first conductivity type semiconducting substrate first and second oxide layers respectively interfacing with first and second regions of said surface and respectively containing second and first conductivity type impurities, said first region being contiguously surrounded by said second region and itself including a pair of spaced apart areas between which said surface is free of both of said layers; and
  b. raising the temperature of said substrate and of said layers thereon so as to diffuse the impurities from said first layer into said spaced apart areas, thereby forming second conductivity type source and drain regions therein and so as to simultaneously diffuse the impurities from said second layer into said surrounding second region, thereby forming increased first conductivity type field regions therein, without thereby doping said channel region.

3,892,610
FREEZE DRYING PROCESS OF MAKING ULTRA-FINE AMMONIUM PERCHLORATE AND PRODUCT

John R. Huzinec, Ridgeley, W. Va., assignor to Hercules Incorporated, Wilmington, Del.

Filed Jan. 8, 1973, Ser. No. 321,889

Int. Cl. C06b *19/02*

U.S. Cl. 149—76 **9 Claims**

1. A process for preparation of ultra-fine ammonium perchlorate particles for incorporation as oxidizer into composite propellants comprising:
  dissolving ammonium perchlorate in water to form an aqueous solution of ammonium perchlorate,
  admixing said aqueous solution of ammonium perchlorate with an organic liquid immiscible with water and substantially a nonsolvent for ammonium perchlorate for the formation of an emulsion comprising said organic liquid as continuous phase and said aqueous solution as dispersed phase therein;
  incorporating into the resulting admixture a branched chain hydroxy terminated polybutadiene (HTPB) having a molecular weight not exceeding about 2,500 as an emulsifier for the formation of said emulsion, and a diester of an alcohol having at least 2 carbon atoms in the molecule and a dicarboxylic acid having at least 3 carbon atoms in the molecule as a stabilizer for said emulsion, and agitating the resulting mixture of water, ammonium perchlorate, diester, and HTPB to form said emulsion,
  freezing said emulsion,
  subliming the said organic liquid and ice from the frozen emulsion, and
  recovering residual fine ammonium perchlorate particles as product of the process.

3,892,611
INGOT MOULDS

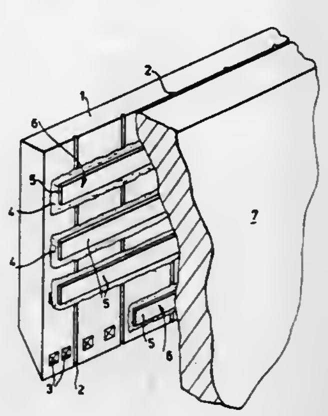
Peter Stanley Clark, and David John Bloodworth, both of Nechells, Birmingham, England, assignors to Foseco International Limited, Birmingham, England

Filed Mar. 23, 1973, Ser. No. 344,084

Claims priority, application United Kingdom, Mar. 23, 1972, 13702/72; Apr. 20, 1972, 18345/72

Int. Cl.² B22D *7/10*

U.S. Cl. 156—71 **16 Claims**



1. A method of adhering a plurality of elements, which comprises adhering together an insulator in the form of a hot top lining slab to an inner metal surface of an ingot mould or a head box via a layer of a heat-vulcanisable rubber having the following properties:
  a. a Mooney viscosity, after 4 minutes at 100°C of 24–70 units;
  b. a torque after 1 minute at 160°C of 1–30 inch.lbs.;
  c. a scorch time of not greater than 3 ½minutes;
  d. a vulcanisation rate of 9–20 inch.lbs. per minute;
  e. a time to 100% cure of 10–30 minutes, and
  f. a quality level of 50–90 inch.lbs. WE CLAIM:

14. A method of adhering a hot top lining slab to an inner surface of an ingot mould or head box, which method comprises first priming the rear surface of the lining slab with a solution comprising a rubber and a tackifier; then extruding a plurality of strips of a heat-vulcanisable rubber having the following properties:
  a. a Mooney viscosity, after 4 minutes at 100°C of 24–70 units;
  b. a torque after 1 minute at 160°C of 1–30 inch.lbs.;
  c. a scorch time of not greater than 3½ minutes;
  d. a vulcanisation rate of 9–20 inch.lbs. per minute;
  e. a time to 100% cure of 10–30 minutes, and
  f. a quality level of 50–90 inch.lbs.

onto the primed surface while the primer is still wet; allowing the assembly to cure to give a rubber strip firmly adhered to the surface; and adhering the rubber strip to the inner surface of the ingot mould or head box with a tacky pressure sensitive material.

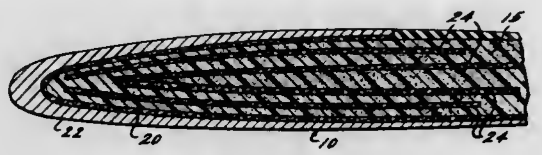
3,892,612
METHOD FOR FABRICATING FOREIGN OBJECT DAMAGE PROTECTION FOR ROTAR BLADES

Robert G. Carlson, Greenhills; Joseph H. Crawford, Cincinnati; Edward R. Farmer, Reading; Guy C. Murphy, Fairfield, and Charles T. Salemme, Madeira, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Division of Ser. No. 159,111, July 2, 1971, Pat. No. 3,762,885. This application Mar. 5, 1973, Ser. No. 338,156

Int. Cl. B63h *23/00, 25/00*

U.S. Cl. 156—150 **3 Claims**



1. A method of applying a protective metal coating to a non-conductive substrate comprising the steps of
  incorporating a woven wire mesh into the substrate, as a surface layer, by means of a bonding agent which fills the interstices of the mesh and with the outer nubs of the wire mesh exposed
  applying a thin conductive layer to the bonding agent in the interstices of the mesh with the mesh nubs free of said thin conductive layer and
  electrolytically depositing a metal coat on the wire mesh/-conductive layer surface to obtain an essential even or uniform thickness with good adhesion obtained through the atomic bonds between the mesh nubs and the coated metal.

3,892,613
METHOD OF MAKING CORRUGATED PAPERBOARD

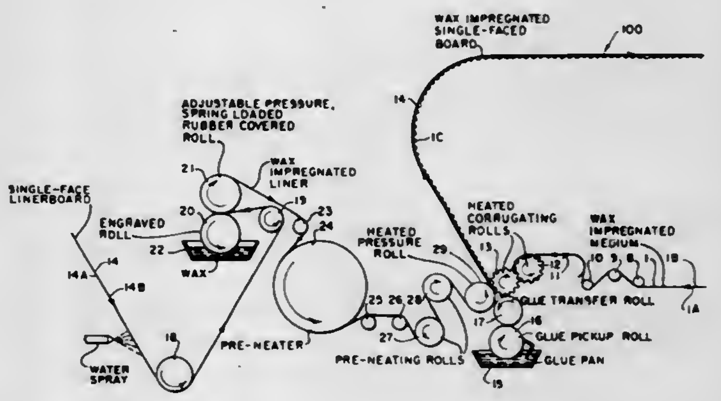
William S. McDonald, and Hugh B. Johnson, both of Georgetown, S.C., assignors to International Paper Company, New York, N.Y.

Continuation of Ser. No. 165,360, July 22, 1971, abandoned, which is a continuation of Ser. No. 7,419, Feb. 6, 1970, abandoned, which is a continuation of Ser. No. 616,756, Feb. 13, 1967, abandoned, which is a continuation-in-part of Ser. No. 475,786, July 29, 1965. This application July 2, 1974, Ser. No. 485,239

Int. Cl. B31f *1/20;* **B32b** *3/30*

U.S. Cl. 156—210 **13 Claims**

1. The method of manufacturing wax impregnated single face corrugated paperboard which comprises:
  a. continuously supplying a web of corrugating medium;
  b. moisture conditioning a first side of said corrugating medium;
  c. impregnating the second side of said corrugating medium with wax;
  d. heating said impregnated corrugating medium;
  e. corrugating said impregnated corrugating medium;
  f. applying an adhesive to the crests of said impregnated corrugated medium, said adhesive being applied to the crests of said impregnated corrugated medium on said first side of said medium;



  g. continuously supplying a web of single face linerboard;
  h. heating said single face linerboard; and
  i. securing said linerboard to said wax impregnated corrugated medium.

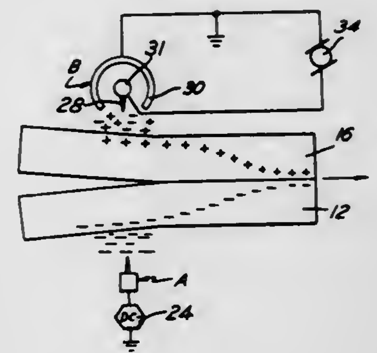
3,892,614
ELECTROSTATIC LAMINATING APPARATUS AND METHOD

Warren W. Levy, Cynwyd, Pa., assignor to The Simco Company, Inc., Lansdale, Pa.

Filed Mar. 8, 1973, Ser. No. 339,188

Int. Cl.² B32B *31/00;* **H05F** *3/00*

U.S. Cl. 156—272 **7 Claims**



1. Apparatus for electrostatically laminating two or more articles together, comprising:
  means for juxtaposing a set of articles with respect to each other so that adjacent surfaces thereof are in close proximity,
  first ionizing means for emitting ions of a single polarity and being adjacently spaced from one side of the set of juxtaposed articles so as to direct unipolar ions toward an outboard surface thereof,
  second ionizing means for emitting ions of both polarities and being adjacently spaced from the other side of the set of juxtaposed articles, said second ionizing means being in confronting disposition with said first ionizing means and simultaneously directing positive and negative ions toward a discrete zone of an opposing outboard surface of said set of articles in juxtaposition with each other to effect pinning thereof while the pinned set is substantially neutral.

5. A method for electrostatically laminating two or more articles together comprising the steps of:
  transporting the articles along a longitudinal path with a set of articles juxtaposed with each other in a direction substantially normal to the longitudinal path, and

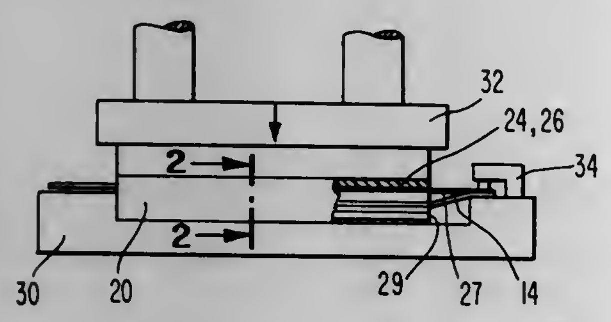
simultaneously passing the juxtaposed articles between a first ionizing device emitting unipolar ions and a second ionizing device emitting ions of both polarities toward a discrete zone, said first and second ionizing devices being adjacently spaced respectively from opposing sides of said juxtaposed set of articles and in confronting disposition with each other whereby the field of ions from each ionizing device acts as a conductive path to the other ionizing device and ground so as to cause pinning of the articles in the set without said articles being contacted by either of said ionizing devices while the pinned set emerges in substantially neutral disposition.

3,892,615

METHOD OF MAKING A SHEATHED SOFT-FEEL HANDLE

Marton J. Szabo, Camden, N.J., assignor to P.H.C. Industries, Inc., Camden, N.J.

Filed July 29, 1974, Ser. No. 492,711
Int. Cl.^{2} B29C *19/04*; H05B *9/04*
U.S. Cl. 156—273 6 Claims



1. A method of making an elongated soft-feel handgrip for a handle construction comprised of placing an electrically conductive member against one face of a cushioning member, encompassing said members in a thermoplastic sheath which is coextensive with said cushioning member so that its longitudinal free ends overlap directly on said conductive member, said sheath being open at least at one of its ends with said conductive member extending therethrough, placing the sheathed unit on a conductive grounded bed and operatively connecting the extended end of said conductive member thereto, placing a die against said overlapped ends of said sheath, applying a high frequency alternating current between the die and bed for a time sufficient to seal said overlapped ends of said sheath dielectrically, said die acting to compress said cushioning member during the sealing operation and removing said conductive member through said one open end of said sheath after said overlapped longitudinal ends of said sheath have been sealed, said cushioning member expanding to occupy the space left by the removal of said conductive member to provide a tight soft-feel handle.

3,892,616

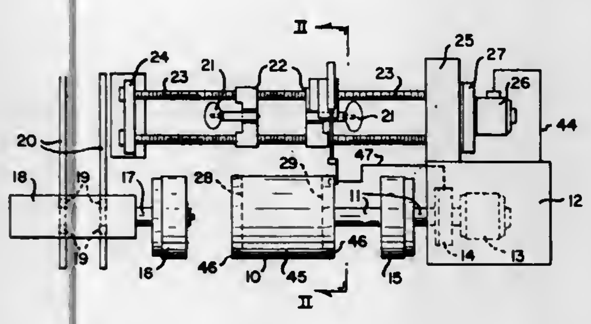
INDEX MEANS FOR TIRE-BUILDING APPARATUS

Robert G. Crites, Ravenna, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 233,695, March 10, 1972, abandoned. This application Apr. 5, 1974, Ser. No. 458,157
Int. Cl. B29h *17/20*
U.S. Cl. 156—352 1 Claim

1. In an apparatus for building pneumatic tires by juxtaposition of rubber impregnated, endless fabric carcass bands which apparatus comprises a collapsible rotatable cylindrical drum for supporting the carcass bands during the tire building, said drum having a first accessible band applying end portion and a second end portion opposite said first end portion, a bead setting mechanism positioned axially adjacent said end portion of the drum for pressing bead rings circumferentially into opposite edge portions of said carcass bands, and a stitching mechanism adjacent said drum for folding edge portions of the carcass bands over the end portions of the drum and the bead rings, the improvement comprising:

A. an index means disposed adjacent said second end portion of the drum for accurately positioning each carcass band applied to the collapsible drum; said index means adapted to move
   1. along an axis substantially parallel to the axis of said drum and
   2. along a path transverse to said axis of said drum between an inoperative retracted position and an operative extended position, said index means comprising
      a. a light source capable of producing a light beam to be broken by edge portions of each carcass band extending a predetermined distance axially beyond said second end portion of said drum when said index means is in its extended position and
      b. a light sensing means for detecting a break in said light beam by edge portions of each carcass band extending a predetermined distance axially beyond said second end portion of said drum when said index means is in its extended position;



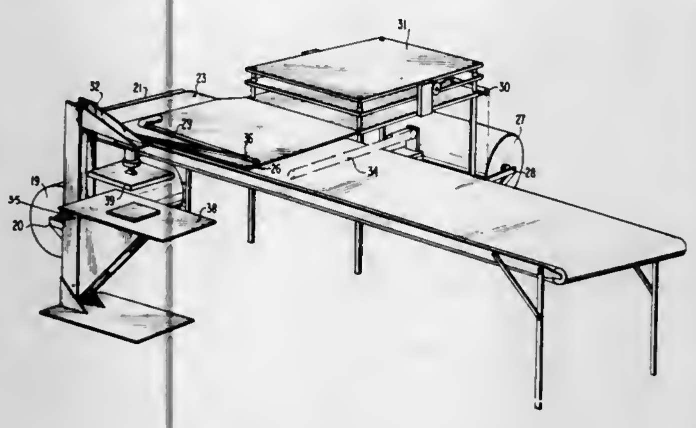
B. stopping means adapted for actuation by said light sensing means to stop rotation of the drum when said light sensing means detects a break in said light beam;
C. first means for the automatic and incremental movement of the index means axially of the drum by motive means according to a set of preset stop limits; and
D. second means for automatic movement of the index means transversely of said drum according to a set of preset stop limits.

3,892,617

APPARATUS, PROCESS AND PRODUCT

Donald R. DePriest; Bobby C. Brandon, and Connell M. Buie, all of Columbus, Miss., assignors to Humboldt Products Corporation, Columbus, Miss.

Filed May 21, 1973, Ser. No. 362,451
Int. Cl.^{2} B26D *5/00*
U.S. Cl. 156—353 4 Claims



1. Apparatus for forming large, disposable complex specialty drapes having a T configuration with an abdominal cover section and a T section, the T section having at least two fenestrations at predetermined distances from one end

thereof, the abdominal cover section having a predetermined width and the T section having a predetermined length, the T section affixed to the abdominal cover section a predetermined distance from an end of the abdominal cover section; said apparatus comprising:

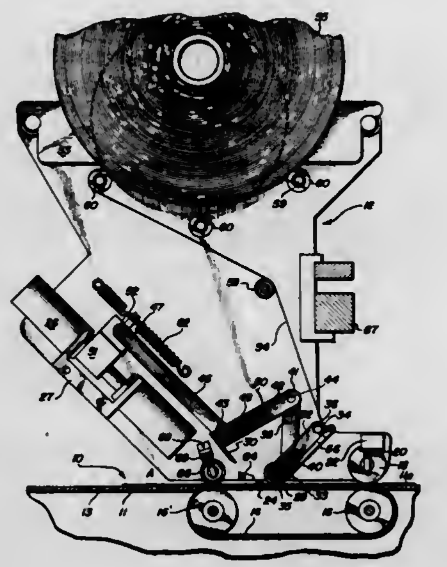
a. first holding means for holding a supply of abdominal cover section stock material;
b. means defining a first abdominal cover section work station;
c. second holding means for holding a supply of T section stock material;
d. means defining a first T section work station, including fenestrating means for producing at least two fenestrations in T section stock material positioned thereat;
e. means defining a second T section work station located to cause T section stock material positioned at the second T section work station to overlay abdominal cover section stock material positioned at the first abdominal cover section work station, the second T section work station including first cutting means for cutting T sections from T section stock material and further including first affixing means for affixing cut T sections to abdominal cover section stock material at the first abdominal cover section work station;
f. means defining a second abdominal cover section work station, including second cutting means for cutting completed large, disposable complex specialty drapes from abdominal cover section stock material having a T section affixed thereto;
g. second affixing means at one of said work stations for affixing a filter to at least one of the fenestrations;
h. drive means for advancing abdominal cover section stock material and T section stock material through their respective work stations in sequence; and
i. control means for controlling operation of said drive means, said fenestrating means, said first cutting means and said second cutting means.

3,892,618

TAPING MACHINE

Martin Griebat, 4315 N. New England, Harwood Heights, Ill. 60656

Filed June 21, 1973, Ser. No. 372,265
Int. Cl.^{2} B26D *5/26*; B32B *31/04*, *31/18*
U.S. Cl. 156—355 7 Claims



1. A machine for applying a predetermined length of transfer tape to an object surface, said machine comprising:

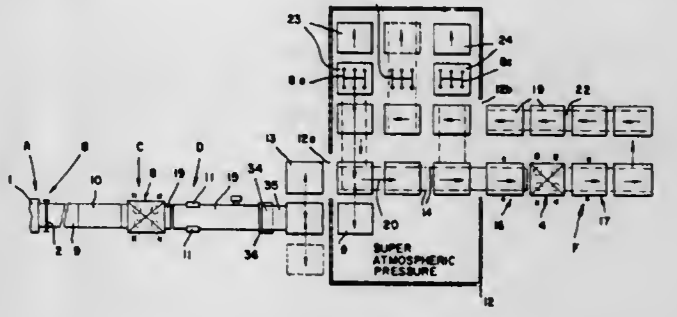
conveying means for conveying said object to which tape is to be applied to a surface;
synchronous sensing means for sensing the presence of said object to which tape is to be applied;
a laminating head disposable adjacent said object;
a roller arm having said laminating head disposed at a first end thereof including means for pivotally mounting the second end of said roller arm;
a connecting link, said connecting link attached at a first end thereof to said roller arm between said means for pivotably mounting second end of said roller arm and said laminating head;
a knife arm including a pivot shaft;
means for pivotably mounting said knife arm about said knife arm pivot shaft;
means for connecting said second end of said connecting link to a first end of said knife arm;
a knife blade projecting from the second end of said knife arm;
a tape guide chute mounted to the side of said roller arm for receiving said transfer tape and guiding same between said laminating head and said conveying means;
means for laminating said tape;
means, in cooperation with said synchronous sensing means, for moving said knife arm away from the surface of said conveyor means and for moving said knife arm towards the surface of said conveyor means, whereby when said synchronous sensing means senses the presence of an object to which tape is to be applied, said knife blade is moved away from the surface of said conveyor means and said knife arm pivots about said knife arm pivot shaft moving said first end of said knife arm toward the surface of said conveyor means, moving said connecting link toward the surface of said conveyor means and said roller arm in the same direction therewith, until said laminating head having an end of said roll of said transfer tape thereunder contacts the surface of said object to which transfer tape is to be applied moving on said conveyor means to thereby apply said transfer tape.

3,892,619

APPARATUS FOR MAKING LAMINATED PRESSED BOARD

Gerhard Hütz, Suchteln, Germany, assignor to G. Siempelkamp & Co., Krefeld, Germany

Continuation-in-part of Ser. No. 737,465, June 17, 1968, Pat. No. 3,576,692. This application Jan. 25, 1971, Ser. No. 109,198. The portion of the term of this patent subsequent to Apr. 27, 1988, has been disclaimed.
Int. Cl. B29j *5/00*, *5/08*
U.S. Cl. 156—382 7 Claims



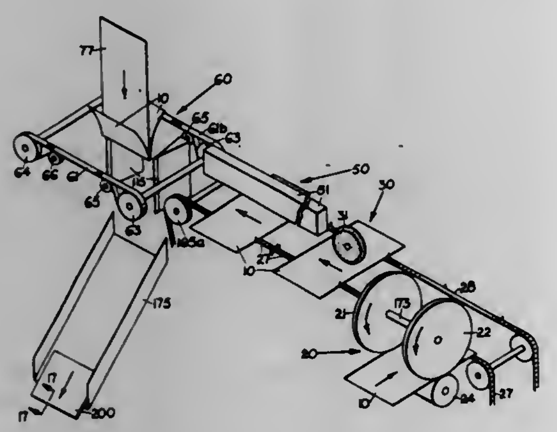
1. An apparatus for producing pressed board comprising:
means for forming a loosely coherent mat of comminuted material;
means for applying at least one lamina to said loosely coherent mat in a lamination zone;
means for excluding dust from said zone by maintaining same under superatmospheric pressure;
means for thereafter hot-pressing said loosely coherent mat and the lamina superposed thereon together between two

pressing surfaces to render the mat coherent and simultaneously bond said lamina thereto;
means for continuously depositing a first layer of relatively fine comminuted material;
means for continuously depositing a second layer of relatively coarse comminuted material on said first layer;
means for continuously depositing a third layer of relatively fine comminuted material on said second layer; and
means for longitudinally subdividing the superposed continuous layers into individual mats, said lamina being applied to one of said layers of relatively fine material.

3,892,620
APPARATUS FOR FORMING ENVELOPES OF THERMOPLASTIC SHEET MATERIAL

William C. Heussy, Shedd, Oreg., assignor to Evans Products Company, Portland, Oreg.

Filed Jan. 7, 1974, Ser. No. 431,146
Int. Cl.² B31F *1/08*
U.S. Cl. 156—443 **10 Claims**



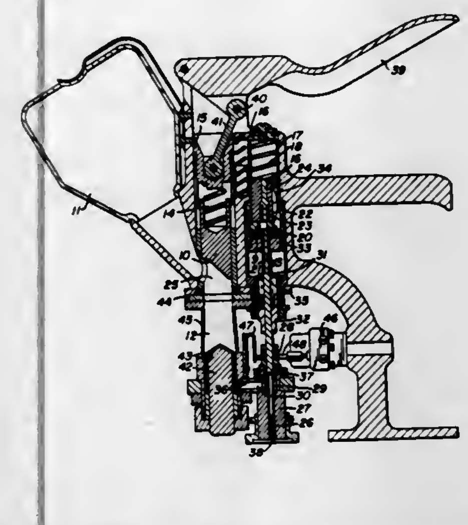
1. An apparatus for forming an envelope from an individual thermoplastic sheet comprising heating means for heating the sheet solely along a narrow, transverse zone constituting a predetermined fold line; folding means for folding the sheet along the heated zone, said folding means comprising a plow member, a pair of guide members, and means for imparting a reciprocating motion to the plow member to move said plow member from a position away from said guide membes to a position between said guide members to thereby fold said sheet about said plow member; heat-sealing means for heat-sealing the folded sheet along the lateral longitudinal edges thereof while said sheet is folded about said plow member; and means for conveying the sheet from said heating means to said folding means.

3,892,621
METHOD AND APPLICATION FOR APPLYING LIQUEFIED ADHESIVE MATERIAL

Albert R. Salonen, 560 Baxter Ave., Victoria, British Columbia, Canada

Filed Oct. 17, 1973, Ser. No. 407,319
Int. Cl.² B32B *31/00;* **B35C** *11/04*
U.S. Cl. 156—513 **19 Claims**

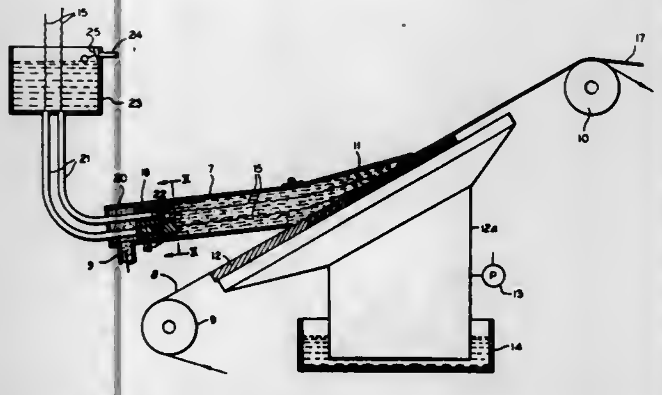
1. An applicator for applying an adhesive bond to fasten together overlapping layers of sheet material, comprising a body portion provided with a working face for placing against an outer surface of said layers, at least one member mounted protusibly in said face, a spring means mounted within said body portion, means for deflecting said spring means to impress mechanical energy therein, a releasable means for effecting releasable restraint of said spring means at a portion thereof to constrain the force acting on said portion when said spring means is deflected, a tripping means operatively associated with said releasable means for releasing said portion from said restraint when said spring means is deflected a predetermined amount; said portion, therefore, being operative to transfer said energy from said spring means to a means responsive to said force for impelling said member outwardly from said face so that said member is driven at a velocity into said surface to penetrate the material of said layers; said velocity being sufficient for the inertia-mass of said material to cause a counteractive force within said material against the thrust of said member thereby providing effective support to said layers during penetration thereof by said member, means for limiting said penetration to one or more outer layers of said material and to partial penetration of the last layer thereof, and means for injecting heated thermoplastic fluid into openings formed by said member to penetrate through the thickness of said outer layers and into said last layer and spread laterally at the interface therebetween; whereupon the heated fluid cools and hardens in place to provide fastenings securing said outer layers to said last layer; said injecting means including means for conveying heated thermoplastic fluid under pressure to a valve means which is operative to release a charge of said fluid into said openings subsequent to the penetrating thrust of said member.



3,892,622
INLAYING CONTINUOUS FILAMENTOUS REINFORCEMENT IN A NONWOVEN WEB

Borgeir Skaugen, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Dec. 5, 1973, Ser. No. 421,990
Int. Cl. D21f *1/00, 11/00*
U.S. Cl. 162—108 **19 Claims**

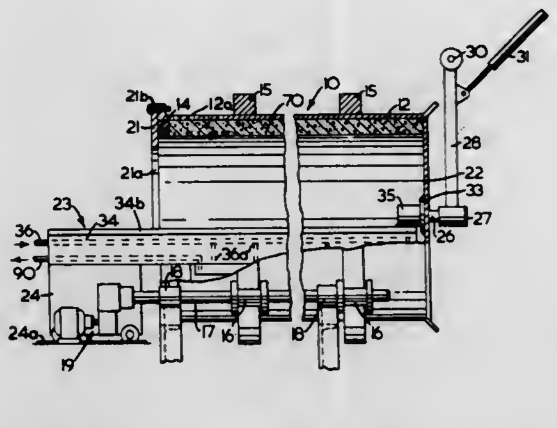


1. A method of inlaying a continuous filamentous reinforcement in a nonwoven web, comprising:
supplying fibrous stock slurry through an elongated orifice into a stream traveling through a headbox to a web-forming porous traveling surface;
feeding filamentous reinforcement through a nozzle discharging downstream within the orifice and thereby into the slurry stream;
carrying the filamentous reinforcement in the slurry stream to the forming surface; and
on the forming surface forming the slurry into a web with the filamentous reinforcement integrally embedded in the web.

3,892,623
PROCESS FOR PRODUCING FIBROUS CEMENT SHEETS

William C. Barratt, 595 Shepherd St., Niagara Falls, Ontario, Canada

Continuation-in-part of Ser. No. 166,778, July 28, 1971, abandoned. This application Apr. 20, 1973, Ser. No. 353,074
Claims priority, application Canada, July 31, 1970, 89700The portion of the term of this patent subsequent to Dec. 11, 1990, has been disclaimed.
Int. Cl. D21f *3/00*
U.S. Cl. 162—120 **7 Claims**



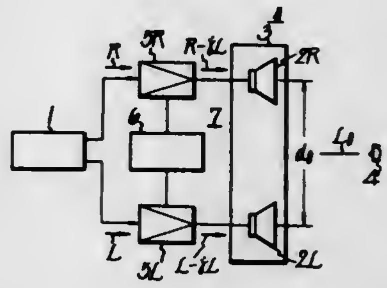
1. A process for producing a fibrereinforced cement sheet comprising the steps of:
a. feeding a cement mixture together with reinforcing fibres into a rotatable horizontal cylindrical mould,
b. spinning the mixture in the mould, distributing the mixture around the mound walls, and removing water therefrom, to form a soft, hollow cement cylinder,
c. inserting a cylindrical mandrel into the said cement cylinder to engage the inner surface of said cylinder,
d. sliding the cement cylinder from the mould without dimensional change by withdrawing said mandrel while holding said cylinder on the mandrel and supporting the inner surface of the soft cement cylinder by means of said mandrel,
e. dividing said cement cylinder longitudinally, and
f. progressively removing the cement cylinder from the mandrel as a sheet by initially placing one edge of the sheet on a receiving surface disposed beneath the mandrel and subsequently unrolling the cement sheet from the mandrel by simultaneously rotating the mandrel and causing relative movement between the mandrel and the said receiving surface transverse to the mandrel axis.

3,892,624
STEREOPHONIC SOUND REPRODUCING SYSTEM

Satoshi Shimada, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 29, 1971, Ser. No. 110,854
Claims priority, application Japan, Feb. 3, 1970, 45-9819; Feb. 3, 1970, 45-9821
Int. Cl. H04r *5/00*
U.S. Cl. 179—1 G **2 Claims**

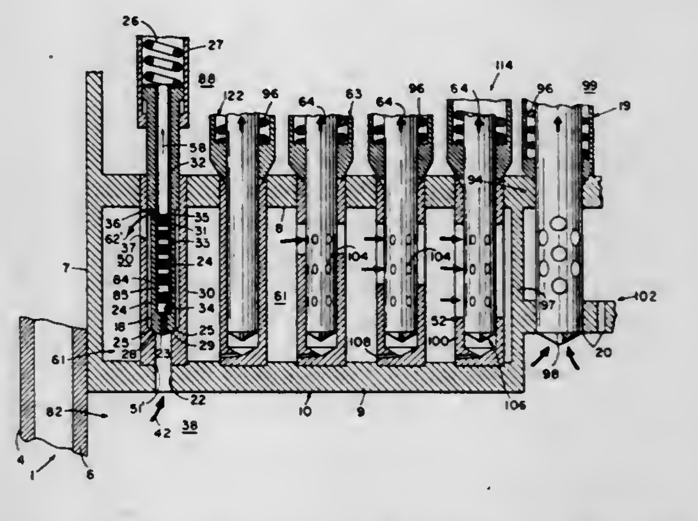
1. A stereophonic sound reproducing system comprising first and second audio transducer means disposed in a common housing and fixed a distance $d_o = \lambda_o/2 \sin \theta$ apart from each other, where λ_o represents the wavelength of a component of the sound produced by said transducers, which wavelength substantially corresponds to the effective distance between the audio sensitive parts of both ears of listeners, and θ represents one-half of the angle between maximum sound pressure directions of difference sound components of right and left sounds produced by said first and second audio transducer means and which have said wavelength λ_o, a stereophonic sound signal source for generating right and left sound signals R and L, a combiner means for combining said right and left signals R and L to produce a combined right sound signal $R-\gamma L$ and a combined left sound signal $L-\gamma R$, γ being a complex number coefficient, a first circuit means for feeding said combined right sound signal to said first audio transducer means and a second circuit means for feeding said combined left sound signal to said second audio transducer means.



3,892,625
RADIAL BLANKET ASSEMBLY ORIFICING ARRANGEMENT

John F. Patterson, Richland, Wash., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Oct. 12, 1973, Ser. No. 406,519
Int. Cl.² G21C *15/04*
U.S. Cl. 176—50 **5 Claims**



1. In a nuclear reactor core (**2**) including core components, comprising a lower grid plate (**9**) with axial openings (**22**) therethrough separating zones (**62** and **61**) of high and low coolant (**38**) pressure, an upper grid plate **8** with axial openings therethrough in alignment with the openings in the lower grid plate, a plurality of tubular first, second and third retainers (**30**) in the low pressure zone depending vertically from the upper grid plate, depending vertically upon the lower grid plate, interposed between the two plates, and passing axially vertically upwardly through the upper grid plate in said low pressure zone;
said tubular first retainers having a top opening aligned axially with openings through the upper and lower grid plates, and the tubular first, second and third retainers containing specific core components (**59, 18, 122** and **63**) that are adapted to define coolant flows through their tubular retainers, all of said openings in said lower grid plate being axially aligned with said openings in said tubular first retainers;
the specific core components comprising a plurality of hollow, tubular, longitudinally, axially and vertically extending plugs (**59**) and restraint assemblies (**18**) supported by the tubular first retainers, reflector assemblies

(**122**) supported by the tubular second retainers, and blanket fuel assemblies (**63**) supported by the third tubular retainers;

the blanket fuel assemblies being replaceable and interchangeable with each other in the tubular third retainers; the specific core components having coolant inlet portions, and the coolant inlet portions (**23** and **60**) in the plugs and first restraint assemblies being disposed to receive coolant longitudinally axially, vertically from an opening in the lower grid plate to transport coolant in a flow axially through the low pressure zone between the upper and lower grid plates, said low pressure zone being divided into two separate and non-fluid communicating regions, one of said regions containing said tubular first, second and third retainers and the other of said regions containing all of the fissile fuel assemblies of the core;

the improved combination, comprising:

a. tubular first retainers having side wall openings (**37**) communicating with the low pressure zone between the grid plates for receiving and transporting a portion of said axially flowing coolant radially horizontally outwardly in a first direction;

b. tubular third retainers having side wall openings (**37**) communicating with the low pressure zone between the grid plates for receiving and transporting coolant flow radially horizontally inwardly in a second direction;

c. the second and third tubular retainers having drain holes (**108**) communicating with the low pressure zone between the grid plates;

d. blanket fuel assemblies having side wall openings (**104**) communicating with the low pressure zone between the grid plates for receiving and transporting coolant flow radially horizontally inwardly in said second direction and communicating with the side wall openings in the tubular third retainers; and

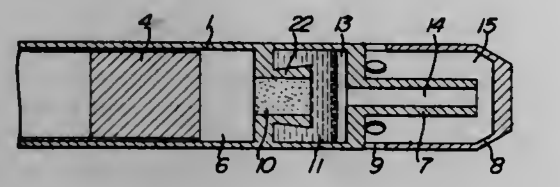
e. restraint assemblies having side wall openings (**35**) communicating with the side wall openings (**37**) in the tubular first retainers;

the plugs and reflector assemblies differing from the tubular first and third retainers and the blanket fuel assemblies in that the plugs and reflector assemblies permit only an axial vertical flow of coolant therethrough to define said flow in their respective tubular first and second retainers, the restraint assemblies and blanket fuel assemblies permitting and defining both axial vertical and radial horizontal coolant flow in their respective tubular first and third retainers, and

the radial horizontal outward flow through the restraint assemblies and the first tubular retainers communicating with the radial horizontal inward flow through the third tubular retainers and the blanket fuel assemblies.

3,892,626
VENTED NUCLEAR FUEL ELEMENT

Yasuo Hirose, Hitachi, Japan, assignor to Hitachi, Ltd., Japan
Filed Dec. 14, 1971, Ser. No. 207,789
Claims priority, application Japan, Dec. 12, 1970, 45–111800
Int. Cl. G21c *3/02*
U.S. Cl. 176—68 **19 Claims**



1. A vented nuclear fuel element for nuclear reactors comprising a tubular cladding means for containing nuclear fuel and check valve means for venting gaseous fission products from said fuel to the exterior of the fuel element, said check valve means including porous means for passing gaseous fission products from the fuel, selective sealing means covering said porous means for passing said gaseous fission products passed from said porous means during operation of the fuel element and sealing said porous means during inoperation of said fuel element, and discharge means for discharging said gaseous fission products to the exterior of the fuel element, said selective sealing means being a material in a liquid state during operation of the fuel element and different from coolant surrounding the fuel element in the nuclear reactor.

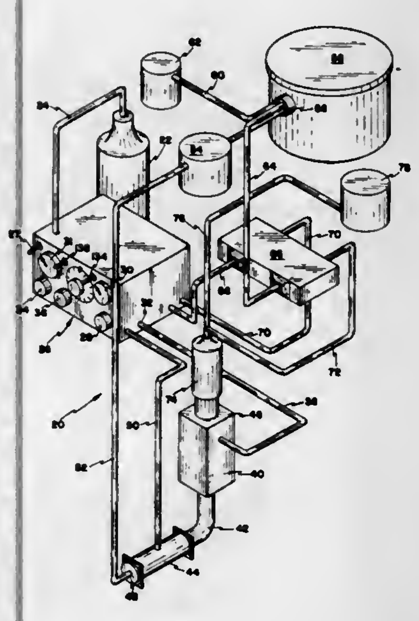
3,892,627
FELINE PANLEUKOPENIA VACCINE

Robert W. Simons, and William M. Acree, both of White Hall, Ill., assignors to Rohm and Haas Company, Philadelphia, Pa.
Filed June 4, 1973, Ser. No. 367,032
Int. Cl. C12k *7/00, 9/00*
U.S. Cl. 195—1.3 **6 Claims**

1. In the process of producing attenuated feline panleukopenia vaccine, the improvement reducing the possibility of contamination with other feline viruses which comprises culturing an attenuated panleukopenia seed virus on ferret cell suspension tissue culture.

3,892,628
PRESERVATION OF ORGANS

Gale H. Thorne, Bountiful; Orin Lew Wood, Salt Lake City, and Kay L. Knudson, Murray, all of Utah, assignors to Baxter Laboratories, Inc., Morton Grove, Ill.
Division of Ser. No. 863,869, Oct. 6, 1969, Pat. No. 3,738,914.
This application Dec. 19, 1972, Ser. No. 316,612
Int. Cl. C12k *9/00*
U.S. Cl. 195—1.7 **6 Claims**



1. In a method of artificially perfusing a life organ which method includes delivery of perfusate to the organ the improvement of:

developing a pulsatile pressure in the perfusate delivered to the organ and imposing a minimum pressure bias on the delivered perfusate circulated through the organ between pressure pulses.

3,892,629
PROCESS FOR GROWING A FUNGUS

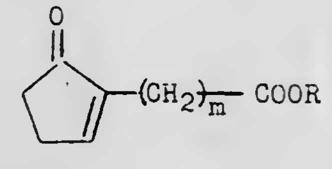
John Edward Smith, Bearsden, and John Galloway Anderson, East Kilbride, both of Scotland, assignors to Imperial Chemical Industries Limited, London, England
Filed Feb. 5, 1973, Ser. No. 329,338
Claims priority, application United Kingdom, Feb. 10, 1972, 6367/72
Int. Cl. C12b *1/20;* **C12d** *9/10, 1/04;* **C12k** *1/00*
U.S. Cl. 195—36 R **14 Claims**

1. In an industrial process for growing a fungus belonging to a genus selected from the group consisting of Aspergillus, Penicillium, Cephalosporium, Zygorhyncus, Gliocladium, Fusarium, Helminthosporium, Paecilomyces and Cunninghamella upon an aqueous nutrient medium comprising a source of assimilable carbon and inorganic nutrients, the improvement which comprises the step of maintaining spores of the fungus at a temperature above that at which normal hyphal growth occurs but below that at which the spores remain dormant for a period of at least 10 hours during the incubation phase of their germination cycle thereby producing enlarged spores which produce less hyphal growth than normal spores.

3,892,630
PROCESS FOR PREPARING HYDROXYCYCLOPENTENONE DERIVATIVES USING MICROORGANISMS

Seizi Kurozumi; Takashi Toru, both of Hino, Sachio Ishimoto, Tokyo, all of Japan, assignors to Teijin Ltd., Osaka, Japan
Filed May 24, 1974, Ser. No. 473,208
Claims priority, application Japan, May 28, 1973, 48-58537
Int. Cl. C07b *29/02*
U.S. Cl. 195—51 R **12 Claims**

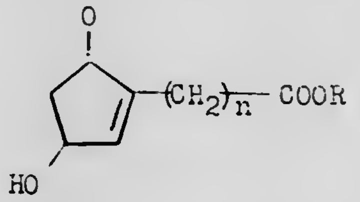
1. A process for preparing hydroxycyclopentenone derivatives, which comprises cultivating a microorganism belonging to the genus Aspergillus in a medium containing a cyclopentenone derivative expressed by the formula (1)



(1)

wherein R is a hydrogen atom or a lower alkyl group, and *m* is an integer of 1 to 6,

to form in said medium a hydroxycyclopentenone derivative expressed by the formula (2)



(2)

wherein R is the same as defined above, and *n* is equal to *m*, or (*m* − 2) when *m* is from 3 to 6,

and then recovering the hydrocyclopentenone derivative.

3,892,631
DIAGNOSTIC REAGENTS USED FOR THE DETERMINATION OF GAMMA-GLUTAMYL TRANSPEPTIDASE IN BIOLOGICAL FLUIDS

James J. Carroll, East Hanover, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.
Division of Ser. No. 369,046, June 11, 1973, Pat. No. 3,878,048, which is a continuation-in-part of Ser. No. 282,632, Aug. 21, 1972, Pat. No. 3,769,173. This application Nov. 4, 1974, Ser. No. 520,752
Int. Cl. G01n *31/14*
U.S. Cl. 195—99 **5 Claims**

1. A diagnostic composition for the determination of gamma-glutamyl transpeptidase concentrations in biological fluids comprising an aqueous substrate solution containing:

A. at least about 45 micromoles of L-gamma-glutamyl-p-nitroanilide per milliliter of biological fluid;

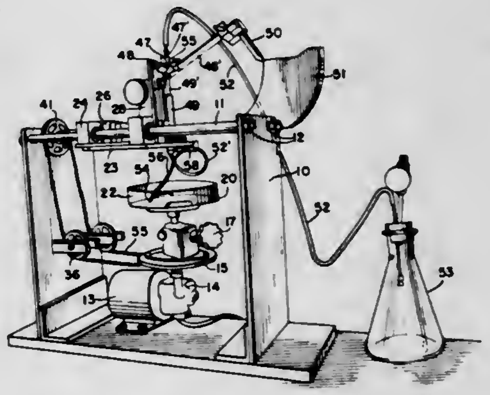
B. at least 400 micromoles of glycylglycine per milliliter of biological fluid; and

C. at least 36.2 micromoles of sodium nitrite per milliliter of biological fluid;

said aqueous solution being buffered to maintain a pH of from about 7.9 to about 8.4.

3,892,632
METHOD AND APPARATUS FOR PLATING AND COUNTING AEROBIC BACTERIA

Jeptha E. Campbell, and James E. Gilchrist, both of Cincinnati, Ohio, assignors to The United States of America as represented by the Secretary of the Department of Health, Education and Welfare, Washington, D.C.
Continuation-in-part of Ser. No. 149,137, June 2, 1971, Pat. No. 3,799,844. This application Mar. 14, 1974, Ser. No. 451,275
Int. Cl. C12k *1/04*
U.S. Cl. 195—103.5 R **9 Claims**



1. A method for determining the concentration of an unknown bacterial solution using only a single bacterial growth plate for the determination, comprising the steps of:

mounting a bacterial growth plate for rotation;

moving a dispenser of bacterial solution across the plate as the plate rotates so as to deposit the solution in a spiral configuration;

continuously depositing through the dispenser as it moves across the plate, a continuously varying but known amount of solution onto the plate such as to produce even distribution of the solution on said plate;

incubating the plate;

counting the bacteria colonies in a determinable area of the plate, and determining said determinable area; and

dividing the number of colonies counted by the volume of solution deposited in said determinable area, thereby calculating the concentration of the bacteria in the original bacterial solution.

3,892,633

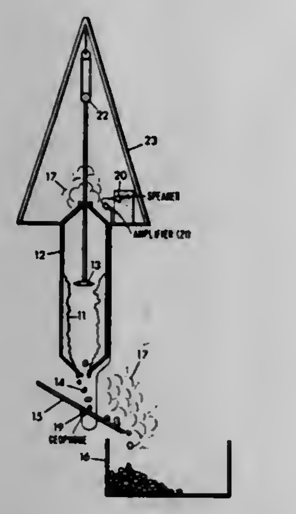
COKE CUTTING WITH AID OF VIBRATION DETECTORS

Thaddeus J. Oleszko; Eduard P. Kaufmann, both of Burghausen, Germany, and Irvin D. Johnson, Englewood, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Feb. 12, 1973, Ser. No. 331,452

Int. Cl. C10b *47/00, 43/00*

U.S. Cl. 201—2 **5 Claims**



1. In a method to cutting coke from the drum of a delayed coker wherein the cut coke falls from the coke drum onto a surface, the improvement comprising the use of a sensing device contacting said surface to generate a signal indicative of the amount and size of the coke and controlling the rate of the coke cutting in response to said signal.

3,892,634

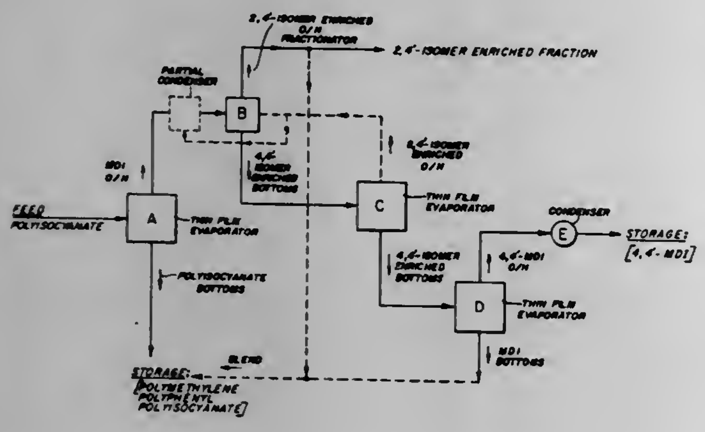
SEPARATION OF 2,4′ AND 4,4′ METHYLENE BIS(PHENYL ISOCYANATE) FROM POLYMETHYLENE POLYPHENYL POLYISOCYANATES

James D. Hajek, Houston, and Howard R. Steele, Baytown both of Tex., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Feb. 20, 1973, Ser. No. 334,048

Int. Cl. B01d *3/00*

U.S. Cl. 203—72 **6 Claims**


2,4'-ISOMER ENRICHED O/H FRACTIONATOR
2,4'-ISOMER ENRICHED FRACTION
PARTIAL CONDENSER
A
B
C
D
E
FEED POLYISOCYANATE
THIN FILM EVAPORATOR
CONDENSER
STORAGE [4,4'-MDI]
BLEND
STORAGE [POLYMETHYLENE POLYPHENYL POLYISOCYANATE]
MDI BOTTOMS

1. A continuous process for the partial removal of at least 98% pure 4,4′-methylenebis(phenyl isocyanate) from a feed mixture of polymethylene polyphenyl polyisocyanates, which mixture contains a major proportion by weight of methylenebis(phenyl isocyanate), comprising the steps of

a. subjecting said feed mixture in a continuous manner to a first partial distillation in a thin film evaporator under reduced pressure and continuously withdrawing from said thin film evaporator methylenebis(phenyl isocyanate) as overhead and polymethylene polyphenyl polyisocyanate as undistilled bottoms fraction;

b. continuously passing said overhead from said first partial distillation to a fractional distillation zone;

c. continuously removing an overhead fraction enriched in 2,4′-methylenebis(phenyl isocyanate) from said fractional distillation zone;

d. continuously passing the bottoms fraction from said fractional distillation zone as liquid feed to a second thin film evaporator wherein said feed is subjected to a second partial distillation under reduced pressure to recover a portion of said feed as overhead;

e. continuously returning said overhead fraction from said second partial distillation to said fractional distillation zone employed in the previous stage;

f. subjecting said undistilled bottoms from said second partial distillation to a third partial distillation under reduced pressure in a third thin film evaporator in a continuous manner and recovering at least 98% pure 4,4′-methylenebis(phenyl isocyanate) as overhead and methylenebis(phenyl isocyanate) residues as undistilled bottoms fraction, said overhead comprising the major proportion of the feed to said third thin film evaporator.

3,892,635

PRE-CONDITIONER AND PROCESS

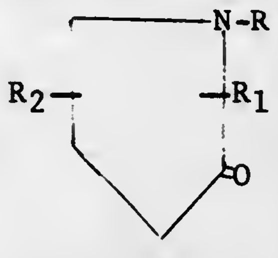
Charles D. Mallico, Stratford, Conn., assignor to Enthone, Incorporated, West Haven, Conn.

Division of Ser. No. 193,589, Oct. 28, 1971, Pat. No. 3,791,986. This application Aug. 31, 1973, Ser. No. 393,382

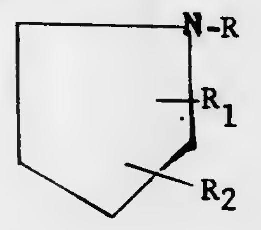
Int. Cl. B44d *1/092*

U.S. Cl. 204—15 **8 Claims**

1. A process for conditioning surfaces of an electrical insulating resin material which comprises pre-conditioning the object surface by contacting it with an acidic solution containing at least one five-membered saturated nitrogen heterocyclic compound of the formulae



wherein R is hydrogen or methyl, R_1 is hydrogen or methyl and R_2 is hydrogen or methyl, and



wherein R is hydrogen or methyl, R_1 is hydrogen or methyl and R_2 is hydrogen or methyl, an organic compound of the formula

RCOOM

wherein R is hydrogen or 1–6C alkyl and M is hydrogen or an alkali metal cation and a wetting agent in an amount sufficient to impart wettability to the preconditioning acidic solution until the surface is rendered capable of being conditioned by contacting the surface with a strong acid aqueous conditioning solution, and contacting the pre-conditioned article surface with a strong acid aqueous oxidizing conditioner solution until the surface is capable of having a chemical reduction metal plating process plating adhere firmly thereto.

3,892,636

METHOD FOR PRODUCING A COLORED OXIDE FILM ON AN ALUMINUM OR ALUMINUM ALLOY

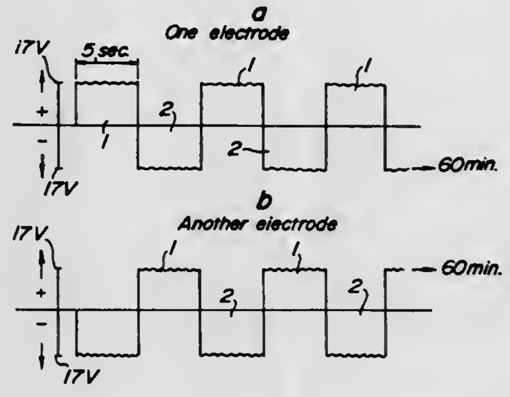
Kazuyoshi Kaneda; Yasushi Suzuki, both of Shizuoka, and Kenji Wada, Tokyo, all of Japan, assignors to Riken Light Metal Industries Co., Ltd., Shizuoka, Japan

Filed June 1, 1973, Ser. No. 366,207

Claims priority, application Japan, June 6, 1972, 47-55574; Nov. 13, 1972, 47-112868

Int. Cl. C23f *5/00;* **C23b** *9/02*

U.S. Cl. 204—35 N **5 Claims**



2. A method for producing colored oxide films on aluminum or an aluminum alloy which comprises arranging a pair of aluminum or aluminum alloy electrodes in an electrolytic bath containing a metal salt and passing between said electrodes a periodically reversing direct current, said current reversing direction at intervals of from 1 second to 5 minutes at not more than 70V.

3,892,637

METHOD OF TREATMENT OF METAL SURFACES

Jean-Loup Polti, LePetit Pont, 42450 Suryle Comtal, France

Continuation-in-part of Ser. No. 279,798, Aug. 10, 1972, abandoned, which is a continuation-in-part of Ser. No. 15,871, March 2, 1970, abandoned. This application Mar. 12, 1974, Ser. No. 450,282

Claims priority, application France, Mar. 10, 1969, 69.06596

Int. Cl. C23b *5/52, 5/32*

U.S. Cl. 204—37 T **5 Claims**

1. A method of forming a hard and wear- resistant coating on a finished article made of a copper-based alloy, comprising electrodepositing on the surface of a said article a layer 8–15 microns thick of an alloy consisting essentially of tin containing 5–10 percent by weight antimony, said electrodeposition being conducted in an aqueous bath having a pH of about 2.5 to about 2.8, having a proportion of antimony ions to tin ions in the range from about 1.7:1 to 1.9:1, and having a cathodic current density of about 2 to about 8 amperes per square decimeter, and then heating said article to diffuse the metals of said layer and surface into each other.

2. A method as claimed in claim 1, in which said bath contains about 18 to about 22 grams per liter of $SnCl_2$, about 30 to about 34 grams per liter of $Sb_2 o_3$, about 125 to about 135 grams per liter of ammonium citrate, about 78 to about 85 milliliters per liter of hydrochloric acid, about 2 grams per liter of gelatin and about 4 grams per liter of salicylic acid.

3,892,638

ELECTROLYTE AND METHOD FOR ELECTRODEPOSITING RHODIUM-RUTHENIUM ALLOYS

Peter Stevens, Parsippany, and John M. Deuber, Nutley, both of N.J., assignors to Oxy Metal Industries Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 372,375, June 21, 1973, abandoned. This application July 29, 1974, Ser. No. 492,578

Int. Cl. C23b *5/32*

U.S. Cl. 204—43 N **7 Claims**

1. A substantially platinum-free aqueous acidic electroplating bath suitable for depositing a bright, low-stress rhodium alloy at a temperature of 60° – 180°F and a current density of 5 to 40 amps per square foot, the bath comprising 0.1 to 15 g/l of rhodium as a soluble compound and a compatible soluble ruthenium compound in a weight ratio of Rh:Ru of from 10 to 200:1.

3,892,639

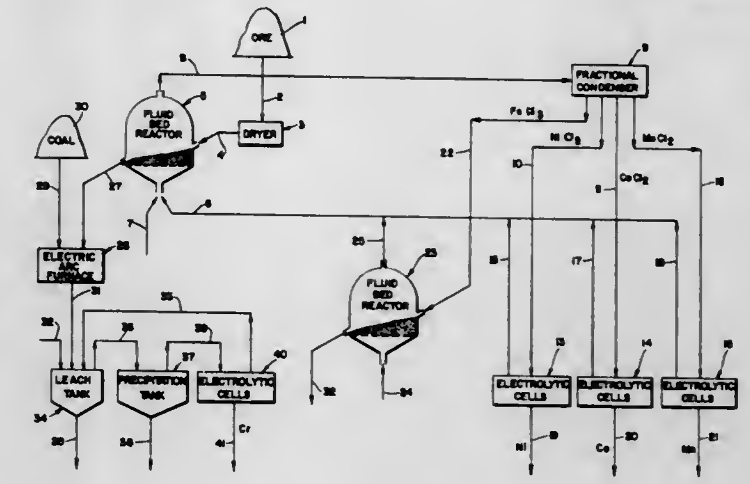
EXTRACTION OF METAL VALUES FROM LATERITIC ORES

Howard W. Leavenworth, Jr., Washington, D.C.; Earle B. Amey, Greenbelt, Md.; Beverly W. Dunning, Jr., Adelphi, Md.; Robert C. Gabler, Jr., Grasonville, Md., and Carl E. Goldsmith, Brandywine, Md., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Sept. 11, 1974, Ser. No. 504,464

Int. Cl. C22d *1/14, 1/24*

U.S. Cl. 204—105 M **11 Claims**



1. A method for the extraction of nickel, chromium and other metallic values from laterite ores which comprises chlorinating the ore in a fluidized bed with hydrogen chloride gas to form volatile metal chlorides of nickel and other metals except chromium; and a residue containing chromium, removing the volatile metal chlorides from the fluidized bed and condensing to recover the chlorides of nickel and the other metals; removing at least a portion of the chromite-containing residue from the fluidized bed reactor which contains chromium, reducing with carbon to form a carbide of chromium, leaching to form chromium salts, and recovering the chromium.

3,892,640

METHOD OF PURIFICATION OF WASTE WATER PRODUCED FROM THE PACKING OF MEAT AND AQUATIC ANIMALS

Motohiro Furuta, Abashiri, Japan, assignor to Zenkoku Reitogyoniku Kyokai, Hokkaido, Japan

Filed Mar. 27, 1973, Ser. No. 345,286

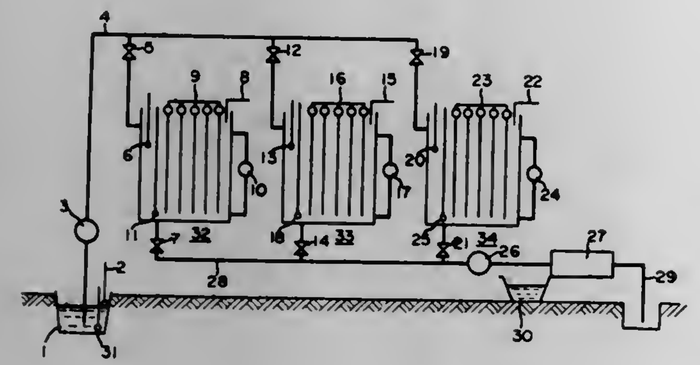
Claims priority, application Japan, Mar. 31, 1972, 47-31735

Int. Cl. B01k *3/00;* **C02b** *1/82*

U.S. Cl. 204—149 **4 Claims**

1. A method of purifying the contaminated waste water that is produced in the slaughter and processing of livestock and

aquatic animals and containing water-soluble colloidally dispersed materials selected from at least one of water soluble protein, visceral matter or blood, said method comprising passing said waste water through the compartments of at least one electrolytic tank containing a plurality of compartments, each compartment separated from the next adjacent compartment by an electrically insulated partitioning plate, each compartment containing at least one pair of electrode plates comprising a solid metallic anode selected from iron, stainless steel or aluminum and a cathode, adding to said waste water at least one electrolyte selected from the group consisting of the halides, halogen acid salts and nitrates of the alkali metals, alkaline earth metals and ammonium in an amount such that the concentration of said electrolyte in the waste water is 0.03 – 1.7 % by weight, agitating the waste water in each compartment and removing any waste matter adhered to the surfaces of said electrodes passing a direct-current electricity through the electrolyte-added waste water to effect its electrolysis and generate metallic cations from said solid metallic anode to thereby coagulate said water-soluble colloidally dispersed materials selected from at least one of water soluble protein, visceral matter or blood and thereafter separating the preciptiated solid matter from the waste water.



3,892,641
PROCESS FOR PRODUCING A COPOLYMER OF TETRAFLUOROETHYLENE AND PROPYLENE

Yoneho Tabata; Hiroshi Ukihashi, both of Tokyo, and Masaaki Yamabe, Yokohama, all of Japan, assignors to Japan Atomic Energy Research Institute and Asahi Glass Company, Japan

Continuation-in-part of Ser. No. 147,209, May 26, 1971, abandoned. This application Apr. 10, 1973, Ser. No. 349,680

Claims priority, application Japan, May 26, 1970, 45-44507

Int. Cl. C08f *1/16*

U.S. Cl. 204—159.22 **7 Claims**

1. A process for producing copolymer of tetrafluoroethylene and propylene which comprises copolymerizing tetrafluoroethylene and propylene with high energy ionizing radiation at a dose rate of 10^2 – 10^7 roentgens/hour in an aqueous emulsion, without a hydrocarbon liquid, consisting essentially of water, tetrafluoroethylene and propylene and a dispersing agent which is suitable for emulsifying tetrafluoroethylene and propylene and has no retarding action for the copolymerization reaction, wherein the reaction temperature is 5° to 80°C. and reaction pressure is 1 to 50 kg/cm².

3,892,642
PHOTO-CYCLOADDITION POLYMERIZATION OF BIS-NTHRACENES

Frans Carolus De Schrijver, Leuven, and Gerard Albert Delzenne, S-Gravenwezel, both of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

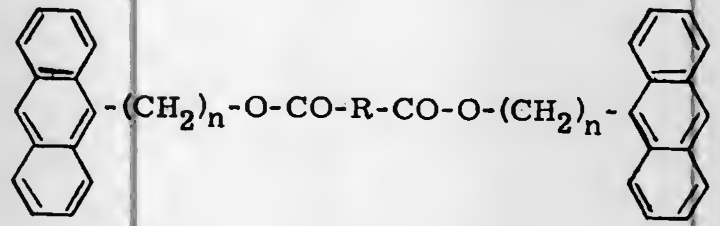
Division of Ser. No. 233,325, March 9, 1972, Pat. No. 3,807,999. This application Feb. 7, 1974, Ser. No. 440,503

Claims priority, application United Kingdom, Mar. 19, 1971, 7376/71

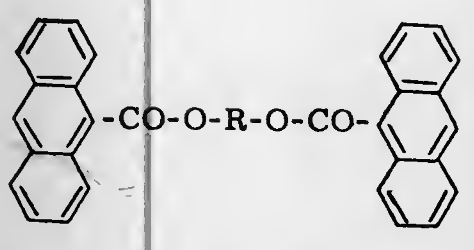
Int. Cl. B01j *1/10, 1/12*

U.S. Cl. 204—159.11 **2 Claims**

1. Process for the photo-cycloaddition polymerization of bis-anthracenes, which comprises exposing to ultraviolet radiation at about 365 nm in the absence of oxygen, bis-anthracenes corresponding to one of the following general formulae:



and



wherein R represents an alkylene group of two to 10 carbon atoms and *n* is 1 or 2.

3,892,643
THERMALLY CURABLE COMPOSITIONS AND PROCESS FOR CURING SAID COMPOSITIONS

Goro Tanaka, and Toshikazu Narahara, both of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Apr. 30, 1974, Ser. No. 465,586

Claims priority, application Japan, May 2, 1973, 48-48499; May 2, 1973, 48-48500

Int. Cl. B01j *1/10*

U.S. Cl. 204—159.13 **51 Claims**

1. A thermally curable composition comprising a silicon hydride compound having at least two hydrogen atoms bonded to silicon atom and (b) at least one isocyanuric acid compound selected from the group consisting of trialkenyl isocyanurates and derivatives thereof obtained by replacing one alkenyl group of a trialkenyl isocyanurate with an alkyl, silylalkyl or aryl group.

3,892,644
METHOD OF MAKING CERMET POWDERS

Richard J. Borg; David Y. F. Lai; Neil R. Riley, and James R. Wolfe, all of Livermore, Calif., assignors to California Metallurgical Industries Inc., Livermore, Calif.

Division of Ser. No. 44,608, June 8, 1970, Pat. No. 3,723,359. This application July 12, 1972, Ser. No. 271,004

Int. Cl. C22c *29/00*

U.S. Cl. 204—164 **12 Claims**

1. A process for preparing an intimately blended powder including as constituents:

I. at least one refractory compound selected from the group consisting of

  a. carbides, nitrides, borides, oxides and silicides of titanium, tantalum, chromium, tungsten, hafnium, columbium, zirconium and molybdenum, and
  b. silicon nitride, boron nitride, silicon carbide and boron carbide; and

II. at least one matrix metal in elemental form selected from the group consisting of iron, cobalt, nickel, copper, silver, gold and platinum;

comprising the step of forming a plasma containing the two separate constituents by striking a high intensity arc between a cathode and an anode, wherein the anode comprises a mixture of:

III. a material selected from the group consisting of titanium, tantalum, chromium, tungsten, hafnium, columbium, zirconium, molybdenum, boron, silicon, and compounds thereof; and

IV. the matrix metal or a compound thereof; when the material of (III) is titanium, tantalum, chromium, tungsten, hafnium, columbium, zirconium, molybdenum or a compound thereof, the arc being maintained in the presence of an element selected from the group consisting of carbon, nitrogen, boron, silicon and oxygen; and when the material of (III) is boron, silicon or a compound thereof, the element is selected from the group consisting of carbon and nitrogen.

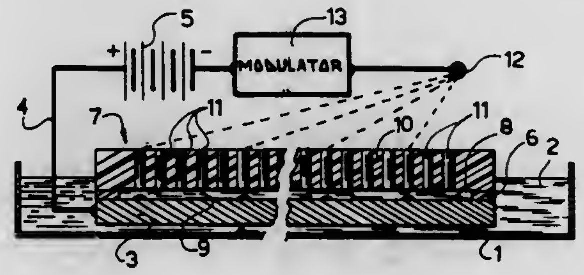
3,892,645
PRINTING METHOD AND SYSTEM BY GELATIN COAGULATION

Adrien Castegnier, 325 Melbourne St., Mount Royal, Quebec, Canada

Filed June 6, 1973, Ser. No. 367,589

Int. Cl. B01k *1/00, 5/00, 5/02*

U.S. Cl. 204—180 R **13 Claims**



1. An electric reproduction printing method comprising interposing a thin layer of a composition in substantially liquid state containing water, an electrolyte, and an electrolytically coagulable colloid, between opposite negative and positive electrolytically inert electrode means, electrically and selectively biasing said opposite electrode means with direct current for a relatively short period of time and concurrently sweeping the positive electrode means by the negative electrode means to thereby cause point by point selective coagulation and adherence of colloid onto said positive electrode means, and removing the non-coagulated colloid, whereby the coagulated colloid is representative of a desired image.

3,892,646
PROCESS FOR SELECTIVELY FORMING ELECTROPHORETIC COATINGS ON ELECTRICAL CONTACTS

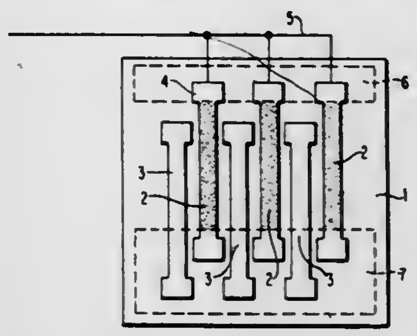
Donald J. Lazzarini, Binghamton, and Lewis K. Schultz, Apalachin, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 17, 1970, Ser. No. 64,424

Int. Cl.² C25D *13/06, 13/12*

U.S. Cl. 204—181 **7 Claims**

1. In a process for forming a thin, insulative coating having good mechanical resistance to cracking and compression at elevated pressure, said process comprising immersing a plurality of metal electrical contacts carried on a backing in an electrophoretic coating composition, some of said metal electrical contacts being in electrical isolation from the source of electrical current, and some of said metal electrical contacts being connected to said source of electrical current, said metal electrical contacts comprising a plurality of longitudinally arranged, narrowly spaced members, and electrophoretically depositing said coating composition as a coating on said metal electrical contacts whereby a homogeneous, thin polymeric coating is formed only on said metal electrical contacts which are connected to said electrical current, the improvement according to which the electrophoretic coating composition comprises an aqueous polymeric blend of from 60 to 40 parts polyethylene ionomer and from 40 to 60 parts epoxy ester polyer, all parts being by weight.



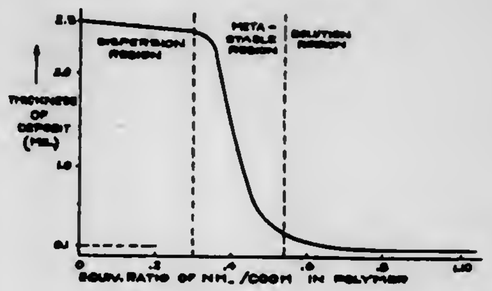
3,892,647
METHOD OF ELECTRODEPOSITING A POLYMER

Marvin A. Peterson, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 18,816, March 12, 1970, abandoned. This application Sept. 1, 1972, Ser. No. 285,612

Int. Cl. B01k *5/02*

U.S. Cl. 204—181 **23 Claims**



1. A process of producing a polymer coating on a conductive substrate, including the steps of:

reacting, in an inert water-miscible, organic solvent,
  a curable polymer having recurrent reactive carboxyl groups, and
  a volatile ammoniating agent, to form a water-soluble ammonium carboxylate salt of said polymer, and
adding sufficient water to said organic solution of said ammonium carboxylate polymer salt to form an aqueous-organic solution of said salt;

wherein the improvement comprises

adding a volatile weak acid to said aqueous-organic solution in an amount sufficient to precipitate at least a portion of said polymer as a stable dispersion without breaking the chain linkages of said polymer thereby to form both a dispersion phase and a solution phase of said polymer in an aqueous-organic liquid medium,
immersing a conductive substrate in said aqueous-organic liquid medium, and
applying a voltage to said medium and substrate sufficient to electrodeposit a polymer coating from said medium onto said substrate to a thickness of between about 1.0 and about 2.6 mils.

3,892,648
ELECTROCHEMICAL DEPOSITION OF BONE

David C. Phillips, Pittsburgh, and Bevil J. Shaw, Murrysville, both of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 16, 1974, Ser. No. 461,470
Int. Cl. C23b *13/00*
U.S. Cl. 204—181 **8 Claims**

1. A method of forming a prothesis for bone repair or replacement comprising:
electrodepositing finely divided powdered bone particles from aqueous glycerin and collagen dispersions onto a metallic substrate to form the prosthesis as a coating on the substrate; and
removing the metallic substrate by dissolution during and after formation of the prosthesis.

3,892,649
ELECTRODEPOSITION OF BONE WITHIN A PLASTIC MATRIX

David C. Phillips, Pittsburgh, and Bevil J. Shaw, Murrysville, both of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

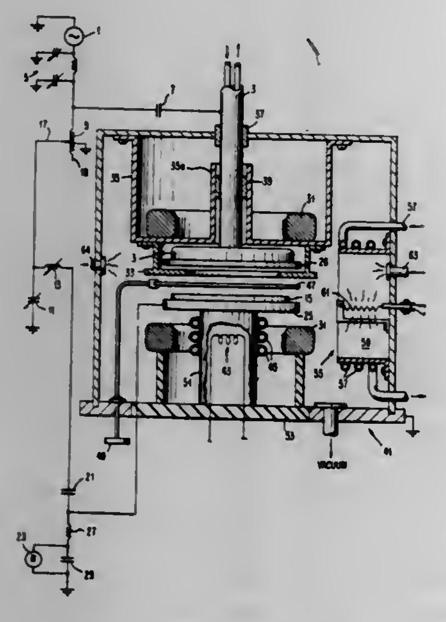
Filed May 13, 1974, Ser. No. 469,181
Int. Cl. B01k *5/02;* **C23b** *13/00*
U.S. Cl. 204—181 **20 Claims**

1. A method of forming a prosthesis for bone repair or replacement comprising:
electrodepositing finely divided powdered bone particles from colloidal suspensions of said bone particles in a solution comprising acetone, dimethylsulfoxide, an organic amine and a polyamic acid onto a metallic substrate in the form of said prosthesis.

3,892,650
CHEMICAL SPUTTERING PURIFICATION PROCESS

Jerome J. Cuomo, Bronx, and Walter W. Molzen, Jr., Patterson, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1972, Ser. No. 319,409
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 **13 Claims**

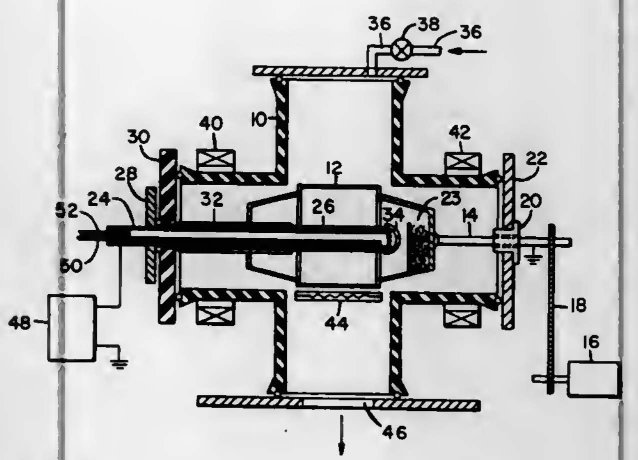


7. A process for sputtering high purity materials, comprising the steps of:
positioning within a sputtering chamber a target material and substrate upon which said target material is to be sputtered;
evacuating said sputtering chamber;
providing an RF sputtering potential between said target and substrate sufficient to effect an ionization within the deposition region between target and substrate to produce target material deposition upon said substrate at a rate between approximately 5A/sec and 50A/sec;
procuring an active vapor species selected from the group consisting of SiH_4, $TiCl_4$, WF_6 and UF_6 which active vapor species will be readily disproportionated in the diffuse plasma produced within said chamber outside said deposition region; and
introducing into said chamber an inert sputtering atmosphere of argon having mixed therewith from 0.1 to 10% by volume of said procured active vapor species, said inert sputtering atmosphere of argon becoming ionized therein through stimulation by said RF sputtering potential to produce said diffuse plasma around and outside said deposition region under conditions such that said procured active vapor species is decomposed before reaching said deposition region so as to form an active gettering species to thereby reduce the outgassing rate required to maintain a given level of purity.

3,892,651
METHOD AND APPARATUS FOR COATING A PLURALITY OF CYLINDRICAL ARTICLES

Kenneth R. Salisbury, Campbell, and Robert J. Settzo, Painted Post, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed May 28, 1974, Ser. No. 473,756
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 **15 Claims**

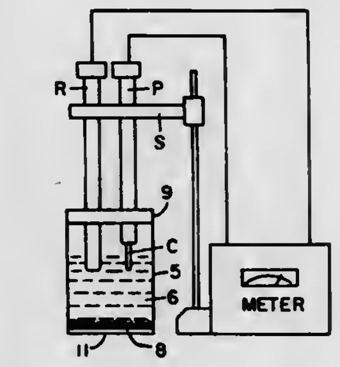


1. A method of simultaneously coating a plurality of cylindrical articles comprising the steps of
providing a plurality of cylindrical articles,
providing an electrically conductive rotatable container within a housing,
disposing said articles in said rotatable container,
disposing a conductive cathode within said container, said cathode having a layer of sputtering material on the surface thereof,
evacuating said container and housing,
introducing a quantity of inert ionizable gas into said container and housing,
rotating said container about said cathode so that said articles are caused to tumble within said container,
applying an electrical potential between said cathode and said container, and
sputtering said sputtering material from said cathode to the surface of said articles.

3,892,652
APPARATUS FOR pH MEASUREMENTS

Stuart A. Levine, Westwood, and Robert S. Potts, South Natick, both of Mass., assignors to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 408,301, Oct. 23, 1973, abandoned. This application Oct. 7, 1974, Ser. No. 512,203
Int. Cl. G01n *27/28*
U.S. Cl. 204—195 R **4 Claims**

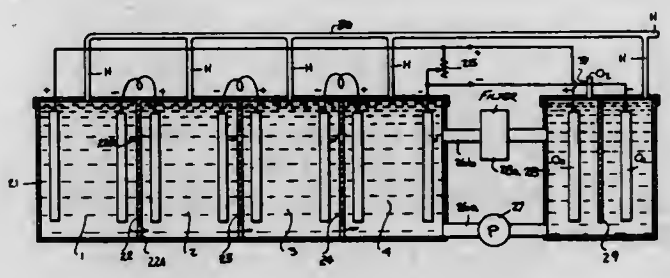


1. In a pH measuring system comprising a flow-through pH electrode, a pH reference electrode, and a container containing a saturated KCl solution forming an electrolytic salt bridge between the sensing portions of each electrode, the improvement wherein said container for the saturated KCl solution, consists of a polymeric material having separate orifices through which the sensing portions of each electrode are insertable and the orifices having means adapted to retain the electrodes in electrical contact with KCl solution and adapted, with the retained electrodes, to seal the KCl solution from contact with air external to the container, thereby providing a means for inhibiting KCl creep from the saturated KCl solution.

3,892,653
HYDROGEN GENERATOR

Francisco Pacheco, Hewitt, N.J., assignor to Michael Ebert, Mamaroneck, N.Y.; Patrick Clark, Ridgewood, N.J.; Carmine Joseph Girone, Bricktown, N.J. and F. Pacheco, Hewitt, N.J., part interest to each

Filed Nov. 14, 1973, Ser. No. 415,638
Int. Cl. B01k *3/00;* **H01m** *17/02*
U.S. Cl. 204—238 **10 Claims**



1. A hydrogen generator comprising:
A. at least one voltaic cell having an active magnesium electrode and a non-active electrode adapted to be immersed in a salt-water electrolyte contained in a tank having a hydrogen outlet above the level of said electrolyte,
B. a variable load resistor external to the cell and connected across the electrodes to produce a current in said cell resulting in the proportional production of hydrogen which is discharged through said outlet, a voltage being developed across said load resistor, and
C. an external flow loop communicating with said tank adjacent the lower and upper ends thereof to effect continuous circulation and cooling of said electrolyte to minimize polarization and other adverse effects, said loop including an electrically-operated pump connected to said load resistor and powered by said voltage, said pump functioning to draw the electrolyte from the lower end of the tank and to return it to the upper end thereof.

3,892,654
DUAL TEMPERATURE COAL SOLVATION PROCESS

Charles H. Wright, Overland Park, Kans., and Gerald R. Pastor, Takoma, Wash., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Mar. 4, 1974, Ser. No. 446,971
Int. Cl. C10g *1/00*
U.S. Cl. 208—8 **15 Claims**

1. A process for preparing deashed solid and liquid hydrocarbonaceous fuel from hydrocarbonactous feed coal containing ash comprising contacting the feed coal with hydrogen and a solvent for the hydrocarbonaceous material in the coal to form a coal-solvent slurry in contact with hydrogen, passing the slurry and hydrogen through a preheater for a residence time between 0.01 and 0.25 hours, said preheater having a length to diameter ratio of at least 100 to inhibit backmixing so that an increment of said slurry gradually increases in temperature in passge through the preheater from a low inlet temperature to a maximum temperature at the preheater outlet, the maximum temperature at the preheat outlet being 400° to 525°C., the viscosity of an increment of the slurry in passage through the preheater increasing initially to a value at least 20 times the viscosity of the solvent alone when each is measured at a temperature of 99°C., the viscosity of the slurry when measured at 99°C. subsequently dropping to a value lower than 10 times the viscosity of the solvent alone when each is measured at 99°C. in continued passage through the preheater, the viscosity of said slurry finally tending to increase to a value greater than 10 times that of the solvent alone when each is measured at 99°C. at the exit temperature of said preheater but the slurry and hydrogen being removed from said preheater after the relative viscosity drops to a value below 10 but before the relative viscosity finally increases to a value of 10, forcing reduction of the temperature of the slurry at least 10°C. to a temperature at which the viscosity of the slurry does not increase to a value above 10 times that of the solvent alone when each is measured at 99°F., passing the cooled slurry to a dissolver maintained at a temperature between 350° and 475°C. and which is below the temperature at the outlet of the preheater, the residence time of the slurry in the dissolver being greater than in the preheater, removing the slurry from the dissolver and separating the slurry into gaseous product, a fraction which is liquid at room temperature and a deashed fraction which is solid at room temperature, recycling hydrogen contained in said gaseous fraction to the preheater, and recycling at least a portion of said liquid fraction as solvent for said preheater step.

3,892,655
LAYERED CLAY MINERALS, CATALYSTS, AND PROCESSES FOR USING

Donald A. Hickson, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 311,081, Dec. 1, 1972, Pat. No. 3,844,979. This application Mar. 18, 1974, Ser. No. 452,473
Int. Cl. C01b *33/28;* **C10g** *13/02, 11/18*
U.S. Cl. 208—111 **16 Claims**

1. A hydroconversion process comprising contacting a hydrocarbon feedstock at conventional hydroconversion conditions with a catalyst comprising: (1) a layer-type trioctrahedral, clay-like mineral, and (2) at least one hydrogenation component, said mineral having prior to dehydrating and calcining of said catalyst, the empirical formula:

$$MgO : sSiO_2 : aAl_2O_3 : bAB : xH_2O$$

wherein the layer-lattice structure is composed of said silica, said alumina, said magnesia, said A and said B, and wherein s is from 0.66 to 1.33,

a is $0 < a$ 0.333,
b is $0 < b$ 0.333,

A is one equivalent of an exchangeable cation having a valence of 3 or less and is external to the layers of the framework or at the edges or between successive layers of the structure,

B is chosen from the group of negative ions consisting of F^-, OH^-, $\frac{1}{2}O^{--}$ and mixtures thereof, and is internal or at the edges and surfaces of the layers of the framework structure, and

x is from 2 to 3.5 at 50% relative humidity,

said mineral being characterized by a d_{001} spaacing at said humidity within the range which extends from a lower limit of about 10 Angstroms to an upper limit of 18 Angstroms when A is divalent or trivalent, with intermediate values possible when A is a mixture of monovalent, divalent and trivalent cations, and a d_{06} spacing at said humidity in the range of from 1.5375 to 1.5176 Angstroms by x-ray diffraction analysis.

3,892,656
CONTINUOUS LOW PRESSURE CATALYTIC REFORMING PROCESS

John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 277,708, Aug. 3, 1972, Pat. No. 3,806,447. This application Mar. 29, 1974, Ser. No. 456,704

Int. Cl. C10g *35/08*

U.S. Cl. 208—139 **13 Claims**

1. In a process for reforming a hydrocarbon charge stock boiling in the gasoline range wherein the hydrocarbon charge stock and hydrogen are continuously contacted in a reforming zone with a reforming catalyst, containing a catalytically effective amount of a platinum group metal, at reforming conditions, including a pressure of about 25 to about 250 psig., selected to produce a high octane effluent stream, the improvement which comprises continuously adding a refractory light hydrocarbon selected from the group consisting of ethane and propane to the reforming zone in an amount sufficient to result in a mole ratio of refractory light hydrocarbon to hydrogen entering the reforming zone of about 0.4:1 to about 10:1, said refractory light hydrocarbon addition being commenced at start-up of the process and continuing throughout the duration of the reforming run.

3,892,657
HYDROCARBON CONVERSION WITH A MULTIMETALLIC CATALYTIC COMPOSITE

Frederick C. Wilhelm, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 272,582, July 17, 1972, abandoned, which is a division of Ser. No. 114,719, Feb. 11, 1971, abandoned. This application Mar. 4, 1974, Ser. No. 448,131

Int. Cl. C10g *35/08*

U.S. Cl. 208—139 **17 Claims**

1. A process for converting a hydrocarbon which comprises contacting the hydrocarbon, at hydrocarbon conversion conditions, with a catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. percent platinum group metal, about 0.1 to about 3.5 wt. percent halogen, about 0.05 to about 5 wt. percent germanium or tin and indium in an amount sufficient to result in an atomic ratio of indium to platinum group metal of about 0.1:1 to about 1:1, wherein the platinum group metal and indium are uniformly dispersed throughout the porous carrier material, wherein substantially all of the platinum group metal is present in the elemental metallic state, wherein substantially all of the indium and germanium or tin are present in an oxidation state above that of the corresponding elemental metal, and wherein substantially all of the halogen is present in the form of combined halide.

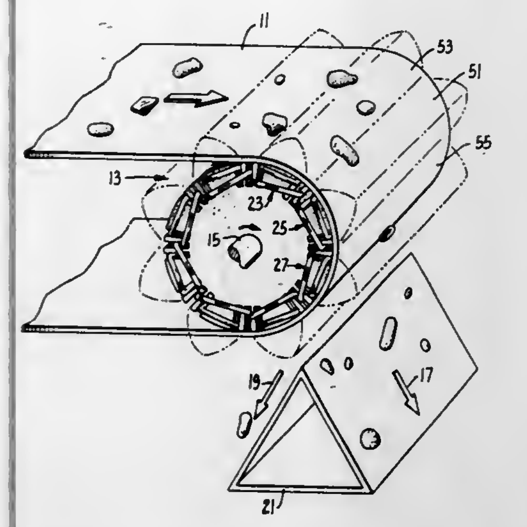
3,892,658
MAGNETIC PULLEY FOR REMOVAL OF NON-MAGNETIC PIECES FROM WASTE MATERIAL

Sander Benowitz, Sunnyvale, Calif., assignor to Combustion Power Company, Inc., Menlo Park, Calif.

Filed Sept. 17, 1973, Ser. No. 397,637

Int. Cl.^{2} B03C *1/18*

U.S. Cl. 209—213 **12 Claims**



1. Apparatus for separating electrically conductive non-magnetic objects from a mixture including other types of objects, comprising:

means for guiding said mixture in a stream past a separation station,

magnetic means positioned adjacent said stream guiding means at said separation station for attracting said electrically conductive non-magnetic objects from said mixture as it passes thereby, said magnetic means including a plurality of electromagnetic assemblies positioned adjacent each other across the surface of said magnetic means and each having an excitation coil and an attractor current path electrically isolated from one another but arranged to be magnetically coupled in a manner that their magnetic fields overlap to produce a zone of attraction of non-magnetic particals when currents in said excitation coil and said attractor current path are out of phase, means for removing the attracted objects from the influence of said magnetic means and

means for collecting objects after removal from said magnetic means, whereby said electrically conductive non-magnetic objects have been separated from said stream.

3,892,659
MULTIPLE CYCLE PROCESS FOR WASTEWATER PURIFICATION

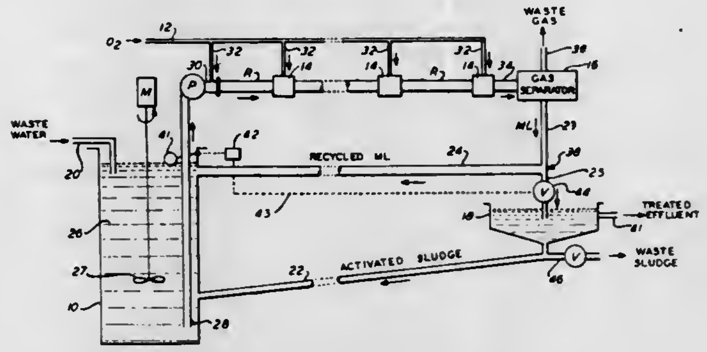
Bradley S. Kirk, Plainfield, N.J., assignor to AIRCO, Inc., Montvale, N.J.

Filed May 4, 1973, Ser. No. 357,123

Int. Cl. C02b *3/08;* **C02c** *1/08*

U.S. Cl. 210—3 **14 Claims**

1. A process for treating wastewater in an aerobic reactor having a series of closed reaction stages for passage therethrough of a mixed liquor of wastewater and activated sludge and a clarifier for normally receiving mixed liquor from the reactor and collecting activated sludge, the process comprising the steps of collecting the influent wastewater together with activated sludge in a receiving well as mixed liquor, pumping said mixed liquor from said well into said reactor under a positive pressure to establish a substantially constant flow rate of mixed liquor through said reactor and to impart sufficient turbulence to said mixed liquor to maintain activated sludge in suspension during passage of said mixed liquor through said reactor, injecting oxygen into the mixed liquor in respective reaction stages, dividing mixed liquor leaving the reactor into separate streams which are directed to the clarifier and recycled to the well with at least half of the mixed liquor leaving the reactor being normally recycled to the well and controlling the flow rate of the recycled stream according to the variation of the well liquid level from a predetermined reference level.



3,892,660
METHOD OF RENDERING DECAY PROCESSES MORE EFFECTIVE

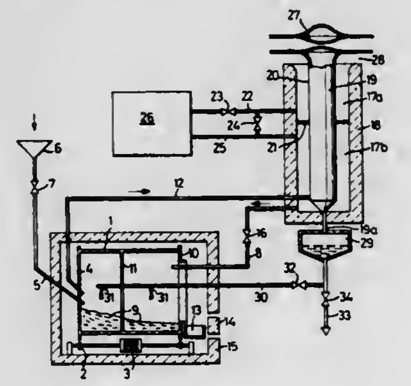
Dag Romell, 10, Ynglingavagen, Djursholm, Sweden

Filed Apr. 16, 1973, Ser. No. 351,267

Claims priority, application Sweden, Apr. 4, 1973, 7304771

Int. Cl. C02c *1/14*

U.S. Cl. 210—12 **1 Claim**



1. Method of rendering decay processes more effective in an apparatus for providing decaying of organic waste products, including introducing waste products into a container having a decaying zone for exposure to a decay process at above ambient temperatures, supplying air to said decaying zone so as to provide gaseous oxygen for maintaining an exothermic decaying process in said decaying zone, and removing said air from the decaying zone after having been brought to above ambient temperature by said exothermic processes, the improvement comprising: passing said air supplied to deliver gaseous oxygen to said decaying process and said air removed from said decaying zone after having been brought to above ambient temperature by heat generated in said decaying process through a heat exchanger; transferring heat from said removed air to said supplied air in said heat exchanger while separating flows of removed air and supplied air; condensing vapor generated during said decaying process and leaving said decaying zone together with air removed from said zone on the walls of said heat exchanger by restricting the quantity of said air supplied to the decaying zone, said air supplied to said decaying zone after having been heated by heat exchange with air removed from said decaying zone to above ambient temperature in a first part of said heat exchanger being conveyed to an enclosed space of a building for heat exchange with air contained in asid space, air from said space being conveyed to a second part of said heat exchanger for exchange of heat between air removed from said decaying zone and subsequently conveyed to said decaying zone to deliver gaseous oxygen for maintaining said exothermic decaying process; feeding said organic waste products into a vessel at one end thereof; conveying said waste products through said vessel while exposed to said decaying process towards an opposite end of the vessel for removal therefrom; introducing fresh air which is heated to above ambient temperature by heat supplied by said air removed from the decaying zone into the vessel adjacent said lastmentioned opposite end of the vessel; removing said air after having been brought to above ambient temperature by heat originating from said exothermic decaying process at said firstmentioned end of the vessel; and conveying said air to said heat exchanger for delivering heat to said air supplied to the decaying zone.

3,892,661
REMOVAL OF POLLUTANTS FROM WATER

Neil Graham Sliviour, East Kew; Grant Marshall Pearson, Elwood, and Geoffrey Victor Cullen, North Balwyn, all of Australia, assignors to University of Melbourne, Australia

Filed July 14, 1971, Ser. No. 162,644

Claims priority, application Australia, July 24, 1970, 1960/70

Int. Cl. B01d *15/00*

U.S. Cl. 210—40 **1 Claim**

1. A method for the removal of pollutant microorganisms from water, which comprises contacting the water with a brown coal char, separating the char from the water after contact, wherein the brown coal char is present in a weight ratio of brown coal char to water of from about 1:10 to 1:500 and the brown coal char is contacted with the water for at least about 5 minutes.

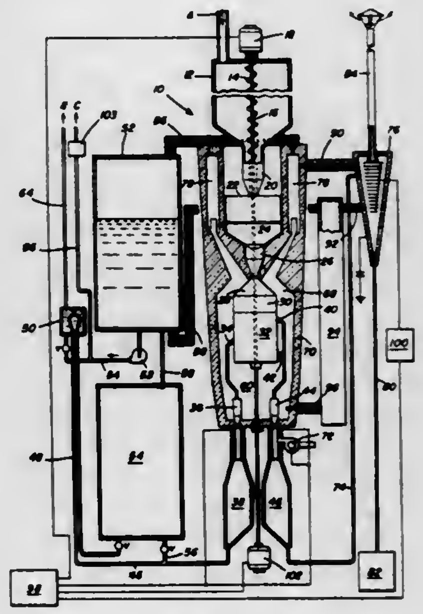
3,892,662
CLOSED RECYCLING SYSTEM FOR WATER PURIFICATION AND WASTE REDUCTION

Daniel W. Stout, North Palm Beach, Fla., assignor to Gerald C. Daniels, North Palm Beach, Fla., a part interest

Filed Aug. 1, 1973, Ser. No. 384,511

Int. Cl. C02b *1/12*

U.S. Cl. 210—66 **23 Claims**



1. A process for household, commercial and industrial waste purification, reduction and water recycling comprising the steps of:

a. homogenizing the waste;
b. reducing the solid material in the waste to fine particle size;
c. atomizing the waste;

- d. cryogenically freezing the atomized waste into minute crystalline particles, said particles consisting essentially of water crystals and crystals of solid waste;
- e. homogenizing and reducing the size of said particles to produce a crystalline particle mass having the flow characteristics of a liquid;
- f. centrifugally separating the water crystals from the solid waste crystals;
- g. heating the water crystals to steam and condensing the steam to water for recycling to the household; and
- h. heating said solid waste crystals to combustion gas and ash, separating said gas and ash, venting said gas and collecting said ash.

3,892,663
HOME FISH-TANK FILTER CONSTRUCTION

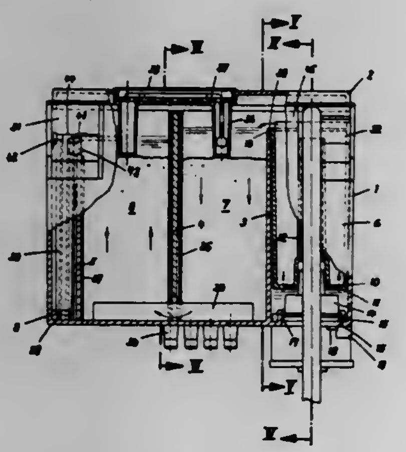
Walter Wiedenmann, Kongen, Germany, assignor to Gunther Eheim, Esslingen, Germany

Filed June 28, 1973, Ser. No. 374,794

Claims priority, application Germany, Aug. 1, 1972, 2237774

Int. Cl. E04h *3/20*

U.S. Cl. 210—169 **15 Claims**



1. In the combination with an aquarium, a filter and pump assembly comprising
- a filter housing (1) located outside of the aquarium;
- means (3, 4, 5) sub-dividing the housing to define at least a first (6), a second (7) and a third (8) filter chamber therein in a serial fluid flow communication;
- filter media inside the chambers;
- positive pump means (14) having a suction pump inlet means (20) in fluid communication with the aquarium tank, and a pressure outlet directly connected to the bottom of the first filter chamber (6) and supplying aquarium water, to be filtered under pressure from below, upwardly, through the first chamber, the filter media in said first chamber (6) being coarse with respect to the media in the second and third chambers
- a first overflow (39, 40) at the sub-dividing means between the first (6) and second (7) filter chambers to determine the level of water forced into the first chamber (6);
- a fluid connection in the subdivision means located adjacent the bottom of the filter housing (1) between the second and third chambers (7, 8); and
- an outlet trough (31) in fluid communication with the third filter chamber (8) and having an overflow edge (41, 42) adjacent the third chamber which is located at a level lower than said first overflow (39, 40) whereby water will be filtered by filter substance located in the first chamber (6) and flow under positive pressure upwardly therethrough, and water will be filtered by filter substance located in the second and third chambers (7, 8) and then can return to the aquarium through the outlet trough (31) after spilling over the overflow edge (41, 42).

3,892,664
BLOOD DIALYZER OF THE COIL TYPE

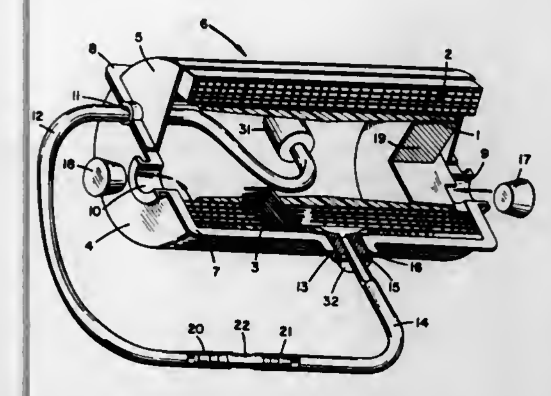
Leendert Van Assendelft, Arnhem; Jacob M. Van Der Kloot, Lunteren; Antonie Van 'T Sant, and Hendrikus J. Speklé, both of Arnhem, all of Netherlands, assignors to Organon Teknika B.V., Industrielaan, Netherlands

Filed July 26, 1973, Ser. No. 382,858

Claims priority, application Netherlands, July 26, 1972, 7210262

Int. Cl. B01d *31/00*

U.S. Cl. 210—321 **15 Claims**



1. A blood dialyzer having a substantially cylindrical housing, a substantially cylindrical hollow core member disposed in said housing and having its wall spaced inwardly therefrom to provide an annular dialysis space therebetween, a dialyzer membrane and supporting gauze wound about the core member in the annular space, means for the introduction of dialyzer fluid into the dialysis space and means for flow of dialyzer fluid from the dialysis space, the wall of said core member having an opening therein, means for introducing blood through the opening into the said membrane comprising a blood tube, a plug about the tube and in said opening, one end of said dialyzer membrane being pleated to reduce its cross-section to correspond substantially to the cross-section of the opening and disposed about the said plug in a substantially liquid impervious relationship, said wall having a recess which extends circumferentially from adjacent to the said opening only partially around the core member, said recess diverging from said opening towards the ends of the core member, said pleated membrane being disposed in said recess, and means for removing the blood after dialysis from the dialyzer.

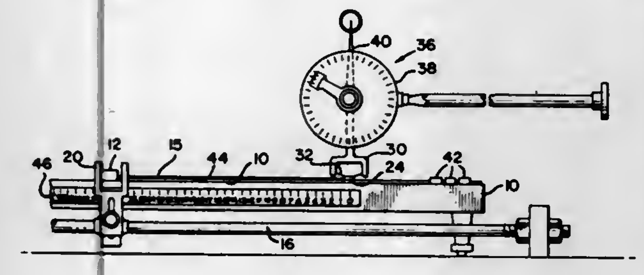
3,892,665
MEMBRANE METHOD AND PRODUCT

Edward F. Steigelmann, Park Forest; Herman E. Ries, Jr., Chicago, and Robert D. Hughes, Park Forest, all of Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed Oct. 15, 1973, Ser. No. 406,382

Int. Cl. B01d *25/16*

U.S. Cl. 210—490 **22 Claims**



13. A composite structure consisting of an ultrathin membrane comprising a plurality of separate layers of a polymeric material, each layer being one or two molecules thick and the molecules in each layer being oriented so that each layer has a regular structure, said membrane being on the order of 0.01 to 0.001 μ thick and having an essentially continuous surface attached to a porous support, the pores of which are of a size effective to support the membrane and larger than 25A in diameter.

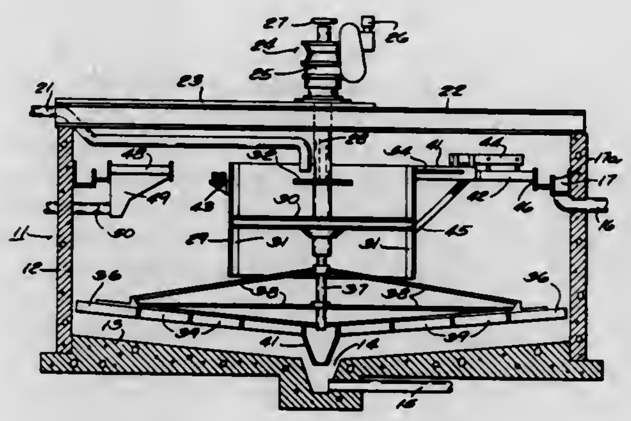
3,892,666
THICKENER WITH ELEVATABLE SCRAPER AND NON-LEVATING SKIMMER

Gilbert W. Quast, Brookfield, Wis., assignor to Envirex Inc., Milwaukee, Wis.

Filed Mar. 18, 1974, Ser. No. 452,209

Int. Cl.^{2} B01D *21/18*

U.S. Cl. 210—520 **2 Claims**



1. In a tank for the gravity separation of suspended solids from a liquid which tank includes side walls, a bottom, an influent pipe extending to the center of the tank, a bridge extending over the center of the tank and supporting said pipe, a central sump for receiving the solids settled on the tank bottom, a peripheral effluent trough having an overflow weir which establishes and maintains the liquid level within the tank, a central vertical drive shaft within the tank, scraper arms attached to and carried by the lower portion of said shaft and having scrapers for pushing the settled solids for movement over the tank bottom and pushing the settled solids to said sump, a drive and lift mechanism carried by said bridge and connected to the upper end of said shaft for adjusting the elevation of the scrapers of said scraper arms relative to the tank bottom, a drive tube surrounding the upper portion of said drive shaft, an influent well carried by and rotating with said drive tube, said influent pipe being carried by the bridge and opening into said feedwell, said feedwell defining an upper central influent distribution zone within the tank, and a skimming blade connected to, supported by and rotatable by and with said feedwell.

3,892,667
NOVEL FLAME RETARDANT COMPOSITIONS

Irving Touval, Edison, N.J., assignor to M & T Chemicals Inc., Greenwich, Conn.

Continuation-in-part of Ser. No. 869,366, Oct. 24, 1969, abandoned. This application Oct. 15, 1973, Ser. No. 406,194

Int. Cl.^{2} C09K *3/28*

U.S. Cl. 252—8.1 **3 Claims**

1. In an improved flame-retarding composition for use with synthetic organic polymers, such composition consisting essentially of particulate sodium antimonate and an organic chlorine- or bromine-containing compound equivalent to between 50 and 400% of chlorine or bromine based on the weight of the sodium antimonate, wherein the improvement resides in the presence of said sodium antimonate as particles, substantially all of which are between 0.1 and 8 microns in diameter and at least 40% of which are smaller than 1 micron.

3,892,668
DIGESTED ALKALINE TALL OIL PITCH SOAP COMPOSITION

Ying C. Chiu, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 351,738, April 16, 1973, Pat. No. 3,823,774, and a continuation-in-part of Ser. Nos. 235,039, March 15, 1972, abandoned, and Ser. No. 235,088, March 15, 1972, abandoned. This application Mar. 5, 1974, Ser. No. 448,236

Int. Cl.^{2} C11D *15/04;* **E21B** *43/20*

U.S. Cl. 252—8.55 D **9 Claims**

1. A digested alkaline tall oil pitch soap composition, which comprises a digestion product produced by:
- mixing each part by weight of tall oil pitch with from about 1-5 parts by weight of an aqueous solution of an alkaline material that is substantially free of multivalent cations which form water-insoluble salts of fatty acids selected from the group consisting of alkali metal and ammonium hydroxides, carbonates, phosphates, fluorides and borates and alkali metal and ammonium salts of lower molecular weight carboxylic acids, said solution containing an amount of dissolved monovalent cationic alkaline material providing an excess alkalinity, relative to the acid number of the pitch, of from about 20 to 80%, and;
  heating the mixture for time and temperature equivalent to from about 4 hours at 70°C to about 16 hours at 110°C.

3,892,669
CLEAR FABRIC-SOFTENING COMPOSITION

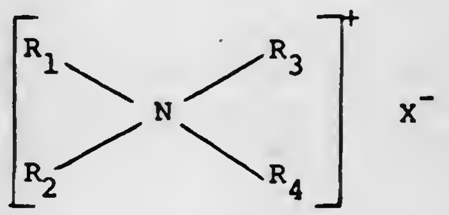
Anthony A. Rapisarda, Elmhurst, N.Y.; Kenneth F. Schoene, Maywood, and William B. Benken, Cliffside Park, both of N.J., assignors to Lever Brothers Company, New York, N.Y.

Filed Oct. 27, 1972, Ser. No. 301,546

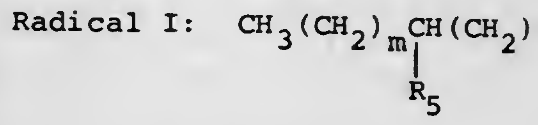
Int. Cl. D06m *13/38*

U.S. Cl. 252—8.75 **6 Claims**

1. A clear, single phase, liquid fabric softener composition comprising
- i. about 2 to about 20 percent of dialkyl dimethyl quaternary ammonium salt conforming to the formula



wherein R_1 and R_2 are independently selected from the group consisting of



$$\text{Radical I:}\quad CH_3(CH_2)_m\underset{\displaystyle R_5}{\underset{|}{CH}}(CH_2)-,$$

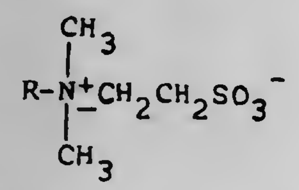
and

Radical II: $CH_3(CH_2)_y$ — and mixtures thereof,
where $m = 8$ through 14 inclusive,
$y = 11$ through 17 inclusive, and
Radical I comprises between about 5 and about 25 percent by weight of the total of R_1 and R_2, and Radical II comprises between about 40 and about 60 percent by weight of carbon chains where y is 11 through 14 inclusive, with the remainder being carbon chains where y is 15 through 17 inclusive,
R_3 and R_4 are independently selected from the group consisting of methyl, ethyl, propyl, and isopropyl radicals,
R_5 is methyl or ethyl, and

X is an anion selected from the group consisting of chloride, bromide, iodide, methosulfate, and ethosulfate, which imparts water dispersibility to the quaternary,

ii. about 98 to about 80 percent of a solvent for said quaternary ammonium salt, said solvent comprising a solubilizer selected from the group consisting of

  a. arylsulfonates having the formula $A\text{-}Bz\text{-}SO_3M$ wherein A is H, methyl, dimethyl, or isopropyl, Bz is a benzene nucleus, and M is Na, K, NH_4, or substituted ammonium,
  b. alkanediols having 2–6 carbon atoms,
  c. alkylene glycols having 2–6 carbon atoms,
  d. methyl, ethyl, and butyl monoethers of diethyleneglycol,
  e. 2-methoxy, 2-ethoxy, and 2-butoxy ethanol,
  f. water-soluble quaternary ammonium compounds having the formula $R^1R^2R^3R^4NCl$ wherein R^1 is an alkyl group having about 8 to about 14 carbon atoms, R^2 and R^3 are methyl, and R^4 is benzyl or ethylbenzyl,
  g. N-alkyl sulfobetaines having the formula



$$R-\overset{\displaystyle CH_3}{\underset{\displaystyle CH_3}{\overset{|}{\underset{|}{N^{+}}}}}CH_2CH_2SO_3^{-}$$

wherein R is an alkyl group having 10–14 carbon atoms,

  h. N-2-hydroxymethyl taurines, wherein the alkyl group has 8 to 10 carbon atoms,
  i. amines oxides having the formula $R^1R^2R^3N$ O wherein R^1 and R^2 are selected from the group consisting of methyl, ethyl, propyl, isopropyl and 2-hydroxyethyl, and R^3 is selected from the group consisting of alkyl and 2-hydroxyalkyl having about 8 to 14 carbon atoms,
  j. phosphine oxides having the formula R^1,R^2R^3P O wherein R^1 and R^2 are methyl, and R^3 is an alkyl radical having from 10 to about 16 carbon atoms,
  k. sulfoxides having the formula $R^1\ R^2S = O$ wherein R^1 is a methyl, ethyl, or a 2-hydroxyethyl radical, and R^2 is an alkyl radical having about 6 to about 10 carbon atoms, and
  l. nonionic surfactants selected from the group consisting of (a) ethylene oxide condensates of aliphatic alcohols having about 8 to about 18 carbon atoms, and (b) of alkylphenols having straight or branched chain alkyl groups with about 6 to about 12 carbon atoms, the ethylene oxide forming oxyethylene groups to the extent of 5 to 30 molar proportions per mole of condensate, and (c) ethylene oxide condensates with polyoxypropylene, having 30 to 90 percent ethylene oxide by weight per molecule, and mixtures thereof, said solubilizer being present in proportions ranging from about 4 to about 43 percent, whole composition basis, the balance being essentially water, the proportions of said components (a) – (1) being selected to provide a visually clear solution of said quaternary ammonium salt.

3,892,670

VAPOR SPACE CORROSION INHIBITED COMPOSITIONS

James A. White, Orange; Ralph P. Chesluk, Nederland, and Howard J. Platte, Groves, all of Tex., assignors to Texaco Inc., New York, N.Y.

Filed Aug. 15, 1973, Ser. No. 388,677
Int. Cl. C10m *1/32*

U.S. Cl. 252—34.7 **10 Claims**

1. A lubricating oil composition having improved vapor space corrosion properties consisting of a corrosion inhibiting amount of a mixture of at least one amine salt of a C_8–C_{10} aliphatic monocarboxylic acid together with at least one amide of diethanolamine and a fatty acid containing from 12 to 20 carbon atoms, the ratio of amide to acid amine salt being from about 1:1 to about 1:10, the balance, a major amount of a mineral hydrocarbon oil.

3,892,671

LUBRICANT CONTAINING DISPERSANT-POUR DEPRESSANT POLYMER

Won R. Song, Maplewood, and Norman Jacobson, East Brunswick, both of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed Aug. 25, 1972, Ser. No. 283,916
Int. Cl. C10m *1/32, 1/26*

U.S. Cl. 252—51.5 A **6 Claims**

1. A lubricating oil composition comprising a major amount of a mineral lubricating oil, a viscosity index improving oil soluble copolymer comprising essentially ethylene and propylene, having a viscosity average molecular weight in the range of about 10,000 to 200,000 and containing about 60 to 80 mole percent ethylene, and a minor amount of a pour depressing and dispersing oil soluble acrylate copolymer, compatible with said ethylenepropylene copolymer of (a) a mixture consisting essentially of at least one C_8 or C_{10} alkyl ester and at least one C_{14} or C_{16} alkyl ester, said esters being esters of an acrylic acid selected from the group consisting of unsubstituted acrylic acid and methacrylic acid, wherein all of the alkyl esters have the same acid moiety and said alkyl groups are straight chain, and (b) a nitrogen-containing ethylenically unsaturated monomer selected from the group consisting of N,N-dimethyl aminoethyl methacrylate and 4-vinyl pyridine, said acrylate copolymer having a number average molecular weight in the range of about 2,000 to about 20,000, and a nitrogen content of about 0.2 percent to about 5 percent by weight, said acrylate copolymer being produced from a monomer mixture which initially is essentially free of polymer, and wherein said acrylate copolymer is the sole acrylate copolymer present in said composition.

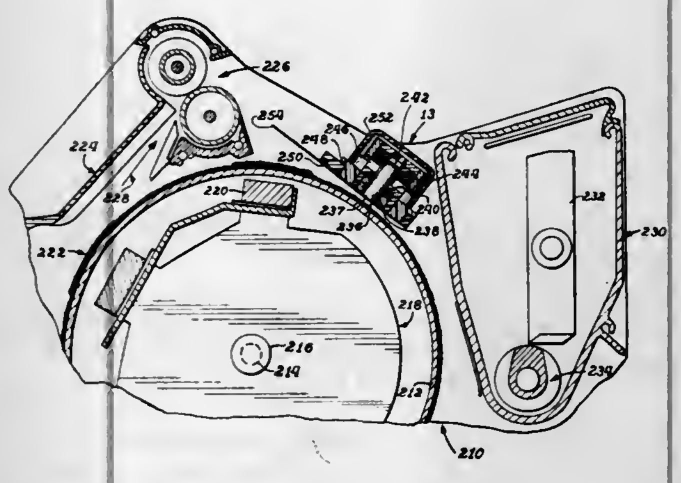
3,892,672

AUTOMATIC TONER CONCENTRATE DETECTOR AND CONTROL DEVICE

Stanley A. Gawron, Arlington Heights, Ill., assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Division of Ser. No. 65,902, Aug. 21, 1970, Pat. No. 3,707,134. This application Nov. 3, 1972, Ser. No. 303,455
Int. Cl. G03g *13/08;* **B67d** *5/08*

U.S. Cl. 252—62.1 **5 Claims**



1. The method of automatically maintaining a developer mix comprising toner particles and magnetic carrier particles in a weight ratio representative of an optimum performing developer mix for developing high quality electrostatic images comprising the steps of:

moving the developer mix along a path from a supply chamber onto the surface of a rotating magnetic brush cylinder and back to the supply chamber,
contacting said developer mix with a sensing device, at a point where it is forming the brush on the surface of the cylinder, said sensing device forming part of an electric circuit and exhibiting to the circuit an inductance responsive to changes in the weight ratio of said toner to said carrier,
detecting said changes in inductance, and
when the sensed inductance increases above a predetermined value, dispensing toner powder from a toner dispensing unit into said supply chamber and mixing the same with said developer mix until the reading of inductance given by said sensor is restored to said predetermined value.

3,892,673

COMPOSITION OF METAL SALT CRYSTALS HAVING A POLYMERIC COATING

John E. Ehrreich, Wayland, and Adrian R. Reti, Cambridge, both of Mass., assignors to Graham Magnetics, Graham, Tex.

Continuation-in-part of Ser. No. 127,514, March 24, 1971, abandoned. This application Feb. 22, 1972, Ser. No. 228,387
Int. Cl. B44d *1/02*

U.S. Cl. 252—62.54 **9 Claims**

1. A dry powder-like composition consisting essentially of (1) acicular particles of metal oxalate crystals of at least an average 1.5:1 length-to-diameter ratio and (2) from 1 to 15 percent by weight of a polymeric resin intimately associated therewith, and forming a coating over said oxalate crystals.

5. A dry powder-like composition formed of a mass (1) acicular particles of a metal-containing thermally decomposable organic salt crystals, and (2) a polymeric coating over said crystals.

3,892,674

BUILDERS FOR DETERGENT AND CLEANSING AGENTS

Joachim Kandler, Erftstadt-Lechenich; Karl Merkenich, Efferen; Klaus Henning, Hurth; Wilhelm Vogt, Efferen; Eberhard Auer, Erftstadt-Liblar, and Hermann Glaser, Erftstadt-Lechenich, all of Germany, assignors to Hoechst Aktiengesellschaft, Cologne, Germany

Filed Sept. 21, 1972, Ser. No. 291,043

Claims priority, application Germany, Sept. 24, 1971, 2147780

Int. Cl. C11d *9/42*

U.S. Cl. 252—96 **2 Claims**

1. A detergent composition containing dodecylbenzene sulfonate, tallow oil, hardened tallow soap, magnesium silicate, sodium silicate, sodium perborate tetrahydrate, sodium sulfate, and a builder, the builder being a substance selected from the group consisting of the sodium salt of glycerol-trioxydiacetic acid, the sodium salt of sorbitol-hexaoxydiacetic acid and the sodium salt of glycerol trimalic acid, the builder being present in a proportion between 10 and 80 weight percent based on the total dry ingredients of the composition.

3,892,675

COATING COMPOSITIONS

Warwick Kingston Clarke; Ronald Wynford Kenyon, and David Robinson, all of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Jan. 4, 1974, Ser. No. 430,623

Claims priority, application United Kingdom, Jan. 23, 1973, 3349/73

Int. Cl. C09k *1/00;* **B44d** *5/00*

U.S. Cl. 252—301.3 W **8 Claims**

1. Coating compositions comprising white pigment extender, polyvinyl acetate latex as sole binding agent, at least one sparingly water-soluble optical brightening agent in finely-divided form, and water.

3,892,676

DETERGENT COMPOSITIONS CONTAINING METHANE DIPHOSPHONIC ACID COMPOUNDS

Edward G. Budnick, Roselle, N.J., assignor to Plains Chemical Development Co., Roselle, N.J.

Division of Ser. No. 485,624, Sept. 7, 1965, Pat. No. 3,471,406. This application Apr. 23, 1969, Ser. No. 818,802
Int. Cl. C11d *1/04, 3/36*

U.S. Cl. 252—109 **13 Claims**

1. A detergent composition consisting essentially of a water soluble synthetic detergent and mixtures thereof and a builder which is an alkali metal or ammonium salt of methane hydroxy diphosphonic acid.

3,892,677

PROCESS FOR REGENERATION OF SULFUR OXIDE ACCEPTORS

Jaap E. Naber, and Frits M. Dautzenberg, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed July 15, 1969, Ser. No. 842,025
Int. Cl. B01j *11/30, 11/02;* **B01d** *53/34*

U.S. Cl. 252—411 S **11 Claims**

1. A process for the regeneration of a sulfur oxide-loaded acceptor obtained by contacting a sulfur oxide- and oxygen-containing gas mixture with a solid acceptor of a solid refractory carrier material composited with a metal or a metal compound capable of taking up sulfur oxides, which comprises treating said loaded acceptor at a temperature of 200° to 500°C with a reducing gas comprising an inert diluent and a hydrocarbon in a volume ratio of 0.2:1 to 20:1, said hydrocarbon having at least three carbon atoms per molecule; and removing a sulfur dioxide-containing spent reducing gas.

2. The process of claim 1 in which the metal or metal compound is copper or copper oxide.

3. The process of claim 1 in which said solid carrier material is composited with a vanadium compound and an alkali metal compound capable of taking up sulfur oxides.

6. The process of claim 1 in which said inert diluent is steam.

3,892,678

POROUS SILICON DIOXIDE-BASED ADSORBENTS FOR CHROMATOGRAPHY AND PROCESSES FOR THEIR MANUFACTURE

Istvan Halasz, Saarbrucken; Otto-Ernst Brust, and Imrich Sebestian, both of Dudweiler, Saar, all of Germany, assignors to Istvan Halasz, Saarbrucken, Germany

Filed July 16, 1973, Ser. No. 379,705

Claims priority, application Germany, July 27, 1972, 2236862

Int. Cl. B01j *31/02*

U.S. Cl. 252—426 **10 Claims**

1. A porous silicon dioxide-based absorbent for chromatography having a surface modified by chemical conversion of silanol groups, said absorbent characterized in that its surface is modified by primary or secondary, aliphatic or araliphatic amines having from two to twenty carbon atoms and lacking any reactive hydroxy groups, said amines being bound onto said surface by means of a SiN linkage.

3,892,679

CATALYST FOR PREPARATION OF ETHYLENE OXIDE

Howard V. Holler, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Sept. 24, 1973, Ser. No. 399,905

Int. Cl.² B01J *23/48*

U.S. Cl. 252—476 **6 Claims**

1. A process of preparing a supported silver catalyst active in the conversion of ethylene to ethylene ethylene oxide containing from about 2 to 20% by weight metallic silver deposited evenly on the surface of a catalyst support as discrete particles having an average diameter of less than about 150nm which comprises:

a. coating the surfaces of a catalyst support with an overlayer of polyacrylonitrile complexed with silver salt and b. heating the coated support at a temperature of from about 200° to about 600°C for a period of time sufficient to pyrolyze the polyacrylonitrile and convert the silver ions of the complexed silver salt into discrete particles of silver.

3,892,680

BUILT DETERGENT COMPOSITION CONTAINING CALCIUM-INSENSITIVE DETERGENT AND A CARBONATE-SILICATE BUILDER

Lawrence Benjamin, Springfield Twp., Hamilton County, and Jay Harold Saylor, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 98,113, Dec. 14, 1970, abandoned. This application Mar. 14, 1973, Ser. No. 341,182

Int. Cl. C11d *3/08, 3/10*

U.S. Cl. 252—532 **3 Claims**

1. A laundry composition consisting essentially of

1. a synthetic organic detergent having a formula

$$RO(C_2H_4O)_xSO_3M$$

wherein R is alkyl or alkenyl of about 10 to about 18 carbon atoms, *x* is 1 to 30 and M is a salt-forming radical selected from the group consisting of alkali metals, ammonium and mono-, di-, and tri lower alkyl substituted ammonium, and

2. as a detergency builder, a mixture of an alkali metal carbonate and an alkali metal silicate wherein the weight ratio of carbonate to silicate is from 3:1 to 1:3 and the SiO_2/M_2O weight ratio of the silicate when M is an alkali metal is from 1.0 to 3.5:1; and the weight ratio of the detergent to builder is from 1:10 to 3:1.

3,892,681

DETERGENT COMPOSITIONS CONTAINING WATER INSOLUBLE STARCH

James Byrd Edwards, and Francis Louvaine Diehl, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Feb. 16, 1973, Ser. No. 333,103

Int. Cl. C11d *1/12*

U.S. Cl. 252—551 **14 Claims**

1. A laundry detergent composition comprising:

a. from about 4% to about 60% by weight of an organic surface-active agent selected from the group consisting of anionic, nonionic, zwitterionic and ampholytic detergents and mixtures thereof; and

b. from 0.1% to about 6% by weight of granular substantially water-insoluble starch having an average particle diameter from 1.0 to about 45 micrometers and a swelling power of less than about 15 at a temperature of 65°C.

6. A laundry detergent composition comprising

a. from about 4% to about 60% by weight of an organic surface-active agent selected from the group consisting of anionic, nonionic, zwitterionic and ampholytic detergents and mixtures thereof;

b. from 0.1% to about 6% by weight of a granular substantially water-insoluble starch having an average particle diameter from 1.0 to about 45 micrometers and a swelling power of less than about 15 at a temperature of 65°C; and

c. from about 1% to about 50% by weight of a smectite-type clay having an ion-exchange capacity of at least about 50 meg/100 g.

3,892,682

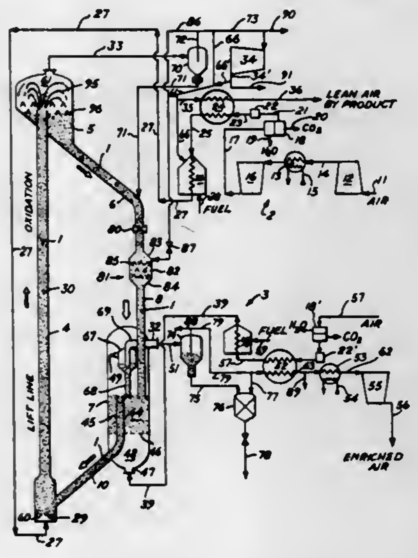
SINGLE REACTOR FLUIDIZED BED OXYGEN ENRICHMENT PROCESS AND APPARATUS

Dharamvir Punwani, Chicago, Ill.; Lester G. Massey, Moreland Hills, Ohio, and Paul B. Tarman, Elmhurst, Ill., assignors to Consolidated Natural Gas Service Co., Inc., Cleveland, Ohio

Filed Mar. 30, 1973, Ser. No. 346,570

Int. Cl. C01b *13/00*

U.S. Cl. 252—186 **30 Claims**



1. A process for enriching air with oxygen from air by alternately stripping oxygen from a barium-containing oxygen acceptor composition bed material in the presence of air and causing oxygen to be accepted from air by said bed material comprising the steps of:

a. circulating a hot barium-containing bed material in a peroxide state through a reduction zone,

b. passed heated air at a pressure below about 15 psia through said bed material in said reduction zone to enrich the oxygen content of said air by stripping oxygen from said bed material and converting a portion of barium peroxide therein to the monoxide state,

c. circulating said converted bed material containing barium monoxide through a second, oxidizing zone,

d. passing heated, pressurized air through said bed material in said oxidizing zone so that said bed material accepts oxygen by converting a portion of the barium monoxide therein to barium peroxide, and to produce a lean air by-product gas,

e. maintaining the pressure in said oxidizing zone in a range of from about 1.5 to 10 times the pressure in said reduction zone,

f. returning said bed to said reduction zone,

g. maintaining said bed in a fluidized condition in one of said zones,

h. maintaining said bed in an air-entrained, upwardly moving condition in the other of said zones, and

i. collecting an enriched air product gas from said reduction zone having from about 22 to 75 mole percent oxygen therein.

3,892,683

HYDROCARBON ISOMERIZATION CATALYST

Dalia Germanas, Des Plaines, and Ernest L. Pollitzer, Skokie, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 293,232, Sept. 28, 1972, abandoned. This application May 17, 1974, Ser. No. 471,070

Int. Cl. B01j *11/78*

U.S. Cl. 252—442 **11 Claims**

1. A catalyst composition consisting essentially of a composite of from about 0.01 to about 2.0 wt. % of platinum group metal and from about 0.01 to about 5.0 wt. % of tin with a refractory inorganic oxide reacted with a Friedel Crafts metal halide in an amount to introduce at least 3.5 wt. % combined halogen to the composite, said composite having been treated at a temperature of from about 150° to about 350° C. with a polyhalo compound containing at least two chlorine atoms and selected from the group consisting of methylene halide, haloform, methylhaloform, carbon tetrahalide, sulfur dihalide, sulfuryl halide, thionyl halide, and thiocarbonyl tetrahalide to add at least about 0.1% combined halogen to the composite.

3,892,684

CLEAR FLEXIBILIZED EPOXY RESINS

Ted J. Logan, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

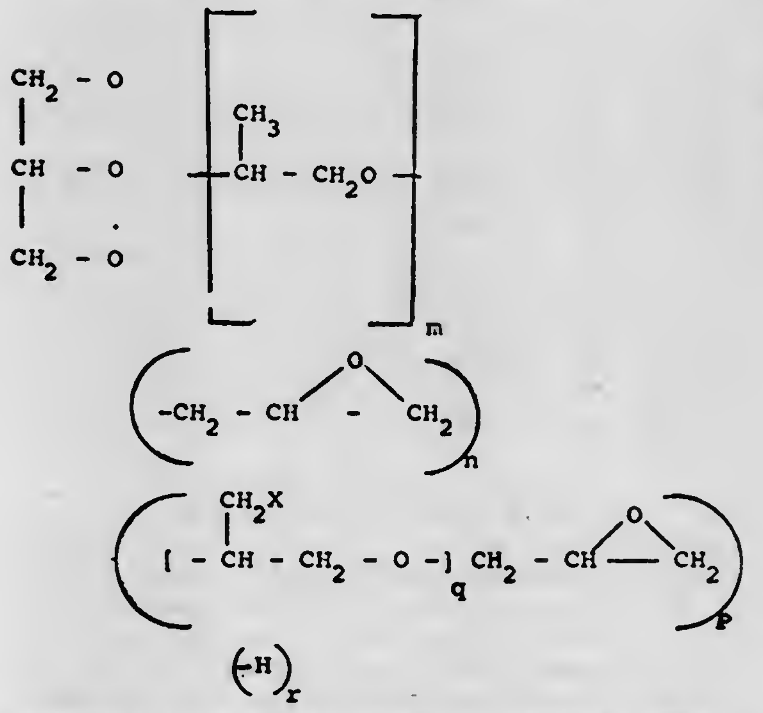
Division of Ser. No. 299,491, Oct. 20, 1972, Pat. No. 3,792,018, which is a continuation-in-part of Ser. No. 195,455, Nov. 3, 1971, abandoned. This application Oct. 5, 1973, Ser. No. 404,078

Int. Cl. C08g *30/10*

U.S. Cl. 260—2 N **3 Claims**

1. A precondensate for use in preparing clear flexibilized epoxy resin compositions, consisting essentially of

A. triepoxide flexibilizer having the formula



wherein X is chlorine or bromine, *n* is a number from 1 to 3, the sum of $n + p$ is equal to from 2 to 3, *r* is equal to from 0 to 1, the sum of $n + p + r$ is 3, and *m*, *n*, *p* and *r* are selected so as to give a molecular weight of from about 1,500 to about 2,500, and *q* is a number from 0 to 1.3, and

B. a stoichiometric type curing agent capable of curing epoxy resins at temperatures of 35°C or lower, the proportions of A and B being such that B is present in sufficient quantity to react stoichiometrically with all of A and with from about 75% to about 125% of an epoxy base resin when said epoxy base resin is mixed with said precondensate in such proportion that from about 5 to about 50 parts by weight of flexibilizer are present per 100 parts by weight of epoxy base resin.

3,892,685

POLYURETHANE FOAMS

Michael Stanley Pusey, High Wycombe, England, assignor to Dunlop Limited, London, England

Filed Nov. 28, 1973, Ser. No. 419,875

Claims priority, application United Kingdom, Dec. 6, 1972, 56312/72

Int. Cl. C08g *22/46, 33/02*

U.S. Cl. 260—2.5 BB **13 Claims**

1. A process for the production of a one-shot flexible flame-retardant polyurethane foam which comprises reacting together in a foam-forming reaction mixture:

a. a polymeric polyol;

b. an aromatic polyisocyanate

c. as a foam modifier a substance normally effective as a catalyst for the polymerization of tolylene diisocyanate selected from the group consisting of an alkali metal salt of a weak organic acid and an alkali metal salt of a weak inorganic acid and

d. as an additive to prevent the deleterious effect of said foam modifier on ageing of the foam, a substance which releases an aliphatic or aromatic sulphonic acid under the conditions of said foam-forming reaction.

3,892,686

CELLULAR PRODUCTS PRODUCED BY FOAMING AND CROSS-LINKING AROMATIC POLYSULFIDES

Gar Lok Woo, Tiburon, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 253,144, May 15, 1972. This application Mar. 26, 1973, Ser. No. 344,694

Int. Cl. C08g *53/08;* **C08j** *1/22*

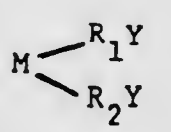
U.S. Cl. 260—2.5 A **40 Claims**

1. A sulfur-based foam produced by the steps of

I. mixing and stirring for a period of from 1 to 24 hours at a temperature of from about 120°to about 200°C. from about 0.5A to 50A parts of elemental sulfur with 1 part of an aromatic carbocyclic or heterocyclic compound containing from about 4 to 24 carbon atoms, said aromatic compounds being substituted by at least one group of the formula —OH or —NHR in which R is hydrogen or lower alkyl, said compound containing at least 2 ring hydrogen atoms per molecule, wherein the stabilization energy of said aromatic compound is at least 20 in the case of the carbocyclic compounds and 10 in the case of the heterocyclic compounds, and wherein A is equal to the average number of —OH or —NHR groups in the aromatic compound on a molar basis; and

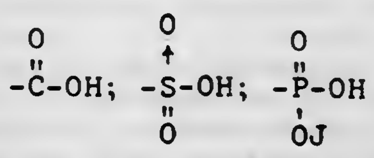
II. contacting the product of (I) at a temperature of about 100°to 200°C. with from about 0.002 to 0.50 acid equivalents per 100 g. of (I) of an acid of the formula equivalents per 100 g. of (I) of an acid of the formula

(i)



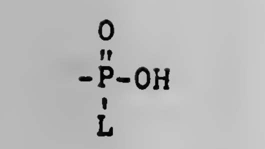
$$M\begin{matrix} \diagup R_1Y \\ \diagdown R_2Y \end{matrix}$$

in which Y is



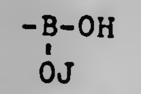
$$-\overset{\overset{O}{\parallel}}{C}-OH; \quad -\underset{\underset{O}{\parallel}}{\overset{\overset{O}{\uparrow}}{S}}-OH; \quad -\underset{\underset{OJ}{|}}{\overset{\overset{O}{\parallel}}{P}}-OH$$

in which J is H or alkyl of 1 to 6 carbon atoms;



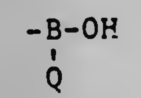
$$\begin{array}{c} O \\ \| \\ -P-OH \\ | \\ L \end{array}$$

in which L is H, hydrocarbyl of 1 to 18 carbon atoms, or is a group the same as the other group attached directly to the phosphorus atom through a carbon-phosphorus bond;



$$-\underset{OJ}{B}-OH$$

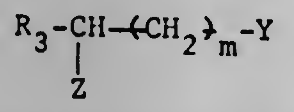
in which J is as previously defined; or



$$-\underset{Q}{B}-OH$$

in which Q is H, hydrocarbyl of 1 to 18 carbon atoms, or is a group the same as the other group attached directly to the boron atom through a carbon-boron bond; R_1 and R_2 are divalent hydrocarbon radicals of 1 to 20 carbon atoms which may be substituted by up to two halogen, hydroxyl, or mercapto groups per radical and may contain from 1 to 3 vinylene or ethynylene groups per radical, M is O, S_f or $—CH_2—_f$, f is an integer of 1 to 10, and the sum of the carbon atoms in R_1 and R_2 is from 2 to 18.

(ii)

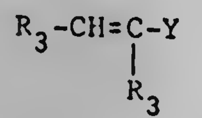


$$R_3-\underset{Z}{CH}-(CH_2)_m-Y$$

in which Y is as previously described, R_3 is H or a hydrocarbyl radical of 1 to 18 carbon atoms which may be substituted by up to two halogen, hydroxyl, or mercapto groups and may contain from 1 to 3 vinylene or ethynylene groups, Z is hydroxy, halogen, or mercapto group or H when m is greater than 0, m is an integer of 0 to 18, and the sum of the carbon atoms in R_3 and $—CH_2—$ is from 1 to 19.

iii. 2 to 5 unit addition oligomers of the unsaturated acids of (ii).

(iv)

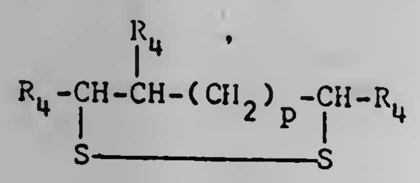


$$R_3-CH=\underset{R_3}{C}-Y$$

wherein R_3 and Y are as previously defined.

v. 2 to 5 unit addition oligomers of the acids of (iv).

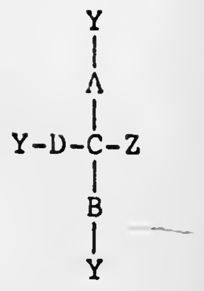
(vi)



in which R_4 is H, Y is as previously defined, an aliphatic hydrocarbon radical of 1 to 10 carbon atoms, or an aliphatic hydrocarbon radical of 1 to 10 carbon atoms substituted with acid group Y as previously defined, wherein at least one R_4 is a carboxy radical or a substituted aliphatic hydrocarbon radical, and wherein p is 1 or 2.

vii. Partially esterified polybasic acids which may contain a hydroxy, mercapto, carboxy, vinylene or ethynylene group, and have an acid equivalent weight (molecular weight divided by the number of free acid groups) within the range of about 100 to about 1,000.

(viii)

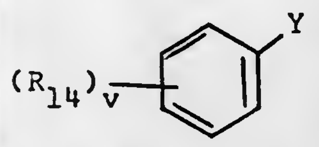


$$\begin{array}{rcl} & Y & \\ & | & \\ & A & \\ & | & \\ Y-D- & C & -Z \\ & | & \\ & B & \\ & | & \\ & Y & \end{array}$$

in which Y is as previously defined, A, B, and D are independently $C_nH_m(R_{11})_p(R_{12})_q$, n is an integer 0 to 5, p is an integer 0 to 2, q is an integer 0 to 1, R_{11} is alkyl of 1 to 4 carbon atoms, Z is H, OH, or SH, m is an integer equal to or less than $2n-p-q$, R_{12} is OH or SH, and in at least 2 of A, B and D, n is equal to or greater than 1.

ix. Acids of the formula $R_{13}Y$ in which Y is as previously defined and R_{13} is a hydrocarbon group of 3 to 24 carbon atoms in which Y is attached to R_{13} through an alicyclic group of 3 to 12 carbon atoms.

(x)



in which Y is as previously defined, R_{14} is SH, an aliphatic hydrocarbon radical of 2 to 24 carbon atoms or a cycloaliphatic hydrocarbon radical of 5 to 20 carbon atoms, and v is an integer 1 to 5.

III. contacting the product of (II) at a temperature in the range of 110°–160°C with a compound of the formula $R_5(CNX)_n$ in which R_5 is a polyvalent organic radical, X is a chalcogen having a molecular weight less than 33, and n is an integer of at least 2, said compound being employed in sufficient quantity to provide a number of isocyanate or isothiocyanate groups necessary to react with at least 10% of the carboxyl groups present in the product of (II), and

IV. cooling the product of (III) to ambient temperature.

3,892,687

QUATERNARY HYDROXYALKYL TERTIARY AMINE BASES AS POLYURETHANE CATALYSTS

Ibrahim Selim Bechara, Boothwyn; Felix Patrick Carroll, Chester, and Rocco Lawrence Mascioli, Media, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

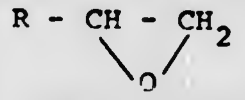
Filed July 9, 1973, Ser. No. 377,447

Int. Cl. C08g *22/36, 22/44, 33/04*

U.S. Cl. 260—2.5 AC **14 Claims**

1. In the method of preparing cellular polyurethane plastic by the reaction of a precursor comprising a polyol having at least two alkanol groups per molecule, an organic polyisocyanate compound containing at least two isocyanate groups per molecule, a volatilizable blowing agent, and a catalyst, the improvement which comprises carrying out said reaction in the presence of a tertiary amine selected from the group consisting of triethanolamine, methyldiethanolamine, ethyldiethanolamine, dimethylethanolamine, butyldiethanolamine, octadecyldiethanolamine, cyclohexyldiethanolamine, benzyldiethanolamine, benzylmethylethanolamine, diethylethanolamine, diethylcyclohexynolamine, methyloctadecylethanolamine, methyloctadecenylethanolamine, and dimethylbenzylamine and a quaternary hydroxyalkyl tertiary amine base catalyst prepared by reacting stoichiometric amounts of water or a carbinol selected from the group consisting of methanol, ethanol, butanol, phenol and [bis-phenol A] p,p'-dihydroxydiphenyldimethylmethane and an alkylene oxide selected from the group consisting of propylene oxide, ethylene oxide, 1,2-butylene oxide, 1,2-pentene oxide, styrene oxide, butadiene

epoxide, a lauryl-myristyl range olefin oxide having an average molecular weight of 189 and having its principal constituent the oxidation product of terminal straight chain mono-olefins which olefin is represented by the formula:



where R is a C_8–C_{12} straight chain alkyl radical and mixtures thereof and an excess amount of said tertiary amine at controlled temperatures in the range of 0° to about 100°C.

3,892,688

N-THIOCARBAMOYL-POLYALKYLENEPOLYAMINE GROUP CONTAINING HEAVY METAL ADSORBING RESINS

Kensuke Motani; Akihiko Nakahara, and Nobuyuki Kuramoto, all of Tokuyama, Japan, assignors to Tokuyama Soda Kabushiki Kaisha, Japan

Division of Ser. No. 339,382, March 7, 1973, Pat. No. 3,847,841. This application May 30, 1974, Ser. No. 474,723

Claims priority, application Japan, Mar. 11, 1972, 47-24424; Mar. 11, 1972, 47-24425; Mar. 11, 1972, 47-24426; Mar. 11, 1972, 47-24427

Int. Cl. C08f *27/02, 27/04*

U.S. Cl. 260—2.2 R **2 Claims**

1. A heavy metal adsorbing resin consisting essentially of a polymer comprising:

A. a backbone polymer selected from polystyrene, polyvinyl chloride, a copolymer of vinyl chloride with another copolymerizable monomer, a graft copolymer of a rubbery substance to which vinyl chloride has been grafted and a chlorinated polyolefin; and

B. a moiety attached to the backbone polymer which is selected from the N-thiocarbamoyl-polyalkylene polyamine group consisting of $—NH(CH_2CH_2NH)_nCSNHR$, wherein R is a hydrogen atom, alkyl moiety, aryl moiety, or acyl moiety, and n is from 1 to 100.

3,892,689

THIOUREIDO HEAVY METAL ADSORBING RESINS

Kensuke Motani; Akihiko Nakahara, and Nobuyuki Kuramoto, all of Tokuyama, Japan, assignors to Tokuyama Soda Kabushiki Kaisha, Yamaguchi, Japan

Division of Ser. No. 339,382, March 7, 1973, Pat. No. 3,847,841. This application May 30, 1974, Ser. No. 474,724

Claims priority, application Japan, Mar. 11, 1972, 47-24424; Mar. 11, 1972, 47-24425; Mar. 11, 1972, 47-24426; Mar. 11, 1972, 47-24427

Int. Cl. C08f *27/02, 27/04*

U.S. Cl. 260—2.2 R **2 Claims**

1. A heavy metal adsorbing resin consisting essentially of a polymer comprising:

A. a backbone polymer selected from polystyrene, polyvinyl chloride, a copolymer of vinyl chloride with another copolymerizable monomer, a graft copolymer of a rubbery substance to which vinyl chloride has been grafted and a chlorinated polyolefin; and

B. a moiety attached to the backbone polymer which is selected from at least one thioureide of the group consisting of —NHCSNHR, wherein R is a hydrogen atom, alkyl moiety, aryl moiety, or acyl moiety.

3,892,690

METHOD OF PREPARING POLYETHYLENE FOAM

Carl A. Setterstrom, Ho-Ho-Kus, N.J., assignor to Cities Service Company, Tulsa, Okla.

Continuation of Ser. No. 66,719, Aug. 25, 1970, abandoned. This application June 23, 1972, Ser. No. 265,865

Int. Cl. C08f *47/10, 3/04*

U.S. Cl. 260—2.5 HA **7 Claims**

1. A method for manufacturing a polyethylene foam which comprises:

a. withdrawing a solution of polyethylene in ethylene monomer from a heated, high pressure polyethylene polymerization zone wherein the ethylene monomer is the polymerization medium,

b. reducing the pressure of said solution to within the range of about 150 psi to about 1200 psi, vaporizing and separating some of the ethylene monomer from the solution while maintaining the solution temperature above the melting point of the polyethylene and reducing the ethylene content of the solution to a level of about 0.1 to about 5 weight percent,

c. extruding the heated, devaporized solution from step (b) into a recovery zone at atmospheric pressure and at a temperature at which the ethylene of the solution vaporizes and the polyethylene simultaneously solidifies, the polyethylene being simultaneously blown and solidified upon extrusion, and

d. recovering from step (c) a closed-cell, solidified polyethylene foam product having a density of less than 10 lbs. per cubic foot.

3,892,691

POLYURETHANE STRUCTURAL MEMBER

John R. White, Wadsworth, and James M. Hogan, Tallmadge, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed July 10, 1974, Ser. No. 487,067

Int. Cl. C08g *22/48, 22/06, 22/14*

U.S. Cl. 260—2.5 AM **2 Claims**

2. The structural member of claim 1 obtained by reacting a liquid reaction mixture comprising a mixture of 86 to 104 parts of a quasi-prepolymer of methane-di(phenyl isocyanate) and tripropylene ether glycol or dipropylene ether glycol having 18 to 26 weight percent free NCO, 82 to 78 parts of polypropylene ether triol, said triol being obtained by condensing propylene oxide on a triol generator selected from the generator consisting of trimethylol propane, trimethylol ethane and glycerol and capping with 10 to 25 mole percent of ethylene oxide to give a molecular weight of 4500 to 6500, 14 to 25 parts of 1,4-butanediol, and 0 to 10 parts of a blowing agent selected from the halohydrocarbons boiling below 110°F. or water to give a density of 50 to 70 pounds per cubic foot.

3,892,692

FLEXIBLE VINYL CHLORIDE-ETHYLENE COPOLYMER COMPOSITIONS

Charles A. Helberger, Princeton, N.J., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation-in-part of Ser. No. 335,018, Feb. 23, 1973, abandoned, which is a continuation of Ser. No. 199,783, Nov. 17, 1971, abandoned. This application May 13, 1974, Ser. No. 469,184

Int. Cl. C08f *45/38, 45/40, 45/50*

U.S. Cl. 260—23 XA **4 Claims**

1. A flexible, vinyl chloride-ethylene copolymer composition having a high degree of plasticizer permanence, permanent modulus index of less than about 3,000 pounds per square inch and a modulus of elasticity of less than 10,000 pounds per square inch at 23°C consisting essentially of:

a. between about 70 and about 85 weight percent of a vinyl chloride-ethylene copolymer having an ethylene content of between about 10 and about 40 mol percent, an intrinsic viscosity of between about 0.5 and 1.5 dl/g., a permanent modulus index of less than about 3,000 pounds per square inch at 23°C and a T_4 value above about 25°C, said permanent modulus index being defined as the 100% tensile modulus of a composition when containing 17 parts per hundred parts of copolymer of dioctyl phthalate plasticizer, and

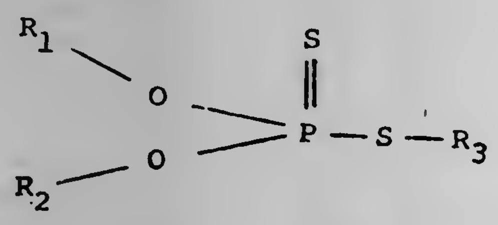
b. between about 15 and about 30 weight percent of a monomeric plasticizer selected from the group consisting of dialkyl phthalates, dialkyl alkanedicarboxylates, aryl and alkyl phosphates, said plasticizer containing between about 24 and about 35 major atoms selected from the group consisting of carbon, oxygen and phosphorus.

3,892,693
HIGH TEMPERATURE STABILIZED POLYBUTADIENE RESIN

Delmar F. Lohr, Jr., and Edward L. Kay, both of Akron, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Mar. 20, 1974, Ser. No. 452,775
Int. Cl. C08c *11/72;* **C18d** *9/14*
U.S. Cl. 260—23.7 R **36 Claims**

1. A cured heat-stabilized resin, comprising by weight, 100 parts of a resin selected from the class consisting of a homopolymer of butadiene or a copolymer of butadiene and styrene containing at least 40% of butadiene, at least 80% of the butadiene repeating units in the polymer or copolymer being in the 1,2-configuration, from 0.5 to about 5.0 parts of a metal soap wherein said metal is selected from the class consisting of calcium, zinc, magnesium, and cadmium and said soap is of a fatty acid having from 8 to about 26 carbon atoms, from 0.5 to about 6.0 parts of a peroxide curing agent giving radicals having the formula $R_2(CH_3)CO$. wherein R is a hydrocarbon radical of 1 to about 20 carbon atoms, and, from 0.5 to about 5.0 parts of an ester of O,O-dihydrocarbylphosphorodithioic acid having the formula



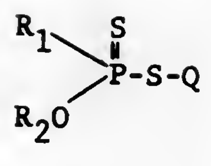
wherein R_1 and R_2 are hydrocarbyl groups having from 1 to about 25 carbon atoms and R_3 is a hydrocarbyl group containing from 1 to 25 carbon atoms.

3,892,694
SUBSTITUTED PHOSPHOROUS CONTAINING ALKYL THIO METHYL CARBOXYLATES

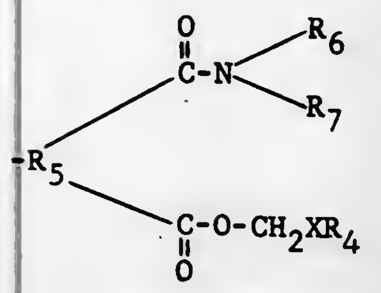
Charles Kezerian, Orinda, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 69,089, Sept. 5, 1970, Pat. No. 3,822,272, which is a division of Ser. No. 681,576, Nov. 8, 1967, Pat. No. 3,562,362. This application Apr. 1, 1974, Ser. No. 456,700
Int. Cl.² C07D *295/18*
U.S. Cl. 260—247.1 P **1 Claim**

1. A compound of the formula



in which R_1 is selected from the group consisting of alkyl having 1 to 4 carbon atoms and alkoxy having from 1 to 4 carbon atoms; R_2 is an alkyl group having from 1 to 4 carbon atoms; and Q is



in which

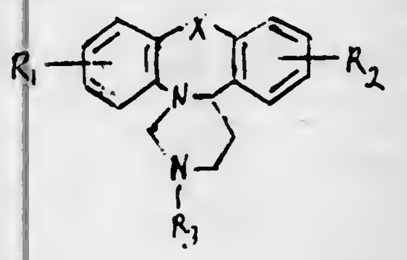
X is selected from the group consisting of thio and sulfinyl,
R_4 is an alkyl group having from 1 to 4 carbon atoms,
R_5 is a trivalent saturated hydrocarbon group having from 1 to 2 carbon atoms, and
R_6 and R_7 taken together is ethyleneoxyethylene.

3,892,695
PYRIMIDINO-DIBENZO-AZEPINE,-OXAZEPINE,-THIAZEPINE AND DIAZEPINE DERIVATIVES

Willem Jacob van der Burg, Heesch, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.

Filed Sept. 7, 1973, Ser. No. 396,251
Claims priority, application Netherlands, Sept. 23, 1972, 7212915
Int. Cl.² C07D *471/04*
U.S. Cl. 260—251 A **3 Claims**

1. A compound of the formula:



in which

X is selected from the group consisting of oxygen, sulfur, the group NR_4 and $—CH_2—$;
R_1 and R_2 are selected from the group consisting of hydrogen, halogen, hydroxy, alkyl having 1–6 carbon atoms, alkoxy having 1–6 carbon atoms, and trifluoromethyl;
R_3 is selected from the group consisting of hydrogen, alkyl having 1–6 carbon atoms, and
R_4 is selected from the group consisting of hydrogen and alkyl having 1–6 carbon atoms, and the pharmaceutically acceptable acid addition salts and quaternary ammonium compounds thereof.

3,892,696
POLYUREAS AND PREPARATION THEREOF

Louis L. Wood, Potomac, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed May 12, 1972, Ser. No. 252,793
Int. Cl. C08g *22/00, 51/34*
U.S. Cl. 260—29.2 TN **11 Claims**

1. A method for preparing aqueous polyurea solution which consists essentially of preparing a non-crosslinked polyurea by reacting a first component comprising polyisocyanate selected from the group consisting of polyaryl polyisocyanate, tolylene diisocyanate, triphenylmethane-4,4′4″,-triisocyanate, benzene-1,3,5-triisocyanate, toluene-2,4,6-triisocyanate, diphenyl-2,4,4′-triisocyanate, hexamethylene diisocyanate, xylylene diisocyanate, chlorophenylene diisocyanate, diphenylmethane-4,4′-diisocyanate, napthalene-1,5-diisocyanate, xylene-alpha,alpha′-diisothiocyante, 3,3′-dimethyl-4, 4′-biphenylene diisocyanate, 3,3′-dimethoxy-4, 4′biphenylene diisocyanate, 2,2′,5,5′-tetramethyl-4, 4′-biphenylene diisocyanate, 4,4′-methylenebis (phenylisocyanate)c 4,4′-sulfonylbis (phenylisocyanate), 4,4′-methylene di-ortho-tolylisocyanate, ethylene diisocyanate, ethylene diisothiocyanate, trimethylenediisocyanate and the like; and a second component comprising polyamine having from about 2 to about 23 pendant amine groups in a non-protonic carbonyl containing solvent selected from the group consisting of acetone, methyl ethyl ketone, cyclohexanone, acetaldehyde, propionaldehyde, butyradelhyde, and isobutyraldehyde; said polyamine and said solvent being first combined for from about 2 minutes to about 24 hours at a temperature of −5°C. to about 150°C.; the molar ratio of isocyanate groups in the polyisocyanate to amine groups in the polyamine being from about 1:1 to about 1:20 isocyanate to amine; adding water and removing the solvent from the non-crosslinked polyurea.

3,892,697
PREPARATION OF CROSSLINKED POLYMER LATEX FROM AQUEOUS EMULSION OF SOLVENT/POLYMER SOLUTION OF PRECURSOR LATEX PARTICLE SIZE

Oliver W. Burke, Jr., Fort Lauderdale, Fla., assignor to Exxon Research and Engineering Company, Linden, N.J.

Division of Ser. No. 767,790, Oct. 15, 1966, Pat. No. 3,622,127, which is a continuation-in-part of Ser. No. 621,997, March 7, 1967, Pat. No. 3,503,917, and Ser. No. 691,823, Dec. 19, 1967, abandoned. This application Sept. 2, 1971, Ser. No. 177,462
Int. Cl. C08f *45/24*
U.S. Cl. 260—29.6 CM **4 Claims**

1. A method of preparing a crosslinked polymer latex from an aqueous emulsion of solvent/polymer solution of precursor latex particle size, the solvent of the polymer solution being an organic solvent for the polymer and itself or as an azeotrope with water having a boiling point below that of water at atmospheric pressure, the polymer being essentially organic solvent soluble or dispersable and essentially water insoluble and cross-linkable, and said emulsion having been prepared with the aid of an emulsifying agent, which method consists essentially of:-

a. converting the emulsion to an aerosol of latex phase in an aqueous and solvent vapor phase by dispersing said emulsion into a flow of gas consisting essentially of steam at a temperature sufficiently high to vaporize solvent from said emulsion but not so high as to be deleterious to the stability of the emulsion and sufficient in quantity to vaporize essentially all of the solvent from said emulsion into said vapor phase,
b. effecting separation of the latex phase and the vapor phase from step (a) in a vacuum separator,
c. adding to the latex phase from step (b) cross-linking agent selected from the class consisting of the peroxide, hydroperoxide, azo, sulfur, selenium, and telluriam compound vulcanizing agents and elemental sulfur, selenium and telluriam, in the amount of from 0.1 to 10 parts by weight per 100 parts by weight of the polymer content of the latex,
d. flowing the latex phase containing the cross-linking agent through a constriction at a pressure, in the range of 1,000 to 10,000 p.s.i., to establish intimate association between the latex particles and the cross-linking agent, and
e. then subjecting the resulting latex phase to a cross-linking operation at a temperature below the maximum temperature for stability of the latex.

3,892,698
PROCESS FOR CONVERTING COARSE AQUEOUS EMULSION INTO UNIFORM FINE EMULSION

Oliver W. Burke, Jr., Ft. Lauderdale, Fla., assignor to Exxon Research and Engineering Company, Linden, N.J.

Division of Ser. No. 767,790, is a continuation-in-part of Ser. Nos. 621,997, March 7, 1967, Pat. No. 3,503,917, and Ser. No. 691,823, Dec. 19, 1967, abandoned. This application Sept. 2, 1971, Ser. No. 177,467
Int. Cl. C08f *45/24*
U.S. Cl. 260—29.6 XA **5 Claims**

1. A process for converting a relatively coarse aqueous emulsion prepared with the aid of an emulsifying agent, which emulsion has as its discontinuous phase droplets of a solvent-polymer cement the polymer of which is essentially organic solvent soluble or dispersible and essentially water insoluble and the solvent of which is an organic solvent for the polymer, into a relatively uniform fine emulsion in which the cement droplets forming the discontinuous phase are of precursor latex particle size said process consisting essentially of:

a. converting essentially all of the coarse emulsion to a fine emulsion of precursor latex particle size of relatively wide particle size distribution by subjecting it to ultradispersion by a combination of mechanical, hydraulic and ultrasonic shear, impact, and vibrating phenonema, at a selected temperature in the range of 40°–200° F., and
b. then reducing the particle size distribution of the fine emulsion produced by step (a) by forcing said fine emulsion at a selected temperature in the range of 60° to 180° F. through a resiliently restricted orifice at a pressure within the range of 1,000 to 10,000 p.s.i.

3,892,699
PROCESS FOR INHIBITING MICROBIAL GROWTH IN WATER-BASED PAINTS

Guenter K. Weisse, Northford, Conn., assignor to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 73,240, Sept. 17, 1970, abandoned, which is a continuation-in-part of Ser. No. 792,756, Jan. 21, 1969, abandoned. This application July 31, 1972, Ser. No. 276,865
Int. Cl. C09d *5/14;* **C08f** *45/64*
U.S. Cl. 260—29.6 MM **7 Claims**

1. In a process for inhibiting the growth of bacteria and fungi in a water-based paint composition the improvement consisting essentially of incorporating in said paint composition an inhibitive amount of a biocidal composition comprising a mixture of a metal salt of 2-mercaptopyridine-1-oxide selected from the group consisting of zinc, zirconium and tin salts and a bromosalicylanilide selected from the group consisting of 3,4′,5-tribromosalicylanilide, 4′,5-dibromosalicylanilide and mixtures thereof in amounts of from about 1:1 to about 1:8 parts by weight of said 2-mercaptopyridine-1-oxide salt to said bromosalicylanilide.

3,892,700

METHOD OF TREATING STABLE POLYMER LATEX TO PRODUCE THEREFROM STABLE LATEX HAVING DECREASED VISCOSITY

Oliver W. Burke, Jr., Ft. Lauderdale, Fla., assignor to Exxon Research and Engineering Company, Linden, N.J.

Division of Ser. No. 767,790, Oct. 15, 1968, Pat. No. 3,622,127, which is a continuation-in-part of Ser. No. 621,997, March 7, 1967, Pat. No. 3,503,917, and a continuation-in-part of Ser. No. 691,823, Dec. 19, 1967, abandoned. This application Sept. 2, 1971, Ser. No. 177,463

Int. Cl. C08f *45/24*

U.S. Cl. 260—29.6 R **4 Claims**

1. The method of treating a stable polymer latex, said latex being a relatively viscous combination consisting essentially of an aqueous continuum with polymer particles dispersed therein with a latex stabilizing emulsifier, to produce therefrom a stable latex having a decreased viscosity and a reduced number of dispersed polymer particles therein, which method comprises:

1. first heating the stable latex to a temperature which is sufficiently high to sensitize the latex by substantially reducing the proportion of its emulsifier which is stabilizing the latex particles but which is below the maximum temperature for stability of the latex,
2. then reducing the temperature of the so heated latex by at least 20° F. at a sufficiently rapid rate to avoid restoration to its initial value of the proportion of emulsifier stabilizing the particles by the passage of time, and
3. then subjecting the resulting sensitized latex prior to such restoration to mechanical working to cause reduction of the number of particles therein by effecting controlled coalescence of the polymer particles of the sensitized latex;

said polymer being essentially organic solvent soluble and essentially water insoluble.

3,892,701

METHOD OF TREATING AQUEOUS EMULSION OF SOLVENT/POLYMER SOLUTION OF PRECURSOR LATEX PARTICLE SIZE TO FORM LATEX

Oliver W. Burke, Jr., Ft. Lauderdale, Fla., assignor to Exxon Research and Engineering Company, Linden, N.J.

Division of Ser. No. 767,790, Oct. 15, 1968, Pat. No. 3,622,127, Continuation-in-part of Ser. No. 621,997, March 7, 1967, Pat. No. 3,503,917, Continuation-in-part of Ser. No. 691,323, Dec. 19, 1967, abandoned. This application Sept. 2, 1971, Ser. No. 177,464

Int. Cl. C08f *45/24*

U.S. Cl. 260—29.6 R **11 Claims**

1. The method of treating an aqueous emulsion of solvent-/polymer solution of precursor latex particle size to form a latex, the solvent of the solution being an organic solvent for the polymer and itself or as an azeotrope with water having a boiling point below that of water at atmospheric pressure, and the polymer of the solution being essentially organic solvent soluble or dispersible and essentially water insoluble, and the emulsion being formed with an emulsifier, which method consist essentially of:

a. converting the emulsion to an aerosol of latex in an aqueous/solvent vapor phase, by dispersing it in a flow of steam at temperatures sufficiently high to vaporize solvent from said emulsion but not so high as to be detrimental to the stability of the emulsion, and in a quantity sufficient to vaporize substantially all the solvent from the emulsion into said vapor phase,

b. effecting separation of the latex phase and the vapor phase of the aerosol in a vacuum separator, whereby the latex phase contains only residual solvent,

c. increasing the particle size of the dispersed particles of the latex to lie in the upper part of the colloidal size range by flowing the residual solvent containing latex phase through a resiliently restricted orifice at a pressure in the range of 1,000 to 10,000 p.s.i., and

d. thereafter subjecting the resulting latex to a vacuum stripping and concentrating operation.

3,892,702

PROCESS FOR PRODUCTION OF AEROSOL LATEX WITH CENTRIFUGAL FORCE

Oliver W. Burke, Jr., Ft. Lauderdale, Fla., assignor to Exxon Research and Engineering Company, Linden, N.J.

Division of Ser. No. 767,790, Oct. 15, 1968, Pat. No. 3,622,127, which is a continuation-in-part of Ser. Nos. 621,997, March 7, 1967, Pat. No. 3,503,917, and Ser. No. 691,823, Dec. 19, 1967, abandoned. This application Sept. 2, 1971, Ser. No. 177,465

Int. Cl. C08f *45/24*

U.S. Cl. 260—29.6 R **2 Claims**

1. An improvement in a process for producing latex, the process improved being of the type in which an aqueous emulsion of polymer/solvent solution which has been prepared with the aid of an emulsifying agent and has as its discontinuous phase droplets of such solution of precursor latex particle size, the polymer of such solution being essentially organic solvent soluble or dispersible and essentially water insoluble, and the solvent of such solution being an organic solvent for the polymer, is converted from an emulsion to a flow of aerosol of latex of the polymer in an aqueous/solvent vapor phase, and in which the aerosol droplets of latex are then coalesced into larger droplets in the flow to facilitate separation of the latex from the gaseous phase in a separating zone maintained at a reduced pressure which causes movement of the flow thereto, and

said improvement consisting essentially in subjecting the aerosol, on its way to the reduced pressure zone, to the action of centrifugal force sufficient for effecting such segregation or coalescence of the non-gaseous phase.

3,892,703

PROCESS FOR CONVERTING AQUEOUS EMULSION INTO AEROSOL OF LATEX OF POLYMER IN AQUEOUS/SOLVENT VAPOR PHASE

Oliver W. Burke, Jr., Ft. Lauderdale, Fla., assignor to Exxon Research and Engineering Company, Linden, N.J.

Division of Ser. No. 767,790, Oct. 15, 1968, Pat. No. 3,622,127, which is a continuation-in-part of Ser. Nos. 621,997, March 7, 1967, Pat. No. 3,503,917, and Ser. No. 691,823, Dec. 19, 1967, abandoned. This application Sept. 2, 1972, Ser. No. 177,466

Int. Cl. C08f *45/24*

U.S. Cl. 260—29.6 R **2 Claims**

1. In a process for converting an aqueous emulsion prepared with the aid of an emulsifier, which emulsion has as its discontinuous phase droplets of solvent/polymer solution of precursor latex particle size, into an aerosol of latex of the polymer in an aqueous/solvent vapor phase, said polymer being essentially organic solvent soluble or dispersible and essentially water insoluble, and the solvent of the solution being an organic solvent for the polymer, and said solvent itself or as an azeotope with water having a boiling point lower than that of water at atmospheric pressure, the improvement which consists essentially of:

a. providing a moving flow of gas consisting essentially of steam as an initial continuous phase, said flow having a temperature within the range of temperatures sufficiently high to vaporize solvent from said emulsion but not so high as to be detrimental to the stability of the emulsion,
b. at a first station dispersing the aqueous emulsion into said initial continuous phase at a rate to effect only a partial vaporization of the solvent of said solvent polymer solution and a corresponding condensation of steam, and
c. at one or more stations downstream from said first station adding peripherally to said flow a further quantity of steam within said temperature range sufficient to effect vaporization of substantially all the remaining solvent from said aqueous emulsion dispersion with a corresponding condensation of steam,

whereby the temperature of the emulsion particles and rate of evaporation of the solvent therefrom are controlled to facilitate maintainance of the stability of the aqueous emulsion during the stripping of the solvent to produce the aerosol of latex.

3,892,704

PROCESS FOR PRODUCING HARDENED CEMENT MATERIAL

Einosuke Higashimura, Tokyo, and Yasunobu Miura, Yokohama, both of Japan, assignors to Mitsubishi Rayon Co., Ltd., Japan

Division of Ser. No. 92,921, Nov. 25, 1970, abandoned. This application May 29, 1973, Ser. No. 364,417

Claims priority, application Japan, Nov. 26, 1969, 44-94780

Int. Cl. C08f *45/24*

U.S. Cl. 260—29.6 S **11 Claims**

1. A process for producing a hardened cement material which comprises curing a cement material composed of a base material consisting of cement or of cement and aggregates; water for mixing the cement material; 2 to 30% by weight (based on the water) of a water-soluble ethenoid monomer; and 0.02 to 20% by weight (based on the water) of a water-soluble crosslinking monomer, with a catalytic quantity of a redox catalyst system in the presence of 2–40% by weight (based on the water) of at least one compound selected from the group consisting of watersoluble alkali metal sulfates and carbonates.

3,892,705

RAPID SETTING POLYURETHANES FROM DIOLS AND POLYFUNCTIONAL ISOCYANATES

Franciszek Olstowski, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 358,245, May 7, 1973, Pat. No. 3,801,532, which is a continuation-in-part of Ser. No. 205,687, Dec. 7, 1971, abandoned. This application Dec. 7, 1973, Ser. No. 422,825

Int. Cl. C08g *51/34*

U.S. Cl. 260—30.4 N **20 Claims**

1. A rigid, non-cellular composition having a density of at least about 1 gram/cc, a percent elongation of less than 100, and which is demoldable without the application of an external source of heat, within about 5 minutes after admixture of the components of the composition which is the reaction product of a polyurethane-forming composition comprising

A. a dihydroxyl-containing compound having a hydroxyl equivalent weight of less than about 250;
B. an organic polyisocyanate having an NCO functionality of at least about 2.5;
C. a liquid modifier compound having a boiling point of at least about 150°C or mixture of such compounds and which moderates the reaction exotherm between components (A), (B) and (D) without sustantial reaction therewith selected from cyclic polyethers and mixtures thereof, said polyethers being cyclic tetramers and above of ethylene oxide, propylene oxide, butylene oxide or epichlorohydrin; and
D. an organometallic catalyst; wherein components (A) and (B) are present in quantities such that the NCO:OH ratio is from about 0.8:1 to about 1.5:1, component (C) is present in quantities of from about 10 to about 50 percent by weight of the combined weights of components (A), (B) and (C); and component (D) is present in quantities of from about 0.1 to about 10 percent by weight of the combined weight of components (B), (B) and (C).

3,892,706

METHOD OF PROCESSING REFUSE FOR CONVERSION INTO SHAPED BODIES

Raimund Jetzer, Nussbaumen, Switzerland, assignor to Jetzer Engineering AG, Vaduz, Liechtenstein

Continuation-in-part of Ser. No. 7,996, Feb. 2, 1970, abandoned. This application Aug. 9, 1972, Ser. No. 279,171

Claims priority, application Switzerland, Feb. 6, 1969, 1803/69; June 12, 1972, 8749/72

Int. Cl. C08g *51/04*

U.S. Cl. 260—37 R **31 Claims**

1. A method of processing refuse for conversion into shaped bodies, comprising the steps of subjecting a quantity of refuse containing liquid and solid constituents to aerobic decomposition so as to liberate the fiber content of said refuse; treating the resulting product to sterilize said product, adjust the moisture content of said product to within a predetermined range and convert said product into a mass of substantially dry heterogeneous fiber-containing matter; segregating said mass into a plurality of fractions including one fraction containing the matter of largest particle size, the remainder of said fractions containing the matter of smaller particle size and including a fibrous component and another component; separating said fibrous component from said other component; and converting said fibrous component into at least one shaped body.

3,892,707

SILICONE ELASTOMER COMPOSITIONS

Kunio Itoh, and Naohiko Harada, both of Annaka, Japan, assignors to Shinetsu Chemical Company, Japan

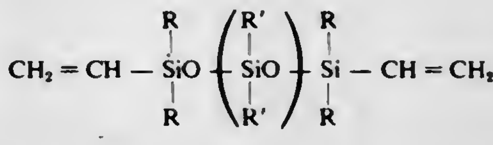
Filed May 10, 1974, Ser. No. 468,982

Claims priority, application Japan, May 15, 1973, 48-53902

Int. Cl. C08g *51/04*

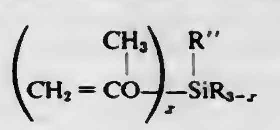
U.S. Cl. 260—37 SB **9 Claims**

1. A silicone elastomer composition consisting essentially of (a) 100 parts by weight of diorganovinylsilyl-terminated diorganopolysiloxane having a viscosity of from 100 to 500,000 cs. at 25°C, represented by the general formula



$$CH_2=CH-\overset{R}{\underset{R}{|}}\!\!\!\!\!\!SiO\left(\overset{R'}{\underset{R'}{SiO}}\right)\overset{R}{\underset{R}{Si}}-CH=CH_2$$

where R and R′ each are unsubstituted or substituted monovalent hydrocarbon groups and *n* is a possitive integer, (b) from 0.5 to 10 parts by weight of an unsaturated double bond-containing isopropenoxysilane represented by the general formula



$$\left(CH_2=\overset{CH_3}{\overset{|}{C}}O-\right)_x\overset{R''}{\overset{|}{Si}}R_{3-x}$$

where R is as defined above, R″ is a monovalent organic group having an unsaturated double bond bonded to a silicon atom by the Si-C linkage, and *x* is 1, 2 or 3, or a product of the partial hydrolysis-condensation thereof, (c) an organohydrogenpolysiloxane having at least two Si—H linkages in a molecule, represented by the general formula

$$(R)_a(H)_bSiO_{\frac{4-a-b}{2}}$$

where R is as defined above, *a* is from 1 to 2 and *b* is from 0.1 to 1.2 with the proviso that (*a*+*b*) is from 2.0 to 2.7, in an amount such that the Si-bonded hydrogen atoms are given in a ratio of from 0.5 to 1.2 per vinyl group directly bonded to the silicon atom in component (a), and (d) platinum or a platinum compound in a catalytic amount.

3,892,708

FLUIDISABLE POWDER BASED ON A HEAT-STABLE BIS-IMIDE RESIN

Michel Cronenberger, Lyon; Serge Laurent, Bron, and Maurice Mallet, Lyon, all of France, assignors to Rhone-Poulenc, S.A., Paris, France

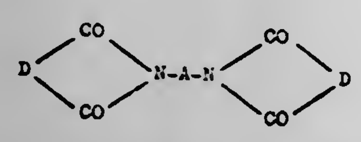
Continuation of Ser. No. 285,216, Aug. 31, 1972, abandoned, which is a continuation of Ser. No. 91,610, Nov. 20, 1970, abandoned. This application June 17, 1974, Ser. No. 480,279

Claims priority, application France, Nov. 24, 1969, 69.40392; Oct. 1, 1970, 70.35524

Int. Cl. C08g *51/04*

U.S. Cl. 260—37 N **12 Claims**

1. A fluidisable powder in the form of particles of dimensions between 5 and 200μ consisting of a mixture comprising:
a. 5 to 95 percent by weight of a prepolymer obtained by heating at between 50° and 250°C., an N,N′-bis-imide of an unsaturated discarboxylic acid of general formula



(I)

in which D represents a divalent radical containing a carbon-carbon double bond and A represents a divalent radical containing 2 to 30 carbon atoms, and a di-primary diamine of general formula:

$$H_2N - B - NH_2 \qquad (II)$$

in which B represents a divalent radical containing 2 to 30 carbon atoms, and
b. 95 to 5 percent by weight of glass micro-spheres and/or mica particles.

3,892,709

ALDEHYDE-POLYAMINE OR ALDEHYDE-POLYAMINE-AROMATIC COMPOUND CONDENSATION RESIN ADSORBENT FOR HEAVY METALS AND HEAVY METALLIC COMPOUNDS

Nakaaki Oda; Shozo Iwasa; Mitsuru Idohara; Yoshio Horie; Takeo Fukui, and Naomichi Takasaka, all of Takaoka, Japan, assignors to Nippon Soda Company, Limited, Japan

Division of Ser. No. 209,573, Dec. 20, 1971, abandoned. This application Dec. 14, 1973, Ser. No. 424,680

Int. Cl. C08g *51/04*

U.S. Cl. 260—39 R **14 Claims**

1. A powder cement composition for fixing heavy metals or heavy metallic compounds, which comprises 99.9 to 50% of cement and 0.1 to 50% of an adsorbent prepared by a reaction between an aldehyde and a polyamine selected from the group consisting of thiourea and rubeanic acid.

3,892,710

ABS PLASTIC COMPOSITIONS CONTAINING HALOGENATED ARYL FLAME RETARDANTS

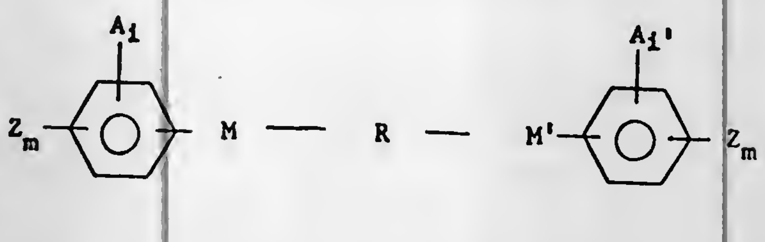
Arnold L. Anderson, and Robert J. Nulph, both of Alma, Mich., assignors to Michigan Chemical Corporation, St. Louis, Mich.

Continuation-in-part of Ser. No. 260,240, June 6, 1972, abandoned. This application Feb. 8, 1973, Ser. No. 330,800The portion of the term of this patent subsequent to July 16, 1991, has been disclaimed.

Int. Cl. C08f *45/60*

U.S. Cl. 260—45.9 R **29 Claims**

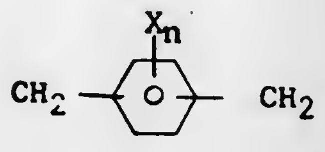
1. A plastic composition containing acrylonitrile-butadiene-styrene polymer having incorporated therein a flame retardant which is a halogenated aryl compound having the formula:



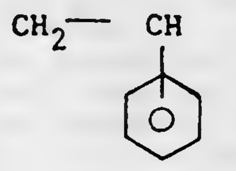
wherein Z is selected from the group consisting of bromine or chlorine; *m* and *m′* are integers having a value of 1–5; *i* and *i′* are integers having a value of 0–2; M and M′ are each independent and are selected from the group consisting of oxygen, nitrogen or sulfur with the proviso that M and M′ cannot concurrently be oxygen in both cases and where M and/or M′ is nitrogen, the formula is

$$\overset{H}{-N-}$$

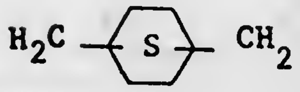
, A is selected from the group consisting of chlorine, cyano, nitro, lower alkoxy, lower alkyl, fluorine, dialkylamino, phenyl, halo-phenyl, benzyl, or halo- benzyl; and R is selected from the group consisting of
(a) alkylene group having from one to six carbon atoms
(b) $CH_2—CH(OH)—CH_2$
(c) $CH_2—CH(CH_2OH)—CH_2$
(d) $(CH_2)_w— O— (CH_2)_w$
where *w* = 1–6
(e)



where
X = H, Cl, Br
n = 4
(f) $CH_2— C(O)— CH_2$
(g)



(h)



where S = saturated ring

3,892,711

POLY(PHENYLENE OXIDE) PLASTIC COMPOSITIONS CONTAINING BIS-PHENOXY FLAME RETARDANTS

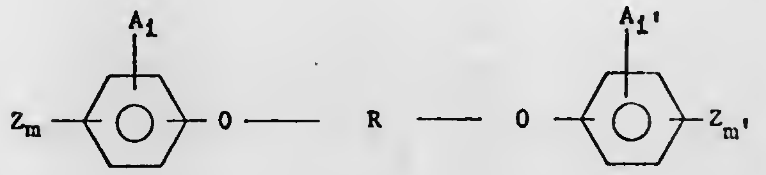
Arnold L. Anderson, Alma, Mich., assignor to Michigan Chemical Corporation, St. Louis, Mich.

Continuation-in-part of Ser. No. 260,240, June 6, 1972, abandoned. This application Feb. 8, 1973, Ser. No. 330,857The portion of the term of this patent subsequent to May 14, 1991, has been disclaimed.

Int. Cl. C08q *51/60*

U.S. Cl. 260—45.9 R **14 Claims**

1. A plastic composition containing poly(phenylene oxide) having incorporated therein an effective amount of a flame retardant which is a compound having the formula:



wherein Z is selected from the group consisting of bromine or chlorine; *m* and *m′* are integers having a value of 1–5; *i* and *i′* are integers having a value of 0–2; A is selected from the group consisting of cyano, nitro, lower alkoxy, lower alkyl, fluorine, dialkylamino, phenyl, halo-phenyl, benzyl and halobenzyl; and R is selected from the group consisting of

(a) $CH_2—CH(OH)—CH_2$
(b) $CH_2—CH(CH_2OH)—CH_2$
(c) $(CH_2)_w—O—(CH_2)_w$ where w = 1-6
(d) where X = H, Cl, Br
n = 4
CH_2 CH_2

(e) $CH_2—C(O)—CH_2$
(f) $CH_2—CH$

(g) N_2C CH_2 where S = Saturated ring

3,892,712

PROCESS FOR PRODUCED STABILIZED OLEFIN

Sergio Arrighetti; Sebastiano Cesca; Giuseppe Ghetti, and Eugenio Vajna, all of San Donato Milanese, Italy, assignors to Snam Progetti S.p.A., San Donato Milanese, Italy

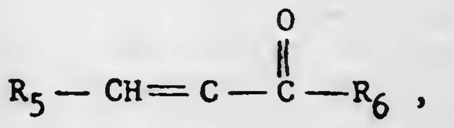
Filed July 28, 1972, Ser. No. 275,936

Claims priority, application Italy, July 31, 1971, 27014/71

Int. Cl. C08f *15/40, 27/18*

U.S. Cl. 260—66 **7 Claims**

1. A process for preparing an olefin terpolymer which is stabilized against oxidative ageing, which comprises reacting in a hydrocarbon solvent and at a temperature between 0° and 150°C.
a. a terpolymer of ethylene, another alpha olefin, and a polyene which is a methyl-cyclopentadienyl norbornenyl methane having in addition to a double bond for participating in the terpolymer formation, conjugated double bonds in the cyclopentadienyl substituent, with
b. a dienophilic agent of the general formula:



$$R_5 — CH = C — \overset{\overset{O}{\|}}{C} — R_6 \ ,$$

wherein R_5 can be hydrogen or alkyl, aryl, cycloalkyl or arylalkyl radicals having up to 8 carbon atoms and R_6 can be an alkyl, alkenyl, cycloalkyl, aryl or arylalkyl radical having up to 8 carbon atoms.

3,892,713

CURE OF POLYURETHANES WITH MIXED CURATIVES COMPRISING HYDROXY TERTIARY AMINES

John Burkus, Woodbridge; Robert G. Leclerc, Wolcott, and Louis V. Esposito, Naugatuck, all of Conn., assignors to Uniroyal, Inc., New York, N.Y.

Filed Mar. 25, 1974, Ser. No. 454,646

Int. Cl. C08g *22/38*

U.S. Cl. 260—75 NC **11 Claims**

1. A method of curing an isocyanate terminated polyurethane prepolymer comprising admixing therewith, in amount sufficient to cure the prepolymer, (A) hydroquinone bis (beta-hydroxyethyl) ether or (B) 1,4-butanediol, with (C) phenyl diethanol amine and (D) triisopropanol amine, the ratio of (C) to (D) being from 98:2 to 50:50 by weight, the equivalents ratio of (A) to (C) plus (D) being from 17:1 to 2.5:1, and the equivalents ratio of (B) to (C) plus (D) being from 18:1 to 2.5:1, and subjecting the mixture to curing conditions.

3,892,714

HYDROXY COPOLYMER REACTED WITH A LACTONE AND POLYISOCYANATE CROSSLINKED

Keith George Sampson, Clophill; Victor Frederick Jenkins, St. Albans, and Anthony John Bunker, Kempston, all of England, assignors to Laporte Industries Limited, London, England

Filed Dec. 4, 1972, Ser. No. 311,502

Claims priority, application United Kingdom, Dec. 9, 1971, 57175/71

Int. Cl. C08g *22/16*

U.S. Cl. 260—77.5 CR **7 Claims**

1. A polymeric composition comprising:
a. from 5% to 85% by weight, main chains comprising a copolymer of at least two ethylenically unsaturated monomers at least one of which is an ethylenically unsaturated hydroxy alkyl ester having the formula $CH_2 = CR_1 — COOR_2$ in which R_1 is hydrogen or an alkyl group and R_2 is an alkyl group to which at least one methylol group is attached
b. from 5 to 85% by weight, side chains comprising chains derived from an epsilon caprolactone attached to oxygen remnants of hydroxyl groups on said copolymer and
c. from 10% to 40% by weight linking chains comprising di-isocyanate which cross-link said side chains.

3,892,715

POLYURETHANES WITH A NEW CATALYST SYSTEM

Yves Bonin, and Jean Robin, both of Lyon, France, assignors to Rhone-Poulenc, S.A., Paris, France

Filed Aug. 3, 1973, Ser. No. 385,344

Claims priority, application France, Aug. 7, 1972, 72.28433

Int. Cl. C08g *22/34, 22/40*

U.S. Cl. 260—77.5 AB **5 Claims**

1. Process for preparing a polyurethane by reacting a polyol and a polyisocyanate in a reaction zone, which comprises introducing into the reaction zone, simultaneously but separately from one another, the polyol mixed with a catalytic amount of acetylacetone and the polyisocyanate to which has been added a catalytic amount of a ferric halide, at least one mol of acetylacetone being used per gram atom of iron in the ferric halide.

3,892,716

METHOD FOR MAKING CARBOXY FREE POLYAMIDE ACID SALTS DERIVED THEREFROM

Edith M. Boldebuck, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 148,154, May 28, 1971, Pat. No. 3,737,478. This application Feb. 5, 1973, Ser. No. 329,428The portion of the term of this patent subsequent to June 5, 1990, has been disclaimed.

Int. Cl.^{2} C08G *69/48*

U.S. Cl. 260—78 TF **2 Claims**

1. A method for producing resinous polyamideimide substantially free of carboxy radicals and having from 1 to 2.3 meq. of polyamide acid salt radicals per gm. of polyamideimide, which comprises, adding a base to a resinous, carboxy-free polyamideimide at a temperature up to 150°C., while the polyamideimide is substantially dissolved in solvent comprising an inert aprotic organic solvent, where the base is characterized by having an ionization constant greater than 10^{-2} in water at 25°C., and is employed in the resulting mixture at a concentration which is at least sufficient to neutralize any carboxy radicals which may be present and provide a ratio of moles of base, per mole of imide functionality of the polyamideimide having a value of from about 0.01 to about 1.2, whereby resinous imide values are converted to amide acid salt values.

3,892,717

PROCESS FOR PRODUCING MALEIC ACID MODIFIED POLYMERIZED ETHYLENE WAX

Akikazu Mori; Hideo Nara, both of Iwakuni; Toshiki Kataoka, Yamaguchi; Teiji Kato; Toru Tomoshige, both of Iwakuni; Katsumi Funakoshi, and Toshio Kobayashi, both of Otake, all of Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Division of Ser. No. 146,849, May 25, 1971, abandoned. This application July 9, 1973, Ser. No. 377,428

Int. Cl. C08f *27/00*

U.S. Cl. 260—78.4 D **11 Claims**

1. A process for producing a waxy maleic acid modified ethylene polymer comprising polymerizing ethylene in a saturated hydrocarbon as a polymerization solvent in the presence of hydrogen, an α-olefin or mixture thereof using as a catalyst a halogen compound of titanium, vanadium or mixtures thereof supported on a carrier composed of a hydrocarbon-insoluble magnesium-containing compound, and an organoaluminum compound under the following conditions:

a. the atomic ratio of aluminum to titanium, vanadium or mixtures thereof in the catalyst being 1–100:1;

b. the concentration of the catalyst in the polymerization solvent being such that the atom amount of the aluminum in the catalyst is 0.01 to 10 millimoles per liter of the polymerization solvent;

c. ethylene, hydrogen and α-olefin being fed in amounts such that the vapor phase in the polymerization vessel excepting the vapor portion of the solvent consists of 5 to 90 molar percent of hydrogen, 0 to 35% of α-olefin and the remainder being ethylene; and

d. the polymerization temperature being a temperature at which the resultant polymer is present as liquid, and the polymerization pressure being from 20 to 100 kg/cm^2;

to form said waxy ethylene polymer having a density of 0.85 to 0.98 g/cm^3 and a viscosity average molecular weight of 400 to 20,000; separating said waxy ethylene polymer from the polymerization solvent; feeding oxygen or an oxygen-containing gas into a melt of said waxy ethylene polymer at a temperature above the melting point of said ethylene polymer and up to 140°C to obtain an oxidized ethylene polymer containing peroxide groups and an oxygen content of 0.1 to 1% by weight; and reacting said oxidized ethylene polymer with a maleic acid compound in the absence of oxygen at 140°C. to 180°C.

3,892,718

INHIBITION OF DIALLYLIC PHTHALATE POLYMER COMPOSITIONS

Carl Leonard Wright, Pennington, N.J., assignor to FMC Corporation, New York, N.Y.

Filed June 1, 1973, Ser. No. 366,176

Int. Cl. C08f *3/60*

U.S. Cl. 260—78.4 UA **4 Claims**

1. A thermosetting diallylic phthalate prepolymer composition comprising (a) a diallylic phthalate prepolymer selected from the group consisting of diallyl isophthalate and diallyl orthophthalate prepolymers, (b) from about 0.001 to 0.1 percent by weight phenothiazine based on the weight of prepolymer, and (c) a peroxide catalyst in sufficient amount to convert the diallylic phthalate prepolymer to the thermoset state at elevated temperatures.

3,892,719

PROCESS FOR PRODUCING LACTONIZED ACRYLIC POLYMER PRODUCTS

Yasuo Matsumura; Kunio Maruyama; Minoru Akiyama, and Katsutoshi Kanetsuki, all of Okayama, Japan, assignors to Japan Exlan Company Limited, Japan

Continuation of Ser. No. 203,886, Dec. 1, 1971, abandoned. This application Oct. 11, 1973, Ser. No. 405,638

Claims priority, application Japan, Dec. 29, 1970, 45-125336

Int. Cl. C08f *15/02, 27/14*

U.S. Cl. 260—79.3 MU **8 Claims**

1. In a method for producing a lactonized acrylic product by treating an acrylic copolymer containing at least 50 mol percent acrylonitrile and at least one monomer having a hydroxyl group or capable of forming a hydroxyl group or a fiber or film shaped from such copolymer with an acid medium containing 40 percent or less of an acid selected from the group consisting of an organic acid, an inorganic acid and mixtures thereof having a pH not higher than 2, the improvement comprising adding to said acid medium at least one compound selected from the group consisting of oxyacids of chlorine and the alkaline metal, alkaline earth or ammonium salts thereof in an amount of at least 0.01 mol/liter.

3,892,720

POLYMERIZABLE HYDROXY-CONTAINING ESTERS OF AMIDO-SUBSTITUTED SULFONIC ACIDS

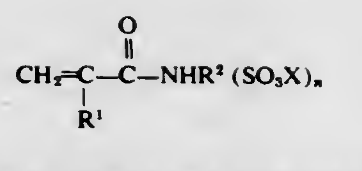
Richard William Jahnke, Mentor-on-the-Lake, Ohio, assignor to The Lubrizol Corporation, Cleveland, Ohio

Division of Ser. No. 375,257, June 29, 1973, abandoned. This application Jan. 14, 1974, Ser. No. 433,321

Int. Cl. C08f *3/92*

U.S. Cl. 260—79.5 C **12 Claims**

1. An addition polymer of a compound or mixture of compounds of the formula

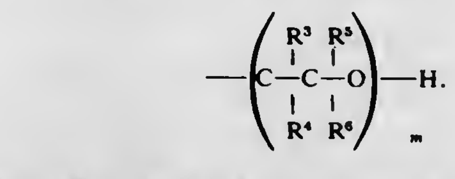


$$CH_2{=}\underset{\substack{|\\R^1}}{C}-\overset{\substack{O\\\|}}{C}-NHR^2\,(SO_3X)_n$$

wherein: R^1 is hydrogen, halogen or a lower alkyl or substituted lower alkyl radical;

R^2 is a divalent or trivalent hydrocarbon or substituted hydrocarbon radical;

each "X" is individually hydrogen or



$$-\left(\begin{matrix} R^3 & R^5 & \\ | & | & \\ C- & C- & O \\ | & | & \\ R^4 & R^6 & \end{matrix}\right)_m - H.$$

at least one X being other than hydrogen;

each of R$_3$, R^4, R^5 and R^6 is hydrogen or a hydrocarbon or substituted hydrocarbon radical, at least one of R^3, R^4, R^5 and R^6 being hydrogen;

m is an integer from 1 to 10, and

n is 1 or 2;

wherein the substituents on said substituted radicals do not alter significantly their character or reactivity.

3,892,721

COPOLYMERIZED HARD PLASTIC HYDROGEL COMPOSITIONS

Robert Gustafson, 5129 Louis Ave., Chicago Ill. 60625

Continuation-in-part of Ser. No. 168,769, Aug. 3, 1971, Pat. No. 3,728,315. This application Nov. 10, 1972, Ser. No. 305,303

Int. Cl. C08f *15/40*

U.S. Cl. 260—80.75 **1 Claim**

1. A cross-linked polymerized composition comprising a copolymer including from about 10 percent to about 35 percent by weight of triethylene glycol dimethacrylate, from about 5 percent to about 35 percent by weight of hydroxy ethyl methacrylate, and from about 55 percent to about 70 percent of n-butyl methacrylate or ethyl methacrylate.

3,892,722

METHOD FOR PREPARING STEREOREGULAR 1,4-TRANSPOLYMERS OF 2-ALKYL- BUTADIENES-1,3 OR STEREOREGULAR 1,4-TRANSCOPOLYMERS OF 2-LKYLBUTADIENES-1,3 WITH BUTADIENE-1,3

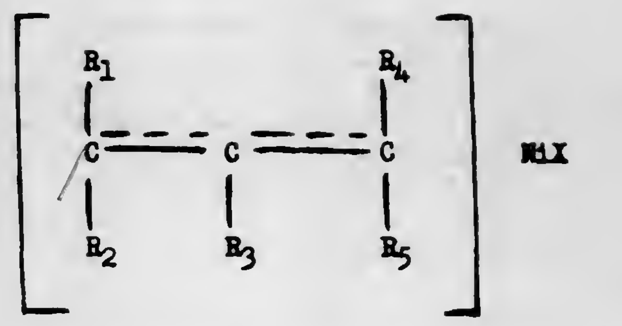
Boris Davidovich Babitsky, ulitsa Krasnogo Kursanta, 7, kv. 9; Vadim Nikolaevich Beresnev, ulitsa Pulkovskaya, 3, kv. 164; Tatyana Georgievna Bolshakova, ulitsa Lensoveta, 87, kv. 85; Natalya Anatolievna Buzina, prospekt Slavy, 16, kv. 129, all of Leningrad; Valentin Alexandrovich Vasiliev, ulitsa Gorskaya, 13. Leningradskaya oblast; Nadezhda Andreevna Kalinicheva, ulitsa Zaitseva, 17/23, kv.26, Leningrad; Vitaly Abramovich Kormer, ulitsa Zheleznovodskaya, 62, kv. 2, Leningrad; Mark Iosifovich Zobach, prospekt Annikova, 28. kv. 52, Leningrad; Ivan Ignatievich Radchenko, Apraksin pereulok, 11, kv. 2, Leningrad, and Taisiya Danilovna Khrustaleva, ulitsa Voskova, 16, kv. 26, Leningrad, all of U.S.S.R.

Filed June 15, 1973, Ser. No. 370,472

Int. Cl. C08d *1/18, 3/08*

U.S. Cl. 260—82.1 **4 Claims**

1. A method for preparing polymers selected from the group consisting of stereoregular 1,4-trans-polymers of 2-alkylbutadienes-1,3 and stereoregular 1,4-trans copolymers of 2-alkylbutadienes-1,3 with butadiene-1,3, consisting essentially of polymerizing monomers selected from the group consisting of 2-alkylbutadienes-1,3 and mixtures of 2-alkylbutadienes-1,3 with butadiene-1,3 in an aqueous medium in the presence of π-allyl complexes of nickel having the formula



where R$_1$, R$_2$, R$_3$, R$_4$ and R$_5$ are each selected from the group consisting of hydrogen, alkyl, aryl, and halide, and X is a singly charged anion, and subsequently isolating the main products from the reaction mixture.

3,892,723

P-GLU-TRP-SER-TYR-D-PGL-LEU-ARG-PRO-GLY-NH$_2$ AND INTERMEDIATES

Wayne A. McKinley, Wallingford, and Dimitrios Sarantakis, Audubon, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Feb. 4, 1974, Ser. No. 439,490

Int. Cl. C07c *103/52;* **A61k** *27/00*

U.S. Cl. 260—112.5 **5 Claims**

1. A compound selected from the class consisting of

L-p-Glu-L-Trp-L-Ser-L-Tyr-D-Pgl-L-Leu-L-Arg-L-Pro-Gly-NH$_2$ (I)

and

R^4-L-p-Glu-L-Trp-L-Ser(R^3)-L-Tyr(R^2)-D-Pgl-L-Leu-L-Arg(N^G-R^1)-L-Pro-Gly-X (III)

and its non-toxic salts; wherein

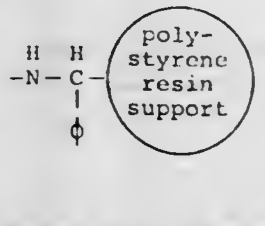
R^1 is a protecting group for the N , N and N nitrogen atoms of arginine selected from the group consisting of nitro, tosyl, benzyloxycarbonyl, adamantyloxycarbonyl and tert-butyloxycarbonyl or R^1 is hydrogen;

R^2 is a protecting group for the phenolic hydroxyl group of tyrosine selected from the group consisting of acetyl, tosyl, benzoyl, tert-butyl, tetrahydropyranyl, trityl, benzyl, 2,6 dichlorobenzyl, p-bromobenzyloxycarbonyl and benzyloxycarbonyl or R^2 is hydrogen;

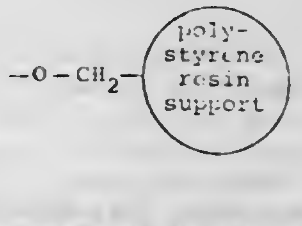
R^3 is a protecting group for the alcoholic hydroxyl group of serine and is selected from the group consisting of acetyl, tosyl, benzoyl, tetrahydropyranyl, tert-butyl, trityl, 2,6 dichlorobenzyl and benzyl or R^3 is hydrogen;

R^4 is selected from the group consisting of hydrogen or an α-amino protecting group, with the proviso that at least one of R^1, R^2 and R^3 is a protecting group; and

X is selected from the group consisting of NH$_2$, OH, O-(lower)alkyl, O-benzyl and an anchoring bond linked to a solid polystyrene resin represented by one of the formula



and



wherein said polystyrene resin is cross linked through the phenyl group on each second carbon atom of the alkyl chain of said polystyrene and wherein "Pgl" means phenylglycyl.

3,892,724

1-(PHENYLAZO OR SUBSTITUTED PHENYLAZO)-2-IMIDAZOLIDINONES

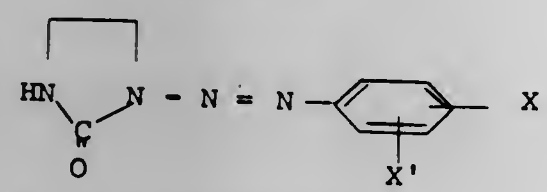
Willy D. Kollmeyer, and Samuel B. Soloway, Modesto, both of Calif., assignors to Shell Oil Company, Houston, Tex.

Filed Jan. 26, 1973, Ser. No. 326,734

Int. Cl.^{2} A01N *9/22;* **C07C** *115/00*

U.S. Cl. 260—140 **4 Claims**

1. A compound of the formula



where X is independently hydrogen, fluorine, chlorine, bromine, nitro, or trifluoromethyl; and X′ is hydrogen.

3,892,725

UNSATURATE CONTAINING AZO INDAZOLIUM DYESTUFFS

Jean-Pierre Henri Stiot, Les Elboeuf, and Claude Marie Henri Emile Brouard, Sotteville, both of France, assignors to Produits Chimiques Ugine Kuhlmann, Paris, France

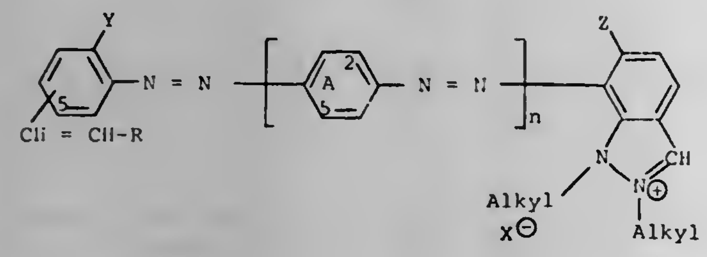
Filed Mar. 22, 1973, Ser. No. 343,763

Claims priority, application France, Mar. 24, 1972, 72.10332

Int. Cl. C09b *31/14*

U.S. Cl. 260—157 **5 Claims**

1. A dyestuff of the formula:



in which the group CH═CH—R is fixed in the position 4 or 5, R represents CN, CONH$_2$ or COO-alkyl, wherein the alkyl group contains 1 to 5 carbon atoms, Y represents H or Cl, the benzene nucleus A is unsubstituted or substituted in the 2 and/or 5 positions by alkyl or alkoxy groups containing 1 to 5 carbon atoms, *n* is equal to 0 or 1, Z represents an OH or NH$_2$ group, the alkyl groups of the indazolium nucleus contain 1 or 2 carbon atoms and X represents a monovalent anion.

3,892,726

TYROSINE-O-SULFATE CONTAINING PEPTIDES

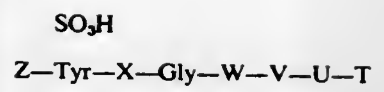
Miguel Angel Ondetti, Princeton; Josip Pluscec, Ewing Township, and John T. Sheehan, Middlesex, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 828,368, May 27, 1969, abandoned. This application Dec. 4, 1972, Ser. No. 312,150

Int. Cl. C07c *103/52;* **A61k** *37/00*

U.S. Cl. 260—112.5 **10 Claims**

1. A compound having the formula



$$\text{Z—}\overset{SO_3H}{\text{Tyr}}\text{—X—Gly—W—V—U—T}$$

wherein

Z is Ala, Abu, or β-Asp or R-Asp wherein R is hydrogen, alkanoyl of from 2 to 16 carbon atoms, t-butyloxycarbonyl, benzyloxycarbonyl, fumaryl, maleyl, or succinyl;
X is Met, Leu, Nle or Abu,
W is Trp or D-Trp;
V is Met, Leu, Nle or Abu;
U is Asp, Ala or Glu;
T is Phe-NH$_2$ or D-Phe-NH$_2$;
and pharmaceutically acceptable ammonium, alkali metal or alkaline earth metal salts thereof provided that only one of X and V is Met when the other is Leu, Nle, or Abu, that all optically active amino acid residues are of the L-configuration unless otherwise indicated, and that R is not H when the compound has the formula

R-L-Asp-L-Tyr-L-Met-Gly-L-Trp-L-Met-L-Asp-L-Phe-NH$_2$.

3,892,727

TWO PIECE CARTRIDGE FOR MAGNETIC TAPES

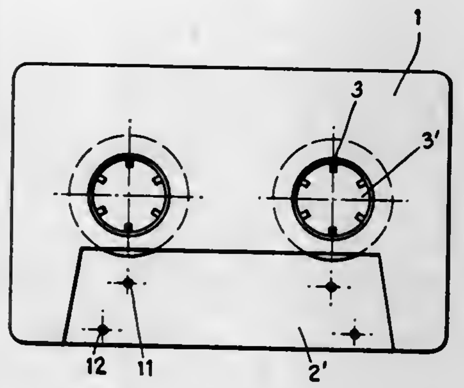
Jose Antonio Arias Carvajal, 1010 Opalocka Blvd., Opalocka, Fla. 33053, and Luis-Martin Mena Sanchez, San Ambrosio 8, Madrid, Spain

Filed Jan. 3, 1974, Ser. No. 430,514

Claims priority, application Spain, Feb. 13, 1973, 188692/73

Int. Cl. G11b *23/02*

U.S. Cl. 360—132 **7 Claims**



1. A two-piece cartridge for magnetic tapes for use in a cassette cartridge receiving recording-reproducing machine, said two-piece cartridge comprising:

a portable tape-containing element housing therein a pair of tape reels and a magnetic tape extending between and wrapped around said tape reels, said portable element having therein windows adjacent said tape for receipt of magnetic heads of a recording-reproducing machine when said cassette is operatively positioned therein, the overall dimensions of said portable element being substantially smaller than the overall dimensions of a conventional cassette cartridge;

an auxiliary element comprising a body having overall dimensions equal to those of a conventional cassette cartridge, said auxiliary element having therein a recess dimensioned to receive said portable element, said auxiliary element having therein a pair of reel driving means, each of which has means thereon for receiving driving movement from said recording-reproducing machine when said auxiliary element is positioned thereon; and

said portable element having therein openings, whereby when said portable element is operatively positioned in said recess of said auxiliary element, said reel driving means extend into said openings into driving engagement with said reels.

3,892,728

QUINIDINE POLYMANURONATE

Gonzalo Cobo Barrachina, Madrid, Spain, assignor to Laboratorios Berenguer Beneyto S.A., Madrid, Spain

Filed Dec. 8, 1972, Ser. No. 313,264

Int. Cl. C07g *3/00*

U.S. Cl. 260—209 R **12 Claims**

12. A quinidine salt of polymanuronic acid having the following characteristics:

a. fine powder of yellowish color,
b. stable in air at from ambient temperature to about 150°C,
c. empirical formula $(C_{26}H_{32}O_8N_2)_x$, wherein x is about 1360,
d. quinidine content of about 60.46% by weight,
e. infrared spectrum indicating a peak at 1615 cm^{-1}, with a broad band at 1710 cm^{-1},
f. soluble in 50% methanol, 50% ethanol and hot propylene glycol, and insoluble in methanol, 96% ethanol, chloroform, cold propylene glycol and acetone,
g. total decomposition at 190°C,
h. rotation of +77.3° (propylene glycol, *c*=0.5).

3,892,729

1′(BETA-HYDROXYETHYL)-1′-DEMETHYL CLINDAMYCIN 2-PHOSPHATES

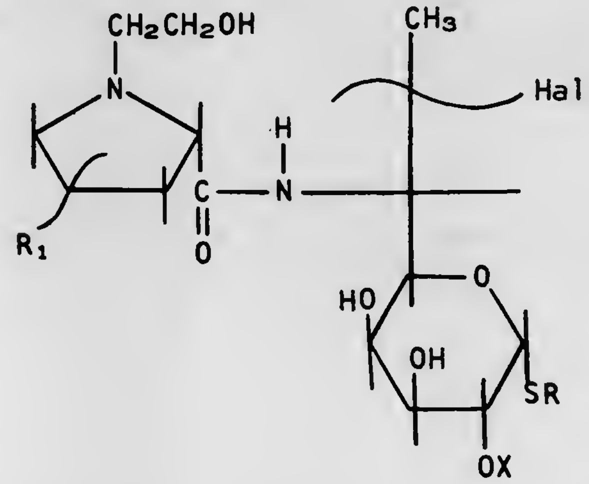
Robert D. Birkenmeyer, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 156,099, June 23, 1971, Pat. No. 3,787,390. This application Dec. 17, 1973, Ser. No. 425,149

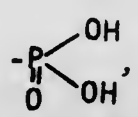
Int. Cl. C08b *19/00*

U.S. Cl. 260—210 R **3 Claims**

1. A compound of the formula:



or the acid addition salts thereof wherein Halo is chlorine, bromine, or iodine, X is



the zwitterion thereof or the hemi-salt thereof, inclusive; R is alkyl of not more than 4 carbon atoms; and R$_1$ is alkyl of not more than 8 carbon atoms.

3,892,730

1′-(β-HYDROXYETHYL)-1′-DEMETHYL CLINDAMYCIN 2-ACYLATES

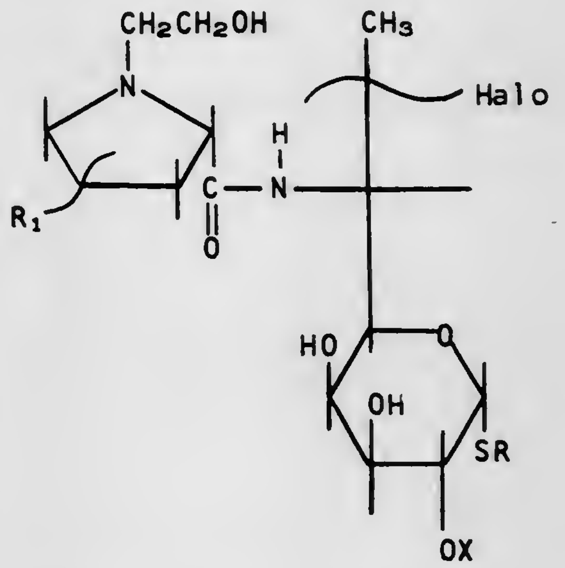
Robert D. Birkenmeyer, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 156,099, June 23, 1971, Pat. No. 3,787,390. This application Dec. 17, 1973, Ser. No. 425,150

Int. Cl. C08b *19/00*

U.S. Cl. 260—210 R **3 Claims**

1. A compound of the formula:



or the acid addition salts thereof wherein Halo is chlorine, bromine, or iodine, X is an acyl radical of an aliphatic carboxylic acid having from 2 to 18 carbon atoms, inclusive; R is alkyl of not more than 4 carbon atoms; and R$_1$ is alkyl of not more than 8 carbons.

3,892,731

SOLVENTS FOR AND PURIFICATION OF CHITIN

Paul Rolland Austin, Wilmington, Del., assignor to University of Delaware, Newark, Del.

Filed Nov. 23, 1973, Ser. No. 418,441

Int. Cl.^{2} C07H *5/06*

U.S. Cl. 260—211 R **2 Claims**

1. A solution of chitin in di- or tri-chloracetic acid.

3,892,732

ANTIBIOTIC TUBERACTINOMYCIN-N AND PROCESS FOR PRODUCTION THEREOF

Jinnosuke Abe, Shizuoka; Tetsuo Watanabe, Kanagawa; Akiho Nagata, Shizuoka; Takuji Ando, Shizuoka; Teruo Take, Shizuoka; Rokuro Izumi, Shizuoka; Toshiharu Noda, Shizuoka, and Kazuo Matsuura, Shizuoka, all of Japan, assignors to Toyo Jozo Kabushiki Kaisha, Shizuoka, Japan

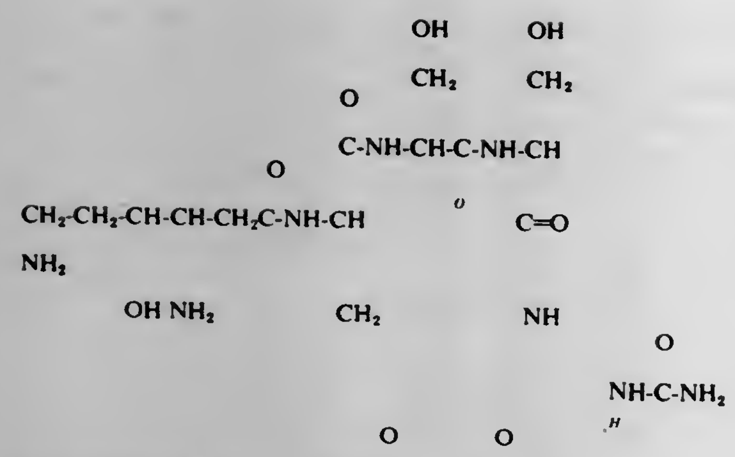
Filed June 30, 1971, Ser. No. 158,488

Claims priority, application Japan, June 30, 1970, 45-56467

Int. Cl. C07d *57/00;* **C07c** *103/52*

U.S. Cl. 260—239.3 R **1 Claim**

1. An antibiotic substance selected from the group consisting of tuberactinomycin-N having the formula



and therapeutically acceptable salts thereof.

3,892,733
CYCLOPENTANE DERIVATIVES

Edward Douglas Brown, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

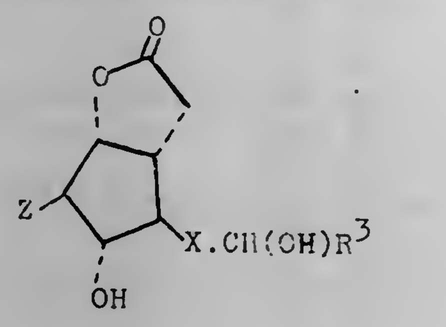
Filed Jan. 17, 1973, Ser. No. 324,429

Claims priority, application United Kingdom, Feb. 4, 1972, 5353/72

Int. Cl. C07d *5/04*

U.S. Cl. 260—240 R **13 Claims**

1. A cyclopentane derivative of the formula:-



wherein X is ethylene or trans-vinylene, Z is chlorine, bromine or iodine and R^3 is alkyl or alkenyl of 4 to 10 carbon atoms, or a group $—A^1OR^4$ wherein A^1 is alkylene of 1 to 9 carbon atoms and R^4 is alkyl of 1 to 9 carbon atoms or cycloalkyl of 5 to 7 carbon atoms, A^1 and R^4 together containing not more than 10 carbon atoms, or R^3 is a group $–A^2R^5$ wherein A^2 is alkylene of 2 to 5 carbon atoms which is unsubstituted or is substituted by 1 or 2 alkyl of 1 to 4 carbon atoms and R^5 is aryl which is unsubstituted or is substituted by halogen; nitro; alkyl, halogenoalkyl or alkoxy each of 1 to 3 carbon atoms; or dialkylamino wherein each alkyl is of 1 to 3 carbon atoms, or R^3 is a group $—A^3.A^4.R^6$ wherein A^3 is alkylene of 1 to 3 carbon atoms bearing 0,1 or 2 alkyls of 1 to 3 carbon atoms, A^4 is oxygen, sulphur, sulphinyl or alkylimino of up to 4 carbon atoms, and R^6 is aryl, benzyl or furfuryl which is unsubstituted or substituted by hydroxy; nitro; phenyl; halogen; alkyl, alkenyl, halogenoalkyl, alkoxy, or alkenyloxy each of 1 to 4 carbon atoms; or dialkylamino wherein each alkyl is of 1 to 3 carbon atoms.

3,892,734
NOVEL ANTHRAQUINO[(3,2-d)]OXAZOLE DYES AND COLORING AGENTS

Ichiro Okubo, and Michihiro Tsujimoto, both of Tokyo, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

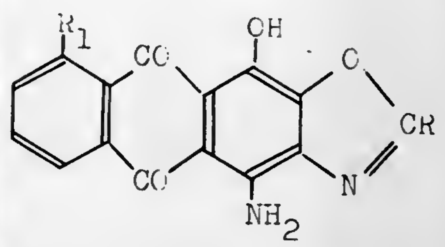
Continuation-in-part of Ser. No. 144,658, May 18, 1971, abandoned. This application Mar. 26, 1974, Ser. No. 455,035

Claims priority, application Japan, May 19, 1970, 45-42107

Int. Cl. C07d *85/48*

U.S. Cl. 260—240 D **14 Claims**

1. Anthraquino[3,2-d] oxazole having the formula:



wherein R is alkyl having 1 to 17 carbon atoms, cyclohexyl, phenyl styryl or substituted phenyl or styryl wherein the benzene nucleus thereof is substituted with methyl or chlorine, R_1 is hydrogen when R is phenyl, styryl, or substituted phenyl or styryl, and is hydrogen or amino when R is alkyl having 1 to 17 carbon atoms or cyclohexyl.

3,892,735
CYANODITHIOCARBAMIC ACID DERIVATIVES OF CEPHALOSPORINS

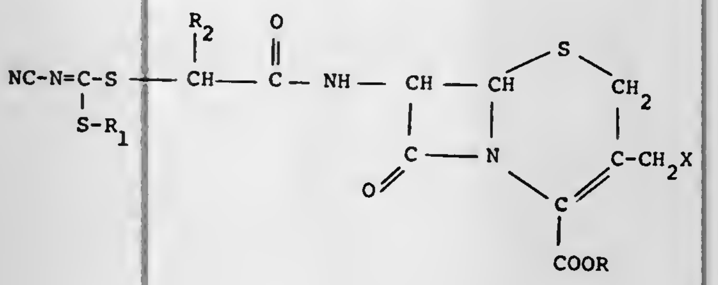
Uwe D. Treuner, and Hermann Breuer, both of Regensburg, Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Mar. 5, 1973, Ser. No. 337,805

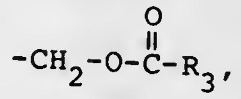
Int. Cl.² C07D *501/20*

U.S. Cl. 260—243 C **10 Claims**

1. A compound of the formula



wherein R is hydrogen, tri(lower alkyl)silyl,



$$-CH_2-O-\overset{O}{\overset{\|}{C}}-R_3,$$

alkali metal, alkaline earth metal or lower alkylamine; R_1 is lower alkyl or phenyl-lower alkyl; R_2 is hydrogen, lower alkyl, phenyl, thienyl, furyl or pyridyl; R_3 is lower alkyl, phenyl or phenyl-lower alkyl; and X is hydrogen, hydroxy, lower alkanoyloxy, lower alkoxy or lower alkylthio.

3,892,736
PROCESS FOR SELECTIVE BLOCKING OF THE CARBOXYL GROUP ON THE 7-POSITION OF (6R, 7R)--ACETOXYMETHYL-7-(4-CARBOXYBUTANAMIDO)-CEPH-3-EM-4-CARBOXYLIC ACID

David Cedric Humber, Greenford, and Anita Lynda Lucrece Lynd, Southall, both of England, assignors to Glaxo Laboratories Limited, Greenford, England

Filed June 12, 1972, Ser. No. 261,598

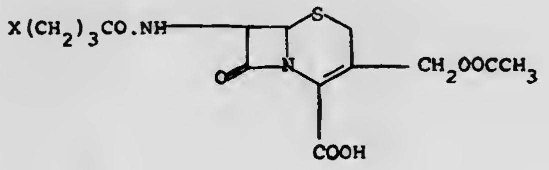
Claims priority, application United Kingdom, June 17, 1971, 28566/71

Int. Cl. C07d *99/24*

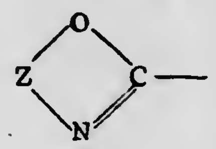
U.S. Cl. 260—243 C **5 Claims**

1. In a process for the selective blocking of the 7-side chain carboxyl group of (6R, 7R)-3-acetoxymethyl-7-(4-carboxybutanamido)ceph-3-em-4-carboxylic acid, the step of reacting said carboxylic acid or a salt thereof selected from the group consisting of an alkali metal, tri(C_1–C_6) alkyl ammonium, piperidinium, N(C_1–C_6) alkyl piperidinium, N,N,N-dimethylphenylammonium, pyridinium, quinolinium and benzylammonium salt with an alcohol selected from the group consisting of a C_1–C_4 alkanol, an alkanolamine having 2–4 carbon atoms in the chain between the hydroxyl and amino groups, benzyl alcohol, cyclopentanol and cyclohexanol in the presence of an acid halide catalyst to selectively esterify said 7-side chain carboxyl group without esterifying the 4-carboxyl group.

4. A compound selected from the group consisting of a compound of the formula



where X is ROOC— in which R is selected from the group consisting of C_1–C_4 alkyl, benzyl, cyclopentyl, and cyclohexyl or



where Z is an alkylene group having 2–4 carbon atoms, and a salt thereof selected from the group consisting of an alkali metal, tri (C_1–C_6) alkylammonium, piperidinium, N(C_1–C_6) alkyl piperidinium, N,N,N-dimethylphenylammonium, pyridinium, quinolinium and benzylammonium salt.

3,892,737
CEPHALOSPORINS

Michihiko Ochiai, Senriyamahigashi; Osami Aki, Kawanishi; Akira Morimoto, Yamadashimo, and Taiiti Okada, Kyoto, all of Japan, assignors to Takeda Chemical Industries, Ltd., Japan

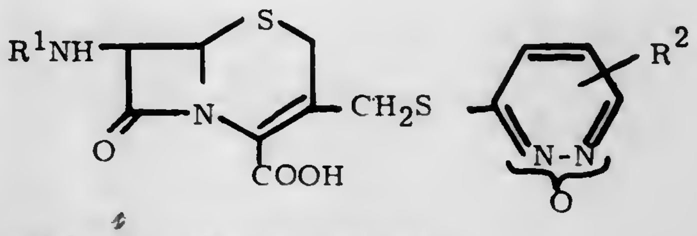
Filed Aug. 18, 1972, Ser. No. 281,656

Claims priority, application Japan, Aug. 20, 1971, 46-63448; Oct. 25, 1971, 46-84522

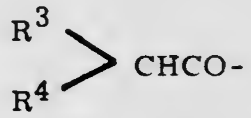
Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **39 Claims**

1. A compound of the formula:



wherein R^1 represents hydrogen or:



wherein R^3 represents phenyl, phenoxy, 1-cyclohexenyl, thienyl, 3-amino-3-carboxypropyl, pyrazolyl, pyrazolyl substituted with chlorine or pyrazolyl substituted with methyl and R^4 represents hydrogen or amino and wherein R^2 represents hydrogen, chlorine, bromine, methyl, ethyl, propyl or alkoxy having up to 8 carbon atoms, or a pharmaceutically acceptable salt thereof.

3,892,738
7-THIASUBSTITUTED-1,2,4-BENZOTHIADIAZINE-1.1-DIOXIDES AND THEIR SALTS

Frederick C. Novello, Berwyn, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 20, 1972, Ser. No. 236,244

Int. Cl. C07d *93/32*

U.S. Cl. 260—243 D **7 Claims**

1. 3-R^1-6-X-7-RS-1,2,4-benzothiadiazine-1,1-dioxides and pharmacologically acceptable salts thereof wherein X represents C_{1-3} alkyl, chloro and trifluoromethyl; R^1 represents pyridyl and C_1–C_3-alkyl substituted pyridyl and R represents hydrogen, C_1–C_6 lower alkyl and phenyl-C_1–C_3-alkyl.

3,892,739
1,2-BENZOTHIAZINES

Maximilian Von Strandtmann, Rockaway; John Shavel, Jr., Mendham; Sylvester Klutchko, Hackettstown, and Marvin Cohen, New Milford, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 174,947, Aug. 25, 1971, Pat. No. 3,801,644. This application July 27, 1973, Ser. No. 383,416

Int. Cl. C07d *93/02*

U.S. Cl. 260—243 R **1 Claim**

1. A compound which is 4-hydroxy-2-methyl-2H-1,2-benzothiazin-3-yl(methylsulfinyl) methyl ketone S,S-dioxide.

3,892,740

PROCESS FOR THE PRODUCTION OF CARBOXAMIDES OF OXO-1,2-BENZOTHIAZINE-1,1-DIOXIDES

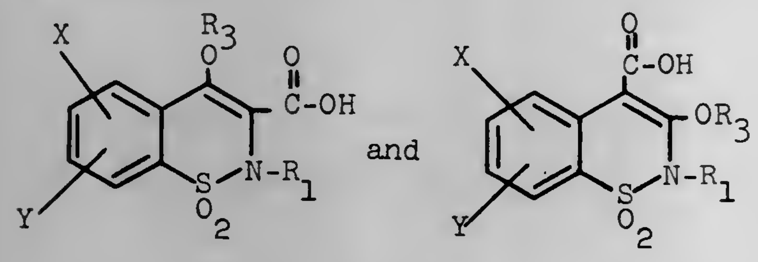
Joseph G. Lombardino, Niantic, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Oct. 15, 1974, Ser. No. 514,570

Int. Cl. C07d *93/02*

U.S. Cl. 260—243 R **12 Claims**

1. A compound selected from the group consisting of those of the formulae



wherein X and Y are each selected from the group consisting of hydrogen, fluorine, chlorine, bromine, nitro, tirfluoromethyl and alkyl and alkoxy having up to 5 carbom atoms;

R_1 is selected from the group consisting of hydrogen, alkyl having up to 6 carbon atoms, alkenyl having up to 4 carbon atoms and phenyl alkyl having up to 3 carbon atoms in the alkyl moiety;

and R_3 is selected from the group consisting of lower alkyl, and phenylalkyl having up to 3 carbon atoms in the alkyl moiety.

3,892,741

PREPARATION OF THIOCARBAMYLSULFENAMIDES

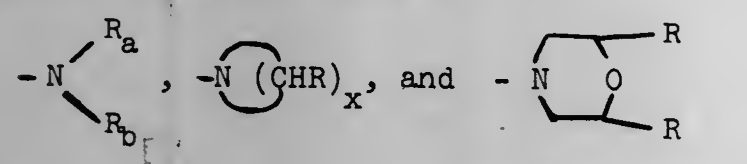
Ray D. Taylor, Brecksville, Ohio, assignor to The B.F. Goodrich Company, Akron, Ohio

Filed May 18, 1972, Ser. No. 254,533

Int. Cl. C07d *87/46*

U.S. Cl. 260—246 B **11 Claims**

1. A process for the preparation of thiocarbamylsulfenamides comprising the reaction of, as the only reactants, (1) a monohaloamine(s) of the formula X—A wherein X is selected from the group consisting of —Cl, —Br, and —I, and A is selected from the group consisting of



wherein R_a and R_b are selected from the group consisting of -H, alkyl having 1 to 24 carbon atoms, cyanoalkyl having 2 to 12 carbon atoms, alkoxyalkyl having 2 to 12 carbon atoms, cycloalkyl having 4 to 8 carbon atoms in the ring, phenyl, and aralkyl or alkaryl having up to 18 carbon atoms; and where $x = 4$ to 7, and R is selected from the group consisting of hydrogen and alkyl having 1 to 2 carbon atoms, and (2) a thiocarbonate salt of the formula M_zCS_y, wherein M is selected from the class consisting of alkali metals, alkaline earth metals, and an ammonium salt of the formula $—N(R')_4$ where R′ is —H, alkyl having 1 to 8 carbon atoms, or mixtures thereof, $Z = 1$ to 2, and y is 3 or 4.

3,892,742

REACTIVE DYESTUFFS

Brian Parton, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

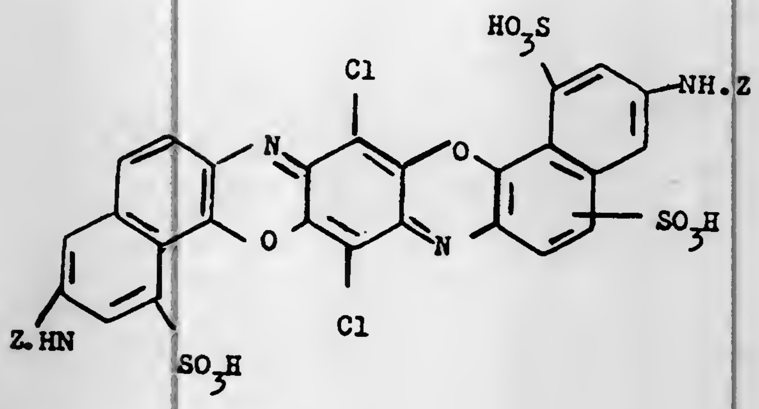
Filed Aug. 20, 1973, Ser. No. 389,546

Claims priority, application United Kingdom, Sept. 6, 1972, 41351/72

Int. Cl. C09b *19/02*

U.S. Cl. 260—246 R **5 Claims**

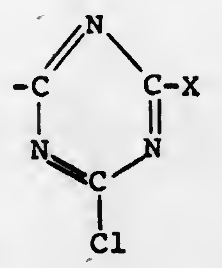
1. A dyestuff of the formula



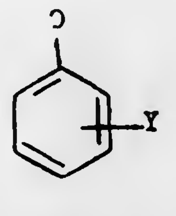
wherein Z is

1. 4,6-dichloropyrimid-2-yl,
2. 4,5,6-trichloropyrimid-2-yl,
3. 2,4-dichloropyrimid-5-yl carbonyl,
4. 4,6-dichloro-5-cyanopyrimid-2-yl,
5. 4,6-difluoro-5-chloropyrimid-2-yl,
6. 2,4-dichloroquinazolin-6-ylsulphonyl,
7. 2,4-dichloroquinazolin-6-yl carbonyl,
8. 2,3-dichloroquinoxalin-6-ylcarbonyl,
9. β-(4,5dichloropyridaz6-on-1-yl) propionyl,
10. 4,6-dibromopyrimid-2-yl,
11. 2-methylsulphonyl-5-chloro-6-methylpyrimid-4-yl,
12. 3,6-dichloropyridazin-4-ylcarbonyl,
13. 2,3-dichloroquinoxalin-6-ylsulphonyl,
14. 1,4-dichlorophthalazin-6-ylcarbonyl,
15. β-(2,2,3,3-tetrafluorocyclobutyl) acryloyl,
16. 2,2,3,3-tetrafluorocyclobutylcarbonyl,
17. 2,methylsulphonyl-6-methylpyrimid-4-yl and

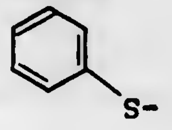
(18)



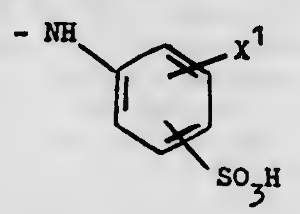
wherein X is selected from Cl; lower alkoxy:



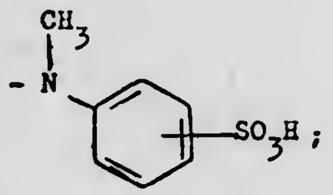
wherein Y is H, Cl or SO₃H;

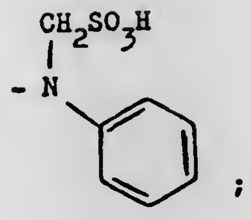


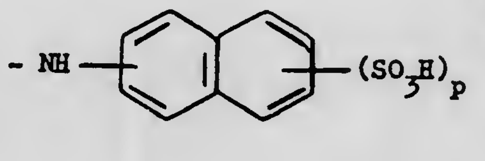
lower alkoxy alkoxy; NH_2; lower alkylamino; di (lower alkyl) amino; lower hydroxyalkylamino; β-sulphatoethylamino; anilino;



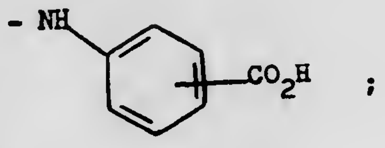
wherein X^1 is H, CO_2H, CH_3, OCH_3, Cl or SO_3H; cyclohexylamino;



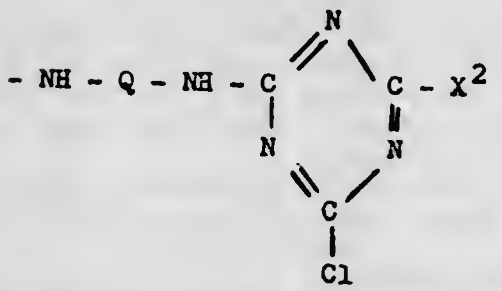




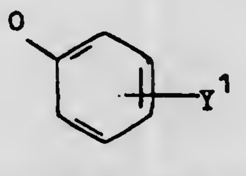
wherein $p = 1$, 2 or 3;



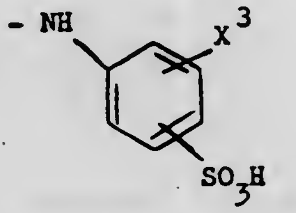
and



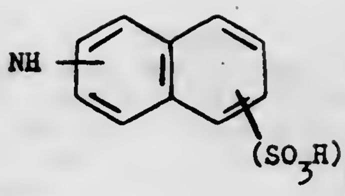
wherein Q is sulphophenylene, disulphophenylene, ethylene or 2-sulpho-1,3-trimethyline and X^2 is Cl; OCH_3;



wherein Y^1 is H or SO_3H; NH_2; lower allylamino; β-hydroxyethylamino; anilino;



wherein X^3 is H, CO_2H, CH_3, OCH_3, Cl or SO_3H; or



wherein $q = 2$ or 3.

3,892,743

AMIDES OF DIBROMO-AND TRIBROMOMETHANESULFONIC ACIDS

Christian T. Goralski, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 26, 1973, Ser. No. 326,609

Int. Cl. C07d *27/04, 29/34, 47/86*

U.S. Cl. 260—247.1 R **5 Claims**

1. A compound corresponding to the formula

$$Br_xH_{3-x}CSO_2NR_1R_2$$

wherein R_1 and R_2 together with the nitrogen atom form a heterocyclic ring of the group of a pyrrolidinyl, piperidinyl, morpholinyl, 4-methyl piperidinyl and 2,6-dimethyllmorpholinyl and x is 2 or 3.

3,892,744

PROCESS FOR PREPARING 4-[3-(SUBSTITUTED AMINO)-2-HYDROXYPROPOXY]-1,2,5-THIADIAZOLES

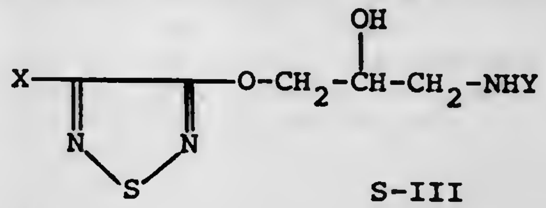
Leonard M. Weinstock, Belle Mead; Roger J. Tull, Metuchen, and Dennis M. Mulvey, Milford, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 284,013, Aug. 25, 1972, abandoned, which is a division of Ser. No. 172,234, Aug. 16, 1971, Pat. No. 3,718,647, which is a division of Ser. No. 818,474, April 21, 1969, Pat. No. 3,657,237. This application Dec. 18, 1973, Ser. No. 425,912

Int. Cl.² C07D *295/12, 285/10*

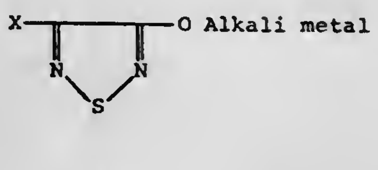
U.S. Cl. 260—247.1 H **6 Claims**

1. A process for the preparation of an optically active thiadiazole in the sinister configuration having the structure S-III,

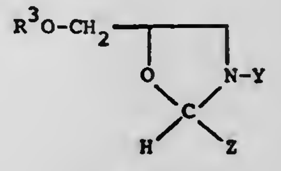


S-III

comprising the reaction of a compound of structure I with a compound of structure S-II,



I



S-II

followed by acid hydrolysis wherein the variable radical X is selected from chloro, C_{1-3} alkyl, C_{1-3} alkoxy, phenyl, benzyl, morpholino, piperidino, hydroxypiperidino, and N-C_{1-3} alkyl-1-piperazinyl, Y is a straight or branched chain C_{1-5} alkyl; Z is hydrogen or an aliphatic, alicyclic, aromatic or heterocyclic residue of the aldehyde ZCHO used to form the oxazolidine nucleus; and R^3 is alkylsulfonyl, arylsulfonyl or aralkylsulfonyl.

3,892,745
ISOXAZOLONE DERIVATIVES AND PROCESS FOR PREPARING THE SAME

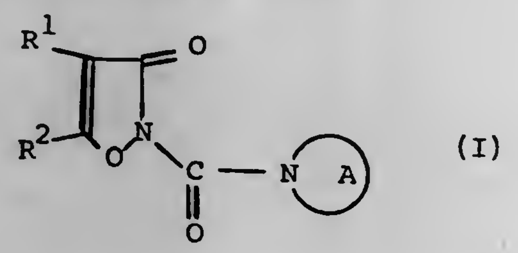
Kazuo Tomita, Yokosuka; Tadashi Murakami, Tokyo; Hiromu Takagi, Tokyo, and Yasuhiro Morisawa, Tokyo, all of Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Filed Nov. 20, 1972, Ser. No. 307,864

Int. Cl.² C07D *295/04*

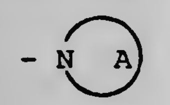
U.S. Cl. 260—247.2 A **15 Claims**

1. A compound having the formula



(I)

wherein R^1 represents a hydrogen atom, an alkyl group of from 1 to 4 carbon atoms or a halogen atom; R^2 represents a hydrogen atom, an alkyl group of from 1 to 4 carbon atoms, or a phenyl group; and a group of the formula



represents a morpholyl group, a pyrrolidyl group, a piperidyl group, a C_1-C_4 alkyl-substituted piperidyl group, a hexamethyleneimino group, a 4-phenylpiperazyl group or a 4-(halophenyl) piperazyl group.

3,892,746
PYRROLO([1,2,3-de)]QUINOXALIN-2(3H)-ONES AND RELATED COMPOUNDS

John H. Sellstedt, King of Prussia, and Milton Wolf, West Chester, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Continuation of Ser. No. 831,723, June 9, 1969, abandoned. This application Jan. 27, 1972, Ser. No. 221,416

Int. Cl. C07d *87/42*

U.S. Cl. 260—247.2 A **28 Claims**

1. A compound selected from the group consisting of:

A. 3-(3-dimethylaminopropyl)-8,9,10,11-tetrahydro-1H,7H-cyclohepta[4,5]pyrrolo[1,2,3-de]quinoxalin-2(3H)-one.

B. 3-(2-dimethylaminoethyl)-8,9,10,11-tetrahydro-1H,7H-cyclohepta[4,5]pyrrolo[1,2,3-de]quinoxalin-2(3H)-one.

C. 6-methyl-1-(2-dimethylaminoethyl)-5-phenyl-1H-pyrrolo1,2,3-de]quinoxalin-2(3H)-one.

D. 1-(3-dimethylaminopropyl)-5-methyl-6-phenyl-1H-pyrrolo[1,2,3-de]quinoxalin-2(3H)-one.

E. 3-(2-dimethylaminoethyl)-7,8,9,10,11,12-hexahydro-1H-cycloocta[4,5]pyrrolo[1,2,3-de]quinoxalin-2(3H)-one.

F. 3-(3-dimethylaminopropyl)-8,9-dihydro-1H,7H-cyclopenta[4,5]pyrrolo[1,2,3-de]quinoxalin-2(3H)-one.

G. 5-benzyl-1-(2-dimethylaminoethyl)-6-phenyl-1H-pyrrolo[1,2,3-de]quinoxalin-2(3H)-one.

H. 1-(3-dimethylamino-2-methylpropyl)-6-ethyl-5-phenyl-1H-pyrrolo[1,2,3-de]quinoxalin-2-(3H)-one.

I. 1-(3-dimethylamino-1-methylpropyl)-6-ethyl-5-phenyl-1H-pyrrolo[1,2,3-de]quinoxalin-2(3H)-one.

J. 1-(2-dimethylaminoethyl)-6-ethyl-5-phenyl-1H-pyrrolo[1,2,3-de]quinoxalin-2(3H)-one.

K. 1-(3-dimethylaminopropyl)-6-methyl-5-phenyl-1H-pyrrolo[1,2,3-de]quinoxalin-2(3H)-one.

L. 1-(3-dimethylaminopropyl)-5-phenyl-6-propyl-1H-pyrrolo[1,2,3-de]quinoxalin-2(3H)-one.

M. 1-(3-dimethylaminopropyl)-6-ethyl-5-methyl-1H-pyrrolo[1,2,3-de]quinoxalin-2(3H)-one.

N. 6-ethyl-1-(2-morpholinoethyl)-5-phenyl-1H-pyrrolo[1,2,3-de]quinoxalin-2(3H)-one.

O. 1-(2-diethylaminoethyl)-6-ethyl-5-phenyl-1H-pyrrolo[1,2,3-de]quinoxalin-2(3H)-one.

P. 6-ethyl-1-(3-morpholinopropyl)-5-phenyl-1H-pyrrolo[1,2,3-de]quinoxalin-2(3H)-one.

Q. 6-ethyl-5-phenyl-1-[2-(1-pyrrolidinyl)ethyl]-1H-pyrrolo[1,2,3-de]quinoxalin-2(3H)-one.

R. 6-ethyl-1-(3-methylaminopropyl)-5-phenyl-1H-pyrrolo[1,2,3-de]quinoxalin-2(3H)-one.

S. 6-ethyl-5-phenyl-1-[3-(1-pyrrolidinyl)propyl]-1H-pyrrolo[1,2,3-de]quinoxalin-2(3H)-one.

T. 1-(3-dimethylaminopropyl)-5-(p-methoxyphenyl)-6-methyl-1H-pyrrolo[1,2,3-de]quinoxalin-2(3H)-one.

U. 5-(p-benzyloxyphenyl)-1-(3-dimethylaminopropyl)-6-methyl-1H-pyrrolo[1,2,3-de]quinoxalin-2(3H)-one.

V. 5-(m-chlorophenyl)-1-(3-dimethylaminopropyl)-6-methyl-1H-pyrrolo[1,2,3-de]quinoxalin-2(3H)-one.

W. 5-(p-chlorophenyl)-1-(3-dimethylaminopropyl)-6-methyl-1H-pyrrolo[1,2,3-de]quinoxalin-2(3H)-one.

X. 1-(3-dimethylaminopropyl)-5-(p-hydroxyphenyl)-6-methyl-1H-pyrrolo[1,2,3-de]quinoxalin-2(3H)-one.

Y. 1-(3-dimethylaminopropyl)-5-phenyl-1H-pyrrolo[1,2,3-de]quinoxalin-2(3H)-one.

Z. 5-(o-chlorophenyl)-1-(3-dimethylaminopropyl)-6-methyl-1H-pyrrolo[1,2,3-de]quinoxalin-2(3H)-one.

AA. 7,8,9,10-tetrahydro-8-methyl-1H-pyrido[3′,4′:4,5-]pyrrolo[1,2,3-de]quinoxalin-2(3H)-one.

3,892,747
TRIAZINE COMPOUNDS AND HERBICIDES CONTAINING THE SAME, AND A PROCESS FOR THE PREPARATION THEREOF

Gyorgy Matolcsy; Barna Bordas; Odon Szatala; Viktor Andriska, all of Budapest; Erzsebet Grega, nee Toth; Zoltan Pinter, both of Miskolc, and Sandor Nagy, Putnok, all of Hungary, assignors to Eszakmagyarorszagi Vegyimuvek, Sajobabony, Hungary

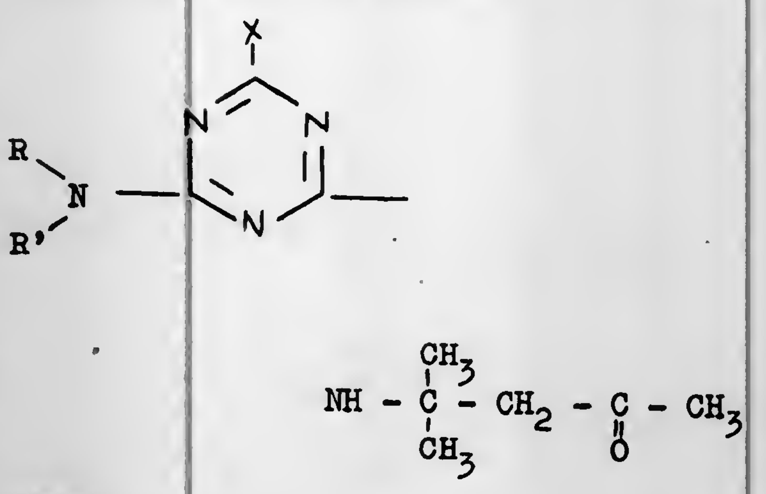
Filed May 7, 1973, Ser. No. 357,721

Claims priority, application Hungary, May 8, 1972, 167

Int. Cl. C07d *55/20*

U.S. Cl. 260—249.8 **1 Claim**

1. A 2-substituted-4-alkylamino-6-(α,α-dimethyl-β-acetylethylamino)-1,3,5-triazine of the formula



$$NH - \underset{CH_3}{\overset{CH_3}{C}} - CH_2 - \underset{O}{\overset{\|}{C}} - CH_3$$

wherein

X represents chlorine or a methylthio group,

R represents hydrogen or a C_{1-4} alkyl group, and

R′ stands for a C_{1-4} alkyl or alkenyl group.

3,892,748
5,5-DIPHENYL-3-(PIPERIDINO, TETRAHYDROPYRIDYL-1-AND PIPERAZINO)-HYDANTOINS

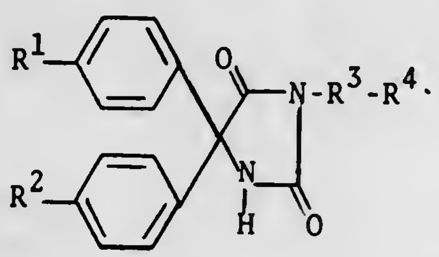
Shin Hayao, Tokyo, Japan; Herbert John Havera, Edwardsburg, Mich., and Wallace Glenn Strycker, Goshen, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed July 20, 1973, Ser. No. 381,021

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 PH **16 Claims**

1. A compound of the formula



or a pharmacologically acceptable acid addition salt thereof wherein:

R^1 and R^2 are selected from the group consisting of hydrogen, halogeno, loweralkyl of 1 to 3 carbon atoms, loweralkoxy of 1 to 3 carbon atoms, amino, and nitro;

R^3 is selected from the group consisting of ethylene and trimethylene; and

R^4 is selected from the group consisting of 4-phenyl-1-piperidyl, 4-hydroxy-4-phenyl-1-piperidyl, 4-phenyl-1,2,3,6-tetraphydropyridyl, and 4-phenyl-1-piperazinyl.

3,892,749
INDAMINE SALTS

Gregoire Kalopissis, Paris; Andrée Bugaut, Boulogne-sur-Seine, and Francoise Estradier, Paris, all of France, assignors to L'Oreal, Paris, France

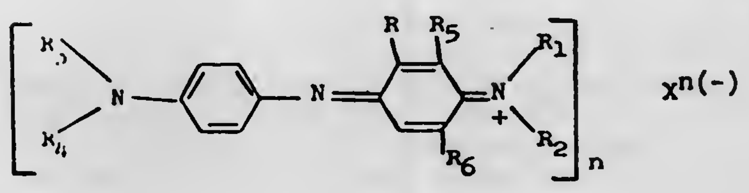
Division of Ser. No. 180,456, Sept. 14, 1971, Pat. No. 3,824,075. This application Apr. 3, 1974, Ser. No. 457,620

Claims priority, application France, Sept. 18, 1970, 70.34043

Int. Cl. C07c *119/06*

U.S. Cl. 260—270 H **2 Claims**

1. An indamine salt including tautomers thereof, having the formula:



wherein R_1 and R_2 each independently represent lower alkyl; R_3 and R_4 each independently represent a member selected from the group consisting of lower alkyl and lower alkyl substituted with a member selected from the group consisting of piperidino, hydroxy and acetylamino; R_5 and R_6 each represent hydrogen; R represents a member selected from the group consisting of amino, acetylamino and hydroxy; n is an integer of 1 or 2; and $X^{n(-)}$ represents an anion selected from the group consisting of persulfate, perchlorate, chloride, bromide and Cl_3Zn^-.

3,892,750
AZOMETHINE PIGMENTS AND PROCESSES FOR THEIR MANUFACTURE

Christoph Frey, Oberwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

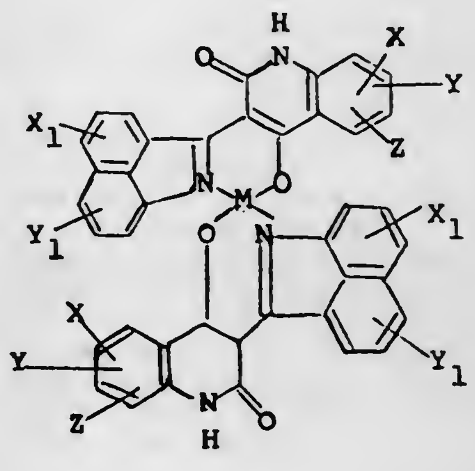
Filed Aug. 3, 1973, Ser. No. 385,618

Claims priority, application Switzerland, Aug. 9, 1972, 11763/72

Int. Cl. C07d *33/38*

U.S. Cl. 260—270 Q **7 Claims**

1. An azomethine pigment metal complex of the formula



wherein M is nickel, copper, cobalt, zinc, or cadmium; and X, Y, Z, X_1 and Y_1 is hydrogen, halogen or alkyl of 1 to 6 carbon atoms, with the proviso that x, y and z are not simultaneously tertiary alkyl.

3,892,751
ZETA FORM OF QUINACRIDONE

Ronald S. Tyson, Piscataway, and Leonard Shapiro, East Brunswick, both of N.J., assignors to Sun Chemical Corporation, New York, N.Y.

Filed Aug. 20, 1973, Ser. No. 389,986

Int. Cl. C07d *37/22, 37/18*

U.S. Cl. 260—279 R **1 Claim**

1. A red pigment consisting of linear quinacridone in the zeta crystal phase characterized by an X-ray diffraction pattern exhibiting six strong lines corresponding to interplanar spacings of 14.06A, 6.38A, 3.45A, 3.35A, 3.11A, and 2.11A and six weak lines with interplanar spacings of 7.05A, 4.35A, 3.91A, 3.59A, 3.18A, and 2.83A.

3,892,752
PHENYL AND SUBSTITUTEDPHENYL BENZOQUINOLIZINES

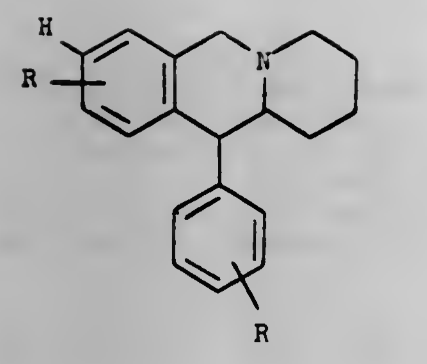
William J. Houlihan, Mountain Lakes, and Jeffrey Nadelson, Lake Parsippany, both of N.J., assignors to Sandoz, Inc., East Hanover, N.J.

Division of Ser. No. 246,352, April 21, 1972, Pat. No. 3,824,244. This application Apr. 26, 1974, Ser. No. 464,696

Int. Cl. C07d *35/26, 35/22*

U.S. Cl. 260—283 R **2 Claims**

1. A compound of the formula



where R represents H or halo of atomic weight about 19–36, or a pharmaceutically acceptable acid addition salt thereof.

3,892,753
O-ALKYL-O-[3-CYANO-QUINOLYL-(2)]-THIONOPHOSPHONIC ACID ESTERS

Christa Fest, Wuppertal, and Ingeborg Hammann, Cologne, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

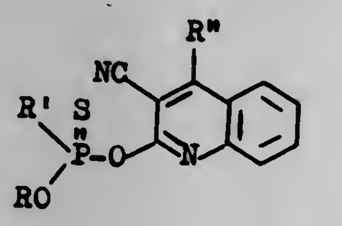
Filed July 24, 1973, Ser. No. 382,236

Claims priority, application Germany, Aug. 10, 1972, 2239366

Int. Cl. C07d *33/60*

U.S. Cl. 260—283 CN **5 Claims**

1. An 0-alkyl-0-[3-cyano-quinolyl-(2)]-thionophosphonic acid ester of the formula



(I)

in which

R is alkyl of 1 to 4 carbon atoms,
R′ is lower alkyl of 1 to 4 carbon atoms or phenyl, and
R″ is hydrogen or methyl.

3,892,754
5,6-BENZO-γ-PYRIDONE DERIVATIVES

Ekkehard Winterfeldt, Grossburgwedel, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

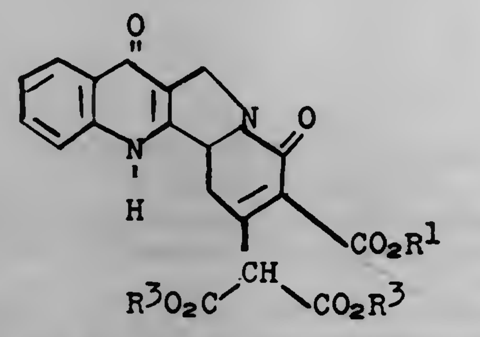
Filed Dec. 10, 1971, Ser. No. 206,922

Claims priority, application Germany, Nov. 13, 1971, 2156501; Dec. 12, 1970, 2061359

Int. Cl. C07d *39/00*

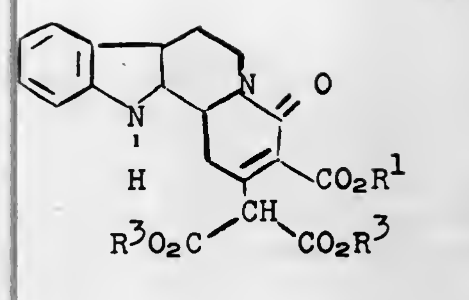
U.S. Cl. 260—287 R **1 Claim**

1. A process for the production of a 5,6-benzo-γ-pyridone having the formula:



(II)

in which R^1 denotes alkyl of from 1 to 3 carbons, and R^3 denotes t-butyl which comprises subjecting an indole of the formula:



(I)

in which R^1, and R^3 have the meanings expressed above, to a combined rearrangement and oxidation by means of oxygen and a proton acceptor which is an alkoxide with 1 to 6 carbon atoms, a hydride or an amide of lithium, sodium, potassium, magnesium, or calcium in a liquid medium at a temperature of from 0° to 50°C to form said compound II.

3,892,755
PROCESS OF PREPARATION OF VINCAMINE FROM TABERSONINE

Jean Levy, Reims, France, assignor to Omnium Chimique Societe Anonyme, Brussels, Belgium

Filed Jan. 13, 1972, Ser. No. 217,580

Claims priority, application Belgium, Mar. 3, 1971, 763730; Jan. 15, 1971, 761628

Int. Cl. C07d *33/48*

U.S. Cl. 260—287 R **15 Claims**

1. The method for producing (−)-vincamine) which comprises the sequential steps of:

a. catalytically hydrogenating (−)-tabersonine for a time at least sufficient for producing (−)-vincadifformine in the presence of a catalyst selected from the group consisting of PtO_2, Pt/C, and Pd/C;
b. oxidizing the vincadifformine of step (a) with a peracid selected from the group consisting of peracetic acid, perbenzoic acid, metachlororbenzoic acid, paranitroperbenzoic acid, performic acid, perphthalic acid, and mixtures thereof; under nitrogen, in darkness, and in the presence of a water-immiscible solvent selected from the group consisting of aromatic solvents, ether and aliphatic chlorinated hydrocarbons; for a time at least sufficient for producing (−)-1,2-dehydro-16-carbomethoxy-16-hydroxy-N-oxyaspidospermidine;
c. reducing the (−)-1,2-dehydro-16-carbomethoxy-16-hydroxy-N-oxyaspidospermidine of step (b) in the presence of acetic acid with triphenylphosphine for a time at least sufficient for forming a product comprising a mixture of:
   1 (−)-vincamine,
   2. epi-16-vincamine, and
   3. apo-vincamine, and
d. isolating (−)-vincamine from the mixture by crystallization from a member selected from the group of acetone, methanol, ethanol and propanol or by chromatography with aluminum-oxide and crystallization from acetone.

3,892,756
NOVEL DIBENZOCYCLOHEPTENES

Lucien Nedelec, Le Raincy, and Daniel Frechet, Paris, both of France, assignors to Roussel Uclaf, Paris, France

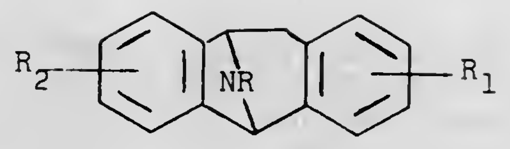
Filed Jan. 30, 1973, Ser. No. 328,006

Claims priority, application France, Feb. 4, 1972, 72.03778

Int. Cl. C07d *39/00*

U.S. Cl. 260—289 C **7 Claims**

1. A compound of the formula



wherein R is selected from the group consisting of hydrogen, alkyl of one to six carbon atoms, monohydroxyalkyl of one to six carbon atoms, monohaloalkyl of one to six carbon atoms, lower alkenyl of two to six carbon atoms and lower alkynyl of two to six carbon atoms, and R_1 and R_2 are individually selected from the group consisting of hydrogen and halogen and the non-toxic, pharmaceutically acceptable acid addition salts thereof.

3,892,757
TRIALKYLMETHANOBENZAZOCINOLS

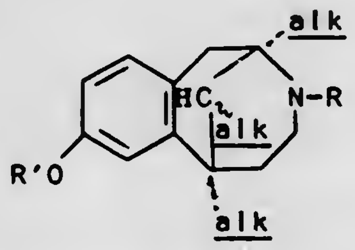
Stephen I. Sallay, Fort Wayne, Ind., assignor to Purdue Research Foundation, West Lafayette, Ind.

Filed Aug. 29, 1973, Ser. No. 392,844

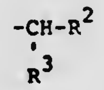
Int. Cl. C07d *39/00*

U.S. Cl. 260—293.54 **9 Claims**

1. A substituted benzazocine of the formula



wherein each alk is independently C_1–C_3 alkyl, R′ is H or alk and R is H, alk or



$$\underset{R^3}{\mathrm{-CH-R^2}}$$

wherein R^2 is cyclopropyl or C_2–C_6 alkenyl and R^3 is hydrogen, methyl or ethyl, the sum of the carbon atoms in R^2 plus R^3 being less than 7; and pharmaceutically-acceptable acid addition salts thereof formed with non-toxic acids.

3,892,758
BIS[1-(4-THIENO[3,2-C]PYRIDINYL)-4-PIPERIDYL]ALKANES

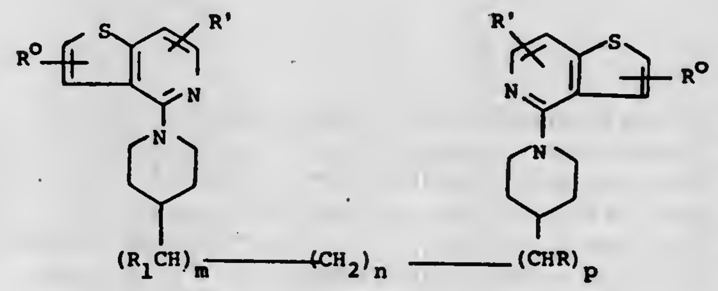
William R. J. Simpson, Mendham, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Filed Mar. 6, 1974, Ser. No. 448,525

Int. Cl. C07d *63/18*

U.S. Cl. 260—293.57 **7 Claims**

1. A compound of the formula:



wherein

R and R_1 are independently hydrogen or alkyl of 1 to 4 carbon atoms,
n is 1 to 6
m is 0 or 1
p is 0 or 1

each

R° is independently hydrogen, halo of atomic weight of 18 to 80, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms, and

each

R′ is hydrogen or alkyl of 1 to 4 carbon atoms, or

a pharmaceutically acceptable acid addition salt thereof.

3,892,759
METHOD FOR PREPARING AMINOALKANOL ESTERS OF 3-METHYLFLAVONE-8-CARBOXYLIC ACID

Enrico Sianesi, Milan, Italy, assignor to Recordati SA, Lugano, Switzerland

Division of Ser. No. 90,016, Nov. 16, 1970, Pat. No. 3,770,802. This application Apr. 4, 1972, Ser. No. 241,094

Claims priority, application Italy, Aug. 1, 1970, 28190/70

Int. Cl. C07d *29/24*

U.S. Cl. 260—293.58 **4 Claims**

1. A method for preparing esters of 3-methylflavone-8-carboxylic acid with aminoalcohols, wherein 2-hydroxy-3-allylpropiophenone is subjected to an isomerisation treatment comprising dissolving it in a solvent and refluxing the solution under alkaline conditions to convert it to 2-hydroxy-3-propenylpropiophenone, the latter is oxidized with ozone at a temperature of about 0°C in a reaction medium which consists of a mixture of formic acid and acetic acid to produce 3-propionylsalicylic aldehyde, then the latter compound is subjected to an alkaline fusion to oxidize it to 3-propionylsalicylic acid, the latter is esterified with a lower alkanol, then the 3-propionylsalicylic acid lower alkyl ester is reacted with sodium benzoate and benzoyl chloride at a temperature of about 180°–190°C to produce a 3-methylflavone-8-carboxylic acid lower alkyl ester and the ester is transesterified with an aminoalcohol or, if desired, the lower alkyl ester is hydrolized to produce free 3-methylflavone-8-carboxylic acid and the said acid is esterified with an aminoalcohol, said aminoalcohol being selected from the group consisting of β-piperidinoethanol, β-morpholinoethanol, β-diethylaminoethanol, β-di-n-propylaminoethanol and β-di-isopropylaminoethanol.

3,892,760
BIS-(2-PYRIDYL-1-OXIDE) DISULFIDE

Haywood Hooks, Jr., West Haven, and James J. Pitts, Hamden, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed May 2, 1974, Ser. No. 466,328

Int. Cl.[2] C07D *211/70*

U.S. Cl. 260—294.8 J **8 Claims**

1. In the method of preparing bis-(2-pyridyl-1-oxide) disulfide wherein 2-chloropyridine is oxidized with permaleic acid to form a reaction mixture containing 2-chloropyridine-1-oxide which is mercaptized using an alkali metal sulfide or alkali metal hydrosulfide to form the alkali metal salt of 2-mercaptopyridine-1-oxide in solution, the improvement comprising adjusting the pH of the resulting solution to a pH of about 4 to about 5 and then oxidizing with hydrogen peroxide to form the bis-(2-pyridyl-1-oxide) disulfide compound.

3,892,761

CERTAIN IMIDODITHIOCARBONATES

William Wayne Brand, Hopewell, and Michael Stanley Schrider, South Bound Brook, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Oct. 28, 1973, Ser. No. 410,842

Int. Cl.² C07D *31/50;* **C07C** *119/00*

U.S. Cl. 260—294.8 G **7 Claims**

1. Dipropargyl (4-chloro-o-tolyl)dithioimido-carbonate.

3,892,762

NOVEL SUBSTITUTED 1,2,4-TRIAZOLES

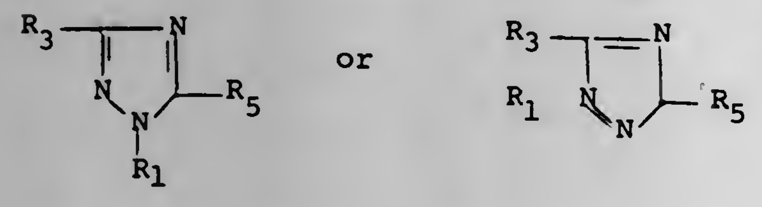
John J. Baldwin, Lansdale, and Frederick C. Novello, Berwyn, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 75,784, Sept. 25, 1970, abandoned. This application May 21, 1973, Ser. No. 361,915

Int. Cl.² C07D *213/75*

U.S. Cl. 260—295 E **9 Claims**

1. A compound of the formula



wherein R_1 is lower alkanoyl, carbamoyl or di-loweralkylcarbamoyl and R_3 and R_5 are each pyridyl.

3,892,763

1-PROPYNYLAMINOMETHYL-6-PHENYL-4H-S-TRIAZOLO[4,3-A][1,4]BENZODIAZEPINES

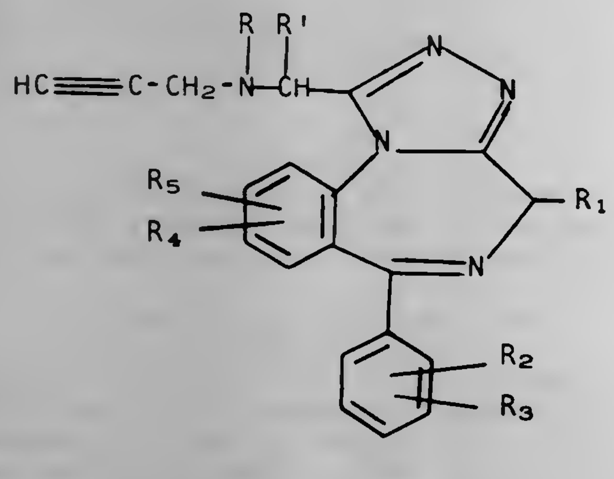
Jackson B. Hester, Jr., Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Mar. 21, 1974, Ser. No. 453,194

Int. Cl. C07d *57/02*

U.S. Cl. 260—308 R **14 Claims**

1. A compound of the formula II



wherein R, R′ and R_1 are hydrogen or alkyl of 1 to 3 carbon atoms, inclusive; wherein R_2, R_3, R_4 and R_5 are hydrogen, alkyl as defined above, fluorine, chlorine, bromine, nitro or trifluoromethyl; and the pharmacologically acceptable acid addition salts thereof.

3,892,764

PHENYL-IMIDAZOLYL-ALKANYL DERIVATIVES, THEIR PRODUCTION AND USE

Carl Metzger; Werner Meiser; Karl Heinz Buchel, and Manfred Plempel, all of Wuppertal-Elberfeld, Germany, assignors to Farbenfabriken Bayer AG, Germany

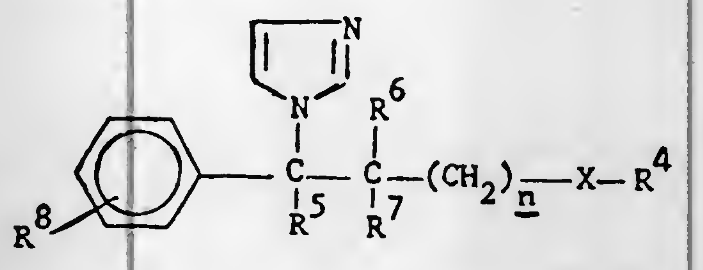
Division of Ser. No. 172,201, Aug. 16, 1971, Pat. No. 3,796,704. This application Apr. 2, 1973, Ser. No. 346,939

Claims priority, application Germany, Aug. 22, 1970, 2041771The portion of the term of this patent subsequent to Mar. 12, 1991, has been disclaimed.

Int. Cl. C07d *49/36*

U.S. Cl. 260—309 **17 Claims**

1. A compound of the formula:



or a pharmaceutically acceptable non-toxic salt thereof, wherein

X is oxygen or sulfur, or when R^4 is other than hydrogen, sulfonyl;

R^4 is hydrogen, lower alkyl, phenyl or phenyl substituted by 1 to 3 substituents selected from the group consisting of lower alkyl, lower alkoxy, chlorine, bromine, fluorine or nitro;

R^5 is lower alkyl or phenyl;

R^6 is hydrogen, lower alkyl or phenyl;

R^7 is hydrogen or lower alkyl;

R^8 is hydrogen, lower alkyl, lower alkoxy, chlorine, fluorine, bromine or nitro; and

n is 0 or 1.

3,892,765

DIALKOXYPHOSPHONOALKYL DERIVATIVES OF CYCLIC UREIDES

Daniel Porret, Binninen, and Jurgen Habermeier, Pfeffingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

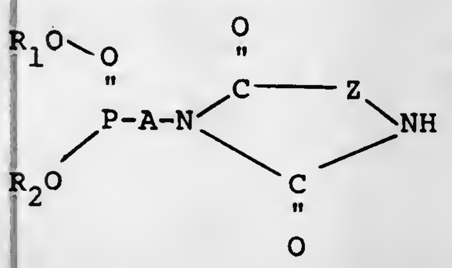
Filed Nov. 27, 1973, Ser. No. 419,313

Claims priority, application Switzerland, Dec. 12, 1972, 18030/72

Int. Cl. C07d *49/32*

U.S. Cl. 260—309.5 **6 Claims**

1. A dialkoxyphosphonoalkyl derivative of the Formula I



wherein Z is methylene, methylene substituted by alkyl of 1 to 6 carbon atoms, cyclopentylidene, or cyclohexylidene, R_1 and R_2 is alkyl of 1 to 4 carbon atoms, alkenyl of 3 to 4 carbon atoms, or R_1 and R_2 together form an alkylene of 2 to 5 carbon atoms, and A is alkylene of 1 to 12 carbon atoms, or alkylene of up to 12 carbon atoms interrupted by 1 oxygen atom.

3,892,766

PROCESS FOR THE PREPARATION OF 4-KETO-1,2,3,4-ETRAHYDROCARBAZOLE

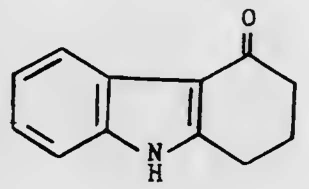
Harold Zinnes, Rockaway, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed June 3, 1974, Ser. No. 475,476

Int. Cl. C07d *27/68*

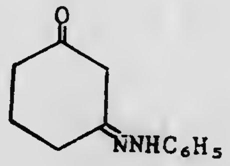
U.S. Cl. 260—315 **1 Claim**

1. In an improved process for the production of a compound of the formula



II

the improvement comprises refluxing a compound of the formula



I

with trifluoroacetic acid, and diluting the reaction mixture with ice water to obtain Compound II as a precipitate.

3,892,767

INDOLOSTEROIDS (6,12A-DIMETHYLINDENO-(4,5C)-CARBAZOLES) AND PROCESS THEREFOR

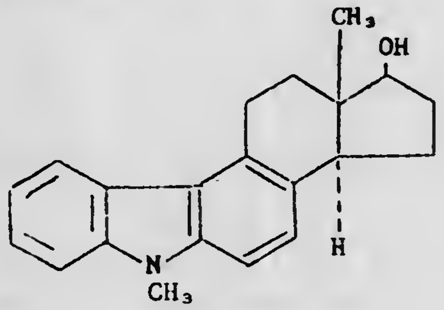
Jagadish C. Sircar, Dover, and Harold Zinnes, Rockaway, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed June 3, 1974, Ser. No. 475,559

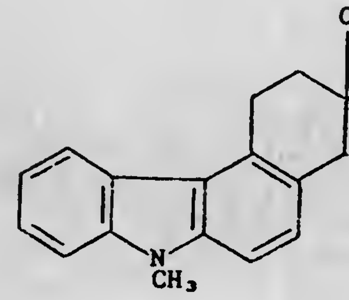
Int. Cl. C07d *27/68*

U.S. Cl. 260—315 **6 Claims**

1. A member selected from the group consisting of compounds of the formula:



I



II

3,892,768

AMIDE-IMIDE POLYMERS

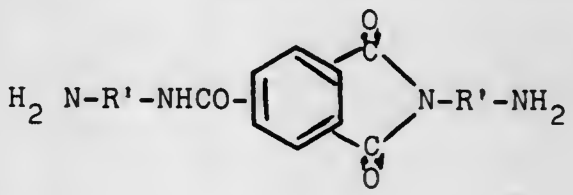
William M. Alvino, Pittsburgh, and Lawrence W. Frost, Murrysville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 13, 1971, Ser. No. 180,190

Int. Cl. C07d *27/52*

U.S. Cl. 260—326 C **5 Claims**

1. A primary diamine having the general structural formula:



wherein R′ is selected from the group consisting of divalent radicals of benzene, naphthalene, biphenyl, benzophenone, diphenyl ether, diphenyl sulfone, benzanilide, phenylbenzoate, diphenyl methane and diphenyl propane.

3,892,769

ACETAMINOPHEN ESTERS OF ARYL SALICYLIC ACIDS

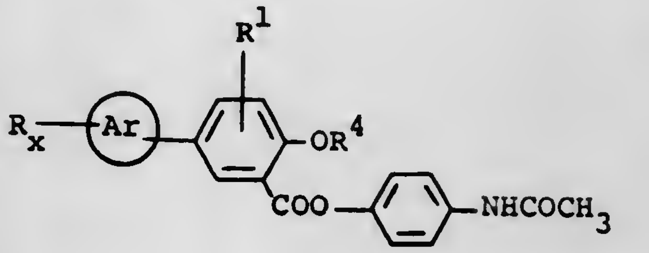
Tsung-Ying Shen, Westfield; Howard Jones, Holmdel, and Dennis M. Mulvey, Milford, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed July 20, 1973, Ser. No. 381,123

Int. Cl.² C07D *27/00, 27/56*

U.S. Cl. 260—326.13 R **5 Claims**

1. A compound of structural formula:



wherein

Ar is phenyl or pyrrolyl;

R^1 is hydrogen or $C_{1\text{-}5}$ alkyl;

R is chloro or fluoro;

X is an integer from 0–5; and

R^4 is hydrogen, benzyl, or $C_{2\text{-}3}$ alkanoyl.

3,892,770

PHENOXYACETIC ACID DERIVATIVES AND PROCESS FOR THE PREPARATION THEREOF

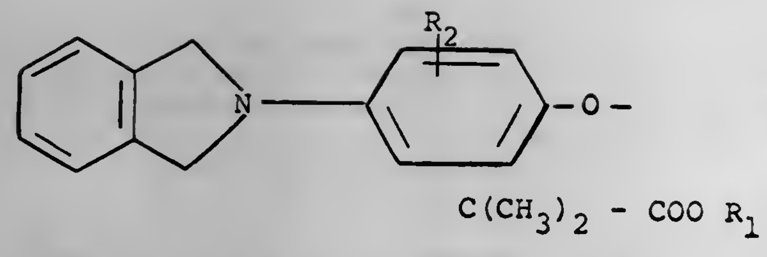
Johann Dahm; Joachim Borck; Herbert Nowak; Zdenek Simane, and Detlev Kayser, all of Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

Division of Ser. No. 234,343, March 13, 1972, Pat. No. 3,804,839. This application Sept. 4, 1973, Ser. No. 393,935

Int. Cl. C07d *27/48*

U.S. Cl. 260—326.1 **8 Claims**

1. A compound of the formula



wherein R_1 is H or alkyl or 1-10 carbon atoms; R_2 is H, alkyl of 1–4 carbon atoms or halogen; and the aromatic ring of the isoindolino group is unsubstituted or substituted by one or two of methyl, methoxy, halogen or by methylenedioxy.

3,892,771
SUBSTITUTED DIHYDROISOINDOLES

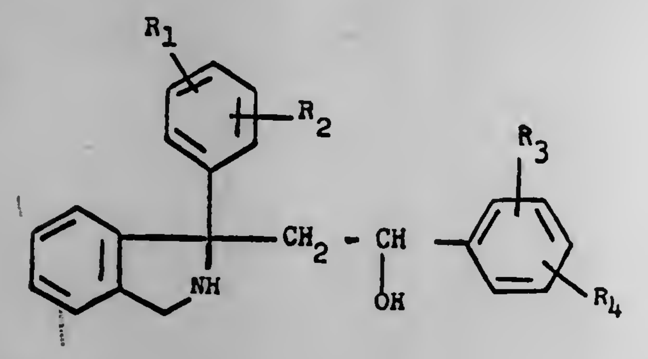
Marcel K. Eberle, Madison, N.J., assignor to Sandoz, Inc., Hanover, N.J.

Continuation-in-part of Ser. No. 323,629, Jan. 15, 1973, abandoned, which is a continuation-in-part of Ser. No. 301,660, Oct. 27, 1972, abandoned, which is a continuation-in-part of Ser. No. 240,277, March 31, 1972, abandoned, which is a continuation-in-part of Ser. No. 220,494, Jan. 24, 1972, abandoned, which is a continuation-in-part of Ser. No. 170,332, Aug. 9, 1971, abandoned. This application July 9, 1973, Ser. No. 377,642

Int. Cl. C07d *27/00, 27/48*

U.S. Cl. 260—326.1 **35 Claims**

1. A compound of the formula:



where

R_1 and R_2 each independently represent hydrogen or halo having an atomic weight of 19 to 36 and

R_3 and R_4 each independently represents hydrogen, lower alkyl having 1 to 4 carbon atoms, lower alkoxy having 1 to 4 carbon atoms, halo having an atomic weight of 19 to 36 or trifluoromethyl

provided that when both R_3 and R_4 are trifluoromethyl, they are not on adjacent carbon atoms; or a pharmaceutically acceptable acid addition salt thereof.

3,892,772
ISOMER OF 1-(P-CHLOROPHENYL)-1,2-CYCLOPROPANEDICARBOXIMIDE AND METHOD OF USE

Corris Mabelle Hofmann, Ho-Ho-Kus, N.J.; Arnold Curtis Osterberg, Pearl River; Eugene Newton Greenblatt, Spring Valley, both of N.Y., and David Henry Tedeschi, Little Falls, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Dec. 4, 1973, Ser. No. 421,559

Int. Cl. C07d *27/30*

U.S. Cl. 260—326.5 B **3 Claims**

1. The compound (1 S, 2 R)— (−) 1-(p-chlorophenyl)-1,2-cyclopropanedicarboximide, having a melting point of about 172°–173°C.

3,892,773
2-PHENYL ETHANOL DERIVATIVES

Andre Allais, Les Lilas; Jean Meier, La Varenne Saint-Hilaire, and Jacques Dube, Eaubonne, all of France, assignors to Roussel Uclaf, Paris, France

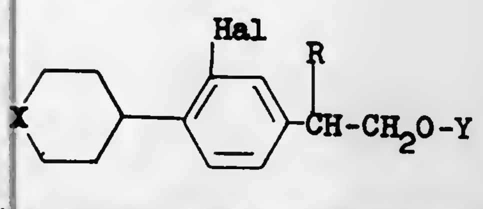
Filed May 21, 1973, Ser. No. 362,172

Claims priority, application France, June 1, 1972, 72.19690

Int. Cl. C07d *65/04, 7/04*

U.S. Cl. 260—327 TH **6 Claims**

1. A compound of the formula



wherein X is selected from the group consisting of oxygen and sulfur, Hal is halogen, R is selected from the group consisting of hydrogen and alkyl of 1 to 4 carbon atoms and Y is selected from the group consisting of hydrogen and acyl of a lower alkanoic acid and when R is alkyl, they exist in the form of racemates or optically active isomers.

3,892,774
CYCLO PENTATHIOPHENE DERIVATIVES

Anton Ebnöther, Arlesheim; Fulvio Gadient, Birsfelden, and Rudolf Süess, Bettingen, all of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

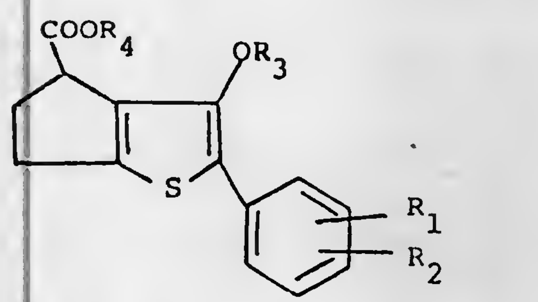
Filed Sept. 6, 1974, Ser. No. 503,968

Claims priority, application Switzerland, Sept. 11, 1973, 13024/73

Int. Cl. C07d *63/00*

U.S. Cl. 260—332.2 A **23 Claims**

1. A compound of formula I,



I

wherein

R_1 is hydrogen, chlorine, bromine, lower alkyl or lower alkoxy,

R_2 is hydrogen, chlorine, bromine, lower alkyl, lower alkoxy or, when R_1 is hydrogen, also fluorine or trifluoromethyl,

R_3 is hydrogen or lower alkyl, and

R_4 is hydrogen or lower alkyl,

or, when at least one of R_3 and R_4 is hydrogen, alternatively a salt thereof with a pharmaceutically acceptable cation.

3,892,775
3,5-DIMETHYL-2-THIENYL-(N-HALOALKYLTHIOCARBOXANILIDE) HERBICIDES

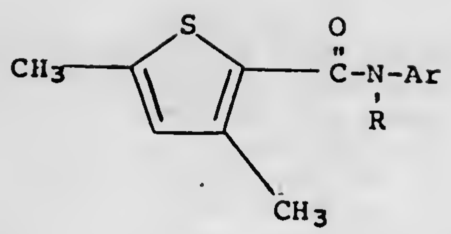
John W. Kobzina, Walnut Creek, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed July 30, 1973, Ser. No. 383,751

Int. Cl. C07d *63/16*

U.S. Cl. 260—332.2 C **3 Claims**

1. A compound of the formula



wherein R is haloalkylthio of 1 to 2 carbon atoms and of 3 to 5 chloro or bromo groups, and Ar is phenyl or 2-fluorophenyl.

3,892,776
N-OXIDES OF BIS-BASIC TRICYCLIC ETHERS

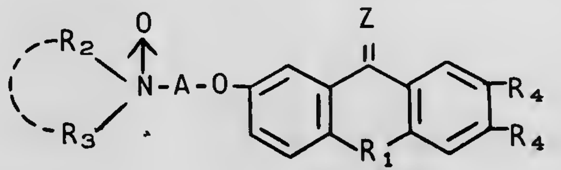
Robert H. Hook, and George J. Wright, both of Cincinnati, Ohio, assignors to Richardson-Merrell Inc., Wilton, Conn.

Filed Mar. 8, 1974, Ser. No. 449,227

Int. Cl. C07d *7/44*

U.S. Cl. 260—335 **8 Claims**

1. An essentially pure N-oxide of a bis-basic tricyclic ether having the general formula



wherein

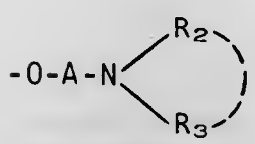
Z is oxygen or H_2;

R_1 is selected from the group consisting of a sigma bond, oxygen and when Z is oxygen the carbonyl radical;

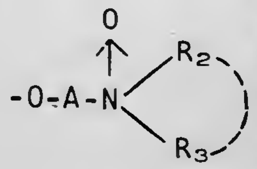
A is the ethylene or trimethylene radical;

R_2 and R_3 are each selected from the group consisting of lower alkyl having from one to three carbon atoms and when taken together with the nitrogen atom to which they are attached represent the pyrrolidinyl, piperidino and morpholino radical;

R_4 is selected from the group consisting of hydrogen and the radicals



and



with the proviso that one and only one such R_4 group is hydrogen; and

the pharmaceutically acceptable acid addition salts thereof.

3,892,777
SUBSTITUTED BENZYLETHYLENEDICARBAMATES

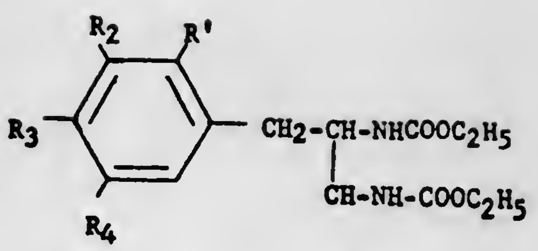
Vsevolod Gruenman, Montclair, and Max Hoffer, Nutley, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 184,950, Sept. 29, 1974, abandoned, which is a division of Ser. No. 13,769, Feb. 24, 1970, Pat. No. 3,636,039, which is a continuation-in-part of Ser. No. 725,946, May 1, 1968, abandoned. This application Feb. 7, 1974, Ser. No. 440,640

Int. Cl. C07c *125/06;* **C07d** *13/10*

U.S. Cl. 260—340.5 **1 Claim**

1. A compound of the formula



where R′ is hydrogen, lower alkyl and lower alkoxy: R_2, R_3 and R_4 taken independently of each other are hydrogen, hydroxy and lower alkoxy and R′, R_2, R_3 and R_4 taken as an adjacent pair is methylenedioxy.

3,892,778
NAPHTHOL SULFONAMIDONAPHTHALIDES

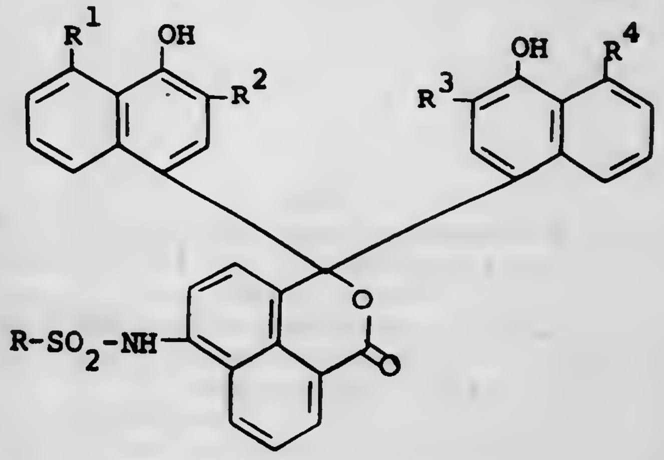
Myron S. Simon, West Newton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 193,746, Oct. 29, 1971, Pat. No. 3,811,881. This application Mar. 14, 1974, Ser. No. 451,077

Int. Cl. C07d *7/20*

U.S. Cl. 260—343.2 R **7 Claims**

1. A compound of the formula:



wherein R^1, R^2, R^3 and R^4 each are selected from hydrogen and a hydrogen-bonding group forming a 5-, 6- or 7-membered intramolecular hydrogen-bonded ring with the adjacent —OH and being a member selected from hydroxy, carboxy, o-hydroxyphenyl, sulfonamido, sulfamoyl and bis trifluoromethyl carbinol, at least one of R^1 and R^2 and at least one of R^3 and R^4 being hydrogen, and R is a hydrocarbon group containing up to 20 carbon atoms selected from alkyl, phenyl, phenyl-substituted alkyl and alkyl-substituted phenyl.

3,892,779
STEROIDAL INTERMEDIATES

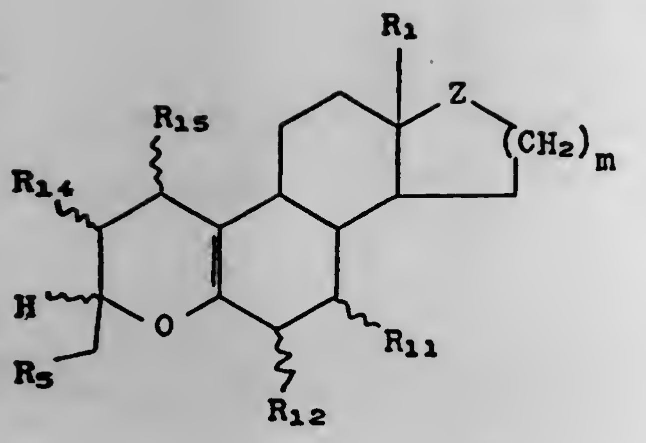
Gabriel Saucy, Essex Fells, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 57,372, July 22, 1970, Pat. No. 3,816,458, which is a continuation-in-part of Ser. No. 679,989, Nov. 2, 1967, Pat. No. 3,544,598, which is a continuation-in-part of Ser. No. 623,730, April 26, 1967, abandoned, which is a continuation-in-part of Ser. No. 604,124, Dec. 23, 1966, abandoned, which is a continuation-in-part of Ser. No. 549,816, May 13, 1966, abandoned, and a continuation-in-part of Ser. No. 813,693, April 4, 1969, abandoned. This application Mar. 13, 1974, Ser. No. 450,692

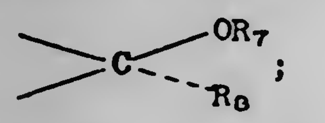
Int. Cl. C07d *7/20*

U.S. Cl. 260—345.2 **3 Claims**

1. A compound of the formula



where R_1 is a primary lower alkyl group of from 1 to 5 carbon atoms; R_5, R_{11}, R_{12} and R_{15} are each independently hydrogen or lower alkyl; *m* is an integer having a value of from 1 to 2; and Z is carbonyl or a group of the formula



R_7 is hydrogen or lower alkanoyl; and R_8 is hydrogen or lower alkyl, lower alkenyl or lower alkynyl.

3,892,780

PRODUCTION OF MALEIC ANHYDRIDE BY CATALYTIC VAPOR PHASE OXIDATION OF GLUTARIC ACID OR ANHYDRIDE

Alan Lewis Crowther, and Christopher Buxton Spencer, both of Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Sept. 25, 1972, Ser. No. 291,543

Claims priority, application United Kingdom, Oct. 20, 1971, 48713/71

Int. Cl. C07c *57/14*

U.S. Cl. 260—346.8 **9 Claims**

1. A process for the production of maleic anhydride which comprises contacting a mixture of a feedstock comprising glutaric acid and/or glutaric anhydride and a gas-containing free oxygen in the vapour phase at elevated temperature with a solid vanadium oxide catalyst.

3,892,781

METHOD FOR OXIDIZING O-XYLENE TO PHTHALIC ANHYDRIDE

Stewart R. Montgomery, Ashton, and Thomas H. Cheavens, Glenwood, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Aug. 2, 1973, Ser. No. 384,864

Int. Cl.^{2} C07D *307/89*

U.S. Cl. 260—346.4 **3 Claims**

1. A process for improving the yield of phthalic anhydride recovered from the oxidation of o-xylene comprising carrying out the reaction at a temperature of from 600° to 750°F. and a pressure of from 1 to 75 p.s.i.g. in the presence of a V_2O_5/-TiO_2 catalyst in a fluidized bed reactor system wherein the reactants are passed through two or more separate fluidized bed catalytic reactors in sequence.

3,892,782

PROCESS FOR THE PREPARATION OF 2-(HEX-3-CIS-EN-1-YL)-5-METHYL-FURAN

George H. Buchi, Cambridge, Mass., assignor to Firmenich S.A., Geneva, Switzerland

Filed July 12, 1974, Ser. No. 488,073

Int. Cl. C07d *5/16*

U.S. Cl. 260—346.1 R **4 Claims**

1. A process for the preparation of 2-[hex-3-cis-en-1-yl]-5-methyl-furan, which comprises:

a. reacting 5-methyl-furfural with a propargyl-magnesium halide;
b. hydrolysing the thus obtained compound to give 2-[1-hydroxy-but-3-yn-1-yl]-5methyl-furan;
c. converting the said hydroxy derivative into a corresponding ether;
d. reacting the resulting ether with an alkali metal in the presence of liquid ammonia and then adding ethyl bromide to the thus formed compound to give 2-[hex-3-yn-1-yl]-5-methyl-furan; and
e. partially reducing the triple bond of the resulting acetylenic derivative by catalytic hydrogenation to give 2-[hex-3-cis-en-1-yl]-5-methyl-furan.

3,892,783

PREPARATION OF ALKYL FURANS BY DEHYDROCYCLIZATION

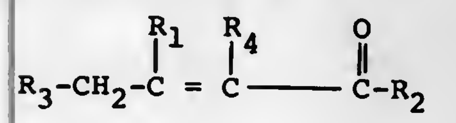
Roy B. Duke, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Mar. 5, 1971, Ser. No. 121,579

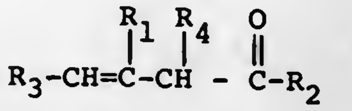
Int. Cl. C07d *5/16*

U.S. Cl. 260—346.1 R **23 Claims**

1. A process for the preparation of alkyl furans comprising oxidatively dehydrogenating and dehydrocyclizing a hydrocarbon starting compound having the structure:

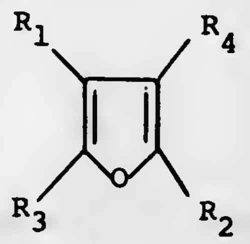


$$R_3-CH_2-\overset{R_1}{\overset{|}{C}} = \overset{R_4}{\overset{|}{C}} —— \overset{O}{\overset{\|}{C}}-R_2 \qquad \text{I}$$



$$R_3-CH=\overset{R_1}{\overset{|}{C}}-\overset{R_4}{\overset{|}{CH}} - \overset{O}{\overset{\|}{C}}-R_2 \qquad \text{II}$$

in the presence of a halogen selected from the group consisting of iodine, bromine, chlorine, interhalogen compounds and hydrohalic acids and molecular oxygen to form alkyl furans having the structure:



wherein said reaction is conducted in the vapor phase at at temperature of from about 300° to about 1300°F. and in the presence of a catalyst comprising copper chromite with or without other metallic salts, hydroxides, or oxides, or mixtures of elements from Groups Ia, IIa, Ib, VIb and VIII or the Lanthanide Series of the Periodic Table of the Elements at a gaseous hourly space velocity of from about 5 to about 1500 hours^{-1} and wherein R_1, R_2, R_3 and R_4 can be the same or different lower alkyl groups or hydrogen.

3,892,784

MANUFACTURE OF ALPHA-METHYL ETHERS OF ANTHRAQUINONE

Wolfgang Elser, Frankenthal, and Helmut Schmidt, Ludwigshafen, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Mar. 18, 1974, Ser. No. 451,785

Claims priority, application Germany, Mar. 24, 1973, 2314696

Int. Cl. C07c *49/68*

U.S. Cl. 260—383 **8 Claims**

1. A process for the manufacture of α-methyl ethers of anthraquinone, wherein an α-nitroanthraquinone is reacted with methanol in the presence of at least the stoichiometric amount of anhydrous or virtually anhydrous potassium carbonate.

3,892,785

CROSS-LINKABLE POLYAMIDES DERIVED FROM POLYMERIC FAT ACIDS

James E. Billigmeier, Rancho Cordova, Calif.; Allan L. Melby, Anoka; Dwight E. Peerman, Minneapolis, and Richard R. Roesler, New Brighton, all of Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Filed Nov. 9, 1972, Ser. No. 305,020

Int. Cl. C07c *103/30*

U.S. Cl. 260—404.5 **17 Claims**

1. A cross-linkable polyamide derived from an essentially linear diamine-polymeric fat acid based polyamide wherein the polymeric fat acid comprises at least about 25 equivalent % of the total carboxyl groups of the acid component used in the preparation of the polyamide and contains at least about 85% dimeric fat acid obtained by polymerizing ethylenically unsaturated aliphatic monocarboxylic acids of 16 to 22 carbon atoms, said cross-linkable polyamide having sufficient $—CH_2—O—R''$ groups, wherein R'' is a hydrocarbon radical of less than about 12 carbon atoms which may contain inert substituents, as replacements for amide hydrogens of the essentially linear polyamide to render the same cross-linkable.

3,892,786

BROMOACETANILIDES AND THEIR UTILITY AS BIOCIDES

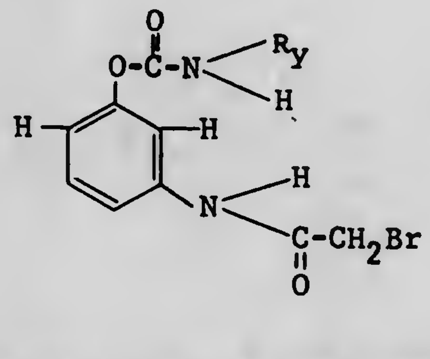
Don R. Baker, Pinole, and Eugene G. Teach, El Cerrito, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 806,717, March 12, 1969, abandoned. This application Mar. 24, 1971, Ser. No. 127,773

Int. Cl. C07c *125/06*

U.S. Cl. 260—468 E **5 Claims**

1. A compound of the formula



wherein R_y is selected from the group consisting of alkyl containing from 1 to about 6 carbon atoms, inclusive, allyl and cyclohexyl.

3,892,787

PROCESS FOR THE PREPARATION OF METHYL ESTERS

Eddie N. Gutierrez, Fort Lee, and Robert C. Reardon, Jr., Tenafly, both of N.J., assignors to Lever Brothers Company, New York, N.Y.

Filed Dec. 20, 1973, Ser. No. 426,770

Int. Cl. C07c *67/00*

U.S. Cl. 260—410.9 R **6 Claims**

1. A process for the preparation of methyl esters of aliphatic primary alcohols which comprises treating mono and polyhydric aliphatic primary alcohols with chlorine in methanol wherein said primary alcohols are selected from compounds of the formula:

$$R_1OH \text{ and } HO—R_2—OH$$

wherein R_1 is a straight or branched chain alkyl group of from 2 to 20 carbon atoms, and phenylalkyl wherein the alkyl moiety is from 1 to 20 carbon atoms, and R_2 is an alkylene group of from 3 to 20 carbon atoms; R_1 may also have halogen substituted thereon said halogen being selected from the group consisting of chlorine, bromine, and iodine; said treatment is conducted at a temperature of from about 0°C to about 80°C wherein the ratio of methanol to aliphatic primary alcohol is from about 5:1 to about 20:1 and the ratio of chlorine to methanol is from about 0.1:1 to about 10:1.

3,892,788

SELECTIVE CARBOXYLATION PROCESS

John F. Knifton, Poughquag, N.Y., assignor to Texaco Inc., New York, N.Y.

Continuation-in-part of Ser. No. 223,015, Feb. 2, 1972, Pat. No. 3,819,669. This application Jan. 28, 1974, Ser. No. 437,251

Int. Cl. C07c *51/14, 67/00*

U.S. Cl. 260—410.9 R **11 Claims**

1. A process for selectively carboxylating alpha (α) olefins contained in mixtures of alpha-olefins and internal olefins to linear alkanoic acid or ester products, wherein said alpha olefins in the mixture constitute from 10 to 90 mole percent of the olefin mixture, said olefins containing from 2 to 30 carbon atoms, by:

a. contacting each mole of said olefin mixture with carbon monoxide and hydroxyl containing coreactant selected from the group consisting of water and alcohols, in the presence of from about 0.001 to 0.02 mole of a three component catalyst consisting of ligand-stabilized platinum (II) dihalide complexes in combination with Group IVB metal halides, said catalyst being selected from the group consisting of:
   $PtCl_2[As(C_6H_5)_3]_2$-$SnCl_2$
   $PtCl_2[As(C_6H_5)_3]_2$-$SnCl_4$
   $PtCl_2[P(p\text{-}CH_3.C_6H_4)_3]_2$-$SnCl_2$
   $PtCl_2[S(C_6H_5)_2]_2$-$SnCl_2$
   with sufficient inert solvent to disperse the components of the admixture, to form a deoxygenated reaction mixture,
b. pressurizing said reaction mixture to between about 1500 psig to 3000 psig with at least sufficient carbon monoxide and hydroxyl containing coreactant to satisfy the stoichiometry of the carboxylation reaction,
c. heating said pressurized reaction admixture between 60° to 90°C, until between about 10 and 90 percent of said alpha olefins contained in said olefin mixture is converted to alkanoic acid or ester products, and then
d. isolating said alkanoic acid or ester products contained therein.

3,892,789

PROCESS FOR THE EXTRACTION OF GLYCERIDE OILS BY SELECTIVE SOLVENTS

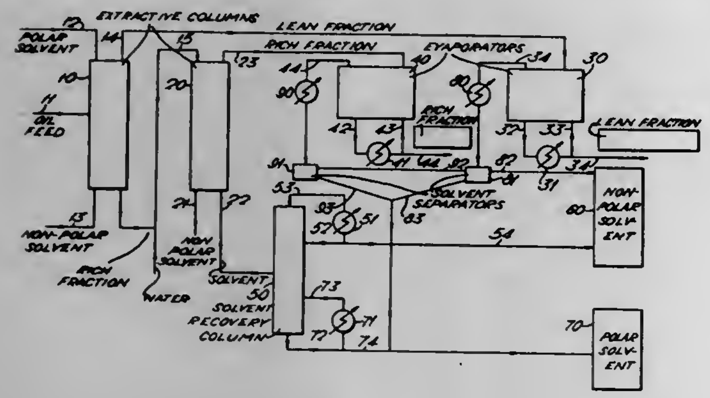
Anthony Mesnard Parsons, Hatfield, England, assignor to Lever Brothers Company, New York, N.Y.

Filed Oct. 15, 1973, Ser. No. 406,748

Claims priority, application United Kingdom, Oct. 18, 1972, 48039/72

Int. Cl. C11b *7/00*

U.S. Cl. 260—428.5 **11 Claims**



1. Process for increasing the combined polyunsaturated fatty acid content of edible oils having a combined linoleic acid content of at least 50% by weight, comprising contacting the oil with a suitable solvent system comprising an N-substituted amide solvent selected from the group consisting of dimethyl formamide, N-lower alkyl pyrrolidone, and 1,6-bis-pyrrolidon-2-yl-,-hexane at a temperature at which two liquid phases are formed, one consisting of a fraction of the oil rich in combined linoleic acid which is dissolved in the polar solvent, and the other a lean fraction comprising the residual oil, separating the two fractions and removing the polar solvent from the rich fraction to recover an oil fraction rich in combined linoleic acid.

3,892,790

COMPOSITIONS CONTAINING PLATINUM

Martin Leslie Tobe, Northwood; Abdul Rauf Khokhar, London, and Peter David Michael Braddock, Wigan, all of England, assignors to Rustenburg Platinum Mines Limited, Johannesburg, South Africa

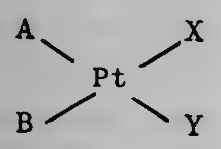
Filed Apr. 9, 1973, Ser. No. 349,186

Claims priority, application United Kingdom, Apr. 10, 1972, 16349/72; Apr. 27, 1972, 19656/72; May 8, 1972, 21388/72; June 26, 1972, 29920/72; Sept. 8, 1972, 41798/72

Int. Cl.² C07E *15/00;* **C07F** *87/34*

U.S. Cl. 260—429 R **14 Claims**

1. A cis co-ordination compound of platinum having the structure



in which X and Y are halogen groups which are the same or different and A and B are the same or different alicyclic amine groups co-ordinated to the Pt through their N atoms each having the general formula:

$$\text{cyclo—}C_nR_{2n-1}\,NH_2$$

in which n may vary from 3 to 7 and in which all of the R groups are either the same or different and are selected from the group consisting of hydrogen and methyl and ethyl.

3,892,791

TITANIUM COMPOUNDS

David Whiteley Brook, Teesside, and Peter Dunlop Kay, Hartlepool, both of England, assignors to British Titan Limited, Teesside, England

Filed Sept. 25, 1972, Ser. No. 291,668

Claims priority, application United Kingdom, Oct. 28, 1971, 50038/71

Int. Cl. C07f *7/28*

U.S. Cl. 260—429.5 **6 Claims**

1. A titanium chelate comprising the reaction product of a titanium orthoester having the formula $Ti(OR)_4$ in which R represents an alkyl group containing from 2 to 10 carbon atoms, an alkylene glycol containing 2 OH groups in which each alkylene group contains up to 6 carbon atoms, and an alkanolamine selected from the group consisting of diethanolamine, triethanolamine, diisopropanolamine and triisopropanolamine and in which the ratio of the number of moles of said glycol plus said alkanolamine to the number of moles of Ti in said chelate is from 4:1 to 1:1, and the ratio of the number of moles of said alkanolamine to the number of moles of said glycol is from 1:5 to 10:1.

3,892,792

PROCESS FOR THE SYNTHESIS OF PGE COMPOUNDS FROM PGF COMPOUNDS

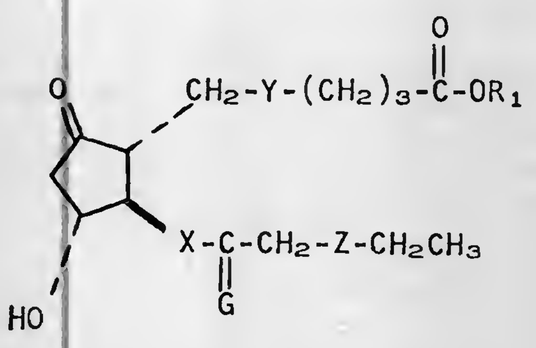
Ernest W. Yankee, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 207,630, Dec. 13, 1971, abandoned. This application Dec. 26, 1973, Ser. No. 427,837

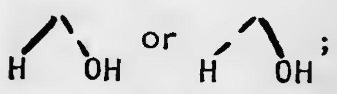
Int. Cl. C07c *51/00*

U.S. Cl. 260—448.8 R **10 Claims**

1. A process for producing an optically active compound of the formula:

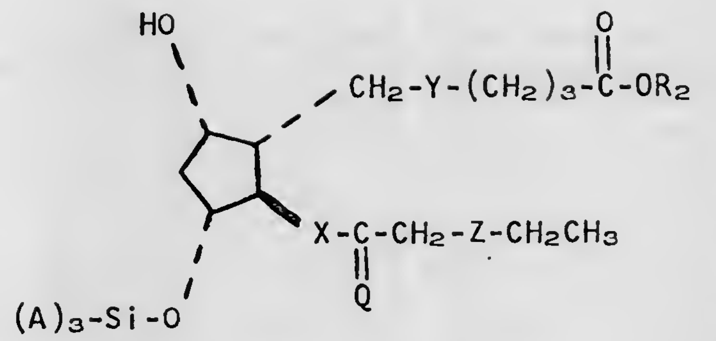


or a racemic compound of that formula and the mirror image thereof, wherein (a) X is trans—CH═OH— or $—CH_2CH_2—$, and Y and Z are both $—CH_2CH_2—$, or (b) X is trans—CH═CH—, Y is cis—CH═CH—, and Z is $—CH_2CH_2—$ or cis—CH═CH—; wherein G is

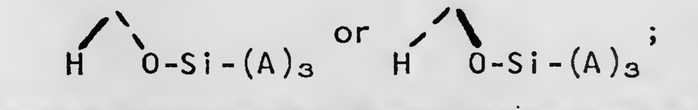


and wherein R_1 is hydrogen or alkyl of one to 8 carbon atoms inclusive, which comprises the steps:

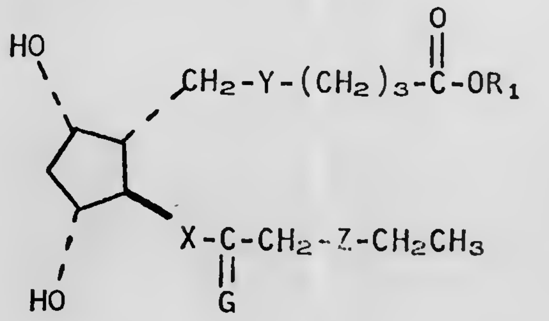
1. preparing an optically active compound of the formula:



or a racemic compound of that formula and the mirror image thereof, wherein A is alkyl of one to 4 carbon atoms, inclusive, phenyl, phenyl substituted with one or 2 fluoro, chloro, or alkyl of one to 4 carbon atoms, inclusive, or aralkyl of 7 to 12 carbon atoms, inclusive; wherein Q is

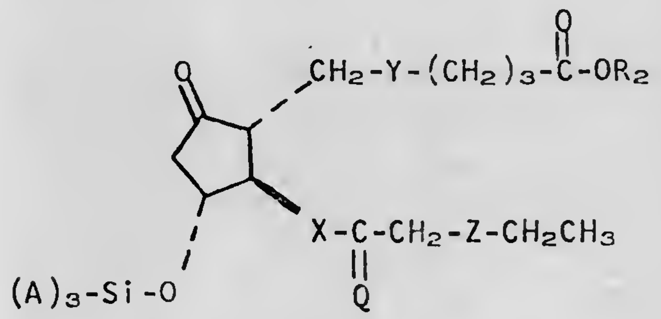


wherein R_2 is hydrogen, alkyl of one to 8 carbon atoms, inclusive, or $—Si—(A)_3$ wherein A is as defined above; and wherein X, Y, and Z are as defined above, by starting with an optically active compound of the formula



or a racemic compound of that formula and the mirror image thereof, wherein G, R_1, X, Y, and Z are defined above, and reacting it either (a) with a silylating agent of the formula $(A)_3SiN(E)_2$ wherein A is alkyl of one to 4 carbon atoms, inclusive, phenyl, phenyl substituted with one or 2 fluro, chloro, or alkyl of one to 4 carbon atoms, inclusive, or aralkyl of 7 to 12 carbon atoms, inclusive, and E has the same defineition as A, being the same or different, at a temperature in the range of about −25° to −50° C., or (b) with a silylating agent consisting of a trisubstituted monochlorosilane selected from the group consisting of chlorotriethylsilane, chlorotriisobutylsilane, chlorotriphenylsilane, chlorotris(p-chlorophenyl)silane, chlorotrim-tolylsilane, and tribenzylchlorosilane in the presence of a tertiary base at a temperature in the range of about 0° to +25° C.;

2. forming an optically active compound of the formula



or a racemic compound of that formula and the mirror image thereof, wherein A, Q, R_2, X, Y, and Z are as defined above, by oxidizing the reaction product of step (1) with a reagent which selectively oxidizes secondary hydroxyl to carbonyl in the presence of carbon-carbon double bonds; and

3. hydrolyzing the reaction product of step (2).

3,892,793

MANUFACTURE OF ISOCYANATES

Geoffrey Ernest Beswick, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

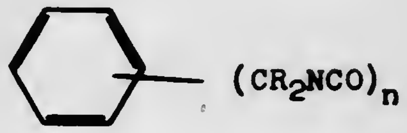
Filed Jan. 13, 1972, Ser. No. 217,623

Claims priority, application United Kingdom, Jan. 22, 1971, 2963/71

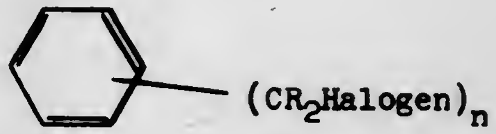
Int. Cl. C07c *119/04*

U.S. Cl. 260—453 P **4 Claims**

1. In a process for the manufacture of organic isocyanates of the formula



wherein R independently represents hydrogen or an alkyl group of from 1 to 4 carbon atoms, the benzene nucleus is substituted in at least one position ortho to each $—CR_2NCO$ group by an alkyl group and *n* is from 2 to 4 which comprises reacting a halide of the formula



wherein R and n are as above defined, halogen represents a chlorine or bromine atom and the benzene nucleus is substituted in at least one position ortho to each $—CR_2$Halogen group by an alkyl group, with an alkali metal, ammonium or alkaline earth metal cyanate, the improvement which comprises first rendering the cyanate into a fine state of subdivision by milling in a solvent for the reaction in the presence of a finely divided inert substrate selected from the group of activated carbons and siliceous earths.

3,892,794

PROCESS FOR THE MANUFACTURE OF UNSATURATED ALDEHYDES, ACIDS AND NITRILES FROM THE CORRESPONDING OLEFINS

Robert K. Grasselli, Chagrin Falls; Dev. D. Suresh, Warrensville Heights, and Ernest C. Milberger, Solon, all of Ohio, assignors to Standard Oil Company, Cleveland, Ohio

Filed Feb. 9, 1972, Ser. No. 224,967

Int. Cl. C07c *121/02*

U.S. Cl. 260—465.3 **5 Claims**

1. A process for the ammoxidation of propylene or isobutylene to form acrylonitrile or methacrylonitrile, respectively, comprising contacting in the vapor phase at a temperature within the range of from about 250° to 600°C. a mixture of ammonia, a molecular oxygen-containing gas and either propylene, or isobutylene, or mixtures thereof, in a molar ratio of ammonia to olefin within the range from about 0.05:1 to about 5:1, and a molar ratio of oxygen to olefin within the range from about 0.5:1 to about 10:1, in the presence of a promoted, reduced, antimony oxide-molybdenum oxide-containing catalyst wherein the catalyst is prepared by combining the following components in any order:

a. an aqueous suspension of molybdenum oxide;

b. a reducing agent selected from the group consisting of finely divided metal, sulfur, sulfur dioxide, hydrogen sulfide, hydrazine hydrate, ammonia, hydroxylamine, and an organic reducing agent, each such reducing agent being capable of reducing at least some of the molybdenum to a valence state below +6, in a ratio of from about 0.0001 to 0.2 moles of the reducing agent per mole of the element molybdenum;

c. antimony oxide in a ratio of from about 0.1 to 9 moles of antimony oxide per mole of the element molybdenum; and

d. at least one promoter element in the form of a non-oxidizing compound, selected from the group consisting of tellurium, tungsten, titanium, manganese, nickel, iron, copper, lead, rhenium, bismuth, tin, uranium, chromium, phosphorus and boron, said promoter element being added in a ratio of from about 0.0001 to 1.0 moles of promoter element per mole of the element molybdenum.

3,892,795

16-METHYL AND 16,16 DIMETHYL PGA$_2$ COMPOUNDS

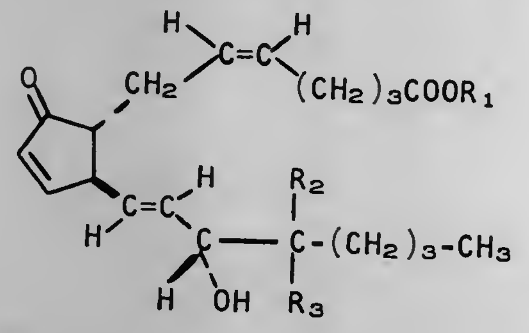
Barney J. Magerlein, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 133,342, April 12, 1971, abandoned. This application Apr. 23, 1973, Ser. No. 353,475

Int. Cl. C07c *61/36, 69/74*

U.S. Cl. 260—468 D **9 Claims**

1. An optically active compound of the formula



or a racemic compound of that formula and the mirror image thereof, wherein R_1 is hydrogen, alkyl of one to 8 carbon atoms, inclusive, or a pharmacologically acceptable cation, and wherein R_2 and R_3 are hydrogen, methyl, or ethyl, provided that at least one of R_2 and R_3 is not hydrogen.

3,892,796

HYDROGENATION OF DMT PROCESS RESIDUE AND DISTILLED DMT PROCESS RESIDUE

Raymond T. Leibfried, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed June 21, 1973, Ser. No. 372,371

Int. Cl. C07c *67/06, 51/36, 64/71*

U.S. Cl. 260—468 K **7 Claims**

1. A process which comprises hydrogenating to substantially complete ring saturation material selected from the group consisting of DMT process residue and distilled DMT process residue by admixing said material with hydrogen at superatmospheric pressure and a hydrogenation catalyst at 100-300°C. until the reaction mixture no longer absorbs ultraviolet light at 241 millimicrons; said DMT process residue being the residue purged from the continuous process for the production of DMT, which comprises the air oxidation of p-xylene to p-toluic acid, the esterification of said acid with methanol to methyl p-toluate, the air oxidation of methyl p-toluate to the monomethyl ester of terephthalic acid, and the esterification of said monomethyl ester with methanol to DMT, said air oxidations being carried out together in a first stage to form an oxidate, said esterifications being performed together in a second stage to form an esterification reaction mixture, with said oxidate and methanol being introduced into said second stage, xylene and part of said esterification reaction mixture being introduced into said first stage, and the remainder of said esterification reaction mixture being distilled to give a distillate comprising DMT and methyl p-toluate, and a residue, part of which is introduced into said first stage and the remainder of which is purged.

5. The product obtained by hydrogenating to substantially complete ring saturation material selected from the group consisting of DMT process residue and distilled DMT process residue by admixing said material with hydrogen at superatmospheric pressure and a hydrogenation catalyst at 100°–300°C. until the reaction mixture no longer absorbs ultraviolet light at 241 millimicrons; said DMT process residue being the residue purged from the continuous process for the production of DMT, which comprises the air oxidation of p-xylene to p-toluic acid, the esterification of said acid with methanol to methyl p-toluate, the air oxidation of methyl p-toluate to the monomethyl ester of terephthalic acid, and the esterification of said monomethyl ester with methanol to DMT, said air oxidations being carried out together in a first stage to form an oxidate, said esterifications being performed together in a second stage to form an esterification reaction mixture, with said oxidate and methanol being introduced into said second stage, xylene and part of said esterification reaction mixture being introduced into said first stage, and the remainder of said esterification reaction mixture being distilled to give a distillate comprising DMT and methyl p-toluate, and a residue, part of which is introduced into said first stage and the remainder of which is purged.

7. The reaction product of alcoholic material and the product of the process which comprises hydrogenating to substantially complete ring saturation material selected from the group consisting of DMT process residue and distilled DMT process residue, said hydrogenating being effected by admixing said material with hydrogen at superatmospheric pressure and a hydrogenation catalyst at 100°–300°C. until the reaction mixture no longer absorbs ultraviolet light at 241 millimicrons; said alcoholic material being selected from the group consisting of straight and branched chain C_2-C_{18} alkanols, straight and branched chain C_1-C_{18} mono- and polyalkylene glycol ethers of said alkanols, ethylene glycol, propylene glycol, diethylene glycol, glycerol, sucrose, pentaerythritol, dipentaerythritol and neopentyl glycol and said DMT process residue being the residue purged from the continuous process for the production of DMT, which comprises the air oxidation of p-xylene to p-toluic acid, the esterification of said acid with methanol to methyl p-toluate, the air oxidation of methyl p-toluate to the monomethyl ester of terephthalic acid, and the esterification of said monomethyl ester with methanol to DMT, said air oxidations being carried out together in a first stage to form an oxidate, said esterifications being performed together in a second stage to form an esterification reaction mixture, with said oxidate and methanol being introduced into said second stage, xylene and part of said esterification reaction mixture being introduced into said first stage, and the remainder of said esterification reaction mixture being distilled to give a distillate comprising DMT and methyl p-toluate, and a residue, part of which is introduced into said first stage and the remainder of which is purged.

3,892,797

PROCESS FOR THE PREPARATION OF 1-NITROBENZENE-2-CARBOXYLIC ACID ALKYL ESTER-5-CARBOXYLIC ACID AMIDES

Kurt Gengnagel, Offenbach, Main, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Mar. 27, 1974, Ser. No. 455,375

Claims priority, application Germany, Apr. 3, 1973, 2316459

Int. Cl. C07c *103/24*

U.S. Cl. 260—471 R **1 Claim**

1. A process for the preparation of a 1-nitrobenzene-2-carboxylic acid alkyl ester-5-carboxylic acid amide, wherein a 1-nitrobenzene-2,5-dicarboxylic acid dialkyl ester is reacted with ammonia in an alcoholic ammonia solution at about 20° to 30°C.

3,892,798

PROCESS FOR INTRODUCING TEREPHTHALIC ACID INTO A REACTION

Rudolf Heeg, Oberhochstadt, and Alfred Striebich, Bad Vilbel, both of Germany, assignors to Davy-Ashmore Aktiengesellschaft, Frankfurt, Germany

Filed Sept. 11, 1972, Ser. No. 287,985

Claims priority, application Germany, Sept. 14, 1971, 2145761

Int. Cl.² C07C *69/82*

U.S. Cl. 260—475 P **9 Claims**

1. In a process for introducing powdered terephthalic acid into a reaction mixture of terephthalic acid, partially esterified with ethylene glycol in a pressurized reaction vessel in an esterification reaction zone maintained at superatmospheric pressure wherein the ethylene glycol is introduced only directly into the reaction vessel, the improved process for adding the terephthalic acid to the reaction mixture which comprises removing a portion of the reaction mixture from the reaction zone, raising the pressure of the powdered terephthalic acid to substantially the pressure of the reaction zone; adding the pressurized powdered acid to the removed portion of the reaction mixture, without intermediate cooling of said removed portion of the reaction mixture or ethylene glycol addition thereto in a quantitative ratio of powdered acid to removed portion of the reaction mixture of about 1 to 33% by weight; homogenizing the resultant mixture in a homogenizer and returning the resultant homogenized mixture to the reaction mixture.

3,892,799

PHENOXYALKYLAMINES AND THEIR SALTS

Henri Pinhas, Paris, France, assignor to Laboratoires Laroche Navarron, Levallois, France

Filed Dec. 20, 1971, Ser. No. 210,108

Claims priority, application France, Dec. 28, 1970, 70.46876

Int. Cl.² C07C *93/06*

U.S. Cl. 260—501.18 **10 Claims**

1. A compound selected from the group consisting of 3-Methyl-4-[2-(α-methyl-phenethylamino)-ethoxy]-propiophenone and its non-toxic acid addition salts.

3,892,800

TRICHLOROAMINO (AND ACYLAMINO)PHENYLALKANOIC ACIDS AND ESTERS THEREOF

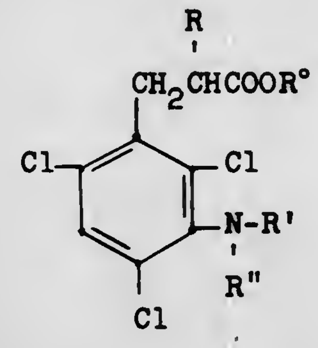
Ardie R. Nickel; Franklin J. Rosenberg, and James H. Ackerman, all of Bethlehem, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Apr. 6, 1973, Ser. No. 348,531

Int. Cl. C07c *103/32*

U.S. Cl. 260—518 A **17 Claims**

1. A compound of the formula



wherein:

R, R° and R″ are hydrogen or alkyl of 1–4 carbon atoms; and R′ is hydrogen or alkanoyl of 1–6 carbon atoms, R′ being limited to alkanoyl when R″ is alkyl;

or therapeutically acceptable salts thereof where R° is hydrogen.

3,892,801

METHOD FOR PREPARING ALKALI SALTS OF P-METHYLAMINOBENZOYLGLUTAMIC ACID

John Kazan, Somerville, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Sept. 11, 1974, Ser. No. 505,102

Int. Cl. C07c *103/30*

U.S. Cl. 260—518 R **8 Claims**

1. An improved method for preparing an alkali salt of p-methylaminobenzoylglutamic acid comprising (1) reacting and aqueous mixture of p-nitro, or p-chlorobenzoyl chloride and a salt of glutamic acid under alkaline conditions at a temperature of 20° to 40°C. to produce the corresponding alkali salt of p-chlorobenzoylglutamic acid, (2) acidifying the reaction mixture to precipitate p-nitro, or p-chlorobenzoylglutamic acid, (3) separating the latter compound by filtration, (4) reacting said p-nitro, or p-chlorobenzoylglutamic acid with an aqueous solution containing an excess of methylamine and cuprous chloride at a temperature of from 115°C. to 150°C. in a closed vessel to obtain a reaction mixture containing a salt of p-methylaminobenzoylglutamic acid, (5) treating said reaction mixture with an inorganic sulfide to precipitate the copper as copper sulfide, (6) separating said copper sulfide from the reaction mixture, (7) treating the reaction mixture with an alkalizing agent to form the alkali salt of p-methylaminobenzoylglutamic acid and (8) recovering said compound therefrom.

3,892,802

PROCESSES FOR MAKING BENZAMIDE COMPOUNDS

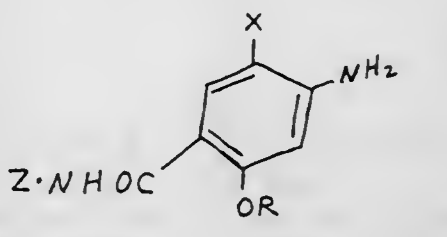
Ctirad Podesva, Montreal, Quebec; Geza Kohan, La Salle, Quebec, and William T. Scott, Ville-de-Lery, Quebec, all of Canada, assignors to Delmar Chemicals Limited, Ville La-Salle, Canada

Continuation-in-part of Ser. No. 4,587, Jan. 21, 1970, abandoned. This application Nov. 11, 1971, Ser. No. 197,986

Int. Cl. C07c *103/44*

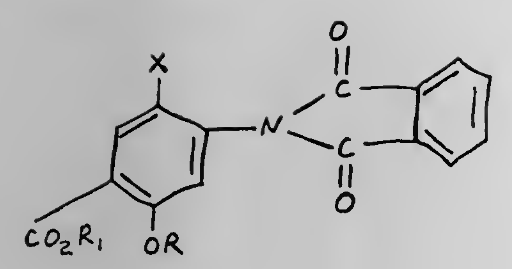
U.S. Cl. 260—559 S **18 Claims**

1. A process for making a benzamide compound having the formula:



(I)

wherein X represents a chlorine or bromine atom, R represents a hydrogen atom or an alkyl group and Z is a tertiary amino alkyl group, which comprises reacting a phthaloylamido compound having the formula:



(II)

wherein X and R each have the same meaning as in the foregoing formula I and R_1 is an alkyl group, with an asymetrically disubstituted diamine having the formula:

$$Z.NH_2$$

wherein Z has the same meaning as in the foregoing formula I, whereby dephthaloylation and aminolysis are accomplished in a single-stage, one-vessel reaction, said reaction being conducted in the presence of aluminum isopropoxide, which is an aminolysis catalyst, said reaction being conducted at a temperature between about 100° and 150°C., said reaction being conducted under substantially anhydrous conditions, and the molar ratio of said diamine to said phthaloylamido compound being at least six, the excess amount of said diamine being a solvent for said reaction.

3,892,803
NAPHTHYLALKANOIC ACIDS AND THEIR DERIVATIVES

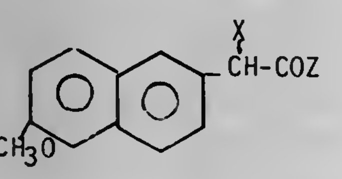
Julius Diamond, Lafayette Hill, and Ching Tan Tsuei, Lansdale, both of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Division of Ser. No. 268,691, July 3, 1972, abandoned. This application Dec. 6, 1973, Ser. No. 422,479

Int. Cl. C07c *103/22*

U.S. Cl. 260—559 R **18 Claims**

1. A compound of the formula



where X is halo or hydroxy and Z is —NH_2, loweralkylamino, diloweralkylamino or cycloloweralkylamino.

3,892,804
TETRAHYDRONAPHTHYLALKANOIC ACIDS AND THEIR DERIVATIVES

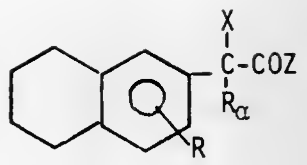
Julius Diamond, Lafayette Hill, and George Henry Douglas, Paoli, both of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Division of Ser. No. 268,745, July 3, 1972, Pat. No. 3,829,467. This application Dec. 6, 1973, Ser. No. 422,491

Int. Cl. C07c *103/22*

U.S. Cl. 260—559 R **20 Claims**

1. A compound of the formula



where R is halo, R is hydrogen, X is hydroxy or halo and Z is amino, loweralkylamino, diloweralkylamino or cycloloweralkylamino.

3,892,805
PRODUCTION OF AZINES

Kurt-Wilhelm Eichenhofer, Leverkusen, and Reinhard Schliebs, Cologne, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 11, 1974, Ser. No. 441,548

Claims priority, application Germany, Feb. 24, 1973, 2309421; Oct. 2, 1973, 2349490

Int. Cl. C07c *119/00*

U.S. Cl. 260—566 B **7 Claims**

1. A process for the production of an azine comprising reacting a carbonyl compound selected from the group consisting of formaldehyde, acetaldehyde, propionaldehyde, butyraldehyde, isobutyraldehyde, valeraldehyde, benzaldehyde, p-chlor-benzaldehyde, acetone, 2-butanone, 2-pentanone, diethylketone, pinacolone, acetylacetone, dibutylketone, cyclohexanone, methylphenylketone, methylisopropylketone, methylcyclohexylketone, dicyclohexylketone, 2-hexanone, 2-heptanone, cycloheptanone, and cyclopentanone, with ammonia and at least one peroxosulphuric acid compound selected from the group consisting of peroxomonosulphuric acid, peroxodisulphuric acid, and the ammonium, alkali metal and alkaline earth metal salts thereof.

3,892,806
REACTION PRODUCTS OF ϵ-CAPROLACTAM WITH ALKYLENE DIAMINES

Hans-Werner Eckert, Dusseldorf, and Gunter Koppensteiner, Hilden, both of Germany, assignors to Henkel & Cie, GmbH, Dusseldorf, Germany

Filed Apr. 20, 1973, Ser. No. 352,981

Int. Cl.² C07C *103/00*

U.S. Cl. 260—561 A **6 Claims**

1. A reaction product of ϵ-caprolactam with N-alkyl-1,3-propylene diamine of the formula:

$$RHN — (CH_2)_3—NH_2$$

wherein R is selected from the group consisting of alkyl of 10 to 18 carbon atoms, hydroxyalkyl of 10 to 18 carbon atoms, alkenyl of 10 to 18 carbon atoms, hydroxyalkenyl of 10 to 18 carbon atoms, alkadienyl of 10 to 18 carbon atoms, alkatrienyl of 10 to 18 carbon atoms, and mixtures of alkyl derived from fatty acid mixtures of 10 to 18 carbon atoms, with the molar ratio of N-alkyl-1,3-propylene diamine to ϵ-caprolactam ranging from 1:1 to 1:10; said reaction being carried out for 3 to 20 hours in the liquid phase at temperatures above 180°C.

3,892,807
AROMATIC AZOMETHINES

Wilfried Sahm, Kelkheim, Taunus, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

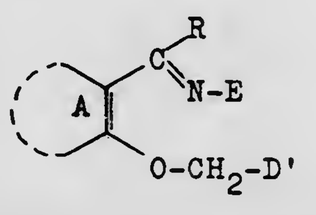
Filed Dec. 13, 1973, Ser. No. 427,016

Claims priority, application Switzerland, Dec. 18, 1972, 18397/72

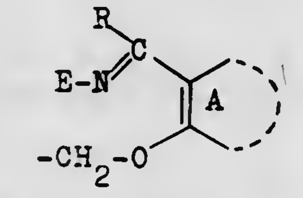
Int. Cl. C07c *119/00*

U.S. Cl. 260—566 F **5 Claims**

1. A compound of the formula



in which A is phenylene or naphthylene which is unsubstituted or substituted by halogen, lower alkyl, lower alkoxy, lower alkylene forming an annellated ring, or phenyl, R is hydrogen, lower alkyl or phenyl, E is lower alkyl which is linked to the azomethine nitrogen atom via a tertiary carbon atom, phenyl, chlorophenyl, lower alkyl phenyl, lower hydroxyalkyl phenyl or naphthyl and D′ is 4,4′-biphenylene which bivalent group is substituted by a group of the formula



in which A, R and E are as defined above.

3,892,808
HOP EXTRACTS

William Mitchell, Brookhaven, England, assignor to Carlton & United Breweries Limited, Carlton, Australia

Division of Ser. No. 129,608, March 30, 1971, abandoned, which is a continuation of Ser. No. 743,586, July 10, 1968, Pat. No. 3,607,300, which is a continuation-in-part of Ser. No. 594,980, Nov. 17, 1966, abandoned. This application June 28, 1972, Ser. No. 263,738

Claims priority, application United Kingdom, Nov. 17, 1965, 48866/65; Aug. 8, 1967, 36469/67; South Africa, Nov. 11, 1968, 66/6829; Canada, Nov. 13, 1967, 004813. The portion of the term of this patent subsequent to Sept. 21, 1988, has been disclaimed.

Int. Cl. C12c *9/02*

U.S. Cl. 260—586 D **9 Claims**

1. The method of preparing a water insoluble humulate hop which comprises contacting a solution of an extract of hops, the solvent of said solution being a water-immiscible solvent which dissolves alkali metal humulate salts less readily than does water, with a sufficient amount of a dilute aqueous alkali metal carbonate to form a mixture of said water-immiscible solvent solution and said dilute aqueous alkali metal carbonate having a pH sufficient to transfer the humulones into the aqueous phase as humulate salts but not sufficiently high to transfer the lupulones into the aqueous phase as lupulate salts, forming a water-immiscible phase containing the lupulate salts and a dilute aqueous phase containing the humulate salts, separating said dilute aqueous phase from said water-immiscible phase, adding to said dilute aqueous phase a water soluble salt of a cation whose humulate is water insoluble to form the water insoluble humulate and precipitating said water insoluble humulate salt, and separating the precipitated humulate salt from the dilute aqueous phase.

3,892,809
PROCESS FOR THE PREPARATION OF BUTENOYL 1,3-YCLOHEXADIENES

Karl-Heinrich Schulte-Elte, Onex, Geneva, Switzerland, assignor to Firmenich S.A., Geneva, Switzerland

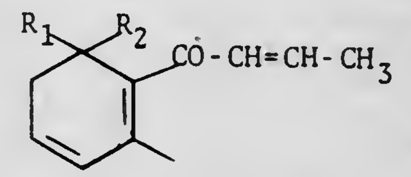
Filed Sept. 11, 1972, Ser. No. 287,647

Claims priority, application Switzerland, Sept. 13, 1971, 13397/71

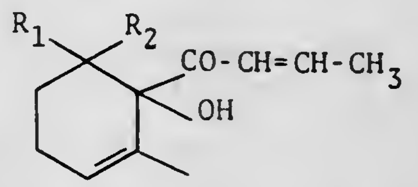
Int. Cl. C07c *45/00, 49/45*

U.S. Cl. 260—586 R **2 Claims**

1. A process for the preparation of unsaturated cycloaliphatic ketones of formula



wherein R_1 and R_2 are the same or different and each represents a hydrogen atom or a lower alkyl radical comprising from one to six carbon atoms, which comprises treating a keto-alcohol of formula



with an acid of the group comprising hydrochloric acid, sulphuric acid, phosphoric acid, p-toluenesulphonic acid, trifluoroacetic acid and acidic diatomaceous earth wherein the reaction is carried out in an inert organic solvent and at a temperature between about 50°C. and about the boiling temperature of the chosen solvent.

3,892,810
PREPARATION OF NITROCYCLOALKANONES

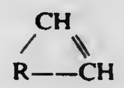
Mahmoud S. Kablaoui, Wappinger Falls, and Donald R. Lachowicz, Fishkill, both of N.Y., assignors to Texaco, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 206,195, Dec. 8, 1971, abandoned. This application Nov. 29, 1973, Ser. No. 420,035

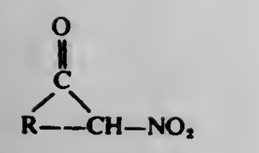
Int. Cl. C07c *45/04*

U.S. Cl. 260—586 P **26 Claims**

1. A method of preparing nitrocycloalkanones which comprises simultaneously contacting a solution containing a cycloalkene of the formula:



where R is a polymethylene radical of from three to 22 carbons or a substituted polymethylene radical of four to 22 carbons containing one or more substituents selected from the group consisting of alkyl and aryl, a 2-pyrrolidinone or alkyl substituted 2-pyrrolidinone denitrating agent and an aprotic organic solvent having a boiling point of between about 30° and 100°C. with dinitrogen tetroxide and oxygen at a temperature between about 0° to 40°C., where the mole ratio of said denitrating agent to said cycloalkene is about 0.5:1 to 1:1 ant the ratio of aprotic organic solvent to cycloalkene is from 2:1 to 20:1 parts by weight thereby forming a nitrocycloalkanone corresponding to the formula:



where R is as heretofore defined.

3,892,811
ORGANIC PEROXIDES AND METHOD THEREFOR

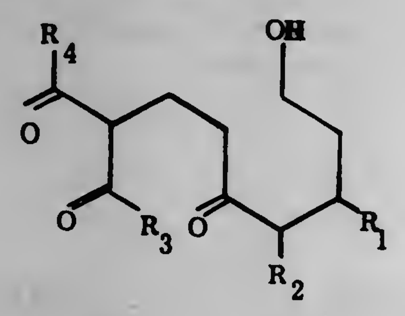
Yun Ger Chang, and Philip S. Bailey, both of Austin, Tex., assignors to Reichhold Chemicals, Inc., White Plains, N.Y.
Division of Ser. No. 310,560, Nov. 29, 1972, Pat. No. 3,842,129, which is a division of Ser. No. 170,621, Aug. 10, 1971, Pat. No. 3,755,454, which is a division of Ser. No. 754,472, Aug. 21, 1968, abandoned. This application Apr. 18, 1974, Ser. No. 461,969
Int. Cl.² C07C *49/04*
U.S. Cl. 260—593 R **2 Claims**

1. An organic peroxide; namely, 4-t-butylperoxy-4-methyl-2-pentanone.

3,892,812
STEROIDAL INTERMEDIATES

Gabriel Saucy, Essex Falls, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.
Division of Ser. No. 259,724, June 5, 1972, Pat. No. 3,810,909, which is a division of Ser. No. 811, Jan. 5, 1970, Pat. No. 3,691,189. This application Feb. 25, 1974, Ser. No. 445,418
Int. Cl. C07c *49/18*
U.S. Cl. 260—594 **2 Claims**

1. A compound of the formula

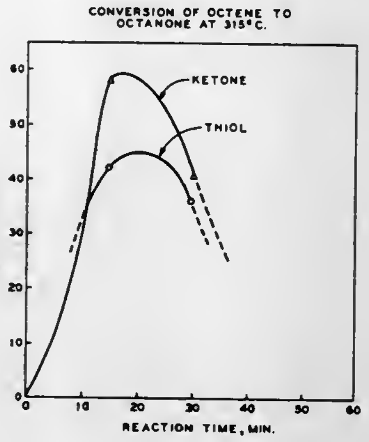


wherein R_1, R_2 and R_4 are selected from the group consisting of hydrogen and lower alkyl and R_3 is selected from the group consisting of hydrogen, lower alkyl, lower alkyl phenyl and phenylalkyl.

3,892,813
SULFUR OXIDATION OF OLEFINS TO KETONES

Shigeto Suzuki, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Filed July 6, 1970, Ser. No. 52,310
Int. Cl. C07c *45/02*
U.S. Cl. 260—597 R **9 Claims**

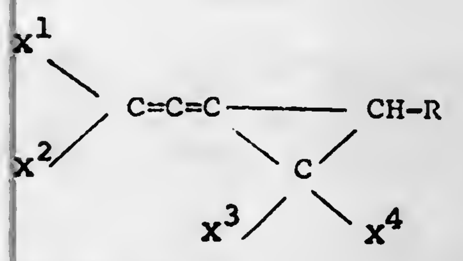
1. The process for the conversion of a feed hydrocarbon having a single carbon-carbon double bond to a ketone having the same carbon atom content as said feed, which comprises maintaining in the liquid phase a mixture of the feed, water, and sulfur at a temperature in the range from about 225 to 325°C. for a period sufficient to produce an appreciable amount of said ketone, wherein for each mol of the feed the mixture contains an amount of sulfur in the range from about 0.15 to 2 mols, and an amount of water in the range from about 2 to 100 mols, said period being in the range from about 5 to 60 minutes; wherein said feed contains at least 3 carbon atoms, wherein at least one carbon atom of the carbon-carbon double bond pair is a secondary carbon, wherein said pair is not included in a six-membered carbocyclic ring, wherein said feed is liquefiable at a temperature within said range, and wherein said feed is either an n-alkene or a cycloalkene.



3,892,814
CYCLOPROPANE DERIVATIVES

Ralph Alexander Raphael; Robert Douglas Hutton Murray, and Roy William Mills, all of Glasgow, Scotland, assignors to National Research Development Corporation, London, England
Filed Dec. 22, 1971, Ser. No. 211,110
Claims priority, application United Kingdom, Dec. 24, 1970, 61320/70
Int. Cl. C07c *33/02*
U.S. Cl. 260—617 R **8 Claims**

1. An allene compound of the formula:

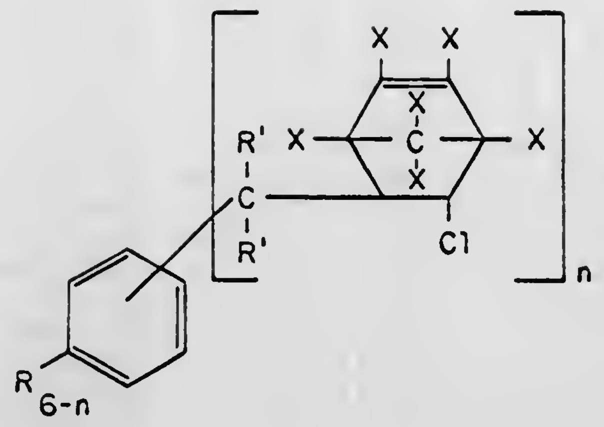


wherein X^1 and X^2 independently represent an alkyl group of 1 to 4 carbon atoms or together represent a $—(CH_2)_n—$group where n is 4 or 5, X^3 and X^4 independently represent an alkyl group of 1 to 4 carbon atoms and R represents a hydroxymethyl group.

3,892,815
FLAME RETARDANT COMPOUNDS AND COMPOSITIONS OF MATTER

Louis Schmerling, Riverside, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Sept. 13, 1973, Ser. No. 397,197
Int. Cl. C07c *25/18*
U.S. Cl. 260—649 R **8 Claims**

1. A compound having the formula:



wherein X is hydrogen or chlorine or bromine, at least two X's being chlorine or bromine, **R**' is hydrogen or lower alkyl, **R** is hydrogen or alkyl of from 1 to about 4 carbon atoms, and n is an integer of from 2 to 6.

3,892,816
PROCESS FOR OXYCHLORINATION OF ETHYLENE

Albert T. Kister, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.
Filed Dec. 19, 1972, Ser. No. 316,609
Int. Cl. C07c *17/02*
U.S. Cl. 260—659 A **7 Claims**

1. A process for production of ethylene dichloride by contacting ethylene, hydrogen chloride and molecular oxygen in the vapor phase in a reaction zone at a temperature of from about 450°F to about 670°F in the presence of a fixed-bed, supported cupric chloride catalyst, introducing all or substantially all of the ethylene to the upstream inlet portion of the reaction zone in a sufficient stoichiometric excess and adding hydrogen chloride and molecular oxygen and the remainder of the ethylene in cases where substantially all of the ethylene is added at said upstream inlet to the reaction zone at a sufficient plurality of points throughout the reaction zone to maintain the hydrogen chloride:ethylene molar ratio below about 0.7 and the oxygen:ethylene molar ratio below about 0.12 in the reaction mass during passage through the reaction zone, and separating the resulting ethylene dichloride containing reaction zone effluent into at least one ethylene dichloride containing liquid phase and an organic vapor phase of at least 55% ethylene.

3,892,817
PROCESS FOR PRODUCING CYCLOALKENES

Susumo Akutagawa, Tokyo; Hidenori Kumobayashi, Kanagawa, and Akira Komatsu, Tokyo, all of Japan, assignors to Takasago Perfumery Co., Ltd., Tokyo, Japan
Filed Mar. 1, 1974, Ser. No. 447,409
Claims priority, application Japan, Mar. 1, 1973, 48-24643
Int. Cl. C07c *13/00*
U.S. Cl. 260—666 A **9 Claims**

1. A process for producing cyclopolyenes ($1,5, \ldots 4n+5$) having $8 + 4n$ carbon atoms where n is an integer of from 1 to 7 comprising polymerizing cyclooctadiene in the presence of a rhenium catalyst on an alumina carrier or an alumina-boria carrier.

3,892,818
CATALYTIC CONVERSION OF HYDROCARBON CHLORIDES TO HYDROGEN CHLORIDE AND HYDROCARBONS

Gerhard Scharfe, Leverkusen, and Rolf-Ernst Wilhelms, Hamburg, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Dec. 7, 1972, Ser. No. 313,032
Claims priority, application Germany, Dec. 23, 1971, 2164074
Int. Cl. C07c *9/00*
U.S. Cl. 260—676 R **11 Claims**

1. A process for the catalytic conversion of a hydrocarbon chloride into a chlorine-free hydrocarbon, said hydrocarbon chloride being selected from the group consisting of a saturated aliphatic hydrocarbon, an unsaturated aliphatic hydrocarbon, a saturated cycloaliphatic hydrocarbon, an unsaturated cycloaliphatic hydrocarbon, a saturated aliphatic hydrocarbon substituted by at least one saturated aliphatic radical, a saturated aliphatic hydrocarbon substituted by at least one unsaturated aliphatic radical, an unsaturated aliphatic hydrocarbon substituted by at least one saturated aliphatic radical, an unsaturated hydrocarbon substituted by at least one saturated aliphatic radical, an unsaturated aliphatic hydrocarbon substituted by at least one unsaturated aliphatic radical, a saturated cycloaliphatic hydrocarbon substituted by at least one saturated aliphatic radical, a saturated cycloaliphatic hydrocarbon substituted by at least one unsaturated aliphatic radical, an unsaturated cycloaliphatic hydrocarbon substituted by at least one saturated aliphatic radical, an unsaturated cycloaliphatic hydrocarbon substituted by at least one unsaturated aliphatic radical, an aromatic hydrocarbon, an aromatic hydrocarbon substituted by at least one alkyl radical, and an aromatic hydrocarbon substituted by at least one alkenyl radical, at least one H atom of said hydrocarbon being replaced by chlorine, comprising contacting the hydrocarbon chloride in the gas phase with hydrogen in the presence of rhodium as catalyst and at a temperature of about 50° to 500°C.

3,892,819
IMPACT RESISTANT VINYL ESTER RESIN AND PROCESS FOR MAKING SAME

Daniel J. Najvar, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.
Filed Mar. 21, 1973, Ser. No. 343,716
Int. Cl. C08g *45/04*
U.S. Cl. 260—836 **16 Claims**

1. A process for preparing a thermosettable resin having improved impact resistance in the thermoset state which comprises simultaneously reacting the epoxide moieties of a polyepoxide having an average of more than one epoxide group per molecule with the acid moieties of an unsaturated monocarboxylic acid and a liquid carboxy terminated polydiene rubber wherein the combined acid equivalents of said unsaturated acid and said polydiene ranges from about 0.8 to 1.2 equivalents per epoxide equivalent and wherein at least about 80 percent of said acid equivalents comprises said unsaturated acid and the balance between 0.01 and 20 percent comprises said polydiene, provided that the polydiene rubber content is at least about 4 weight percent.

3,892,820
THERMOPLASTIC POLYAMIDE URETHANE UREA RESINS OF IMPROVED PROPERTIES

Hachiro Goto, Takatsuki; Atsushi Tanaka, Ibaraki; Shiho Iizuka, Ibaraki, and Takahiko Kitamura, Ibaraki, all of Japan, assignors to Teijin Ltd., Osaka, Japan
Filed Oct. 2, 1973, Ser. No. 402,837
Int. Cl.² C08G *41/04*
U.S. Cl. 260—858 **4 Claims**

1. A thermoplastic polyamide urethane urea resin which is the reaction product of the four components as follows:

- A. A linear polyhydroxyl oligomer having a hydroxyl group at both terminals, which is free from ethylene terephthalate unit, has an average molecular weight of 400 to 4,000, and is liquid at 80°C.,
- B. a linear polyester oligomer having a hydroxyl group at both terminals, a molecular weight of 500 to 4,000, and a melting point of 50° to 220°C., 55 to 100 mol% of the molecular chain thereof consisting of ethylene terephthalate and ethylene-2,6-naphthalate units, said ethylene terephthalate unit occupying 50 to 85 mol% of the linear polyester oligomer, and said ethylene-2,6-naphthalate unit occupying 5 to 40 mol% of the linear polyester oligomer,
- C. a linear polyamide oligomer having an average molecular weight of 400 to 4,000, and a melting point of 100° to 200°C., at least 80% of the terminal groups thereof being amino groups, and
- D. an organic diisocyanate;

the composition of the reactants (A) through (D) satisfying the expressions as follows:

- i. 0.8 (D)/(A)+(B)+(C) (mol ratio) < 1,
- ii. (B) + (C)/(A) (weight ratio) = 1.0 – 3.0,
- iii. (C)/(B) + (C) (weight ratio) = 0.05 – 0.85,

and

- iv. (C)/(A) + (B) + (C) + (D) (weight %) = 3 – 55.

3,892,821

POLYESTERS BLENDED WITH CYCLIC ESTER POLYMERS

Joseph Victor Koleske; Clyde Jesse Whitworth, Jr., both of Charlestown, W. Va., and Robert Dean Lundberg, Somerville, N.J., assignors to Union Carbide Corporation, New York, N.Y.

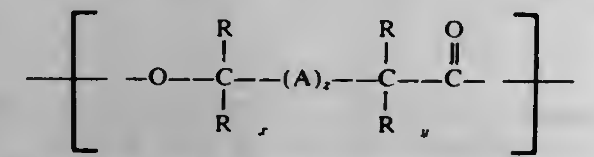
Division of Ser. No. 140,951, May 6, 1971, Pat. No. 3,781,381, which is a continuation-in-part of Ser. No. 812,314, April 1, 1969, abandoned. This application Oct. 11, 1973, Ser. No. 405,525

Int. Cl. C08g *39/10*

U.S. Cl. 260—860 **8 Claims**

1. A thermoplastic composition consisting essentially of a blend of about 1 to about 95 weight percent of a cyclic ester polymer having a reduced viscosity of about 0.1 to about 15 and containing at least a major molar amount of recurring units I of the formula:

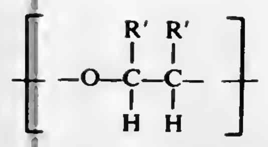
(I)



$$\left[-O-\left(\overset{R}{\underset{R}{C}}\right)_x-(A)_z-\left(\overset{R}{\underset{R}{C}}\right)_y-\overset{O}{\overset{\|}{C}}-\right]$$

wherein each R, individually, is selected from the class consisting of hydrogen, alkyl, halo, and alkoxy, A is the oxy group; x is an integer from 1 to 4; y is an integer from 1 to 4; z is an integer of zero or one; with the provisos that (a) the sum of $x+y+z$ is at least 4 and not greater than 7, and (b) the total number of R substituents which are substituents other than hydrogen does not exceed 3, and up to a minor molar amount of recurring units II of the formula:

(II)



$$\left[-O-\overset{R'}{\underset{H}{C}}-\overset{R'}{\underset{H}{C}}-\right]$$

wherein each R′ is selected from the class consisting of, individually, hydrogen, alkyl, cycloalkyl, aryl, and chloroalkyl, and, together with the ethylene moiety of the oxyethylene chain of Unit II, a saturated cycloaliphatic hydrocarbon ring having from 4 to 8 carbon atoms, and about 5 to about 99 weight percent of a polyester of a polyhydric alcohol having 2 to 18 carbon atoms and polycarboxylic acid or acid anhydride thereof having 2 to 18 carbon atoms as the thermoplastic organic polymer, said percentages being based on the total weight of thermoplastic polymer and cyclic ester polymer.

3,892,822

RECONSTITUTABLE VINYL ACETATE POLYMER POWDERS FROM NON-AQUEOUS DISPERSION

Arthur C. Frechtling, Watchung, N.J., assignor to Union Carbide Corporation, New York, N.Y.

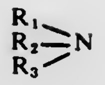
Filed Feb. 20, 1974, Ser. No. 443,989

Int. Cl. C08f *15/20, 37/04*

U.S. Cl. 260—875 **9 Claims**

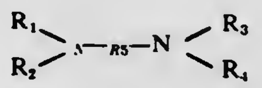
1. A method of preparing vinyl acetate polymers in a powder form which are readily converted to stable latices by addition of water which comprises:

- a. rapidly adding with agitation, in one continuous operation about 3 to about 8 parts by weight of methacrylic acid to a stable non-aqueous dispersion containing 100 parts by weight of a vinyl acetate/dialkyl fumarate copolymer having about 0.5 to 6 percent by weight of dialkyl fumarate, copolymerized therein, wherein the alkyl groups contain about 8 to about 18 carbon atoms, in an organic diluent selected from the class consisting of aliphatic hydrocarbons containing from about 4 to about 12 carbon atoms and alicyclic hydrocarbons containing from about 5 to about 8 carbon atoms, at a temperature of about 20° to about 150°C. in the presence of a polymerization initiating amount of a free radical polymerization initiator;
- b. maintaining a temperature of about 20°C to about 150°C for at least about 5 minutes whereby methacrylic acid is polymerized onto the surface of the vinyl acetate/dialkyl fumarate copolymer;
- c. neutralizing the carboxyl groups of the methacrylic acid with about a stoichiometric amount of an organic amine selected from the group consisting of (1) trialkyl-amines having the formula



$$\begin{matrix}R_1\diagdown\\R_2-N\\R_3\diagup\end{matrix}$$

wherein each of R_1, R_2 and R_3 is an alkyl group having about 4 to about 10 carbon atoms, (2) tetraalkyl alkylene diamines having the formula



$$\begin{matrix}R_1\diagdown\\ R_2\diagup\end{matrix}N-R_5-N\begin{matrix}\diagup R_3\\ \diagdown R_4\end{matrix}$$

wherein each of R_1, R_2 and R_3 is as described above, R_4 is an alkyl group having about 4 to about 10 carbon atoms and R_5 is an alkylene radical having about 2 to about 10 carbon atoms and (3) a diamine having the formula

$$H_2N-R_5-NH_2$$

wherein R_5 is as defined above; and

- d. recovering and drying the resultant product.

3,892,823

O-ETHYL-S-n-PROPYL-O-2-CYANOVINYL-THIONOTHIOL-PHOSPHORIC ACID ESTERS

Fritz Maurer; Hans-Jochem Riebel; Lothar Rohe, all of Wuppertal, and Ingeborg Hammann, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

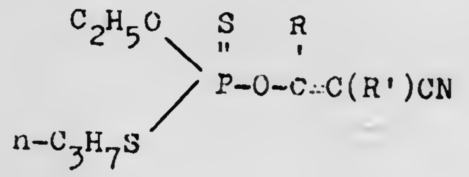
Filed Jan. 14, 1974, Ser. No. 433,011

Claims priority, application Germany, Jan. 18, 1973, 2302273

Int. Cl. C07f *9/16;* **A01n** *9/36;* **C07e** *121/02*

U.S. Cl. 260—940 **7 Claims**

1. An O-ethyl-S-n-propyl-O-vinyl-thionothiolphosphoric acid ester of the formula



(I)

in which

R is lower alkyl, carbo-lower alkoxy, or phenyl or naphthyl optionally substituted by halogen, nitro, nitrile, lower alkyl, lower alkoxy or halo-lower alkyl, and

R′ is hydrogen or lower alkyl.

3,892,824

S-ω-(ω-AMINOALKYLAMINO)ALKYL DIHYDROGEN PHOSPHOROTHIOATES

James R. Piper, and Thomas P. Johnston, both of Birmingham, Ala., assignors to Southern Research Institute, Birmingham, Ala.

Filed Dec. 16, 1968, Ser. No. 784,231

Int. Cl. C07f *9/16*

U.S. Cl. 260—944 **5 Claims**

1. Compounds of the formula $RHN(C_nH_{2n})NH(C_nH_{2n})$-$SPO_3H_2$ wherein R is hydrogen or an alkyl group containing from 1 to 7 carbon atoms and each n has a value of from 2 to 6; and hydrates or alkali metal salts thereof.

3,892,825

UNITARY STACKED PRESSURE TOWER

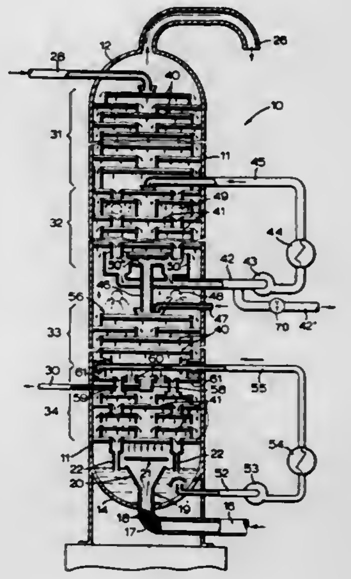
Don Barkley Nazzer, 861 George St., Sidney, Canada

Continuation-in-part of Ser. No. 859,344, Sept. 19, 1969, abandoned. This application June 14, 1972, Ser. No. 262,521

Int. Cl. B01f *3/04*

U.S. Cl. 261—114 R **2 Claims**

1. A stacked tower structure for carrying out a dual fluid isotope exchange process in two zones maintained at different, substantially constant temperatures, using hydrogen sulphide gas and water in a counterflow heavy water concentration process, including; an upright unitary pressure vessel of substantially uniform cross section having a cold isotope exchange zone and a hot isotope exchange zone, with said cold zone superposed over said hot zone; fluid transfer means at the top and bottom of said zones for passage of gas and water therethrough including gaseous fluid extraction means at the top of said hot zone for the removal of hot deuterium-enriched fluid therethrough, a temperature conditioning zone intermediate said exchange zones to provide direct heat exchange between cold water flowing downwardly from said cold zone and hot gas flowing upwardly from said hot zone including heat exchange circuit means connecting said temperature conditioning zone with a heat exchanger located externally of said tower to provide cold water circulating downwardly through said zone in mixing relation with said gas and water to provide complementary cooling to said conditioning zone, to condition both fluids while within said conditioning zone to the temperature of the respective adjacent tower exchange zone to which the respective fluid flows, and water flow control means between said intermediate zone and said hot zone for controlling the quantity of water passing to said hot zone whereby the balanced exchange of deuterium in said hot isotope exchange zone is promoted.



3,892,826

METHOD FOR FORMING A CORED CONCRETE SLAB

Robert L. Yost, Decatur, Ind., assignor to Joseph J. Dues, Dayton, Ohio

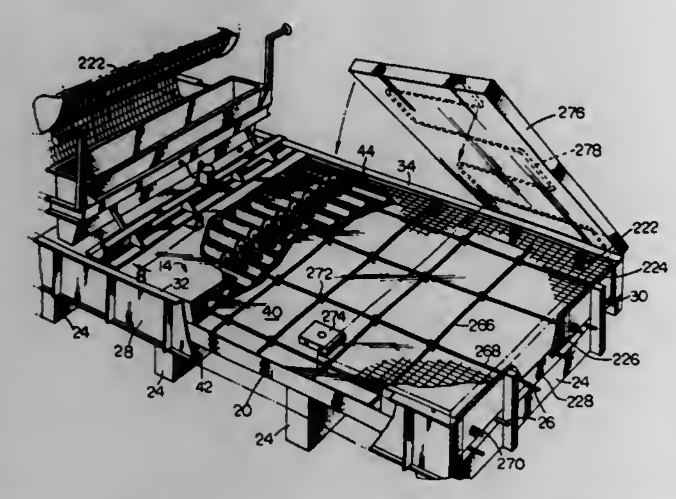
Division of Ser. No. 771,152, Oct. 28, 1968, Pat. No. 3,647,308. This application Sept. 14, 1971, Ser. No. 180,442

Int. Cl. B28b *1/08*

U.S. Cl. 264—72 **7 Claims**

1. The method of making a cored cementitious slab comprising the steps of providing an elongated mold having a bottom and upstanding sides for forming the bottom and side surfaces of a slab, placing a plurality of elongated mandrels in said mold adjacent to one end thereof and in a spaced and parallel relationship with respect to each other and said mold sides so as to extend longitudinally of said mold, and sequentially performing the following steps, depositing a first layer of cementitious material in relatively fluid form having a slump from about 1 inch to about 2 inches in said mold to a level generally even with the tops of said mandrels, laying elongated cementitious material supporting material in said mold over said mandrels and said first layer, depositing a second layer of cementitious material in relatively fluid form having a slump from about 1 inch to about 2 inches in said mold over said first layer and said cementitious material supporting material while continuously imparting troweling motion to each of said mandrels, moving said mandrels from adjacent to said one end of

said mold toward the other end of said mold to remove the mandrels from the slab at a rate in excess of about 1 foot per minute and faster than said cementitious material becomes self-supporting, and leaving said mold bottom and sides and said cementitious material supporting material behind said mandrels to support said cementitious material until self-supporting.



3,892,827

METHOD FOR PRECIPITATING A LAYER OF SEMICONDUCTOR MATERIAL FROM A GASEOUS COMPOUND OF SAID SEMICONDUCTOR MATERIAL

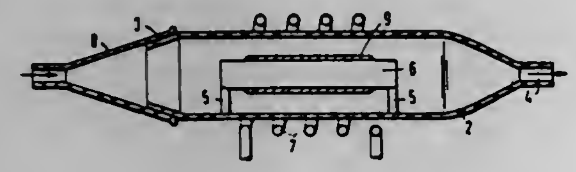
Wolfgang Keller, Pretzfeld; Arno Kersting, Erlangen, and Konrad Reuschel, Vaterstetten, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Oct. 29, 1969, Ser. No. 872,278

Claims priority, application Germany, Oct. 30, 1968, 1805970

Int. Cl. B29c *23/00*

U.S. Cl. 264—81 **1 Claim**



1. Method of producing a tubular silicon body wherein the outer surface of a hollow cylindrical body is treated with soot and heated by electric current, in a flowing reaction gas of a silicon halogen compound ($SiHCl_3$) and hydrogen, to a temperature ranging between 1050°–1250°C until the silicon layer precipitated on the outer surface of the carrier body attains the wall thickness of the tube being produced, cooling the carrier and the silicon body and pulling apart the tubular silicon layer and the carrier body, without damaging said silicon layer.

3,892,828

METHOD OF MAKING PLASTIC ARTICLES HAVING EASILY SEVERABLE FLASH

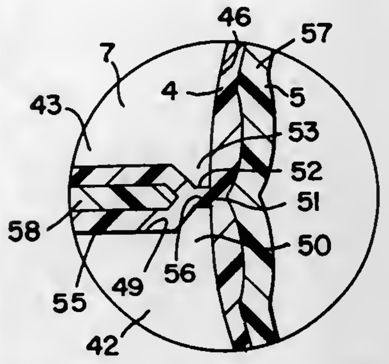
Arden R. Weatherly, Downers Grove, and Carson F. Buckman, Park Forest, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Filed June 7, 1973, Ser. No. 367,998

Int. Cl. B29c *17/07*, *17/12*; **B29d** *9/00*

U.S. Cl. 264—89 **9 Claims**

8. A method of making an article from a laminate comprising an inner layer of thermoplastic material and an outer layer of material different than the inner layer and comprised of low density polyethylene comprising introducing such laminate into article forming mold sections having a configuration wherein islands of flash are developed, then closing the mold sections an extent sufficient to pinch the material and squeeze out the inner layer of material from between the parting areas of the mold sections leaving only an easily severable material to form a web interconnecting the islands of flash with the article, and then expanding the laminate into said article within the mold formed by said sections when closed.



3,892,829

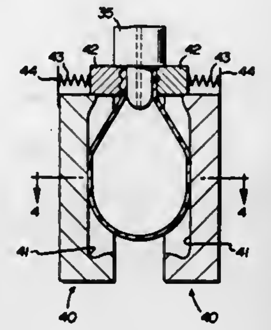
METHOD OF MAKING BLOWN PLASTIC ARTICLES

Albert R. Uhlig, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Oct. 3, 1973, Ser. No. 403,051

Int. Cl. B29c *17/07*

U.S. Cl. 264—89 **11 Claims**



1. In a method of making a blow molded article of non-circular cross-section from a generally tubular plastic parison of essentially circular cross-section and of substantially uniform wall thickness, the steps of:

1. blowing the parison to the shape of a pre-form within a first blow mold cavity, said pre-form having a substantially uniform wall thickness and an exposed outer surface approximately the same as but less than the exposed outer surface of the article,
2. interposing the pre-form between a pair of blow mold sections which, when closed, have cavity-defining walls spaced apart a distance less than the cross-sectional dimension of said pre-form,
3. simultaneously (a) closing the mold sections progressively on said pre-form, (b) progressively deflecting the pre-form by its contact with said walls to a shape closely approaching that of said article, and (c) thermally stabilizing the contacted portion of the pre-form, while preserving the substantially uniform wall thickness and the exposed outer surface of said pre-form, and
4. finally blowing the deflected shape to complete the formation of said article interiorly of the closed mold sections.

3,892,830

PRECISE TEMPERATURE ADJUSTMENT OF REHEATED PARISON PREFORMS

Jimmie E. Hudson, Bartlesville, Okla., and Jimmy W. Snelson, Orangeburg, N.Y., assignors to Phillips Petroleum Company, Bartlesville, Okla.

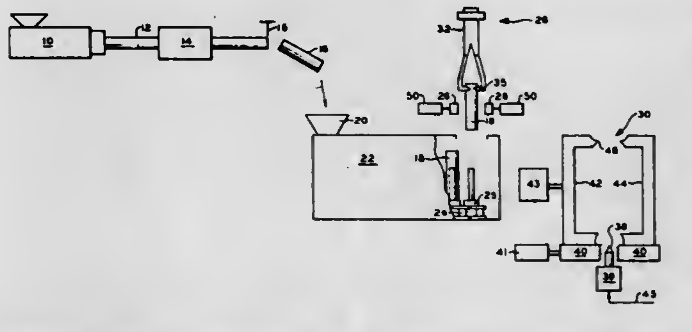
Division of Ser. No. 242,385, April 10, 1972, Pat. No. 3,790,319. This application Oct. 3, 1973, Ser. No. 402,983

Int. Cl. B29c *17/07*

U.S. Cl. 264—94 **6 Claims**

1. A method of forming a biaxially oriented hollow article having an irregular configuration wherein at least a portion thereof has a ratio of a major axis to a minor axis of at least 1.25 to 1 comprising:

- introducing a cylindrical thermoplastic parison preform into a heating zone;
- imparting sufficient heat to bring the entire parison preform to orientation temperature;
- thereafter cooling a portion of at least one side of said parison which is to correspond to said major axis to an average of 0.25° to 10°F below the temperature of the rest of the parison but still within the range of orientation temperature by contacting said parison for a time within the range of 0.001 to 1 second with a textured temperature adjustment finger, said textured temperature adjustment finger having grooves at least 1/32 of an inch deep and having 40 to 60 per cent of the surface made up of lands and the remaining portion made up of grooves;
- placing said parison in a molding zone with said thus cooled portion of said parison being aligned with a wall across from a major axis of said zone; and
- creating a pressure differential to expand said parison out into conformity with said zone.



3,892,831

METHOD OF MANUFACTURE OF TENNIS RACKETS OF REINFORCED SYNTHETIC MATERIAL

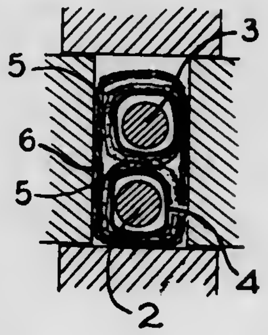
Jacques André Robin, 125 Boulevard Malesherbes, Paris 17, and Michel Roger Guyot, 17 rue des Quatre Vents, Paris 6, both of France

Continuation-in-part of Ser. No. 160,758, July 8, 1971, abandoned. This application May 11, 1973, Ser. No. 359,404

Claims priority, application France, July 29, 1970, 70.27924

Int. Cl. B29c *27/26*

U.S. Cl. 264—103 **4 Claims**



1. Process for the manufacture of tennis racket frames from woven tubular sheaths of filamentary synthetic reinforced material impregnated with a polymerizable synthetic material, the steps of placing at least two superposed inflatable sheaths having long axes in contact with their long axes parallel, connecting the superposed sheaths to each other and forming between them at least one reinforcing web of intercrossed filamentary material the filaments of which are at approximately 45° to the longitudinal axis of the sheaths, surrounding the superposed connected sheaths over their entire peripheries with a supplementary woven cover banding the sheaths together, disposing the resulting superposed banded structure of multiple tubes in a mold which maintains the superposed structure and having the shape of a tennis racket frame with said resulting banded structure of multiple tubes forming an integral handle and hoop to reinforce the tennis racket frame at the points of localization of forces to give a banding effect, impregnating the structure of multiple tubes with a polymerizable synthetic material, inflating the sheaths, web and cover into contact with the mold and then polymerizing the polymerizable synthetic material.

3,892,832

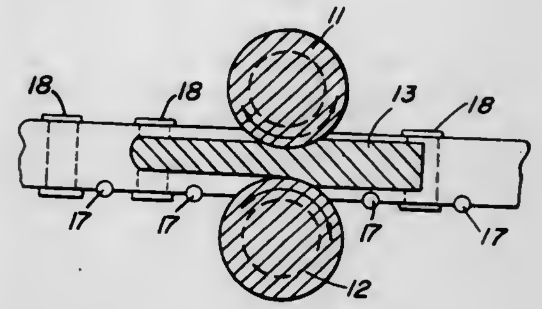
METHOD OF COMPRESSING AND ROLLING POWDER

John A. Schey, 716 S. Bruner St., Hinsdale, Ill. 60521

Division of Ser. No. 67,910, Aug. 28, 1970, Pat. No. 3,746,701, which is a division of Ser. No. 691,109, Dec. 7, 1967, Pat. No. 3,561,240, which is a continuation-in-part of Ser. No. 587,358, Sept. 16, 1966, which is a continuation-in-part of Ser. No. 444,637, April 1, 1965, abandoned. This application June 14, 1973, Ser. No. 369,885

Int. Cl. B22f *3/18*

U.S. Cl. 264—109 **2 Claims**



1. A method of preventing edge cracking when continuously rolling and compressing powder material between at least one pair of spaced, parallel aligned rolls comprising:

- a. feeding the powder material between a pair of rotating rolls,
- b. reducing the thickness of the powder material by compacting as it passes between the rolls,
- c. engaging the lateral edges of said compacted material with a pair of substantially incompressible elongated restraint members being substantially inflexible throughout a zone of compaction with said rolls,
- d. restraining the lateral edges of the compacted material during said compaction, and
- e. moving said restraint members rectilinearly at a velocity substantially equal to the peripheral velocities of said rolls with the compact material to prevent lateral deformation of compacted material while reducing the thickness thereof, whereby the tensile forces along the lateral edges of the compacted material are sufficiently reduced to prevent edge cracking.

3,892,833

METHOD OF MAKING AN ION-SELECTIVE ELECTRODE

Masumi Hattori, and Teizou Maeda, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

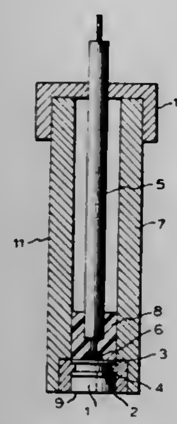
Filed Nov. 8, 1973, Ser. No. 413,896

Claims priority, application Japan, Nov. 10, 1972, 47-113350; Nov. 10, 1972, 47-113351; June 20, 1973, 48-70324; June 20, 1973, 48-70325

Int. Cl. B01k *3/10*

U.S. Cl. 264—115 **2 Claims**

1. A method of making an ion-selective membrane for an ion-selective electrode, comprising the steps of coating the surface of CdS granules with an Ag_2S layer formed by reacting said CdS granules with an $AgNO_3$ solution and compressing the resultant granules to form a membrane, said membrane being responsive to cadmium ions in solution.



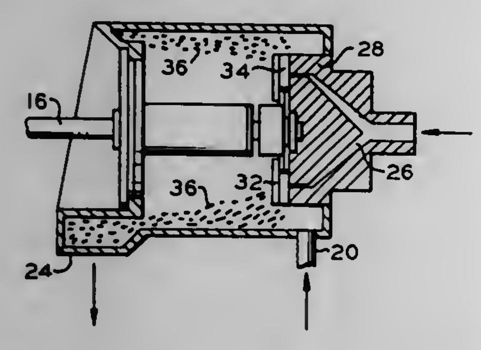
3,892,834
SURFACE ACTIVE AGENT TO REDUCE AGGLOMERATION IN DRY DIE-FACE PELLETIZING

James E. Pritchard, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 9, 1974, Ser. No. 431,858

Int. Cl. B29b *1/03*

U.S. Cl. 264—142 **9 Claims**



1. In a process for producing pellets from normally solid polymer of at least one mono-1-olefin having 2 to 8 carbon atoms per molecule, wherein said polymer is heated to a molten condition, extruded through a plurality of orifices in a die having a dry die-face, severed adjacent said die-face to produce said pellets, said pellets thereafter being thrown out toward an inner surface of a housing where they contact a stream of water moving around said inner surface and axially away from said die face, the improvement comprising incorporating 0.0025 to 0.35 weight percent based on the weight of said water of a surface active agent into said water to reduce agglomeration of said pellets.

3,892,835
METHOD OF MANUFACTURING HOT PRESSED CERAMIC MATERIAL BASED ON SILICON NITRIDE

Martin Richard Holdsworth, Birmingham, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

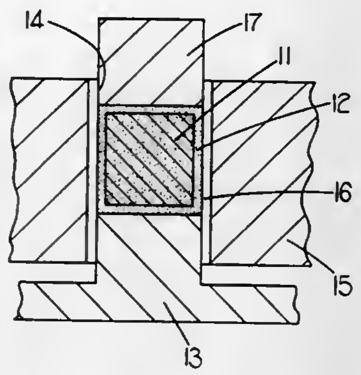
Filed Mar. 30, 1973, Ser. No. 346,597

Claims priority, application United Kingdom, Apr. 6, 1972, 15883/72

Int. Cl. C04b *33/64*

U.S. Cl. 264—332 **8 Claims**

1. A method of manufacturing hot pressed ceramic material based on silicon nitride, comprising the steps of starting with a graphite die defining a die cavity for receiving the ceramic material to be hot pressed, introducing the ceramic material into the die cavity, providing a compound of alumina or a compound of aluminium which decomposes to alumina at elevated temperatures between said ceramic material and the walls of the die cavity, heating the ceramic material to an elevated temperature and simultaneously applying pressure to said ceramic material to hot press the material, said compound of alumina or a compound of aluminium which decomposes to alumina at elevated temperatures reacting with the ceramic material at said elevated temperature to form a silicon aluminium oxynitride as a substantially non-porous, continuous barrier layer at or near the surface of the ceramic material so that reaction between the ceramic material and the graphite die is substantially prevented.



3,892,836
SINTERED NO_X REDUCTION CATALYSTS

William A. Compton; Joseph F. Nachman, and Manfred I. Seegall, all of San Diego, Calif., assignors to International Harvester Company, San Diego, Calif.

Filed Jan. 7, 1974, Ser. No. 431,423

Int. Cl. B01d *53/34;* **B01j** *11/06*

U.S. Cl. 423—213.2 **5 Claims**

1. In the elimination of nitrogen oxides from a gas stream by bringing the gas into contact with a nitrogen oxide reducing catalyst, the improvement wherein the gas stream is contacted at a temperature of at least 600°F. with a catalyst which consists essentially of from 25 to 75 percent praseodymium oxide of the formula PrO_x where x is 1.5 to 2.0 and from 75 to 25 percent of a cerium oxide.

3,892,837
PROCESS FOR REMOVING SULFUR OXIDES FROM GASES

Hisashi Uchiyama; Naohiko Meno, both of Hamamatsu; Teizo Senjo, Tokyo, and Makio Kobayashi, Osaka, all of Japan, assignors to Fuji Kasui Engineering Co., Ltd. and Sumitomo Metal Industries, Ltd., Japan

Filed June 14, 1973, Ser. No. 369,834

Claims priority, application Japan, July 25, 1972, 47-74358; Mar. 5, 1973, 48-25211

Int. Cl. C01b *17/00*

U.S. Cl. 423—242 **6 Claims**

1. In a process for removing sulfur oxides from a combustion exhaust gas containing sulfur oxides which comprises passing said gas upwardly through a plate tower provided with at least one perforated or grid plate without weir and downcomer, and subsequently passing a liquid absorbent containing calcium carbonate in aqueous suspension downwardly through said plate tower in countercurrent flow relationship to the upflowing gas; the improvement in which

a. said perforated or grid plate has a free-space ratio of 0.25–0.60,
b. the upflowing has had a superficial gas velocity in the tower within the region exhibiting undulation,
c. the ratio of the liquid absorbent flow to the gas flow (L/G) is 0.5 or more, and
d.
  1. the pH of the circulating liquid absorbent,
  2. total solid content in the liquid absorbent and
  3. ratio of solid calcium carbonate content to the total solid content in the liquid absorbent, all at the outlet of the tower, are maintained within the range of 6–8, 3–15 wt% and 5–35 wt%, respectively, and each of (1), (2) and (3) are obtained by supplying at least one calcium compound selected from the group consisting of calcium oxide, calcium hydroxide and calcium carbonate to the circulating liquid absorbent.

3,892,838
METHOD OF PRODUCING THERMALLY STABLE URANIUM CARBONITRIDES

Mitsuhiro Ugajin, and Ichiro Takahashi, both of Ibaragi, Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

Filed Oct. 12, 1972, Ser. No. 296,851

Claims priority, application Japan, Oct. 16, 1971, 46-81762

Int. Cl. C01g *43/00*

U.S. Cl. 423—253 **2 Claims**

1. A process for producing a thermally stable uranium carbonitride which comprises

adding to a material selected from the group consisting of uranium carbide and a mixture of uranium and carbon
a metal selected from the group consisting of tungsten, molybdenum and mixtures thereof in an amount of 0.2 to 5.3 weight percent of said metal based upon the produced uranium carbonitride;
melting the resulting mixture under the pressure of nitrogen to insure no yield of uranium dicarbide or uranium metal, and
producing a resulting uranium carbonitride containing at least a part of said metal dissolved in the matrix.

3,892,839
PROCESS FOR FORMING NITROSYL TETRAFLUOROBORATE

James L. Adcock, Cambridge, and Richard J. Lagow, Manchester, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Mar. 6, 1974, Ser. No. 448,717

Int. Cl. C01b *35/00*

U.S. Cl. 423—277 **4 Claims**

1. The process for forming nitrosyl tetrafluoroborate which comprises reacting, in the substantial absence of water, boron nitride, oxygen gas and fluorine gas wherein the energy for the reaction is provided either by ultraviolet light or by heat.

3,892,840
METHOD OF PRODUCING AN OXYGEN CONTAINING SILICON COMPOUND

Jorgen Abildtrup, Augustenborg, Denmark, assignor to Danfoss A/S, Nordberg, Denmark

Continuation of Ser. No. 208,914, Dec. 16, 1971, abandoned, which is a continuation of Ser. No. 43,144, June 3, 1970, abandoned. This application Jan. 10, 1974, Ser. No. 432,197

Int. Cl. C01b *21/06, 33/00*

U.S. Cl. 423—325 **2 Claims**

1. A method of producing shaped elements of silicon oxynitride essentially free of SiO_2, which comprises forming a silica-free powder compact consisting essentially of powdered silicon and heating the compact at a temperature in the range 1200°C to 1600°C and under a gaseous atmosphere consisting essentially of nitrogen and free oxygen, for a period of from 1–3 hours, where the gaseous atmosphere contains an amount of free oxygen gas sufficient to maintain the partial pressure of oxygen in the reaction zone during the reaction period lower than 10^{-16} atmospheres but greater than 10^{-26} atmospheres.

3,892,841
ENHANCING THE VISIBILITY OF IMMUNODIFFUSION PRECIPITIN BANDS IN HUMAN PLACENTAL LACTOGEN TEST

William Frederick Barg, Jr., Monsey, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed July 11, 1973, Ser. No. 378,352

Int. Cl. G01n *31/02, 33/16*

U.S. Cl. 424—12 **4 Claims**

1. A method of enhancing the visibility or making visible human placental lactogen antigen: human placental lactogen antibody precipitin bands in an incubated immunodiffusion plate containing same, said plate made up of a gel selected from the group consisting of agar and agarose, which comprises the steps of:

a. washing said incubated immunodiffusion plate containing said precipitin bands with water, about 0.15 molar neutral aqueous salt solutions, a 0.002 to 0.10 molar aqueous solution of tris-(hydroxymethyl)-aminomethane, a 0.002 to 0.10 molar aqueous solution of ammonia, having a pH of about 9, or a 0.002 to 0.01 molar aqueous solution of sodium ethylene diaminetetraacetate having a pH of about 9;
b. contacting said washed plate with about 0.01 to about 0.2 w/v percent aqueous solution of a soluble metal salt adjusted to or maintained at a pH of from about 5 to about 7.5, in such a manner to put said soluble metal salt on said gel, wherein the metal is selected from the group consisting of copper and zinc; and
c. rinsing said plate with water or saline solution.

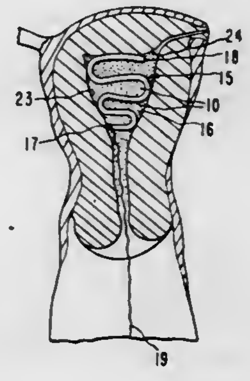
3,892,842
INTRAUTERINE CONTRACEPTIVE DEVICE FOR RELEASING STEROID HAVING DOUBLE BOND FUNCTIONALITY

Alejandro Zaffaroni, Atherton, Calif., assignor to ALZA Corporation, Palo Alto, Calif.

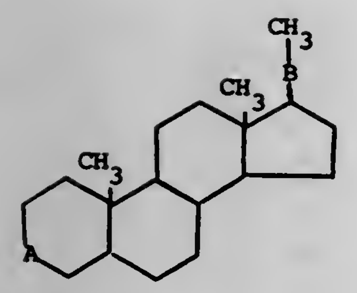
Continuation-in-part of Ser. No. 176,926, Sept. 1, 1971, abandoned, which is a continuation-in-part of Ser. No. 884,305, Nov. 11, 1969, abandoned, which is a continuation-n-part of Ser. No. 864,175, Oct. 6, 1969, abandoned. This application Oct. 16, 1973, Ser. No. 406,951

Int. Cl. A61m *31/00*

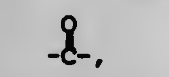
U.S. Cl. 424—22 **12 Claims**



1. An intrauterine device adapted for insertion and placement in a uterine cavity for the administration of a pharmaceutically acceptable antifertility steroid to the cavity, said device comprising a matrix formed of a non-toxic biologically inert polymeric release rate controlling material containing a locally, contraceptively active steroid and permeable to the passage of the steroid, having the structural formula:



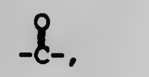
wherein A is a member selected from the group consisting of


$\overset{O}{\overset{\|}{-C-}}$,

C-OH, C...OH, C-OR and C...OR; B is a member selected from the group consisting of

$\overset{O}{\overset{\|}{-C-}}$,

C-OH, C...OH, C-OR and C...OR; R is a member selected from the group consisting of the acyl moiety of a pharmaceutically acceptable acid of 1 to 18 carbons and a lower alkyl of 1 to 8 carbons, said steroids having a sole double bond at Δ^1, Δ^4 or Δ^5 positions, with a double bond at the Δ^1 and Δ^4 position when A and b are both


$\overset{O}{\overset{\|}{-C-}}$,

provided that B is not

$\overset{O}{\overset{\|}{-C-}}$

when A is

$\overset{O}{\overset{\|}{-C-}}$

and the double bond is at the Δ^4 position, and wherein the device when placed in a uterus, meters the flow of an effective amount of the steroid up to 1500 micrograms per day for an antifertility effect through the material at a controlled and continuous rate over a prolonged period of time, essentially without systemic progestational effect.

3,892,843

PROPHYLACTIC DENTAL COMPOSITIONS

Joseph C. Muhler, R.R. 2, Sturgis, Mich. 49091, and Howard R. Alexander, Prescott, Ariz. 86201

Filed Aug. 13, 1973, Ser. No. 387,678

Int. Cl. A61k *9/00*

U.S. Cl. 424—52 **36 Claims**

1. A prophylactic dental cleaner and polisher comprising feldspar in finely-divided state, substantially all of the particles passing through a 20 mesh screen, and the essential particles have a size range of about 37 microns to about 420 microns.

3,892,844

METHOD OF PROTECTING THE SKIN FROM ULTRAVIOLET RADIATION

Gustav Erlemann, Basel, Switzerland, and Dr. Hellmut Ippen, Haan, Germany, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 883,993, Dec. 12, 1969, abandoned. This application July 20, 1972, Ser. No. 273,561

Claims priority, application Switzerland, Dec. 16, 1968, 18694/68

Int. Cl.² A61K *7/42*

U.S. Cl. 424—59 **4 Claims**

1. A method of protecting skin from erythema inducing ultraviolet radiation which comprises applying to the skin an effective amount of a sunscreen composition comprising from about 1% by weight to about 30% by weight of an active ingredient comprising a compound selected from the group consisting of cytosine, uracil, guanine, 5-chlorouracil and mixtures thereof, and an inert, dermatologically acceptable carrier material selected from the group consisting of an ointment, a cream, a milk, a lotion and an aerosol.

3,892,845

HAIR SHADE ADJUSTER

Andrew J. Cunningham, Highland Lakes, and Fred M. Tuffile, Lakeville, both of Mass., assignors to Avon Products, Inc., N.Y.

Filed Sept. 29, 1972, Ser. No. 293,471

Int. Cl. A61k *7/12*

U.S. Cl. 424—62 **10 Claims**

1. A method of removing the color of dyed keratin fibers which comprises:

applying to the fibers an effective amount of an aqueous composition comprising a combination of from about 1 to 15 parts of an oxidative dye reducing agent of zinc sulfoxylate formaldehyde, potassium sulfoxylate formaldehyde, sodium sulfoxylate formaldehyde, calcium sulfoxylate formaldehyde, zince hydrosulfite, potassium hydrosulfite, sodium hydrosulfite or calcium hydrosulfite and from about 1 part to 25 parts of disulfide reducing agent capable of cleaving covalent disulfide linkages of thioglycolic acid, dithiotreitol, potassium bisulfate, sodium bisulfate, potassium bisulfite, sodium bisulfite, potassium bisuflide, thiourea, tetrakishydroxyalkyl phosphonium chloride, tris(hydroxyalkyl)phosphine or tris(hydroxyalkyl)phosphine oxide wherein the above alkyl groups are C_1–C_3 hydrocarbons,

treating the fibers with the reducing agents until the desired color shade is produced, and

removing the reducing agents from the fibers.

3,892,846

ANIMAL LITTER RESISTANT TO AMMONIA ODOR FORMATION

Joseph S. Wortham, Lake City, Fla., assignor to Allied Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 47,904, June 19, 1970, abandoned. This application Sept. 12, 1972, Ser. No. 288,470

Int. Cl. A61l *13/00*

U.S. Cl. 424—76 **17 Claims**

1. An animal litter comprising a urine-absorbent material containing a salt selected from the group consisting of Al, Zn, Sn, Ca and Mg of an hydroxamic acid, in an amount sufficient to inhibit the decomposition of urea to ammonia when wetted by urine.

3,892,847

SPINAL ANESTHESIA USING SMALL AMOUNT OF SAXITOXIN

Herbert J. F. Adams, Westboro; Murray R. Blair, Jr., Sudbury; Robert N. Boyes, Auburn; Maxim I. Lebeaux, Shrewsbury, and Helen G. Vassallo, Worcester, all of Mass., assignors to Astra Pharmaceutical Products, Inc., Worcester, Mass.

Filed Aug. 14, 1973, Ser. No. 388,146

Int. Cl. A61k *27/00*

U.S. Cl. 424—95 **4 Claims**

1. A method for anesthetizing a mannal comprising administration by injection into the subarachnoid space of the intact mannal, a pharmaceutical composition containing saxitoxin as active ingredient in amount effective for producing anesthesia.

3,892,848

MICROBIOLOGICAL PRODUCTION OF BIOLOGICALLY ACTIVE 8,8′-BI-1H-NAPHTHO[2,3-C]PYRANS AND PRODUCTS

James Jiu, and Seth S. Mizuba, both of Morton Grove, Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Filed Jan. 31, 1974, Ser. No. 438,258

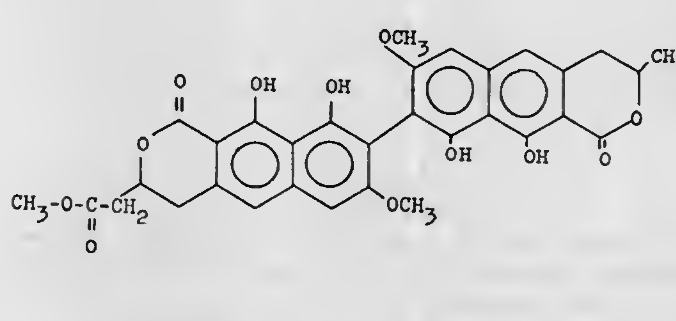
Int. Cl. A61k *21/00;* **C07c** *7/46;* **C12d** *9/00*

U.S. Cl. 424—115 **4 Claims**

1. A process for producing an anti-microbial product comprising growing *Spicaria divaricata* NRRL 5771 in an aqueous nutrient medium, extracting said aqueous nutrient medium containing *Spicaria divaricata* NRRL 5771 with organic solvent to provide organic solvent extracts, separating said organic solvent extracts from said aqueous nutrient medium containing *Spicaria divaricata* NRRL 5771, and evaporating the organic solvent.

2. The anti-microbial product produced by the process of claim 1.

3. The process of claim 1, wherein the anti-microbial product of claim 1 is subjected to column chromatography to provide compounds of the formula



in which X represents methyl or methoxy.

3,892,849

ANTIBIOTIC 21,190 RP

Denise Mancy, Charenton; Jean Florent, and Jean Preud'-Homme, both of Paris, all of France, assignors to Rhone-Poulenc, S.A., Paris, France

Division of Ser. No. 309,810, Nov. 27, 1972, Pat. No. 3,822,350. This application Aug. 21, 1973, Ser. No. 389,638

Claims priority, application France, Nov. 29, 1971, 71.42683

Int. Cl. H61k *21/00*

U.S. Cl. 424—118 **6 Claims**

1. A feedstuff composition comprising an animal feedstuff and 0.1 to 0.0001% by weight of said feedstuff of the antibiotic herein designated 21, 190 RP, which possesses the following characteristics: it is a white crystalline powder, melting at 226°–228°C., soluble in water at pH 9 and in dimethylformamide, sparingly soluble in methanol and ethanol, and practically insoluble in hexane and benzene; it contains carbon, hydrogen, oxygen and chlorine and has the elementary composition: C = 50.5% H = 6.6% O = 38.4% Cl = 4.5%; its ultra-violet spectrum in aqueous 0.1N sodium hydroxide solution shows an absorption maximum at 292 nm ($E_{1\ cm}^{1\%}$ = 33) and an absorption minimum at 257 nm ($E_{1\ cm}^{1\%}$ = 33); its infra-red spectrum (determined with a mixture with potassium bromide) shows principal absorption bands as follows: 3,440 strong, 2,970 medium, 2,9300 strong, 2,900 shoulder, 2,840 shoulder, 1,735 strong, 1,715 medium, 1,630 medium, 1,570 medium, 1,335 shoulder, 1,305 shoulder, 1,248 strong, 1,220 weak, 1,192 medium, 1,165 medium, 1,122 strong, 1,090 strong, 1,060 strong, 1,035 very strong, 975 medium, 942 medium, 920 shoulder, 900 weak, 865 medium, 848 weak, 828 weak, 815 weak, 775 medium, 730 medium, 690 weak, 678 very weak, 655 weak, 630 shoulder, 612 weak, 570 weak, 548 weak, 525 very weak, 510 very weak; and its optical rotation is $[\alpha]_D^{20} = +3° \pm 3°$ ($c = 0.5$, 0.1N NaOH), $[\alpha]_{436}^{20} = +7° \pm 3°$ ($c = 0.5$, 0.1N NaOH), $[\alpha]_{365}^{20} = 20° \pm 3°$ ($c = 0.5$, 0.1N NaOH).

3,892,850

PIMARICIN AND PROCESS OF PRODUCING SAME

Adrianus Petrus Struyk, and Jacques Maurits Waisvisz, both of Delft, Netherlands, assignors to Gist-Brocades N.V., Delft, Netherlands

Filed Mar. 7, 1957, Ser. No. 644,609

Claims priority, application Netherlands, Mar. 13, 1956, 5620534

Int. Cl. A61k *21/00*

U.S. Cl. 424—119 **6 Claims**

1. A substance having antibiotic properties in relation to saprophytic and parasitic fungi and yeasts which in the pure state is a white crystalline compound which begins to decompose at about 150°C., gives no color reaction with ferric chloride, which gives the concentrated phosphoric acid a pink, unstable color, which decolorizes bromine water, which is slightly soluble in water (about 8 mgs. in 100 ml at 20°C.) and more soluble in alcohols and is soluble in pyridine, dimethylformamide, dimethylacetamide, glacial acetic acid, and alkali hydroxides, which is practically insoluble in aliphatic hydrocarbons, has a specific roatation $\alpha_D^{25} = +250°$ (in a concentration of 0.083% in 100% methanol), which has a molecular weight of about 685 and an empirical formula of $C_{33}H_{50}NO_{14}$, and which displays maximum absorption of ultra violet light at 290, 304 and 318 mμ with a shoulder at about 280 and a minimum at about 250 mμ and in a potassium bromide plate exhibits the following infra red absorption (in cm^{-1}): 3460, **2985,** 1721, 1637, 1577, 1441, 1401, 1381, 1275, 1269, 1238, 1192, 1176, 1136, 1109, 1066, 1006, 988, 948, 887, 855, 844, 803, 794.

3,892,851

CLEAR AQUEOUS ANTACID SOLUTION CONTAINING A POLYMERIC MEGLUMINE-HEXITOL-ALUMINUM HYDROXIDE COMPLEX AND PREPARATION THEREOF

Emil T. Hinkel, Jr., Bethlehem, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 152,963, June 14, 1971, abandoned. This application July 5, 1973, Ser. No. 376,349

Int. Cl. A61k *27/00*

U.S. Cl. 424—157 **20 Claims**

1. A clear aqueous antacid solution having a pH from about 8.5 to 9.8 comprising water and an effective amount of a polymeric meglumine-hexitol-aluminum hydroxide complex which has mole ratios of Al:hexitol:meglumine of about 1:0.333–1.333:0.12–0.50 where hexitol is sorbitol or mannitol.

3,892,852

PHARMACEUTICAL COMPOSITIONS CONTAINING CYSTEINE DERIVATIVES

Maurice Joullie, Yvelines; Lucien Lakah, Paris; Gabriel Maillard, Paris, and Pierre Muller, Paris, all of France, assignors to Recherches Pharmaceutiques et Scientifiques, France

Filed June 7, 1973, Ser. No. 367,827

Claims priority, application France, June 15, 1972, 72.21606

Int. Cl.² A01N *9/00*

U.S. Cl. 424—180 **7 Claims**

1. A pharmaceutical composition for use in securing a reduction in atheromatous deposits and hypercholesteroloma which comprises a mixture of L S-allyl cysteine and β-benzylidenebutyrylglucosamine and a pharmaceutical diluent.

3,892,853
STABILIZED ALOE VERA GEL AND PREPARATION OF SAME

Henry H. Cobble, Garland, Tex., assignor to Aloe "99" Incorporated, Dallas, Tex.

Continuation of Ser. No. 640,358, May 22, 1967, abandoned. This application Jan. 25, 1971, Ser. No. 109,565

Int. Cl. A61k *27/14*

U.S. Cl. 424—195 **10 Claims**

1. The process of stabilizing the clear gel from the leaf of aloe vera which comprises:

a. mechanically separating the nonbruised and nondiscolored aloe vera gel matrix from the outer green cortex of the aloe vera leaf;

b. homogenizing said aloe gel matrix and adding a catalytic proportion of hydrogen peroxide thereto;

c. heating said gel containing said oxidant to a temperature within the range of from about 35°C to about 80°C for a sufficient time to cause said gel to assume a lighter appearance;

d. adding an effective proportion relative to said oxidant of a nontoxic antioxidant to stop catalytic oxidation; and

e. adding an effective proportion relative to said antioxidant of a nontoxic buffer substance to maintain the pH of the gel solution at a value between pH 4 and pH 6.

3,892,854
CONTROL OF PESTS WITH O,S-DIALKYL-S-(4-OXA-1,2,3-BENZATRIAZINYL)-DITHIAPHOSPHATES

Jozef Drabek, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 7, 1974, Ser. No. 495,459

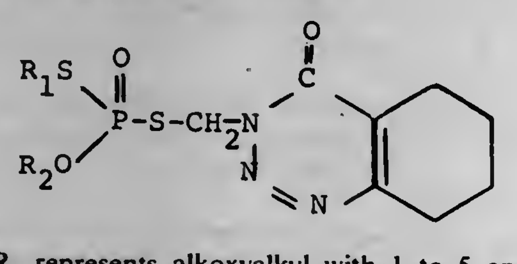
Division of Ser. No. 315,971, Dec. 18, 1972, Pat. No. 3,845,053.

Claims priority, application Switzerland, Dec. 23, 1971, 18828/71, Nov. 7, 1972, 16185/72

Int. Cl. A01n *9/36*

U.S. Cl. 424—200 **6 Claims**

1. A pesticidal composition for combatting pests selected from the group consisting of insects, acarids, and nematodes comprising (1) as active ingredient a pesticidally effective amount of a compound of the formula



wherein R_1 represents alkoxyalkyl with 1 to 5 and 1 to 3 carbon atoms respectively in each of the moieties, or alkylthioalkyl with 1 to 5 and 1 to 3 carbon atoms respectively in each of the moieties and R_2 represents alkyl with 1 to 5 carbon atoms, and (2) a suitable carrier.

3,892,855
METHOD FOR FERTILE BREEDING CONTROL IN FEMALE BOVINE

George E. Short, Arlington Heights, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Filed Oct. 10, 1973, Ser. No. 405,045

Int. Cl.^{2} A61K *17/00*

U.S. Cl. 424—238 **4 Claims**

1. A method for fertile breeding control in female bovine comprising:

a. establishing an estrus and ovulation blocking period of 4 to 12 days by administering subcutaneously for 4–12 days to a female bovine an implant of biologically acceptable polymer containing at least 6 mg. of a progestin selected from the group comprising 17α-acetoxy-11β-methyl-19-norpregn-4-ene-3,20-dione, chlormadinone acetate, dimethisterone, ethisterone, hydroxyprogesterone, hydroxyprogesterone caproate, medroxyprogesterone, norethynodrel, progesterone, 3-ethylenedioxy-17-acetoxy-6-methylpregn-5-en-20-one and 16,17-dihydroxy progesterone acetophenide and

b. administering upon removal of the implant by injection a luteolytic agent selected from the group consisting of at least 5 mg. of estrogens selected from the group comprising estradiol volerate, estradiol benzoate, estrone and mestranol and at least 30 mg. of PGF_2

3,892,856
TOPICAL STEROID FORMULATION

John Anthony Hill, East Brunswick, and Rudolfo Cilento, North Brunswick, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Apr. 10, 1974, Ser. No. 459,754

Int. Cl.^{2} A61K *17/00*

U.S. Cl. 424—241 **21 Claims**

1. A composition comprising from about 0.01% by weight to about 0.5% by weight of 21-chloro-9α-**fluoro**-Δ^4-pregnene-11β,16α,17α-triol-3,20-dione 16,17-acetonide, from about 1% by weight to about 35% by weight of polyethylene glycol having a molecular weight of from about 200 to about 7500, up to about 5% by weight of a bodying agent, and from about 65% by weight to about 99% by weight of oleaginous materials, at least part of the steroid being dissolved in the polyethylene glycol, and the foregoing solution of steroid in polyethylene glycol being dispersed in the oleaginous material.

3,892,857
STEROID FORMULATION

Louis Thomas Difazio, Somerville, and Matthew Anthony Augustine, Allentown, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Nov. 24, 1972, Ser. No. 309,295

Int. Cl.^{2} A61K *31/58*

U.S. Cl. 424—241 **8 Claims**

1. A cream composition for topical application comprising from about 0.05 part to about 2.0 parts by weight of 21-chloro-9α-fluoro-Δ^4-pregnene-11β,16α,17α-triol-3,2-,dione 16,17-acetonide, from about 300 to about 700 parts by weight of propylene glycol, from about 70 to about 440 parts by weight of water, about 33 parts by weight of polyoxyalkylene derivative of hexitol anhydride partial long chain fatty acid ester, and from about 180 to about 260 parts by weight of monoglyceride of fatty acid of from 16 to 18 carbon atoms, fatty alcohol of from 12 to 16 carbon atoms, or fatty acid ester of alcohol having from 3 to about 16 carbon atoms, the lower amounts of the steroid being employed with the lower amounts of propylene glycol, and the higher amounts of the steroid being employed with the higher amounts of propylene glycol, whereby from about 30 to about 75 % by weight of the steroid is in solution in the propylene glycol.

3,892,858
METHOD FOR LOWERING URIC ACID LEVELS USING 7-ALKYLSUFONYL SUBSTITUTED BENZOTHIADIAZINE-1,1-DIOXIDES

Frederick C. Novello, Berwyn, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 265,132, June 22, 1972, Pat. No. 3,816,625. This application Apr. 1, 1974, Ser. No. 456,947

Int. Cl. A16k *27/00*

U.S. Cl. 424—246 **16 Claims**

1. A method which comprises orally administering to a mammal having an elevated blood uric acid level a dose sufficient to lower the blood uric acid level to normal for that species a 3-R^1-6-X-7-RO_2S-1,2,4-benzothiadiazine-1,1-dioxide or a pharmacologically acceptable salt thereof wherein X represents C_{1-3} alkyl, chloro and trifluoromethyl; R^1 represents hydrogen, lower alkyl, halo-lower alkyl, phenyl-lower alkyl, carboxy, —CO_2 lower alkyl and -$CONH_2$; and R represents lower alkyl and phenyl lower alkyl.

3,892,859
1-(M-TRIFLUOROMETHYLPHENYL)-5-HALOPYRIDAZONES-(6) AS SLEEP INDUCERS

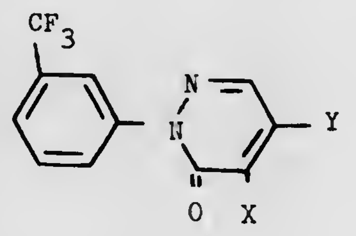
Jerome Linder, Westfield, N.J., assignor to Sandoz-Wander, Inc., E. Hanover, N.J.

Division of Ser. No. 306,440, Nov. 14, 1972, abandoned. This application June 6, 1974, Ser. No. 476,921

Int. Cl. H61k *27/00*

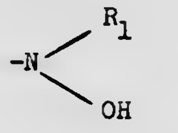
U.S. Cl. 424—250 **12 Claims**

1. A method for inducing sleep which comprises orally or parenterally administering to a mammal in need of said treatment a sleep inducing effective amount of a compound of the formula:



where

Y is —NHOH, —$NHOR_2$ or



,

R_1 and R_2 are each alkyl of 1 to 4 carbon atoms and X is halo having an atomic weight of about 35 to 80.

3,892,860
4,6-DIARYL-PYRIMIDIN-2(1H)-ONES AS SLEEP-INDUCERS

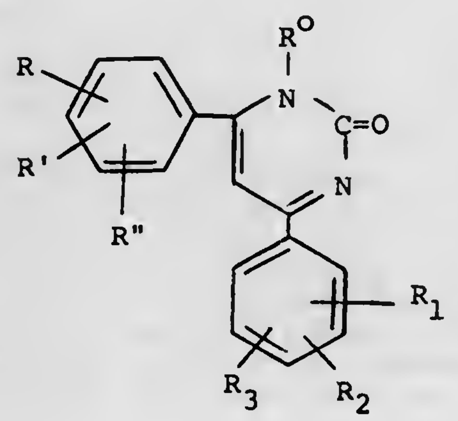
Goetz E. Hardtmann, Florham Park, and Faizulla G. Kathawala, West Orange, both of N.J., assignors to Sandoz-Wander, Inc., E. Hanover, N.J.

Division of Ser. No. 172,583, Aug. 17, 1971, Pat. No. 3,772,272, which is a continuation-in-part of Ser. No. 37,341, May 14, 1970, abandoned, which is a continuation-in-part of Ser. No. 878,572, Nov. 20, 1969, abandoned. This application Aug. 3, 1973, Ser. No. 385,402

Int. Cl. C07d *51/38*

U.S. Cl. 424—251 **8 Claims**

1. The method of inducing sleep in a mammal comprising administering to a mammal a sleep-inducing effective amount of a compound of the formula:



wherein

R^o is alkyl of 1 to 5 carbon atoms,

each of R and R'' is independently hydrogen, fluoro, chloro, bromo, alkyl of 1 to 3 carbon atoms or alkoxy of 1 to 3 carbon atoms,

R' is hydrogen, fluoro, chloro, bromo, alkyl of 1 to 3 carbon atoms, alkoxy of 1 to 3 carbon atoms, nitro or trifluoromethyl,

each of R_1 and R_3 is independently hydrogen, fluoro, chloro, bromo, alkyl of 1 to 3 carbon atoms or alkoxy of 1 to 3 carbon atoms, and

R_2 is hydrogen, fluoro, chloro, bromo, alkyl of 1 to 3 carbon atoms, alkoxy of 1 to 3 carbon atoms, nitro or trifluoromethyl, provided that no more than one of R, R' and R'' and no more than one of R_1, R_2 and R_3 is a branched chain substituent.

3,892,861
SYNERGISTIC FUNGICIDE OF 2-(METHOXYCARBAMOYL)-BENZIMIDAZOLE AND AN N-SUBSTITUTED PHTHALIMIDE

Ernst-Heinrich Pommer, Limburgerhof; Guenter Scheuerer, Ludwigshafen; Gerhard Bolz, Frankenthal, and Dietrich Mangold, Neckargemuend, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed May 29, 1973, Ser. No. 364,858

Claims priority, application Germany, June 2, 1972, 2226945

Int. Cl. A01n *9/22*

U.S. Cl. 424—273 **5 Claims**

1. A fungicidal composition comprising a mixture of

a. 2-(methoxycarbamoyl)-benzimidazole and

b. an N-substituted phthalimide selected from the group consisting of N-trichloromethylthiotetrahydrophthalimide, N-trichloromethylthiophthalimide and N-(1,1,2,2-tetrachloroethylthio)-tetrahydrophthalimide in a weight ratio of *a:b* of 1:1 to 1:4.

3,892,862
COMPOSITION AND METHOD FOR COMBATTING FUNGI AND MITES CONTAINING TRIORGANOTIN COMPOUNDS

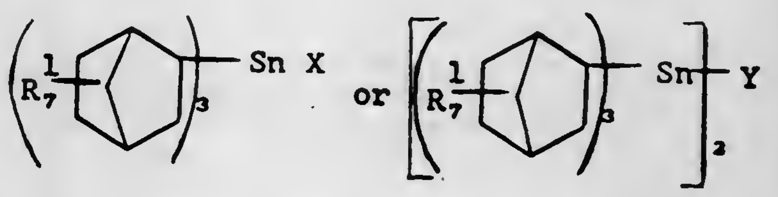
Melvin H. Gitlitz, Edison, N.J., assignor to M & T Chemicals Inc., Greenwich, Conn.

Division of Ser. No. 316,045, Dec. 18, 1972, Pat. No. 3,781,316. This application July 16, 1973, Ser. No. 379,745

Int. Cl. A01n *9/00*

U.S. Cl. 424—288 **11 Claims**

1. A non-phytotoxic composition for combating fungi and mites, said composition comprising an inert liquid or inert solid carrier and a fungicidally or miticidally effective amount of a tri-2-norbornyltin compound represented by the general formula



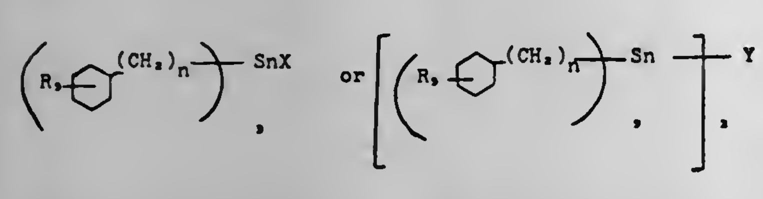
wherein each R^1 is individually selected from the group consisting of hydrogen linear alkyl containing between 1 and 8 carbons and branched alkyl containing between 1 and 8 carbons, X is selected from the group consisting of chlorine, bromine, fluorine, hydroxyl, carboxylate, phenoxy, alkoxy (—OR^2) and mercaptide (—SR^2), wherein R^2 is alkyl containing between 1 and 12 carbons, inclusive and Y is selected from the group consisting of oxygen, sulfur and sulfate.

3,892,863

METHOD FOR COMBATING FUNGI AND MITES USING TRIS (CYCLOHEXYLALKYL) TIN COMPOUNDS

Melvin H. Gitlitz, and Bernard G. Kushlefsky, both of Edison, N.J., assignors to M & T Chemicals Inc., Greenwich, Conn.
Division of Ser. No. 295,137, Oct. 5, 1972, Pat. No. 3,790,611. This application July 16, 1973, Ser. No. 379,744
Int. Cl. A01n *9/00*
U.S. Cl. 424—288 **6 Claims**

1. A method for controlling organisms selected from the group consisting of fungi and mites which comprises contacting said organisms with a fungicidally and miticidally effective amount of a compound of the formula



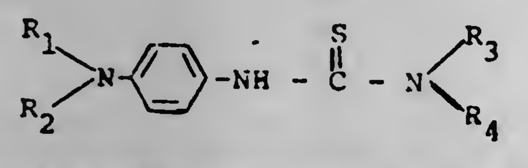
wherein each R is individually selected from the group consisting of hydrogen linear alkyl containing between 1 and 8 carbons and branched alkyl containing between 1 and 8 carbons, X is selected from the group consisting of chlorine, bromine, fluorine, hydroxyl, carboxylate (—OOCR′), phenoxy, alkoxy (—OR′), and mercaptide (—SR′) wherein R′ is alkyl containing between 1 and 12 carbons, inclusive, Y is selected from the group consisting of oxygen, sulfur and sulfate and *n* is an integer between 1 and 5, inclusive.

3,892,864

METHOD FOR COMBATTING RODENTS AND RODENTICIDAL COMPOSITIONS

Hiroshi Yamamoto, Tokyo; Shoichi Kato, Ageo; Koji Ohgushi, and Iwao Tokumitsu, both of Fukuoka, all of Japan, assignors to Nippon Kayaku Co., Ltd., Japan
Filed Sept. 5, 1972, Ser. No. 286,058
Claims priority, application Japan, Sept. 13, 1971, 46-70390
Int. Cl.² A01N *9/12, 9/20*
U.S. Cl. 424—322 **5 Claims**

1. A method for combatting rodents comprising the step of making accessible to rodents a feed bait containing a rodenticidally effective amount of a compound of the formula



wherein R_1 is hydrogen or alkyl of 1 to 5 carbons, R_2 is alkyl of 1 to 5 carbons, R_3 is hydrogen or alkyl of 1 to 2 carbons, and R_4 is hydrogen or alkyl of 1 to 12 carbons, or a hydrochloric acid salt thereof.

3,892,865

METHOD OF CONTROLLING LIPIDS IN THE BLOODSTREAM

Dan Christian Roehm, 808 N.E. 20th Ave., Fort Lauderdale, Fla. 33304
Filed Feb. 9, 1972, Ser. No. 224,964
Int. Cl. H61k *27/00*
U.S. Cl. 424—325 **12 Claims**

1. A method of lowering the serum lipids of animals comprising administering an effective lipid lowering amount of a composition to an animal host in need of said lipid lowering and in such a fasting state that the animal has not had a substantial food intake within 2 hours before or 1 hour after the administration of the composition, whereby the lipid content of the blood drops below the preadministration content, said substantial food intake being at least the equivalent of 400 calories and 2 ounces of fat and said composition consisting essentially of diethanolamine or the pharmaceutically acceptable nontoxic salts thereof.

3,892,866

PROCESS FOR THE PREPARATION OF FEED FOR CULTIVATING MACRURA

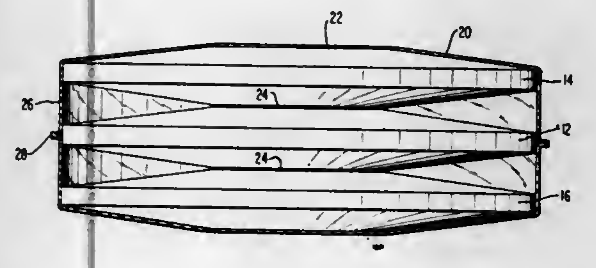
Tsunetoshi Kanemitsu, Tokyo, Japan, assignor to Taiyo Fishery Co., Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 82,132, Oct. 19, 1970, abandoned. This application Feb. 12, 1973, Ser. No. 331,585
Claims priority, application Japan, Oct. 20, 1969, 44-83243
Int. Cl. A23k *1/10, 1/18*
U.S. Cl. 426—72 **7 Claims**

1. A process for preparing a dry solid feed for cultivating macrura which comprises shrimp, prawn and lobster which hides at the bottom of the nursery in the sand thereof and which eats food slowly, which feed is resistant to collapse in water and is capable of keeping the water soluble nutrients after feeding, which comprises kneading fresh raw meat of fish, shrimp, or clams with 1–3% by weight of salt selected from the group consisting of sodium chloride, magnesium sulfate, sodium phosphate, potassium phosphate, calcium phosphate and calcium lactate to give an adhesive paste, adding 50–150 parts by weight of the paste to 100 parts by weight of a compound feed powder containing fish meal, soybean meal, wheat flour, yeast and minerals, fully kneading the mixture, shaping the kneaded mixture into adequate size pellets and thereafter heating the shaped materials to dryness.

3,892,867

READILY SEPARABLE INSTANT BEVERAGE CHARGE

Marten Leonard Schoonman, 906 N. Elam Ave., Greensboro, N.C. 27408
Filed Feb. 7, 1974, Ser. No. 440,611
Int. Cl. A23f *1/08, 3/00*
U.S. Cl. 426—93 **2 Claims**



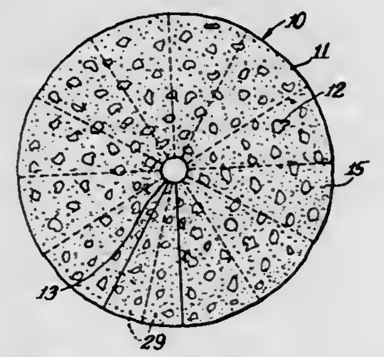
1. In an "instant" water soluble, comestible beverage charge of the type wherein said charge is added to a measured body of water to form a beverage, and wherein said beverage charge comprises measured portions of separate, individual comestibles including a first comestible selected from the group consisting of powdered coffee and tea and at least one other, second comestible selected from the group consisting of powdered milk and sugar, the improvement wherein:

each comestible takes the form of a pressed powdered disc-like wafer,
and said charge consisting of said first comestible wafer and at least one second comestible wafer, all of said wafers being stacked, with adjacent wafers being adhesively fixed to each other in face abutting contact and forming a unitary solid, detachable wafer stack;
whereby, the content of the beverage may be readily varied by separating a selected wafer or wafers from the stack prior to adding the stacked wafer charge to the water.

3,892,868

PIZZA PIE AND METHOD OF FORMING THE SAME

Josef F. Klingler, 1335 Gregory, Wilmette, Ill. 60091
Filed Apr. 27, 1973, Ser. No. 355,056
Int. Cl. A21d *13/00;* **A23g** *3/00*
U.S. Cl. 426—94 **10 Claims**

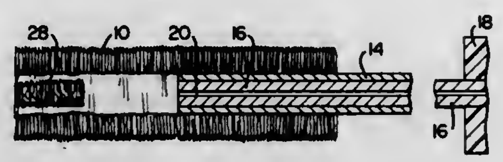


1. A pizza pie having a dough portion and a topping, said dough portion having a central hole defined by an annular inner upwardly extending edge crust portion, an outer circumferential upwardly extending edge crust portion, and a compacted mid-portion extending between said edge portions.

3,892,869

END PLUG CLOSURES FOR SHIRRED CASING STICKS AND METHODS FOR MAKING THEM

Arthur L. Sheridan, Woodridge, and Walter V. Marbach, Palos Heights, both of Ill., assignors to Union Carbide Corporation, New York, N.Y.
Filed Mar. 27, 1974, Ser. No. 455,367
Int. Cl. A22c *13/00*
U.S. Cl. 426—138 **5 Claims**



1. A hollow shirred stick of tubular casing having an open end and a closed end, said closed end comprising a plug of compressed casing of which a first portion is secured to at least a portion of the fore end surface of the shirred stick with the remainder generally conforming to the bore of the shirred stick and extending within said bore so as to form an annular space between the entended portion of said plug and the internal wall of the shirred stick wherein the compressed casing of the plug is casing deshirred from the fore end of the shirred stick thereby resulting in said plug being a free floating plug integral with said shirred stick.

3,892,870

ARTIFICIAL FRUIT AND PROCESS THEREFOR

Francis William Wood, Bedford, England, assignor to Lever Brothers Company, New York, N.Y.
Filed Apr. 23, 1973, Ser. No. 353,275
Int. Cl. A23l *1/04*
U.S. Cl. 426—573 **8 Claims**

1. A process for the production of artificial fruit of heterogeneous eating texture consisting essentially of the steps of

i. preparing a fruit-flavored solution of a first gelling agent selected from the class consisting of alginate and low methoxy pectate;
ii. dispersing fruit-flavored particles having a diameter of from about 0.5 mm to about 3 mm of a gel based on a second gelling agent selected from the class consisting of agar, carageenan, gelatin, furcellaran and starch in the solution; and
iii. gelling the solution round the particles by action of calcium ions, the volume ratio of the particles to the solution being from about 1:1 to about 3:1.

3,892,871

HIGH FRUCTOSE CORN SYRUP JELLIES AND METHOD FOR MANUFACTURE THEREOF

Ned Cooper, 4 Naramore Dr., Batavia, N.Y. 14020
Filed Feb. 19, 1974, Ser. No. 443,855
Int. Cl. A23l *1/06*
U.S. Cl. 426—573 **14 Claims**

1. An edible flavored jelly comprising 55 to 67% of corn syrup solids, of which at least 15% is from high fructose corn syrup, a flavoring material, 0.2 to 5% of a gelling agent, an acidifying agent in sufficient quantity to make the pH of the jelly in the range of 1.5 to 3.5, and water.

3,892,872

EDIBLE COLOURING MATERIALS

Arthur Ernest Billington, Watford, England, assignor to Beecham Group Limited, England
Filed Aug. 13, 1973, Ser. No. 387,749
Claims priority, application United Kingdom, Aug. 19, 1972, 38761/72; Oct. 5, 1972, 45922/72
Int. Cl. A23l *1/26*
U.S. Cl. 426—250 **9 Claims**

1. An food composition comprising 8-amino-2-(azo-benzene-4-sulphonic acid)-1-naphthol-3 6-disulphonic acid or an edible salt thereof together with foodstuff.

3,892,873

EMULSIFIED OIL DRESSING

Eugene P. Kolen, Evanston, and Olga C. Golosinec, Park Ridge, both of Ill., assignors to Kraftco Corporation, Glenview, Ill.
Filed Nov. 19, 1973, Ser. No. 417,132
Int. Cl. A23l *1/24*
U.S. Cl. 426—602 **8 Claims**

1. An emulsified oil dressing having a pH in the range of from about 3 to about 4.5 comprising water, oil, flavoring materials and an emulsifying agent, said emulsifying agent consisting essentially of serum protein obtained from milk, said oil being present at a level of from about 50 to about 80 percent by weight, said serum protein being at least about 70 percent by weight denatured protein when said oil is present at a level of from about 50 to about 70 percent by weight and said serum protein being less than about 20 percent by weight denatured protein when said oil is present at a level of from about 70 to about 80 percent by weight, said serum protein being present at a level of from about 0.5 percent to about 5.0 percent by weight of said dressing.

3,892,874

METHOD OF MANUFACTURING SEASONED INSTANT COOKING NOODLES PACKED IN A CONTAINER

Momofuku Ando, 7-34 Masumicho, Osaka, Japan
Continuation-in-part of Ser. No. 140,253, May 4, 1971, abandoned. This application Oct. 10, 1973, Ser. No. 405,061
Claims priority, application Japan, Aug. 10, 1970, 45-69928
Int. Cl. A23l *1/16*
U.S. Cl. 426—303 **3 Claims**

1. A method of converting raw noodles into precooked noodles flavored with a seasoning agent, comprising the steps of successively:

gelatinizing said raw noodles by boiling;
immediately subjecting the boiled noodles to a spray of a liquid containing a seasoning agent, said liquid having a temperature below about 5°C;
squeezing excess liquid containing seasoning agent from said noodles;

sprinkling edible oil upon said noodles;
immersing said noodles in a hot edible oil at an elevated temperature substantially above the boiling point of water for partially dehydrating same;
packing said noodles substantially at said elevated temperature in a container;
sealing said container; and then
cooling said container and its contents.

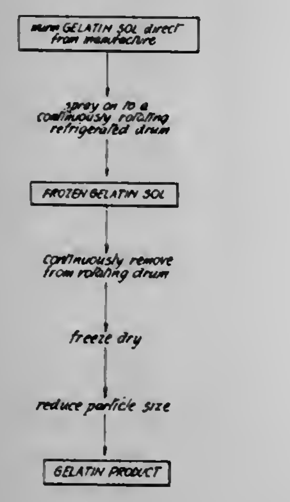
3,892,875
PROCESS FOR THE PRESERVATION OF SEA URCHIN GONADS BY QUICK FREEZING

Alberto Sfeir, Santiago, Chile, assignor to Corporacion de Fomento de la Produccion, Santiago, Chile
Continuation-in-part of Ser. No. 322,726, Jan. 11, 1973, abandoned. This application June 17, 1974, Ser. No. 480,240
Claims priority, application Chile, Jan. 14, 1972, 2572
Int. Cl. A23b *1/02*
U.S. Cl. 426—303 **2 Claims**

1. A method for quick-freezing sea urchin gonads (*Loxechinus Albus*) for preservation purposes, comprising:
resting the washed gonads in an aqueous solution of 2–4% by weight sodium chloride for a period of approximately 30 minutes;
immersing said gonads into an aqueous solution of 8–12% by weight sodium chloride, 0.1 to 0.5% by weight sodium phosphate and 0.05 to 0.2% by weight citric acid, for a period of approximately 15–20 minutes:
and then quick-freezing said gonads at a speed not under 2.5 centimeters an hour.

3,892,876
PROCESS OF PREPARING FREEZE-DRIED GELATIN

Trevor Maurice Norwood Hobday, High Wycombe, and Graham William Jordan, Machen, both of England, assignors to P. Leiner & Sons (Wales) Limited and Ranks Hovis McDougall Limited, both of London, England
Filed Nov. 27, 1972, Ser. No. 309,783
Claims priority, application United Kingdom, Nov. 30, 1971, 55541/71
Int. Cl. A23j *1/10*
U.S. Cl. 426—576 **10 Claims**


warm GELATIN SOL direct from manufacture
spray on to a continuously rotating refrigerated drum
FROZEN GELATIN SOL
continuously remove from rotating drum
freeze dry
reduce particle size
GELATIN PRODUCT

1. A method of treating gelatin to improve its solubility in cold water whilst substantially retaining its gelling property, the method comprising the steps of spraying an aqueous gelatin sol having a gelatin concentration of at least 10 percent w/w on to a refrigerated surface whilst maintaining relative movement between the spray of aqueous gelatin sol and the refrigerated surface so that the particles of aqueous gelatin sol which comprise the spray freeze directly to the refrigerated surface, removing the frozen aqeuous gelatin sol from the refrigerated surface after a single passage of the spray over the refrigerated surface, melting of the frozen aqueous gelatin sol being prevented while the frozen aqueous gelatin sol is being removed from the refrigerated surface, and freeze-drying the frozen aqueous gelatin sol to recover gelatin therefrom before any melting of the frozen aqueous gelatin sol is permitted.

3,892,877
PROCESS FOR PREPARING TOMATO JUICE OF INCREASED CONSISTENCY

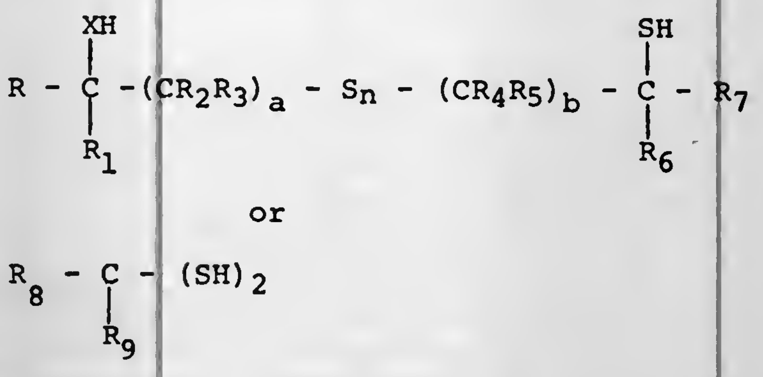
Joseph R. Wagner, Moraga; Jackson C. Miers, Pleasant Hill, and Robert Becker, Lafayette, all of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.
Filed Mar. 17, 1972, Ser. No. 235,779
Int. Cl. A23l *1/02*
U.S. Cl. 426—365 **11 Claims**

1. A process for preparing tomato juice of increased consistency, which comprises
a. macerating and heating tomatoes at their natural pH, the maceration being with force sufficient to break up the tomatoes into a pulpy mass but insufficient to cause substantial damage to individual fruit cells, the heating being at a temperature and for a time sufficient to inactivate the enzymes, but insufficient to damage the tomatoes,
b. mixing the resulting tomato macerate with an amount of non-toxic acid sufficient to provide a pH less than 3.5, said mixing being sufficient to thoroughly distribute the acid within the macerate but insufficient to cause mechanical shearing of the individual fruit cells, whereby to avoid any substantial increase in consistency,
c. extracting the juice from the macerate, said extraction being carried out under conditions which minimize mechanical shearing of individual fruit cells, whereby to avoid any substantial increase in consistency, and
d. homogenizing the juice by applying vigorous and repeated shearing forces to the juice, whereby to cause extensive physical damage to the fruit cells in the juice and thereby increase its consistency.

3,892,878
FLAVORING WITH SULFUR CONTAINING COMPOUNDS

Richard A. Wilson, Westfield, and Christopher Giacino, Califon, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.
Filed Apr. 25, 1973, Ser. No. 354,304
Int. Cl. A23l *1/26*
U.S. Cl. 426—534 **14 Claims**

1. A process for altering the organoleptic properties of a foodstuff which comprises adding thereto an effective amount of a sulfur-containing compound of the formula



$$R-\underset{R_1}{\overset{XH}{C}}-(CR_2R_3)_a-S_n-(CR_4R_5)_b-\underset{R_6}{\overset{SH}{C}}-R_7$$

or

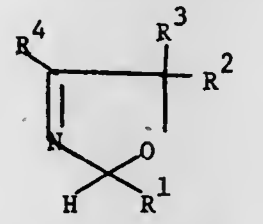
$$R_8-\underset{R_9}{C}-(SH)_2$$

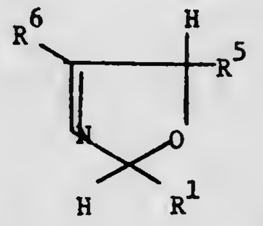
wherein X is oxygen or sulfur, each of R through R_9 is the same or different and each is hydrogen or lower alkyl of 1–4 carbon atoms, and at least one of R_8 or R_9 is such lower alkyl; and when *n* is 0, then *b* is 0 and *a* is an integer of from 0 to 7; and when *n* is 1, *a* and *b* are the same and each represents an integer of 1.

3,892,879
USE OF OXAZOLINE FLAVORING AGENTS AND FLAVOR EXTENDERS

Donald S. Hetzel, New London, and Anibal Torres, Waterford, both of Conn., assignors to Pfizer Inc., New York, N.Y.
Division of Ser. No. 150,768, June 7, 1971, Pat. No. 3,769,293, which is a continuation-in-part of Ser. No. 34,876, May 5, 1970, abandoned. This application June 29, 1973, Ser. No. 374,931
Int. Cl. A23l *1/26*
U.S. Cl. 426–536 **3 Claims**

1. A method of flavoring a food base carrying a flavor selected from the group consisting of peanut, cocoa, chocolate, caramel, mint, butter, rum and fruit, said method comprising adding to said base a compound selected from the group consisting of those having the formulae:





wherein:
R^1, R^2, R^3 and R^4 are each alkyl groups containing up to 6 carbon atoms; and
R^5 and R^6 are each alkyl groups containing from 2 to 6 carbon atoms in an amount sufficient to enhance the flavor and aroma of said food base.

3,892,880
METHOD FOR THE MANUFACTURE OF CRYSTALLINE, FLOWABLE, STABLE FAT POWDERS OR MIXTURES OF SUCH FAT POWDERS WITH OTHER POWDERY MATERIALS

Erhard Grolitsch, Strauchergasse 23, Graz, Austria
Continuation-in-part of Ser. No. 851,190, Aug. 19, 1969, abandoned. This application Aug. 10, 1972, Ser. No. 279,740
Int. Cl. A23d *5/00*
U.S. Cl. 426—541 **12 Claims**

1. A method for continuously converting fat that is completely solid at a temperature of approximately 20°C., into a crystalline, flowable, stable powder, comprising the steps of:
1. heating the fat to a first temperature above, but not in excess of approximately 15°C. above, the clear melting point of the fat to melt the fat and then mixing same to form a homogeneous molten fat composition;
2. thereafter chilling the homogeneous molten fat composition to a second temperature which lies in the lower third of the temperature range between the congeal point and the clear melting point of the homogeneous fat composition, the chilling being carried out at a rate effective to initiate the formation of a high concentration of high melting point β-fat crystal nuclei and to minimize the formation of relatively low melting point α and β'-fat crystal nuclei in the fat composition but without cooling the fat composition below the congeal temperature of the fat composition, and then maintaining the fat composition at the second temperature for a time period of from 2 to 30 minutes to complete the development of a high number of relatively high melting β-fat crystal nuclei in the fat composition;
3. thereafter heating the fat composition up to a third temperature at which its viscosity is such that the fat composition is suitable for atomizing and spraying and to substantially dissolve any residual α β'-fat crystal nuclei in the fat composition and to avoid destruction of the β-fat crystal nuclei, the third temperature being no higher than approximately 10 percent below the clear melting point of the fat composition;
4. then spraying the fat composition substantially free of α and β'-fat crystal nuclei and containing a high concentration of β'-fat crystal nuclei in the liquid phase into a crystallization chamber and therein contacting the sprayed fat composition with cool dry air by circulating through the crystallization chamber a stream of dehumidified air at a temperature of between about −15° to −30°C. to crystallize fat particles, the dew point of the stream of dehumidified air being below the lowest temperature in the crystallization chamber, whereby there is formed a flowable powder of crystalline fat particles of a small particle size and containing primarily the β crystalline form of fat;
5. discharging the flowable fat powder from the crystallization chamber; and
6. then ripening the fat powder in a ripening chamber in a dehumidified atmosphere at a fourth temperature of between about 0°C. to +10°C. for a ripening period of from approximately 0.5 to approximately 10 minutes, the dew point of the dehumidified atmosphere being below the lowest temperature in the ripening chamber.

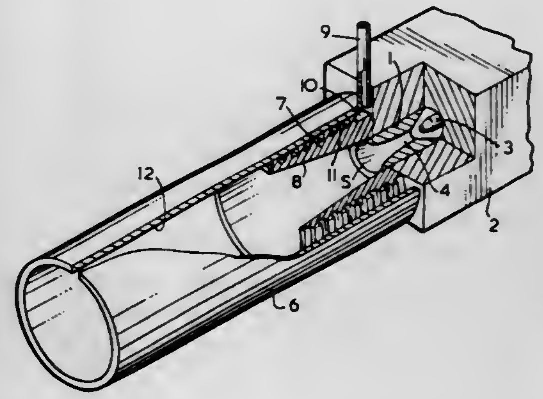
3,892,881
NON-NEWTONIAN NUTRITIVE COMPOSITIONS

Kenneth J. Lissant, St. Louis, Mo., assignor to Petrolite Corporation, St. Louis, Mo.
Continuation-in-part of Ser. No. 784,905, Dec. 18, 1968, abandoned. This application Nov. 23, 1971, Ser. No. 201,562
Int. Cl. A23l *1/24;* **A23d** *5/00*
U.S. Cl. 426—602 **14 Claims**

1. A stable, non-settling nutritive high internal phase ratio emulsion characterized by the presence of nutritive agent therein and by the absence of thickening agent therefrom,
said high internal phase ratio emulsion having the characteristics of a solid when at rest and the characteristics of a liquid when a force is exerted on it with a decrease in the effective viscosity with shear rate, said emulsion consisting essentially of (1) food grade emulsifying agent, (2) nutritive acceptable emulsifiable oil, and (3) aqueous nutritive acceptable non-oil,
said high internal phase ratio emulsion being selected from the group consisting of (1) an oil-in-aqueous non-oil emulsion and (2) an aqueous non-oil-in-oil emulsion,
the internal phase of said emulsion being present in an amount of at least 80 percent by volume of the emulsion.

3,892,882
PROCESS FOR PLASMA FLAME SPRAY COATING IN A SUB-ATMOSPHERIC PRESSURE ENVIRONMENT

Christopher John Scott Guest, and Keith Graham Ford, both of Swindon, England, assignors to Union Carbide Corporation, New York, N.Y.
Filed May 25, 1973, Ser. No. 364,171
Int. Cl. B05b *5/06*
U.S. Cl. 427—34 **2 Claims**



1. A method for producing plasma sprayed coatings comprising

maintaining an arc between a first and second electrode;
passing a gas into said arc to produce a hot gas effluent;
introducing a coating powder into said hot gas effluent;
passing said coating powder entrained hot gas effluent through an arc constricting nozzle;
surrounding said coating powder entrained hot gas effluent by a vortical flow of gas moving in the same direction as said hot gas effluent to provide a zone of sub-atmospheric pressure from said nozzle substantially to a substrate to be coated;
maintaining said coating powder entrained hot gas effluent within said zone of sub-atmospheric pressure until it strikes said substrate.

3,892,883
PROCESS FOR PLASMA SPRAYING FIBER-REINFORCED THERMOSETTING RESIN LAMINATES

Gérard Leclercq, St-Medard en Jalles, France, assignor to Societe Europeene de Propulsion, Puteaux, France
Filed Jan. 19, 1973, Ser. No. 325,183
Int. Cl. C23c *7/00*
U.S. Cl. 117—427/34 **10 Claims**

1. A process for providing a fiber-reinforced thermosetting resin laminate with a protective coating, which process comprises cleaning the surface of the resin laminate to be coated with a solvent and then blasting the surface with an abrasive to remove foreign bodies, plasma spraying a layer of a mixture containing 75% copper and 25% glass on the cleaned and blasted surface, cooling the said copper/glass layer, plasma spraying a layer of nickel aluminide on the copper/glass layer, cooling the said nickel aluminide layer, and plasma spraying a layer of chromium carbide or tungsten carbide on the nickel aluminide layer.

3,892,884
METHOD FOR THE PREPARATION OF PROTECTIVE COATING

Peter Garth Garratt, Wallisellen, and Juerg Hoigne, Zurich, both of Switzerland, assignors to Lonza Ltd., Gampel/Valais, Switzerland
Continuation-in-part of Ser. No. 41,048, May 27, 1970, abandoned. This application Jan. 25, 1972, Ser. No. 220,684
Claims priority, application Switzerland, May 30, 1969, 8218/69
Int. Cl. B44d *1/50;* **C08f** *3/32*
U.S. Cl. 427—36 **16 Claims**

1. A method which comprises coating a substrate with a mixture consisting of at least one member selected from the group consisting of chlorinated polyethylene, chlorinated polypropylene, chlorinated polybutylene and chlorinated rubber together with at least one member selected from the group consisting of ethyl acrylate, butyl acrylate, butyl methacrylate and ethyl hexyl acrylate and exposing the coating to a sufficient amount of ionizing radiation to harden said mixture and form a protective coating on said substrate.

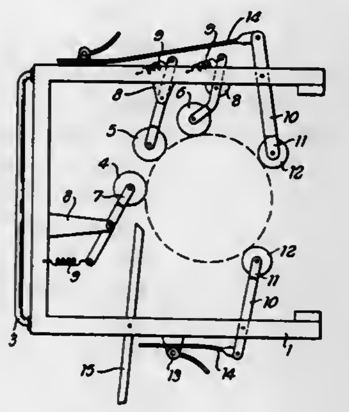
3,892,885
PROCESS FOR TREATING POLYMERIC SURFACES TO PROVIDE INCREASED ADHERENCE TO SUBSEQUENTLY APPLIED COATINGS

Robert A. Bragole, Danvers, Mass., assignor to USM Corporation, Boston, Mass.
Continuation-in-part of Ser. No. 201,541, Nov. 23, 1971, Pat. No. 3,764,370, which is a continuation-in-part of Ser. No. 887,348, Dec. 22, 1969, abandoned. This application Sept. 21, 1973, Ser. No. 399,560The portion of the term of this patent subsequent to Oct. 9, 1990, has been disclaimed.
Int. Cl.² B44D *1/50, 5/12;* **C08F** *3/00*
U.S. Cl. 427—54 **10 Claims**

1. The process of providing a distinct resinous coating strongly adherent to the surface of a body of a polymer resin having at least some hydrogen on a carbon chain in a repeating unit in the polymeric chain and having a critical surface tension of wetting of not more than 35 dynes per centimeter, said surfaces being selected from the group consisting of surfaces of bodies of resinous polyvinyl fluoride, polyvinylidene fluoride, polyolefins, copolymers of ethylene or propylene with vinyl acetate or ethyl acrylate, copolymers of ethylene and propylene containing a small proportion of a non-conjugated diene and molded surfaces of bodies of resins from the group consisting of polyacetal resins, polyamide resins, polycaprolactam resins, polyurethane resins, and ionomer resins, said process comprising the steps of providing a photosensitizer having a triplet state energy of at least about 62 K cal/-mole at the surface to be coated of said polymeric material, irradiating said surface with ultraviolet light in the range of about 2,000 A to about 3,500 A to the extent of at least about 1,000 watt seconds to form a cross-linked surface integral with the body of resin and concurrently to generate free radicals in surface molecules of said polymeric material, thereafter applying to said surface a film forming synthetic polymer resin base coating composition, said composition containing from about 0.05 to about 5 percent by weight of polymerizable unsaturated monomer based on the weight of said film forming polymer resin which will combine with the surface through the action of said free radicals and subjecting said coating to heat after application to improve the interaction between said free radicals, the polymeric resin of the coating and said polymerizable unsaturated monomer material in the applied coating to unite the entire coating to said surface.

3,892,886
TREATMENT OF ELECTRODES

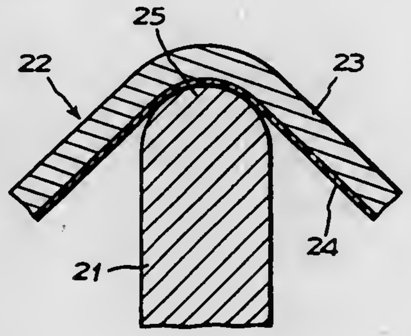
Dieter Schmidt; Clive Graham Lorkin, and Josef Schiffarth, all of Borken, Germany, assignors to Foseco International Limited, Birmingham, England
Filed July 26, 1973, Ser. No. 382,873
Claims priority, application United Kingdom, Aug. 15, 1972, 38102/72
Int. Cl. B44d *1/20*
U.S. Cl. 427—59 **7 Claims**



1. In a method of treating the surface of a rotationally symmetric carbon article the steps of: engaging the surface of the article with the surfaces of a plurality of rollers which are disposed with their axes parallel to the axis of the article; effecting relative rotation between the articles and the rollers such that the rollers roll around the circumference of the article; and effecting a protective treatment on the article surface during rotation.

3,892,887
PROCESS FOR MAKING AN ELECTROSTATIC RECORDING MEDIUM

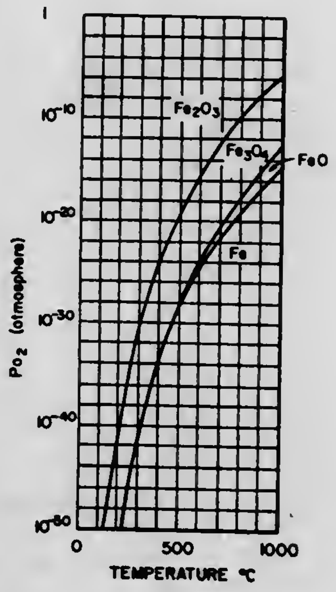
Kazuo Shibata, and Takao Matsushita, both of Hyogo, Japan, assignors to Kanzaki Paper Mfg. Co. Ltd., Tokyo, Japan
Filed Mar. 16, 1973, Ser. No. 342,266
Claims priority, application Japan, Mar. 18, 1972, 47/27852
Int. Cl. H01b *1/00*
U.S. Cl. 427—121 **6 Claims**



1. A process for making an electrostatic recording medium comprising the steps of forming a dried dielectric recording layer on a surface of an electrically conductive substrate selected from the group consisting of paper, plastic film and synthetic paper, said dielectric recording layer being essentially formed of an insulating resin material, and scraping the exposed surface of said dried dielectric recording layer by drawing same transversely across an elongated scraping means with contact area having a relatively narrow contact length within the range of about 0.1 mm to 100 mm, said contact area having a Rockwell hardness within the range of about M 70 to M 120 and a coefficient of friction against clean steel within the range of about 0.1 to 0.7.

3,892,888
METHOD OF MAKING A MAGNETIC RECORDING AND STORAGE DEVICE

Sami A. Halaby, Raleigh, N.C.; Neal S. Kenny, Horseheads, and James A. Murphy, Painted Post, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.
Filed June 9, 1971, Ser. No. 151,388
Int. Cl. H01f *10/00*
U.S. Cl. 117—236 **24 Claims**



1. A method of making an iron oxide magnetic recording and storage device comprising the steps of
providing an inorganic and non-magnetic support member,
heating said support member to a temperature of at least 300°C,
exposing a surface of said heated support member to the vapors of an iron compound, said iron compound vapors containing substantially no metal other than iron,
maintaining said heated support member in a reducing atmosphere while exposing it to said iron compound vapors, whereby a film of iron will be formed on said support member, and thereafter
maintaining said support member and iron film combination at a temperature of at least 300°C in an oxidation-reduction atmosphere whereby said iron film is converted to a film of magnetite.

3,892,889
PROCESS FOR STABILIZING MOLDINGS OF HIGH MOLECULAR WEIGHT THERMO-PLASTIC POLYCARBONATES

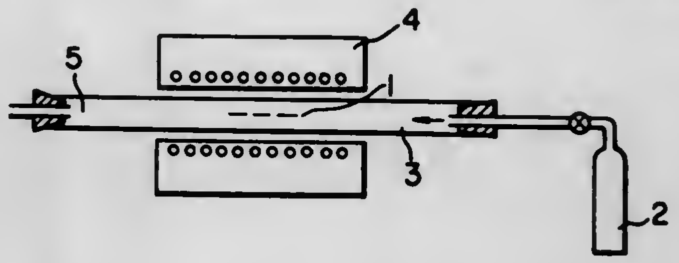
Wolfgang Cohnen, and Gunter Peilstocker, both of Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Feb. 28, 1973, Ser. No. 336,657
Claims priority, application Germany, Mar. 10, 1972, 2211641
Int. Cl. C08g *51/58, 51/60*
U.S. Cl. 427—160 **13 Claims**

1. In the process for the production of moldings of high molecular weight thermoplastic polycarbonates of bivalent phenols having dispersed to a depth of from about 5 to about 30 μ from the surface, from about 2 to about 30 grams per square meter of surface of an ultraviolet absorber, the surface being sealed, wherein 150 to 300 cc/(m^2 of molding surface) of a stabilizer solution are applied to the molding surface and the molding surface thereafter dried, the improvement comprising employing as the stabilizer solution a solution comprising

a. a liquid mixture comprising 10 – 80 parts by weight of an aliphatic C_1 –C_3 halogenohydrocarbon; 20 – 80 parts by weight of a lower aliphatic C_1 – C_4 alcohol and 0 – 25 parts by weight of water, and
b. 2 – 20 parts by weight based on the weight of the liquid mixture, of an ultraviolet absorber for polycarbonates selected from the group consisting of benzophenone derivatives, benzotriazole derivatives, crotonic acid esters, acrylic acid esters and mixtures of these ultraviolet absorbers.

3,892,890
PROCESS FOR FORMING CARBON COATINGS

Kiyoshi Watanabe; Akira Misumi; Takayoshi Onodera, and Kazuo Sunahara, all of Mobara, Japan, assignors to Hitachi, Ltd., Japan
Filed May 9, 1973, Ser. No. 358,647
Claims priority, application Japan, May 12, 1972, 47-46394; May 12, 1972, 47-46395; May 12, 1972, 47-46396
Int. Cl. C01b *31/00*
U.S. Cl. 427—249 **70 Claims**



1. A process for forming a carbon coating on an iron surface of an article to be coated, which process comprises the steps of first forming on the iron surface of said article a nickel-phosphorus alloy layer having an amount of 4 - 12 percent by weight of phosphorus, and of then heating the nickel-phosphorus alloy layer-coated article in a non-combustible gas mixture containing a thermally decomposable hydrocarbon

gas, thereby effecting a thermal decomposition reaction of said gas at a temperature below 700°C to deposit carbon contained in said gas on the surface of said nickel-phosphorus alloy layer-coated article to form the carbon coating thereon, said nickel-phosphorus alloy layer effecting catalytic action to deposit carbon with a nickel-phosphorus compound of said alloy layer, so that said carbon coating is firmly bonded to said surface at said temperature.

3,892,891
PROVISION OF REPRODUCIBLE THIN LAYERS OF SILICON DIOXIDE

Alvin Malcolm Goodman, Princeton, N.J., and James Miklos Breece, Morrisville, Pa., assignors to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 51,248, June 30, 1970, abandoned. This application May 15, 1972, Ser. No. 253,416

Int. Cl. C23c *11/08*

U.S. Cl. 427—255 **6 Claims**

1. A method of reproducibly providing, in separately performed procedures, a thin layer of silicon dioxide of a preselected thickness less than in the order of 100 A on silicon bodies, comprising:

cleaning a surface of each of said bodies,

thermally growing on said surfaces a first layer of silicon dioxide having a thickness greater than said preselected thickness,

removing said first layer without exposure of said surfaces to an oxidizing atmosphere to provide a similarly clean surface on all of said bodies,

after the conclusion of said removing step and at the same pre-set time within 3 minutes of any exposure of said bodies to an oxidizing atmosphere provided by normal room conditions, preheating said bodies at a temperature between 100° and 200°C in a substantially identical atmosphere of preselected dew point for a period of time sufficient to provide substantially identical conditions of temperature and wetness of the surfaces of said bodies from procedure to procedure, and

thereafter, thermally oxidizing said surfaces at a temperature substantially greater than that used in said pre-heating step to provide a silicon dioxide layer thereon of said pre-selected thickness.

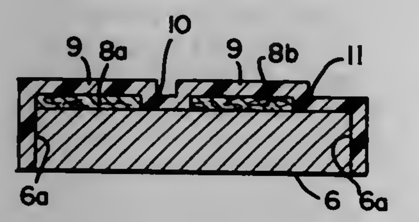
3,892,892
MASKING PROCESS WITH COLD SINK

Peter H. Hofer, Berkeley Heights, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Filed May 1, 1973, Ser. No. 356,207

Int. Cl. B44d *1/52*

U.S. Cl. 427—272 **21 Claims**



1. A process for masking a defined area on a substrate which is to be coated with a coating material which suffers a loss, at a temperature of $< 25°$ to $\geqslant -196°$ C., of about 125% of the elongation value it possesses at 25° C., and which can be embrittled at low temperatures

which comprises

masking said defined area with masking means,

applying said coating material to said substrate so as to coat the masked and unmasked areas of said substrate,

cooling that portion of the coating material which covers said masking means to a temperature and for a period of time as is sufficient to embrittle said portions of said coating material,

tearing the embrittled coating material along the edges of said defined area, and, or while

removing said masking means from said substrate.

3,892,893
FIBRE TREATMENT

Geoffrey Allan Smith, Lynton Darnick, Melrose, and Richard Young, 31 Craig Park Gardens, Galashiels, both of Scotland

Filed Sept. 20, 1972, Ser. No. 290,747

Int. Cl. B44d *1/44*

U.S. Cl. 427—352 **7 Claims**

1. A method of treating a wool textile material consisting of fibre or fabric which comprises:

immersing said material in a bath of a liquid medium at a temperature of between 25° and 45°C., said liquid medium comprising a treating agent consisting of member of the group consisting of a polyamide epichlorhydrin resin or a prepolymer of an aliphatic polyurethane containing free isocyanate groups;

adjusting the quantity of said liquid medium on said material until the ratio of liquid medium to textile material is between 0.5 to 1.0 and 3.0 to 1.0 weight for weight;

pressing the textile material for not more than thirty minutes at a pressure of between 3 pounds per square inch and 100 pounds per square inch;

washing off any excess medium from said textile material; and

recovering the treated textile material as the product of the process.

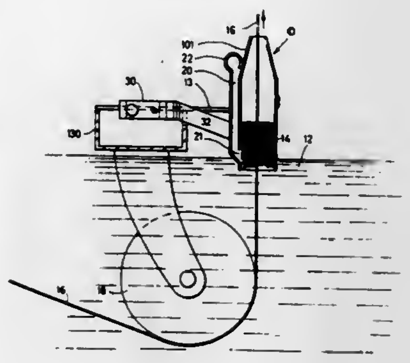
3,892,894
WIPING HOT DIPPED GALVANIZED WIRE OR STRIP

Jack Pryor Sciffer, New Lambton, Australia, assignor to Australian Wire Industries Proprietary Limited, Victoria, Australia

Filed Mar. 16, 1973, Ser. No. 341,851

Int. Cl. B05c *11/10;* **C23c** *1/00*

U.S. Cl. 427—367 **9 Claims**



1. The method of wiping hot dipped galvanized wire or strip comprising the steps of

a. drawing said galvanized wire or strip upwardly from a bath of molten zinc through a laterally confined wiping bed of gravel or other hard and inert material in the form of free tumbling bodies or granules which float on said bath of molten zinc, and

b. vibrating said bed to maintain it in a dense and uniform condition so that the coatings formed on the wire or strip are more uniform in thickness.

3,892,895
METHOD FOR ADHERING POLYAMINO ACID COATING TO PLASTICIZED POLYVINYL CHLORIDE

Kazushi Toogoo; Mineo Yamagata, and Akira Akamatsu, all of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 250,066, May 3, 1972, abandoned. This application May 21, 1973, Ser. No. 362,171

Claims priority, application Japan, May 11, 1971, 46-31434

Int. Cl. B32b *27/30;* **D06n** *3/04*

U.S. Cl. 427—385 **5 Claims**

1. A method of coating a surface of a body of plasticized polyvinyl chloride which comprises:

a. applying to said surface a primer solution essentially consisting of volatile organic solvent and of an elastomeric polyurethane dissolved in said solvent,
   1. said polyurethane being the product of a chain extending reaction between a urethane prepolymer having available isocyanato groups and a chain extending agent having active hydrogen,
   2. said prepolymer being the product of a reaction between an organic polyisocyanate and an organic compound having active hydrogen,
   3. said polyisocyanate having a cyclohexane ring in the molecule thereof,
   4. one of the isocyanato groups of said polyisocyanate being bound to said ring directly or through alkylene only;

b. removing said solvent to deposit said polyurethane on said surface; and

c. coating said surface carrying said polyurethane with a top coating essentially consisting of poly-α-amino acid.

3,892,896
PROCEDURE FOR SURFACE TREATMENT OF WOOD

Karl Ingvar Georg Johansson, Spanga, Sweden, assignor to Erik Gustav Lennart Eriksson, Valberg, Sweden

Continuation-in-part of Ser. No. 193,544, Oct. 28, 1971, abandoned. This application Feb. 19, 1974, Ser. No. 443,415

Int. Cl. B44d *1/16*

U.S. Cl. 427—392 **10 Claims**

1. A process for the surface-treatment of wood, which comprises pretreating the wood at a temperature below about 120°C for about 1–3 hours with a condensable or polymerizable hydrophilic liquid monomer material, that is substantially free of any solvent and that causes the wood to swell or dissolves constituents of the wood, until the desired depth of penetration of the substrate surface has been attained; thereafter at room temperature treating the resulting pretreated wood with an impregnating agent, that reacts with said monomer material, for a time sufficient to condense or polymerize the same with said monomer material; and then hardening the impregnated condensate or polymerizate thus formed in the resulting treated wood, hardening being accomplished by first heating the impregnated wood to a temperature of about 80°C to about 140°C, followed by hot-pressing at a temperature of about 130°C to about 180°c.

3,892,897
PROCESS FOR MAKING BASE METAL TITANATE CATALYTIC DEVICE

Hermann L. Rittler, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 294,073, Oct. 2, 1972, abandoned. This application Mar. 7, 1974, Ser. No. 448,835

Int. Cl. B01j *1/06*

U.S. Cl. 427—463 **4 Claims**

1. A process for making a base metal titanate catalytic device which comprises the steps of:

a. preparing an acid-stabilized alcohol solution consisting essentially of a lower alkanol, a weak organic acid, and alcohol-soluble compounds, said alcohol-soluble compounds including a lower alkoxide of titanium and a salt of at least one other metal selected from the group consisting of Mn, Co, Fe, Cu, Al and Cr, and said alcohol-soluble compounds being present in proportions calculated to yield, upon pyrolytic conversion to the metal oxides, a composition consisting essentially, in weight percent, of about 15–85% TiO_2, 15–70% $M''O$, wherein M'' is Mn^{+2}, Co^{+2}, Fe^{+2} or Cu^{+2}, and 0–60% $M_2'''O_3$, wherein M''' is Al^{+3}, Fe^{+3}, Cr^{+3}, Mn^{+3} or Co^{+3};

b. contacting a refractory ceramic support structure with said solution to produce a solution-coated support structure;

c. contacting said solution-coated support structure with an ammoniacal precipitating agent to precipitate from said solution onto said support structure a coating of the hydroxides of said titanium and other metals; and thereafter

d. heating said structure to a temperature in the range of about 600°–1200°C. for a time in the range of about 1–4 hours to convert said coating of hydroxides to an oxide coating comprising at least one titaniferous crystal phase selected from the group consisting of:
   - i. $M_2''TiO_4$—$M''M_2'''O_4$ solid solutions of cubic or pseudocubic structure;
   - ii. $M''TiO_3$—$M_2'''O_3$ solid solutions of hexagonal or pseudohexagonal structure; and
   - iii. $M''Ti_2O_5$—$M_2'''TiO_5$ solid solutions of orthorhombic or pseudo-orthorhombic structure.

3,892,898
PANEL CORE

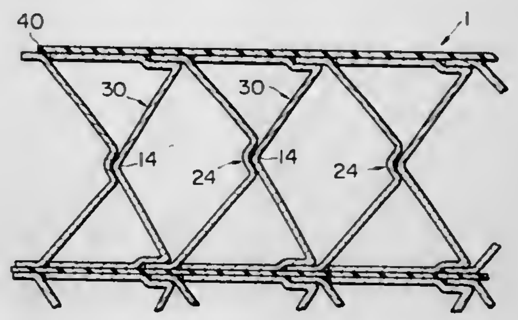
Shinjiro Yasui, 37, Aza Higashioka, Hokkaido, Japan

Filed Oct. 16, 1972, Ser. No. 297,710

Claims priority, application Japan, Oct. 15, 1971, 46-95266

Int. Cl. B32b *3/12*

U.S. Cl. 428—116 **2 Claims**



1. A panel core comprising at least one row of core members and partition plates on opposite sides of the core members in the row, each core member comprising a first panel member having a generally W-shaped cross section with end panel portions and a folded panel portion therebetween having a central apex fold and joined to the end panel portions along folds, and a second panel member having a generally V-shaped cross section with end panel portions joined at an apex fold, the free ends of the end panel portions of the second panel member being attached to the first panel member at the folds of the first panel member where the end panel portions of the first panel member join the folded panel portion of the first panel member, the outside surfaces of the end panel portions of the first panel member being secured to said partition plates, adjacent core members, in the folded condition of the panel core when the partition plates are close to each other, having the flat folded second panel member of one core member interleaved between one of the end panel portions and the folded panel portion of the first panel member of the next adjacent core member and being unsecured to each other, and in the expanded condition of the panel core when the partition plates are moved away from each other, the central apex fold of the folded panel portion of the first panel member of one core member being opposed to the apex fold of the second panel member of the next adjacent member, one

of the apex folds having an inverted V-shaped portion interlocking with the other apex fold for retaining the panel core in the expanded condition.

3,892,899

ROOF CONSTRUCTION

Paul P. Klein, 24 Van Meter Fens, New Rochelle, N.Y. 10804
Filed July 19, 1973, Ser. No. 380,864
Int. Cl. B32b *3/14*
U.S. Cl. 428—49 **4 Claims**

1. A roof construction capable of withstanding constant and active foot traffic, which comprises, in combination:

a. A roof deck;

b. A water impermeable membrane affixed to the upper surface of said roof deck;

c. A thermal insulating member disposed on the upper surface of said water impermeable membrane;

d. A ballast member comprised of a multitude of precut concrete or cementitious blocks or paving squares disposed on the upper surface of said thermal insulating member; and

e. A substantially water impermeable and non-absorbent wearing surface member affixed on the upper surface of said ballast member, to provide a relatively smooth, resilient and uniform upper surface to said wearing surface member.

3,892,900

MASKING FILMS

Keizo Shima, Suita, and Tetsuo Ishihara, Amagasaki, both of Japan, assignors to Daicel Ltd., Japan
Filed Oct. 24, 1973, Ser. No. 409,162
Claims priority, application Japan, Nov. 2, 1972, 47-110033; Nov. 2, 1972, 47-110034; Sept. 10, 1973, 48-102450
Int. Cl. B41n *1/24*
U.S. Cl. 428—40 **15 Claims**

1. A masking film for masking a photo-sensitive material, consisting essentially of a laminate of:

A. a substantially transparent supporting plastic film, at least one surface having been treated by roughening or oxidation;

B. a colored resin layer adhered on said treated surface through an adhesive undercoating, the color of said resin layer being such as to be opaque to light used to expose said photo-sensitive material and transparent to other visible light; and

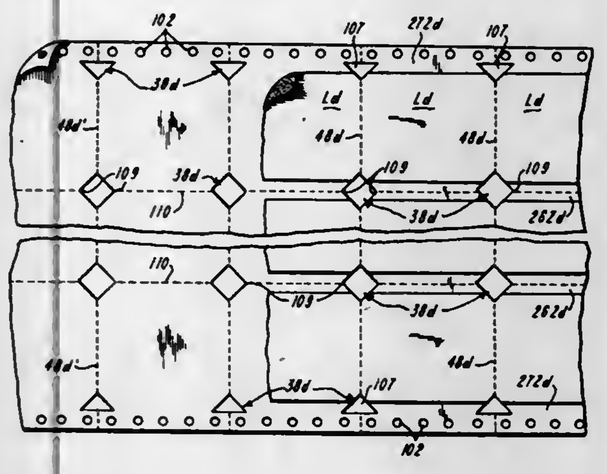
C. a strippable film having at least one strippable surface adhered to said colored resin layer through a pressure-sensitive adhesive.

3,892,901

COMPOSITE LABEL WEB

Thomas M. Smith, Dayton, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio
Filed Aug. 7, 1972, Ser. No. 278,409
Int. Cl. B32b *3/16, 7/06*
U.S. Cl. 161–41 **1 Claim**

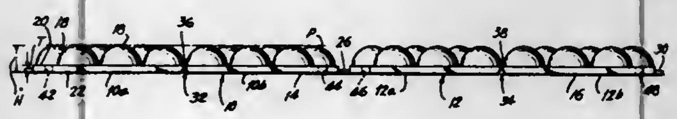
1. A composite web of pressure-sensitive labels, comprising; a longitudinally extending wide composite web including a web of supporting material and longitudinally extending narrow webs of pressure-sensitive label material having a full-gum coating of pressure-sensitive adhesive and being releasably adhered to the supporting material, the label material webs being closely transversely spaced-apart to expose longitudinally extending zones of the supporting material web, first holes through the wide composite web at longitudinally spaced-apart locations along at least some of the longitudinally extending zones, each first hole extending through a marginal side edge of one of the narrow label webs and the underlying supporting material and through the supporting material in the adjacent zone, the supporting material extending beyond the side edges of the narrow label webs at the respective sides of the wide composite web to provide feed strips, longitudinally spaced-apart second holes in the feed strips to facilitate feeding of the composite web, the label material webs being at least partially severed transversely into labels along longitudinally spaced-apart lines extending to at least some of the first holes, and the supporting material being partially severed along at least some of the transverse lines and being partially severed in at least some of the longitudinal zones between the side edges of adjacent narrow label webs.



3,892,902

PLASTIC PANEL PAD CONSTRUCTION FOR SPACING CONCRETE PANELS

Robert John Ilukowicz, Coram, N.Y., assignor to Preco Industries, Ltd., Plainview, N.Y.
Filed Dec. 4, 1972, Ser. No. 312,199
Int. Cl.² B32B *7/08, 3/10;* **B65D** *57/00*
U.S. Cl. 428—99 **9 Claims**



1. A panel pad construction comprising base means having opposite sides and, on one of said sides, a plurality of spaced solid and substantially non-deformable hemispherical projections of equal height peaking at points in a common plane, said base means includes a plurality of bases, each said base forming a monolithic structure with respective of said projections, each said base being provided with a scoring serving selectively to divide the same into hingeably connected sections adapted to be broken into separate sections each of which has projections thereon, and relatively thin straps connecting the bases in serial alignment, said monolithic structure being of a high density polyethylene having a specific gravity of about 0.92–0.95.

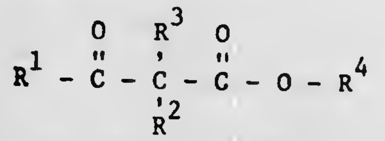
3,892,903

METHOD OF COATING SURFACES WITH HIGH SOLIDS THERMOSETTING BETA-KETO ESTER COATING COMPOSITIONS AND THE RESULTING COATED ARTICLE

Rostyslaw Dowbenko, Gibsonia, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Division of Ser. No. 121,174, March 4, 1971, Pat. No. 3,741,935. This application Jan. 11, 1973, Ser. No. 322,648
Int. Cl. B32b *15/08*
U.S. Cl. 428—460 **7 Claims**

1. A method of coating which comprises applying to a surface a film of a heat-hardening, nongelled coating composition having a nonvolatile solids content of from about 80 to about 100 percent, the resinous vehicle of said coating composition comprising:

a. from about 20 to about 95 percent based on weight of total reaction product and cross-linking agent of a reaction product having a plurality of beta-keto ester groups wherein said reaction product is comprised of a beta-keto ester having the general formula:



$$R^1-\overset{O}{\overset{\|}{C}}-\underset{R^2}{\overset{R^3}{C}}-\overset{O}{\overset{\|}{C}}-O-R^4$$

wherein R^1 represents a hydrocarbon radical having 1 to 10 carbon atoms; R^2 and R^3 are each hydrogen or a hydrocarbon radical having 1 to 6 carbon atoms; and R^4 represents a hydrocarbon radical having 1 to 6 carbon atoms, and a polyol having the general formula:

$$R^5(OH)_n$$

wherein R^5 represents a hydrocarbon radical having 2 to about 20 carbon atoms, and n is an integer from 2 to 6; and

b. from about 5 to about 80 percent based on weight of total reaction product and crosslinking agent of a crosslinking agent containing alkylol groups or alkylol groups which have been etherified by reaction with an alcohol selected from a member of the class consisting of condensation products of an aldehyde with melamine, urea or benzoguanamine;

and curing said film.

3,892,904

GLASS CERAMIC ARTICLE HAVING A METALLIC COATING LAYER IN A LOCALIZED AREA OR ITS SURFACE AND METHOD OF MAKING THE SAME

Takeshi Tanaka, Nagoya, Japan, assignor to Ishizuka Garasu Kabushiki Kaisha, Aichi-ken, Japan
Filed July 2, 1973, Ser. No. 375,693
Int. Cl. B32b *17/06, 15/04*
U.S. Cl. 428—209 **2 Claims**

1. In a glass-ceramic article having, in localized areas of its surface, layers of at least one metal selected from the group consisting of copper and silver, said metallic layers formed by in situ metallic ion migration and not protruding outwardly beyond the adjacent surface not having the metallic layers and being integrally bonded to the glass-ceramic body through the intermediary of intermediate layers consisting of the metal and the oxides thereof, which are finely dispersed in the subjacent glass matrix, the improvement wherein the glass-ceramic article consists essentially of: a first glass-ceramic forming composition (A); and a second glass-ceramic forming composition (B), which is substantially the same as (A) but further contains from 0.5 to 5.0 percent by weight of the above metal, calculated as the metal based on the weight of the glass composition of at least one compound of said metals; said compositions (A) and (B) being bonded in such a manner that composition (B) is subjacent to the localized surface areas having the metallic layers and composition (A) comprises at least all of the remaining surface areas.

3,892,905

COLD WATER SOLUBLE PLASTIC FILMS

Robert Eyer Albert, Wilmington, Del., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.
Continuation-in-part of Ser. No. 129,566, March 31, 1971, abandoned, which is a continuation-in-part of Ser. No. 63,287, Aug. 12, 1970, abandoned. This application Feb. 2, 1973, Ser. No. 329,071
Int. Cl. B65d *81/00;* **B32b** *27/08, 27/06*
U.S. Cl. 428—220 **6 Claims**

1. A 0.0005 to 0,010 inch thick, cold water-soluble self-supporting film consisting essentially of from 10 to 75 parts by weight of a polymer having a weight average molecular weight greater than about 120,000 selected from the group consisting of polyvinyl alcohol which is 87 to 99 mol percent hydrolyzed polyvinyl acetate and polyvinyl pyrrolidone and from 90 to 25 parts by weight of a polymer having a weight average molecular weight of less than about 90,000 selected from the group consisting of polyvinyl alcohol which is 87 to 99 mol percent hydrolyzed polyvinyl acetate and polyvinyl pyrrolidone and from 0 to 100 parts by weight per 100 parts polymer of a hydrophilic plasticizer, provided that if the first polymer is polyvinyl alcohol, the second polymer cannot be polyvinyl alcohol, and if the first polymer is polyvinyl pyrrolidone the second polymer cannot be polyvinyl pyrrolidone.

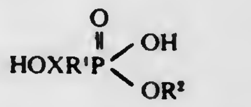
3,892,906

FLAME RETARDANT FIBROUS MATERIAL HAVING IMPROVED DIMENSIONAL STABILITY

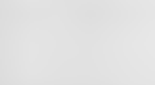
Ronald Swidler; William A. Sanderson, both of Palo Alto, and William A. Mueller, Pasadena, all of Calif., assignors to Cotton, Incorporated, New York, N.Y.
Continuation-in-part of Ser. No. 259,350, June 2, 1972, abandoned, which is a continuation of Ser. No. 153,094, June 14, 1971, abandoned, which is a continuation of Ser. No. 862,509, Sept. 30, 1969, abandoned. This application July 2, 1973, Ser. No. 375,438
Int. Cl. C09k *3/28*
U.S. Cl. 428—289 **21 Claims**

1. A process for imparting flame retardance and improved dimensional stability to cellulosic and wool fiber-containing material, which process comprises

contacting the material with cyanamide and at least one phosphonic acid represented by the structural formula:



wherein R^1 represents a divalent radical selected from the group consisting of lower alkylene, lower alkylidene and lower alkylidyne; X represents a covalent bond,



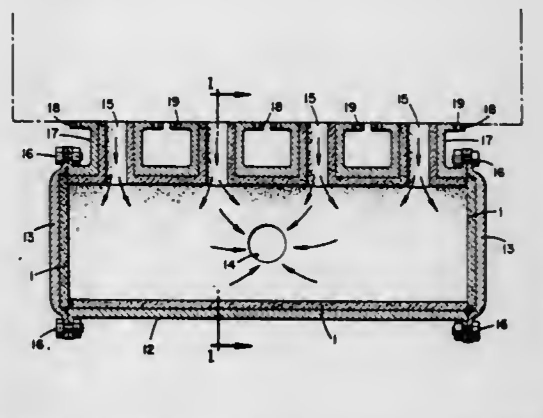
$$\overset{O}{\overset{\|}{P}}-OR^3-$$

or —CO—, and wherein R^2 and R^3 represent monovalent radicals selected from the group consisting of hydrogen and lower alkyl; to deposit on the material a flame retarding and dimensional stability-improving amount of the phosphonic acid with cyanamide.

3,892,907

REINFORCED REFRACTORY HEAT-INSULATOR

Itaru Niimi, Nagoya; Yasuhisa Kaneko, and Fumiyoshi Noda, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan
Claims priority, application Japan, Nov. 13, 1971, 46-90892
Filed Nov. 13, 1972, Ser. No. 305,894
Int. Cl. B32b *15/18*
U.S. Cl. 428—303 **6 Claims**

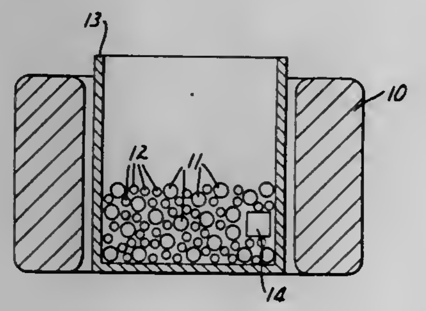


1. A reinforced refractory heat-insulator comprising a cast ceramic inner refractory lining containing dispersed metallic

fibers, and an exterior iron or aluminum casting which envelops said refractory lining.

3,892,908
COATING OF SOLID SUBSTRATES WITH MAGNETICALLY PROPELLED PARTICLES

William R. Lovness, West Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed June 25, 1973, Ser. No. 373,028
Int. Cl. B44d *11094*
U.S. Cl. 428—329 **7 Claims**



1. A process for coating particulate material upon the surface of a substrate comprising:

exposing said substrate surface in a confined volume to a plurality of disconnected and independently movable small permanent magnet elements and said particulate material, and

establishing within said volume, in addition to the magnetic field of said permanent magnet elements, a magnetic field varying in direction with time and of sufficient intensity to impart movement to the magnetic elements to cause the particulate material to impinge upon and to coat said exposed substrate surface.

3,892,909
SYNTHETIC DOWN

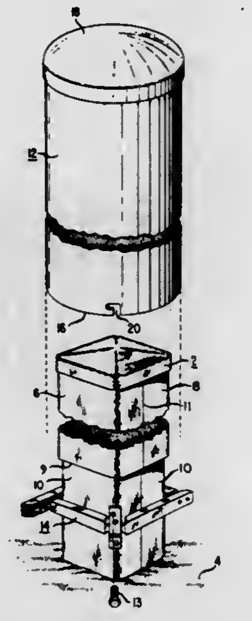
Samuel E. Miller, Winnetka, Ill., assignor to QST Industries, Inc., Chicago, Ill.
Filed May 10, 1973, Ser. No. 359,200
Int. Cl. A41g *11/00*
U.S. Cl. 428—371 **9 Claims**

1. An assemblage of man-made bodies each functioning in simulation of bird down as found in nature, each said body comprising a myriad of fibers formed into a rounded configuration which is capable of being repeatedly deformed in the manner of a spring by application of a load and recovery substantially to its original form upon release of the load.

ELECTRICAL

3,892,910
FLOOD COVER FOR PEDESTAL CLOSURE

Arnold Ray Smith, Chester, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Sept. 9, 1974, Ser. No. 504,086
Int. Cl.² H02G *9/02*
U.S. Cl. 174—37 **4 Claims**



1. In combination with a pedestal closure, a flood cover for preventing the entry of water into the terminal chamber of said pedestal closure comprising in combination:

an elongated container having a first open end installed over said closure and a second closed end sealed to prevent the leakage of air therethrough, said container including first mounting means about said first end; and

bracket means mounting said container over said closure comprising first and second bracket halves, fastening means fastening said halves together about said closure below said terminal chamber to securely clamp said halves to said closure, flange means extending from each said bracket half and including second mounting means thereon connected with said first mounting means on said container and holding said container over said closure whereby water is prevented from entering said terminal chamber by the entrapment of air in said container.

3,892,911
JUNCTION BOX FOR MOTOR VEHICLE ELECTRICAL SYSTEMS

Giuseppe Codrino, Quattordio, Italy, assignor to Cavis-Cavetti Isolati S.p.A., Felizzano (Alessandria), Italy
Filed July 30, 1974, Ser. No. 492,997
Claims priority, application Italy, Dec. 5, 1973, 53700/73
Int. Cl. H02g *3/08*
U.S. Cl. 174—59 **3 Claims**

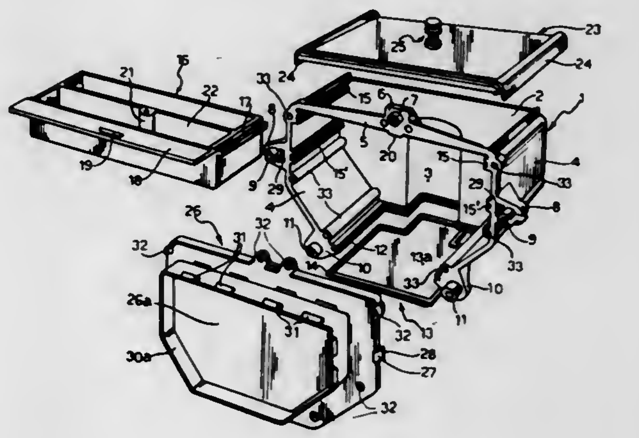
1. A junction box for a motor vehicle electrical system, comprising:

a hollow unitary main body incorporating, with reference to a give orientation:
  a first end wall,
  two symmetrical side walls each connected along a first edge to a respective opposite edge of said end wall,
  a transverse bridging member interconnecting corresponding corners of said side walls at a second edge thereof, opposite said first edge,
  means defining upper and lower aligned guideways in each said side wall, said guideways extending between said first and second edges,
  a plurality of apertured lugs on said body, said apertured lugs forming means by which said body is attachable to support elements of the bodywork of a motor vehicle,
  a member forming a bottom wall having a rim slidably inserted into said lower guideways in said side walls closing the bottom of said unitary body,

a tray member having two parallel side edges slidably inserted into said upper guideways in said side walls of said unitary body,

a transparent lid member removably attached to said tray member,

a member forming second end wall attached to said body along the edges of said two side walls opposite the edges connected to said first end wall so as to extend substantially parallel to said first end wall, said second end wall overlying the edges of said bottom wall member and said tray member to hold these in position against withdrawal along said upper and lower guideways,



first and second electrical connector units respectively mounted on said second end wall member and said bottom wall member, said connector units having pins for connection to terminals on the leads of a motor vehicle electrical system,

means electrically connecting said first and second electrical connector units together, and

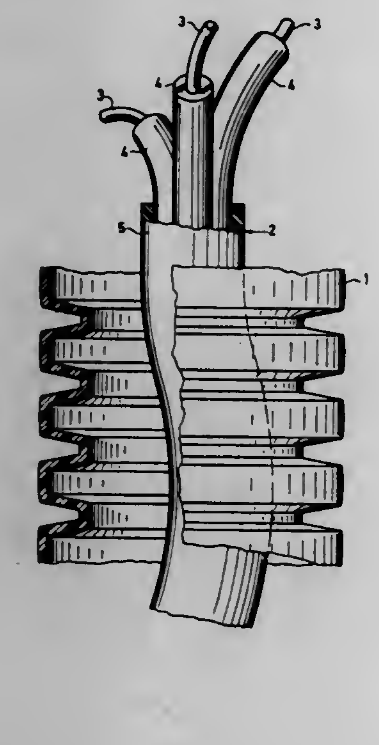
means connecting said electrical connector units to said tray member for electrical connection to any electrical components and safety fuses which may be housed in said tray member.

3,892,912
ELECTRICAL CONDUIT CONTAINING ELECTRICAL CONDUCTORS

Edgar Hauck, Konigsberg, Bavaria, Germany, assignor to Frankische Isolierrohr-und Metallwaren Werke Gebr. Kirchner, Konigsberg/Bavaria, Germany
Filed Dec. 13, 1973, Ser. No. 424,613
Claims priority, application Germany, Dec. 15, 1972, 2261530
Int. Cl.² H02G *3/04;* **B29F** *3/10*
U.S. Cl. 174—68 C **1 Claim**

1. As an article of manufacture, a cable assembly adapted to be pre-shaped prior to installation in various structures, particularly in the walls of buildings or the like, comprising, in combination, a pronouncedly flexible tube of electrically insulating synthetic plastic material, said tube being corrugated; and at least one plastically deformable shape-holding core loosely accommodated in and fractionally filling a part of said tube and extending axially thereof, said core being composed of at least two electrical conductors, at least one of said conductors being a wire which is substantially plastically deformable during bending, and each of said conductors being provided with a respective jacket of electrically insulating material, and a common cover of electrically insulating synthetic plastically deformable shape-holding material frictionally engaging said jackets and combining said conductors into

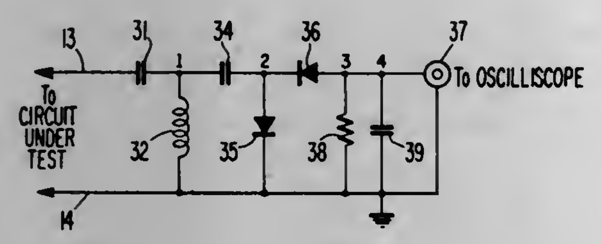
a bundle, whereby said cable assembly may be pre-shaped by bending said shape-holding core to a predetermined form in



which said flexible tube is substantially retained by the presence of said core.

3,892,913
METHOD OF SETTING THE 4.5 MHz TRAP IN A TELEVISION RECEIVER

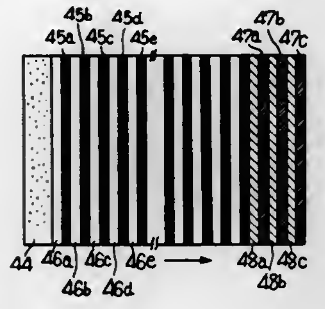
James Herbert Owens, Dallas, Tex., assignor to RCA Corporation, New York, N.Y.
Division of Ser. No. 187,070, Oct. 6, 1971. This application May 7, 1973, Ser. No. 357,674
Int. Cl. H04n *5/00*
U.S. Cl. 178—5.8 R **4 Claims**



1. A method of setting the 4.5 MHz trap in a television receiver comprising:
injecting an audio modulated signal having a 4.5 MHz beat frequency within the IF amplifier of said receiver,
observing the amplitude of the output signal of said trap during said injecting step, and
adjusting the trap to cause said output signal to be set to a minimum level,
said observing step including the steps of applying a series resonant circuit resonating at 4.5 MHz at the output of said trap to provide a resonating signal at 4.5 MHz and detecting said resonating signal to provide a signal manifesting the amplitude of said output signal.

3,892,914
SYSTEM FOR RECORDING AND REPRODUCING PICTURE SIGNALS WITH AMPLITUDE REFERENCE SIGNALS

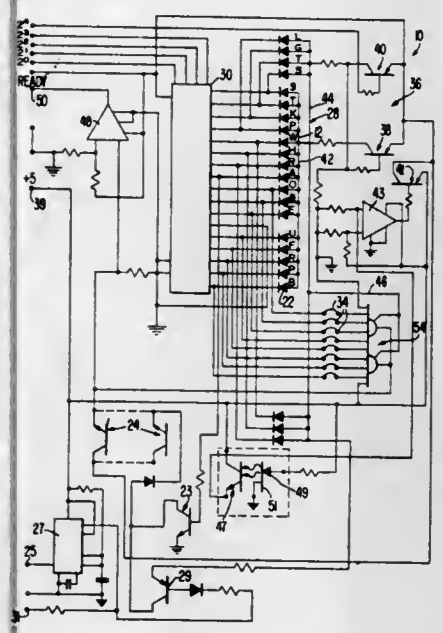
Shinji Takayanagi; Hitoshi Sato, and Koichi Koshikawa, all of Tokyo, Japan, assignors to Nihon Denshi Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 15, 1973, Ser. No. 341,528
Claims priority, application Japan, Mar. 18, 1972, 47-27576; Mar. 18, 1972, 47-27577
Int. Cl.^{2} H04N *5/84*
U.S. Cl. 178—6.7 A **29 Claims**



1. A recording medium comprising frames in which two kinds of amplitude modulated video signals are alternately recorded in the horizontal scanning direction of a raster as variations in the optical density of the medium without overlapping in the recording densities of the respective recording portions and at least one standard signal indicative of the signal intensity where the two kinds of signals are separated and/or the fixed bias levels of the two kinds of signals are recorded at the initial and/or terminal part of the horizontal scanning lines in the raster.

3,892,915
STENOGRAPHIC DATA RECORDING APPARATUS AND METHOD

Ronald L. Budworth, and Richard A. Van Leer, both of San Jose, Calif., assignors to Transcripts, Inc., Sunnyvale, Calif.
Filed Dec. 10, 1973, Ser. No. 423,356
Int. Cl. B41j *3/26;* **G06f** *15/20*
U.S. Cl. 178—21 **10 Claims**

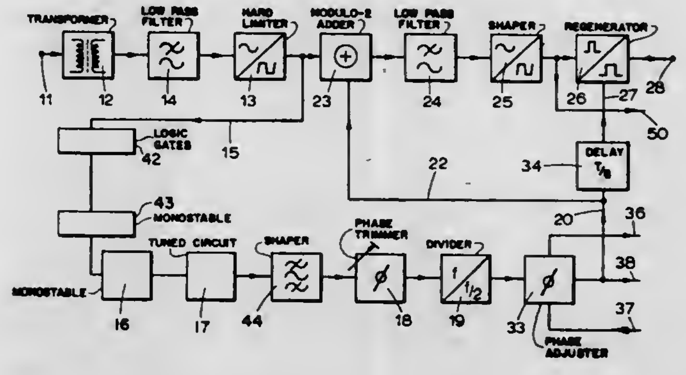


1. A data processing system for use with a stenographic keyboard having a plurality of key-operated switches each associated to a different key for generating a single bit bilevel signal representative of the state of the associated key, said system comprising:

storage means adapted to be coupled to said switches and responsive to the actuation of at least one said key for cumulatively storing all of said single bit signals in a predetermined order;
means responsive to the subsequent release of all of said keys for disabling the storage of additional single bit signals;
means for serially fetching the contents from said storage means as a serial bit stream having a number of bits equal to the number of said keys after said subsequent release of all keys;
means for generating a plurality of predetermined different multibit binary prefix code signals each associable to a different portion of said serial bit stream;
formating means for interjecting said binary prefix code signals in the serial bit stream at predetermined locations to form a modified serial bit stream comprising a plurality of character groups each identified by the corresponding prefix code signal;
output means coupled to said formating means having an output terminal for manifesting said modified serial bit stream;
means for transferring said modified serial bit stream to said output means; and
means responsive to the transfer of the last bit of said modified serial bit stream to said output means for re-enabling said storage means to store all of said single bit signals in response to the subsequent actuation of one of said keys.

3,892,916
SIGNAL RECEIVERS

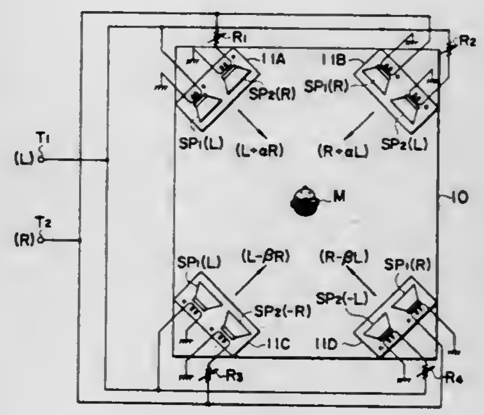
Richard Arnold Boulter, St. Albans, England, assignor to The Post Office, London, England
Filed May 9, 1973, Ser. No. 358,623
Claims priority, application United Kingdom, May 12, 1972, 22338/72
Int. Cl. H04l *27/22*
U.S. Cl. 178—88 **7 Claims**



1. A method of converting a modulated carrier signal modulated by an isochronous baseband data signal into an isochronous baseband data signal, said modulated carrier signal modulated by an isochronous baseband data signal hereinafter referred to as a diphase signal, including the steps of:
a. deriving a clock signal having a frequency equal to the reciprocal of the duration T of one element of the baseband data from the said carrier signal by isolating a p^{th} harmonic, where $p = 2$, of said carrier signal and frequency dividing said harmonic by p to give said clock signal;
b. deriving a data signal by modulo-2 addition of said diphase signal and said clock signal;
c. temporally comparing transitions in said data signal with transitions in said clock signal and phase adjusting said clock signal by 360°/p when transitions in said clock signal and transitions in said data signal have a temporal separation in excess of a predetermined magnitude; and
d. deriving said isochronous baseband data signal from said data signal by retiming said data signal with a delayed clock signal, said delayed clock signal delayed by substantially T/6 with respect to said clock signal.

3,892,917
SPEAKER SYSTEM FOR MULTICHANNEL STEREOSIGNAL REPRODUCTION

Hiromi Sotome, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan
Filed Oct. 3, 1972, Ser. No. 294,613
Claims priority, application Japan, Nov. 25, 1971, 46-94652; Oct. 7, 1971, 46-92395; Oct. 7, 1971, 46-92396
Int. Cl. H04r *5/00*
U.S. Cl. 179—1 GQ **6 Claims**



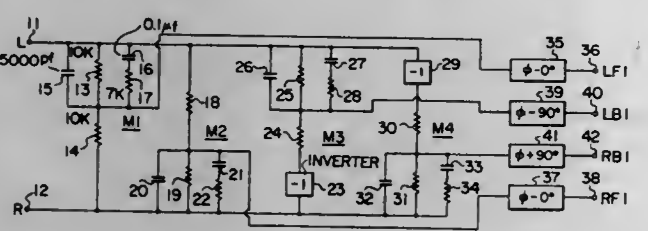
1. A stereophonic speaker system for converting monophonic input signals to composite stereophonic output sound waves comprising in combination:
at least two front speakers;
means for energizing at least one of said front speakers with a monophonic L signal from a first channel;
means for energizing at least another of said speakers with a monophonic R signal from a second channel;
at least two rear speaker devices, each of said speaker devices including at least two speakers, said two speakers in each speaker device facing oppositely and in close proximity to one another, and a sound wave reflector positioned intermediate said speakers;
means for energizing one of said speakers in each of said speaker devices with a monophonic L signal from said first channel; and
means for energizing the other speaker in each of said speaker devices with a monophonic R signal from said second channel, said channel signals being in reverse phase relationship to one another and wherein the sound waves from each speaker are combined spatially to form a composite stereophonic signal.

3,892,918
SOUND SIGNAL CONVERTING APPARATUS FOR USE IN A FOUR CHANNEL STEREOPHONIC REPRODUCTION SYSTEM

Susumu Takahashi, and Ryosuke Ito, both of Tokyo, Japan, assignors to Sansui Electric Co., Ltd., Tokyo, Japan
Filed Apr. 30, 1973, Ser. No. 355,420
Claims priority, application Japan, May 2, 1972, 47-42991
Int. Cl.^{2} H04R *5/00*
U.S. Cl. 179—1 GQ **9 Claims**

1. In a sound signal-converting apparatus including matrix circuit means for reproducing first, second, third and fourth four-channel output signals by additively combining two channel input signals in first and second ratios to produce said first and second output signals, respectively, and subtractively combining said two channel input signals in third and fourth ratios to produce said third and fourth output signals, respectively, the improvement wherein said matrix circuit means includes means for varying each of said first, second, third,

and fourth mixing ratios from a first ratio when both two channel input signals are at one frequency to a second higher ratio when both two channel input signals are at a second higher frequency.



3,892,919
SPEECH SYNTHESIS SYSTEM

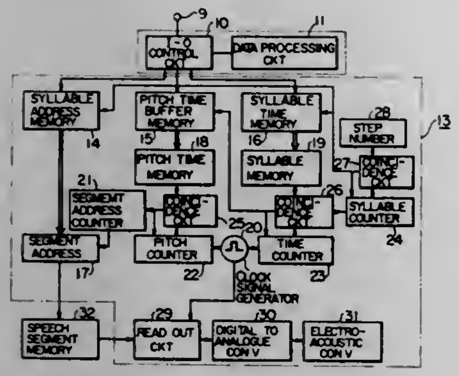
Akira Ichikawa, Kokubunji, Japan, assignor to Hitachi, Ltd., Japan

Filed Nov. 12, 1973, Ser. No. 414,746

Claims priority, application Japan, Nov. 13, 1972, 47-112995

Int. Cl. G10l ***1/00***

U.S. Cl. 179—1 SM **3 Claims**



1. A speech synthesis system comprising:
- a speech segment memory which stores a plurality of speech segments;
- a synthesizing apparatus, coupled to said speech segment memory, including
  - first means for selecting desired speech segments from said speech segment memory,
  - second means, coupled to said first means, for controlling the pitch period of each of said desired speech segments, so as to change the pitch frequency of the synthesized speech step-wise, and
  - third means, coupled to said first means and said second means, for connecting the desired pitch controlled speech segments together.

3,892,920
ACOUSTIC ACTIVATED SWITCH

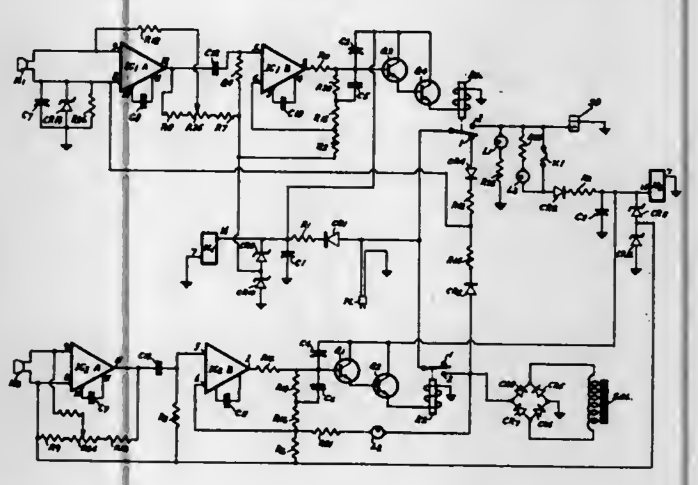
Eric A. Kolm, 37 Evans Rd., Brookline, Mass. 02146

Filed June 5, 1974, Ser. No. 476,439

Int. Cl. H04b ***1/06***

U.S. Cl. 179—1 VC **7 Claims**

1. An acoustic switch responsive to acoustic and remotely generated signals in a predetermined frequency range for use in controlling at least two functions of an auxiliary device adapted to be connected to said switch comprising a first tuned transducer, a second tuned transducer, a first switch receiving input from said first transducer and adapted to be connected to said auxiliary for controlling a first function of said device, a second switch receiving input from said second transducer and operative during a conditioning interval and adapted to be connected to said auxiliary device for controlling a second function of said device, means electrically interconnecting said first and second switches and said first and second tuned transducers and arranged such that during said conditioning interval said first transducer is activated to respond to a second acoustic signal to control said first function of said device.



3,892,921
METHOD AND APPARATUS FOR MONITORING RECORDING LEVEL

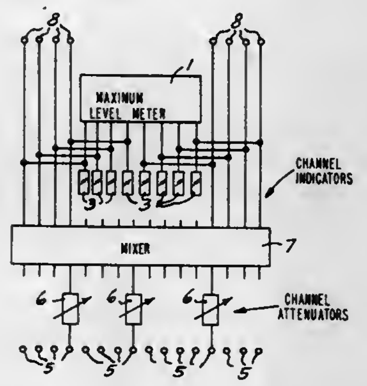
Peter Klaus Burkowitz, Iserhagen NBS, Germany, assignor to Polygram GmbH, Germany

Filed Jan. 15, 1973, Ser. No. 323,647

Claims priority, application Germany, Jan. 18, 1972, 2202244

Int. Cl. H04r ***29/00***

U.S. Cl. 179—1 MN **7 Claims**



1. A method of monitoring a multi-channel recording comprising the steps of providing a meter for indicating the instantaneous maximum level of any of the output signals formed of signals from a plurality of input channels, providing a plurality of indicators for indicating the individual levels of the signals on said channels, and arranging said meter and said indicators in close visual proximity to each other.

3,892,922
TELEPHONE CONTROL SYSTEM

Robert W. Stankus, Fairfield, Conn., assignor to Letot, Incorporated, Fairfield, Conn.

Filed May 18, 1973, Ser. No. 361,653

Int. Cl. H04m ***11/02***

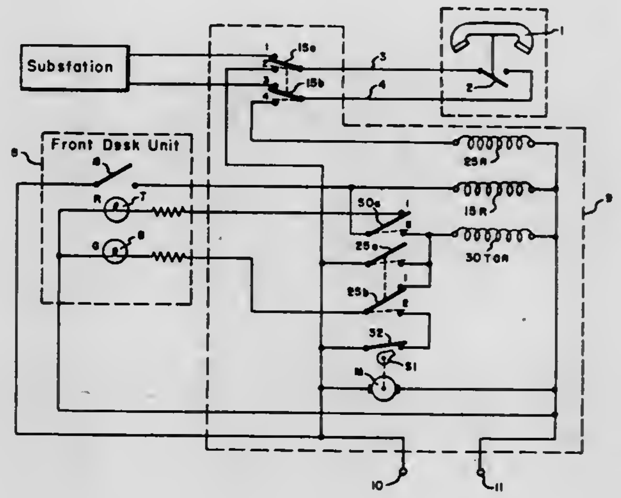
U.S. Cl. 179—2 A **2 Claims**

1. A telephone control system for use with a telephone having a manually operated switch with opened and closed positions and connected to a telephone substation by telephone wires, said system having:

A. a desk unit having an actuation switch and indicating means for indicating status of a room,

B. power means adapted to energize said indicating means, and

C. circuit means including:
   1. means responsive to actuation of said actuation switch for disconnecting said telephone wires from said substation and connecting said wires to said indicating means, and
   2. means responsive to closing of said manually operated switch for changing energization of said indicating means;



the improvement comprising having a time delay means in said circuit means for delaying operation of said means responsive to closing of said manually operated switch when said telephone wires are connected to said indicating means thereby delaying changing of energization of said indicating means when said manually operated switch is closed.

3,892,923
SUPERVISION ARRANGEMENT FOR A PULSE CODE-MODULATION SYSTEM

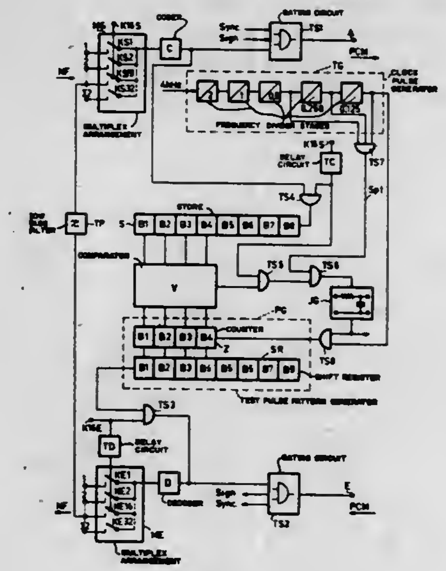
Georg Ranner, Lauf, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 6, 1973, Ser. No. 385,674

Claims priority, application Germany, Aug. 16, 1972, 2240218

Int. Cl. H04j ***3/00***

U.S. Cl. 179—15 BF **9 Claims**



1. Terminal station apparatus for the transmission of information by means of pulse code modulation using *n* channels, *m* channels of which are provided for the transmission of analog information signals and (*n*-*m*) channels are provided for the transmission of signalling and synchronizing information, which comprises a transmitter including a multiplex apparatus having inputs connected to the information channels to be transmitted and a coder whose input is connected to the output of the multiplex arrangement; a receiver including a decoder having an input for receiving the pulse code modulation signal and having an output connected to a demultiplex apparatus having outputs from which signals associated with the different information channels can be derived; said multiplex apparatus cyclically scanning the channels for the analog information signals; said coder quantizing said analog information signals in accordance with a piecewise linear coding characteristic, said terminal station apparatus including a test pulse pattern generator having an output connected to the input of said decoder on the receive side during a period defined by at least one of the (*n*-*m*) channels for the transmission of signalling and synchronizing information and which generates a test pulse pattern corresponding to a PCM channel code word, said pattern being applied to said decoder for conversion into the corresponding analog value, the output of the decoder and the input of the coder being connected during said period to a connection line passing the analog value corresponding to the decoded test pulse pattern, said analog value being applied, through said connection line to the coder in which said analog value is converted into a second pulse pattern by means of coding, the apparatus further comprising means for storage of said second pulse pattern, and a comparator connected to the output of said means for storage as well as the output of said test pulse pattern generator, said comparator giving an alarm when said test pulse pattern and said second pulse pattern are not equal.

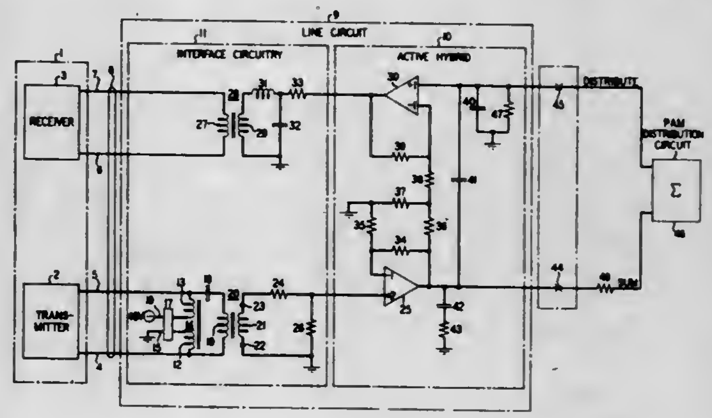
3,892,924
ACTIVE HYBRID SIDETONE PRODUCING CIRCUITRY FOR SIDETONELESS TELEPHONE

Patrick Alban Vachon, Arvada, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 12, 1974, Ser. No. 496,696

Int. Cl.^{2} H04J ***3/00***

U.S. Cl. 179—15 BY **5 Claims**



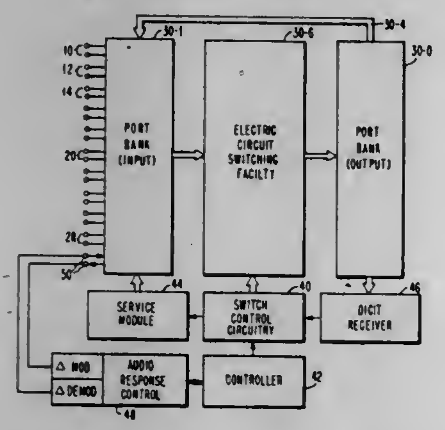
1. A hybrid circuit for use in a time division communication system to provide a controlled level of sidetone signal to an output path for communication signals supplied to a separate input path and for use in a time division communication system in which a telephone has a sidetoneless circuit configuration with its transmitter connected to said input path independently of its receiver which is connected to said output path, comprising a transmit amplifier having input means and output means and a receive amplifier having first and second inputs and an output means,
- means coupling said input means of said transmit amplifier to said input path,
- means for connecting said transmit amplifier output means via a time division switch to a time division transmit bus, connector means for connecting said first input of said receive amplifier to means for storing a sample of a communication signal received via a time division switch from a time division receive bus during a distinct time slot occurring in repetitive cycles,

means connecting said receive amplifier output means to said output path,
and impedance means coupling said output means of said transmit amplifier to said second input of said receive amplifier for controlling a transmission of a sidetone signal from said input path through said receive amplifier to said output path.

3,892,925
ELECTRIC SIGNAL EXCHANGE SWITCHING ARRANGEMENT

Dale Edward Fisk, San Jose; Merle Edward Homan, Los Gatos; Charles Laurie Melley; Zack Dwayne Reynolds, both of San Jose; Robert Vernon Watkins, Los Gatos, and Fritz S. Wiedmer, Saratoga, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 3, 1974, Ser. No. 475,682
Int. Cl. H04 *3/02*
U.S. Cl. 179—15 AT **15 Claims**

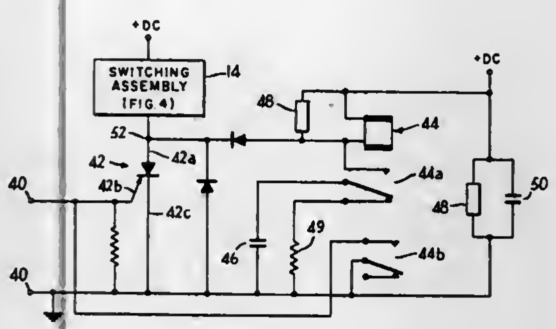


1. An electric signal exchange switching circuit arrangement, comprising,
a multiple of input signal terminals,
a multiple of output signal terminals,
a number of node busses,
a number of electron flow path devices each having two circuit path electrodes and a control electrode with one circuit path electrode of each of said devices connected individually to one of said input signal terminals and the other of said circuit path electrodes of each of said devices connected to one of said node busses,
another number of said electron flow path devices having one circuit path electrode of each individually connected to one of said node busses and the other circuit path electrode connected to one of said output signal terminals,
a timing pulse train generating circuit,
control circuitry having an input terminal connected to said timing pulse train generating circuitry and having output terminals coupled to said control electrodes of the first said number of electron flow path devices for successively applying signals appearing at said input signal terminals to said node busses at a predetermined rate and coupled to said control electrodes of said other number of electron flow path devices for sampling said node busses for said applied signals at a rate corresponding to said predetermined rate at which at least all of the applied signals are translated individually to said output signal terminals, and a further number of said electron flow path devices having one circuit path electrode of each individually connected to one of said node busses, the other circuit path electrodes connected in common to a point of fixed reference potential and control electrodes connected to said control circuitry, for successively closing the circuit paths of said further number of electron flow path devices at a rate related to said predetermined rate.

3,892,926
PULSE SHAPING AND SWITCHING APPARATUS

Robert Edwards, Fort Lee, N.J., and Paul A. Silberg, Cochituate, Mass., assignors to Radiofone Corporation, Red Bank, N.J.

Filed Feb. 22, 1973, Ser. No. 334,926
Int. Cl. H04g *1/36*
U.S. Cl. 179—16 EA **9 Claims**

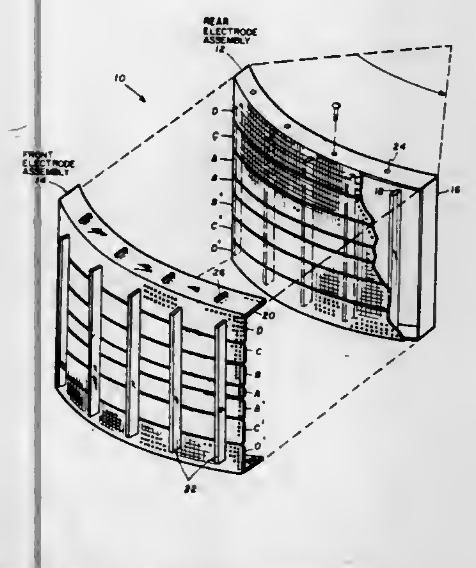


1. For use in dial telephone systems or the like, apparatus for responding to desired input pulses occurring at predetermined time spacings in a train of input pulses, each of said desired pulses exceeding a preselected amplitude level, wherein the first pulse of said train exceeding said preselected amplitude level is a desired pulse and wherein one or more undesired pulses exceeding said preselected amplitude level may occur after each desired pulse and before the succeeding desired pulse, comprising,
pulse shaping means responsive to each of said desired and undesired pulses for producing a unidirectional trigger pulse therefrom,
circuit means responsive to each of said trigger pulses corresponding to a desired input pulse for generating a power output pulse,
said circuit means including means responsive to each of said power output pulses for rendering said circuit means inoperative for a period of time substantially equal to the predetermined time spacing between desired input pulses,
and a control circuit actuated in response to each of said power output pulses.

3,892,927
FULL RANGE ELECTROSTATIC LOUDSPEAKER FOR AUDIO FREQUENCIES

Theodore Lindenberg, 1630 Apache Trl., Maitland, Fla. 32751

Filed Sept. 4, 1973, Ser. No. 393,789
Int. Cl. H04r *19/02*
U.S. Cl. 179—111 R **16 Claims**

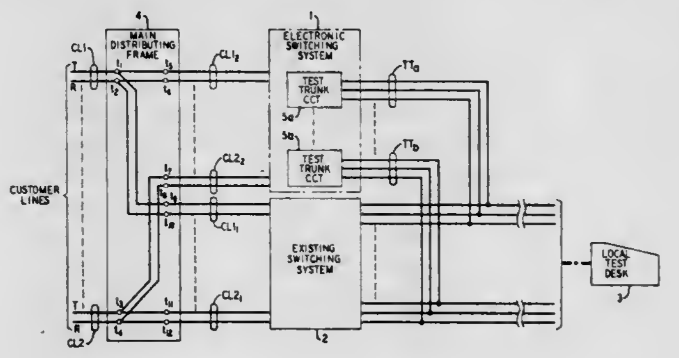


1. An electrostatic speaker, comprising:
an electrode assembly comprising a section of a cylinder;
a diaphragm tensioned across a curved surface of said electrode assembly;
means for changing the area of said diaphragm energized with changes in audio frequency, said means including a plurality of curved parallel electrodes about said electrode assembly, said electrodes extending parallel to each other and perpendicular to the axis of said cylinder, and forming said cylindrical section; and wherein
some of said electrodes comprising two segments spaced on opposite sides of, and surrounding a substantial portion of a next adjacent electrode.

3,892,928
SWITCHING SYSTEM EQUIPPED WITH LINE VERIFICATION APPARATUS

Russell Carson Casterline, Naperville; Zbigniew Apoloniusz Krawiec, Aurora, both of Ill., and Ralph Broman Peterson, Middletown, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 9, 1973, Ser. No. 404,704
Int. Cl. H04m *3/22*
U.S. Cl. 179—175.2 R **6 Claims**

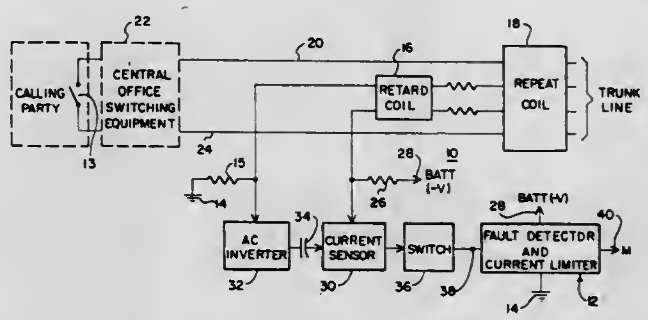


1. A test trunk circuit for a communication switching system comprising: a first trunk port; a second trunk port; detector means; means for establishing a potential difference between said second trunk port and a reference terminal; and means responsive to control signals of said communication system for coupling said detector means to said first trunk port and to said reference terminal.

3,892,929
FAULT DETECTOR AND CURRENT LIMITER

Paul Shylo, Norridge, Ill., assignor to Cook Electric Company, Morton Grove, Ill.

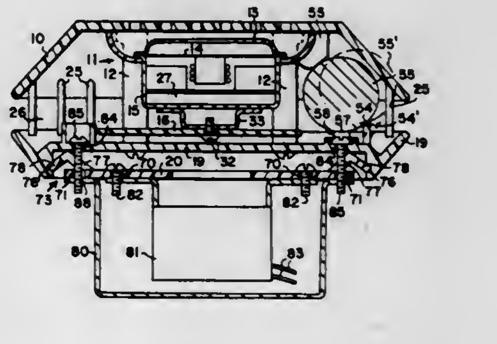
Filed May 15, 1974, Ser. No. 470,073
Int. Cl. H04b *3/46*
U.S. Cl. 179—175.3 R **11 Claims**



1. A fault detector and current limiter having an input terminal and an output terminal and being responsive to an input signal to supply an output potential from a potential source to said output terminal, said fault detector and current limiter comprising:
a first controlled conduction means operable in response to said input signal at said input terminal to supply said output potential to said output terminal,
a first current limiter means coupled to said first controlled conduction means and said potential source, said first current limiter means inhibiting the first controlled conduction means from supplying said output potential when the current through said first controlled conduction means rises above a specified magnitude, and
coupling means coupling said first current limiter means to said output terminal whereby said current limiter means further inhibits said first controlled conduction means in response to the potential at said output terminal.

3,892,930
LOUDSPEAKER ENCLOSURE

Horst K. Wieder, 1207 Riverview Ln., Watertown, Wis. 53094
Continuation-in-part of Ser. No. 377,761, July 9, 1973, Pat. No. 3,835,256. This application July 2, 1974, Ser. No. 485,120
Int. Cl.^{2} G08B *17/12*
U.S. Cl. 179—179 **11 Claims**



1. A combination loudspeaker, sensor and printed circuit board enclosure device comprising the combination of:
a resiliently deformable grill and guard portion,
a speaker bracket portion having leg portions,
a loudspeaker comprising a diaphragm and a cup,
a printed circuit board,
an ionization sensor,
a base portion,
a rear bracket portion removably attached to said base portion,
said base portion connected together with said printed circuit board and said speaker bracket portion by threaded members extending from said base portion through holes in said printed circuit board into said leg portions of said speaker bracket portion,
said loudspeaker connected to said printed circuit board by a wire and also connected to said printed circuit board and retained in seated relation to said speaker portion by a threaded member extending from said printed circuit board to a portion of said loudspeaker,
said speaker bracket portion provided with an annularly curved portion extending outwardly from said loudspeaker and providing a horn for said loudspeaker,
said sensor connected to said printed circuit board,
said base portion provided with a plurality of apertures for receiving wires from the rear of said base portion to connect to said printed circuit board,
said base portion provided with a plurality of means near each of said apertures to connect wires to said printed circuit board,
said grill and guard portion having apertures in front of the loudspeaker and providing a plurality of apertures on each side of the device to receive gas into the device,
said grill and guard portion attached to said speaker bracket portion by projecting interlocking portions and removable from said speaker bracket portion by resilient deformation of said grill and guard portion and said projecting interlocking portions.

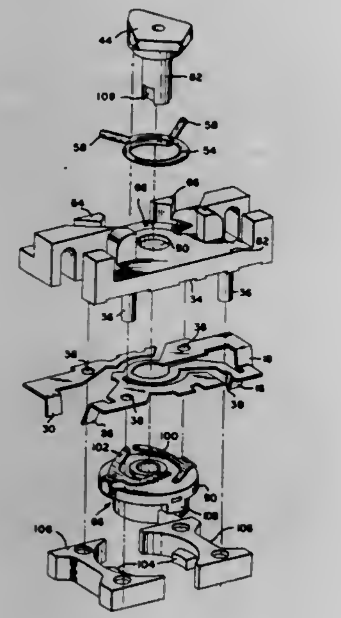
3,892,931
MINIATURE MOMENTARY ROTARY TYPE SWITCH FOR RESETTING ELECTRONIC WATCH DIGITAL DISPLAY

Joseph Larue Lockard, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 15, 1974, Ser. No. 451,617

Int. Cl.^{2} H01H *21/38;* **G04C** *23/00*

U.S. Cl. 200—11 R **3 Claims**



1. A switch, comprising:
a base having recessed portions,
coplanar circuits secured to said base and defining a plurality of switch poles,
portions of said circuits projecting outwardly of the plane of said circuits and into said recess portions to provide mounting lugs,
a cam having a shaft received rotatably through said base, a rotor mounted on said shaft having brush contacts thereon engageable selectively on said circuits upon rotation of said rotor,
said circuits being interposed between said cam and said rotor, and
resilient means encircling said shaft and having end portions engaged on said base, said cam being rotatable from a central position in either of two directions biasing resiliently the corresponding end portions of said spring means to store resilient spring energy for return rotation of said cam to said central position.

3,892,932
STEERING COLUMN SWITCH ASSEMBLY

Herbert Erdelitsch, and Walter Hecht, both of Bietigheim, Germany, assignors to SWF Spezialfabrik fur Autozubehor, Germany

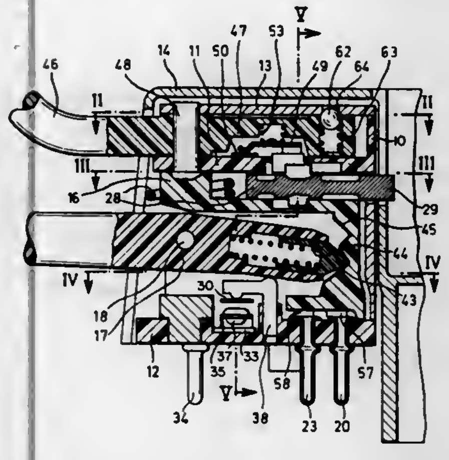
Filed Feb. 25, 1974, Ser. No. 445,460

Claims priority, application Germany, Feb. 17, 1973, 2307855

Int. Cl. H01h *3/16, 9/00*

U.S. Cl. 200—61.27 **14 Claims**

1. A steering column switch, for a motor vehicle having a steering column, high beam and low beam headlamps, signal lamps, a flashing indicator, parking lamps, and side lamps, said steering column switch comprising, in combination, a switch mounting means arranged to be secured to said steering column, said mounting means defining a first switch compartment; a first independently constructed switch device constructed and arranged for mounting in said first compartment and including a first switch lever mounted for movement in first and second mutually perpendicular planes, a first switch operable by movement of said first switch lever in said first plane and perpendicular to said second plane to select between high beam, low beam and flashing operation of said headlamps, and a switch operable by movement of said first switch lever in said second plane and perpendicular to said first plane to selectively connect said signal lamps to said flashing indicator and said parking lamps to a vehicle source of electric potential; and cover means cooperable with said mounting means to define a second switch compartment adapted selectively to receive therein a second independently constructed switch device having a respective actuating member and operable to selectively connect said headlamps and said side lamps to the vehicle source of electric potential; said cover means, when said second switch device is mounted in said second compartment, embracing both said switch devices and said mounting means and, in the absence of said second switch device, embracing said first switch device and said mounting means.



3,892,933
APPARATUS FOR LOCKING AND RELATED RELEASING OF CLOSURE DEVICES OF DOORS OF MACHINES, MORE PARTICULARLY FOR WASHING MACHINES

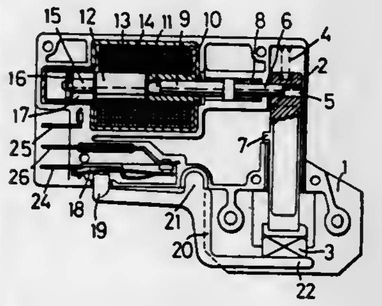
Onofrio Rocchitelli, 20, Via Stoppani, Rho, Italy

Filed Nov. 24, 1972, Ser. No. 309,415

Claims priority, application Italy, Nov. 26, 1971, 31664/71; Mar. 7, 1972, 21515/72; Apr. 28, 1972, 23725/72

Int. Cl. H01h *61/02, 71/16*

U.S. Cl. 337—77 **8 Claims**



1. For use in controlling the locking and releasing of latching devices on access closures in machines such as washing machines and the like, internal members of which machines preferably cease movement prior to the time when such closures may be opened for internal access thereto, which latching devices include a moveable latch devices for cooperative interengagement with an associated hook member, which latch is to be locked in closed position during operation of the machine by a locking pin and is to be unlocked by actuation of said locking pin at the end of the machine operation with a pre-determined time delay, apparatus comprising a locking pin actuated by a piston moveable in a chamber, means for selectively heating said chamber according to the operative condition of the machine, and a heat expansible, low melting point wax contained in said chamber, expansion of which wax will cause actuation of said locking pin to effect locking of said latch in closed position and contraction of which wax will cause actuation of said pin to effect unlocking of said latch.

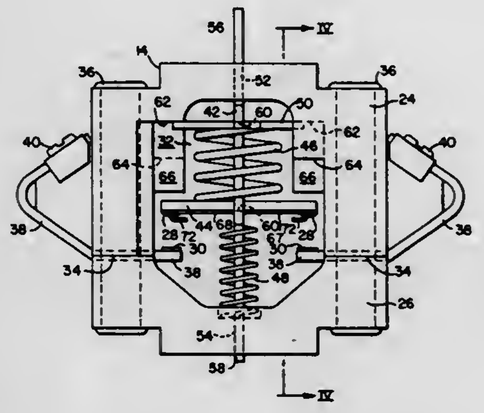
3,892,934
AUXILIARY CONTACT INTERLOCK FOR PREVENTING ELECTRICAL DISCONTINUITY BETWEEN MAIN BRIDGING CONTACT AND FIXED CONTACTS

Edward L. Richards, Aliquippa, and George M. Cametti, Beaver, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 14, 1974, Ser. No. 451,249

Int. Cl. H01h *3/60*

U.S. Cl. 200—288 **4 Claims**



1. An auxiliary contact interlock for use with an electromagnetic contactor having an operating arm, the interlock comprising a housing, at least one stationary contact mounted within the housing, a movable structure movable as a unit and including an actuator rod and a movable conductive contact carrier means mounted on the rod, the rod being slidably mounted in the housing by the operating arm to open and close the contacts when the arm is actuated, each movable contact carrier means having at least one contact button and at least one resilient contact, each resilient contact being located beside and biased to a location between the open and closed positions of the contact button and said stationary contact, the resilient contact having a U-shaped end portion engageable with said stationary contact, upon movement of the movable contact carrier means to the closed position with the stationary contact the resilient contact engages the stationary contact before and at a location adjacent to that of the contact button, and upon movement of the movable contact carrier means to the open position the resilient contact leaves the stationary contact after the contact button.

3,892,935
WALL SWITCH EXTENSION

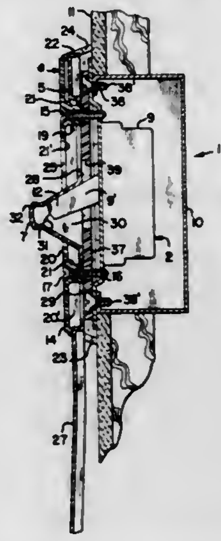
Joe G. Patterson, 428 E. Gay St., Warrensburg, Mo. 64093

Filed July 24, 1974, Ser. No. 491,287

Int. Cl. H01h *3/02*

U.S. Cl. 200—331 **3 Claims**

1. An attachment for an electric light wall switch having a fixed part with screw aperture means and a movable switch lever and adapted to be located about standard height on a wall above a floor of a room comprising:
- a. a mounting member having a front wall and depending side and upper and lower end walls, said front wall having spaced holes adapted to receive screws for connecting the mounting member to a switch fixed part in place of a cover plate, said front wall being spaced from the switch by engagement of said side and end walls with a wall in which the switch is mounted, said mounting member having a guide opening in the lower end wall and guide means depending from said front wall at said spaced holes with said holes extending therethrough, said front wall having an elongate opening between said holes for the switch lever;
- b. a spacer plate fixed to said switch fixed part in overlying relation thereto and having openings aligned with the holes in said front wall and an elongate central opening through which the switch lever extends said central opening permitting movement of said lever to on and off positions;
- c. an elongate switch actuator having a generally rectangular portion slidably mounted between the mounting member front wall and the spacer plate with an extension of the actuator extending through said guide opening in said lower end wall with said extension adapted to extend downwardly and terminating in a hand hold within reach of a small child operating the switch from the floor, said rectangular portion having elongate openings slidably receiving said depending guide means for guided sliding movement, said rectangular portion having an aperture for movable reception of the switch lever for operation of said switch between on and off positions by sliding movement of said actuator;
- d. cooperative means on the mounting member and the rectangular portion of the actuator for stop engagement for limiting movement of the actuator in the mounting member to actuation of the switch lever between on and off positions.



3,892,936
PROCESS FOR ELECTRICAL DISCHARGE SHAPING AND APPARATUS THEREFOR UTILIZING DIFFERENT SHAPE WAVE FORMS

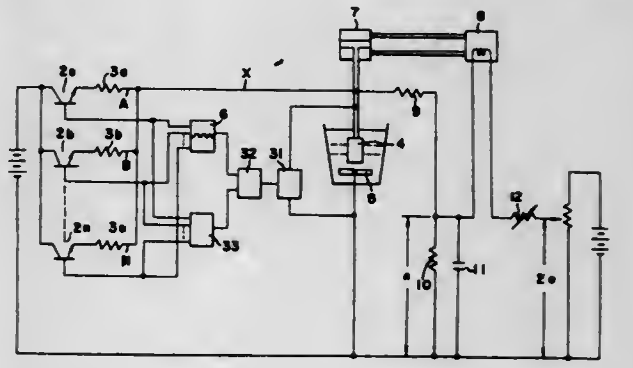
Kazuhiko Kobayashi, Seto, and Toshiro Oizumi, Nagoya, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Feb. 7, 1974, Ser. No. 440,546

Claims priority, application Japan, Feb. 19, 1973, 48-19964

Int. Cl. B23p *1/08*

U.S. Cl. 219—69 P **7 Claims**



1. An apparatus for electrical discharge shaping which comprises:

a workpiece;

an electrode disposed opposite to said workpiece to form a working gap therebetween;

a switching element for controlling a pulse voltage applied from a power source across said working gap between said workpiece and said electrode;

a first signal transmitter for controlling said switching element so as to pass a discharge pulse current having a rectangular waveform across said working gap;

a second signal transmitter for controlling said switching element so as to pass a discharge pulse current having a differing waveform having a slant line across said gap; and a control device for selectively driving either of said first and second signal transmitters depending upon whether the time interval between the application of the pulse voltage and the initiation of discharge is less than or is greater than a predetermined time interval.

3,892,937

APPARATUS FOR UNDERWATER WELDING OF METAL STRUCTURES

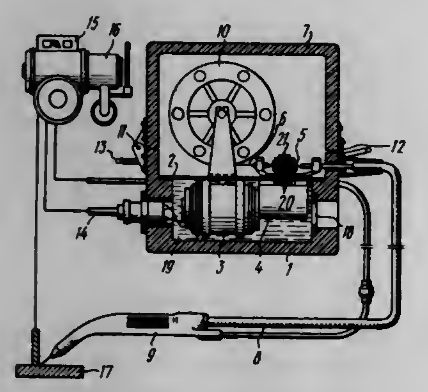
Vladimir Evgenievich Paton, ulitsa Anri Barbjusa, 22/26, kv. 61; Vladimir Borisovich Smolyarko, ulitsa Artema, 26a, kr. 3; Mikhail Gdal Gershovich Belfor, pereulok Ivana Maryanenko, 11/12, kv. 28; Vladimir Grigorievich Pichak, ulitsa Lenina, 88–92, kv.59; Igor Mavriklevich Savich, ulitsa Vernadskogo, 85, kv. 86; Alexandr Grigorievich Rybchenkov, ulitsa Filatova, 1/22, kv. 61; Vasily Ivanovich Pankov, ulitsa Prazhskaya, 3, kv. 114, and Arkady Anatolievich Ignatushenko, ulitsa Kapitanovskaya, 20, kv. 1, all of Kiev, U.S.S.R.

Filed Dec. 14, 1973, Ser. No. 424,833

Claims priority, application U.S.S.R., Dec. 19, 1972, 1859980

Int. Cl. B23k *35/38*

U.S. Cl. 219—72 **12 Claims**



1. An apparatus for the underwater welding of metal structures, comprising: a motor and gear housing with a removable cover, defining therein a chamber filled up with a lubricant having dielectric properties; said cover having a through opening, a joint between said housing and said cover; an electric motor installed in said chamber; a reducing gear kinematically connected with said motor, also installed in said chamber and having a shaft the outer end of which extends via said opening; a device built into said housing, for transmitting the pressure of the environment onto the lubricant in said chamber; a wire enclosure made of a material also having dielectric properties; a coil and the like on the outside of said cover, for an electrode wire wound on said coil; wire feed rollers also located on said cover for gripping the wire and winding it off said coil, said rollers being kinematically connected to said outer shaft end; said enclosure at least partly surrounding said cover, said coil and said rollers; a flexible hose whose one end is fixed in said housing whereas the other, remote end carries a burner; means for hermetically sealing said chamber and said cover, said sealing means being provided at said opening for the shaft, at the point of mounting said transmitting device; a power supply for said motor, also disposed at said joint, means for controlling said motor, arranged outside said housing and electrically connected to said motor; and a power source with poles electrically connected to the wire and to a metal structure being welded.

3,892,938

SYSTEM FOR ADJUSTING THE POSITION OF A COIL

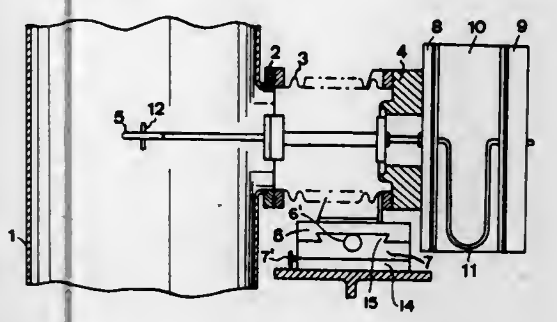
Georges Jean-Pierre Hubert Defosse, Wandre, Belgium, assignor to Elphiac, Brussels, Belgium

Filed Nov. 13, 1973, Ser. No. 415,336

Claims priority, application Belgium, Nov. 13, 1972, 4564

Int. Cl. H05b *5/08*

U.S. Cl. 219—10.79 **2 Claims**



1. Means for adjusting the position of a coil fed by a current generator working at very high frequency, said coil being mounted on a movable support, comprising an assembly of two dovetail slides movable, respectively, in two different directions in one plane, both perpendicular to the axis of the coil, said support being secured to said assembly, four bar-shaped terminals parallel to the axis of the coil two of said terminals being mounted on said support for movement therewith and two terminals being stationary adjacent thereto, and two flexible and curved hoops being electrically conductive, each of said hoops connecting one stationary terminal to one movable terminal.

3,892,939

WELDING MACHINE

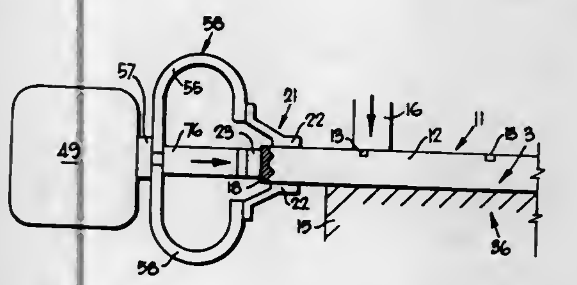
Victor James Medley, Brookvale, New South Wales, Australia, assignor to P.M. Andersen Manufacturing Pty. Limited, Brookvale, Australia

Filed Apr. 25, 1974, Ser. No. 464,160

Claims priority, application Australia, Oct. 18, 1973, 5296/73

Int. Cl. B23k *11/02*

U.S. Cl. 219—101 **14 Claims**



1. A welding machine comprising a base, a grating support platen on the base, a fluid actuated clamp on the base co-operating with the platen for clamping a grating thereto, an edge bar support on the base, a pair of rails fixed relative to the base but spaced therefrom, the rails being parallel to an edge of the platen,

a carriage, wheels on the carriage engaging and guided for movement by the rails, power operated drive means coupled to said wheels, a welding transformer on the carriage having a pair of secondary terminals thereon, a pressure fluid actuated electrode cylinder on the carriage positioned above the plane of the platen, a first welding electrode coupled to the movable element of the electrode cylinder, a pressure fluid actuated welding head on the carriage, a horizontally movable second welding electrode, linkage means coupling the welding head to the second electrode for effecting said horizontal movement thereof upon actuation of the welding head, jumper leads interconnecting the welding electrodes to respective said secondary transformer terminals,

motor control means coupled to the power operated drive means for moving the carriage between welding stations, and weld control means coupled to the transformer for controlling energising of the transformer.

3,892,940

APPARATUS FOR UNIFORMLY HEATING MONOCRYSTALLINE WAFERS

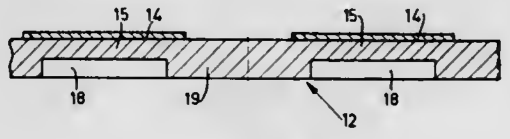
Jan Bloem, Emmasingel, Eindhoven, and Antonius Hermanus Goemans, Nijmegen, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed June 27, 1973, Ser. No. 373,944

Claims priority, application Netherlands, July 1, 1972, 7209297

Int. Cl. H05b *5/08*

U.S. Cl. 219—10.49 **11 Claims**



1. A susceptor for heating to a uniform temperature in a high frequency field monocrystalline wafers of a selected geometrical shape and size, comprising a body having two opposed major surfaces, one major surface having spaced recesses of geometrical shape and size similar to the selected geometrical shape and size of said monocrystalline wafers, said recesses effectively decreasing the heat generated by said field in said body in the thinner regions between said recesses and the other major surface thereof, whereby wafers of said selected geometrical shape and size positioned on said other major surface and aligned with said recesses are heated less in the central areas thereof to compensate for reduced heat radiation from said areas resulting in a more substantially homogeneous temperature distribution in said wafers.

3,892,941

HEATING TIMER FOR PULSE WELDERS

Erhard Lehle, Breite Strasse 21, 7031 Gartringen, Germany

Continuation of Ser. No. 210,978, Dec. 22, 1971, abandoned.

This application Oct. 9, 1973, Ser. No. 404,703

Claims priority, application Germany, Dec. 23, 1970, 2063459

Int. Cl. B23k *9/10*

U.S. Cl. 219—113 **7 Claims**

1. An analog timing circuit for use with a pulse type heating element such as in a welding machine comprising:

a heating element,

a welding bank thermally connected to said heating element, said welding bank having temperature-time characteristic functions,

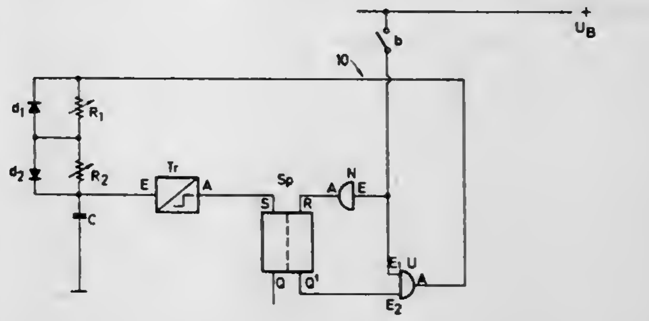
a power source electrically connected to said heating element,

a source of potential,

a capacitor connected to said source of potential for charging said capacitor,

variable resistive means connected in a charging circuit path to said capacitor and said source of potential for adjusting the charging time constant of said capacitor,

variable resistive means connected in a discharging circuit path to said capacitor and said source of potential for adjusting the discharging time constant of said capacitor,



said capacitor charging time constant resistive means and discharging time constant resistive means defining voltage-time characteristic functions of said capacitor, said voltage-time characteristic functions of said capacitor adjusted for approximating the temperature-time characteristic functions of said welding bank, and

electric circuit means for controlling the pulse duration from said power source to said pulse type heating element in response to the charge on said capacitor.

3,892,942

SEMI-AUTOMATIC SPOT-WELDING APPARATUS

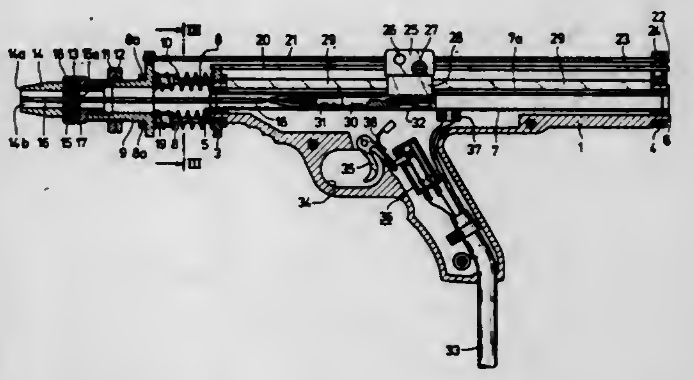
Giacomino Canale, and Pietro Dessy, both of Chiavary, Italy, assignors to Engen Buchel, Vaduz, Liechtenstein

Filed Sept. 13, 1972, Ser. No. 288,534

Claims priority, application Italy, Sept. 15, 1971, 12918/71

Int. Cl. B23k *9/00*

U.S. Cl. 219—127 **2 Claims**



1. A semi-automatic spot welder apparatus comprising a longitudinally extending pistol-shaped casing having a forward end, a hollow welding head, means adjustably securing said welding head to the forward end of said casing, an electrode holder longitudinally displaceable in said casing, means for securing a welding rod to said electrode holder, means associated with said casing for insulating said electrode holder from said casing, said casing having a hand-grip portion, and a switch in said hand-grip portion for connecting said electrode holder to an electrical current source, a disk secured to said casing's forward ends, a plurality of spaced bolts secured to said disk and extending outwardly of said casing longitudinally thereof, a plurality of springs on said respective bolts, biasing said welding head away from said disk, a first saw tooth rack with oppositely directed teeth, positioned above said first rack, a U-shaped driver secured to said electrode holder, said driver having slotted catches therein for alternate engagement with either of said first and second racks, said hollow welding head being formed with a flange provided with an adjustable

knurled nut for limiting the adjustment of said plurality of spaced bolts.

3,892,943
HAIRDRESSING INSTRUMENT

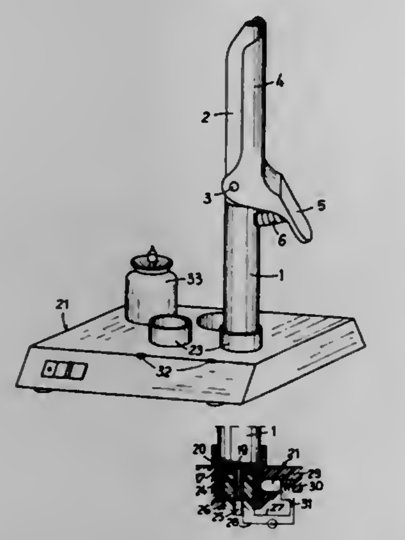
Jean Francois Van Droogenbroek, 88 Avenue Louise, Brussels, Belgium

Filed June 11, 1973, Ser. No. 368,786

Claims priority, application Belgium, June 12, 1972, 784729

Int. Cl. H05b *1/02*; **A45d** *1/04, 2/36*

U.S. Cl. 219—222 **2 Claims**



1. An instrument for hairdressers for use in treating hair with vapor formed under the action of heat, said instrument comprising an elongated solid cylindrical block formed with a plurality of internal longitudinal bores, one of said bores opening into the exterior of said block at one end of the block, a liquid supplying element removably inserted into said one of said bores from the open end of said bore, an electrical heating element located within another one of said bores for supplying heat to said block to vaporize liquid supplied by said liquid supplying element, each of said bores being isolated from one another, a plurality of vapor discharge holes formed along the length of said block and communicating with the said one of said bores which contains the removable liquid supplying element, a handle extending from the end of said solid block opposite to said one end, said handle being rigidly connected to said solid block, an elongated cover part having a partial cylindrical contour which matches the contour of said body part, said cover part extending longitudinally along said block in covering relation to said vapor discharge holes and being pivotally mounted on said cylindrical block, said cover part including an offset foot portion adjacent said handle and a spring interposed between said foot portion and said handle for biasing said cover part into a position covering said vapor-discharge holes, the end of said handle remote from said block including interior electrical contact means for detachably connecting said heating element to an external electrical current supply, a stand for said instrument, an electrical current supply circuit for said instrument located within said stand, said stand including an electric socket connected to said supply and adapted to cooperate with said interior electrical contact means at the remote end of said handle for supplying current to said heating element when the handle of said instrument is plugged into said socket, switch means located within said socket and positioned for selective actuation to a closed condition by the plugging of said handle into said socket, said switch means being connected in said current supply circuit in such manner as to ensure that the circuit of said current supply to said socket is closed and operative to supply current only when said remote end of the handle is plugged into said electric socket on said stand, said handle including first and second conductors for supplying said heating element with electrical current, said interior electrical contact means comprising a first cylindrical electrical contact provided internally at said remote end of said handle and connected to one of said conductors, said electrical contact means further comprising a central connector pin in said handle coaxial with said first cylindrical contact and connected to the other of said conductors, a tubular projection on said stand for receiving said handle and giving access to a recess in said stand, said electrical socket comprising a second cylindrical contact provided in said recess for cooperating with said first cylindrical contact on insertion of said handle into the recess, a female connector in the recess disposed coaxially relative to said second cylindrical contact for cooperating with said connector pin of said handle, and an insulating body in said recess separating said female connector and said second cylindrical contact.

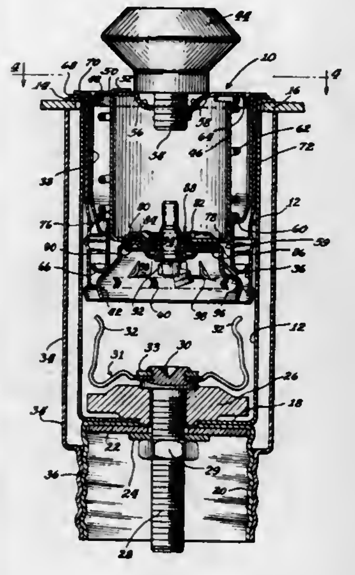
3,892,944
CIGAR LIGHTER IGNITING UNIT

Laurence G. Horwitt, New Haven, and Donald J. Mattis, Norwalk, both of Conn., assignors to Sun Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 457,963, April 4, 1974. This application Aug. 19, 1974, Ser. No. 498,294

Int. Cl.^{2} F23Q *7/22*

U.S. Cl. 219—270 **2 Claims**



1. A low-cost, automated-production, automatic electric cigar lighter igniting unit comprising, in combination:

a. a metal plug body having a stamped, sheet-metal heating element cup insulatedly carried on its inner end, said cup constituting one contact of an electrical heating element circuit and the metal plug body constituting another contact of said circuit,

b. said cup having integral, projecting, heating-element support means formed in its side walls at locations spaced backward from the edge of the cup, and

c. an electrical heating element constituted of spirally-wound resistance ribbon disposed in said cup and having its ends connected respectively to the plug body and cup to be energized therethrough,

d. at least one outer convolution of said element being disposed in front of and closely adjacent the element support means and being adapted to contact the same to provide a back-up for the element when pressure is exerted against the opposite or frontal side thereof,

e. the convolutions of the heating element having a non-linear cross-sectional configuration and interlocking with each other to form a compact, substantially disk-like member the portions of which resist relative axial displacement,

f. said integral, heating-element support means of the cup comprising a plurality of lanced, inwardly-protruding projections engageable with the element at spaced intervals around the circumference of the cup and providing openings in said side walls at the rear of the heating element.

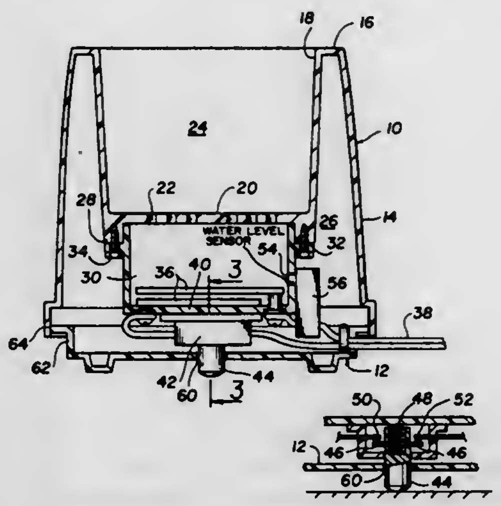
3,892,945
ELECTRIC BOTTLE WARMER

Robert Lerner, 231 Harbor Hill Road, Roslyn, N.Y. 11576

Filed July 26, 1973, Ser. No. 382,828

Int. Cl. H05b *9/06*; **F24h** *3/06*; **H05b** *1/02*

U.S. Cl. 219—437 **2 Claims**



1. A heating device for bottles and the like, comprising an enclosing body adapted to be supported on a surface and defining an interior space for receiving said bottle, said body having a perforated bottom wall, a cup-shaped vessel, having unitarily formed bottom and side walls, for receiving a given quantity of liquid, removably mounted to depend below said perforated bottom and an electric heating element located within said vessel for heating said liquid to produce steam to pass through said perforations into contact with said container, a liquid sensing switch mounted on a side wall of said vessel above the bottom wall, said liquid sensing switch having a normally open position and an operable closed position in series with said electric heating element, said switch being responsive to the presence of liquid in said vessel to be rendered in closed position, a pressure switch having open and closed positions in series with said heating element to control said heating element, said switch being mounted to depend below said vessel and having a switch actuating plunger member extending outwardly of said body into contact with the surface on which it is supported, spring means resiliently biasing said plunger in switch open position, said spring means being sufficient to maintain said plunger in open position on receipt of said quantity of liquid in said vessel and while being free of a bottle, but being overcome on introduction of a bottle into said body.

3,892,946
CONTROL SYSTEM FOR AN ELECTRICAL HEATING DEVICE, AND PARTICULARLY FOR AN ELECTRICAL SAUNA STOVE

Pentti Ilmari Rimmi, Hanko, Finland, assignor to Oy Helo-Tehtaat-Helo Fact. Ltd., Hanko, Finland

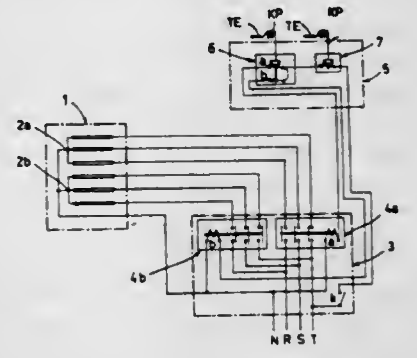
Filed Sept. 25, 1973, Ser. No. 400,622

Claims priority, application Finland, Sept. 26, 1972, 2614

Int. Cl. H05b *1/02*

U.S. Cl. 219—486 **5 Claims**

1. A control system for an electrical heating device, and particularly for an electrical sauna stove, comprising: three heating resistance arrangements adapted for being connected to three different phases, respectively, a coil switch arrangement comprising one three-pole coil switch, a control switch controlling said coil switch arrangement, a temperature controller connected in series with said coil switch arrangement and comprising an at least three-pole controller arrangement



for each phase and arranged so as to connect and disconnect in stepwise manner, with certain preselected temperature intervals, the component loads of said respective resistance arrangements, said temperature controller being placed inside the heating device.

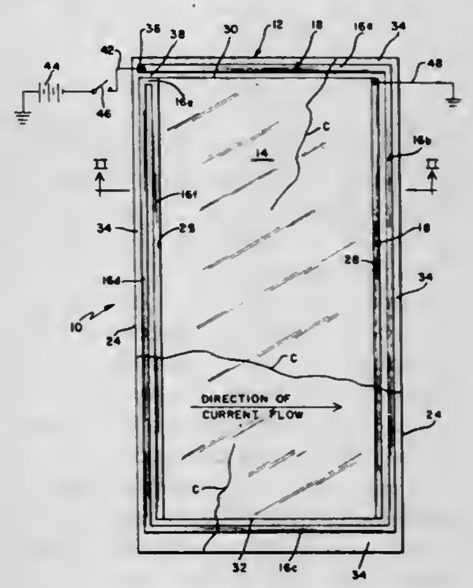
3,892,947
ELECTRICALLY HEATED PANEL WITH ANTI-SHOCK CONDUCTIVE STRIPS

Roy D. Strengholt, Holland, Mich., assignor to Donnelly Mirrors, Inc., Holland, Mich.

Filed Feb. 27, 1974, Ser. No. 446,151

Int. Cl. H05b *3/06*

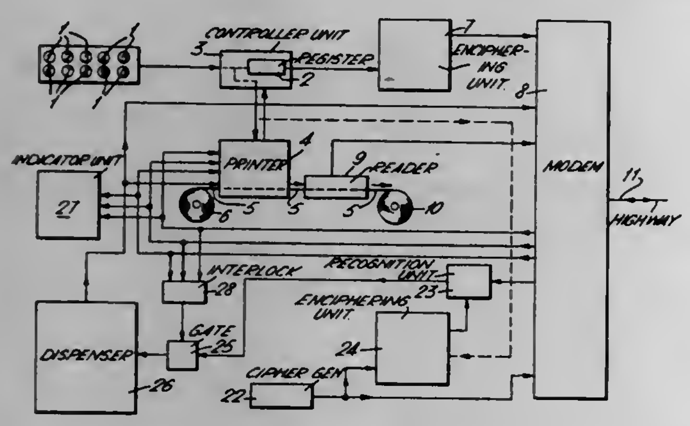
U.S. Cl. 219—522 **16 Claims**



1. In an anti-fogging, heated windowpane of the type including a sheet of transparent glass having a pair of generally opposing, planar surfaces, a peripheral edge having a plurality of edge portions, and an electrically conductive, transparent coating applied to a portion of one of said surfaces, the improvement comprising the combination of an uncoated, insulating space extending around the entirety of said one surface of said sheet between the edge of said coating and said peripheral edge; a first elongated strip of electrically conductive material applied to said sheet within said uncoated, insulating space, said first strip having a beginning end located adjacent one portion of said peripheral edge of said sheet and extending around and being insulated from substantially all of the total length of the edge of said coating after which said strip includes a contact portion which extends into electrical contact with a predetermined length of a first portion of said edge of said coating; a second, elongated strip of electrically conductive material applied to said sheet in electric contact with a predetermined length of a second portion of said edge of said coating; said second portion of said coating edge and said

second, elongated strip of electrically conductive material being spaced across said coating a predetermined distance apart from and in general opposition to said first portion of said coating edge and said contact portion of said first strip; electrical conduction means for conducting electricity to said first strip and for grounding said second strip, said conduction means engaging said first strip at said beginning end, whereby an electrical current transmitted from said first strip across said coating to said second strip for heating said coating and said sheet is automatically shut off upon fracture of said sheet anywhere along its length which causes a severance of said first strip along its length.

3,892,948
ACCESS- OR TRANSACTION-CONTROL EQUIPMENT
Geoffrey Ernest Patrick Constable, Berkhamsted, England, assignor to Smiths Industries Limited, London, England
Filed Feb. 26, 1973, Ser. No. 336,126
Claims priority, application United Kingdom, Feb. 28, 1972, 9145/72
Int. Cl. H04q *5/02;* **G07f** *7/00;* **G06k** *5/00*
U.S. Cl. 340—149 R **3 Claims**



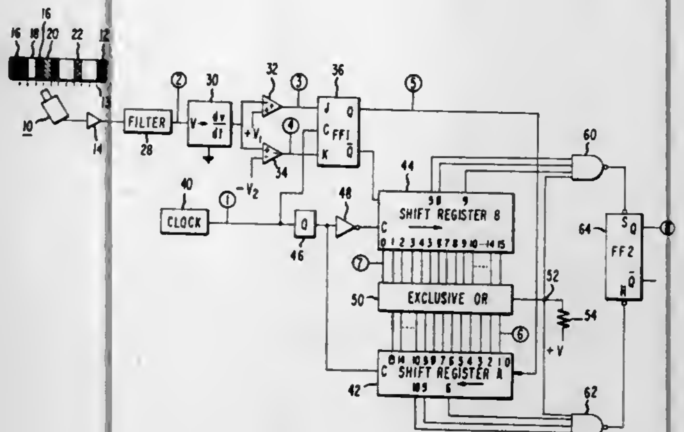
1. Equipment for use in the control of authorization of an operation requested by a person comprising: a plurality of manually-operable devices that are operable to enter a word into the equipment, the particular word entered being dependent on which, and in what sequence, the manually-operable devices are operated; means to derive signals in accordance with two different words entered respectively by successive sequences of operation of said manually-operable devices; comparison means for effecting a comparison between the two different words to detect whether a predetermined correspondence exists between them, said comparison means comprising a signal comparator, a store for storing a multiplicity of words at a multiplicity of addresses respectively, means for reading out a stored word from an address of the store dependent on one of the two entered words, means for supplying signals in accordance with the other entered word to the signal comparator, and means for supplying signals in accordance with the word read out from the store to the signal comparator for comparison with the signals supplied therein in respect of the said other of the two entered words; and means for signifying authorization of said operation in dependence upon the detected existence of said predetermined correspondence.

3,892,949
CIRCUIT FOR DETERMINING THE TIME OF TRANSITIONS IN AN ALTERNATING SIGNAL
George Bertram Dodson, III, Shirley, Mass., assignor to RCA Corporation, New York, N.Y.
Filed Apr. 22, 1974, Ser. No. 462,771
Int. Cl. G06k *7/10;* **G08c** *9/06*
U.S. Cl. 235—61.11 E **7 Claims**

1. In combination:

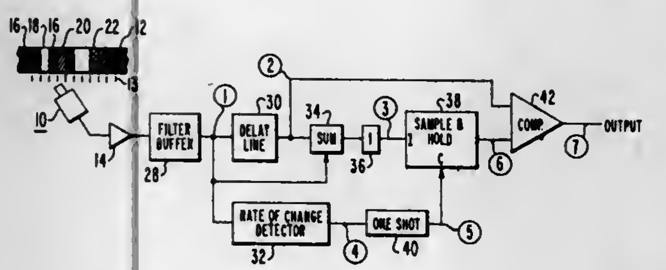
first means responsive to an alternating signal for producing a first stream of bits in response to said alternating signal being at a fixed value and for producing a second different stream of bits in response to said alternating signal transitioning from one fixed value to another fixed value, only one of said first and second bit streams being produced at any one time;

second means responsive to the N most recent bits of said bit streams produced by said first means, where N is a given integer in excess of the number of bits in said second bit stream, for comparing the *i*th bit with the (N − *i*)th bit, for $i = 1$ through N, and for producing a signal indicative of correspondence of the N bit pairs; and



third means, responsive to said correspondence signal and responsive to the presence of at least the minimum number of bits of said second bit stream needed to differentiate it from said first bit stream being present in said N most recently received bits, for producing a pulse indicating that a transition in said alternating signal has occurred, the timing of the pulse being indicative of the time of occurrence of said transition.

3,892,950
AVERAGE VALUE CROSSOVER DETECTOR
George Bertram Dodson, III, Shirley, Mass., assignor to RCA Corporation, New York, N.Y.
Filed Apr. 22, 1974, Ser. No. 462,770
Int. Cl. G06k *7/10;* **G08c** *9/06*
U.S. Cl. 235—61.11 E **15 Claims**



1. In combination:

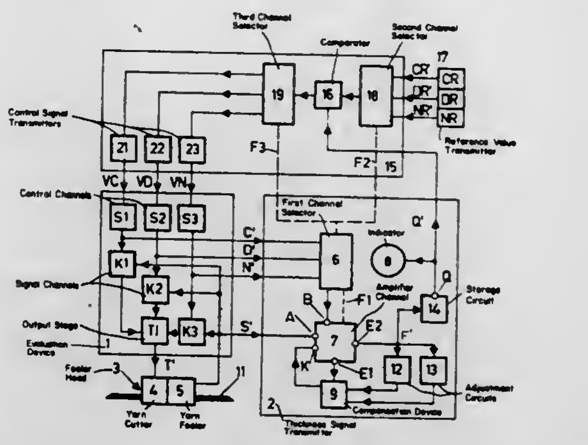
delay means responsive to an alternating input signal for delaying said signal;

means producing a signal equal to the average value of the delayed and undelayed alternating signal;

means storing said average value signal when it is at a fixed value, and

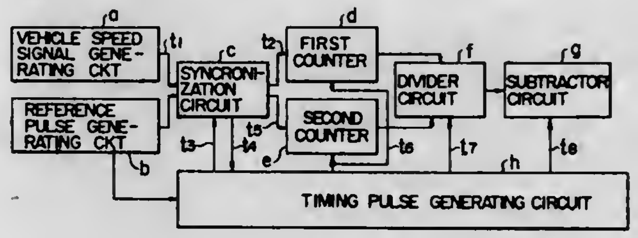
comparator means responsive to the signals produced by the delay means and storing means for producing a signal at a first level when the amplitude of the delay means signal exceeds that of the other signal and for producing a signal at a second, different level when the inverse is true.

3,892,951
METHOD AND APPARATUS FOR ADJUSTING AN ELECTRONIC YARN CLEANER
Hansruedi Stutz, Dietlikon, Switzerland, assignor to Aktiengesellschaft Gebruder Loepfe, Zurich, Switzerland
Filed Jan. 28, 1974, Ser. No. 437,494
Claims priority, application Switzerland, Feb. 5, 1973, 1550/73
Int. Cl. D02j *1/14;* **H01j** *19/82*
U.S. Cl. 235—151.3 **17 Claims**



1. A method for adjusting an electronic yarn cleaner which embodies a yarn feeler for generating a scanning signal dependent upon the cross-section of a yarn to be cleaned and at least one controllable channel connected with the yarn feeler for evaluating the scanning signal and for triggering a yarn cutting device when there is present a defective cross-section of the yarn, the improvement comprising the steps of: deriving from the scanning signal, during running of the yarn, a thickness signal, the magnitude of which is representative of the yarn thickness determined over a longer yarn section, for the purpose of automatically adjusting at least one evaluation channel, and feeding the thickness signal defining a control signal or a signal derived therefrom defining a control signal to the evaluation channel in order to be able to adjust its response threshold in the same sense as the magnitude of the thickness signal.

3,892,952
DIGITAL DIFFERENTIATION CIRCUIT
Akira Shibata, Okazaki, and Atutoshi Okamoto, Toyohashi, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Mar. 20, 1974, Ser. No. 453,160
Claims priority, application Japan, Mar. 22, 1973, 48-33211
Int. Cl. G06f *15/20*
U.S. Cl. 235—151.32 **9 Claims**



1. A digital differentiation circuit for differentiating a frequency proportional to a detected displacement speed, comprising:

a reference pulse generating circuit for generating reference pulses having a predetermined frequency;

a displacement speed detector for generating output pulses having a frequency proportional to a detected displacement speed;

a timing pulse generating circuit for recurrently generating a reference timing pulse having a predetermined reference time width;

a synchronization circuit connected to said timing pulse generating circuit, said reference pulse generating circuit and said displacement speed detector whereby the leading edge of said reference timing pulse is synchronized with the leading edge of said detector output pulse and the leading edge of said reference pulse to continuously generate said reference pulse and said detector output pulse synchronized with each other during a counting period extending from the leading edge of said synchronized reference timing pulse to the trailing edge thereof which was extended to the first leading edge of said detector output pulse generated after the termination of the reference time width of said reference timing pulse;

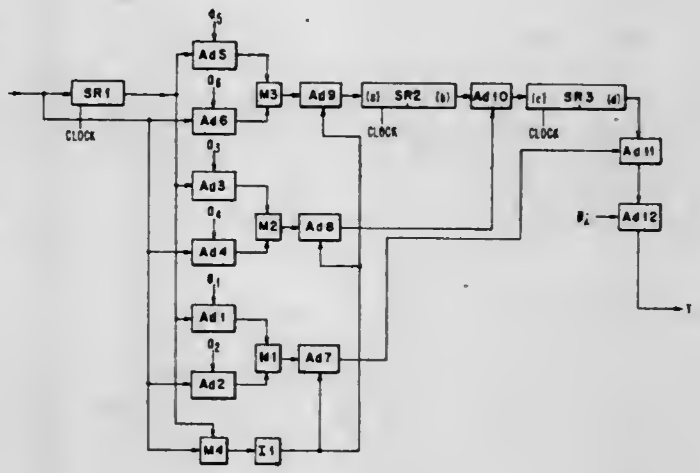
a first counter connected to said synchronization circuit whereby the number of said detector output pulses generated during said counting period is counted repeatedly for each said counting period;

a second counter connected to said synchronization circuit whereby the number of said reference pulses generated during said counting period is counted repeatedly for each said counting period;

a divider circuit connected to said first and second counters whereby every time said counting period terminates, the count of said first counter is divided by the count of said second counter to obtain a displacement speed; and

a subtractor circuit connected to said divider circuit whereby every time a displacement speed is computed by said divider circuit, a subtraction is performed on said computed displacement speed and a just previously obtained displacement speed to determine an acceleration or deceleration of said detected displacement speed.

3,892,953
DIGITAL FILTER
Henri Nussbaumer, LaGaude, France, assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 10, 1974, Ser. No. 513,796
Claims priority, application France, Oct. 23, 1973, 73.38742
Int. Cl. H04b *3/04, 3/14*
U.S. Cl. 235—152 **3 Claims**



1. A digital filter for filtering signals representing bytes of data corresponding to samples of an analog signal carrying information and noise, said filter including:

a first plurality of adders, each having a constant input indicating a coefficient term of said filter and a second input receiving and byte signals;

a shift register to delay said byte representing signals by one sample period;

- a second plurality of adders, each having a constant input representing other filter coefficient terms and another input receiving the output of said shift register;
- a plurality of multiplier circuits, one receiving said byte representing signals and the output of said shift register and the others each receiving the outputs of one adder from said first plurality and one adder from said second plurality;
- an inverter to complement the sign of the output of said one multiplier;
- a third plurality of adders to combine the outputs of each of said other multipliers with the sign inverted output of said one multiplier; and
- a group of shift registers and adders to combine the outputs of said third plurality of adders in a time delayed sequence to provide output signals representing the data bytes of said information signal.

3,892,954

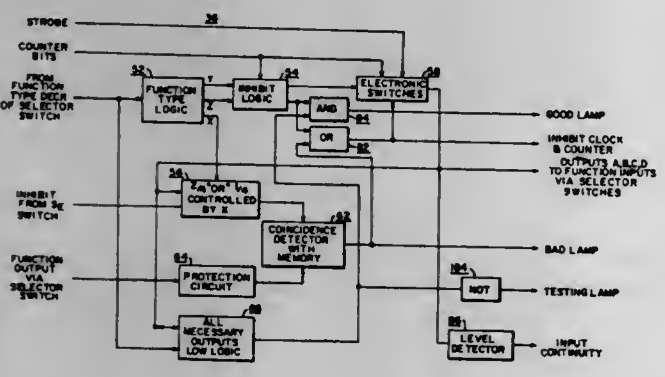
PROGRAMMABLE, TESTER FOR PROTECTION AND SAFEGUARDS LOGIC FUNCTIONS

James A. Neuner, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 4, 1972, Ser. No. 241,049

Int. Cl. G06f *11/00*

U.S. Cl. 235—153 AC **7 Claims**


STROBE
COUNTER BITS
FROM FUNCTION TYPE DECR OF SELECTOR SWITCH
INHIBIT FROM 3E SWITCH
FUNCTION OUTPUT VIA SELECTOR SWITCH
FUNCTION TYPE LOGIC
INHIBIT LOGIC
ELECTRONIC SWITCHES
AND
OR
"A" "OR" "B" CONTROLLED BY X
COINCIDENCE DETECTOR WITH MEMORY
PROTECTION CIRCUIT
ALL NECESSARY OUTPUTS LOW LOGIC
NOT
LEVEL DETECTOR
GOOD LAMP
INHIBIT CLOCK & COUNTER
OUTPUTS A,B,C,D TO FUNCTION INPUTS VIA SELECTOR SWITCHES
BAD LAMP
TESTING LAMP
INPUT CONTINUITY

1. A tester for sequentially testing the operation of a plurality of logic circuits respectively connected to perform a number of different predetermined logic functions each having n inputs, where n is a predetermined integer, operably arranged so as to provide an output signal of a first state whenever at least m of said n inputs assume said first state, where m is a predetermined integer less than or equal to n and where n and m can vary between each of the separate predetermined logic functions, comprising:

- reference signal generating circuit means for providing a reference input signal to said n inputs of the predetermined logic function under test;
- circuit means for simulating the predetermined logic function under test, having corresponding inputs from said reference signal generating means and responsive to said reference input signal to produce a logic reference signal; circuit means for comparing the outputs from the predetermined logic function under test with said logic reference signal and for providing an alarm signal when a difference is indicated; and
- means for switching the inputs of the tester connected to the logic function under test to the next of the sequence of the plurality of logic circuits to be tested, after the test on the circuit being tested is completed and simultaneously programming said reference signal generating means and said simulating means to respectively provide said reference input signal and logic reference signal corresponding to the next of the sequence of the plurality of logic circuits to be tested.

3,892,955

PROGRAM CONTROLLED TESTING SYSTEM

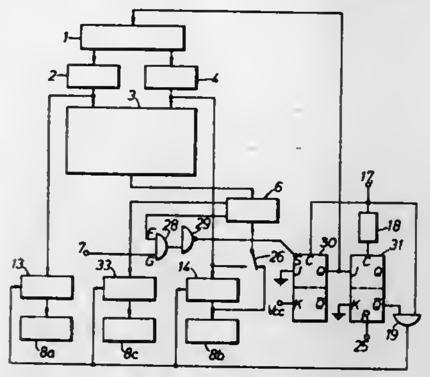
Tsugie Maejima, Gyoda, Japan, assignor to Takeda Riken Kogyo Kabushiki Kaisha, Tokyo, Japan

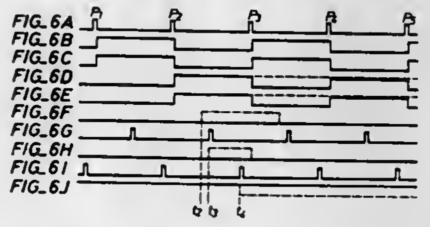
Filed Feb. 22, 1974, Ser. No. 445,044

Claims priority, application Japan, Feb. 26, 1973, 48-22899

Int. Cl. G11c *29/00*

U.S. Cl. 235—153 AC **8 Claims**





1. A program controlled testing system including a microprogram control unit, an address unit for storing an address contained in an instruction read out from the microprogram control unit, a reference data generator for storing a reference data, said address being used to access a storage unit to be tested to enter the reference data into the storage unit at said address, and an output data memory for storing an output data which is read out from the storage unit at said address for subsequent comparison of the output data with the reference data; the system comprising:

- an address register into which the content of the address unit is entered;
- a reference data register into which the content of the reference data generator is entered;
- an output data register into which the content of the data memory is entered;
- a comparator for comparing the content of the reference data register and the content of the output data register; means for performing the entry into the address register; the reference data register and the output data register, respectively, at a time later than the entry into the address unit, and
- entry inhibit means for inhibiting said entry in response to a non-coincident output from the comparator.

3,892,956

CASCADE DIGITAL FAST FOURIER ANALYZER

Peter Siegfried Fuss, Greensboro, N.C., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 27, 1971, Ser. No. 212,572

Int. Cl. G06f *15/34*

U.S. Cl. 235—156 **3 Claims**

1. A fast Fourier transform processor for forming Fourier coefficient signals corresponding to consecutive N-sample records of a single sequence of ordered input samples, each sample appearing during a respective consecutive fixed 1/2R-second interval of time, R being a constant value, comprising a plurality of ordered cascaded processing stages

A. the first of which stages comprises

1. an arithmetic unit having first and second input terminals and first and second output terminals for generating at said output terminals during successive fixed 1/R-second intervals of time pairs of output signals representing the sum and difference of a first product

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the corresponding amplifier stage, means for selectively effecting a discontinuance of the feedback function and means for selectively adjusting bias potentials at the inputs of the regenerating circuit.

3,892,985

SET-PREFERRING R-S FLIP-FLOP CIRCUIT

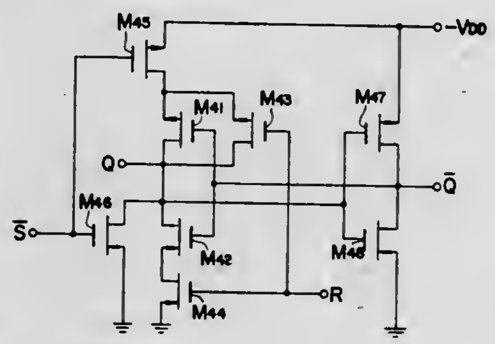
Hiroto Kawagoe, Tokyo, Japan, assignor to Hitachi, Ltd., Japan

Filed Mar. 11, 1974, Ser. No. 450,190

Claims priority, application Japan, Mar. 9, 1973, 48-27092

Int. Cl. H03k *3/286, 3/33*

U.S. Cl. 307—279 **10 Claims**



1. A set-preferring R-S flip-flop circuit comprising:

- a first inverter circuit which includes
  - first, third and fifth transistors of the same first conductivity type, each having an input electrode, an output electrode and a control electrode,
  - second, fourth and sixth transistors, of the same second conductivity type which is opposite to that of said first, third and fifth transistors, each having an input electrode, an output electrode, and a control electrode,
  - said first and third transistors having their input and output electrodes connected in parallel,
  - said fifth transistor being connected in series with said parallel-connected first and third transistors between a first power source terminal and a first output terminal; said sixth transistor being connected in series between said first output terminal and a second power source terminal;
  - said second and fourth transistors being connected in series between said first output terminal and said second power source terminal;
- a second inverter circuit which includes
  - a seventh transistor of said first conductivity type and an eighth transistor of said second conductivity type, each having an input electrode, an output electrode, and a control electrode;
  - said seventh transistor being connected in series between a second output terminal and said first power source terminal;
  - said eighth transistor being connected in series between said second output terminal and said second power source terminal;
- first means for coupling the output of said first inverter circuit to the control electrodes of said seventh and eighth transistors;
- second means for feeding-back the output of said second inverter circuit to the control electrodes of said first and second transistors; and
- third means for applying a reset input signal to the control electrodes of said third and fourth transistors and a set input signal to the control electrodes of said fifth and sixth transistors, so as to make said flip-flop circuit have a function that when said fifth and sixth transistors are respectively non-conductive and conductive, said flip-flop circuit is in a set state irrespective of the reset input signal, and when said fifth and sixth transistors are respectively conductive and nonconductive, said flip-flop circuit remains in the previous state thereof or is in a reset state in accordance with the conductive or nonconductive state of said third and fourth transistors which operate complementarily.

3,892,986

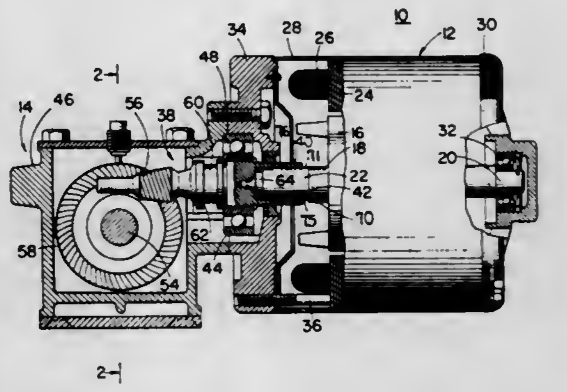
GEARMOTOR WITH REMOVABLE PINION

Howard G. Allen, Roselle, N.J., assignor to General Electric Company, Schenectady, N.Y.

Filed Sept. 20, 1973, Ser. No. 399,263

Int. Cl. H02k *15/00*

U.S. Cl. 310—42 **4 Claims**



1. A gearmotor assembly including a motor having a stator assembly and a rotor assembly including a shaft having first and second portions; bearing means rotatably supporting said rotor assembly; power transmitting means including an input gear coaxially connected with said shaft; a gear box having output gear means; said input gear meshing with said output gear means; said power transmitting means being assembled with said shaft, and being provided with abutment means adapted for use when removing said power transmitting means from said shaft; said power transmitting means includes a pinion and pinion shaft, and the abutment means comprises a shoulder of greater diameter than said pinion shaft.

3,892,987

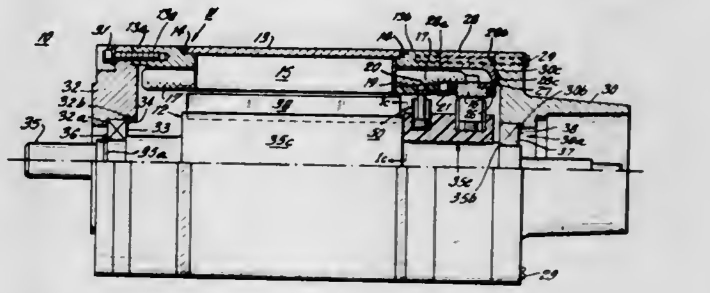
COMMUTATING METHOD AND APPARATUS FOR DC PERMANENT MAGNET MACHINES

Samuel Noodleman, Blacksburg, Va., assignor to Kollmorgen Corporation, Hartford, Conn.

Filed Jan. 30, 1974, Ser. No. 437,907

Int. Cl. H02k *37/00*

U.S. Cl. 310—46 **9 Claims**

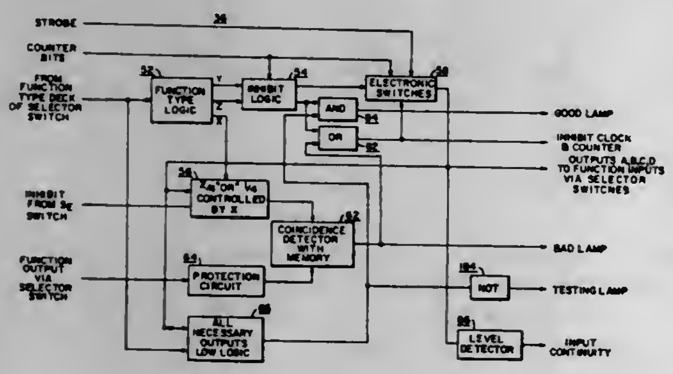


1. Switching apparatus for a machine responsive to a source of DC power and having interacting rotor and stator assemblies which rotate relative to each other, the rotor having at least a two-pole permanent magnet structure for creating a magnetic field and the stator having a winding with a plurality of energizeable coils arranged at spaced intervals around the stator, said coils having an array of commutator bars associated therewith for supplying electrical power thereto for progressively creating magnetic fields in said stator which interact with those in said rotor, said apparatus comprising:

a. first and second spaced conductive rings associated with said stator, said conductive rings being positioned proximate said commutator bars;

- a second plurality of adders, each having a constant input representing other filter coefficient terms and another input receiving the output of said shift register;
- a plurality of multiplier circuits, one receiving said byte representing signals and the output of said shift register and the others each receiving the outputs of one adder from said first plurality and one adder from said second plurality;
- an inverter to complement the sign of the output of said one multiplier;
- a third plurality of adders to combine the outputs of each of said other multipliers with the sign inverted output of said one multiplier; and
- a group of shift registers and adders to combine the outputs of said third plurality of adders in a time delayed sequence to provide output signals representing the data bytes of said information signal.

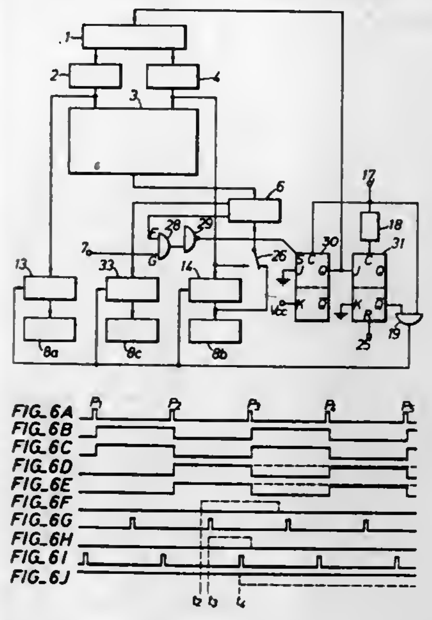
3,892,954
PROGRAMMABLE, TESTER FOR PROTECTION AND SAFEGUARDS LOGIC FUNCTIONS
James A. Neuner, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Apr. 4, 1972, Ser. No. 241,049
Int. Cl. G06f *11/00*
U.S. Cl. 235—153 AC **7 Claims**



1. A tester for sequentially testing the operation of a plurality of logic circuits respectively connected to perform a number of different predetermined logic functions each having n inputs, where n is a predetermined integer, operably arranged so as to provide an output signal of a first state whenever at least m of said n inputs assume said first state, where m is a predetermined integer less than or equal to n and where n and m can vary between each of the separate predetermined logic functions, comprising:

- reference signal generating circuit means for providing a reference input signal to said n inputs of the predetermined logic function under test;
- circuit means for simulating the predetermined logic function under test, having corresponding inputs from said reference signal generating means and responsive to said reference input signal to produce a logic reference signal;
- circuit means for comparing the outputs from the predetermined logic function under test with said logic reference signal and for providing an alarm signal when a difference is indicated; and
- means for switching the inputs of the tester connected to the logic function under test to the next of the sequence of the plurality of logic circuits to be tested, after the test on the circuit being tested is completed and simultaneously programming said reference signal generating means and said simulating means to respectively provide said reference input signal and logic reference signal corresponding to the next of the sequence of the plurality of logic circuits to be tested.

3,892,955
PROGRAM CONTROLLED TESTING SYSTEM
Tsugie Maejima, Gyoda, Japan, assignor to Takeda Riken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 22, 1974, Ser. No. 445,044
Claims priority, application Japan, Feb. 26, 1973, 48-22899
Int. Cl. G11c *29/00*
U.S. Cl. 235—153 AC **8 Claims**



1. A program controlled testing system including a microprogram control unit, an address unit for storing an address contained in an instruction read out from the microprogram control unit, a reference data generator for storing a reference data, said address being used to access a storage unit to be tested to enter the reference data into the storage unit at said address, and an output data memory for storing an output data which is read out from the storage unit at said address for subsequent comparison of the output data with the reference data; the system comprising:

- an address register into which the content of the address unit is entered;
- a reference data register into which the content of the reference data generator is entered;
- an output data register into which the content of the data memory is entered;
- a comparator for comparing the content of the reference data register and the content of the output data register; means for performing the entry into the address register; the reference data register and the output data register, respectively, at a time later than the entry into the address unit, and
- entry inhibit means for inhibiting said entry in response to a non-coincident output from the comparator.

3,892,956
CASCADE DIGITAL FAST FOURIER ANALYZER
Peter Siegfried Fuss, Greensboro, N.C., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Dec. 27, 1971, Ser. No. 212,572
Int. Cl. G06f *15/34*
U.S. Cl. 235—156 **3 Claims**

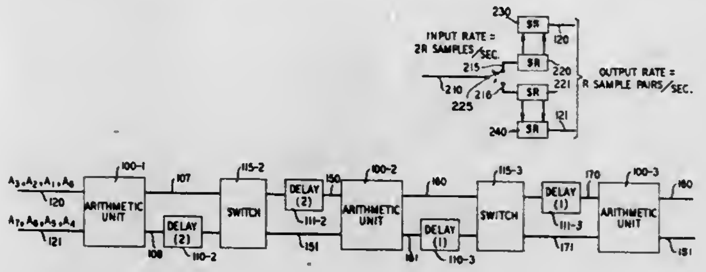
1. A fast Fourier transform processor for forming Fourier coefficient signals corresponding to consecutive N-sample records of a single sequence of ordered input samples, each sample appearing during a respective consecutive fixed 1/2R-second interval of time, R being a constant value, comprising a plurality of ordered cascaded processing stages

A. the first of which stages comprises

1. an arithmetic unit having first and second input terminals and first and second output terminals for generating at said output terminals during successive fixed 1/R-second intervals of time pairs of output signals representing the sum and difference of a first product

signal and a signal applied at said first input terminal, said first product signal representing the product of a signal applied at said second input terminal and a predetermined weighting factor, and

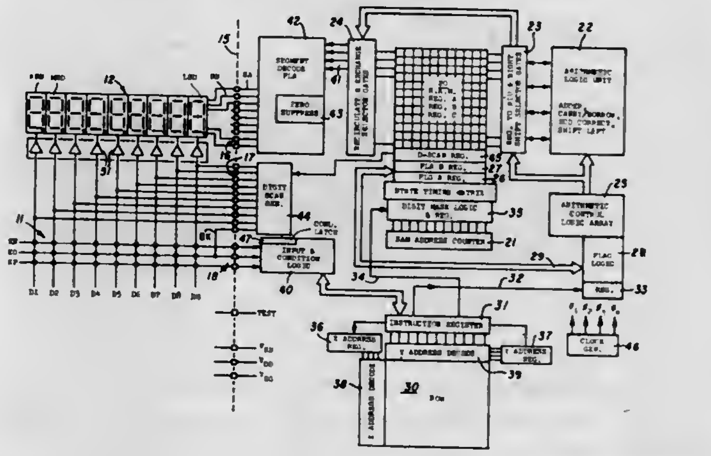
2. means for applying, during 2M consecutive ones of said fixed 1/R-second intervals of time, M > N/2 successive pairs of said input samples of consecutive N-sample records of said single sequence to said first and second input terminals during said successive fixed intervals of time while excluding other signals from said input terminals, said pairs each including a selected sample from the first half of one of said N-sample records of input samples and a uniquely corresponding sample from the second half of said one of said N-sample records of input samples,



B. each stage after the first comprising

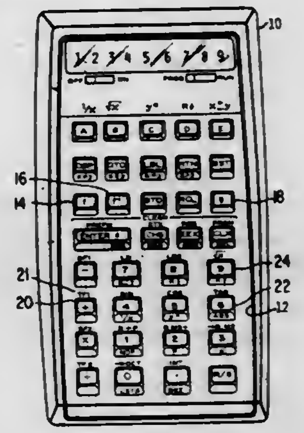
1. a pair of input terminals,
2. a pair of output terminals,
3. a network for selectively delaying signals applied at said input terminals,
4. arithmetic means for forming output pairs of signals corresponding to the sum and difference of a second product signal and a signal applied at said pair of input terminals and selectively delayed by said network, said second product signal representing the product of a predetermined weighting factor and another signal applied at said pair of input terminals and selectively delayed by said network.

3,892,957
DIGIT MASK LOGIC COMBINED WITH SEQUENTIALLY ADDRESSED MEMORY IN ELECTRONIC CALCULATOR CHIP
John D. Bryant, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Sept. 24, 1973, Ser. No. 400,473
Int. Cl. G06f *7/48*
U.S. Cl. 235—156 **10 Claims**



1. An electronic calculator system of the type implemented in monolithic semiconductor means, comprising data memory means having an array of memory cells addressed in sequence, an arithmetic unit for executing operations on data from the memory means, a read-only-memory for storing a large number of instruction words to define the operation of the system, storage means for receiving a part of an instruction word for defining a timing mask, a logic array connected to the storage means and responsive to said part of the instruction word and also connected to receive timing singals used to address the data memory in sequence, the logic array producing one of a plurality of different timing masks in accord with said part of the instruction word, and means for coupling the data memory to the arithmetic unit responsive to the timing masks.

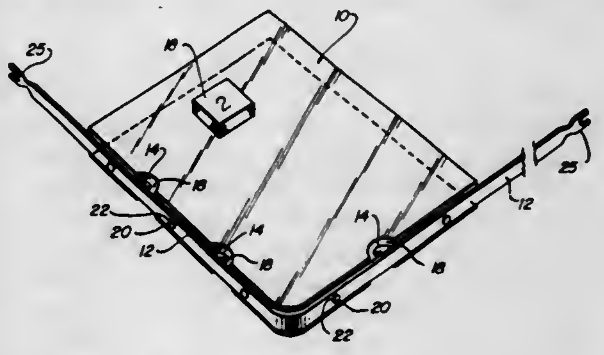
3,892,958
INVERSE/COMPLEMENTARY FUNCTION PREFIX KEY
Chung C. Tung, Santa Clara, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Jan. 11, 1974, Ser. No. 432,736
Int. Cl.² G06F *3/02*
U.S. Cl. 235—156 **9 Claims**



1. An input and control keyboard for use in a calculator comprising:

- a mounting panel for mounting keys;
- a plurality of keys including function and numeric keys, mounted in the mounting panel, for activating input and control functions, each of said keys having more than two functions assigned thereto;
- color-coded legends applied to the mounting panel adjacent to the keys for identifying one of the functions assigned thereto;
- a first command key mounted in the mounting panel, having a color-coded body coloration for associating that key with functions identified by correspondingly color-coded legends; and
- a command key legend affixed to the first command key for associating that key with the inverse of functions identified by the correspondingly color-coded legends;
- said first command key being manually operable with one of the plurality of keys for designating the inverse of the function identified by the correspondingly color-coded legend assigned to that key.

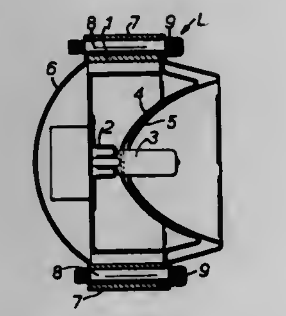
3,892,959
EDGE-LIGHTED PANEL ARRANGEMENT
Eduard J. Pulles, Huntsville, Ala., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Filed Nov. 2, 1973, Ser. No. 412,237
Int. Cl. F21
U.S. Cl. 240—1 EL **7 Claims**



1. In combination, a transparent light-transmitting panel having front and rear surfaces arranged for specular reflection of light therebetween and a marginal portion for receiving

light, said marginal portion being provided with a plurality of spaced openings for receiving light sources and with a plurality of spaced fastening means, a length of flexible material carrying electrical conductor means and having a plurality of complimentary fastener means for fastening with the fastening means on said marginal portion of said panel, a plurality of light sources carried by said length of flexible material and electrically connected with said electrical conductor means so as to be energized when said electrical conductor means is connected to a source of power, said length of flexible material being affixed about said marginal portion of said panel by mating together said fastening means, said plurality of light sources being positioned on said length of flexible material so as to be disposed within said spaced openings when said flexible material is affixed to said panel, whereby edge-lighting for said panel can be provided simply by affixing said flexible material to said panel and coupling the electrical conductor means to a source of power.

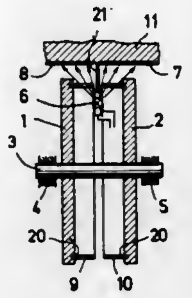
3,892,960
LIGHT PROJECTOR FITTINGS
Robert Heritage, Mortlake, England, assignor to Rotaflex (Great Britain) Limited, London, England
Filed Apr. 3, 1974, Ser. No. 457,404
Claims priority, application United Kingdom, Apr. 4, 1973, 16182
Int. Cl. F21v *7/00*
U.S. Cl. 240—41.35 R **3 Claims**



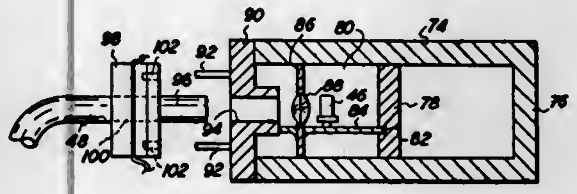
1. A light projector comprising a lamp housing having a body, a source of light, an elliptical reflector, a parabolic reflector, means for mounting said reflectors on said body, at least one of said reflectors being removable from said body, and mounting means permitting the support of supplementary fittings on said body, said mounting means comprising a plurality of extension rods releasably securable to said body to project forwardly therefrom parallel with the common optical axis of said reflectors.

3,892,961
CONTACTLESS POTENTIOMETER WITH AUTOMATICALLY CONTROLLED LIGHT SOURCE
Hans Bachmann, Zug, Switzerland, assignor to Intermadox A.G., Zug, Switzerland
Filed Mar. 19, 1974, Ser. No. 452,550
Claims priority, application Germany, Mar. 21, 1973, 2313997
Int. Cl. G01j *1/32;* **H01l** *15/06*
U.S. Cl. 250—211 K **19 Claims**

5. An arrangement of the character described, comprising, in combination, a light source; photosensitive means positioned to receive light from said light source and operative for generating an electrical output signal having a magnitude dependent upon the luminous flux received from said light source; light-blocking means positioned intermediate said light source and said photosensitive means and mounted for displacement relative to said photosensitive means and said source in a predetermined direction along a predetermined path, the light transmittance of said light-blocking means varying in said predetermined direction, whereby as said light-blocking means is displaced in said direction the luminous flux received by said photosensitive means from said light source will vary accordingly; and compensating means operative for establishing a linear relationship between the displacement of said light-blocking means and the magnitude of said signal by automatically varying the luminous flux emitted from said light source towards said photosensitive means in dependence upon the position of said light-blocking means, wherein said photosensitive means and said signal respectively constitute first photosensitive means and a first signal, and wherein said compensating means comprises second photosensitive means positioned to receive light from said light source and operative for generating a second electrical signal having a magnitude dependent upon the luminous flux received from said light source, and stabilizing circuit means connected to said second photosensitive means and to said light source, and operative for maintaining constant the magnitude of said second signal by automatically varying the luminous flux emitted by said light source, said light-blocking means constituting first light-blocking means, and wherein said compensating means further includes second light-blocking means positioned intermediate said light source and said second photosensitive means and mounted for displacement relative to said second photosensitive means and said source in a predetermined direction along a predetermined path, said second light-blocking means being coupled to said first lightblocking means for displacement jointly therewith, and the light transmittance of said second light-blocking means varying in the direction in which said second light-blocking means is displaceable.



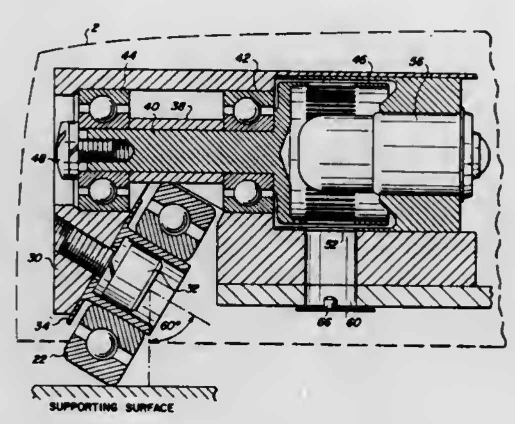
3,892,962
THERMAL CHAMBER FOR A DEVELOPABILITY REGULATING APPARATUS
Charles A. Whited, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Division of Ser. No. 295,775, Oct. 6, 1972, Pat. No. 3,817,616. This application Jan. 30, 1974, Ser. No. 438,126
Int. Cl. G02b *5/14*
U.S. Cl. 250—227 **4 Claims**



1. An apparatus for controlling the thermal environment of a photosensor adapted to detect light rays emitted from a light source, including:
- a fiber optic light pipe for transmitting light rays to the photosensor;
- an open ended container defining an internal chamber for housing the photosensor;
- an end cap having an aperture therein adapted to receive one end portion of said fiber optic light pipe to form therewith a substantially light-tight joint, said end cap being mounted on the open end of said container to form therewith a substantially heat-tight joint;

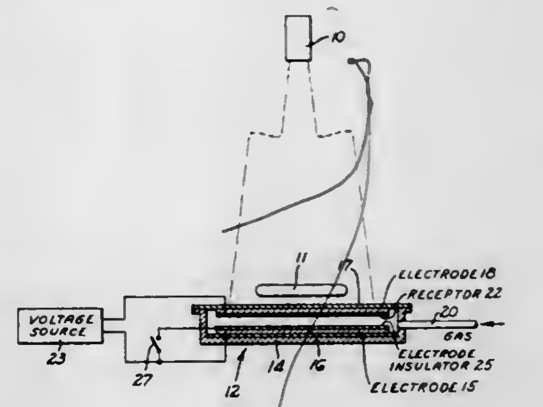
- means for heating said container to a predetermined temperature; and
- means for controlling said heating means such that said container remains substantially at the predetermined temperature.

3,892,963
TRANSDUCER FOR A DISPLAY-ORIENTED POINTING DEVICE
Jack S. Hawley, Berkeley; Roger D. Bates, Sunnyvale, and Charles P. Thacker, Los Altos, all of Calif., assignors to Xerox Corporation, Stamford, Conn.
Filed Dec. 20, 1973, Ser. No. 426,847
Int. Cl. G01d *5/34*
U.S. Cl. 250—231 R **24 Claims**



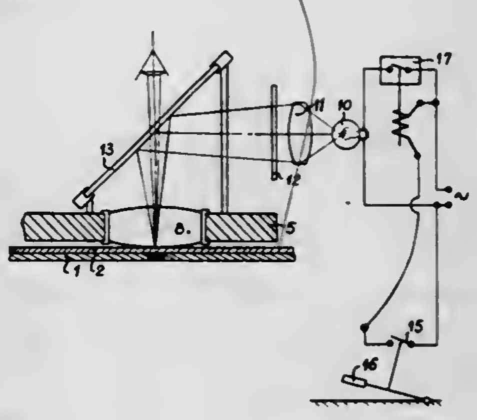
16. A position indicator device for electronically representing its positional movement over a supporting surface, comprising:
- a housing;
- two transducer elements mounted to said housing for converting mechanical motion to electrical signals, said transducer elements comprised of
- first shutter means having a plurality of slits spaced from one another about its periphery,
- a light source disposed on one side of said first shutter means for generating light to pass through the slits of said first shutter means,
- second shutter means disposed concentric with and on the other side of said first shutter means having at least two groups of slits about its periphery, the total number of slits being fewer than said plurality of slits in said first shutter means, for passing light passing through said plurality of slits directed into at least two channels of light upon the coincidence of slits of said plurality and slits of said two groups;
- photosensitive means responsive to said channels of light for generating electrical signals respective to each of said channels;
- at least two wheels for supporting and moving said housing over the supporting surface,
- each of said wheels respectively coupled to one of said transducer elements with the horizontal components of the axes of said wheels substantially orthogonal to one another whereby the rotation of one of said coupled wheels represents the X coordinate of movement over the surface and the rotation of the other coupled wheel represents the Y coordinate of movement; and
- said first shutter means has a portion of which is disposed in frictional contact with its respective wheel in substantially the same angular relationship with said wheel as said wheel is to the supporting surface such that said first shutter means moves relative to said second shutter means in accordance with the rotation of its respective wheel whereby two sets of signals, each set comprised of respective signals expressed as streams of discrete pulses generated from a respective transducer element, represent the X and Y coordinates of movement, respectively.

3,892,964
INSULATING ELECTRODE FOR BREAKDOWN INHIBITION IN ELECTRONRADIOGRAPHY IMAGING CHAMBER
Eric P. Muntz, Pasadena, and Murray S. Welkowsky, Los Angeles, both of Calif., assignors to Xonics, Inc., Van Nuys, Calif.
Continuation of Ser. No. 365,971, June 1, 1973. This application July 12, 1974, Ser. No. 488,147
Int. Cl. G03b *41/16*
U.S. Cl. 250—315 **6 Claims**



1. In an imaging chamber for an electronradiography system, the chamber having spaced electrodes with a gap therebetween for an ionizable imaging gas which absorbs incoming x-ray photons during an x-ray exposure and produces electrons and positive ions, and an electrostatic charge image receptor sheet at one of the electrodes for receiving one of said types of charged particles and production of a first electrostatic charge image,
- the improvement comprising an insulating layer covering the other electrode for collecting the other of said types of charged particles and building up and maintaining an electrostatic charge at the gap surface thereof during the x-ray exposure reducing the magnitude of the accelerating field across the gap, and including means for discharging said charged gap surface of said insulating layer after the x-ray exposure.

3,892,965
MARKING METHOD AND DEVICE
Karl Blattner, Rain 698, Kuttigen, and Roland Picard, Sonnmattstrasse, 923, Romback, both of Switzerland, assignors to Societe Genevoise d'Instruments de Physique, Geneva, Switzerland
Filed Sept. 25, 1973, Ser. No. 400,529
Claims priority, application Switzerland, Nov. 16, 1972, 16713/72
Int. Cl.² G03C *5/16*
U.S. Cl. 250—316 **5 Claims**



1. In a method of marking the positions of points on a drawing which are recorded by means of a coordinate reading device, the improvement comprising superposing the drawing

and heat-sensitive sheet, the upper of the drawing and sheet being transparent to visible light, and projecting the image of an infra-red source onto the heat-sensitive sheet at a point on the drawing which is recorded when said recording is effected, thereby locally to modify the visual appearance of the heat-sensitive sheet to provide a visible record of the points of the drawing that have been recorded.

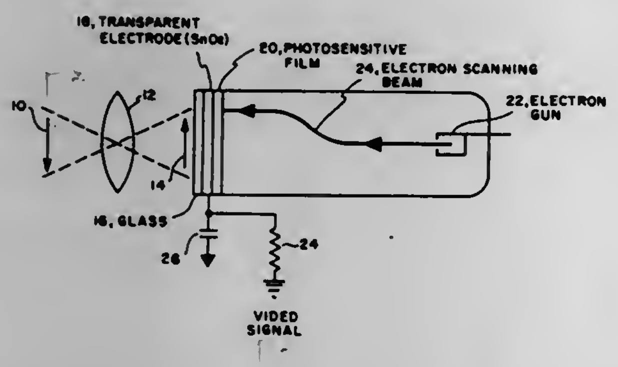
3,892,966
INFRARED VIDICON

Harold R. Riedel, Adelphi; Kurt Peter Scharnhorst, Beltsville, both of Md.; Sol Nudelman, and Hans Roehrig, both of Tucson, Ariz., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 10, 1974, Ser. No. 433,021

Int. Cl. H01j *29/18*

U.S. Cl. 250—333 **2 Claims**



1. A vidicon tube for producing an electronic video signal representative of detected radiation having wavelengths shorter than two microns comprising:

- transparent support means disposed along one end of said tube for transmitting said radiation;
- transparent electrode means deposited on said transparent support means for conducting said electronic video signal;
- a homogeneous layer of amphorous $(Pb_yGe_{1-y})_xTe_{1-x}$ with $0<x<<1$ and $0<y<1$ and x and y selected such that the crystallization temperature of said homogeneous layer is outside the operating temperature of said vidicon tube and said homogeneous layer remains amorphous during operation;
- wherein said homogeneous layer is deposited on said transparent electrode means for photoconductively producing said electronic video signal in response to, and representative of, said radiation having wavelengths shorter than two microns transmitted through said transparent support means.

3,892,967
APPARATUS FOR RADIOLOGICAL EXAMINATION OF A SUBJECT THROUGH A SOLID ANGLE

John K. Grady, Lincoln, and David B. Rice, Cambridge, both of Mass., assignors to John K. Grady, Lincoln, Mass.

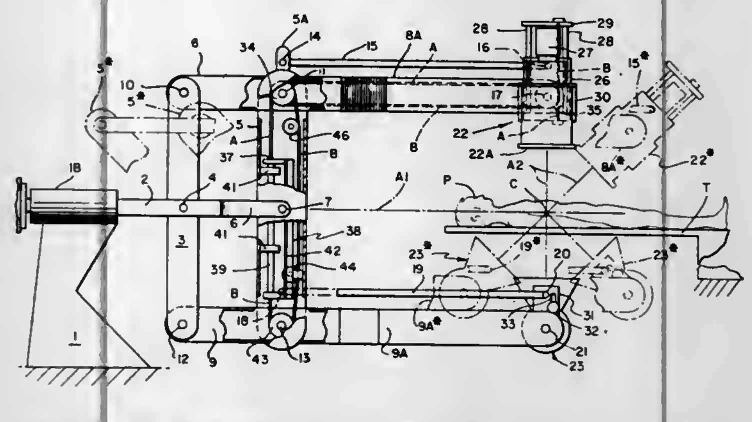
Filed Dec. 10, 1973, Ser. No. 423,449

Int. Cl. G01n *21/26;* G01j *3/34;* G03b *41/16*

U.S. Cl. 250—447 **9 Claims**

1. Radiological apparatus for examination of a fixed subject comprising:

- a main support rotor mounted to turn about a central axis;
- four pivotally connected members of fixed length forming an angularly adjustable parallelogram, two of the members being pivotally attached transversely of the rotor at locations spaced along the central axis, the other two members having extensions parallel to the central axis beyond the parallelogram;
- radiation source means having an axis and attached by a pivot on one extension;
- radiation receptor means having an axis and attached by a pivot on the other extension;
- first and second links respectively mechanically connected at one end to one transverse member and at the other end to a point spaced from the pivot of one radiation means so as to hold the axes of both radiation means aligned on a common radiation axis through an isocenter on the central axis, the links being parallel to the central axis and operative to hold at least one radiation means at a fixed distance from the isocenter as adjustment of the rotor and parallelogram inclines the radiation axis through a solid angle about the isocenter, whereby a fixed subject at the isocenter may be radiologically examined at constant radiological distance and axial alignment from throughout the solid angle.



3,892,968
ELECTRON CAPTURE DETECTOR SYSTEMS

James Ephraim Lovelock, Bowerchalke, Salisbury, England

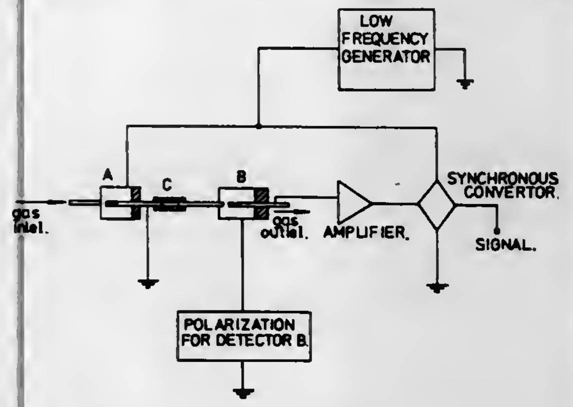
Filed Dec. 4, 1973, Ser. No. 421,615

Continuation of Ser. No. 278,411, Aug. 7, 1972, abandoned.

Claims priority, application United Kingdom, Aug. 6, 1971, 37025/71

Int. Cl. G01t *1/18*

U.S. Cl. 250—389 **3 Claims**



1. An electron capture detector system, for detecting the presence of an electron absorber in a gas sample, comprising in combination:

first and second electron capture detectors electrically insulated the one from the other, said first and second detectors being coupled together in series such that the gas sample flows through the first detector and then through the second detector, said first detector including electrodes for receiving a potential, said second detector including means for producing an output signal, means periodically switching the potential applied across the electrodes of the first detector between minimum and maximum values for modulating the output signal of the second detector in response to presence of an electron absorber in the gas sample, and means for detecting the output signal from the second detector, said second detector including electrodes, said means for producing an output signal including means applying a polarizing potential to said second detector electrodes, said output signal of said second detector being an alternating signal, said means for detecting the output signal including a synchronous converter for rectifying said alternating signal from said second detector.

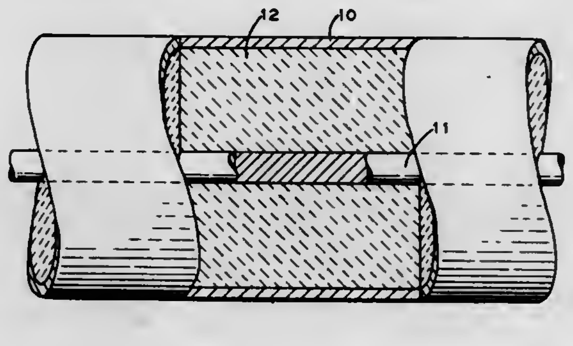
3,892,969
NEUTRON DETECTOR WITH GAMMA COMPENSATED CABLE

Holland D. Warren, Lynchburg, Va., assignor to The Babcock & Wilcox Company, New York, N.Y.

Filed Apr. 5, 1974, Ser. No. 458,152

Int. Cl. G01t *3/00*

U.S. Cl. 250—390 **7 Claims**



1. An electrical conductor comprising a sheath having a material that has a low probability for neutron-electron reactions, a leadwire within said sheath, said leadwire being formed from another material that also has a low probability for neutron-electron reactions, said leadwire material also having an atomic number that is larger than the atomic number of the sheath material; in order to generally satisfy the equation

$$O = Z_l^n d_l - Z_s^m d_s,$$

in which *l* identifies said leadwire, *s* identifies said sheath, *d* is a size characteristic, Z is the atomic number, and *n* and *m* are exponents that reflect the electron emissivities of said leadwire and said sheath respectively in response to photoelectric and "Compton" phenomena.

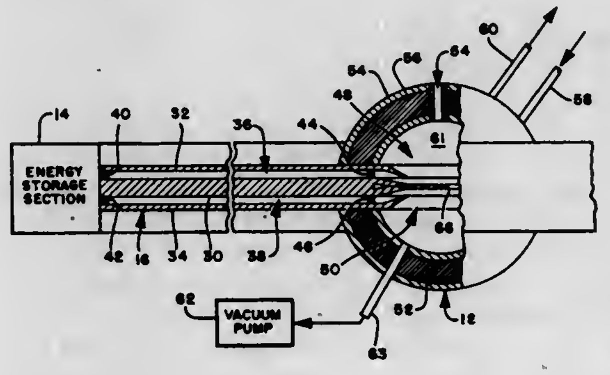
3,892,970
RELATIVISTIC ELECTRON BEAM DEVICE

John R. Freeman; James W. Poukey; Steven L. Shope, and Gerold Yonas, all of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed June 11, 1974, Ser. No. 478,199

Int. Cl.² G21G *5/00;* G01K *1/08*

U.S. Cl. 250—396 **13 Claims**



1. An electron beam device comprising first and second cathodes separated from each other by a gap on a common longitudinal axis; means for providing and injecting an anode plasma intermediate said cathodes at said gap along a plane perpendicular to said axis; and means for producing electron beams between said anode plasma and said cathodes.

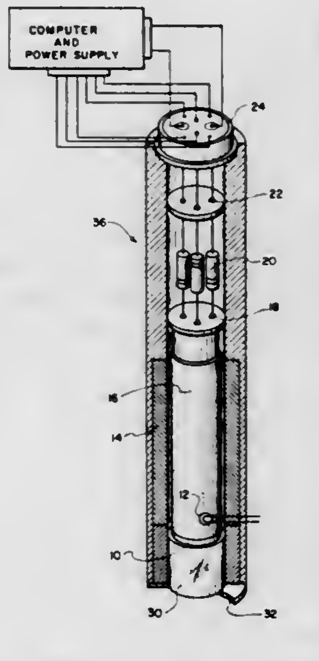
3,892,971
RADIATION DETECTOR SYSTEM USING AN INORGANIC SCINTILLATOR CRYSTAL DETECTOR WITH AN OPTICAL FILTER FOR AERIAL DOSEMETRY

William E. Arthur, Torrance; Terry E. Carrell, Los Angeles, both of Calif., and Willard Crego, Hudson, Ohio, assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 22, 1974, Ser. No. 453,905

Int. Cl. G01t *1/20*

U.S. Cl. 250—361 **5 Claims**



1. A radiation detection system for aerial dosimetry comprising:

- an elongated cylindrical detector container having a radiation transparent end window at an input end and an electrical connector at an output end;
- a solid inorganic scintillator crystal positioned adjacent said end window wherein said scintillator crystal and said end window are potted to said detector container;
- a blue optical filter contiguous with said solid inorganic scintillator crystal; and
- a photomultiplier tube surrounded by a lead shield within said detector container and having an input end positioned adjacent said blue optical filter and an output end having electrical leads connected through said electrical connector to dosimetry electronics inside a computer in which radiation emitted from a monitored area near the ground passes through said end window and is incident on said solid inorganic scintillator crystal resulting in residual optical radiation therefrom being filtered and only the initial radiation therefrom being transmitted by said blue filter to said input of the photomultiplier tube for converting to an electrical output signal monitored by said dosimetry electronics.

3,892,972
METHOD OF PRODUCING A LUMINESCENT SURFACE CONTAINING SUBSTITUTED SULFONAMIDO AND CARBOXAMIDO PHENYL QUINAZOLONES

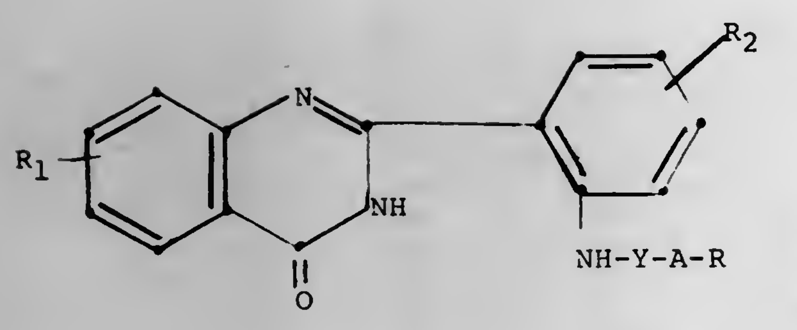
Albert Anthony Cevasco, Middlesex, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 119,964, March 1, 1971, Pat. No. 3,740,402. This application Apr. 25, 1973, Ser. No. 354,291

Int. Cl. C09d *11/00*

U.S. Cl. 250—458 **1 Claim**

1. A method for causing a coated surface to fluoresce which comprises, coating said surface with a composition containing a compound of the formula:

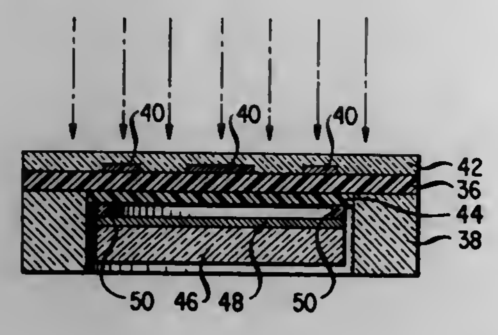


wherein R is hydrogen, alkyl of 1–4 carbons or alkoxy of 1–4 carbons; R_1 and R_2 are hydrogen, alkyl of 1–4 carbons, alkoxy of 1–4 carbons or halogen; A is alkylene of 1–18 carbons, phenylene or naphthylene; and Y is sulfonyl or carbonyl, and thereafter shining exciting radiation on said surface.

3,892,973
MASK STRUCTURE FOR X-RAY LITHOGRAPHY

Gerald Allan Coquin; Juan Ramon Maldonado, both of Berkeley Heights, and Dan Maydan, Short Hills, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 15, 1974, Ser. No. 442,921
Int. Cl. G01n *21/34*
U.S. Cl. 250—505 **9 Claims**

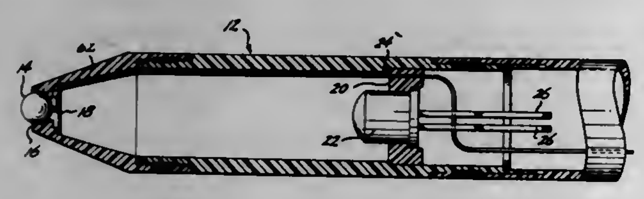


1. In combination in a mask structure, a dimensionally stable support member, an x-ray-transparent heat-treated film stretched over and bonded to said support member, and an x-ray-absorptive pattern disposed on said film.

3,892,974
UNITARY FLEXIBLE CIRCUIT FOR PEN READER

Larry P. Ellefson, and John Renn, both of Seattle, Wash., assignors to Interface Mechanisms, Inc., Seattle, Wash.

Filed Dec. 28, 1973, Ser. No. 429,656
Int. Cl. G01n *21/30*
U.S. Cl. 250—568 **12 Claims**



1. A circuit connection unit for use in an electro-optical reader for bar codes or the like, the reader having a cavity in which is positioned two elements, one element being a light source element and the other element being a light-detector element in a spaced coaxial relationship with a transparent member for focusing light emitted from the light source element on to a document being positioned at one end of said electro-optical reader, comprising in combination:

a plurality of flexible electrically conductive strips;

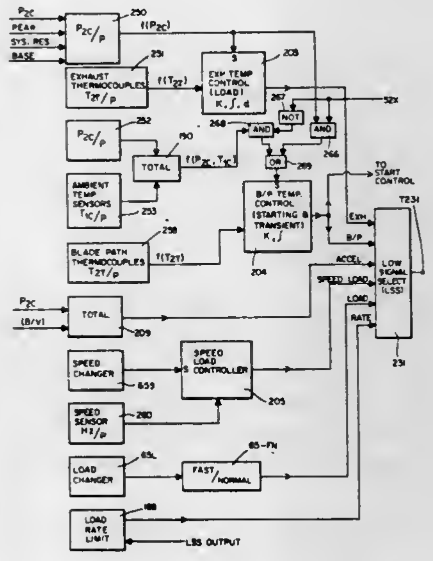
first means located in the vicinity of one end of the connection unit for connecting one of the elements in a predetermined spaced manner to more than one of said plurality of conductive strips, said first means being shaped so as to substantially conform to said cavity of said reader adjacent the transparent member, and having a configuration such that a substantial portion of light which passes through said transparent member also passes through said first means, said first means, when operatively positioned within said cavity, supporting said one element directly adjacent said transparent member;

second means spaced away from said first means a specified distance for connecting the other of said elements to more than one of said plurality of conductive strips; and flexible insulating means for maintaining said plurality of electrically conductive strips in a spaced relationship with each other, which circuit connection unit is inserted in the electro-optical reader to provide the spaced coaxial relationship between the light source element, the light-detector element and the transparent member.

3,892,975
GAS TURBINE POWER PLANT CONTROL APPARATUS HAVING IMPROVED MONITORING AND ALARM ELEMENTS

Robert A. Yannone, Aldan, and James J. Shields, Philadelphia, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed June 20, 1973, Ser. No. 371,630
Int. Cl. F02c *9/04*
U.S. Cl. 290—40 **10 Claims**

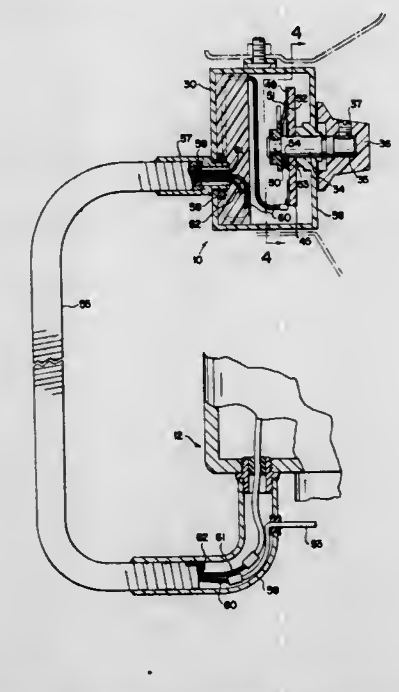


1. A gas turbine electric power plant comprising a gas turbine having compressor, combustion and turbine elements, a generator driven by said gas turbine, a fuel system for supplying fuel to said gas turbine combustion element, a control system having a plurality of control paths with inputs constantly connected to predetermined elements of said turbine and said generator, the output of said control system being connected to and continuously providing an output signal for operating said fuel system to energize said turbine, said control paths including a first plurality of primary control paths for developing a primary control signal for operating said fuel system during turbine startup, load and shutdown operations, and a second plurality of control paths for developing temperature backup control signals, each said backup control signal being a predetermined function of the temperature of a respective one of said turbine elements and at least one other turbine operating condition, said control system including means for selecting one of said backup signals as said control system output under predetermined turbine conditions, and means for continuously indicating which of said control paths is generating said selected signal.

3,892,976
AUTO THEFT PREVENTION DEVICE

Theodore L. Tsevdos, 28900 Gates Mills Blvd., Pepper Pike, Ohio 44124; Nicholas L. Tsevdos, 1031 W. Hill Mill Dr., Highland Heights, Ohio 44143, and Milton D. Tenenbaum, 3085 Lincoln Heights, Cleveland Heights, Ohio 44118

Filed May 20, 1974, Ser. No. 471,557
Int. Cl. H02g *3/00*
U.S. Cl. 307—10 AT **6 Claims**



1. In a security system for a motor vehicle electrical circuit including a lock switch assembly electrically connected between two essential circuit elements of said circuit, the improvement which comprises a cable consisting of a plurality of discrete identical insulated conductors including a first group connected between one of said essential circuit elements and said lock switch, a second group connected between the other of said essential circuit elements and said lock switch, and a third group connected to ground whereby if said cable is cut the conductors of said groups are indistinguishable from one another.

3,892,977
SWITCHABLE HIGH VOLTAGE POWER SUPPLY

Meade Goodman Bierly, Elizabethtown, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 327,273, Jan. 29, 1973, abandoned. This application June 7, 1974, Ser. No. 477,386
Int. Cl. H02j *3/00*
U.S. Cl. 307—77 **6 Claims**

1. A variable high voltage power supply comprising,

first and second voltage sources,

a first switch means including at least one semiconductor for connecting the first voltage source to the load when energized,

a second switch means including at least one semiconductor for connecting the first and second sources in series with the load when energized,

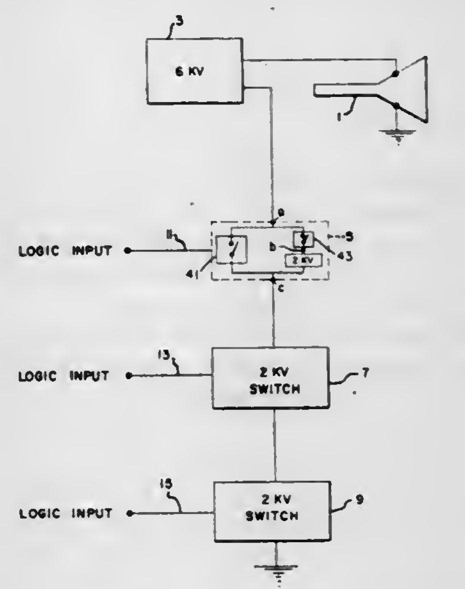
a source of oscillation,

a pair of transformer primary windings,

a pair of switches operative when rendered conductive, to apply the oscillations to the respective windings through unidirectional conducting means,

and control means for rendering one of the switches conductive and simultaneously rendering the other of the switches non-conductive,

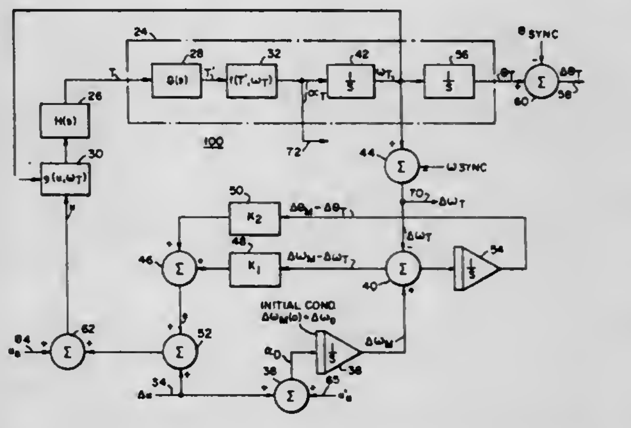
the semiconductors of the first and second switch means being each provided with a respective secondary winding of the transformer connected between their control electrodes to control the energization.



3,892,978
APPARATUS AND METHOD FOR AUTOMATICALLY GUIDING A DRIVEN GENERATOR INTO SYNCHRONIZATION WITH A POWER SYSTEM

Paul H. Haley, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 26, 1974, Ser. No. 464,609
Int. Cl. H02j *3/42*
U.S. Cl. 307—87 **6 Claims**



1. In an electric power plant having a gas turbine driven generator, a control system for operating the turbine and, in particular, for controlling the fuel flow thereto, and a breaker system for connecting the generator to an external power system, apparatus for automatically guiding the generator into synchronization with the external power system, said apparatus comprising:

a. means for sensing at an initializing point when the turbine has reached a predetermined angular velocity which is different than the angular velocity at synchronization;

b. means for determining, responsive to said means for sensing and actuable thereby, a constant acceleration value which will cause any difference in phase angle and angular velocity of the generator at the initializing point and at a projected point of synchronization to simultaneously reach zero;

c. means for generating a control signal comensurate with said determined constant acceleration value and for applying said control signal to the turbine fuel flow control to cause it to accelerate at said determined constant value; and

d. means for generating a breaker actuation signal, coupled to the breaker, when the angular velocity of the turbine becomes equal to the product of said determined constant acceleration value and the time required to close the breaker.

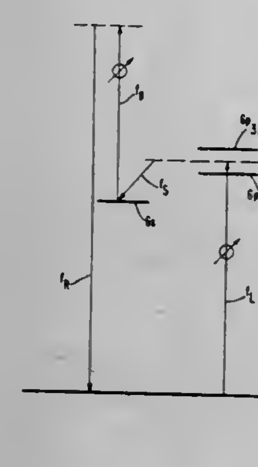
3,892,979
TUNABLE INFRA RED/ULTRAVIOLET LASER

Rodney T. Hodgson, Somers; John R. Lankard, Mahopac; Peter P. Sorokin, White Plains, and James J. Wynne, Montrose, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 343,307, March 21, 1973, Pat. No. 3,816,754. This application Apr. 5, 1974, Ser. No. 458,144

Int. Cl. H02m *5/04*

U.S. Cl. 307—88.3 **4 Claims**



1. A generator of coherent ultraviolet light comprising

a first laser for producing a first beam of radiation at a first frequency f_L,

a nonlinear material having a given energy state above ground level which is connected by a Raman-type process to the ground level, said material being transparent to ultraviolet light,

means for directing said first beam into said material so as to create stimulated Raman scattering at a second frequency f_S equal to the difference between the first frequency and that frequency corresponding to the energy difference between said given energy state and said ground level,

a second laser for producing a beam at a third frequency f_p, frequency f_p corresponding to a higher energy state than that energy state associated with frequency f_L, and

means for directing said first frequency and third frequency beams into said material whereby all said frequencies mix together to produce a fourth frequency f_R in the ultraviolet region, whereby $f_R = f_p + f_L - f_S$.

3,892,980
RELEASABLE SKI BINDING DEVICE

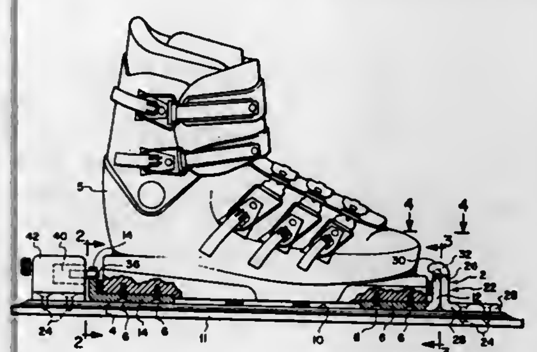
Gary Anderson, 1280 Glen Haven Dr., San Jose, Calif. 95129

Filed Oct. 24, 1973, Ser. No. 409,182

Int. Cl. H01h *35/00*

U.S. Cl. 307—116 **10 Claims**

1. A release system responsive to pressure changes comprising a pressure sensing means capable of transmitting a signal in response to a pressure change, a learning level means for setting a variable pressure release threshold point, said threshold point being based on past signals received from said pressure sensing means, and a release means actuatable by a signal received from said pressure sensing means which exceeds said pressure release threshold point.



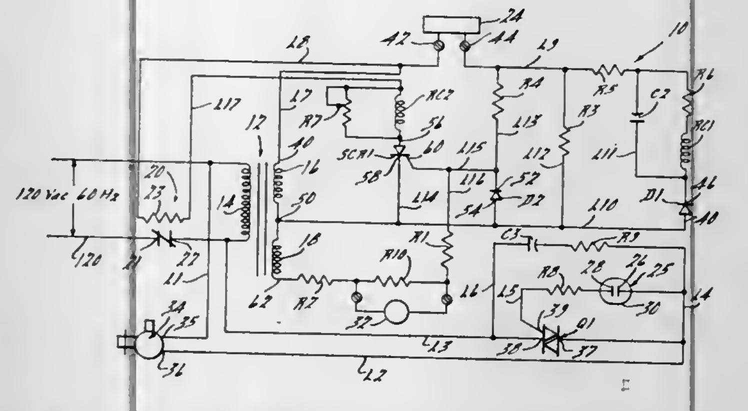
3,892,981
ELECTRICAL PRIMARY CONTROL SYSTEM FOR FURNACES

Frederick T. Bauer, Holland, Mich., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Dec. 4, 1973, Ser. No. 421,557

Int. Cl. H01h *37/00*

U.S. Cl. 307—117 **10 Claims**



1. In an electrical primary control system for furnaces, the combination including burner control means adapted to be connected to a furnace burner connected to a main line source of AC current, a low voltage control circuit including burner ignition detection means and energy conversion means, means providing a substantially lower voltage than line voltage in said control circuit, means in said low voltage control circuit including solid state means effective to actuate said burner control means in response to a signal from said ignition detection means, electrical switch means controlled by said energy conversion means and effective to interrupt the flow of current through said main line source of AC current, and means including a reed switch interfacing between said low voltage control circuit and said burner control means, said electrical switch means comprising a housing means, a pair of movable spring switch blades carried by said housing means and respectively having contact means normally placed out of contact with each other by the normal bias of said switch blades, a pair of cams rotatably carried by said housing means and being respectively engageable with said switch blades, one of said cams when in one position relative to said housing means being adapted to hold its respective switch blade into electrical contact with the other switch blade to complete an electrical circuit therebetween, the other of said cams when in one position thereof relative to said housing means being adapted to hold its respective switch blade out of contact with the other switch blade even though said one cam is in its said one position thereof to thereby prevent completion of said electrical circuit, a movable actuator means including an actuator carried by said housing means and being adapted to simultaneously engage said cams and move the same to said respective one positions thereof, and latch means for holding said one cam in said one position thereof.

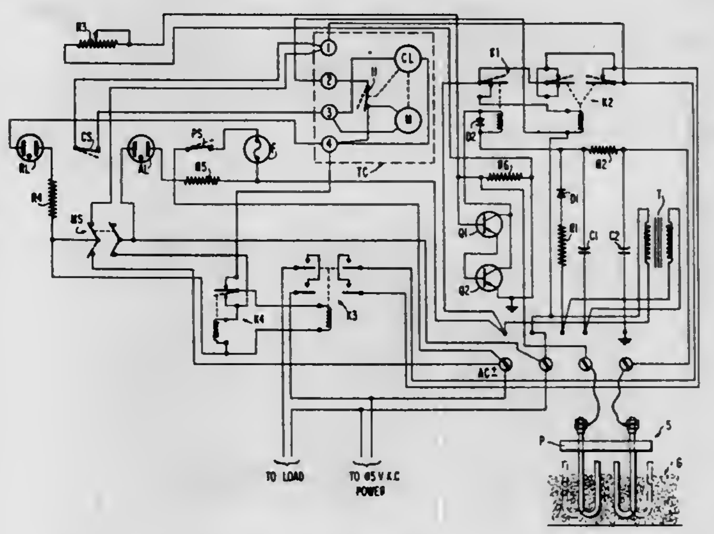
3,892,982
HYDROPONIC NUTRIENT FEEDING CONTROL SYSTEM

Floyd W. Holmes, 7302 Rolliston St., Jacksonville, Fla. 32208

Filed Jan. 29, 1974, Ser. No. 437,688

Int. Cl.² A01G *31/00;* **F16K** *21/18*

U.S. Cl. 307—118 **9 Claims**



1. In a hydroponic feeding system having a plant bed, container means for liquid nutrient solution and solution forcing means for forcing said solution into said bed, the improvement comprising, in combination: an electrolytic sensor at least partially embedded in said bed for producing current signals representative of moisture content of said bed, a presettable timer means having its output coupled to said solution forcing means for controlling same, and circuit means having its input coupled to said electrolytic sensor and being responsive to signals therefrom for producing at its output a control signal in response to a signal from said electrolytic sensor indicative of a need for nutrient feeding, said circuit having its output coupled to said presettable timer means for supplying its control signal thereto to cause said electrolytic timer means to feed solution to said bed for a preselected time period each time said electrolytic sensor detects a need for nutrient feeding, whereby the initiation of a feeding cycle and its duration are separably and independently controlled.

3,892,983
SWITCHING CIRCUIT

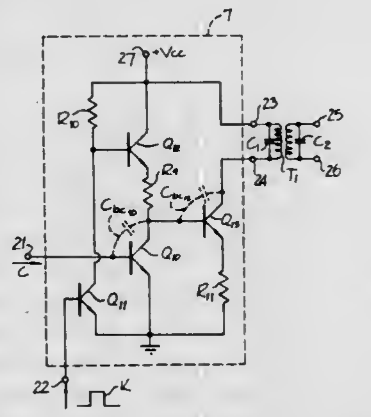
Takashi Okada, and Isa Nakamura, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sept. 21, 1973, Ser. No. 399,305

Claims priority, application Japan, Sept. 22, 1972, 47-110349

Int. Cl. H03k *17/60;* **H03f** *1/00*

U.S. Cl. 307—254 **6 Claims**



1. A switching circuit for an informational signal comprising: information signal input terminal means; information signal output terminal means; a first semiconductor amplifier device having an input electrode connected to said information signal input terminal means and an output circuit controlled by the information signal applied to said input electrode; switching signal input terminal means to receive a switching signal capable of shifting between an OPEN level and a CLOSED level; a switching semiconductor device having an input electrode and an output circuit controlled thereby; an output load impedance connected in a series circuit between said output circuit of said first semiconductor amplifier device and said output circuit of said switching semiconductor device; first and second voltage supply terminals connected to the opposite ends of said series circuit; circuit means connecting said switching signal input terminal means with said input electrode of said switching semiconductor device including a second switching semiconductor device having an input electrode connected to said switching signal input terminal means and an output circuit controlled by said switching signal to form a low impedance path between said input electrode of the first-named switching semiconductor device and said second voltage supply terminal when said switching signal reaches said OPEN level so that said output circuit of said first-named switching semiconductor device is conductive when said switching signal is at said CLOSED level and non-conductive when said switching signal is at said OPEN level; a second semiconductor ammplifier device having an input electrode and an output circuit connected to said information signal output terminal means and being controlled by the voltage applied to the respective input electrode; and circuit means connecting said input electrode of said second semiconductor amplifier device to said series circuit between said output load impedance and said output circuit of said first semiconductor amplifier device so that said output circuit of the second semiconductor amplifier device is conductive only when said output circuit of said first-named switching semiconductor device is conductive.

3,892,984
REGENERATING CIRCUIT IN THE FORM OF A KEYED FLIP-FLOP

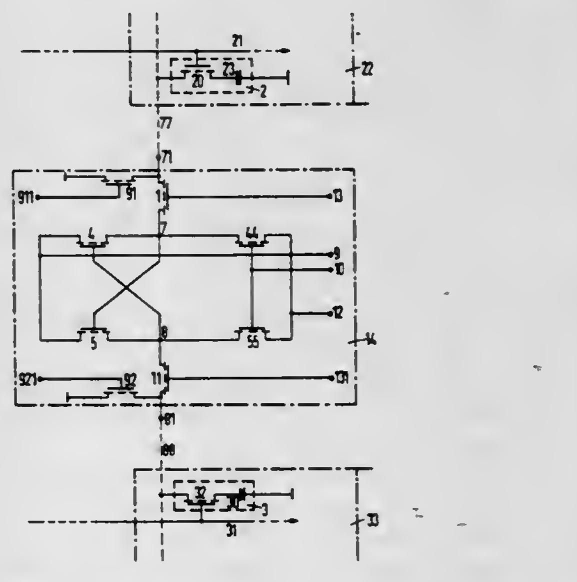
Karl-Ulrich Stein, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Feb. 13, 1974, Ser. No. 442,084

Claims priority, application Germany, Feb. 23, 1973, 2309192

Int. Cl. H03k *3/286, 3/33;* **G11c** *7/00*

U.S. Cl. 307—279 **7 Claims**



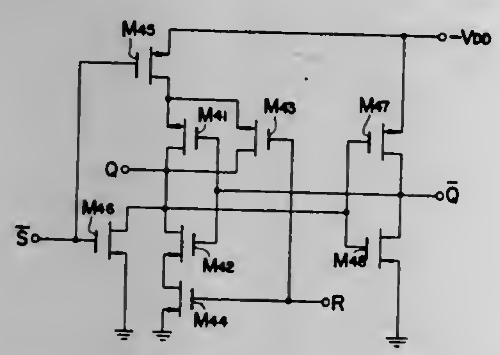
1. A regenerating circuit in the form of a keyed flip-flop for binary signals, in particular for the readout signals of integrated single-transistor storage elements forming a storage field in which the single-transistor storage elements are connected over a digit line to the flip-flop, characterized in that the regenerating circuit comprises at least two inverting amplifier stages with feedback, at least one barrier transistor disposed at the signal input between the associated digit line and

the corresponding amplifier stage, means for selectively effecting a discontinuance of the feedback function and means for selectively adjusting bias potentials at the inputs of the regenerating circuit.

3,892,985
SET-PREFERRING R-S FLIP-FLOP CIRCUIT

Hiroto Kawagoe, Tokyo, Japan, assignor to Hitachi, Ltd., Japan

Filed Mar. 11, 1974, Ser. No. 450,190
Claims priority, application Japan, Mar. 9, 1973, 48-27092
Int. Cl. H03k *3/286, 3/33*
U.S. Cl. 307—279 **10 Claims**

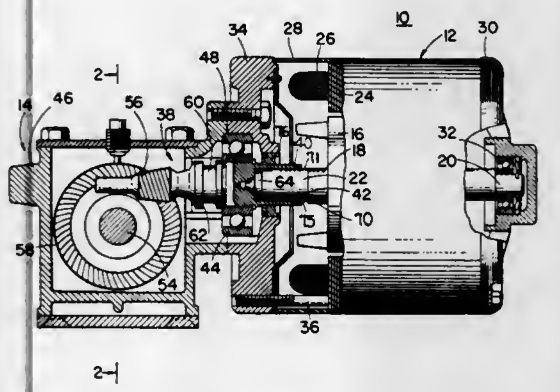


1. A set-preferring R-S flip-flop circuit comprising:
- a first inverter circuit which includes
  - first, third and fifth transistors of the same first conductivity type, each having an input electrode, an output electrode and a control electrode,
  - second, fourth and sixth transistors, of the same second conductivity type which is opposite to that of said first, third and fifth transistors, each having an input electrode, an output electrode, and a control electrode,
  - said first and third transistors having their input and output electrodes connected in parallel,
  - said fifth transistor being connected in series with said parallel-connected first and third transistors between a first power source terminal and a first output terminal; said sixth transistor being connected in series between said first output terminal and a second power source terminal;
  - said second and fourth transistors being connected in series between said first output terminal and said second power source terminal;
- a second inverter circuit which includes
  - a seventh transistor of said first conductivity type and an eighth transistor of said second conductivity type, each having an input electrode, an output electrode, and a control electrode;
  - said seventh transistor being connected in series between a second output terminal and said first power source terminal;
  - said eighth transistor being connected in series between said second output terminal and said second power source terminal;
- first means for coupling the output of said first inverter circuit to the control electrodes of said seventh and eighth transistors;
- second means for feeding-back the output of said second inverter circuit to the control electrodes of said first and second transistors; and
- third means for applying a reset input signal to the control electrodes of said third and fourth transistors and a set input signal to the control electrodes of said fifth and sixth transistors, so as to make said flip-flop circuit have a function that when said fifth and sixth transistors are respectively non-conductive and conductive, said flip-flop circuit is in a set state irrespective of the reset input signal, and when said fifth and sixth transistors are respectively conductive and nonconductive, said flip-flop circuit remains in the previous state thereof or is in a reset state in accordance with the conductive or nonconductive state of said third and fourth transistors which operate complementarily.

3,892,986
GEARMOTOR WITH REMOVABLE PINION

Howard G. Allen, Roselle, N.J., assignor to General Electric Company, Schenectady, N.Y.

Filed Sept. 20, 1973, Ser. No. 399,263
Int. Cl. H02k *15/00*
U.S. Cl. 310—42 **4 Claims**

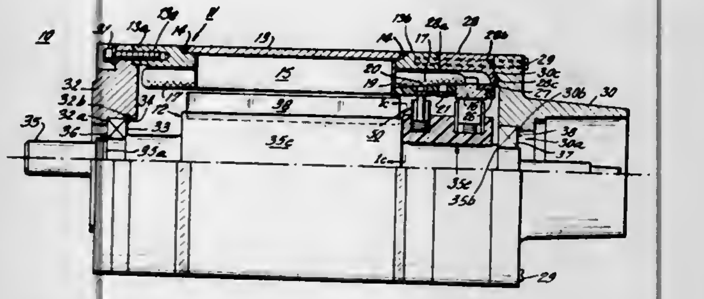


1. A gearmotor assembly including a motor having a stator assembly and a rotor assembly including a shaft having first and second portions; bearing means rotatably supporting said rotor assembly; power transmitting means including an input gear coaxially connected with said shaft; a gear box having output gear means; said input gear meshing with said output gear means; said power transmitting means being assembled with said shaft, and being provided with abutment means adapted for use when removing said power transmitting means from said shaft; said power transmitting means includes a pinion and pinion shaft, and the abutment means comprises a shoulder of greater diameter than said pinion shaft.

3,892,987
COMMUTATING METHOD AND APPARATUS FOR DC PERMANENT MAGNET MACHINES

Samuel Noodleman, Blacksburg, Va., assignor to Kollmorgen Corporation, Hartford, Conn.

Filed Jan. 30, 1974, Ser. No. 437,907
Int. Cl. H02k *37/00*
U.S. Cl. 310—46 **9 Claims**



1. Switching apparatus for a machine responsive to a source of DC power and having interacting rotor and stator assemblies which rotate relative to each other, the rotor having at least a two-pole permanent magnet structure for creating a magnetic field and the stator having a winding with a plurality of energizeable coils arranged at spaced intervals around the stator, said coils having an array of commutator bars associated therewith for supplying electrical power thereto for progressively creating magnetic fields in said stator which interact with those in said rotor, said apparatus comprising:

a. first and second spaced conductive rings associated with said stator, said conductive rings being positioned proximate said commutator bars;

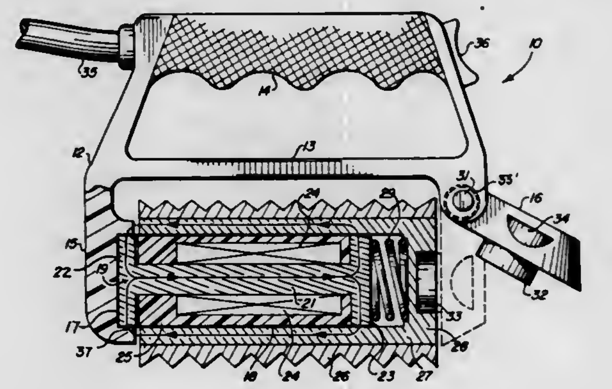
b. means for respectively coupling each of said conductive rings to opposite polarities of said DC source; and

c. first and second actuating means associated with said rotor, said first and second actuating means being adapted to progressively and sequentially electrically couple said first and said conductive rings to the commutator bars during the relative rotation so as to momentarily and progressively couple each coil to both polarities of said source and to couple each subsequent coil across said source before the preceding coil is decoupled from said source.

3,892,988
HAND-HELD MULTI-PURPOSE ELECTRIC MEAT TENDERIZER

William M. Gran, 3030 N. 7th St., Phoenix, Ariz. 85014

Filed Feb. 27, 1974, Ser. No. 446,126
Int. Cl.^{2} H02K *7/14;* **B25F** *1/00;* **A22C** *9/00*
U.S. Cl. 310—50 **5 Claims**

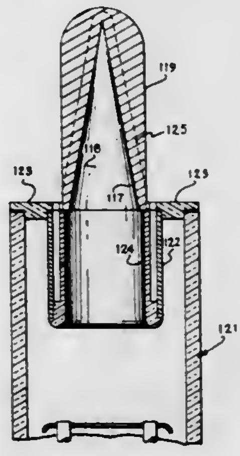


1. A hand-held electric appliance for producing reciprocating motion of a work head comprising in combination:
- a frame defining a handle for holding the appliance by one hand of the user,
- a reciprocating work head mounted on said frame,
- said work head comprising a sleeve rotatably mounted on said frame,
- drive means mounted on said frame for reciprocating said work head,
- spring means mounted on said frame for biasing said head against the reciprocating action of said drive means,
- said drive means being intermittently connected to said work head and comprising a vibrator,
- and means for connecting said vibrator to a source of alternating current,
- said vibrator reciprocating said work head longitudinally of the axis of said sleeve,
- said frame comprising a pair of spaced bearing means for rotatably mounting the opposite ends of said sleeve,
- one of said pair of bearing means being hingedly mounted for pivotal movement to permit the insertion and removal of said sleeve from between said bearing means,
- said sleeve being rotated manually by the user moving the appliance along a surface while said sleeve is vibrated longitudinally of its longitudinal axis.

3,892,989
CONVERGENT FLOW HOLLOW BEAM X-RAY GUN CONSTRUCTION

Nicholas M. Gralenski, Aptos; George Wada, Palo Aho, and David J. Bates, Los Altos, all of Calif., assignors to Watkins-Johnson Company, Palo Alto, Calif.

Division of Ser. No. 122,065, March 8, 1971, Pat. No. 3,751,701. This application May 9, 1973, Ser. No. 358,667The portion of the term of this patent subsequent to Aug. 7, 1990, has been disclaimed.
Int. Cl. H01j *35/14, 35/30*
U.S. Cl. 313—59 **4 Claims**



1. In an X-ray generating device of a type employing an evacuated enclosure and a target of material disposed therein to be struck by high energy electrons to develop X-rays, the improvement comprising a cathode having an electron-emitting portion adapted to be charged negatively with respect to said target to create an annular, hollow beam of electrons for impinging upon said target, said target being formed with a closed conical surface, said surface converging in a direction leading away from said cathode, means responsive to a potential applied thereto for focusing said beam onto said surface, a control element and means coupled to said control element for continuously varying the potential thereof to cause said flow of electrons to cause said annular beam to impinge upon said surface with a varying diameter in response to variations in said potential of the last named means, and a window formed to pass X-rays out of said enclosure axially of said beam.

3,892,990
BROMINE-QUENCHED HIGH TEMPERATURE G-M TUBE WITH PASSIVATED CATHODE

Nicolas Mitrofanov, Cleveland, Ohio, assignor to Kewanee Oil Company, Bryn Mawr, Pa.

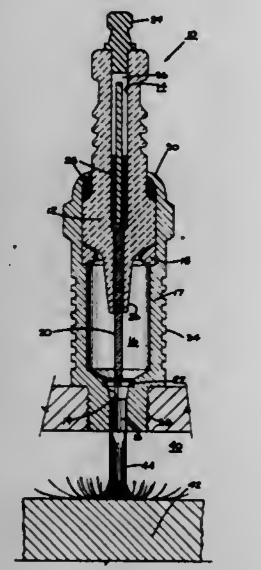
Filed July 31, 1972, Ser. No. 276,693
Int. Cl. H01j *9/38*
U.S. Cl. 313—93 **4 Claims**

1. In a method for increasing the high temperature operability of a Geiger-Mueller counter, comprising a relatively large surface area cathode sealingly confined in a chamber, wherein said chamber is filled with a halogen gas containing saturation gas and subjected to an electrical discharge to cause said halogen to be absorbed by said cathode surface, wherein said gaseous material is purged from said chamber and replaced with a sealing gas including at least some of said halogen gas, the improvement consisting of electro-depositing a coating of chromium, platinum, or a predominantly nickel-containing alloy less than about 1 mil thick upon said cathode surface, contacting said coating with an oxygen-containing gas, saturating the cathode surface with halogen gas until the saturation end-point is reached, purging the saturation gas, filling said chamber with a sealing mixture containing said halogen gas, pressurizing said chamber to a pressure in the range from about 100 to 500 mm. Hg. abs., reading the starting voltage, repeating said pressurizing of said chamber over a period of

several days and reading the starting voltage after each repressurization until the starting voltage read is essentially constant, and then sealing said chamber so as to provide a passivated cathode surface and to extend the operating life of said counter.

3,892,991
STRATICHARGE INJECTOR SPARK PLUG

Don C. Joslyn, 4732 Millcove Dr., Orlando, Fla. 32809
Filed July 1, 1974, Ser. No. 484,713
Int. Cl.^{2} H01T *13/20*
U.S. Cl. 313—138 **9 Claims**



1. A spark plug comprising;

an insulating member;

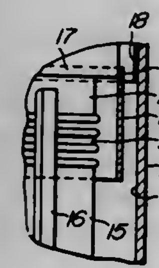
a precombustion chamber communicating with one end of the said insulating member, said precombustion chamber including an elongated, substantially cylindrical orifice extending therefrom, said orifice having a sufficient length so as to provide a concentrated, narrow flame injection therefrom during operation of said spark plug,

a ground electrode about the junction between said chamber and said orifice; and

an electrode rod extending centrally through said member and said precombustion chamber, said rod bearing closest to said precombustion chamber adjacent said ground electrode.

3,892,992
COLOUR PICTURE TUBES

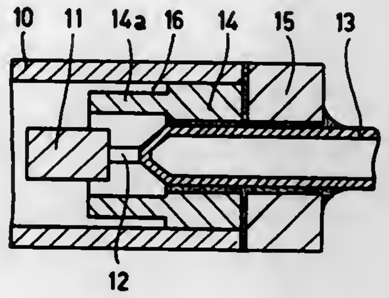
Tomic Ishizuka, Mobara-shi, Japan, assignor to Hitachi, Ltd., Japan
Continuation of Ser. No. 591,331, Nov. 1, 1966, which is a continuation-in-part of Ser. No. 514,577, Dec. 17, 1965, abandoned. This application Aug. 1, 1968, Ser. No. 756,338
Claims priority, application Japan, Dec. 21, 1964, 39-2364; Jan. 14, 1966, 41-98316
Int. Cl. H01j *29/02, 29/56*
U.S. Cl. 313—414 **7 Claims**



1. A color picture tube comprising an envelope having a neck portion, three electron guns embraced in said neck portion of said picture tube for generating respective electron beams, each of said electron guns including a plurality of focusing grid electrodes supported with an interstice therebetween to form an electric focusing lens for a respective one of said electron beams, electro-conductive shielding plate means surrounding each interstice of said electric focusing lens and overlapping the opposing end portions of said focusing grid electrodes, means for supporting said electro-conductive shielding plate means so as to collectively and substantially surround all three electron guns as a group and be disposed out of direct contact with said tube neck portion, said electro-conductive shielding plate means uniformly having the same potential as that of one of said focusing grid electrodes thereby effectively electrostatically shielding said opposing end portions of said focusing grid electrodes and said interstice therebetween from said tube neck portion of said picture tube.

3,892,993
HIGH PRESSURE DISCHARGE LAMP

Abraham Timmermans, Eindhoven, Netherlands, assignor to U.S. Phillps Corporation, New York, N.Y.
Filed Jan. 22, 1974, Ser. No. 435,534
Claims priority, application Netherlands, Feb. 16, 1973, 7302172
Int. Cl. H01j *5/48, 5/50*
U.S. Cl. 313—318 **7 Claims**

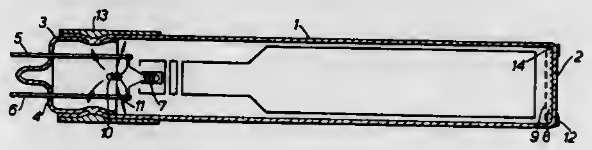


1. A high-pressure discharge lamp having a first electrode and a second electrode and an elongated cylindrical discharge tube having a filling which comprises a metal, said discharge tube having a wall which consists primarily of ceramic material, the first electrode being disposed at a first end of the discharge tube and the second electrode being disposed at a second end of the discharge tube, a wall defining a compartment between at least one of the electrodes and the adjacent end of the discharge tube, the compartment being in fluid communication with the part of the discharge tube in which the discharge is effected, said wall screening at least part of an adjacent electrode from the interior of said compartment, wherein the portion of wall of the compartment screening at least part of the electrode is made of ceramic material, said wall constituting a part of an entirely ceramic member which is secured to the wall of the discharge tube in a gastight manner.

3,892,994
VIDICON CAMERA TUBE WITH INTERNAL LIGHT SOURCE FOR SETTING DARK CURRENT LEVEL

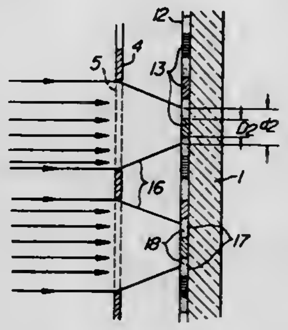
Hans Scholz, Essex, England, assignor to English Electric Valve Company Limited, Chelmsford, England
Filed May 13, 1974, Ser. No. 469,323
Claims priority, application United Kingdom, June 23, 1973, 29933/73
Int. Cl.^{2} H01J *29/45, 31/28*
U.S. Cl. 313—371 **9 Claims**

1. A camera tube of the vidicon type comprising an envelope, closed at one end to form the face of the tube, which includes a sidewall, the face of the tube, and a portion joining said sidewall and said face; a light source within said envelope for emitting light which is conducted via said sidewall and said portion to said face; a target disposed between said light source and said face and sufficiently close to said face so that some of the light is conducted into said face to illuminate the target and cause a small quiescent current to flow therein while some of the light is reflected at said portion of the envelope tending to impinge directly on the target and produce non-uniform illumination thereof; and suppression means provided at said portion for reducing the internal reflection which produces direct impingement of light on said target so as to result in a more uniform illumination of the target and to cause a more uniform quiescent current to flow therein.



3,892,995
POST-DEFLECTION ACCELERATION TYPE COLOR PICTURE TUBE

Eiichi Yamazaki, Ichihara, Japan, assignor to Hitachi, Ltd., Japan
Filed Sept. 16, 1970, Ser. No. 72,758
Claims priority, application Japan, Oct. 1, 1969, 44-77770
Int. Cl. H01j *29/32, 31/20*
U.S. Cl. 313—408 **2 Claims**



1. In a post-deflection acceleration type color picture tube including a glass bulb having a panel portion, a funnel portion and a neck portion, a phosphor screen disposed on the inner surface of a face plate of said panel portion, and a color selective electrode disposed just in front of said phosphor screen inside said glass bulb, the improvement comprising said phosphor screen being provided with phosphor dots which are smaller in diameter than the diameter of the focussed electron beams reaching said phosphor screen, wherein gaps between the adjacent phosphor dots on said phosphor screen are filled up with a non-luminescent black substance, and wherein the post-deflection accelerating voltage ratio between said phosphor screen and said color selective electrode is 1.5 – 3.0.

3,892,996
SELF-CONVERGING COLOR TELEVISION DISPLAY SYSTEM

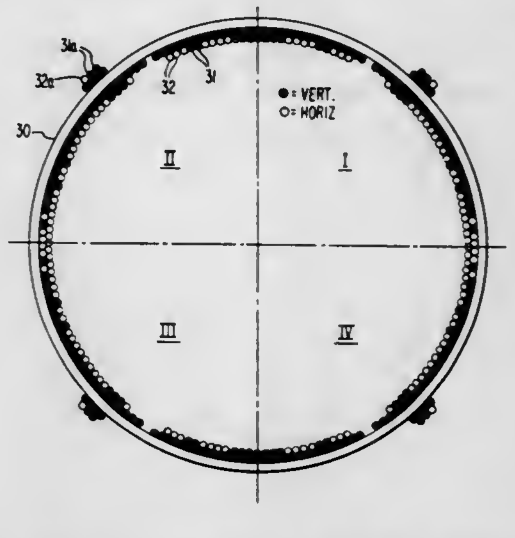
Albert Maxwell Morrell, Lancaster, Pa.; William Henry Barkow, Pennsauken, and Josef Gross, Princeton, both of N.J., assignors to RCA Corporation, New York, N.Y.
Continuation of Ser. No. 217,780, Jan. 14, 1972, abandoned. This application June 29, 1973, Ser. No. 374,831
Int. Cl. H01j *29/66, 29/76, 31/20*
U.S. Cl. 313—413 **20 Claims**

1. A color television display system, comprising:

a color television picture tube including a face-plate having deposited thereon groups of three different color phosphor elements forming a viewing screen, an electron beam gun assembly for producing three horizontal in-line electron beams lying in a plane substantially normal to said viewing screen and an aperture mask including a plurality of apertures in registry with said groups of phosphor elements, said electron beam gun assembly being selected for producing said three beams along three generally convergent lines extending toward the center of said viewing screen; and

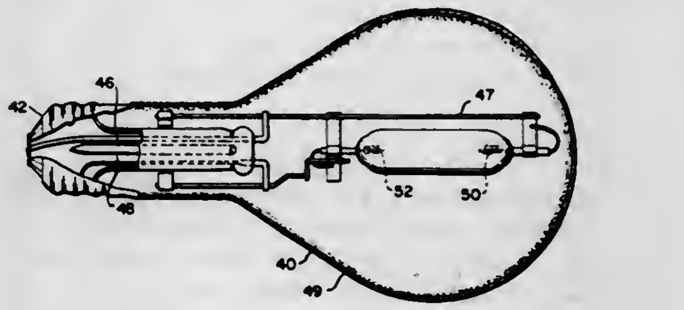
a deflection yoke comprising vertical and horizontal deflection coils disposed around said picture tube between said mask and said gun assembly for deflecting said beams for forming a raster on said viewing screen, the winding distribution of said deflection coils being selected for producing vertical positive isotropic astigmatism and negative horizontal isotropic astigmatism such that said beams are overconverged at the ends of the vertical axis of the raster and underconverged at the ends of the horizontal axis thereof;

said electron beam gun assembly including beam forming members for producing a spacing not greater than 0.200 inches between adjacent ones of said beams meaured in a plan located halfway between the ends of said yoke when said beams are substantially at the center of said screen.



3,892,997
ARC DISCHARGE LAMP FOR PRODUCING CONTROLLED ENERGY SPECTRUM

Luke Thorington, Berkeley Heights, and Louis J. Parascandola, North Bergen, both of N.J., assignors to Duro-Test Corporation, Fair Lawn, N.J.
Division of Ser. No. 37,433, May 14, 1970, Pat. No. 3,670,193, which is a continuation of Ser. No. 654,148, July 18, 1967, abandoned. This application Mar. 27, 1972, Ser. No. 238,325
Int. Cl. H01j *61/44*
U.S. Cl. 313—487 **10 Claims**



1. A high pressure arc discharge lamp for operation from a source of voltage comprising an envelope, a pair of electrodes for connection to said source of voltage and an ionizable material within said envelope, said electrodes and ionizable material producing an arc discharge which emits energy in both the visible light and ultraviolet range, and means interacting with the energy emitted by the arc discharge to modify the energy such that ultraviolet energy is transmitted through

the envelope in the middle range and near range respectively of between about 6 to 50 and 150 to 700 microwatts per lumen of the visible light transmitted through the envelope and with a radiant power ratio of near ultraviolet/middle ultraviolet in a range of between about 8 to 40.

3,892,998
GAS DISCHARGE DEVICE FOR MULTICOLOR INFORMATION DISPLAY

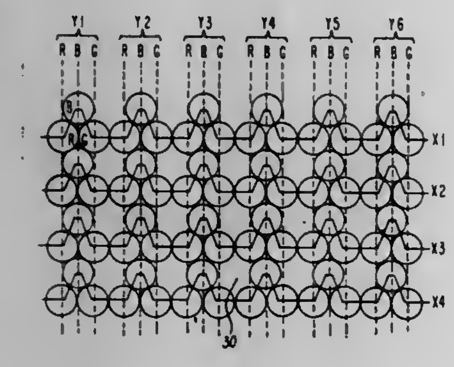
Frank Tsui, and Katherine Tsui, both of Boeblingen, Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 25, 1973, Ser. No. 410,009

Claims priority, application Germany, Oct. 25, 1972, 2252256

Int. Cl. H01j *61/08, 61/40, 1/74*

U.S. Cl. 313—487 **6 Claims**



1. A gas discharge device for a multicolor information display having a gas composition within a discharge chamber which can be excited into illumination by means of ionization, wherein
  - the opposing sides of said discharge chamber include first and second arrays of substantially parallel conductors,
  - said conductor arrays being disposed at an angle relative to each other,
  - the crossover points of respective conductors of said first and second arrays defining coordinate discharge cells, the improvement wherein
  - a single discharge chamber is provided for exciting the light emission for all basic colors and combinations thereof,
  - wherein the conductors of said first array are divided into associated groups of three conductors,
  - each of said three conductors being suitable for exciting one of three adjacent cells in one of the three basic colors, said second conductor array comprising a plurality of individual parallel conductors connected in a meandering configuration through the cells of associated groups of conductors, the coincident energization of a conductor from said first and second array producing discharge of the associated cell, said discharge producing a light emission corresponding to a selected color.

3,892,999
POWER SOURCE FOR ELECTRONIC FLAME DETECTION DEVICES AND THE LIKE

Bianchini Gianni, Reggio Emilia, Italy, assignor to Societa Italiana Elettronica S.p.A., Milan, Italy

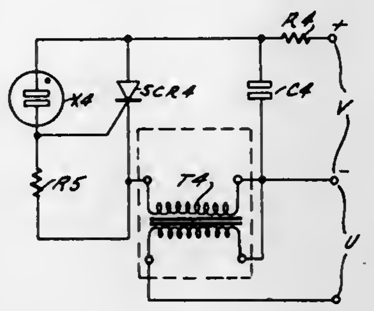
Filed Feb. 13, 1974, Ser. No. 442,105

Claims priority, application Italy, May 22, 1973, 24390/73

Int. Cl. H05b *41/36*

U.S. Cl. 315—149 **6 Claims**

1. In an electronic flame detection device, having normally non-conducting ionization tube means, said tube means forming an ionization discharge therein responsive to the presence of an externally generated quantum of ultraviolet radiations within said tube means, a circuit for the polarization of said tube means comprising:
  - a source of direct current voltage having an output level chosen to lie between the level of spontaneous ignition of said tube means and the minimum triggering voltage of said tube means;
  - current limiting means coupled between said source and said tube means for rapidly extinguishing the discharge within said tube means due to ionization, thereby allowing a plurality of discharges to occur, each of said plurality of discharges signifying the presence of an additional quantum of ultraviolet radiations;



  - energy storage means coupled to said source for storing energy and adapted to be charged to a constant voltage; and means coupled to said storage means and said tube means for transferring the electrical energy stored by said storage means to an output line when said tube is ignited; the characteristics of said transfer means and said energy storage means being selected so as to prevent substantial parasitic periodic oscillations of the voltage across said tube means after its triggering.

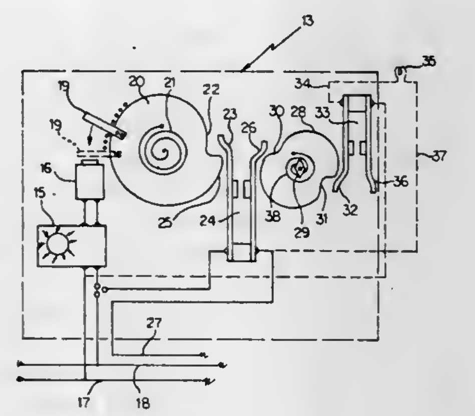
3,893,000
HIGHWAY LIGHTING SYSTEM

John Francis Guercio, 306 Throop St., North Babylon, N.Y. 11704

Filed Sept. 17, 1973, Ser. No. 397,933

Int. Cl. H05b *37/02, 39/04, 41/36*

U.S. Cl. 315—159 **2 Claims**



1. A highway lighting system for lighting a predetermined length of a highway for a predetermined time in response to the flow of trafic on said highway comprising:
  - a plurality of highway lights spaced sequentially apart from each other by a predetermined distanc[illegible]ong said highway,
  - circuit means connecting each of said highway lights in parallel electrical circuits,
  - power supply means including a first conductor electrically connected in said circuit means to each of said highway lights and a second conductor,
  - switch means connected between said circuit means and said second conductor and normally in an inactivated condition whereby said highway lights are normally off,
  - trip means operatively associated with said switch means and responsive to the passage of a vehicle past a predetermined point on said highway to activate said switch means to electrically connect said circuit means and said second conductor to turn on said highway lights, said trip means including an electric eye electrically connected to an electromagnet and being responsive to passage of a vehicle in front of said predetermined point to activate said electromagnet, cam means having an armature thereon attractable by said electromagnet when said electromagnet is activated and said switch means being operatively associated with said cam means and being activatable thereby when said armature is attracted to said electromagnet, and
  - timing means operatively associated with said trip means and said switch means for maintaining said switch means activated for a predetermined time after the passage of said vehicle beyond said predetermined point, said timing means including spring clock means connected to said cam means for maintaining said switch means activated a predetermined time after said armature is attracted to said electromagnet.

3,893,001
PULSED POWER SUPPLY CIRCUIT FOR A LIGHT-EMITTING DISCHARGE TUBE

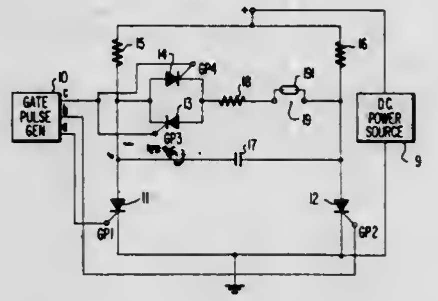
Tomoyuki Isono, and Tetsuo Ohmiya, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Dec. 19, 1973, Ser. No. 426,171

Claims priority, application Japan, Dec. 26, 1972, 47-693

Int. Cl. H05b *41/24*

U.S. Cl. 315—287 **3 Claims**



1. A pulsed power supply circuit for intermittently energizing a light emitting discharge tube, comprising:
  - first circuit means including first and second SCR's connected in parallel and first and second resistors connected respectively in series with said first and second SCR's, said first circuit means being connected to a DC power source;
  - second circuit means including third and fourth SCR's connected in parallel with their polarities reversed, said second circuit means being connected in series with said discharge tube between said first and second SCR's;
  - means for alternately triggering said first and second SCR's; a capaciter connected between said first and second SCR's; and
  - means for alternately triggering said third and fourth SCR's a predetermined time after the triggering of said first and second SCR's, respectively, thereby establishing an energizing circuit for said discharge tube.

3,893,002
SWITCH-CONTROLLED CONTINUOUSLY PROGRESSIVE DIMMER CIRCUIT

John Peter Woodnutt, 119 Cleveland St., London, England

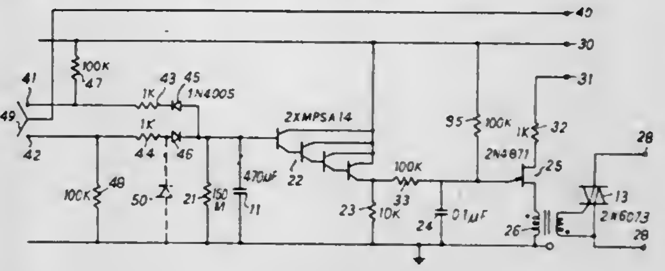
Filed Feb. 19, 1974, Ser. No. 443,387

Claims priority, application United Kingdom, Feb. 21, 1973, 8562/73

Int. Cl. H05b *37/02, 39/04*

U.S. Cl. 315—291 **15 Claims**

1. A dimmer circuit comprising:
  - output power control means adapted for connection in a power supply circuit of a lamp;
  - a storage capacitor;
  - conversion means connected to said storage capacitor and to said output power control means to cause said output power control means to set the power available to a lamp in whose power supply circuit the output power control means is connected, to a level dependent on te potential across said storage capacitor; and



  - manually-operable switch controlled charge-varying means connected to said storage capacitor and operable in a first mode to allow the charge on said storage capacitor to remain unaltered and in a second mode to cause progressive and continuous alteration of said charge at such a rate as to enable a user to progressively and continuously vary the brightness of said lamp to a required level by employing said second mode of operation and then to retain said level by switching to said first mode.

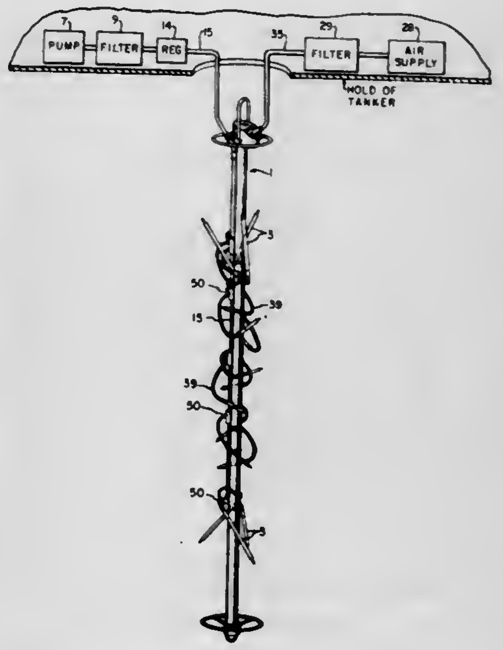
3,893,003
METHOD FOR REDUCING THE STRENGTH OF ELECTROSTATIC FIELDS IN AN OIL TANKER

Julian H. Dancy, Richmond, Va., assignor to Texaco Inc., New York, N.Y.

Filed Aug. 23, 1973, Ser. No. 390,803

Int. Cl. H05f *3/00*

U.S. Cl. 317—2 R **12 Claims**

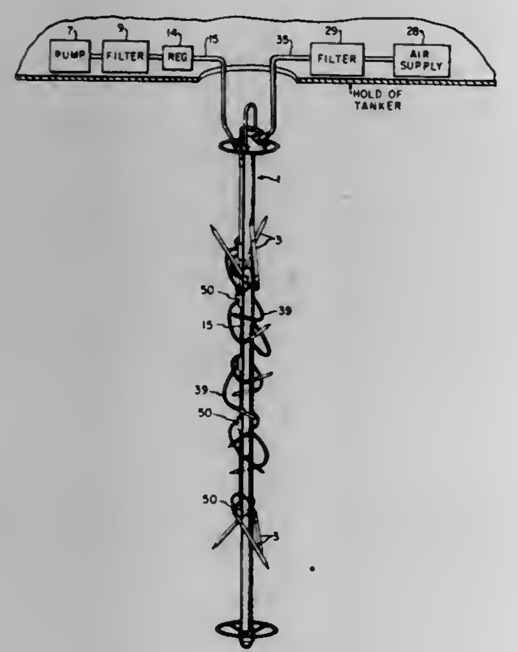


1. A method for reducing the strength of an electrostatic field in a substantially empty enclosed volume, which comprises the following steps of providing a supply of liquid at a predetermined pressure at a predetermined location in the substantially enclosed volume, converting the liquid to droplets to provide a mist, utilizing the electrostatic field to charge the droplets during the converting step to an opposite polarity to the polarity of the electrostatic field, and distributing the oppositely charged mist throughout the substantially enclosed volume so that the net strength of the electrostatic field is substantially reduced.

3,893,004
APPARATUS FOR REDUCING THE STRENGTH OF ELECTROSTATIC FIELDS IN AN OIL TANKER

Julian H. Dancy, Richmond, Va., assignor to Texaco Inc., New York, N.Y.

Filed Aug. 23, 1973, Ser. No. 390,801
Int. Cl. H05f *3/00*
U.S. Cl. 317—2 R **10 Claims**



1. Apparatus for reducing the strength of an electrostatic field in a substantially enclosed volume comprising means for providing a supply of liquid at a predetermined pressure at a predetermined location in the volume, means for converting the liquid to droplets to provide a mist, utilizing the electrostatic field to charge the droplets during the converting step to an opposite polarity to the polarity of the electrostatic field, and means for distributing the oppositely charged mist throughout the volume so that the net strength of the electrostatic field is substantially reduced.

3,893,005
HELICOPTER HOOK-UP AND STATIC ELECTRICITY GROUNDING DEVICE

Joseph G. Corbin, 5251 Alabama Ave., Camp Le Jeune, N.C. 28542

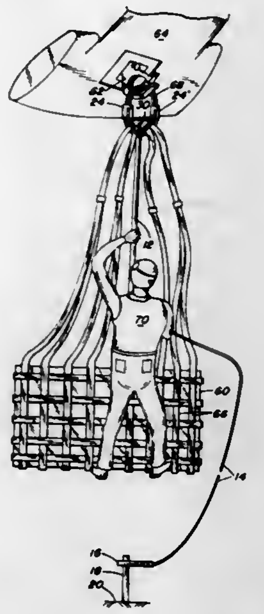
Filed June 27, 1974, Ser. No. 483,498
Int. Cl.^{2} H05F *3/02*
U.S. Cl. 317—2 E **10 Claims**

1. Grounded pole means for attaching a donut to an elevated hook, said donut having straps from a load-carrying sling coupled to it, comprising, in combination:

a hollow pole made from electrically non-conductive material and having top and bottom ends;

hook-up means attached to the pole at its top end for holding said donut and placing it on said helicopter hook, said hook-up means being made from electrically conductive material;

grounding means, attached to the pole at its bottom end, for grounding electrical discharges; and

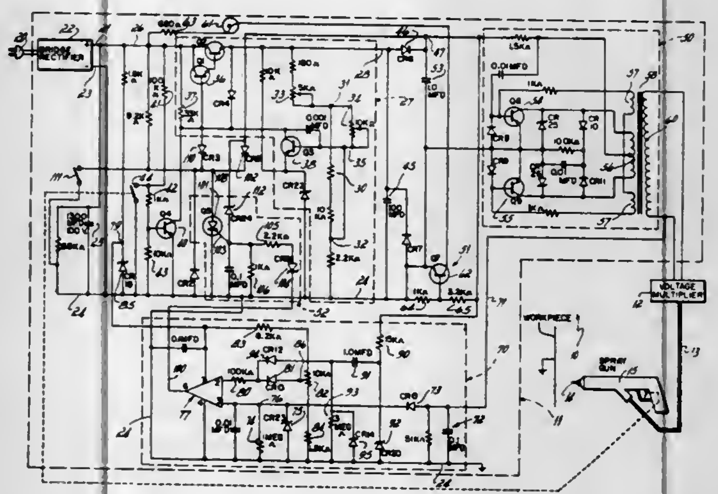


electrical connection means forming a conductive path between said hook-up means and said grounding means.

3,893,006
HIGH VOLTAGE POWER SUPPLY WITH OVERCURRENT PROTECTION

Harvey R. Algeri, North Olmsted; Ralph G. Bruening, Amherst; Robert E. Sandorf, West Richfield, and Fred A. Stillwell, Elyria, all of Ohio, assignors to Nordson Corporation, Amherst, Ohio

Filed Jan. 14, 1974, Ser. No. 433,262
Int. Cl.^{2} B05B *5/02;* H02H *7/122*
U.S. Cl. 317—3 **7 Claims**



2. A power supply for producing a very high DC voltage for application to a probe of an electrostatic spray gun from which electrostatically charged coating material is sprayed onto a directly electrically grounded object comprising, in combination:

a source of unregulated DC power including an output power lead and a common ground lead, said power lead having an unregulated voltage thereat relative to said common ground lead,

a voltage regulator circuit with a two wire power input, a control input and an output, one input wire of said regulator input being connected to said power lead and the other input wire of said series regulator being connected to said common ground lead, said voltage regulator circuit producing a regulated DC voltage at its output relative to said common ground lead when said control input is at a voltage higher than at said ground lead, said regulator including a turnoff means responsive to an externally generated turnoff signal applied to said control input for turning off said regulator thereby removing said DC voltage from said regulator output;

an inverter circuit with a two wire input and a two wire output, one said inverter circuit input wire is connected to said regulator output and the other inverter circuit input wire is connected to said common ground lead, said inverter circuit producing at its two wire output an intermediate AC voltage at a high frequency;

a voltage multiplier circuit with a two wire input and a single wire output, said two wire input of said voltage multiplier is connected to said inverter circuit two wire output, said voltage multiplier produces at its single wire output a very high DC voltage which is electrically connected to the spray gun probe for electrostatically charging coating material sprayed onto a directly electrically grounded object;

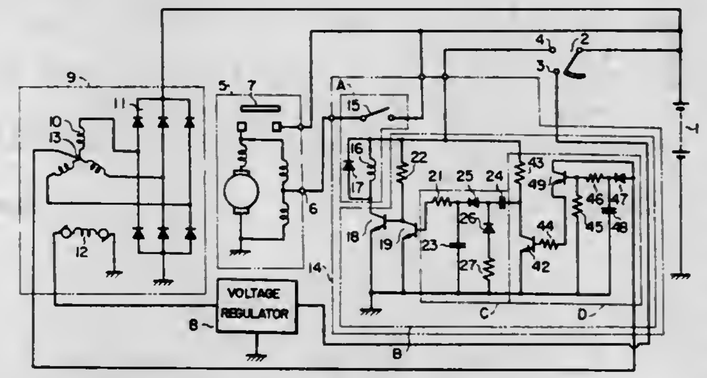
an overcurrent detector connected between one said input wire of said voltage multiplier circuit and said common ground lead to monitor ground return current from said voltage multiplier, said overcurrent detector producing an overcurrent signal at its output when the current flow from the voltage multiplier circuit to said common ground lead exceeds a predetermined selectable maximum value;

a power supply shutdown switch activated in response to said overcurrent signal for simultaneously a) generating and applying said turnoff signal to said turnoff means to thereby turnoff said regulator and b) short circuiting to said common ground lead said regulator output and said inverter circuit input to thereby inhibit power transfer from said DC source to said multiplier.

3,893,007
VEHICLE STARTER PROTECTIVE SYSTEM

Kazumasa Mori, Aichi, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed July 6, 1973, Ser. No. 377,033
Int. Cl. H02h *3/00*, *7/00*
U.S. Cl. 317—9 B **2 Claims**



1. A vehicle starter protective system operative in combination with an AC generator in a vehicle comprising:

a starter,

a battery positioned in said vehicle,

a key switch connected to said battery,

a starter relay having a relay coil and relay contacts positioned between said starter and said key switch,

a digital-to-analog converter means connected to said AC voltage generator for receiving the AC voltage generated by said AC generator for converting said AC voltage to a variable DC voltage,

switching means including a first and second transistor connected in a Schmidt trigger configuration for operating said starter relay in accordance with the output of said digital-to-analog converter, wherein said digital-to-analog converter includes

a capacitor charged in response to the voltage generated by said AC generator, said voltage having a frequency corresponding to the rotational rate of the rotor of said AC generator, and

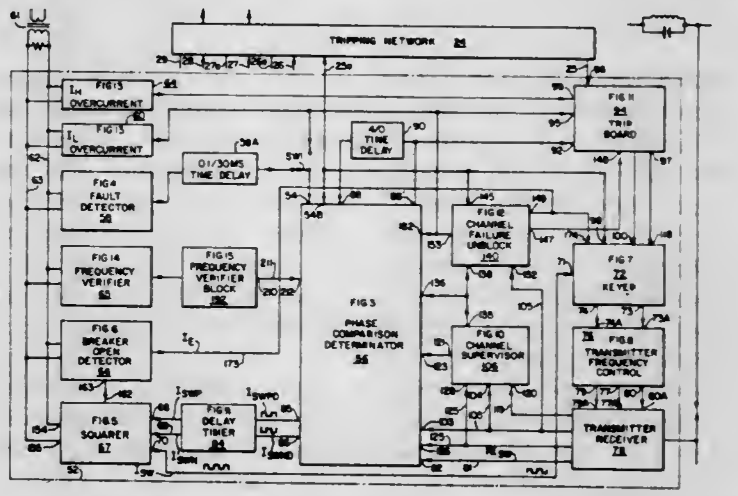
a resistor connected between said capacitor and the base terminal of said first transistor of said switching means, said capacitor and said resistor forming a delay means for maintaining the on-state of said first transistor for a fixed period of time after the rotational rate of said rotor falls below a predetermined level, and

a pulse generator connected between said digital-to-analog converter and the neutral point of said AC generator, said pulse generator including a smoothing circuit for filtering the signal of said neutral point to derive the average value thereof, a third transistor coupled to the output of said smoothing circuit and controlled by the filtered voltage of said smoothing circuit, and a fourth transistor connected to said third transistor, said fourth transistor being connected to said delay circuit.

3,893,008
SEGREGATED PHASE COMPARISON RELAYING APPARATUS

William A. Strickland, Jr., Livingston, and Walter L. Hinman, Jr., New Providence, both of N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 295,031, Oct. 4, 1972, abandoned. This application Oct. 2, 1973, Ser. No. 402,687
Int. Cl. H02h *7/26*, *3/28*
U.S. Cl. 317—27 R **29 Claims**


TRIPPING NETWORK
FIG 13 OVERCURRENT
FIG 13 OVERCURRENT
OI/30MS TIME DELAY
A/O TIME DELAY
FIG 11 TRIP BOARD
FIG 4 FAULT DETECTOR
FIG 12 CHANNEL FAILURE UNBLOCK
FIG 14 FREQUENCY VERIFIER
FIG 15 FREQUENCY VERIFIER BLOCK
FIG 3 PHASE COMPARISON DETERMINATOR
FIG 7 KEYER
FIG 6 BREAKER OPEN DETECTOR
FIG 10 CHANNEL SUPERVISOR
FIG 8 TRANSMITTER FREQUENCY CONTROL
FIG 5 SQUARER
FIG 9 DELAY TIMER
TRANSMITTER RECEIVER

1. Protective relay apparatus for protecting an n phase alternating potential transmission line having n phase conductors, said apparatus comprising a breaker actuating network having n input means, an individual breaker controlling network for each of said n input means of said actuating network, said controlling networks being individually associated with said phase conductors, each of said controlling networks including a conductor fault sensing device and a current sensing device connected to be associated with the phase conductor with which said controlling network is associated, each of said controlling networks including an intelligence handling device, each of said intelligence devices having an intelligence receiving portion and an intelligence transmitting portion, each said network including first circuit means interconnecting its said fault sensing device between its said current sensing device and with its said intelligence handling device, said first circuit means being effective in the absence of the sensing of a conductor fault by its associated said fault sensing device to actuate its associated said transmitter portion to establish a transmitted guard signal, each said controlling network including a phase comparing portion and a second circuit means interconnecting its associated said comparing portion to its said current sensing device and said receiving portion of its said intelligence handling device, each said receiving portion being effective to provide a pulsing signal to its associated said comparing portion through its associated said second circuit means when receiving a remote pulsing input signal and to provide a remote guard signal to its associated said

controlling network when its said receiving portion is receiving a remote guard signal, each of said current sensing device being effective to energize its associated said comparing network with a local pulsing input signal through its associated said second circuit means, each said controlling network being effective to render its said comparing portion ineffective to actuate its associated said breaker actuating network when its said receiving portion is supplying its said remote guard signal.

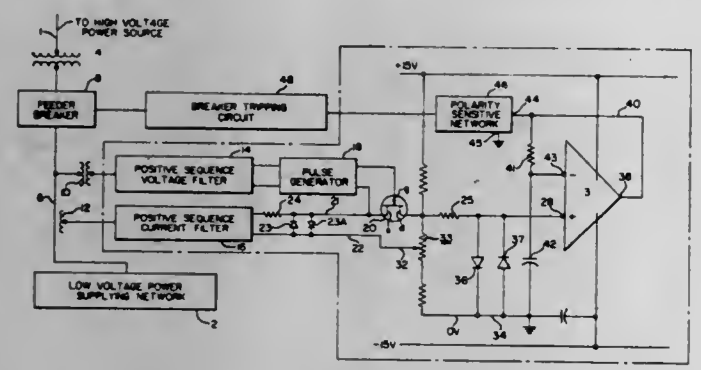
3,893,009
REVERSE POWER FLOW RELAY

John D. Watson, Bognor Regis, England, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 16, 1974, Ser. No. 433,957

Int. Cl. H02h *3/26, 3/38*

U.S. Cl. 317—43 **10 Claims**


TO HIGH VOLTAGE POWER SOURCE
4
8
FEEDER BREAKER
48
BREAKER TRIPPING CIRCUIT
+15V
46
POLARITY SENSITIVE NETWORK
44
40
45
14
18
POSITIVE SEQUENCE VOLTAGE FILTER
PULSE GENERATOR
41
43
3
38
6
10
12
POSITIVE SEQUENCE CURRENT FILTER
24
25
28
23
23A
20
16
22
33
32
37
42
36
LOW VOLTAGE POWER SUPPLYING NETWORK
2
0V
34
-15V

1. A power flow direction relay for a power transmitting circuit, said relay comprising: first and second input circuits and an output circuit, said input circuits being energized with first and second alternating quantities representative of the current and voltage in said power circuit, a first switching device having a main circuit and a control circuit for initiating a change in the conductive condition of said main circuit, a pulse generator, first circuit means connecting one of said input circuits to said control circuit of said switching device and including said pulse generator, second circuit means connecting the other of said input circuits to said output circuit and including said main circuit of said switching device, said pulse generator being effective to actuate said control circuit to initiate a change in the conductive condition of said main circuit solely during a predetermined time interval in degrees of the one alternating quantity which energizes said one input circuit,

said output circuit including a high gain amplifier and a feedback circuit, said feedback circuit including a timing network, said timing network comprising a primarily reactive device and a primarily resistive device, said timing network having a time constant substantially greater than said predetermined time interval, said second circuit means connecting said other input circuit through said main circuit of said switching device to the input of said amplifier.

3,893,010
SAMPLING SYSTEM FOR PROCESSING TEXTILE MATERIAL IN A WET CONDITION

Kazutomo Ishizawa, Osaka; Takahuni Akashi, Kyoto, and Sadao Otake, Kobe, all of Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Japan

Continuation of Ser. No. 232,390, March 7, 1972, which is a continuation-in-part of Ser. No. 859,825, Sept. 22, 1969, abandoned. This application Nov. 6, 1973, Ser. No. 413,311

Claims priority, application Japan, Sept. 24, 1968, 43-68518; Sept. 24, 1968, 43-68520; Sept. 24, 1968, 43-68521

Int. Cl.^{2} G05B *21/02;* **D06P** *1/00*

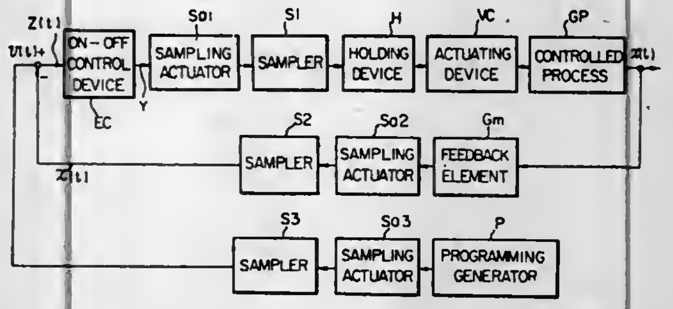
U.S. Cl. 318—636 **5 Claims**

1. A system for controlling the temperature of a treating liquid in a dyeing process in accordance with a predetermined trapezoidal temperature control program which contains a temperature rising, a temperature constant level and a temperature lowering program, for dyeing textile material by the treating liquid comprising:

sampling the actual temperature of the treating liquid in order to detect the difference between the actual temperature of the liquid and the temperature represented by the predetermined trapezoidal temperature control program;

holding an output signal of an on-off control device produced in response to the detected difference for a holding time by a zero-order holding device within each sampling cyclic period so that the input of the thermal exchanging medium to the dyeing process is held until said holding by said zero-order holding device is almost completed;

and changing said holding time within each sampling cylic period in accordance with predetermined exchanging programs for respective temperature rising, constant level and lowering programs of the predetermined trapezoidal temperature control program while maintaining the magnitude of said input of said thermal exchanging medium at a constant level during each holding period.



3,893,011
NUMERICAL CONTROL SYSTEM CONTROLLING A MACHINE AND PROVIDED WITH A SYSTEM FOR COMPENSATING A POSITION-ERROR IN THE NUMERICAL CONTROL OF THE MACHINE

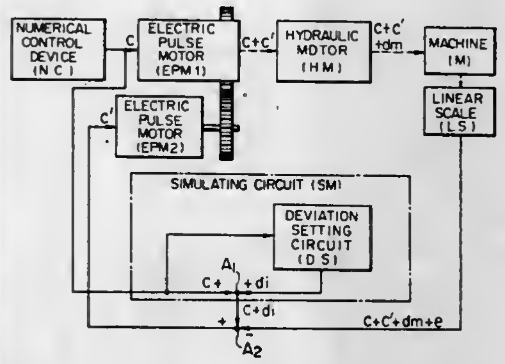
Seluemon Inaba; Kanryo Shimizu, both of Kawasaki; Yoshihiro Hashimoto, Yokohama; Hiroshi Usami, Kawasaki, and Youichi Amemiya, Tokyo, all of Japan, assignors to Fujitsu Ltd., Japan

Continuation-in-part of Ser. No. 80,041, Oct. 12, 1970. This application Oct. 17, 1973, Ser. No. 407,286

Claims priority, application Japan, Oct. 24, 1969, 44-85138

Int. Cl. G05b *19/40*

U.S. Cl. 318—685 **5 Claims**


NUMERICAL CONTROL DEVICE (NC)
C
ELECTRIC PULSE MOTOR (EPM1)
C+C'
HYDRAULIC MOTOR (HM)
C+C' +dm
MACHINE (M)
LINEAR SCALE (LS)
C'
ELECTRIC PULSE MOTOR (EPM2)
SIMULATING CIRCUIT (SM)
DEVIATION SETTING CIRCUIT (DS)
A1
C+
+di
C+di
+
-
A2
C+C'+dm+e

1. A position-error compensated numerical control system for a controlled member of a machine, which comprises:

a numerical control device for developing command pulses;

an electro-hydraulic stepping motor responsive to said command pulses for developing torques to position the controlled member of the machine in response to said command pulses;

means for measuring the amount of movement of the controlled member;

simulating circuit means connected to said numerical control device and receptive of said command pulses for developing output pulses simulating a lag error which causes a delay between the development of said command pulses by said numerical control device and the resultant movement of the controlled member;

compensating pulse generating means cooperative with said measuring means and said numerical control device for generating compensating pulses representative of the difference between the measured amount of movement of the controlled member measured by said measuring means and an amount of movement represented by the output pulses developed by said simulating circuit means; and

feedback means receptive of said compensating pulses and cooperative with said electrohydraulic stepping motor for reducing said difference to zero.

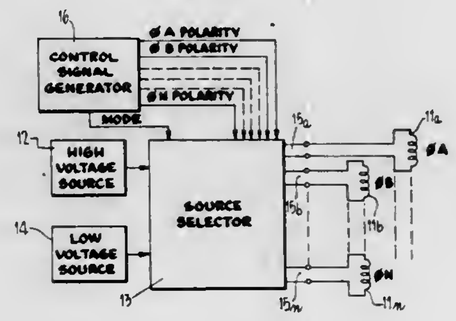
3,893,012
STEPPING MOTOR DRIVE CIRCUIT

Frank W. Lin, San Jose, Calif., assignor to Qume Corporation, Hayward, Calif.

Filed July 5, 1974, Ser. No. 486,150

Int. Cl.^{2} H02k *37/00*

U.S. Cl. 318—696 **10 Claims**



1. An apparatus for supplying a relatively high voltage and a relatively low voltage to a plurality of associated devices, said apparatus comprising the combination of:

a source of relatively high voltage;

a source of relatively low voltage;

a control signal generator for generating a mode control signal and a plurality of pairs of polarity control signals; and

a source selector having a plurality of control signal input terminals individually coupled to different ones of control signals generated by said control signal generator, a pair of voltage input terminals respectively coupled to said source of relatively high voltage and said source of relatively low voltage, and a plurality of pairs of voltage output terminals for alternately coupling said high voltage source and said low voltage source to said plurality of pairs of voltage output terminals in response to the receipt of said mode control signal from said control signal generator, the polarity of the voltage present on said output voltage terminals being determined by said polarity control signals coupled to said source selector from said control signal generator.

3,893,013
ELECTRIC DISCHARGE MACHINING CIRCUIT INCORPORATING MEANS FOR PRE-IGNITION OF THE DISCHARGE CHANNEL

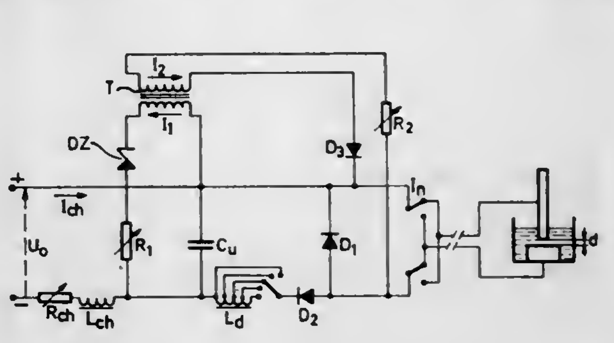
Nicolas Mironoff, Mies, Switzerland, assignor to Bovard & Cie, Bern, Switzerland

Filed May 29, 1973, Ser. No. 364,640

Claims priority, application Switzerland, June 1, 1972, 8090/72; Oct. 25, 1972, 15429/72

Int. Cl. B23k *9/06;* **H03k** *3/72*

U.S. Cl. 320—1 **11 Claims**



1. An electrical discharge machining circuit for generating and automatically applying recurrent erosive pulses across a machining gap defined by an electrode tool and a workpiece, comprising an electrical circuit incorporating:

electric energy accumulator means for recurrently storing electrical energy and discharging such electrical energy across said machining gap in the form of erosive current pulses via a conductive circuit,

said electrical energy accumulator means including a capacitor coupled in parallel with the machining gap for recurrently storing electrical energy and returning said stored electrical energy to the machining gap, which capacitor has a voltage which increases and decreases correlatively with said stored electrical energy,

pre-ignition voltage delivering circuit means connected in circuit with said electric energy accumulator means and including voltage threshold means coupled to said capacitor and responsive to the voltage thereon, and inductive transformer means having a primary winding and a secondary winding, said primary winding being coupled to said voltage threshold means and to said capacitor for causing a current to pass through said primary winding only when said voltage of said capacitor reaches a predetermined value in relation to said voltage threshold means and said current in said primary winding causing a voltage to appear across said secondary winding, and

diode means coupled between said machining gap and said capacitor for applying across said machining gap the higher of two voltages, the one of which is a voltage delivered only from said capacitor via said conductive circuit and fed to said gap without passing through said secondary winding as a main erosive pulse voltage, and the other of which is a voltage delivered at least from said secondary winding as a pre-ignition voltage.

3,893,014
SYSTEM FOR SUBSTANTIALLY ELIMINATING THE FUNDAMENTAL AND HARMONICS OF A RIPPLE VOLTAGE OR CURRENT

Jan Vacek, Bonndorf, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed May 20, 1974, Ser. No. 471,249

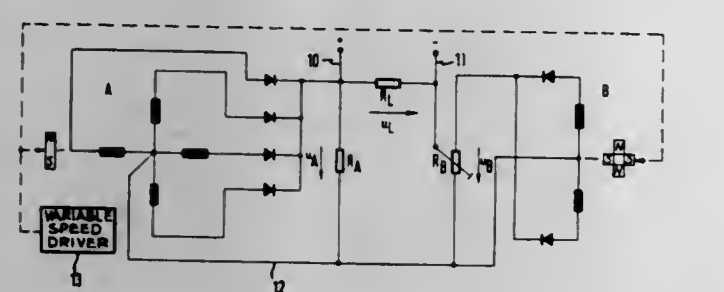
Claims priority, application Germany, May 23, 1973, 2326239

Int. Cl.^{2} H02M *1/12*

U.S. Cl. 321—9 R **7 Claims**

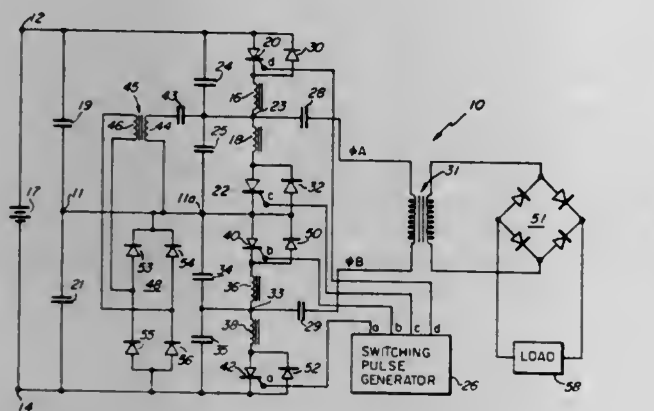
1. An arrangement for generating a speed-dependent D.C. voltage without substantial ripple, said arrangement comprising: a first voltage generator for producing an A.C. output voltage; first rectifier means connected with said first genera-

tor to rectify the said A.C. output voltage thereof; a second generator coupled to said first generator for producing an A.C. output voltage in frequency and phase synchronism with that of said first generator; second rectifier means connected with said second generator to rectify the A.C. output voltage thereof; and a pair of output leads, said first and second rectifier means and said first and second generators being connected together and to said output leads in a manner such that said generators and said rectifier means are connected in a series circuit that substantially reduces the ripple appearing at the output of said first rectifier means, the said A.C. voltage generators being rotatable, one of which has a two-phase stator winding and a two-pole permanent magnet rotor, while the other has a single-phase stator winding and a four-pole permanent magnet rotor, said rotors being rigidly coupled together in such a manner that the maximum values of said first and second generator output voltages are in phase.



3,893,015
FORCED VOLTAGE SHARING IN SERIES-CONNECTED POWER INVERTERS

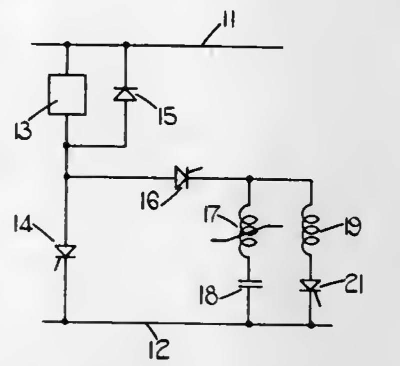
Thomas A. Weil, Wellesley, Mass., assignor to Raytheon Company, Lexington, Mass.
Filed Jan. 3, 1975, Ser. No. 538,282
Int. Cl.^{2} H02M *7/00*
U.S. Cl. 321—27 R **13 Claims**



1. In combination, a source of direct current, first and second inverters, each inverter having a DC input and an AC output, said inverters connected in series with each other and said source of direct current, means for providing a sample of the AC output of one of said inverters, means for rectifying said sample to a direct current output, and means for feeding said direct current output to augment the DC input of the other inverter when the DC input of one inverter departs from a predetermined balance with respect to the other.

3,893,016
THYRISTOR CHOPPER CIRCUIT

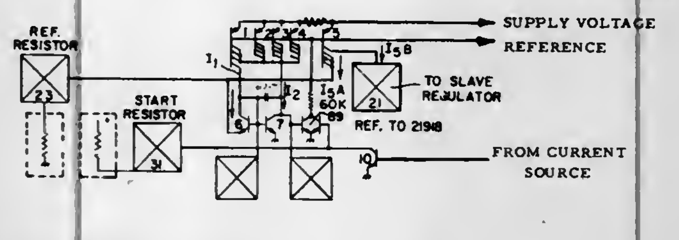
Ivor Carl Rohsler, Birmingham, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed Mar. 14, 1974, Ser. No. 451,066
Claims priority, application United Kingdom, Apr. 6, 1973, 16490/73
Int. Cl. H02m *7/52*
U.S. Cl. 321—45 C **1 Claim**



1. A thyristor chopper circuit comprising in combination first and second d.c. supply lines, a load and a main thyristor connected in series across the supply lines, a second thyristor, a first inductor and a capacitor connected in series across the main thyristor, and a second inductor and a third thyristor connected in series across the series combination of the first inductor and capacitor, firing of the second thyristor commutating the main thyristor and charging the capacitor, and firing of the third thyristor reversing the charge on the capacitor, said first inductor having a saturable core but the second inductor having no core.

3,893,017
REGULATOR WITH BIPOLAR TRANSISTORS

Clark R. Williams, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 263,819, June 19, 1972, abandoned. This application Feb. 20, 1974, Ser. No. 444,233
Int. Cl.^{2} G05F *1/56*
U.S. Cl. 323—4 **8 Claims**



1. A reference bias regulator for a current source comprising:

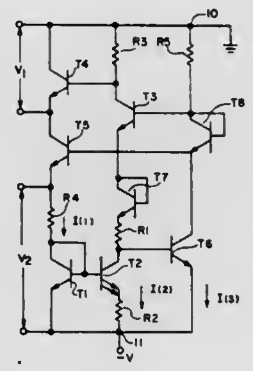
a. a reference portion having a first bipolar transistor means of one type connected in emitter-collector series with a reference resistor between first and second reference nodes;

b. a differential regulator portion having second and third bipolar transistor means of said one type and fourth and fifth bipolar transistor means of the opposite type, resistance means and capacitance means, the bases of said transistor means of like types being connected together, the emitters of said transistor means of said one type being connected together and through said resistance means to the first reference node and the emitter of said fourth transistor means being connected to the second reference node, the collectors of said second and fourth transistor means being connected together and to one terminal of said capacitance means; the collectors of said third and fifth transistor means being connected together and to the bases of said fourth and fifth transistor means and to the other terminal of said capacitance means and the emitter of said fifth transistor means being connected to the junction of said reference resistor and said first transistor means; and

c. a drive portion having a sixth bipolar transistor means of said opposite type, the base of said sixth transistor means being connected to the collector of said second and fourth transistor means and the emitter of said sixth transistor means being connected to said second reference node.

3,893,018
COMPENSATED ELECTRONIC VOLTAGE SOURCE

Robert R. Marley, Phoenix, Ariz., assignor to Motorola, Inc., Chicago, Ill.
Filed Dec. 20, 1973, Ser. No. 426,968
Int. Cl. G05f *5/00*
U.S. Cl. 323—19 **24 Claims**



1. A voltage regulator circuit having first and second voltage input terminals for connection across an unregulated direct current voltage source including in combination:

first transistor circuit means coupled with said first and second voltage input terminals and having an output terminal supplying a voltage having a predetermined positive temperature coefficient;

a shunt regulator transistor with emitter, base and collector electrodes, the emitter thereof coupled with said second input terminal and the base thereof coupled with the output terminal of said first transistor circuit means;

first diode means;

first resistance means coupled with said first diode means at a first junction in a series circuit, in the order named, between said first input terminal and the output terminal of said first transistor circuit means;

compensating means coupled between said first junction and the collector of said shunt regulator transistor for offsetting variations of the voltage across the base-emitter junction of said shunt regulator transistor with variations in the voltage appearing on said second input terminal; and

output circuit means including an output transistor having base, collector and emitter electrodes, the base thereof coupled with the collector of said shunt regulator transistor, the collector thereof coupled with said first voltage input terminal and the emitter thereof coupled with said second voltage input terminal.

3,893,019
VARIABLE POWER CONTROL ADAPTER

John A. King, and Donald L. Brown, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 10,088, Feb. 16, 1970, abandoned, which is a continuation of Ser. No. 615,948, Feb. 14, 1967, abandoned. This application July 9, 1971, Ser. No. 161,945
Int. Cl. G05f *3/04;* **H05b** *39/04*
U.S. Cl. 323—19 **2 Claims**

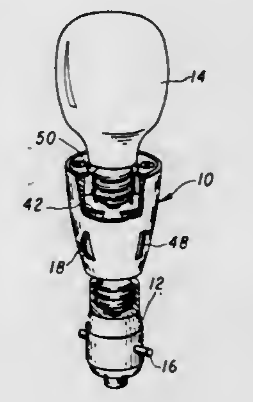
1. An adjustable power control device of the type adapted to threadably engage a conventional electric lamp socket to which a source of electrical power is connectable for enabling the magnitude of the electrical power provided to an electric lamp to be selectively varied, said power control device comprising:

a generally tubular housing of electrically insulating material and having upper and lower ends, said housing being provided with a plurality of circumferentially spaced elongated slots therethrough arranged intermediate the ends of the housing and extending lengthwise thereof,

a stationary support plate fixedly secured within said housing intermediate the ends thereof and defining a transverse partition within said housing disposed above the elongated slots therein, said support plate being provided with a plurality of radially spaced ventilating slots therethrough arranged between the central portion and the periphery of the support plate,

an externally threaded base member fixedly secured to the lower end of said housing and providing a male connector for threadably connecting the control device to the electric lamp socket so as to enable the control device to be coupled to the source of electrical power through the electric lamp socket,

an internally threaded upwardly opening socket member fixedly secured within said housing to the central portion of said support plate and disposed radially inwardly with respect to the housing wall and the ventilating slots in said support plate, said internally threaded socket member and said housing wall cooperating to define an annular passageway therebetween in registration with said ventilating slots, said internally threaded socket member providing a female connector for threadably receiving the electric lamp so as to enable the electric lamp to be coupled to the source of electrical power through the control device,



a manually adjustable electric control circuit fixedly secured within said housing to the central portion of said support plate in depending relation therefrom, said electric control circuit being disposed within said housing at a location in registration with the elongated slots in said housing, said electric control circuit being electrically interconnected between said base member and said socket member to provide electrical coupling therebetween and being selectively adjustable for varying the magnitude of the electrical power to be provided to the electric lamp,

a thumbwheel mounted within said housing for rotation with respect thereto about an axis transverse to the longitudinal extent of said housing, said thumbwheel being located in registration with one of the elongated slots in said housing and including a portion thereof protruding outwardly of said housing through said one elongated slot to enable the position of said thumbwheel to be manually adjusted,

means coupling said electric control circuit to said thumbwheel such that said electric control circuit is responsive to the rotation of said thumbwheel to vary the electrically conductive state of said electric control circuit for enabling the magnitude of the electrical power provided to the electric lamp to be selectively varied, and said elongated slots in said housing, said ventilating slots in said support plate, and said annular passageway defined between the housing wall and the radially inwardly disposed socket member cooperating to provide an unimpeded path for air flow extending through said housing supplying ventilation for said electric control circuit.

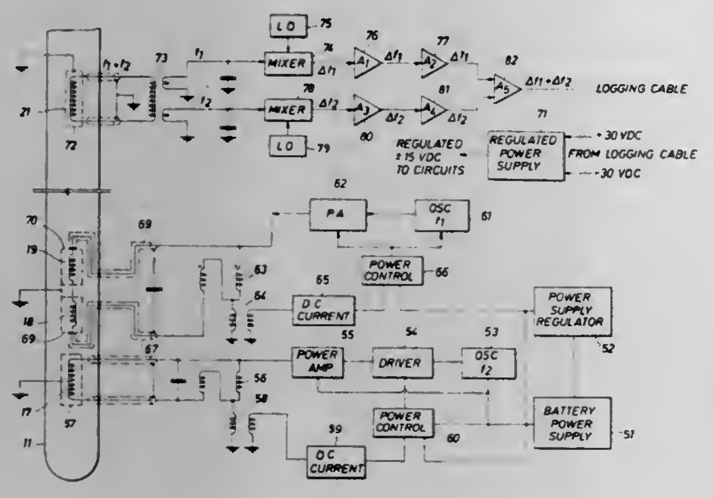
3,893,020
DUAL RADIO FREQUENCY APPARATUS FOR DETERMINING ELECTROMAGNETIC CHARACTERISTICS OF EARTH FORMATIONS USING CONSTANT FLUX FIELD GENERATORS

Richard A. Meador, and Larry W. Thompson, both of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Aug. 27, 1973, Ser. No. 391,899

Int. Cl. G01v *3/10, 3/18*

U.S. Cl. 324—6 **15 Claims**



1. A system for determining the electromagnetic characteristics of materials in the vicinity of a well borehole, comprising:

means for generating, in a well borehole, a first, lower frequency, alternating electromagnetic field at a radio frequency in the range of approximately 10 to 20 megahertz;

means for generating, in a well borehole, a second, higher frequency alternating electromagnetic field at a radio frequency in the range of approximately 20 to 40 megahertz;

means for stabilizing the total electromagnetic flux emitted by said means for generating said first and second alternating electromagnetic fields to a constant value;

means for detecting, in a well borehole, at a longitudinally spaced distance from the locations where said first and second alternating electromagnetic fields are generated, the voltage amplitudes of the total electromagnetic field at said first and second frequencies and generating signals representative of said total field voltage amplitudes of the total electromagnetic field at said first and second frequencies; and

means for recording said total field amplitude signals as a function of borehole depth.

3,893,021
DUAL RADIO FREQUENCY METHOD FOR DETERMINING DIELECTRIC AND CONDUCTIVITY PROPERTIES OF EARTH FORMATIONS USING NORMALIZED MEASUREMENTS

Richard A. Meador, Houston, and Richard H. Arnold, Sugarland, both of Tex., assignors to Texaco Inc., New York, N.Y.

Filed Aug. 27, 1973, Ser. No. 391,898

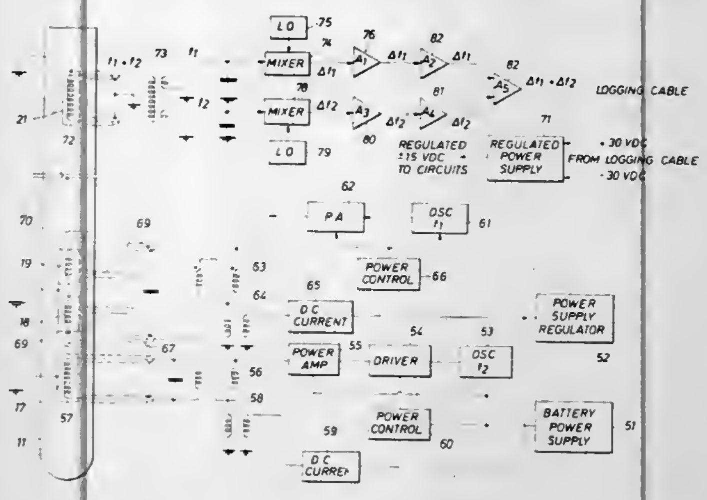
Int. Cl. G01v *3/10, 3/18*

U.S. Cl. 324—6 **9 Claims**

1. A method for determining the resistivity and dielectric characteristics of materials in the vicinity of a well borehole, comprising the steps of:

generating, in a homogeneous medium outside a well borehole, first and second frequency alternating electromagnetic fields, said first alternating electromagnetic field at a radio frequency in the range of 10 to 20 megahertz and said second alternating electromagnetic field at a radio frequency in the range of approximately 20 to 40 megahertz, said second frequency being a non-integer multiple of said first frequency;

detecting, in a homogeneous medium outside a well borehole at a longitudinally spaced distance from the location where said first and second alternating electromagnetic fields are generated the voltage amplitudes of the total electromagnetic field at said first and second frequencies and generating first and second normalization signals representative thereof whose amplitudes are defined to be unity;



repeating said generating and detecting steps at said first and second frequencies at a plurality of depth levels in a well borehole and generating at each such depth level first and second total field voltage amplitude signals representative of the normalized relative amplitudes of the total field at said first and second frequencies with respect to said first and second normalization signals; and

recording said first and second representative total field signals as a function of borehole depth.

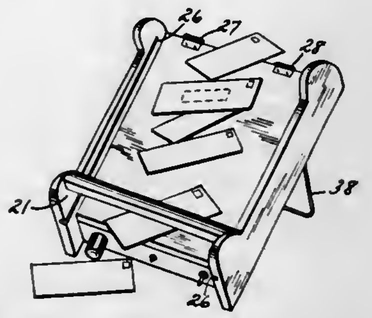
3,893,022
SEALED ENVELOPE EXAMINING DEVICE FOR DETECTING THE PRESENCE OF METAL

Herbert S. Kulik, and Jacob Schachter, both of 100 Richfield Ln., Hauppauge, N.Y.

Filed Feb. 28, 1974, Ser. No. 446,698

Int. Cl. G01r *33/00*

U.S. Cl. 324—41 **2 Claims**



1. A sealed envelope examining device comprising: a base element forming a housing, a metal-sensitive oscillating detector circuit at least partially disposed within said housing, said circuit including first and second coils developing an electromagnetic field therebetween and an alarm device; said base element including a planar upper wall and a pair of side walls on either side thereof, a bridge structure supported by portions of said walls and extending over said upper wall to define an interstice therebetween for the passage of an envelope therethrough, one of said coils being supported by said bridge structure, the other of said coils being supported by said base element on opposite sides of said interstice; a slideable drawer element supported by said base element and passing beneath said bridge structure, and a pivotally mounted cover element selectively overlying said base element and having means maintaining said drawer element against movement when said cover element is in overlying position.

3,893,023
MAGNETIC BUBBLE DEVICE FOR VISUALIZING MAGNETIC FIELD PATTERNS

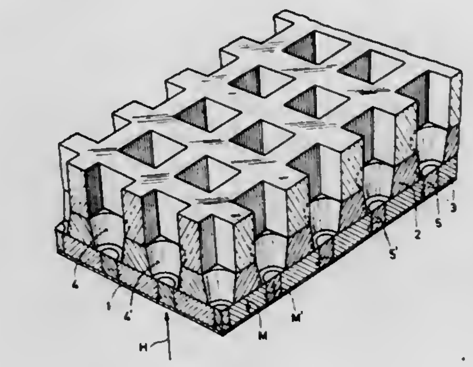
Matti Niilo Tapani Otala, Oulu, Finland, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 7, 1974, Ser. No. 431,544

Claims priority, application Netherlands, Feb. 12, 1973, 7301931

Int. Cl. G01r *33/02*

U.S. Cl. 324—43 R **7 Claims**



1. A device for visualizing magnetic field patterns, comprising a first layer of a magnetizable material having a uniaxial magnetic anisotropy, which layer is magnetized in a direction normal to the plane of the layer under the influence of a second layer of a permanent magnetic material juxtaposed one side of the first layer, the first layer comprising a periodic structure of magnetic domains the direction of magnetization of which is opposite to the direction of magnetization of the remainder of the first layer, said second layer comprising a means for maintaining the magnetic domains fixed in said periodic structure, and a magneto-optical detection means for irradiating the first layer with a beam of linearly polarized light and for analyzing the direction of polarization of the resulting beam from said first layer.

3,893,024
METHOD AND APPARATUS FOR FAULT TESTING MULTIPLE STAGE NETWORKS

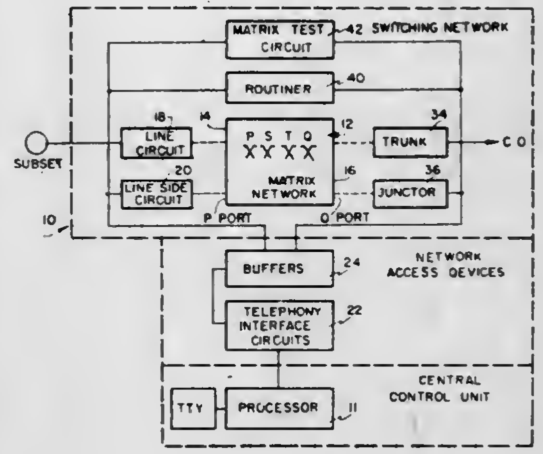
Jose Reines, Glen Ellyn; Eric G. Platt, Westmont; Stanley E. White, Crestwood; Joseph M. Corrado, and Askold W. Wawryszyn, both of Chicago, all of Ill., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Nov. 15, 1973, Ser. No. 416,031

Int. Cl. G01r *31/02;* **H04m** *3/26*

U.S. Cl. 324—51 **9 Claims**

1. An apparatus for testing the individual switching members of a multiple stage switching network of the type in which the network is responsive to marking signals at points at the ends of the network for completing a path serially through the stages of said network between the marked points and in which a plurality of possible paths exist between each set of marked end points and said paths are distributed through at least one stage in said network; the invention comprising means responsive to a test indication for marking a first end point at one end of said network and a second end point at the opposed end of the network, means for disabling all possible paths but one through said one stage between said marked first and second endpoints, means to enable a single path between said marked first and second end points and means responsive to the successful completion of said single path between said first and second endpoints for initiating successive tests of remaining paths between the marked first and second points and means for indicating failure of completion of a path.



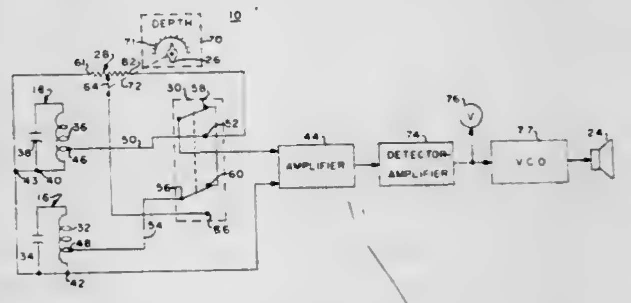
3,893,025
APPARATUS FOR DETERMINING THE DISTANCE TO A CONCEALED CONDUCTIVE STRUCTURE

Thomas G. Humphreys, Jr., Birmingham, Ala., assignor to George G. Plosser, Birmingham, Ala.

Filed Feb. 1, 1974, Ser. No. 438,939

Int. Cl. G01r *19/16;* **G01v** *3/08*

U.S. Cl. 324—67 **10 Claims**



1. A locator for determining the distance to a concealed conductive object lying along a known direction and wherein the object is radiating an alternating current signal, said locator comprising:

first and second signal receptors, each being adapted to receive said signal and provide an output voltage in proportion to the level of said signal as received;

support means for positioning said receptors a selected and fixed distance apart whereby one receptor may be positioned a selected distance greater than the other from said object;

signal combining means, including adjustment means, coupled to the outputs of said receptors for adjustably combining said outputs in a subtractive mode and providing a combined signal output which is reducible to a substantially zero level as a function of setting of said adjustment means;

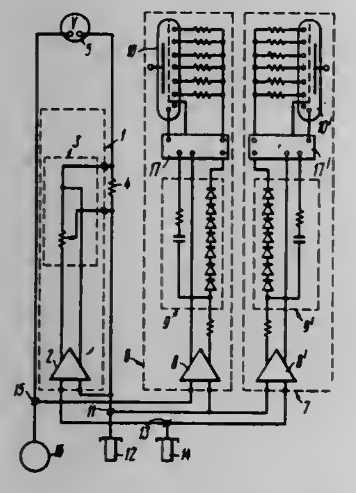
detection means responsive to the output of said signal combining means for indicating when said combined signal output is at a substantially zero level; and

depth indication means coupled to said signal combining means and responsive to adjustment of said adjustment means and the distance apart of said receptor for indicating the distance to a concealed conductive object.

3,893,026
METHOD AND APPARATUS FOR MEASURING ELECTROCHEMICAL POTENTIAL DIFFERENCE BETWEEN A METALLIC STRUCTURE AND EARTH

Vsevolod Ivanovich Glazkov, 5 Sokolinaya ul., 18, kv. 38; Viktor Gerasimovich Kotik, Flotskaya ul., 18, kv. 96, and German Mikhailovich Gunin, Shebashevsky proezd, 8, kv. 91, all of Moscow, U.S.S.R.

Continuation-in-part of Ser. No. 204,822, Dec. 6, 1972. This application July 23, 1974, Ser. No. 491,056
Int. Cl. G01r *19/00, 31/00;* **G01n** *27/00*
U.S. Cl. 324—72 **3 Claims**



1. A method of measuring an electrochemical potential difference arising between a metal structure in contact with earth and an earth point in the presence of stray currents and cathodic protection currents, comprising: placing two comparison electrodes in the earth, a main comparison electrode being located at said earth point and an additional comparison electrode at a point more remote from the metal structure;

obtaining a first voltage as a potential difference between the metal structure and the main comparison electrode; obtaining a second voltage as a potential difference across the main and the additional comparison electrodes; applying said first and second voltages to the input of an analogue device which produces signals varying in proportion with the time derivatives of the first and second voltages at periods when variations of stray current and cathodic protection current occur;

determining a proportionality factor by dividing the magnitude of a signal proportional to the first voltage derivative by the magnitude of a signal proportional to the second voltage derivative; injecting said second voltage into the input of a corrector unit; adjusting said corrector unit so as to produce an output voltage whose magnitude divided by the input voltage magnitude equals said proportionality factor;

applying said first voltage between the metal structure and the main electrode to a voltmeter in antiphase with said voltage obtained at the output of the corrector unit;

whereby, the result of the measurement of an electrochemical potential difference is read directly off the voltmeter scale.

3,893,027
ELECTRICAL TEST PROBE

Cornelis Teunis Veenendaal, Cornelius, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

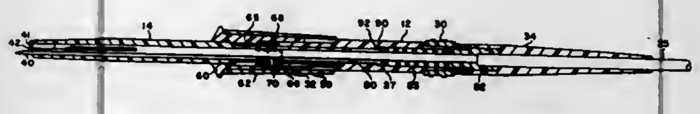
Filed June 10, 1974, Ser. No. 477,711
Int. Cl. G01r *31/02*
U.S. Cl. 324—72.5 **4 Claims**

1. An electrical test probe, comprising:

an insulative body including a substantially tubular stationary member and a member disposed in internesting relationship therewith so that said body is adapted for extended and contractional dispositions;

a conductive member disposed in said body;

a plurality of probe tips disposed in said body and in contact with said conductive member, said plurality of tips including a first tip adapted to be extendible in the contractional disposition of said probe body and a second tip adapted to be extendible in the extended disposition of said probe body; and

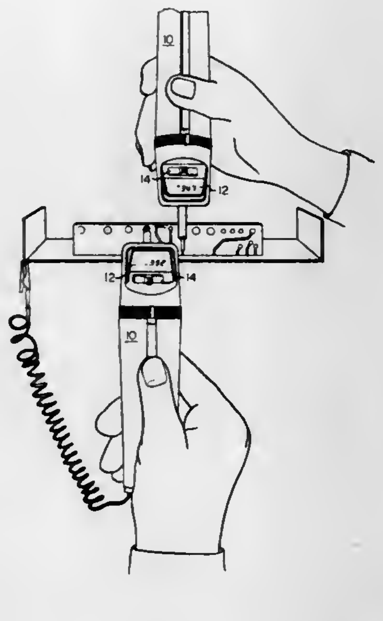


control means for selectively extending and retracting said tips relative to said body, said control means including a sleeve member operatively connected to said movable member for selectively extending said tips by longitudinal and rotational movement thereof.

3,893,028
PROBE MULTIMETER WITH DISPLAY INVERTING MEANS

Paul F. Febvre, Eybens, France, and Virgil Lee Laing, Loveland, Colo., assignors to Hewlett-Packard Company, Loveland, Colo.

Filed Oct. 16, 1973, Ser. No. 407,019
Int. Cl. G01r *1/08, 15/08*
U.S. Cl. 324—115 **6 Claims**



1. Electrical signal measuring apparatus comprising:

display means for visually displaying character information indicative of a measurement result, said display means comprising one or more character positions;

switch means for selecting either an upright or an inverted display mode of operation;

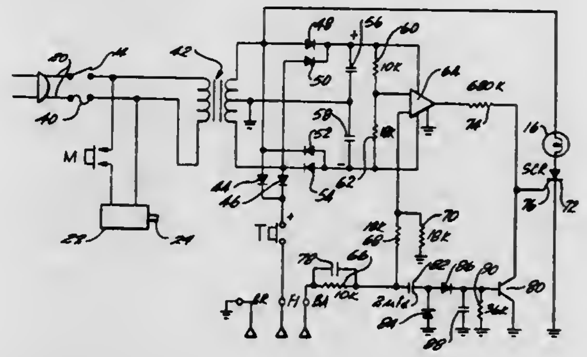
first logic means coupled to said display means and switch means, said first logic means being responsive to selection of the inverted display mode of operation for reflecting upright character information associated with each of said character positions about a central one of said character positions; and

second logic means coupled to said display means, switch means, and first logic means, said second logic means being responsive to selection of the inverted display mode of operation for reflecting upright character information associated with each of said character positions about a central portion of each respective character position.

3,893,029
AUTOMOBILE ALTERNATOR TESTER

Richard R. Vensel, 45329 6th St., E., and Jerry A. Leach, 45800 N. 10th St., E., both of Lancaster, Calif. 93534

Filed Mar. 25, 1974, Ser. No. 454,125
Int. Cl. G01r *31/02, 19/16*
U.S. Cl. 324—158 MG **6 Claims**



1. A test device for testing an automobile three-phase alternator or the like independently of the automobile electrical system and without loading the alternator, the alternator having a ground terminal, a field terminal, and a battery terminal, the test device comprising:

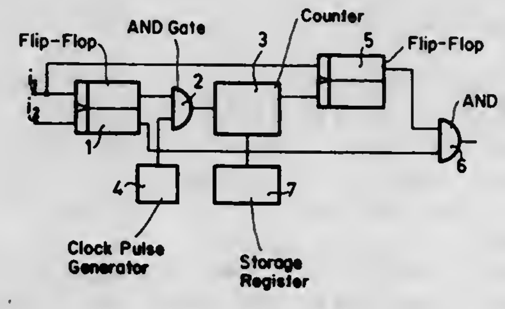
- a DC voltage source adapted to be connected to the field terminal and the ground terminal of the alternator to energize the field winding of the alternator,
- a first circuit means adapted to be connected to the battery terminal and ground terminal of the alternator for producing a first DC signal having a magnitude that varies with the DC output voltage at the battery terminal of the alternator relative to ground,
- a second circuit means adapted to be connected to the battery terminal and the ground terminal of the alternator for producing a second DC signal having a magnitude that varies with the AC output voltage at the battery terminal relative to ground, and

binary indicator means responsive to the magnitudes of the first and second signals for indicating when both the first signal is above a first predetermined magnitude and the second is simultaneously below a second predetermined magnitude.

3,893,030
COINCIDENCE MEASURING CIRCUIT FOR INDICATING TIME INTERVALS

Klaus Brandenburg, Hamburg, and Jurgen Schwake, Schenefeld, both of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 83,016, Oct. 22, 1970, abandoned. This application Dec. 26, 1972, Ser. No. 318,569
Claims priority, application Germany, Oct. 24, 1969, 1953737
Int. Cl. G04f *9/00*
U.S. Cl. 324—181 **4 Claims**

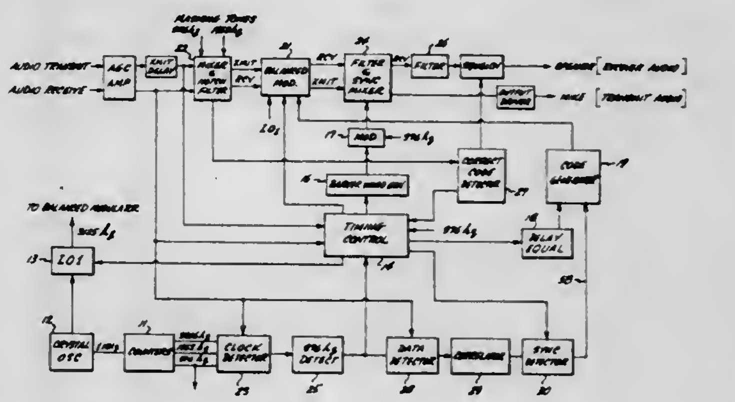


1. A coincidence measuring circuit for indicating the time interval between the pulses of two separate periodic pulse trains i_1 and i_2 having dissimilar frequencies F1 and F2, comprising a first bistable multivibrator triggerable to a first stable state in response to a pulse on a first input thereof and triggerable to a second stable state in response to a pulse on a second input thereof for providing an output signal level on a first output thereof in response to the first stable state and for providing an output level on a second output thereof in response to the second stable state, means connecting the pulse train i_1 to the first input of the first bistable multivibrator, means connecting the pulse train i_2 to the second input of the first bistable multivibrator, timing means connected to the first output of the first bistable multivibrator for providing a timing output pulse a predetermined delay interval after the initiation of the output signal level on the first output of the first bistable multivibrator, a second bistable multivibrator triggerable to a first stable state in response to a pulse on a first input thereof and triggerable to a second stable state in response to a pulse on a second input thereof for providing an output level on a first output thereof in response to the first stable state and for providing an output level on a second output thereof in response to the second stable state, means connecting the pulse train i_1 and to the first input of the second bistable multivibrator, means connecting the output of the timing means to the second input of the second bistable multivibrator, and a coincidence gate having inputs connected to the second output of the first bistable multivibrator and to the first output of the second bistable multivibrator for providing a coincidence output signal indicating that the period between a pulse of the pulse train i_1 and the next following pulse of the pulse train i_2 was less than the delay interval of the timing means.

3,893,031
SYNCHRONIZATION SYSTEM FOR VOICE PRIVACY UNIT

Henrie L. Majeau; Neil W. Heckt, both of Bellevue, and Jack L. May, Redmond, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Nov. 8, 1972, Ser. No. 304,843
Int. Cl. H04k *1/00;* **H04l** *7/00*
U.S. Cl. 325—32 **11 Claims**



1. In combination, an apparatus for synchronizing the initiation of enciphering/deciphering of communication signals between two or more communication stations, comprising:

a transmitter portion, which includes:

means for generating a first signal of known frequency;

means for generating a Barker word digital signal;

means for modulating said first signal with said Barker word digital signal, thereby producing a first modulated signal; means operative at the conclusion of said Barker word digital signal for initiating the enciphering of communication signals generated at one communication station to produce enciphered communication signals;

means for combining said first signal with said enciphered communication signals for as long as the communication signals are enciphered, thereby providing a continuous indication of enciphered communication, said first signal combined with said enciphered communication signals defining a first combined signal;

means for transmitting said first modulated signal and said first combined signal in sequence, such that said first modulated signal is transmitted to another communication station substantially immediately prior to transmission of said combined signal to said another communication station;

a receiver portion, which includes:

means for receiving said first modulated signal and said combined signal from said one communication station;

means for detecting the first signal, said first signal providing a continuous indication of enciphered communication between communication stations;

means for recovering said Barker word digital signal from said first modulated signal;

means for correlating bit-by-bit said recovered Barker word digital signal with a replica of said Barker word digital signal;

means responsive to said correlator means for generating a summation signal which is proportional in magnitude to the number of correct correlations between said detected Barker word digital signal and said replica;

means for generating a reference signal having a first predetermined magnitude;

means for comparing said reference signal with said summation signal; and,

means for initiating deciphering of the enciphered communication signals at the conclusion of correlation if the magnitude of said summation signal is greater than said first predetermined magnitude.

3,893,032
CHANNEL SELECTION DEVICE

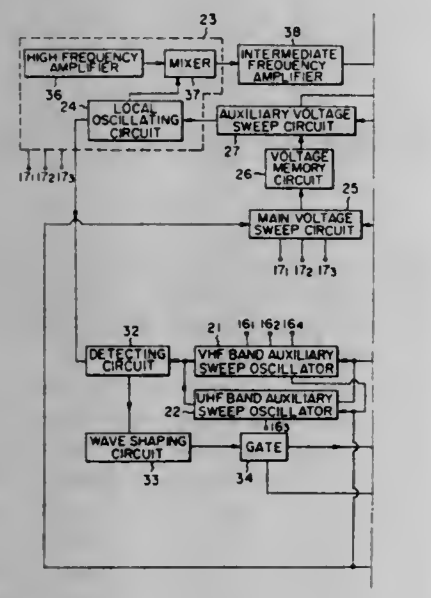
Yoichi Sakamoto, Toyonaka, and Yukio Koyanagi, Suita, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 22, 1971, Ser. No. 210,876

Claims priority, application Japan, Dec. 28, 1970, 45-124784; Dec. 28, 1970, 45-124776; Dec. 28, 1970, 45-124780; Dec. 28, 1970, 45-124782; Dec. 28, 1970, 45-124775; Dec. 28, 1970, 45-124781; Dec. 28, 1970, 45-124783; Dec. 28, 1970, 45-124774; Mar. 3, 1971, 46-11412; Mar. 3, 1971, 46-11413; Mar. 3, 1971, 46-11414; Mar. 3, 1971, 46-11415; Mar. 3, 1971, 46-11416; Mar. 3, 1971, 46-11417

Int. Cl. H04b *1/32*

U.S. Cl. 325—334 **20 Claims**


23
38
HIGH FREQUENCY AMPLIFIER
MIXER
INTERMEDIATE FREQUENCY AMPLIFIER
36
24
37
LOCAL OSCILLATING CIRCUIT
AUXILIARY VOLTAGE SWEEP CIRCUIT
27
26
VOLTAGE MEMORY CIRCUIT
25
MAIN VOLTAGE SWEEP CIRCUIT
32
DETECTING CIRCUIT
VHF BAND AUXILIARY SWEEP OSCILLATOR
22
UHF BAND AUXILIARY SWEEP OSCILLATOR
WAVE SHAPING CIRCUIT
GATE
33
34

1. For a receiver receiving channels, said receiver including a tuner, a channel selection device comprising

a. a main local oscillator in said tuner, said main local oscillator capable of having the oscillation frequency thereof swept in response to a control signal,

b. an auxiliary local oscillator capable of having the oscillation frequency thereof swept in response to a further control signal,

c. switching means connected to said main and auxiliary local oscillators for alternately providing said control signals to said main and auxiliary local oscillators, for alternately maintaining constant the frequency of the main local oscillator when the auxiliary local oscillator is sweeping and for maintaining constant the frequency of the auxiliary local oscillator when the main local oscillator is sweeping,

d. frequency detection means connected to said main and auxiliary oscillators for detecting the frequency at which said oscillators are oscillating,

e. means for manually selecting a desired channel

f. means connected to said frequency detection means for producing a detection signal in response to a correspondence between the oscillation frequency of the main local oscillator and the frequency of said desired channel, and

g. means for de-energizing said switching means in response to said detection signal and for maintaining said local oscillator oscillating at said frequency, whereby the channel selection device is automatically set to the frequency corresponding to the manually selected channel.

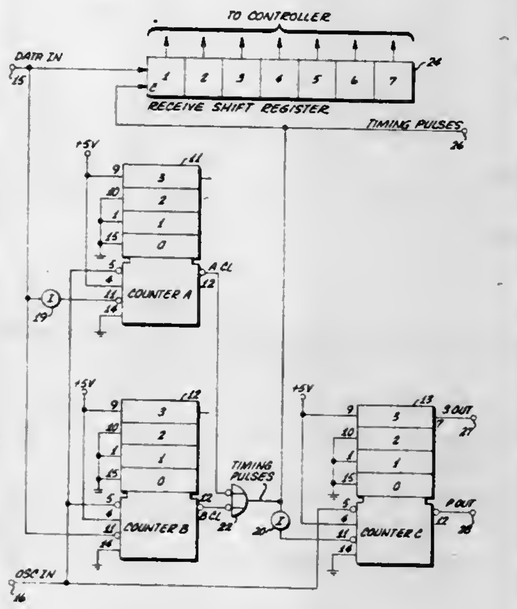
3,893,033
APPARATUS FOR PRODUCING TIMING SIGNALS THAT ARE SYNCHRONIZED WITH ASYNCHRONOUS DATA SIGNALS

DeVer C. Finch, Phoenix, Ariz., assignor to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed May 2, 1974, Ser. No. 466,115

Int. Cl.^{2} H03K *1/17, 5/13*

U.S. Cl. 328—63 **3 Claims**



1. Apparatus for producing timing signals that are synchronized with asynchronous data signals, for use with a source of data and a source of oscillator signals, said apparatus comprising:

first and second up/down counters each having first and second input leads and an output lead, said first input lead of said first counter being connected to said source of data, said source of oscillator signals being connected to said second input leads of said first and said second counters;

an inverter, said inverter being connected between said source of data and said first input lead of said second counter;

a logic gate having first and second input leads and an output lead, said first input lead of said gate being connected to said output lead of said first counter, said second input lead of said gate being connected to said output lead of said second counter; and

a shift register having first and second input leads and a plurality of output leads, said first input lead of said register being connected to said source of data, said second input lead of said register being connected to said output lead of said gate.

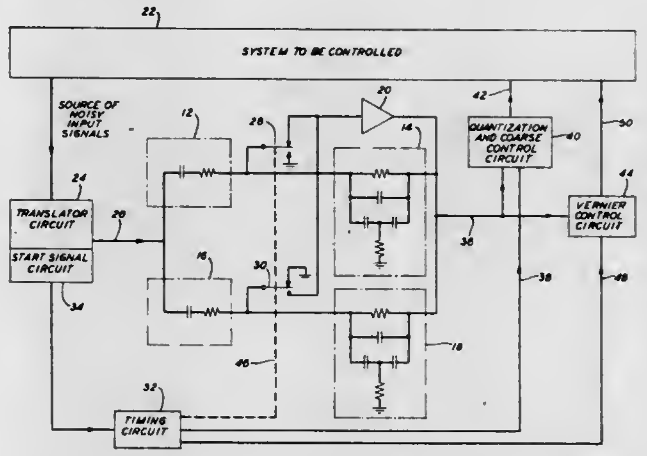
3,893,034
SMOOTHING CIRCUITS

Charles C. Willhite, Convent Station, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 4, 1958, Ser. No. 771,923

Int. Cl. H03k *17/02*

U.S. Cl. 328—71 **5 Claims**



5. In a control system, a direct current amplifier circuit, alternative long and short time constant smoothing circuits to be selectively employed with said amplifier circuit, each of said smoothing circuits including input and feedback portions, means for initially selecting said short time constant smoothing circuit, circuitry for precharging both portions of said long time constant smoothing circuit and for grounding the midpoint of said long time constant circuit during the selection of said short time constant circuit, and means for thereafter switching over to said long time constant smoothing circuit.

3,893,035
AMPLIFICATION CIRCUIT

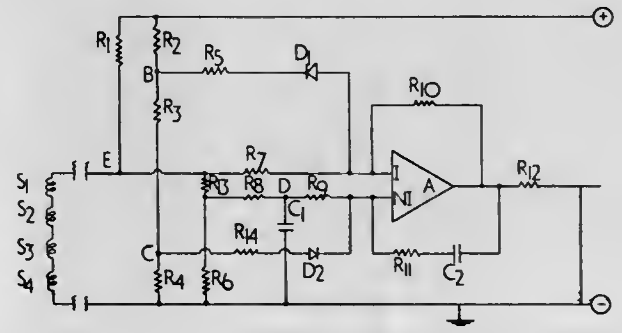
Kenneth Henry Higgens, Sutton Coldfield, England, assignor to Dunlop Limited, London, England

Filed Oct. 26, 1973, Ser. No. 409,931

Claims priority, application United Kingdom, Nov. 4, 1972, 50915/72; May 19, 1973, 23980/73

Int. Cl. H03k *5/20, 5/18*

U.S. Cl. 328—146 **4 Claims**



1. Apparatus for detecting pulse signals from pulse generating means, comprising: differential amplifying circuit means for generating an output signal having one of two possible voltage levels depending upon the voltage difference of input signals applied to said amplifying means, said amplifying means having first and second input terminals coupled to each other through a voltage dividing circuit to create a constant potential difference between said input terminals; and a filter circuit coupled to one of said input terminals to substantially inhibit pulse signals from being applied to said one input terminal; said amplifying means output signal changing its voltage level when a pulse signal appears at the other of said input terminals, the negative peak of said pulse signal exceeding the constant potential difference between said first and second input terminals.

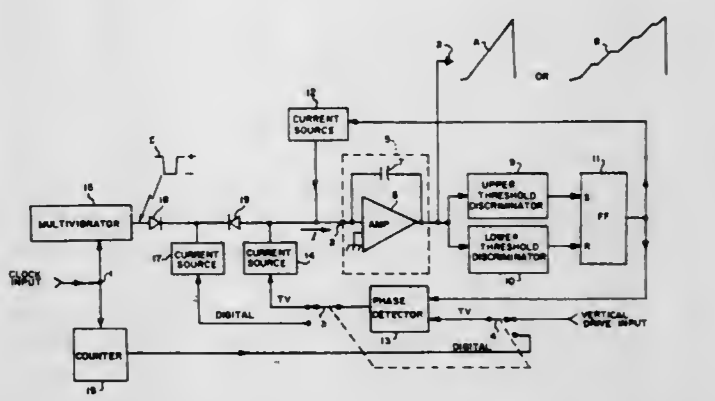
3,893,036
PRECISION FUNCTION GENERATOR

James Louis Cavoretto; Alfred Alden Allworth, and Carlo Infante, all of Portland, Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed July 27, 1973, Ser. No. 383,413

Int. Cl. H03k *4/10*

U.S. Cl. 328—185 **5 Claims**



1. A precision function generator for generating linear or linear stepped ramp waveform signals in response to selected input synchronizing signals, comprising:

signal input receiving means for receiving the synchronizing signals;

integrator means having an output whose slope is proportional to an input current applied thereto;

digital control means responsive to said output for providing a digital control signal, and

current source means including phase detector means responsive to said digital control signal and said selectable signal for providing a phase error signal, a plurality of selectively adjusted current means whose outputs are adjustable in response to said phase error signal to provide said input current, means for selecting said selectively adjustable current means, and gate means responsive to a switching pulse for selecting said selectively adjustable current means, said current source means responsive to said digital control signal and the synchronizing signals for providing said input current.

3,893,037
ISOLATING LINEAR AMPLIFIER

William L. Herbert, 1405 Inglis Ave., Columbus, Ohio 43212

Filed Sept. 9, 1973, Ser. No. 377,708

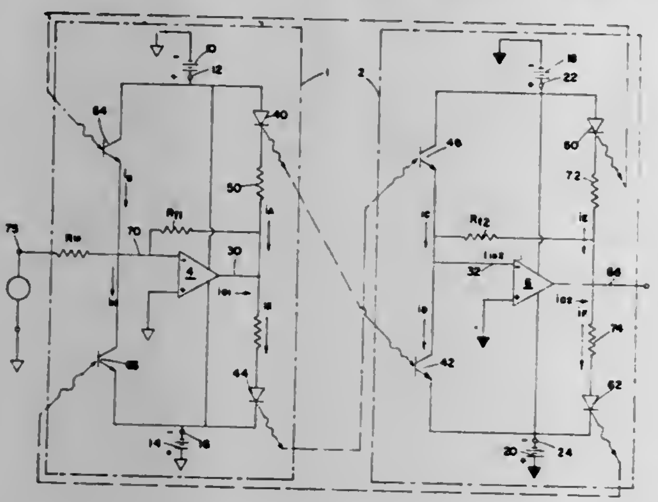
Int. Cl.^{2} H03F *17/00*

U.S. Cl. 330—59 **11 Claims**

1. A multistage isolating amplifier including an improved circuit for applying a signal from the output of a first amplifier stage to the input of a second amplifier stage with electrical isolation between said amplifier stages, wherein the improvement comprises:

a. at least two electrically isolated power supplies, a different supply connected to said first amplifier stage and said second amplifier stage respectively, each supply having a common terminal connected to a common terminal of its respective amplifier stage and having a positive terminal and a negative terminal; and

b. a signal applying means for applying a signal from the output of said first amplifier stage to the input of said second amplifier stage, said signal applying means comprising a pair of optical couplers having their photoemissive elements in series connection between the positive and negative supply terminals of the power supply connected to said first amplifier stage for permitting a quiescent current flow through said photoemissive elements and having the output of said first amplifier stage connected intermediate said photoemissive elements, said optical couplers also having their photoresponsive elements in series connection between the positive and negative terminals of the power supply connected to said second amplifier stage for permitting a quiescent current flow through said photoresponsive elements and having the input of said second amplifier stage connected intermediate said photoresponsive elements.



3,893,038
AUTOMATIC GAIN CONTROL CIRCUIT

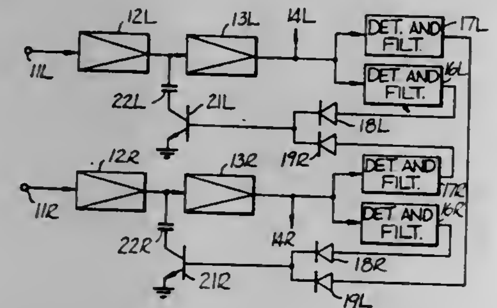
Katsuyoshi Omata, Tokyo, and Nobuaki Sato, Kanagawa-ken, both of Japan, assignors to Sony Corporation, Shinagawa-ku, Japan

Filed Aug. 26, 1974, Ser. No. 500,256

Claims priority, application Japan, Aug. 27, 1973, 48-100433

Int. Cl. H03g *3/30;* **H03f** *3/68*

U.S. Cl. 330—124 R **10 Claims**



1. An automatic gain control circuit for a multi-channel amplifying system, said gain control circuit comprising:

A. first and second gain control means connected to first and second ones of said channels, respectively;

B. first control signal means connected to said first channel to be energized by an information signal therein to generate a first control signal and connected to said first gain control means to form a first control circuit comprising a first time constant circuit having a first time constant value to control the gain of said information signal in said first channel;

C. second control means connected to said first channel to be energized by an information signal therein and connected to said second gain control means to form a second control circuit comprising a second time constant circuit having a different time constant value than said first time constant circuit to control the gain of an information signal in said second channel;

D. third control means connected to said second channel to generate a third control signal in response to an information signal in said second channel, said third control means being connected to said second gain control means to form a third gain control circuit comprising a third time constant circuit having a different time constant value than said second time constant circuit to control the gain of said information signal in said second channel; and

E. fourth control means connected to said second channel to be energized by an information signal in said second channel and connected to said first gain control means to form a fourth gain control circuit comprising a fourth time constant circuit having a different time constant value than said third time constant circuit to control the gain of an information signal in said first channel.

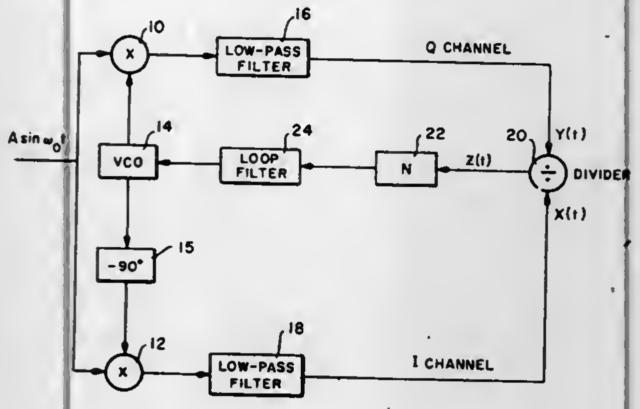
3,893,039
TWO-CHANNEL PHASE-LOCKED LOOP

Joseph H. Yang, Towson, and Stephen S. Wolff, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 2, 1974, Ser. No. 466,364

Int. Cl. H03b *3/04*

U.S. Cl. 331—12 **7 Claims**



7. A phase-lock loop comprising:
first mixer means;
second mixer means;
input means for applying an input signal to said first and said second mixer means;
voltage-controlled oscillator means applying its output signal directly to said first mixer means to be mixed with the input signal and also applying its output signal phase-shifted by 90° to said second mixer to be mixed with the input signal;
means for filtering the quadrature-related outputs from said first and second mixer means and applying as outputs two signals substantially identical except for a quadrature phase relationship; and
means for taking said substantially identical outputs from said filtering means and generating a signal therefrom which is not a function of the amplitude of the input signal and applying this generated signal back to said voltage-controlled oscillator as the control signal.

3,893,040
DIGITAL AUTOMATIC FREQUENCY CONTROL SYSTEM

Maurice C. Harp, Belmont, Calif., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Mar. 27, 1974, Ser. No. 455,109

Int. Cl.² H03B *3/04*

U.S. Cl. 331—14 **6 Claims**

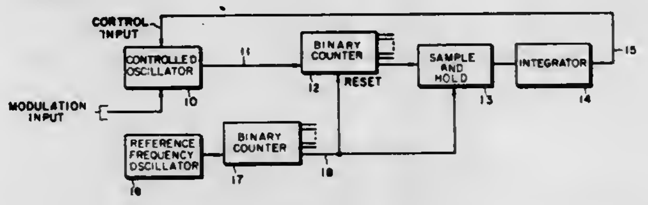
1. An automatic frequency control system wherein the frequency of an oscillator is periodically determined during

intervals of time precisely controlled to derive indications of the frequency thereof for controlling said frequency, said system comprising:

a frequency controllable oscillator;

timing means producing timing signals defining a precise predetermined interval of time;

a binary counting means, responsive to the oscillator output signal and to the timing means for counting the number of cycles in the oscillator output signal during each predetermined interval of time, and producing a binary signal of one state when said number of cycles is greater than a predetermined number and a binary signal of the opposite state when said number of cycles is less than the predetermined number;



a first means for converting said binary signal to an analog signal at the end of each time interval; and

a second means coupling the analog signal to said oscillator for increasing or decreasing the frequency thereof in accordance with the binary indication.

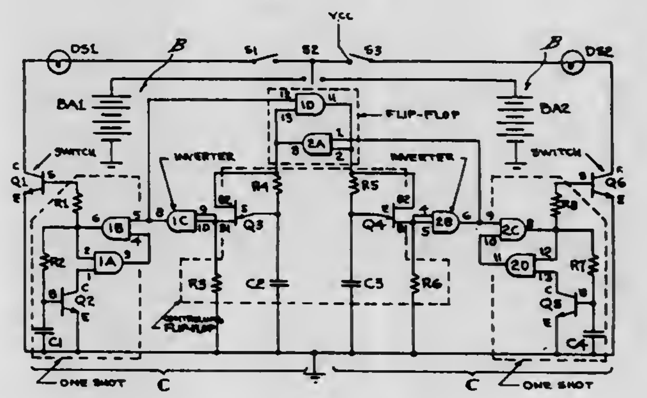
3,893,041
OSCILLATING POWER SWITCHING CIRCUIT FOR ALTERNATELY ENERGIZING TWO LIGHTS

Charles C. Foster, 6531 Riverton Ave., North Hollywood, Calif. 91606, and Leonard W. Hughes, 6566 Tyrone Ave., Van Nuys, Calif. 91401

Continuation of Ser. No. 151,385, June 9, 1971, abandoned. This application Sept. 4, 1973, Ser. No. 393,990

Int. Cl. H03k *3/26*

U.S. Cl. 331—45 **8 Claims**



1. Interdependent power circuits with a pair of alternately operable load elements requiring electrical power for their operation;

a grounded power source,

a flip-flop circuit means comprising first and second interconnected NAND gates and each with a first interlocking input, a second controlling input and an output, the first interlocking input of each being connected to the output of the other,

a pair of switching circuit means and each comprising a unijunction transistor with its emitter connected into a time determination resistorcapacitor network, each of said networks being connected to the output of a corresponding one of said flip-flop NAND gates respectively, a pair of inverters and each comprised of a NAND gate with an input and an output, and with the input connected to a base of a corresponding one of said unijunction transistors,

a pair of alternately operable pulse generating one-shot circuits and each comprised of a "set" and a "reset" NAND gate, a "reset" transistor and a timing resistor-capacitor network, the "set" NAND gate having first and second inputs and an output with the first input connected to both the output of a corresponding one of said inverter NAND gates and to the second controlling input of the other of said flip-flop NAND gates, the "reset" NAND gate having first and second inputs and an output with the first input connected to the output of the set NAND gate and to the timing resistor-capacitor network and with the output connected to the second input of the set NAND gate, the reset transistor with its emitter connected to ground and with its collector connected to the second input of the reset NAND gate and with its base connected into the "timing" resistor-capacitor network,

a pair of power switching transistors and each with its emitter connected to ground, with its base connected to the output of a corresponding one of said set NAND gates, and with its collector connected through a corresponding one of said load elements to the power source, whereby the interdependent power circuits are alternately triggered at rates determined by the time constants of said pair of switching circuit means, and power is applied through each load element for time periods determined by a corresponding one of said one-shot circuits.

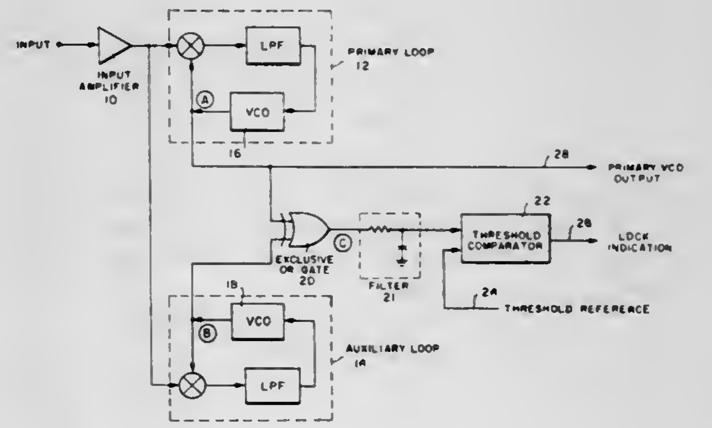
3,893,042
LOCK INDICATOR FOR PHASE-LOCKED LOOPS

Edward C. Whitman, Laurel, and George B. Blake, Greenbelt, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 12, 1973, Ser. No. 423,967

Int. Cl.² H03F *3/26*

U.S. Cl. 331—55 **4 Claims**



1. A phase-lock indication circuit for indicating a locked condition in a phase-locked loop in response to an incoming periodic signal comprising:

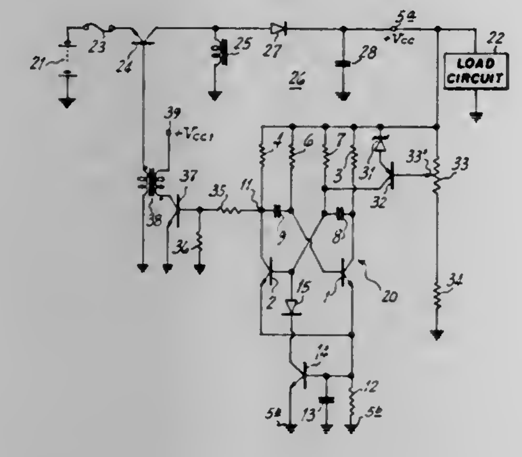
a first phase-locked loop having a VCO center frequency; an auxiliary phase-locked loop having a VCO frequency slightly different from the center frequency of said first phase-locked loop, wherein the capture range of said auxiliary loop overlaps that of said first loop;

means for applying said incoming signal to said first phase-locked loop and to said auxiliary phase-locked loop; and means for comparing the outputs of said first phase-locked VCO and said auxiliary phase-locked VCO for indicating that said first loop and said auxiliary loop are driven in synchronism by said incoming signals.

3,893,043
ASTABLE MULTIVIBRATOR CIRCUIT

Toshimi Fukuoka, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 9, 1974, Ser. No. 459,262
Claims priority, application Japan, Apr. 13, 1973, 48-44473
Int. Cl. H03k *3/282*
U.S. Cl. 331—113 R **8 Claims**

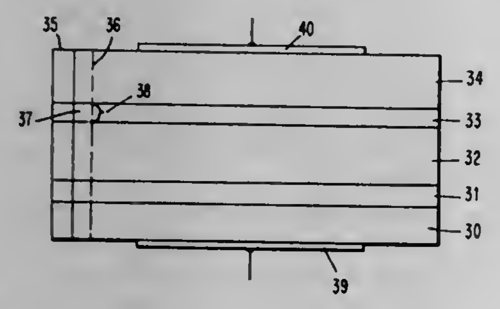


1. An astable multivibrator circuit comprising first and second circuit elements each having conductive and non-conductive states, voltage source means, means connecting said first and second circuit elements with each other and with said voltage source means for normally causing said first and second circuit elements to alternatively and reciprocally assume said conductive states thereof, signal output means connected with at least one of said first and second circuit elements for providing an output signal in dependence on said conductive and non-conductive states of said circuit elements, current detecting means connected with said first and second circuit elements for detecting a total current flowing through the latter when in said conductive state, and means for causing one of said first and second circuit elements to assume said non-conductive state when said total current detected by said current detecting means exceeds a predetermined value either by reason of said first and second circuit elements being accidentally in said conductive state simultaneously or by reason of an excessive voltage at said voltage source means.

3,893,044
LASER DEVICE HAVING ENCLOSED LASER CAVITY

William P. Dumke, Chappaqua, and Jerry M. Woodall, Hartsdale, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 12, 1973, Ser. No. 350,575
Int. Cl. H01s *3/00*
U.S. Cl. 331—94.5 H **2 Claims**

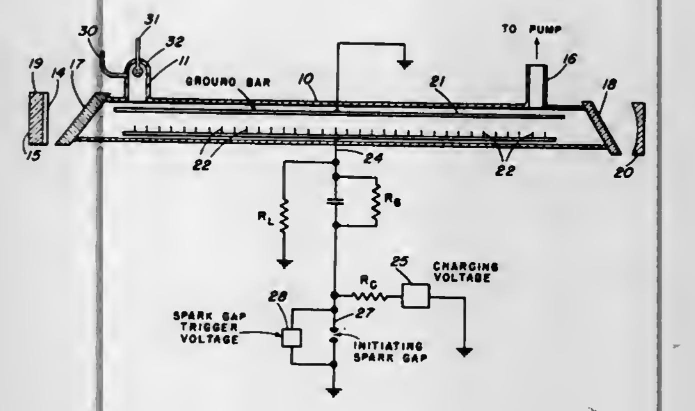


1. A semiconductor laser comprising:
- a substrate of P type conductivity gallium arsenide,
- a first layer of P type conductivity gallium aluminum arsenide disposed on said substrate,
- a second layer of N type conductivity gallium aluminum arsenide disposed on said first layer,
- a third layer of N type conductivity gallium arsenide disposed on said second layer forming with said second layer a NN heterojunction,
- a fourth layer of N type conductivity gallium aluminum arsenide disposed on said third layer forming with said third layer a NN heterojunction,
- a regrown region of P type conductivity gallium aluminum arsenide intersecting a portion of said substrate and each of said layers forming with said third layer a PP heterojunction,
- a diffusion front emanating from said regrown region forming within a portion of said third layer a P type conductivity region said front forming with said third layer a PN homojunction.

3,893,045
PULSED CHEMICAL LASER

Thor V. Jacobson, 3049 Rue La Foret No. 10, and George H. Kimbell, 2650 Boul. Liegereis, both of Ste-Foy, Quebec, Canada

Filed Dec. 1, 1971, Ser. No. 203,734
Int. Cl.² H01S *3/22*
U.S. Cl. 331—94.5 G **2 Claims**

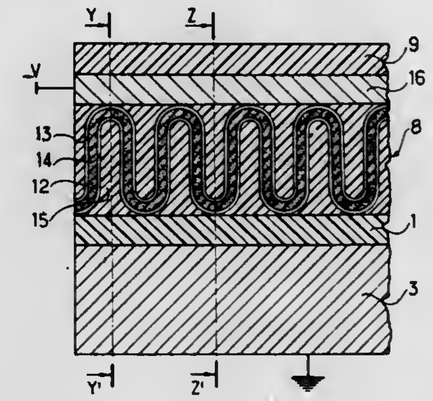


1. A laser comprising, in combination:
- a gastight longitudinal cavity having a longitudinal axis therethrough;
- an optical responator comprising light reflecting means located on the longitudinal axis at opposite ends of the cavity, one of said reflecting means also having means to permit light to pass therethrough;
- multiple transverse pin electrodes located within said cavity on transversely opposite sides of said longitudinal axis, said electrodes having terminals outside said cavity for connection to means for initiating an electrical discharge therebetween, the direction of discharge being transverse to the longitudinal axis and the discharge from all electrodes being simultaneous;
- means providing a mixture of a hydrogen-rich gas and a fluorine-rich gas to said laser cavity, said gases being of a type which chemically react with each other, when exposed to an electrical discharge, to produce a hydrogenfluorine gas compound having hydrogen fluoride molecules which are in an excited state, so that spontaneous lasing action occurs; and
- means for exhausting the reaction products of said chemical reaction from said cavity,
- said gaseous mixture comprising 6.4 to 9.5 parts of SF_6, 1 part of C_3H_8, and 0 to 160 parts of He.

3,893,046
PARALLEL PLATE TRANSMISSION LINE LASER EXCITATION SYSTEM

Bruno Godard, Gif-sur-Yvette; Bernard Lacour, Villebon-sur-Yvette, and Maurice Michon, Draveil, all of France, assignors to Compagnie Generale d'Electricite, Paris, France

Filed June 25, 1974, Ser. No. 482,914
Claims priority, application France, June 26, 1973, 73.23375; Sept. 21, 1973, 73.33973
Int. Cl. H01s *3/09, 3/22*
U.S. Cl. 331—94.5 G **14 Claims**



1. In a laser generator including: an active gaseous medium; an electric excitation line formed by an insulating plate inserted between a first metallic plate and a second metallic plate, one edge of each of the plates being in the shape of a parabola whose axis forms an angle α greater than zero with at least one slot formed in said first metallic plate and separating it into two distinct parts, the foci as well as the apices of said parabolas being respectively arranged on the same straight line perpendicular to the plane of the plates, said metallic plates being parallel to each other and connected to at least one voltage source; means for maintaining an active gaseous medium in said slot; and an excitation means for generating a current wave in said line and comprising discharger circuit means for producing a substantially point discharge between said metallic plates at the foci of the parabolas;

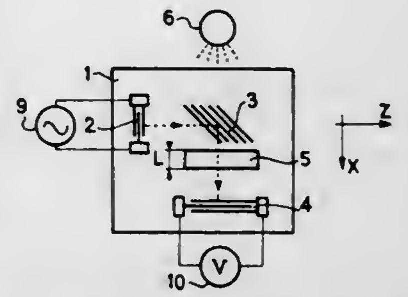
and comprising the improvement wherein at least one of the parts of said first metallic plate is formed by a horizontal metallic conductive plate, and a sheet consisting of an insulating layer inserted between two electrically conductive layers, said sheet being folded back on itself so that its cross-section through a plane parallel to the slot and perpendicular to the plane of the plates has substantially the form of a continuous series of U's having upper and lower ends and vertical legs, said upper ends being in contact with said horizontal metallic conductive plate, said lower ends being in contact with said insulating plate.

3,893,047
ACOUSTIC SURFACE WAVE TRANSMISSION SYSTEM

Claude Lardat, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Mar. 4, 1974, Ser. No. 448,083
Claims priority, application France, Mar. 9, 1973, 73.08560
Int. Cl. H03h *9/26, 9/30, 9/32*
U.S. Cl. 333—30 R **11 Claims**

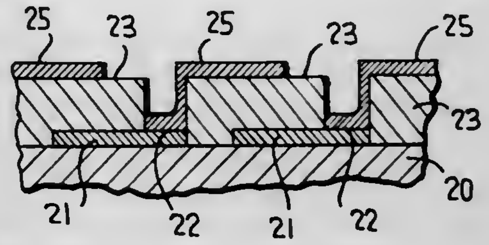
1. Acoustic surface wave transmission device using means cooperating in a combination comprising:
- a piezoelectric substrate having on one face transducers between which the acoustic surface waves propagate; at least one transmitting electro-acoustic transducer connected to an electric signal source and producing the transmitted acoustic waves; at least one acousto-electric transducer receiving the waves and outputting to a load; at least one reflective grating constituted by a series of discontinuities parallel to one another at an inclination to wave propagation direction redirecting the transmitted wave; characterised in that the device also comprises at least one thin photoconductive layer (5) disposed on the substrate (1) between the grating (3) and the receiving transducer (4), a light source (6) to cause illumination of said layer so as to make use of the zero-electric-field acousto-electric effect arising from interaction between the layer when illuminated and the acoustic surface wave, and means to allow said zero effect to take place only at given regions of said substrate between said grating and said receiving transducer.



3,893,048
MATCHED MIC DELAY LINE TRANSDUCER USING A SERIES ARRAY

Stuart I. Lieberman, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed July 8, 1974, Ser. No. 486,296
Int. Cl. H03h *9/26, 9/30, 9/32*
U.S. Cl. 333—30 R **9 Claims**



1. A transducer arrangement for a bulk mode acoustic delay line comprising a plurality of series connected, adjacent, closely spaced transducers disposed on an end surface of said delay line, each two adjacent transducers of said plurality of transducers comprising first and second transducers each having,
- a thin film metal ground layer electrode, the end of said electrode of said first transducer extending beyond said first transducer and abutting said second transducer,
- a layer of electromechanical transducer material disposed on said ground layer electrode and having a transducer material top surface and at least a side surface at right angles thereto and covering all but a specified exposed end portion of the transducer ground layer electrode, said end of said first transducer ground layer electrode being the end of said specified end portion of said first transducer ground layer electrode,
- and a thin film metal top layer electrode disposed on said top surface of said transducer material layer and overlying part of said ground layer electrode, the top layer electrode of said second transducer extending beyond said ground layer electrode of said second transducer and into overlying contact with the specified exposed end portion of the ground layer electrode of said first transducer to connect said first and second transducers in series, said top layer electrode of said second transducer being bent at right angles down a said side surface of transducer material and then at right angles again into said overlying contact.

3,893,049

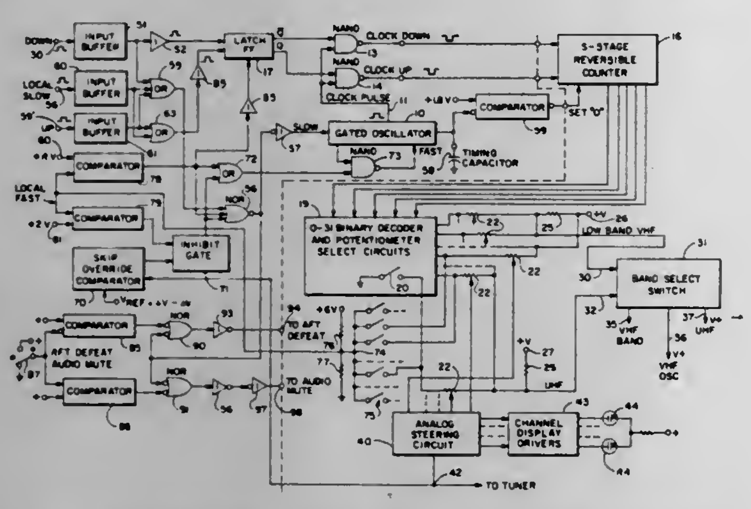
ELECTRONIC TUNING SYSTEM FOR TELEVISION RECEIVERS

Derek Bray, Phoenix, Ariz., assignor to Motorola, Inc., Chicago, Ill.

Filed Mar. 25, 1974, Ser. No. 454,429

Int. Cl. H03j *1/22;* H03h *5/12*

U.S. Cl. 334—15 11 Claims



1. An electronic tuner control system including in combination:

a gated clock pulse generator for producing clock pulses at first and second frequencies on an output thereof, said second frequency being higher than said first frequency; control means energizable for initiating and maintaining operation of said gated clock pulse generator to cause said clock pulse generator to produce said clock pulses in response thereto at said first frequency and to terminate production of said clock pulses upon deenergization of said control means;

overriding means coupled with said gated clock pulse generator for overriding said control means and maintaining operation of said gated clock pulse generator for so long as an input signal to said overriding means is within a second predetermined range of signals and for terminating operation of said gated clock pulse generator following deenergization of said control means when the input signal to said overriding means is in a first predetermined range of signals; and

direct select switch means coupled with said gated clock pulse generator for causing operation thereof at said second frequency.

3,893,050

SOLENOID ACTUATED CIRCUIT BREAKER OPERATOR

John G. Salvati, and Louis N. Ricci, both of Beaver Falls, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 15, 1974, Ser. No. 470,104

Int. Cl. H01h *3/02*

U.S. Cl. 335—1 8 Claims

1. An operating mechanism for remotely controlling a circuit breaker, said operating mechanism comprising:

a. a frame mountable in association with a circuit breaker, said circuit breaker having an operating handle,

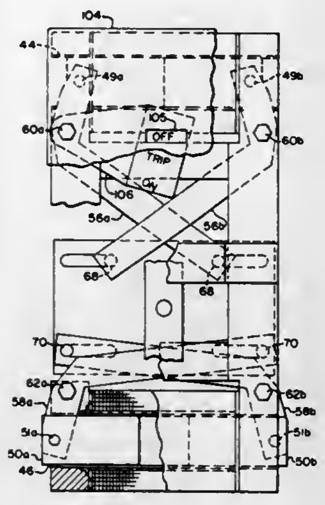
b. a saddle assembly adapted to engage the operating handle of the associated circuit breaker, said saddle assembly activating the operating handle of the circuit breaker upon movement of said saddle assembly,

c. means attached to said frame for supporting said saddle assembly, said saddle assembly supporting means permitting linear longitudinal movement of said saddle assembly with respect to said frame through sufficient distance to actuate the associated circuit breaker operating handle from one operating position to another operating position,

d. solenoid means, said solenoid means comprising movable core means,

e. means for energizing said solenoid means to cause said core means to move from one operating position to another operating position; and,

f. linkage means connecting said saddle assembly and said core means, said linkage means transmitting force from said core means to said saddle assembly through lost motion connections at a plurality of points spaced away from the centerline of said saddle assembly, said saddle assembly moving said breaker handle from one operating position to another operating position in response to movement of said core means.



3,893,051

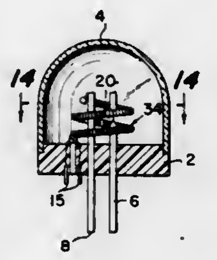
ELECTROMAGNETIC REED SWITCH

Bernard Edward Shlesinger, Jr., 9411 Macklin Ct., Alexandria, Va. 22309, and Charlie D. Mariner, 2846 Greenway Blvd., Falls Church, Va. 22042

Filed Mar. 19, 1974, Ser. No. 452,505

Int. Cl. H01h *1/66*

U.S. Cl. 335—151 59 Claims



1. A reed switch comprising:

a. a support,

b. an electromagnet and a magnetic reed having portions supported by said support and in close proximity to each other,

c. said electromagnet including a core and a coil,

d. conductor means supported by said support,

e. said conductor means including a contact portion,

f. said magnetic reed including a free end having a thin hinge facing said core,

g. said magnetic reed including a contact portion,

h. said conductor means contact portion and said magnetic reed contact portion being positioned for contact engagement and disengagement with each other,

i. whereby upon activation of said electromagnet said magnetic reed contact portion will be drawn to or away from said conductor means contact portion by virture of said hinge to open or close a circuit.

3,893,052

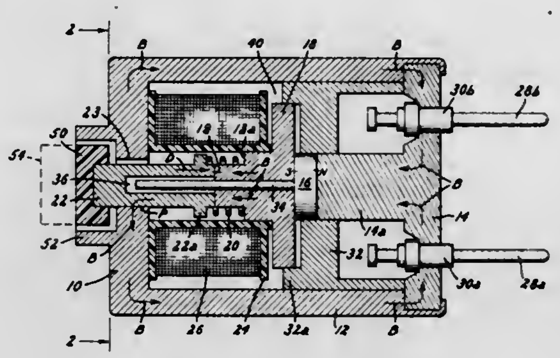
SHOCK-RESISTANT INDICATING DEVICE

Peter Kotos, Havertown, Pa., and Harry G. Kokolis, Cherry Hill, N.J., assignors to General Electric Company, New York, N.Y.

Filed Sept. 26, 1974, Ser. No. 509,505

Int. Cl. H01f *7/08*

U.S. Cl. 335—229 8 Claims



1. A shock-resistant electromechanical indicating device comprising:

a. spaced-apart first and second walls and a frame connecting said walls, said walls and said frame being made of a highly magnetically permeable material, and said first wall containing an aperture;

b. a reciprocally-movable, generally-cylindrical plunger also made of highly magnetically permeable material extending into said aperture with a loose fit, said plunger having a normal retracted position and an extended indicating position;

c. spring means normally producing a force urging said plunger toward said extended position;

d. guide means for guiding said plunger for a movement in a direction substantially parallel to the longitudinal axis of said plunger but allowing the outer periphery of said plunger when the plunger is in its retracted position to contact the internal wall of said aperture along a restricted portion of said internal wall;

e. a permanent magnet member fixed relative to said second wall producing a first magnetomotive force which is in opposition to and of a magnitude greater than said spring force and a second magnetomotive force applied in a radial direction to said plunger at said aperture;

f. said second magnetomotive force normally holding the outer periphery of said plunger in contact with said restricted portion of the internal wall of said aperture when the plunger is in said retracted position; and

g. a normally-deenergized coil surrounding but spaced from said plunger energizable to produce flux in opposition to that from said permanent magnet, thus reducing said first magnetomotive force sufficiently to allow said spring to drive said plunger to its extended position.

3,893,053

ELECTROMAGNET LATCHING MEANS FOR PLUNGER

Mikhail Alexandrovich Onatsevich, ulitsa 6, Minusinskaya, kv. 67, Moscow, U.S.S.R.

Filed Apr. 25, 1974, Ser. No. 464,209

Int. Cl. H01f *7/08*

U.S. Cl. 335—254 2 Claims

1. A plunger electromagnet comprising:

a housing;

a working armature disposed in said housing for axial displacement in said housing

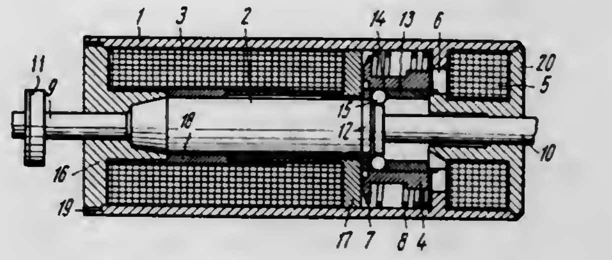
a winding enveloping said working armature;

an auxiliary armature disposed in said housing and comprisisng arranged coaxially with said working armature;

a spring circumposed about said auxiliary armature in engagement between said flange and housing and spring-loading the auxiliary armature toward said working armature;

a second winding having an axial air gap between said second winding and said auxiliary armature so that the magnetic field of said second winding causes axial movement of said auxiliary armature into said air gap in opposition to said spring loading; said working armature having an end face portion facing said auxiliary armature;

a truncated-conical stop secured at said end face portion of said working armature; a locking means in said housing comprising a hollow cylinder and fixedly interposed between the path of movement of said working armature and said auxiliary armature; said cylinder including at least one hole opening radially through said cylinder for communicating with the respective path of travel of the respective armatures, a ball trapped in said hole for movement therein radially between said paths of travel, said ball being engagable with said truncated conical stop of said working armature with the inner surface of the auxiliary armature overlying the same when the working armature is energized during one attitude of operation of the plunger electromagnet, and being positionable in abutting relation with said auxiliary armature and being retained there by the outer surface of the working armature when the auxiliary armature is energized during another attitude of operation.



3,893,054

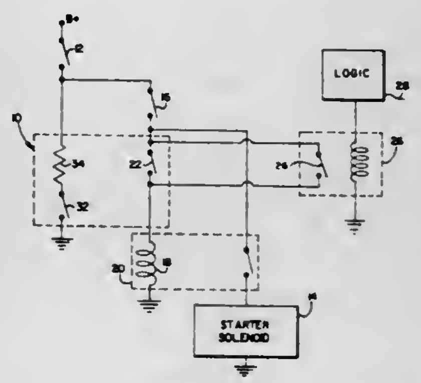
MANUALLY SET SWITCHING DEVICE

Leo Marcoux, Rehoboth; Charles D. Flanagan, Attleboro, and Thomas E. Evans, Rehoboth, all of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 5, 1973, Ser. No. 421,889

Int. Cl. H01h *39/00*

U.S. Cl. 337—37 23 Claims



1. A manually set switching device comprising:

first switch means having an enabling switch condition and an overriding switch condition and operatively connectible to a load circuit;

electrically energized force generating means operatively connected to the first switch means for moving the first switching means between the two switch conditions;

second switch means having enabling and disabling switch conditions and coupled with the electrically operated force generating means to control the energization and deenergization of the force generating means;

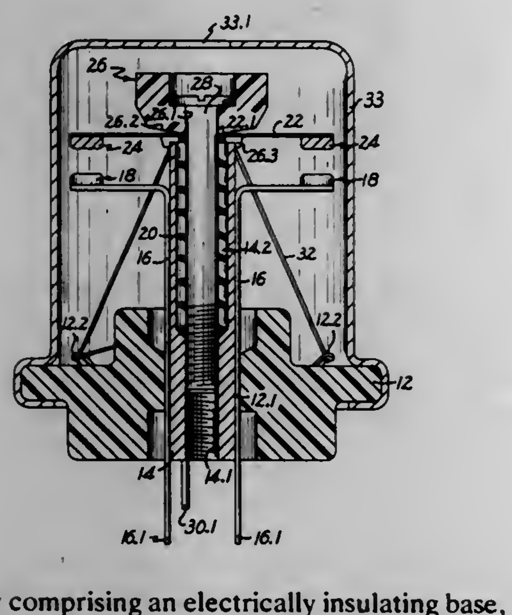
latch means operatively engagable with the second switch means for holding the second switch means in the disabling switch condition upon deenergization of the force generating means; and

manually operable actuator means for disengaging the second switch means from the latch means.

3,893,055
HIGH GAIN RELAYS AND SYSTEMS

Ernest M. Jost, Plainville; Lyle E. McBride, Jr., Norton, and Teuvo J. Santala, Attleboro, all of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 16, 1973, Ser. No. 351,683
Int. Cl. H01h *61/06*
U.S. Cl. 337—140 **15 Claims**



1. A relay comprising an electrically insulating base, stationary contact means mounted on said base, movable contact means mounted on said base for movement between a closed circuit position engaging said stationary contact means and an open circuit position spaced from said stationary contact means, spring means mounted on said base biasing said movable contact means from one of said positions to the other of said positions, and a metal wire secured between said movable contact means and said base, said wire being of a selected metal alloy to be deformed from an original length to a second length by said spring bias as said movable contact means is moved from said one position to said other position by said spring bias while said alloy displays a relatively low modulus of elasticity below a transition temperature and to abruptly return to said original length and to display a relatively higher modulus of elasticity to move said movable contact means back to said one position against said spring bias with a force of at least 15 grams when said wire is heated to said transition temperature, said wire having a selected cross-sectional size and length to be heated from room temperature to said transition temperature by passing electrical current through said wire with a power input of less than about 2 watts for permitting operation of said relay with a gain of at least about 500 to 1 at power levels used in energizing integrated circuits.

3,893,056
FUSE DEVICE

Robert H. Harner, Park Ridge, Ill., assignor to S&C Electric Company, Chicago, Ill.

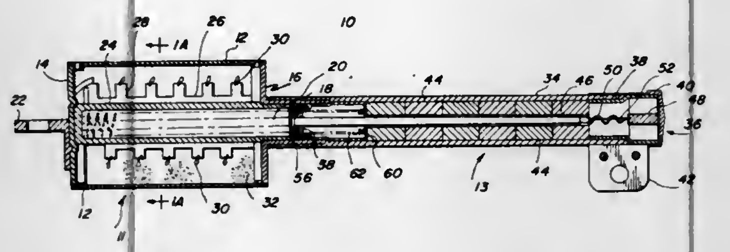
Filed Apr. 1, 1974, Ser. No. 456,866
Int. Cl. H01h *85/02*
U.S. Cl. 337—283 **19 Claims**

1. A current-limiting fuse device for interrupting current flow comprising:

an expulsion fuse means comprising at least one fusible element for optimumly interrupting current flow in a first current range, said expulsion fuse means having operative portions; and

a current-limiting means for optimumly interrupting current flow in a second current range, said current-limiting portion having a hollow interior portion;

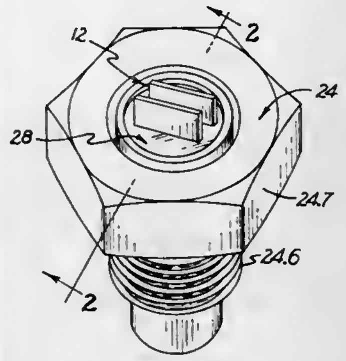
said expulsion fuse means and said current-limiting means being joined together so that the internal portion of the current-limiting means can receive at least one of the operative portions of the expulsion fuse means without adversely affecting the voltage withstand capabilities of the current-limiting means thereby reducing the overall length of the fuse device.



3,893,057
SEALED THERMOSTATIC SWITCH

Gerrit J. Beunk, Almelo, and Arie van der Ploeg, Wierden, both of Netherlands, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed July 3, 1974, Ser. No. 485,402
Int. Cl. H01h *37/52*
U.S. Cl. 337—380 **3 Claims**

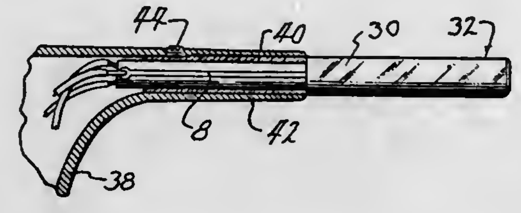


1. A sealed electrical switch comprising a seal body having a well therein which is open at one end, having a shoulder extending completely around said open well end, and having a wall upstanding from said shoulder; a switch means having a frame, operative switching components mounted on said frame for performing an electrical switching function, and terminal means extending in a selected direction from said frame for electrically connecting said switch means in an electrical circuit, said switch means being disposed in said well of said seal body with said terminal means extending out of said open well end; a compressible sealing member of electrically insulating material having a portion resting on said shoulder completely around said open well end and having an aperture fitted around each terminal means of said switch means extending out of said well, said compressible member having an upstanding portion with cam surfaces thereon surrounding a portion of each aperture in said compressible member and inclined toward an end of said aperture; and a spreader member of a relatively more rigid electrically insulating material having an aperture fitted around each terminal means of said switch means, said spreader member having a recessed portion around each aperture therein interfitted with an upstanding portion of said compressible member, said seal body having said wall engaging said spreader member pressing said compressible member against said shoulder and camming said upstanding portion of said compressible member around said terminal means of said switch means for sealing said switch means within said body to form said sealed electrical switch.

3,893,058
ELECTRONIC THERMOMETER PROBE

Arlie L. Keith, Orlando, Fla., assignor to J & J Manufacturing Corporation, West Palm Beach, Fla.

Filed Mar. 6, 1973, Ser. No. 338,501
Int. Cl. G01k *7/22*
U.S. Cl. 338—28 **5 Claims**

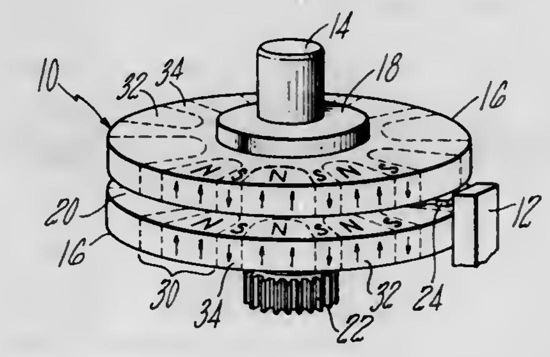


1. A probe for an electronic thermometer having an elongated foundation member, a long conductor member extending axially along said foundation member to one end, a first shorter conductor member extending axially to a first location spaced from the end, a second shorter conductor member extending axially to a second location spaced from the end, a resistor material connecting said first shorter conductor at said first location to said long conductor at the end of said foundation member, a first insulating material insulating said resistor material from said long conductor except at the end where they are connected, a thermistor material connecting said second shorter conductor at said second location to said long conductor at the end of said foundation member, a second insulating material insulating said thermistor material from said resistor material and said long conductor except at the end where they are connected, said resistor material and said thermistor material being positioned relative to each other so that heat from said resistor material will heat said thermistor material, a protective covering being located over and fixed to the end of said foundation member containing the resistor material and thermistor material.

3,893,059
PULSE GENERATOR WITH ASYMMETRICAL MULTI-POLE MAGNET

Walter J. Nowak, Vernon, Conn., assignor to Veeder Industries, Inc., Hartford, Conn.

Filed Mar. 13, 1974, Ser. No. 450,562
Int. Cl. H01c *7/16*
U.S. Cl. 338—32 **4 Claims**

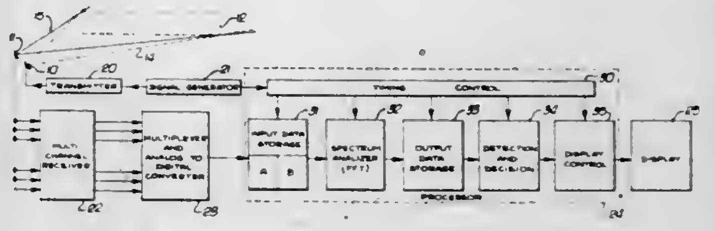


1. In a pulse generator comprising magnetic field means and a Hall sensor operative for generating an electrical signal upon the application of a magnetic field thereto, the Hall sensor and magnetic field means being mounted for relative movement for generating a train of electrical signals, the combination wherein the magnetic field means includes an asymmetrical multi-pole magnet having a plurality of symmetrically spaced pole pairs with each pole pair including a predominant magnetic pole of one polarity and a subservient magnetic pole of the opposite polarity.

3,893,060
AIRCRAFT VORTEX DETECTION SYSTEM

Martin Balser, Covina, Calif., assignor to Xonics, Inc., Van Nuys, Calif.

Filed Aug. 28, 1973, Ser. No. 392,254
Int. Cl. G01s *9/66*
U.S. Cl. 340—1 R **14 Claims**



1. In an aircraft vortex detection system, the combination of:

an acoustic echo system transmitter including a first acoustic transducer system for directing energy toward a zone in a generally fan shaped beam, and control means for energizing said transmitter beam in pulses;

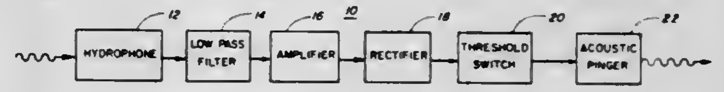
an acoustic echo system receiver positioned adjacent said transmitter and including a second acoustic transducer system defining a plurality of generally side-by-side beams coincident with said transmitter beam for receiving acoustic energy of said transmitter backscattered by a vortex in a zone, and providing a receiver output for each receiver beam; and

signal processor means having the receiver outputs as inputs for generating an output signal varying as a function of the backscatter echoes.

3,893,061
UNDERWATER ACOUSTIC DETECTION SYSTEM

Zaka I. Slawsky, Bethesda, and Wayne Dee Wilson, Silver Springs, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 13, 1970, Ser. No. 48,620
Int. Cl.² H04B *11/00*
U.S. Cl. 340—3 E **4 Claims**



1. An underwater acoustic detection system comprising:

hydrophone means for detecting an acoustic signal from an object in the water medium and converting said acoustic signal into an electrical signal;

low pass filter means for filtering said electrical output signal to provide a bandwidth limited electrical signal;

a full wave rectifier for providing a rectified electrical signal from said bandwidth limited electrical signal;

a threshold switch sensitive to the level of said rectified electrical signal that closes when the amplitude of said rectified electrical signal is above a certain threshold level;

an acoustic pinger for transmitting an acoustic detection signal through the water medium in response to the closing of said threshold switch, said acoustic detection signal having a frequency substantially higher than the cutoff frequency of said low pass filter; and

means remotely located from said hydrophone for receiving said transmitted signal.

3,893,062
TRANSMISSION SYSTEM

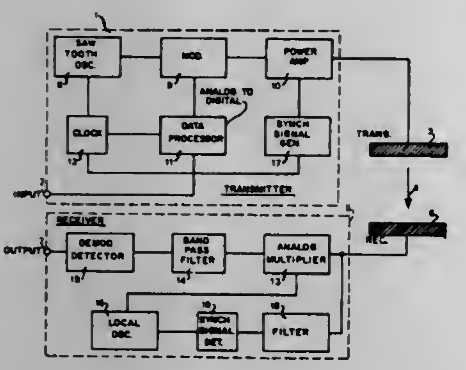
Alain Georges Segul, Rennes, France, assignor to Agence Nationale de Valorisation de la Recherche, France

Filed June 20, 1973, Ser. No. 371,599

Claims priority, application France, June 23, 1972, 72.22799

Int. Cl. H04b *11/00*

U.S. Cl. 340—5 R **6 Claims**



1. An ultrasonic underwater transmission system comprising a transmitter and at least one remote receiver, means in said transmitter for transmitting a carrier frequency modulated with an intelligence signal, means in said receiver for generating a first local receiver frequency, both said carrier frequency and said local frequency being subject to periodic variations according to a same predetermined variation law whereby said carrier and local frequencies naturally beat with each other as a function of said variations, means responsive to said beat frequency resulting from a beating of the received carrier frequency and the said first local frequency for filtering a band of signals having a center frequency selected according to the length of an underwater transmission path from said transmitter to said receiver and to the phase difference between said carrier frequency variation and the local frequency variation, and means for demodulation of said intelligence signal.

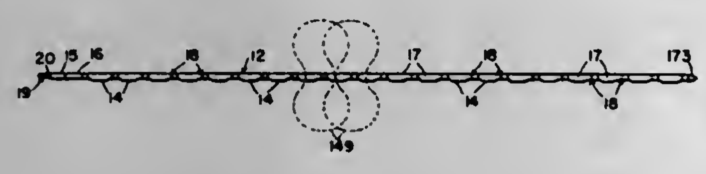
3,893,063
DETECTION STREAMER

Robert H. Park, Pluckemin, N.J.; Harold W. Klas, Washington, D.C., and Nelson N. Estes, Austin, Tex., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 15, 1944, Ser. No. 526,624

Int. Cl.² G01S *3/80*

U.S. Cl. 340—6 R **7 Claims**



1. A torpedo detecting device of the character disclosed comprising, in combination, a plurality of microphone units, means including orientation means for providing each of said units with a vertically arranged substantially dumbbell-shaped response pattern to a sound signal received thereby from a torpedo moving transversely with respect thereto, and coupling means for spacing said units with respect to each other in such a manner as to provide an overlapping of the response patterns of adjacent units and a substantially uniform longitudinal field of response to sound signals received from a torpedo passing any pair of adjacent microphone units at any point therebetween.

3,893,064
SIGNAL DISCRIMINATING DEVICE

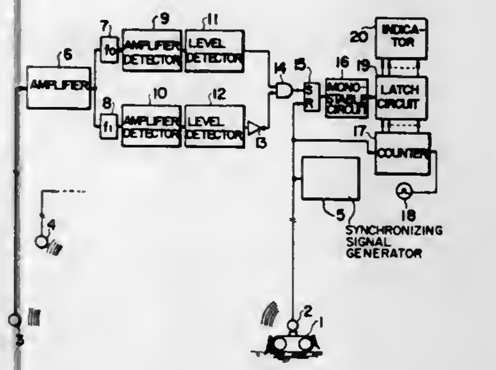
Motohisa Nishihara, and Yomei Kato, both of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Mar. 28, 1973, Ser. No. 345,489

Claims priority, application Japan, Mar. 29, 1972, 47-31494

Int. Cl. G01s *11/00*

U.S. Cl. 340—6 R **20 Claims**



1. A signal discriminating device which is employed with a system for measuring the time required until the reception of signals successively sent forth from a transmitter comprising a first selective amplifier means for selectively amplifying a first signal of a predetermined frequency, a second selective amplifier means for selectively amplifying a second signal of a frequency other than the predetermined frequency of said first signal, and a detecting means to detect the outputs of said first and second means, the output of said first means being identified as a desired signal when only said first means produces the output, and which further comprises a means through which only the signals arriving during predetermined periods before and after a predicted instant of arrival of a new signal corresponding to the time required until the reception of the preceding signal in the preceding measurement cycle are transmitted to said first and second means.

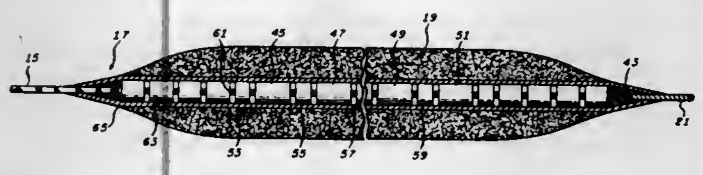
3,893,065
HYDROPHONE ARRAY

John D. Lea, Huntington, and George Rand, Franklin Square, both of N.Y., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Dec. 5, 1973, Ser. No. 422,125

Int. Cl. G01v *1/38;* H04b *13/02*

U.S. Cl. 340—8 MM **8 Claims**



1. An improved towable hydrophone array of the type employing acoustic sensor means enclosed in an elongated tubular casing and adapted to respond to incident acoustic signals arriving from various directions with respect to the longitudinal axis of said casing, said improvement comprising sheath means positionable around the portion of the array containing said sensor means, said sheath means being fabricated from a highly compressible, reticulated material having open pores arranged to permit water to fill the voids therein during normal operation whereby the sheath means is rendered substantially acoustically transparent in the frequency range of interest, said sheath means having an outside diameter which is large with respect to the outside diameter of said tubular casing.

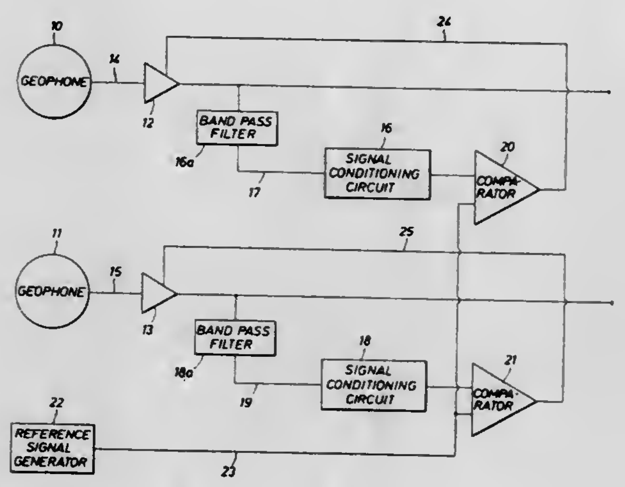
3,893,066
APPARATUS AND METHOD FOR ADJUSTING THE OUTPUT OF A PLURALITY OF GEOPHONES TO ELIMINATE THE EFFECT OF VARIATIONS IN THE NEAR SURFACE CHARACTER OF THE EARTH

Don A. Saunders, Houston, Tex., assignor to Mark Products, Inc., Houston, Tex.

Filed Feb. 25, 1974, Ser. No. 445,534

Int. Cl. G01v

U.S. Cl. 340—15.5 GC **7 Claims**



1. A method of adjusting the amplitude of the output of each of a plurality of geophones for variations in the energy transmitting character of the earth layer near the surface below the geophones comprising obtaining a signal level from each geophone that is produced by ambient noise, comparing the signal level from each geophone with a reference signal level, and adjusting the output of each geophone in proportion to the ratio of the noise signal level for that geophone and the reference signal level so that the output signal level of each geophone resulting from seismic energy will be a substantially accurate indication of the seismic energy reaching the surface earth layer below the geophone.

3,893,067
TRAFFIC SIGNAL CONTROL SYSTEM

Hiroo Watanabe, Mukou, and Minoru Nagao, Nagaokakyo, both of Japan, assignors to Omron Tateisi Electronics Co., Japan

Filed Mar. 16, 1973, Ser. No. 341,848

Claims priority, application Japan, Mar. 16, 1972, 47-26848

Int. Cl. G08g *1/097*

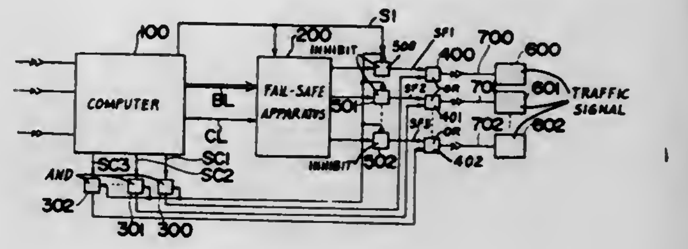
U.S. Cl. 340—46 **9 Claims**

1. A traffic signal control system for controlling traffic signals at a multiplicity of intersections, comprising,

a computer for counting first phase time of traffic signals and generating first signals for advancing phases of the traffic signals upon each countout of the first phase times, a fail-safe apparatus, in which second phase times of the traffic signals are set, and to which said first phase advance signals generated by said computer are supplied,

said fail-safe apparatus commencing the count of the second phase times in accordance with said first phase advance signals from said computer when said computer is normally operating, and for generating second signals for advancing the phases of said traffic signals upon attaining a count of said set second phase times, and

logic switch means for transmitting said first phase advance signals from said computer when said computer is normally operating, and for transmitting said second phase advance signals from said fail-safe apparatus when said computer fails.



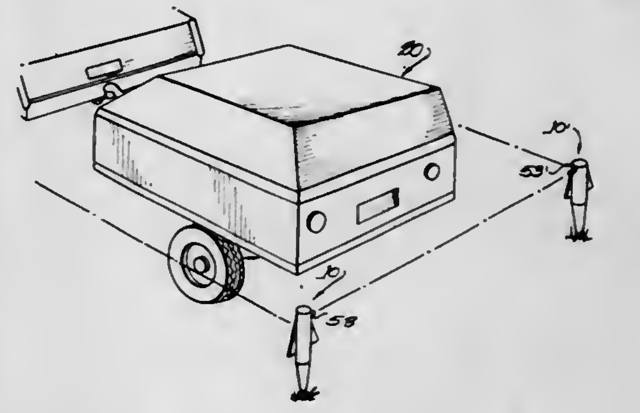
3,893,068
TRAILER BACK-UP-RIGHT DEVICE

Raymond A. Tucker, Jr., 1048 Southwest 1 Ter., Pompano Beach, Fla. 33060

Filed Sept. 10, 1974, Ser. No. 504,693

Int. Cl.² G08G *1/14*

U.S. Cl. 340—51 **8 Claims**



1. A trailer back-up-right guide device intended for use by a vehicle driver in the backing up of a towed trailer into a parking space without requiring the assistance or guidance of other individuals, the device comprising a pair of guide devices, each guide device comprising, in combination:

an elongated hollow tubular housing having a closed bottom end, an open top end, and cylindrical side wall surfaces;

a compartment defined interiorly of the side walls with access thereto being through the open top end of the housing;

an inverted conically configured stake affixed at its base to the closed bottom end and projecting downwardly therefrom to its apex and adapted to be stabbed into the ground for supporting the housing at a position above the ground;

a reflector affixed to the front of the cylindrical sidewall surface along a tangential line of contact therewith projecting outwardly symetrically relative to the line of contact;

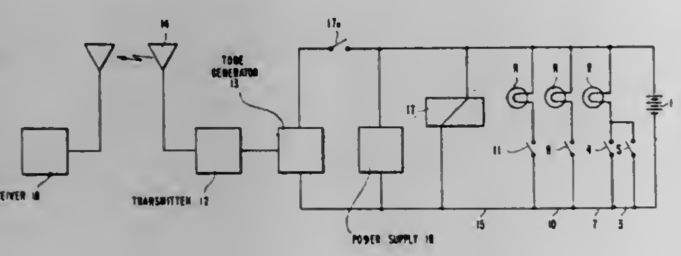
an electric lamp disposed inwardly of said compartment;

a plurality of electric dry cells disposed inwardly of said compartment;

an electrical switch mounted on said housing;
means connecting an electric lamp, said dry cell batteries, and said electrical switch in electrical series relationship such that the switch selectively controls the energization and de-energization of the electric lamp;
a cap closing the open top end of the housing compartment to retain the electric lamp and dry cells therein;
an aperture extending through the housing side walls in communication with the electric lamp for directing light rays therefrom in a direction forwardly of the housing normal to the plane of said reflector;
a second aperture in the side walls of the housing in communication with said electric lamp for directing light rays therefrom in a direction approximately 90° from said first aperture;
means deflecting a portion of the light rays from said front aperture onto a face surface of said reflector;
whereby upon energization of said electric lamp light rays are emmitted through said first and second ports.

3,893,069
VEHICLE ALARM SYSTEM

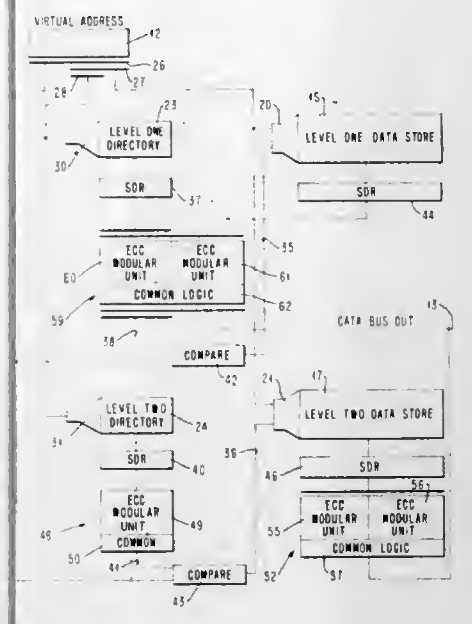
Robert L. Mason, Durham, N.C., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Mar. 28, 1974, Ser. No. 455,114
Int. Cl. B60r *25/10*
U.S. Cl. 340—63 **3 Claims**



1. A vehicle alarm system for a vehicle having a battery, a passenger compartment having doors, a compartment lamp therein, a compartment circuit including the battery for electrically energizing the compartment lamp and a plurality of compartment switches, each at a corresponding one of the doors for closing the compartment circuit to energize the compartment lamp when a compartment door is opened, a trunk having a trunk cover, a trunk lamp therein, a trunk circuit including the battery for electrically energizing the trunk lamp, a trunk switch at the trunk cover for closing the trunk circuit to energize the trunk lamp when the trunk cover is opened, and an engine area for an engine, said engine area having an engine cover, an engine lamp therein, an engine circuit including the battery for electrically energizing the engine lamp and an engine switch at the engine cover for closing the engine circuit to energize the engine lamp when the engine cover is opened, said alarm system comprising
radio transmitting means for transmitting signals;
tone generating means connected to the transmitting means for producing signals and supplying the signals to the transmitting means for transmission; and
energizing means coupling the tone generating means to the compartment, trunk and engine circuits for energizing the tone generating means to produce signals when a circuit is closed, the energizing means comprising power supply means connected to the battery for producing a voltage for energizing the tone generating means, a relay switch connected between the power supply means and the tone generating means for controlling the energization of the tone generating means and a relay winding connected in parallel with the compartment, trunk and engine lamps for controlling the operation of the relay switch for closing the relay switch to connect the tone generating means to the power supply means when a lamp is energized.

3,893,070
ERROR CORRECTION AND DETECTION CIRCUIT WITH MODULAR CODING UNIT

Douglas C. Bossen, Wappingers Falls; Vincent A. Cordi, Vestal; Mu-Yue Hsiao, Poughkeepsie; Barry N. Shiffrin, Endicott, all of N.Y., and Ellis W. Glick, Deerfield, Ill., assignors to IBM Corporation, Armonk, N.Y.
Filed Jan. 7, 1974, Ser. No. 431,530
Int. Cl. H04l *1/10*
U.S. Cl. 340—146.1 AL **7 Claims**



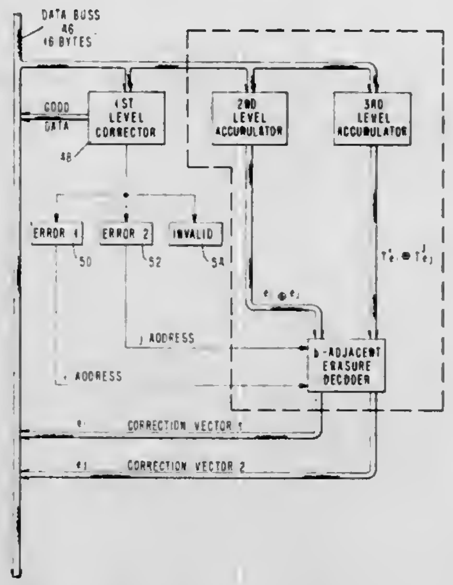
1. A modular odd weight encoder for data words that are multiples of a predetermined number of data bits, comprising, first means for encoding a first set of data bits having said predetermined number of data bits to form a minimum number of SEC DED bits according to an odd weight code,
second means for encoding a second set of data bits having said predetermined number of data bits to form a minimum number of SEC DED bits according to an even weight code and for forming a parity bit of all the data bits encoded in said even weight code, and
means combining in an Exclusive OR function each SEC DED bit of said first encoding means with a SEC DED bit of said second encoding means to form SEC DED bits in an odd weight code for all the data bits encoded by said first and second encoding means, said parity bit forming an additional SEC DED bit for said data bits encoded by said first and second encoding means.

3,893,071
MULTI LEVEL ERROR CORRECTION SYSTEM FOR HIGH DENSITY MEMORY

Douglas C. Bossen, Wappingers Falls; Mu-Yue Hsiao, Poughkeepsie, both of N.Y., and Arvin M. Patel, San Jose, Calif., assignors to IBM Corporation, Armonk, N.Y.
Filed Aug. 19, 1974, Ser. No. 498,510
Int. Cl. H04l *1/10;* **G11c** *29/00*
U.S. Cl. 340—146.1 AL **5 Claims**

1. In a random access memory system of the type that is functionally divided into units of storage each containing a plurality of data words with each word storing a number of bits of different arrays, an error correcting system comprising:
a first level error correction means including a SEC-MED code means adding a plurality of check bits to each data word in and out of storage to form a SEC-MED code word for correcting a single bit in error of each of the SEC-MED code words generated from the plurality of data words in the unit of storage on a word for word basis and providing a pointer for each SEC-MED code in the unit of storage containing more than one error;

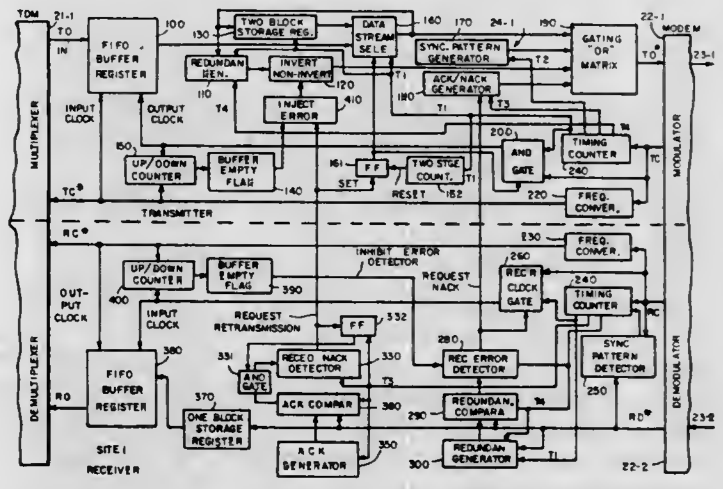
second and third level error correction means adding additional code words to the units of storage for protecting said SEC-MED code words of the unit of storage on a cross word basis each byte of both additional code words being a check on one byte position in all of the words in the plurality of words, where each check byte of the first additional code word $B_{p,1} = A_{p,1}\ A_{p,2}\ A_{p,3}\ \ldots\ A_{p,M}$ and each check byte of the second additional code word $B_{p,2} = T\ A_{p,1}\ T^2\ A_{p,2}\ T^3\ A_{p,3}\ \ldots\ T^M\ A_{p,M}$;
second level accumulator level means for generating the syndrome $S_{p,1} = B_{p,2}\ T\ A_{p,1}\ T^2\ A_{p,2}\ \ldots\ T^M\ A_{p,M}$ for each data byte position in the SEC-MED code words of the unit of storage while the first level error corrector is correcting single errors in the words;



third level accumulating means for generating the syndrome $S_{p,2} = B_{p,2}\ T\ A_{p,1}\ T^2\ A_{p,2}\ \ldots\ T^M\ A_{p,M}$ for each data byte position in the SEC-MED code words of the unit of storage while the first level corrector is correcting single errors in the syndrome, and,
second and third level error correction means for correcting words containing multiple errors using the syndromes generated by the first and second level accumulator means and the pointers generated in the first level error correction means after the first level error correction means has corrected those words containing single errors.

3,893,072
ERROR CORRECTION SYSTEM

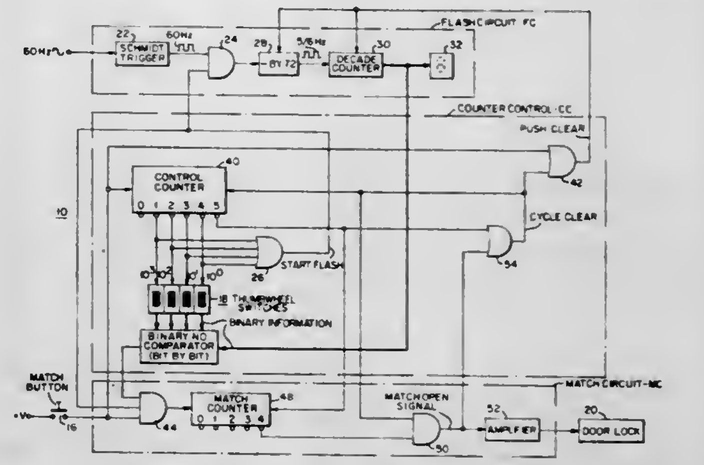
Renato A. D'Antonio, North Attleboro, Mass., and Alejandro B. Marton, Barrington, R.I., assignors to International Data Sciences, Inc., Providence, R.I.
Filed Aug. 3, 1973, Ser. No. 385,297
Int. Cl. H04l *1/16;* **G08c** *25/02*
U.S. Cl. 340—146.1 BA **13 Claims**



2. In an error correction subsystem, first means for generating redundancy signals based on blocks of data to be transmitted, second means for injecting an error into said redundancy signals, third means for recognizing a received request retransmission signal and controlling the injection of an error into said redundancy signals, means for transmitting blocks of data previously transmitted upon recognition of a received request retransmission signal, and first in first out storage means for storing blocks of data to be transmitted.

3,893,073
KEYLESS CONTROL MECHANISM

Paul S. Angello, Los Angeles, Calif., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Feb. 6, 1974, Ser. No. 440,202
Int. Cl. E05b *49/00;* **H04q** *3/02*
U.S. Cl. 340—147 MD **4 Claims**



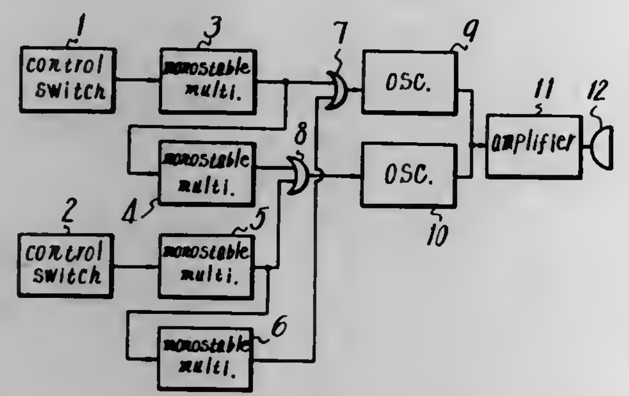
1. Apparatus for generating a control signal in response to predetermined input signals, comprising, first means for sequentially displaying information for viewing by an observer, said first means including a display window having a critical viewing angle requiring the observer to assume a specific position relative to the display window in order to view the displayed information, second means including a single actuator means permitting an observer to selectively acknowledge displayed information and produce signals indicative of the acknowledged display information, and third means operatively connected to said second means and responding to said signals to determine if the acknowledged information corresponds to predetermined information, said third means producing a control signal if said acknowledged information corresponds to said predetermined information.

3,893,074
REMOTE CONTROL SYSTEM UTILIZING SIGNAL FREQUENCY SEQUENCE

Takao Mogi, Tokyo, and Hisao Okada, Yokohama, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Oct. 5, 1973, Ser. No. 404,374
Claims priority, application Japan, Oct. 12, 1972, 47-102096
Int. Cl. H04b *1/16;* **H04q** *9/12*
U.S. Cl. 340—171 PF **8 Claims**

1. A remote control system for remotely controlling an apparatus in response to a remote control signal having a plurality of different frequency components arranged in a predetermined selection of orders, said system comprising:
a. means for receiving the remote control signal transmitted thereto;
b. frequency selecting means for selecting the different frequency components of said received remote control signal with different frequencies and producing a plurality of selected output signals corresponding to said different frequency components, respectively;
c. means for memorizing one of said selected output signals;
d. first gating means for gating an output of said memorizing means in response to a subsequent one of said selected output signals; and

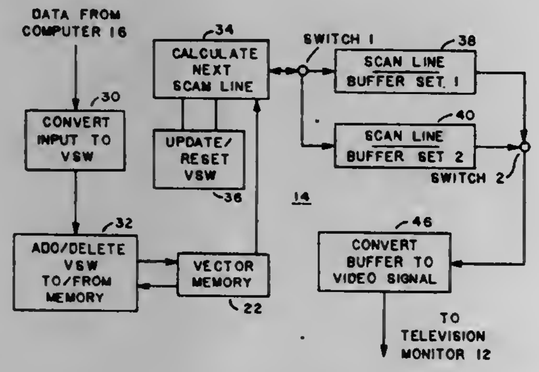
- e. second gating means comprising first and second control signal output terminals and being connected to said first gating means to be enabled by the output of said first gating means during the occurrance of said subsequent one of said output signals and being gated in response to said subsequent one of said selected output signals to supply an output signal through said first output terminal when a first one of said frequency components occurs first and through said second output terminal when a second one of said frequency components occurs first.



3,893,075
METHOD AND APPARATUS FOR DIGITAL SCAN CONVERSION

Richard Orban, 2151 Sharon Rd., Menlo Park, Calif. 94025; Stephen C. Terry, 1801 9th Ave., San Francisco, Calif. 94122, and Horace J. Enea, 1240 Lisa Ln., Los Altos, Calif. 94022

Filed Dec. 29, 1972, Ser. No. 319,217
Int. Cl. G06f *3/14, 13/06*
U.S. Cl. 340—172.5 **49 Claims**



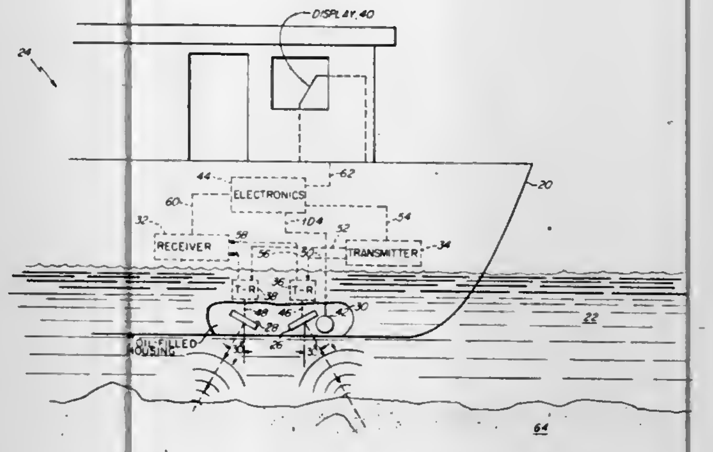
1. A digital scan conversion system for displaying on a raster scan output device an arbitrary graphical pattern, wherein said pattern comprises one or more vectors and wherein each vector is defined by graphical line data, comprising:

- a. means for receiving digitally-coded graphical line information for each vector forming said arbitrary graphical pattern;
- b. processing means responsive to said receiving means for determining at least graphical line boundary data for each vector and determining a vector storage word which uniquely defines each vector of said arbitrary graphical pattern, said processing means additionally including
- c. means for storing said vector storage word for each vector;
- d. means for accessing said vector storage words from said storing means so that the vector storage word for each vector is accessed at least once during each scan of said raster-scan output device;
- e. first means responsive to said accessing means for determining for each vector forming the pattern, the intersection scan-line segments for each scan of said output device intersected by each of said vectors required to synthesize each vector of the pattern;
- f. second means responsive to said vector storage words provided by said accessing means and to said intersection scan-line segments provided by said first means for determining for each scan of the raster scan output device the composite of all of the intersection scan-line segments which must be displayed during that scan and storing said composite; and
- g. means responsive to said second determining means for activating and de-activating said raster-scan output device according to the stored composite of all of the intersection scan lines during each scan thereof.

3,893,076
SPEED MEASUREMENT SYSTEM

Peter J. Clifford, Barrington, R.I., assignor to Raytheon Company, Lexington, Mass.

Filed Oct. 18, 1973, Ser. No. 407,729
Int. Cl. G01s *9/66*
U.S. Cl. 340—3 D **15 Claims**



1. A speed measurement system comprising:
a transducer system for coupling radiant energy into a medium into which a vehicle is moving;
means coupled to said transducer system for extracting data from a predetermined number of cycles of such part of said radiant energy as is reflected through said medium, said data extracting means comprising a plurality of intermediate storage means each of which stores data obtained respectively from successive ones of said cycles;
memory means coupled to said data extracting means for storing said data;
means coupled to said memory means for providing a periodic signal having said data; and
means coupled to said periodic signal providing means for counting cycles of said periodic signal to provide a measure of ships speed.

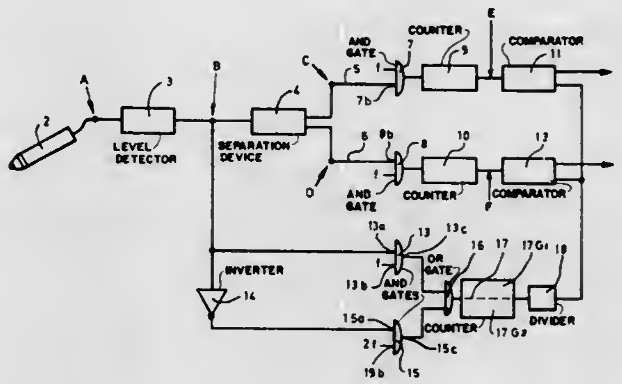
3,893,077
METHOD AND A SYSTEM FOR CHECKING THE ACCURACY OF INFORMATION DERIVED FROM AN ENCODED CARRIER MEMBER

Rune L. Myren, Spanga, Sweden, assignor to Svenska Dataregister AB, Solna, Sweden

Filed Jan. 9, 1973, Ser. No. 322,225
Claims priority, application Sweden, Jan. 27, 1972, 918/72
Int. Cl. G06k *5/00;* **G11b** *27/36*
U.S. Cl. 340—146.1 R **17 Claims**

1. A method for checking for information errors during reading of data carriers containing a series of markings representing a coded record, the code comprising markings have predetermined widths, and the errors being generated by markings having an error-causing spot associated therewith comprising the steps of:

detecting the leading and trailing edge of each marking in a series of at least three markings and computing the width of each of said at least three markings;
computing the distance, *m*, between the trailing edge of the first detected marking and the leading edge of the second detected marking;

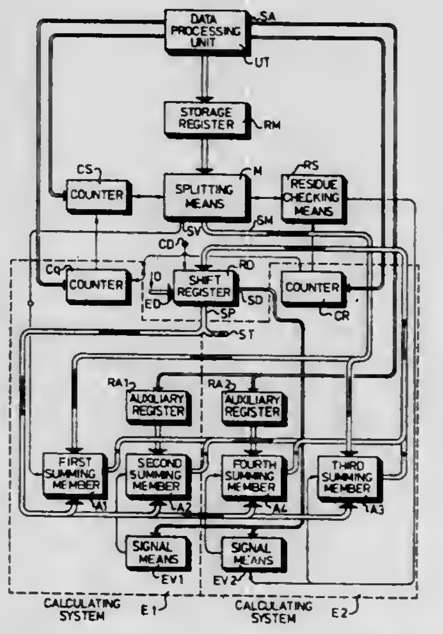


computing the distance, *o*, between the trailing edge of said second-detected marking and the leading edge of the third-detected marking;
comparing the computed width, *n*, of said second-detected marking with said distance *m* and emitting an error signal if said width *n* exceeds said distance *m* by a predetermined ratio; and comparing said width *n* with said distance *o* and emitting an error signal if width *n* exceeds distance *o* by a predetermined ratio.

3,893,078
METHOD AND APPARATUS FOR CALCULATING THE CYCLIC CODE OF A BINARY MESSAGE

Jean Maurice Finet, Paris, France, assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Apr. 8, 1974, Ser. No. 458,922
Claims priority, application France, Apr. 13, 1973, 73.13501
Int. Cl.^{2} G06F *11/12*
U.S. Cl. 340—146.1 AL **12 Claims**

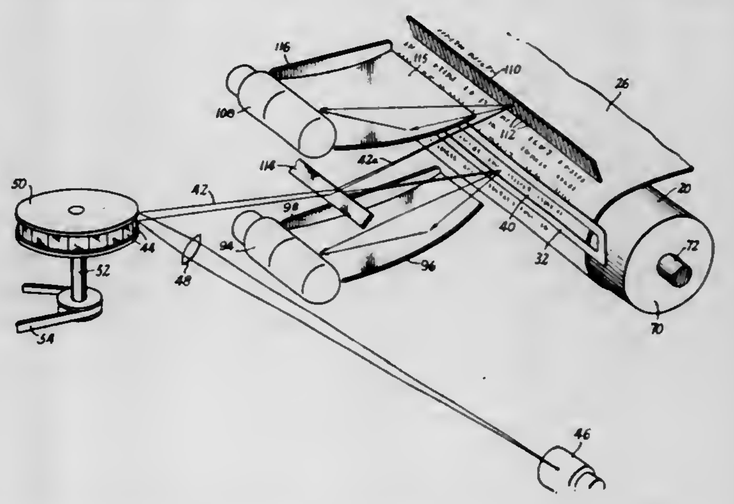


1. A method of obtaining the cyclic code of a message which contains *n* binary information elements, said method comprising the steps of:
splitting up the message into a whole number *s* of words each containing *q* binary information elements plus a residue of *r* binary information elements, in such a way that the relationship $n = sq + r$ is satisfied, *r* being zero when *q* is a sub-multiple of *n*, and *r* being a whole number other than zero and less than *q* when *q* is not a sub-multiple of *n*, and
producing the cyclic code of the message thus split up, said step comprising the substeps of:
enabling a calculating system to obtain word by word, the cyclic code of the group of words, said code being constructed and fed successively into a shift register, and
checking the existence of said residue, the outcome of which is the delivery of either
a negative check signal when there is no residue, the cyclic code of the message being then contained in said shift register, or
a positive check signal when there is a residue, which causes an operation to commence which consists in obtaining from said calculating system the cyclic code for the group formed by said words and said residue, that is to say for the message, this cyclic code being fed into said shift register and being then contained in said shift register at the conclusion of this operation.

3,893,079
CHARACTER READING APPARATUS WITH IMPROVED DOCUMENT SCANNER

David H. Shepard, Rye, and Edward J. Gushue, Bedford Hills, both of N.Y., assignors to Cognitronics Corporation, Stamford, Conn.

Continuation of Ser. No. 624,445, March 20, 1967, abandoned. This application Aug. 21, 1970, Ser. No. 66,149
Int. Cl. G06k *9/12*
U.S. Cl. 340—146.3 F **13 Claims**



6. Character reading apparatus comprising:
means to support a document in cylindrical shape;
a laser producing a beam of coherent radiation;
scanning means for repetitively sweeping said laser beam along successive elements of the surface of said document, parallel to the elements of the cylinder, whereby the beam traverses straight-line sections of the document; means to detect the laser radiation reflected from the document; and
means coupled to the output of said detecting means for analyzing the reflected radiation to determine the characters on the document.

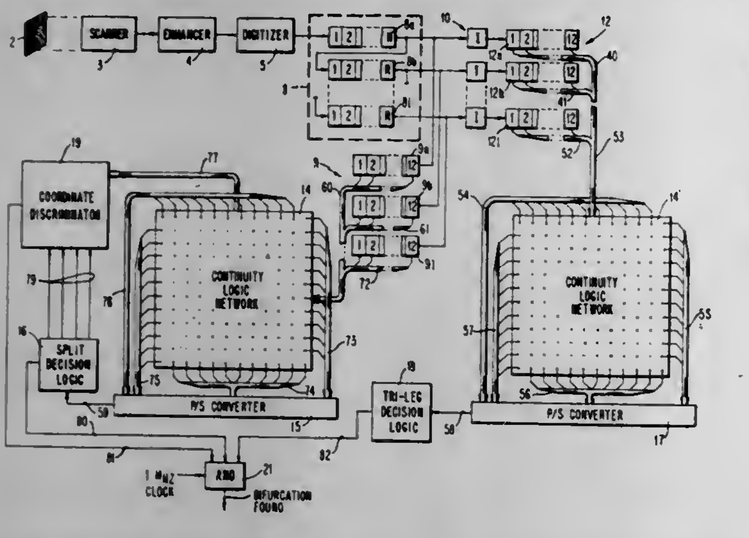
3,893,080
MINUTIAE RECOGNITION SYSTEM

Allen P. Ho, and Hua-Tung Lee, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 29, 1973, Ser. No. 375,211
Int. Cl.^{2} G06K *9/12*
U.S. Cl. 340—146.3 E **35 Claims**

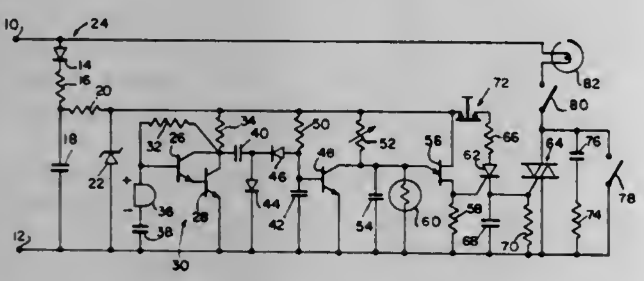
1. A system for recognizing the merger of two lines in a pattern consisting of lines and spaces between lines comprising:

scanning means for scanning said pattern and having a scanning output;
means for converting the output of said scanning means into binary signals representative of the contrast between said lines and said spaces; and
continuity logic means for forming conductive paths corresponding to the contrast between said lines and spaces including:
a matrix of logic elements;
a source of a continuity signal;
each said logic element in said matrix generating an output signal to the inputs of the logic elements located adjacent and orthogonal thereto in response to the combination of



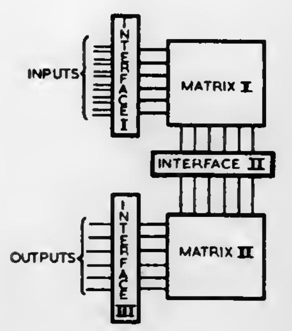
a binary signal from said scanning means and said continuity signal;
said continuity signal source being directly connected only to the inputs of a first set of logic elements in said matrix; whereby said continuity signal source is electrically connected to the inputs of the logic elements outside of said first set only when at least one of said first set of logic elements generates an output signal; and
means connected to the outputs of a second selected set of logic elements in said matrix and responsive to conductive paths between said continuity signal source and the logic elements in said second set for providing an indication of a merger of two lines.

3,893,081
AUDIO ACTUATED LAMP
Charles L. Hopkins, 86 Beechwood, Shelbyville, Ky. 40065
Filed Apr. 5, 1974, Ser. No. 458,081
Int. Cl.^{2} G08B *5/22*
U.S. Cl. 340—148 **17 Claims**



1. A system for electrically energizing a load upon receipt of an acoustic signal having predetermined characteristics including a fundamental frequency in addition to all significant harmonics thereof of the type typically generated by the sound of an alarm clock, telephone and the like, said system comprising means providing a connection to an alternating current power source, acoustic pick-up means, and a triggering device for supplying alternating current to said load, wherein the improvement comprises rectifier means for providing a direct current output to trigger on said triggering device, said rectifier means being connected to said alternating current power source connecting means, means for amplifying the output of said acoustic pick-up means, said amplifier means being connected to said rectifier means, means for establishing a minimum time delay period throughout the length of which the signal from the pick-up means must exist in order to energize the load, said amplifier means connecting the pick-up means to said time delay means, and said time delay means including means for activating said triggering device to supply alternating current to said load when such a predetermined acoustic signal is received for such a predetermined minimum time duration.

3,893,082
AUTOMATIC MATRIX CONTROL SYSTEM
Anthony David Ryder, Bolton, England, assignor to Thomas Ryder & Son Limited, Bolton, England
Filed Dec. 18, 1973, Ser. No. 425,903
Claims priority, application United Kingdom, Dec. 28, 1972, 59860/72
Int. Cl. H04q *9/00*
U.S. Cl. 340—166 R **12 Claims**

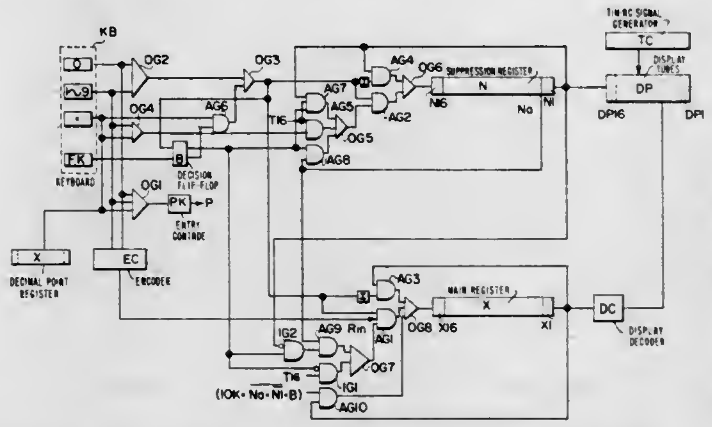


1. In an automatic control system of the type comprising means for realising a set of Boolean relationships, in electrical form, between input and output signals, means for presenting input conditions in electrical form, and means for converting the output signals into mechanical or other required form, the improvements comprising:
a first diode matrix including a bus-bar lattice wherein selected point connections at intersections of the lattice for programming purposes are made by means of diodes, a first interface network of inverters connected to receive said input conditions in electrical form and provide inverted input signals to the inputs of said first diode matrix, a second interface network of inverters connected to receive the outputs of said first diode matrix and provide inverted output signals, and
a second diode matrix connected to receive as inputs the outputs of said second interface network and including a bus-bar lattice wherein selected point connections at intersections of the lattice for programming purposes are made by means of diodes, whereby said first diode matrix in combination with said first and second interface networks provides an AND function and said second diode matrix provides an OR function.

3,893,083
KEY INPUT INDICATING SYSTEM
Satoshi Teramura, 1, Tomigaoka, Nara-shi, and Kazuyuki Kurata, 1500 Tsutsui-cho, Yamatokoriyama, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Mar. 5, 1973, Ser. No. 337,855
Claims priority, application Japan, Mar. 6, 1972, 47-22889
Int. Cl. G06f *3/00*
U.S. Cl. 340—172.5 **13 Claims**

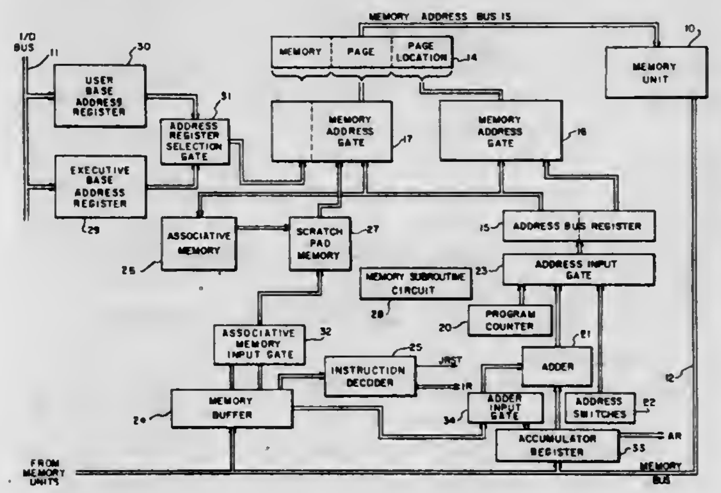
1. A key input information indicating system comprising;
a plurality of keys for entering individual key inputs upon the manual depression thereof in first and second key entry modes;

a series of indicating elements for indicating the entered key input;
a counter responsive to the key inputs for counting the number of the manual depressions of the keys, the outputs of the counter being indicative of the number of key inputs to be actually indicated; and



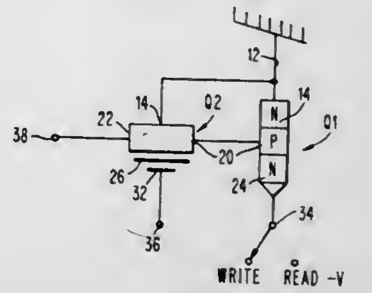
a connection coupling the counter outputs with the indicating elements thereby inhibiting the indication of insignificant information in the series of the indicating elements; and detection circuit means connected between said keys and said counter for detecting whether a key depression is concerned with a first key entry mode or a second key entry mode.

3,893,084
MEMORY ACCESS CONTROL SYSTEM
Alan Kotok, Waltham; Allan R. Kent, Framingham, and David A. Gross, Acton, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.
Filed May 1, 1973, Ser. No. 356,118
Int. Cl. G06f *13/08*, *7/04*, *11/12*
U.S. Cl. 340—172.5 **16 Claims**



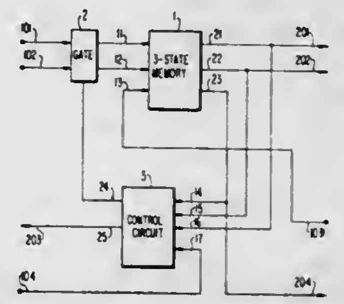
1. In a data processing system including a memory unit for storing information as instructions or data in storage locations with a unique address designating each storage location and a processor unit for processing in succession instructions in the memory unit, said processor unit including means for defining a plurality of operating modes, a generator for transmitting an address to identify one of the memory locations and to initiate a memory reference, and use signal means responsive to the address generator for transmitting signals corresponding to predetermined use characteristics of the addressed location, the improvement of circuitry for checking each memory reference, said circuitry including:
A. a memory subroutine circuit in the processor unit for controlling information transfers between the processor unit and an addressed location, and
B. a testing circuit comprising
  i. means activated upon the initiation of each memory reference for generating operating mode signals corresponding to the processor unit operating mode prevailing at that time, and
  ii. a validating circuit responsive to the use signal means and operating mode signal means during each memory reference and including means for enabling said memory subroutine circuit to effect a transfer when the signals corresponding to the use characteristic and prevailing operating mode indicate that the use characteristic and operating mode are compatible and means for disabling said memory subroutine circuit when they ʳe incompatible.

3,893,085
READ MOSTLY MEMORY CELL HAVING BIPOLAR AND FAMOS TRANSISTOR
Aage A. Hansen, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 28, 1973, Ser. No. 419,587
Int. Cl. G11c *11/40*
U.S. Cl. 340—173 R **19 Claims**



1. A memory cell comprising:
an input node;
a transistor having collector, base, and emitter regions; and a FAMOS device connected between the base region of said transistor and said input node.

3,893,086
ASYNCHRONOUS SPATIAL SHIFT REGISTER CIRCUIT
Takashi Nanya, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan
Filed Dec. 11, 1973, Ser. No. 423,823
Claims priority, application Japan, Dec. 13, 1972, 47-125432
Int. Cl. G11c *19/00*
U.S. Cl. 340—173 R **7 Claims**

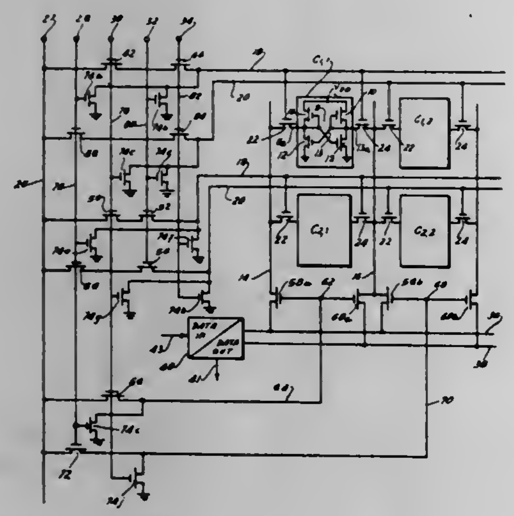


7. A shift register circuit means comprising a plurality of like stages, each said like stages adapted to store only one of three data items L_1, L_0 and L and having quiescent, set, and clear control states of operation, each said like stage comprising:
a. means responsive to a clear signal from a succeeding stage of said shift register for storing the data L in said state, provided said stage is in the quiescent state,
b. means responsive to the storage of data L in said stage for switching the control state of said stage from quiescent to set,

c. means responsive to the data stored in a preceding stage of said shift register, provided said data is L_1 or L_0, for entering said data from said preceding stage into said stage for storage therein when said stage is in the set condition,
d. means responsive to the storage of data L_1 or L_0 in said stage for switching said control state from set to clear control state,
e. a means responsive to said control state of said stage for applying a clear signal to said preceding stage, and
f. means responsive to said preceding stage storing the data L for switching the control state of said stage from clear to quiescent.

3,893,087
RANDOM ACCESS MEMORY WITH SHARED COLUMN CONDUCTORS

Lamar T. Baker, West Islip, N.Y., assignor to General Instrument Corporation, Clifton, N.J.
Filed Feb. 8, 1974, Ser. No. 440,699
Int. Cl. G11c *11/40*
U.S. Cl. 340—173 R **22 Claims**

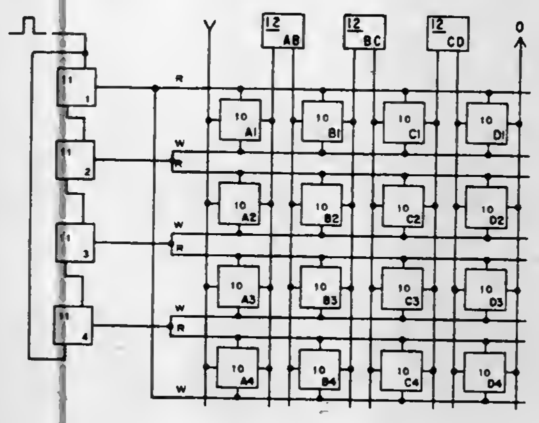


1. A random access memory comprising a pair of adjacent memory cells each having a data storage portion, a first control line, means conditionally connecting said first control line to said data storage portion of each of said cells, and second and third control lines connected to each of said connecting means, said second and third control lines being effective when respectively actuated to cause said connecting means to selectively connect said data storage portion of one or the other of said cells to said first control line.

3,893,088
RANDOM ACCESS MEMORY SHIFT REGISTER SYSTEM

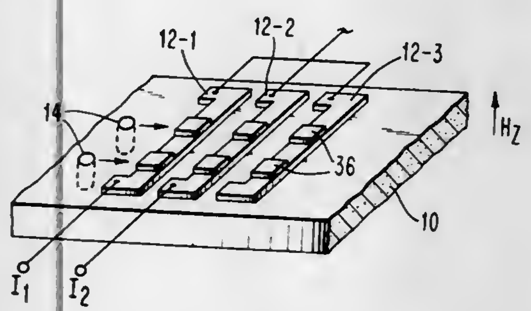
Antony G. Bell, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 163,682, July 19, 1971, abandoned. This application Apr. 11, 1974, Ser. No. 460,259
Int. Cl. G11c *7/00, 19/00*
U.S. Cl. 340—173 R **16 Claims**

1. A shift register system comprising:
a. an array of random access memory cells arranged in rows and columns with the cells of a column having separate input and output lines common to all cells in a column; and
b. commutator means effective to provide a continuous sequence of read/write signals coupled to said array for sequentially reading rows of said memory cells and simultaneously writing information into adjacent rows of memory cells via common read/write lines whereby coded information is stored in said array delayed by a selected number of time periods.



3,893,089
TWO-PHASE PROPAGATION OF CYLINDRICAL MAGNETIC DOMAINS

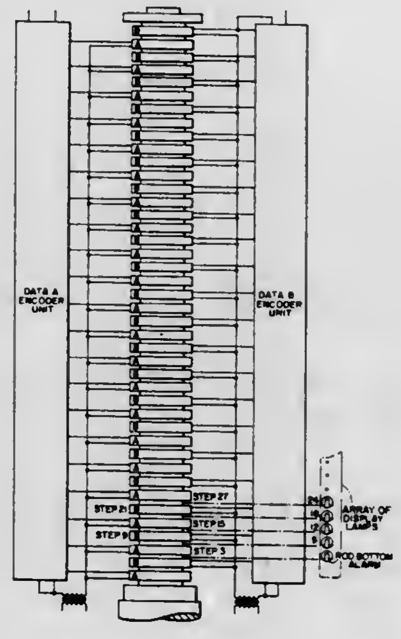
George S. Almasi, Purdy Station, and George E. Keefe, Montrose, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 132,954, April 12, 1971, abandoned. This application Apr. 3, 1973, Ser. No. 347,516
Int. Cl. G11c *11/14, 19/00*
U.S. Cl. 340—174 TF **11 Claims**



1. A conductor propagation means for movement of magnetic bubble domains, comprising:
a magnetic medium in which said bubble domains can be propagated,
a plurality of substantially parallel conductors, each having at least two oppositely facing surfaces and having a substantially constant slope along its length with one of said at least two surfaces of each conductor located adjacent said magnetic medium for propagation of said bubble domains in said magnetic medium when current flows through sequentially displaced conductors wherein adjacent conductors are electrically unconnected to each other, said domains moving from one side of a conductor to the other side of said conductor when current flows through said conductor,
electrical means for providing current through said conductors to produce propagation magnetic fields, said current being provided through sequentially displaced conductors for movement of said bubble domains in said magnetic medium, and
magnetically soft material located with respect to said conductors such that the magnetic fields of said magnetically soft material add to said propagation magnetic field in the vicinity of said conductors, said magnetically soft material being in the form of discrete elements located over the surface of each said conductor remote from said magnetic medium.

3,893,090
POSITION INDICATION SYSTEM

James A. Neuner, Gibsonia, and Dirk J. Boomgaard, Monroeville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Jan. 3, 1973, Ser. No. 320,773
Int. Cl. G08b *23/00;* **G08c** *19/06*
U.S. Cl. 340—188 R **5 Claims**

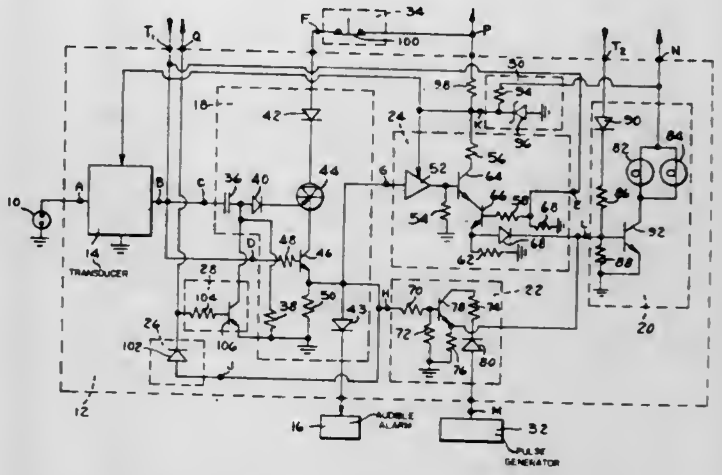


1. A position indication system for displaying the relative position of a movable element with respect to fixed known coordinates comprising:
a plurality of sensory means arranged in first and second groups in corresponding configurations which are positioned proximate to and substantially equally spaced along the path of movement of the movable element, the individual locations of said sensory means defining the fixed known coordinates, said sensory means of said first group are alternately interleaved within the arrangement of said sensory means of said second group and each of said groups are responsive to the element's position to respectively provide discrete electrical outputs indicative of the element's position with respect to the corresponding locations of said sensory means;
means for combining the respective discrete outputs of said first and second groups of sensory means to provide a display output representative of the elements position;
means for monitoring said discrete outputs for malfunctions and responsive to a malfunction to disconnect either said first or second group exhibiting a malfunction from representation within said display output so that said display output is representative only of functioning groups of said sensors; and
means electrically connected to said monitoring means and combining means and responsive to a malfunction indicated by said monitoring means to alter the inputs to the combining means to align said display output to indicate the presence of the movable element substantially centered between two of said sensory means within said functioning group most nearly proximate a predetermined portion of the element.

3,893,091
ANNUNCIATOR CIRCUIT

Art Lee, El Paso, Ill., assignor to General Electric Company, New York, N.Y.
Filed Dec. 3, 1973, Ser. No. 420,870
Int. Cl. G08b *25/00, 21/00*
U.S. Cl. 340—213.1 **9 Claims**

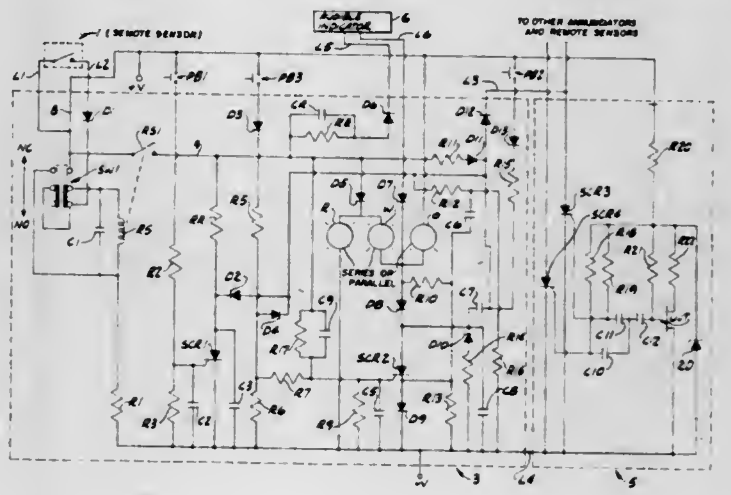
1. An annunciator circuit comprising:
a. means for generating an output level signal in response to a sensed abnormal signal condition;
b. an audible alarm;
c. means for actuating said audible alarm upon initial recognition of the output level signal from said generating means and means responsive to the output level signal for deactuating said audible alarm if said audible alarm is still actuated when the abnormal signal condition is corrected and the output level signal is extinguished; and



d. acknowledgement means electrically coupled to said alarm actuating means for deactuating said audible alarm only while the abnormal signal condition is sensed and for the duration of the output level signal.

3,893,092
FLASHING COLOR SEQUENCE ANNUNCIATOR SYSTEM WITH FAIL-SAFE FEATURES

Arthur R. Kessler, St. Louis, Mo., assignor to Electro Devices, Inc., St. Louis, Mo.
Filed Nov. 19, 1973, Ser. No. 417,037
Int. Cl. G08b *25/00*
U.S. Cl. 340—213.1 **15 Claims**



1. An annunciator system comprising a plurality of remote sensors for detecting normal and abnormal conditions and a central annunciator station to which said remote sensors are connected by leads, said annunciator station including a plurality of visual annunciators corresponding to respective remote sensors, each of said annunciators comprising alarm signalling means for providing alternate red and white flashing light signalling upon detection by the respective sensor of an abnormal condition, acknowledge signalling means responsive to manual acknowledge operation for causing the alternate red and white flashing light signalling to cease and for providing steady red light signalling, return-to-normal signalling means responsive to detection by the respective sensor of a normal condition following an abnormal condition for causing the steady red light signalling to cease and for providing steady green light signalling and reset means responsive to manual reset operation for causing the steady green light signalling to cease, said annunciator station further including at least one

flasher means for effecting said alternate red and white flashing light signalling by the alarm means of respective annunciators, and means responsive to failure of said flasher during detection by a respective sensor of an abnormal condition to cause bright white light alarm signalling by the respective annunciator and thereby provide unique light signalling in the event of failure of the flasher means.

3,893,093

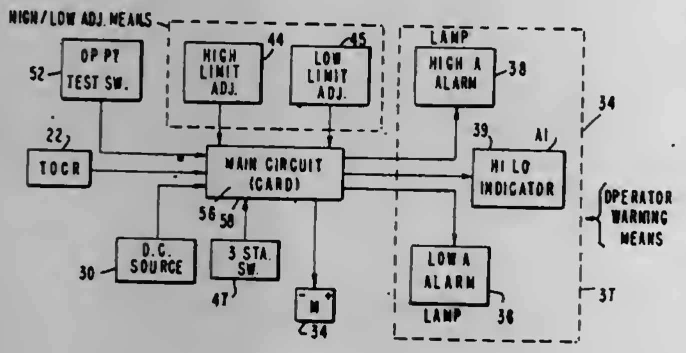
CRANE BOOM ANGLE INDICATION AND WARNING SYSTEM

Candelario Paredes, Dallas, and Robert Horn, Richardson, both of Tex., assignors to Forney Engineering Company, Carrollton, Tex.

Filed July 25, 1973, Ser. No. 382,403

Int. Cl. G08b *21/00*

U.S. Cl. 340—267 C **15 Claims**



1. An improved boom angle indicating and warning system for a crane, including: a boom angle transducer for producing an analogue output proportional to the boom angle position, a boom angle meter responsive for providing a visual indication of boom position over a range of 90° from a full vertical to horizontal, warning means for selected high and low boom angle limits for indicating respective upper and lower limits of boom position defining a range of permissable operation; main circuit means coupled to the transducer and warning means for energizing same and variable means coupled to the warning means manually selectable for setting said upper and lower angle limits, wherein the improvement comprises:

test circuit means switchably coupled with said main circuit means and said transducer for generating a slowly increasing signal corresponding to a simulated transducer output in place of the actual output thereof for driving the meter through the entire operating range including the high and low boom angle limits for allowing an operator of the crane to observe the operation of the meter.

3,893,094

CUSTOMER DIRECTING SYSTEM

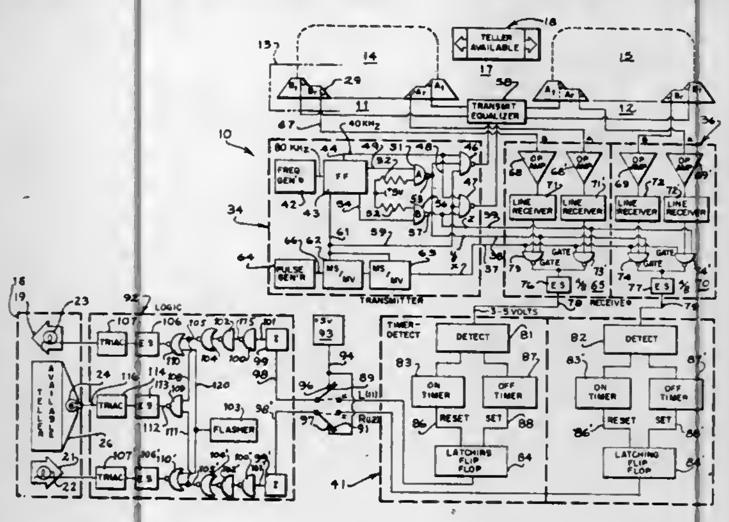
Albin W. Thorson, San Carlos, and Henry D. Shultz, San Rafael, both of Calif., assignors to Bank Of America National Trust & Savings Association, San Francisco, Calif.

Filed Oct. 29, 1973, Ser. No. 410,683

Int. Cl. G08b *13/00*

U.S. Cl. 340—258 B **5 Claims**

1. In a system for directing customers to available clerks positioned at their respective work stations, the combination comprising a counter disposed and adapted to separate each work station from an associated customer service region, an open pedestrian space in front of said counter, including said service regions, for movement of customers up to and for passing in front of said counter, electronic means in a continuously active state transducing signals at each service region for detecting the absence of a customer waiting thereat, display means operable between active and inactive states for directing customers to a service region free of customers when in said active state, and means for activating said display means in response to said detection of the absence of a waiting customer within that field defining the last named service region.



3,893,095

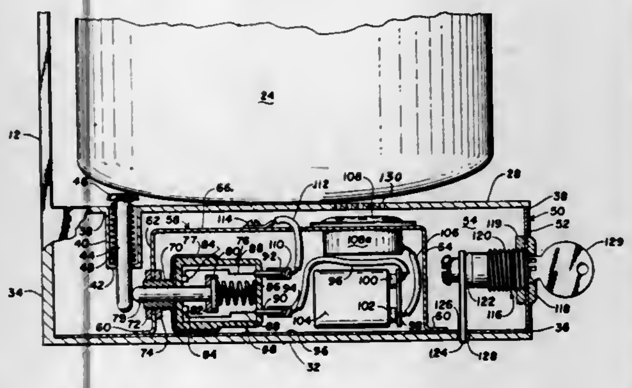
ALARM DEVICE FOR INDICATING THE REMOVAL OF A FIRE EXTINGUISHER

Dennis E. DeJong, 1211 N. 7th Ave., Princeton, Minn. 55371

Filed May 31, 1974, Ser. No. 474,884

Int. Cl. G08b *13/14*

U.S. Cl. 340—272 **10 Claims**



1. An alarm device for indicating the removal of a fire extinguisher therefrom comprising a casing having an opening at the front, a drawer slidably received in said casing having a front wall for blocking said casing opening, an electric alarm in said drawer, a switch in circuit with said alarm, a horizontally reciprocal plunger for opening said switch in a first position thereof to inactivate said alarm and closing said switch in a second position thereof to activate said alarm, means biasing said plunger into said second position, a vertically reciprocal plunger extending downwardly through the top of said casing to a first position to retain said horizontal plunger in its first position, means biasing said vertical plunger upwardly to a second position to permit said horizontal plunger to assume its second position, and means for locking said drawer in said casing, whereby when a fire extinguisher is supported on said casing said vertical plunger is depressed sufficiently by said fire extinguisher to keep said horizontal plunger in its said first position and when said fire extinguisher is removed said horizontal plunger moves to its said second position.

3,893,096

HANDBAG ALARM SYSTEM

Domenick Tucci, 12 Ridge Rd., Mt. Kisco, N.Y. 10549, and Lewis Cantalupi, 79 Beaumont Circle, Yonkers, N.Y. 10710

Filed Dec. 19, 1973, Ser. No. 426,053

Int. Cl. G08b *21/00*

U.S. Cl. 340—283 **8 Claims**

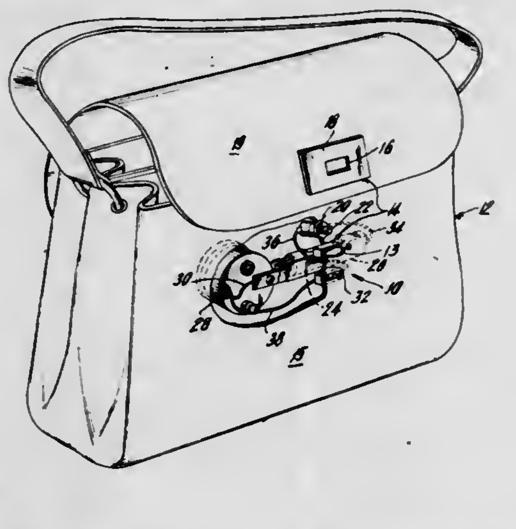
1. An alarm system for handbags having a clasp means for closing same, comprising:

means mounted on said handbag to provide a source of direct current;

alarm means mounted on said handbag and electrically connected to said direct current means;

deactivating switch means mounted on said handbag for interrupting the circuit from said direct current means to said alarm means; and

pressure responsive switch means mounted on a side wall of the handbag, said pressure responsive switch means having an external component extending outwardly from the side wall of the handbag, said external component being depressed upon the closing of the clasp means by the closing of the handbag to open the pressure responsive switch means and deactivate said alarm means, and said pressure responsive switch means closing to complete the circuit between said direct current means and said alarm means upon opening of the handbag, so that opening of the handbag without deactivating said deactivating switch means results in activation of said alarm means.



3,893,097

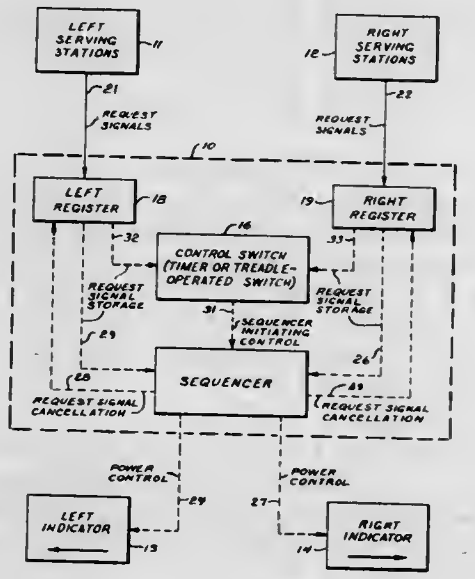
DISPATCHING SYSTEM CIRCUIT

Ronald Louis Lach, Arlington Heights, and William Jean Brier, Skokie, both of Ill., assignors to Elec-Tro-Tec, Inc., Elk Grove Village, Ill.

Filed June 3, 1974, Ser. No. 475,582

Int. Cl. G08g *1/09*

U.S. Cl. 340—286 **10 Claims**



1. For use in a dispatching system having actuating means at each of two sets of serving stations for producing electrical request signals, and having two electrically actuated instructing means each for an associated set, a circuit comprising: control switch means, sequencing means and two register means, each said register means being associated with an instructing means, and being connected to the actuating means at an associated set of serving stations to store the request signals produced thereby, said sequencing means being in control circuit with each said register means and the instructing means associated therewith and being operable to control actuation of the latter in response to storage of request signals in said register means, said sequencing means being operable to alternately control actuation of both instructing means in response to simultaneous storage of request signals in both said register means, said sequencing means being further operable to cancel a request signal in a said register means following each actuation of its associated instructing means, said control switch means being in control circuit with said sequencing means and each said register means and being preconditioned upon storage of request signals to initiate operation of said sequencing means; whereby said circuit effects actuation of an instructing means in response to storage of a request signal produced by actuating means at its associated set of serving stations, and effects alternate actuation of both instructing means in response to simultaneous storage of request signals produced by actuating means at both sets of serving stations.

3,893,098

VISUAL SIGNALING SYSTEM FOR OFFICES

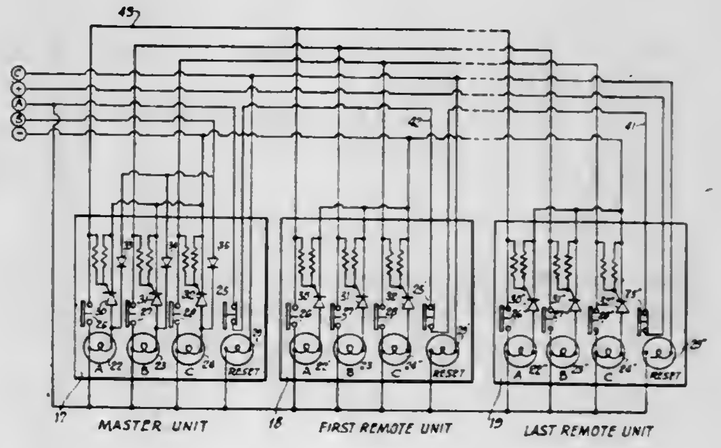
Richard T. Gomez, Chicago, and Christopher A. Otis, Northbrook, both of Ill., assignors to G & O Industries Inc., Chicago, Ill.

Continuation of Ser. No. 225,831, Feb. 14, 1972, abandoned.

This application Dec. 20, 1973, Ser. No. 426,807

Int. Cl. H04m *11/04*

U.S. Cl. 340—311 **2 Claims**



1. A communication system comprising:

a. a plurality of interconnected signaling units adapted to be placed in different locations, each unit having a plurality of corresponding signal lamps;

b. a plurality of actuating means on each unit, each associated with one signal lamp for simultaneously actuating said signal lamp and the corresponding signal lamp of all other units, each of said actuating means including a silicone controlled rectifier circuit and switching means for biasing said silicone rectifier circuit into a conductive condition whereby the signal lamps are maintained in an on condition regardless of subsequent state of said switching means; and

c. recognition means on each of said plurality of signaling units for simultaneously returning the silicone controlled rectifier circuits to a nonconductive state to turn off the signal lamps.

3,893,099

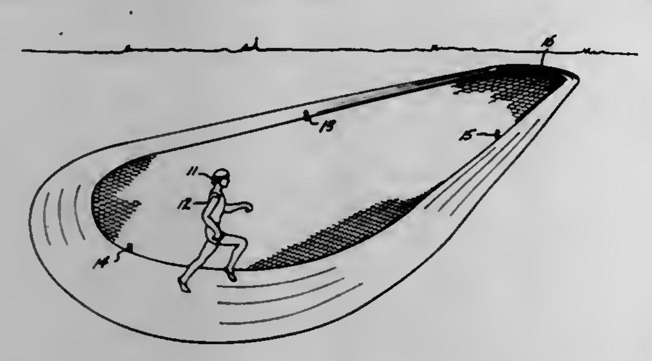
ATHLETIC TIMER

Jack A. Zoepfl, 3410 S. 292nd, Auburn, Wash. 98002

Filed July 25, 1973, Ser. No. 382,578

Int. Cl. G08b *3/10*

U.S. Cl. 340—323 **7 Claims**



1. A system for providing an indication to a runner of his pace over a given course, comprising in combination:

a plurality of markers positioned at spaced points along the course, successive markers defining therebetween successive portions of the course;

signal means adapted to be secured to the runner without substantially interfering with his pace and operative to provide tone bursts at regular intervals of time, said tone bursts being audible to the runner, each of said tone bursts having a time duration which is substantially shorter than said intervals of time, said intervals of time being sufficiently long that the runner covers substantially one of said portions of the course between markers in one of said intervals of time between successive tone bursts, the runner's position relative to the markers at each successive tone burst providing an indication of his pace over the course.

3,893,100

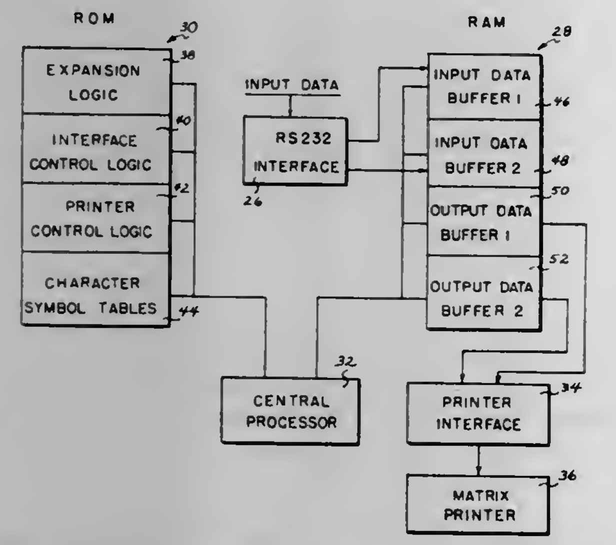
VARIABLE SIZE CHARACTER GENERATOR WITH CONSTANT DISPLAY DENSITY METHOD

Charles W. Stein, Nashua, N.H., assignor to Data Royal, Incorporated, Nashua, N.H.

Filed Dec. 20, 1973, Ser. No. 427,023

Int. Cl. G09f *9/32*

U.S. Cl. 340—336 **24 Claims**



1. A method for producing variable size, matrix defined and point displayed characters comprising the steps of:

1. defining each character through a matrix having a predetermined number of components, said components each having one of a predetermined number of size independent, component shapes with each component being an element of the matrix;
2. generating a plurality of binary display signals corresponding to said component shapes and the desired component size to be displayed with one binary state representing a display condition and the other binary state representing a no-display conditon; and,
3. applying said display signals to a point display with the display density of the points remaining the same regardless of the size of said character.

3,893,101

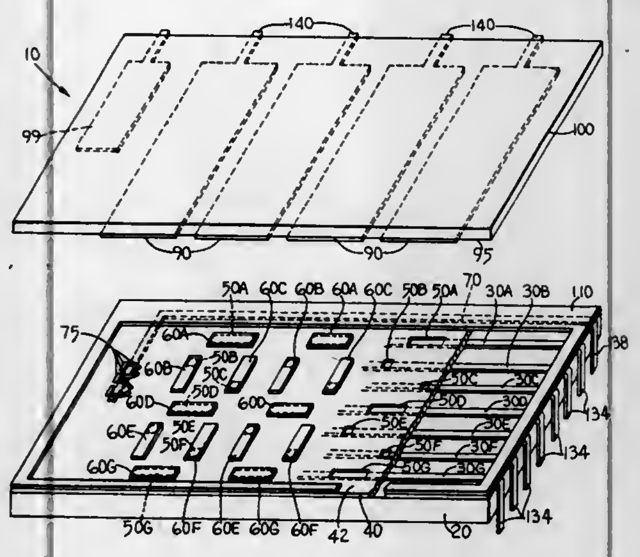
DISPLAY APPARATUS HAVING SEGMENTED INTEGRAL REGULATOR

David Glaser, Green Brook, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed June 20, 1974, Ser. No. 481,029

Int. Cl. G09f *9/32*

U.S. Cl. 340—336 **18 Claims**


140
140
10
99
100
90
90
95
50A 60C 60B 60A 60C 50B 50A 70 30A 30B 110
75
38
134
134
134
50G 60F 60E 60G 60F 42 40 20

1. A display device comprising

a gas-filled envelope having a viewing window and an insulating base plate,

a plurality of groups of cathodes shaped in the form of segments of different characters to be displayed and disposed along the front surface of the base plate and having terminals extending out of the envelope,

an anode electrode associated with each group of cathodes for selective discharge therewith and having terminals extending out of the envelope,

an integral voltage reference device comprising at least a plurality of interconnected discrete cathode elements and an anode electrode associated with the elements within the envelope, and

means connected to the electrodes of the reference device for receiving a current sufficient to sustain a discharge between one or several of the reference cathode elements and the associated anode electrode to maintain thereby a stable reference voltage across the reference device.

3,893,102

DIGITAL-TO-ANALOG CONVERTER USING DIFFERENTLY DECODED BIT GROUPS

James Charles Candy, Convent Station, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 2, 1973, Ser. No. 412,296

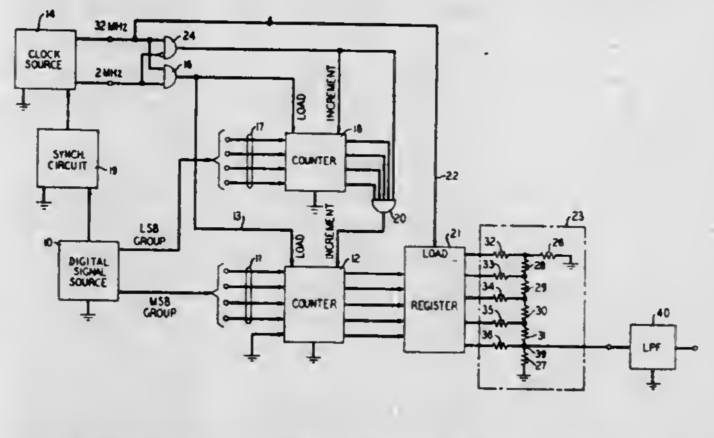
Int. Cl.² H03K *13/02*

U.S. Cl. 340—347 DA **18 Claims**

1. In combination,

means, responsive to a pulse coded digital character occurring in a character time interval of predetermined duration, for producing an output analog signal at a first amplitude representing the coded value of a first portion of said character,

means for changing the amplitude of said analog signal to a second amplitude for a fraction of said time interval, and said changing means including means, responsive to a discrete second portion of said character, for fixing the magnitude of said fraction of said time to correspond to the coded value of said second part, the difference between said first and second amplitudes being independent of said coded values and being chosen so that the average analog amplitude over said character time corresponds to the value represented by said digital character.



3,893,103

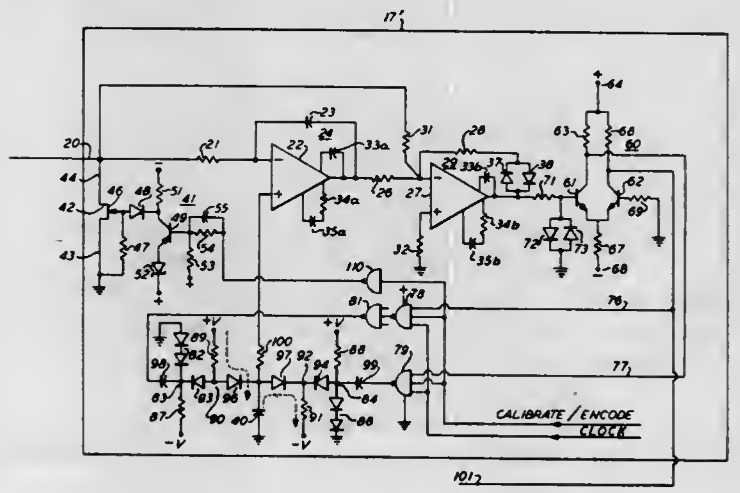
ELECTRICAL DRIFT CORRECTION SYSTEM

Robert S. Prill, West Paterson, N.J., assignor to The Singer Company, Little Falls, N.J.

Filed Jan. 21, 1971, Ser. No. 108,348

Int. Cl. H03k *13/20*

U.S. Cl. 340—347 CC **6 Claims**



1. Apparatus for reducing drift in an analog to digital conversion system including a serially connected operational amplifier-integrator and a comparator, said apparatus comprising:

means for coupling the signal to be converted, during those times when it is desired to convert said signal, to one input of said operational amplifier-integrator, and, during other times, coupling said one input to a point of ground potential;

means for deteting the polarity of the output of said comparator;

means for receiving a series of clock pulses;

a capacitor;

means, effective during said other times, for charging said capacitor with a series of positive pulses when said comparator output is of one polarity, and for charging in the opposite direction with a series of negative pulses when said comparator output is of a different polarity; and

means coupling one terminal of said capacitor to a second input of said amplifier-integrator;

said means effective during said other times including:

A. a level shifter circuit coupled to the output of said comparator, and having a pair of output lines therefrom, said circuit being adapted to provide logical levels of 0 and 1, respectively, on said output lines when said comparator output is of positive polarity and to provide logical evels of 1 and 0, respectively, on said output lines when said comparator output is of negative polarity;

B. a first set of gating circuits, adapted to be operative during said other times, coupled to receive said series of clock pulses and one of said output lines;

C. a second set of gating circuits, adapted to be operative during said other time coupled to receive said series of clock pulses and the other of said output lines, one of said gating circuits including an inverting means so that, during said other times, said first set of gating circuits provides a series of pulses of a fixed polarity when said comparator output is of one polarity, and said second set of gating circuits provides a series of pulses of said fixed polarity when said comparator output is of a different polarity;

D. a reference of ground potential,

E. means for coupling said reference of group potential to the opposite terminal of said capacitor;

F. a first diode means having its anode coupled to said ground potential and having its cathode coupled to a first junction terminal;

G. a second diode means having its cathode coupled to said ground potential and having its anode coupled to a second junction terminal;

H. a third diode means having its anode coupled to a third junction terminal and having its cathode coupled to said first junction terminal;

I. a fourth diode means having its cathode coupled to a fourth junction terminal and having its anode coupled to said second junction terminal;

J. a fifth diode means having its anode coupled to said third junction terminal and having its cathode coupled to said one terminal of said capacitor;

K. a sixth diode means having its cathode coupled to said fourth junction terminal and having its anode coupled to said one terminal of said capacitor;

L. a first and a second resistor for coupling said first and fourth junctions, respectively, to a negative voltage source;

M. a third and a fourth resistor for coupling said second and third junctions, respectively, to a positive voltage source;

N. first capacitive means for coupling the output of one gating circuit to said first junction; and

O. second capacitive means for coupling the output of the other gating circuit to said second junction.

3,893,104

ANALOGUE-DIGITAL VOLTAGE MEASURING APPARATUS

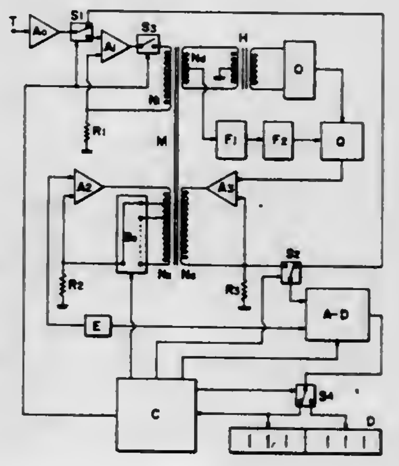
Hikaru Furukawa; Shozo Kumazawa, and Noriyuki Wakayama, all of Gyoda, Japan, assignors to Takeda Riken Industry Company Limited, Tokyo, Japan

Filed June 12, 1973, Ser. No. 369,126

Claims priority, application Japan, June 13, 1972, 47-58240

Int. Cl. H03k *13/02*

U.S. Cl. 340—347 AD **2 Claims**



1. Apparatus for determining the level of an analogue input and displaying it on a digital display having multiple digital

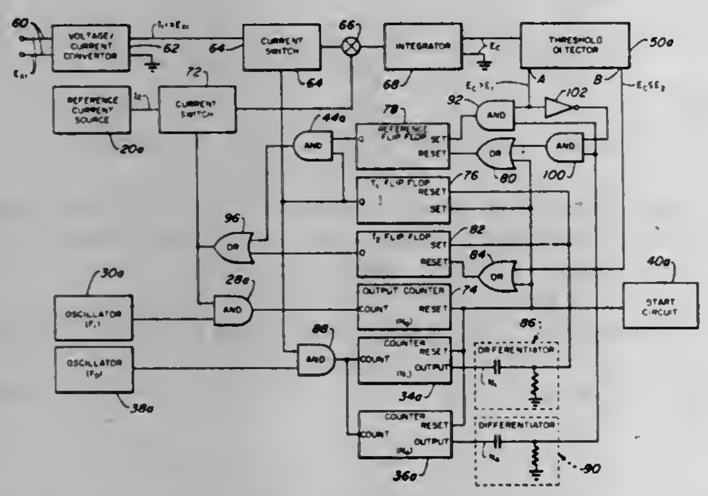
positions including more significant digits and less-significant digits, comprising:
- an input terminal;
- a magnetic core having thereon an input winding, having a fixed winding, having a switching winding including switching means for selecting one of multiple taps, and having a magnetic flux detecting element;
- a fixed reference potential source;
- first means coupled to said source and operative to pass a constant current through said switching winding for the purpose of substantially cancelling the flux in the core;
- an analogue-to-digital converter having an output; flux detecting means connected to said element and operative to deliver a dc signal representative of the flux level in said core;
- second means coupled to the source and operative to pass a current through the fixed winding for the purpose of cancelling the remaining flux in the core; and
- controller circuitry sequentially operative initially to connect said converter to said terminal to produce an initial output measurement of said analogue input and to couple said initial output for display to said more significant digit positions and to couple said initial output to said winding switching means to select a tap representing a number of turns proportional to the magnitude of said output, and the controller circuitry being operative subsequently to couple said terminal to said input winding and to couple said converter to receive a level proportional to said dc signal from said flux detecting means and to produce a subsequent output representing said remaining flux in the core and to couple said subsequent output to said less-significant digit positions for display.

3,893,105
INTEGRATING TYPE ANALOG-DIGITAL CONVERTER
Philip D. Wasserman, Newbury Park, Calif., assignor to Tekelec, Inc., Oxnard, Calif.

Continuation-in-part of Ser. No. 249,077, May 1, 1972, abandoned. This application Dec. 18, 1973, Ser. No. 425,753

Int. Cl. H03k *13/20*

U.S. Cl. 340—347 NT **11 Claims**



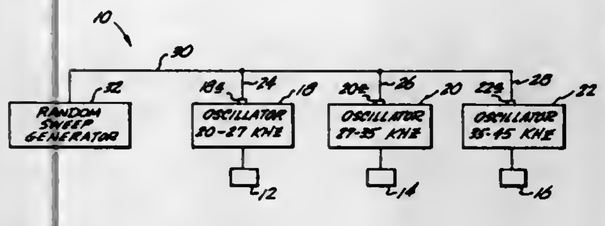
1. An integrating type of analog-digital converter system comprising:
- an input circuit for producing a current (I_1) corresponding to an unknown analog input signal;
- an integrator circuit for producing an output voltage (E_c) in response to an input current;
- first gate circuit means connecting said input circuit to said integrator circuit;
- a reference current source for producing a reference current (I_2) of opposite polarity to said first-named current (I_1);
- second gate circuit means connecting said reference source to said integrator circuit;
- first pulse counter means connecting said reference source to said integrator circuit;
- second pulse counter means for producing a digital output representative of the number of pulses applied thereto;
- pulse generating means for generating a series of pulses;
- third gate circuit means connecting said pulse generating means to said second pulse counter means and connected to said second gate circuit means to pass said pulses from said pulse generating means to said pulse counter means when said second gate circuit means passes said reference current (I_2) to said integrator circuit;
- further circuitry connected to said first and second gate circuit means to enable said first gate circuit means and to disable said second gate circuit means during portions of a first, predetermined time interval (T_1) which is independent of said input current, so as to cause said first gate circuit means to pass said first-named current (I_1) to said integrator circuit during said first time interval (T_1), and to disable said first gate circuit means and enable said second gate circuit means during a second, predetermined time interval (T_2) so as to cause said second gate circuit means to pass said reference current (I_2) to said integrator circuit during said second time interval (T_2); and
- threshold detector means included in said further circuit means and connected to the output of said integrator circuit for causing said further circuitry to enable said second gate circuit means during sub-time periods within said first time interval (T_1) when the amplitude of said integrator output voltage (E_c) is below a selected voltage level (E_1) so as to introduce said reference current (I_2) to said integrator circuit during such sub-time periods concurrently with the introduction of said first-named current (I_1).

3,893,106
ELECTRONIC PEST-CONTROL DEVICE HAVING PLURAL ULTRASONIC GENERATORS
Joseph Schulein, Vancouver, Wash., assignor to H. Dutton Hayward, trustee, Tacoma; Joseph Schulein and Margaret A. Schulein, both of Vancouver, all of, Wash.

Filed Oct. 10, 1973, Ser. No. 405,150

Int. Cl. G08b *3/00*

U.S. Cl. 340—384 E **8 Claims**



1. An electronic pest-control device comprising
- an electrically energizable, changeable frequency source of ultrasonic waves operable when energized to generate such waves within a predetermined range of frequencies, said source including a control terminal, the instantaneous voltage level on which determines the specific operating frequency of the source, and
- energizing circuit means for said source operatively coupled thereto and operable to energize the same in a manner causing the source to generate waves having continuously randomly changing frequencies within said range, said energizing circuit means including means operatively connected to said control terminal for changing the instantaneous voltage level thereon, comprising a plurality of free-running sweep oscillators, each having a different operating frequency and each including an output terminal, integrating circuit means operatively connected to said output terminal and operable with said sweep oscillators running to produce a control voltage having a continuously randomly changing level, and means operatively interconnecting said circuit means and said control terminal for applying to the latter said control voltage.

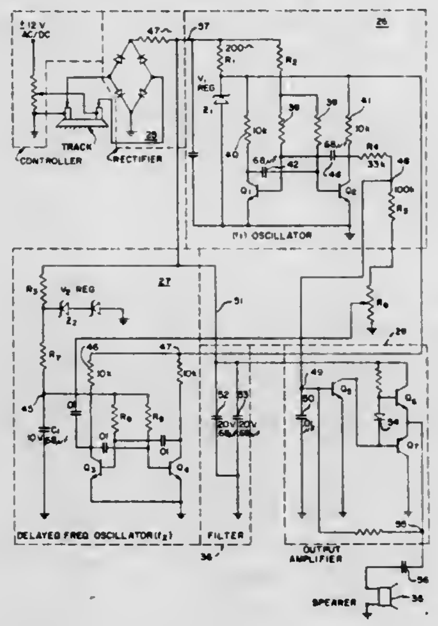
3,893,107
SOUND SIMULATOR FOR DIESEL TRAIN ENGINE
Walter John Schedler, 544 Wildwood Way, Santa Clara, Calif. 95050

Filed July 22, 1974, Ser. No. 490,906

Int. Cl. G08b *3/00*

U.S. Cl. 340—384 E **6 Claims**

1. A sound simulator for representing the sound of a diesel engine for a model train operated by power supplied to a track and regulated by a controller, said simulator comprising:
- a first voltage controlled oscillator having a predetermined frequency range and adapted to supply an output signal having a frequency dependent on the power supplied to the train;
- a second voltage controlled oscillator having a predetermined frequency range and adapted also to supply an output signal having a frequench dependent on the voltage supplied to the train;



- means to delay the frequency response of the second oscillator such that the frequency of the output signal changes more slowly with voltage changes than does the frequency of the first oscillator, and
- means to mix the signals of the first and second oscillators and broadcast an audible signal from the diesel train responsive to the oscillator signals thereby to simulate the diesel engine sound.

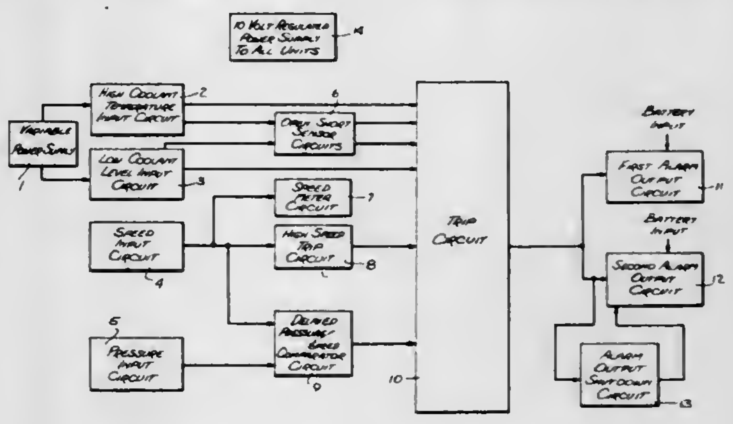
3,893,108
INTERNAL COMBUSTION ENGINE PROTECTION CIRCUIT
Lyle E. McBride, Jr., Norton, and William W. Bowman, North Easton, both of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 20, 1973, Ser. No. 426,850

Int. Cl. G08b *23/00*

U.S. Cl. 340—420 **28 Claims**

1. A protection circuit for an internal combustion engine comprising
- a power source, ,
- means for providing a first input signal which varies as function of a first engine parameter,
- means for providing a second input signal which varies as a function of a second engine parameter,
- means for manually adjusting the second input signal so that selected variations of said second input signal are representative of predetermined variations of said second engine parameter to adapt said protection circuit to said engine,
- comparator means for comparing the second input signal to the first input signal to provide an alarm signal in response to a predetermined difference between the two input signals,
- means for sensing the alarm signal and for providing an alarm indication, and
- power source means connected to said first and second


10 Volt Regulated Power Supply To All Units
Regulated Power Supply
Trip Circuit
Battery Input
First Alarm Output Circuit
Second Alarm Output Circuit
Alarm Output Shutdown Circuit
Speed Input Circuit
High Speed Trip Circuit
Pressure Input Circuit
Delayed Pressure Speed Comparator Circuit
1
2
4
6
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13

input signal means, to said adjusting means, to said comparator means and to said alarm signal sensing means for energization thereof.

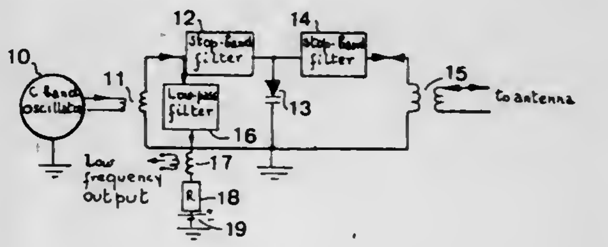
3,893,109
SIMPLIFIED MOVING TARGET DETECTOR
Bernard Chiron, and Michel Fache, both of Paris, France, assignors to Societe Lignes Telegraphiques et Telephoniques, Paris, France

Filed Mar. 28, 1974, Ser. No. 455,891

Claims priority, application France, Apr. 2, 1973, 73.11718

Int. Cl.^{2} G01S *9/42*

U.S. Cl. 343—5 PD **4 Claims**



1. A short range moving target detector based on Doppler effect comprising:
- a. a transistor generator which operates at frequency f_o;
- b. a semiconductor diode mixer and frequency multiplier with a ratio n;
- c. a first coupling element between said generator and said mixer and frequency multiplier with a low impedance at f_o and a high impedance at nf_o;
- d. a second coupling element between said mixer and frequency multiplier and a transmit-receive antenna with a low impedance at nf_o;
- e. a low-pass filter between said mixer and frequency multiplier and a load for applying the difference frequency signal between the transmit and received signals.

3,893,110
DEVICE FOR CONVERSION AND DISPLAY OF RADAR RETURNS
David L. Drake, Treasure Cove, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

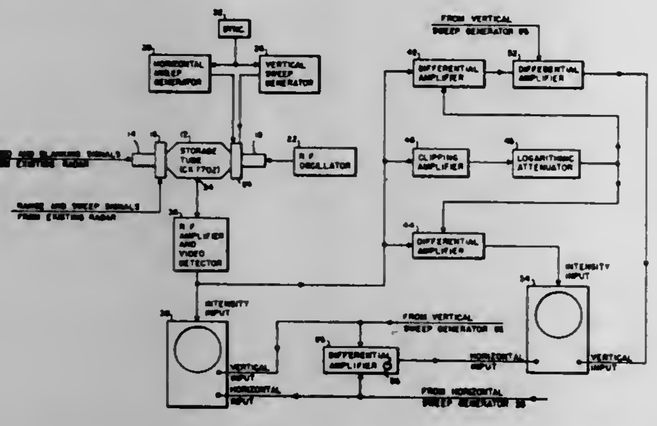
Filed May 27, 1965, Ser. No. 459,986

Int. Cl. G01s *7/04*

U.S. Cl. 343—5 EM **6 Claims**

1. A display system for enhancing some patterns and suppressing other patterns comprising:
- display means having an intensity and two orthogonal input terminals;
- sweep signal generator means coupled to one of said two orthogonal input terminals;
- signal input means;
- clipping means connected to said signal input means;

logarithmic variation means connected to said clipping means;
first differential amplifier means connected to said signal input means and to said logarithmic variation means;
second differential amplifier means connected to said first differential amplifier means, to said sweep signal generator means and to the other of said two orthogonal input terminals and



third differential amplifier means connected to said signal input means, to said logarithmic variation means and to said intensity input terminal.

3,893,111

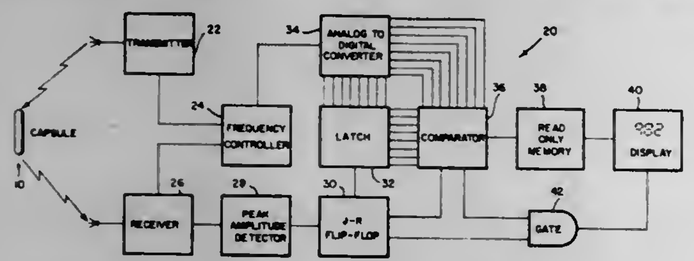
SYSTEM AND METHOD FOR REMOTE MONITORING OF ANIMAL TEMPERATURE

John L. Cotter, Laconner, Wash., assignor to Albert F. Albert, Santa Barbara, Calif.

Filed Mar. 14, 1974, Ser. No. 451,009

Int. Cl. A61b *5/00;* **G01s** *9/56;* **H01q** *1/12*

U.S. Cl. 343—6.5 R **6 Claims**



5. An antenna for a remote monitoring system for animal body temperature, comprising:

a. a variable length antenna means for being subcutaneously implanted in an animal, said antenna means being such that its length variations are proportional to changes in the animal's body temperature, said antenna also being at least partially metallic in nature and encapsulated in a non-metallic substance.

3,893,112

COMPUTER FOR THRESHOLD OF TAU

Jeffrey Ellis Miller, Dallas, Tex., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 21, 1974, Ser. No. 434,925

Int. Cl. G01s *9/56*

U.S. Cl. 343—6.5 LC **11 Claims**

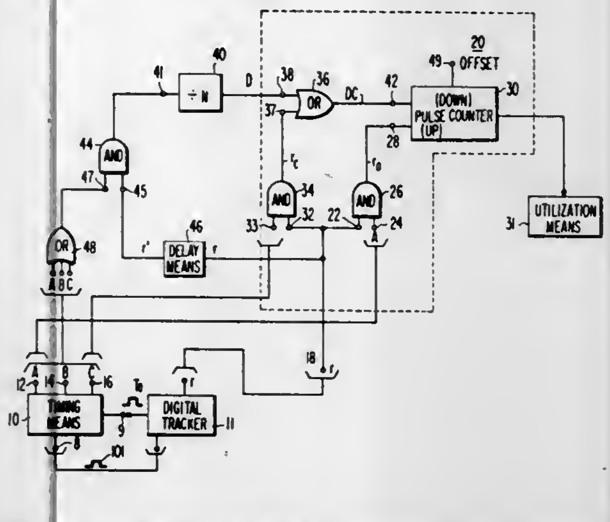
1. In a digital tracker for tracking reply signals from a remote station corresponding to interrogation signals from an interrogating station, including clock means for generating range counts, each count representative of a set distance, and range count gating means, responsive to said range counts, for providing interrogation reply gated range count output signals only during the intervals between the transmission of said interrogation signals and the reception of said corresponding replies, a system for generating a warning when the time to a projected impact between said interrogation and remote stations exceeds a predetermined value comprising:

a. timing means for generating a plurality of timing signals each of which being, respectively, indicative of contiguous time periods;

b. input means for receiving input signals representative of a time varying parameter;

c. divider means receptive of said representative input signals for generating one output signal for every N representative input signals received where N equals a specified constant;

d. accumulator means receptive of said representative input signals, said divider means output signals and said timing signals for providing an output signal when the number of representative input signals received during a first one of said time periods is greater than the sum of the number of divider means output signals and the number of representative input signals received during a specified one of said time periods subsequent to said first period.



3,893,113

TRACKING RECEIVER

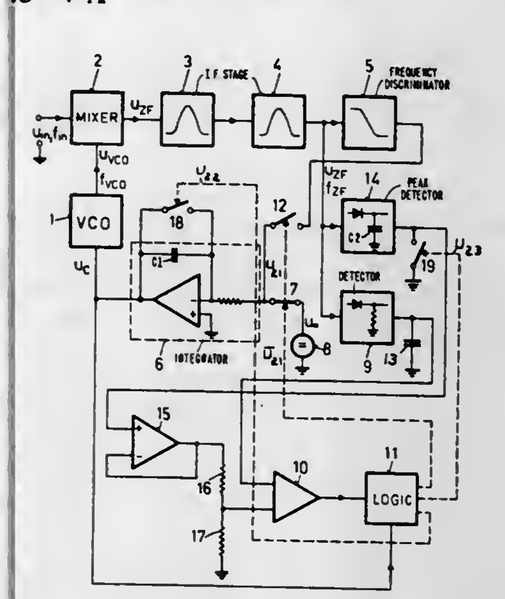
Paul D. Iten, Oberrohrdorf, and Jiri Mastner, Niederrohrdorf, both of Switzerland, assignors to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Dec. 18, 1973, Ser. No. 425,841

Claims priority, application Switzerland, Dec. 27, 1972, 18859/72

Int. Cl. G01s *9/44*

U.S. Cl. 343—7 A **4 Claims**



1. A tracking receiver comprising a mixer, a voltage-controlled oscillator having its output connected as one input to said mixer and the input signal connected as the other input to said mixer, an intermediate frequency stage having a pass band and which is connected to the output from said mixer, a frequency discriminator connected to the output from said intermediate frequency stage and which produces at its output a variable control voltage connected to said oscillator for varying the output frequency thereof during a search operation until the frequency of the output signal from said mixer comes to lie in the pass band of said intermediate frequency stage, an instantaneous-value detector connected to the output of said intermediate frequency stage, a peak-value detector also connected to the output of said intermediate frequency stage for storing the peak value of the output therefrom, a comparator for comparing the outputs from said instantaneous and peak-value detectors, and means including switching means disposed in the connection between the output from said frequency discriminator and said oscillator for switching over the discriminator when the instantaneous output signal from said intermediate frequency stage approaches or reaches a specific fraction of the peak value of its signal stored in said peak-value detector during the preceding search operation covering the whole tuning range of the receiver.

3,893,114

METHOD AND DEVICE FOR ANTICIPATING A COLLISION

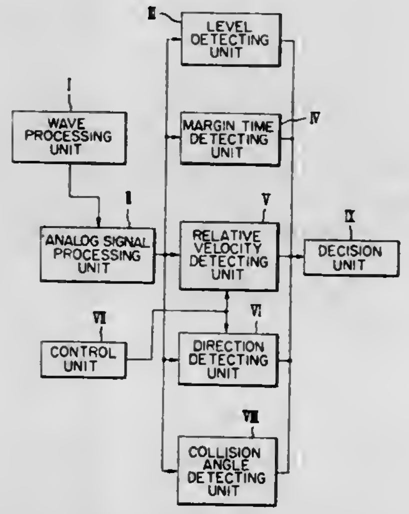
Teruo Yamanaka, Seto, and Kazuo Sato, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Kabushiki Kaisha Toyota Chuo Kenkyusho, both of Aichi, Japan

Filed Apr. 9, 1973, Ser. No. 348,941

Claims priority, application Japan, Apr. 8, 1972, 47-35339

Int. Cl. G01s *9/02*

U.S. Cl. 343—7 ED **27 Claims**


II
LEVEL DETECTING UNIT
I
WAVE PROCESSING UNIT
MARGIN TIME DETECTING UNIT
IV
III
ANALOG SIGNAL PROCESSING UNIT
V
RELATIVE VELOCITY DETECTING UNIT
IX
DECISION UNIT
VII
CONTROL UNIT
VI
DIRECTION DETECTING UNIT
VIII
COLLISION ANGLE DETECTING UNIT

7. A collision anticipating device utilizing transmitted and reflected frequency-modulated continuous waves comprising

A. wave processing means comprising means for transmitting a wave to an object and for receiving a wave reflected therefrom,

B. analog signal processing means comprising
  means for mixing reflected wave with a portion of a transmitted wave so as to derive a low frequency wave,
  means for separating a first Doppler signal component from said low frequency wave, means for separating a fundamental wave component and harmonic components from said low frequency wave and for separating additional Doppler signal components from said fundamental wave component and harmonic components,
  means for selecting at least two components which are different in phase from each other from said first and additional Doppler signal components,
  wave shaping means for detecting a specified point in time in one period of said selected components and comparator means for detecting a point in time in one period at which said selected components are equal in intensity;

C. margin time detecting means comprising
  means for detecting a time interval between said two detected points in time and generating a signal when said time interval reaches a predetermined time interval; and

D. decision means for generating a signal when said means for detecting a time interval generates a signal.

3,893,115

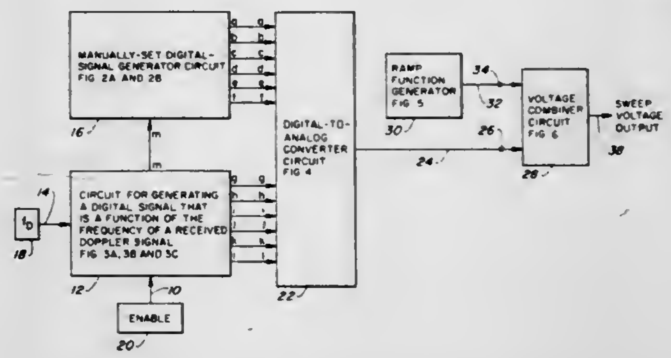
SWEEP AND MEMORY CONTROL CIRCUIT

John L. Linder, Las Cruces, N. Mex., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 25, 1974, Ser. No. 436,415

Int. Cl.^{2} G01S *9/02, 9/44*

U.S. Cl. 343—7 A **7 Claims**


MANUALLY-SET DIGITAL-SIGNAL GENERATOR CIRCUIT FIG 2A AND 2B
a
b
c
d
e
f
16
m
m
14
fD
18
CIRCUIT FOR GENERATING A DIGITAL SIGNAL THAT IS A FUNCTION OF THE FREQUENCY OF A RECEIVED DOPPLER SIGNAL FIG 3A, 3B AND 3C
12
10
ENABLE
20
DIGITAL-TO-ANALOG CONVERTER CIRCUIT FIG 4
22
RAMP FUNCTION GENERATOR FIG 5
30
34
32
26
24
VOLTAGE COMBINER CIRCUIT FIG 6
28
SWEEP VOLTAGE OUTPUT
38

1. A digital sweep voltage generator for providing sweep voltages to a doppler satellite tracking station receiver voltage-controlled oscillator to ensure searching in the correct doppler frequency range at a proper rate, comprising:

a. means for generating a continuous train of identical ramp function signals having an output;

b. a first digital-to-analog converter circuit having an input circuit and an output;

c. means for providing an enable signal;

d. means for providing a manually-set digital signal;

e. means for gating said manually-set digital signal to said input circuit of said first digital-to-analog converter circuit when said enable signal is at a logic 0 level, said means for providing an enable signal being connected to said means for gating said manually-set digital signal;

f. means for providing a doppler frequency signal having an output;

g. means for generating a digital signal that is a function of the frequency of said doppler frequency signal having an output circuit and an input, said input being connected to said output of said means for providing a doppler frequency signal;

h. means for gating said digital signal that is a function of the frequency of said doppler frequency signal to said input circuit of said first digital-to-analog converter circuit when said enable signal is at a logic 1 level, said means for providing an enable signal being connected to said means for gating said digital signal that is a function of the frequency of said doppler frequency signal, said means for gating said digital signal that is a function of the frequency of said doppler frequency signal having an input circuit and an output circuit;

i. a voltage combiner circuit having a first and a second input and an output, said output of said digital-to-analog converter circuit being connected to said first input, said output of said means for generating a continuous train of identical ramp function signals being connected to said second input, said output being said sweep voltage for said doppler satellite tracking station receiver.

3,893,116

RADAR LOBING SYSTEM

Thomas Hudspeth, Malibu; Walter W. Maguire, Los Angeles; Harold A. Rosen, Santa Monica, and Donald E. Kreinheder, Inglewood, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

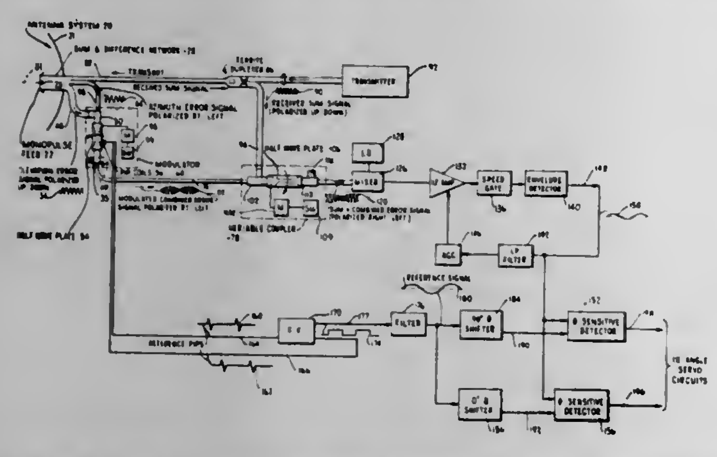
Filed Dec. 30, 1958, Ser. No. 783,994

Int. Cl. G01s *9/22;* **H01q** *15/24*

U.S. Cl. 343—16 M **19 Claims**

1. A radar system for receiving unmodulated directional echo signals at radio frequency from a source comprising

antenna means for developing from the echo signals at radio frequency a sum signal, an elevation error signal and an azimuth error signal each of the error signals being linearly polarized and having a voltage amplitude indicative of the direction of said source from an axis of said antenna, means responsive to the error signals for coupling the error signals in a common conductor with their planes of linear polarization orthogonal to each other, modulating means for simultaneously rotating the linearly polarized planes of said elevation and azimuth error signals at a desired angular velocity, polarization direction sensitive means for accepting a component of said elevation and azimuth error signal in a given direction of polarization to develop a resultant signal including amplitude modulated elevation and azimuth error signals modulated to develop a difference in phase and arranged spectrally as double sideband signals, coupling means coupled to said polarization direction sensitive means and to said antenna means for combining the resultant error signal and the sum signal at radio frequency into a common signal having the sum signal arranged as the carrier wave to the double sideband signals, mixing means for heterodyning the common signal to intermediate frequency, amplifier means coupled to said mixing means for amplifying the intermediate frequency common signal, means coupled to said modulating means for developing a reference signal indicative of the angular velocity, provided by the modulating means and detecting means coupled to receive the reference signal and coupled to said amplifier means to respond to the amplitude of the common signal for developing output signals having characteristics indicative of the direction of said source from said antenna means.



3,893,117
MARINE RADAR TRANSMISSION AND RECEPTION SYSTEM

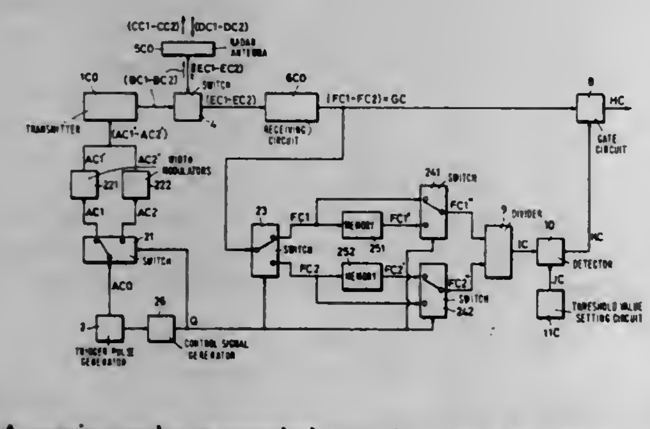
Tomiji Nirasawa, Kanagawa-ken, and Hiroshi Ota, Tokyo, both of Japan, assignors to Kabushiki Kaisha Tokyo Keiki, Tokyo, Japan

Filed May 8, 1973, Ser. No. 358,456

Claims priority, application Japan, May 10, 1972, 47-46033

Int. Cl. G01s *9/06, 7/28*

U.S. Cl. 343—17.1 R **4 Claims**



1. A marine radar transmission and reception system comprising:

a. means for sequentially generating first and second transmission pulse radar waves of first and second pulse widths, respectively;

b. an antenna for sequentially emitting the first and second transmission pulse radar waves in the same direction as first and second emitted pulse radar waves respectively and sequentially receiving first and second reflected pulse radar waves of the first and second emitted pulse radar waves;

c. a receiving circuit supplied with the output of the antenna;

d. means for producing first and second received pulse waves corresponding to the first and second reflected pulse radar waves from the output of the receiving circuit, respectively;

e. a gate circuit for gating the output of the receiving circuit or either one of the first and second received pulse waves; and

f. control means having a quotient circuit for producing the quotient output of the first and second received pulse waves, a setting circuit for deriving a predetermined threshold value output and a detector for detecting whether or not the quotient is in excess of the threshold value output;

g. in which the gate circuit is controlled with the output of the detector of the control means, whereby sea clutter eliminated received pulse radar waves are obtained from the gate circuit.

3,893,118
DOPPLER ILS RECEIVER

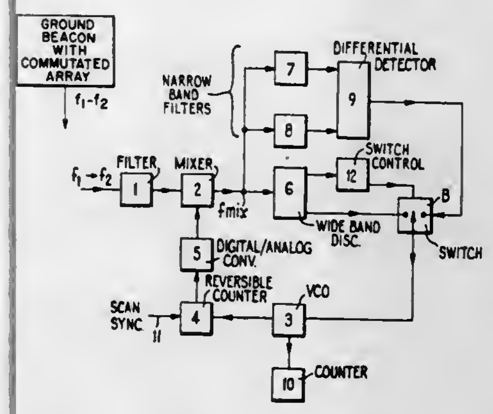
Francis Gile Overbury, Cuffley, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed July 26, 1973, Ser. No. 382,957

Claims priority, application United Kingdom, Aug. 3, 1972, 36231/72

Int. Cl.² G01S *1/38*

U.S. Cl. 343—106 D **5 Claims**



1. A Doppler navigation system including a ground beacon having an array of commutated antenna elements and at least one airborne receiver responsive to the radiation from said array to determine the angular position of said receiver with respect to said beacon, comprising:

first means within said receiver for determining a Doppler frequency signal representative of said angular position, said signal having a spectrum including two relatively large and substantially equal magnitude spectral lines;

and second means operatively associated with said first means, including means for frequency tracking said angle representing signal, said second means also including frequency conversion means responsive to a variable signal generated by said frequency tracking means and to said angle representing signal to produce an output signal within a fixed passband centered at a frequency midway between said two relatively large spectral lines representing said Doppler signal after conversion.

3,893,119
DISTANCE MEASURING APPARATUS INTEGRATED IN AN AIRCRAFT LANDING SYSTEM OF THE ILS TYPE

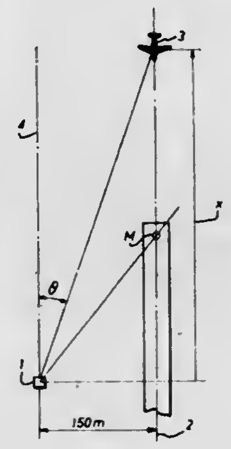
Gilbert Montel, Palaiseau, France, assignor to Agence Nationale de Valorisation de la Recherche "Anvar", France

Filed Sept. 20, 1973, Ser. No. 399,092

Claims priority, application France, Sept. 20, 1972, 72/33283

Int. Cl. G01s *1/16*

U.S. Cl. 343—108 R **10 Claims**



1. Distance measuring apparatus integrated in an aircraft landing system of the ILS type utilizing the differential measuring technique wherein a deviation signal is alternately applied and suppressed to a network of lateral aerials of a glide station, the distance measuring apparatus measuring the bearing angle of the approaching aircraft with respect to the glide station when the aircraft is on the glide path and comprising at the glide station a pair of lateral aerial means operatively associated with the low aerial of the glide station and intermittently emitting sidebands corresponding to the modulation of the glide signal at a low frequency which is sufficiently high with respect to the conventional ILS frequencies of 90 and 150 Hz, and distance means connected to the low frequency output of a conventional ILS receiver on board the aircraft for providing a distance indication in accordance with the variation in the degree of modulation of the low frequency signal received by the ILS receiver.

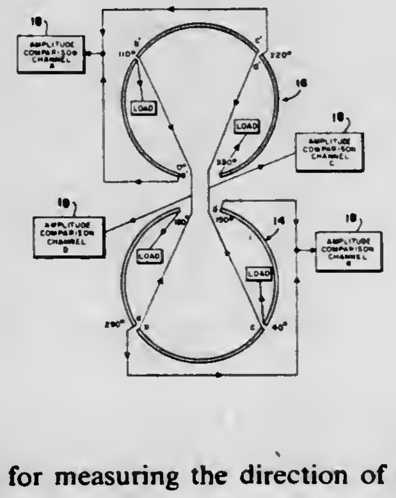
3,893,120
OMNIDIRECTIONAL RING ANTENNA FOR EW AMPLITUDE COMPARISON DIRECTION FINDING

Richard S. Trenam, Adelaide, Australia, assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 13, 1970, Ser. No. 63,375

Int. Cl.² G01S *3/28*

U.S. Cl. 343—119 **3 Claims**



1. Apparatus for measuring the direction of incoming RF signals comprising:

an omnidirectional ring antenna for receiving said RF signals,

said antenna consisting of a ring of air-spaced coaxial cable and a selectively predetermined number of radiating elements symmetrically spaced and disposed about said coaxial cable in an energy coupling relationship with respect to said coaxial cable,

probe means for sampling the coupled energy level at selectively predetermined points on said ring antenna, and

means for comparing the sampled energy levels derived by said probe means whereby the direction of said incoming RF signals can be determined.

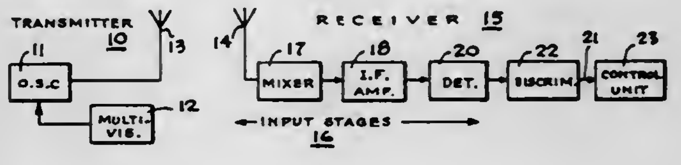
3,893,121
REMOTE CONTROL SYSTEM

Kenneth M. Ringer, Longmont, Colo., assignor to A.R.F. Products, Incorporated, Raton, N. Mex.

Division of Ser. No. 178,376, Sept. 7, 1971, Pat. No. 3,747,108, which is a continuation of Ser. No. 840,806, July 10, 1969, abandoned, which is a continuation-in-part of Ser. No. 749,746, Aug. 2, 1968, abandoned. This application June 13, 1973, Ser. No. 369,586

Int. Cl. H04b *7/00*

U.S. Cl. 343—225 **4 Claims**



1. A remote control system, comprising a transmitter including a carrier oscillator for producing a radio frequency carrier signal, modulation oscillation means for modulating said carrier signal with modulation frequency signals in the high audio frequency range, pulse generator means for producing repetitive pulses at a predetermined repetition rate corresponding to a low audio frequency range, means connected to said pulse generator means and operable by said pulses for repetitively changing the frequency of said modulation frequency signals between first and second substantially different modulation frequencies in the high audio range, a receiver including an input circuit for receiving and demodulating said carrier signal thereby producing first and second tone signals alternating at the pulse generator rate, an output control device, and means for actuating the output control device electrically connected between the input circuit and the output control device, said actuation means impressing an actuating signal on the output control device only responsive to audio signals of the frequency of the first and second modulation frequencies which alternate between the first and second modulation frequencies at the rate of the pulse generator.

3,893,122
WAVE GUIDE ANTENNA HORN

John D. Feeney, St. Paul, Minn., assignor to Western Electric Company, Incorporated, New York, N.Y.

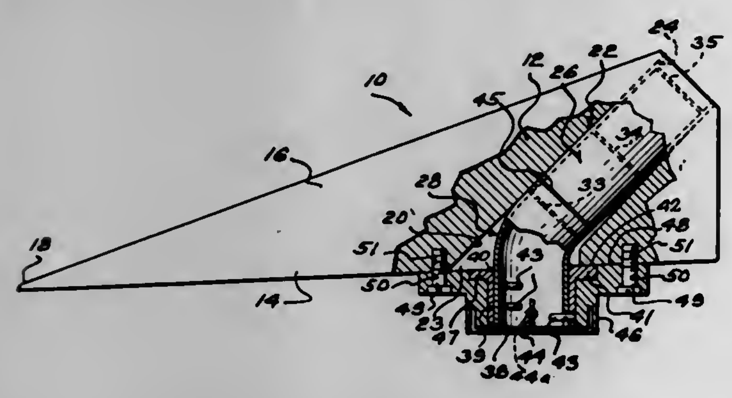
Filed Sept. 27, 1957, Ser. No. 687,597

Int. Cl.² H01Q *1/28*

U.S. Cl. 343—705 **7 Claims**

5. An antenna horn for a radar-controlled device comprising a streamlined body having surfaces defining an aperture extending through said body, a composite wave guide disposed in the aperture in said body, said composite wave guide having a straight section and a curved section with an end portion of each section secured together in coaxial alignment, means in one of said sections for modifying electro-magnetic waves passing therethrough, said surfaces of said body being

shaped to support one end of the composite wave guide against lateral movement, therethrough, and means for securing the other end of said composite wave guide to said body against movement in any direction.



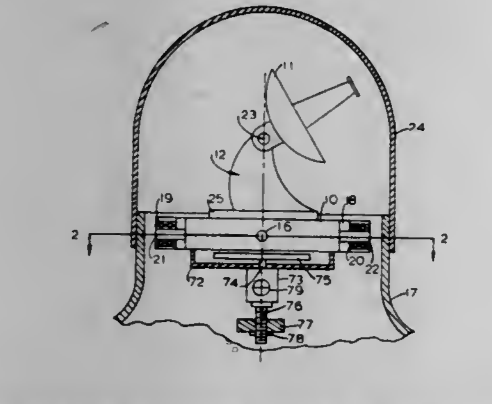
3,893,123
COMBINATION GYRO AND PENDULUM WEIGHT STABILIZED PLATFORM ANTENNA SYSTEM

Albert H. Bieser, Garland, Tex., assignor to B E Industries, Garland, Tex.

Filed Sept. 12, 1973, Ser. No. 396,513

Int. Cl. H01q *3/00*

U.S. Cl. 343—706 **21 Claims**



1. In an antenna mounting system: a plural axis antenna pedestal including a vertical axis and having a right angled gimbaled, combination gravity slaved and gyro stabilized platform; the right angled axes of the gimbaled platform lying in a common plane intersecting the symmetrical axis of the platform; gyro motor means and rotor means vertically mounted for rotor rotation in a plane normal to the vertical axis of the pedestal; counterweight mass means positioned below the gimbaled plane of said platform; and with the mass and positioning of said counterweight mass means insuring positioning of the center of gravity of the entire gimbaled platform along with antenna means and other structure supported by the gimbaled platform, below the gimbaled plane of said platform; and wherein said antenna means and antenna mounting structure is rotatably supported on said gimbaled platform for rotation about said vertical axis.

3,893,124
R-F ANTENNA APPARATUS FOR GENERATING CONICAL SCAN PATTERN

Jabus Barker, Utica, N.Y., assignor to General Electric Company, Utica, N.Y.

Filed Apr. 26, 1974, Ser. No. 464,430

Int. Cl. H01q *13/10*

U.S. Cl. 343—768 **8 Claims**

1. A phase-scanned r-f antenna comprising, in combination:

a four quadrant antenna;

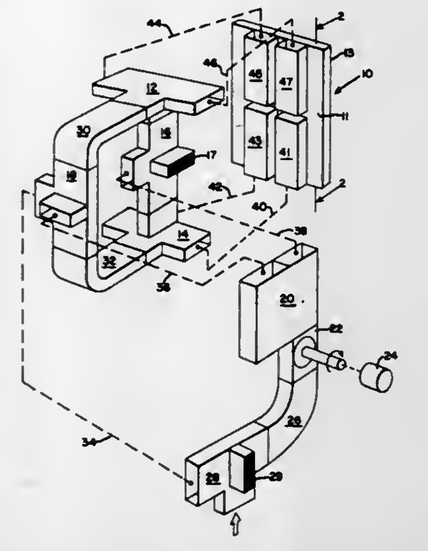
first and second 180° hybrid couplers connected to said antenna, the four branching arms of said couplers being connected to different ones of said antenna quadrants;

a third 180° hybrid coupler having its branching arms connected to the E-plane arms of said first and second couplers;

a fourth 180° hybrid coupler having its branching arms connected to the H-plane arms of said first and second couplers;

a 90° hybrid coupler having one pair of adjacent ports connected to the H and E-plane arms of said third and fourth 180° hybrid couplers respectively;

a fifth 180° hybrid coupler having its branching arms connected respectively to the H-plane arm of said fourth 180° coupler and to a port of said 90° coupler which is opposite the port connected to said third 180° coupler.



a phase shifter connected in the circuit between the branching arm of said fifth 180° coupler and said 90° coupler;

r-f energy operating means connected to the H-plane arm of said fifth 180° coupler; and

means for actuating said phase shifter whereby the axis of the beam pattern of said antenna is caused to scan in a path describing at least a segment of a cone.

3,893,125
MOTOR OPERATED TELESCOPIC ANTENNA FOR VEHICLES

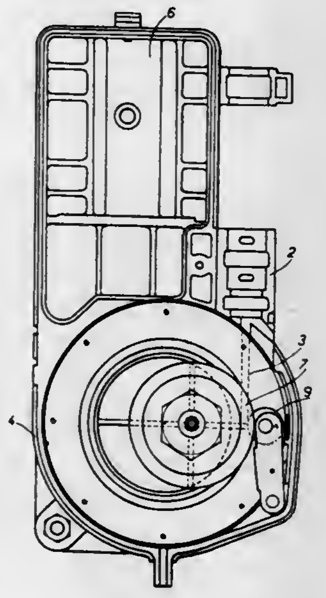
Michel De Bellomayre, 69 Avenue Raymond Poincare, 75 Paris, France

Filed Nov. 27, 1973, Ser. No. 419,427

Claims priority, application France, Nov. 29, 1972, 72.42384

Int. Cl. H01q *1/10*

U.S. Cl. 343—903 **11 Claims**



1. A device for actuating a telescopic antenna comprising a flat housing of annular shape having an interior periphery and an exterior periphery, a long, flexible cable of solid polymeric material formed with evenly spaced indentations along its length with at least substantially circular cross-section in its non-indented parts, said housing having a central opening for reversibly receiving and storing said cable, a motor which reversibly actuates through the agency of a drive winch said cable in such manner that the longitudinal centerline of said cable forms a flat spiral within said housing, said drive winch having means for engaging with said cable indentations, cable guiding means in said housing for directing said cable into the housing from the interior of the spiral and in such manner that the ingoing cable thrusts the previously formed cable spiral against the inner periphery of the housing.

3,893,126
PROCESS AND DEVICE FOR WRITING BY INK JET

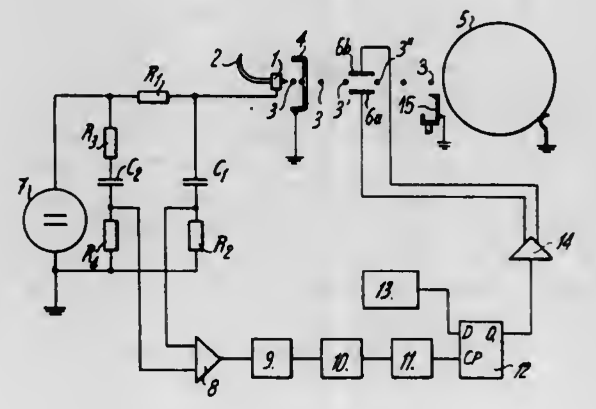
Enzo Ascoli, Lausanne; Raymond Pidoux, Pully, and Marc Perdrix, Champagne, all of Switzerland, assignors to Paillard S.A., Sainte-Croix (Vaud), Switzerland

Filed Aug. 14, 1973, Ser. No. 388,274

Claims priority, application Switzerland, Sept. 12, 1972, 13412/72

Int. Cl. G01d *15/16*

U.S. Cl. 346—1 **8 Claims**



1. A process for writing by means of a jet of ink, comprising: applying an electric field to extract a succession of discrete droplets of ink from a delivery nozzle to form a jet of ink directed generally towards a writing surface and passing between deflecting electrodes; applying a control voltage across the deflecting electrodes to deflect the jet of ink to trace signs on the writing surface, said control voltage having abrupt variations corresponding to discontinuities in the signs being traced, determining the individual passages of the droplets and making said abrupt variations in the control voltage coincide with instants when no droplet is located between said deflecting electrodes.

3,893,127
ELECTRON BEAM RECORDING MEDIA

Michael Kaplan, Princeton, and Edmund Benjamin Davidson, Short Hills, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Sept. 27, 1973, Ser. No. 401,213

Int. Cl. G01d *15/34*

U.S. Cl. 346—1 **16 Claims**

1. In a method of recording information whereby a modulated beam of electrons is scanned across the surface of a resist material which becomes more soluble in the developer solvent when impinged upon by the beam of electrons and the resist material is developed with a developer solvent so as to remove the solubilized portions thereof, the improvement which comprises employing as the resist material a film of a copolymer of SO_2 and an olefin.

3,893,128
RECORDING APPARATUS FOR ELECTROGRAPHIC IMAGING

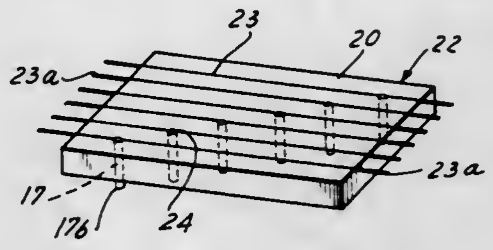
Hans Bäuerlen, Gerlingen, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany

Division of Ser. No. 256,976, May 25, 1972, Pat. No. 3,798,756. This application Nov. 23, 1973, Ser. No. 418,773

Claims priority, application Germany, May 26, 1971, 2126043

Int. Cl.² G03G *15/00*

U.S. Cl. 346—74 ES **6 Claims**



1. A recording head for recording on a recording medium, comprising a carrier; a plurality of one-piece electrically conductive wires embedded in said carrier in closely spaced parallel relationship, each of said wires having opposite end portions projecting beyond said carrier and adapted to serve as writing electrodes; and a plurality of electrically conductive contact pins, each partially embedded in said carrier in a direction substantially perpendicular to said wires and having a first end connected to said wires intermediate said end portions thereof and a second end projecting outwardly beyond said carrier, one of said end portions of the respective wire being adapted to conduct electrical signals to the other of said end portions of the same wire so that said other end portion serves as a writing electrode and, at the option of a user, said second end of each pin being adapted to conduct electrical signals to the associated wire so that either or both of said end portions of the wire serve as writing electrodes for interchangeably or simultaneously writing on the recording medium.

3,893,129
LIGHT BEAM RECORDING DEVICE

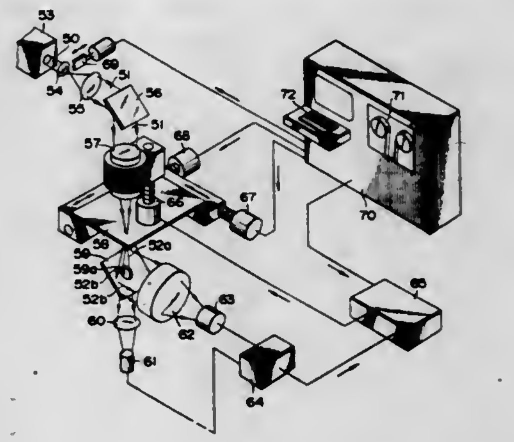
Hirotoshi Endo; Hiroshi Oono, and Shigenori Oosaka, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed July 24, 1974, Ser. No. 491,504

Claims priority, application Japan, July 27, 1973, 48-85333

Int. Cl. G02b *7/02;* **G01d** *15/14*

U.S. Cl. 346—77 E **13 Claims**



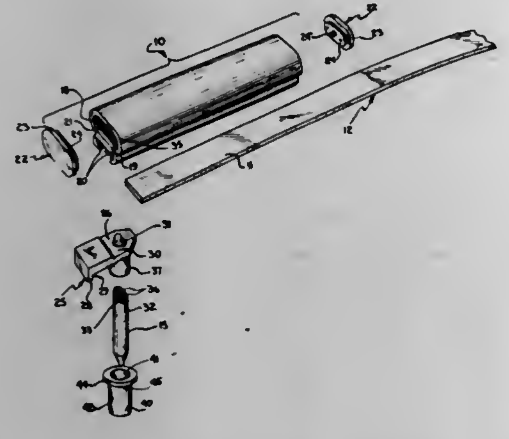
1. A light beam recording device comprising a light source which emits a light beam of high intensity which is able to deform a thermoplastic material, an optical system for focusing the light beam on the thermoplastic recording medium, a photoelectric sensing means provided behind the recording medium for receiving light passing through the recording

medium, and means for controlling said optical system to focus the light beam accurately on the recording medium in accordance with the output of said photoelectric sensing means.

3,893,130
RECORDER PEN

Charles A. Browning, Chicago; Gilbert G. Perrigo, Roselle, both of Ill., assignors to Northern Illinois Gas Company, Aurora, Ill.

Continuation of Ser. No. 122,759, March 10, 1971 abandoned. This application July 20, 1973, Ser. No. 381,209
Int. Cl. G01d *15/16*
U.S. Cl. 346—140 **15 Claims**

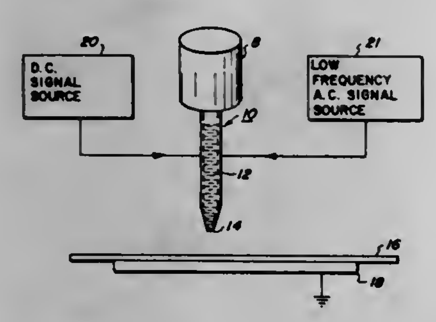


1. A recorder pen for a recording instrument comprising a cartridge having a closed chamber, means for maintaining a supply of fluid in said chamber, means for venting said closed chamber, a tubular member carried by the cartridge and having a capillary passageway therethrough communicating with the inside of said chamber, a point formed on said tubular member with said passageway communicating with said point, said fluid in said chamber flowing through said passageway to said point, said cartridge having a channel means formed on one side thereof for receiving the end portion of an arm of the recording instrument, and a retainer having a body portion for closing the one end of the chamber in the cartridge and having a pair of legs extending from said body portion, said legs engaging opposite sides of said cartridge to hold said retainer on said cartridge in said closed relationship, one of said legs extending into retaining relationship with said channel means.

3,893,131
INK PRINTER

Julius Perel, Altadena, and John F. Mahoney, South Pasadena, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Sept. 4, 1973, Ser. No. 393,760
Int. Cl. G01d *15/18*
U.S. Cl. 346—140 **10 Claims**



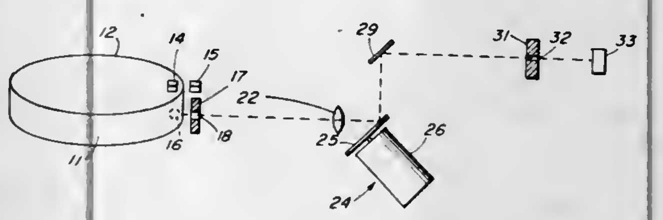
1. A fluid printer in which substantially all ink drops produced are used for printing on a recording medium comprising:

a nozzle containing a conductive fluid,
an electrode disposed adjacent said nozzle and maintained at a fixed potential, and
pulsing means for applying to said nozzle a voltage waveform having a voltage pulses of sufficient magnitude to produce an electrostatic field between said nozzle and said electrode of sufficient magnitude to overcome the liquid surface tension of the nozzle and draw ink from the nozzle to the recording medium, each of said pulses having a peak amplitude portion and a trailing edge portion that decrease in magnitude at a variable rate.

3,893,132
PHOTOCOMPOSING MACHINE

Peter R. Ebner, Lowell, Mass., assignor to Graphic Systems, Inc., Lowell, Mass.

Filed Feb. 15, 1974, Ser. No. 442,807
Int. Cl. B41b *21/28*
U.S. Cl. 354—13 **4 Claims**

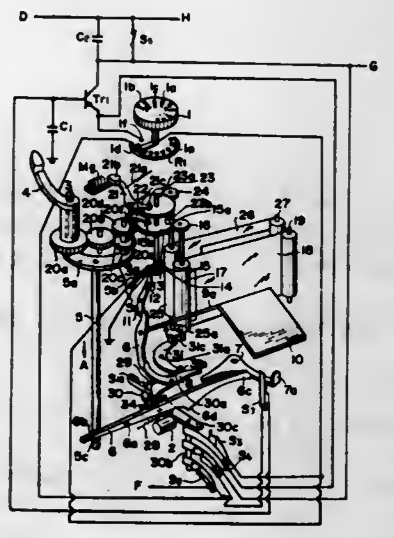


1. A photocomposing machine comprising a rotatable character store bearing a multiplicity of characters in a plurality of rows rotatable through a character presentation location, means to illuminate said characters on demand in said plurality of rows, optical means to project an image of said characters in an optical path to an optical output movable over a photorecording member, and selector means in said optical means to select a single row of characters from said plurality or rows, said selector means comprising a plurality of optical selection members each mounted in a predetermined angular relationship uniquely associated with a single row of characters, and means to move each optical selection member selectively into said optical path in its predetermined angular relationship.

3,893,133
ELECTRICALLY CONTROLLED SHUTTER FOR USE IN PHOTOGRAPHIC CAMERAS

Kayoshi Tsujimoto, and Toru Matsui, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Oct. 5, 1973, Ser. No. 403,831
Claims priority, application Japan, Oct. 7, 1972, 47-100323; June 23, 1973, 48-70464
Int. Cl. G03b *7/08, 9/58*
U.S. Cl. 354—24 **13 Claims**



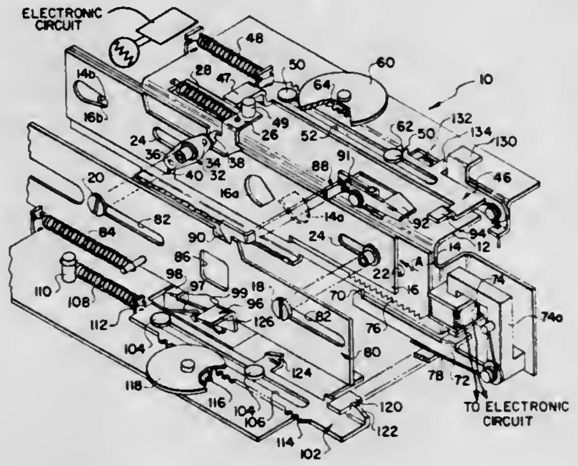
8. An electrically controlled shutter for a photographic camera, comprising:

a first timing circuit for setting exposure timing commensurate with the brightness of a photographic object;
a second timing circuit for manually setting exposure timing;
an exposure time control circuit for controlling exposure in accordance with the exposure timing of said first or second timing circuit;
means for closing the shutter in response to said exposure time control circuit;
a first manually operative member settable to a desired position for selecting exposure time and for selectively connecting at least said second timing circuit to said exposure time control circuit; and
a second manually operative member for setting automatic exposure control and for connecting said first timing circuit to said exposure time control circuit, said second manually operative member is at least movable from a rest position to an operating position to connect said first timing circuit to said exposure time control circuit for over-riding the setting of said first manually operative member;
a retaining member for retaining said second manually operative member in said operating position; and
means for releasing said second manually operative member from being retained in said operating position thereof by said retaining member.

3,893,134
EXPOSURE CONTROL APPARATUS

Gerhard Bräuning, Ruit, Germany, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 7, 1973, Ser. No. 413,751
Claims priority, application Germany, Nov. 11, 1972, 2255329
Int. Cl. G03b *7/08*
U.S. Cl. 354—30 **5 Claims**

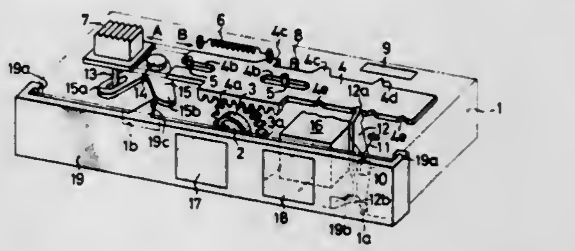


1. In a camera, exposure control apparatus comprising:
diaphragm means constructed and mounted for movement for forming an exposure aperture of a size ranging between a minimum and a maximum size;
shutter means, mounted for movement between open and closed positions, for controlling the passage of light through said exposure aperture;
means for actuating said shutter means to move to said open position a preselected time after actuation of said diaphragm means;
light responsive means for arresting movement of said diaphragm means at a position wherein an exposure aperture of size related to scene brightness is formed; and
means, cooperative with said light responsive means and said shutter means, for actuating said shutter means to close said exposure aperture a preselected time after arrest of said diaphragm means.

3,893,135
APPARATUS FOR MOVING LENS OF CAMERA FOR FOCUSING

Toru Matsui, Sakai; Akira Yoshizaki, Osaka, and Yasuzi Kogure, Kawanishi, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 4, 1974, Ser. No. 438,959
Claims priority, application Japan, Feb. 21, 1973, 48-22641
Int. Cl.^{2} G03B *13/20*
U.S. Cl. 354—167 **10 Claims**

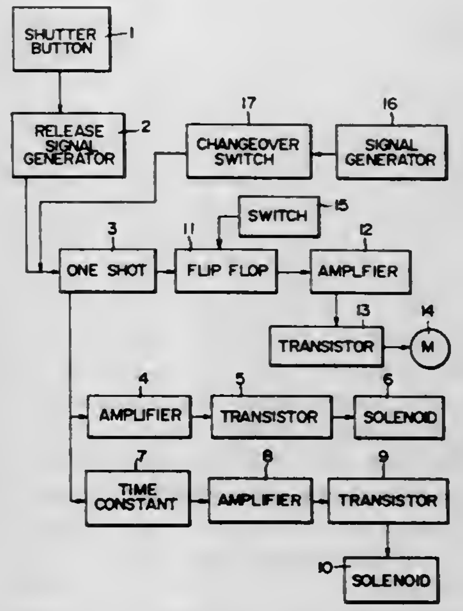


1. An apparatus for adjusting the focus of the main taking lens of a camera comprising:
a movable focussing member;
a focussing ring for effecting the focussing movement of the main taking lens in operative relation to the movement of the focussing member; and
a lens unit including a lens for special photography and a portion for setting the main taking lens to a predetermined focussed position which is dependent on the focal length of the special photography lens, and adapted to be set to a position for special photography in which the optical axis of the special photography lens registers with that of the main taking lens, the main taking lens setting portion of the lens unit, when the unit is positioned for special photography, acting on the focussing member to thereby set the main taking lens to said predetermined position.

3,893,136
MOTOR DRIVEN CAMERA

Kunio Ando, Warabi, and Ryuzo Mukoyama, Kitamoto, both of Japan, assignors to Fuji Photo Optical Co., Ltd., Omiya, Japan

Filed Jan. 17, 1974, Ser. No. 434,097
Claims priority, application Japan, Jan. 20, 1973, 48-9025
Int. Cl. G03b *19/04*
U.S. Cl. 354—173 **16 Claims**



1. In a motor driven camera in which the shutter is charged and film is fed by the power of a motor built in the camera body, the improvement comprising:

a power supply,
an electric motor associated with a shutter charge means and a film feed means for charging the shutter and feeding the film by the rotation thereof,
a flip-flop circuit connected between the power supply and the electric motor to selectively energize the motor,
a shutter release signal generating means which generates a signal upon depression of a shutter button,
a film wind-up completion signal generating means which generates a signal upon completion of the shutter charge and the film feed, and
a one shot multivibrator which generates a pulse having a width corresponding to the exposure time, said one shot multivibrator being connected with said shutter release signal generating means for generating said pulse upon receipt of a signal therefrom,
said flip-flop circuit being connected with said one shot multivibrator and said film wind-up completion signal generating means so that the flip-flop circuit is put into a state to energize the motor when the pulse from the one shot multivibrator falls and is put into the other state to deenergize the motor upon receipt of a signal from said signal generating means.

3,893,137
DUAL LENS CAMERA FOCUS MEANS

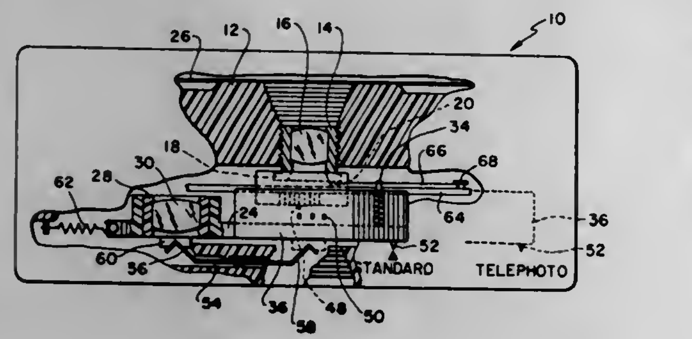
Helmut Ettischer, 60 Wangen, Posthach 369, 7 Stuttgart, Germany

Filed June 10, 1974, Ser. No. 477,580

Claims priority, application Germany, June 14, 1973, 2302650

Int. Cl. G03b *3/00*

U.S. Cl. 354—197 **2 Claims**



1. In a camera having a focusable primary lens, a converter lens movable into and out of axial alignment with said primary lens to change the camera's focal length and a movable focus member for focusing said primary lens; the improvement comprising means movable with said converter lens for covering said focus member when said converter lens is out of alignment with said primary lens, said covering means being moved to a position uncovering said focus member when said converter lens is moved into alignment with said primary lens.

3,893,138
ACCESSORY SOCKET FOR INTERCHANGEABLE LENS FOR PHOTOGRAPHIC CAMERAS

Ralf Sture Frode, Pixbo, Sweden, assignor to Fritz Victor Hasselblad, Goteborg, Sweden

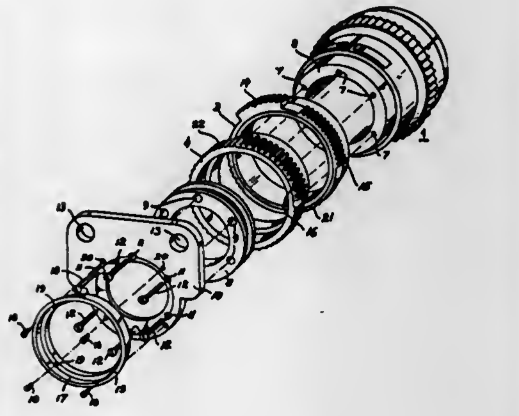
Filed Aug. 13, 1973, Ser. No. 387,633

Claims priority, application Sweden, Aug. 28, 1972, 11126/72

Int. Cl. G03b *17/56*

U.S. Cl. 354—286 **6 Claims**

1. An interchangeable lens including an accessory mount for supporting accessories laterally on said lens, said lens having at least one adjusting mechanism, said mount comprising
a plate having an aperture therein,
means for mounting said plate on said lens forward of the adjusting mechanisms thereof and with said aperture aligned with the optical axis of the lens, said plate having a lateral portion positioned adjacent the lens body,
and positioning means for fixing the position of said mounting plate relative to said adjusting mechanism.



3,893,139
PHOTOGRAPHIC APPARATUS WITH EXPANSIBLE HOUSING

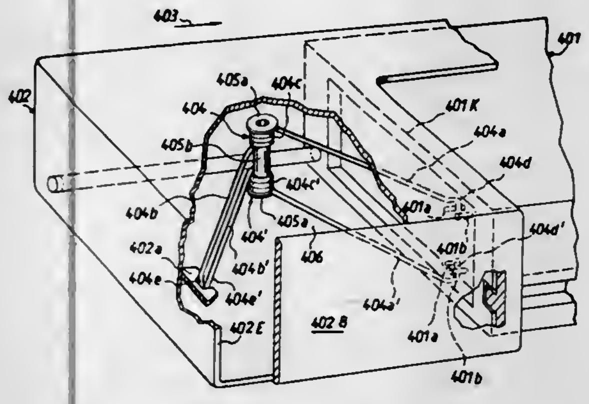
Alfred Winkler, Munich; Dieter Engelsmann, Unterhaching, and Rolf Schröder, Baldham, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed July 23, 1974, Ser. No. 491,143

Claims priority, application Germany, July 31, 1973, 2338776

Int. Cl.² G03B *17/02*

U.S. Cl. 354—288 **10 Claims**



1. In a photographic apparatus, particularly in a still camera, a combination comprising a housing including a first section and a second section supported by and reciprocable relative to said first section between first and second positions in which one of said sections respectively conceals and exposes a portion of the other of said sections; and means for biasing said second section to one of said positions, including at least one torsion spring having first and second legs respectively bearing against said first and second sections and an unsupported arcuate portion connecting said legs and being disposed between said sections.

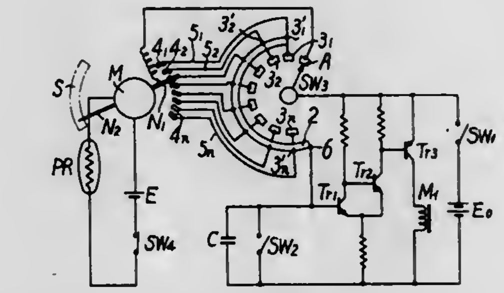
3,893,140
AUTOMATIC EXPOSURE TIME CONTROL APPARATUS FOR CAMERA

Kintaro Yata, Ikeda, and Yoshio Kuramoto, Sakai, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 12,562, Feb. 10, 1970, abandoned. This application Mar. 1, 1972, Ser. No. 231,041

Int. Cl.² G03B *7/08*

U.S. Cl. 354—50 **7 Claims**



1. A network in an automatic exposure time controlling device for a camera comprising an automatic terminal and a group of terminals for manual exposure setting to be selected by a manual selector, said terminals of said group of terminals being connected respectively to a resistance means by lead wires which are spaced along the length thereof and through which resistance values corresponding to respective exposure times are obtained stepwise; another group of terminals to be selected automatically at the position which corresponds to the intensity of incident light from the subject and including an electrically conductive member connected to said automatic terminal and occupying a position responsive to said incident light intensity for engagement with a corresponding terminal of said other group; and shutter actuating means for closing a shutter to be controlled by an electromagnet which is operated by an RC integrating circuit actuated with the resistance value of said resistance means determined alternatively by one of said two groups of terminals, wherein a first insulating base carries said resistance means and a first of said group of terminals; a second insulating base carries a second of said groups of terminals; mutually insulated conductors connect said first group of terminals to respective spaced points along said resistance means; and conductor means connect said first group of terminals to corresponding terminals of said second group respectively.

3,893,141
SINGLE LENS REFLEX CAMERA MIRROR AND DIAPHRAGM ADJUSTING MECHANISM

Naoyuki Uno, and Namura Katsuhiko, both of Kawagoe, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

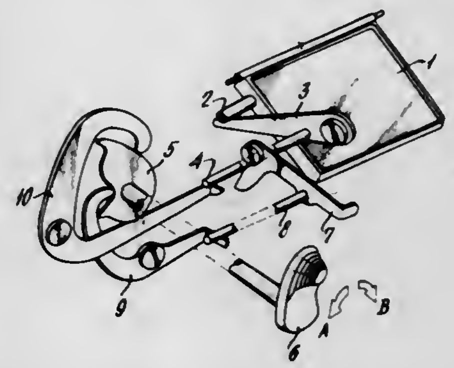
Filed Sept. 12, 1973, Ser. No. 396,657

Claims priority, application Japan, Sept. 21, 1972, 47-108967

Int. Cl.² G03B *19/12, 9/02*

U.S. Cl. 354—156 **3 Claims**

1. In a single lens reflex camera including a mirror moveable between an advanced viewing position and a retracted photographing position and a diaphragm moveable between a retracted aperture open condition and an advanced reduced aperture condition, a cam member manually rotatable from an intermediate position in opposite directions to opposite first and second positions and having a first section including successive raised and depressed portion and a second section including an intermediate depressed portion and raised portions on opposite sides of said depressed portion, first means including a first arm operatively engageable with said mirror and swingable between mirror advanced and retracted positions and a lever having a first end operatively engageable with said first arm and a second end defining a first follower engaging with said cam member first section for advancing and retracting said mirror in response to said follower engaging alternate of said cam member first section depressed and raised portions, and second means including a second arm swingable between a diaphragm open aperture and reduced aperture positions and a second lever having a first end operatively engageable with said second arm and a second end defining a second follower engaging said cam member second section for positioning said diaphragm in its retracted and advanced aperture positions in response to said second follower alternatively engaging said cam member second section depressed and raised portions.



3,893,142
ELECTRIC MOTOR DRIVEN AUTOMATIC FILM ADVANCE

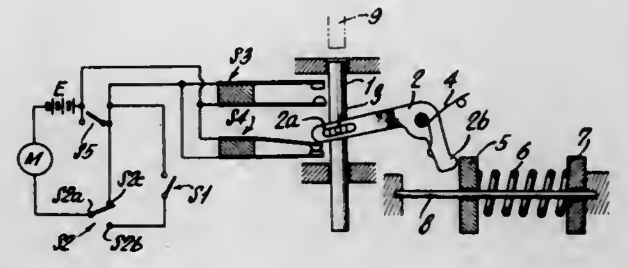
Akihiro Arai, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed July 17, 1973, Ser. No. 380,049

Claims priority, application Japan, July 28, 1972, 47-88785

Int. Cl. G03b *19/04*

U.S. Cl. 354—204 **6 Claims**



1. An automatic stopping mechanism in a camera of electrical automatic film transport type comprising:
a. means including a drive motor for advancing a film a unit frame, and charging the camera shutter;
b. a shutter release actuator member movable between advanced and retracted positions and urged to its advanced position by said drive motor following full film frame advance or completion of a film;
c. means including a shutter release locking mechanism for stopping said shutter release actuator member at an intermediate position between said retracted and advanced positions;
d. a current source for said drive motor; and
e. a control circuit including a switching mechanism mounted in said control circuit including said drive motor and current source at least during the time when the film frame is advanced or the shutter is charged, said switching mechanism by contact with said shutter release actuator member being in a closed position whereby said motor is energized when said shutter release actuator member is either in said advanced or in said retracted position and in an open position when the shutter release actuator member is in an intermediate stop position whereby said motor is deenergized and stops automatically.

3,893,143

DEVICE FOR ADJUSTING A SHUTTER EXPOSURE TIME FOR A CAMERA

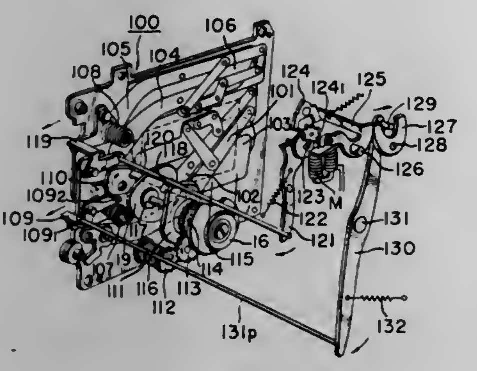
Tatsuya Taguchi, Tokyo, and Yukio Iura, Yokosuka, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 29, 1973, Ser. No. 392,451

Claims priority, application Japan, Sept. 2, 1972, 47-88207

Int. Cl. G03b *9/62*

U.S. Cl. 354—258 **13 Claims**



1. A shutter device for a camera, which comprises:

a shutter mechanism having a shutter opening means and a shutter closing means arranged for operation in exposure time sequence after actuation of a shutter release means; exposure time setting means including a manual setting control and a mechanical displacement transmission system responsive thereto, said setting means being settable for exposure time in substantially contiguous short, medium and long exposure time ranges;

a first mechanical exposure time control means arranged to be settable by said displacement transmission system and arranged to control fully the exposure time of said shutter mechanism in accordance with the position of said setting means when said setting means is set within said short exposure time range;

a second mechanical exposure time control means arranged to be disabled by said setting means in said short exposure time range and to retard the operation of said first mechanical exposure time control means in said medium and long exposure time ranges and thereby to control the exposure time of said shutter mechanism in accordance with the position of said setting means in said medium exposure time range and to control the duration of a final portion of the exposure time of said shutter mechanism in said long exposure time range, said second mechanical exposure time control means including a control member for limiting the speed of movement of said first mechanical exposure control means and a rotary member the rotation of which is mechanically coupled to movement of said control member so as to provide a retarding action on movement of the latter and to reduce the force required to block said movement when said rotary member is blocked; and

electronic exposure time control means arranged to be settable by said displacement transmission system and arranged to be electrically enabled only for settings of said setting means in said long exposure time range and also arranged to participate additively with said second mechanical exposure time control means to control exposure time of said shutter mechanism in said long exposure time range, said electronic control means including electromagnet means provided with a spring-biased armature structure arranged to blockingly engage said rotary member to block said control member of said second mechanical exposure time control means in its initial position for a time period controlled by said setting means which is less than the exposure time and thereafter to release said rotary member and thereby to release said second mechanical exposure time control means for a full operation thereof.

3,893,144

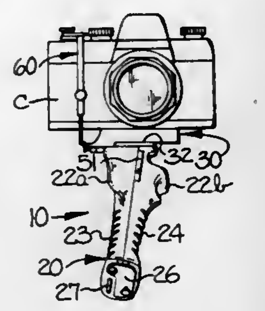
PISTOL GRIP FOR A CAMERA

Ervin M. Funderburk, 1648 Providence Rd., Charlotte, N.C. 28207

Continuation-in-part of Ser. No. 300,827, Oct. 25, 1972, abandoned. This application Oct. 18, 1973, Ser. No. 407,423

Int. Cl. G03b *17/00*

U.S. Cl. 354—293 **5 Claims**



1. A camera having a shutter mechanism and a downwardly operating shutter release for tripping said shutter mechanism when making an exposure, and in combination therewith a pistol grip adapted for providing steady and positive control over the camera while making an exposure, said pistol grip comprising an elongate handle, a generally planar horizontal mounting surface located adjacent the upper end of the handle and supporting the lower surface of said camera thereon, fastener means associated with said mounting surface and securing said camera to the mounting surface, a trigger located in the upper portion of said handle and adapted for being depressed by the forefinger of the hand gripping the handle, an elongate connector member extending upwardly above said mounting surface, means carried by the upper end of said connector member for attaching the connector member to said shutter release, a linkage mechanism interconnecting the lower end of said elongate connector member and said trigger for imparting downward movement to the connector member when the trigger is depressed, said connector member and linkage mechanism being thereby adapted to operate the shutter release of said camera when said trigger is depressed, said linkage mechanism including means for providing a mechanical advantage to said trigger whereby the trigger may be depressed with less force than the force required to depress the shutter release of the camera for thereby facilitating smoothly tripping the shutter mechanism of the camera while maintaining steady and positive control over the camera, and said linkage mechanism also including means permitting adjusting the amount of mechanical advantage provided in the linkage mechanism for accommodating cameras having varying lengths of throw in the shutter release.

3,893,145

FLASH EXTENDER AND CAMERA SUPPORT

Dwayne L. King, 395 Grove St., No. 1435, Reno, Nev. 89502

Filed Apr. 19, 1974, Ser. No. 462,418

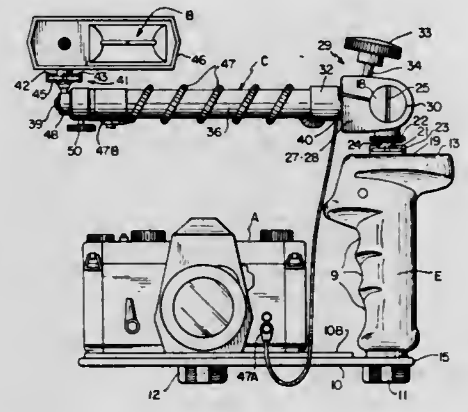
Int. Cl. G03b *17/56*

U.S. Cl. 354—293 **4 Claims**

1. A photographic apparatus including in combination a camera, a support plate releasably coupled to said camera, said support plate having a land portion, said land portion having releasable coupling means thereon, a telescopic extender means having a first end coupled to said land portion at said releasable coupling means and a second end connected to a flash illumination means, the improvement comprising:

trunion joint means connecting said releasable coupling on said land means to said first end of said telescopic extender for providing pivotal movement of said telescopic extender about a first axis and about a second axis perpendicular to said first axis, said trunion joint means including a trunion joint portion having a pair of spaced ears with aligned sockets, a trunion shafted mounted at opposite ends in said ear sockets, one of said ears providing a split socket for one end of said shaft, said trunion shaft having an opening through a medial portion thereof, and a second shaft mounted in said trunion shaft opening, said second shaft being connected to said land portion of said hand grip by said releasable coupling in said ear with the said split socket having bifurcated portions formed with aligned threaded and unthreaded bore portions on respective sides of the split portion of said ear, a locking bolt with a reduced end in said bore portions, and handle means to rotate said bifurcated portions of said ear together, to thereby frictionally grip one end of said trunion shaft in said split ear socket and lock said trunion shaft to set angular positions, said trunion shaft being longitudinally bifurcated at an end to provide lateral resiliency for optimum adjustment efficiency in said split socket and wherein said bolt is formed with a threaded reduced end with a shoulder portion, said shoulder mating with a countersunk surface in said unthreaded bore to impart thrust to said surface; and

ball joint means coupling said second end of said telescopic extender to said flash illumination means to provide angular movement of said flash illumination means about said second end of said telescopic extender.



3,893,146

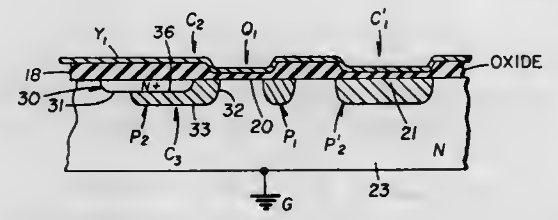
SEMICONDUCTOR CAPACITOR STRUCTURE AND MEMORY CELL, AND METHOD OF MAKING

Richard H. Heeren, Palatine, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Dec. 26, 1973, Ser. No. 427,874

Int. Cl. H01l *11/00*

U.S. Cl. 357—14 **7 Claims**



1. An improved cell capacitor structure for an MOS integrated circuit memory chip of the type having a cell-gating field-effect transistor including a grounded substrate of type I semiconductor material and first and second controlled terminals consisting of first and second diffusions of type II semiconductor material formed in the upper surface of the substrate, the first controlled terminal being selectively connectable (1) to a source of charging potential for the cell to store charge on the second controlled terminal when the transistor is turned ON, or (2) to ground to discharge any stored charge on the second controlled terminal when the transistor is turned ON, the second diffusion being an isolated island of substantial area unconnected to external circuits so as to form a first electrode of the cell capacitor, the grounded substrate forming the second electrode of the cell capacitor, and the induced depletion region formed at the second diffusion to substrate junction when the second diffusion is charged constituting the capacitor dielectric, the improved cell capacitor structure being characterized in that:

a third diffusion, of type I+ semiconductor material, is formed in the upper surface of the chip overlying the second diffusion area except for the second controlled terminal area of the transistor, the third diffusion being covered by an insulating layer of oxide and being isolated from external circuits, the third diffusion extending beyond the periphery of the second diffusion into electrical contact with the grounded substrate, the interconnected substrate and third diffusion together forming the second electrode on the cell capacitor and the induced depletion region formed at the junction between the second and third diffusions when the second diffusion is charged constituting the major portion of the cell capacitance.

3,893,147

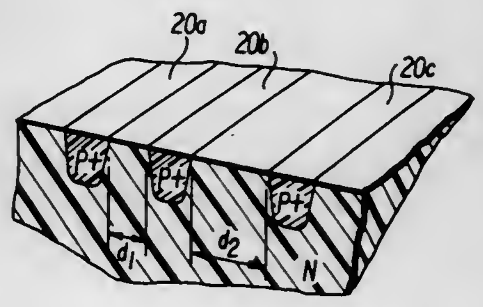
MULTISTATE VARACTOR

David W. Williams, Baltimore, Md., and Phillip L. Peyton, Falls Church, Va., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sept. 5, 1973, Ser. No. 394,600

Int. Cl. H01l *5/00*

U.S. Cl. 357—14 **9 Claims**



6. A multistate voltage-variable capacitor comprising:

a semiconductor substrate of one conductivity type;

said substrate having diffused therein at least three zones having an opposite conductivity type, successive said zones being spaced apart by different amounts thereby defining corresponding, different interzone spacings, said zones and said substrate forming a plurality of PN junctions; and

means for applying a selectively variable electric potential between each of said zones and said substrate thereby to establish a reverse bias across each of said PN junctions, each said zone developing a depletion layer in said substrate which increases in extent as a function of the magnitude of the reverse bias, and successive said zones being spaced whereby the depletion layer for each zone overlaps the depletion layer for a next adjacent zone at a predetermined voltage, the successive, different interzone spacings defining successive, different predetermined voltages at which the respective depletion layers of said successive, adjacent zones overlap.

3,893,148

LAYERED SUPERLATTIC SWITCHING AND NEGATIVE RESISTANCE DEVICES

A. Hamid Madjid, State College, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 25, 1974, Ser. No. 445,374

Int. Cl.^{2} H01L *29/161, 29/205, 29/255, 27/12*

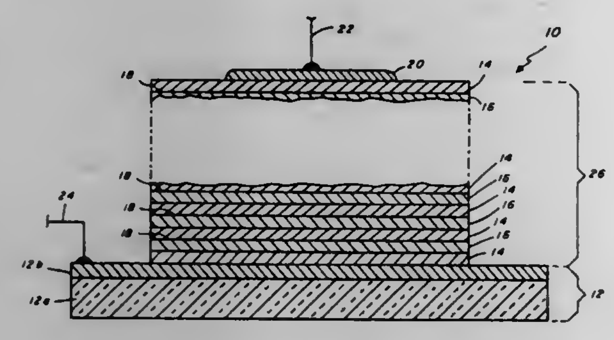
U.S. Cl. 357—16 **7 Claims**

1. A solid state, multiple resistance switching device comprising:

substrate means, including a first conductive layer, for supporting thin film layers and for providing electrical connection with a first one of said thin film layers;

a plurality of superimposed thin film layers supported on said substrate means and comprising alternate silicon monoxide and silver thin film layers, adjacent ones of said silicon monixide and of said silver thin film layers forming layer pairs;

said silicon monixide thin film layers each being in the range of 20 A to 90 A in thickness and said silver thin film layers each being in the range of 3 A to 85 A in thickness;



a superlattice structure being disposed between the layers of each of said pairs, each superlattice structure having an identity period that is different from the characteristic identityperiods of boundary structures of either of the layers of the respective layer pair;

a second conductive layer providing electrical connection with another of said thin film layers; and

said device being characterized by an ability to change between more than two discrete resistance values in response to changing voltages applied across said thin film layers and said superlattice structures.

3,893,149

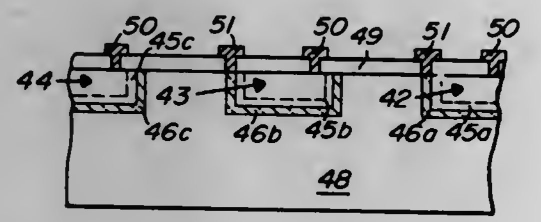
SCANNABLE LIGHT EMITTING DIODE ARRAY AND METHOD

Lawrence A. Grenon, Phoenix, Ariz., assignor to Motorola, Inc., Chicago, Ill.

Continuation of Ser. No. 188,274, Oct. 12, 1971, abandoned. This application Apr. 15, 1974, Ser. No. 461,089

Int. Cl. G08b *5/36*

U.S. Cl. 357—17 3 Claims



1. A monolithic light display comprising a matrix of light emitting diodes in an integral structure which is scannable to produce an alpha numeric character display, an insulating supporting carrier having first and second major planar parallel surfaces, each of the light emitting diodes being electrically isolated from each other diode in a planar surface of an insulating supporting carrier, means on said planar surface of the supporting carrier for electrically connecting the cathodes of the plurality of diodes in a series of rows, a conductive layer surrounding and underlying each diode and means on said planar surface of the supporting carrier contacting said conductive layer for connecting the anodes of said diodes in a plurality of columns.

3,893,150

SEMICONDUCTOR DEVICE HAVING AN ELECTROLUMINESCENT DIODE

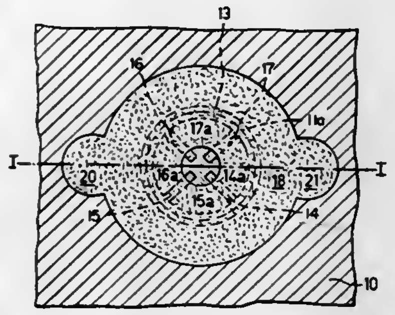
Jean-Claude Dubois, Caen, France, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 246,139, April 21, 1972, abandoned. This application June 12, 1974, Ser. No. 478,610

Claims priority, application France, Apr. 22, 1971, 71.14388

Int. Cl. H01l *15/00*

U.S. Cl. 357—17 6 Claims



1. A semiconductor device comprising:

a. a substantially flat semiconductor substrate having a first conductivity type and comprising a first surface;

b. at least one diffused region located at said first surface of said substrate and having a second conductivity type so as to form an electroluminescent junction with said substrate and means for energizing said junction;

c. a dielectric material layer covering at least a portion of said substrate surface and including an opening extending therethrough, said surface portion comprising at least a part of said diffused region surface and said dielectric layer being transparent at those parts thereof disposed at said diffused region surface; and

d. contact elements provided at said diffused region surface, at least a first one of said contact elements comprising a first portion having a ring configuration and extending through said layer opening to said diffused region surface and extending along the periphery of said region, said first contact element consisting essentially of a conductive material, said first contact element further comprising a second portion comprising a layer of material that is opaque to light radiation emitted by said junction and that is disposed at the inside of and along said first portion, said opaque layer being at least partly located on a portion of said dielectric layer disposed above said diffused region and extending toward the central part of said diffused region surface.

3,893,151

SEMICONDUCTOR MEMORY DEVICE AND FIELD EFFECT TRANSISTOR SUITABLE FOR USE IN THE DEVICE

Cornelis Albertus Bosselaar; Olof Erik Hans Klaver, both of Nijmegen; Jan Florus Verwey, and Johannes Gerrit Van Santen, both of Emmasingel, Eindhoven, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed June 7, 1973, Ser. No. 367,957

Claims priority, application Netherlands, June 13, 1972, 7208026

Int. Cl. H01l *11/14*

U.S. Cl. 357—23 16 Claims

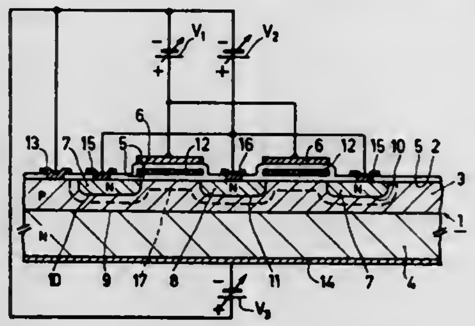
1. A semiconductor memory device comprising:

a. a semiconductor body comprising a first region that is adjacent to the surface of said body,

b. an electrically insulating layer that at least partly covers said first region,

c. a gate electrode disposed over said semiconductor body surface and separated therefrom by said insulating layer,

d. means for forming a depletion zone adjacent to said insulating layer in said first region below the gate electrode, whereby charge carriers can be injected from said semiconductor body into said insulating layer and the electrical properties of said device thereby changed, said depletion zone forming means comprising means for providing across said depletion zone a voltage drop that is lower than the voltage at which avalanche multiplication occurs, but higher than the potential barrier for said charge carriers at the interface between said semiconductor body and said insulating layer,



e. means for injecting said charge carriers into said depletion zone, and

f. means for simultaneously applying a voltage to said gate electrode to exert on said charge carriers a force in the direction of said interface.

3,893,152

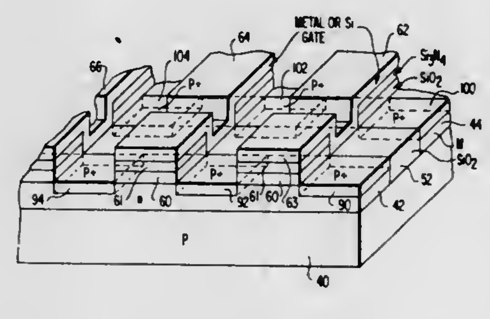
METAL NITRIDE OXIDE SEMICONDUCTOR INTEGRATED CIRCUIT STRUCTURE

Hung Chang Lin, 8 Schindler Ct., Silver Spring, Md. 20903

Filed July 25, 1973, Ser. No. 382,355

Int. Cl. H01l *11/00, 15/00*

U.S. Cl. 357—23 10 Claims



1. An array of MNOS devices having binary logic operating states thereby being adapted to operate as a matrix of discrete storage cells, the improvement comprising:

a body of first type semiconductor material;

a continuous planar epitaxial layer of substantially uniform thickness formed on the surface of said body consisting of a plurality of active regions comprising alternate rows of second type semiconductive material, separated by contiguous inactive regions comprising intervening rows of dielectric isolation material, said rows extending through the entire thickness of the epitaxial layer;

a plurality of separated columns of MNOS gates extending substantially transversely across said rows of second type semiconductive material and said rows of dielectric isolation material, said columns each comprising gate material separated from said rows by respective columns of substantially the same width dimension as said gate material of a first layer of dielectric material contiguous with said rows and a second layer of dielectric material contiguously sandwiched between said first layer of dielectric material and said gate material, each gate portion and the active region subtended thereby comprising a separate storage cell having a capacitive node.

3,893,153

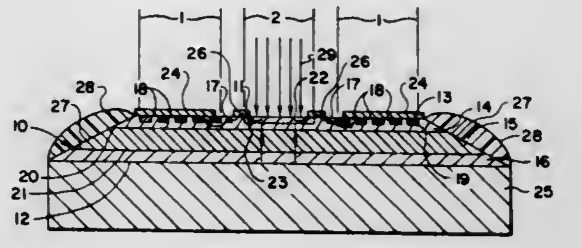
LIGHT ACTIVATED THYRISTOR WITH HIGH DI/DT CAPABILITY

Derrick J. Page, and John S. Roberts, both of Export, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 10, 1974, Ser. No. 432,374

Int. Cl. H01l *9/12*

U.S. Cl. 357—38 3 Claims



1. A light activated thyristor with high dI/dt capability comprising:

A. first and second thyristors disposed in a semiconductor body having first and second major surfaces; each thyristor having four impurity regions extending through the body between the major surfaces; said impurity regions of alternate carrier-type disposed alternately with the PN junctions formed between adjacent regions; the two regions interior being cathode-base and anode-base regions, and the two regions adjoining the first and second major surfaces and adjoining the cathode-base and anode-base regions,respectively, being cathode-emitter and anode-emitter regions, respectively;

B. the cathode-base, anode-base and anode-emitter regions of the first and second thyristors being common to both thyristors;

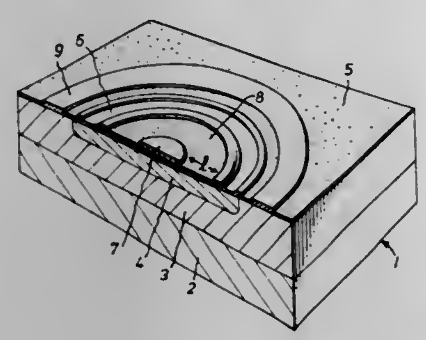
C. said common cathode base region adjoining the first major surface intermittently of the cathode-emitter region of the first thyristor to form shunts, and between the cathode-emitter regions of the first and second thyristor such that the cathode-emitter regions are spaced apart;

D. portions of the first surface adjoining the cathode-emitter region of the second thyristor adapted for activation of the second thyristor therethrough by electromagnetic radiation of wavelengths corresponding substantially to the bandgap energy of the semiconductor material of the body;

E. cathode and anode electrodes disposed on first and second major surfaces, respectively, of the semiconductor body and making ohmically contact with the cathode-emitter region of the first thyristor and the common anode-emitter region of both thyristors, respectively, said cathode electrode also making ohmic contact with the cathode-base region at the shunts through the cathode-emitter region of the first thyristor; and

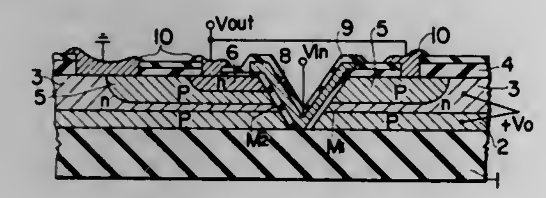
F. a floating contact positioned on the first major surface to make ohmic contact with the common cathode-base region between the thyristors and the cathode-emitter region of the second thyristor, while leaving exposed for light activation therethrough substantial portions of the first major surface adjoining the cathode-emitter region of the second thyristor.

3,893,154
SEMICONDUCTOR ARRANGEMENT WITH CURRENT STABILIZING RESISTANCE
Werner Mroczek, Heilbronn, and Josef Wolf, Leingarten, both of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt/Main, Germany
Filed Oct. 19, 1973, Ser. No. 407,817
Claims priority, application Germany, Oct. 21, 1972, 2251727
Int. Cl. H01l *3/00, 5/00*
U.S. Cl. 357—35 **7 Claims**



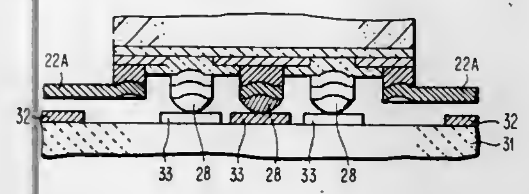
1. In a semiconductor device including a semiconductor body having at least two regions of alternatingly opposite conductivity type with at least one of said regions forming a pn junction which extends to a major surface of said semiconductor body, an insulating layer on said major surface, and a contact ohmically connected to said one region via an aperture in said insulating layer, the improvement wherein said contact is formed of resistance material, is connected to said one region only at its outer edge and extends along the entire length of said edge of said one region; and further comprising a current feed terminal for said one region connected to said contact by a resistance formed of a coherent layer of resistance material on said insulating layer, said current feed terminal being connected to said layer of resistance material at a position such that the shortest spacing between said current feed terminal and said contact via said layer of resistance material is the same at all points.

3,893,155
COMPLEMENTARY MIS INTEGRATED CIRCUIT DEVICE ON INSULATING SUBSTRATE
Katsumi Ogiue, Tokyo, Japan, assignor to Hitachi, Ltd., Japan
Filed June 17, 1974, Ser. No. 480,293
Claims priority, application Japan, Oct. 12, 1973, 48-113886
Int. Cl. H01l *11/14*
U.S. Cl. 357—42 **25 Claims**



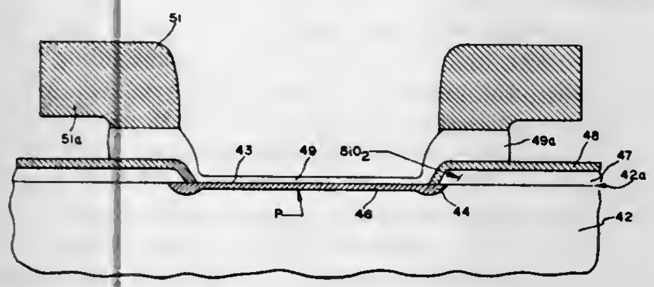
10. A semiconductor device comprising:
a substrate of insulating material;
a first plurality of semiconductor layers disposed one on top of another on a first portion of said insulating substrate, at least three adjacent ones of which have respectively different conductivity types;
a second plurality of semiconductor layers disposed one on top of another on a second portion of said insulating substrate, and at least three adjacent ones of which have respectively different conductivity types, said second plurality of layers being spaced apart from said first plurality of layers and having side surfaces thereof facing side surfaces of said first plurality of layers;
first and second insulating films disposed on the respective side surfaces of said first and second pluralities of semiconductor layers; and
a common electrode layer disposed on said first and second insulating films.

3,893,156
NOVEL BEAM LEAD INTEGRATED CIRCUIT STRUCTURE AND METHOD FOR MAKING THE SAME INCLUDING AUTOMATIC REGISTRATION OF BEAM LEADS WITH CORRESPONDING DIELECTRIC SUBSTRATE LEADS
Jacob Riseman, Poughkeepsie, N.Y., assignor to IBM Corporation, Armonk, N.Y.
Filed June 29, 1973, Ser. No. 375,296
Int. Cl. H01l *3/00, 5/00*
U.S. Cl. 357—67 **16 Claims**



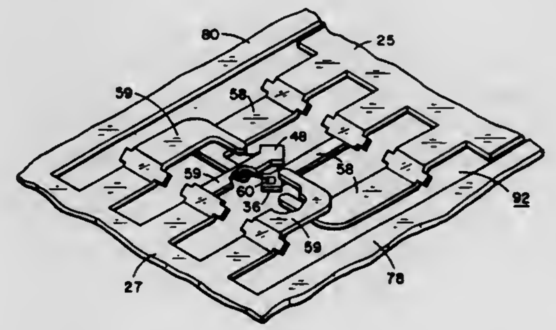
1. A beam-lead integrated circuit chip structure comprising: a semiconductor chip substrate having a surface from which the active and passive devices in the circuit extend into the substrate,
a first layer of electrically insulative material over said surface,
a metallic interconnector pattern formed on said layer in a first plane, said pattern being selectively connected to said devices by device contacts extending through said layer,
a second layer of electrically insulative material over said interconnector pattern,
a plurality of chip contacts extending through said second layer into contact with said interconnector pattern,
a plurality of solder mounds having a lower melting point than beam-leads extending from the surface of said chip structure to a level beyond said second plane, and
a plurality of peripheral cantilevered metallic beam-leads, disposed in a second plane, respectively in contact with said chip contacts and extending beyond the periphery of said chip.

3,893,157
SEMICONDUCTOR TARGET WITH INTEGRAL BEAM SHIELD
Aris Silzars, Redwood City, and Aaron Ballonoff, Sunnyvale, both of Calif., assignors to Signetics Corporation, Sunnyvale and Watkins-Johnson Company, Palo Alto, both of, Calif.
Filed June 4, 1973, Ser. No. 366,534
Int. Cl. H01l *5/00*
U.S. Cl. 357—69 **13 Claims**



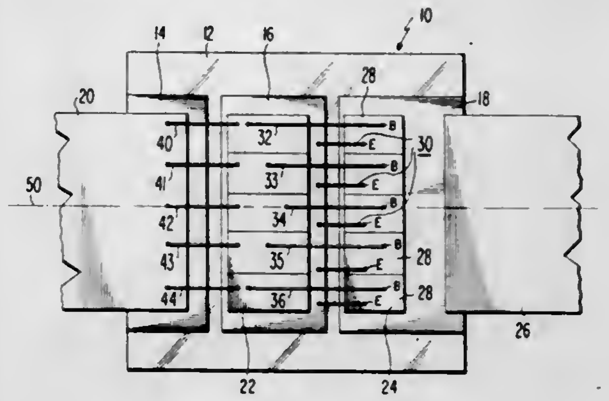
1. In a semiconductor device of the type including an evacuated envelope and a gun positioned at one end of the envelope to project radiation along the envelope, a semiconductor target spaced from the gun to receive the radiation and comprising a semiconductor substrate having a front surface oriented towards the radiation, at least one diode formed in said semiconductor substrate and extending to said front surface, a passivating layer formed on said front surface covering all but the inner portion of said diode and being of a thickness to inhibit penetration of radiation, a beam shield of radiation-absorbing material, mounting means carried by said semiconductor substrate front surface for mounting said beam shield at the periphery of said semiconductor substrate surrounding the diode and in spaced relationship to said passivating layer, said beam shield extending out over the periphery of said semiconductor substrate adjacent said at least one diode for shielding said periphery from the radiation, said beam shield having a central opening aligned with an inner portion of said diode for permitting said radiation to strike said inner portion.

3,893,158
LEAD FRAME FOR THE MANUFACTURE OF ELECTRIC DEVICES HAVING SEMICONDUCTOR CHIPS PLACED IN A FACE TO FACE RELATION
Milan L. Lincoln, Phoenix, Ariz., assignor to Motorola, Inc., Chicago, Ill.
Continuation-in-part of Ser. No. 234,955, March 15, 1972, abandoned. This application Aug. 30, 1973, Ser. No. 393,180
Int. Cl. H01l *5/02*
U.S. Cl. 357—70 **8 Claims**



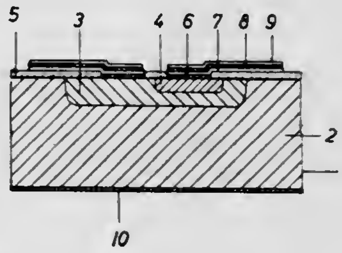
1. A one-piece metal lead frame for use in the multi-step fabrication of a plurality of electrical devices having two integral parts extending longitudinally of the length of said lead frame, with one part being severable from the other part of the lead frame in one step of said fabrication and adapted to be assembled in an interlocked relationship in another step of said fabrication with mounting pads in one part in a face-to-face relationship with mounting pads of the other part,
said lead frame having a plurality of segments corresponding to the plurality of electrical devices to be fabricated positioned side by side over the longitudinal length of the lead frame and each extending transversely of said longitudinal length,
each segment having two lead frame sections with one section being in one of said parts and the other section being in the other of said parts, and each said section having a mounting pad therein,
metal portions in said lead frame extending transversely of said longitudinal length with two metal portions defining the longitudinal width of a segment,
each said metal portion having therein a preformed locking aperture and a free-end locking projection of the same configuration as said aperture, with said aperture and said projections being separated upon severance of said one part from the other part of said lead frame,
and with one said projection adapted to fit in one aperture upon the assembly of said two severed parts and maintained therein in a frictional fit and in a single plane to interlock said two parts together, with pairs of mounting pads in a face-to-face relationship in said interlocked position and with each mounting pad in a pair in a plane displaced from the plane of said other mounting pad of said pair.

3,893,159
MULTIPLE CELL HIGH FREQUENCY POWER SEMICONDUCTOR DEVICE HAVING BOND WIRES OF DIFFERING INDUCTANCE FROM CELL TO CELL
Irving Edwin Martin, Somerville, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Feb. 26, 1974, Ser. No. 445,971
Int. Cl. H01l *3/00, 5/00*
U.S. Cl. 357—70 **3 Claims**



1. A semiconductor device including a plurality of transistor cells, each of said cells comprising at least two regions of opposite type conductivity,
a plurality of lead wires individually connected to the same corresponding region of different ones of said cells,
said wires being disposed in a generally side by side array having a central axis,
the self-inductance of said wires being greater with increasing distance from said axis.

3,893,160
RESISTIVE CONNECTING CONTACT FOR A SILICON SEMICONDUCTOR COMPONENT
Leonhard Botzenhardt, Heilbronn, Germany, assignor to Licentia-Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany
Filed Aug. 28, 1973, Ser. No. 392,174
Claims priority, application Germany, Sept. 8, 1972, 2244062
Int. Cl. H01l *3/00, 5/00*
U.S. Cl. 357—71 **5 Claims**



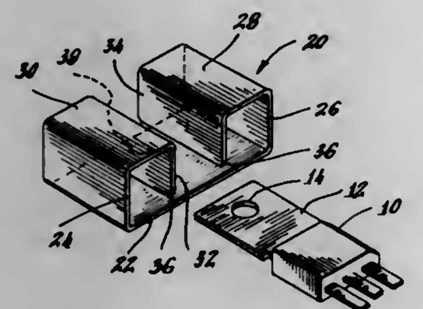
1. A resistive connecting contact for a silicon semiconductor component, characterized in that the contact, starting from the silicon semiconductor body, comprises the layer sequence platinum silicide-titanium-molybdenum-gold.

3,893,161
FRICTIONALLY ENGAGEABLE HEAT SINK FOR SOLID STATE DEVICES
Albert Pesak, Jr., c/o Fab-Tek, Inc., 17 Sugar Hollow Rd., Danbury, Conn. 06810
Filed Feb. 4, 1974, Ser. No. 439,371
Int. Cl. H01l *3/00, 5/00*
U.S. Cl. 357—81 **5 Claims**

1. A heat sink adapted to frictionally engage a solid state device of the type having a metallic tab extending therefrom

which is inserted therein for the removal and dissipation of heat generated by such a device, comprising

a. a stamped sheet metal body of high thermal conductivity material having a base member,
b. a first pair of oppositely facing sides bent in from opposite ends of said base member,
c. a second pair of sides bent in and extending toward each other from said first pair of oppositely facing sides and spaced from said base member, and
d. a pair of opposed resilient fingers bent in from said second pair of sides and extending to said base member,



e. said first and second pairs of sides and said pair of opposed resilient fingers forming open ended enclosures on each end of said base member,
f. said base member and said resilient fingers adapted to receive and frictionally engage the metallic tab of a solid state device inserted therein, said heat sink being positioned vertically on the metallic tab of the solid state device with said open ended enclosures vertically aligned with the solid state device on which said heat sink is mounted, thereby accommodating the air flow through the hollow enclosures of the heat sink and facilitating the cooling of the solid state device.

3,893,162
RESILIENT TUBULAR MEMBER FOR HOLDING A SEMICONDUCTOR DEVICE TOGETHER UNDER PRESSURE

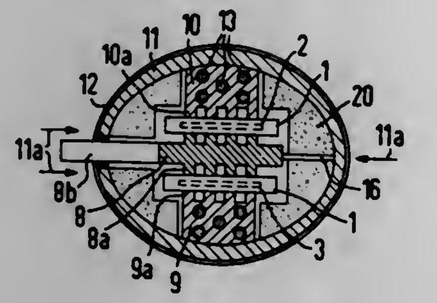
Erwin Weidemann, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Continuation of Ser. No. 334,931, Feb. 22, 1973, abandoned. This application May 30, 1974, Ser. No. 474,801

Claims priority, application Germany, Mar. 2, 1972, 2209993

Int. Cl. H01l *3/00, 5/00*

U.S. Cl. 357—82 **10 Claims**



1. An arrangement for holding the parts of a semiconductor package together under pressure and for directing a coolant over the package, the arrangement comprising: a cooling channel for receiving the semiconductor package therein and for directing a flow of the coolant thereover; the semiconductor package including at least one semiconductor component having a disc-like configuration, and contact members disposed on both sides of said component respectively; said cooling channel being made of resilient material and being in a tensioned condition so as to cause the same to apply a spring-like force directly to said package, said component and said contact members being disposed with respect to said force to conjointly coact with said channel to cause said force to hold said package together under pressure.

3,893,163
METHOD OF RECORDING A VIDEO SIGNAL

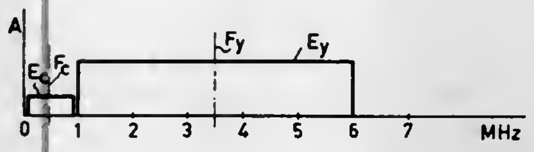
Johannes Hendrik Wessels, and Willem van den Bussche, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 26, 1973, Ser. No. 344,863

Claims priority, application Netherlands, Sept. 2, 1972, 7212003

Int. Cl. H04n *5/76, 9/02*

U.S. Cl. 358—4 **20 Claims**



1. Method of recording a video signal, in particular a color video signal, on a record carrier, which comprises frequency modulating a carrier with the luminance information of the video signal, modulating a further carrier which lies below the frequency band of the modulated carrier by a further associated information component, shifting the zero crossings of the ascending and descending edges of the modulated carrier in mutually opposite dependence upon the modulated further carrier (or further carriers), and recording the shifted zero crossings of the modulated carrier on the record carrier as the information-containing quantities.

3,893,164
SYSTEM FOR COMB-FILTERING TELEVISION SIGNALS

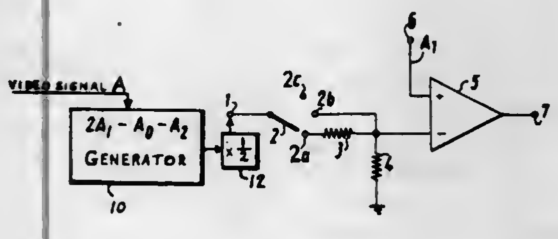
Helmut Raedecke, Darmstadt, Germany, assignor to Robert Bosch Fernsehanlagen GmbH, Darmstadt, Germany

Filed Nov. 1, 1973, Ser. No. 411,714

Claims priority, application Germany, Nov. 10, 1972, 2254941

Int. Cl. H04n *9/535*

U.S. Cl. 358—31 **4 Claims**



1. System for comb-filtering tv signals, comprising:

A. means for generating a television signal mixture $k(2A_1 - A_0 - A_2)$, wherein A_2, A_1, and A_0 represent three time-sequential lines of an input television signal,
B. means for subtracting the signal mixture from a television signal A_1 which is the input television signal delayed by the duration of one line, wherein the television signal A_0 is not delayed, the television A_1 is delayed by the duration of one line, and the television signal A_2 is delayed by the duration of two lines, and
C. means for switchng the attenuation k between $k = ½$ for color television systems with a quarter-line offset and $k = ¼$ for systems with a half-line offset.

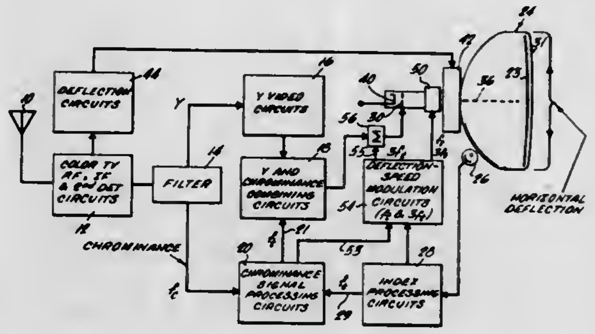
3,893,165
ELECTRICALLY-CONTROLLED IMAGE-DISPLAY SYSTEM AND METHOD, AND APPARATUS SUITABLE FOR USE THEREIN

David E. Sunstein, 9 Warton Rd., Nashua, N.H. 03060

Filed Mar. 13, 1973, Ser. No. 340,669

Int. Cl. H04n *9/24*

U.S. Cl. 358—67 **30 Claims**


DEFLECTION CIRCUITS
COLOR TV RF, IF & 2nd DET CIRCUITS
Y
FILTER
Y VIDEO CIRCUITS
Y AND CHROMINANCE COMBINING CIRCUITS
DEFLECTION-SPEED MODULATION CIRCUITS
CHROMINANCE
CHROMINANCE SIGNAL PROCESSING CIRCUITS
INDEX PROCESSING CIRCUITS
HORIZONTAL DEFLECTION

1. In an electrically-controlled image-display system comprising image-forming means including a plurality of similar groups of elements of different light-controlling characteristics, means for scanning said groups with a scanning entity to activate said elements in a manner to form an image, and index elements positioned to be scanned by said scanning entity during formation of said image to produce index signals representative of the position of said scanning entity:

means for producing variations in the speed of said scanning within at least one of said groups; said index elements being positioned so as to be scanned by said scanning entity at a frequency which is M/N times the frequency of scanning of said groups in the absence of said variations in scanning speed where N and M are integers and M is greater than N and other than an integral multiple of N, whereby the phase of said index signals averaged over the time of said scanning of several of said groups is not substantially adversely affected by said scanning-speed variations.

3,893,166
COLOUR CORRECTING IMAGE REPRODUCING METHODS AND APPARATUS

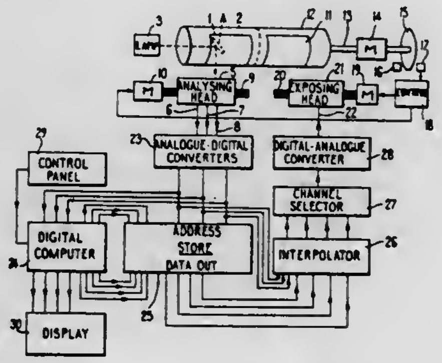
Peter C. Pugsley, Pinner, England, assignor to Crosfield Electronics Limited, London, England

Continuation-in-part of Ser. No. 321,118, Jan. 5, 1973, abandoned. This application May 9, 1974, Ser. No. 468,385

Claims priority, application United Kingdom, Jan. 5, 1972, 478/72

Int. Cl. G03f *3/08*

U.S. Cl. 358—80 **7 Claims**



1. A method of reproducing a coloured original, including: programming a digital computer to effect tone and colour correction of colour-component signals applied thereto and to provide tone and colour corrected output signals;

adjusting parameter-setting means to define parameters used by said digital computer in correcting said colour-component signals;

supplying said computer with a matrix of input signal combinations, each input signal representing a colour component and each combination representing a point in colour space, and transferring corresponding output signals from the computer to a store, whereby said store contains a matrix of tone and colour corrected signals corresponding to said input points in colour space;

scanning the original with a photo-electric scanner to obtain signals representing colour component densities of successively scanned elements of the original;

interrogating said store to derive tone and colour corrected store output signals corresponding to the signals from the said scanner; and using said signals from the store to control the treatment of an output surface on which the original is to be reproduced.

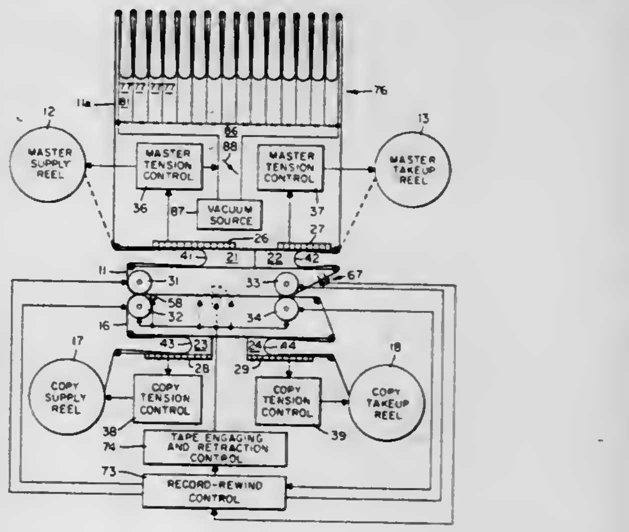
3,893,167
MAGNETIC TAPE DUPLICATOR

Alfred F. Stahler, San Jose, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Apr. 1, 1970, Ser. No. 24,761

Int. Cl. G11b *5/86*

U.S. Cl. 360—16 **17 Claims**



1. Apparatus for magnetically duplicating a magnetic copy tape from a magnetic master tape, comprising:

means including a first pair of pinch rollers for bringing the magnetic sides of said master and said copy tape into superimposed adhesion contact;

means for urging said pinch rollers toward one another with sufficient pressure to squeeze out the air from between the magnetic sides of said tapes;

means for applying transfer excitation to said superimposed master and copy tape; and means for guiding said superimposed master and copy tapes in a path of unchanging curvature from said pinch rollers through and beyond said transfer excitation means so as to avoid relative longitudinal shifting of said magnetic sides of said tape during the imprinting thereof.

3,893,168
TECHNIQUE FOR MINIMIZING INTERFERENCE IN VIDEO RECORDER REPRODUCER SYSTEMS

Fred Lorin Bechly, Cherry Hill, and Jing Jue Young, Delran, both of N.J., assignors to RCA Corporation, New York, N.Y.

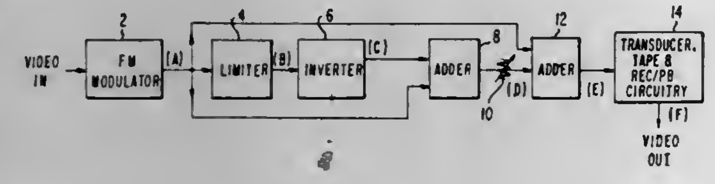
Filed Mar. 7, 1974, Ser. No. 448,922

Int. Cl. G11b *5/02*

U.S. Cl. 360—25 **8 Claims**

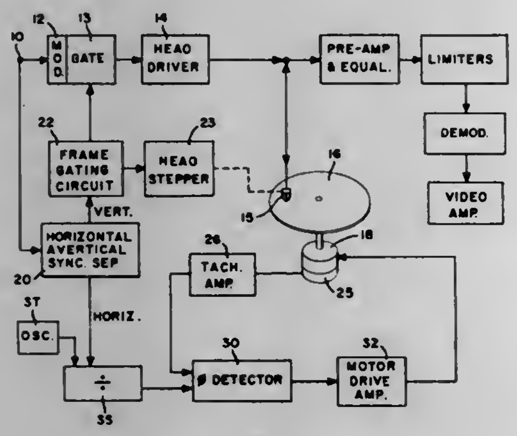
1. A system for minimal distortion transducing of an angle modulated signal with a magnetic record medium, said signal including a carrier component and sideband components, produced in accordance with a modulating signal, comprising:

limiter means responsive to said angle modulated signal for providing an output with a further component whose frequency is related to the frequency of said carrier component and said modulating signal, inverting means coupled to the output of said limiting means, signal combining means responsive to the output of said inverting means and said angle modulated signal to provide a further output signal, and means coupled to said further output for recording said further signal on said magnetic record medium.



3,893,169
VIDEO RECORDER WHICH ACCEPTS A PLURALITY OF HORIZONTAL LINE RATES

Robert P. Hall, Jr., Auburn, Calif., assignor to Arvin Industries, Inc., Columbus, Ind.
Filed Jan. 29, 1973, Ser. No. 327,833
Int. Cl. G11b *15/46;* H04n *5/78*
U.S. Cl. 360—37 **4 Claims**

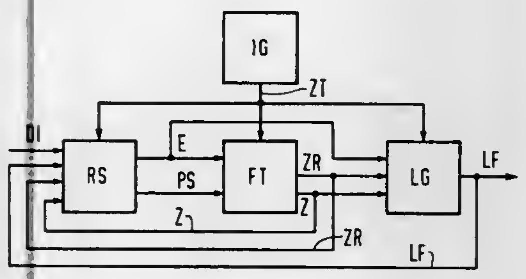


1. In a single frame video recorder having transducer means for recording and playback of video signals having different horizontal sync frequencies which are related as different multiples of a base frequency, a magnetic recording media, means including a drive motor and controller for moving said media past said transducer means at a predetermined speed, an input terminal for video signals to be recorded,

- a gating circuit connected to control the application of signals from said input terminal to said transducer means, a tachometer driven by said motor and providing an output signal at a predetermined base frequency,
- a sync separator circuit connected to said input terminal and operative to separate horizontal synchronizing information from the input signal, and
- a phase detector receiving said output signal from said tachometer and providing corrective drive signals to said motor controller;
- the improvement comprising a divider circuit having a horizontal sync input from said sync separator circuit and an output which is an integral submultiple of said horizontal sync and is equal to said base frequency, said output being connected to said phase detector.

3,893,170
DIGITAL PHASE CONTROL CIRCUIT

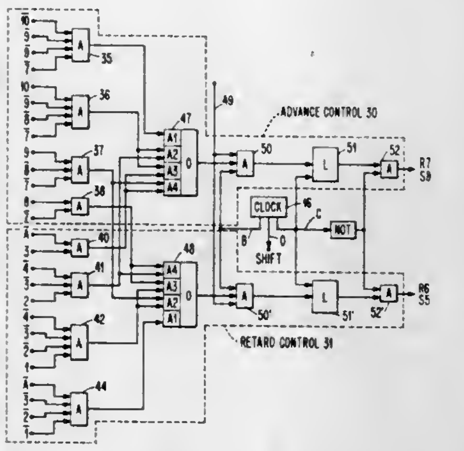
Josef Kellner, and Hans Kowalczyk, both of Germering, Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany
Filed Sept. 3, 1974, Ser. No. 502,510
Claims priority, application Germany, Sept. 18, 1973, 2346934
Int. Cl. G11b *5/09*
U.S. Cl. 360—42 **21 Claims**



1. In a digital phase control circuit for the production of a rectangular wave oscillation in which synchronization of the rectangular wave oscillation is effected with the aid of data pulses, in which a counter is operative to count pulses of a counter pulse train, counting from a constant initial value to an adjustable final value, with such final value determining the frequency of the rectangular wave oscillation and the final value being adjusted on the arrival of a data pulse, in dependence upon the contents of the counter, the combination of such counter being in the form of an up-down counter which counts pulses upwardly until a final value is reached and then downwardly to the original initial value, a control circuit operatively connected to said counter, having means for increasing the final value or reducing the same, following the arrival of a data pulse, by a fraction of the final value, while the counter correspondingly counts upwardly or downwardly and if the content of the counter is not greater than half the final value, and a bistable trigger stage, at the output of which the rectangular wave oscillation is derived, operatively connected for seting or resetting when the counting content of the counter is correspondingly smaller or greater than half the final value.

3,893,171
SIGNAL ADJUSTMENT CIRCUIT

John W. Marshall; Earl G. McDonal, Jr., both of Boulder, and Phillip B. Roath, Longmont, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 25, 1974, Ser. No. 454,500
Int. Cl. G11b *5/09*
U.S. Cl. 360—45 **7 Claims**

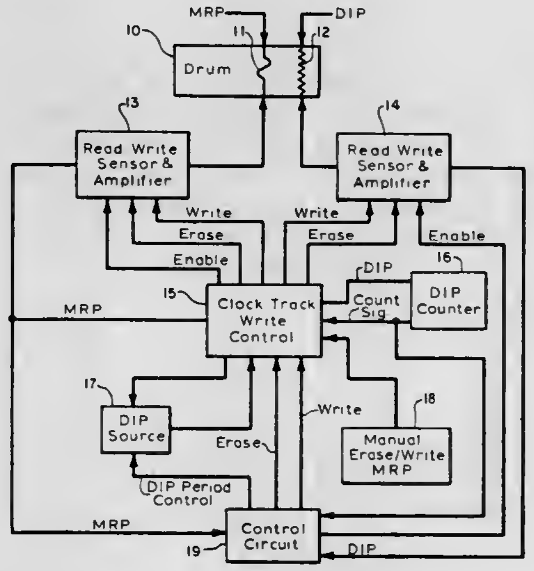


1. A transition adjustment method, including the following steps in combination:

- detecting an incoming signal and generating a string of timed 1 and 0 indicating digital signals having a series of transitions and representative of said incoming signal zero crossovers;
- analyzing first, second, and third successive wavelengths separated by a given two signal transitions;
- determining which of said first and third wavelengths are longer; and
- either adjusting a first one of said two signal transitions in time to make said second wavelength longer when said first wavelength being longer than said third wavelength or adjusting a second one of said two signal transitions when said third wavelength is longer than said first wavelength.

3,893,172
AUTOMATIC MASTER CLOCK TRACK WRITER

John Edward Celek, Carol Stream, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Filed Sept. 9, 1974, Ser. No. 504,586
Int. Cl. G11b *5/09*
U.S. Cl. 360—51 **12 Claims**

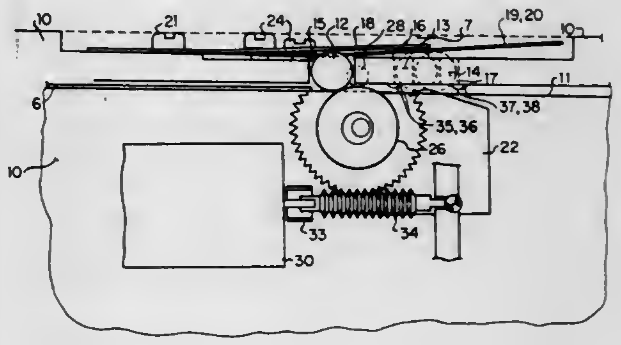


1. In a drum memory system of the type which includes a revolving magnetic drum, a writing means including an index pulse source for providing the drum with index pulses until receipt of a count signal to afford ready access to data stored on the drum and a master reset pulse source for providing the drum with a reset pulse upon the completion of each drum revolution, reading means comprising an index pulse sensor for reading the index pulses on the drum and a reset pulse sensor for reading the reset pulses on the drum, an index pulse counter for counting the number of index pulses written onto and read from the drum and for providing the count signal when a predetermined number of index pulses have been counted, and an erasing means for erasing the index and reset pulses from the drum, the improvement of a control circuit for insuring that said predetermined number of index pulses are stored on the drum in a closed loop for a single drum revolution comprising:

- a first pulse coincidence sensing means coupled to said index pulse sensor and to said master reset pulse sensor for sensing the coincidence of an index pulse and a reset pulse and for providing a first control signal in response to such coincidence;
- a second pulse coincidence sensing means coupled to said first pulse coincidence sensing means and to said counter for providing a second control signal responsive to the coincidence of said first control signal and said count signal; and
- a latching means coupled to said second pulse coincidence sensing means for inhibiting said erasing and writing means and for providing an indication in response to said second control signal; whereby
- when a master reset pulse and an index pulse are coincident said first pulse coincidence sensing means provides said first control signal and when said first control signal is coincident with said count signal said second pulse coincidence sensing means provides said second control signal to cause said latching means to inhibit further erasing and writing and to provide an indication that the drum has recorded thereon for one drum revolution said predetermined number of index pulses in a closed loop.

3,893,173
MINIATURIZED MAGNETIC CARD READER/RECORDER FOR USE IN HAND-HELD CALCULATOR

Robert B. Taggart, Mountain View; Richard H. Barth, San Jose, and John S. Bailey, Sunnyvale, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Jan. 11, 1974, Ser. No. 432,710
Int. Cl.^{2} G11B *19/04;* G06K *7/08*
U.S. Cl. 360—60 **7 Claims**



1. An electromechanical apparatus for operation with a record card having major surfaces separated by a selected thickness dimension which is very much smaller than the width or length dimension thereof, said apparatus comprising: chassis means including a guide path for receiving and guiding the record card along a selected path;

- drive means disposed at a location along the guide path for moving the record card by frictional engagement therewith along the guide path in response to an electrical signal applied thereto;
- electrical means including a resilient elongated first switch member disposed to be deflected to connect to an electrical connection point for applying an electrical signal to said drive means;
- first switch member deflecting means positioned at a selected location in the guide path and coupled to the first switch member for deflecting the first switch member as a function of the thickness of the record card to contact said electrical connection point and for simultaneously urging a major surface of the record card into frictional engagement with the drive means;
- transducer means disposed at a location along the guide path having a contoured surface for operative engagement with a major surface of the record card; and
- contour means disposed at a location along the guide path substantially opposite the contoured surface of the transducer means for deforming a major surface of the record card to conform to the contoured surface of said transducer means.

3,893,174
COLOUR TELEVISION RECEIVER

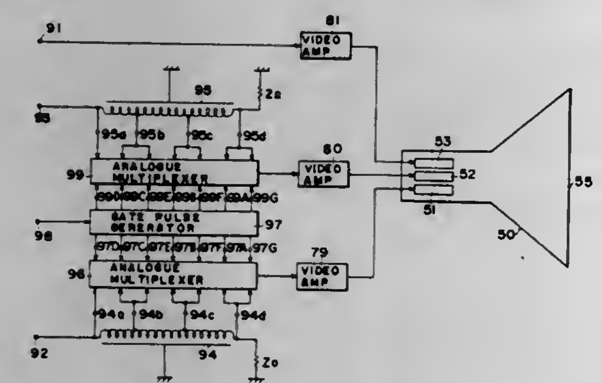
Shunichi Sano, Zama; Koichi Kasahara, Yokohama, both of Japan; Harry C. Murphy, Jr., Apollo, and Harry C. Stauffer, Cheswick, both of Pa., assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed June 28, 1973, Ser. No. 374,311

Claims priority, application Japan, July 1, 1972, 47-65417; Aug. 29, 1972, 47-85894; Sept. 11, 1972, 47-90448; Sept. 11, 1972, 47-90449; Oct. 25, 1972, 47-106219; Oct. 30, 1972, 47-107918; Dec. 21, 1972, 47-127717

Int. Cl. H04n *9/20;* **C10G** *23/02*

U.S. Cl. 358—65 **15 Claims**



1. A color television receiver comprising an in-line type color cathode ray tube including:

a vacuum vessel having a neck portion and an enlarged portion, a fluorescent screen formed on the enlarged portion of said vacuum vessel and three electron guns provided in the neck portion of said vacuum vessel for emitting a center electron beam and two side electron beams, said electron guns being arranged in-line in the scanning direction of said center and two side electron beams;

a deflection means mounted on the neck portion of said vacuum vessel for scanning said electron beams on said fluorescent screen;

means for generating red, green and blue video signals for modulating said center and two side electron beams; and signal processing means including first means for subjecting a video signal for modulating the center beam to a fixed delay, and second means coupled to said generating means for electrically processing two video signals which are coupled to modulate said side electron beams, said second means varying a time dependent electrical characteristic of said two video signals by different amounts during a horizontal scanning period, said characteristic being varied symmetrically with respect to both the preceding and succeeding scanning time relative to a center point of said horizontal scanning period.

3,893,175
RECORDER FOR MONITORING COPIERS

Abby R. Solomon, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 26, 1973, Ser. No. 344,781

Int. Cl. G01d *9/06;* **G11b** *13/00*

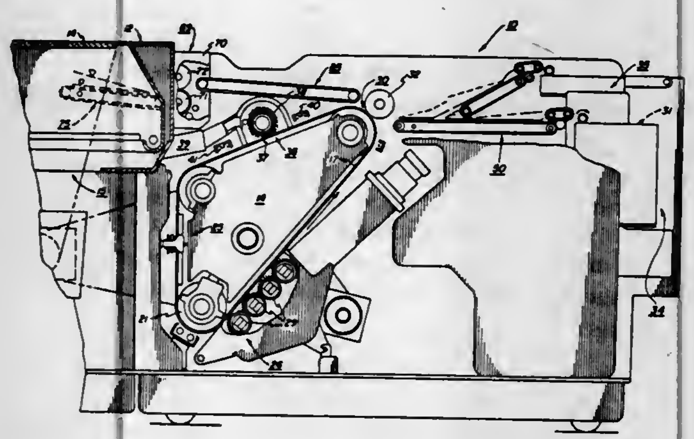
U.S. Cl. 360—6 **11 Claims**

1. Recording apparatus for use in collecting information about customer copier usage patterns and copier failure and operational patterns for subsequent analysis, comprising:

an on-line recorder including a magnetic tape and a recording head for recording real time operating characteristics of the copier on said tape;

means to monitor certain of said copier operating characteristics in real time sequence, the monitor means providing recordable data identifying the copier operating characteristics being monitored as they occur;

data storage means for storing said data pending recording thereof; and



control means adapted on the occurrence of a predetermined recording event in said copier to release at least a block-like portion of the data stored in said data storage means to said recorder head for recording thereof on said tape.

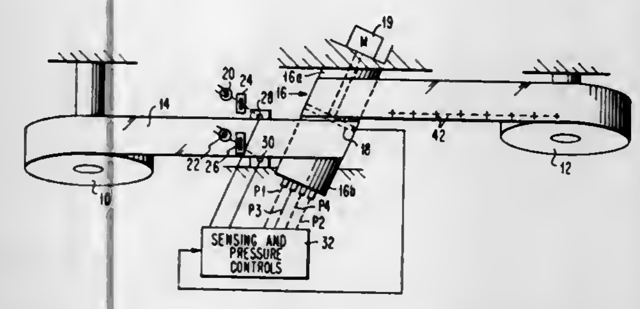
3,893,176
MEANS AND METHOD OF TAPE GUIDE CONTROL WITH TAPE SKEW AND LATERAL DISPLACEMENT CORRECTIONS IN A ROTARY HEAD DRUM

David Wilkes Jones, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 12, 1974, Ser. No. 478,571

Int. Cl. H04n *5/78*

U.S. Cl. 360—70 **7 Claims**



7. A method of correcting the position and alignment of a tape that is transported relative to a magnetic head comprising the steps of:

sensing the edges of the moving tape and generating an error signal representative of the angle of skew of said tape relative to said head;

providing a differential air pressure to different sections of said tape to correct for said skew error;

sensing prerecorded servo signals associated with recorded data tracks and developing a track following error signal representative of the displacement of the tape relative to the position of the magnetic head; and

providing a second differential air pressure across one section of the tape adjacent to said head to correct for lateral displacement of said tape.

3,893,177
AUTOMATIC PROGRAM FINDER SYSTEM FOR TAPE DECKS

Takashi Takenaka, Kamo-gun, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sept. 5, 1973, Ser. No. 394,532

Int. Cl. G11b *27/22, 15/18, 15/02*

U.S. Cl. 360—72 **5 Claims**

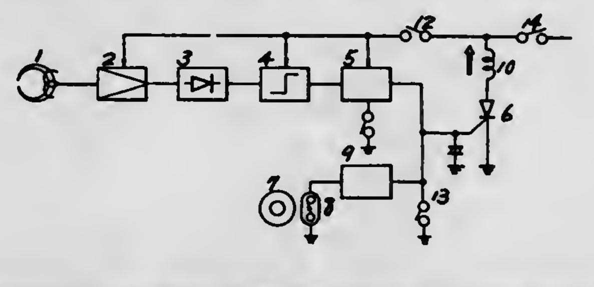
1. In a system for shifting operational states of a recorder apparatus and precisely positioning heads of record areas on a magnetic tape in accordance with determinations of the

presence and the absence of the signals of programs reproduced from the tape, the improvement comprising:

a first capacitor;

first means responsive to the presence of the reproduced signals to charge said first capacitor;

second means responsive to the absence of the reproduced signals to discharge said first capacitor; and



third means for utilizing the discharge current of said first capacitor for generating trigger signals useful for shifting the operational states of the recorder apparatus, whereby the operational states are shifted only if the reproduced signals are first present and then absent.

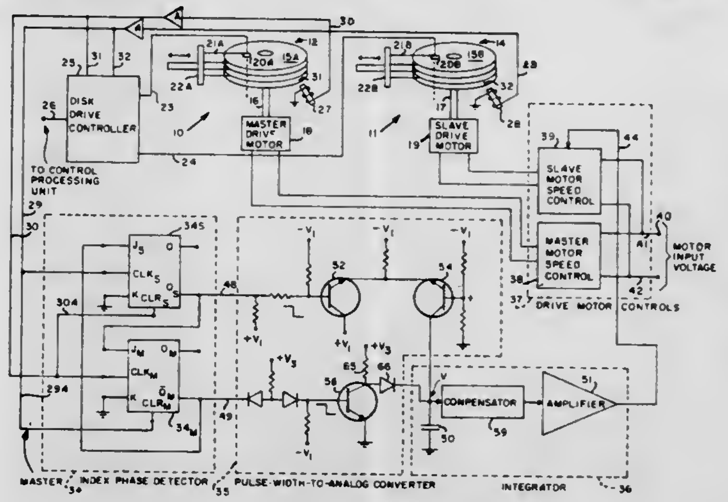
3,893,178
SYNCHRONIZATION OF MULTIPLE DISC DRIVES

Frank J. Sordello, Los Gatos, Calif., assignor to Information Storage Systems, Inc., Cupertino, Calif.

Filed Dec. 19, 1973, Ser. No. 421,211

Int. Cl.² G11B *5/012, 15/52, 5/82*

U.S. Cl. 360—73 **3 Claims**



1. A disc drive subsystem having a plurality of rotating discs each having an index point utilized to assist in the location of specific locations radially about the discs, including:

adjustable drive means for rotating the discs at desired rotational speeds;

means to signal the arrival of each index point at a predetermined location on the drive, and

circuit means to detect the relative position of the index points and regulate the speeds of the drive means to adjust the speed of rotation of the discs thereby to cause the index points to arrive at the respective predetermined locations concurrently.

3,893,179
TAPE FEED CONTROL APPARATUS

Moriaki Toyoda, Yokohama, Japan, assignor to Denki Onkyo Company, Ltd., Tokyo, Japan

Filed May 1, 1974, Ser. No. 466,090

Claims priority, application Japan, May 1, 1973, 48-47603; May 11, 1973, 48-52750

Int. Cl. G11b *15/18, 27/14, 27/20*

U.S. Cl. 360—74 **12 Claims**

1. A tape feed control apparatus comprising

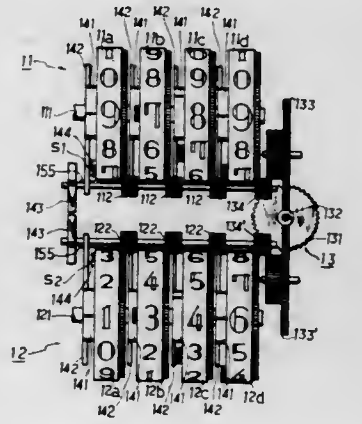
a. a first rotating means which rotates in accordance with feeding of a tape in a direction which is changed over to an opposite direction when said tape is changed over from forward feed to reverse feed and from reverse feed to forward feed,

b. a second rotating means which rotates in accordance with feeding of a tape in a direction which is changed over to an opposite direction when said tape is changed over from forward feed to reverse feed and from reverse feed to forward feed,

c. a first resetting means which resets said first rotating means to a specified position independently from said second rotating means,

d. a second resetting means which resets said second rotating means to a specified position independently os said first rotating means,

e. a first signal generating means which generates a first change-over signal when said first rotating means rotates exceeding the resetting position,



f. a second signal generating means which generates a second change-over signal when said second rotating means rotates exceeding the resetting position,

g. a tape feed direction control circuit which sets alternatively an operation mode for which a forward feed signal to perform forward feed of the tape is generated and an operation mode for which a reverse feed signal to perform reverse feed of the tape is generated, and

h. a coupling means which transmits said first change-over signal to said tape feed direction control circuit so that the tape feed direction control circuit comes in the forward feed mode when said first signal generating means generates the first change-over signal and transmits said second change-over signal to said tape feed direction control means so that the tape feed direction control circuit comes in the reverse feed mode when said second signal generating means generates the second change-over signal.

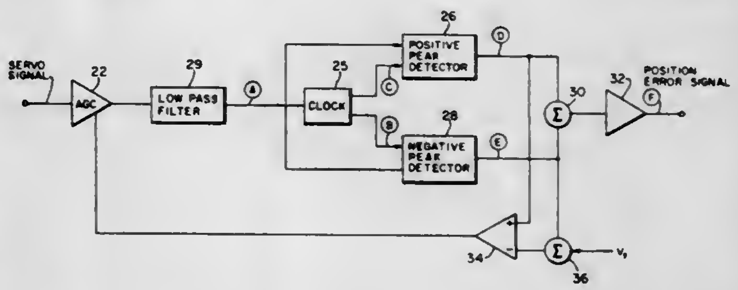
3,893,180
TRANSDUCER POSITIONING SYSTEM

William A. Braun, Acton, Mass., and David S. Dunn, Windham, N.H., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jan. 2, 1974, Ser. No. 430,343

Int. Cl. G11b *5/58, 17/00, 21/10*

U.S. Cl. 360—77 **14 Claims**



1. In a magnetic storage device wherein a transducer is positioned over a magnetic media by sensing position information, the sensed position information consisting of a train of

pulses having two basic pulse configurations the first pulse configuration consisting of a first pulse of a first polarity followed by a second pulse of a second polarity and the second pulse configuration consisting of a first pulse of the second polarity followed by a second pulse of the first polarity, a system for detecting certain peak amplitudes within the train of pulses comprising:

means for detecting the positive peak amplitude of a pulse having a positive signal polarity in each first pulse configuration, said positive peak amplitude detection means generating a signal indicative of the positive peak amplitude detection;

means for detecting the negative peak amplitude of a pulse having a negative signal polarity in each second pulse configuration, said negative peak amplitude detection means generating a signal indicative of the negative peak amplitude detection;

means for generating a clock signal having a first signal level when the first pulse configuration occurs in the train of pulses and having a second signal level when the second pulse configuration occurs in the train of pulses;

wherein said positive peak amplitude detection means comprises means, responsive to said clocking means, for initiating the detection of a pulse having a positive signal polarity in each first pulse configuration; and said negative peak amplitude detection means comprises means, responsive to said clocking means, for initiating the detection of a pulse having a negative signal polarity in each second pulse configuration, wherein each of said peak amplitude detection means comprises:

a capacitive storage means,

means, responsive to said initiating means, for charging said capacitive storage means,

means for discharging said capacitive storage means at a defined rate, said discharging means being operative to decrease the stored signal level of said capacitive storage means when said capacitive storage means is not being charged by said charging means,

means for feeding back the signal level of said capacitive storage means, and

means for comparing the signal level of the incoming train of pulses with the feedback signal, said comparing means being operative to provide a signal to said initiating means when the signal level of the incoming train of pulses exceeds the feedback signal; and

means for summing the signals indicative of the positive peak amplitude detection and the negative peak amplitude detection, said summing means producing a signal indicative of the relative signal strengths of the detected peak amplitudes in each basic pulse configuration.

3,893,181

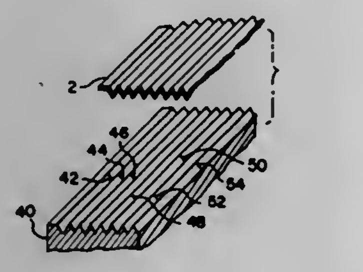
THIN BASE SELF-TRACKING RECORDING TAPE

Robert I. Desourdis, 15420 S.W. 84th Ct., Miami, Fla. 33157

Filed Feb. 14, 1973, Ser. No. 332,288

Int. Cl. G11b *5/62*

U.S. Cl. 360—84 **4 Claims**



1. A record-reproduce system comprising:

a thin accordion pleated recording tape having a sensitive coating on at least one side thereof, said accordion pleats being so formed in said tape that said tape has a plurality of substantially V-shaped grooves formed on each side thereof, said substantially V-shaped grooves on one side of said tape being separated from each other by the substantially V-shaped projections formed by said substantially V-shaped grooves on the other side of said tape;

a guide mechanism having a plurality of substantially V-shaped grooves for accommodating said substantially V-shaped projections, said substantially V-shaped projections on the side of said tape adjacent said guide mechanism mating with said substantially V-shaped grooves in said guide mechanism;

at least one guide roller having a plurality of substantially V-shaped grooves formed in its surface for mating with said substantially V-shaped projections on the side of said tape adjacent said guide roller; and

a head assembly having a plurality of heads so formed that said head assembly has a plurality of substantially V-shaped projections for mating with said substantially V-shaped grooves of the side of said tape adjacent said head assembly.

3,893,182

INFORMATION CARD TRANSPORT, RECORDING AND READOUT MECHANISM

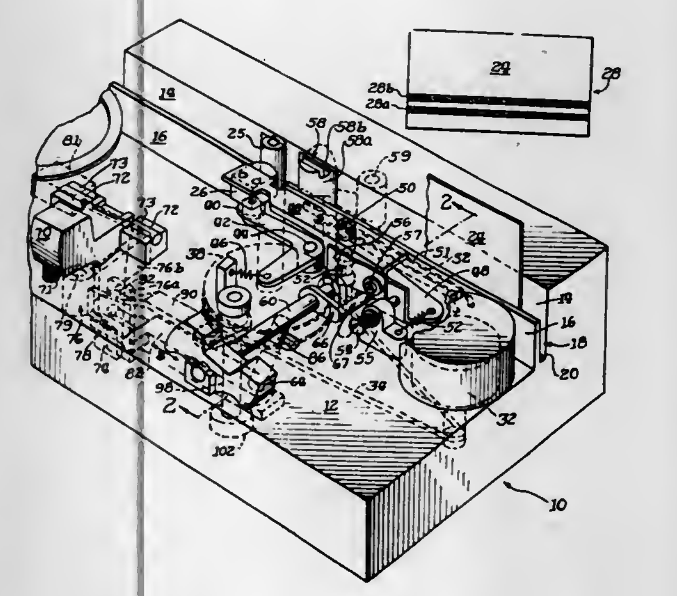
Josef Schmidt, Chicago, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Divislon of Ser. No. 367,513, June 6, 1973, Pat. No. 3,869,718.

This application Feb. 8, 1974, Ser. No. 440,600

Int. Cl. G11b *15/04, 25/04*

U.S. Cl. 360—88 **8 Claims**



1. In combination with an apparatus for handling a substrate carrying an elongated magnetic media, the apparatus having a guide track through which the substrate is moved in a forward direction on a support base across and in engagement with a transducer head, the substrate being accessible to an operator while moving through the guide track, the improvement comprising:

blocking means positioned within the track at a location for engagement with the substrate prior to engagement of the substrate with the transducer head for blocking entrance of the substrate into the track laterally along a path substantially normal to its path of forward movement.

3,893,183

INSTANT STOP DEVICE FOR A TAPE PLAYER-RECORDER

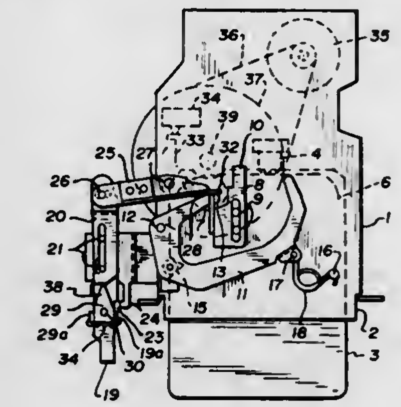
Hajime Murakami, Onoda, Japan, assignor to Alps Motorola, Inc., Tokyo, Japan

Filed Aug. 30, 1972, Ser. No. 285,053

Claims priority, application Japan, Sept. 20, 1971, 46-85704The portion of the term of this patent subsequent to Mar. 26, 1991, has been disclaimed.

Int. Cl. G11b *15/18, 25/06*

U.S. Cl. 360—93 **5 Claims**



1. In a cartridge-type tape player adapted to receive an insertable cartridge and having a motor for powering a capstan shaft for moving the tape through the cartridge, the combination including

a latching mechanism including slide means having an arm portion positioned to be engaged by the cartridge being inserted into the player, and a spring biased linkage coupled to said slide means and actuated thereby so that said linkage moves the cartridge into a first position and holds the same against the capstan shaft in the play position, and

an instant stop device including an actuating lever, control means engageable with said actuating lever to limit the movement of said actuating lever from a first position wherein the cartridge is held in the play position to a second position wherein the cartridge is held a predetermined distance away from the capstan shaft, spring means biasing the actuating lever to said first position, means coupling said actuating lever to said linkage, said actuating lever being movable from said first position against the bias of said spring means to said second position to move said linkage against its spring bias such that said arm portion of said slide means moves the cartridge a predetermined distance away from the capstan shaft and out of said first position,

release of said actuating lever of said instant stop device from said second position causing said spring means to return said actuating lever to said first position, and causing said spring biased linkage to return the cartridge to said first position against the capstan shaft from said second position.

3,893,184

TAPE CARTRIDGE EJECTION MECHANISM

Toshio Ishigami, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 28, 1973, Ser. No. 345,820

Claims priority, application Japan, May 25, 1972, 47-60548

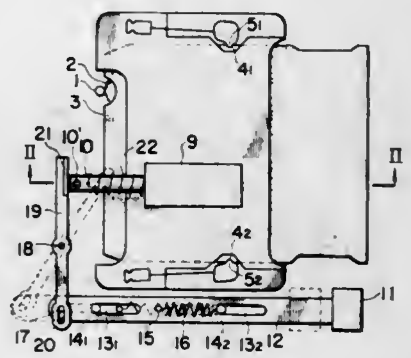
Int. Cl. G11b *23/04*

U.S. Cl. 360—93 **4 Claims**

1. A tape cartridge discharge mechanism for a tape recorder including a chassis, having a compartment formed by spaced parallel plates for slidably receiving an inserted cartridge and having frictional restraints for frictionally latching the cartridge in fully inserted position, said mechanism comprising:

means forming a hole within one of said chassis plates adjacent the leading end of the inserted cartridge,

an ejection lever having one end positioned within said hole and extending obliquely away from and lying across the leading end of said cartridge with said one end in contact with said cartridge only at the leading edge adjacent said plate hole, and forming a lever pivot point at said plate hole, and



means for exerting an ejection force to the other end of said lever in a direction opposite that of cartridge insertion, whereby; said cartridge is forcibly ejected by force amplification from said recorder by initial contact between the ejection lever and the leading edge of said cartridge adjacent said chassis plate hole.

3,893,185

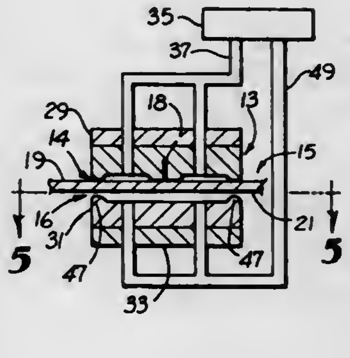
FLUID BIASED HEAD ASSEMBLY

John J. Ring, 26251 Morena Dr., Mission Viejo, Calif. 92675, and William R. Miller, 3301 Yarba Linda Blvd. No. 202, Fullerton, Calif. 92631

Filed July 16, 1973, Ser. No. 379,236

Int. Cl. G11b *5/00*

U.S. Cl. 360—103 **25 Claims**



1. A head assembly for recording a signal on a medium, including:

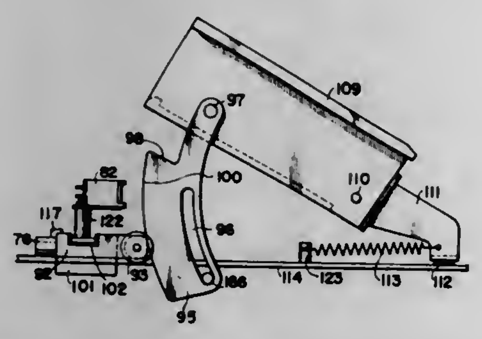
a head disposed in recording relationship with the medium and responsive to the signal to alter the characteristics of the medium;

first means disposed opposite the head for maintaining the medium in a substantially contiguous relationship with the head;

second means for biasing the first means in the direction of the medium; and

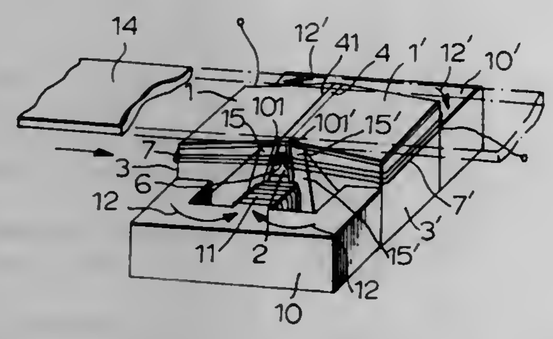
third means for introducing a fluid between the first means and the medium, the fluid having properties for opposing the bias of the second means on the first means to maintain the first means in a substantially frictionless relationship with the medium.

3,893,186
MAGNETIC RECORDER WITH MOVABLE HEAD BASE
Tetsuji Yoshii, Neyagawa, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Division of Ser. No. 802,455, Feb. 26, 1969, Pat. No. 3,759,529. This application Mar. 1, 1973, Ser. No. 337,008
Claims priority, application Japan, Mar. 6, 1968, 43-14881
Int. Cl. G11b *5/54, 21/22, 15/32*
U.S. Cl. 360—105 **3 Claims**



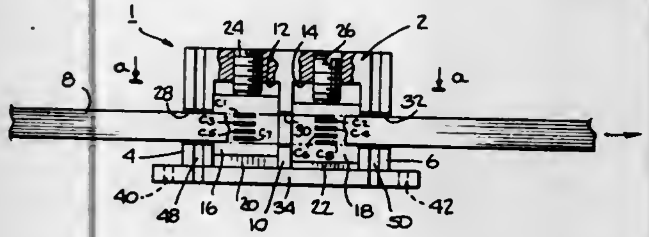
1. A magnetic recording and reproducing apparatus, comprising a movable head base on which a head means including at least one magnetic head is mounted, means for moving said head base between a first position where said head means is away from the tape of a mounted cassette and a second position where said head means is in abutment with said tape, means normally biasing said head base toward and into said second position, mounting means movable between playing and non-playing positions for mounting said cassette in said playing position, and engaging means movable between engaging and disengaging positions and urged towards said engaging position, said engaging means having a first portion which engages said head base at said engaging position, thereby restricting said head base to said first position and disengages at said disengaging position, thereby permitting said head base to move from said first position toward and into said second position, said engaging means further having a second portion which is coupled to and moved with said mounting means when said mounting means is moved toward and into said playing position, thereby moving said engaging means to said disengaging position and said head base into said second position.

3,893,187
SCANNING MAGNETIC HEAD
Kenji Kanai, Neyagawa; Eisuke Sawai, Katano, and Norimoto Nouchi, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Mar. 13, 1974, Ser. No. 450,852
Claims priority, application Japan, Mar. 20, 1973, 48-31999; Mar. 20, 1973, 48-32000; Mar. 20, 1973, 48-32001; July 6, 1973, 48-76354; July 6, 1973, 48-76355
Int. Cl. G11b *5/12, 5/22*
U.S. Cl. 360—115 **10 Claims**



1. A magnetic head comprising:
a pair of pole pieces (1+101, 1'+101') made with soft magnetic thin films,
each pole piece of said air having a folded sheet comprising a top plane part (1, 1') for contacting a magnetic tape and an oblique plane part (101, 101'), both the top plane and the oblique plane being connected at an edge corner and having an acute angle inbetween,
said pair of pole pieces are so arranged that edge corners of both the pole pieces oppose each other defining a gap inbetween,
a center core (2) of a constant-permeability magnetic material sandwiched between a pair of end parts of said oblique plane parts **101** and **101'**, the center core being extended across the width of the pole pieces in the direction parallel to said gap,
a pair of outer poles or second poles (3,3') of magnetic material contacting the rear faces of the top plane parts (1,1'), respectively,
a pair of E-shape electromagnets (10, 10'), each of the pair comprizing a winding (11, 11') for accepting sawteeth current, the electromagnets (10, 10') being arranged in a manner that their center legs couple with both end faces of the center core (2) and their outer legs couple with both end faces of the outer poles (3, 3'), and
a signal winding (7,7') for accepting a signal current to be recorded in the tape or for taking out signal current to be reproduced from the tape, the winding being provided to surround said oblique parts (101, 101') of the soft magnetic thin film and said outer pole (3,3')together.

3,893,188
MULTICHANNEL MAGNETIC HEAD UNIT
William M. Shoemaker, 56 Porterfield Pl., Freeport, N.Y. 11520
Filed June 5, 1974, Ser. No. 476,400
Int. Cl. G11b *5/28, 5/50, 5/56*
U.S. Cl. 360—121 **14 Claims**

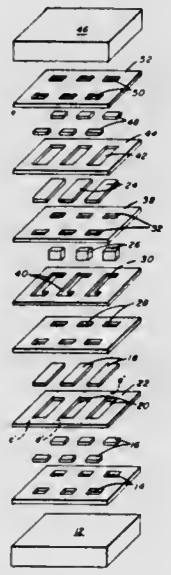


1. A multichannel magnetic head unit for use with magnetic tape, comprising
a pair of recording-reproducing head assemblies with a plurality of magnetic heads and at least three recording-reproducing channels;
one of said head assemblies being positioned behind the other head assembly such that the axes of its recording-reproducing channels longitudinally alternate with the axes of the channels of said other head assembly;
a head nest which contains both said head assemblies and has a cross-wall between said head assemblies and an end wall on an opposite side of at least said one head assembly; and
said cross-wall and said end wall each having aligned guide means for receiving and guiding the magnetic tape.

3,893,189
MAGNETIC RECORD/REPRODUCE HEAD AND MANUFACTURING METHOD THEREFOR
Willem L. Kronn, Putten, Netherlands, assignor to Spin Physics, Inc., San Diego, Calif.
Filed Jan. 14, 1974, Ser. No. 433,038
Int. Cl. G11b *5/00*
U.S. Cl. 360—127 **9 Claims**

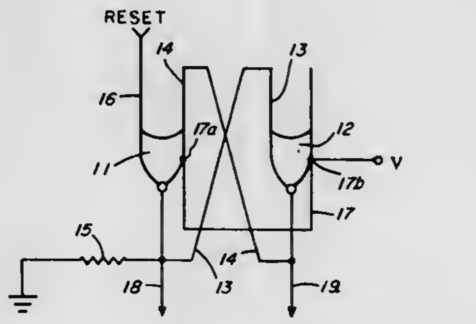
3. The method of making an array useful in the manufacture of a magnetic record and/or reproduce head, comprising the steps of:
a. abutting a first lamination of ceramic-convertible glass having an aperture, and a ceramic spacer within said aperture, against a base;

b. placing a second lamination of ceramic-convertible glass having an aperture, and a ferrite member within said aperture, in contact with said first lamination so that said spacer and ferrite are in contact with each other;
c. placing a third lamination of ceramic-convertible glass having an aperture, and a ceramic spacer within said aperture, so that (1) the spacer within the aperture of said third lamination and said ferrite are in contact with each other, and (2) said second lamination is sandwiched between said first and third laminations;



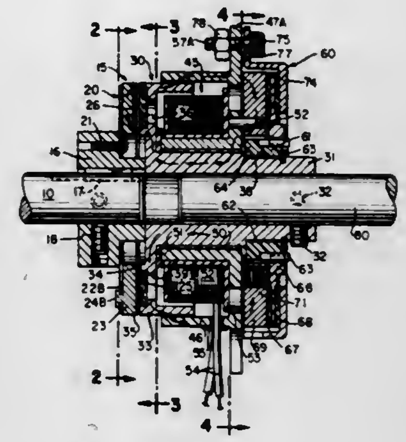
d. sandwiching said three laminations between said base and a cap; and
e. devitrifying said glass into ceramic, whereby said sandwiches fuse into an integral assembly.

3,893,190
POWER-UP MASTER CLEAR CONTROL FLIP-FLOP
Douglas Alan Robbins, Saint Paul, Minn., assignor to Control Data Corp., Minneapolis, Minn.
Filed June 10, 1974, Ser. No. 478,817
Int. Cl.² H03K *3/286*
U.S. Cl. 307—215 **7 Claims**



1. Apparatus providing a predetermined master clear logic signal reaching a predetermined one of two distinct logic states upon lifting the apparatus power terminal voltage to operating level, and the other logic state responsive to a reset logic signal following power voltage reaching operating level, comprising
a. a flip-flop whose output is the master clear logic signal, comprising first and second logic gates of substantially identical electrical characteristics, each of the type having a transistor-controlled output achieving the logic state whose voltage is closest to 0 volts when the transistor impedance is lowest, each powered by a single common source, and each having at least two inputs, one input of one gate receiving the reset signal and responsive thereto setting the flip-flop to the condition wherein the logic state of the first gate is that represented by the voltage level closest to zero; and
b. a steering impedance connecting the output of the second logic gate to ground, and having a sufficiently low value to predispose the flip-flop to invaribly reach the condition wherein the logic state of the second gate is that represented by voltage closest to zero, and having sufficiently high value to allow the output voltage to attain acceptable logic levels and prevent overloading of the logic gates.

3,893,191
ELECTROMAGNETIC CLUTCH BRAKE ASSEMBLY
Joseph Gold, Springfield; Edward Kim-Eng, Newark, and Paul Emile Plante, Mountainside, all of N.J., assignors to Valcor Engineering Corporation, Kenilworth, N.J.
Filed Mar. 14, 1974, Ser. No. 451,304
Int. Cl.² H02K *7/10*
U.S. Cl. 310—76 **11 Claims**



1. Electromagnetic clutch brake assembly comprising:
a. clutch armature having a frictional engaging face which is movable between an engaged power-transmitting position and a disengaged no-power position,
b. clutch biasing means contacting said clutch armature for biasing said clutch face to its disengaged position,
c. rotor positioned adjacent said armature and having a frictional engaging face positioned to be engaged and driven by said clutch armature face when said clutch face is in its engaged position,
d. said clutch biasing means comprising spider means having a plurality of spring arms, means connecting said arms to said armature, and means positioning said spider a predetermined distance from said rotor,
e. brake armature positioned adjacent to said rotor and having a frictional engaging face movable between an engaged braking position and a disengaged free position,
f. brake biasing means contacting said brake armature for biasing said brake face to its engaged braking position,
g. brake stop means positioned adjacent said brake face and having a fixed frictional engaging face positioned to engage and stop said brake face when said brake face is in its engaged position,
h. electromagnetic coil associated with said rotor for magnetically displacing said clutch face against the opposing force of said clutch biasing means toward and in engagement with said rotor means and magnetically displacing said brake face against the opposing force of said brake biasing means away from and out of engagement with said stop means in response to the activation of said coil,
i. said clutch and brake biasing means having biasing forces relative to each other and to the magnetic forces required to engage and disengage said clutch and brake faces such that clutch means engages before said brake means disengages on activation of said coil, and said brake means engages before said clutch means disengages on deactivation of said coil.

3,893,192

CONVERTER FOR MEASURED QUANTITIES

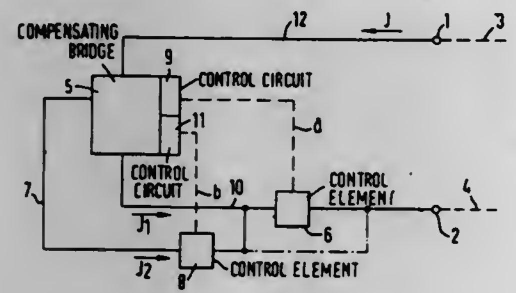
Arne Jensen, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Continuation of Ser. No. 270,975, July 12, 1972, abandoned. This application Mar. 13, 1974, Ser. No. 450,592

Claims priority, application Germany, Feb. 25, 1971, 2108892

Int. Cl. G01r *27/02*

U.S. Cl. 324—65 R **12 Claims**



1. An electric circuit arrangement for supplying an electric signal current in dependence upon a measured value of a physical quantity, the circuit arrangement comprising a compensating bridge circuit having a plurality of arms including fixed value resistances and at least one measuring resistance, in which bridge circuit the signal current is supplied through at least one of said fixed value resistances for restoring the balance of the bridge circuit, a control element connected in series with the bridge circuit, and means to derive a control signal in dependence upon the voltage drop across at least one of the other of said fixed value resistances and to supply said control signal to said control element whereby the control element varies the voltage across the bridge circuit such that the sum of the currents flowing through the bridge circuit is maintained substantially constant.

3,893,193

HERMETICALLY HOUSED ELECTRICAL COMPONENT DEVICE

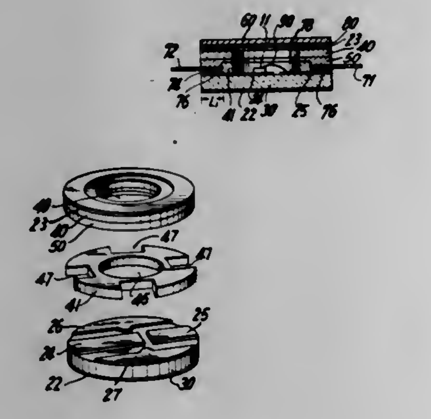
Shinzo Anazawa; Seiichi Ueno, and Isamu Nagasako, all of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Feb. 21, 1974, Ser. No. 444,347

Claims priority, application Japan, Feb. 22, 1973, 48-21864

Int. Cl.² H01L *23/02, 23/32;* **H01P** *1/00*

U.S. Cl. 333—84 M **6 Claims**



1. An electrical component device including
- a ceramic substrate having a first and a second major surface;
- a plurality of first metallized layers formed on said first major surface of said substrate, each of said first metallized layers including a bonding region and an external lead connecting region;
- a second metallized layer formed on said second major surface of said substrate;
- at least one electrical component mounted adjacent to said first major surface of said substrate, said electrical component having electrodes;
- means for electrically connecting said electrodes of said electrical component to said bonding regions of said first metallized layers;
- a first ceramic member having a first and a second surface and a central aperture, said first surface of first ceramic member being disposed on said first major surface of said substrate so that said first ceramic member intersects each of said first metallized layers between said bonding region and said external lead connecting region;
- a number of external connecting leads,
- means for connecting said external connecting leads to said external lead connecting regions of said first metallized layers;
- a second ceramic member;
- a third metallized layer, said third metallized layer being formed on a first surface of said ceramic member;
- means for attaching said second ceramic member to said first ceramic member so that said third metallized layer is mounted above said external lead connecting regions of said first metallized layers; and
- cover means attached to said second ceramic member.

3,893,194

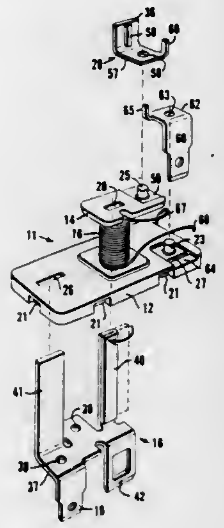
SIMPLE RELAY STRUCTURE

Rodney Hayden, Stoney Creek, and Gordon M. Davidson, Grimsley, both of Canada, assignors to TRW Inc., Cleveland, Ohio

Continuation-in-part of Ser. No. 368,398, June 8, 1973, abandoned, which is a continuation of Ser. No. 277,843, Aug. 3, 1972, abandoned. This application Feb. 27, 1974, Ser. No. 446,554

Int. Cl. H01h *45/04*

U.S. Cl. 335—202 **22 Claims**



1. A relay structure comprising: a coil form part, said coil form part including a coil supporting tube and a flange at each end of said tube, said tube and said flanges being formed as one piece of an insulating material; a stationary core part, said core part including a mounting flange and two, parallel, spaced apart core legs joined to and extending from said mounting flange, one of said core legs being inserted within said coil supporting tube; and a movable armature structure fastened in cantilever manner to the other of said core legs proximate the end thereof remote from said mounting flange, said armature structure including a movable core part supported thereby in overlapping, spaced relationship to the end of said one core leg remote from said mounting flange.

3,893,195

GANGED VARIABLE RESISTOR

Hiroshi Matsui, Neyagawa; Hisao Kitahara, Takatsuki, and Tadashi Mihara, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

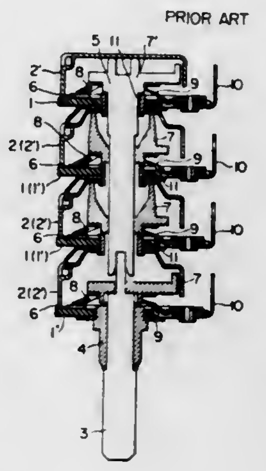
Filed Jan. 17, 1974, Ser. No. 434,289

Claims priority, application Japan, Jan. 20, 1973, 48-9763[U]; Jan. 20, 1973, 48-9764[U]

Int. Cl. H01l *5/02*

U.S. Cl. 338—132 **6 Claims**

1. An improved ganged variable resistor assembly including a plurality of variable resistors, wherein the improvement comprises a cover member having at least a bottom wall and a pair of side walls, an actuating shaft supported by and extending through a bearing provided on said bottom wall, said actuating shaft including an extension, a plurality of bent portions formed on the sides of each of said side walls and arranged at predetermined intervals to securely hold the insulating bases of said plurality of variable resistors in place, and a plurality of brushes mounted on said extension of said actuating shaft whereby each of said brushes is slidable on the associated one of resistance elements provided on said insulating bases.



DESIGN PATENTS

GRANTED JULY 1, 1975

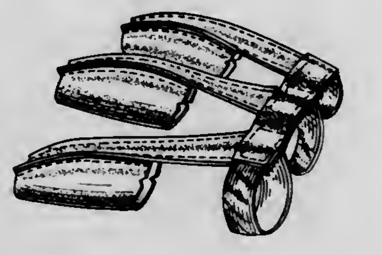
ERRATA

For CLASS	See PATENT NO.
019-060	235,649
010-062	235,650
034-015	235,675

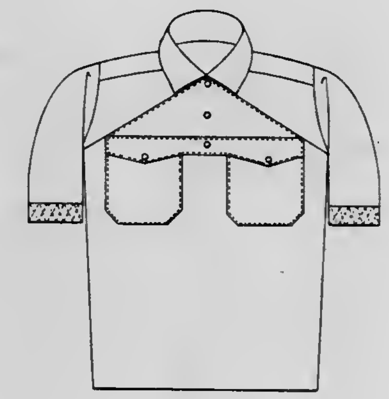
DESIGNS

JULY 1, 1975

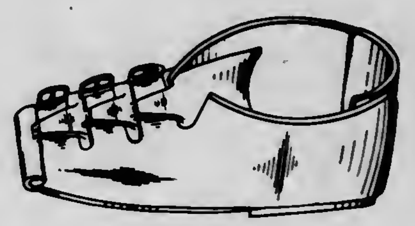
235,589
ARCHERY FINGER GLOVE
George D. Birnie, Pine Bluff, Ark., assignor to Brunswick Corporation, Skokie, Ill.
Filed Feb. 28, 1973, Ser. No. 336,540
Term of patent 14 years
Int. Cl. D2—*06*
U.S. Cl. D2—361



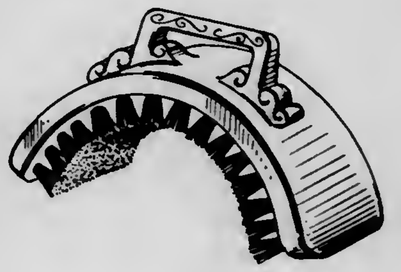
235,590
SPORT SHIRT
Vera Naumovski, 60 Roseland Drive, Toronto, Ontario, Canada
Filed Mar. 2, 1973, Ser. No. 337,497
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—208



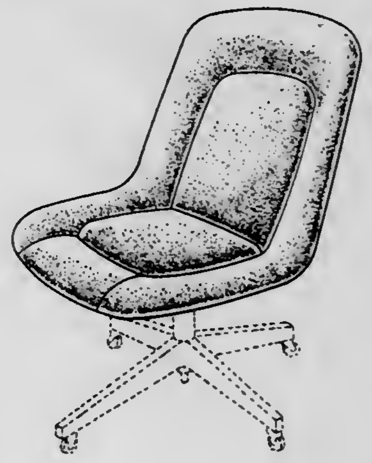
235,591
BOOTEE OR SIMILAR ARTICLE
Basil D. Huff, 94 Ferry Road, Breslaw, Wilkes-Barre, Pa. 18702
Filed Dec. 28, 1973, Ser. No. 429,102
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—278



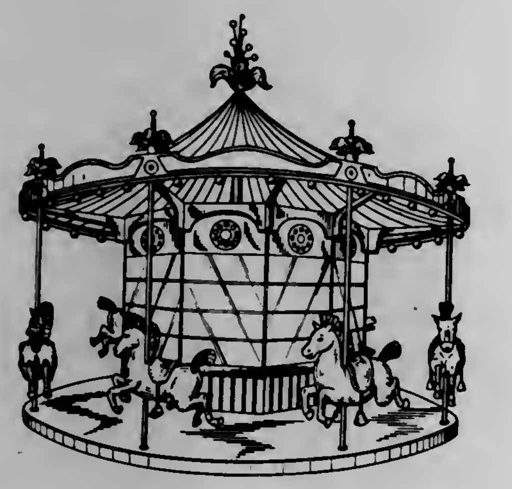
235,592
CURVED HAIR BRUSH
Norman Kirk, 9 Rosedale Ave., Montclair, N.J. 07042
Filed Jan. 30, 1974, Ser. No. 437,847
Term of patent 14 years
Int Cl. D4—*02*
U.S. Cl. D4—31



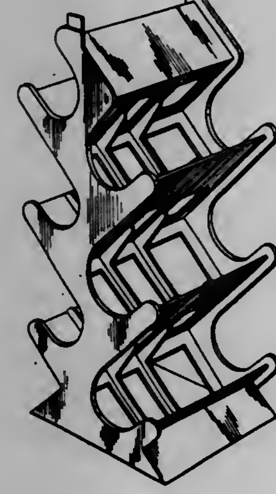
235,593
SIDE CHAIR
Maxwell E. Pearson, Zionville, Pa., assignor to Knoll International, Inc., New York, N.Y.
Original design application Sept. 16, 1968, Ser. No. 13,539, now Patent No. 219,376. Divided and this application June 17, 1970, Ser. No. 23,531
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—30



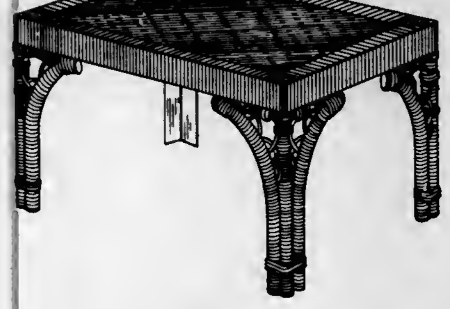
235,594
DISPLAY CAROUSEL
Gerald Cohn, New York, N.Y., assignor to Remember When Sweet Shoppe, Inc., Valley Stream, N.Y.
Filed Apr. 5, 1973, Ser. No. 348,296
Term of patent 14 years
Int Cl. D6—*04*
U.S. Cl. D6—154



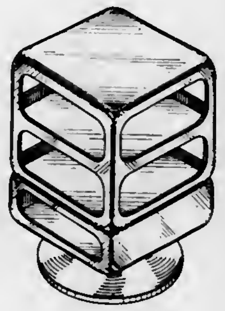
235,595
DISPLAY STAND
Amilcare Dogliotti, Neive, Italy, assignor to P. Ferrero & C. S.p.A., Alba, Italy
Filed May 29, 1973, Ser. No. 364,475
Claims priority, application Italy Apr. 6, 1973
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—24



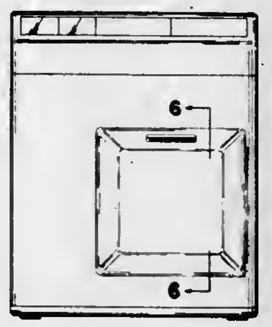
235,596
TABLE
Leonard V. Birnbaum, Highland Park, Ill., assignor to Burwood Products Company, Chicago, Ill.
Filed July 2, 1973, Ser. No. 375,821
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177



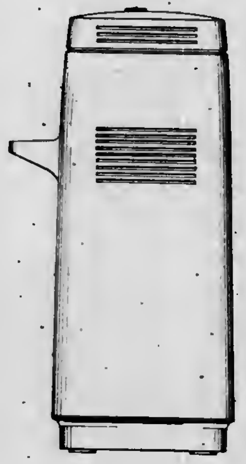
235,597
DISPLAY STAND
Roland E. Loomis, Menlo Park, Calif., assignor to House of Health, Inc., Santa Clara, Calif.
Filed July 12, 1973, Ser. No. 378,563
Term of patent 14 years
Int. Cl. D30—*20*
U.S. Cl. D6—24



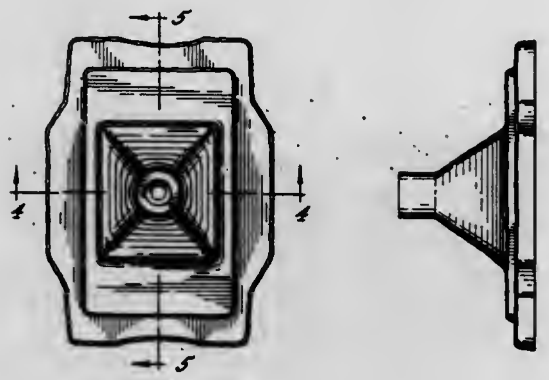
235,598
SHAVE CREAM DISPENSER
Theodore R. Peterson, Hinsdale, Ill., assignor to The Gillette Company
Filed Sept. 26, 1973, Ser. No. 400,933
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D6—95



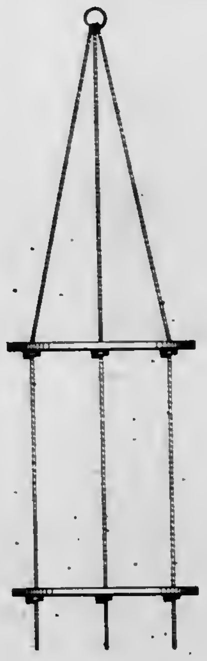
235,599
SHAVE CREAM DISPENSER
John L. Benty, Maplewood, N.J., and Daniel Nickles, Brooklyn, N.Y., assignors to The Gillette Company
Filed Nov. 12, 1973, Ser. No. 415,138
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D6—95



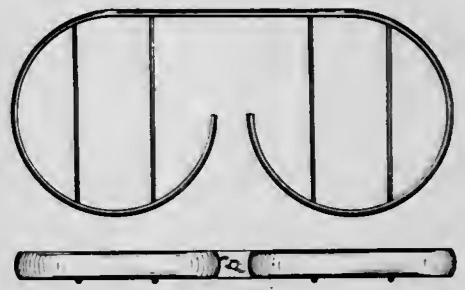
235,600
COMBINED ESCUTCHEON PLATE AND SUPPORTING POST
Raymond U. H. Tegner, Lodi, Wis., assignor to Amerock Corporation, Rockford, Ill.
Filed Dec. 26, 1973, Ser. No. 427,838
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—86



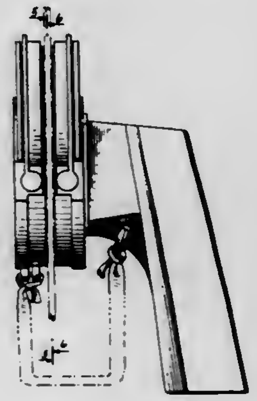
235,601
FLOWERPOT HOLDER
Rick Lewis, 1441 Humboldt, San Pablo, Calif. 94806
Filed Apr. 3, 1974, Ser. No. 457,583
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D6—113



235,602
SUPPORT FOR ASHTRAYS, AEROSOL CONTAINERS AND OTHER ARTICLES
Willard H Sahloff, Bridgeport, Conn., assignor to Handy Andy Specialty Co., Inc., New York, N.Y.
Filed May 17, 1974, Ser. No. 470,774
Term of patent 14 years
Int Cl. D6—*04*
U.S. Cl. D6—86

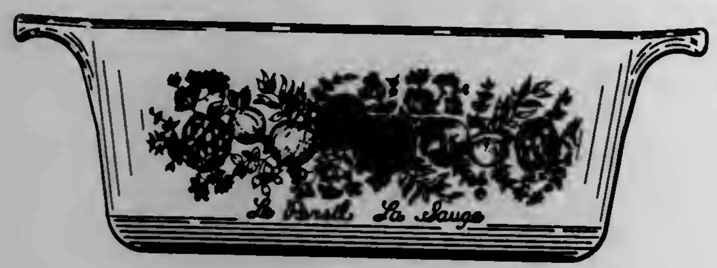


235,603
MAGNETIC WINDOW CLEANING DEVICE
John S. Doyel, 404 W. 20th St., New York, N.Y. 10011
Filed Mar. 7, 1972, Ser, No. 232,655
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—179



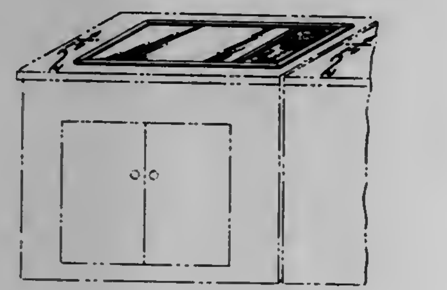
235,604
SAUCEPAN OR THE LIKE

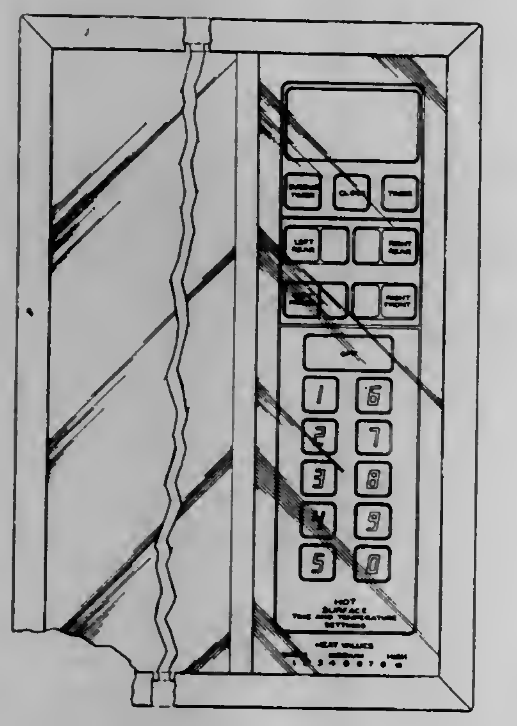
Alice Kiernan, Lewiston, Maine, and Patricia A. Luzier and Gregory Mirow, Corning, N.Y., assignors to Corning Glass Works
Filed Apr. 20, 1973, Ser. No. 353,121
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—97



235,605
DOMESTIC BUILT-IN COOKTOP HAVING SMOOTH COOKING SURFACE AND TOUCH CONTROL PANEL

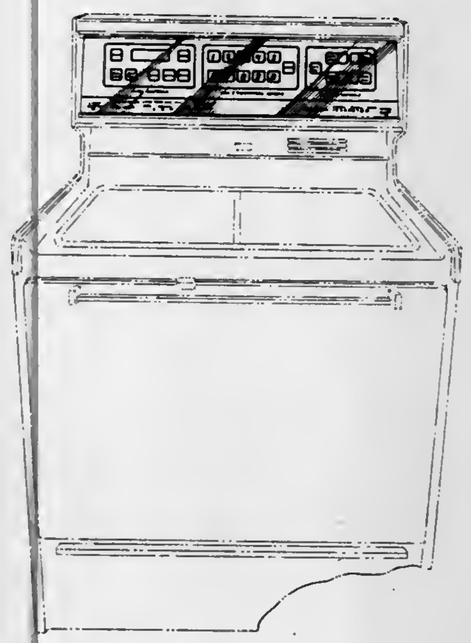
David D. Shelley, Romeo, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed May 3, 1973, Ser. No. 356,768
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—121





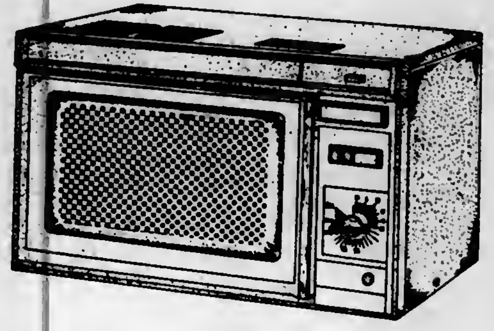
235,606
TOUCH CONTROL PANEL FOR THE CONTROL CONSOLE OF A DOMESTIC COOKING APPLIANCE

Paul E. Petkwitz, Highland, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed May 3, 1973, Ser. No. 356,755
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—135



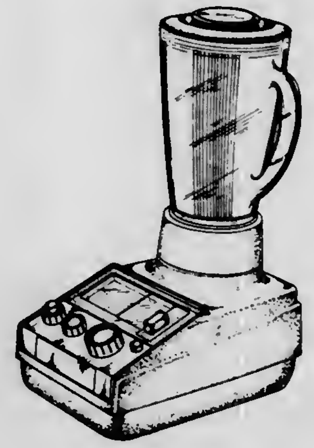
235,607
MICROWAVE OVEN

Hiroshi Kikuchi, Ikeda, Akiyoshi Koshiro, Nara, and Yoshiaki Kawata, Nara, Japan, assignors to Matsushita Electric Industrial Co., Kadoma, Osaka, Japan
Filed June 13, 1973, Ser. No. 369,761
Claims priority, application Japan Feb. 22, 1973
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—128



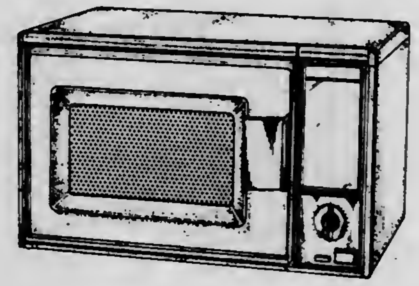
235,608
MIXER

Toshihiko Yoshida, Suita, Yukio Hirano, Minoo, Hiroshi Toyoda, Higashi-Yodogawa-ku, and Shyusuke Inoue, Ibaragi, Japan, assignors to Matsushita Electric Industrial Co., Kadoma, Osaka, Japan
Filed Aug. 3, 1973, Ser. No. 385,583
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—154



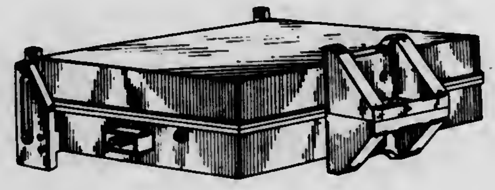
235,609
MICROWAVE OVEN

Yoshiaki Kawata, Nara, and Tetuso Kawasaki, Kashihara, Japan, assignors to Matsushita Electric Industrial Co., Kadoma, Osaka, Japan
Filed May 24, 1974, Ser. No. 473,316
Claims priority, application Japan Dec. 11, 1973
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—128



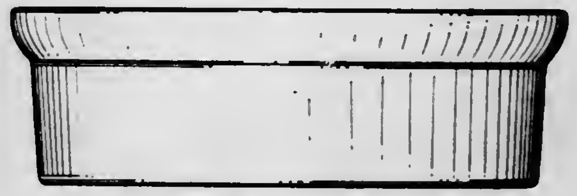
235,610
CASING FOR A GRILL

Andre N. Giguere, 223 St. Charles St., and Real A. Thibodeau, 594 2nd Ave., both of Beauceville, Quebec, Canada
Filed July 20, 1973, Ser. No. 381,057
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—88



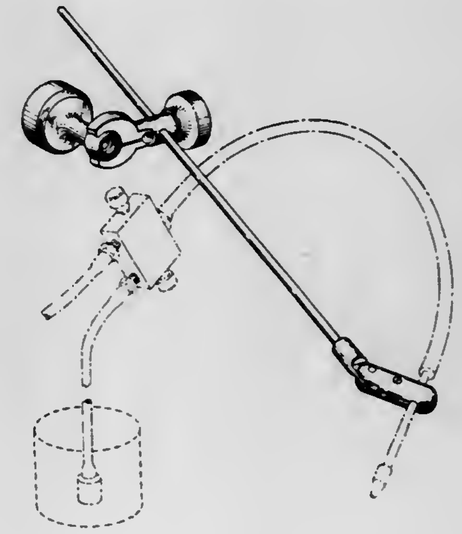
235,611
BOWL

Gerald Gulotta, New City, N.Y., assignor to Block China Corporation, New York, N.Y.
Filed Dec. 20, 1973, Ser. No. 426,897
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—23



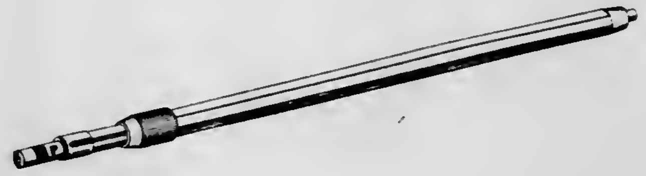
235,612
ADJUSTABLE SUPPORT FOR A SPRAY NOZZLE OR THE LIKE

Kenneth M. Daniels, 125 Roberta Drive, Woodside, Calif. 94062
Filed Mar. 21, 1973, Ser. No. 343,203
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—72



235,613
SCREW STARTER

John Donald Olson, Kensington, and Wojciech Stanislaw Gutowski, Southington, Conn., assignors to The Stanley Works, New Britain, Conn.
Original design application Feb. 14, 1972, Ser. No. 226,381, now Patent No. 233,132, dated Oct. 8, 1974. Divided and this application July 9, 1973, Ser. No. 377,803
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—86

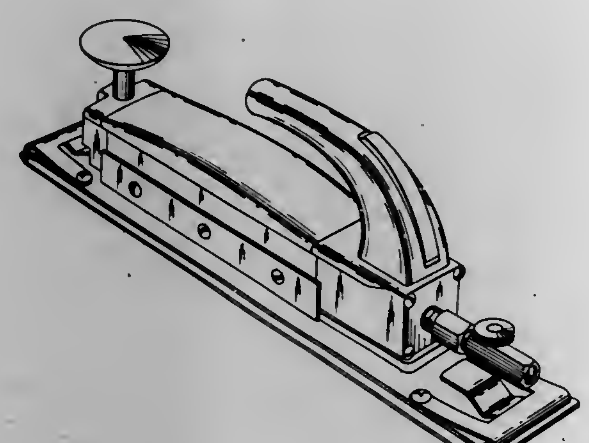


235,614

PNEUMATIC SANDER

James O. Taylor, Lantana, Fla., assignor to Florida Pneumatic Manufacturing Corp., Boynton Beach, Fla.
Filed Nov. 6, 1973, Ser. No. 413,397
Term of patent 14 years
Int. Cl. D8—*05*

U.S. Cl. D8—62

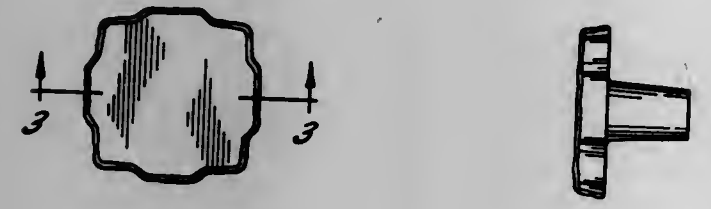


235,615

KNOB

Raymond U. H. Tegner, Lodi, Wis., assignor to Amerock Corporation, Rockford, Ill.
Filed Dec. 26, 1973, Ser. No. 427,836
Term of patent 14 years
Int. Cl. D8—*06*

U.S. Cl. D8—139

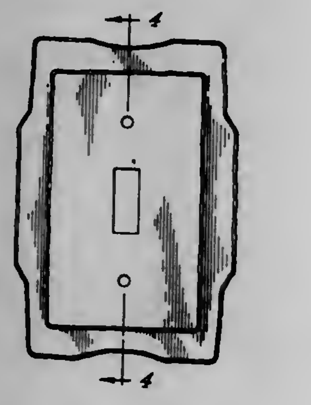


235,616

ESCUTCHEON

Raymond U. H. Tegner, Lodi, Wis., assignor to Amerock Corporation, Rockford, Ill.
Filed Dec. 26, 1973, Ser. No. 428,363
Term of patent 14 years
Int. Cl. D8—*09*

U.S. Cl. D8—179

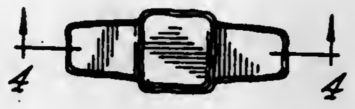


235,617

TURN FOR A DEADLOCK

Raymond U. H. Tegner, Lodi, Wis., assignor to Amerock Corporation, Rockford, Ill.
Filed Dec. 26, 1973, Ser. No. 428,389
Term of patent 14 years
Int. Cl. D8—*07*

U.S. Cl. D8—132

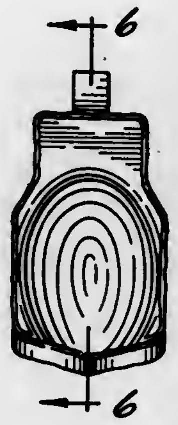


235,618

THUMB PIECE FOR AN ENTRY LOCK

Raymond U. H. Tegner, Lodi, Wis., assignor to Amerock Corporation, Rockford, Ill.
Filed Dec. 26, 1973, Ser. No. 430,948
Term of patent 14 years
Int. Cl. D8—*07*

U.S. Cl. D8—134

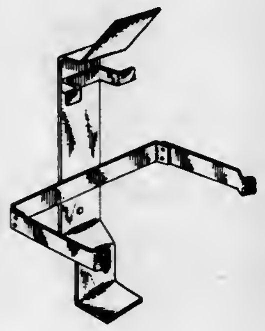


235,619

BRACKET FOR LIFESAVING EQUIPMENT

Theodore Ziaylek, Jr., Yardley, Pa., assignor to Ziamatic Corp., Yardley, Pa.
Filed May 3, 1974, Ser. No. 466,698
Term of patent 14 years
Int. Cl. D6—*04*

U.S. Cl. D8—247

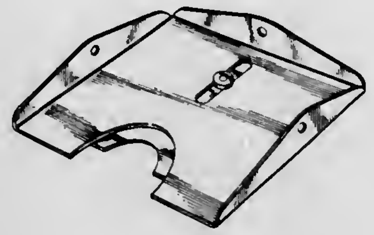


235,620

RODENT PROTECTIVE BOTTOM SHIELD FOR TELEPHONE PEDESTAL

Arthur Everett Forseth, Halstad, Minn. 56548
Filed Jan. 27, 1972, Ser. No. 221,478
Term of patent 14 years
Int. Cl. D8—*08*

U.S. Cl. D8—263

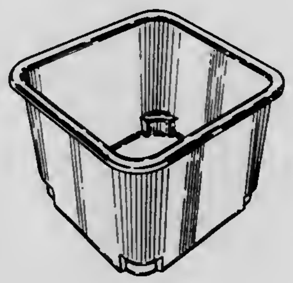


235,621

PACKAGING CONTAINER FOR FOOD OR THE LIKE

Richard S. Cawrse, Huron, Ohio, assignor to Cawrse Dairy, Inc., Lorain, Ohio
Filed May 14, 1973, Ser. No. 360,313
Term of patent 14 years
Int. Cl. D9—*03*

U.S. Cl. D9—219

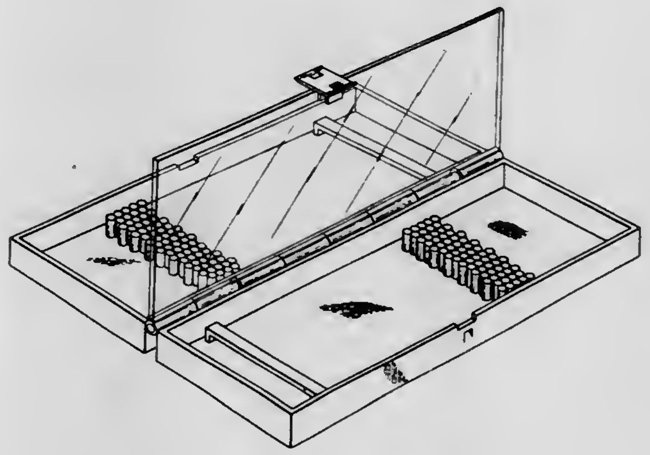


235,622

STORAGE CONTAINER FOR FISHING HOOKS AND LEADERS

John Luther Herring, 2626 S. 48th Terrace, Kansas City, Kans. 66106
Filed June 18, 1973, Ser. No. 370,954
Term of patent 14 years
Int. Cl. D9—*03*

U.S. Cl. D9—235

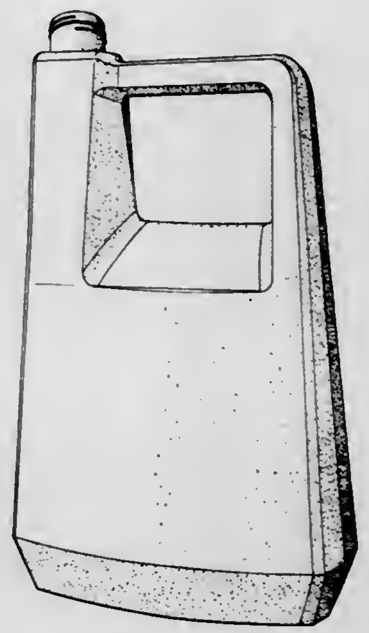


235,623

JUG

George Torrent Lloveras, 330 Haven Ave., New York, N.Y. 10033
Filed Aug. 3, 1973, Ser. No. 385,554
Term of patent 14 years
Int. Cl. D9—*01*

U.S. Cl. D9—42

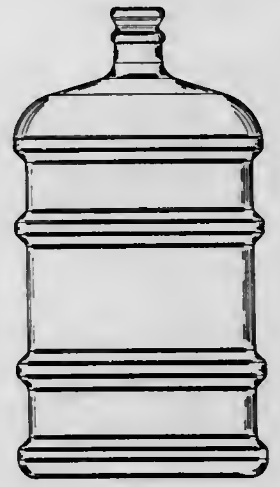


235,624

PLASTIC CONTAINER FOR LIQUIDS

Wallace Douglas Templin, Coraopolis, Pa., assignor to Foremost-McKesson, Inc.
Filed Aug. 20, 1973, Ser. No. 390,127
Term of patent 14 years
Int. Cl. D9—*01*

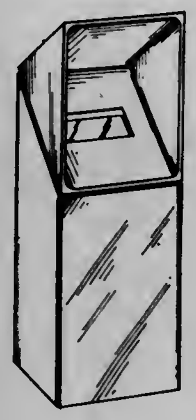
U.S. Cl. D9—131



235,625

DIGITAL CLOCK HOUSING

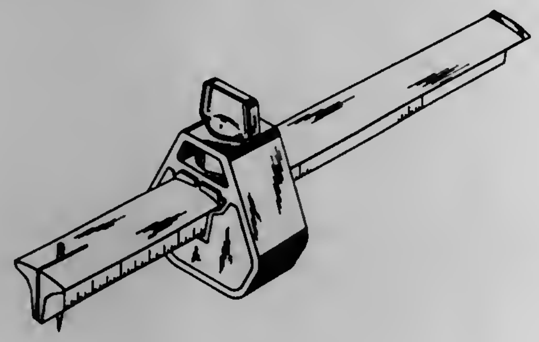
John E. Studer, Jr., Raritan Township, N.J., assignor to Delta Transnational, Inc., New York, N.Y.
Filed Dec. 26, 1972, Ser. No. 318,695
Term of patent 7 years
Int. Cl. D10—*01*
U.S. Cl. D10—1



235,626

MARKING GAUGE

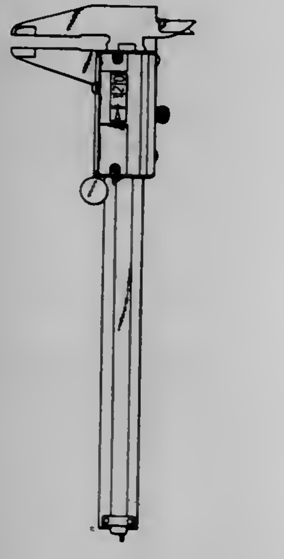
Laird F. Covey, Easton, and William John Hildebrandt, West Simsbury, Conn., assignors to The Stanley Works, New Britain, Conn.
Filed June 28, 1973, Ser. No. 374,645
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—71



235,627

DIGITAL VERNIER CALIPER

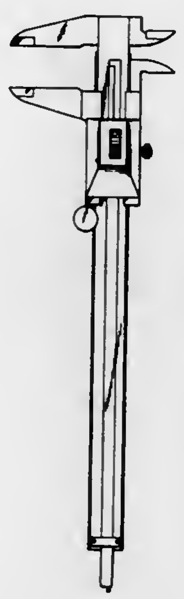
Kenju Uchino, Utsunomiya, Japan, assignor to Yehan Numata, Yokohama, Japan
Filed July 23, 1973, Ser. No. 381,662
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—73



235,628

DIGITAL VERNIER CALIPER

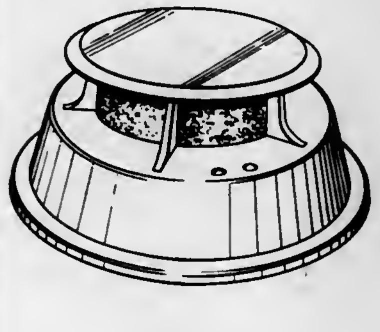
Goro Nishigata, Kawasaki, Japan, assignor to Yehan Numata, Yokohama, Japan
Filed July 23, 1973, Ser. No. 381,664
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—73



235,629

OPTICAL SMOKE DETECTOR

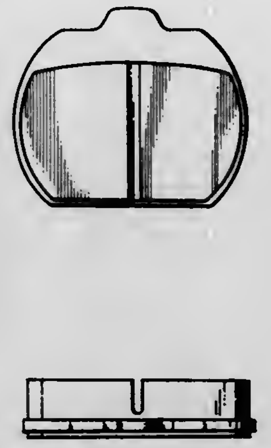
Donald F. Steele, River Road, Cohasset, Mass. 02025, and Hugh P. Thornton, Jr., Kelly Road, Acton, Mass. 01720
Filed Sept. 28, 1973, Ser. No. 401,941
Term of patent 14 years
Int. Cl. D29—*02*
U.S. Cl. D10—106



235,630

DISC BRAKE FRICTION PAD ASSEMBLY

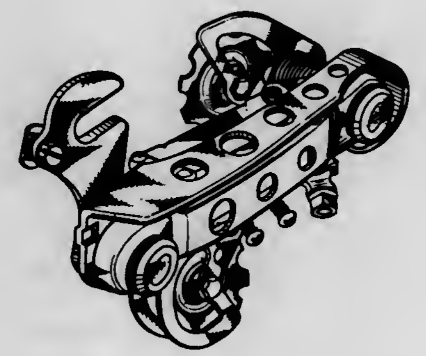
Heinrich Bernhard Rath, Koblenz-Luetzel, Germany, assignor to Girling Limited, Birmingham, England
Filed Oct. 19, 1972, Ser. No. 300,778
Claims priority, application Great Britain Apr. 21, 1972
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—180



235,631

DERAILLEUR

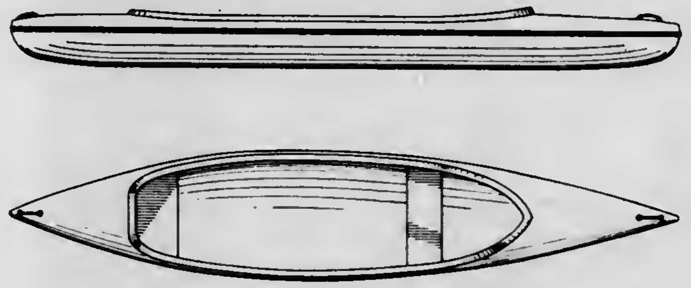
Keizo Shimano and Norio Sato, Osaka, Japan, assignors to Shimano Industrial Co., Ltd.
Filed Mar. 12, 1973, Ser. No. 340,364
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—124



235,632

CANOE

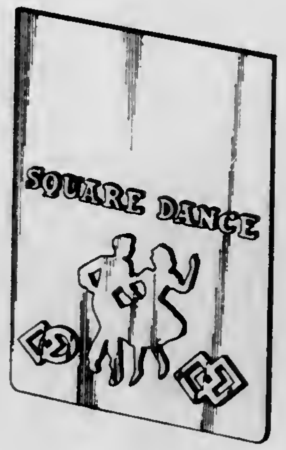
Frederick D. Blake, 3207 Montrose Road, St. Paul, Minn. 55119
Filed July 23, 1973, Ser. No. 381,717
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—63



235,633

VEHIICLE MUD GUARD

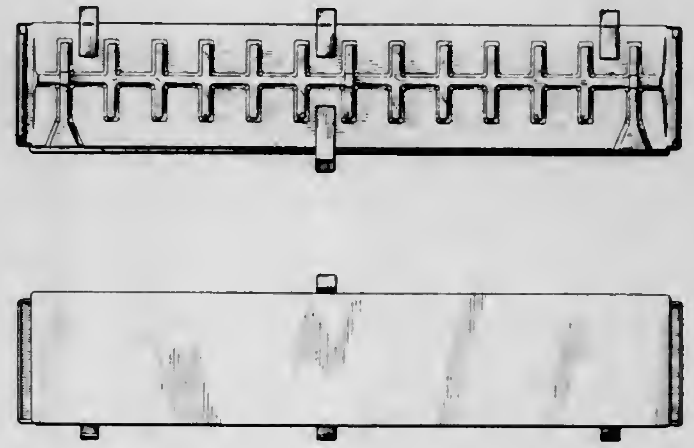
Cecil L. Cooper, 300 E. John, Carson City, Nev. 89701
Filed July 26, 1973, Ser. No. 382,680
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—185



235,634

HATCH COVER WITH HAND HOLD FOR TOP OF RAILWAY GRAIN CAR

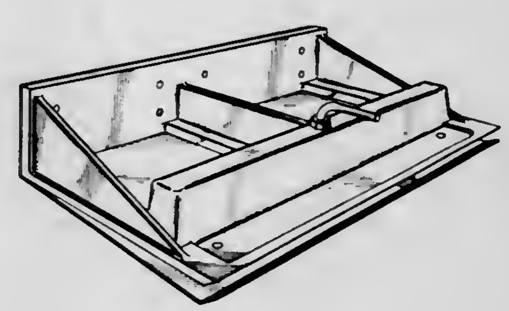
William L. Hall, Box 353, Maplewood Ave., Lucasville, Ohio 45648
Filed Oct. 26, 1973, Ser. No. 410,285
Term of patent 14 years
Int. Cl. D12—*03*
U.S. Cl. D12—43



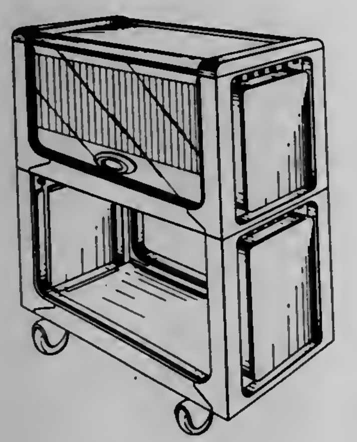
235,635

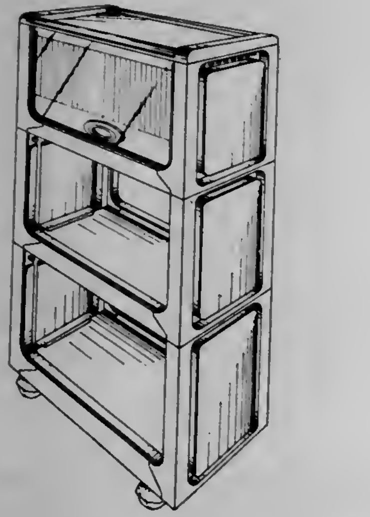
ADJUSTABLE TRIM TAB FOR LEVELING A BOAT

Gerald J. Curtis, 8806 Glen Loch, Houston, Tex. 77017
Filed Feb. 4, 1974, Ser. No. 439,131
Term of patent 14 years
Int. Cl. D12—*99*
U.S. Cl. D12—70

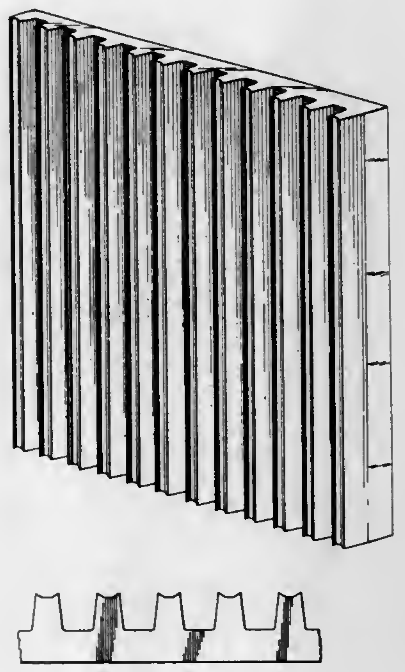


235,636
SERVING CART FOR FOOD AND THE LIKE
Takeo Teranishi, Fujiidera, Japan, assignor to Kabushiki Kaisha Tadapura, Fujiidera, Japan
Continuation-in-part of abandoned design applications Ser. No. 288,345 and Ser. No. 288,346, both Sept. 12, 1972. This application Feb. 14, 1974, Ser. No. 442,414
Claims priority, application Japan Mar. 30, 1972
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D12—22

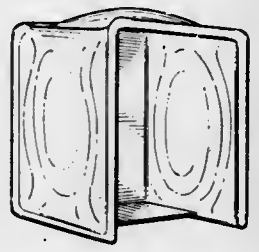




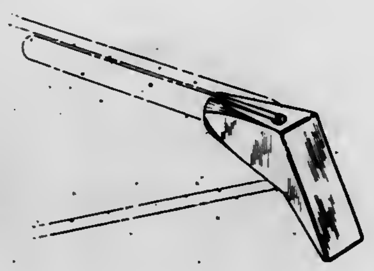
235,637
EXTERIOR MOLDED PANEL FOR DATA PROCESSING UNITS
Richard G. Clayton, Detroit, Mich., assignor to Burroughs Corp., Detroit, Mich.
Filed Aug. 1, 1973, Ser. No. 384,488
Term of patent 14 years
Int. Cl. D25—*01;* D14—*99*
U.S. Cl. D13—1 J



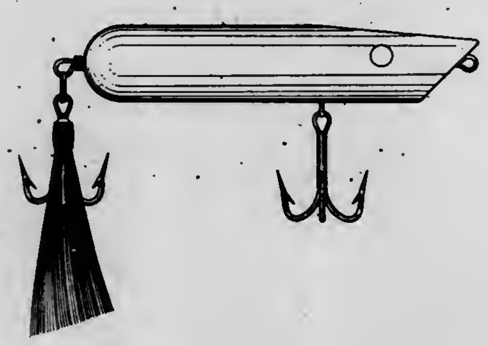
235,638
ENCLOSURE FOR TELEPHONE STATION OR THE LIKE
Matti Johannes Suuronen, Westend, Finland, assignor to Oy Polykem AB
Filed Jan. 11, 1974, Ser. No. 432,538
Claims priority, application Finland July 16, 1973
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D13—1 L



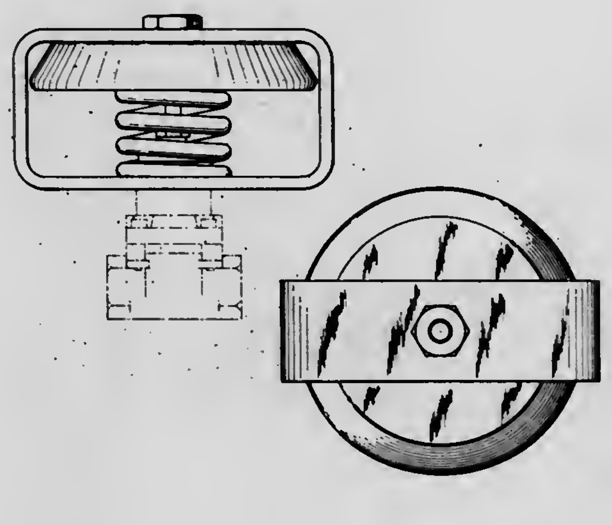
235,639
SIZE TAG FOR GARMENT HANGER
Maurice Cohen, 3580 NW. 52nd St., Miami, Fla. 33142
Filed May 14, 1973, Ser. No. 359,883
Term of patent 14 years
Int. Cl. D20—*99*
U.S. Cl. D19—13



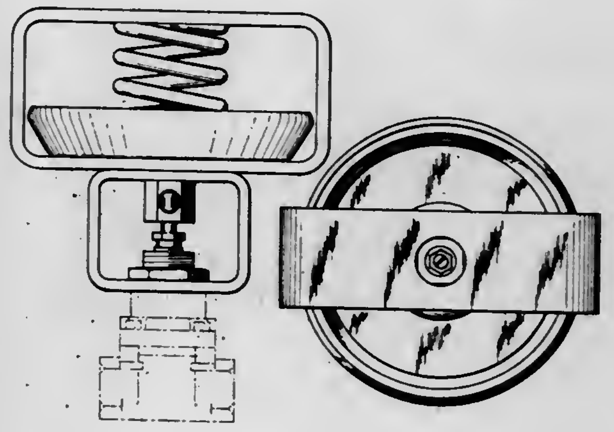
235,640
FISHING LURE
William H. Hills, 25 Woodhull Road, East Setauket, N.Y. 11733
Filed Mar. 29, 1974, Ser. No. 456,062
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27



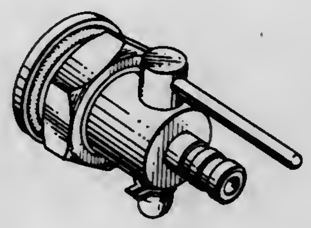
235,641
ACTUATOR FOR A VALVE
Linwood P. Erickson, Warren, R.I., assignor to G. W. Dahl Company, Inc., Bristol, R.I.
Filed June 5, 1973, Ser. No. 367,351
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—19



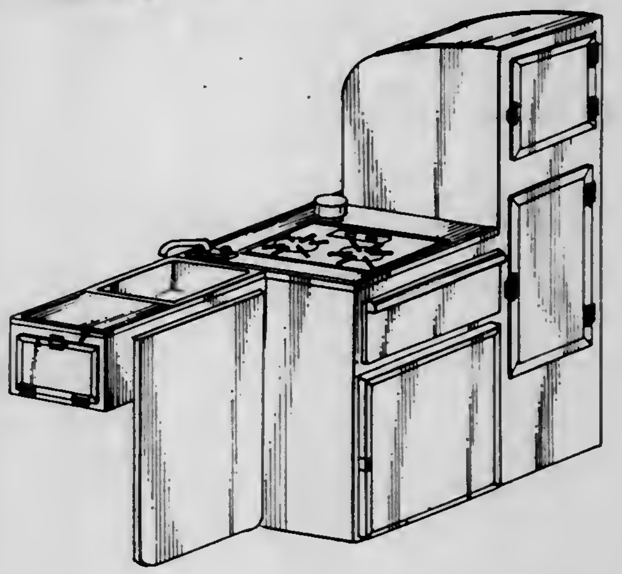
235,642
ACTUATOR FOR A VALVE
Linwood P. Erickson, Warren, R.I., assignor to G. W. Dahl Company, Inc., Bristol, R.I.
Filed June 5, 1973, Ser. No. 367,352
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—19



235,643
PETCOCK
Wade N. Zimmerman III, Los Angeles, Calif. (6833 Agnes Ave., North Hollywood, Calif. 91605)
Filed July 23, 1973, Ser. No. 381,391
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—19



235,644
KITCHEN AND STORAGE UNIT FOR RECREATIONAL VEHICLES
Roosevelt Rastegar, 836 Richmond St., El Cerrito, Calif. 94530
Filed May 31, 1973, Ser. No. 365,489
Term of patent 7 years
Int. Cl. D23—*02*
U.S. Cl. D23—50



235,645
COMBINED COUNTER, SINK, STORAGE AND INDUCTION HEATING ELECTRIC COOKING RANGE UNIT

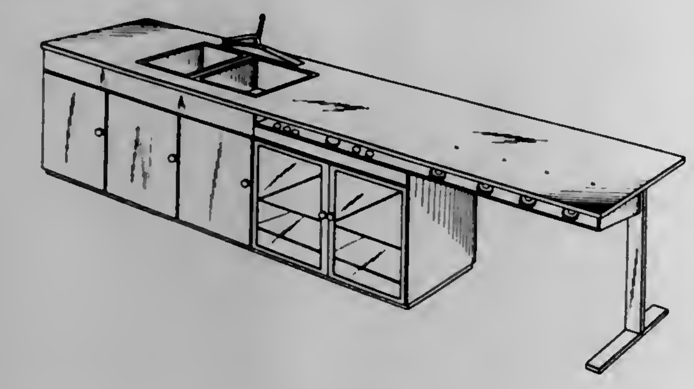
Philip H. Peters, Jr., Washington County, and John L. Matrone, Albany County, N.Y., assignors to Environment/One Corp., Schenectady, N.Y.

Original design application Sept. 23, 1971, Ser. No. 183,289. Divided and this application Nov. 12, 1973, Ser. No. 424,105

Term of patent 14 years

Int. Cl. D6—*04;* D7—*02;* D23—*02*

U.S. Cl. D23—50



235,646
HEATER, CIRCULATOR, AND TEMPERATURE CONTROL FOR A FLUID-TYPE HEATING PAD

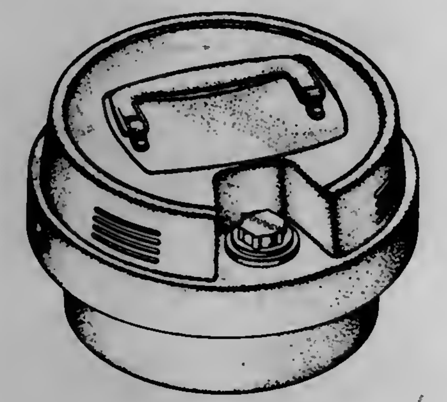
Bhaskar Kumar Agarwala, West Los Angeles, Calif., assignor to Everest & Jennings, Inc., Los Angeles, Calif.

Filed Aug. 24, 1973, Ser. No. 391,061

Term of patent 14 years

Int. Cl. D23—*03*

U.S. Cl. D23—77



235,647
PLURAL WICK-TYPE DISPENSER ASSEMBLY

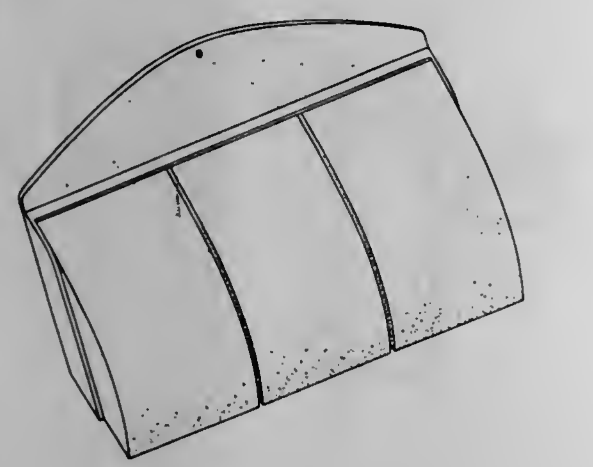
Arthur G. Howard, Indianapolis, Ind.
(1134 Golfview Drive, Carmel, Ind. 46032)

Filed July 5, 1973, Ser. No. 371,581

Term of patent 14 years

Int. Cl. D23—*04*

U.S. Cl. D23—150



235,648
AIR FRESHENER HOLDER OR SIMILAR ARTICLE

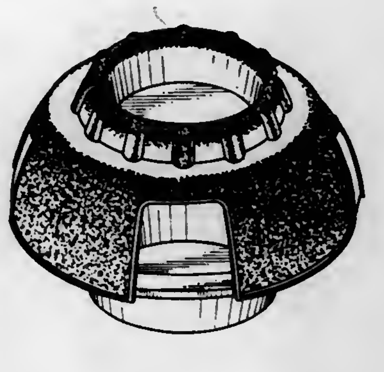
Victor F. Anderson, Wenonah, N.J., assignor to Shell Oil Company, Houston, Tex.

Filed May 2, 1974, Ser. No. 466,104

Term of patent 14 years

Int. Cl. D23—*04*

U.S. Cl. D23—150



235,649
TEACHING MACHINE

Masatoshi Hideshima, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

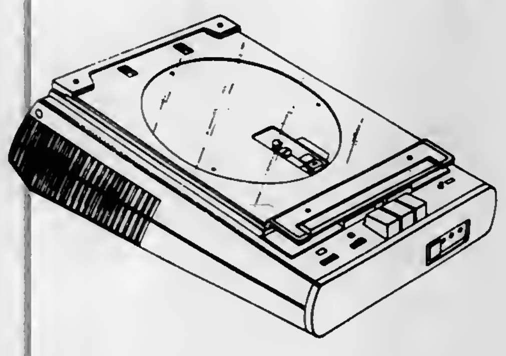
Filed Jan. 12, 1973, Ser. No. 323,036

Claims priority, application Japan July 7, 1972

Term of patent 14 years

Int. Cl. D19—*07*

U.S. Cl. D19—60



235,650
MODEL OF A BIRTH CANAL

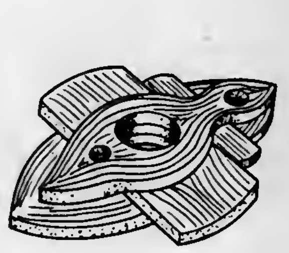
Karen A. Haddad, 352 W. Woodland, Ferndale, Mich. 48220

Filed Apr. 16, 1973, Ser. No. 351,466

Term of patent 14 years

Int. Cl. D19—*07*

U.S. Cl. D10—62



235,651
SUPPRESSOR FOR INTERNAL COMBUSTION ENGINE IGNITION SYSTEMS

Norman Alfred Jukes, 16 Norman Road, Walsall, England

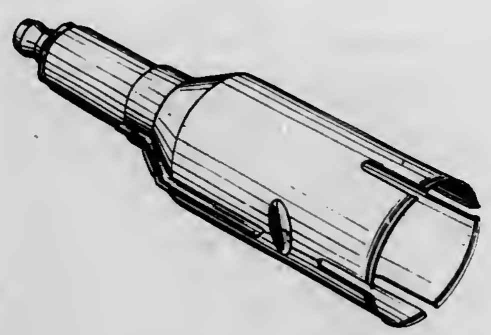
Filed Mar. 1, 1972, Ser. No. 231,090

Claims priority, application Great Britain Oct. 6, 1971

Term of patent 14 years

Int. Cl. D15—*01*

U.S. Cl. D26—1 J



235,652
COMMUNICATIONS TERMINAL

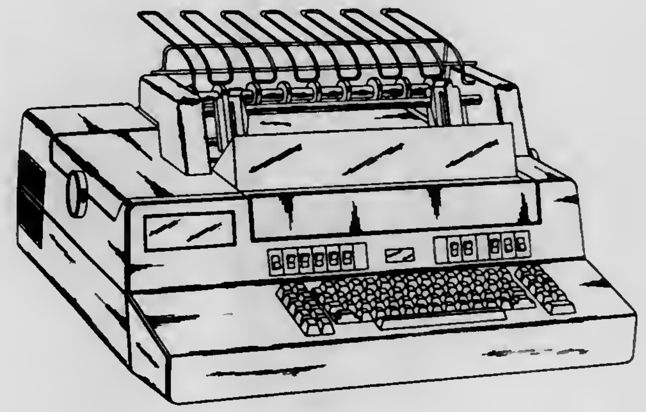
Henry Kapper and Edward J. Sabella, Raleigh, N.C., assignors to International Business Machines Corp., Armonk, N.Y.

Filed June 14 ,1974, Ser. No. 479,331

Term of patent 14 years

Int. Cl. D14—*02*

U.S. Cl. D26—5 C



235,653
HOUSING FOR ELECTRICAL UNIT

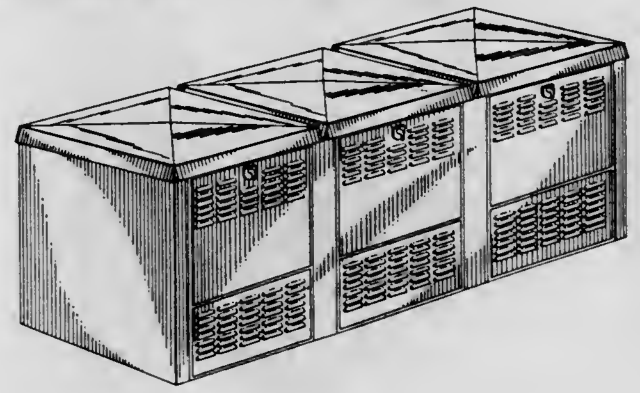
Anton J. Bozich, Virginia, Minn., assignor to Malton Electric Company, Virginia, Minn.

Filed June 18, 1973, Ser. No. 370,741

Term of patent 14 years

Int. Cl. D13—*03*

U.S. Cl. D26—5 R



235,654
DISPLAY TERMINAL

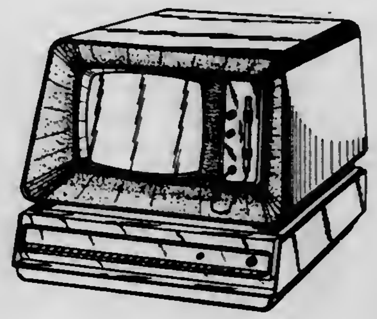
David K. Crabbe, Auburn, Leonard F. Hallo, Stow, and John W. Carroll, Pepperell, Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Sept. 26, 1973, Ser. No. 401,924

Term of patent 14 years

Int. Cl. D14—*02*

U.S. Cl. D26—5 C



235,655
DISPLAY DEVICE

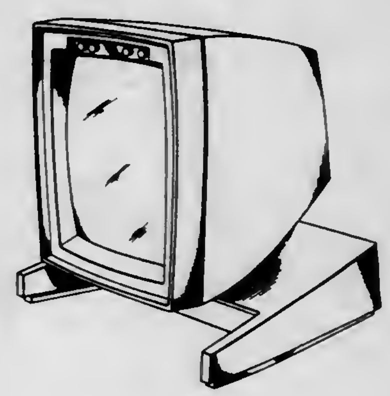
Carl J. Clement, Mountain View, and Fred H. Stengel and Kenneth S. Campbell, Palo Alto, Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 20, 1973, Ser. No. 426,878

Term of patent 14 years

Int. Cl. D14—*02*

U.S. Cl. D26—5 C



235,656
TERMINAL STATION

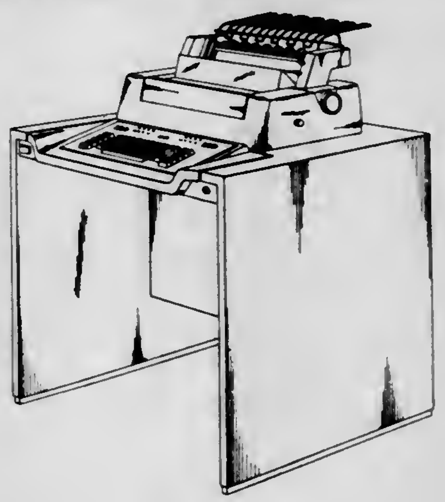
Henry Kapper and Edward J. Sabella, Raleigh, N.C., assignors to International Business Machines Corp., Armonk, N.Y.

Filed June 14, 1974, Ser. No. 479,333

Term of patent 14 years

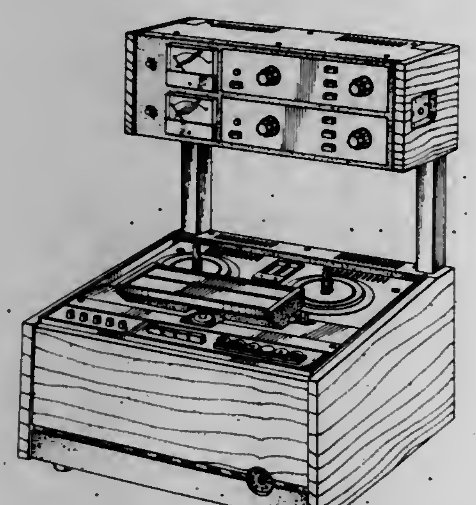
Int. Cl. D14—*02*

U.S. Cl. D26—5 C



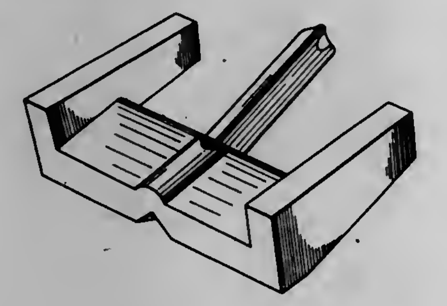
235,657
TAPE RECORDER

Haruo Simizu and Nobnyuki Ueda, Yokohama, Japan, assignors to Denki Onkyo Co., Ltd., Tokyo, Japan
Filed July 24, 1973, Ser. No. 382,219
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 B



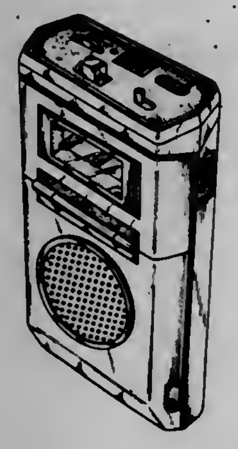
235,658
PHONOGRAPH STYLUS ASSEMBLY

Robert M. Kita, Mount Prospect, and Eduard A. Rusch, Bloomingdale, Ill., assignors to Shure Brothers Incorporated, Chicago, Ill.
Filed Jan. 23, 1974, Ser. No. 435,862
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 D



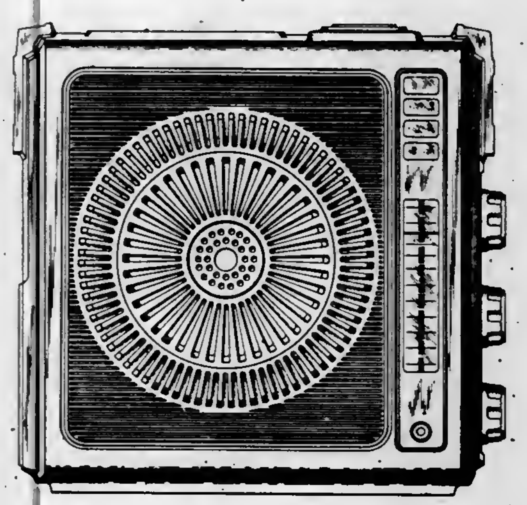
235,659
TAPE RECORDER

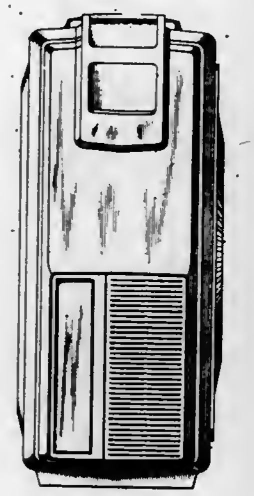
Takemi Ebata, Kyoto, Kunishige Mika, Katano, Osaka, and Yasuo Hattori, Tokyo, Japan, assignors to Matsushita Electric Industrial Co., Kadoma, Osaka, Japan
Filed Mar. 7, 1974, Ser. No. 449,210
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 B



235,660
COMBINED PORTABLE 8-TRACK TAPE PLAYER AND AM/FM TUNER

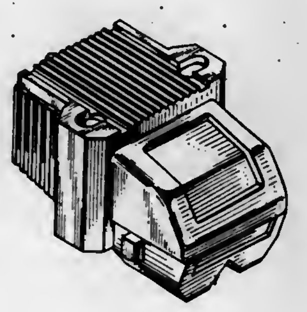
Richard Culbertson, Manlius, and Cornelius W. Cristie, Jr., Fulton, N.Y., assignors to General Electric Company
Filed July 11, 1974, Ser. No. 487,568
Term of patent 14 years
Int. Cl. D14—*01, 03*
U.S. Cl. D26—14 B





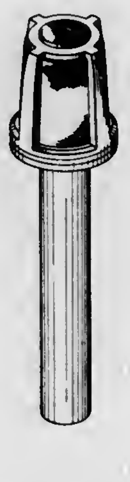
235,661
PHONOGRAPH CARTRIDGE

Robert L. Deschamps, Wheaton, Ill., assignor to Shure Brothers Incorporated, Evanston, Ill.
Filed Apr. 11, 1973, Ser. No. 350,059
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 D



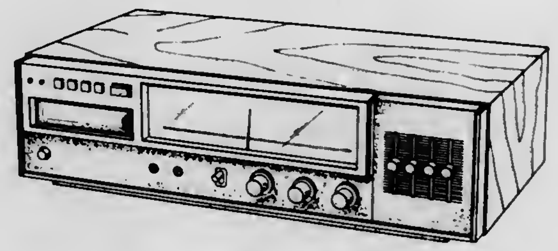
235,662
MICROPHONE

Dana W. Mox, Glenview, Ill., assignor to Shure Brothers Incorporated, Chicago, Ill.
Filed Feb. 6, 1974, Ser. No. 440,248
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 J



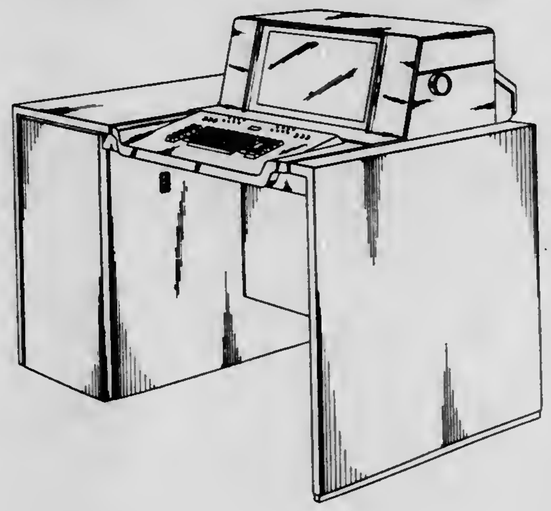
235,663
COMBINED AMPLIFIER AND CASSETTE TAPE RECORDER

Toshio Igo, Katano, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Kadoma, Osaka, Japan
Filed May 7, 1974, Ser. No. 467,840
Claims priority, application Japan Nov. 12, 1973
Term of patent 14 years
Int. Cl. D14—*01, 03*
U.S. Cl. D26—14 L



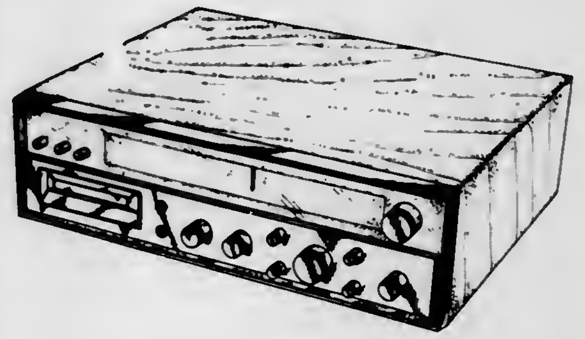
235,664
WORKSTATION

Henry Kapper and Edward J. Sabella, Raleigh, N.C., assignors to International Business Machines Corp., Armonk, N.Y.
Filed June 14, 1974, Ser. No. 479,332
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



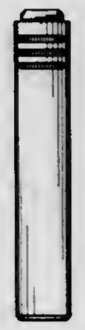
235,665
COMBINED AMPLIFIER AND CASSETTE TAPE RECORDER

Yasuhiko Funabiki, Kobe, and Koji Marumoto, Minoo, Osaka, Japan, assignors to Matsushita Electric Industrial Co., Kadoma, Osaka, Japan
Filed May 16, 1974, Ser. No. 470,555
Claims priority, application Japan Nov. 19, 1973
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 L



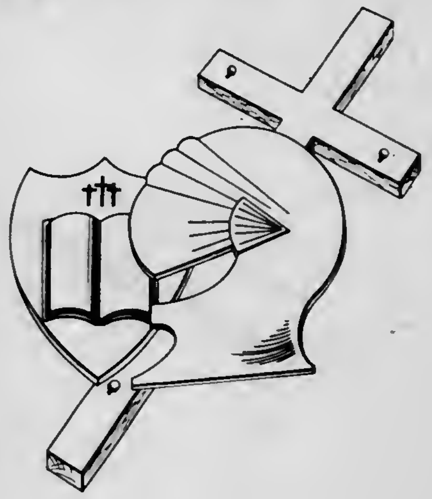
235,666
CIGARETTE LIGHTER

Nobuyoshi Moriya, Urawa-shi, Saitama, Japan, assignor to Mansei Kogyo Kabushiki Kaisha, Kawaguchi-shi, Saitama, Japan
Filed Feb. 20, 1974, Ser. No. 444,134
Claims priority, application Japan Aug. 31, 1973
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—36



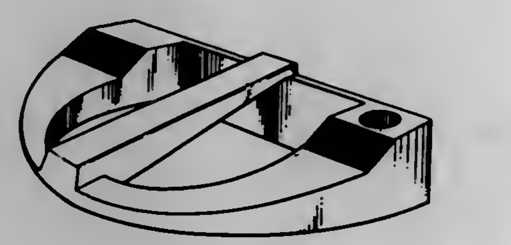
235,667
RELIGIOUS PLAQUE

Winnie C. Whitmire, P.O. Box 203, Deming, N. Mex. 88030
Filed Jan. 24, 1972, Ser. No. 220,547
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—23 A



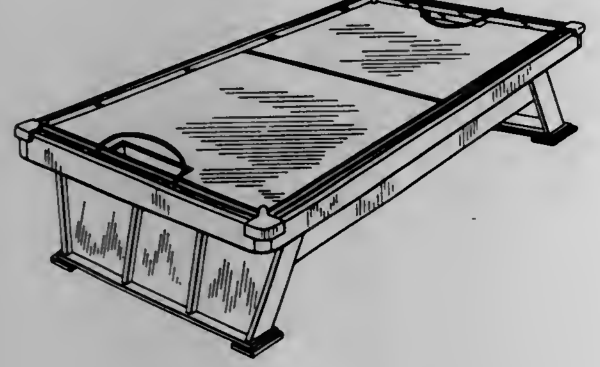
235,668
GOLF CLUB HEAD

Harold Edward Swash, 5 Bushby's Park,
Formby, Lancashire, England
Filed June 14, 1972, Ser. No. 262,487
Claims priority, application Great Britain Jan. 11, 1972
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH



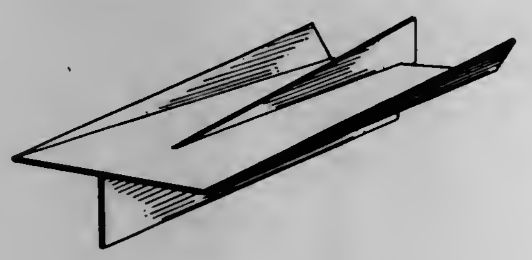
235,669
GAME TABLE

Robert W. Le Mieux, Spring Lake, Mich., assignor to
Brunswick Corporation, Skokie, Ill.
Filed May 8, 1973, Ser. No. 358,306
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 J



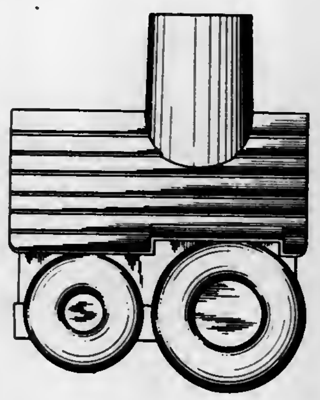
235,670
TOY KITE

Bernard R. Barrett, 308 W. Graham St.,
Lombard, Ill. 60148
Filed July 2, 1973, Ser. No. 375,686
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AF



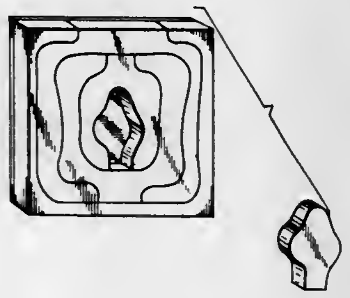
235,671
TOY VEHICLE

Norman Spiegel, New York, N.Y., assignor to Nasta
Industries, Inc., New York, N.Y.
Filed July 5, 1973, Ser. No. 376,821
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



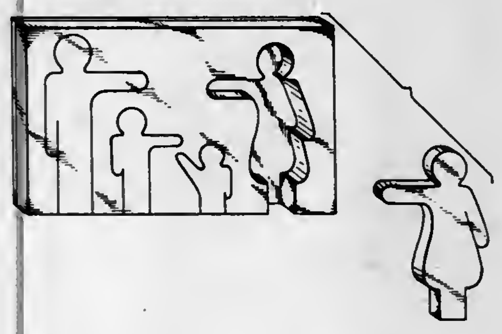
235,672
PUZZLE TOY

Charles B. Root, Morristown, N.J., assignor to
Educational Design Associates
Filed Aug. 14, 1973, Ser. No. 388,132
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 M



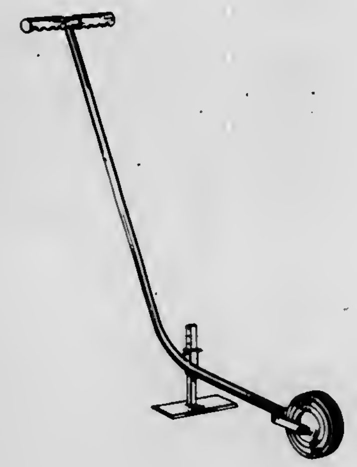
235,673
PUZZLE TOY

Charles B. Root, Morristown, N.J., assignor to
Educational Design Associates
Filed Aug. 14, 1973, Ser. No. 388,133
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 M



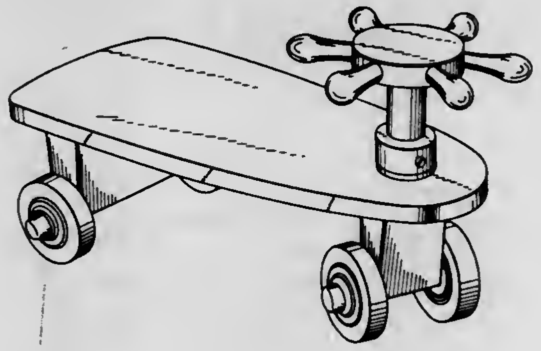
235,674
HAND OPERATED CULTIVATOR

Don L. Calder, 936 W. 8th Ave., Mesa, Ariz. 85201
Filed Oct. 3, 1973, Ser. No. 403,217
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D35—2 A



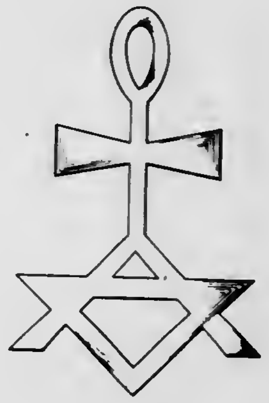
235,675
RIDING TOY

Matthew Moustakas, Mercerville, N.J., assignor to
CBS, Inc., New York, N.Y.
Filed Feb. 19, 1974, Ser. No. 443,231
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



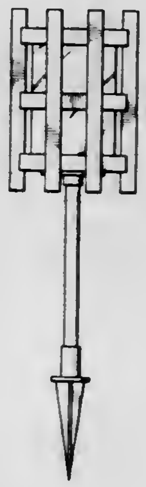
235,676
PENDANT OR THE LIKE

Alexander Pappas, 222 10th St.,
Palisades Park, N.J. 07650
Filed Feb. 14, 1974, Ser. No. 442,678
Term of patent 7 years
Int. Cl. D11—*01*
U.S. Cl. D45—16 B

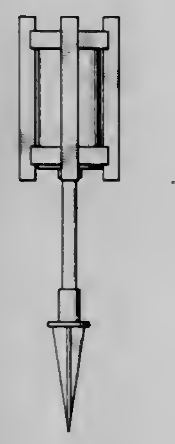


235,677
OUTDOOR LIGHT FIXTURE

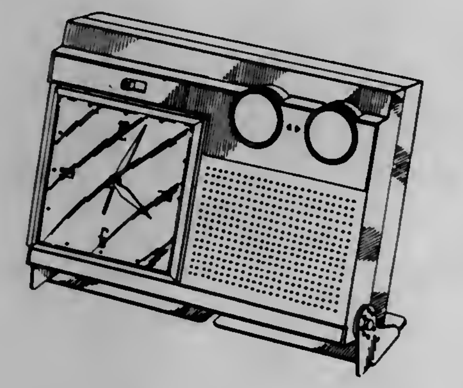
Gerald M. Goldberg, 10501-2 Larwin Ave.,
Chatsworth, Calif. 91311
Filed Oct. 19, 1973, Ser. No. 408,580
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—31



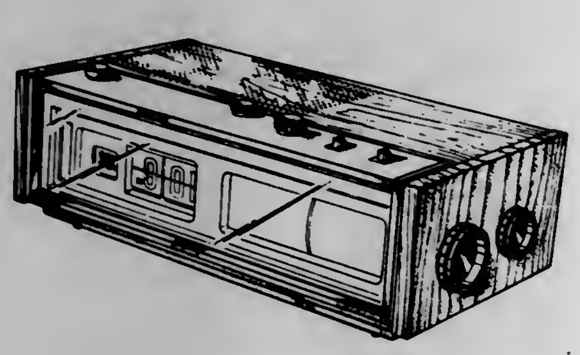
235,678
OUTDOOR LIGHT FIXTURE
Gerald M. Goldberg, 10501–2 Larwin Ave., Chatsworth, Calif. 91311
Filed Oct. 9, 1973, Ser. No. 404,490
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—31



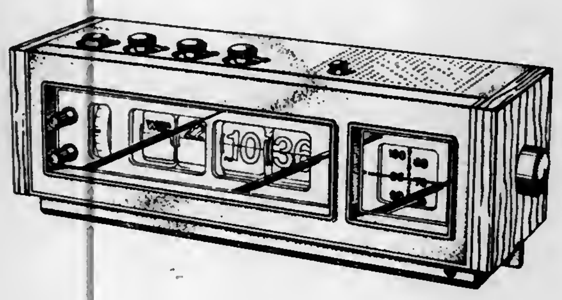
235,679
CLOCK-RADIO
Lester Kenneth Franklin, deceased, late of Toronto, Ontario, Canada, by Mildred P. Franklin, executrix, Toronto, Ontario, Canada
Filed July 7, 1972, Ser. No. 269,758
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D56—4 B



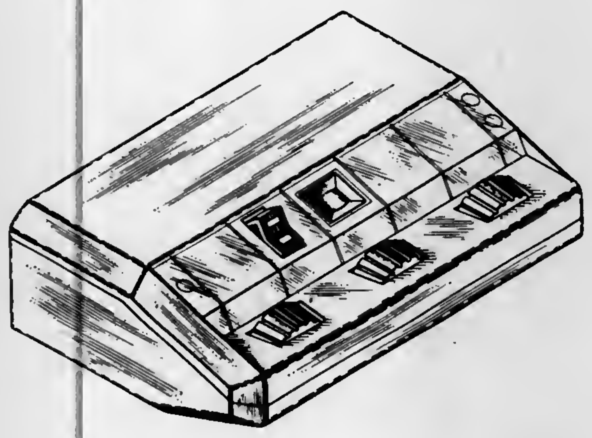
235,680
CLOCK RADIO
Tomio Fujiwara, Osaka, and Benito Mishiro, Sakai, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Apr. 20, 1973, Ser. No. 353,171
Claims priority, application Japan Oct. 20, 1972
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



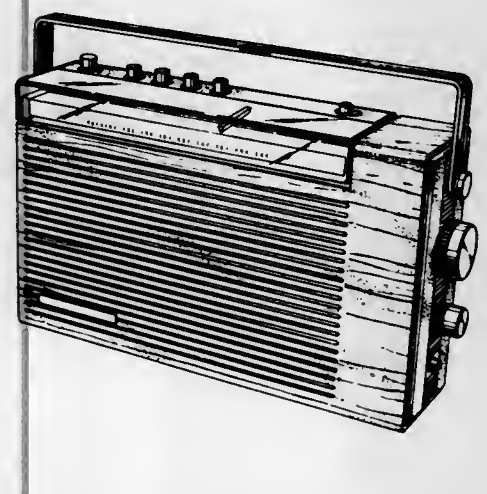
235,681
DIGITAL CLOCK RADIO
Nobumitsu Matsumura, Sakurai, and Benito Mishiro, Sakai, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed May 4, 1973, Ser. No. 357,139
Claims priority, application Japan Nov. 10, 1972
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



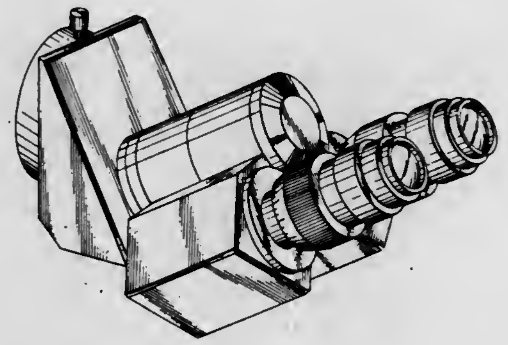
235,682
CONTROL HOUSING FOR A RADIO
David L. Haas, Norwalk, Conn., assignor to General Electric Company
Filed June 25, 1973, Ser. No. 373,404
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



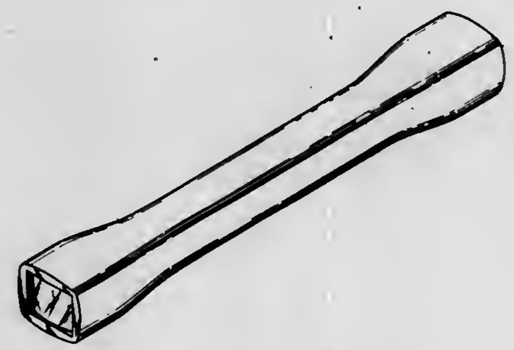
235,683
PORTABLE RADIO
Hiroshi Hirasa, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Aug. 16, 1973, Ser. No. 389,036
Claims priority, application Japan Feb. 16, 1973
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



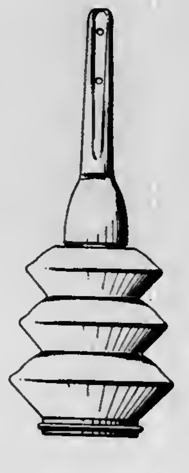
235,684
BINOCULAR MICROSCOPE EYEPIECE
Kurt Michel, Aalen, Germany, assignor to Carl Zeiss-Stiftung, Wurttemberg, Germany
Filed Dec. 19, 1973, Ser. No. 426,314
Claims priority, application Germany June 20, 1973
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 E



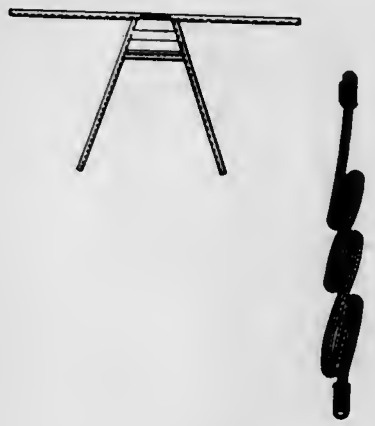
235,685
RIFLESCOPE
M. Gaines Chesnut, Denver, Colo., assignor to Outdoor Sports Industries, Inc., Denver, Colo.
Filed June 24, 1974, Ser. No. 482,209
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 E



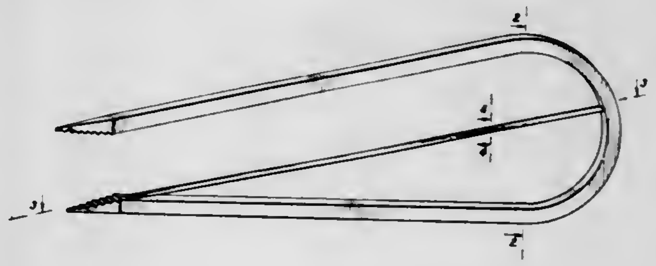
235,686
DISPOSABLE DOUCHE
Stanley Schoenfeld, Pound Ridge, and Jacob Skolnik, New Rochelle, N.Y., assignors to Richardson-Merrell Inc., Wilton, Conn.
Filed Aug. 6, 1973, Ser. No. 385,675
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1 Q



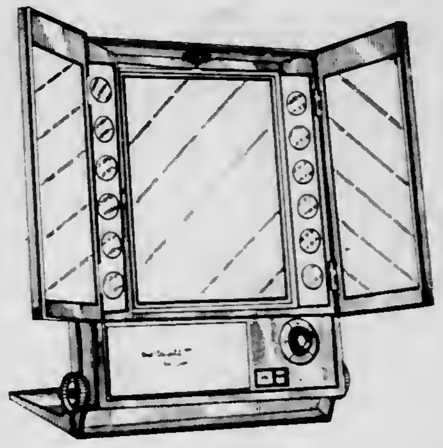
235,687
SURGICAL MASK
Marion Bragg, Palatine, Ill., assignor to The Kendall Company, Walpole, Mass.
Continuation-in-part of abandoned design application Ser. No. 453,776, Mar. 22, 1974. This application Aug. 29, 1974, Ser. No. 499,380
Term of patent 14 years
Int. Cl. D24—*02, 99*
U.S. Cl. D83—1 K



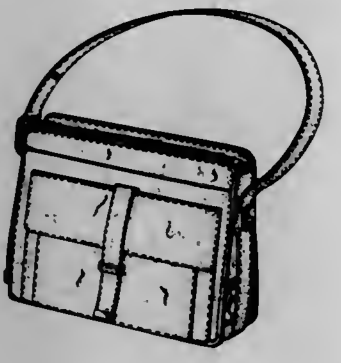
235,688
SURGICAL SUTURE REMOVER
William Glenn Allen, Jr., 1811 Floyd Ave., Richmond, Va. 23220
Filed Oct. 18, 1973, Ser. No. 407,471
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—12 R



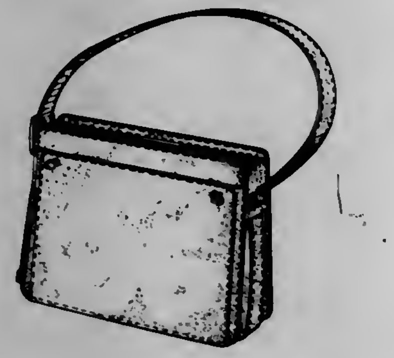
235,689
MAKE-UP MIRROR
John L. Benty, Maplewood, N.J., and Dominic De Fano, Palatine, and Robert I. Kallman, Elburn, Ill., assignors to Clairol Incorporated, New York, N.Y.
Filed May 23, 1972, Ser. No. 256,220
Term of patent 14 years
Int. Cl. D28—*02*
U.S. Cl. D86—10 H



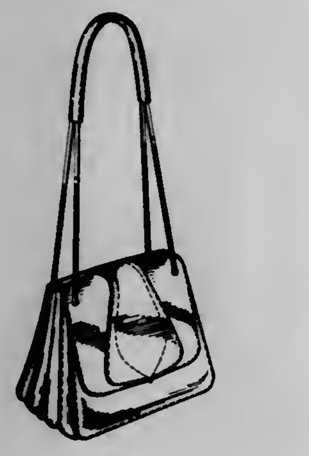
235,690
HANDBAG
Valerie Barad, Gardena, Calif., assignor to Theodor Manufacturing Corp., Gardena, Calif.
Filed June 11, 1973, Ser. No. 368,616
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—3 F



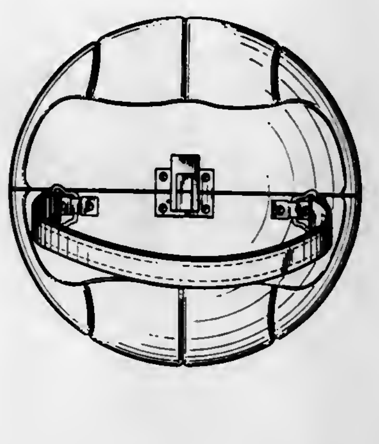
235,691
HANDBAG
Valeria Barad, Gardena, Calif., assignor to Theodor Manufacturing Corp., Gardena, Calif.
Filed May 29, 1973, Ser. No. 364,900
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—3 F



235,692
SHOULDER BAG
James L. Rushing and Linda S. Rushing, both of 3012 NW. 43rd St., Oklahoma City, Okla. 73112
Filed Dec. 6, 1974, Ser. No. 530,216
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—3 F



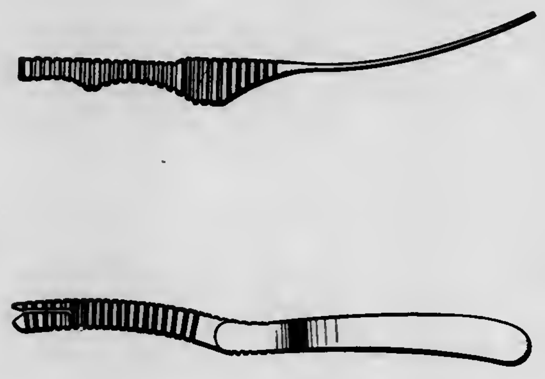
235,693
HANDBAG
Clarence V. Tibbs, Knoxville, Tenn., assignor to Balls 'n' All, Inc., Knoxville, Tenn.
Filed Mar. 13, 1973, Ser. No. 340,756
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—C



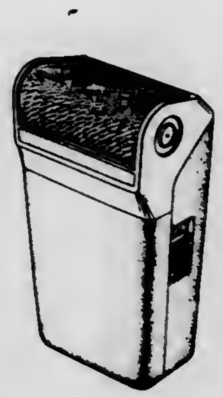
235,694
CARPET
Kenneth Doyle Hill, Dalton, Ga., assignor to World Carpets, Dalton, Ga.
Filed June 1, 1973, Ser. No. 366,186
Term of patent 14 years
Int. Cl. D6—*11*
U.S. Cl. D92—4

235,695
CARPET
Kenneth Doyle Hill, Dalton, Ga., assignor to World Carpets, Dalton, Ga.
Filed June 1, 1973, Ser. No. 366,170
Term of patent 14 years
Int. Cl. D6—*11*
U.S. Cl. D92—4

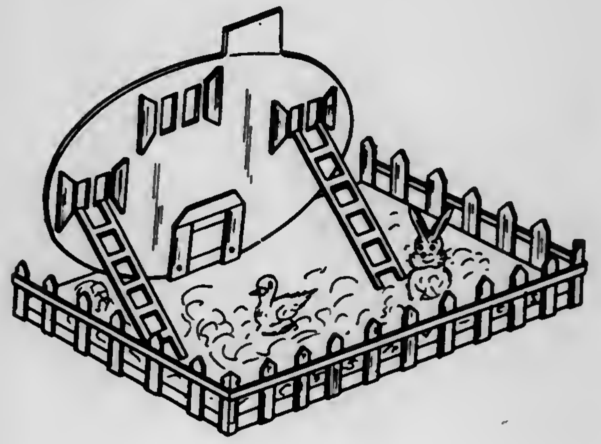
235,696
RAZOR HANDLE
Walter R. Krupski, 375 Main St., Lynnfield, Mass. 01940
Filed Feb. 21, 1973, Ser. No. 334,205
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3 A



235,697
ELECTRIC SHAVER
Yoritaka Ikejima and Takeshi Takagi, Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Kadoma, Japan
Filed Oct. 26, 1973, Ser. No. 410,054
Claims priority, application Japan Apr. 27, 1973
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3 A



235,698
EASTER DISPLAY
Joan J. Keskes, 9606 Boucher, Otter Lake, Mich. 48464
Filed May 17, 1972, Ser. No. 254,341
Term of patent 14 years
Int. Cl. D11—*05;* D20—*02*
U.S. Cl. D96—2



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TO WHOM

PATENTS WERE ISSUED ON THE 1st DAY OF JULY, 1975

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- Abildtrup, Jorgen, to Danfoss A/S. Method of producing an oxygen containing silicon compound. 3,892,840, Cl. 423-325.000.
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  - Cobble, Henry H., 3,892,853.
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  - Murakami, Hajime, 3,893,183.
- Alvino, William M.; and Frost, Lawrence W., to Westinghouse Electric Corporation. Amide-imide polymers. 3,892,768, Cl. 260-326.00C.
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- AMF Incorporated: *See—*
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  - Eichenhofer, Kurt-Wilhelm; and Schliebs, Reinhard, 3,892,805.
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  - Tamer, Ergun; Hendricks, Udo; and Quaedvlieg, Mathieu, 3,892,527.
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Boser, Ronald J. Apparatus for making top and bottom blind stitched facing. 3,892,192, Cl. 112-140.000.

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Brauning, Gerhard, to Eastman Kodak Company. Exposure control apparatus. 3,893,134, Cl. 354-30.000.

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Butler, William R. Dispensing device having a rotor for metering a material into a fluid stream. 3,892,336, Cl. 222-193.000.

Buzina, Natalya Anatolievna: *See*—
    Babitsky, Boris Davidovich; Beresnev, Vadim Nikolaevich; Bolshakova, Tatyana Georgievna; Buzina, Natalya Anatolievna; Vasiliev, Valentin Alexandrovich; Kalinicheva, Nadezhda Andreevna; Kormer, Vitaly Abramovich; Zobach, Mark Iosifovich; Radchenko, Ivan Ignatievich; and Khrustaleva, Taisiya Danilovna, 3,892,722.

Byron Jackson Inc.: *See*—
    Wiley, Mark H., 3,892,148.

C. B. F. Systems Inc.: *See*—
    Covarrubias, George Salvador, 3,892,253.

C. Keller & Co.: *See*—
    Berndt, Walter; and Lauff, Helmut F., 3,892,318.

Cabansag, Edwin. Apparatus for immobilizing infants and small children. 3,892,399, Cl. 269-328.000.

Calder, Alain: *See*—
    Anderson, Robert Craig; and Calder, Alain, 3,892,244.

Caldwell, William F., to Huntington Rubber Corporation. Toggle-action fastener. 3,892,434, Cl. 292-247.000.

California Metallurgical Industries Inc.: *See*—
    Borg, Richard J.; Lai, David Y. F.; Riley, Neil R.; and Wolfe, James R., 3,892,644.

Cametti, George M.: *See*—
    Richards, Edward L.; and Cametti, George M., 3,892,934.

Campbell, Jeptha E.; and Gilchrist, James E., to United States of America, Health, Education and Welfare. Method and apparatus for plating and counting aerobic bacteria. 3,892,632, Cl. 195-103.50R.

Canadian Structural Clay Association: *See*—
    Anderson, Yngve R., 3,892,380.

Canale, Giacomino; and Dessy, Pietro, to Buchel, Engen. Semiautomatic spot-welding apparatus. 3,892,942, Cl. 219-127.000.

Candy, James Charles, to Bell Telephone Laboratories, Incorporated. Digital-to-analog converter using differently decoded bit groups. 3,893,102, Cl. 340-347.0DA.

Canon Kabushiki Kaisha: *See*—
    Taguchi, Tatsuya; and Iura, Yukio, 3,893,143.

Canron, Inc.: *See*—
    von Beckmann, Helmuth, 3,892,183.

Cantalupi, Lewis: *See*—
    Tucci, Domenick; and Cantalupi, Lewis, 3,893,096.

Cap, Antonin: *See*—
    Doudlebsky, Ctibor; Jaros, Frantisek; Ferkl, Frantisek; Cap, Antonin; Ripka, Josef; and Junek, Jan, 3,892,063.

Carborundum Company, The: *See*—
    Monaghan, George J., 3,892,396.

Carlson, Robert G.; Crawford, Joseph H.; Farmer, Edward R.; Murphy, Guy C.; and Salemme, Charles T., to General Electric Company. Method for fabricating foreign object damage protection for rotar blades. 3,892,612, Cl. 156-150.000.

Carlton & United Breweries Limited: *See*—
    Mitchell, William, 3,892,808.

Carrell, Terry E.: *See*—
    Arthur, William E.; Carrell, Terry E.; and Crego, Willard, 3,892,971.

Carroll, Felix Patrick: *See*—
    Bechara, Ibrahim Selim; Carroll, Felix Patrick; and Mascioli, Rocco Lawrence, 3,892,687.

Carroll, James J., to Warner-Lambert Company. Diagnostic reagents used for the determination of gamma-glutamyl transpeptidase in biological fluids. 3,892,631, Cl. 195-99.000.

Carroll, John T.; and Harris, Nathan G., to Carroll, John T. Lance tip. 3,892,393, Cl. 266-34.00L.

Castegnier, Adrien. Printing method and system by gelatin coagulation. 3,892,645, Cl. 204-180.00R.

Casterline, Russell Carson; Krawiec, Zbigniew Apoloniusz; and Peterson, Ralph Broman, to Bell Telephone Laboratories, Incorporated. Switching system equipped with line verification apparatus. 3,892,928, Cl. 179-175.20R.

Caterpillar Tractor Co.: *See*—
    Miller, Kenneth J.; Merritt, Paul H.; and Fuller, Francis W., 3,892,119.

Cavis-Cavetti Isolati S.p.A.: *See*—
    Codrino, Giuseppe, 3,892,911.

Cavoretto, James Louis; Allworth, Alfred Alden; and Infante, Carlo, to Tektronix, Inc. Precision function generator. 3,893,036, Cl. 328-185.000.

CBF Systems Inc.: *See—*
  Covarrubias, George Salvador; and Slater, Ernest Charles, 3,892,182.

Cebal GP and Societe de Traitements Electrolytiques et Electrothermiques: *See—*
  Doucherain, Jacques, 3,892,505.

Celek, John Edward, to GTE Automatic Electric Laboratories Incorporated. Automatic master clock track writer. 3,893,172, Cl. 360-51.000.

Cesca, Sebastiano: *See—*
  Arrighetti, Sergio; Cesca, Sebastiano; Ghetti, Giuseppe; and Vajna, Eugenio, 3,892,712.

Cevasco, Albert Anthony, to American Cyanamid Company. Method of producing a luminescent surface containing substituted sulfonamido and carboxamido phenyl quinazolones. 3,892,972, Cl. 250-458.000.

Champoux, Louis A.; Hill, Horace E.; and Phillips, Joseph L., to Boeing Company, The. Apparatus for cold-working holes. 3,892,121, Cl. 72-393.000.

Chang, Yun Ger; and Bailey, Philip S., to Reichhold Chemicals, Inc. Organic peroxides and method therefor. 3,892,811, Cl. 260-593.00R.

Chappelow, Ronald E.; Doney, Donald A.; Doulin, Joseph; Lin, Paul T.; and Schiavone, Frank A., to International Business Machines Corporation. Method for forming silicon conductive layers utilizing differential etching rates. 3,892,606, Cl. 148-174.000.

Charles, Inc.: *See—*
  Schneider, Charles, 3,892,001.

Charles, Richard J.: *See—*
  Smeggil, John G.; and Charles, Richard J., 3,892,599.
  Smeggil, John G.; and Charles, Richard J., 3,892,600.
  Smeggil, John G.; and Charles, Richard J., 3,892,601.

Charlesby, Arthur; Fydelor, Peter John; and Morris, Adele Patricia, to National Research Development Corporation. Process of making a self contained electrode separator for primary and secondary electrolytic cells. 3,892,594, Cl. 136-148.000.

Charman, Bernard William: *See—*
  Sheffield, David John; Prosser, Paul Edward; and Charman, Bernard William, 3,892,120.

Cheavens, Thomas H.: *See—*
  Montgomery, Stewart R.; and Cheavens, Thomas H., 3,892,781.

Chesapeake and Ohio Railway Company, The: *See—*
  Booth, Larry H., 3,892,431.

Chesluk, Ralph P.: *See—*
  White, James A.; Chesluk, Ralph P.; and Platte, Howard J., 3,892,670.

Chevron Research Company: *See—*
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  Kobzina, John W., 3,892,775.
  Lindquist, Robert H., 3,892,270.
  Senger, John F., 3,892,218.
  Shigeto, Suzuki, 3,892,813.
  Woo, Gar Lok, 3,892,686.

Chicago Pneumatic Tool Company: *See—*
  Amtsberg, Lester A., 3,892,279.

Chiron, Bernard; and Fache, Michel, to Societe Lignes Telegraphiques et Telephoniques. Simplified moving target detector. 3,893,109, Cl. 343-5.0PD.

Chiu, Ying C., to Shell Oil Company. Digested alkaline tall oil pitch soap composition. 3,892,668, Cl. 252-8.55D.

Chiyoda Kako Kensetsu Kabushiki Kaisha: *See—*
  Iwagami, Masao; and Miyashita, Satoshi, 3,892,332.

Christensen, Bryan L.; and Berg, David W., to Tennant Company. Vented double skirt system. 3,892,008, Cl. 15-368.000.

Ciba-Geigy Corporation: *See—*
  Drabek, Jozef, 3,892,854.
  Frey, Christoph, 3,892,750.
  Pass, Herbert A.; Gerber, Hans-Rudolf; and Green, David Howard, 3,892,555.
  Porret, Daniel; and Habermeier, Jurgen, 3,892,765.

Ciccarelli, Roger N.; and Ims, Dale R., to Xerox Corporation. Electrostatically deformable materials. 3,892,567, Cl. 96-1.100.

Cilento, Rudolfo: *See—*
  Hill, John Anthony; and Cilento, Rudolfo, 3,892,856.

Cinva S.A.: *See—*
  Hernandez Garcia, Maria Cruz, 3,892,507.

Cioccolani, Arnaldo, to Kuhlmann, Ugine. Producing monocrystalline bodies by the verneuil method. 3,892,540, Cl. 23-301.0SP.

Cirulis, Uldis; and Zacharias, Ellis M., Jr., to Nusonics, Inc. Oil detection system. 3,892,127, Cl. 73-61.10R.

Cities Service Company: *See—*
  Setterstrom, Carl A., 3,892,690.

Claes, Frans Henri; Klein, Eberhard; Libeer, Marcel Jan; and Moisar, Erik, to Agfa-Gevaert Aktiengesellschaft. Controlled reduction of silver halide grains formed during precipitation. 3,892,574, Cl. 96-107.000.

Clark, John Charles: *See—*
  Van Amerongen, Edward; Beall, Glenn Lee; Clark, John Charles; and Reilly, Richard Joseph, 3,892,235.

Clark, Kenneth M., to Deutsch Company Electronic Components Division, The. Coupling for electrical connector or the like. 3,892,458, Cl. 339-90.00R.

Clark, Patrick: *See—*
  Pacheco, Francisco, 3,892,653.

Clark, Peter Stanley; and Bloodworth, David John, to Foseco International Limited. Ingot moulds. 3,892,611, Cl. 156-71.000.

Clarke, Warwick Kingston; Kenyon, Ronald Wynford; and Robinson, David, to Imperial Chemical Industries Limited. Coating compositions. 3,892,675, Cl. 252-301.30W.

Claudius Peters AG: *See—*
  Kayatz, Karl-Heinz, 3,892,044.

Clayton, Marvin Courtland, to American Funeral Supply Corporation. Gasket for sealing a casket. 3,892,417, Cl. 277-207.00R.

Clevenger, James T., Jr.; and Snyder, Gary C., to Sperry Rand Corporation. Fine speed control for a vehicle. 3,892,286, Cl. 180-77.00R.

Clifford, Peter J., to Raytheon Company. Speed measurement system. 3,893,076, Cl. 340-3.00D.

Closson, Addison W., Jr. Textured shoe stiffener blank. 3,892,078, Cl. 36-68.000.

Closure Industries, Inc.: *See—*
  Maguire, Daniel J., 3,892,325.

Coal Industry (Patents) Limited: *See—*
  Cooke, Michael Jonathan, 3,892,046.
  Kenn, Robert Charles; and Tate, David Arthur, 3,892,184.

Cobble, Henry H., to Aloe "99" Incorporated. Stabilized aloe vera gel and preparation of same. 3,892,853, Cl. 424-195.000.

Cobo Barrachina, Gonzalo, to Laboratorios Berenguer Beneyto S.A. Quinidine polymanuronate. 3,892,728, Cl. 260-209.00R.

Codrino, Giuseppe, to Cavis-Cavetti Isolati S.p.A. Junction box for motor vehicle electrical systems. 3,892,911, Cl. 174-59.000.

Coffey, Donald E.; Harrington, Robert E.; and Felton, Jeffrey L., to NCR Corporation. Replaceable currency or bill holder for a till tray. 3,892,309, Cl. 206-74.000.

Cognitronics Corporation: *See—*
  Shepard, David H.; and Gushue, Edward J., 3,893,079.

Cohen, Marvin: *See—*
  Von Strandtmann, Maximilian; Shavel, John, Jr.; Klutchko, Sylvester; and Cohen, Marvin, 3,892,739.

Cohnen, Wolfgang; and Peilstocker, Gunter, to Bayer Aktiengesellschaft. Process for stabilizing moldings of high molecular weight thermo-plastic polycarbonates. 3,892,889, Cl. 117-33.300.

Cole, Edward N., to General Motors Corporation. Quick heat manifold. 3,892,213, Cl. 123-122.00H.

Coleman, William H.: *See—*
  Miller, Lewis J.; and Coleman, William H., 3,892,500.

Combustion Equipment Associates Inc.: *See—*
  Lyshkow, Norman A., 3,892,549.

Combustion Power Company, Inc.: *See—*
  Benowitz, Sander, 3,892,658.

Commissariat a l'Energie Atomique: *See—*
  Roubeau, Pierre, 3,892,106.

Compagnie Electro-Mecanique: *See—*
  Gardey, Robert, 3,892,548.

Compagnie Generale d'Electricite: *See—*
  Godard, Bruno; Lacour, Bernard; and Michon, Maurice, 3,893,046.

Compton, William A.; Nachman, Joseph F.; and Seegall, Manfred I., to International Harvester Company. Sintered NO_x reduction catalysts. 3,892,836, Cl. 423-213.200.

Conco Inc.: *See—*
  Faletti, Vincent R., Jr., 3,892,324.

Conradi, Eugene P.: *See—*
  DePuydt, Frank A.; and Conradi, Eugene P., 3,892,296.

Consolidated Natural Gas Service Co., Inc.: *See—*
  Punwani, Dharamvir; Massey, Lester G.; and Tarman, Paul B., 3,892,682.

Consolidation Coal Company: *See—*
  Jamison, Will B., 3,892,100.

Constable, Geoffrey Ernest Patrick, to Smiths Industries Limited. Access- or trnansaction-control. 3,892,948, Cl. 340-149.00R.

Construction Materials Division, General Electric Company: *See—*
  Mees, Robert D.; Mittermaier, Armin F.; and Wilcox, Albert F., 3,892,115.

Contastin, Andre, to N. V. Bekaert S.A. Device and method for injecting liquids into a mixing head. 3,892,389, Cl. 259-8.000.

Continental Can Company, Inc.: *See—*
  Weatherly, Arden R.; and Buckman, Carson F., 3,892,828.

Control Data Corp.: *See—*
  Robbins, Douglas Alan, 3,893,190.

Cook Electric Company: *See—*
  Shylo, Paul, 3,892,929.

Cooke, Michael Jonathan, to Coal Industry (Patents) Limited. Fluidised bed apparatus. 3,892,046, Cl. 34-57.00A.

Cooper, Ned. High fructose corn syrup jellies. 3,892,871, Cl. 426-573.000.

Coppen, Peter J., to Hughes Aircraft Company. Production of mis integrated devices with high inversion voltage to threshold voltage ratios. 3,892,609, Cl. 148-188.000.

Coquin, Gerald Allan; Maldonado, Juan Ramon; and Maydan, Dan, to Bell Telephone Laboratories, Incorporated. Mask structure for X-ray lithography. 3,892,973, Cl. 250-505.000.

Corbin, Joseph G. Helicopter hook-up and static electricity grounding device. 3,893,005, Cl. 317-2.00E.

Cordi, Vincent A.: *See—*
  Bossen, Douglas C.; Cordi, Vincent A.; Hsiao, Mu-Yue; Shiffrin, Barry N.; and Glick, Ellis W., 3,893,070.

Corning Glass Works: *See—*
  Best, Howard S.; Bustraan, Daniel J.; and Philippon, Paul H., 3,892,333.
  Gulati, Suresh T.; Hagy, Henry E.; and McCartney, John S., 3,892,537.
  Halaby, Sami A.; Kenny, Neal S.; and Murphy, James A., 3,892,888.
  Levine, Stuart A.; and Potts, Robert S., 3,892,652.
  Messing, Ralph A., 3,892,580.
  Rittler, Hermann L., 3,892,897.
  Salisbury, Kenneth R.; and Settzo, Robert J., 3,892,651.

Corompt, Antoine, to Marrel, Bennes. Container-handling device for a self-loading vehicle. 3,892,323, Cl. 214-505.000.

Corporacion de Fomento de la Produccion: *See—*
  Sfeir, Alberto, 3,892,875.

Corrado, Joseph M.: *See—*
  Reines, Jose; Platt, Eric G.; White, Stanley E.; Corrado, Joseph M.; and Wawryszyn, Askold W., 3,893,024.

Corse, Louis. Method and device for regulating the tension and length of a sheet of material. 3,892,344, Cl. 226-44.000.

Costello, Richard C.: *See—*
  Troy, Walter C.; Novak, James J.; Costello, Richard C.; and Dearth, Raymond J., 3,892,272.

Coton, William Henry, to Dunlop Limited. Vehicle jack. 3,892,132, Cl. 73-457.000.

Cotter, John L., to Albert, Albert F. System and method for remote monitoring of animal temperature. 3,893,111, Cl. 343-6.50R.

Cotton, Incorporated: *See—*
  Swidler, Ronald; Sanderson, William A.; and Mueller, William A., 3,892,906.

Coulstring, Robert N., to Triangle Engineering, Inc. Weld coupon sample cutter. 3,892,089, Cl. 51-34.00D.

Coursin, David B.; and Marmarou, Anthony. System for stimulation and recording of neurophysiologic data. 3,892,227, Cl. 128-2.10B.

Couzens, Roy George Swain: *See—*
  Trueman, Frederick Ranson; Couzens, Roy George Swain; and Islip, Brian Henry, 3,892,338.

Covarrubias, George Salvador; and Slater, Ernest Charles, to CBF Systems Inc. Squib control circuit. 3,892,182, Cl. 102-70.20R.

Covarrubias, George Salvador, to C. B. F. Systems Inc. Shear valve with frangible fitting. 3,892,253, Cl. 137-68.000.

Crawford, Joseph H.: *See—*
  Carlson, Robert G.; Crawford, Joseph H.; Farmer, Edward R.; Murphy, Guy C.; and Salemme, Charles T., 3,892,612.

Crawford, Lloyd B., to Crawfords Foods Ltd. Brooding and rearing of poultry. 3,892,201, Cl. 119-17.000.

Crawfords Foods Ltd.: *See—*
  Crawford, Lloyd B., 3,892,201.

Crego, Willard: *See—*
  Arthur, William E.; Carrell, Terry E.; and Crego, Willard, 3,892,971.

Crites, Robert G., to General Tire & Rubber Company, The. Index means for tire-building apparatus. 3,892,616, Cl. 156-352.000.

Cronenberger, Michel; Laurent, Serge; and Mallet, Maurice, to Rhone-Poulenc, S.A. Fluidisable powder based on a heat-stable bis-imide resin. 3,892,708, Cl. 260-37.00N.

Crosfield Electronics Limited: *See—*
  Pugsley, Peter C., 3,893,166.

Crowther, Alan Lewis; and Spencer, Christopher Buxton, to Imperial Chemical Industries Limited. Production of maleic anhydride by catalytic vapor phase oxidation of glutaric acid or anhydride. 3,892,780, Cl. 260-346.800.

CRS Industries, Inc.: *See—*
  Haupt, Hans O., 3,892,544.

Cullen, Geoffrey Victor: *See—*
  Siviour, Neil Graham; Pearson, Grant Marshall; and Cullen, Geoffrey Victor, 3,892,661.

Cunningham, Andrew J.; and Tuffile, Fred M., to Avon Products, Inc. Hair shade adjuster. 3,892,845, Cl. 424-62.000.

Cuomo, Jerome J.; and Molzen, Walter W., Jr., to International Business Machines Corporation. Chemical sputtering purification process. 3,892,650, Cl. 204-192.000.

Curran, Jeremiah M. Fire protection system. 3,892,277, Cl. 169-16.000.

Currie, Grover C.; and Doll, Brendan L. Slitting roll. 3,892,157, Cl. 83-672.000.

Curtin, John J. Method and apparatus for facilitating testing the liquid absorptivity of soil. 3,892,126, Cl. 73-38.000.

Cyrus-Sobolewski, Jan: *See—*
  Hennel, Waclaw; Cyrus-Sobolewski, Jan; and Bartosik, Zbigniew, 3,892,535.

Dahlmann, Julius; and Volter, Gunter, to Opti-Holding AG. Slide-fastener stringer half with woven-in coupling element and method of making same. 3,892,262, Cl. 139-384.00B.

Dahm, Johann; Borck, Joachim; Nowak, Herbert; Simane, Zdenek; and Kayser, Detlev, to Merck Patent Gesellschaft mit beschrankter Haftung. Phenoxyacetic acid derivatives and process for the preparation thereof. 3,892,770, Cl. 260-326.100.

Dai Nippon Toryo Co., Ltd.: *See—*
  Masujima, Kiyohiko; Kotera, Noboru; and Hitomi, Teiichi, 3,892,520.

Daicel Ltd.: *See—*
  Shima, Keizo; and Ishihara, Tetsuo, 3,892,900.

Daily, Thomas Edward, to Fedders Corporation. Dishrack adjustment. 3,892,453, Cl. 312-351.000.

Daimler-Benz Aktiengesellschaft: *See—*
  Dobler, Helmut, 3,892,028.
  Gotz, Hans, 3,892,439.
  Saufferer, Helmut, 3,892,483.

Dalle, Jean Paul, to Omnium de Prospective Industrielle, S.A. Process for dyeing cellulosic materials. 3,892,521, Cl. 8-82.000.

Dancy, Julian H., to Texaco Inc. Method for reducing the strength of electrostatic fields in an oil tanker. 3,893,003, Cl. 317-2.00R.

Dancy, Julian H., to Texaco Inc. Apparatus for reducing the strength of electrostatic fields in an oil tanker. 3,893,004, Cl. 317-2.00R.

Danfoss A/S: *See—*
  Abildtrup, Jorgen, 3,892,840.
  Jensen, Arne, 3,893,192.

Daniels, Gerald C.: *See—*
  Stout, Daniel W., 3,892,662.

Danis, Louis J., to Eaton Corporation. Composite article and method of making same. 3,892,216, Cl. 123-191.00S.

Dann, Fred M.; and Reigel, James. Projection forming of three-dimensional metal objects. 3,892,506, Cl. 425-78.000.

D'Antonio, Renato A.; and Marton, Alejandro B., to International Data Sciences, Inc. Error correction system. 3,893,072, Cl. 340-146.1BA.

Darbo, Rolf E. Folding combined broiler, oven and stove. 3,892,222, Cl. 126-9.00R.

Dart Industries, Inc.: *See—*
  Kraynak, Joseph Stephen; and Blumenfield, Arthur, 3,892,427.

Data Royal, Incorporated: *See—*
  Stein, Charles W., 3,893,100.

Datacq Systems Corporation: *See—*
  Higgins, Leonard James, 3,892,305.

Dautzenberg, Frits M.: *See—*
  Naber, Jaap E.; and Dautzenberg, Frits M., 3,892,677.

Davidson, Edmund Benjamin: *See—*
  Kaplan, Michael; and Davidson, Edmund Benjamin, 3,893,127.

Davidson, Gordon M.: *See—*
  Hayden, Rodney; and Davidson, Gordon M., 3,893,194.

Davy-Ashmore Aktiengesellschaft: *See—*
  Heeg, Rudolf; and Striebich, Alfred, 3,892,798.

Dayton-Walther Corporation: *See—*
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De Laval Separator Company, The: *See—*
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Dearth, Raymond J.: *See—*
  Troy, Walter C.; Novak, James J.; Costello, Richard C.; and Dearth, Raymond J., 3,892,272.

De Bellomayre, Michel. Motor operated telescopic antenna for vehicles. 3,893,125, Cl. 343-903.000.

De Cat, Arthur Henri: *See—*
  Van Poucke, Raphael Karel; and De Cat, Arthur Henri, 3,892,576.

Decatox, GmbH: *See—*
  Roeser, Helmut; Volker, Herbert; and Brand, Hans-Dieter, 3,892,536.

Dedona, Francis A.: *See—*
  Farrant, David A.; and Dedona, Francis A., 3,892,511.

Deering Milliken Research Corporation: *See—*
  Klein, Norman E.; and King, Herbert R., 3,892,109.

Defosse, Georges Jean-Pierre Hubert, to Elphiac. System for adjusting the position of a coil. 3,892,938, Cl. 219-10.790.

DeJong, Dennis E. Alarm device for indicating the removal of a fire extinguisher. 3,893,095, Cl. 340-272.000.

Delmar Chemicals Limited: *See—*
  Podesva, Ctirad; Kohan, Geza; and Scott, William T., 3,892,802.

Delzenne, Gerard Albert: *See—*
  De Schrijver, Frans Carolus; and Delzenne, Gerard Albert, 3,892,642.

Demetron Gesellschaft fur Elecktronik-Werkstoffe mbH: *See—*
  Lutz, Klaus; and Golla, Manfred, 3,892,557.

Denki Onkyo Company, Ltd.: *See—*
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De Pierre, Vincent; and Gurney, Ferdinand J., to United States of America, Air Force. Method of fabricating a billet from metal preforms and metal powder. 3,892,030, Cl. 29-420.000.

DePriest, Donald R.; Brandon, Bobby C.; and Buie, Connell M., to Humboldt Products Corporation. Apparatus, process and product. 3,892,617, Cl. 156-353.000.

DePuydt, Frank A.; and Conradi, Eugene P., to Dico Company, Inc. Trailer hitch and brake actuator assembly. 3,892,296, Cl. 188-112.000.

De Schrijver, Frans Carolus; and Delzenne, Gerard Albert, to Agfa-Gevaert N.V. Photo-cycloaddition polymerization of bis-anthracene. 3,892,642, Cl. 204-159.110.

Desourdis, Robert I. Thin base self-tracking recording tape. 3,893,181, Cl. 360-84.000.

Dessy, Pietro: *See—*
  Canale, Giacomino; and Dessy, Pietro, 3,892,942.

Detch, Lewis; and Detch, Olive A. Locking means for double pin fluorescent lamps. 3,892,457, Cl. 339-54.000.

Detch, Olive A.: *See—*
  Detch, Lewis; and Detch, Olive A., 3,892,457.

Deuber, John M.: *See—*
  Stevens, Peter; and Deuber, John M., 3,892,638.

Deutsch Company Electronic Components Division, The: *See—*
  Clark, Kenneth M., 3,892,458.

Dever, James L.: *See—*
  Golborn, Peter; and Dever, James L., 3,892,578.

Diamond, Julius; and Tsuei, Ching Tan, to William H. Rorer, Inc. Naphthylalkanoic acids and their derivatives. 3,892,803, Cl. 260-559.00R.

Diamond, Julius; and Douglas, George Henry, to William H. Rorer, Inc. Tetrahydronaphthylalkanoic acids and their derivatives. 3,892,804, Cl. 260-559.00R.

Di Campli, Dominique: *See—*
Lainez, Lucien; Duiker, Fokke; Bayard, Joel; and Di Campli, Dominique, 3,892,025.

Dico Company, Inc.: *See—*
DePuydt, Frank A.; and Conradi, Eugene P., 3,892,296.

Diehl, Alan V. Transfer molding apparatus with resilient pad to distribute molding pressure. 3,892,512, Cl. 425-251.000.

Diehl, Francis Louvaine: *See—*
Edwards, James Byrd; and Diehl, Francis Louvaine, 3,892,681.

Dieter Haubold Industrielle Nagelgerate: *See—*
Lange, Wilfried, 3,892,313.

Difazio, Louis Thomas; and Augustine, Matthew Anthony, to E. R. Squibb & Sons, Inc. Steroid formulation. 3,892,857, Cl. 424-241.000.

Digital Equipment Corporation: *See—*
Kotok, Alan; Kent, Allan R.; and Gross, David A., 3,893,084.

Dill, Floyd E., to Halliburton Company. Retrievable self-decentralized hydra-jet tool. 3,892,274, Cl. 166-222.000.

dit Dalmy, Max Hercovici. Load-carrying push-carriage. 3,892,429, Cl. 280-36.00C.

Dittmann, Larry Eugene; and Lemke, Timothy Allen, to AMP Incorporated. Open barrel terminal and method for terminating an electrical wire therein. 3,892,459, Cl. 339-95.00R.

Djerassi, Isaac. Apparatus for filtration-leukopheresis for separation and concentration of human granulocytes. 3,892,236, Cl. 128-214.00R.

Dobler, Helmut, to Daimler-Benz Aktiengesellschaft. Method for producing a housing casing for a rotary piston internal combustion engine. 3,892,028, Cl. 29-156.4WL.

Dobson, Christopher David. Enclosures for vacuum coating. 3,892,198, Cl. 118-49.000.

Dr. Ing. h.c.F. Porsche, AG: *See—*
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Dodson, George Bertram, III, to RCA Corporation. Circuit for determining the time of transitions in an alternating signal. 3,892,949, Cl. 235-61.11E.

Dodson, George Bertram, III, to RCA Corporation. Average value crossover detector. 3,892,950, Cl. 235-61.11E.

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Doucherain, Jacques, to Cebal GP and Societe de Traitements Electrolytiques et Electrothermiques; and Electrolytiques et Electrothermiques. Means for heating a mold. 3,892,505, Cl. 425-41.000.

Doudlebsky, Ctibor; Jaros, Frantisek; Ferkl, Frantisek; Cap, Antonin; Ripka, Josef; and Junek, Jan, to Vyzkumny Ustav Bavlnarsky. Spinning machine construction. 3,892,063, Cl. 57-56.000.

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Dowbenko, Rostyslaw, to PPG Industries, Inc. Method of coating surfaces with high solids thermosetting beta-keto ester coating compositions and the resulting coated article. 3,892,903, Cl. 428-460.000.

Dowell, Frederick Sidney, to Dunlop Limited. Disc brakes. 3,892,293, Cl. 188-71.500.

Downes, Thomas. Domestic cleaning apparatus. 3,892,004, Cl. 15-102.000.

Drabek, Jozef, to Ciba-Geigy Corporation. Control of pests with o,s-dialkyl-s-(4-oxa-1,2,3-benzatriazinyl)-dithiaphosphates. 3,892,854, Cl. 424-200.000.

Drake, David L., to United States of America, Navy. Device for conversion and display of radar returns. 3,893,110, Cl. 343-5.0EM.

Drennhaus, Alfons, to International Harvester Company. Scraper and digger attachment for a tractor loader. 3,892,322, Cl. 214-131.00A.

Dresner, Thomas L., to Westinghouse Electric Corp. Holding arrangement for a main valve plug and a pilot valve plug. 3,892,382, Cl. 251-28.000.

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Dube, Jacques: *See—*
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Dubois, Jean-Claude, to U.S. Philips Corporation. Semiconductor device having an electroluminescent diode. 3,893,150, Cl. 357-17.000.

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Dudley, Richard J.; and Dudley, Harold A., to S. E. Hyman Company. Automobile seat cover. 3,892,440, Cl. 297-229.000.

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Duffy, Marcus L. Structural steel punch. 3,892,154, Cl. 83-368.000.

Duguay, Michel Albert, to Bell Telephone Laboratories, Incorporated. Optical scanner utilizing organ arrays of optical fibers. 3,892,468, Cl. 350-96.00B.

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Duke, Roy B., to Marathon Oil Company. Preparation of alkyl furans by dehydrocyclization. 3,892,783, Cl. 260-346.10R.

Dumke, William P.; and Woodall, Jerry M., to International Business Machines Corporation. Laser device having enclosed laser cavity. 3,893,044, Cl. 331-94.50H.

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Dunford, Donald. Controlled flying kite. 3,892,375, Cl. 244-153.00R.

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Dwyer, John Robert, Jr.; Karasa, Alvydas Petras; Bell, Jonathan Durand; and Allen, James Lawson, to Black and Decker Manufacturing Company, The. Spray apparatus operable by pressurized air. 3,892,359, Cl. 239-342.000.

Dykmans, Maximiliaan J. Tank winding and prestressing apparatus. 3,892,367, Cl. 242-7.220.

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Eauclaire, Thomas J. Method and means for putting additive in plastic and other materials. 3,892,390, Cl. 259-192.000.

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Ebnother, Anton; Gadient, Fulvio; and Suess, Rudolf, to Sandoz Ltd. Cyclo pentathiophene derivatives. 3,892,774, Cl. 260-332.20A.

Eckert, Hans-Werner; and Koppensteiner, Gunter, to Henkel & Cie, GmbH. Reaction products of ϵ-caprolactam with alkylene diamines. 3,892,806, Cl. 260-561.00A.

Edmonds, Walter R., to United States of America, Air Force. Laser site marking system. 3,892,488, Cl. 356-153.000.

Edwards, James Byrd; and Diehl, Francis Louvaine, to Procter & Gamble Company, The. Detergent compositions containing water insoluble starch. 3,892,681, Cl. 252-551.000.

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Egleston, Harry B. Flat end closure container with reclosable pour spout. 3,892,347, Cl. 229-17.00R.

Eglin, Hans, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Target simulator for a sighting apparatus. 3,892,352, Cl. 235-61.50S.

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Ehrreich, John E.; and Reti, Adrian R., to Graham Magnetics. Composition of metal salt crystals having a polymeric coating. 3,892,673, Cl. 252-62.540.

Eichenberger, Werner, to Aktiengesellschaft Gebruder Loepfe. Optoelectrical apparatus with directional light sources for detecting reflection behaviour of an object. 3,892,492, Cl. 356-199.000.

Eichenhofer, Kurt-Wilhelm; and Schliebs, Reinhard, to Bayer Aktiengesellschaft. Production of azines. 3,892,805, Cl. 260-566.00B.

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Erlemann, Gustav; and Ippen, Hellmut, Dr., to Hoffmann-La Roche Inc. Method of protecting the skin from ultraviolet radiation. 3,892,844, Cl. 424-59.000.

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Felt, Maurice D., to Sacomo Sierra Inc. Seal ring. 3,892,418, Cl. 277-205.000.

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Ferris, Ray L., to Pullman Incorporated. Fifth wheel plate assembly for trailer hitch. 3,892,426, Cl. 280-432.000.

Fest, Christa; and Hammann, Ingeborg, to Bayer Aktiengesellschaft. O-Alkyl-O-[3-cyano-quinolyl-(2)]-thionophosphonic acid esters. 3,892,753, Cl. 260-283.0CN.

Feterl, Leon G. Bale handling and feeding container. 3,892,202, Cl. 119-60.000.

Finch, DeVer C., to Honeywell Information Systems Inc. Apparatus for producing timing signals that are synchronized with asynchronous data signals. 3,893,033, Cl. 328-63.000.
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Harvey, Benjamin F. Variable speed hydraulic transmission. 3,892,072, Cl. 60-487.000.
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Hauck, Edgar, to Frankische Isolierrohr-und Metallwaren Werke Gebr. Kirchner. Electrical conduit containing electrical conductors. 3,892,912, Cl. 174-68.00C.
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- Klimkovich, Nikolai Semenovich: *See—*
  - Ilinkov, Dmitry Vladimirovich; Volpin, Pavel Ilich; Rumyantsev, Vasily Petrovich; Artemenko, Stanislav Arsenievich; Alivoivodich, Miro; Ragulina, Raisa Ivanovna; Zadorozhny, Vasily Grigorievich; Varen, Viktor Viktorovich; Emlin, Boris Ivanovich; Gasik, Mikhail Ivanovich; Khitrik, Spiridon Iosifovich; Klimkovich, Nikolai Semenovich; Novikov, Anatoly Yakovlevich; and Gasik, Ljudmila Ivanovna, 3,892,558.
- Klingler, Josef F. Pizza pie and method of forming the same. 3,892,868, Cl. 426-94.000.
- Klushin, Nikolai Alexandrovich; Maslakov, Petr Avramovich; and Kotov, Vladimir Petrovich. Portable pneumatic impact tool. 3,892,280, Cl. 173-162.000.
- Klutchko, Sylvester: *See—*
  - Von Strandtmann, Maximilian; Shavel, John, Jr.; Klutchko, Sylvester; and Cohen, Marvin, 3,892,739.
- Knifton, John F., to Texaco Inc. Selective carboxylation process. 3,892,788, Cl. 260-410.90R.
- Knudson, Kay L.: *See—*
  - Thorne, Gale H.; Wood, Orin Lew; and Knudson, Kay L., 3,892,628.
- Knutzen, Ted H.: *See—*
  - Gunderlock, Richard P.; and Knutzen, Ted H., 3,892,497.
- Kobayashi, Akira, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Combustion device for heat motors. 3,892,206, Cl. 123-8.090.
- Kobayashi, Kazuhiko; and Oizumi, Toshiro, to Mitsubishi Denki Kabushiki Kaisha. Process for electrical discharge shaping and apparatus therefor utilizing different shape wave forms. 3,892,936, Cl. 219-69.00P.
- Kobayashi, Makio: *See—*
  - Uchiyama, Hisashi; Meno, Naohiko; Senjo, Teizo; and Kobayashi, Makio, 3,892,837.
- Kobayashi, Toshio: *See—*
  - Mori, Akikazu; Nara, Hideo; Kataoka, Toshiki; Kato, Teiji; Tomoshige, Toru; Funakoshi, Katsumi; and Kobayashi, Toshio, 3,892,717.
- Kobori, Rinei. Process and a device for butt jointing and assembling panels of a building. 3,892,098, Cl. 52-270.000.

Kobylinski, Joseph Anthony: *See—*
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Kobzina, John W., to Chevron Research Company. 3,5-Dimethyl-2-thienyl-(n-haloalkylthiocarboxanilide) herbicides. 3,892,775, Cl. 260-332.20C.

Koch, John K. Back lighted panel. 3,892,080, Cl. 40-106.100.

Koetke, Klaus-Dieter: *See—*
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Kogure, Yasuzi: *See—*
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Kohan, Geza: *See—*
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Kohke, Stephen J., to Thomas & Betts Corporation. Bundling strap with self-contained severing means. 3,892,011, Cl. 24-16.0PB.

Kohn, Herbert Dietrich August: *See—*
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Kokolis, Harry G.: *See—*
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Kolen, Eugene P.; and Golosinec, Olga C., to Kraftco Corporation. Emulsified oil dressing. 3,892,873, Cl. 426-602.000.

Koleske, Joseph Victor; Whitworth, Clyde Jesse, Jr.; and Lundberg, Robert Dean, to Union Carbide Corporation. Polyesters blended with cyclic ester polymers. 3,892,821, Cl. 260-860.000.

Kollmeyer, Willy D.; and Soloway, Samuel B., to Shell Oil Company. 1-(Phenylazo or substituted phenylazo)-2-imidazolidinones. 3,892,724, Cl. 260-140.000.

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Kolm, Eric A. Acoustic activated switch. 3,892,920, Cl. 179-1.0VC.

Kolster, Edward J.; Bushyhead, Jess C.; and Kolster, Harvey L., to Hallmark Cards, Incorporated. Combination storage and display rack. 3,892,450, Cl. 312-117.000.

Kolster, Harvey L.: *See—*
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Komatsu, Akira: *See—*
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Komatsu, Yoshihiro; and Yamaguchi, Kanemichi, to Toyo Seikan Kaisha Limited. Process for the preparation of high-temperature short-time sterilized packaged articles. 3,892,058, Cl. 53-21.0FC.

Kondo, Takamitsu: *See—*
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Konishiroku Photo Industry Co., Ltd.: *See—*
Van der Winden, Johannes Bernardus, 3,892,176.

Koo, Bonny B. Putting practice green. 3,892,412, Cl. 273-176.00H.

Kooi, Else, to U.S. Philips Corporation. Method of manufacturing a semiconductor device. 3,892,033, Cl. 29-576.000.

Koppensteiner, Gunter: *See—*
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Kormer, Vitaly Abramovich: *See—*
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Kotok, Alan; Kent, Allan R.; and Gross, David A., to Digital Equipment Corporation. Memory access control system. 3,893,084, Cl. 340-172.500.

Kotos, Peter; and Kokolis, Harry G., to General Electric Company. Shock-resistant indicating device. 3,893,052, Cl. 335-229.000.

Kotov, Vladimir Petrovich: *See—*
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Kranenberg, Helmut, to Bethlehem Steel Corporation. As-worked, heat treated cold-workable hypoeutectoid steel. 3,892,602, Cl. 148-36.000.

Krasner, Efim Elevich: *See—*
Almen, Iosif Abramovich; Krasner, Efim Elevich; Dunaevsky, Vladimir Izrailevich; and Kireev, Ivan Nikitich, 3,892,152.

Krause, Richard P.; and Montgomery, Harry T., to Pennsylvania Engineering Corporation. Metallurgical vessel having restraining means. 3,892,394, Cl. 266-36.00P.

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Casterline, Russell Carson; Krawiec, Zbigniew Apoloniusz; and Peterson, Ralph Broman, 3,892,928.

Kraynak, Joseph Stephen; and Blumenfield, Arthur, to Dart Industries, Inc. Personalized computer printed hard covered book. 3,892,427, Cl. 281-15.00R.

Kreinheder, Donald E.: *See—*
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Kriechbaum, Karl; and Ahrens, Karl, to Licentia-Patent-Verwaltungs-G.m.b.H. Tube tapering apparatus. 3,892,151, Cl. 82-4.00C.

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Kronn, Willem L., to Spin Physics, Inc. Magnetic record/reproduce head and manufacturing method therefor. 3,893,189, Cl. 360-127.000.

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Kuhn, Gregory L., to Motorola, Inc. Method for filling grooves and moats used on semiconductor devices. 3,892,608, Cl. 148-188.000.

Kuhn, Karl; and Bouquet, Jean-Claude, to Societe d'Etudes de Machines Thermiques. Cooled exhaust valve for an internal combustion engine. 3,892,210, Cl. 123-90.300.

Kulik, Herbert S.; and Schachter, Jacob. Sealed envelope examining device for detecting the presence of metal. 3,893,022, Cl. 324-41.000.

Kumazawa, Shozo: *See—*
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Kurozumi, Seizi; Toru, Takashi; and Ishimoto, Sachio, to Teijin Ltd. Process for preparing hydroxycyclopentenone derivatives using microorganisms. 3,892,630, Cl. 195-51.00R.

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Lainez, Lucien; Duiker, Fokke; Bayard, Joel; and Di Campli, Dominique, to Thompson-Brandt. Method of manufacturing electromechanical vibration pick-ups. 3,892,025, Cl. 29-169.500.

Laing, Nikolaus. Spherical plain bearing. 3,892,448, Cl. 308-230.000.

Laing, Virgil Lee: *See—*
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Lampkin, James G., to Lissatronic Corporation. Sound to image translator. 3,892,478, Cl. 353-15.000.

Land, Edwin H., to Polaroid Corporation. Viewer providing automatic cassette ejection. 3,892,477, Cl. 352-74.000.

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Lang, Irving M. Boat ladder. 3,892,290, Cl. 182-22.000.

Lange, Wilfried, to Dieter Haubold Industrielle Nagelgerate. Magazine strip for ornamental nail driving apparatus. 3,892,313, Cl. 206-346.000.

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Lazzarini, Donald J.; and Schultz, Lewis K., to International Business Machines Corporation. Process for selectively forming electrophoretic coatings on electrical contacts. 3,892,646, Cl. 204-181.000.

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Lebeaux, Maxim I.: *See—*
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Lebrero Martinez, Isidoro. Vibrating roller. 3,892,496, Cl. 404-117.000.

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Leclercq, Gerard, to Societe Europeene de Propulsion. Process for plasma spraying fiber-reinforced thermosetting resin laminates. 3,892,883, Cl. 427-34.000.

Lee, Art, to General Electric Company. Annunciator circuit. 3,893,091, Cl. 340-213.100.

Lee, Hua-Tung: *See—*
Ho, Allen P.; and Lee, Hua-Tung, 3,893,080.

Lehle, Erhard. Heating timer for pulse welders. 3,892,941, Cl. 219-113.000.

Leibfried, Raymond T., to Hercules Incorporated. Hydrogenation of dmt process residue and distilled dmt process residue. 3,892,796, Cl. 260-468.00K.

Leitz, Wilfried. Cover, especially for plastic containers. 3,892,327, Cl. 215-253.000.

Lemke, Timothy Allen: *See—*
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Lennox, William Murdoch, to National Research Development Corporation. Endoprosthetic shoulder joint. 3,891,998, Cl. 3-1.910.

Leo, Bruno S., to Hughes Aircraft Company. Vuilleumier refrigerator hot cylinder burner head. 3,892,102, Cl. 62-6.000.

Leonard, Ronald J., to Baxter Laboratories, Inc. Rigidly mounted bubble-type blood oxygenator having flexible flow channels. 3,892,534, Cl. 23-258.500.

Lerner, Robert. Electric bottle warmer. 3,892,945, Cl. 219-437.000.

Letot, Incorporated: *See—*
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Leveen, Harry H. Disposable plastic blood vessel clamp. 3,892,241, Cl. 128-325.000.

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Levy, Jean, to Omnium Chimique Societe Anonyme. Process of preparation of vincamine from tabersonine. 3,892,755, Cl. 260-287.00R.

Levy, Warren W., to Simco Company, Inc., The. Electrostatic laminating apparatus and method. 3,892,614, Cl. 156-272.000.

Libeer, Marcel Jan: *See—*
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Lienemann, Ernst, to VEB Nahmaschinenwerk Wittenberge. Driving gear for the looper of a chain stitch sewing machine. 3,892,193, Cl. 112-200.000.

Lin, Frank W., to Qume Corporation. Stepping motor drive circuit. 3,893,012, Cl. 318-696.000.

Lin, Hung Chang. Metal nitride oxide semiconductor integrated circuit structure. 3,893,152, Cl. 357-23.000.

Lin, Paul T.: *See—*
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Lincoln, Joseph A.; and Riopelle, Joseph A., III, to Midland-Ross Corporation. Method of nitriding. 3,892,597, Cl. 148-16.600.

Lincoln, Milan L., to Motorola, Inc. Lead frame for the manufacture of electric devices having semiconductor chips placed in a face to face relation. 3,893,158, Cl. 357-70.000.

Lindenberg, Theodore. Full range electrostatic loudspeaker for audio frequencies. 3,892,927, Cl. 179-111.00R.

Linder, Jerome, to Sandoz-Wander, Inc. 1-(M-trifluoromethylphenyl)-5-halopyridazones-(6) as sleep inducers. 3,892,859, Cl. 424-250.000.

Linder, John L., to United States of America, Navy. Sweep and memory control circuit. 3,893,115, Cl. 343-7.00A.

Lindquist, Robert H., to Chevron Research Company. Production of hydrocarbons from underground formations. 3,892,270, Cl. 166-251.000.

Lioux, Jean, to La Precision Industrielle. Rotary hydraulic jack device. 3,892,165, Cl. 91-420.000.

Lissant, Kenneth J., to Petrolite Corporation. Non-Newtonian nutritive compositions. 3,892,881, Cl. 426-602.000.

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Ljung, Torsten Nickolaus. Method for manufacturing multi-story housing with floor-slabs, bearing walls and partitions cast on the ground level. 3,892,055, Cl. 52-745.000.

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Lockard, Joseph Larue, to AMP Incorporated. Miniature momentary rotary type switch for resetting electronic watch digital display. 3,892,931, Cl. 200-11.00R.

Lofquist, Robert Alden, to Allied Chemical Corporation. Tertiary alkanolamines to reduce ozone fading of dyed polyamide fibers. 3,892,525, Cl. 8-165.000.

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Logan, Ted J., to Procter & Gamble Company, The. Clear flexibilized epoxy resins. 3,892,684, Cl. 260-2.00N.

Lohr, Delmar F., Jr.; and Kay, Edward L., to Firestone Tire & Rubber Company, The. High temperature stabilized polybutadiene resin. 3,892,693, Cl. 260-23.70R.

Lomasney, Henry L. Apparatus and method for dispersing and comminuting the solid in a solid-liquid mixture. 3,892,364, Cl. 241-15.000.

Lombardino, Joseph G., to Pfizer Inc. Process for the production of carboxamides of oxo-1,2-benzothiazine-1,1-dioxides. 3,892,740, Cl. 260-243.00R.

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Lotspeich, James F., to Hughes Aircraft Company. Electro-optical variable focal length lens using optical ring polarizer. 3,892,469, Cl. 350-150.000.

Lotspeich, James F., to Hughes Aircraft Company. Optical device for transforming monochromatic linearly polarized light to ring polarized light. 3,892,470, Cl. 350-157.000.

Lovelock, James Ephraim. Electron capture detector systems. 3,892,968, Cl. 250-389.000.

Lovness, William R., to Minnesota Mining and Manufacturing Company. Coating of solid substrates with magnetically propelled particles. 3,892,908, Cl. 428-329.000.

Lubrizol Corporation, The: *See—*
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- Lucien, Rene. Electro-hydraulic servo-distributor. 3,892,260, Cl. 137-625.620.
- Lundberg, Robert Dean: *See—*
  - Koleske, Joseph Victor; Whitworth, Clyde Jesse, Jr.; and Lundberg, Robert Dean, 3,892,821.
- Lutz, Klaus; and Golla, Manfred, to Demetron Gesellschaft fur Elecktronik-Werkstoffe mbH. Process for the production of gold powder in platelet form. 3,892,557, Cl. 75-0.50A.
- Lybarger, James H.; and Scheuerman, Ronald F., to Shell Oil Company. Self-thinning and neutralizing thickened aqueous liquid. 3,892,275, Cl. 166-250.000.
- Lynd, Anita Lynda Lucrece: *See—*
  - Humber, David Cedric; and Lynd, Anita Lynda Lucrece, 3,892,736.
- Lyshkow, Norman A., to Combustion Equipment Associates Inc. Gas dilution apparatus. 3,892,549, Cl. 55-267.000.
- M & T Chemicals Inc.: *See—*
  - Gitlitz, Melvin H., 3,892,862.
  - Gitlitz, Melvin H.; and Kushlefsky, Bernard G., 3,892,863.
  - Touval, Irving, 3,892,667.
- Mabie, Curtis P., Jr., to American Dental Association. Adhesive refractory protective composition for investment casting. 3,892,579, Cl. 106-38.300.
- Macchi, Romualdo. Beam structures. 3,892,096, Cl. 52-227.000.
- MacDonald, Joseph R. Rotatable drive operated by highway traffic. 3,892,136, Cl. 74-14.000.
- Madjid, A. Hamid, to United States of America, Navy. Layered superlattic switching and negative resistance devices. 3,893,148, Cl. 357-16.000.
- Maeda, Takuma: *See—*
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- Maeda, Teizou: *See—*
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- Maejima, Tsugie, to Takeda Riken Kogyo Kabushiki Kaisha. Program controlled testing system. 3,892,955, Cl. 235-153.0AC.
- Magerlein, Barney J., to Upjohn Company, The. 16-Methyl and 16,16 dimethyl PGA_2 compounds. 3,892,795, Cl. 260-468.00D.
- Magor, Lincoln Stoddard, to Mimik Limited. Servo control for machine tools. 3,892,164, Cl. 91-378.000.
- Maguire, Daniel J., to Closure Industries, Inc. Child proof container closure. 3,892,325, Cl. 215-219.000.
- Maguire, Walter W.: *See—*
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- Pacheco, Francisco, to Ebert, Michael; Clark, Patrick; Girone, Carmine Joseph; and Pacheco, F., part interest to each. Hydrogen generator. 3,892,653, Cl. 204-238.000.
- Page, Derrick J.; and Roberts, John S., to Westinghouse Electric Corp. Light activated thyristor with high di/dt capability. 3,893,153, Cl. 357-38.000.
- Paillard S.A.: *See—*
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- Pallingen, Hans-G; Vinatzer, Alex; and Kapfinger, Wolfgang, to Durst Ag. Fabrik Fototechnischer Apparate Bozen. Light measuring process and apparatus. 3,892,493, Cl. 356-226.000.
- Palumbo, Arnaldo. Voice for dolls or puppets, provided with an anchoring organ. 3,892,085, Cl. 46-180.000.
- Panacek, Anton F. Vapor seal unit. 3,892,329, Cl. 220-85.0VR.
- Pankov, Vasily Ivanovich: *See—*
  - Paton, Vladimir Evgenievich; Smolyarko, Vladimir Borisovich; Belfor, Mikhail Gdal Gershovich; Pichak, Vladimir Grigorievich; Savich, Igor Mavrikievich; Rybchenkov, Alexandr Grigorievich; Pankov, Vasily Ivanovich; and Ignatushenko, Arkady Anatolievich, 3,892,937.
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- Paredes, Candelario; and Horn, Robert, to Forney Engineering Company. Crane boom angle indication and warning system. 3,893,093, Cl. 340-267.00C.
- Park, Charles Lanier. Surgical needle apparatus. 3,892,240, Cl. 128-339.000.
- Park, Robert H.; Klas, Harold W.; and Estes, Nelson N., to United States of America, Navy. Detection streamer. 3,893,063, Cl. 340-6.00R.
- Parsons, Anthony Mesnard, to Lever Brothers Company. Process for the extraction of glyceride oils by selective solvents. 3,892,789, Cl. 260-428.500.
- Parton, Brian, to Imperial Chemical Industries Limited. Reactive dyestuffs. 3,892,742, Cl. 260-246.00R.
- Pass, Herbert A.; Gerber, Hans-Rudolf; and Green, David Howard, to Ciba-Geigy Corporation. Herbicidal agents. 3,892,555, Cl. 71-93.000.
- Pastor, Gerald R.: *See—*
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- Patterson, Joe G. Wall switch extension. 3,892,935, Cl. 200-331.000.
- Patterson, John F., to United States of America, Energy Research and Development Administration. Radial blanket assembly orificing arrangement. 3,892,625, Cl. 176-50.000.
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  - Fox, Roy K. N.; and Patterson, Rowan W., 3,892,140.
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- Peabody, Ralph C., to Tennant Company. Power floor treating apparatus. 3,892,003, Cl. 15-49.00C.
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- Persson, Karl Rune, to Sprinter Pack AB. Carton box. 3,892,349, Cl. 229-37.00R.
- Pesak, Albert, Jr. Frictionally engageable heat sink for solid state devices. 3,893,161, Cl. 357-81.000.
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- Phillips, Charles Edward, Jr.; and Wells, Thomas Robert, to Dayton-Walther Corporation. Landing gear with shaft detent clip retainer. 3,892,141, Cl. 74-475.000.
- Phillips, David C.; and Shaw, Bevil J., to United States of America, Navy. Electrochemical deposition of bone. 3,892,648, Cl. 204-181.000.
- Phillips, David C.; and Shaw, Bevil J., to United States of America, Navy. Electrodeposition of bone within a plastic matrix. 3,892,649, Cl. 204-181.000.
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- Plantif, Bernard E.; and Hiss, Andre H., to Societe Nationale des Poudres et Explosifs. Pyrotechnic positioning device. 3,892,073, Cl. 60-635.000.
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Rimmi, Pentti Ilmari, to Oy Helo-Tehtaat-Helo Fact. Ltd. Control system for an electrical heating device, and particularly for an electrical sauna stove. 3,892,946, Cl. 219-486.000.
Ring, John J.; and Miller, William R. Fluid biased head assembly. 3,893,185, Cl. 360-103.000.
Ringer, Kenneth M., to A.R.F. Products, Incorporated. Remote control system. 3,893,121, Cl. 343-225.000.
Riopelle, Joseph A., III: *See—*
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Rist, Michel, to Societe Anonyme Francaise du Ferodo. Vehicle disc clutch with plural release levers. 3,892,302, Cl. 192-91.00A.
Rittler, Hermann L., to Corning Glass Works. Process for making base metal titanate catalytic device. 3,892,897, Cl. 427-463.000.
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Roeshman, Benjamin. Paper board seat structure. 3,892,441, Cl. 297-461.000.
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Rose, Jacques H., to O.P.I. Textile. Device for the pneumatic squeezing of a continuously moving thread. 3,892,018, Cl. 28-62.000.
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Roubeau, Pierre, to Commissariat a l'Energie Atomique. Method for reducing the consumption of a cryostat and a device for carrying out said method. 3,892,106, Cl. 62-514.000.
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Ruhe, Jochen; and Beck, August, to Balzers Patent-und Beteiligungs Aktiengesellschaft. Sealing member for flanged joints. 3,892,416, Cl. 277-29.000.
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Sahm, Wilfried, to Hoechst Aktiengesellschaft. Aromatic azomethines. 3,892,807, Cl. 260-566.00F.
Sakairi, Hiroshi; Tezuka, Tetuyosi; and Watanabe, Noboru, to Gumze Ltd. Air bag. 3,892,425, Cl. 280-150.0AB.
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Sallay, Stephen I., to Purdue Research Foundation. Trialkylmethanobenzazocinols. 3,892,757, Cl. 260-293.540.
Salonen, Albert R. Method and application for applying liquefied adhesive material. 3,892,621, Cl. 156-513.000.
Salvati, John G.; and Ricci, Louis N., to Westinghouse Electric Corp. Solenoid actuated circuit breaker operator. 3,893,050, Cl. 335-1.000.
Sampson, Keith George; Jenkins, Victor Frederick; and Bunker, Anthony John, to Laporte Industries Limited. Hydroxy copolymer reacted with a lactone and polyisocyanate crosslinked. 3,892,714, Cl. 260-77.5CR.
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Saucy, Gabriel, to Hoffmann-La Roche Inc. Steroidal intermediates. 3,892,779, Cl. 260-345.200.
Saucy, Gabriel, to Hoffmann-La Roche Inc. Steroidal intermediates. 3,892,812, Cl. 260-594.000.
Saufferer, Helmut, to Daimler-Benz Aktiengesellschaft. Distance warning device for vehicles. 3,892,483, Cl. 356-4.000.
Saunders, Don A., to Mark Products, Inc. Apparatus and method for adjusting the output of a plurality of geophones to eliminate the effect of variations in the near surface character of the earth. 3,893,066, Cl. 340-15.5GC.
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Schaefer, Louis F.; and Gardiner, Kenneth W., to Savin Business Machines Corporation. Automatic development electrode bias control system. 3,892,481, Cl. 355-10.000.
Scharfe, Gerhard; and Wilhelms, Rolf-Ernst, to Bayer Aktiengesellschaft. Catalytic conversion of hydrocarbon chlorides to hydrogen chloride and hydrocarbons. 3,892,818, Cl. 260-676.00R.
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Schmerling, Louis, to Universal Oil Products Company. Flame retardant compounds and compositions of matter. 3,892,815, Cl. 260-649.00R.

Schmidt, Dieter; Lorkin, Clive Graham; and Schiffarth, Josef, to Foseco International Limited. Treatment of electrodes. 3,892,886, Cl. 427-59.000.
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Scholz, Hans, to English Electric Valve Company Limited. Vidicon camera tube with internal light source for setting dark current level. 3,892,994, Cl. 313-371.000.
Schoonman, Marten Leonard. Readily separable instant beverage charge. 3,892,867, Cl. 426-93.000.
Schrader, Preston Henry, to Rexnord Inc. Control of reversible vibratory equipment. 3,892,308, Cl. 198-220.0CC.
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Semp, Bernard Albert, to American Cyanamid Company. Sterile rubber glove or catheter package. 3,892,314, Cl. 206-363.000.
Senften, David A., to Hunter Engineering Company. Electronic runout compensator and method of electronically compensating for wobble run-out in a rotating body. 3,892,042, Cl. 33-301.000.
Senger, John F., to Chevron Research Company. Cold start method and apparatus for carrying out same. 3,892,218, Cl. 123-127.000.
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Seth, Ram Gopal. Method and apparatus for generating high temperature zone using fixed-fluidized bed. 3,892,538, Cl. 23-295.000.
Setterstrom, Carl A., to Cities Service Company. Method of preparing polyethylene foam. 3,892,690, Cl. 260-2.5HA.
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Sfeir, Alberto, to Corporacion de Fomento de la Produccion. Process for the preservation of sea urchin gonads by quick freezing. 3,892,875, Cl. 426-303.000.
Shakib, Iraj D., to International Business Machines Corporation. Single print element print carrier with self-contained selection function. 3,892,304, Cl. 197-18.000.
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Shen, Tsung-Ying; Jones, Howard; and Mulvey, Dennis M., to Merck & Co., Inc. Acetaminophen esters of aryl salicylic acids. 3,892,769, Cl. 260-326.13R.
Shepard, David H.; and Gushue, Edward J., to Cognitronics Corporation. Character reading apparatus with improved document scanner. 3,893,079, Cl. 340-146.30F.
Sheridan, Arthur L.; and Marbach, Walter V., to Union Carbide Corporation. End plug closures for shirred casing sticks and methods for making them. 3,892,869, Cl. 426-138.000.
Sherman, Benjamin F., Jr. Catoptric system for simultaneous concentration of light, laser, and other type paraxial rays into beams. 3,892,476, Cl. 350-294.000.
Shiba, Keisuke; and Hirose, Takeshi, to Fuji Photo Film Co., Ltd. Multilayer color photographic material. 3,892,572, Cl. 96-74.000.
Shibata, Akira; and Okamoto, Atutoshi, to Nippondenso Co., Ltd. Digital differentiation circuit. 3,892,952, Cl. 235-151.320.
Shibata, Kazuo; and Matsushita, Takao, to Kanzaki Paper Mfg. Co. Ltd. Process for making an electrostatic recording medium. 3,892,887, Cl. 427-121.000.
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Shlesinger, Bernard Edward, Jr.; and Mariner, Charlie D. Electromagnetic reed switch. 3,893,051, Cl. 335-151.000.
Shoemaker, William M. Multichannel magnetic head unit. 3,893,188, Cl. 360-121.000.
Shope, Steven L.: *See—*
  Freeman, John R.; Poukey, James W.; Shope, Steven L.; and Yonas, Gerold, 3,892,970.
Short, George E., to G. D. Searle & Co. Method for fertile breeding control in female bovine. 3,892,855, Cl. 424-238.000.
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Shylo, Paul, to Cook Electric Company. Fault detector and current limiter. 3,892,929, Cl. 179-175.30R.
Sianesi, Enrico, to Recordati SA. Method for preparing aminoalkanol esters of 3-methylflavone-8-carboxylic acid. 3,892,759, Cl. 260-293.580.

- Sieffert, William G., to Olinkraft Inc. Shipping container. 3,892,350, Cl. 229-40.000.
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- Siemens Aktiengesellschaft: *See—*
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  - Kellner, Josef; and Kowalczyk, Hans, 3,893,170.
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- Silberg, Paul A.: *See—*
  - Edwards, Robert; and Silberg, Paul A., 3,892,926.
- Silzars, Aris; and Ballonoff, Aaron, to Signetics Corporation; and Watkins-Johnson Company. Semiconductor target with integral beam shield. 3,893,157, Cl. 357-69.000.
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- Simco Company, Inc., The: *See—*
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- Simeonov, Vasil Dragomirov; Mednikarov, Borislav Dimitrov; and Malinowski, Jordan Petrov, to Zlafop Pri Ban of Bulgaria. Photomasks. 3,892,571, Cl. 96-68.000.
- Simms, Robert A. Process for changing the tint of a photochromic material and material formed thereby. 3,892,582, Cl. 106-52.000.
- Simon, Myron S., to Polaroid Corporation. Naphthol sulfonamidonaphthalides. 3,892,778, Cl. 260-343.20R.
- Simons, Robert W.; and Acree, William M., to Rohm and Haas Company. Feline panleukopenia vaccine. 3,892,627, Cl. 195-1.300.
- Simpson, William R. J., to Sandoz, Inc. Bis[1-(4-thieno[3,2-c]pyridinyl)-4-piperidyl]alkanes. 3,892,758, Cl. 260-293.570.
- Singer Company, The: *See—*
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  - Prill, Robert S., 3,893,103.
- Sira Institute: *See—*
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- Sircar, Jagadish C.; and Zinnes, Harold, to Warner-Lambert Company. Indolosteroids (6,12a-dimethylindeno-(4,5c)-carbazoles) and process therefor. 3,892,767, Cl. 260-315.000.
- Sittmann, Brigitte, to Vereinigte Baubeschlagfabriken Gretsch and Co. GmbH. Support device for ski safety bindings. 3,892,420, Cl. 280-11.35T.
- Siviour, Neil Graham; Pearson, Grant Marshall; and Cullen, Geoffrey Victor, to University of Melbourne. Removal of pollutants from water. 3,892,661, Cl. 210-40.000.
- Skaugen, Borgeir, to Beloit Corporation. Inlaying continuous filamentous reinforcement in a nonwoven web. 3,892,622, Cl. 162-108.000.
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- Small, Charles E.; Small, Lawrence E.; Small, Charles R.; and Ellis, Harlan F. Educational game. 3,892,408, Cl. 273-135.0AB.
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- Small, Lawrence E.: *See—*
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- Smeets, Gerard Gaston Frans, to Producto Machine Company. Angularly adjustable punch adaptor. 3,892,158, Cl. 83-699.000.
- Smeggil, John G.; and Charles, Richard J., to General Electric Company. Air-stable compact of cobalt-rare earth alloy particles and method. 3,892,599, Cl. 148-31.570.
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- Smith, Alexander; and Baggs, Burton D., Jr., to Smitty's Incorporated. Rotary tiller-mulcher. 3,892,278, Cl. 172-70.000.
- Smith, Andrew W., Jr., to Westinghouse Electric Corp. Rolling mill gauge control. 3,892,112, Cl. 72-11.000.
- Smith, Arnold Ray, to Bell Telephone Laboratories, Incorporated. Flood cover for pedestal closure. 3,892,910, Cl. 174-37.000.
- Smith-Berger Manufacturing Corporation: *See—*
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- Smith, Geoffrey Allan; and Young, Richard. Fibre treatment. 3,892,893, Cl. 427-352.000.
- Smith, Harry Davis, Jr., to Texaco Inc. Methods for thermal well logging. 3,892,128, Cl. 73-154.000.
- Smith, John Edward; and Anderson, John Galloway, to Imperial Chemical Industries Limited. Process for growing a fungus. 3,892,629, Cl. 195-36.00R.
- Smith, Marjorieann M. Trailer. 3,892,423, Cl. 280-106.00T.
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- Sneider, Vincent R. Disposable syringe kit. 3,892,311, Cl. 206-229.000.
- Snell, Donald Noel, to Mannesmann-Meer Aktiengesellschaft. Hydraulic presses. 3,892,122, Cl. 72-453.000.
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- Societe Suisse pour l'Industrie Horlogere Management Services S.A.: *See—*
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- Sokol, Vincent. Braiding machine wire control. 3,892,161, Cl. 87-29.000.
- Solomon, Abby R., to Xerox Corporation. Recorder for monitoring copiers. 3,893,175, Cl. 360-6.000.
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- Sony Corporation: *See—*
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  - Mogi, Takao; and Okada, Hisao, 3,893,074.
  - Okada, Takashi; and Nakamura, Isa, 3,892,983.
  - Omata, Katsuyoshi; and Sato, Nobuaki, 3,893,038.
  - Shimada, Satoshi, 3,892,624.
- Sordello, Frank J., to Information Storage Systems, Inc. Synchronization of multiple disc drives. 3,893,178, Cl. 360-73.000.
- Sorenson, Bill W., to AMF Incorporated. Jumping pit. 3,892,401, Cl. 272-59.00R.
- Sorokin, Peter P.: *See—*
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- Sotolongo, Thomas J., to Thomas & Betts Corporation. Ground clamp connector. 3,892,455, Cl. 339-14.00L.
- Sotome, Hiromi, to Nippon Gakki Seizo Kabushiki Kaisha. Speaker system for multichannel stereosignal reproduction. 3,892,917, Cl. 179-1.0GQ.
- Southco, Inc.: *See—*
  - Bisbing, Robert H., 3,892,031.
- Southern Research Institute: *See—*
  - Piper, James R.; and Johnston, Thomas P., 3,892,824.
- Span-Deck, Inc.: *See—*
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- Speers, Daniel E., to General Film Development Corporation. Photosensitive sheets comprising organic dyes and sensitizers. 3,892,569, Cl. 96-67.000.
- Spekle, Hendrikus J.: *See—*
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  - Lea, John D.; and Rand, George, 3,893,065.
- Spin Physics, Inc.: *See—*
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- Spray, William N. Shelter having a stressed frame with a flexible sheathing thereon. 3,892,094, Cl. 52-63.000.
- Spreadall (Proprietary) Limited: *See—*
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- Sprinter Pack AB: *See—*
  - Persson, Karl Rune, 3,892,349.
- Staamann, Otto, to Automatic Druckmaschinenfabrik, Firma. Rotary printing machine. 3,892,178, Cl. 101-177.000.
- Stahlecker, Fritz; and Stahlecker, Hans. Apparatus for start-spinning on an open-end spinning machine. 3,892,062, Cl. 57-34.00R.
- Stahlecker, Hans: *See—*
  - Stahlecker, Fritz; and Stahlecker, Hans, 3,892,062.
- Stahler, Alfred F., to Ampex Corporation. Magnetic tape duplicator. 3,893,167, Cl. 360-16.000.
- Standard Oil Company: *See—*
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  - Steigelmann, Edward F.; Ries, Herman E., Jr.; and Hughes, Robert D., 3,892,665.
- Stankus, Robert W., to Letot, Incorporated. Telephone control system. 3,892,922, Cl. 179-2.00A.
- Stanley, Joseph, Jr., to Kay Laboratories, Inc. Hot or cold pack and apparatus for and method of making same. 3,892,060, Cl. 53-127.000.
- Statham, Charles D.: *See—*
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- Stauffer Chemical Company: *See—*
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  - Kezerian, Charles, 3,892,694.
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- Steelcase Inc.: *See—*
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  - Vankuik, Dirk J.; and Wilcox, Glae F., 3,892,095.
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- Steenbergen, Zwier. Plastics made crate for bottles. 3,892,328, Cl. 220-21.000.
- Steigelmann, Edward F.; Ries, Herman E., Jr.; and Hughes, Robert D., to Standard Oil Company. Membrane method and product. 3,892,665, Cl. 210-490.000.
- Stein, Charles W., to Data Royal, Incorporated. Variable size character generator with constant display density method. 3,893,100, Cl. 340-336.000.
- Stein, Karl-Ulrich, to Siemens Aktiengesellschaft. Regenerating circuit in the form of a keyed flip-flop. 3,892,984, Cl. 307-279.000.
- Steiner, Maurice. Self-injecting syringe. 3,892,237, Cl. 128-216.000.
- Sterling Drug Inc.: *See—*
  - Hinkel, Emil T., Jr., 3,892,851.
  - Nickel, Ardie R.; Rosenberg, Franklin J.; and Ackerman, James H., 3,892,800.
- Stevens, Peter; and Deuber, John M., to Oxy Metal Industries Corporation. Electrolyte and method for electrodepositing rhodium-ruthenium alloys. 3,892,638, Cl. 204-43.00N.
- Stillwell, Fred A.: *See—*
  - Algeri, Harvey R.; Bruening, Ralph G.; Sandorf, Robert E.; and Stillwell, Fred A., 3,893,006.
- Stiot, Jean-Pierre Henri; and Brouard, Claude Marie Henri Emile, to Produits Chimiques Ugine Kuhlmann. Unsaturate containing azo indazolium dyestuffs. 3,892,725, Cl. 260-157.000.
- Stobbe, Elmer H. Composition and method for controlling wild oats. 3,892,556, Cl. 71-111.000.
- Stout, Daniel W., to Daniels, Gerald C., a part interest. Closed recycling system for water purification and waste reduction. 3,892,662, Cl. 210-66.000.
- Strengholt, Roy D., to Donnelly Mirrors, Inc. Electrically heated panel with anti-shock conductive strips. 3,892,947, Cl. 219-522.000.
- Strickland, William A., Jr.; and Hinman, Walter L., Jr., to Westinghouse Electric Corporation. Segregated phase comparison relaying apparatus. 3,893,008, Cl. 317-27.00R.
- Striebich, Alfred: *See—*
  - Heeg, Rudolf; and Striebich, Alfred, 3,892,798.
- Strub, Rene, to Sulzer Brothers Ltd. Multistage turbocompressor having an intermediate cooler. 3,892,499, Cl. 415-179.000.
- Struyk, Adrianus Petrus; and Waisvisz, Jacques Maurits, to Gist-Brocades N.V. Pimaricin and process of producing same. 3,892,850, Cl. 424-119.000.
- Strycker, Wallace Glenn: *See—*
  - Hayao, Shin; Havera, Herbert John; and Strycker, Wallace Glenn, 3,892,748.
- Stuard, Charles Donald: *See—*
  - Johnson, Charles Louis; and Stuard, Charles Donald, 3,892,351.
- Stutz, Hansruedi, to Aktiengesellschaft Gebruder Loepfe. Method and apparatus for adjusting an electronic yarn cleaner. 3,892,951, Cl. 235-151.300.
- Suess, Rudolf: *See—*
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- Sugahara, Yujiro; Noshi, Yoshibumi; and Naito, Hiroyuki, to Mizusawa Kagaku Kogyo Kabushiki Kaishi. White pigment excelling in resistance to flame and corrosion. 3,892,577, Cl. 106-14.000.
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- Sugihara, Syoetsu: *See—*
  - Uetani, Yoshio; Ikebata, Rokurou; Kashiwaya, Kentaro; Sugihara, Syoetsu; and Hisatomi, Kaoru, 3,892,591.
- Sugiyama, Shunichi: *See—*
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- Sumitomo Metal Industries, Ltd.: *See—*
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  - Tyson, Ronald S.; and Shapiro, Leonard, 3,892,751.
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- Sunahara, Kazuo: *See—*
  - Watanabe, Kiyoshi; Misumi, Akira; Onodera, Takayoshi; and Sunahara, Kazuo, 3,892,890.
- Sunstein, David E. Electrically-controlled image-display system and method, and apparatus suitable for use therein. 3,893,165, Cl. 358-67.000.
- Superior Oil Company, The: *See—*
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- Suresh, Dev. D.: *See—*
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- Swanson, Elmer G.: *See—*
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- SWF Spezialfabrik fur Autozubehor: *See—*
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- Swidler, Ronald; Sanderson, William A.; and Mueller, William A., to Cotton, Incorporated. Flame retardant fibrous material having improved dimensional stability. 3,892,906, Cl. 428-289.000.
- Swoboda, John J., Jr.; and Boatman, Lawrence T., to Victoria Machine Works. Tugboat-barge connection system. 3,892,196, Cl. 114-235.00A.
- Szabo, Marton J., to P.H.C. Industries, Inc. Method of making a sheathed soft-feel handle. 3,892,615, Cl. 156-273.000.
- Szatala, Odon: *See—*
  - Matolcsy, Gyorgy; Bordas, Barna; Szatala, Odon; Andriska, Viktor; Grega, Erzsebet, nee Toth; Pinter, Zoltan; and Nagy, Sandor, 3,892,747.
- Tabata, Yoneho; Ukihashi, Hiroshi; and Yamabe, Masaaki, to Japan Atomic Energy Research Institute; and Asahi Glass Company. Process for producing a copolymer of tetrafluoroethylene and propylene. 3,892,641, Cl. 204-159.220.
- Taggart, Robert B.; Barth, Richard H.; and Bailey, John S., to Hewlett-Packard Company. Miniaturized magnetic card reader/recorder for use in hand-held calculator. 3,893,173, Cl. 360-60.000.
- Taguchi, Tatsuya; and Iura, Yukio, to Canon Kabushiki Kaisha. Device for adjusting a shutter exposure time for a camera. 3,893,143, Cl. 354-258.000.
- Taiyo Fishery Co., Ltd.: *See—*
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- Takahashi, Noriyuki; Miyahara, Hiromitsu; and Inoue, Hidehiko, to Honda Giken Kogyo Kabushiki Kaisha. Vehicle-height control device. 3,892,424, Cl. 280-124.00F.
- Takahashi, Susumu; and Ito, Ryosuke, to Sansui Electric Co., Ltd. Sound signal converting apparatus for use in a four channel stereophonic reproduction system. 3,892,918, Cl. 179-1.0GQ.
- Takahashi, Yoshio; Abe, Kunio; and Tanaka, Haruhiko, to Pioneer Electronic Corporation. Record changer. 3,892,415, Cl. 274-10.00S.
- Takasago Perfumery Co., Ltd.: *See—*
  - Akutagawa, Susumo; Kumobayashi, Hidenori; and Komatsu, Akira, 3,892,817.
- Takasaka, Naomichi: *See—*
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- Takashima, Masaru, to Aikoh Company, Ltd. Composition for treating steels. 3,892,561, Cl. 75-58.000.
- Takayanagi, Shinji; Sato, Hitoshi; and Koshikawa, Koichi, to Nihon Denshi Kabushiki Kaisha. System for recording and reproducing picture signals with amplitude reference signals. 3,892,914, Cl. 178-6.70A.

- Take, Teruo: *See—*
  - Abe, Jinnosuke; Watanabe, Tetsuo; Nagata, Akiho; Ando, Takuji; Take, Teruo; Izumi, Rokuro; Noda, Toshiharu; and Matsuura, Kazuo, 3,892,732.
- Takeda Chemical Industries, Ltd.: *See—*
  - Ochiai, Michihiko; Aki, Osami; Morimoto, Akira; and Okada, Taiiti, 3,892,737.
- Takeda, Kenzo; Takahashi, Kazuhiko; and Shiraishi, Kunihiko, to Nippon Crucible Co., Ltd. Monolithic refractory materials. 3,892,584, Cl. 106-56.000.
- Takeda Riken Industry Company Limited: *See—*
  - Furukawa, Hikaru; Kumazawa, Shozo; and Wakayama, Noriyuki, 3,893,104.
- Takeda Riken Kogyo Kabushiki Kaisha: *See—*
  - Maejima, Tsugie, 3,892,955.
- Takenaka, Takashi, to Sharp Kabushiki Kaisha. Automatic program finder system for tape decks. 3,893,177, Cl. 360-72.000.
- Takenoshita, Mitsuaki; Fujisawa, Fumio; and Nakamura, Ichiro, to Hitachi, Ltd. Hydraulic elevators. 3,892,292, Cl. 187-17.000.
- Talonen, Timo Tapani: *See—*
  - Nermes, Esko Olavi; Talonen, Timo Tapani; and Aaltonen, Olavi August, 3,892,560.
- Tamai, Hisashi; and Iizuka, Yoshitoku, to Honda Giken Kogyo Kabushiki Kaisha. Integral intake and exhaust conduit for internal combustion engine. 3,892,212, Cl. 123-122.0AB.
- Tamer, Ergun; Hendricks, Udo; and Quaedvlieg, Mathieu, to Bayer Aktiengesellschaft. Process for lowering the dyestuff affinity of fibre materials made of polyacrylonitrile. 3,892,527, Cl. 8-172.000.
- Tamny, Simon Z., to Nordson Corporation. Electrostatic spray apparatus and method. 3,892,357, Cl. 239-15.000.
- Tanaka, Atsushi: *See—*
  - Goto, Hachiro; Tanaka, Atsushi; IIzuka, Shiho; and Kitamura, Takahiko, 3,892,820.
- Tanaka, Goro; and Narahara, Toshikazu, to Hitachi, Ltd. Thermally curable compositions and process for curing said compositions. 3,892,643, Cl. 204-159.130.
- Tanaka, Haruhiko: *See—*
  - Takahashi, Yoshio; Abe, Kunio; and Tanaka, Haruhiko, 3,892,415.
- Tanaka, Takeshi, to Ishizuka Garasu Kabushiki Kaisha. Glass ceramic article having a metallic coating layer in a localized area or its surface and method of making the same. 3,892,904, Cl. 428-209.000.
- Taniguchi, Hiroyoshi; Wakabayashi, Toshio; Maeda, Takuma; and Ishimoto, Kenzi, to Ube Industries, Ltd. Containers for use in extrusion press and method of manufacturing the same. 3,892,114, Cl. 72-272.000.
- Tarman, Paul B.: *See—*
  - Punwani, Dharamvir; Massey, Lester G.; and Tarman, Paul B., 3,892,682.
- Tate, David Arthur: *See—*
  - Kenn, Robert Charles; and Tate, David Arthur, 3,892,184.
- Tatsuta, Sumitaka; and Ueno, Wataru, to Fuji Photo Film Co., Ltd. Method of improving the surface of a high molecular weight support. 3,892,573, Cl. 96-67.000.
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- Wortham, Joseph S., to Allied Chemical Corporation. Animal litter resistant to ammonia odor formation. 3,892,846, Cl. 424-76.000.
- Wright, Carl Leonard, to FMC Corporation. Inhibition of diallylic phthalate polymer compositions. 3,892,718, Cl. 260-78.4UA.
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- Yoshii, Tetsuji, to Matsushita Electric Industrial Co., Ltd. Magnetic recorder with movable head base. 3,893,186, Cl. 360-105.000.
- Yoshizaki, Akira: *See—*
  - Matsui, Toru; Yoshizaki, Akira; and Kogure, Yasuzi, 3,893,135.
- Yost, Robert L., to Dues, Joseph J. Method for forming a cored concrete slab. 3,892,826, Cl. 264-72.000.
- Young, Jing Jue: *See—*
  - Bechly, Fred Lorin; and Young, Jing Jue, 3,893,168.
- Young, Richard: *See—*
  - Smith, Geoffrey Allan; and Young, Richard, 3,892,893.
- Yuasa, Yoshio: *See—*
  - Uetsuki, Toshio; Okajima, Mitsuo; and Yuasa, Yoshio, 3,892,490.
- Zacharias, Ellis M., Jr.: *See—*
  - Cirulis, Uldis; and Zacharias, Ellis M., Jr., 3,892,127.
- Zadorozhny, Vasily Grigorievich: *See—*
  - Ilinkov, Dmitry Vladimirovich; Volpin, Pavel Ilich; Rumyantsev, Vasily Petrovich; Artemenko, Stanislav Arsenievich; Alivoivodich, Miro; Ragulina, Raisa Ivanovna; Zadorozhny, Vasily Grigorievich; Varen, Viktor Viktorovich; Emlin, Boris Ivanovich; Gasik, Mikhail Ivanovich; Khitrik, Spiridon Iosifovich; Klimkovich, Nikolai Semenovich; Novikov, Anatoly Yakovlevich; and Gasik, Ljudmila Ivanovna, 3,892,558.
- Zaffaroni, Alejandro, to ALZA Corporation. Intrauterine contraceptive device for releasing steroid having double bond functionality. 3,892,842, Cl. 424-22.000.
- Zedgenidze, Tengiz Grigorievich: *See—*
  - Arakelov, Mikhail Alexandrovich; Gersamia, Eduard Galaktionovich; Zedgenidze, Tengiz Grigorievich; and Nozadze, Gennady Pavlovich, 3,892,034.
- Zenkoku Reitogyoniku Kyokai: *See—*
  - Furuta, Motohiro, 3,892,640.
- Zia, Yee C. Vertical sanitary trap assembly for drain pipes. 3,892,257, Cl. 137-247.000.
- Zimmerman, Fritz; and Pogrzeba, Hans-Joachim, to Steag AG. Reactor for pressure type gasification of coal. 3,892,542, Cl. 48-67.000.
- Zinnes, Harold, to Warner-Lambert Company. Process for the preparation of 4-keto-1,2,3,4-tetrahydrocarbazole. 3,892,766, Cl. 260-315.000.
- Zinnes, Harold: *See—*
  - Sircar, Jagadish C.; and Zinnes, Harold, 3,892,767.
- Zlafop Pri Ban of Bulgaria: *See—*
  - Simeonov, Vasil Dragomirov; Mednikarov, Borislav Dimitrov; and Malinowski, Jordan Petrov, 3,892,571.
- Zobach, Mark Iosifovich: *See—*
  - Babitsky, Boris Davidovich; Beresnev, Vadim Nikolaevich; Bolshakova, Tatyana Georgievna; Buzina, Natalya Anatolievna; Vasiliev, Valentin Alexandrovich; Kalinicheva, Nadezhda Andreevna; Kormer, Vitaly Abramovich; Zobach, Mark Iosifovich; Radchenko, Ivan Ignatievich; and Khrustaleva, Taisiya Danilovna, 3,892,722.
- Zoepfl, Jack A. Athletic timer. 3,893,099, Cl. 340-323.000.
- Zollinger, Otto. Yarn tensioning device. 3,892,371, Cl. 242-152.100.

LIST OF DEFENSIVE PUBLICATIONS

APPLICANTS TO WHOM

DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 1ST DAY OF JULY, 1975

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

- Greene, Robin N. Novel hydroxyl-terminated polymers. T936,001, 7-1-75, Cl. 260-635.
- Hill, James F. Hydroxyl-terminated chloroprene polymers. T936,002, 7-1-75, Cl. 260-77.
- Kramer, Ronald R. High tenacity crimped tow and process. T936,005, 7-1-75, Cl. 28-72.140.
- Ward, James J.: *See—*
  - Watkins, Windell C., and Ward. T936,003.
- Watkins, Windell C., and J. J. Ward. Stabilization of alpha, alpha-disubstituted-beta-propiolactones. T936,003, 7-1-75, Cl. 260-343.900.
- Willis, Alan E. Solid state watch display. T936,004, 7-1-75, Cl. 58-50.

LIST OF REISSUE PATENTEES

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PATENTS WERE ISSUED ON THE 1ST DAY OF JULY, 1975

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Cole, Richard I.: *See—*
  - Holcroft, Donald E., Cole, Milligan, and Greenhalgh. Re. 28,459.
- Cole, Richard I., D. E. Holcroft, E. A. Milligan, and S. Greenhalgh, to Scott Paper Co. Transpiration drying and embossing of wet paper webs. Re. 28,459, 7-1-75, Cl. 34—6.
- Dawson, James A., to McDonnell Douglas Corp. Coupling fitting for connecting two pipes. Re. 28,457, 7-1-75, Cl. 285—354.
- Denier, Dennis J.: *See—*
  - Denier, Howard H., D. J., and Hedger. Re. 28,455.
- Denier, Howard H., D. J., and T. Hedger. Portable elevator working and load-lifting platform. Re. 28,455, 7-1-75, Cl. 182—16.
- Denier, Howard H.: *See—*
  - Denier, Dennis J., H. H., and Hedger. Re. 28,455.
- Exxon Research & Engineering Co.: *See—*
  - Langer, Arthur W., Jr., and Whitney. Re. 28,456.
- Greenhalgh, Samuel: *See—*
  - Cole, Richard I., Holcroft, Milligan, and Greenhalgh. Re. 28,459.
- Grand-City Container Corp.: *See—*
  - Rous, Benjamin. Re. 28,460.
- Halstead, Earle W., to Tru-Pitch, Inc. Ball throwing machine. Re. 28,462, 7-1-75, Cl. 124—1.
- Holcroft, Donald E.: *See—*
  - Cole, Richard I., Holcroft, Milligan, and Greenhalgh. Re. 28,459.
- Hydro-Clear Corp.: *See—*
  - Ross, David S. Re. 28,458.
- Langer, Arthur W., Jr., and T. A. Whitney, to Exxon Research & Engineering Co. Inorganic lithium amine complexes. Re. 28,456, 7-1-75, Cl. 260—563.
- Lemelson, Jerome H. Tape cartridge and reader. Re. 28,461, 7-1-75. Cl. 235—61.11.
- McDonnell Douglas Corp.: *See—*
  - Dawson, James A. Re. 28,457.
- Milligan, Edward A.: *See—*
  - Cole, Richard I., Holcroft, Milligan, and Greenhalgh. Re. 28,459.
- Ross, David S., to Hydro-Clear Corp. Apparatus and method of filtering solids from a liquid effluent. Re. 28,458, 7-1-75, Cl. 210—80.
- Rous, Benjamin, by Grand-City Container Corp., assignee, Stone Container Corp. Carton. Re. 28,460, 7-1-75, Cl. 206—424.
- Scott Paper Co.: *See—*
  - Cole, Richard I, Holcroft, Milligan, and Greenhalgh. Re. 28,459.
- Stone Container Corp.: *See—*
  - Rous, Benjamin. Re. 28,460.
- Tru-Pitch, Inc.: *See—*
  - Halstead, Earle W. Re. 28,462.
- Whitney, Thomas A.: *See—*
  - Langer, Arthur W., Jr., and Whitney. Re. 28,456.

LIST OF PLANT PATENTEES

- DeGroot, Constant, to Sheridan Nurseries Ltd. Boxwood plant. 3,736, 7-1-75, Cl. 54.
- Ecke, Paul, Jr.: *See—*
  - Wooldridge, Charles E. 3,738.
- Kendall, Harold E. Avocado tree. 3,737, 7-1-75, Cl. 44.
- Sheridan Nurseries Ltd.: *See—*
  - DeGroot, Constant. 3,736.
- Wooldridge, Charles E., to Paul Ecke, Jr. Poinsettia plant. 3,738, 7-1-75, Cl. 86.

LIST OF DESIGN PATENTEES

- Agarwala, Bhaskar K., to Everest & Jennings, Inc. Heater, circulator, and temperature control for a fluid-type heating pad. 235,646, 7-1-75, Cl. D23—77.
- Allen, William G., Jr. Surgical strue remover. 235,688, 7-1-75, Cl. D83—12.
- Amerock Corp.: *See—*
  - Tegner, Raymond U. H. 235,600.
  - Tegner, Raymond U. H. 235,615.
  - Tegner, Raymond U. H. 235,616.
  - Tegner, Raymond U. H. 235,617.
  - Tegner, Raymond, U. H. 235,618.
- Anderson, Victor F., to Shell Oil Co. Air freshener holder or similar article. 235,648, 7-1-75, Cl. D23—150.
- Balls 'N' All, Inc.: *See—*
  - Tibbs, Clarence V. 235,693.
- Barad, Valerie, to Theodor Mfg. Corp. Handbag. 235,690, 7-1-75, Cl. D87—3.
- Barad, Valerie, to Theodor Mfg. Corp. Handbag. 235,691, 7-1-75, Cl. D87—3.
- Barrett, Bernard R. Toy kite. 235,670, 7-1-75, Cl. D34—15.
- Benty, John L., D. DeFano, and R. I. Kallman, to Clairol Inc. Mak-up mirror. 235,689, 7-1-75, Cl. D86—10.
- Benty, John L., and D. Nickles, to The Gillette Co. Shave cream dispenser. 235,599, 7-1-75, Cl. D6—95.
- Birnbaum, Leonard V., to Burwood Products Co. Table. 235,596, 7-1-75, Cl. D6—177.
- Birnie, George D., to Brunswick Corp. Archery finger glove. 235,589, 7-1-75, Cl. D2—361.
- Blake, Frederick D. Canoe. 235,632, 7-1-75, Cl. D12—63.
- Block China Corp.: *See—*
  - Gulotta, Gerald. 235,611.

- Bozich, Anton J., to Malton Electric Co. Housing for electrical unit. 235,653, 7-1-75, Cl. D26—5.
- Bragg, Marion, to Kendall Co. Surgical mask. 235,687, 7-1-75, Cl. D83—1.
- Brunswick Corp.: *See—*
  - Le Mieux, Robert W. 235,669.
  - Birnie, George D. 235,589.
- Burroughs Corp.: *See—*
  - Clayton, Richard G. 235,637.
- Burwood Products Co.: *See—*
  - Birnbaum, Leonard V. 235,596.
- Calder, Don L. Hand operated cultivator. 235,674, 7-1-75, Cl. D35—2.
- Carl Zeiss-Stiftung: *See—*
  - Michel, Kurt. 235,684.
- Cawrse Dairy, Inc.: *See—*
  - Cawrse, Richard S. 235,621.
- Cawrse, Richard S., to Cawrse Dairy, Inc. Packaging container for food or the like. 235,621, 7-1-75, Cl. D9—219.
- CBS, Inc.: *See—*
  - Moustakas, Matthew. 235,675.
- Chestnut, M. Gaines, to Outdoor Sports Industries, Inc. Riflescope. 235,685, 7-1-75, Cl. D57—1.
- Christie, Cornelius W., Jr.: *See—*
  - Culbertson, Richard, and Christie. 235,660.
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- Clayton, Richard G., to Burroughs Corp. Exterior molded panel for data processing units. 235,637, 7-1-75, Cl. D13—1.
- Clement, Carl J., F. H. Stengel, and K. S. Campbell, to Xerox Corp. Display device. 235,655, 7-1-75, Cl. D26—5.
- Cohen, Maurice. Size tag for garment hanger. 235,639, 7-1-75, Cl. D19—13.
- Cohn, Gerald, to Remember When Sweet Shoppe, Inc. Display carousel. 235,594, 7-1-75, Cl. D6—154.
- Cooper, Cecil L. Vehicle mud guard. 235,633, 7-1-75, Cl. D12—185.
- Corning Glass Works: *See—*
  - Kiernan, Alice, Luzier, and Mirow. 235,604.
- Covey, Laird F., and W. J. Hildebrandt, to The Stanley Works. Marking gauge. 235,626, 7-1-75, Cl. D10—71.
- Crabbe, David K., L. F. Halio, and J. W. Carroll, to Digital Equipment Corp. Display terminal. 235,654, 7-1-75, Cl. D26—5.
- Culbertson, Richard, and C. W. Christie, Jr., to General Electric Co. Combined portable 8-track tape player and AM/FM tuner. 235,660, 7-1-75, Cl. D26—14.
- Curtis, Gerald J. Adjustable trim tab for leveling a boat. 235,635, 7-1-75, Cl. D12—70.
- Dahl, G. W., Co., Inc.: *See—*
  - Erickson, Linwood P. 235,641.
  - Erickson, Linwood P. 235,642.
- Daniels, Kenneth M. Adjustable support for a spray nozzle or the like. 235,612, 7-1-75, Cl. D8—72.
- Delta Transnational, Inc.: *See—*
  - Studer, John E., Jr. 235,625.
- Denki Onkyo Co., Ltd.: *See—*
  - Simizu, Haruo, and Ueda. 235,657.
- Deschamps, Robert L., to Shure Brothers, Inc. Phonograph cartridge. 235,661, 7-1-75, Cl. D26—14.
- Digital Equipment Corp.: *See—*
  - Crabbe, David K., Halio, and Carroll. 235,654.
- Dogliotti Amilcare, to P. Ferrero & C. S.p.A. Display stand. 235,595, 7-1-75, Cl. D6—24.
- Doyel, John S. Magnetic window cleaning device. 235,603, 7-1-75, Cl. D7—179.
- Ebata, Takemi, K. Miki, and Y. Hattori, to Matsushita Electric Industrial Co. Tape recorder. 235,659, 7-1-75, Cl. D26—14.
- Educational Design Associates: *See—*
  - Root, Charles B. 235,672.
  - Root, Charles B. 235,673.
- Environment/One Corp.: *See—*
  - Peters, Philip H., Jr., and Matrone. 235,645.
- Erickson, Linwood P., to G. W. Dahl Co., Inc. Actuator for a valve. 235,641, 7-1-75, Cl. D23—19.
- Erickson, Linwood P., to G. W. Dahl Co., Inc. Actuator for a valve. 235,642, 7-1-75, Cl. D23—19.
- Everest & Jennings, Inc.: *See—*
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- Florida Pneumatic Mfg. Corp.: *See—*
  - Taylor, James O. 235,614.
- Foremost-McKesson, Inc.: *See—*
  - Templin, Wallace D. 235,624.
- Forseth, Arthur E. Rodent protective bottom shield for telephone pedestal. 235,620, 7-1-75, Cl. D8—263.
- Franklin, Lester K., deceased, by Mildred P. Franklin. Clock radio. 235,679, 7-1-75, Cl. D56—7.
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  - Franklin, Lester K. 235,679.
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- Funaziki, Yasuhiko, and K. Marumoto, to Matsushita Electric Industrial Co. Combined amplifier and cassette tape recorder. 235,665, 7-1-75, Cl. D26—14.1.
- General Electric Co.: *See—*
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- General Motors Corp.: *See—*
  - Sheeley, David D. 235,605.
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- Goldberg, Gerald M. Outdoor light fixture. 235,677, 7-1-75, Cl. D48—31.
- Goldberg, Gerald M. Outdoor light fixture. 235,678, 7-1-75, Cl. D48—31.
- Gulotta, Gerald, to Block China Corp. Bowl. 235,611, 7-1-75, Cl. D7—23.
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- Herring, John L. Storage container for fishing hooks and leaders. 235,622, 7-1-75, Cl. D9—235.
- Hideshima, Masatoshi, to Kabushiki Kaisha Ricoh. Teaching machine. 235,649, 7-1-75, Cl. D19—60.
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- Hill, Kenneth D., to World Carpets. Carpet. 235,695, 7-1-75, Cl. D92—4.
- Hills, William H. Fishing Lures. 235,640, 7-1-75, Cl. D22—27.
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- Igo, Toshio, to Matsushita Electric Industrial Co. Combined amplifier and cassette tape recorder. 235,663, 7-1-75, Cl. D26—14.
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- International Business Machines Corp.: *See—*
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- Kawata, Yoshiaki, and T. Kawasaki, to Matsushita Electric Industrial Co. Microwave oven. 235,609, 7-1-75, Cl. D7—128.
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- Kikuchi, Hiroshi, A. Koshiro, and Y. Kawata, to Matsushita Electric Industrial Co. Microwave oven. 235,607, 7-1-75, Cl. D7—128.
- Kirk, Norman. Curved hair brush. 235,592, 7-1-75, Cl. D4—31.
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- Le Mieux, Robert W., to Brunswick Corp. Game table. 235,669, 7-1-75, Cl. D34—5.
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Root, Charles B., to Educational Design Associates. Puzzle toy. 235,673, 7-1-75, Cl. D34—15.

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Shimano, Keizo, and N. Sato, to Shimano Industrial Co., Ltd Derailleur. 235,631, 7-1-75, Cl. D12—124.

Shure Brothers Inc.: *See—*
  Kita, Robert M., and Rusch. 235,658.
  Deschamps, Robert L. 235,661.
  Mox, Dana W. 235,662.

Simizu, Haruo, and N. Ueda, to Denki Onkyo Co., Ltd. Tape recorder. 235,657, 7-1-75, Cl. D26—14.

Skolnik, Jacob: *See—*
  Schoenfeld, Stanley, and Skolnik. 235,686.

Spiegel, Norman, to Nasta Industries, Inc. Toy vehicle. 235,671, 7-1-75, Cl. D34—15.

Stanley Works, The: *See—*
  Olson, John D., and Gutowski. 235,613.
  Covey, Laird F., and Hildebrandt. 235,626.

Steele, Donald F., and H. P. Thornton, Jr. Optical smoke detector. 235,629, 7-1-75, Cl. D10—106.

Stengel, Fred H.: *See—*
  Clement, Carl J., Stengel, and Campbell. 235,655.

Studer, John E., Jr. to Delta Transnational, Inc. Digital clock housing. 235,625, 7-1-75, Cl. D10—1.

Suuronen, Matti J., to Oy Polykem Ab. Enclosure for telephone station or the like. 235,638, 7-1-75, Cl. D13—1.

Swash, Harold. Golf club head. 235,668, 7-1-75, Cl. D34—5.

Takagi, Takeshi: *See—*
  Ikejima, Yoritaka, and Takagi. 235,697.

Taylor, James O., to Florida Pneumatic Mfg. Corp. Pneumatic sander. 235,614, 7-1-75, Cl. D8—62.

Tegner, Raymond U. H., to Amerock Corp. Combined escutcheon plate and supporting post. 235,600, 7-1-75, Cl. D6—86.

Tegner, Raymond U. H., to Amerock Corp. Knob. 235,615, 7-1-75, Cl. D8—139.

Tegner, Raymond U. H., to Amerock Corp. Escutcheon. 235,616, 7-1-75, Cl. D8—179.

Tegner, Raymond U. H., to Amerock Corp. Turn for a deadlock 235,617, 7-1-75, Cl. D8—132.

Tegner, Raymond U. H., to Amerock Corp. Thumb piece for an entry lock. 235,618, 7-1-75, Cl. D8—134.

Templin, Wallace D., to Foremost-McKesson, Inc. Plastic container for liquids. 235,624, 7-1-75, Cl. D9—131.

Teranishi, Takeo, to Kabushiki Kaisha TADAPURA. Serving cart for food and the like. 235,636, 7-1-75, Cl. D12—22.

Theodor Mfg. Corp.: *See—*
  Barad, Valerie. 235,690.
  Barad, Valerie. 235,691.

Thibodeau, Real A.: *See—*
  Giguere, Andre N., and Thibodeau. 235,610.

Thornton, Hugh P., Jr.: *See—*
  Steele, Donald F., and Thornton. 235,629.

Tibbs, Clarence V., to Balls 'N' All, Inc. Handbag. 235,693, 7-1-75, Cl. D87.

Ueda, Nobuyuki: *See—*
  Simizu, Haruo, and Ueda. 235,657.

Witmire, Winnie C. Religious plaque. 235,667, 7-1-75, Cl. D29—23.

World Carpets: *See—*
  Hill, Kenneth D. 235,694.
  Hill, Kenneth D. 235,695.

Xerox Corp.: *See—*
  Clement, Carl J., Stengel, and Campbell. 235,655.

Uchino, Kenju, to Yehan Numata. Digital vernier caliper. 235,627, 7-1-75, Cl. D10—73.

Yehan Numata: *See—*
  Uchino, Kenju. 235,627.
  Nishigata, Goro. 235,628.

Yoshida, Toshihiko, Y. Hirano, and H. Toyoda, to Matsushita Electric Industrial Co. Mixer. 235,608, 7-1-75, Cl. D7—154.

Ziaylek, Theodore, Jr., to Ziamatic Corp. Bracket for lifesaving equipment. 235,619, 7-1-75, Cl. D8—247.

Ziamatic Corp.: *See—*
  Ziaylek, Theodore, Jr. 235,619.

Zimmerman, Wade N. Petcock. 235,643, 7-1-75, Cl. D23—19.

CLASSIFICATION OF PATENTS

ISSUED JULY 1, 1975

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2	
2.5	3,891,996
CLASS 3	
1	3,891,997
1.91	3,891,998
CLASS 4	
185F	3,892,000
CLASS 5	
354R	3,892,001
CLASS 8	
82	3,892,521
93	3,892,522
94.2	3,892,523
127	3,892,524
165	3,892,525
	3,892,526
172	3,892,527
CLASS 15	
21D	3,892,002
49C	3,892,003
102	3,892,004
245	3,892,005
250.22	3,892,006
306A	3,892,007
368	3,892,008
CLASS 17	
35	3,892,009
62	3,892,010
CLASS 23	
230PC	3,892,528
230B	3,892,529
230R	3,892,530
253R	3,892,531
	3,892,532
258.5	3,892,533
	3,892,534
288FC	3,892,537
288F	3,892,536
288K	3,892,535
295	3,892,538
301SP	3,892,540
301R	3,892,539
CLASS 24	
16PB	3,892,011
90E	3,892,013
103	3,892,014
201HH	3,892,015
205.1R	3,892,016
205.11F	3,892,017
CLASS 28	
1.2	3,892,019
62	3,892,018
72.12	3,892,020
72.14	3,892,021
CLASS 29	
25.42	3,892,023
103B	3,892,022
156.4WL	3,892,028
156.4R	3,892,026
169.5	3,892,025
196.1	3,892,541
200P	3,892,027
420	3,892,030
428	3,892,029
437	3,892,031
455	3,892,032
576	3,892,033
596	3,892,034
CLASS 30	
62	3,892,036
140	3,892,024
276	3,892,037
279R	3,892,039
294	3,892,038
CLASS 32	
12	3,892,035
40R	3,892,040
CLASS 33	
80	3,892,041
143L	3,892,043
301	3,892,042
CLASS 34	
6	Re.28,459
20	3,892,044
28	3,892,045
57A	3,892,046
103	3,892,047
133	3,892,048
235	3,892,049
CLASS 35	
8R	3,892,050
12N	3,892,051
22R	3,892,053
CLASS 36	
44	3,892,077
68	3,892,078
CLASS 37	
56	3,892,079
CLASS 40	
106.1	3,892,080
214	3,892,081
CLASS 42	
11	3,892,082
CLASS 43	
43.11	3,892,083
CLASS 46	
114	3,892,084
116	3,892,087
180	3,892,085
202	3,892,086
CLASS 48	
67	3,892,542
CLASS 49	
37	3,892,088
CLASS 51	
34D	3,892,089
101R	3,892,090
154	3,892,092
170TL	3,892,091
372	3,892,093
CLASS 52	
63	3,892,094
221	3,892,095
227	3,892,096
233	3,892,097
270	3,892,098
479	3,892,099
665	3,892,054
745	3,892,055
	3,892,056
CLASS 53	
14	3,892,057
21FC	3,892,058
29	3,892,059
127	3,892,060
CLASS 55	
96	3,892,543
106	3,892,544
112	3,892,545
129	3,892,546
178	3,892,547
194	3,892,548
267	3,892,549
269	3,892,550
390	3,892,551
CLASS 56	
27.5	3,892,061
CLASS 57	
34R	3,892,062
56	3,892,063
96	3,892,064
108	3,892,065
CLASS 58	
28R	3,892,066
58	3,892,067
86	3,892,068
CLASS 60	
226	3,892,069
279	3,892,070
288	3,892,071
487	3,892,072
635	3,892,073
669	3,892,074
CLASS 61	
4	3,892,075
35	3,892,076
45B	3,892,101
45R	3,892,100
CLASS 62	
6	3,892,102
58	3,892,103
186	3,892,104
353	3,892,105
514	3,892,106
CLASS 64	
23	3,892,107
CLASS 66	
75	3,892,108
CLASS 68	
205R	3,892,109
CLASS 70	
107	3,892,110
358	3,892,111
CLASS 71	
1	3,892,552
13	3,892,553
92	3,892,554
93	3,892,555
111	3,892,556
CLASS 72	
11	3,892,112
250	3,892,113
272	3,892,114
294	3,892,115
305	3,892,116
367	3,892,117
371	3,892,118
385	3,892,119
391	3,892,120
393	3,892,121
453	3,892,122
478	3,892,123
CLASS 73	
6	3,892,124
15A	3,892,125
38	3,892,126
61.1R	3,892,127
154	3,892,128
362AR	3,892,281
371	3,892,129
425.4R	3,892,130
432R	3,892,131
457	3,892,132
556	3,892,133
CLASS 74	
12	3,892,134
	3,892,135
14	3,892,136
99R	3,892,137
110	3,892,138
116	3,892,139
224	3,892,140
475	3,892,141
521	3,892,142
583	3,892,143
805	3,892,144
CLASS 75	
.5A	3,892,557
10R	3,892,558
21	3,892,559
23	3,892,560
58	3,892,561
83	3,892,562
97	3,892,563
165	3,892,564
168C	3,892,565
CLASS 81	
9.51	3,892,145
52.4R	3,892,146
53.2	3,892,147
57.18	3,892,148
71	3,892,149
179	3,892,150
CLASS 82	
4C	3,892,151
CLASS 83	
56	3,892,152
100	3,892,153
368	3,892,154
460	3,892,155
469	3,892,156
672	3,892,157
699	3,892,158
CLASS 84	
307	3,892,159
CLASS 85	
13	3,892,160
CLASS 87	
29	3,892,161
CLASS 89	
1.815	3,892,162
37C	3,892,163
CLASS 91	
378	3,892,164
420	3,892,165
454	3,892,166
497	3,892,167
CLASS 93	
93C	3,892,168
CLASS 96	
1C	3,892,566
1.1	3,892,567
1.3	3,892,568
67	3,892,569
	3,892,570
	3,892,573
68	3,892,571
74	3,892,572
84R	3,892,575
100	3,892,576
107	3,892,574
CLASS 98	
37	3,892,169
40D	3,892,170
CLASS 99	
450.7	3,892,171
458	3,892,172
CLASS 100	
117	3,892,173
CLASS 101	
35	3,892,174
93.05	3,892,175
116	3,892,176
	3,892,177
177	3,892,178
415.1	3,892,179
456	3,892,180
CLASS 102	
40	3,892,181
70.2R	3,892,182
CLASS 104	
12	3,892,183
147R	3,892,184
148LM	3,892,185
249	3,892,186
CLASS 105	
75	3,892,187
368R	3,892,188
CLASS 106	
14	3,892,577
16	3,892,578
38.3	3,892,579
41	3,892,580
50	3,892,581
52	3,892,582
55	3,892,583
56	3,892,584
187	3,892,585
200	3,892,586
288B	3,892,587
CLASS 108	
109	3,892,189
CLASS 110	
8R	3,892,190
49R	3,892,191
CLASS 112	
140	3,892,192
200	3,892,193
CLASS 114	
20R	3,892,194
235A	3,892,196
235R	3,892,195
CLASS 118	
7	3,892,197
49	3,892,198
CLASS 119	
5	3,892,199
	3,892,200
17	3,892,201
60	3,892,202
99	3,892,203
103	3,892,204
CLASS 122	
32	3,892,205
CLASS 123	
8.09	3,892,206
32SA	3,892,207
32ST	3,892,221
32R	3,892,208
41.29	3,892,209
90.3	3,892,210
122AB	3,892,212
122AC	3,892,214
122F	3,892,215
122H	3,892,213
122R	3,892,211
127	3,892,218
148E	3,892,219
190E	3,892,220
191S	3,892,216
CLASS 124	
1	Re.28,462
7	3,892,217
CLASS 126	
9R	3,892,222
200	3,892,223
	3,892,224
204	3,892,225
CLASS 128	
2F	3,892,226
2.1B	3,892,227
4	3,892,228
24R	3,892,229
25R	3,892,230
80A	3,892,231
92BA	3,892,233
92EB	3,892,232
142	3,892,234
194	3,892,235
214R	3,892,236
216	3,892,237
260	3,892,238
293	3,892,239
325	3,892,241
339	3,892,240
346	3,892,242
359	3,892,243
CLASS 131	
2	3,892,244
75	3,892,245
CLASS 132	
7	3,892,246
11R	3,892,247
88.7	3,892,248
89	3,892,249
CLASS 134	
24	3,892,588
168R	3,892,250
CLASS 135	
20R	3,892,251
CLASS 136	
6LN	3,892,589
83R	3,892,590
102	3,892,591
120FC	3,892,592
133	3,892,593
148	3,892,594
162	3,892,595
CLASS 137	
13	3,892,252
68	3,892,253
116.3	3,892,254
116.5	3,892,255
185	3,892,256
247	3,892,257
461	3,892,258
625.21	3,892,259
625.62	3,892,260
CLASS 138	
149	3,892,261
CLASS 139	
384B	3,892,262
CLASS 140	
147	3,892,263
CLASS 141	
5	3,892,264
CLASS 144	
230	3,892,265
309AC	3,892,266
CLASS 148	
1.5	3,892,596
16.6	3,892,597
31.57	3,892,598
	3,892,599
	3,892,600
	3,892,601
36	3,892,602
108	3,892,603
120	3,892,604
	3,892,605
174	3,892,606
186	3,892,607
188	3,892,608
	3,892,609
CLASS 149	
76	3,892,610
CLASS 150	
52G	3,892,267
CLASS 152	
172	3,892,268
330	3,892,269
CLASS 156	
71	3,892,611
150	3,892,612
210	3,892,613
272	3,892,614
273	3,892,615
352	3,892,616
353	3,892,617
355	3,892,618
382	3,892,619
443	3,892,620
513	3,892,621
CLASS 162	
108	3,892,622
120	3,892,623
CLASS 164	
252	3,892,271
306	3,892,272
CLASS 165	
105	3,892,273
CLASS 166	
222	3,892,274
250	3,892,275
251	3,892,270
267	3,892,276
CLASS 169	
16	3,892,277
CLASS 172	
70	3,892,278
CLASS 173	
13	3,892,279
162	3,892,280
CLASS 174	
37	3,892,910
59	3,892,911
68C	3,892,912
CLASS 176	
50	3,892,625
68	3,892,626
CLASS 178	
5.8R	3,892,913
6.7A	3,892,914
21	3,892,915
88	3,892,916
CLASS 179	
1GQ	3,892,917
	3,892,918
1MN	3,892,921
1SM	3,892,919
1VC	3,892,920
1G	3,892,624
2A	3,892,922

15AT	3,892,925
15BF	3,892,923
15BY	3,892,924
16EA	3,892,926
111R	3,892,927
175.2R	3,892,928
175.3R	3,892,929
179	3,892,930
CLASS 180	
6.5	3,892,282
66R	3,892,283
73D	3,892,284
75	3,892,285
77R	3,892,286
115	3,892,287
CLASS 181	
156	3,892,288
171	3,892,289
CLASS 182	
16	Re.28,455
22	3,892,290
CLASS 184	
7E	3,892,291
CLASS 187	
17	3,892,292
CLASS 188	
71.5	3,892,293
109	3,892,294
111	3,892,295
112	3,892,296
218XL	3,892,297
289	3,892,298
CLASS 191	
29R	3,892,299
CLASS 192	
2	3,892,300
6R	3,892,301
91A	3,892,302
CLASS 195	
1.3	3,892,627
1.7	3,892,628
36R	3,892,629
51R	3,892,630
99	3,892,631
103.5R	3,892,632
CLASS 197	
18	3,892,303
	3,892,304
52	3,892,305
CLASS 198	
192R	3,892,306
195	3,892,307
220CC	3,892,308
CLASS 200	
11R	3,892,931
61.27	3,892,932
288	3,892,934
331	3,892,935
CLASS 201	
2	3,892,633
CLASS 203	
72	3,892,634
CLASS 204	
15	3,892,635
35N	3,892,636
37T	3,892,637
43N	3,892,638
105M	3,892,639
149	3,892,640
159.11	3,892,642
159.13	3,892,643
159.22	3,892,641
164	3,892,644
180R	3,892,645
181	3,892,646
	3,892,647
	3,892,648
	3,892,649
192	3,892,650
	3,892,651
195R	3,892,652
238	3,892,653
CLASS 206	
74	3,892,309
210	3,892,310
229	3,892,311
328	3,892,312
346	3,892,313
363	3,892,314
424	Re.28,460
CLASS 208	
8	3,892,654
111	3,892,655
139	3,892,656
	3,892,657
CLASS 209	
213	3,892,658
CLASS 210	
3	3,892,659
12	3,892,660
40	3,892,661
66	3,892,662
80	Re.28,458
169	3,892,663
321	3,892,664
490	3,892,665
520	3,892,666
CLASS 211	
71	3,892,315
CLASS 212	
46R	3,892,316
CLASS 214	
1BC	3,892,317
6A	3,892,318
8.5F	3,892,319
84	3,892,320
86A	3,892,321
131A	3,892,322
505	3,892,323
730	3,892,324
CLASS 215	
219	3,892,325
221	3,892,326
253	3,892,327
CLASS 219	
10.49	3,892,940
10.79	3,892,938
69P	3,892,936
72	3,892,937
101	3,892,939
113	3,892,941
127	3,892,942
222	3,892,943
270	3,892,944
437	3,892,945
486	3,892,946
522	3,892,947
CLASS 220	
21	3,892,328
85VR	3,892,329
86AT	3,892,330
96	3,892,331
219	3,892,332
CLASS 221	
200	3,892,333
281	3,892,334
CLASS 222	
129.1	3,892,335
193	3,892,336
199	3,892,337
254	3,892,338
318	3,892,339
CLASS 223	
1	3,892,340
43	3,892,341
57	3,892,342
CLASS 224	
45S	3,892,343
CLASS 226	
44	3,892,344
89	3,892,345
CLASS 229	
14BE	3,892,346
17R	3,892,347
23R	3,892,348
37R	3,892,349
40	3,892,350
43	3,892,351
CLASS 235	
61.11E	3,892,949
	3,892,950
61.11R	Re.28,461
61.5S	3,892,352
64	3,892,353
91C	3,892,354
101	3,892,355
151.3	3,892,951
151.32	3,892,952
152	3,892,953
153AC	3,892,954
	3,892,955
156	3,892,956
	3,892,957
	3,892,958
CLASS 238	
8	3,892,356
CLASS 239	
15	3,892,357
265.39	3,892,358
342	3,892,359
345	3,892,360
432	3,892,361
533	3,892,362
590	3,892,363
CLASS 240	
1EL	3,892,959
41.35R	3,892,960
CLASS 241	
15	3,892,364
92	3,892,365
CLASS 242	
7.05B	3,892,366
7.22	3,892,367
55.2	3,892,368
55.53	3,892,369
56A	3,892,012
71.8	3,892,370
152.1	3,892,371
CLASS 243	
5	3,892,372
CLASS 244	
77A	3,892,373
77D	3,892,374
153R	3,892,375
CLASS 245	
6	3,892,376
CLASS 246	
62	3,892,377
CLASS 248	
71	3,892,378
225	3,892,379
CLASS 249	
83	3,892,380
CLASS 250	
211K	3,892,961
227	3,892,962
231R	3,892,963
315	3,892,964
316	3,892,965
333	3,892,966
361	3,892,971
389	3,892,968
390	3,892,969
396	3,892,970
447	3,892,967
458	3,892,972
505	3,892,973
568	3,892,974
CLASS 251	
26	3,892,381
28	3,892,382
88	3,892,383
282	3,892,384
CLASS 252	
8.1	3,892,667
8.55D	3,892,668
8.75	3,892,669
34.7	3,892,670
51.5A	3,892,671
62.1	3,892,672
62.54	3,892,673
96	3,892,674
109	3,892,676
186	3,892,682
301.3W	3,892,675
411S	3,892,677
426	3,892,678
442	3,892,683
476	3,892,679
532	3,892,680
551	3,892,681
CLASS 254	
133R	3,892,385
190R	3,892,386
CLASS 256	
24	3,892,387
CLASS 259	
5	3,892,388
8	3,892,389
192	3,892,390
CLASS 260	
2N	3,892,684
2.2R	3,892,688
	3,892,689
2.5AC	3,892,687
2.5AM	3,892,691
2.5BB	3,892,685
2.5HA	3,892,690
2.5A	3,892,686
23XA	3,892,692
23.7R	3,892,693
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[Notice of Dec. 16, 1969, 869 O.G. 6877]

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

3,217,867, R. I. Harris, PACKAGE FOR DISPLAYING ELONGATED ARTICLES; **3,470,638**, Friedman, Harris, Mauch, Harris and Manzo, WATCH BAND CONSTRUCTION, **filed** Jan. 1, 1970, D.C., S.D.N.Y., Doc. 70–23, *Brite Industries Inc.* v. *Westerman Manufacturing Co., Inc.* Consent judgment, defendant permanently restrained and enjoined from further infringement of the U.S. patents except by leave or license of plaintiff, Feb. 22, 1973.

3,232,761, Allen and Burness, HARDENING OF PHOTOGRAPHIC GELATIN LAYERS; **Re. 26,601**, same, **filed** Feb. 24, 1975, D.C., S.D.N.Y., Doc. 75–C–925, *Eastman Kodak Company* v. *GAF Corporation.*

3,285,621, S. Turner, Jr., WHEELED VEHICLE SUSPENSION, **filed** Feb. 21, 1975, D.C., N.D. Ohio (Toledo), Doc. 75–71, *TWM Manufacturing Company, Inc.* v. *Sycon Corporation et al.*

3,298,378, Stevens, Schweitzer and Selke, METHOD OF MAKING A TOBACCO PRODUCT, **filed** July 28, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1848, *Sylgab Steel and Wire Corporation* v. *Imoco-Gateway Corp.* Patent invalid and unenforceable and thus the defendants have not infringed the patent as alleged in Court, Feb. 12, 1975.

3,305,536, P. Warner, POLYSULFIDE POLYMERS, **filed** Feb. 18, 1975, D.C., S.D. Calif. (San Diego), Doc. 75–0096–T, *Johnson & Johnson and Dispersalloy Inc.* v. *Gary Weikel.*

3,333,280, Hynek, Russell and Ainslie, INTERLINER, **filed** May 3, 1974, D.C., N.D. Ga. (Atlanta), Doc. C–74–871 A, *Johnson & Johnson* v. *DHJ Industries, Inc.* U.S. patent good and valid and has been infringed by defendant. Defendant's counterclaims are dismissed with prejudice. No other relief is granted and plaintiff's claims are withdrawn with prejudice, Feb. 25, 1975.

3,337,212, Barker, Nickerson and Rumball, WORK GUIDANCE MECHANISMS; **3,604,707**, F. A. Hurley, ELECTRIC DART GAME AND THE LIKE, **filed** Apr. 9, 1973, D.C. Pa. (Philadelphia), Doc. 73–820, *Funtronics of Texas Inc.* v. *Tri-City Inc.* Consent decree, ordered that the complaint and counterclaim are dismissed with prejudice, Feb. 11, 1975.

3,458,314, Linowitizki and Kramer, PROCESS AND DEVICE FOR DEVELOPING A TWO-COMPONENT DIAZOTYPE MATERIAL, **filed** Feb. 11, 1975, D.C., N.D. Calif. (San Francisco), Doc. C–75–0304LHB, *Geni-Chlor International Inc.* v. *Multisonics Development Corp.*

3,470,638. (See 3,217,867.)

3,483,523, Cogar, Sekse, Banziger, Ming and Horvath, DATA RECORDING AND VERIFYING MACHINE, **filed** Aug. 18, 1970, D.C., S.D.N.Y., Doc. 70–3584, *Mohawk Data Sciences Corp.* v. *Honeywell Inc.* Stipulation of dismissal under Rule 41(a)(i)(ii) F.R.C.P., dismissing action, including the counterclaim, without prejudice, Feb. 7, 1975.

3,604,707. (See 3,337,212.)

3,632,138, W. P. Whitley, Jr., IMMERSIBLE BOAT TRAILER WITH BOAT CRADLING AND LATCHING MEANS, **filed** Feb. 14, 1975, D.C., N.D. Fla. (Tampa), Doc. 75–122–C–T.H., *Southeastern Fabricators Inc. et al.* v. *Edward G. Boettcher et al.*

3,633,774, W. S. Lee, MOVING METHOD; **3,809,261**, same, **filed** Nov. 11, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c3240, *William S. Lee and Lee Moving and Storage* v. *Michael Bartnett and Neptune World-Wide Moving, Inc.*

3,725,158, Schmidt, Heyman and Johnsen, MULTICOMPONENT POWDERLESS ETCHING BATH ADDITIVE; **3,725,159**, same, POWDERLESS ETCHING BATH COMPOSITIONS, **filed** Nov. 5, 1973, D.C.N.J. (Newark), Doc. 1596–73, *Mona Industries, Inc.* v. *Philip A. Hunt Chemical Corporation.* Stipulation and order dismissing complaint and counterclaim, Feb. 20, 1975.

3,725,159. (See 3,725,158.)

3,743,280, D. Martinez, EXERCISING DEVICE, **filed** Aug. 5, 1974, D.C.N.J. (Trenton), Doc. C–74–1189, *Rainbow Lifegard Products Inc.* v. *General Home Products Corporation.* Case reported settled. Order of dismissal without costs, Feb. 19, 1975.

3,795,347, E. Singer, POWER PURGED LIQUID SAMPLER, **filed** Feb. 14, 1975, D.C., N.D. Calif. (San Francisco), Doc. C–75–0331 RHS, *Sirco Products Limited* v. *Manning Environmental Corp. and J. Gordon Schontzler.*

3,796,430, K. Sudo, COLLAPSIBLE BABY WALKER WITH PROTECTIVE COVERS FOR LEG JOINTS THEREOF, **filed** Feb. 13, 1975, D.C., E.D. Pa. (Philadelphia), Doc. C–75–426, *Century Products, Inc.* v. *Graco Metal Products, Inc., doing business as Swyngomatic Industries.*

3,809,261. (See 3,633,774.)

3,812,636, Albrecht, Curran and Lindner, SHEET METAL DECKING UNIT AND COMPOSITE FLOOR CONSTRUCTION UTILIZING THE SAME, **filed** Feb. 18, 1975, D.C., M.D. Fla. (Tampa), Doc. 75–125, *H. H. Robertson Company* v. *Epic Metals Corporation.*

3,834,220, H. O. Westmoreland, BUBBLE TEST FOR INTERNAL COMBUSTION ENGINES, **filed** Feb. 11, 1975, D.C., E.D. Mich. (Detroit), Doc. 75–70259, *Hollis O. Westmoreland* v. *General Motors Corp.*

3,842,732, J. Anderson, TAILGATE CONTROL FOR STACKERS, **filed** Feb. 20, 1975, D.C. Kans. (Wichita), Doc. 75–36–C6, *Hesston Corporation* v. *John Deere Company.* Plaintiff hereby voluntarily dismisses the above action in accordance with the provisions of Rule 41 of the Federal Rules of Civil Procedure. Service has not been made on the defendant in this matter, Feb. 20, 1975.

3,850,336, E. Acosta, COUNTERBALANCE APPARATUS FOR A REFUSE CONTAINER LID, **filed** Feb. 11, 1975, D.C., S.D. Fla. (Miami), Doc. 75–199–C–CA, *Enro Steel Containers Inc.* v. *Hydraulic Equipment Systems and Fabricating Inc.*

Re. 26,601. (See 3,232,761.)

D. 227,352, Meng and Driessen, PACKAGE WITH STAGGERED PRODUCT SLICES, **filed** Jan. 7, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c47, *L. D. Schreiber Cheese Co., Inc.* v. *Kraftco Corporation.*

D. 227,503, G. E. Raymond, MOBILE PHOTOCOPY CAMERA UNIT, **filed** Sept. 17, 1974, D.C.N.J. (Newark), Doc. C74–1442, *Gary E. Raymond* v. *M. P. Goodkin Co.* Stipulation and order of dismissal of action, Feb. 21, 1975.

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds, should be furnished the Commissioner of Patents on or before August 8, 1975.

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June 17, 1975. *Chairman, Committee on Enrollment.*

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Certificates of Correction for the Week of July 8, 1975

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Adverse Decisions in Interferences

In the designated interferences involving the indicated claims of the following patents, final decisions have been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,304,563, M. J. Fino, ADHESIVE APPLYING MECHANISMS, Interference No. 97,244, decided Feb. 16, 1972, claims 1, 2, 6, 7, 9, 10, 14 and 15.

Patent No. 3,487,392, M. A. Lewis, INCREMENTAL WEB MEMBER DRIVE SYSTEM, Interference No. 97,932, decided Feb. 10, 1975, claims 2 and 3.

Patent No. 3,513,718, J. J. Tomecek, CONTROL SYSTEM ADJUSTMENT MEANS, Interference No. 97,610, decided Feb. 26, 1974, claim 1.

Patent No. 3,535,349, T. B. Windholz, A. A. Patchett, J. Fried, 13-POLYCARBON ALKYL-GONA-4-EN-3-ONES AND 17-ACYLATES THEREOF, Interference No. 97,824, decided Oct. 25, 1974, claim 1.

Patent No. 3,553,041, G. W. Von Hofe, METHOD OF AND MEANS FOR DETECTING CONDITIONS IN THE LABEL AREAS OF LABELED ARTICLES, Interference No. 98,198, decided Nov. 15, 1974, claims 1, 2, 3, 5 and 9.

Patent No. 3,575,502, R. Eppe, ELECTROPHOTOGRAPHIC COPYING ARRANGEMENT, Interference No. 98,084, decided Oct. 30, 1974, claims 1, 8 and 9.

Patent No. 3,634,203, W. R. McMahon, T. H. Ramsey, Jr., THIN FILM METALLIZATION PROCESSES FOR MICROCIRCUITS, Interference No. 98,018, decided Dec. 11, 1973, claims 1, 2, 3 and 4.

Patent No. 3,713,209, J. M. Biddison, AUTOMATIC ARMATURE WINDING, Interference No. 98,353, decided Mar. 3, 1975, claims 1, 4, 6, 7, 8, 9, 11, 13, 16 and 17.

Patent No. 3,750,873, R. R. Roman, COOKING AND STERILIZING BAG AND A BAG ROLL. Interference No. 98,785, decided Feb. 28, 1975, claims 1–4.

Patent No. 3,781,930, M. P. Spitz, CONNECTING DEVICE FOR ADJUSTABLE BEDFRAME, Interference No. 98,751, decided Feb. 5, 1975, claims 1, 4 and 5.

Disclaimers and Dedications

3,558,998.—*Robert B. Bertolasi,* Rockford, Ill. REVERSIBLE POLARITY UNIVERSAL ELECTRICAL DISCHARGE MACHINING POWER SUPPLY WITH CURRENT CUT-OFF. Patent dated Jan. 26, 1971. Disclaimer and dedication filed Sept. 19, 1974, by the assignee, *Amsted Industries Incorporated.*

Hereby disclaims and dedicates to the Public the remaining term of said patent.

3,637,244.—*Richard A. Strizki,* Ringoes, N.J. LOAD CONCENTRATED BREAKAWAY COUPLING. Patent dated Jan. 25, 1972. Disclaimer and dedication filed Oct. 18, 1974, by the assignee, *The State of New Jersey.*

Hereby disclaims and dedicates to the Public the remaining term of said patent.

Dedication

3,609,707.—*Jordan D. Lewis,* Worthington, and *Albert H. Adelman,* Columbus, Ohio. METHOD AND APPARATUS FOR GENERATING THREE-DIMENSIONAL PATTERNS. Patent dated Sept. 28, 1971. Dedication filed Aug. 2, 1974, by the assignee, *Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

Disclaimers

Design No. 234,022.—*Seymour R. Cray, Lester T. Davis,* and *Maurice D. Roush,* Chippewa Falls, Wis. COMPUTER MAINFRAME CONSOLE. Patent dated Dec. 31, 1974. Disclaimer filed Nov. 25, 1974, by the assignee, *Control Data Corporation.*

Hereby disclaims the term of the patent subsequent to Nov. 26, 1988.

3,536,722.—*Keisuke Murayama, Syoji Morimura,* and *Tetsuya Tanaka,* Tokyo, Japan. PIPERIDINE-N-OXYL-SPIROHYDANTOIN DERIVATIVES. Patent dated Oct. 27, 1970. Disclaimer filed Oct. 11, 1974, by the assignee, *Sankyo Company, Limited.*

Hereby enters this disclaimer to claims 1 and 2 of said patent.

3,579,088.—*Taylor C. Fletcher,* Fullerton, *Lawrence M. Silva,* Portuguese Bend, and *Bruce L. Wilkinson,* Torrance, Calif. FERRORESONANT TRANSFORMER WITH CONTROLLABLE FLUX. Patent dated May 18, 1971. Disclaimer filed Jan. 23, 1974, by the inventors.

Hereby enters this disclaimer to claims 1, 3, 7, 8, 9, 11, 12, 13 and 17 of said patent.

3,655,188.—*Karsten Solheim*, Phoenix, Ariz. CORRELATED GOLF CLUB SET. Patent dated Apr. 11, 1972, Disclaimer filed May 7, 1973, by the inventor.

Hereby enters this disclaimer to claims 1 and 2 of said patent.

3,732,682.—*Francis N. Crotty, William C. Gause*, and *George E. Hartranft*, Baltimore, Md. METHODS OF AND APPARATUS FOR TWISTING AND STRANDING CABLE PAIRS IN A TANDEM OPERATION. Patent dated May 15, 1973. Disclaimer filed Sept. 23, 1974, by the assignee, *Western Electric Company, Incorporated.*

Hereby enters this disclaimer to claims 1–24, 27–28, 38–40 and 42 of said patent.

3,732,940.—*Warren H. Price*, Sheboygan, Wis. TRACTOR SUBASSEMBLY. Patent dated May 15, 1973. Disclaimer filed Aug. 29, 1973, by the assignee, *Gilson Bros. Co.*

Hereby enters this disclaimer to claims 1, 2 and 3 of said patent.

3,742,559.—*Stephen Punako, Bainbridge*, and *George J. Swanson*, Sidney, N.Y. PLASTIC CABLE SUPPORT. Patent dated July 3, 1973. Disclaimer filed July 30, 1973, by the assignee, *The Bendix Corporation.*

Hereby disclaims the term of the patent subsequent to Mar. 13, 1990.

3,772,104.—*Edwin Arthur Chandross*, Murray Hill, and *Theodore Arthur Shankoff*, Mendham, N.J. FABRICATION OF THIN FILM DEVICES. Patent dated Nov. 13, 1973. Disclaimer filed Dec. 17, 1973, by the assingee, *Bell Telephone Laboratories, Incorporated.*

Hereby enters this disclaimer to claims 1 and 2 of said patent.

3,772,245.—*Martin Dexter*, Briarcliff Manor, N.Y. POLYOLEFINS STABILIZED WITH ORGANIC HYDRAZINE COMPOUNDS AND PHENOLIC ANTIOXIDANTS. Patent dated Nov. 13, 1973. Disclaimer filed Jan. 21, 1974, by the assignee, *Ciba-Geigy Corporation.*

Hereby enters this disclaimer to claim 1 of said patent.

3,783,394.—*Leslie Ronald Avery*, Byfleet, England. FREQUENCY COMPARATOR SYSTEM. Patent dated Jan. 1, 1974. Disclaimer filed July 17, 1974, by the assignee, *RCA Corporation.*

Hereby enters this disclaimer to claims 1 through 5 of said patent.

3,785,094.—*Rudolf Holzhauer*, Marienheide/Rhineland, Germany. ABRASIVE MEDIUM. Patent dated Jan. 15, 1974. Disclaimer filed Feb. 6, 1974, by the assignee, *Firma August Ruggeberg.*

Hereby disclaims the term of the patent subsequent to Oct. 2, 1990.

3,794,378.—*Harry Haslam, Detroit*, and *Giulio Massetti* and *Herbert W. Truesdale*, Dearborn Heights, Mich. SEAT ASSEMBLY. Patent dated Feb. 26, 1974. Disclaimer filed June 17, 1974, by the assignee, *Ford Motor Company.*

Hereby enters this disclaimer to claims 1 to 5, inclusive, of said patent.

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Hereby disclaims the term of the patent subsequent to Jan. 29, 1990.

National Technical Information Service

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DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

DEPARTMENT OF HEALTH, EDUCATION AND WELFARE

National Institutes of Health, Chief, Patent Branch,
Bethesda, Md. 20014

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DEPARTMENT OF THE NAVY

Assistant Chief for Patents, Office of Naval Research,
Arlington, Va. 22217

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Assistant General Counsel for Patent Matters, NASA—
Code GP2, Washington, D.C. 20546

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Assistant General Counsel for Patents,
Washington, D.C. 20545

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Chief, Research Agreements and Patent Mgmt. Branch,
Federal Bldg., Hyattsville, Md. 20782

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National Institutes of Health, Chief, Patent Branch,
Bethesda, Md. 20014

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Assistant Chief for Patents,
Arlington, Va. 22217

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Assistant General Counsel for Patents
Washington, D.C. 20545

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DEPARTMENT OF THE AIR FORCE

AF/JACP, Washington, D.C. 20314

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DEPARTMENT OF AGRICULTURE

Chief, Research Agreements and Patent Mgmt. Branch,
Federal Bldg., Hyattsville, Md. 20782

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National Institutes of Health, Chief, Patent Branch,
Bethesda, Md. 20014

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters, NASA—
Code GP 2, Washington, D.C. 20546

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DEPARTMENT OF HEALTH, EDUCATION AND WELFARE

National Institutes of Health, Chief, Patent Branch,
Bethesda, Md. 20014

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DEPARTMENT OF THE NAVY

Assistant Chief for Patents, Office of Naval Research,
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ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION

Assistant General Counsel for Patents
Washington, D.C. 20545

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AF/JACP, Washington, D.C. 20314

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Patent 3,867,701. Method of Changing a Phase Difference in an Input Pulse to a Pulse Rate. Filed Sept. 27, 1968. Patented Feb. 18, 1975. Not available NTIS.

Patent 3,867,759. Method of Manufacturing a Multi-Layered Strip Transmission Line Printed Circuit Board Integrated Package. Filed June 13, 1973. Patented Feb. 25, 1975. Not available NTIS.

DEPARTMENT OF AGRICULTURE

Chief, Research Agreements & Patent Mgmt. Branch,
General Services Div., Hyattsville, Md. 20782

Patent application 438,307. Recovery and Reactivation of Rhodium Catalysts. Filed Jan. 31, 1974. PC $3.25/MF $2.25.

Patent application 454,524. Improved Method of Making Mineral-Filled Paper. Filed Mar. 25, 1974. PC $3.75/MF $2.25.

Patent application 465,650. Apparatus and Method for Obtaining Undisturbed Soil Core Samples. Filed Apr. 30, 1974. PC $3.25/MF $2.25.

Patent application 515,262. Insoluble-Starch-Xanthate for Heavy Metal Ion Removal. Filed Oct. 16, 1974. PC $3.75/MF $2.25.

Patent 3,809,771. Process for Obtaining Full-Fat Oilseed-Protein Beverages. Filed Aug. 8, 1972. Patented May 7, 1974. Not available NTIS.

Patent 3,809,773. Method for Preparing a Liquid Iron-Fortifying Composition. Filed Feb. 25, 1972. Patented May 7, 1974. Not available NTIS.

Patent 3,823,132. Flame-Retardant Polyurethane Foams. Filed July 9, 1971. Patented July 9, 1974. Not available NTIS.

Patent 3,830,762. Polysaccharide-Containing Elastomers. Filed Aug. 24, 1973. Patented Aug. 20, 1974. Not available NTIS.

DEPARTMENT OF TRANSPORTATION

Patent Counsel, 400 7th St. SW,
Washington, D.C. 20590

Patent application 555,021. A Grade-Crossing Motorist Warning System. Filed Mar. 3, 1975. PC $3.25/MF $2.25.

DEPARTMENT OF HEALTH, EDUCATION AND WELFARE

National Institutes of Health, Westwood Bldg.,
Bethesda, Md. 20014

Patent application 546,786. Polysiloxane Membrane Lung. Filed Feb. 3, 1975. PC $3.25/MF $2.25.

DEPARTMENT OF THE NAVY

Assistant Chief for Patents, Office of Naval Research,
Arlington, Va. 22217

Patent application 380,780. Thin Film MIS Photovoltaic Detector. Filed July 19, 1973. PC $3.25/MF $2.25.

Patent application 385,494. An Improved Optical Tracking System. Filed Aug. 3, 1973. PC $3.25/MF $2.25.

Patent application 401,014. Spiral Scan Generator. Filed Sept. 26, 1973. PC $3.25/MF $2.25.

Patent application 402,659. Method and Apparatus for Determining Near-Field Antenna Patterns. Filed Oct. 1, 1973. PC $3.25/MF $2.25.

Patent application 405,957. Automatic Testing System for Radar Magnetrons. Filed Oct. 12, 1973. PC $3.25/MF $2.25.

Patent application 418,339. An Improved Armored Helicopter Seat. Filed Nov. 23, 1973. PC $3.25/MF $2.25.

Patent application 423,624. Optical Switch. Filed Dec. 10, 1973. PC $3.25/MF $2.25.

Patent application 432,270. An Improved Signal Processor System. Filed Jan. 10, 1974. PC $3.25/MF $2.25.

Patent application 432,384. Acoustic Velocimeter for Ocean Bottom Coring Apparatus. Filed Jan. 10, 1974. PC $3.25/MF $2.25.

Patent application 433,037. Multi-Wire Cable to Coaxial Cable Transition Apparatus. Filed Jan. 14, 1974. PC $3.25/MF $2.25.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters, NASA—
Code GP–2, Washington, D.C. 20546

Patent application 536,785. The 3-5 Photocathode With Nitrogen Doping for Increased Quantum Efficiency. Filed Dec. 27, 1974. PC $3.75/MF $2.25.

Patent application 538,982. Inrush Current Limiter. Filed Jan. 6, 1975. PC $3.25/MF $2.25.

Patent application 542,157. Method of Constructing Dished Ion Thruster Grids to Provide Hole Arrays Spacing Compensation. Filed Jan. 20, 1975. PC $3.25/MF $2.25.

Patent application 544,611. High Temperature Capacitor. Filed Jan. 28, 1975. PC $3.25/MF $2.25.

Patent application 545,284. System for Measuring Reynolds Stress in a Turbulently Flowing Fluid. Filed Jan. 29, 1975. PC $3.25/MF $2.25.

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ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION

Assistant General Counsel for Patents
Washington, D.C. 20545

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Patent 3,479,295. Method of Reducing Radioactive Waste Solution to Dryness. Patented Nov. 18, 1969. Not available NTIS.

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Patent 3,845,300. Apparatus and Method for Magnetoplasmadynamic Isotope Separation. Filed Apr. 18, 1973. Patented Oct. 29, 1974. Not available NTIS.

Patent 3,845,633. Interceptor for Preventing Ship Collisions With Offshore Power Stations and the Like. Filed Dec. 13, 1973. Patented Nov. 5, 1974. Not available NTIS.

Patent 3,846,121. Method for Preparing Scandium Metal. Filed Apr. 10, 1974. Patented Nov. 5, 1974. Not available NTIS.

Patent 3,846,668. Plasma Generating Device. Filed Feb. 22, 1973. Patented Nov. 5, 1974. Not available NTIS.

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Patent 3,851,179. Shipping Cask Neutron and Heat Shield. Filed Feb. 5, 1974. Patented Nov. 26, 1974. Not available NTIS.

Patent 3,851,248. Vibrating Fiber Electrometer. Filed Aug. 17, 1973. Patented Nov. 26, 1974. Not available NTIS.

Patent 3,851,274. Recirculating Liquid-Nitrogen-Coolant System for Solid-State Lasers. Filed June 29, 1973. Patented Nov. 26, 1974. Not available NTIS.

Department of the Air Force

AF/JACP, Washington, D.C. 20314

Patent application 452,590. Bubble Domain Structures. Filed Mar. 9, 1974. PC $3.25/MF $2.25.

Patent application 488,129. System for Adjusting Individual Sensors in an Array. Filed July 12, 1974. PC $3.25/MF $2.25.

Patent application 492,076. Braking Device for Aircraft Gyroscope. Filed July 26, 1974. PC $3.25/MF $2.25.

Patent application 494,936. Means and Method for Determining Meridan Location and Azimuth. Filed Aug. 5, 1974. PC $3.25/MF $2.25.

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Patent application 522,370. Variable Stagger Angle Rotor Actuation Assembly. Filed Nov. 8, 1974. PC $3.25/MF $2.25.

Patent application 522,371. Apparatus for Dispensing Rain Repellent Fluid. Filed Nov. 8, 1974. PC $3.25/MF $2.25.

Patent application 525,592. Laser Power Supply. Filed Nov. 20, 1974. PC $3.25/MF $2.25.

Patent application 525,594. Self-Referencing Retransmitting Alignment Sensor for a Collimated Light Beam. Filed Nov. 20, 1974. PC $3.25/MF $2.25.

Patent application 525,711. Rebreathing System. Filed Nov. 20, 1974. PC $3.25/MF $2.25.

Patent application 526,191. Benzothiophenediozideisoquinoline Polymers and Method for Synthesizing Same. Filed Nov. 22, 1974. PC $3.25/MF $2.25.

Patent application 526,192. Thermally Stable, Highly Fused Quinozaline Composition and Method of Synthesis. Filed Nov. 22, 1974. PC $3.25/MF $2.25.

Patent application 529,194. Heat Pipe System. Filed Dec. 3, 1974. PC $3.25/MF $2.25.

Patent application 530,569. Method and Apparatus for Determining the Mechanism Responsible for Laser-Induced Damage. Filed Dec. 9, 1974. PC $3.25/MF $2.25.

Patent application 531,645. Calorimeter for an Unstable Laser Resonator. Filed Dec. 11, 1974. PC $3.25/MF $2.25.

Patent application 535,060. Rotatable Window Means. Filed Dec. 20, 1974. PC $3.25/MF $2.25.

Patent application 535,061. Dynamic Damping Apparatus. Filed Dec. 20, 1974. PC $3.25/MF $2.25.

Patent application 535,066. A Precision Light Exposure Timing Mechanism for a Wide Range of Exposure Duration. Filed Dec. 20, 1974. PC $3.25/MF $2.25.

Patent application 535,067. Method of Connecting a Metal Conduit to a Plastic Conduit. Filed Dec. 20, 1974. PC $3.25/MF $2.25.

Patent 3,845,409. Laser Grating Couplers. Filed Nov. 27, 1973. Patented Oct. 29, 1974. Not available NTIS.

Patent 3,846,376. Thermally Stable Perfluoroalkylene Ether Bibenzoxazole Polymers. Filed Sept. 26, 1973. Patented Nov. 5, 1974. Not available NTIS.

Patent 3,846,798. Integrated Window Antenna, and Waveguide With Plasma Alleviation. Filed Aug. 12, 1968. Patented Nov. 5, 1975. Not available NTIS.

Patent 3,846,903. Vacuum Brazing Tantalum Alloys. Filed July 13, 1973. Patented Nov. 12, 1974. Not available NTIS.

Patent 3,848,197. Boost-Surge Power Supply. Filed Apr. 9, 1973. Patented Nov. 12, 1974. Not available NTIS.

Patent 3,854,325. Method and Means for Determining Fatigue Damage and Surface Stress. Filed July 13, 1973. Patented Dec. 17, 1974. Not available NTIS.

Patent 3,855,686. Cartridge Link Guide Assembly. Filed Nov. 27, 1973. Patented Dec. 27, 1974. Not available NTIS.

Patent 3,855,849. Reentry Vehicle Nose Tip Flight Testing Apparatus. Filed Apr. 16, 1973. Patented Dec. 24, 1974. Not available NTIS.

Patent 3,858,209. Radar Moving Target Tracking System. Filed July 27, 1962. Patented Dec. 31, 1974. Not available NTIS.

Patent 3,858,213. Antenna With Short Line Tuning Stub. Filed Oct. 18, 1965. Patented Dec. 31, 1974. Not available NTIS.

National Aeronautics and Space Administration

Assistant General Counsel for Patent Matters, NASA—Code GP–2, Washington, D.C. 20546

Patent application 533,734. The DC-to-DC Converters Employing Staggered Phase Power Switches With Two Loop Control. Filed Dec. 17, 1974. PC $3.25/MF $2.25.

Patent 3,859,736. Kinesthetic Control Simulator. Patented Jan. 14, 1975. Not available NTIS.

Patent 3,860,858. Variable Frequency Inverter for AC Induction Motors With Torque, Speed and Braking Control. Patented Jan. 14, 1975. Not available NTIS.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JUNE 7, 1975

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry: Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	8-8-74
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director Heterocyclic, Amides; Alkaloids; Azo; Sulfur: Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	4-26-74
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	6-24-74
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	9-17-74
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	8-22-74
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination: Horology; Acoustics; Recorders; Weighing Scales.	12-4-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	3-11-74
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	8-22-74
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	11-15-74
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	5-8-74
DESIGNS, GROUP 290—C. D. QUARFORTH, Director Industrial Arts; Household, Personal and Fine Arts.	3-4-74
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	9-25-74
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	9-23-74
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	7-30-74
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	10-8-74
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	11-18-74

Expiration of patents: The patents within the range of numbers indicated below expire during July 1975, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 2,840,821 to 2,845,624 inclusive
Plant Patents	Numbers 1,722 to 1,739 inclusive

REISSUES

JULY 8, 1975

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 28,463
LIST FINDER WITH INSERTABLE INFORMATION CARDS

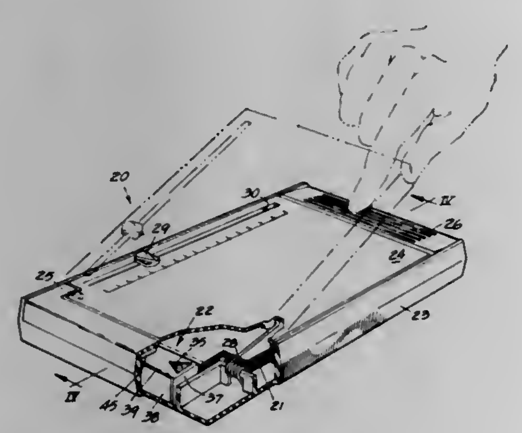
Chuzo Mori, Tokyo, Japan, assignor to Carl Manufacturing Company Ltd., Tokyo, Japan

Original No. 3,820,264, dated June 28, 1974, Ser. No. 316,815, Dec. 20, 1972. Application for reissue Sept. 9, 1974, Ser. No. 504,042

Claims priority, application Japan, Sept. 28, 1972, 47-112875

Int. Cl. B42f *21/00*

U.S. Cl. 40—104.01 **17 Claims**



1. A list finder comprising
- a horizontally disposed holder having a forward end and defining a receptable therein,
- a card cartridge, disposed in said receptacle, comprising a plurality of stacked elongated and rectangular information cards having indicia formed thereon and releasably clamped together entirely across their forward ends by clamping means, said clamping means comprising a clamping device having top and bottom members connected together to respectively overlie and underlie the forward ends of said information cards,
- a normally closed cover pivotally mounted on said holder to cover said cards and means for selectively raising said cover, said cover having pointer means movably mounted thereon to selectively expose one of said information cards upon opening of said cover, and
- retaining means, releasably mounting a forward end of said card cartridge in the forward end of said holder for permitting composite removal of said card cartridge therefrom.

Re. 28,464
MAGNETIC SUSPENSION FLOWMETERS

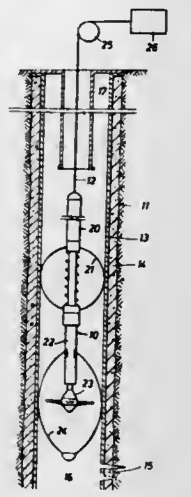
Jean-Loup Bonnet, par Verrieres le Buisson, France, assignor to Schlumberger Technology Corporation, New York, N.Y.

Original No. 3,630,078, dated Dec. 28, 1971, Ser. No. 872,971, Oct. 31, 1969. Application for reissue Apr. 17, 1974, Ser. No. 425,907

Int. Cl. E21b *47/00*

U.S. Cl. 73—155 **21 Claims**

1. Apparatus for measuring fluid flow rate in a well borehole comprising:
- a body member sized for passage through a well bore;
- a longitudinal shaft member rotatably mounted in said body member so that it is also free to undergo limited motion along the direction of the longitudinal axis of said body member, said shaft member having at least a portion of its length comprised of ferromagnetic material and having an end portion extending exteriorly to said body member;
- a measuring screw system including a plurality of foldable blades carried on the exterior portion of said shaft member together with means for folding and unfolding said blades; and
- solenoid means mounted in said body member and adjacent said shaft member so that an electrical current flowing in said solenoid interacts with said ferromagnetic portion of said shaft to suspend it free of touching engagement with any supporting member.



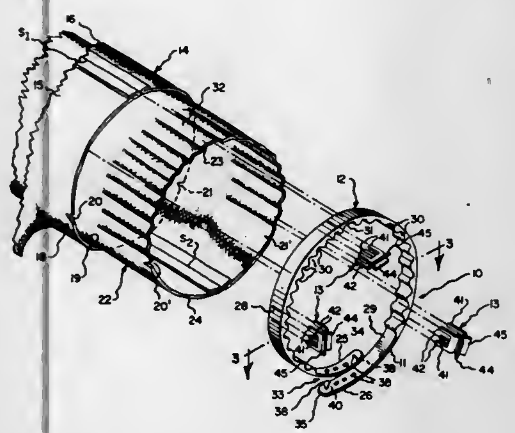
Re. 28,465
SEWING AID DEVICE FOR, AND METHOD OF, SETTING A SLEEVE IN THE ARMHOLE OF A BODICE

Regina Reidy, 258 W. 7th St., Emporium, Pa. 15834

Original No. 3,776,436, dated Dec. 4, 1973, Ser. No. 343,395, Mar. 21, 1973. Continuation-in-part of Ser. No. 221,994, Jan. 31, 1972 abandoned. Application for reissue Sept. 3, 1974, Ser. No. 502,611

Int. Cl. A41h *43/00*

U.S. Cl. 223—1 **18 Claims**



1. A sewing aid device for setting a sleeve in the armhole of a bodice, comprising an elongated strip having a first surface on one side arranged to be covered by the marginal portion of said bodice at said armhole, and also having for a portion of its longitudinal extent a second surface on its opposite side arranged to cover the cap portion of said sleeve, said second surface having a series of depressions extending transversely of said strip and spaced from one another longitudinally therealong, and means for holding such bodice marginal portion against said first surface and for holding such sleeve cap portion against said second surface whereby the material of said sleeve cap portion is gathered relative to said bodice marginal portion.

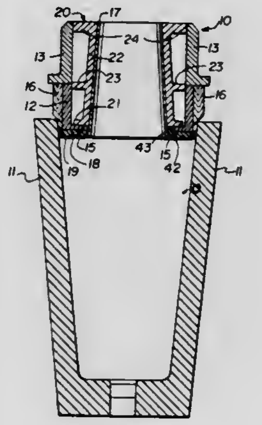
Re. 28,466
HOT TOP FOR BIG-END-UP INGOT MOLDS AND METHOD OF ASSEMBLING SAME

Fred Eastwood, Fairview Park; John Harry Brindle, Lakewood, both of Ohio, and Frederick L. Kolb, Jr., Venetia, Pa., assignors to Foseco International Ltd., Birmingham, England

Original No. 3,458,169, dated July 29, 1969, Ser. No. 389,656, Aug. 14, 1964. Application for reissue June 20, 1972, Ser. No. 273,526

Int. Cl. B22d *7/10*

U.S. Cl. 249—201 **10 Claims**



1. A low volume, rapid turn-around hot top especially adapted for use with a big-end-up ingot mold having a top opening of a predetermined cross-sectional area comprising, in combination, a metal casing adapted to be mounted on the top of a big-end-up mold, the inside surface of said metal casing being inclined downwardly and outwardly to provide a gradually increasing hot top opening, a refractory bottom ring secured to the lower end of said metal casing with the *entire* inside surface of said ring being substantially flush with the inside surface of said metal casing and tapered at the same angle, and an expandable, highly insulating refractory liner comprising a plurality of preformed refractory boards fitted within said metal casing in bearing engagement with the inclined surfaces thereof *and wedged tightly together against the inside surface of said casing with the longitudinal edges of said boards abutting each other*, the lower portions of said boards extending downwardly in bearing engagement with the inner surfaces of said bottom ring to substantially prevent the spread of molten metal upwardly therebetween.

Re. 28,467
THROWING MEMBER AND PAIR OF MULTIPLE-TARGET AREA POST MEMBERS

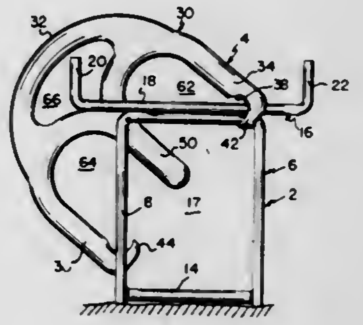
Frank E. Curtiss, 819 East Erie St., Painesville, Ohio 44077, and Jack E. Curtiss, 246 Corduroy Rd., Mentor, Ohio 44060

Original No. 3,602,509, dated Aug. 31, 1971, Ser. No. 857,084, Sept. 11, 1969. Application for reissue Aug. 31, 1973, Ser. No. 393,551

Int. Cl. A63b *71/00*

U.S. Cl. 273—100 **13 Claims**

1. A game system comprising,
- a pair of post members each having a multiple-target-area-like construction adapted to be mounted in spaced apart relation on a support surface,
- at least one throwing member having multiple-scoring-area-like construction adapted to be thrown into scoring registration with said post members,
- said post members each include a generally inverted U-shaped lower section defining a closed target area, and a generally U-shaped upper section made integral with said lower section and facing outwardly away from said lower section.



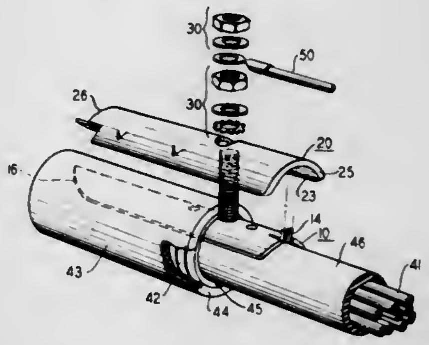
Re. 28,468
CABLE SHIELD CONNECTOR

Robert Garland Baumgartner, Baltimore, Md., and Harry James Graff, Somerville, N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Original No. 3,757,269, dated Sept. 4, 1973, Ser. No. 181,030, Sept. 16, 1971. Application for reissue May 2, 1974, Ser. No. 466,381

Int. Cl. H01r *3/06*

U.S. Cl. 339—14 L **9 Claims**



1. A connector assembly for providing electrical connection to the shield of a cable having a plurality of conductors within said shield and a protective jacket overlaying said shield, with said shield and said jacket having discontinuity therein to form ends, comprising, in combination:
- a first plate of conductive material having top and bottom surfaces and first and second ends, said plate having an upstanding tang on said second end thereof;
- a threaded stud mounted on said first plate and extending upwardly therefrom; said first plate adapted to have said first end inserted into said cable in contact with said shield so that said stud abuts said ends and said second end extends away from said ends along said cable [.];
- a second plate having top and bottom surfaces and having first and second ends corresponding to said first and second ends of said first plate and adapted for installation on said stud over the exterior of said jacket; and
- mounting means engaging said stud for forcing said second plate toward said first plate to cause said second end of said second plate to contact said tang causing said second plate to pivot thereabout so that said first ends of said first and second plates clamp together whereby said jacket and said shield can be clamped between said first ends when said assembly is installed on said cable.

Re. 28,469

DRY CLEANING PROCESS

Ector P. Impullitti, deceased, late of Detroit, Mich. (by Madeline Impullitti, administratrix), assignor to F. W. Means & Company, Chicago, Ill.

Original No. 3,577,215, dated May 4, 1971, Ser. No. 796,069, Feb. 3, 1969. Application for reissue Apr. 27, 1973, Ser. No. 355,107

Int. Cl. D06l *1/02*

U.S. Cl. 8—142 **12 Claims**

1. A process for cleaning a soiled textile *cleaning* article comprising:

a. contacting the soiled article at a temperature in the range of about 60 to 250°F. with a petroleum mineral oil having [a viscosity in the range of about 100 to 800 SUS at 100°F. and] *lubricating viscosity and having viscosity-gravity constant in the range of about 0.79 to 1.05 substantially as sole cleaning agent* in an amount in excess of that necessary to saturate the article;

b. agitating the oil while in contact with said articles;

c. and removing the excess oil from the cleaned, oil-impregnated textile article.

Re. 28,470

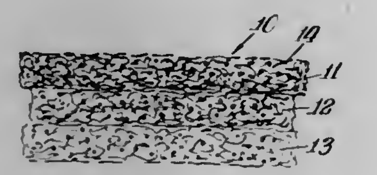
POROUS METAL STRUCTURE

Harold H. Webber, Groton, Mass., assignor to Brunswick Corporation, Skokie, Ill.

Original No. 3,469,297, dated Sept. 30, 1969, Ser. No. 543,980, Apr. 20, 1966. Application for reissue June 6, 1974, Ser. No. 477,101

Int. Cl. B32b *5/26, 15/18;* **B32p** *17/06*

U.S. Cl. 29—180 R **2 Claims**



37. A porous metal web structure comprising a plurality of substantially fracture free unmachined and unburnished staple length metal fibers each having a maximum cross-section dimension of less than 50 microns, said fibers having rough outer surfaces and being interlocked in an intermingled relationship substantially solely by means of said rough outer surfaces thereof in frictional engagement, said fibers each provided with tension broken ends.

Re. 28,471

Co-Ni-Cr BASE AUSTENTIC ALLOYS PRECIPITATION STRENGTHENED BY INTERMETALLIC COMPOUNDS AND CARBIDES

Mahesh C. Chaturvedi, 919-17 University Crescent, Winnipeg, Manitoba, Canada

Original No. 3,790,372, dated Feb. 5, 1974, Ser. No. 250,230, May 4, 1972. Application for reissue June 25, 1974, Ser. No. 483,053

Int. Cl. C22c *19/00*

U.S. Cl. 75—134 F **3 Claims**

1. An alloy having a face centered cubic structure consisting essentially of the combination by weight of between 35 percent and 45 percent Cobalt, between 35 percent and 45 percent Nickel, and between 16 percent and 20 percent Chromium, said alloy being precipitation strengthened by the addition of a compound to make up 100 percent by weight taken from the group comprising intermetallic compound and carbides, the intermetallic compound being selected from the group comprising Titanium, Niobium and Aluminium, the carbides being selected from the group comprising Titanium and Carbon, and [Nickel] *Niobium* and Carbon.

Re. 28,472

FLUX FOR USE IN SOLDERING OF STAINLESS STEELS

Lester Aronberg, Chicago, Ill., assignor to Lake Chemical Co., Chicago, Ill.

Original No. 3,597,285, dated Aug. 3, 1971, Ser. No. 821,482, May 2, 1969. Application for reissue Apr. 5, 1974, Ser. No. 458,195

Int. Cl. B23k *35/34*

U.S. Cl. 148—26 **23 Claims**

11. The method of making a flux for use in soldering stainless steels which comprises admixing approximately 100 parts of 75–105% phosphoric acid with from 1 to 20 parts of basic copper carbonate and with from 20 to 60 parts of an ammonium phosphate, said parts being by weight.

Re. 28,473

PRIMARY EXPLOSIVE COMPOSITIONS FOR EXPLOSIVE BONDING OR FORMING

Terri Giversen Steele, Hamilton Twp., Mercer County, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Original No. 3,704,186, dated Nov. 28, 1972, Ser. No. 174,194, Aug. 23, 1971. Application for reissue Nov. 15, 1974, Ser. No. 524,281

Int. Cl.² C06C *1/02*

U.S. Cl. 149—35 **14 Claims**

1. Primary explosive composition useful in explosive bonding, forming or similar processes, said composition comprising:

a. 60–70% by weight of colloidal lead azide;

b. balance essentially vehicle selected from the group consisting of:

i. beta-terpineol in an amount equal to approximately 92% by weight of the vehicle, ethyl cellulose constituting the balance of the vehicle;

ii. Beta-terpineol in an amount equal to approximately 90% by weight of the vehicle, polyvinyl butyral constituting the balance of the vehicle; and

iii. pine oil in amount equal to approximately 92% by weight of the vehicle, ethyl cellulose constituting the balance of the vehicle.

Re. 28,474

PROCESS FOR RAPIDLY DISSOLVING WATER-SOLUBLE POLYMERS

Donald R. Anderson, Oswego, and Alvin J. Frisque, La Grange, both of Ill., assignors to Nalco Chemical Co., Oak Brook, Ill.

Original No. 3,624,019, dated Nov. 30, 1971, Ser. No. 92,031, Dec. 15, 1970. Application for reissue Nov. 8, 1973, Ser. No. 413,831

Int. Cl. C08f *47/16, 47/18*

U.S. Cl. 260—29.6 H **19 Claims**

1. A method of rapidly dissolving an acrylamide polymer into water, which comprises the steps of:

A. preparing a water-in-oil emulsion which contains dispersed therein [a] *between 5–75 percent by weight of* finely divided acrylamide polymer; [thereby providing an acrylamide polymer containing emulsion; and then,] *said emulsion having an oil-to-water ratio between 5:1 – 1:10 and said oil being a hydrocarbon liquid; and then,*

B. inverting said emulsion in water which contains a water-soluble surfactant whereby the acrylamide polymer is released into the water as a solution.

Re. 28,475

PROCESS FOR COPOLYMERIZATION OF MALEIC ANHYDRIDE WITH 1-OLEFINS

Ronald G. Blecke, Lower Salford Twp., Montgomery County, and Robert W. Hill, Gibsonia, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Original No. 3,729,451, dated Apr. 24, 1973, Ser. No. 270,331, July 10, 1972. Application for reissue Mar. 13, 1974, Ser. No. 450,822

Int. Cl.² C08F *2/02, 2/08, 222/06*

U.S. Cl. 260—78.5 R **6 Claims**

1. A dispersion process for manufacturing a copolymer of maleic anhydride with an aliphatic 1-olefin comprising the steps:

a. forming a reaction mixture by mixing together at least one polymerizable liquid 1-olefin having from 4 to 14 carbon atoms, a minor amount of an equimolecular copolymer of maleic anhydride with a linear aliphatic 1-olefin having from 14 to 18 carbon atoms as a dispersing agent, a polymerization initiator and a quantity of maleic anhydride which is less than a molar equivalent of the amount of 1-olefin present,

b. agitating the reaction mixture of step (a) and heating to increase the temperature to the point at which the polymerization reaction is initiated,

c. continuing agitation of the reaction mixture at a temperature near the decomposition temperature of the polymerization initiator until a dispersion of solid copolymer particles in liquid 1-olefin is obtained as a polymerization product mixture, and

d. recovering the solid particles of product from the polymerization product mixture by filtration or evaporation of the liquid 1-olefin.

Re. 28,476

CONTROL OF ENVIRONMENTAL POLLUTION IN TALL OIL FRACTIONATION

Dellason F. Bress, Murray Hill, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Original No. 3,709,793, dated Jan. 9, 1973, Ser. No. 840,723, July 10, 1969. Application for reissue Aug. 8, 1973, Ser. No. 391,892

Int. Cl. C09f *1/00*

U.S. Cl. 260—97.6 **14 Claims**

1. A plant for treating the stripping steam and odorous material carried therein after stripping a tall oil fractionating tower in a manner to reduce pollution comprising:

- a conduit circuit, said circuit comprising:
  - a condenser for condensing said steam, said condenser having an inlet and outlet, the outlet and inlet of said condenser being connected with each other by said circuit so that condensate from said condenser is recirculated from the outlet thereof through the inlet thereof;
  - a purging outlet to purge from said circuit a portion of the circulating water and entrained odorous material at a rate of flow approximately equal to the rate at which said stripping steam enters said condenser;
- a vaporizer connected with said purging outlet for vaporizing the condensate and entrained odorous matter coming through said outlet, to separate it from the entrained organic material;
- a conduit connected between said vaporizer and said fractionating tower for directing the vapor from said vaporizer to said fractionating tower; and
- means between said purging outlet and said vaporizer to separate from said odorous material and water, non-condensible gases, so that said non-condensible gases can be incinerated.

Re. 28,477

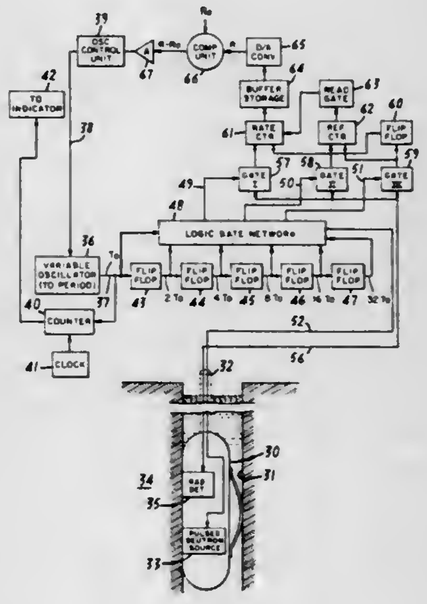
METHOD AND APPARATUS FOR MEASURING NEUTRON CHARACTERISTICS OF A MATERIAL SURROUNDING A WELL BORE

William B. Nelligan, Danbury, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.

Original No. 3,566,116, dated Feb. 23, 1971, Ser. No. 592,795, Nov. 8, 1966. Application for reissue Feb. 23, 1973, Ser. No. 335,165

Int. Cl. G01t *1/16*

U.S. Cl. 250—262 **67 Claims**



1. A method for logging a characteristic of an unknown material comprising irradiating the material with neutrons during at least two spaced irradiation intervals, detecting indications of the neutron concentration in the material during first and second periods, respectively, after commencement of the corresponding irradiation interval, determining a neutron characteristic of the material from the detected indications occurring during at least one measurement interval during the respective periods, the time of occurrence of at least one measurement interval during the second period being variable, and controlling automatically the variable time of at least one measurement interval during the second period in accordance with the neutron characteristic determined from the indications detected during the first period in the same logging run.

Re. 28,478

WINDING SUPPORT SYSTEM FOR A DYNAMOELECTRIC MACHINE

John J. Bahn; Almy D. Coggeshall, both of Schenectady; Richard T. Maher, Wilton, and John B. Waldbillig, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

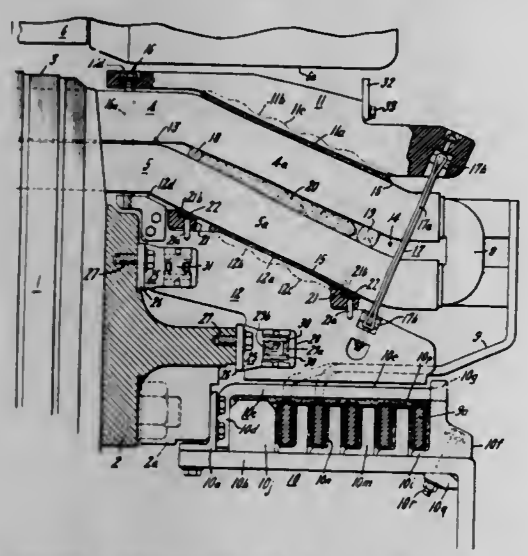
Original No. 3,089,048, dated May 7, 1963, Ser. No. 33,808, June 3, 1960. Application for reissue June 15, 1973, Ser. No. 370,349

Int. Cl. H02k *3/46*

U.S. Cl. 310—260 **9 Claims**

9. For use on a dynamoelectric machine stator having a circumferential structural member supporting the end turns of the stator winding, the combination of a plurality of axially spaced collecting rings electrically connected to said end turns, first stationary means restraining said collecting rings in an axial direction, a plurality of rigid spacer means interposed between said collecting rings, second means movable in an axial direction relative to one another and with respect to said first means and transversely to the collecting rings, a plurality of conformable thermosetting pads disposed between the

collecting rings and said spacer means, and third adjustable means causing the second means to move toward the first stationary means constricting the thermosetting pads to hold the collecting rings in a rigid framework.



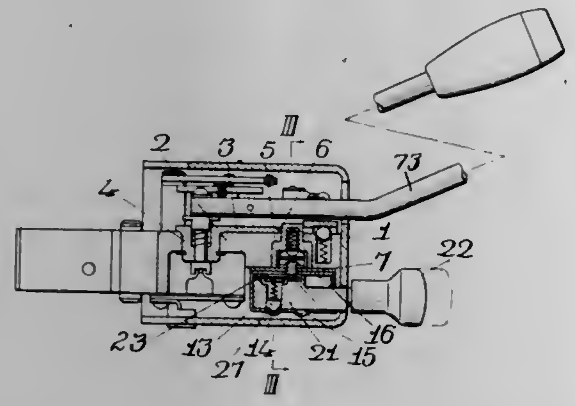
Re. 28,479
COMBINATION TURN-SIGNAL AND HAZARD-WARNING SYSTEM

Masaru Suzuki, Aichi; Masayoshi Hyodo, Toyota, and Yoshiaki Kurihara, Nagoya, all of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Japan

Original No. 3,662,336, dated May 9, 1972, Ser. No. 834,269, June 18, 1969. Application for reissue May 7, 1974, Ser. No. 467,779

Int. Cl. B60q *1/38*

U.S. Cl. 340—81 F **11 Claims**



1. A combined turn-signal and hazard-warning signal system for a vehicle having right and left indicator lights, comprising:
stationary housing means;

actuating means movably mounted on said housing means, said actuating means including a movable actuating member normally maintained in a neutral position and being movable into first and second actuating positions disposed on substantially opposite sides of said neutral position;

holder means mounted on said housing means for movement in a first direction between a turn-signal position and a hazard-warning position;

first movable contact means mounted on said holder means for movement therewith in said first direction;

second movable contact means movably mounted on said housing means for movement in a plane substantially transverse to said first direction, said second movable contact means being disposed for actuation and movement into first and second operative positions by said actuating member when same is moved into said first and second actuating positions, respectively;

stationary contact means mounted on said housing means and disposed for coaction with said first and second movable contact means for controlling energization of the right and left indicator lights;

first circuitry means for permitting flashing of a selected one of said right and left indicator lights, said first circuitry means causing flashing of only said left indicator lights when said second movable contact means is in said second operative position and said holder means is in said turn-signal position, said first circuitry means including cooperating contacts on said second movable contact means and said stationary contact means and further cooperating contacts on said stationary contact means and said first movable contact means;

second circuitry means connected to both said right and left indicator lights for permitting flashing of both said right and left indicator lights when said holder means is in said hazard-warning position, said second circuitry means including cooperating contacts coacting between said first movable contact means and said stationary contact means for causing energization and flashing of both said right and left indicator lights;

said stationary contact means including an insulator plate fixedly secured to said housing means and positioned between said first and second movable contact means, said stationary contact means including a first plurality of sationary contacts disposed adjacent one side of said insulator plate and a second plurality of stationary contacts disposed adjacent the other side of said insulator plate, at least some of said first plurality of stationary contacts being conductively interconnected to at least some of the contacts of said second plurality of stationary contacts, and said first and second plurality of stationary contacts being disposed for engagement with said first and second movable contact means, respectively;

said second plurality of stationary contacts including first, second and third stationary contacts disposed for coaction with said second movable contact means, said second movable contact means including a conductive element having a first portion thereof disposed in continuous engagement with said first stationary contact and having second and third movable portions positioned for alternate engagement with said second and third stationary contacts, respectively, said second and third stationary contacts being connected to the right and left indicator lights respectively;

said first plurality of stationary contacts including fourth, fifth and sixth stationary contacts conductively connected to said first, second and third stationary contacts, respectively; and

said first movable contact means including a first movable contact disposed for engagement with said fourth stationary contact only when said holder means is in said turn-signal position, and said first movable contact means including second and third movable contacts disposed for engagement with the fifth and sixth stationary contacts only when said holder means is in said hazard-warning position.

11. A combined turn-signal and hazard-warning signal system for a vehicle having right and left indicator lights, comprising:
stationary housing means;

actuating means movably mounted on said housing means, said actuating means including a movable actuating member normally maintained in a neutral position and being movable into first and second actuating positions disposed on substantially opposite sides of said neutral position;

holder means mounted on said housing means for movement in a first direction between a turn-signal position and a hazard-warning position;

first movable contact means mounted on said holder means for movement therewith in said first direction;

second movable contact means movably mounted on said housing means for movement substantially transverse to a plane including the under-mentioned insulator plate of the stationary contact means, said second movable contact means being disposed for actuation and movement into first

and second operative positions by said actuating member when same is moved into said first and second actuating positions, respectively;

stationary contact means mounted on said housing means and disposed for coaction with said first and second movable contact means for controlling energization of the right and left indicator lights;

first circuitry means for permitting flashing of a selected one of said right and left indicator lights, said first circuitry means causing flashing of only said left indicator lights when said second movable contact means is in said second operative position and said holder means is in said turn-signal position, said first circuitry means including cooperating contacts on said second movable contact means and said stationary contact means and further cooperating contacts on said stationary contact means and said first movable contact means;

second circuitry means connected to both said right and left indicator lights for permitting flashing of both said right and left indicator lights when said holder means is in said hazard-warning position, said second circuitry means including cooperating contacts coacting between said first movable contact means and said stationary contact means for causing energization and flashing of both said right and left indicator lights;

said stationary contact means including an insulator plate fixedly secured to said housing means and positioned between said first and second movable contact means, said stationary contact means including a first plurality of stationary contacts disposed adjacent one side of said insulator plate and a second plurality of stationary contacts disposed adjacent the other side of said insulator plate, at least some of said first plurality of stationary contacts being electrically interconnected to at least some of the contacts of said second plurality of stationary contacts, and said first and second plurality of stationary contacts being disposed for engagement with said first and second movable contact means, respectively;

said second plurality of stationary contacts including first, second and third stationary contacts disposed for coaction with said second movable contact means, said second movable contact means including a conductive element having a first portion thereof disposed in continuous engagement with said first stationary contact and having second and third movable portions positioned for alternate engagement with said second and third stationary contacts, respectively, said second and third stationary contacts being connected to the right and left indicator lights respectively;

said first plurality of stationary contacts including fourth, fifth and sixth stationary contacts electrically connected to said first, second and third stationary contacts, respectively; and

said first movable contact means including a first movable contact disposed for engagement with said fourth satationary contact only when said holder means is in said turn-signal position, and said first movable contact means including second and third movable contacts disposed for engagement with the fifth and sixth stationary contacts only when said holder means is in said hazard-warning position.

PLANT PATENTS

GRANTED JULY 8, 1975

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,739
CARNATION PLANT

Alexandre Barberet and Henri Blanc, La Londe, France, assignors to Laboratoire de Physiologie Vegetale de La Londe Barberet & Blanc, La Londe, France

Filed Feb. 19, 1974, Ser. No. 443,605

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—73 **1 Claim**

1. A new and distinct variety of carnation plant substantially as herein shown and described, characterized by its precocity and abundant year around production of bright, medium sized blossoms, and the stability of the flower color which holds throughout the winter season.

3,740
CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Mar. 7, 1974, Ser. No. 449,069

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct cultivar of chrysanthemum capable of being grown in cut spray programs or as a pot mum and characterized particularly as to its uniqueness by its seven week response period; superior permanence of 14–20 days due to improved form and color retention; its 40″–45″ height in cut spray programs given 2–3 weeks of long days, and by its lavender flower color, with the flower having a purple dot in the center of the disc which disappears as the flower matures.

3,741
CHRYSANTHEMUM PLANT

Charles B. Coward, Fort Myers, Fla., and Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Charles B. Coward, Fort Myers, Fla.

Filed Mar. 20, 1974, Ser. No. 453,034

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—81 **1 Claim**

1. A new and distinct cultivar of chrysanthemum characterized particularly as to its uniqueness when compared to the parent cultivar Belair by its more intense lavender coloration.

PATENTS

GRANTED JULY 8, 1975

ERRATA

For CLASS	See PATENT NO.
180-069	3,893,207
228-107	3,893,222
228-110	3,893,223
228-124	3,893,224
228-173	3,893,225
228-170	3,893,226
228-44.1	3,893,612
029-200 J	3,893,613
254-093 R	3,893,650
301-012 R	3,893,688
301-039 R	3,893,689
301-108 A	3,893,690
302-002 R	3,893,691
303-007	3,893,692
303-021 F	3,893,693
303-021 F	3,893,694
303-021 P	3,893,695
303-021 F	3,893,696
303-006.1	3,893,697
303-089	3,893,698
106-272	3,893,839
106-288	3,893,840
106-306	3,893,841
127-029	3,893,842
134-010	3,893,843
273-106.5 R	3,893,866
209-211	3,893,922
264-261	3,894,024
310-053	3,894,138
235-193.5	3,894,212

PATENTS

GRANTED JULY 8, 1975

GENERAL AND MECHANICAL

3,893,196

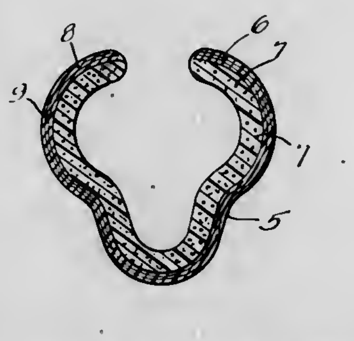
BODY IMPLANT MATERIAL

Robert F. Hochman, 3136 River Heights Dr., Smyrna, Ga. 30080

Continuation of Ser. No. 61,606, Aug. 6, 1970, abandoned. This application Oct. 11, 1972, Ser. No. 296,708

Int. Cl. A61f *1/20*

U.S. Cl. 3—1.91 **2 Claims**



2. An orthopedic implant comprising a shaped composite with a longitudinally layered stem portion and including an organopolysiloxane presenting an outer surface that is inert to substances in the human body, and fibers included in the composite for reinforcement and within the outer surface and of the group consisting of graphite fibers and boron fibers, and with the fibers of one layer of the stem portion oriented longitudinally thereof and with the fibers of an adjacent layer oriented in a generally circumferential direction.

3,893,197

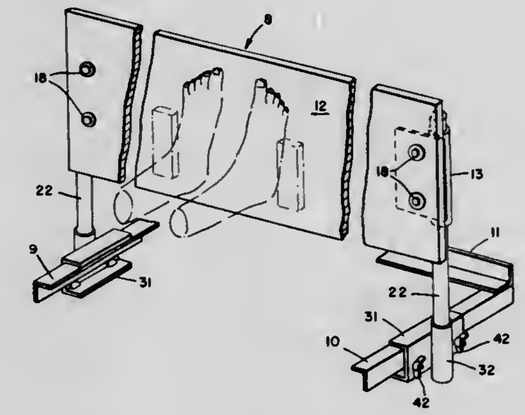
HOSPITAL BED FOOTBOARD ASSEMBLY

Maurine E. Ricke, 153 Smith Rd., Danville, Calif. 94526

Filed Feb. 11, 1974, Ser. No. 441,560

Int. Cl. A47c *21/00*

U.S. Cl. 5—327 R **4 Claims**



1. A foot support assembly for beds, comprising a pair of support brackets for mounting on opposite side rails of a bed frame, each support bracket including a channel member with an upper flange and a lower flange extending equally from a medial web and defining therebetween a cavity for receiving a side rail of the bed, a plurality of holes disposed in said web, at least one bolt received through one of said plurality of holes in said web and secured thereto for clamping the bed side rail between a portion of the head of said bolt and said web; each of said support brackets including a vertically disposed tubular member secured to said web; a pair of support arms each received in said tubular member and supported thereby, and a foot support member extending between said support arms and secured thereto.

3,893,198

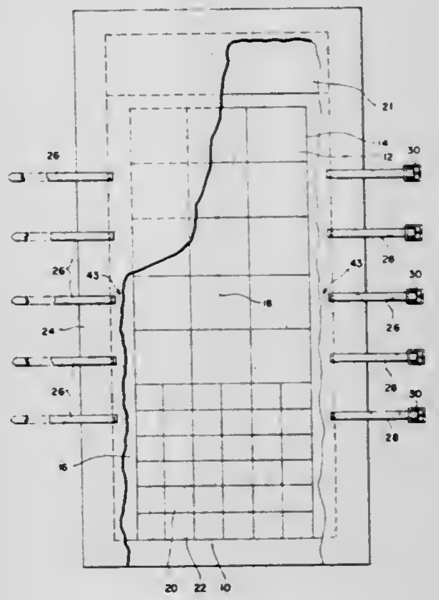
MATTRESS FOR PREVENTING BEDSORES

E. Allan Blair, Princeton, N.J., assignor to Medic-Ease Corporation, Princeton, N.J.

Filed Mar. 29, 1972, Ser. No. 239,219

Int. Cl. A47c *23/00;* A47g *9/00*

U.S. Cl. 5—345 R **8 Claims**



1. A mattress for the prevention of bed sores in a user comprising a unitary member made of resilient foam having a thickness greater than the thickness of an average user's body and having load-bearing properties wherein a 50 percent compression deflection pressure is substantially equal to the user's body weight divided by his body area in contact with the mattress, said mattress being subdivided upon its surface into a plurality of individual load-bearing units whereby said mattress absorbs the downward weight and lateral movement of the user's body to protect said user's body from contact with hard surfaces and from localized high pressure over the bony protuberances, a cover of flexible, waterproof and soft but strong fabric which is sized to cover the top and overlap, all edges of said mattress which is loose enough that it is not pulled tight when the user sinks deeply into the mattress, means for drawing at least two opposed edges of the cover tightly about the mattress so that the mattress is rendered firm enough to easily move a patient disposed thereupon, said drawing means includes a plurality of straps affixed to one edge of said cover and a plurality of buckles affixed to an opposed edge of said cover, said straps being extended thereunder, a shaft disposed beneath said mattress, said straps being wrapped about said shaft and means for rotating said shaft whereby the tension upon said straps may be adjusted in unison.

3,893,199

COMBINATION TOOL FOR WIRE CUTTING AND STRIPPING

Anthony Todaro, 47 Priscilla Ave., Deer Park, N.Y. 11729

Continuation-in-part of Ser. No. 373,861, June 26, 1973, abandoned. This application Sept. 20, 1974, Ser. No. 507,967

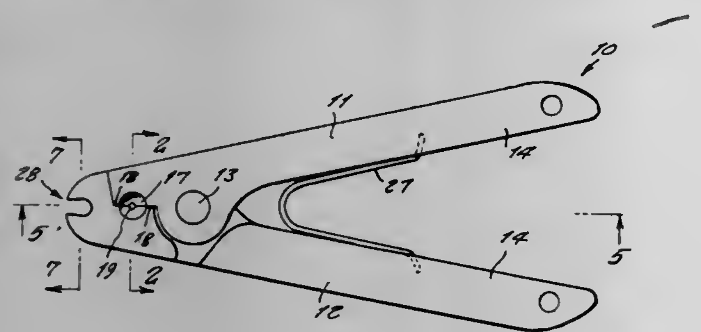
Int. Cl.^{2} B25B *7/22;* H02G *1/12*

U.S. Cl. 7—5.6 **10 Claims**

1. A combination wire cutter and wire stripper comprising:

a pair of pivoted arms, said arms being positioned on opposite sides of a longitudinal center line passing through the pivot;

a pair of jaws each extending from a respective one of said arms, each of said jaws including a first portion located on the same side of the center line as does the arm from which that jaw extends, said first portions having aubtting faces, and a second portion extending onto the opposite side of the center line, said second portions each including an aligned notched section;



a pair of cooperating stripping edges each located on a respective one of the abutting faces of the first portion of said jaws, a pair of cooperating cutting edges each located on a respective opposite side of said notched sections of said second portion, and

biasing means for biasing said stripping edges in abutting relationship while simultaneously biasing said cutting edges in spaced relationship, whereby when force is applied against said bias, said cutting edges will cut and said stripping edges will be separated, and when the force is subsequently related said stripping edges will strip wire placed therein.

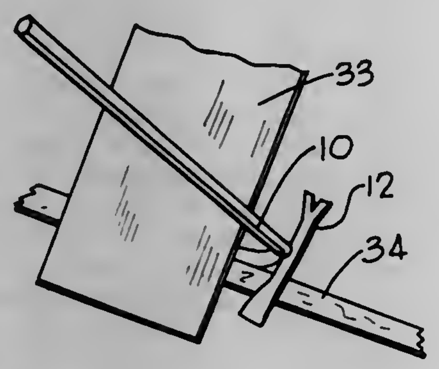
3,893,200
WRECKING BAR

Peter J. Wanciak, Seymour, Conn., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Nov. 4, 1974, Ser. No. 520,402

Int. Cl. B25f *1/00*

U.S. Cl. 7—12 **4 Claims**



1. An improved wrecking bar comprising a conventional straight bar having a handle at one end and terminating in a curved portion defining a hook shape, a curved working end with a support member having a working member formed at each end, said support member being joined to the straight bar near the general point of tangency of hook section to the straight section of the bar, said support member further extending along an axis generally perpendicular to the plane of the hook section and the axis of the straight section of the bar with the end thereof extending towards the direction of the handle.

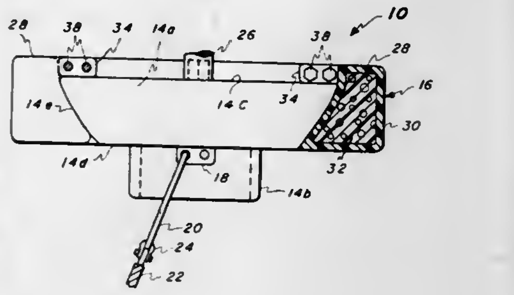
3,893,201
MULTI-BUOYANCY BUOY

Ray R. Mallory, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 25, 1974, Ser. No. 436,568

Int. Cl.² B63B *21/52*

U.S. Cl. 9—8 R **2 Claims**



1. A multiple bouyancy bouy comprising in combination:

a basic bouy for providing a first predetermined amount of positive bouyancy, said basic bouy comprising a hull that is circular in plan, has a substantially flat bottom surface of a first diameter, a substantially flat deck surface of a second diameter that is larger than said first diameter, and an annular side wall presenting a curved, sloping outer surface extending upwardly and outwardly from the periphery of said bottom surface to the periphery of said deck;

a plurality of arcuate flotation elements assembled in the form of a ring and embracing said basic bouy so as to provide additional bouyancy, each of said elements comprising only a segmental section of said ring and presenting a curved and sloping inner surface complimentary to and adjacent a corresponding portion of said sloping outer surface of said side wall, whereby upward movement of said ring relative to said basic bouy is precluded by cooperation between said outer and inner surfaces;

each of said flotation elements further comprising a plurality of tangs each extending radially inwardly from one end thereof in overlying relation to said deck, whereby said ring is prevented from downward movement relative to said basic bouy, each of said tangs being disposed in mutually adjacent relation to a tang of another of said flotation elements and said tangs being free of direct connection to said bouy; and

releasable fastener means securing together mutually adjacent ones of said tangs.

3,893,202
LIFE SAVING ARRANGEMENT FOR A VESSEL

William York Higgs, Gibsons, and Alan Cumyn, West Vancouver, both of Canada, assignors to Intercontinental Marine Limited, Canada

Filed June 24, 1974, Ser. No. 482,582

Claims priority, application Canada, June 26, 1973, 174970

Int. Cl. B63b *21/52*

U.S. Cl. 9—9 **14 Claims**

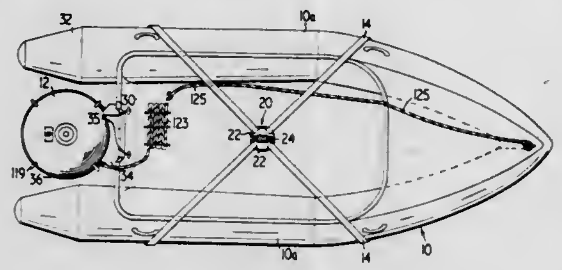
1. A life saving arrangement for a vessel, comprising:

a. a buoy adapted to be releasably carried by the vessel in such manner as to be released automatically should the vessel sink,

b. buoyant life support equipment also arranged to be releasably carried by the vessel,

c. releasable securing means normally securing said buoyant equipment to said buoy in close relationship and in such manner as to maintain said relationship when the buoy and the equipment are released from the vessel,

d. trip means for providing an interconnection between said securing means and the vessel, said trip means being arranged to cause release of said securing means after the vessel has separated from the buoy by a predetermined amount sufficient for the buoy to be clear of any of the vessel fixtures or rigging, and



e. mooring means connecting said equipment to the buoy so that after release of said securing means the buoyant life saving equipment remains moored to the buoy.

3,893,203
DRIVE MOTOR FOR CLEANING GLASS SURFACES

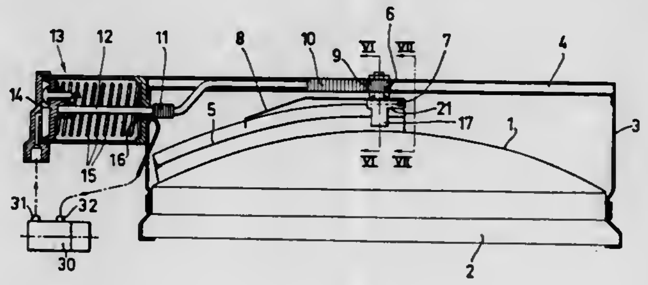
Hans Berkelius, 36 Parkvagen, Taby, Sweden

Continuation of Ser. No. 314,072, Dec. 11, 1972, abandoned. This application Aug. 5, 1974, Ser. No. 495,020

Claims priority, application Sweden, Dec. 22, 1971, 16496

Int. Cl.² B60S *1/44;* **F01L** *21/04*

U.S. Cl. 15—250.22 **2 Claims**



1. A drive motor for operating a cleaning device of the type having at least one wiper blade mounted for movement adjacent a glass surface to be cleaned and adapted to be driven by the drive motor across the glass surface to clean said surface, said drive motor comprising a hydraulic cylinder having a liquid inlet opening adjacent one end thereof and a liquid outlet opening adjacent the other end thereof, means for supplying liquid under pressure to said inlet opening and for receiving a return of liquid from said outlet opening, said liquid inlet opening having a flow area which is substantially greater than the flow area of said outlet opening, a slidable piston located within said cylinder for reciprocating movement, means connecting said slidable piston to said wiper blade of said cleaning device, said connecting means including rack and pinion means for converting reciprocating motion of said piston to rotary motion of said wiper blade, spring means between said piston and said cylinder for resiliently urging said piston toward said one end of said cylinder, said piston having a surface extending across said cylinder which surface is always in direct communication with said liquid inlet opening and continually exposed to the liquid under pressure at said inlet opening whereby said piston is movable against the restraint of said spring means toward said other end of said cylinder in response to forces exerted upon said piston by liquid pressure applied to said liquid inlet opening, said piston including an overflow passage extending therethrough for selectively equalizing the pressure on opposite sides of said piston, a valve member disposed adjacent said overflow passage, said valve member being operated by impact with a predetermined portion of said cylinder to open said overflow passage in response to movement of said piston in a working stroke from said one end to said other end of said cylinder, and said valve member thereafter being operated in the opposite direction by impact with a different portion of said cylinder to close said overflow passage in response to subsequent movement of said piston by said spring means in a return stroke from said other end to said one end of said cylinder, said overflow passage when open having a flow area substantially equal to the flow area of said liquid inlet opening and substantially greater than the flow area of said outlet opening, whereby the speed of movement of said piston is substantially the same during both said working stroke and said return stroke and is dependent upon the comparatively small flow area of said liquid outlet opening.

3,893,204
WINDSHIELD WIPER

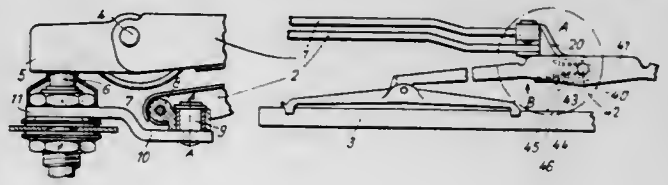
Erich Kolb, Buhl-Eisental, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Oct. 10, 1973, Ser. No. 405,141

Claims priority, application Germany, Oct. 14, 1972, 2250509

Int. Cl. B60s *1/32, 1/40*

U.S. Cl. 15—250.23 **9 Claims**



1. A windshield wiper mechanism for a motor vehicle for use with a replaceable wiper blade, comprising:

a control bracket having a first arm (**22**) serving as a link member for pivotally holding said wiper blade, and

a power-driven wiper arm and a control arm both pivotally connected to said wiper blade by said control bracket so as to allow rotation of said wiper blade relative to said wiper arm,

said control bracket (**20**) being made of sheet metal and having a second arm (**21**) a portion of which separates the places at which said wiper arm and said control arm are respectively attached pivotally to said control bracket and having bent over tongues providing U-shaped portions at both said attachment places to hold respective mounting rivet members passing through said wiper arm and said control arm respectively and to provide, on the inside of the U-shape, a pair of opposed bearing surfaces (**25, 26**) of said control bracket, one of said pairs of surfaces engaging surfaces of said wiper arm and the other engaging surfaces of said control arm, said second arm (**21**) of said control bracket having a portion reversely bent, as seen from the side, between said attachment places, which portion includes a straight portion between mutually reverse bends.

3,893,205
COMPOSITE METAL MATERIAL AND ARTICLES MADE THEREFROM

Ray B. Anderson, Attleboro, and Robert Baboian, North Attleboro, both of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sept. 25, 1970, Ser. No. 75,388

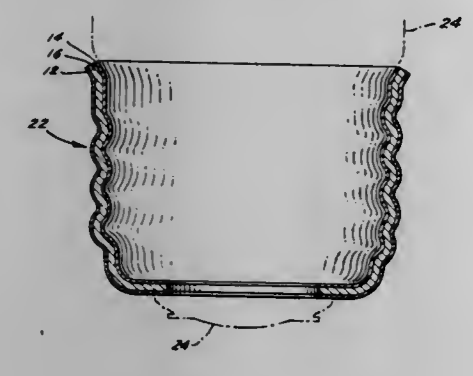
Int. Cl. B32b *15/18;* **E05b** *1/06;* **H01k** *1/20*

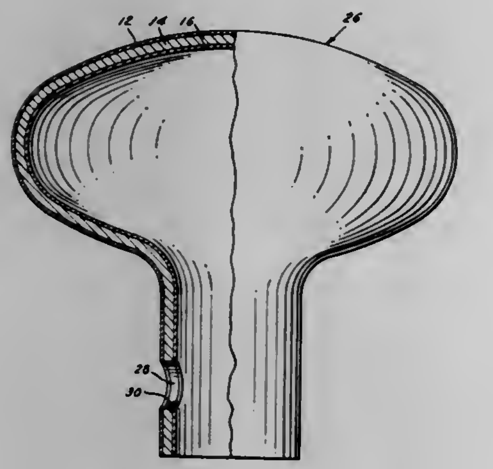
U.S. Cl. 16—121 **8 Claims**

1. A lamp bulb base embodying a composite metal laminate material comprising a first layer of metal selected from the group consisting of copper, and copper alloys, a second layer of metal selected from the group consisting of aluminum and aluminum alloys, and an intermediate layer of steel sandwiched between and metallurgically bonded to said first and second metal layers, said layers of metal being coextensive in said composite material within said lamp bulb base, said second layer material being more anodic in the galvanic series of metals and alloys than the metals of said first and intermediate

metal layers and being preferentially corrosive in said composite material, said composite material being formed in a generally cup-shaped configuration with said first layer of said composite material disposed in exteriorly facing relation in said lamp bulb base and with said second, preferentially corrosive, metal layer disposed in an interiorly facing relation in said lamp bulb base.

5. A door knob embodying a composite metal laminate material, said composite material comprising a first layer of metal selected from the group consisting of copper, and copper alloys, a second layer of metal selected from the group consisting of aluminum and aluminum alloys, and an intermediate layer of steel sandwiched between and metallurgically bonded to said first and second metal layers, said layers of metal being coextensive in said composite material within said door knob, said second layer material being more anodic in a galvanic series of metals and alloys than the metals of said first and intermediate metal layers and being preferentially corrosive in said composite material, said composite material being formed into a generally ball-shaped configuration with said first layer of said composite metal material disposed in exteriorly facing relation in said door knob and with said second, preferentially corrosive, metal layer disposed in interiorly facing relation in said door knob.



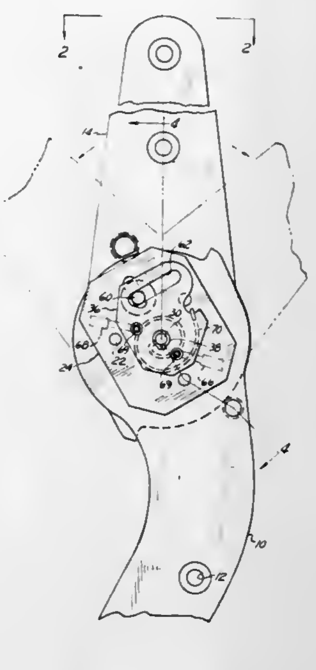


3,893,206
SEAT RECLINING ASSEMBLY
Joseph Pickles, Birmingham, and Chester S. Fudala, Detroit, both of Mich., assignors to Ferro Manufacturing Corporation, Detroit, Mich.

Filed Apr. 10, 1974, Ser. No. 459,632
Int. Cl. E05d *11/10*

U.S. Cl. 16—144 **19 Claims**

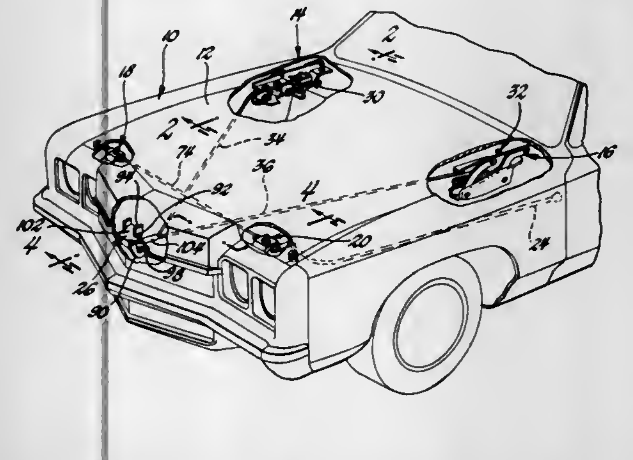
1. Seat back adjusting mechanism comprising a seat member, a seat back member, a pivot connection between said members, planetary gearing comprising a sun gear, planet gears, and an internal ring gear connected between said members, one of said gears being driven as an incidence of pivotal movement between said members, a ratchet gear fixed to said driven gear, and a locking pawl movable on one of said members into and out of engagement with said ratchet to block said ratchet gear and thereby to lock said seat back member in adjusted position.



3,893,207
VEHICLE HOOD RETENTION DEVICE
Edward J. Rudaitis, Warren, and Lowell Ray Ulrich, Utica, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 8, 1974, Ser. No. 449,279
Int. Cl. B62d *25/10*

U.S. Cl. 180—69 C **5 Claims**

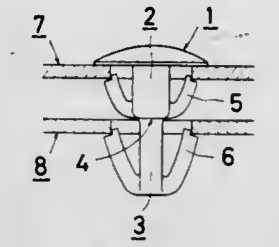


5. In a vehicle body having a compartment, a closure panel for closing a compartment, hinge means connecting one end of the closure panel to the body, and a latch for releasably latching the other end of the closure panel to the vehicle body, a retention device for retaining the one end of the closure panel comprising: a pin on the body extending upwardly and being inclined forwardly, the closure panel having an aperture in which the pin is received when the closure panel is in closed position to prevent substantial lateral or rearward movement of the closure panel, an apertured retaining plate pivotally mounted on the closure panel and closely surrounding the pin when the closure panel is in closed position, means biasing the apertured retaining plate to a normal position in which the retaining plate prevents substantial opening movement of the closure panel by engaging the pin, and means interconnecting the latch and the retaining plate for pivoting the retaining plate against the biasing means to a second position permitting opening movement of the closure panel by aligning the aperture of the apertured retaining plate with the pin to prevent engagement of the pin by the apertured retaining plate.

3,893,208
PLASTIC DEVICE FOR SPACING AND HOLDING TWO OR MORE PLATES
Takuo Yuda, Yokohama, Japan, assignor to Nifco Inc., Tokyo, Japan

Filed Feb. 28, 1974, Ser. No. 446,850
Claims priority, application Japan, Mar. 9, 1973, 48-28712
Int. Cl.^{2} A44B *21/00*

U.S. Cl. 24—73 P **3 Claims**

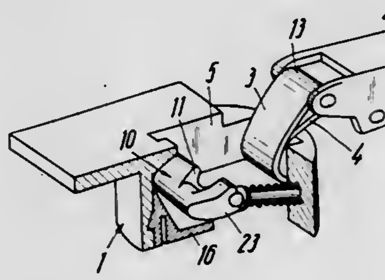


1. A plastic fastener for spacing and holding two or more plates each having a slot-like aperture with a predetermined width, comprising: a head portion; at least two adjacent shank portions each having a predetermined length the first of which has a relatively large cross-section and is integrally connected to and extending from said head portion and the other of which has a relatively smaller cross-section and is integrally connected to and extending from said first shank portion; a shoulder portion formed at the transition point between said adjacent shank portions; and at least one non-return element integrally connected to said first shank portion at the end opposite said head portion and to said second shank portion at the end opposite said shoulder portion, each said non-return element having a free end with all such free ends extending toward said head and each being adapted to yieldingly deform in passing through an associated aperture of one of said plates and return to its original form after passing through said aperture, each said non-return element being a diverging branch whose free end has a shoulder to catch the edge of said associated aperture, each of said shank shoulder portions having a transverse dimension equal to or less than the predetermined width of the slot in the plate through which it must pass but larger than the predetermined width of the slot in the next adjacent plate whereby said plates are retained in predetermined spaced relation controlled by the predetermined lengths of said shank portions.

3,893,209
HINGE FOR A PIECE OF FURNITURE
Gerhard Sewing, Lohne, and Jürgen Bachor, Kirchlengern, both of Germany, assignors to Paul Hettich & Co., Kirchlengern, Germany

Filed Oct. 24, 1973, Ser. No. 411,589
Claims priority, application Germany, Oct. 26, 1972, 2252497
Int. Cl.^{2} E05D *3/06*

U.S. Cl. 24—164 **7 Claims**

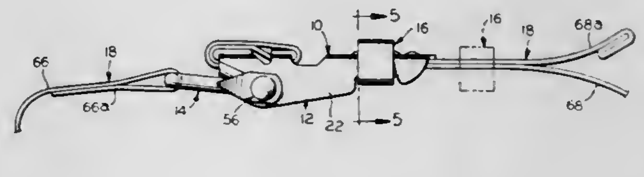


1. A hinge for a piece of furniture having a body and a door which is movable relative to said body between an open and a closed position, comprising a housing adapted to be recessed into said door and having a surface formed with a recess and with at least one lateral chamber open to said surface; a hinge arm mounted in said recess for movement about a pivot axis normal to its elongation and extending in part out of said recess and beyond said housing for connection with said body; a rocker member mounted in said recess for rocking movement about a rocking axis extending parallel to said pivot axis, said rocker member having a part projecting into said chamber and said rocker member having cam portions which project from the region of said rocking axis towards said pivot axis; and a spring received in said chamber and engaging said housing and said part, said spring being movable past a dead-center position between respective end positions in response to said door moving towards said open and closed positions, respectively.

3,893,210
STRAP CLAMP ASSEMBLY
William J. Hildebrandt, West Simsbury, Conn., assignor to The Stanley Works, New Britain, Conn.

Filed Sept. 16, 1974, Ser. No. 506,427
Int. Cl. A44b *11/06*

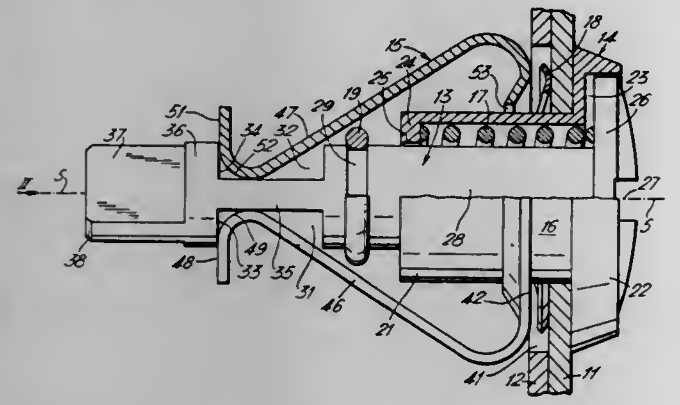
U.S. Cl. 24—194 **9 Claims**



1. A strap clamp assembly having general utility comprising:
a. a buckle consisting of an elongated member having side flanges depending therefrom on at least two sides thereof, said elongated members having at least a pair of slots formed therein intermediate the ends thereof, said pair of side flanges each having a notched area formed therein intermediate the ends thereof;
  b. a stirrup including a medial portion and a pair of arms extending outwardly from opposite ends of said medial portion;
  c. mounting means operable for fastening said pair of arms of said stirrup to said side flanges of said buckle to enable said stirrup to pivot relative to said buckle between a release position and a clamping position;
  d. strap means operable for gripping an object and including a first portion having one end thereof secured to said stirrup for movement therewith and a second portion having one end thereof receivable in said pair of slots in said buckle for detachably connecting said one end of said second portion of said strap means to said buckle; and
  e. a slide lock comprising a tubular member consisting of a first pair of side walls, a second pair of side walls connected to said first pair of side walls and a pair of opposed open walls, one of said first pair of side walls being inclined inwardly from the edges thereof towards the center thereof in the direction of the other of said first pair of side walls, said slide lock being supported on said strap means for movement between a release position wherein said slide lock is positioned in spaced relation to said buckle and a locking position wherein said slide lock is received in said notched areas of said pair of side flanges of said buckle and said one of said pair of side walls of said slide lock applies a biasing force to said buckle effective when said stirrup is in said clamping position thereof to hold said buckle and said strap means in clamped relation relative to each other so as to thereby prevent the accidental release of the strap clamp assembly.

3,893,211
STUD-AND-SOCKET FASTENER

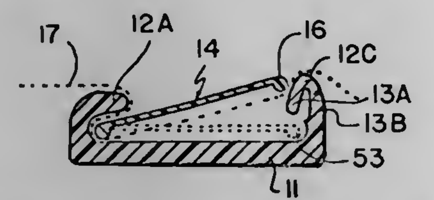
Edward Albert Skinner, Hatfield, England, assignor to Aerpat A.G., Zug, Switzerland
Filed Feb. 5, 1974, Ser. No. 439,726
Claims priority, application United Kingdom, Feb. 5, 1973, 5695/73
Int. Cl. A44f *17/00*
U.S. Cl. 24—221 K **6 Claims**



1. A stud for use with a socket of the kind comprising two transversely extending abutments which are resiliently urged towards each other, said stud comprising:
- a shank having a stem portion, a leading portion, and a reduced portion joining the stem and leading portions, said leading portion providing two shoulders on opposite sides of the reduced portion, and the thickness of the shank in the reduced portion being reduced in a transverse direction extending across the two shoulders, and
- orientating means for orientating said stud relative to a socket when said stud is inserted within a socket,
- whereby, when the stud is inserted into a socket of the said kind with such an angular orientation relative to the socket that the socket abutments will not engage the shoulders of the stud, said orientating means will engage and co-operate with a part of the socket before the reduced portion enters between the socket abutments so as to relatively reorientate the stud and the socket abutments so that the socket abutments can engage the shoulders of the stud.

3,893,212
DEVICE FOR MAKING LAP JOINTS FOR PLASTIC FILM AND THE LIKE

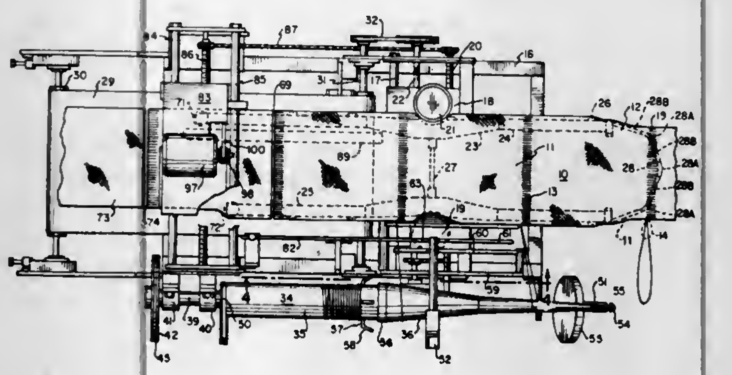
Walter J. Curry, 337 Roberta St., Winnipeg, Canada
Continuation-in-part of Ser. No. 379,815, July 16, 1973, abandoned. This application Oct. 16, 1973, Ser. No. 406,786
Int. Cl. A44b *21/00*
U.S. Cl. 24—243 K **6 Claims**



1. Apparatus for holding flexible plastic film in place comprising in combination an elongated flexible channel including a base and a pair of side walls overhanging the side edges of said base, an elongated flexible locking strip detachably engageable under said over hanging side walls, said locking strip including a web having a longitudinal edge on each side thereof, said edges engaging under said overhanging side walls and facing the base of said channel when installed, the associated flexible plastic film being sandwiched between the locking strip and said channel, one of said side walls including a downwardly extending edge portion, said edge portion being substantially flexible and being displaced outwardly when said locking strip is engaged, and moving back to the original position after said locking strip is installed.

3,893,213
METHODS FOR SEPARATING INTERCONNECTED SECTIONS OF TUBULAR KNITTED FABRIC

Murray L. Rockman, Plainview, and Andrew P. Cecere, Valley Stream, both of N.Y., assignors to Samcoe Holding Corporation, Woodside, N.Y.
Division of Ser. No. 244,050, April 14, 1972, Pat. No. 3,797,080. This application Dec. 19, 1973, Ser. No. 426,216
Int. Cl. D04b *19/00;* **D06h** *7/02*
U.S. Cl. 28—72 CS **3 Claims**

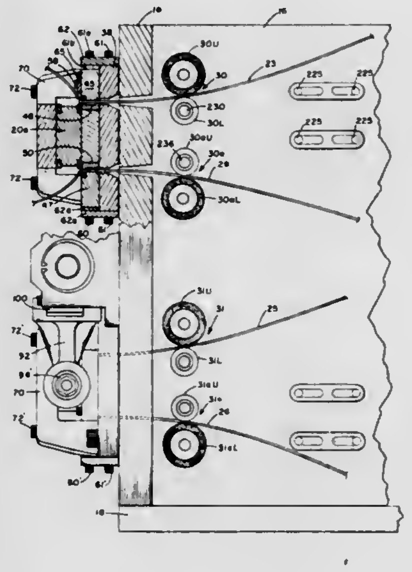


3. A method for separating adjacent fabric sections of a tubular knitted fabric web in a continuous manner, said sections being connected together by a yarn transition transfer cord and a removable draw thread, the steps which comprise
- a. continuously advancing said web of connected together sections in predetermined yarn cord alignment;
- b. laterally distending said advancing web and effecting removal of successive draw threads therefrom;
- c. maintaining said predetermined yarn cord alignment on one side of said advancing web;
- d. accelerating the forward advance of said web sections after removal of said successive draw threads and releasing said distended fabric to partially separate said adjacent fabric sections to provide tapered spaced apart gaps therebetween; and
- e. maintaining said accelerated forward advance of said partially separated web sections while severing said yarn cord sequentially between said adjacent sections as each successive tapered gap is formed.

3,893,214
MACHINE FOR MAKING EXPANDED METAL

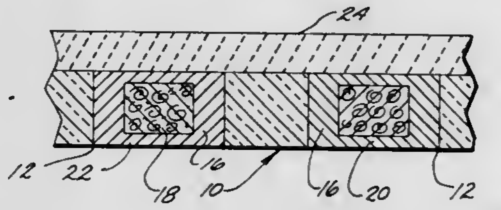
David B. Parkinson, Cleveland Heights, Ohio, assignor to Gould Inc., Chicago, Ill.
Filed Aug. 15, 1973, Ser. No. 388,400
Int. Cl. B21d *31/02;* **B26d** *1/10*
U.S. Cl. 29—6.2 **11 Claims**

1. Apparatus for manufacturing expanded sheet stock comprising:
- a. first and second knife means for shearing openings in flat sheet stock, said first knife means comprising an elongated bar having a first face defined by a plurality of teeth and having a flat intersecting second face, portions of an intersection between said first and second faces defining a cutting edge for said first knife means, said second knife means comprising a first guide surface for said sheet stock and a second guide surface for said second face, an intersection between said first and second surfaces defining a cutting edge for said second knife means;
- b. means for mounting said second face and said second guide surface in substantial planar alignment;
- c. means defining third and fourth guide surfaces, said third guide surface being spaced from said first guide surface to also comprise a guide surface for said sheet stock, said fourth guide surface being in substantially planar alignment with said second guide surface and being in face-to-face contact with said second face;
- d. means for feeding said strip between said first and third guide surfaces and between said cutting edges; and
- e. drive means for moving said first knife relative to said second knife in planar alignment therewith and in essentially simple harmonic motion recurringly along a curvilinear path to permit a rapid knife movement and reduce vibration in the apparatus and while said strip is fed therebetween so that any point on the cutting edge of a tooth sequentially shears said strip in a recurring sequence of point (1), to point (2), to point (*n*), where even-numbered points are spaced along a first line along the length of the strip, where the odd-numbered points are spaced on a second parallel line and are staggered with respect to said even-numbered points, and where said lines are spaced apart a distance substantially corresponding to one-half the distance between identically located points on adjacent teeth.



3,893,215
METHOD OF MANUFACTURING FACE PLATES WITH LARGE NUMBER OF CONDUCTING PATHS FROM ONE FACE TO THE OTHER

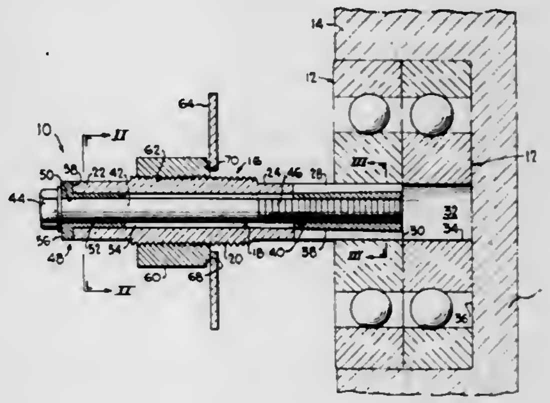
Tugrul Yasar, Madison Heights, Mich., assignor to The Bendix Corporation, North Hollywood, Calif.
Filed July 18, 1973, Ser. No. 380,517
Int. Cl. B01j *17/00*
U.S. Cl. 29—25.35 **9 Claims**



1. A method of manufacturing a face plate having a large number of conducting paths thereacross comprising
- forming a disk of fused glass capillary arrays to a desired thickness, said disk having a large number of parallel pores extending from one face to the other,
- depositing a layer of metal on said disk such that the inner walls of said pores are coated with metal,
- cleaning and drying said disk,
- heating said disk to approximately 470° C. and filling the coated pores with an inert sealant material capable of maintaining sealing integrity at temperatures over 300° C., and
- lapping the surfaces of said disk to provide a smooth glass surface with exposed metal contacts.

3,893,216
APPARATUS FOR EXTRACTING BEARINGS FROM A SUPPORTING STRUCTURE

Stephen R. Kushner, 3706 Vista View, Pittsburgh, Pa. 15122
Continuation-in-part of Ser. No. 400,124, Sept. 24, 1973, abandoned. This application June 26, 1974, Ser. No. 483,257
Int. Cl. B25b *27/06*
U.S. Cl. 29—265 **4 Claims**



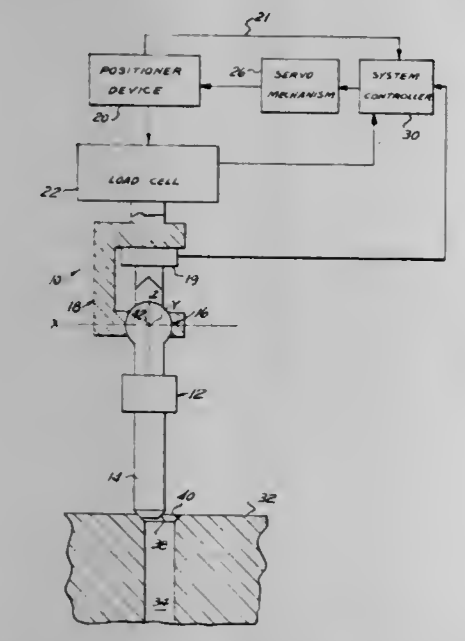
1. Apparatus for extracting a bearing from a supporting structure comprising,
- a cylindrical member having an axial bore therethrough and an externally threaded intermediate portion,
- said cylindrical member having first end portion and a radially expandable second end portion positioned within the bore of the bearing,
- a rod member having a threaded end portion axially positioned within said cylindrical member bore,
- a sleeve member coaxially positioned within said cylindrical member bore, said sleeve member having a bore threadedly engaged to said rod member threaded end portion, said sleeve member being positioned in abutting relation with said cylindrical member bore and arranged to advance axially therein upon rotation of said rod member to urge said cylindrical member second end portion into frictional engagement with the bearing,
- a fastening member threadedly engaged to said cylindrical member intermediate portion in spaced relation to said supporting structure and positioned for axial movement on said cylindrical member threaded intermediate portion, said fastening member having a bearing surface, and a brace member surrounding and rigidly supported independently of said cylindrical member threaded intermediate portion, said brace member having a bearing surface, said fastening member bearing surface being arranged to frictionally engage said brace member bearing surface.

3,893,217
SYSTEM AND METHOD FOR AUTOMATIC INSERTION OF PINS IN HOLES

James J. Edmond, Southfield, Mich., assignor to The Bendix Corporation, Southfield, Mich.
Filed Dec. 13, 1974, Ser. No. 532,531
Int. Cl. B23q *17/00*
U.S. Cl. 29—407 **2 Claims**

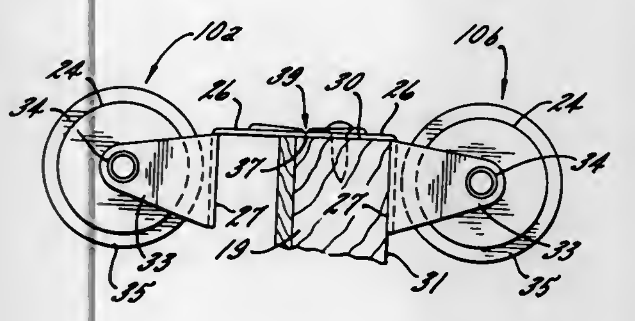
1. A system for inserting a pin into a member having a mating hole, at least one of said pin or hole being chamfered, said system comprising:
- means positioning said pin and hole with their axes in approximate alignment such that said chamfer on said at

least one of said pin or hole is engaged with the other of said pin or hole;
means releasably holding one of said pin or member in a fixed orientation and fixing the position of the other of said pin or member;
means for relatively moving said pin and said member along a direction tending to insert said pin in said hole;
means sensing the lateral reactive force created by the interaction of said chamfer and the other of said pin or hole under the influence of said axial force;
means moving said pin and member laterally relative each other in directions tending to null said sensed reactive force;
means sensing a bending condition imposed on said pin by a jam condition of said pin in said hole due to misalignment of said pin and hole axes;
means releasing said releasable holding means holding said one of said pin or said member so as to allow free angular movement thereof but restraining said pin or member from laterally moving in the absence of such angular movement; and
means relatively moving said pin and member laterally in response to said sensed bending condition of said pin in a direction to relieve said jam condition until said pin and hole axes are aligned, whereby said pin enters said hole under the influence of said axial force.



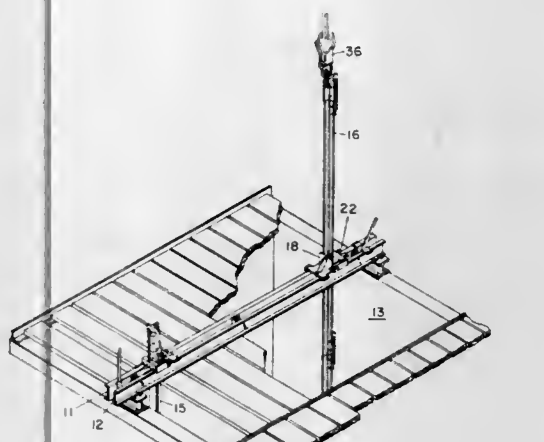
2. A method for inserting a pin into a member having a mating hole, at least one of said pin or hole being chamfered, said method comprising the steps of:
positioning said pin and hole with their axes in approximate alignment such that said chamfer on said at least one of said pin or hole is engaged with the other of said pin or hole;
holding one of said pin or member in a fixed orientation and fixing the position of the other of said pin or member;
relatively moving said pin and said member along a direction tending to insert said pin in said hole;
sensing the lateral reactive force created by the interaction of said chamfer and the other of said pin or hole under the influence of said axial force;
moving said pin and member laterally relative each other in a direction tending to null said sensed reactive force;
releasing said one of said pins or said member so as to allow free angular movement thereof while restraining said pin or member from any lateral movement in the absence of such angular movement;
sensing any bending condition imposed on said pin by a jam condition of said pin in said hole due to misalignment of said pin and hole axes; and
relatively moving said pin and member laterally in response to said sensed bending condition of said pin in a direction to relieve said jam condition until said pin and hole axes are aligned, whereby said pin enters said hole under the influence of said axial force.

3,893,218
METHOD OF MOUNTING CABINET DRAWER ROLLERS
Richard L. Bildahl, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.
Division of Ser. No. 249,700, May 2, 1972, Pat. No. 3,849,832.
This application May 16, 1974, Ser. No. 470,578
Int. Cl. B23p *17/00*
U.S. Cl. 29—413 **3 Claims**



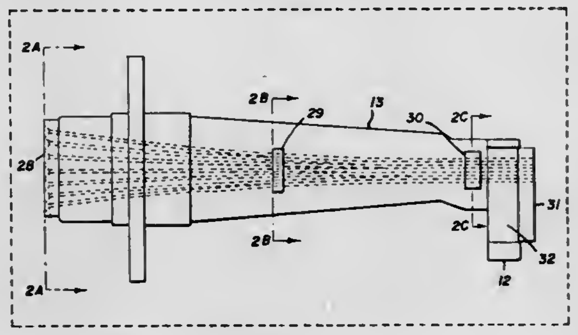
1. A method for mounting in a cabinet a roller assembly having a first bracket with a roller journaled thereon at one end, said bracket being integrally connected by a frangible web at the other end to a second similar bracket, said method comprising, attaching one of said brackets in a predetermined first position on said cabinet, breaking the frangible web to free the other of said brackets from said one bracket, and securing said other bracket in a second predetermined position on said cabinet.

3,893,219
APPARATUS AND METHOD FOR SUSPENDING ELEVATOR GUIDE RAILS
Meredith Reese Davis, Roselle, N.J., assignor to Otis Elevator Company, New York, N.Y.
Filed Aug. 1, 1974, Ser. No. 493,942
Int. Cl. B23p *19/04*
U.S. Cl. 29—429 **2 Claims**



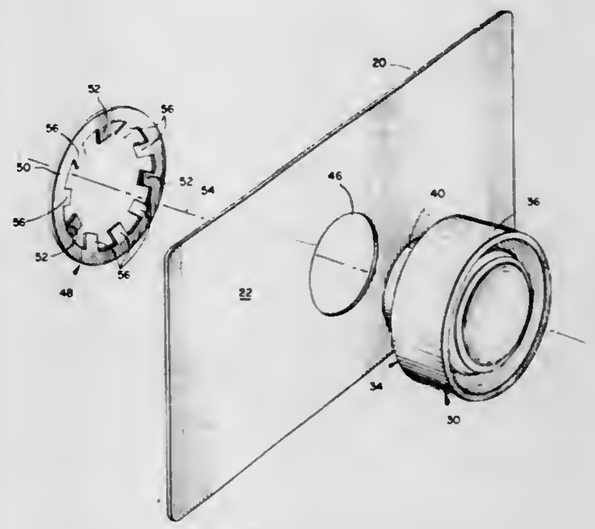
1. Apparatus for suspending a T-shaped elevator guide rail in a hoistway shaft to enable it to be secured to one side thereof including;
a pair of mounting members spanning the top of said hoistway, in a direction substantially perpendicular to said one side, said members being separated laterally sufficiently to enable said guide rail to be suspended between them with the cross-piece of the T of said guide rail being disposed substantially perpendicularly to the longitudinal axis of said mounting members;
a guide unit for said guide rail secured to and mounted on said mounting members and having a slot disposed outwardly toward said one side of said hoistway for receiving the leg portion of the T of said suspended guide rail; and
support means serving as a stop for said guide unit, said support means resting atop and spanning said mounting members and being resiliently secured to said guide unit on the outer side thereof for pressing against the back surface of the cross-piece of said suspended guide rail;
whereby a fish plate fixedly attached to the uppermost portion of said guide rail can be supported by said stop to suspend said guide rail in said hoistway;
said mounting members and said guide unit being suitably located with respect to said one side of said hoistway to suspend said guide rail properly in relation to said one side to enable it to be secured thereto while remaining suspended from the top of said hoistway.

3,893,220
METHOD OF MAKING WIRE MATRIX PRINT HEAD NOZZLE
John R. Bittner, Waynesboro, Va., assignor to General Electric Company
Filed Aug. 1, 1974, Ser. No. 493,974
Int. Cl. B23p *19/04*
U.S. Cl. 29—433 **4 Claims**



1. A method for manufacturing a wire matrix print nozzle wherein said nozzle comprises a block of plastic material with a plurality of holes extending throughout its length from a wire driving end to a wire driven end and adapted for receiving a plurality of elongated print wires for sliding movement therein such that the ends of the wires at their driven ends can impact a record medium through an inked ribbon comprising:
a mold having a wire driving end guide and a wire driven end guide,
said driving end guide having wire holes positioned at space points along an oval locus in a first plane,
said driven end guide having wire holes positioned at spaced points along a line in a second plane substantially parallel to said first plane,
locating a first insert, having wire holes positioned at spaced points along an oval locus, intermediate said guides and with the plane of such locus substantially parallel to said first plane,
locating a second insert, having wire holes positioned at spaced points along a straight line locus, intermediate said first insert and said driven end guide and with the plane of such locus substantially parallel to said first plane,
inserting core wires between said guides such that each core wire is positioned in a respective hole in a driving end guide, passes through a respective hole in said first insert, passes through a respective hole in said second insert and is positioned in a respective hole in said driven end guide, causing plastic to be molded around the wires and between said guides and to said first insert,
and removing said second insert from the molded plastic to leave unsupported by plastic that portion of the length of each core wire shielded by the second insert during the molding operation thereby providing an antiwicking region for minimizing ribbon ink flow in the holes of the nozzle.

3,893,221
LENS ASSEMBLY MOUNTING METHOD AND APPARATUS
Walter G. Lehmann, Somerville, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Dec. 26, 1973, Ser. No. 427,582
Int. Cl. B23p *11/02*
U.S. Cl. 29—453 **10 Claims**



1. A method of assembling at least first and second components, said first component being provided with a first aperture, with a retaining member, said retaining member having a planar peripheral portion and a plurality of coplanar first tabs defining a second aperture and a plurality of second tabs resiliently connected to said peripheral portion and extending in a direction away from the plane of said peripheral portion comprising the steps of:
inserting said second component at least partly through said first aperture in said first component;
inserting said second component through said second aperture in contact with at least one of said first tabs to locate said retaining member with respect to said second component;
further inserting said second component through said second aperture and into engagement with said second tabs whereby said second tab members are caused to resiliently move away from said plane and admit said second member therebetween so as to prevent the withdrawal thereof; and
bringing said retaining member into abutment with said first component.

3. In combination with a photographic camera of the type including a shutter housing having a generally planar forward wall portion with a first circular aperture therethrough, means for securing a photographic objective lens assembly to said housing, including:
a lens housing assembly having at least one lens element secured therewithin, said housing assembly having a first cylindrical portion having a diameter slightly smaller than said first aperture whereby said first portion may snugly pass through said first aperture, said first portion extending through said first aperture, said housing assembly having a second cylindrical portion having a diameter larger than said aperture so that it cannot pass therethrough in abutment with said wall portion; and
a retaining member of a dimension unable to pass through said aperture and having means defining a variable aperture therethrough, positioned over said first portion in abutment with the opposite side of said wall portion from said second portion; said variable aperture defining means engaging and gripping said first portion such that any force tending to move said second portion out of

abutment with said wall portion will cause said aperture defining means to exert an increased grip on said first portion to secure said lens housing to said shutter housing, said retaining member comprising a generally planar ring having a rotational axis of symmetry, said retaining member including locating means for registering said retaining member with respect to said first portion to facilitate the positioning of said retaining member over said first portion, said locating means comprising a plurality of first tab members extending inwardly to define a circular aperture of diameter slightly larger than that of said first portion, and said variable aperture defining means including a plurality of inwardly extending second tab members extending out of the plane of said ring in a direction toward and along said rotational axis of symmetry.

3,893,222
WELDING

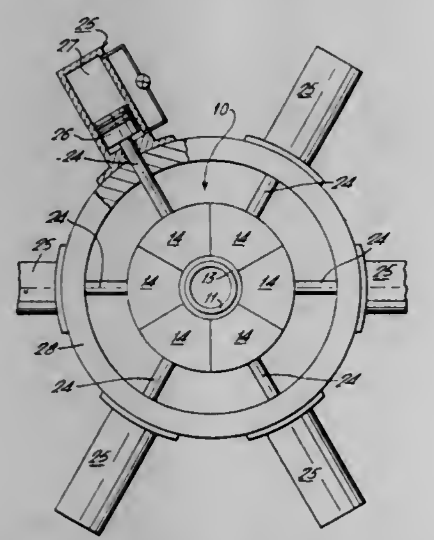
Hugh Anthony Ballinger, Abingdon, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed July 25, 1973, Ser. No. 382,299

Claims priority, application United Kingdom, July 26, 1972, 34952/72; Nov. 17, 1972, 53384/72

Int. Cl. B23k *27/00*

U.S. Cl. 228—107 **28 Claims**



1. A method of welding a first component to a second component by accelerating it towards, and impacting it into, the second component, the method comprising the steps of locating an explosive charge adjacent the first component, positioning, adjacent the side of the second component that is remote from the first component, an anvil which is so shaped and dimensioned and of such mass that it supports the second component against the forces generated by the explosion, and is only accelerated away from the second component by the stored energy in the anvil after the weld between the first and second components is completed, and detonating the explosive charge.

3,893,223
HIGH FREQUENCY VIBRATORY SPOT WELDING OF SHEET METAL

Bruce L. Mims, Redding, Conn., assignor to Branson Instruments, Incorporated, Stamford, Conn.

Filed Nov. 29, 1973, Ser. No. 420,065

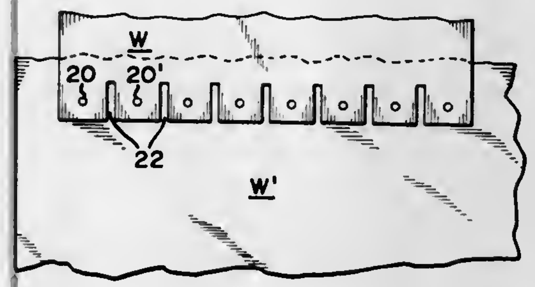
Int. Cl.² B23K *21/00*

U.S. Cl. 228—110 **13 Claims**

1. The method of spot welding two sheet metal members by vibratory energy comprising:

providing one of said members with means for causing said member to have spaced locations which are substantially vibration isolated from each other with respect to high frequency vibratory energy propagated from one such location along the plane of said member toward an adjacent location;

disposing said members in overlapping position for causing said locations of said one member to be in contact with the other member, and



while providing a compressive force between a selected one of said locations and the overlapping portion of the other member, applying to said selected location high frequency vibratory energy having a major component substantially perpendicular to the direction of said force to cause a spot weld.

3,893,224
METHOD OF PRODUCING VACUUM-TIGHT SEALS BETWEEN CERAMIC AND ALLUMINUM COMPONENTS, EVACUATED ENVELOPES INCORPORATING THE COMPONENTS SEALED BY SAID METHOD, AND VACUUM TUBES INCORPORATING SAID ENVELOPES

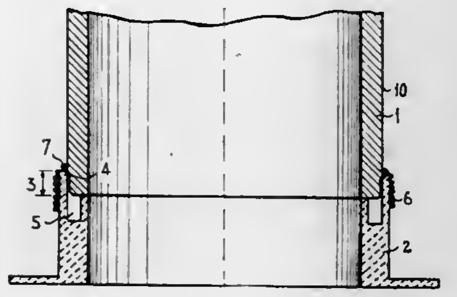
André Besson, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Oct. 31, 1972, Ser. No. 302,416

Claims priority, application France, Nov. 5, 1971, 71.39796

Int. Cl. B23k *31/02*

U.S. Cl. 228—124 **4 Claims**



1. A method of manufacturing vacuum-tight seals between ceramic and aluminium components, comprising the steps of metallizing, the ceramic component over at least part of a contact zone between the ceramic component and the aluminium component;

positioning the aluminium component on the ceramic component;

positioning, at the junction between the two components, an appropriate quantity of brazing solder made of a eutectic mixture of Al-Si containing 89% of aluminium and 11% of silicon; and

heating to 580°C in a controlled, reducing or neutral atmosphere.

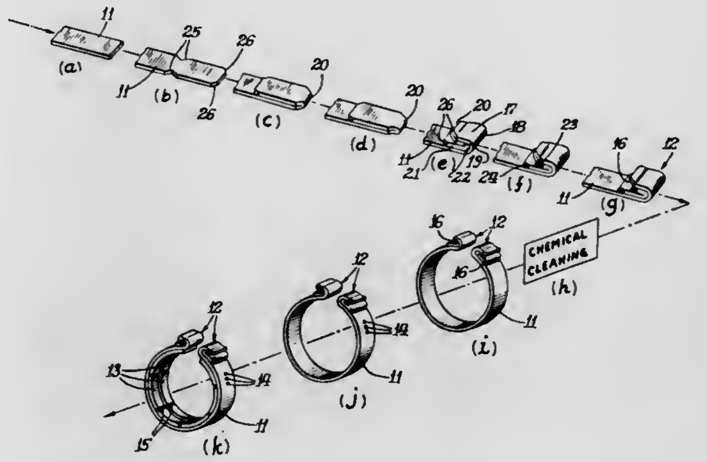
3,893,225
METHOD FOR MAKING A BAND BRAKE

Oscar Hamrick, Elmwood, and Orville E. Kessinger, Jr., Mackinaw, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 304,083, Nov. 6, 1972, Pat. No. 3,811,542. This application Nov. 19, 1973, Ser. No. 416,754

Int. Cl. B23k *31/02*

U.S. Cl. 228—173 **10 Claims**



1. In a method for forming a band brake, including forming an anchor on the end of a metallic, flexible strip adapted to have a brake lining secured thereon, the steps comprising

reverse folding an internal end extension of said strip,

forming a gripping groove of said extension, including the step of again reverse folding the end extension of said strip to form superimposed outer and first and second inner portions, and

securing said first and second inner portions together by a weld bead, extending at least substantially across the transverse width of said strip.

7. A method forming a band brake comprising the steps of reverse folding each integral end extension of a metallic, flexible strip,

forming a gripping groove on each of said end extensions, forming said strip into an annular band by grasping ends thereof and stretch-forming said strip about an annular mandrel, and

thereafter securing a segmented brake lining to the formed annular inner surface portions of said band to form a band brake.

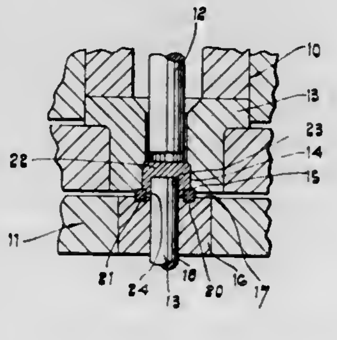
3,893,226
METHOD OF MAKING SEMI-CONDUCTOR MOUNTS

John S. Waite, Barbicon near Welshpool, Wales, assignor to GKN Floform Limited, Welshpool, Wales

Continuation of Ser. No. 279,867, Aug. 11, 1972, abandoned. This application Feb. 8, 1974, Ser. No. 440,801

Int. Cl. B23k *31/02;* **B21d** *31/00*

U.S. Cl. 228—170 **13 Claims**



1. A method of making a mount for a solid state semiconductor comprising the steps of successively

positioning a blank adjacent to and centrally aligned with the opening in an annular mounting part for a cover,

applying pressure to the blank to cause plastic deformation of said blank to form said blank into a mount body of predetermined configuration, said deformation including radially outward movement of part of the blank to bring said blank into contact with a planar surface of the surrounding mounting part,

continuing the pressure against said blank and exerting pressure against said mounting part, said pressure being sufficient to shear off surface portions of said blank and mounting part, thereby exposing new uncontaminated surfaces in contact with each other,

then heating said body and mounting part while maintaining said contact to cause bonding between said new surfaces, then mounting said semiconductor on said body, and

then mounting a cover on said mounting part.

3,893,227
AUTOMATIC TOOL CHANGING APPARATUS

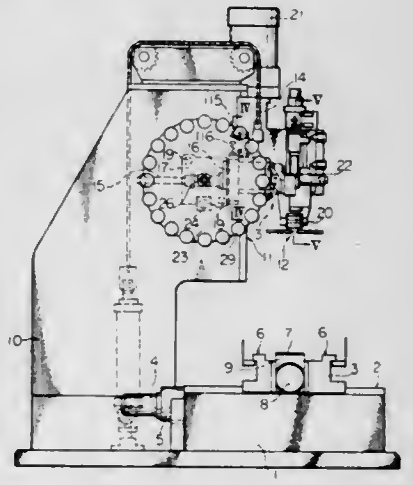
Noboru Suzuki, Aichi-ken, and Yozu Kamiya, Anjo, both of Japan, assignors to Toyoda Machine Works, Limited, Aichi-ken, Japan

Filed Aug. 9, 1973, Ser. No. 387,002

Claims priority, application Japan, Aug. 31, 1972, 47-87368

Int. Cl. B23q *3/157*

U.S. Cl. 29—568 **7 Claims**



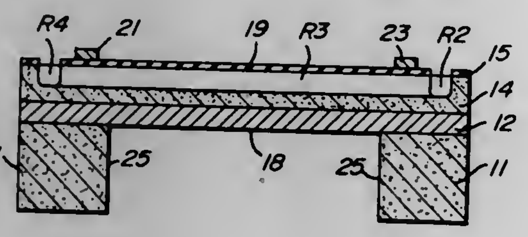
1. An automatic tool changing apparatus adapted for application to a machine tool having a vertical spindle comprising: a rotatable tool storage magazine adapted for removably storing a plurality of horizontally disposed tools, said tool storage magazine being horizontally retractable, and including means for allowing said desired tool to be removed by an intermediate tool transfer device when said tool storage magazine is retracted;

said intermediate tool transfer device being adapted for removing a desired tool from the plurality of tools in the tool storage magazine by horizontal motion thereof from said tool storage magazine and for subsequently positioning an axis of the tool in parallel with an axis of the vertical spindle in a position adjacent to the vertical spindle of the machine tool by downward pivotal motion thereof through 90°; and

a tool transfer device of exchanging the desired tool in the intermediate tool transfer device for an already used tool held in said vertical spindle, wherein each of said plurality of tools being stored in said tool magazine is held in a tool sleeve having vertically spaced recesses, and wherein said means of said tool storage magazine comprises vertically disposed and horizontally spaced front and rear magazine plates having a plurality of paired support seats disposed equiangularly on the peripheries of said magazine plates for supporting said plurality of tools, said seats of said front magazine plates having openings, with one of which vertically spaced recesses of a tool sleeve holding the desired tool are aligned when the tool sleeve is clamped by said intermediate tool transfer device and, said tool magazine is retracted so that said tool sleeve together with said desired tool is free to pass through said opening.

3,893,228
SILICON PRESSURE SENSOR

William L. George, and Jack L. Saltich, both of Scottsdale, Ariz., assignors to Motorola, Inc., Chicago, Ill.
Division of Ser. No. 293,958, Oct. 2, 1972, abandoned. This application Oct. 29, 1973, Ser. No. 410,734
Int. Cl. B01j *17/00*
U.S. Cl. 29—580 **7 Claims**

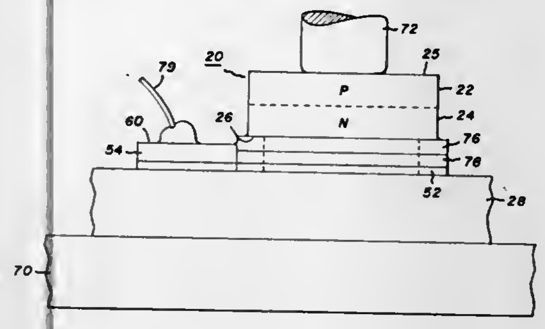


1. A method of manufacturing a silicon pressure sensor from a monocrystalline silicon wafer cut along a prescribed crystallographic plane, comprising the steps of:
a. forming a first layer of a first conductivity type moncrystalline silicon at one surface of the wafer;
b. forming a second layer of a second conductivity type monocrystalline silicon over the first layer;
c. forming at least one elongated piezoresistive pressure sensitive element of the bridge circuit by forming a first conductivity type section of monocrystalline silicon in a prescribed region at the surface of the second layer;
d. forming elongated pressure insensitive elements of the bridge circuit by forming a first conductivity type section of monocrystalline silicon at the surface of the second layer at each end of said pressure sensitive element and connected thereto;
e. selectively etching the wafer from the other surface to provide a relatively thin elongated region to support the piezoresistive pressure sensitive element of the bridge circuit while leaving unetched spaced portions of the wafer underlying the pressure insensitive elements to provide a relatively thick region to support the pressure insensitive elements of the bridge circuit; and
f. interconnecting the elements of the bridge circuit to produce an output when the pressure sensitive element is subjected to pressure.

3,893,229
MOUNTING FOR LIGHT-EMITTING DIODE PELLET AND METHOD FOR THE FABRICATION THEREOF

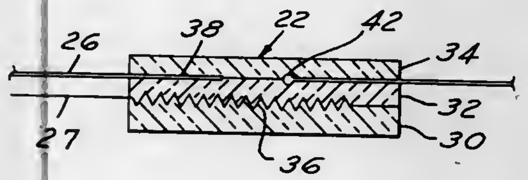
Alanson D. Aird, North Syracuse, N.Y., assignor to General Electric Company, Syracuse, N.Y.
Filed Oct. 29, 1973, Ser. No. 410,640
Int. Cl. B01j *17/00*
U.S. Cl. 29—589 **13 Claims**

1. A method for mounting a gallium arsenide light-emitting diode pellet having a light-emitting surface to a glass substrate, the method comprising the steps of:
a. forming a titanium layer on said glass substrate;
b. forming a gold layer on said titanium layer to form a gold-titanium layer, said gold-titanium layer being in a pattern which exposes a portion of said glass substrate;
c. forming a germanium layer on said gold-titanium layer, said layer of germanium covering a portion of said gold-titanium layer proximate to said exposed portion of said glass substrate;
d. placing said light-emitting diode pellet on said germanium layer with said light-emitting surface in contact therewith so that a portion of said light-emitting surface overlies said exposed portion of said glass substrate; and
e. bonding said light-emitting diode pellet to said germanium layer under pressure at a temperature and for a time sufficient to cause said gold layer and said germanium layer to form a gold-germanium alloy layer which is in ohmic contact with said light-emitting surface, said gold-germanium alloy layer having a configuration which securely mounts said light-emitting diode pellet to said glass substrate.



3,893,230
METHOD OF MANUFACTURE OF AN EXHAUST GAS SENSOR FOR AN AIR-FUEL RATIO SENSING SYSTEM

Henry L. Stadler; Tseng-Ying Tien, both of Ann Arbor; Michael J. Esper, Detroit, and Donald J. Romine, Southfield, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Continuation of Ser. No. 198,515, Nov. 15, 1971, abandoned. This application Aug. 23, 1973, Ser. No. 391,424
Int. Cl. G01n *29/02*
U.S. Cl. 29—592 **6 Claims**



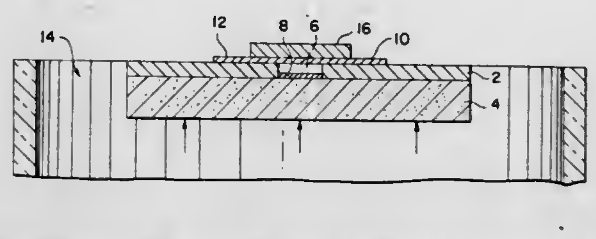
1. A process for preparing an exhaust gas sensing member comprising the steps of
forming a slurry of a major portion of particles of a transition metal oxide;
drying the slurry into a sheet;
forming plates from the dried slurry;
sandwiching spaced electrodes between a pair of said plates; and
firing the sandwiched plates into a unitary structure.

3,893,231
TECHNIQUE FOR FABRICATING VACUUM WAVEGUIDE IN THE X-RAY REGION

John P. Anderson, Peekskill, N.Y., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Dec. 19, 1974, Ser. No. 534,331
Int. Cl.² H01P *11/00*
U.S. Cl. 29—600 **3 Claims**

1. A method of fabricating a vacuum waveguide comprising the steps of:
a. selecting an optionally flat substrate;
b. depositing a film of metal on said substrate;
c. photoetching a line corresponding to the width of said waveguide in said metal film;
d. selecting a parylene pellicle;

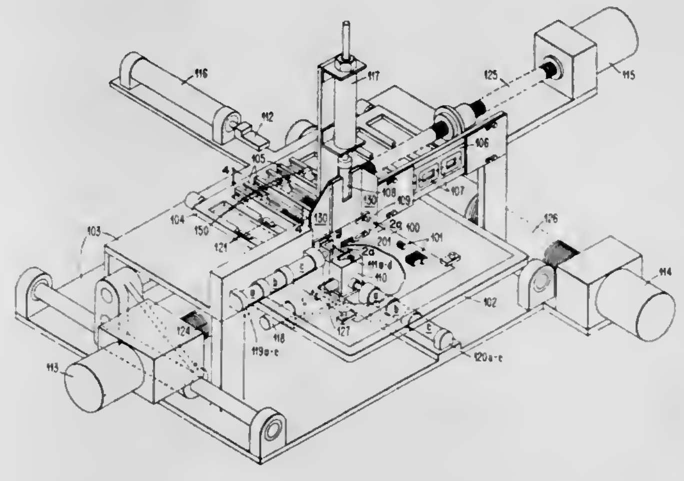
e. depositing a second metal film on one side of said pellicle;
f. depositing a third film perpendicular to the length of the waveguide on the opposite side of said pellicle;



g. stretching said pellicle over said substrate to form a channel; and
h. evacuating said channel to complete said vacuum waveguide.

3,893,232
ELECTRONIC COMPONENT ASSEMBLY APPARATUS

Alan T. M. Fletcher, Boulder, and Robert J. Godsoe, Jamestown, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Aug. 16, 1973, Ser. No. 389,057
Int. Cl. H05k *13/04, 13/02*
U.S. Cl. 29—626 **14 Claims**

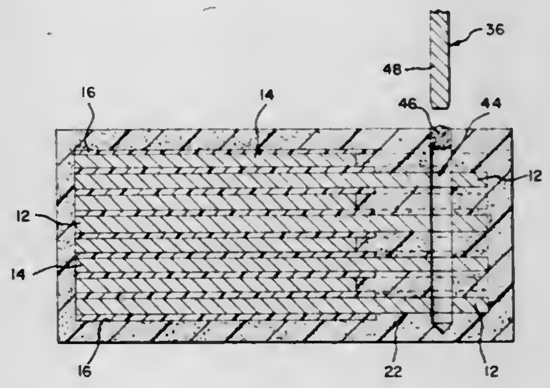


7. Apparatus for inserting different size modules, each having a plurality of leads lying in a plane extending from a first side of the module, into a circuit board, including:
a number of positionable magazines, each magazine retaining a stack of essentially identically dimensioned modules positioned with their leads parallel with each other and also with lines perpendicular through the circuit board;
a movable guide, supported adjacent a first top side of the circuit board, positionable to contact at least one side of a module;
a plurality of anvils, mounted in an indexable anvil support adjacent a second side of the circuit board, positionable to present a selected anvil, in line with the movable guide, having dimensions corresponding to dimensions of a module; and
means for relatively moving the module and anvil support toward each other to place a module into the circuit board and crimp less than all of said module leads against a side of the board to remain within aforesaid plane.

12. A method for inserting different size modules, each having more than two leads emerging from a first side of the module, into holes in a circuit board, including the steps of:
retaining a stack of essentially identically dimensioned modules in magazines so that their leads are parallel with each other and also with lines perpendicular through the circuit board holes;
exerting a positive force on the end of one stack of modules to force a module at the other end of the stack out of the magazine and through an associated aperture;
selecting an anvil having dimensions corresponding to dimensions of the module forced out of the magazine; and
relatively moving the forced module and the selected anvil to crimp less than all of the module leads against the board bottom.

3,893,233
METHOD OF CONNECTING A CONTACT PIN TO LAMINATED BUS BARS

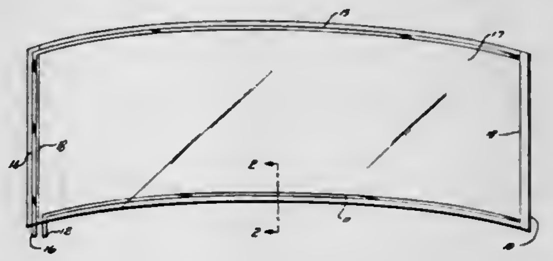
Douglas Wade Glover, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Continuation-in-part of Ser. No. 152,145, June 11, 1971, abandoned. This application Sept. 18, 1972, Ser. No. 290,013
Int. Cl.² H01R *43/00;* **H05K** *1/04*
U.S. Cl. 29—628 **6 Claims**



1. A method of making electrical connection to a laminated bus bar assembly having alternate layers of rigid insulator material and electrically conductive material, comprising
forming an aperture of uniform dimensions in the assembly to a predetermined depth normal to the lamina and extending through predetermined adjacent ones of said lamina,
driving into the aperture of the assembly a conductive post having angularly related walls biting into the aperture wall including that of the conductor and distorting the material of the conductor layer in its own plane while the remainder of the post walls are within the aperture and spaced from the wall thereof,
prior to the step of driving said post into the aperture of the assembly, placing a globule of uncured epoxy on one of the post and entrance to the aperture of the assembly to fill the space between the post and aperture walls,
and allowing said epoxy to cure subsequent to driving the post into the aperture.

3,893,234
EDGE IMPROVEMENT FOR WINDOW WITH ELECTRICALLY CONDUCTIVE LAYER

Berton P. Levin, Santa Monica, Calif., assignor to The Sierracin Corporation, Sylmar, Calif.
Division of Ser. No. 268,827, July 3, 1972, Pat. No. 3,781,524. This application Aug. 29, 1973, Ser. No. 392,741
Int. Cl. H01r *43/00*
U.S. Cl. 29—628 **6 Claims**



1. A method for improving an edge of an electrically conductive window having a glass ply, a transparent plastic carrier film, a thin conductive coating on one face of the carrier film, and a transparent plastic interlayer bonding the glass ply to the

face of the carrier film having the conductive coating thereon comprising the step of:

- providing a transparent plastic carrier film having a thin conductive coating extending over substantially all of one face thereof; and
- removing the conductive coating from an edge portion of the carrier film by mechanically abrading the edge portion.

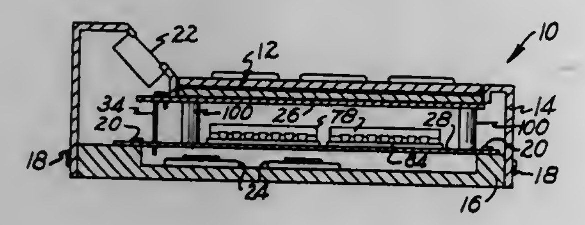
3,893,235
KEYBOARD ELECTRONIC APPARATUS AND METHOD OF MAKING

Laurence J. Keough, Walpole, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 307,706, Nov. 17, 1972, Pat. No. 3,831,063. This application Feb. 11, 1974, Ser. No. 441,072

Int. Cl. H05k *3/20*

U.S. Cl. 29—628 **6 Claims**



1. Method for electrically interconnecting a plurality of circuit paths on two printed circuit boards comprising the steps of blanking a strip of electrically-conductive metal material to form a plurality of shape-retaining leads held in spaced side-by-side parallel relation to each other by integral web portions of said strip material, inserting corresponding first ends of said leads into respective, correspondingly spaced apertures in a first rigid printed circuit board to dispose said first lead ends adjacent selected circuit paths on said first printed circuit board, soldering said first lead ends in electrically connected relation to said selected circuit paths for further securing said leads in said spaced, side-by-side parallel relation to each other, removing said strip web portions from said leads for separating said leads while retaining said leads in said spaced side-by-side parallel relation to each other in said first printed circuit board, inserting the opposite ends of said spaced leads into respective, correspondingly spaced apertures in a second rigid printed circuit board to dispose said opposite lead ends adjacent selected circuit paths on said second printed circuit board, and soldering said opposite lead ends in electrically connected relation to said selected circuit paths on said second printed circuit board.

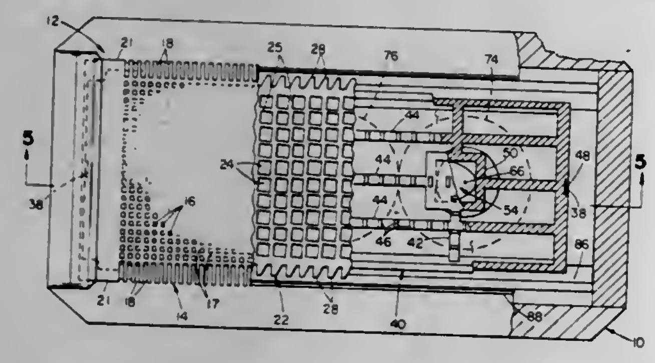
3,893,236
DRY SHAVER

Warren I. Nissen, Topsfield, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Nov. 11, 1974, Ser. No. 522,348

Int. Cl. B26b *19/00*

U.S. Cl. 30—43 **17 Claims**



1. A dry shaver comprising:

- a shear plate having a multiplicity of apertures therein, each said shear plate aperture being of polygonal configuration and defining a series of cutting edges thereabout;
- cutter structure against one side of said shear plate, said cutter structure having a multiplicity of apertures therein, each said cutter aperture being of the same polygonal configuration as said shear plate apertures and defining a series of cutting edges thereabout for shearing coaction with said cutting edges in said shear plate; and
- drive means connected to said cutter structure for driving said cutter structure relative to said shear plate for shearing coaction between cooperating cutting edges of apertures of said shear plate and said cutter structure;
- said drive means has means for driving said cutter structure along a path of the same polygonal configuration as that of said apertures in said shear plate and said cutter structure.

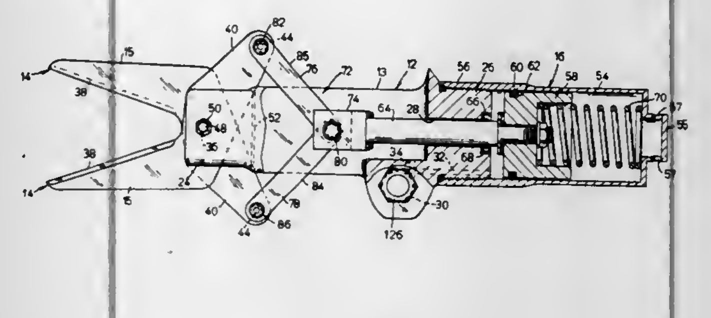
3,893,237
POULTRY CUTTER

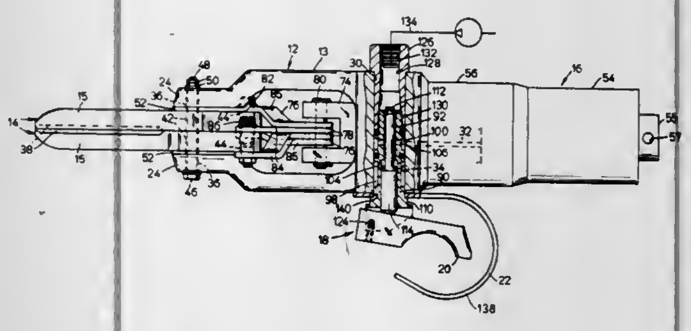
Donald E. Jahnke, 6116 N. 115th St., Menomonee Falls, Wis. 53051

Filed Aug. 3, 1973, Ser. No. 385,437

Int. Cl. B26b *15/00*

U.S. Cl. 30—228 **3 Claims**





1. An improved hand held poultry cutter comprising:

- a housing having a pair of arms,
- a pressure passage extending through said housing transversely to said arms,
- a pair of cutter blades pivotally mounted on said arms on one side of said pressure passage,
- said blades having straight cutting edges and rearwardly extending arms,
- a pneumatic piston and cylinder assembly mounted on said housing on the other side of said pressure passage,
- said assembly including a piston rod,
- linkage means for operably connecting said piston rod to said rearwardly extending arms,
- means for biasing said piston rod to hold the blades in an open position,
- a trigger actuated air control mechanism located in said pressure passage for selectively pressurizing said piston and cylinder assembly to close said blades, said trigger actuated air control mechanism including an air valve body having an axial passage,
- means for connecting one end of said axial passage to a source of air under pressure,
- port means for connecting said axial passage to said cylinder,
- an air valve plunger positioned in said axial passage in said body and including an O-ring on each end of said plunger for selectively sealing one or the other of the ends of said axial passage whereby said port means is connected to said air under pressure or vented to atmosphere, said plunger being moved to a closed position by the pressure of the air at said one end of said axial passage,
- a trigger pivotally mounted on said housing in a position to move said plunger to an open position with respect to said one end of said axial passage to pressurize said piston and cylinder assembly and to close the other end of said axial passage, said trigger being located in a position to be actuated when the cutter is held by the cylinder assembly, and a guard for preventing accidental actuation of said trigger actuated mechanism.

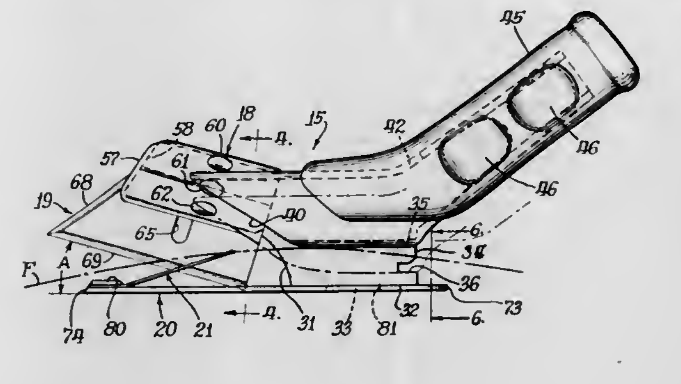
3,893,238
BUTT SEAM CUTTING TOOL

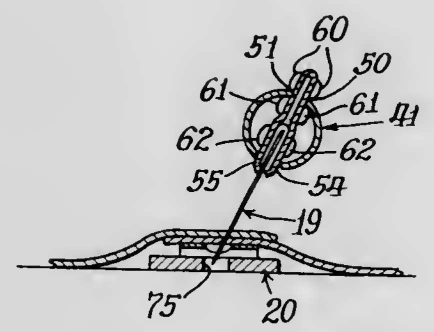
Albert S. Scholl, 2706 S. Kedvale, Chicago, Ill. 60623

Filed Nov. 2, 1973, Ser. No. 412,188

Int. Cl.² B26B *3/08, 29/02*

U.S. Cl. 30—294 **2 Claims**





1. A hand operated tool for cutting angulated butt seam edges in wall covering materials and the like comprising: an elongated planar guide shoe formed with an opening therethrough and having a bottom planar guide surface engageable with an underlying wall to guide the tool in its normal operating position, a generally planar body member affixed to said guide shoe adjacent one end thereof such that the plane of said body member lies in acute angular relation to the plane of said guide shoe and guide surface, an elongated arm portion formed on said body member in overhanging spaced alignment with the longitudinal axis of said guide shoe and opening such that the longitudinal axis of said arm portion intersects the plane of said guide shoe and guide surface; holder means affixed to said arm portion and comprising a pair of parallel spaced wall portions for slidably receiving and holding a cutting blade in the plane of said body member, a cutting blade frictionally mounted in said holder means and having a first cutting edge in the plane of said body member and parallel to the longitudinal axis of said arm portion to subtend in bi-angular intersecting relationship with the plane of said guide surface, said cutting edge invading said opening rearwardly of the leading other end of said guide shoe to interferingly engage sheet materials passing over the latter, whereby movement of the tool through said material serves to feed material over the leading end of said guide shoe and against said cutting edge to sever the same in a plane disposed in acute angular relationship to the formational plane of said sheet material, a secondary cutting edge formed on a lateral margin of said blade, in intersecting relationship with said first cutting edge and adapted for use in an inverted operating position for the tool, and additional guide means formed on the outer end of said holder means for locating the second cutting edge in a plane of angularity coincident with the plane of severance effected by said first cutting edge.

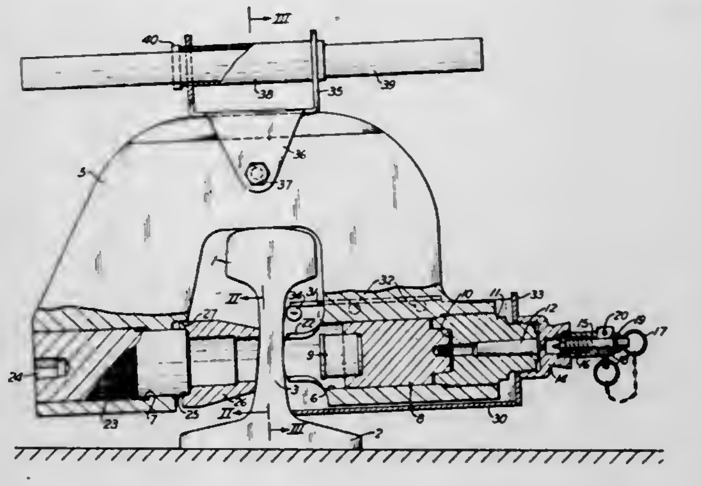
3,893,239
EXPLOSIVELY ACTUATED RAIL PUNCH

Joseph L. Giebel, Pittsburgh, and Frank K. Hill, Irwin, both of Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed Jan. 7, 1974, Ser. No. 431,219

Int. Cl. B26f *1/00*

U.S. Cl. 30—358 **4 Claims**



1. A tool for punching an inclined hole through the upwardly tapered portion of the web of a track rail, comprising a yoke adapted to straddle the rail and having ends for extending down beside its opposite sides, a hollow die between said ends carried by one of them and having a substantially flat front face, explosively driven punching means carried by the opposite end of the yoke in axial alignment with the die and having a substantially flat front face lying in a plane perpendicular to the axis of the punching means, the front face of the die lying in a plane inclined to said first-mentioned plane to provide a space between said planes tapering upwardly to substantially the same degree as the portion of the rail web that is to be punched, and a threaded member screwed into said one end of the yoke and having a projecting inner end engaging and supporting said die, said member being rotatable to move the die toward the punch for clamping the yoke onto a rail with the top and bottom of the inclined front face of the die engaging one side of the rail web, and the yoke and die having engaging surfaces that prevent rotation of the die when said threaded member is turned, whereby the top and bottom of the front face of the punching means will strike the web at the same time when the punching means is driven forward.

2. A tool for punching an inclined hole through the upwardly tapered portion of the web of a track rail, comprising a yoke adapted to straddle the rail and having ends for extending down beside its opposite sides, a hollow die between said ends carried by one of them and having a substantially flat front face, explosively driven punching means carried by the opposite end of the yoke in axial alignment with the die and having a substantially flat front face lying in a plane perpendicular to the axis of the punching means, the front face of the die lying in a plane inclined to said first-mentioned plane to provide a space between said planes tapering upwardly to substantially the same degree as the portion of the rail web that is to be punched, said opposite end of the yoke having a portion projecting toward said one end of the yoke for engaging a rail web when the yoke is clamped onto it, means for clamping the yoke onto a rail with the top and bottom of the inclined front face of the die engaging one side of the rail web

so that the top and bottom of the front face of the punching means will strike the web at the same time when the punching means is driven forward, a guard straddling said opposite end of the yoke and having two side walls and a bottom wall, the guard being movable forward from a rear inoperative position to a forward guarding position beside said projecting portion of the yoke, a cartridge-receiving member carried by the rear end of said opposite end of the yoke, a firing pin behind said member, and a breech block carrying the firing pin and adjustable forward relative to said member to move said pin from a rear inoperative position to a forward operative position, the breech block being engageable with said guard to move the guard forward to its guarding position when the breech block is adjusted forward to the operative position of the firing pin, whereby the tool cannot be operated until the guard is in its guarding position.

3. A tool for punching an inclined hole through the upwardly tapered portion of the web of a track rail, comprising a yoke adapted to straddle the rail and having ends for extending down beside its opposite sides, a hollow die between said ends carried by one of them and having a substantially flat front face, explosively driven punching means carried by the opposite end of the yoke in axial alignment with the die and having a substantially flat front face lying in a plane perpendicular to the axis of the punching means, the front face of the die lying in a plane inclined to said first-mentioned plane to provide a space between said planes tapering upwardly to substantially the same degree as the portion of the rail web that is to be punched, and means for clamping the yoke onto a rail with the top and bottom of the inclined front face of the die engaging one side of the rail web, whereby the top and bottom of the front face of the punching means will strike the web at the same time when the punching means is driven forward, said punching means including a piston and a punch carried by the front end of the piston, the front face of the piston being parallel to the front face of the punch, said opposite end of the yoke being provided with a passage therethrough containing said piston, said opposite end of the yoke also having portions at opposite sides of said passage projecting toward said die for engaging a rail web when the yoke is clamped onto it, the inner surfaces of said projecting portions forming continuations of the wall of said passage to guide the piston when it is driven forward.

3,893,240

PORTABLE CUTTING-OFF IMPLEMENT

Bengt Morner, Ryetvagen 9, Hovas, and Bengt Wallin, Hagmarksgatan 7, Goteborg, both of Sweden

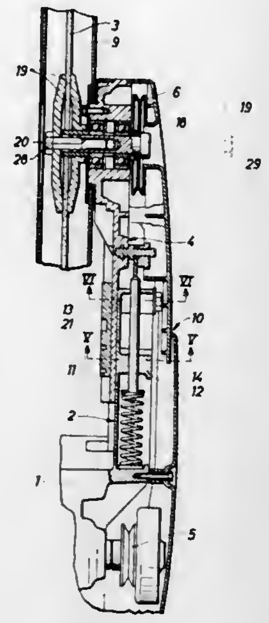
Filed June 3, 1974, Ser. No. 476,072

Claims priority, application Sweden, July 9, 1973, 7309602

Int. Cl. B26d *1/14;* B24b *23/02*

U.S. Cl. 30—390 **4 Claims**

1. Portable cutting-off implement with a body (1), which comprises a driving motor and from which an arm (2, 4) extends, of which the outer end is provided with a shaft means (18) arranged to be driven by the rotation from the driving motor, said shaft being provided with a clamping device (19) with threaded connecting means (20, 28) for a cutting-off tool (3), said arm having brackets (11–27) designed to permit their mounting to be made at least in two working positions opposed to each other relative to the motor body (1), while the driving motor is assumed to work in the same direction of rotation in both working positions, the threaded connecting means comprising one or more parts (20) fitted to the shaft means (18) and one or more relative thereto removable parts (28), CHARACTERIZED BY the parts (20) of the threaded connecting means provided on the shaft means (18) being designed with threads for right hand as well as left hand thread and by the remaining part of parts (28, 29) exhibiting elements with either right hand thread or left hand thread, arranged to be alternated in such a manner that the operative thread is a right hand thread of a left hand thread according to the direction of rotation exhibited by the cutting-off tool (3) in its different working positions, by means of which arrangement a tightening of the threaded connecting means is obtained in case of a possible slip of the cutting-off tool (3) relative to the shaft means (18) independently of the direction of rotation determined by the working position.



3,893,241

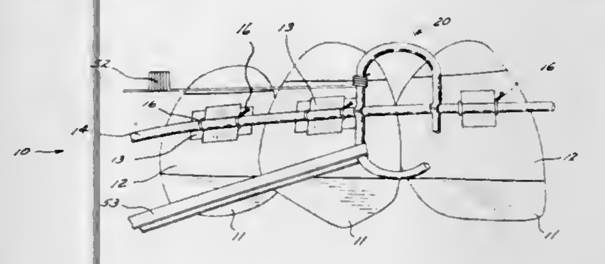
ORTHODONTIC HOOK DEVICE

Thomas M. Moriarty, 2507 S. 105th Ave., Omaha, Nebr. 68124

Filed Jan. 28, 1974, Ser. No. 436,904

Int. Cl. A61c *7/00*

U.S. Cl. 32—14 A **8 Claims**



1. An orthodontic hook device used as an attachment point for elastics, said hook device comprising:
- an arch wire; and
- a hook formed from wire and having a generally ovoid shape open at one end, said hook secured at two places proximate its midpoint to said arch wire, wherein that portion of said hook disposed above said arch wire forms a closed loop and that portion disposed below said arch wire forms an open loop.

3,893,242

AIR DRIVEN DENTAL HANDPIECE

Nathaniel H. Lieb, Narberth; Franklin W. Kerfoot, Jr., Newtown Square; Richard A. Wallace, Audubon, and Kurt Sotman, Wynne, all of Pa., assignors to Star Dental Manufacturing Co., Inc., West Conshohocken, Pa.

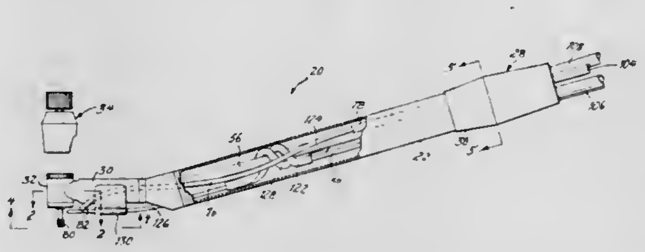
Division of Ser. No. 217,745, Jan. 14, 1972. This application June 5, 1974, Ser. No. 476,748

Int. Cl. A61c *1/10*

U.S. Cl. 32—27 **1 Claim**

1. A dental handpiece comprising a hollow handle, a turbine housing mounted perpendicularly on one end of said handle, said turbine housing having an air turbine rotatably mounted therein, said air turbine comprising a rotor shaft and a plurality of radially extending blades mounted thereon, said rotor shaft extending perpendicularly to said handle, and means within said handle for delivering air to said blades for rotating

the same, said air delivering means comprising a pair of spaced tubes in said handle, said tubes having ends thereof coplanar and lying in a plane that is perpendicular to the axis of said rotor shaft, said ends terminating at said turbine housing and being in fluid communication with the interior of said turbine housing, said ends having outlet ports adjacent said blades, with each of said tubes adapted to supply air which impinges directly and radially against said blades, a fiber optic lighting system within said handle, said fiber optic lighting system comprising a plurality of light transmitting fibers having an opaque sheathing thereover, said light system having a terminus adjacent said turbine housing, said terminus projecting from said handle and being adapted to direct light passing through said fiber optic system to the area around a dental bur which is secured in said housing, said rotor shaft being rotatably mounted in said housing, said rotor shaft having a hollow bore, a collet threadedly secured within said rotor shaft, said collet having a plurality of jaws which are compressible by said rotor shaft when said collet is threadedly advanced within said rotor shaft, and said jaws expanding when said collet is retracted in said rotor shaft, said rotor shaft having at least one axial slot formed in the top thereof, and a wrench for advancing and retracting said collet in said rotor shaft, said wrench comprising a housing, said wrench housing being placed over said turbine housing of said dental handpiece, a tube mounted in said wrench housing, said tube being secured to said wrench housing, said wrench housing having a cavity formed therein, means within said cavity securing said wrench housing on said turbine housing, said securing means comprising a spring, said spring being positioned within a groove formed in the wall of said cavity, said tube having a finger which is received in said slot of said rotor shaft, and a shaft rotatably mounted within said tube, said tube shaft being adapted to threadedly advance or retract said collet relative to said rotor shaft.



3,893,243

LETTERING TEMPLATE

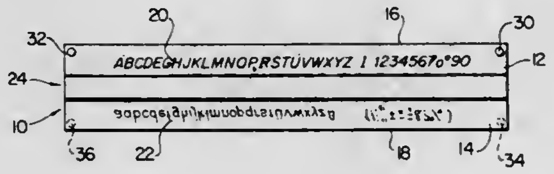
Rolf Schüller, Henstedt-Ulzburg, Germany, assignor to Koh-I-Noor Rapidograph, Inc., Bloomsbury, N.J.

Filed Apr. 17, 1972, Ser. No. 244,436

Claims priority, application Germany, May 14, 1971, 7118804

Int. Cl.^{2} G01B *3/14*

U.S. Cl. 33—174 G **1 Claim**



1. A lettering template comprising:

A. a transparent overlay sheet having first and second longitudinally extending edges; and,

B. two groups of symbol cutouts respectively positioned in straight lines parallel to and inwardly placed from each of said longitudinal edges, and at equal distances therefrom, with the symbols in each group on opposite sides of said sheet and having their bases positioned towards a medial area of said sheet having a gradually increased material thickness extending above opposite surfaces of said overlay sheet, said thickened material area intermediate the groups of symbol cutouts thereby providing raised supporting surfaces at both a top and a bottom side of said overlay sheet, said support surfaces on each side defined in top and bottom support planes which are equally above and below the plane of said overlay sheet; and,

C. a first set of projections extending from said plane of said overlay sheet, near each end of said first longitudinal edge, said first projections terminating at said top support plane; and,

D. a second set of projections extending from said plane of said overlay sheet, near each end of said second longitudinal edge, said second projections terminating at said bottom support plane.

3,893,244

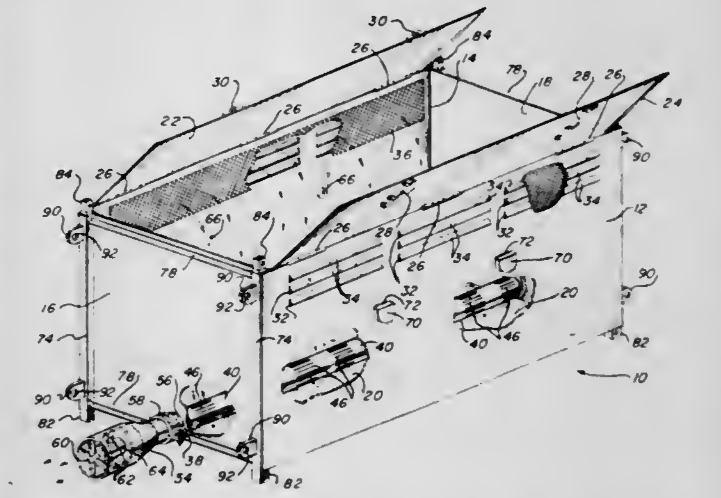
GRAIN STORAGE AND SHIPPING CONTAINERS AND METHOD OF USING THE SAME

Jack De Wayne Danford, Denver, Colo., assignor to Jack D. Danford and H. H. Champlin, both of Denver, Colo.

Filed July 15, 1974, Ser. No. 488,264

Int. Cl. F26b *7/00*

U.S. Cl. 34—19 **16 Claims**



1. A grain storage and shipping container which is stackable with similar containers for transporting grain from one location to another, said shipping container comprising:
- a receptacle for receiving and retaining a cargo of grain in loose bulk form;
- the receptacle being in the general form of a rectangular box having upright side walls and end walls, a horizontal bottom wall, and closure means to overlie the open upper end of the receptacle in parallel relation to said bottom wall when closed so that another container can be stacked on top of said container;
- first airflow port means extending along the major portion of the length of at least one side wall in the vicinity of its upper margin and opening through the side wall to the exterior atmosphere;
- second airflow port means extending through a lower portion of an end wall below the level of the major portion of the cargo to be carried and opening to the exterior atmosphere, said second port means being connectable on the exterior of said container to power operated means;
- duct means mounted adjacent to the bottom wall and extending generally parallel to the side wall containing the first port means and flow-connected to the second port means;
- the duct means being perforated at various points along its length to permit the flow of air between its interior and exterior;
- so that the power operated means can generate a continuous stream of atmospheric air flowing in through one of said port means and out through the other to withdraw

excess moisture from the grain and transfer it to the exterior atmosphere;

the relative arrangement and spacing between the first and second port means serving to define a general flow path between them encompassing substantially all of the grain in the cargo.

3,893,245
PHOTOCOPYING APPARATUS

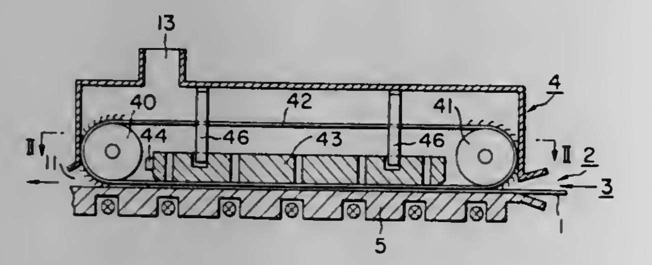
Wilhelm Knechtel, Rodheim-Bieber; Gerhard Petersdorf, Pohlheim, and Winfried Sandner, Rechtenbach, all of Germany, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 12, 1973, Ser. No. 340,558

Claims priority, application Germany, Mar. 28, 1972, 2215099

Int. Cl. F26b *11/02*

U.S. Cl. 34—95 **4 Claims**



1. In a liquid development type copying machine including a sealed chamber having a plurality of walls through which a copy material having a developed image thereon is transported for drying said copy material, said sealed chamber including inlet and outlet ports, stationary heating plate means, and means to transport said copy material from said inlet port over said heating plate means to said outlet port, said transport means comprising at least a pair of driven rollers and endless belt means movably extended around said pair of driven rollers, said endless belt means having a fluffy outer surface, the improvement comprising said heating plate means forming one of said walls of said sealed chamber, and said endless belt means sealing the inlet and outlet ports of said sealed chamber, by contacting a portion of said walls, and further comprising means to press said endless belt means against a stationary surface of said stationary heating plate means, wherein said copy material transported through said sealed chamber is uniformly interposed between and in uniform contact with each of said fluffy surface and said stationary surface of said heating plate.

3,893,246
SIEVE DRUM APPARATUS FOR THE CONTINUOUS TREATMENT OF LENGTHS OF TEXTILE MATERIAL

Hans Fleissner, Egelsbach near Frankfurt am Main, Germany, assignor to Vepa AG, Switzerland

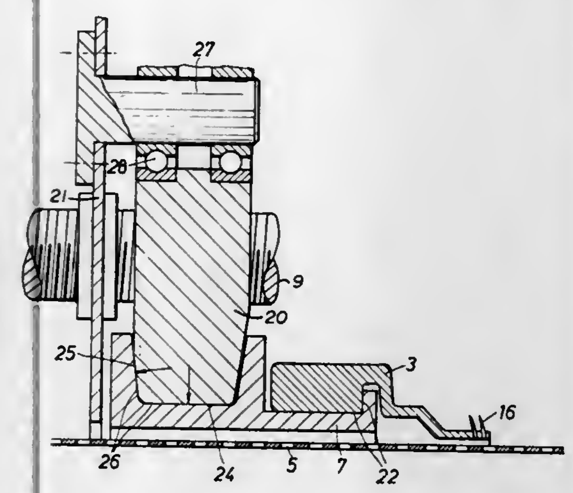
Filed Feb. 1, 1974, Ser. No. 438,536

Claims priority, application Germany, Feb. 1, 1973, 2304776

Int. Cl. F26b *13/00*

U.S. Cl. 34—115 **8 Claims**

1. In a sieve drum apparatus for the continuous treatment of lengths of textile material held along their width, on at least one sieve drum under a suction draft, around which is partially looped at least one tension chain guided in a ring, wherein the ring has a portion U-shaped in cross section in order to receive the tension chain and is mounted to be rotatable about the sieve drum by roller means attached to holding means guided on threaded spindles extending outside of the drum in the axial direction, the improvement wherein said ring has in addition to the U-shaped portion for receiving the chain, another U-shaped portion having an inner portion and said roller means comprise rollers disposed in spaced relationship around the drum, said rollers engaging the inner portion of said another U-shaped portion.



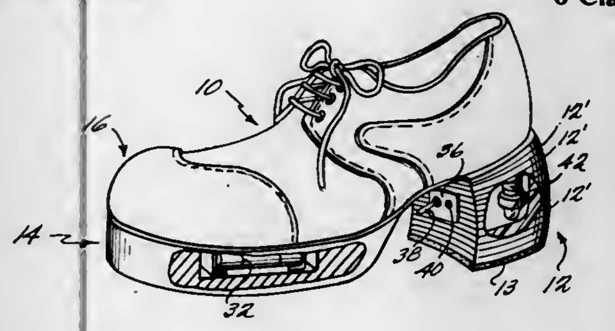
3,893,247
ILLUMINATED SOLES AND HEELS

Alfred Dana, III, 5700 Mariner Dr., Suite 504B, Tampa, Fla. 33609

Filed July 31, 1974, Ser. No. 493,610

Int. Cl.² A43B *00/00*

U.S. Cl. 36—2.5 K **6 Claims**



1. A shoe comprising:

a. a sole,
b. an upper,
c. a heel,
d. a source of e.m.f.,
e. a light bulb adapted to be operatively connected to said e.m.f. source,
f. a circuit operatively connecting said source of e.m.f. and said light bulb,
g. means for selectively connecting and disconnecting said e.m.f. source from said light bulb dependent upon the relative orientation of said shoe, said means including a tilt switch disposed within said circuit operatively connecting said source of e.m.f. and said light bulb, and
h. means for selectively connecting and disconnecting said tilt switch from said circuit operatively connecting said source of e.m.f. and said light bulb, said means including a manually actuated switch having a first position thereof wherein said tilt switch is inserted in said circuit and a second position thereof wherein said tilt switch is not inserted in said circuit and said source of e.m.f. and said light bulb are disconnected.

3,893,248
SNOW REMOVAL APPARATUS

Lee Young, 7425 College, Kansas City, Mo. 64132

Filed Aug. 26, 1974, Ser. No. 500,564

Int. Cl. E01h *5/06;* **E02f** *3/56*

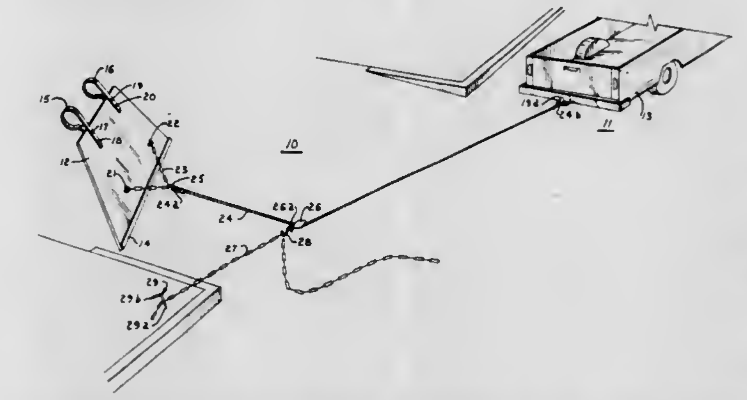
U.S. Cl. 37—41 **5 Claims**

1. Apparatus for use with a towing vehicle to remove snow from a surface, said apparatus comprising:

a scraper adapted to be towed in a longitudinal path along said surface by said vehicle to plow snow from said surface, said scraper including handle means adapted for manual grasping to enable same to be held and guided;

a horizontally disposed pulley freely elevated in proximity to one end of said surface, said pulley being located rearwardly of said vehicle and ahead of said scraper in alignment with the longitudinal path to be traversed by said scraper;

an elongate guy member having one end adapted to be anchored at a location offset to one side of said surface and a freely disposed portion coupled to said pulley in a manner permitting substantially free vertical movement of the latter; and



a flexible tow line of a greater length than the length of said surface and having opposite ends, one of said ends being coupled to said scraper and the other of said ends being adapted for coupling to said vehicle with the tow line being flexed around said pulley,

whereby said scraper may be towed by said vehicle along a longitudinal path in a direction toward said pulley and substantially perpendicular to the direction of travel of said vehicle with said guy member operatively retaining said pulley in alignment with said longitudinal path.

3,893,249
SUCTION DREDGER WITH SWELL COMPENSATION

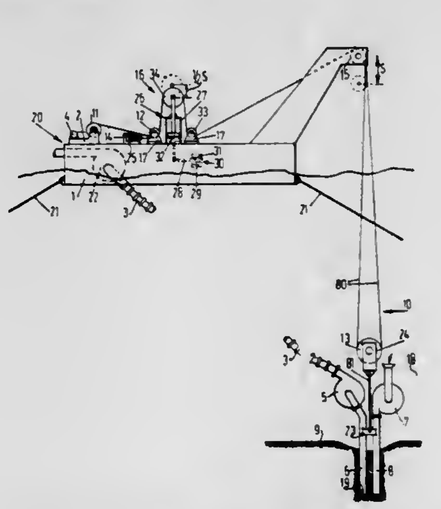
Tjako Aaldrik Wolters, 53, Kastanjelaan, Vianen, Netherlands

Filed Jan. 30, 1974, Ser. No. 437,761

Claims priority, application Netherlands, Feb. 2, 1973, 73.01503

Int. Cl. E02f *3/90*

U.S. Cl. 37—58 **12 Claims**



1. In a suction dredger system comprising a buoyant vessel, and a suction dredger mounted on said vessel and including an elongate suction conduit terminating in a suction nozzle, the combination of:

a cable suspension system for suspending said nozzle from said vessel while the suction nozzle is inserted in the bottom below the vessel, said cable suspension system including at least one winch on said vessel, a cable wound on said winch and issuing therefrom, a reversing pulley connected to said suction nozzle whereby such reversing pulley is subject to an environment which is inherently dirty during dredging operation, said cable being trained over said reversing pulley and secured to said vessel whereby to present at least two cable portions extending from said vessel to said reversing pulley, guide pulley means carried by said vessel and over which said cable portions are trained to suspend said suction nozzle, further guide pulley means on said vessel for guiding and maintaining said cable portions in side-by-side relation; and

swell compensation means, engaging said cable portions which are maintained in side-by-side relation by said further guide pulley means, for paying out and taking in said cable portions in unison as said vessel rises and falls due to wave action, whereby to move said cable relative to said guide pulley means only while obviating any significant movement of the cable over said reversing pulley.

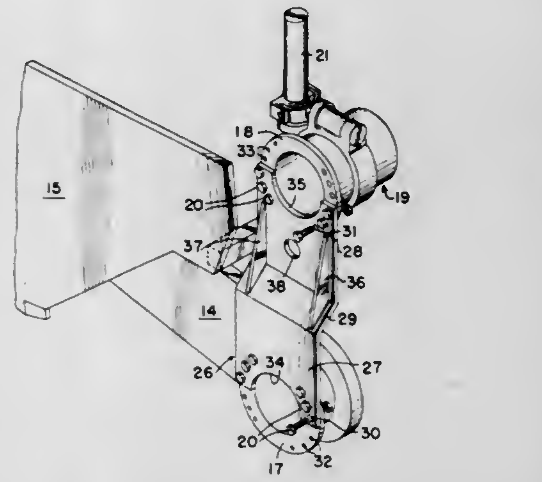
3,893,250
TRANSPORT BRACKET FOR TRACTOR SCRAPERS AND METHOD FOR USING THE SAME

Thomas R. Hamilton, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 31, 1974, Ser. No. 438,285

Int. Cl. E02f *3/62*

U.S. Cl. 37—129 **9 Claims**



1. A transported tractor scraper of the type having a scraper bowl connected to a tractor comprising

a laterally extending draft tube disposed longitudinally between said tractor and said scraper bowl;

a pair of draft arms each having a first end thereof detachably and pivotally mounted interiorly on a respective sidewall of said scraper bowl; and

a transport bracket detachably interconnected between a second end of each of said draft arms and said draft tube.

3,893,251
SPACED FRAME CONSTRUCTION

Kelly R. Coleman, 2367 Anna Ave., Clearwater, Fla. 33515

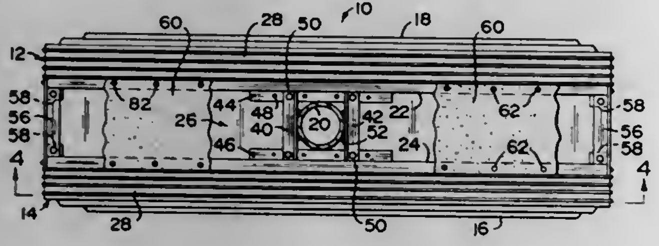
Continuation of Ser. No. 182,435, Sept. 21, 1971, abandoned. This application Aug. 16, 1973, Ser. No. 388,979

Int. Cl. G09f *13/04*

U.S. Cl. 40—130 R **8 Claims**

1. A display device comprising: a first and second frame, each connected to a support means and arranged thereon in spaced, substantially parallel relation to one another, each frame including an inner and outer portion; a display face mounted on said outer portion of each of said frames, whereby said display faces are viewable from opposite exterior portions relative to said device; cover means interconnected to both said frames and detachably mounted to said outer portions thereof, said cover means arranged to extend about at least a portion of the periphery of said device, whereby said cover

means at least partially encloses the space between said frames, thereby at least partially defining the interior of said device; and connecting means arranged on the interior of said device and adaptable to correspond to the configuration of said support means, said connecting means comprising atl least one tab member attached to said inner portion of each of said frames in corresponding position to one another, each of said tab members being located on different sides of said support means, and attachment means disposed on said support means in interconnecting relation between said correspondingly positioned tab members, said connecting means further comprising adjusting means formed on each of said tab members and configured to engage said attachment means, whereby the location of said attachment means on said tab members may be varied depending upon the dimension of said support means and whereby said device is mountable on said support means of various sizes.



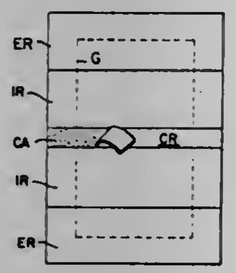
3,893,252
ADHESIVE PICTURE MOUNT

Marston Chase, 1330 New Hampshire Ave., Washington, D.C. 20036

Continuation of Ser. No. 877,583, Nov. 26, 1969, abandoned, which is a division of Ser. No. 690,858, Dec. 15, 1967, Pat. No. 3,517,106. This application Mar. 19, 1974, Ser. No. 452,554

Int. Cl. G09f *1/10*

U.S. Cl. 40—158 R **3 Claims**



1. An adhesive picture mount for mounting pictures or the like comprising a web of a size to accommodate a picture to be mounted with or without a surrounding mat, a layer of pressure sensitive adhesive is provided on both faces of the web for securing a picture to the mount, for securing a composite picture and mount to a support, and for securing the mount to a support, and a cover release sheet releasably retained on the adhesive, each cover release sheet comprising at least three separable sections each release sheet section extending completely across the mount and being removable as a unit to expose a section of the underlying adhesive, one of said release sheet sections being narrow and of a width so as to expose only a minor portion of the pressure sensitive adhesive in a narrow section completely across the web upon a removal of the one sheet section, the remaining sheet sections being so orientated relative to said one sheet section, and hence the adhesive section exposed by the removal thereof, as to retain an overlying picture supported thereon out of direct pressure contact with the exposed adhesive section until such time as the picture is manually depressed below the plane of the remaining sheet sections and into direct contact with the exposed adhesive section for securement thereto whereby the picture and mount can be moved relative to each other in overlying relation for accurate positioning until in final desired position, said exposed adhesive section being of a width so as to accommodate a manually depressed portion of the picture, said remaining sheet sections being removable subsequent to securement of the picture to the exposed adhesive section, the lines of separation of the adjacent separable sections on opposite sides of the mount being offset so as not to be directly opposite from each other.

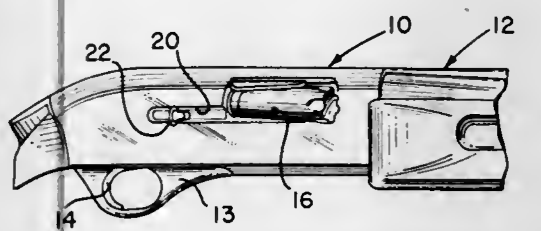
3,893,253
SHELL CATCHER FOR FIREARMS, PARTICULARLY SHOTGUNS

Roy E. Weatherby, Downey, and Fred L. Jennie, Buena Park, both of Calif., assignors to Weatherby, Inc., South Gate, Calif.

Filed Dec. 10, 1973, Ser. No. 423,468

Int. Cl. F41c *27/00*

U.S. Cl. 42—1 T **8 Claims**



1. The combination with a firearm, including a receiver and a barrel having mutually engagable parts, the receiver having a side opening defining an ejection port which normally permits ejection of a shell case therethrough, the improvement comprising: a shell catcher adapted to hold a spent shell case until manually removed from said opening, said shell catcher comprising a flat plate which is held by the receiver and barrell adjacent to one longitudinal edge of said ejection port and being positioned so that the plate restricts the width of the ejection port, thereby restricting a spent shell case from being fully ejected through the ejection port, said plate being shaped to restrict the ejection port in varying degree along its length so that a spent shell case can be moved forwardly to allow removal from said ejection port.

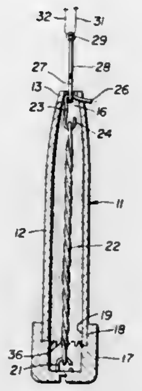
3,893,254
FISH HOOK SNELLING TOOL

Ronald L. Nack, 5015 W. Alaska Pl., Denver, Colo. 80219

Filed July 19, 1974, Ser. No. 489,851

Int. Cl. A01k *91/04*

U.S. Cl. 43—1 **11 Claims**



1. A fishing tool for in-hand usage when tying a fishing line to a fish hook comprising a body unit, a fish hook engaging spindle rotatably mounted at a first end of said body and adapted to receive and hold a fish hook as a fishing line is applied thereto, an anchor element disposed at an opposite end of said body, a resilient element operatively interconnecting said spindle and anchor, means for prestoring torsional energy in said resilient element, and release means whereby the hook is rotated by the stored energy of said resilient means when the fishing line is to be tied to said hook.

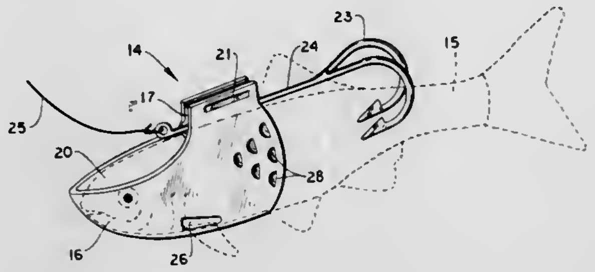
3,893,255
HOLDER FOR LIVE BAIT

Thomas Weems Hicks, 3121 Maple Dr. S.E., Atlanta, Ga. 30305

Filed July 16, 1973, Ser. No. 379,806

Int. Cl. A01k *97/04*

U.S. Cl. 43—41 **12 Claims**



11. A holder for live bait comprising a flexible shell of a length shorter than the length of the live bait defining a cavity for enclosing the forward portion of the body of the live bait, a tail opening defined at the rear portion of said holder so that the tail portion of the bait in said holder normally extends from within said cavity through said tail opening, and a plurality of internally and forwardly extending scale elements struck from said flexible shell on opposite sides of said shell at said tail opening, said scale elements being sized and shaped to contact the live bait and inter-engage with the scales or the like of the live bait to retain the forward body portion of the live bait in the cavity of said shell.

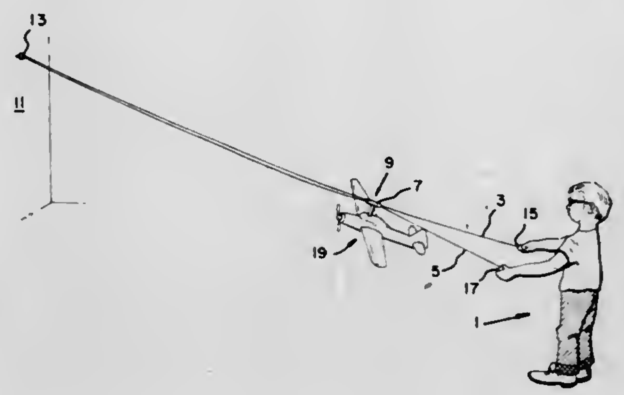
3,893,256
TETHERED FLYING TOY

Tobin Wolf, 285 Aycrigg Ave., Passaic, N.J. 07055, and Ned M. Cain, West Patterson, N.J., assignors to by said Ned Cain said Tabin Wolf

Filed Dec. 3, 1973, Ser. No. 421,333

Int. Cl.^{2} A63H *33/00, 27/04*

U.S. Cl. 46—1 R **12 Claims**



1. A flying toy movable along a pair of string portions by separation and convergence of said strings which comprises, in combination:

a. a toy member;
b. a hollow ring member secured to the toy through which both string portions extend, and
c. turning means secured within said toy member and responsive to a predetermined velocity of ascent of said toy member for rotating said toy member about an axis normal to the direction of travel of the toy member.

3,893,257
PUPPET HEAD WITH MOVABLE EYES AND LIP AND REMOTE HAND CONTROLS THEREFOR

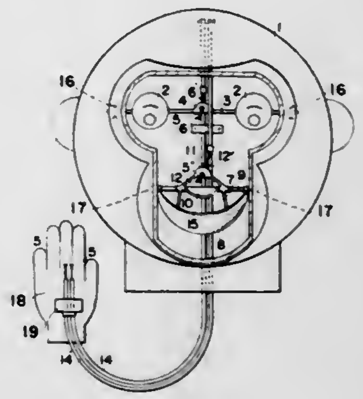
Tokuhito Miki, Osaka, Japan, assignor to Perfect Liberty, Japan

Filed July 12, 1974, Ser. No. 488,252

Claims priority, application Japan, Jan. 10, 1972, 47-5484

Int. Cl. A63h *7/00*

U.S. Cl. 46—126 **1 Claim**



1. A puppet head or the like comprising a pair of simulated eyeballs, a simulated lip, first pivotal means within said head pivotally mounting said eyeballs therein, second pivotal means within said head pivotally mounting said lip therein, and flexible hollow wires having slidable wires therein connected to said first and second pivotal means, a glove of a size for receiving the hand of a user, means for securing said hollow wires to the palm of said glove and loops secured to the ends of said slidable wires for engaging the fingers of said glove, whereby said user may manipulate said slidable wires.

3,893,258
METHOD FOR GROWING CELERY TRANSPLANTS

Peter J. Compton, Santa Maria; Sheldon W. Moline, San Jose; Robert E. McKenzie, and Edward F. Christian, both of Salinas, all of Calif., assignors to Union Carbide Corporation, New York, N.Y.

Filed Apr. 24, 1974, Ser. No. 463,530

Int. Cl. A01c *1/04*

U.S. Cl. 47—58 **10 Claims**

1. A method of growing celery transplants, comprising
coating celery seeds with a seed coating filling the recesses between ribs with the outer surface of the ribs remaining substantially uncoated to obtain a substantially smooth surface,
distributing said coated celery seeds at even intervals on a seed tape of water-soluble material,
planting finished said seed tapes in even spaced rows,
growing celery plants therefrom without any intermediate transplantation until they reach full size for transplantation in a final growing field, and
pulling the grown celery transplants which have long well-developed tap roots and hair roots.

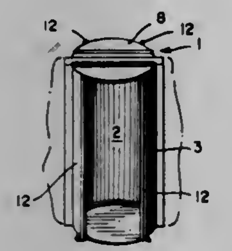
3,893,259
REVOLVING DOORS

Edward Nineberg, Evanston, Ill., assignor to Consolidated International Corporation, Chicago, Ill.

Filed July 5, 1974, Ser. No. 486,120

Int. Cl. E06b *3/34*

U.S. Cl. 49—41 **10 Claims**



1. A revolving door comprising
- a. an elongated, substantially cylindrical-shaped outer shell,
- b. means for supporting said outer shell on a floor in substantially longitudinally upright position,
- c. said outer shell comprising
  - 1. a top wall,
  - 2. an elongated side wall
    - a. extending longitudinally downward from said top wall, and
    - b. having two elongated openings in respective sides thereof and extending downwardly from the upper portion of said side wall through the lower edge of the latter, and
  - 3. an annular ring mounted on the lower edge portion of said side wall and projecting radially inwardly thereof,
- d. said opening being substantially unobstructed except for said ring,
- e. an elongated, substantially cylindrical-shaped inner shell disposed in said outer shell,
- f. said inner shell comprising
  - 1. a top wall,
  - 2. an elongated side wall
    - a. extending longitudinally downwardly from said last mentioned top wall, and
    - b. having an elongated opening in one side thereof extending downwardly from the upper portion of said last mentioned side wall through the lower edge thereof,
- g. said shells being substantially round in transverse cross-section,
- h. means operatively connecting said top walls together for rotatably supporting said inner shell for rotation around the longitudinal axis thereof within said outer shell and thereby moving said last mentioned opening into and out of registration with respective ones of said first mentioned openings,
- i. said ring having annular track means concentrically disposed around said longitudinal axis of said outer shell, inwardly of said inner shell, and
- j. follower means mounted on said inner shell and operatively engaged with said track means for holding the lower end portion of said inner shell against lateral movement during rotation of said inner shell around said axis of said outer shell.

3,893,260
CONTROL DEVICE FOR VEHICLE DOORS AND OTHER MEMBERS

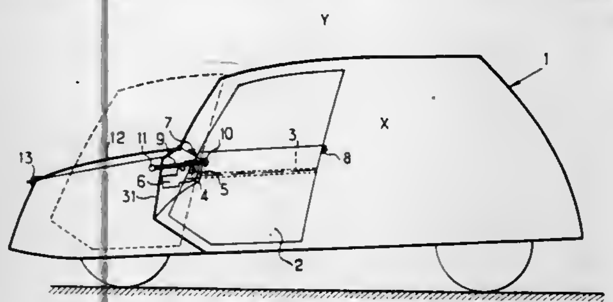
Jean G. Cadiou, Paris, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France

Filed Apr. 30, 1973, Ser. No. 355,749

Claims priority, application France, May 2, 1972, 72.16015

Int. Cl.² E05F *11/34*

U.S. Cl. 49—362 **8 Claims**



1. In a device for controlling the operation of a movable member separating two spaces and disposed in part in a third space, said device comprising
- an electric motor,
- a first switch for selective activation of the electric motor from one of the two spaces, and
- a second switch for selective activation of the electric motor from the other of said two spaces,
- an actuating mechanism for the movable member,
- a non-reversible transmission coupling the electric motor and the actuating mechanism, said transmission including a worm, and
- a worm wheel rotatably mounted and coupled to the actuating mechanism and being so positioned that it is capable of engagement with the worm,

the improvement comprising:
- means for disengaging the worm from the worm wheel, said means including
- a casing carrying the electric motor and the worm which is rotatably mounted in said casing and driven by said motor and said worm wheel also being located within the confines of said casing,
- said casing being so weighted and pivotally mounted that the worm is constantly urged away from the position of engagement with the worm wheel by the force of gravity, and
- a control member accessible both in the said one space and in said third space, said control member being slidably disposed in said casing and operable to pivot the casing and the worm rotatably mounted therein to urge the worm into engagement with the worm wheel against the force of gravity urging the worm away from the worm wheel.

3,893,261
WINDOW SAFETY LATCH

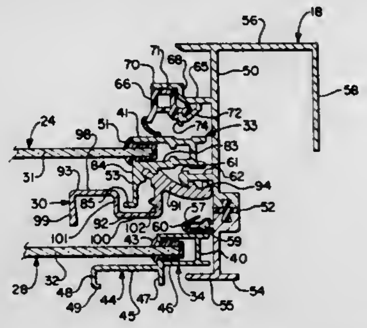
James T. Cribben, Mechanicsburg, Pa., assignor to Capitol Products Corporation, Mechanicsburg, Pa.

Filed Jan. 2, 1974, Ser. No. 429,732

Int. Cl. E05d *13/04*

U.S. Cl. 49—449 **10 Claims**

1. A unitary extruded aluminum shape safety latch for sliding windows comprising a rounded hinge member; a latching member extending outwardly therefrom; a U-shaped web extending downwardly therefrom; a pull handle extending outwardly from said web and away from said latching member, and a catch on the end of said latching member; and U-shaped web comprising a base member, a leg extending from one end thereof joining said latching member and said rounded hinge member, and another leg extending from the other end of said base member and joining said pull handle; and, said leg of said U-shaped member, which joins said latching member and said rounded hinge member, having a channel formed on the internal surface thereof adapted to receive a flat bow spring.



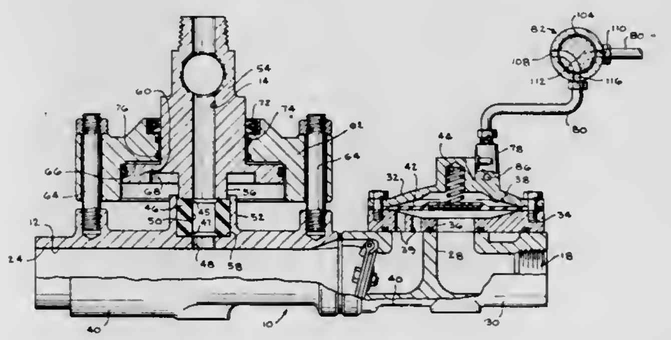
3,893,262
PARTICULATE TRANSFER CONTROL DEVICE

James A. Giese, Houston, Tex., assignor to Fruehauf Corporation, Detroit, Mich.

Filed May 15, 1974, Ser. No. 470,227

Int. Cl.² B24C *7/00*

U.S. Cl. 51—12 **7 Claims**



1. A control means for use with apparatus for pneumatic transfer of a particulate material of the type including an air directing portion having an air flow-way therethrough, means supplying said air flow-way with compressed air, and a particulate directing portion having a particulate flow-way therethrough communicating with said air flow-way to deposit said particulate material in said air flow-way, said control means comprising:
- air flow-way closure means operative to open and close said air flow-way;
- particulate flow-way closure means operative to open and close said particulate flow-way; and
- a sequencing mechanism operatively connected to said air flow-way closure means and to said particulate flow-way closure means and having control fluid passageways and including means responsive to a first flow pattern of said control fluid in said control fluid passageways, when said air flow-way closure means and said particulate flow-way closure means are both open, to cause closing of said particulate flow-way by said particulate flow-way closure means first, followed by closing of said air flow-way by said air flow-way closure means;
- and means for selectively causing said control fluid to flow in said first pattern.

3,893,263
TAPERING TOOL

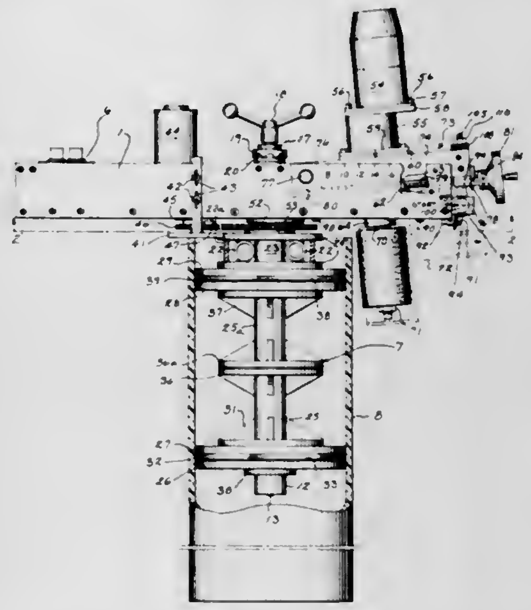
Robert M. Jackman, and William N. McDonald, both of Little Rock, Ark., assignors to A. O. Smith-Inland, Inc., Milwaukee, Wis.

Filed Sept. 9, 1974, Ser. No. 504,342

Int. Cl. B24b *9/00, 41/10*

U.S. Cl. 51—105 R **9 Claims**

9. In a machine having a housing supporting a mandrel to receive and rotate a tubular workpiece for tapering the end thereof to a feathered edge by a grinding drum, a carriage pivoted at one end inside the housing and free at the outer end to be tilted in an arcuate path toward said workpiece, a ratchet and eccentric cam connected to the outer end of the carriage, a pawl connected to said housing in engagement with said ratchet and adapted to be reciprocated when the workpiece is rotated to rotate the ratchet and cam and thereby tilt the carriage toward the workpiece, a motor secured to the carriage and connected to the grinding drum to rotate the latter, a manually operated member secured to a shaft disposed in driving engagement with said cam to thereby manually actuate the cam and effect initial tilt of the carriage and to move the carriage back to start position when the grinding operation is completed, and means in the carriage to move the grinding drum longitudinally therein and therefore toward or away from the workpiece to taper workpieces of different diameter and govern the thickness of the taper.



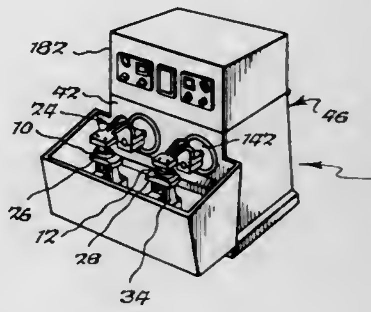
3,893,264
LENS SURFACING APPARATUS AND METHOD

Adolph Behnke, Tampa, Fla., assignor to Textron Inc., Tampa, Fla.

Filed Nov. 23, 1973, Ser. No. 418,763

Int. Cl. B24b *13/02, 1/00*

U.S. Cl. 51—119 **26 Claims**

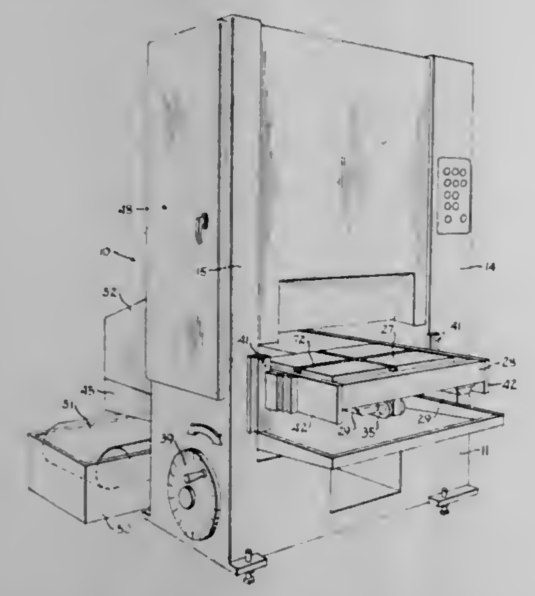


25. A lens grinding machine for forming a compound curvature on a lens surface comprising
- a lap having a compound curvature on the surface thereof, means for moving said lap in a first orbit,
- a lens carrying block,
- means for moving said block, simultaneously with the orbital movement of said lap, in a second orbit,
- wherein one of said lap and said block moves in an orbit which in a reference plane describes substantially a circle and the other of said lap and said block moves in an orbit which in said reference plane describes substantially an ellipse, and

means for maintaining said lens surface in close contact with said lap surface and in a predetermined aligned relationship with respect to said lap surface during the simultaneous orbiting of said lap and said block.

3,893,265
VERTICAL ABRASIVE BELT TYPE SURFACE GRINDER

Donald C. Elm, St. Paul, and Allan J. Stinn, Minnetonka, both of Minn., assignors to Timesavers, Inc., Minneapolis, Minn.
Filed Oct. 2, 1974, Ser. No. 511,352
Int. Cl. B24b *21/00*
U.S. Cl. 51—143 **9 Claims**



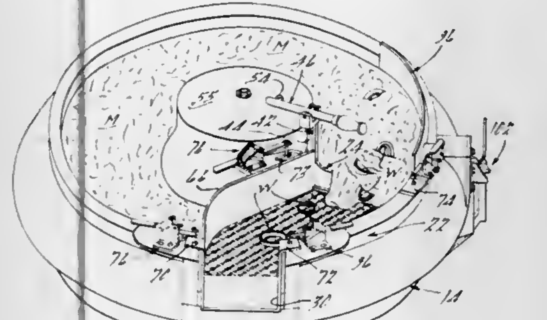
1. A metal grinding machine having a work loading station, the machine being of the type wherein the grinding is done by
a. an abrading head having an endless abrasive belt mounted to travel in a vertically oriented non-circular orbit, the parallel axes of which are substantially horizontal,
  b. power drive means to impart orbital travel to the abrasive belt, and
  c. a backup member extending transversely across and inside the orbit of the belt at the bottom of the orbit to form the bottommost part of the belt into a work performing band that extends straight across the width of the belt,

and wherein during the grinding operation the workpiece is supported with its surface to be ground substantially horizontal, facing upward and engaging said work performing band of the abrasive belt, said machine being characterized by:
  A. work supporting means below the abrading head comprising
    1. a bed member defining a path that leads from the loading station of the machine and is transverse to said work performing band,
    2. a table to support a workpiece and present the surface thereof which is to be ground to the abrasive belt,
    3. means slidably mounting the table on the bed member in a manner which transmits all downward loads on the table directly to the bed member,

said members (i.e. the backup member and the bed member) being adjustably movable vertically relative to one another to enable the machine to accommodate differently dimensioned workpieces;
  B. means to effect said adjustment and thereby establish the elevation of the table at a level at which the surface of the workpiece to be ground is at a level above that of said work performing band of the abrasive belt;
  C. feed means arranged to react between the bed member and the table to advance and retract the table along said path and thereby feed the workpiece against the work performing band of the abrasive belt with a force that has a component reacting vertically between said backup member and the bed member as the travel of the table presents unground portions of the workpiece surface to the abrasive belt; and
  D. control means operatively connected with said feed means to resist the same and thereby govern the rate at which said feed means feeds the workpiece against the abrasive belt and maintain said rate constant during the grinding action, notwithstanding discontinuity in the workpiece surface being ground.

3,893,266
APPARATUS FOR UNLOADING WORKSTOCK FROM VIBRATORY FINISHING MACHINES

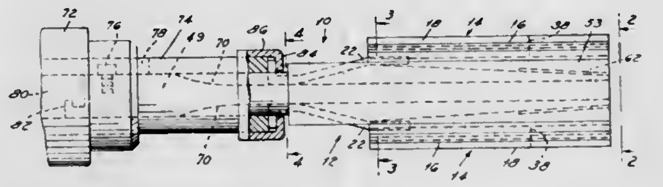
Gordon H. Anderson, and Richard T. Atherton, both of Albert Lea, Minn., assignors to King-Seeley Thermos Co., Ann Arbor, Mich.
Continuation of Ser. No. 210,026, Dec. 20, 1971, abandoned. This application Mar. 4, 1974, Ser. No. 447,966
Int. Cl. B24b *31/06*
U.S. Cl. 51—163 **39 Claims**



1. A vibratory finishing machine comprising,
a container including inner and outer side walls defining a generally circular finishing compartment therebetween adapted to receive finishing media and workpieces to be finished,
means defining an unloading area for said container and closure means normally closing said area but being movable during an unloading cycle to permit workpieces to be removed from said compartment,
means for imparting vibratory movement to said container, whereby said finishing media and workpieces move around said compartment,
unloading means for removing said workpieces from said container,
said unloading means including weir means extending transversely of said compartment between said inner and outer walls and adapted to cause said media and said workpieces to be moved from a first level toward an elevated level as the same passes over said weir,
said weir being pivotably mounted within said chamber and movable therein about a generally vertically extending axis located adjacent one of said side walls between a first position disposed generally tangent to said one side wall and a second position extending generally transversely of said compartment, and
separating means adapted to receive said media and said workpieces passing over said weir and thereafter convey said workpieces toward said unloading area and permit said media to drop downwardly therethrough into said compartment.

3,893,267
HONING TOOL

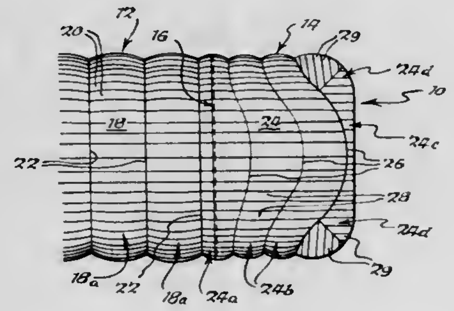
Clyde A. Swinehart, Unicio, and Lyle Stanford Hasty, Erwin, both of Tenn., assignors to MWA Company, Owosso, Mich.
Filed June 4, 1973, Ser. No. 366,986
Int. Cl. B24b *9/02*
U.S. Cl. 51—338 **3 Claims**



2. An abrasive unit adapted to be mounted on a honing tool mandrel, comprising an elongated carrier having a pair of elongated laterally spaced recesses in the outer face of said carrier extending lengthwise thereof, an elongated abrasive stick in each recess, means for releasably holding said abrasive sticks in said recesses comprising a wedge plate removably secured to said carrier between said recesses in wedging contact with said sticks, an elongated key, and means releasably securing said key to the front end of said carrier crosswise thereof and with the opposite ends of said key projecting beyond opposite sides of said carrier to provide retaining lips for retaining said carrier on the honing tool mandrel.

3,893,268
SQUARED END SECTION FOR AIR SUPPORTED STRUCTURE

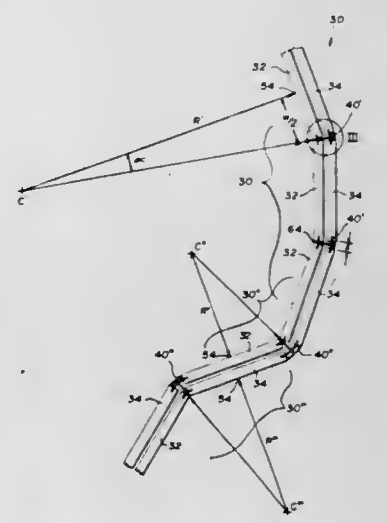
Walter W. Bird, Williamsville, N.Y., assignor to Birdair Structures, Inc., Buffalo, N.Y.
Filed Aug. 27, 1973, Ser. No. 392,093
Int. Cl. E04b *1/345*
U.S. Cl. 52—2 **14 Claims**



1. An air inflated structure adapted to overlie a ground anchorage, which comprises in combination:
a central section having an air inflatable envelope portion of partial, generally cylindrically shaped surface configuration, said central section envelope portion arching upwardly over said ground anchorage and having lengthwise extending lower edges fixed in an air sealed relationship relative to said ground anchorage and hoopwise extending end edges; and
a pair of end means joined to said hoopwise extending end edges of said central section envelope portion for closing opposite ends of said central section at least one of said end means being an air inflated end section including an air inflated envelope portion of essentially square corner plan view configuration air sealed relative to said central section envelope portion and at least one flexible tension device, said end section envelope portion having an innermost, opposite side and outermost marginal edges, said innermost marginal edge arching upwardly over said ground anchorage and being fixed in an air sealed relationship to one of said end edges of said central section envelope portion, said opposite side and outermost marginal edges being fixed in an air sealed relationship relative to said ground anchorage, said tension device having opposite ends thereof fixed to said ground anchorage adjacent said opposite side marginal edges, said tension device extending transversely of said end section envelope portion and arching upwardly over said ground anchorage between said opposite ends thereof, said tension device being fixed to said end section envelope portion, said end section envelope portion maintaining said tension device in a tensioned condition and constraining same in a reverse curved configuration relative to the surface thereof for causing said tension device to pick up inflation pressure induced end section envelope portion loadings directed lengthwise of said structure from relatively high stress central portions of said end section envelope portion disposed intermediate said opposite side marginal edges and to redistribute at least a portion of such loadings to relative low stress opposite side portions thereof.

3,893,269
CURBED WALLS COMPRISING PAIRS OF PLANAR PANELS AND STUDS THEREFORE

Nels Nelsson, Des Plaines, and Alan C. Wendt, Barrington, both of Ill., assignors to United States Gypsum Company, Chicago, Ill.
Filed Feb. 20, 1973, Ser. No. 334,187
Int. Cl. E04b *1/344, 2/32, 2/78*
U.S. Cl. 52—65 **25 Claims**



1. A generally circular wall segment comprising planar panels non-colinearly positioned to approximate a circle, each panel having a front surface and an edge surface, and a plurality of studs each positioned between two adjacent ones of said panels at their adjacent edges and interengaging the same, each of the studs being characterized by a center web portion, at least one flange extending from two opposite sides of the web portion at a non-orthogonal angle thereto, interengaged with the edge surface of one adjacent panel, and means positioned towards the convex surface of the wall from the flange for covering the gap between adjacent panels and for preventing convergence of the adjacent panels, said means including a flange extending so as to contact the edge surfaces only of two adjacent panels and having a width x defined by the following equation:

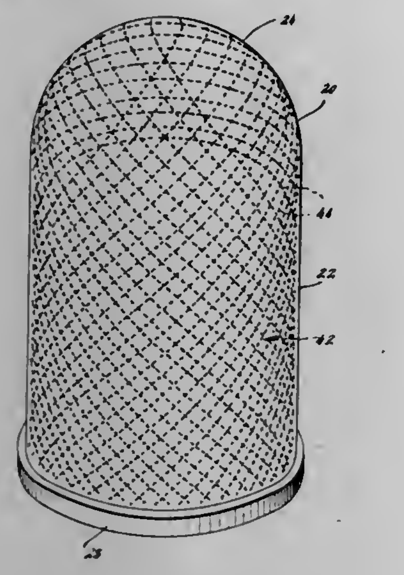
$$x = d + t(w \cos \alpha + d)/(R + a)$$

where w = the width of the panels, t = the thickness of the wall measured from the interior point of contact of two adjacent interengaged panels if translated into contiguous positions, to the point of contact with said covering means, R = the radius of curvature measured from the center of curvature of the wall segment to the midpoint of the interior surface of the wall segment, d = the distance, if any, the interior points of contact of said panels are actually spaced apart in the wall as assembled, a = the depth of the chamfer, if any, of the panel surface defining said interior surface, and α = the angle between R and a line extending from the center of curvature through the midpoint of the separation between said adjacent edge surfaces.

3,893,270
PRESSURE VESSEL

Morris Schupack, 37 Split Rock Rd., South Norwalk, Conn. 06854, and Andres van der Poll, 12 Fishing Trl., Stamford, Conn. 06903

Continuation-in-part of Ser. No. 271,322, July 12, 1972, abandoned. This application Oct. 25, 1973, Ser. No. 409,496
Int. Cl. E04b *7/08;* **E04c** *3/26*
U.S. Cl. 52—80 **16 Claims**

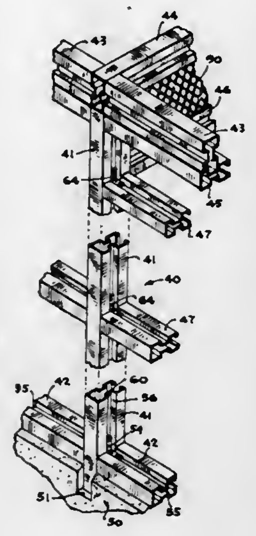


1. A containment structure comprising:
an upstanding walled body formed of concrete and having a longitudinal axis thereof;
said body including an integrally formed generally cylindrical-shaped member and an integrally formed generally hemispherically-shaped closure member;
a plurality of elongated prestressing tendons extending through the length of the body within the wall of the body between first and second anchor location which are positioned at a same general longitudinal location along the cylindrical member of said structure;
each of said tendons including a first integral segment which extends along a left-hand helical path through said cylindrical body member, a second integral segment which extends along a right-hand helical path through said cylindrical body member, and an arcuate integral segment extending between said first and second members, said tendon segments extending in helical paths which form an angle with the horizontal of between 35° and 55°.

3,893,271
BASIC BEAM STRUCTURAL MEMBER AND STRUCTURES BUILT THEREFROM

Joseph C. Kotlarz, 109 W. Woodlawn Dr., Village of Mundelein, Ill. 60060
Filed Sept. 27, 1973, Ser. No. 401,426
Int. Cl.² E04B *1/92, 1/24*
U.S. Cl. 52—168 **9 Claims**

1. A building structure assembled from a plurality of the same basic beam structural members, said structure comprising:
parallel, spaced, generally horizontally and vertically disposed basic beam structural members arranged in transverse relation to each other;
said horizontal members being engaged with said vertical members at preselected vertical heights thereon to form a framework structure with the vertical members; and
fastening means for said horizontal members to said vertical members in a secure abutting relation;
each of said horizontal members and said vertical members comprising an integral, elongated rigid structure having a pair of parallel, spaced, opposed U-shaped channel members, each said channel member having an end face and two side walls, and said side walls of each said channel extending towards and in a spaced, parallel relationship with the walls of the other channel member said U-shaped channel members defining passageways therein, one of said U-shaped channel members having an open face to provide access to the passageway therein;
a pair of longitudinally extending, opposed recesses in the side walls of said U-shaped channel members, said recesses being formed by walls projecting inwardly from the respective side walls of the channel members, and a pair of spaced walls disposed between the inwardly projecting walls to thereby connect the opposed channel members, the pair of spaced walls defining a longitudinally extending slot therebetween;

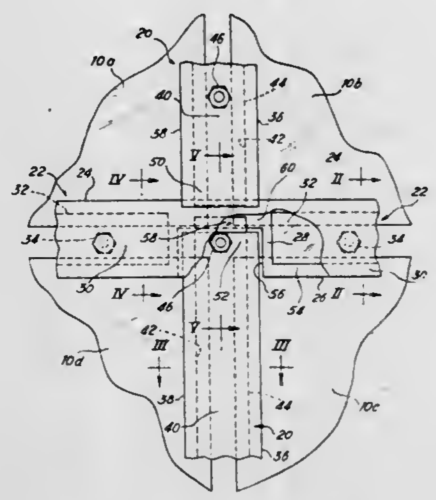


a reinforcing member disposed within the longitudinally extending slot, said member being coextensive with the length and width of the slot; and
a cable disposed in the passageways of an interconnected vertical member, uppermost horizontal member forming a truss, and opposing vertical member, said cable being anchored to the foundation at each end thereof at the bottom of each of the opposing vertical members to thereby provide extra rigidity to the assembled structure.

3,893,272
SEALING JOINTS FOR CURTAIN WALLS

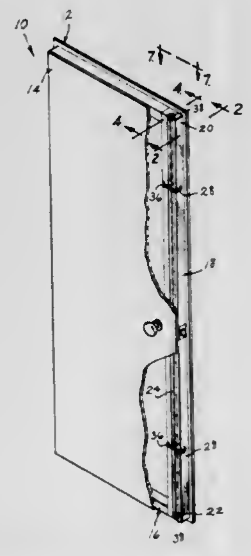
Paul Plom, Pougues-les-Eaux, France, assignor to Hutchinson-Mapa, Grenoble, France
Filed Aug. 29, 1974, Ser. No. 501,526
Claims priority, application France, Sept. 19, 1973, 73.33568
Int. Cl.² E04B *2/88, 1/66*
U.S. Cl. 52—235 **7 Claims**

1. In a curtain wall comprising a plurality of juxtaposed panel means,
a plurality of vertical profiled joints,
a plurality of horizontal profiled joints, and
fixing means maintaining said joints in compression on the exterior edges of said panels, said joints being arranged to form a lattice,
the improvement comprising;
external flap means provided to each of said horizontal joints with said flap means oriented downwardly, each of said horizontal joints interrupting at least one of said vertical joints and each of said interrupted vertical joints having at least one interruption thereof whereat an upper portion of said interrupted vertical joint overlaps on to the upper edge of the respective horizontal joint means and a lower portion of said interrupted vertical joint means is disposed beneath the respective flap means of said respective horizontal joint means.



3,893,273
DOOR WITH IMPROVED CAMBER SETTING MEANS

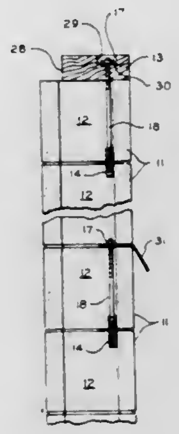
Vernon R. Sailor, 1258 Rivershore La., Elkhart, Ind. 46514
Filed July 19, 1973, Ser. No. 380,706
Int. Cl.² E04C *23/00*
U.S. Cl. 52—291 **3 Claims**



1. In a door having front and rear spaced sheet panels applied over opposite sides of a frame and including upper and lower edges, said frame including a vertical member extending from adjacent said upper door edge to adjacent said lower door edge, said frame member including upper and lower end portions and having opening means formed therein extending the length of said member from said upper to said lower end portion, a horizontal slot formed in said frame member between and spaced from said upper and lower end portions, said slot intersecting said opening means and extending from said rear sheet panel and terminating spacedly rearwardly of said front sheet panel, the improvement comprising a rod member fitting shiftably within said opening means, one end of said rod member being threaded and located at said upper frame member end portion, the other end of said rod member being threaded and located at said lower frame member end portion, adjustment means having parts threaded onto each of the threaded ends of said rod member, one adjustment means abutting the upper end portion and the other adjustment means abutting the lower end portion of said frame member, anchor means of a length greater than the transverse dimension of said opening means connected to said rod member and fitting within said slot for anchoring said rod against rotational movement within said opening means relative to said frame member, said anchoring means having a thickness less than the width of said slot permitting limited vertical movement of said rod member relative to said frame member during rotation of either of said adjustment means upon said rod member against said abutting frame member end portion to cause said frame member to be compressed between said adjustment means and bowed to provide a camber for said door with said front panel being of a convex configuration.

3,893,274
MASONRY FASTENER

Jeffery J. Salisbury, 328 Kensington Pl., Syracuse, N.Y. 13210
Filed Sept. 9, 1974, Ser. No. 504,312
Int. Cl. E04b *2/00*
U.S. Cl. 52—300 **6 Claims**



5. An anchor bolt device for masonry walls of building blocks having vertically extending apertures therethrough for securing to the wall longitudinally extending associated wall members, the device comprising: a nut, a bolt, and a rectangular plate of a thickness less than the thickness of the mortar layers of the wall; the bolt having a first end substantially circular in cross section and threaded for engagement therealong with the nut; the bolt other end being deformed to form flat surfaces on diametrically opposite sides and to extend the other opposite sides projecting beyond the circular surface of the first end, the thickness between the flat sides being less than the diameter of the first end and the projecting sides having arcuately curved surfaces; the bolt other end having a plurality of longitudinally-spaced circularly-extending grooves therearound, the inner diameter of the grooves being substantially equal to the thickness between the flat sides, the grooves having a width substantially equal to the plate thickness; the plate having a hole therethrough conforming to the cross-sectional shape of the bolt other end and being deformed adjacent the hole for forming a positive stop against which a projecting rounded side of the bolt other end abuts when the bolt is inserted in the plate hole with a selected one of the grooves aligned with the plate and the bolt is then turned 90°, the plate having also a dimple-like deformation adjacent its hole substantially tangent to the path of one of the rounded projecting sides of bolt other end when the bolt is turned toward the positive stop deformation; whereby the plate is embedded in a selected mortar layer when building the wall, the bolt is placed threaded end up extending through a block aperture with its other end through the plate hole with a selected groove aligned with the plate and then turned 90° thereby locking the bolt to the plate with its threaded end extending up above the block and adapted to pass through a hole through the associated wall member for securing the associated member to the wall by the nut.

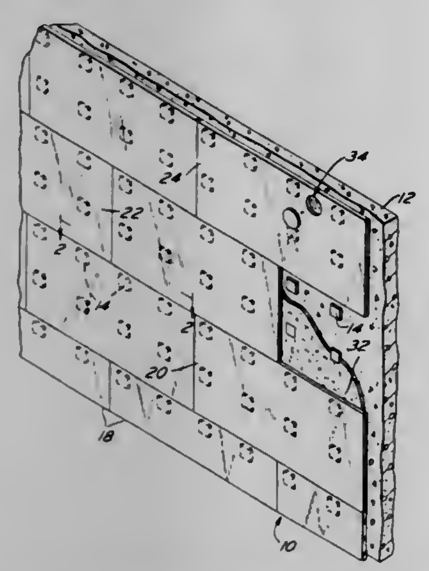
3,893,275
REBOUND WALL AND METHOD

Ray E. Omholt, c/o Powerlock Systems, Inc., Mid-Atlantic Park, 590 Grove Rd., Thorofare, N.J. 08086

Filed Mar. 8, 1973, Ser. No. 339,496

Int. Cl. E04b *2/40*

U.S. Cl. 52—309 **8 Claims**



1. A method of constructing an upright rebound wall on a substantially continuous receiving surface including the steps of providing a plurality of abutting vertically disposed panels the outer surfaces of which can comprise the playing surface of the rebound wall, selecting relatively large panels to minimize seams in the rebound wall, securing a plurality of relatively thin and substantially incompressible spacer shims directly between the panels and the receiving surface so that the panels are spaced from the receiving surface by only the shims and so that a gap exists between the panels and the receiving surface, directly contacting the receiving surface with one face of the shims, directly contacting the rear face of the panels with the opposite face of the shims, providing securing means sufficient to hold the panels in fixed spaced relationship with respect to the receiving surface, attaching the shims directly to the receiving surface, selecting the thickness of the shims so that the outer surfaces of the shims lie in a substantially vertical plane directly against the rear face of the panels, locating the shims at spaced isolated locations on the receiving surface with the shims being discrete in all directions, introducing a pourable material which will become adhesive and cohesive into the gap between the panels and the receiving surface, causing the pourable material to completely flow into and fill the gap and to flow around the isolated and discrete spacer shims, permitting the pourable material to set and bond the panels to the receiving surface solidly to thereby provide a solid base support for the panels, whereby a quiet and solid rebound wall having uniformity of rebound is attained.

3,893,276
BEAM AND BUILDING INCORPORATING THE SAME

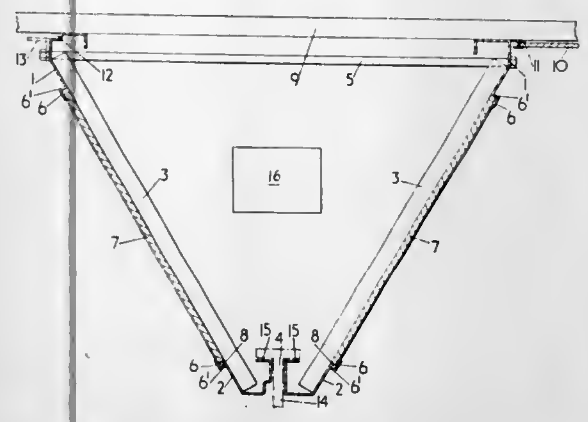
David James Brown, Winchester, England, assignor to Conder International Limited, Winchester, England

Continuation of Ser. No. 305,652, Nov. 13, 1972, abandoned. This application May 6, 1974, Ser. No. 467,148

Int. Cl.² E04H *12/00;* **E04B** *5/57*

U.S. Cl. 52—483 **9 Claims**

1. In a building construction comprising a roof or floor, at least one primary structural member in the form of a beam extending beneath and supporting said roof or floor, said beam comprising four longitudinal load-bearing members arranged in an inverted generally triangular configuration as seen in cross-section with one of said longitudinal load-bearing members running the length of the beam along each of the two top edges of the triangular configuration and with the two remaining longitudinal load-bearing members running the length of the beam along the downwardly depending bottom edge thereof to delineate three longitudinal sides of said beam, two of which are inclined to both the vertical and the horizontal, said longitudinal load-bearing members each being formed from strip material provided with longitudinal bends therein, including a first such bend which divides said longitudinal load-bearing member longitudinally into two substantial parts angularly disposed toward one another, and two longitudinal reverse bends adjacent the longitudinal edge of one part of said longitudinal load-bearing member to form an integral off-set lip extending substantially the length thereof, said lip on the one part of each of the top longitudinal load-bearing members cooperating with the lip on said one part of one of the bottom longitudinal load-bearing members to provide outwardly off-set integral longitudinal panel-retaining lips extending substantially along the tops and bottoms of said inclined sides of said beam, the other parts of said two top longitudinal load-bearing members being adapted to support said floor or roof and the other parts of the two bottom longitudinal load-bearing members being secured to one another, said beam further comprising bracing members inter-connecting said cooperating top and bottom longitudinal load-bearing members and panels on said inclined sides, said panels being retained by said lips and covering said bracing members, the distance apart of said reverse bends forming the lips on any one said inclined side being greater than the height of the respective panel retained by said lips, the top said lip extending lower than the top edge of said panel to retain the top of said panel, and the bottom said lip extending above the bottom edge of said panel to retain the bottom of said panel, whereby said panels are inserted by inserting said top edge of said panel behind said top lip, locating said bottom edge of said panel in the correct plane and then moving said panel downwards to retain said bottom edge of said panel behind said bottom lip.



3,893,277
BUILDING PANELS

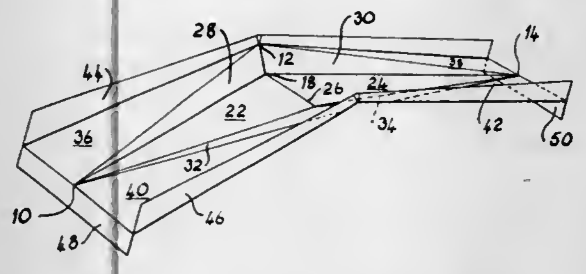
Albert Constant, 7 Braby Pl., Cowies Hill, Pinetown, South Africa

Filed Aug. 9, 1973, Ser. No. 387,047

Claims priority, application South Africa, Aug. 21, 1972, 72/5747

Int. Cl. E04c *2/32, 2/28*

U.S. Cl. 52—630 **2 Claims**



1. A building panel having a rectangular configuration in plan view, said panel including an upper face comprising a main web including two planar isosceles triangular portions extending outwardly from a common inner side, the common inner side of said triangular portions joining said triangular portions to form a parallelogram, the planes of said triangular portions intersecting at an angle at the common side and sloping downwardly therefrom toward the opposed outer apices of the triangular portions, upwardly and outwardly inclined pairs of triangular walls adjoining the opposite sides of the outwardly extending isosceles triangular portions, the outer apices of the inclined triangular walls being contiguous with the opposed outer apices of the triangular portions of the main web, each pair of inclined triangular walls having a common inner side and lying in the same vertical plane as the common side of the triangular portions, and triangular apron portions adjoining the outer longitudinal side of each of the inclined triangular walls, the apices of said apron portions lying in said vertical plane, the outer end of each apron portion further lying in vertical planes containing the contiguous outer apices of the triangular walls and the triangular portions, whereby when the outer ends of the triangular apron portions are supported in a substantially horizontal plane, water falling on said building panel will drain toward at least one outer edge of said building panel.

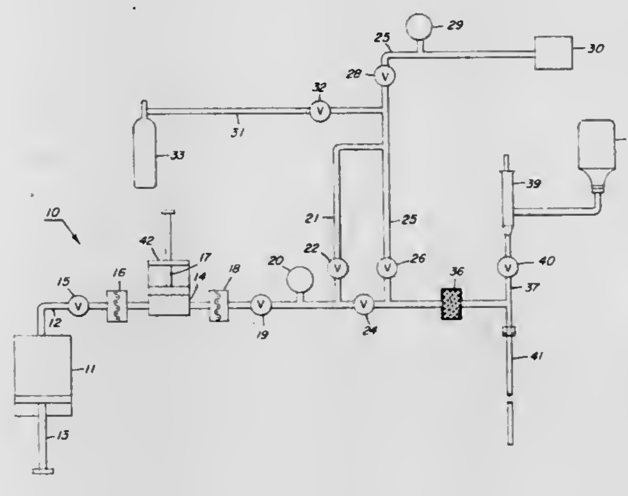
3,893,278
METHOD OF MANUFACTURING CAPSULES CONTAINING GASEOUS RADIOISOTOPE

Robert E. Lewis, Pleasanton, Calif., assignor to General Electric Company, San Jose, Calif.

Filed Aug. 15, 1973, Ser. No. 388,488

Int. Cl. B65b *29/00*

U.S. Cl. 53—5 **16 Claims**



1. A method of manufacturing a capsule comprising a shearable gas impermeable enclosure having therein a gaseous radioisotope comprising the steps of

a. introducing the gaseous radioisotope and a gaseous diluent into a mixing zone,
b. mixing the radioisotope and the diluent in the mixing zone,
c. discharging the mixture of step (b) into a gas impermeable enclosure sealed on one end,
d. sealing the gas impermeable enclosure into segments of a selected size, and
e. separating the segments into individual capsules.

3,893,279
METHOD OF PACKAGING LOAD UNITS IN WELDABLE PLASTIC FOIL

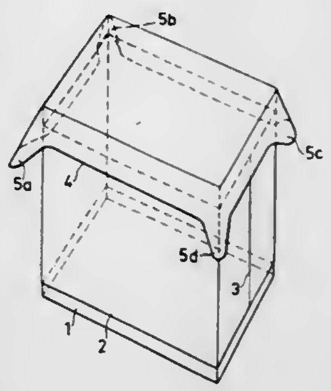
Sigward Gunnar Bostrom, Jonkoping, Sweden, assignor to ARENCO-JM AB, Jonkoping, Sweden

Filed Jan. 4, 1973, Ser. No. 320,841

Claims priority, application Sweden, Jan. 5, 1972, 132/72

Int. Cl. B65b *11/58, 41/18*

U.S. Cl. 53—27 **1 Claim**



1. Method of packaging load units in weldable plastic foil, comprising the steps of initially wrapping a first, tensible, plastic stretch foil web in a closed path around substantially the whole circumferential area of the load unit by unreeling two individual portions of said first stretch foil web substantially symmetrically from a respective one of two foil supply rolls having substantially parallel vertical rotational axes and having their free foil ends united with each other along a substantially vertical junction line, and advancing said load unit between said rotational axes; uniting said two unreeled web portions of said first foil web with each other along a substantially vertical junction line by welding together said unreeled portions of said first foiled web on the rear side of the load unit, as seen in the direction of advancement of said load unit, said first foil webbing substantially stretched in connection with the wrapping operation and having its upper longitudinal edge located below the top end surface of said load unit; covering the top end surface of said load unit with a second tensible plastic stretch foil, which is made to overlap and cover said upper longitudinal edge of said first stretch foil web, which extends around the load unit; subsequently wrapping a third, tensible and weldable plastic stretch foil web, which is made to cover the major part of first stretch foil web and those portions of the second foil, which overlap said upper edge of said first stretch foil web, in a closed path around substantially the whole circumferential area of said load unit in the same way as said first stretch foil web, said third stretch foil web also being substantially stretched in connection with the wrapping operation, substantially double, dependent flaps formed with said second foil at each vertical edge of the load unit, being pairwise folded in mutually opposite directions during the wrapping of said load unit in said third stretch foil web; uniting the two unreeled web portions of said third foil web with each other along a second, substantially vertical junction line in the same way as the two unreeled portions of said first stretch foil web; and finally joining said second stretch foil spot-wise to said third stretch foil web.

3,893,280
TRANSFER PACKAGING FOR BIOLOGICALS

Dale A. King, Overland Park, Kans., assignor to Burns-Biotec Laboratories, Inc., Oakland, Calif.

Filed June 21, 1972, Ser. No. 264,890

Int. Cl. B65b *5/00*

U.S. Cl. 53—37 **3 Claims**

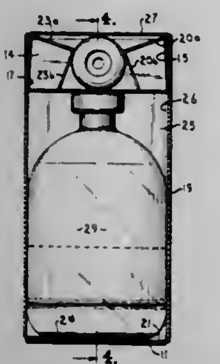
1. A method of separately sub-packaging freeze-dried virus cake and the diluent therefor in a common package for later reconstitution of the virus cake and diluent by mixing same together comprising the steps of:

packaging the freeze-dried virus cake within a first relatively smaller bottle,

the quantity of virus cake in the first bottle such and the first bottle sized substantially no larger than that a single filling of the first bottle with diluent will dissolve the entire virus cake therein for transfer thereof to said second bottle,

packaging the diluent in a second relatively larger size bottle, said diluent operative to reconstitute the virus cake for use when mixed therewith,

the largest quantity of diluent receivable in the second bottle such and the second bottle so sized, that, when the virus cake in the first bottle is dissolved therein, the resultant solution meets the Government requirement for minimum viral quantity in use,



said first and second bottles packaged together in a third disposable container for ultimate use and application by a further step wherein, after removal of said first and second bottles from the said third containers,

a single quantity of diluent is transferred in a single batch from the said second larger bottle to said first smaller bottle thereby to dissolve all of the freeze-dried virus cake therein and thereafter the said completely dissolved viral fluids, in diluent, are transferred back to said second relatively larger bottle in a single batch to provide in said second bottle a properly proportioned and concentrated virus solution.

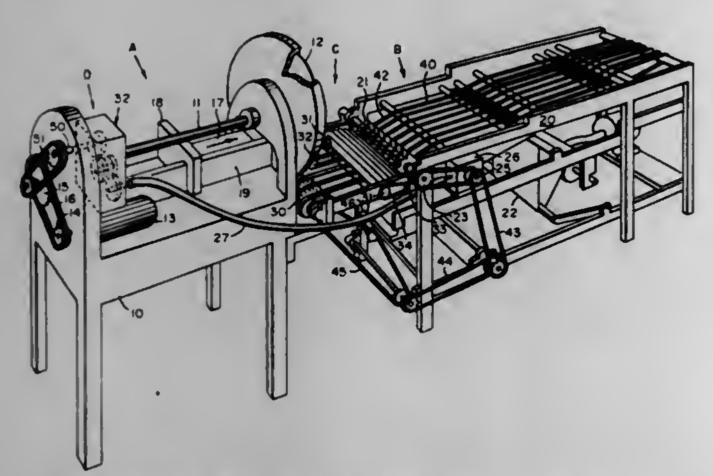
3,893,281
MACHINE FOR PACKAGING MATERIALS

James P. Smithers, Glen Ellyn, Ill., assignor to Armour and Company, Phoenix, Ariz.

Filed Sept. 27, 1973, Ser. No. 401,345

Int. Cl. B65b *65/02*

U.S. Cl. 53—123 **7 Claims**



1. In a slicing and packaging machine, a slicer unit having a slicing blade and drive means for rotating said blade as the material to be sliced is passed through said unit to thereby produce slices of said material, a packaging unit which includes a stepped roll and means for delivering packaging film over said roll, conveyor means for receiving slices produced by said slicer unit and for delivering said slices consecutively to said roll, drive means for rotating said roll, a first gear in drive relation with said blade rotating means, a second gear in drive relation with said roll rotating means, and a third gear in engagement at one point on its periphery with said first gear and at another point on its periphery with said second gear, and means for moving one of said first and second gears about the axis of said third gear to change the angular distance therebetween while each is engaged with said third gear.

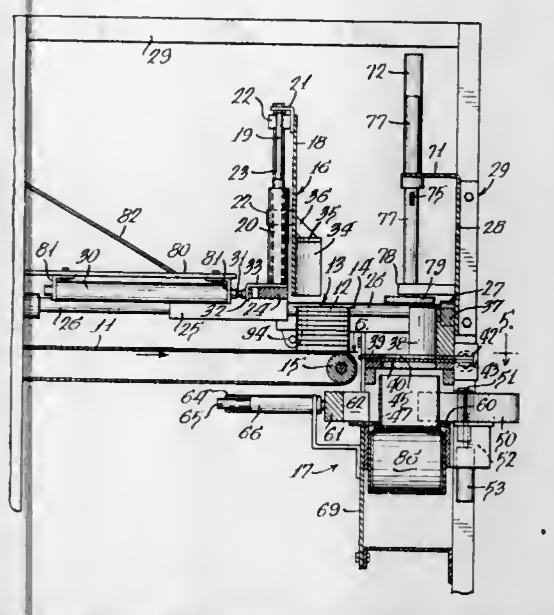
3,893,282
ARTICLE PACKER APPARATUS

Melvin L. Armbruster, 1299 S.W. 14th St., Boca Raton, Fla. 33432; Anthony O. Campanale, 3607 N.W. 84th Terr., Coral Springs, Fla. 33605, and Robert L. Schultz, 1020 S.W. 18th St., Boca Raton, Fla. 33432, assignors to Hollymatic Corporation, Park Forest, Ill.

Filed July 26, 1974, Ser. No. 492,012

Int. Cl. B65b *35/44*

U.S. Cl. 53—252 **11 Claims**



1. An article packer apparatus, comprising: a continuously operating article conveyor for moving said articles to a packing station; locator means for successively segregating said moving articles and simultaneously transferring said segregated articles to said packing station; receiver conveying means at said station for moving article receivers into article receiving position; means for retaining said receivers stationary in preselected patterns at said station for receiving said articles; transfer means for transferring said segregated articles successively to said receivers at said station; and means for moving said locator means at a rate of speed faster than that of said conveyor to clear the conveyor successively of articles adjacent to said packing station and provide space for the next said articles during said packing.

3,893,283
VARIABLE WIDTH EARTH SURFACE TREATING APPARATUS

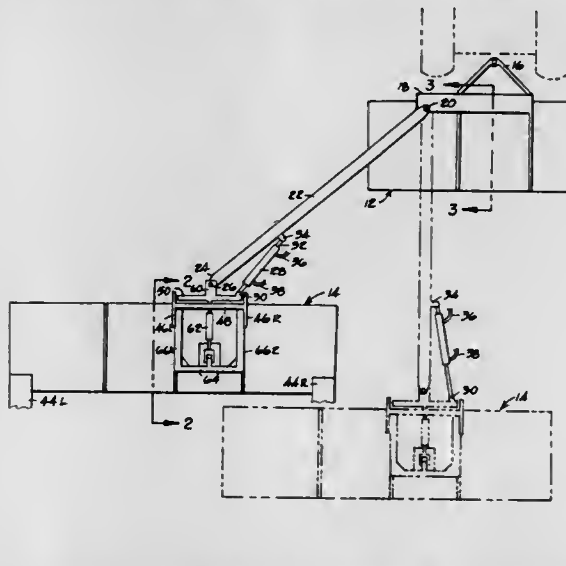
John E. Dandl, 279 Rio Linda Ave., Apt. No. 2, Chico, Calif. 95926

Filed June 20, 1974, Ser. No. 481,379

Int. Cl. A01d *75/30*

U.S. Cl. 56—6 **7 Claims**

1. Earth surface treating apparatus comprising a first surface treating unit mountable on a vehicle, a second surface treating unit having means for supporting the second unit for movement over the earth surface, a rigid drawbar having a first extremity pivotally secured to said first unit and a second extremity pivotally secured to said second unit so that said second unit trails said first unit, said extremities pivoting on substantially vertical axes, an actuator having first and second ends and means for controllably moving said ends toward and away from one another, said first end being attached to said second unit at a point laterally spaced from the second extremity of said drawbar, said second end of said actuator being attached to said drawbar at a point spaced from said second extremity, and means accessible from the vehicle for remotely controlling said actuator to vary the pivotal position of said drawbar relative said second unit.



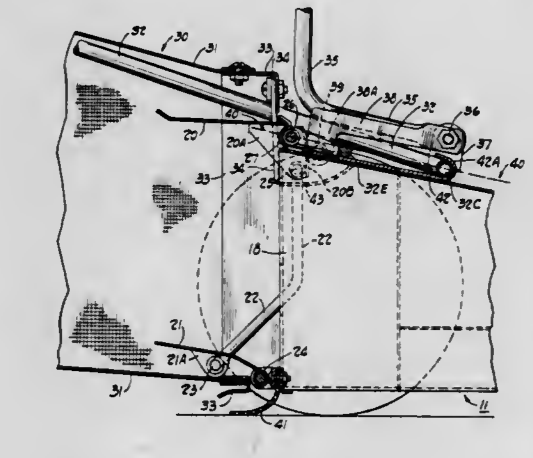
3,893,284
LAWN MOWER AND COLLECTOR THEREFOR

Donald G. Thon, Middleburg Heights, and Juergen Kaesgen, Brunswick, both of Ohio, assignors to MTD Products Inc., Cleveland, Ohio

Filed Dec. 20, 1973, Ser. No. 426,502

Int. Cl. A01d *35/22*

U.S. Cl. 56—202 **15 Claims**



1. In a lawn mower having grass cutting means, a housing for the grass cutting means, the housing having a discharge port in a wall thereof through which cut grass is discharged outwardly of the housing, the combination of a movable closure carried by the housing for blocking said discharge opening when in closed position and for opening up said discharge port in opened position, said closure being subject to bias to urge the closure toward said closed position, a collector for collecting cut grass discharged through said discharge port, said collector being adapted to be mounted upon said housing adjacent said discharge port, a bracket carried by said housing adjacent said discharge port adapted to interengage with said collector upon positioning the collector adjacent said discharge port, operable linkage means carried by said housing for moving said closure to said opened position in opposition to said bias, and pivotal lever means carried by said collector and located to interengage with said linkage means upon interengagement of said bracket and said collector, said pivotal lever means and said linkage means including overthrow means for holding said lever means in a locked position upon swinging the lever means in a direction to interengage with said linkage means and sufficiently to operate said linkage means to move the said closure to said opened position, said lever means in said locked position retaining said collector interengaged with said bracket and in position for receiving cut grass discharged through said discharge port, the said lever means upon being swung in an opposite direction to an unlocked position disengaging said linkage means to permit said linkage means to operate so as to permit said closure under the urging of said bias to move to said closed position, said lever means upon being swung to said unlocked position permitting the said collector to be released from retention be said bracket.

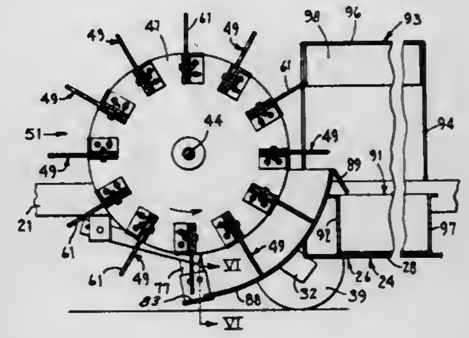
3,893,285
ASPARAGUS SNAPPER

Ann M. Seeley, Paw Paw, and H. Eldon McKibben, Grand Junction, both of, MI, assignors to Ann M. Seeley, Paw Paw, Mich.

Filed Dec. 3, 1973, Ser. No. 421,449

Int. Cl. A01d *45/00*

U.S. Cl. 56—327 A **6 Claims**



1. A machine for harvesting asparagus stalks having a tender part located above the ground and adapted to be moved in a forward horizontal direction, comprising:

means defining a wheel supported frame;

support means mounted on said wheel supported frame means;

means defining a paddle wheel configuration rotatably mounted on said support means, said paddle wheel configuration means including a plurality of flexible paddle means extending generally radially outwardly from said support means and have outer edge portions spaced circumferentially around the periphery of said paddle wheel configuration;

means defining a stationary, generally horizontally extending plate means having a straight leading edge secured to said wheel supported frame means and extending beneath said paddle wheel configuration and being vertically spaced from the ground and from said edge portions of said paddle means, said leading edge being located forward of a vertical plane containing the axis of rotation of said paddle wheel configuration;

collecting means mounted on said frame means for collecting the severed asparagus stalks;

stationary slide means secured to said plate means and extending generally in an arcuate path between said plate means and said collecting means, the radius of said arc generally coinciding with the axis of rotation of said paddle wheel configuration so that said edge portions of said paddle means remain spaced from said stationary slide means but yet capable of effecting a transfer of the severed asparagus stalks to said collecting means; and

selectively variable speed drive means independent of the forward speed of said wheel supported frame means and transmission means operatively connecting said variable speed drive means with said paddle wheel configuration to effect a rotational movement thereof in a direction wherein the lowermost ones of said paddle means are moved at a selected horizontal velocity with respect to said wheel supported frame means, said paddle means engaging said asparagus stalks at the upper portion thereof, said leading edge of said plate means engaging said asparagus stalks at said vertically spaced distance below said edge portions of said paddle means and said vertically spaced distance above the ground to effect a snapping off of said asparagus stalks at the location of said tender part above the ground whereby the speed of said variable speed drive means may be selected to correspond to the condition of the asparagus stalks at the time of harvest.

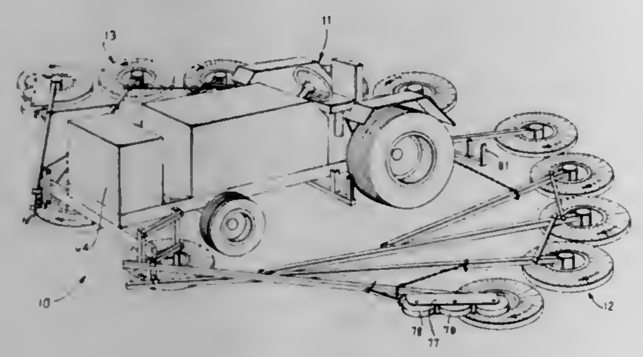
3,893,286
GATHERING AND WINDROWING MACHINE

James R. Buttram, Windermere; Melvin H. Woodward, Winter Garden; Charles E. Hubbard, Windermere, and Howard K. Thronson, Winter Garden, all of Fla., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed June 28, 1973, Ser. No. 374,646

Int. Cl. A01d *51/00*

U.S. Cl. 56—328 R **20 Claims**



1. An apparatus adapted for collecting fruit or the like lying on a supporting surface, such as the ground, comprising:

a carrier adapted to be moved along the ground, said carrier having means disposed in engagement with the ground for supporting the carrier on the ground and for enabling the carrier to be moved relative to the ground;

rotary brush means disposed adjacent the ground and supported thereon for rotation about an axis which is substantially upright, said brush means including a rotatable hub and a plurality of elongated bristles fixed to said hub and projecting radially outwardly therof, said bristles being constructed of a relatively stiff but flexible material, said bristles being disposed within a plurality of circumferentially extending layers which are spaced axially from one another along the rotational axis of said brush means;

drive means drivingly connected to said brush means for rotating same about said axis;

means connected between said carrier and said brush means for permitting said brush means to be freely moved relative to said carrier in a substantially vertical direction;

support means connected to said brush means and positioned for engagement with the ground for supporting said brush means adjacent the ground, said support means being disposed within an imaginary cylinder defined by the periphery of said rotary brush means;

said support means comprising a support foot having a lower surface disposed for slidable engagement with the ground, said support foot being fixed to said brush means and rotatable therewith about said axis, whereby said lower surface likewise rotates as it slidably moves along the ground; and

deflector means mounted on said hub for causing at least the lowermost layer of bristles to be deflected slightly downwardly whereby the free ends of the bristles are disposed below said lower surface, said plurality of bristles extending generally parallel to the surface of the ground when the brush means is disposed in engagement therewith.

3,893,287
HIGH-SPEED STRANDING MACHINE WITH AIR COOLING

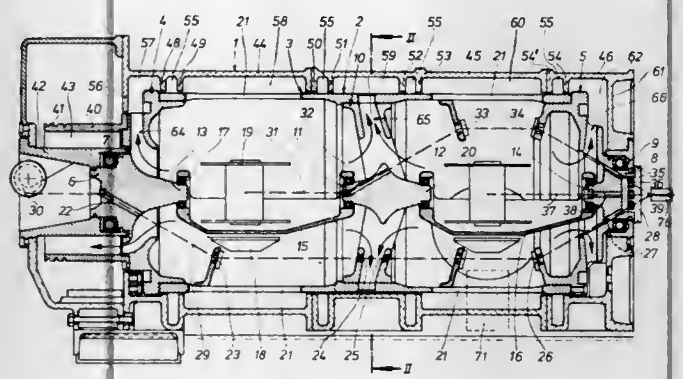
Walter Jahne, Marktoberdorf, Allgaeu, Germany, assignor to Maschinenfabrik Herborn Kommanditgesellschaft, Herborn/Dillkreis, Germany

Filed Apr. 15, 1974, Ser. No. 460,974

Claims priority, application Germany, Apr. 16, 1973, 2319145

Int. Cl. D07b *3/04*

U.S. Cl. 57—58.32 **13 Claims**



1. In a high-speed stranding machine for the manufacture of stranded wire from individual wires or from ropes of stranded wire, comprising a housing in which a windowed cylindrical rotor is supported rotatably and spaced from the inner wall of the housing, having at least one spool carrier which is pivotally suspended in the rotor and accessible through a window which is provided in the rotor, and devices for venting the inside of the housing, wherein on the inside of the housing there are arranged housing partition walls which extend to a point close to the rotor, and which divide the space between the inner wall of the housing and the outer wall of the rotor into window zones and into cooling zones, the improvement comprisng fan wheels fixedly connected to the rotor to convey air from the window zones into the cooling zones and between said window zones and said cooling zones and between the inside of the rotor and the atmosphere only small flow cross sections exist.

3,893,288
BALANCE OF WATCHES AND METHOD OF ITS MANUFACTURE

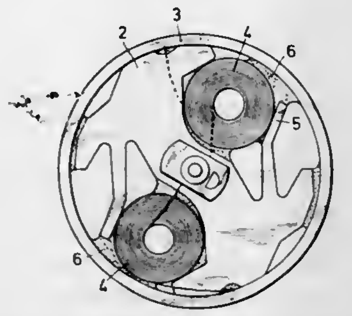
Heinz Meitinger, Mutlangen, Germany, assignor to Bifora-Uhren J. Bidlingmaier GmbH, Schwabisch Gmund, Germany

Filed Jan. 2, 1974, Ser. No. 429,583

Claims priority, application Germany, Jan. 20, 1973, 2302883

Int. Cl. G04c *3/04;* **H03b** *5/30*

U.S. Cl. 58—28 B **7 Claims**



1. A balance assembly for an electric watch comprising a shaft oscillatory about its axis, a hub member formed of an electrically insulating material rigidly connected to and symmetrical with said shaft, electromagnetic means mounted to said hub member and a metallic, electrically conducting ring member coaxial with said shaft and peripherally disposed about said hub member and in engaging retentive relationship therewith.

3,893,289
WATCH MOVEMENT WITH A CIRCULAR MOVABLE INDICATOR MEMBER

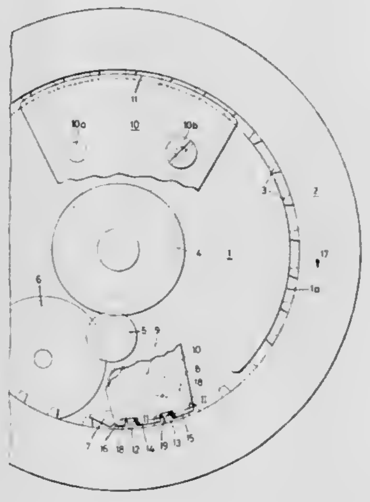
Urs Giger, Solothurn; Edwin Jakob, Grenchen; Friedrich Perrot, Lengnau, and Paul David, Biberist, all of Switzerland, assignors to ETA A.G. Ebauches Fabrik, Grenchen, Switzerland

Filed June 26, 1974, Ser. No. 483,435

Claims priority, application Switzerland, July 13, 1973, 10264/73

Int. Cl. G04b *19/24*

U.S. Cl. 58—58 **10 Claims**



1. A watch movement comprising a base plate having a protuberant portion, a circular movable indicator member provided with a peripheral toothing and rotatively guided by said protuberant portion of said base plate, a holding plate rigidly secured to said base plate and having an arcuate edge portion extending over an arc less than 180° above said toothing, a cover element extending opposite said edge portion and above said toothing, a stud fastened to said base plate, a support body adapted to pivot about said stud, said cover element being rigidly joined to said support body, and a spring which acts on said support body in such a way that a portion of said body presses against the toothing of the indicator member, whereby said portion of said body acts as a jumper.

3,893,290
AUTOMATIC WINDING MECHANISM FOR WATCH MOVEMENTS

Josef Fluck, and Roland Zaugg, both of Grenchen, Switzerland, assignors to A. Schild S.A., Grenchen, Switzerland

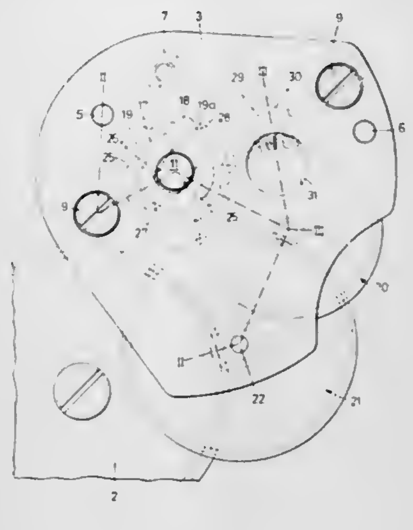
Filed Nov. 14, 1974, Ser. No. 523,749

Claims priority, application Switzerland, Nov. 21, 1973, 16357/73

Int. Cl. G04b *5/02*

U.S. Cl. 58—82 R **10 Claims**

1. An automatic winding mechanism for watch movements, comprising a support, an arbor pivotingly mounted on said support, a winding weight integral with said arbor, a winding gear-train, and a unidirectional clutch device coaxial with said arbor, the first gear of said gear-train being a reduction gear, and said clutch device connecting said arbor to said reduction gear so as to drive said gear-train when said weight rotates in a predetermined direction, wherein said support comprises two parallel elements guiding said arbor at two different levels, and said clutch device comprises, disposed between said elements, a wheel mounted loose on said arbor and having a cupped portion, an outer toothing, and an inner toothing, and a bolt which is situated in said cupped portion, is integral in rotation with said arbor, and is adapted for translatory motion perpendicular to the axis of said arbor, said bolt cooperating with said inner toothing to make said arbor and said wheel integral upon rotation of said weight in said predetermined direction.



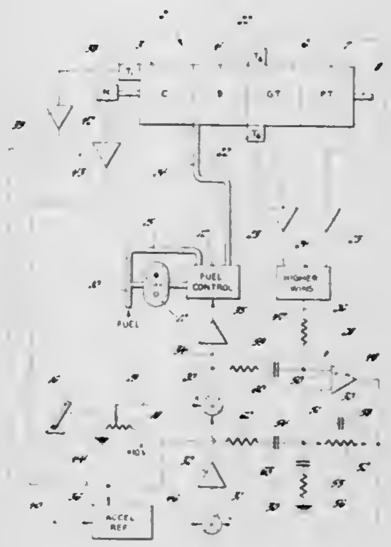
3,893,291
GAS TURBINE FUEL CONTROL

James L. Davis; Edward L. Lopke, both of Kokomo, and Leslie Joseph Pechous, Carmel, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 29, 1973, Ser. No. 392,739

Int. Cl. F02c *9/08*

U.S. Cl. 60—39.28 T **6 Claims**



5. A system for controlling fuel flow to a gas turbine engine comprising, in combination, means responsive to a temperature in the engine effective to generate a first potential signal representative of the instantaneous temperature of the responsive means and compensating means for the said signal effective to provide a compensated temperature signal, the compensating means comprising means for adding a function of the derivative of the first signal of the same sign as the derivative of the first signal, means for adding a function of the derivative of the rate of fuel flow to the engine of the same sign as the derivative of fuel flow rate, and means for subtracting a function of acceleration of the engine of the same sign as the acceleration.

3,893,292

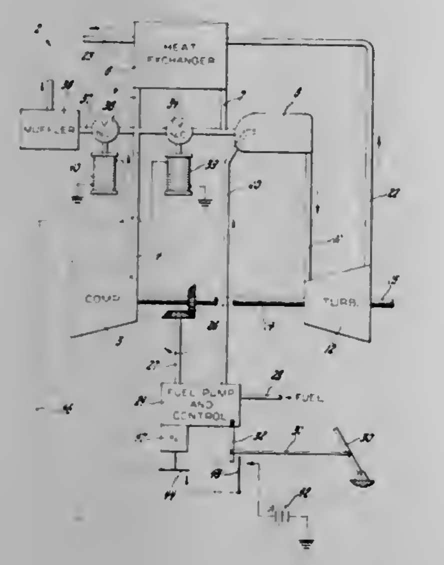
POWER TURBINE DECELERATION CONTROL

Charles A. Amann, Bloomfield Hills, and Sidney G. Liddle, Sterling Heights, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 6, 1973, Ser. No. 385,951

Int. Cl. F02c *9/08*

U.S. Cl. 60—39.27 **4 Claims**



1. A shaft power output gas turbine power plant comprising a compressor, combustion apparatus supplied with air by the compressor, a power output shaft, a turbine energized by the combustion apparatus connected to drive the compressor and to drive or be driven by the output shaft, a regenerator having substantial heat storage capacity normally connected to transfer heat from the turbine exhaust gas to the air flowing through a compressed air path from the compressor to the combustion apparatus, means for supplying fuel to the combustion apparatus, and operator-controllable power level control means regulating the fuel supplying means; in combination with means for reducing power output of the engine upon cutback in fuel supply including normally closed valve means connected to the outlet of the compressor effective upon opening of the valve means to divert a major portion of the air discharged from the compressor from flowing through the regenerator compressed air path; and control means responsive to the power level control means and to turbine speed effective to open the valve means at all times when the conditions that an idling power level is called for by the power level control and that turbine speed is above a predetermined idling speed level are both met and to close the valve means under all other conditions.

3,893,293

METHOD OF AND APPARATUS FOR CONTROL OF HELICOPTER GAS TURBINE ENGINE DURING AUTO ROTATION

Robert G. Moore, Jr., South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Division of Ser. No. 193,385, Oct. 28, 1971, Pat. No. 3,777,478. This application July 26, 1973, Ser. No. 382,974

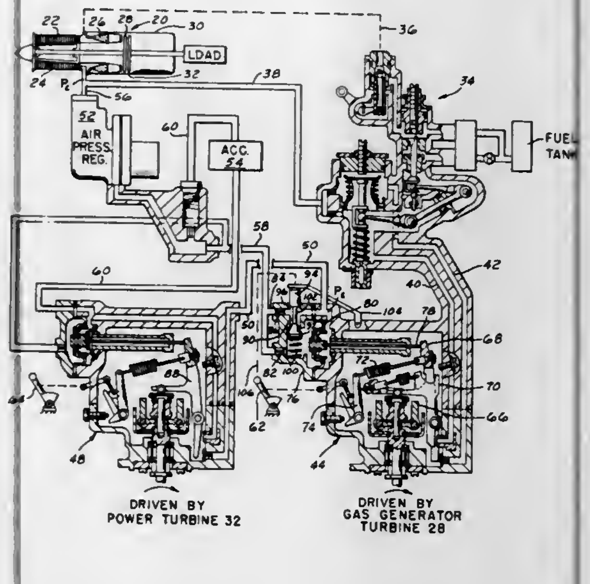
Int. Cl. F02c *9/08*

U.S. Cl. 60—39.03 **2 Claims**

1. A method of controlling a helicopter gas turbine engine independently rotating gas generator and power output turbines and provided with a power control system including coacting first and second engine speed governor means wherein the first governor means is responsive to a first reference speed signal and speed of the gas generator turbine and the second governor means is responsive to a second reference speed signal and speed of power turbine, said method comprising the steps of:

establishing said first reference speed signal to govern said gas generator turbine at a selected speed;

establishing said second reference speed signal to govern said power turbine at a selected speed by generating an output speed error signal;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ACC.
FUEL TANK
DRIVEN BY POWER TURBINE 32
DRIVEN BY GAS GENERATOR TURBINE 28

reducing said first reference speed signal to a predetermined relatively low setting to simulate an engine power failure for the purpose of helicopter practice auto-rotation;

rendering said second governor means inoperative simultaneously with said reduction in said first reference input signal to eliminate the control effect thereof on said power control system.

3,893,294

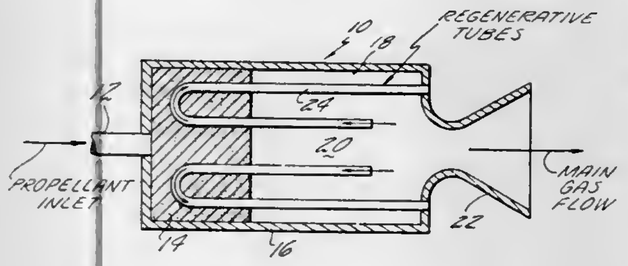
CATALYTIC MONOPROPELLANT REACTOR WITH THERMAL FEEDBACK

Eugene E. Bruun, Simsbury, and Ray A. Simmons, Enfield, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Sept. 10, 1973, Ser. No. 395,806

Int. Cl. F02k *9/02;* **F02c** *3/20*

U.S. Cl. 60—39.46 M **5 Claims**



1. A monopropellant engine including an engine casing having a thermal reaction section, a gas generating section, and an injector for distributing monopropellant fuel into the reaction section, means for conducting the gases in said gas generating section to said thermal reaction section and then to a low pressure source, which pressure is lower than the pressures in the gas generating section, and said means being fabricated from material that effectively conducts heat from the gases passing therethrough to provide hot surfaces whereby the decomposition of said monopropellant injected into said thermal reaction section is enhanced.

3,893,295

EXTERNAL COMBUSTION SWASH PLATE ENGINE EMPLOYING ALTERNATE COMPRESSION AND EXPANSION IN EACH WORKING CYLINDER

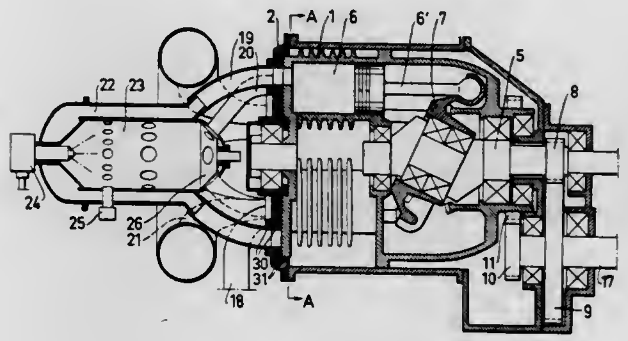
Timo Alras, Parkgatan 3A, Helsinki, Finland

Filed Dec. 21, 1973, Ser. No. 427,190

Claims priority, application Sweden, Jan. 2, 1973, 7300021

Int. Cl. F02g *3/02;* **F01b** *3/02*

U.S. Cl. 60—39.63 **4 Claims**



1. A combustion engine, comprising a stationary frame, a cylinder block comprising a plurality of cylinders mounted for rotation as a unit in bearings in said frame, a reciprocable piston element axially movable in each cylinder, a crankshaft rotatably mounted in said frame along the axis of rotation of said cylinder block, gear means mounted in said frame and connected between the cylinder block and crankshaft for giving the crankshaft a higher rotational speed than that of the cylinder block, swash plate rotatably mounted on said crankshaft and connected in timed relationship to said cylinder block to effect a desired relative rotation therebetween, a connecting rod between each piston element and said swash plate for converting the reciprocating movements of the piston elements into rotational movement of the crankshaft, a slide distributor comprising a pair of relatively rotatable slidably engaged interface members connected respectively to said frame and to said cylinder block, first port means in said cylinder block member of said slide valve distributor, and in flow communication with each of said plurality of cylinders; second port means in said frame member of said slide distributor comprising, in circumferential sequential order, air inlet port means for supply of inlet air to a cylinder when said air inlet port means is in flow communication with said first port means, compressed air discharge port means for discharge of compressed air from a cylinder when said compressed air discharge port means is in flow communication with said first port means, combustion products inlet port means for supply of combustion products to a cylinder when said combustion products inlet port means is in flow communication with said first port means, combustion products discharge port means for discharge of combustion products from a cylinder when said combustion products discharge port means is in flow communication with said first port means; air duct means connecting said compressed air discharge port means to said combustor; and combustion products duct means connecting said combustor to said combustion products inlet port means, said slide distributor being operative, during rotation of said cylinder block and corresponding relative rotation of the said interface member, to cause each cylinder and its associated piston to operate alternatingly as a compressor pumping air into the combustor via said air duct means and as a motor utilizing the expanding heated working medium supplied to each cylinder via said combustion products duct means.

3,893,296

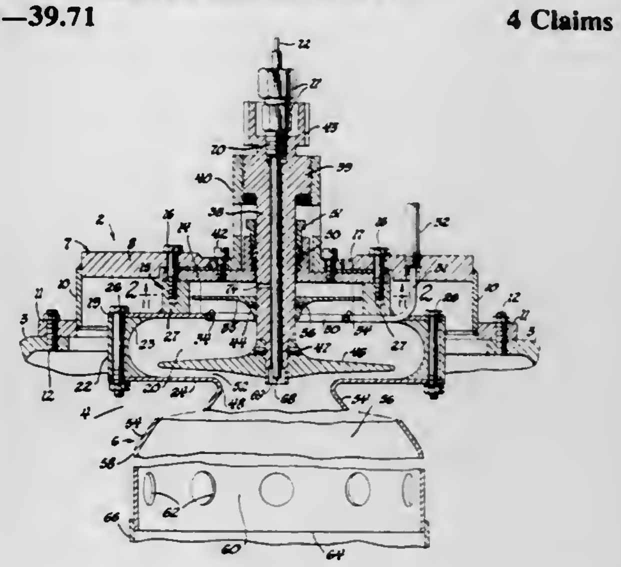
COMBUSTION LINER

Hans P. Fredriksen, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed July 1, 1974, Ser. No. 484,652

Int. Cl. F02c *9/00, 9/14*

U.S. Cl. 60—39.71 **4 Claims**



1. A combustion liner adapted for high energy combustion and with provisions for maintaining a desired equivalence ratio in the reaction zone, the liner having a closed upstream end and having a substantially circular cross-section, and comprising a radial-inflow primary air inlet swirler closely adjacent to the upstream end with flow through circumferentially distributed slots extending axially of the liner; a premixing chamber juxtaposed to and coaxial with the swirler and having a diameter greater than that of the swirler, the premixing chamber having a generally radial annular downstream wall converging to a throat; means defining a reaction zone connected to the premixing chamber through the throat; a first flow controlling disk reciprocable axially of the liner to close variably the air swirler slots to vary primary air flow; fuel spray means disposed at the upstream end of the premixing chamber; and a second flow controlling disk reciprocable toward and from the said downstream wall to vary flow area from the premixing chamber into the said throat.

3,893,297

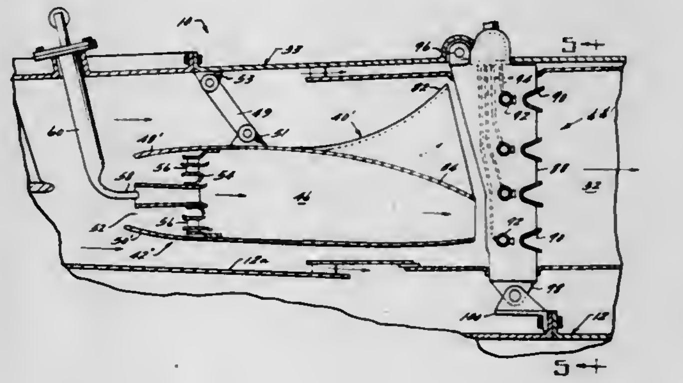
BYPASS AUGMENTATION BURNER ARRANGEMENT FOR A GAS TURBINE ENGINE

Bemis Caldwell Tatem, Jr., and Robert Gordon Stabrylla, both of Cincinnati, Ohio, assignors to General Electric Company, Lynn, Mass.

Filed Jan. 2, 1974, Ser. No. 429,758

Int. Cl. F02k *3/02*

U.S. Cl. 60—224 **12 Claims**



1. A bypass gas turbine engine comprising:

an inner casing enclosing compressor means, combustion means and turbine means in serial flow relation;

an outer casing spaced apart from the inner casing defining a bypass duct therebetween;

a bypass augmentation burner stationed within the bypass duct for providing additional thrust augmentation to the gas turbine engine wherein the downstream end of the bypass burner is convoluted to define alternating hot and cold chutes, and

a plurality of spaced apart struts extending between the inner and outer casings so as to receive impingement of a cooling airflow directly from the plurality of cold chutes.

3,893,298

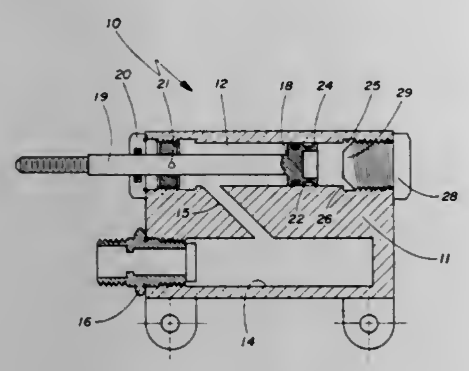
SINGLE-STROKE CARTRIDGE ACTUATED DEVICE

George B. Williams, Dahlgren, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 25, 1974, Ser. No. 454,358

Int. Cl.² F01B *29/08;* **F02N** *13/00*

U.S. Cl. 60—635 **4 Claims**



1. In a single-stroke, cartridge actuated device of the type having a piston which is axially movable within a cylindrical bore by virtue of gas generated by detonation of a cartridge, a non-return interference lock comprising:

a projection integrally formed on the forward end of said piston;

means fixed in the cylindrical bore opposite the forward end of said piston for deforming said projection beyond the yield point to an interference position when the piston reaches the end of its stroke; and

means for engaging the deformed projection to preclude return of said piston.

3,893,299

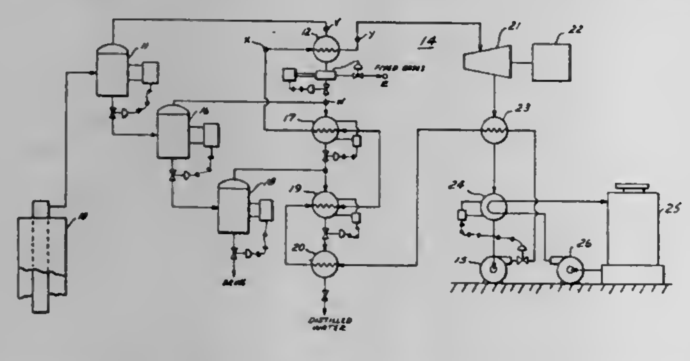
GEOTHERMAL HEAT RECOVERY BY MULTIPLE FLASHING

Arthur J. L. Hutchinson, Pasadena, and Douglas H. Cortez, Los Angeles, both of Calif., assignors to Geothermal Investment Co., South Pasadena, Calif.

Continuation-in-part of Ser. No. 301,258, Oct. 26, 1972, abandoned. This application Jan. 25, 1974, Ser. No. 436,443

Int. Cl. F01k *25/10;* **F03g** *7/00*

U.S. Cl. 60—641 **30 Claims**



1. A method of converting heat energy carried by brine to mechanical energy comprising the steps of:

passing the brine through successive flash chambers operating at progressively lower temperatures and pressures;

passing the steam from each flash chamber through an associated heat exchanger in heat exchange relationship with a working fluid to superheat the working fluid;

expanding the working fluid in a power extracting gas expansion device;

condensing the working fluid after expansion; and

circulating the working fluid in a closed loop including at least devices for heat exchange, gas expansion and fluid condensing.

3,893,300

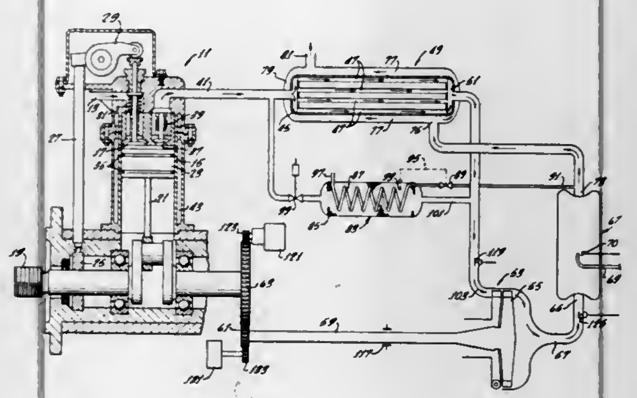
EXTERNAL COMBUSTION ENGINE AND ENGINE CYCLE

Joseph A. Connell, Fountain Valley, Calif., assignor to NRG Incorporated, Phoenix, Ariz.

Continuation-in-part of Ser. No. 355,956, April 30, 1973, abandoned. This application Jan. 10, 1974, Ser. No. 432,139

Int. Cl.² F02C *1/00*

U.S. Cl. 60—683 **2 Claims**



1. Apparatus for driving a vehicle, comprising in combination:

a combustion chamber for mixing air with fuel and burning this mixture to produce output combustion products;

means for supplying fuel under pressure to said combustion chamber;

a heat exchanger including first and second independent thermally interactive flow channels, said first flow channel connected at one end to said output combustion products of said combustion chamber, said first channel connected at its other end to an exhaust outlet;

a positive displacement compressor for compressing a fluid, the output of said compressor being conducted to one end of said second flow channel of said heat exchanger; a fluid drive mechanism, the fluid inlet of which is connected to the other end of said second flow channel of said heat exchanger, said fluid drive mechanism adapted to drive said vehicle and said compressor; and

heat storage means connected to receive heat from the output combustion products of said combustion chamber, said heat storage means comprising:

a heat storage element; and

a heat exchanger including first and second independent flow conduits, each of said flow conduits being thermally interactive with said heat storage element, said first flow conduit connected between said compressor and said fluid drive mechanism, said second flow conduit connected to said combustion chamber.

3,893,301

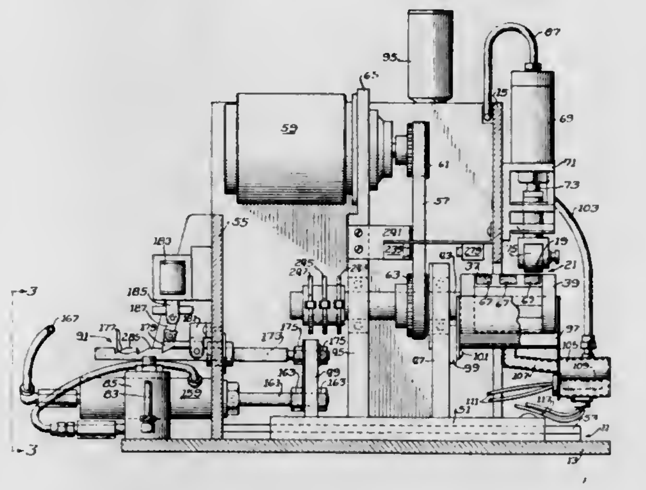
APPARATUS AND PROCESS FOR GRAPHIC IMAGE TRANSFER

Len A. Tyler, Evanston, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Division of Ser. No. 160,890, July 8, 1971, abandoned, which is a division of Ser. No. 695,228, Jan. 2, 1968, Pat. No. 3,612,685. This application Nov. 8, 1973, Ser. No. 414,065

Int. Cl. F02b *73/00*

U.S. Cl. 60—704 **5 Claims**



1. An indexing mechanism for intermittently delivering successive portions of a member to a relatively fixed station and comprising: A rack mounted for movement longitudinally thereof in a first direction for moving said member intermittently successive distances according to the pitch of rack notches; driven means for impelling said rack for movement; a detent arranged for selective engagement in said rack notches for holding said member from moving, and means for moving said detent from member-holding condition to permit said member to move, and means connected to said rack and rotationally supporting said member for movement longitudinally of said rack.

3,893,302

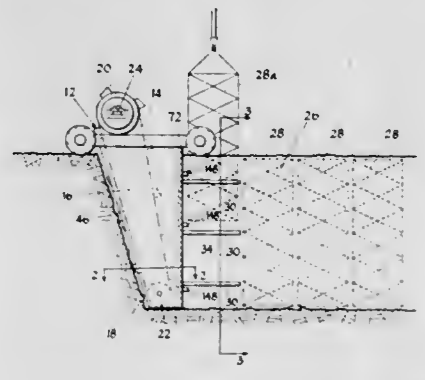
MACHINE AND METHOD FOR EXCAVATING TRENCHES AND FOR CONSTRUCTING WALLS IN TRENCHES

Carl R. Peterson, Boxford, Mass., assignor to Rapidex, Inc., Gloucester, Mass.

Filed Oct. 25, 1973, Ser. No. 409,726

Int. Cl. E02d *5/20;* **E02f** *5/06*

U.S. Cl. 61—35 **24 Claims**



1. In the method of excavating a trench in the earth, said method comprising inserting in the earth an excavating machine of a height corresponding to the depth of the trench desired, said excavating machine having a hydraulic thrust surface facing rearwardly relative to the direction of intended advance of the machine, operating said excavating machine to excavate the trench, and filling the trench immediately behind the excavating machine with fluid, the excavating machine preventing entry of equilibrating fluid to its forward side, whereby pressure exerted by said filling fluid upon said thrust surface applies forward propulsive force to said excavating machine to assist it in its operation, that improvement wherein said filling fluid is fluid concrete, the placing of said concrete in said trench to apply forward propulsive force to the excavating machine serving to continuously cast a wall in the trench and including use of means to exert hydraulic pressure in the fluid concrete at said hydraulic thrust surface in excess of the pressure attributable to the weight of fluid concrete in said excavated trench, said means extending rearwardly of the machine over the filled trench to the point where the concrete has hardened sufficiently to withstand said excess pressure, the resulting hydrostatic force assisting in propelling said excavating machine forward.

3,893,303

ROCK SECURING METHOD

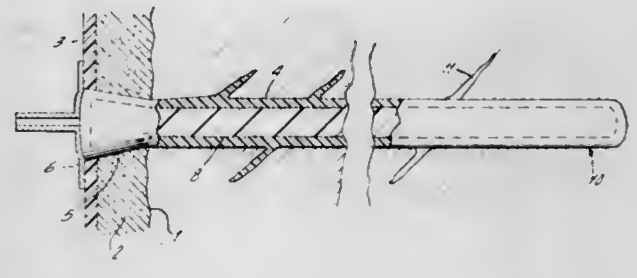
Ernst Rotter, Kaprun, near Zell am See, Austria, assignor to R.u.A. Hinteregger oHG, Munich, Germany

Filed July 24, 1973, Ser. No. 382,211

Claims priority, application Germany, July 25, 1972, 2236457

Int. Cl. E01g *5/10*

U.S. Cl. 61—45 B **6 Claims**



1. In the method of securing rock faces in which a curable plastic resin is injected into holes in the face, the improvement which comprises applying a covering layer of curable plastic to the face prior to boring the holes, boring the holes through the covering layer into the rock face with a frustroconical shape so that the diameter of the hole on the surface of the covering layer is greater than the diameter of the bore shaft, injecting a curable plastic resin under pressure into the holes so that the hole is filled with curable plastic resin in the bore shaft and in the frustroconical portion, curing the curable plastic of the covering layer, and curing the curable plastic resin in the holes to form a plurality of plastic plugs in said holes having frustroconical portions in close contact with the covering layer, whereby said covering layer is securely held against the rock face by the frustroconical portions of the plastic plugs.

3,893,304

METHOD AND A DEVICE FOR THE UNDERWATER CONSTRUCTION OF CONCRETE STRUCTURES

Leonid Pochitaloff-Huvale, and Alexandre Domboy, both of Paris, France, assignors to Leonid Pochitaloff-Huvale, Paris, France

Filed June 28, 1973, Ser. No. 374,506

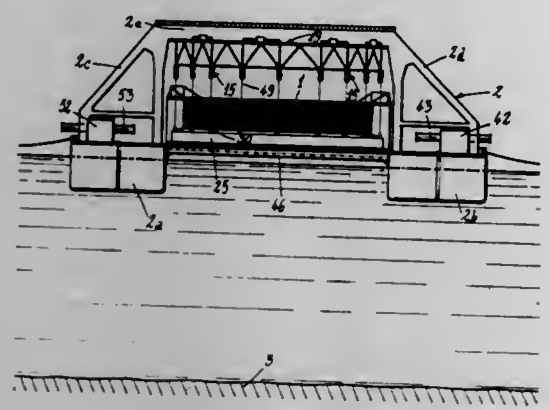
Claims priority, application France, July 21, 1972, 72.26360

Int. Cl. E02d *27/38, 29/00*

U.S. Cl. 61—46 **25 Claims**

1. A method for building at least partially immersed structures by pouring concrete or any like hardenable material, wherein a flexible and leak-tight jacket is placed in position at the intended location, wherein at least part of the internal space of said jacket is filled with a liquid ballast having the design function of applying to the jacket walls a pressure which is higher than the ambient hydrostatic pressure, wherein the internal space of the jacket which is thus filled

corresponds substantially to the casting space of the structure to be built, and wherein the concrete or like hardenable material is then poured into the jacket while discharging the liquid ballast which had been present therein.



3,893,305

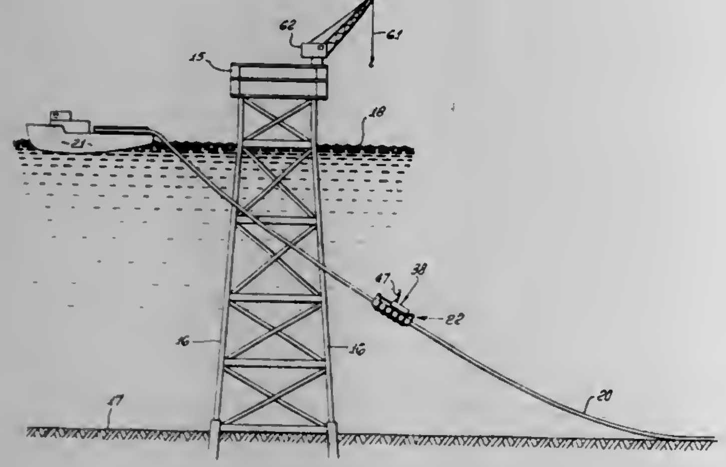
METHOD OF BENDING A CONTINUOUS FLOWLINE

Raymond W. Walker, Huntington Beach, Calif., assignor to Deep Oil Technology, Inc., Long Beach, Calif.

Filed Oct. 1, 1973, Ser. No. 402,058

Int. Cl. F16l *1/00;* **B21d** *7/00*

U.S. Cl. 61—72.3 **7 Claims**



1. In a method of terminating a flowline at an offshore structure with an upstanding end portion of the flowline to be attached to the structure comprising, the steps of:

- trailing a flowline from a moving vessel to the sea floor alongside and past an offshore structure to which the flowline is to be attached;
- attaching a flowline bending unit to a selected portion of said flowline along its length, said portion to be located at the bottom of the offshore structure;
- carrying said bending unit on said flowline as the flowline is being laid;
- actuating from a remote location the flowline bending unit; imparting bending forces to opposite ends of the bending unit to bend the portion of the flowline to be located adjacent the bottom of the offshore structure;
- moving the end portion of the pipe into upstanding position alongside the offshore structure during such bending and providing a bend of selected arc in said flowline portion at said sea bottom;
- and securing the upstanding portion of the pipe to the offshore structure.

3,893,306

REFRIGERATOR CONTROL ARRANGEMENT

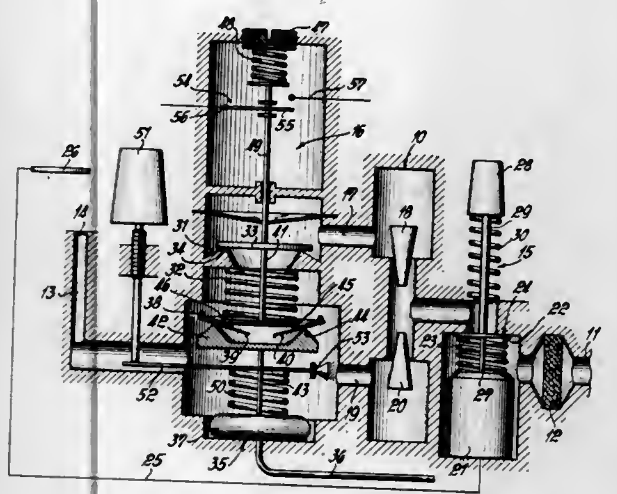
Ulrich Kroll; Josef Schmid, both of Wernau(Neckar), and Siegfried Vollprecht, Boll, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Jan. 12, 1973, Ser. No. 323,312

Claims priority, application Germany, Jan. 25, 1972, 2203295

Int. Cl. F25b *15/10*

U.S. Cl. 62—148 **23 Claims**



1. In a refrigerator comprised of a cooling compartment on the walls of which frost tends to form, an arrangement for counteracting such tendency, comprising, in combination, temperature changing means operative in a first mode for causing a decrease of the temperature of said cooling compartment and operative in a second mode for causing an increase of the temperature of said cooling compartment; and control means operative for maintaining said compartment cool by causing said temperature changing means to assume said first mode when the temperature of said cooling compartment rises to a higher first value, and operative for counteracting the accumulation of frost on said walls by causing said temperature changing means to assume said second mode when the temperature of siad cooling compartment will alternate between said first and second values, said control means including a control member movable between first and second positions for respectively causing said temperature changing means to assume said first and second modes, biasing means connected to said control member comprising a bistable snap-over spring member coupled to said control member and so disposed that said snap-over spring member must be snapped over to a first position and to a second position for respectively permitting said control member to be moved to said first and second positions of said control member, and temperature-responsive means operative for exerting upon at least one of said members a temperature-dependent force moving said members to said first positions when the temperature of said cooling compartment rises to said first value and moving said members to said second positions thereof when the temperature of said cooling compartment falls to said second value.

3,893,307

REFRIGERATOR FREEZER WITH FROST ELIMINATOR

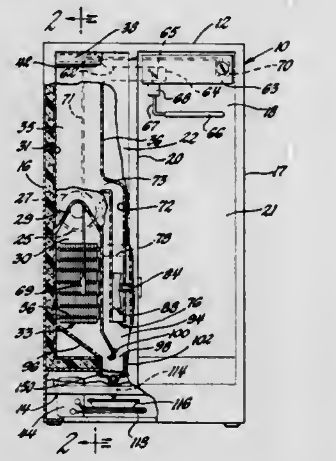
James W. Jacobs, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed May 3, 1974, Ser. No. 466,684

Int. Cl. F25d *21/00*

U.S. Cl. 62—150 **3 Claims**

1. A refrigerator comprising an insulated cabinet, an insulated vertical partition wall extending from top to bottom of said cabinet to provide separate vertical side-by-side fresh food and frozen food compartments, an upright evaporator chamber associated with the frozen food compartment rear wall containing an evaporator, a fan having an inlet connected to said evaporator chamber and having an outlet connected to both an upwardly extending cold air supply duct and a downwardly extending evaporator cold air diverter duct, a Venturi mixing nozzle located in said diverter duct, a frozen food compartment air return duct positioned in spaced relation around the lower portion of said diverter duct having its inlet disposed vertically below said fan, said air return duct defining a mixing chamber between the exit of said diverter duct and the bottom wall of said frozen food compartment, said cold air supply duct having an outlet for discharging part of the cold air therethrough, a crossover duct extending through the upper portion of said partition wall and having an air inlet communicating with said cold air supply duct and having an outlet for discharging a portion of the cold air into said fresh food compartment, thermostatically controlled damper means for controlling the flow of air from said crossover duct outlet to said fresh food compartment, passage means for returning air from the lower portion of said fresh food compartment to the throat portion of said Venturi nozzle, whereby below freezing diverter duct air flowing downwardly through said Venturi nozzle draws above freezing air from said fresh food compartment through said passage means into said throat for mixture with said air therewith, said air return duct having an outlet communicating with both subjacent crystallized water collecting means and the inlet of said evaporator chamber, whereby moisture in the combined return air is frozen by the diverter duct air flow while airborne, and means for separating the crystallized water from the combined return air during its flow from said mixing chamber for deposit into said collecting means prior to the combined return air flows being drawn upwardly into said evaporator chamber to minimize the formation of frost on said evaporator.



3,893,308

FREEZING APPARATUS PARTICULARLY USEFUL FOR FREEZING SPERMATOZOA

Joseph Barkay, Tiberias; Henryk Zuckerman, Afual, and Nachman Pundak, En Harod (Ihud), all of Israel, assignors to Ricor, Ltd., En Harod (Ihud), Israel

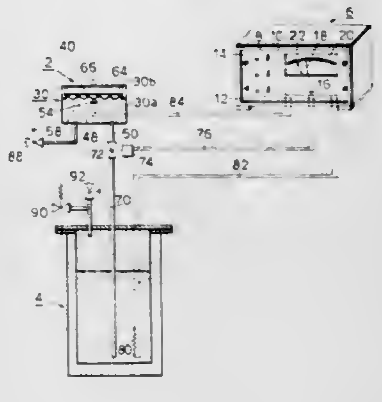
Filed Mar. 13, 1974, Ser. No. 450,783

Claims priority, application Israel, Mar. 23, 1973, 41856

Int. Cl. C12k *1/08*

U.S. Cl. 62—223 **8 Claims**

1. Freezing apparatus particularly useful for producing frozen pellets of a liquid medium containing spermatozoa frozen at a preselected temperature, comprising: a housing closed at the bottom and open at the top; a removable, heat-conductive, freezing plate resting on the top of the container and closing same to define a freezing chamber therewith; said freezing plate being formed with a plurality of recessed circular pockets each for receiving a portion of the liquid medium to be frozen into pellets, said freezing plate being removable with the frozen pellets from the housing; said chamber having an inlet and an outlet for introducing and removing a coolant gas; a temperature-sensitive device disposed within said freezing chamber; a container containing a coolant liquified gas and including an inlet line connected to said chamber inlet; an outlet line connected to said chamber outlet; a valve included in one of said lines for controlling the flow of coolant gas to the freezing chamber; a controller including a temperature presetting device; and means responsive to the temperature-sensitive device in the freezing chamber for controlling said valve, and thereby the temperature of the freezing chamber, in accordance with the temperature presetting device.



3,893,309

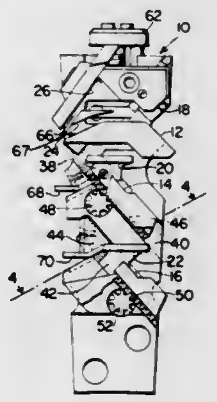
BRIDGING CAM FOR LIMITING THE POSITION OF WELT NEEDLES IN A KNITTING MACHINE

John Christopoulos, Brentwood, N.Y., and Lester Mishcon, Miami Beach, Fla., assignors to The Singer Company, New York, N.Y.

Filed Nov. 12, 1973, Ser. No. 415,035

Int. Cl.² D04B *9/00*

U.S. Cl. 66—40 **10 Claims**



1. In camming for a knitting machine, the combination comprising a wing cam; a stitch cam separated by a gap from the wing cam; a needle with a butt engageable by both said wing and stitch cams when the needle is permitted to welt, said needle being movable beyond the trailing edge of the wing cam and across said gap to the stitch cam, the needle also including another butt; and a bridging cam engageable with said another butt throughout movement of the needle between the trailing edge of the wing cam and the stitch cam whereby movement of the needle toward a knit or tuck position is restricted while the needle moves across said gap.

3,893,310

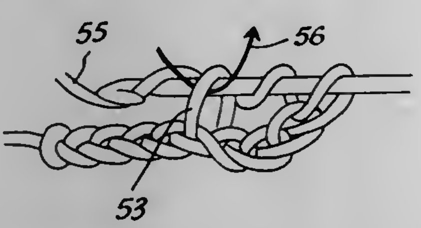
TRICOT CROCHET FABRIC AND ITS METHOD OF MANUFACTURE

Christa Ursula Palfy, 31/98 Ourimbah Rd., Mosman, New South Wales, Australia

Continuation-in-part of Ser. No. 299,724, Oct. 24, 1972, abandoned, which is a continuation of Ser. No. 70,106, Sept. 8, 1970, abandoned. This application Jan. 8, 1974, Ser. No. 431,769

Int. Cl. D04b *1/00*

U.S. Cl. 66—169 R **6 Claims**



1. A method of Tricot stitching wherein the fabric is worked in rows comprising treble stitches, in which each treble is completed by an integral chain stitch thereby to maintain the stitches at right angles to the rows.

3,893,311

DRUM-TYPE MACHINE FOR THE TREATMENT OF TEXTILE MATERIAL

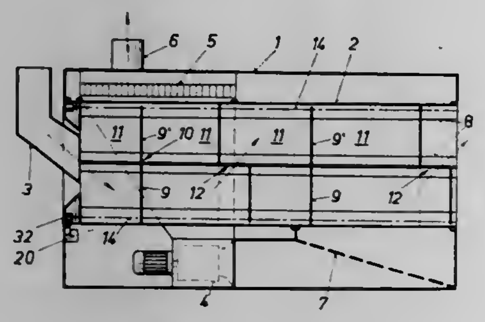
Arnfried Meyer, Neckargartacherstrasse, 7101 Frankenbach, Germany

Filed May 21, 1973, Ser. No. 362,292

Claims priority, application Austria, May 19, 1972, 4421/72

Int. Cl. D06f *37/08*

U.S. Cl. 68—143 **39 Claims**



1. Apparatus for the batchwise treatment of textile material and the like comprising:
- a housing,
- a material accommodating drum mounted in said housing for rotation about a drum axis,
- and at least one partition means for subdividing the interior of said drum into a plurality of separate treatment chambers spaced axially from one another in the direction of said drum axis,
- each of said partition means including a plurality of part disk members which extend substantially perpendicular to said drum axis and which together substantially fill the cross-section of the interior of said drum, at least one of the part disk members forming a respective partition means being axially movable relative to said drum and in a direction parallel to said drum axis between a closed partition position with said respective part disk members at the same axial position along said drum axis to form a substantially closed partition wall which prevents axial movement of the material being treated to the next adjacent treatment chamber and an open partition position with said at least one axially movable part disk member axially spaced from other of said respective part disk members to permit passage of the material being treated to the next adjacent treatment chamber.

3,893,312

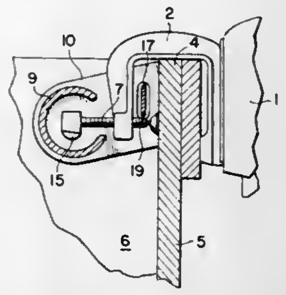
LOCK DEVICE FOR MARINE OUTBOARD MOTOR

Leo D. Johnson, Powell River, British Columbia, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Aug. 12, 1974, Ser. No. 496,465

Int. Cl.^{2} E05B *73/00;* **F16B** *41/00*

U.S. Cl. 70—58 **2 Claims**



1. A lock device for a marine outboard motor having substantially U-shaped clamp arms affixed thereto and accommodating the upper open sheet of the stern of a small boat therein, and manually operated screws threadedly movably mounted in the clamp arms for releasably affixing the motor to the stern of the boat, said lock device comprising
- a substantially semicylindrical pipe;
- a pair of end members affixed to the ends of the pipe in substantially parallel spaced relation extending substantially perpendicular to the axis of the pipe; and
- locking means for releasably locking the end members to the clamp arms in a manner whereby the pipe covers the heads of the manually operated screws thereby preventing unscrewing thereof and removal of the motor from the boat.

3,893,313

CASE

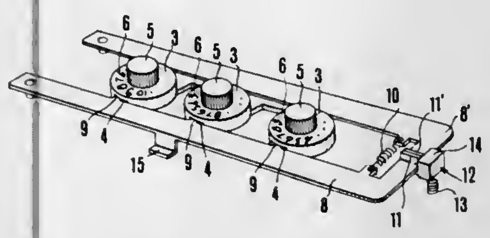
Sanzo Kobayashi, No. 34-9, Ryusen 3-chome,, Taito-ku, Tokyo, Japan

Filed Aug. 9, 1972, Ser. No. 279,061

Claims priority, application Japan, Nov. 17, 1971, 46-107708

Int. Cl. E05b *65/52, 37/12*

U.S. Cl. 70—63 **3 Claims**



1. A case of a covering type characterized by the structure in which the housing(2) is provided on the ceiling wall of the lid(1), a plurality of disc(3) being freely rotatably supported on the axis, the fixing indentations(4) and (4′) being provided at the symmetrical position in the periphery of the disc(3), the knob(5) being provided to the surface of each disc(3), a part of the knob(5) being protruded through the surface of the ceiling wall(2′) of the housing(2), the signs(6) such as numerals being marked on the surface of the cocentric circle of each disc(3) so that one of the signs can be seen through the display window(7) provided to the ceiling wall(2′) of the housing(2), a pair of swing levers(8) and (8′) provided with fixing projections(9) and (9′) which engage or disengage with said fixing indentations(4) and (4′) being located on the inner edge of the both sides of the disc(3) in the housing(2) with one end of each swing lever supported freely rotatably on the axis, the free end of each swing lever being provided with the spring(10) which attracts both ends together, the split member(12) being provided between the joints(11) and (11′) formed at said free ends so that split condition can be maintained by means of the spring element(13), the operating button(14) being provided on the surface of the split member(12), a part of the operating button(14) being protruded through the ceiling wall(2′) of the housing(2), the hooked projections(15) and (15′) turning outward being provided on the underside in the middle between said swing levers(8) and (8′), and the tip of the hooked projections(15) and (15′) are protruded through the holes (16) and (16′) from the lower wall(2″) of the housing(2) toward the underside so that the hooked projections(15) and (15′) can be unlocked at the connections(18) and (18′) provided to the case proper(17) when all the fixing projections(9) and (9′) fix into the fixing indentations(4) and (4′) and locked when at least one of the fixing projections(9) and (9′) is released from the fixing indentations(4) and (4′).

3,893,314

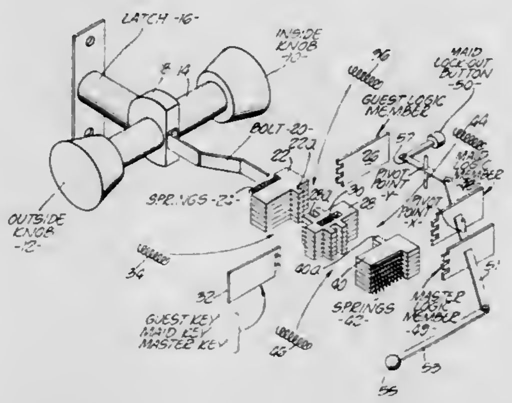
LOCK ASSEMBLY

James W. Raymond, 300 Avenida Cumbre, Newport Beach, Calif. 92660

Filed Feb. 1, 1974, Ser. No. 438,867

Int. Cl. E05b *25/00, 29/02*

U.S. Cl. 70—339 **8 Claims**



1. A lock assembly including: a casing; a first plurality of tumblers mounted in said casing and individually settable to different positions established by a first logic member; a second plurality of tumblers mounted in said casing and individually settable to different positions established by a key, said tumblers of said second plurality permitting movement of said tumblers of said first plurality relative thereto only when the positions of the tumblers of said first plurality have a predetermined relationship with respect to the positions of the tumblers of said second plurality; and a third plurality of tumblers mounted in said casing and individually settable to different positions established by at least one further logic member, said tumblers of said third plurality permitting movement of said tumblers of said second plurality relative thereto only when the positions of the tumblers of said second plurality have a predetermined relationship with the positions of said tumblers of said third plurality.

3,893,315

KEY HOLDER

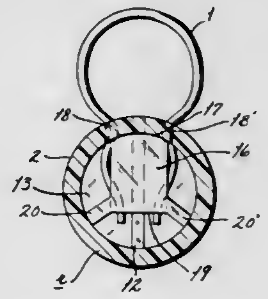
Emil W. Kamp, 242 Palm Dr., St. Louis County, Mo. 63141

Filed Aug. 23, 1973, Ser. No. 390,905

Int. Cl.^{2} A44B *15/00*

U.S. Cl. 70—456 R **2 Claims**

1. A key holder comprising a key ring formed from wire stock and having a loop-forming portion and a pair of spaced-apart legs continuous with said portion, a discoidal retainer body having a rim comprising an outer peripheral wall, an inwardly radially spaced inner peripheral wall and opposed exterior surfaces between said inner and outer peripheral walls, said rim having a pair of openings extending therethrough from said outer peripheral wall through said inner peripheral wall, an elongated partition member provided interiorly of said retainer body with opposite sides thereof aligned respectively with the said openings, said inner peripheral wall being annular, said partition member extending between diametrically opposed points on said inner peripheral wall, said key ring legs projecting through said openings and being presented on opposite sides of said partition member, an annular, flat, uniplanar, relatively rigid plate integral with one side of said partition member with its plane being parallel to the major axis of said partition member, said inner peripheral wall being provided with undercut portions, said plate being integral at its periphery with the said inner peripheral wall, and being located inwardly of the undercut portion proximate thereto, a first indicia-bearing member presented flatwise upon said annular plate, and a first protective transparent member disposed coveringly of said first indicia-bearing member, said first indicia-bearing member and said first protective transparent member having peripheral portions received within the proximate undercut portion of said inner peripheral wall, a second plate presented in planar parallel relationship to said annular plate and being disposed integral to the opposite side of said partition member, said second plate having an area less than that of said annular plate with portions of its periphery spaced from said inner peripheral wall, said second plate being integral with said inner peripheral wall at spaced apart points between the said portions of its periphery spaced from said inner peripheral wall, and further characterized by said co-ordinating plate projecting beyond opposite lateral portions of said partition member a distance sufficient to partially overlie the received key ring legs whereby the latter are retained between said first and second plates, further characterized by the engaged portions of the second plate to said inner peripheral wall constituting a portion thereof proximate the pair of rim openings and arms extending from said second plate to the inner peripheral wall at spaced-apart points from each other and from the portion engaging said wall proximate the pair of rim openings.



3,893,316

BALE TIE STRAIGHTENING APPARATUS

Emil Simich, Chicago, Ill., assignor to A. J. Gerrard and Company, Des Plaines, Ill.

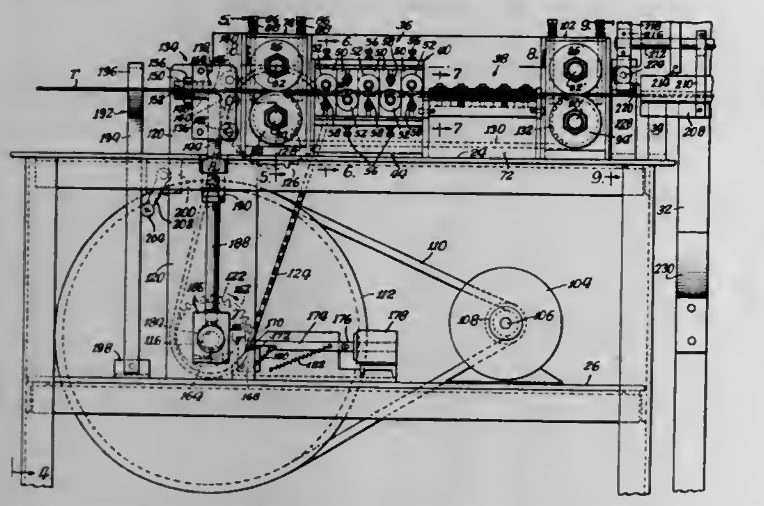
Filed Nov. 7, 1974, Ser. No. 521,578

Int. Cl.^{2} B21D *3/02;* **B21F** *1/02*

U.S. Cl. 72—2 **14 Claims**

1. For use in straightening a bale tie, apparatus comprising frame means, a first straightener unit supported by said frame means and including freely-rotatable roller means for orienting the axis of the bale tie in a first plane, a second straightener unit supported by said frame means and including freely-rotatable roller means for orienting the axis of the bale tie in a second plane normal to said first plane, a forward drive unit supported by said frame means and including drive rollers for engaging the bale tie and advancing the same through said first and second straightener units, a rearward drive unit supported by said frame means and including drive rollers for engaging the portion of the bale tie leaving said second straightener unit and drawing the bale tie through said first and second straightener units, main drive means for driving said forward and

rearward drive units, severing means forwardly of said forward drive unit for severing the bale tie being straightened, and



selectively operable auxiliary drive means for effecting actuation of said severing means.

3,893,317
ECCENTRICITY CORRECTION IN A ROLLING MILL

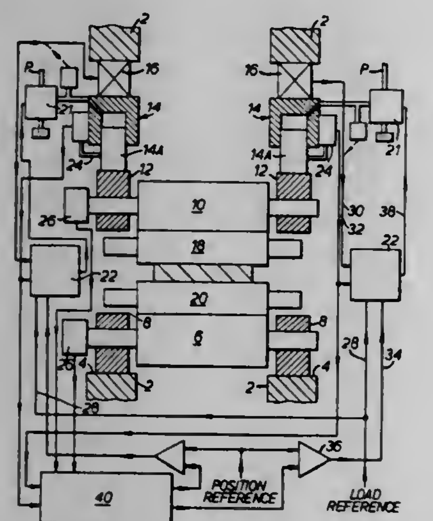
Robin Clarke, Sheffield, England, assignor to Davy-Loewy Limited (formerly Davy and United Engineering Co.), Sheffield, England

Filed Apr. 10, 1974, Ser. No. 459,584

Claims priority, application United Kingdom, Apr. 10, 1973, 17126/73

Int. Cl. B21b *37/00*

U.S. Cl. 72—20 **11 Claims**



1. A method of detecting and correcting for the total eccentricity of two operative rolls in a rolling mill, which rolls differ slightly in diameter, lie on opposite sides of a gap through which a material is to be passed, and are responsible for the bulk of the eccentricity of all the rolls of said mill, said rolling mill comprising roll gap adjusting means and said method comprising the steps of

rotating said rolls for a period of time equal to at least one beat cycle in which the smaller of said rolls rotates through exactly one revolution more than the other of said rolls with the roll gap reduced to zero and the rolls under load, while

continuously supplying signals representing the sum of the eccentricities of said rolls and signals representing the angular position of each of said rolls to a computer which is programmed to calculate and store for each of said rolls data representative of the eccentricity at specific points spaced equally around its periphery, and

subsequently rotating said rolls with said material being rolled between said rolls while supplying signals representative of said sum of said eccentricities from said computer in synchronism with said subsequent rotation of said rolls to said roll gap adjusting means to bring about adjustment of the roll gap in a direction which compensates for the eccentricity of both rolls.

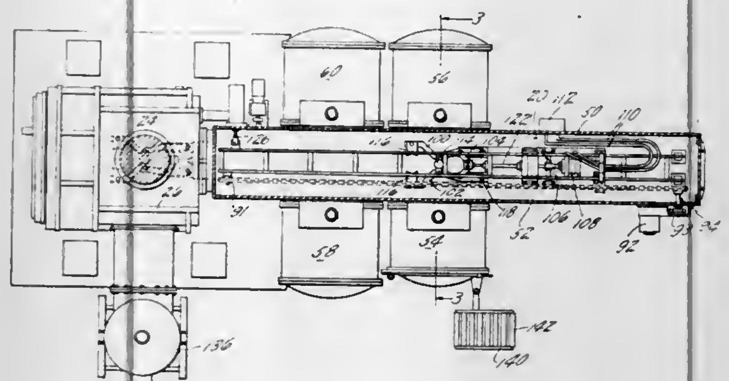
3,893,318
FORGING APPARATUS

Robert E. King, Jr., West Willington, and Clifford B. Turner, East Hampton, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed July 17, 1974, Ser. No. 489,288

Int. Cl. B21j *1/06, 13/10, 17/00*

U.S. Cl. 72—38 **10 Claims**



1. Apparatus for performing a forging operation on successive workpieces in a vacuum including

an elongated vacuum chamber,

a manipulator longitudinally movable in said chamber,

a forging press at one end of the chamber in alignment with the manipulator,

at least one preheat chamber on one side of and communicating with said vacuum chamber,

a loading chamber on one side of said vacuum chamber and communicating therewith,

a closable gate between the vacuum chamber and the loading chamber,

a slide in each of said preheat chambers and said loading chamber movable linearly at right angles to the manipulator,

a loading door providing access to said loading chamber, and

means for creating a vacuum in said loading chamber independently of the vacuum in the vacuum chamber.

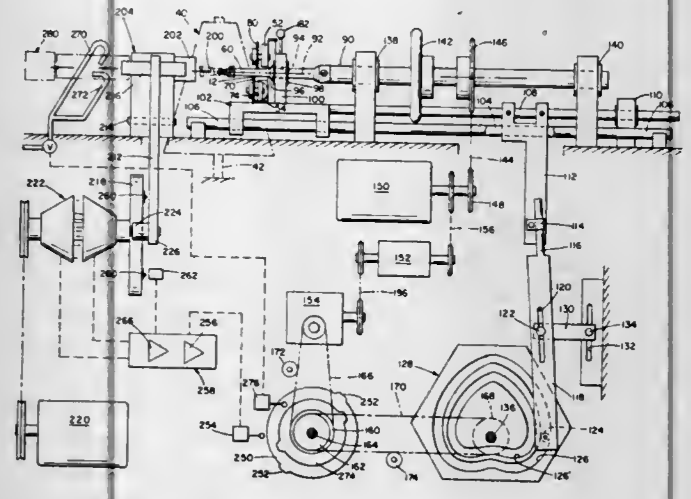
3,893,319
BAND MAKING APPARATUS

Mario Zaltron, Vicenza, Italy, assignor to Evinger Corporation, Providence, R.I.

Filed Jan. 28, 1974, Ser. No. 436,915

Int. Cl. B21c *37/12*

U.S. Cl. 72—49 **10 Claims**



1. Band making apparatus, comprising

a mandrel having an axis,

a source of wire, said wire having a pair of oppositely opening longitudinal channels, said source including means for presenting said wire to said mandrel with said channels opening in opposite directions transverse to said axis,

a guide arranged to fit into one of said channels,

means for relatively rotating said mandrel and said guide about said axis of said mandrel to wind said wire about said mandrel,

means for biasing said guide toward said mandrel to hold said wire against said mandrel,

means for providing a relative traverse motion between said guide and said mandrel during the relative rotation thereof, and

means for controlling the rates of said relative rotation and said traverse motion in accordance with the dimensions of said wire to produce channel-to-channel interlock of successive turns of said wire on said mandrel.

3,893,320
EXTRUSION PRESS FOR HYDROSTATIC EXTRUSION WITH A BILLET-HOLDING PISTON IN THE PRESSURE CHAMBER

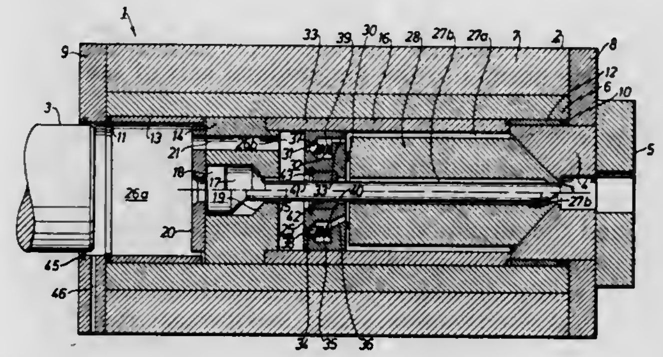
Pertti Syvakari, Helsingborg, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Sept. 30, 1974, Ser. No. 511,301

Claims priority, application Sweden, Oct. 12, 1973, 73138745

Int. Cl.^{2} B21C *23/08*

U.S. Cl. 72—60 **3 Claims**



1. Press for hydrostatic extrusion of tubes comprising a press stand, a pressure chamber comprising a high-pressure cylinder displaceably arranged in the press stand, a die support, a die held by such holder sealing one opening of the cylinder, said die having an opening for forming a profile, and a punch insertable in the other opening of the cylinder for generating a pressure within a pressure medium enclosed in the pressure chamber and surrounding a billet for extrusion of the billet, a mandrel in the pressure chamber, a billet holder shaped like a piston dividing the pressure chamber into two spaces and having an opening for the mandrel, said piston holding the billet and the die pressed against the die support while the pressure chamber is closed, the billet holder having means thereon sealingly engageable against a billet in the pressure chamber, thereby separating a first space between the billet and the cylinder wall from a second space between the billet and the mandrel, a first and a second flow path through the billet holder opening out into the first and the second spaces, respectively, and valve means in the flow paths which open the flow paths at different pressure differences between the spaces on both sides of the billet holder.

3,893,321
SWAGING MACHINE

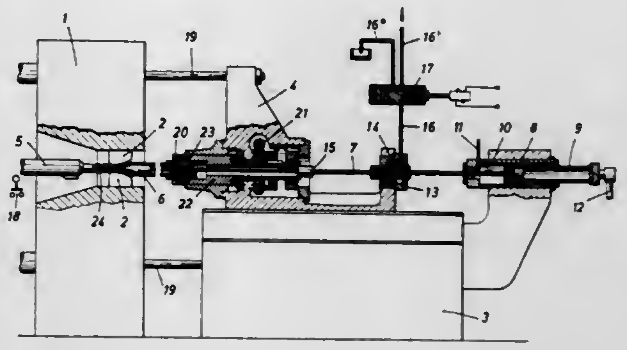
Johann Braunwieser, Steyr, Austria, assignor to GFM Gesellschaft fur Fertigungstechnik und Maschinenbau Aktiengesellschaft, Steyr, Austria

Filed Oct. 18, 1974, Ser. No. 516,009

Claims priority, application Austria, Dec. 4, 1973, 10147/73

Int. Cl.^{2} B21K *21/08*

U.S. Cl. 72—76 **7 Claims**



1. A swaging machine for manufacturing a tubular workpiece having an elongated, internally cylindrical, intermediate workpiece portion and opposite workpiece end portions differing in inside diameter from said intermediate workpiece portion, said machine comprising

die means defining a swaging zone and operable to swage a tubular workpiece in said swaging zone,

a feeding head and a holder-up, which are spaced apart and adapted to engage opposite ends of said tubular workpiece and to grip the same, said feeding head being operable to advance a workpiece thus gripped in its longitudinal direction through said swaging zone, said holder-up being adapted to yield to the workpiece as it is thus advanced,

a mandrel rod extending through said feeding head,

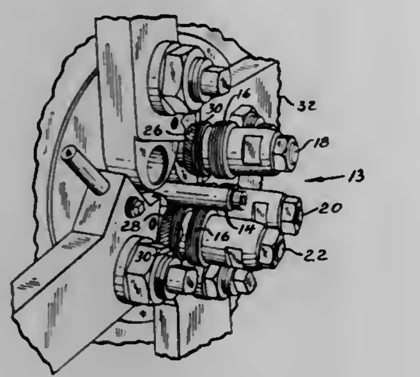
a mandrel carried by said mandrel rod and adapted to extend in said workpiece in the longitudinal direction thereof and having opposite mandrel end portions which have outside surfaces conforming to the inside surfaces of respective ones of said workpiece end portions, said mandrel also having a cylindrical intermediate mandrel portion, which has an outside diameter that is equal to the inside diameter of said intermediate workpiece portion and which has a length that is larger than the corresponding dimension of said swaging zone and substantially smaller than the length of said intermediate workpiece portion, and

control means which when said mandrel extends in said workpiece serve to couple said mandrel rod to said feeding head, so that said mandrel advances in unison with said workpiece, when a workpiece portion intended to form one of said workpiece end portions extends in said swaging zone, to hold said mandrel rod and mandrel in a fixed position when a workpiece portion intended to form said intermediate workpiece portion extends in said swaging zone, and in response to the displacement of said holder-up as it yields to the advancing workpiece to couple said mandrel rod to said feeding head, so that said mandrel advances in unison with said workpiece, when a workpiece portion intended to form the other of said workpiece end portions extends in said swaging zone.

3,893,322
METHOD FOR PROVIDING IMPROVED NUCLEATE BOILING SURFACES

Bonnie J. Campbell, and Klaus K. Rieger, both of Decatur, Ala., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Aug. 21, 1974, Ser. No. 499,344
Int. Cl. B21h *3/12*
U.S. Cl. 72—98 5 Claims



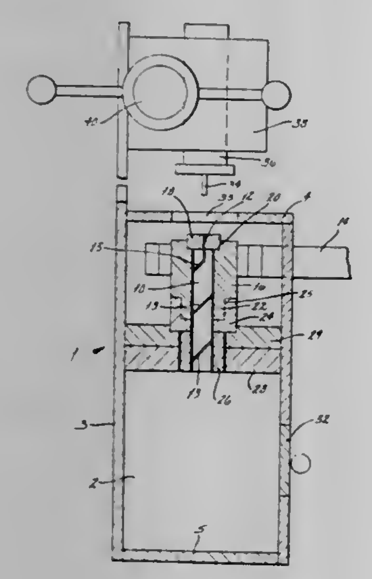
1. A process for improving the heat transfer capability of a metal heat transfer surface comprising the steps of:

Knurling at least a portion of said heat transfer surface and then subjecting said knurled portion to a finning operation.

3,893,323
APPARATUS FOR FORMING CUTTING TOOL FACES

Dennis Harry Wale, Leicester, England, assignor to Marwin Cutting Tools Limited, Rothley, England

Continuation of Ser. No. 397,844, Sept. 17, 1973, abandoned, which is a continuation of Ser. No. 235,434, March 16, 1972, abandoned, which is a continuation of Ser. No. 863,841, Oct. 6, 1969, abandoned. This application Aug. 26, 1974, Ser. No. 500,283
Int. Cl. B21d *11/06*
U.S. Cl. 72—128 6 Claims

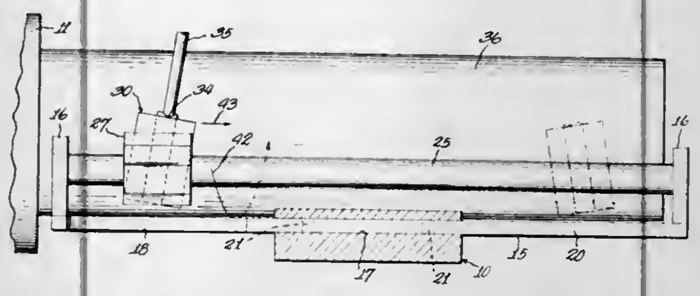


1. Apparatus for shaping a helical face piece for an engineer's tool comprising a core, a feed slot in the surface of said core in the shape of a piece of hard cutting material to be shaped, means for heating hard cutting material in the feed slot up to a temperature at which the material is hot deformable, a continuation of the feed slot in the shape desired in the finished piece, the continuation being long enough to allow the piece to cool to a temperature at which the material is no longer deformable, and means for feeding a piece of material into the feed slot.

3,893,324
SPIRAL WINDING APPARATUS

Charles W. Cappell, Allison Park, Pa., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Aug. 13, 1973, Ser. No. 387,777
Int. Cl.² B21F *3/04*
U.S. Cl. 72—143 6 Claims



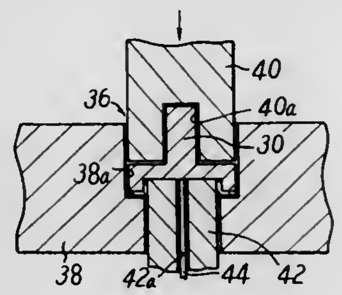
1. Apparatus for winding an elongated deformable member, such as a rod or tube, to spiral formation, comprising:
- a rotatable drum upon which said elongated member is to be wound,
- a slide support comprising an elongated base member and upstanding end members fixed to opposite ends of said base member, said base member being fixed in position so that its longitudinal axis is spaced from but parallel to the longitudinal axis of said drum,
- a slide, a guide rod carried by and extending between said end members, the longitudinal axis of said guide rod being spaced from but parallel to the longitudinal axis of said drum, said slide being freely movable along said guide rod,
- a shoe pivotally mounted on said slide, the axis of the pivot being normal to the longitudinal axis of said base member,
- a groove in a face of said shoe for receiving a peripheral portion of said elongated member and for confining the latter in a pass formed by the defining wall of said groove and the adjoining peripheral surface of said drum,
- means for holding said shoe in a selected pivoted position on said slide wherein the longitudinal axis of said groove is in skewed relation relative to a transverse plane normal to the longitudinal axis of said drum,
- means for holding one end of said elongated member for rotation with said drum whereby drum rotation draws succeeding portions of said elongated member through said groove and spirally winds said member about said drum, sliding movement of said elongated member through said groove generating a force component which moves said slide support in the direction of the spiral winding and in an amount corresponding to the skewed relation of said groove.

3,893,325
PROCESS FOR MANUFACTURING A BASE FOR A SEMICONDUCTOR DEVICE

Yoshio Sato, No. 23-15, 3-chome, Zenpukuji, Suginami-ku, Tokyo, Japan

Filed July 5, 1974, Ser. No. 486,083
Claims priority, application Japan, July 10, 1973, 48-77051; Nov. 22, 1973, 48-130727
Int. Cl. B21j *13/02*
U.S. Cl. 72—344 9 Claims

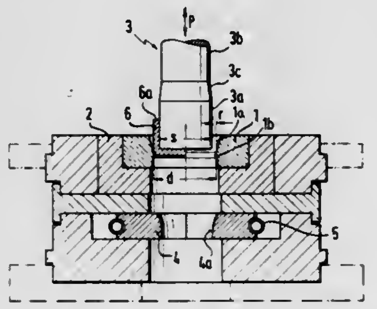
1. A process for manufacturing a base for a semiconductor device having a recess in the base on the upper surface to receive semiconductor means therein and a threaded stem extending from the bottom of the base, said process comprising the steps of preparing a blank of metal material; deforming by extrusion said blank with a shallower recess portion formed in said blank on the upper surface and with a shorter stem portion extending from said blank at the bottom while forming a projection on the bottom of said shallower recess portion in said blank; further deforming said blank so that said recess portion in said blank is deepened whereby said recess is formed in said base and so that said stem portion is lengthened whereby an unthreaded stem is formed; and threadedly rolling said stem on said blank.



3,893,326
APPARATUS FOR REDUCTION DRAWING OF HOLLOW BODIES OF STAINLESS STEEL

Karl-Oskar Oberländer; Christian Domscha, and Werner Schurr, all of Geislingen/Steige, Germany, assignors to Wurttembergische Metallwarenfabrik, Geislingen/Steige, Germany

Filed Nov. 13, 1973, Ser. No. 415,312
Claims priority, application Germany, Nov. 16, 1972, 2256334; Mar. 29, 1973, 2315832
Int. Cl. B21d *22/20*
U.S. Cl. 72—347 1 Claim

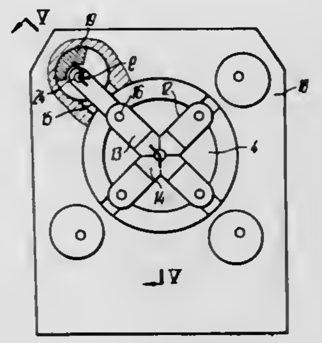


1. In an apparatus for producing hollow bodies of stainless steel, the combination of an axially reciprocable ram and a surrounding die assembly cooperable with said ram so as to reduction deep draw a cup-shaped stainless steel blank, said die assembly comprising a stationary support and an annular die member of ceramic material fixedly mounted thereon, and said ram having a forward plunger portion and an attenuated axial portion tapering rearwardly from said forward portion, the peripheral exterior surface of said ram being cooperable with the peripheral interior surface of said blank, and the peripheral exterior surface of said blank being cooperable with the inner edge of said ceramic die member so that by an initial forward movement of said ram a peripheral wall portion of said blank at its closed end will be drawn to an axially extended length of radially reduced wall thickness and so that continued forward movement of said ram will deform the free end of said blank into a rearwardly extending annular rim of inwardly increasing radial thickness, thereby gradually reducing the radial outward load upon said ceramic die member; and stripping means for axially withdrawing said extended and deformed blank forwardly from said ram.

3,893,327
RADIAL-SWAGING MACHINE

Nikolai Alexandrovich Fedorov, ulitsa Kardasheva 2, kv. 24; Leonid Andreevich Butenko, ulitsa akademika Karpinskogo, 1, kv. 12, and Vadim Vladimirovich Kazak, ulitsa Kirova, 24, kv. 47, all of Voronezh, U.S.S.R.

Filed Sept. 20, 1973, Ser. No. 399,118
Int. Cl. B21d *41/04*
U.S. Cl. 72—402 3 Claims

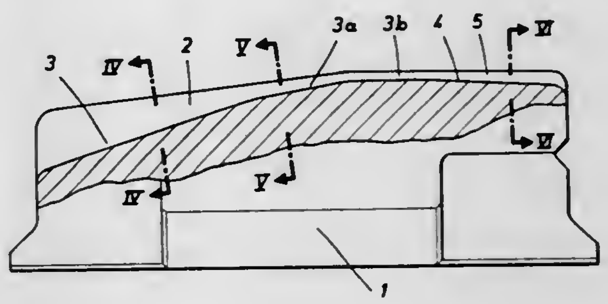


1. A radial-swaging machine, comprising: a bed; a spindle mounted on said bed; a drive connected to said spindle to bring oscillating motion to it; said spindle incorporating an axial passage for the advancement of a billet being swaged, and radial slots; slides accomodated in said slots; striking heads fixed on those ends of said slides which face said axial passage of the spindle; levers whose number is equal to that of said slides, each of these levers located adjacently to its own slide and with its one end is pivotally connected to the latter whilc with the other, to said bed; said levers bringing reciprocating motion to said slides carrying said striking heads in said slots in the course of the oscillating motion of the spindle.

3,893,328
SWAGING TOOL

Gottfried Blaimschein, Steyr, Austria, assignor to GFM Gesellschaft fur Fertigungstechnik und Maschinenbau Aktiengesellschaft, Steyr, Austria

Filed May 9, 1974, Ser. No. 468,398
Claims priority, application Austria, May 17, 1973, 4341/73
Int. Cl. B21j *13/02*
U.S. Cl. 72—404 3 Claims



1. A tool for use in a swaging machine for swaging four-sided bar stock, said tool comprising a tool member having a hammer face formed with an elongated groove open in both longitudinal directions, the cross section of said groove at one longitudinal end being V-shaped, and said groove having a flat bottom wall at the other longitudinal end, lateral bead portions of said tool member projecting from said bottom wall at the other longitudinal end of said groove and constituting side walls of said groove, said -shaped cross section merging along said groove into said bottom wall and said side walls.

3,893,329
STRAIGHTENING EQUIPMENT

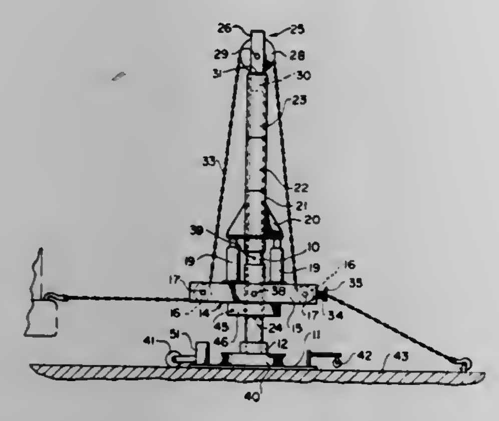
Antonius Albertus Roes, P.O. Box 75, Maitland, Ontario, Canada (K0E 1P0)

Filed Aug. 6, 1973, Ser. No. 385,680

Claims priority, application United Kingdom, Aug. 8, 1972, 37013/72; Nov. 16, 1972, 53035/72

Int. Cl.^{2} B21D *3/14*

U.S. Cl. 72—457 **5 Claims**



1. Tensioning apparatus for applying tension to an object, said apparatus comprising:
- a post;
- means for movably supporting said post in an upright position;
- means for vertically displaceably mounting a rotatable guide member on the top of said post;
- a first rotatable guide member rotatably mounted in said rotatable guide member mounting means;
- rotatable guide member support means extending transversely of said post;
- second and third rotatable guide members rotatably mounted in said rotatable guide member support means at opposite sides of said post;
- means for supporting said rotatable guide member support means at any one of a plurality of different positions spaced apart along said post;
- a plurality of sleeve members extending around said post and disposed in end-to-end relationship along said post, said sleeve members being slidable along said post;
- means for supporting said rotatable guide member mounting means on the uppermost one of said sleeve member; abutment means projecting laterally from the lowermost one of said sleeve members at opposite sides of said posts for transmitting vertically upwardly directed force to said sleeve members;
- a pair of hydrauilc jacks disposed at opposite sides of said post between said abutment means and said rotatable guide member support means, said hydraulic jacks being extensible to apply said vertically upwardly directed force to said sleeve members and thereby raise said first rotatable guide member;
- a chain extending over said first rotatable guide members and beneath said second and third rotatable guide member;
- means for securing said chain at one side of said post to the object;
- means for anchoring said chain at the opposite side of said post; and
- means for locking said chain against movement at said opposite side of said post towards one of said second and third rotatable guide members, whereby said chain can be tensioned by the extension of said hydraulic jacks.

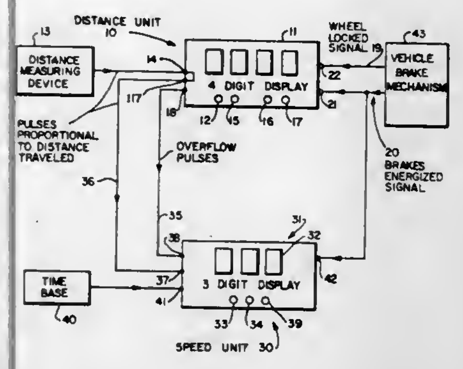
3,893,330
SURFACE FRICTION TESTING

George A. Shute, and Richard A. Zimmer, both of College Station, Tex., assignors to Data Systems, Inc.

Continuation-in-part of Ser. No. 316,369, Dec. 18, 1972, abandoned. This application Jan. 7, 1974, Ser. No. 431,358

Int. Cl. G01n *19/02*

U.S. Cl. 73—9 **14 Claims**



1. An apparatus for measuring speed and distance in testing to determine the skidding coefficient of friction between a road surface and a tire of a vehicle wheel to which a braking force is applied causing the wheel to lock, comprising:
- speed measuring means for measuring the speed of said vehicle at the time a braking force is applied to the vehicle wheel; and
- distance measuring means operably connected to said speed measuring means for measuring the distance travelled by said vehicle after said wheel has locked, whereby the vehicle speed at the time of braking and the distance travelled by said vehicle from the time said vehicle wheel locks until the vehicle comes to rest are determined.

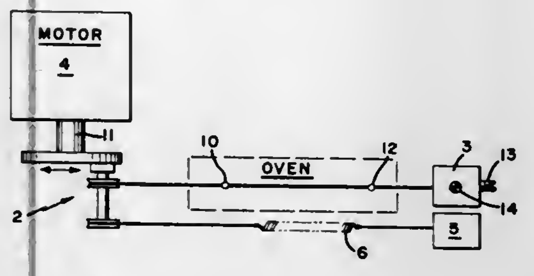
3,893,331
METHOD AND APPARATUS FOR DETERMINING SIDEWALL TEMPERATURE IN RUNNING TIRES

Dusan Ciril Prevorsek; Young Doo Kwon, both of Morristown; Russell Howard Butler, Dover, and Raj Kumar Sharma, Morristown, all of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Apr. 26, 1973, Ser. No. 354,566

Int. Cl. G01k *3/06*

U.S. Cl. 73—15.6 **4 Claims**



1. Non-destructive method of determining temperature profile through the sidewall of an inflated pneumatic tire running under load, which method comprises:

1. determining, for an inflated tire, the stress on the cords in the reinforced region of the sidewall when under no load;
2. determining, in the given tire sidewall, the following physical properties:
   specific heat, cord (C_c)
   specific heat, rubber (C_r)
   density cord (D_c)
   density rubber (D_r)
   surface heat transfer coefficient from rubber to air (h)

   thermal conductivity, cord (K_c)
   thermal conductivity, rubber (K_r);
3. determining, in the given tire sidewall, the following parameters of construction:
   thickness of the reinforced region (L_m)
   thickness of the outer rubber layer (L_r)
   volume fraction of cord in the reinforced region (V);
4. running such tire at constant rate of revolution while maintaining given ambient temperature and under at least one given load;
5. while so running the tire, measuring the surface temperatures at the sidewall after each new load is imposed, until the surface temperature reaches an equilibrium value;
6. determining values at various temperatures for rate of heat generation Q per unit volume of cords, by subjecting cords representative of those in said sidewall to hysteresis measurements at average stress maintained equal to that determined under no load per step 1 above; and at cycling rate equal to the rate of revolution imposed on the tire in step 4 above; and at a series of temperatures; and at various strain amplitudes; and measuring the area of the observed hysteresis loop to evaluate heat generation rate at various temperatures and at various strain amplitudes and given cycling rate;
7. solving by computer the relation below for temperature T at successive times t and at successive points x through the tire sidewall from the inside, through the reinforced region, through the outer rubber layer, to the outside at the surface point where surface temperature T_S was measured, viz.:

$$DC\ (\delta T/\delta t) = K\ (\delta^2 T/\delta x^2) + QV,$$

the symbols having the meanings shown in step 2, step 3 and step 6 above, D being the density and C the specific heat of cord or of rubber as appropriate; and the initial conditions being taken at all points x as:

$T(x,o) = T_a$ (the ambient temperature);

and the boundary conditions being taken as: at $x = 0$, $\delta T/\delta x = o$, where $x = o$ is at the inner boundary of the reinforced region; and at $x = L_m$, $K_m(\delta T/\delta x) = K_r\ (\delta T/\delta x)$, where ($L_m$) is at the outer boundary of the reinforced region and (K_m) is thermal conductivity of the reinforced region, and $K_m = K_c V + K_r (1-V)$; and at $x = L$, $-K_r\ (\delta T/\delta x) = h\ (T-T_a)$, where (L) is at the outer surface of the sidewall; and

8. correcting the values used for Q to arrive at a match between the calculated and the experimentally determined values of tire temperatures; whereupon the resulting values of T at the successive points x within the sidewall and at successive times represent the temperature profile through the sidewall at each time.

3,893,332
LEAKAGE TEST SYSTEM

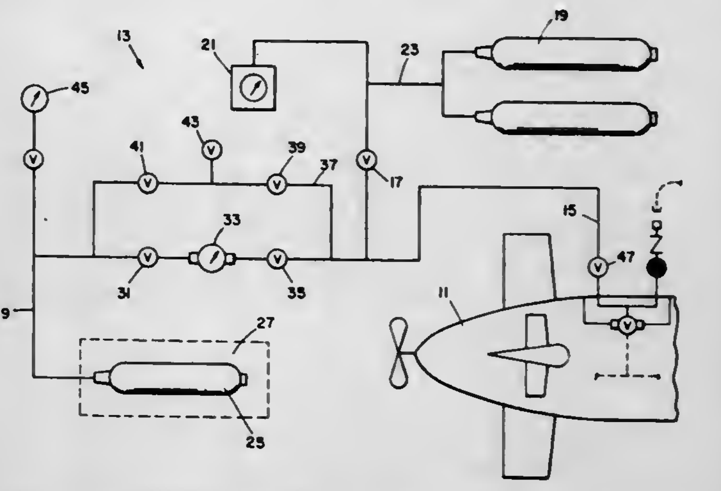
Terry M. Dolan, Bremerton, and Michael G. Leedy, Poulsbo, both of Wash., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 21, 1974, Ser. No. 444,576

Int. Cl. G01m *3/26*

U.S. Cl. 73—40 **6 Claims**

1. A leakage test apparatus comprising:
- a. first means for sampling and containing at a first predetermined pressure a gas contained in an enclosed volume at a first predetermined pressure;
- b. second means for comparing the pressure of said gas contained in said first means with the pressure of the gas contained in said enclosed volume over a predetermined time duration;
- c. third means for adding supplementary gas to the gas contained in said enclosed volume to maintain the pressure of the gas contained in said enclosed volume at said first predetermined pressure; and
- d. fourth means for measuring the amount of supplementary gas added to said enclosed volume during said predetermined time duration.



3,893,333
DEVICE FOR AUTOMATIC DETERMINATION OF SUSPENDED SOLIDS CONTENT IN WATER

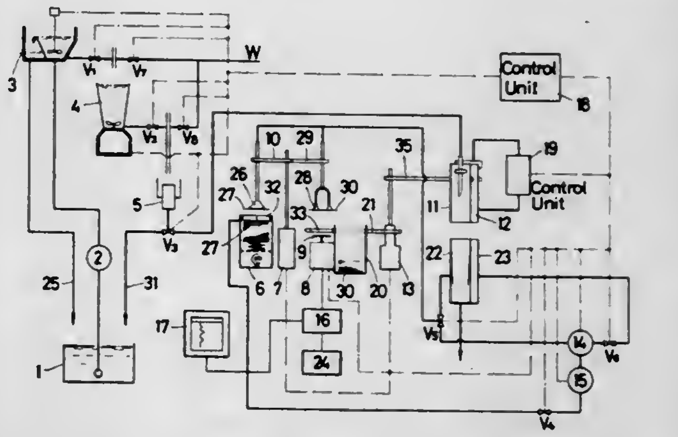
Hiroshi Sunahara, Seto; Yutaka Ishihara, Anjo, and Noboru Nakayama, Nagoya, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Nov. 14, 1973, Ser. No. 415,799

Claims priority, application Japan, Nov. 15, 1972, 47-114441

Int. Cl. G01n *11/02*

U.S. Cl. 73—61 R **9 Claims**



1. A device for the determination of suspended solids content in water, comprising in combination:
- a sample liquid collection means adapted to collect a sample liquid continuously,
- a specimen liquid preparation means adapted to agitate the collected sample liquid and meter out a predetermined amount of the prepared specimen liquid;
- a filter paper feeding means adapted to take out individual sheets of filter paper one by one and deliver the sheet of filter paper onto a turntable disposed over a weighing plate,
- a filter paper weighing means serving to weigh the filter paper placed on the turntable and register the weight thereof,
- a specimen liquid filtration means adapted to deliver the predetermined amount of specimen liquid received from the specimen liquid preparation means onto the filter paper of known weight and cause suspended solids to be separated from the specimen liquid in consequence of filtration through the filter paper,
- a drying means for drying the filter paper on which the suspended solids separated from the liquid are deposited, a determination display means adapted to transfer the

dried filter paper to be weighed onto said filter paper weighing means and display and record the difference between the weight of filter paper prior to filtration and the weight thereof after filtration,

a means for removing the used filter paper, and

automatic process control means for operating automatically and continuously said sample liquid collection means, said specimen liquid preparation means, said filter paper feeding means, said filter paper weighing means, said specimen liquid filtration means, said drying means, said determination display means and said means for removing the used filter paper, whereby said suspended solid content is automatically and continuously determined and recorded.

3,893,334

ESTIMATING THE CONCENTRATION OF SOLID MATTER SUSPENDED IN A FLUID STREAM

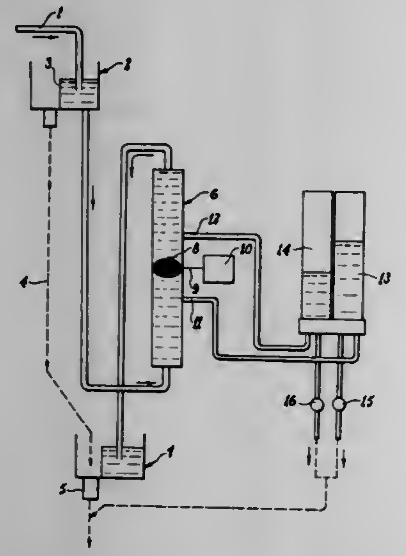
David Joseph Williams, East Ivanhoe, Australia, assignor to Australian Paper Manufactures Limited, South Melbourne, Australia

Filed Jan. 16, 1974, Ser. No. 433,934

Claims priority, application Australia, Jan. 24, 1973, 2010/73

Int. Cl.^{2} G01N *15/06*

U.S. Cl. 73—61 R **7 Claims**



1. Apparatus for carrying out a method of estimating the concentration of large solids suspended in a fluid stream also containing small-grain solids, comprising a cylindrical flow-chamber, a conduit for continuously removing part of the fluid stream for measurement, a first constant-head device for supplying at least some of said part to one end of the chamber, a second constant-head device for removing fluid from the other end of the chamber, a sieve movable in an intermediate part of the chamber so as selectively to catch solids from the substantially uniform flow that is due to a pressure drop between the constant-head devices, manometer means for continuously sensing the pressure difference between upstream and downstream of the sieve, and means for deriving therefrom a measure of the relevant solids concentration.

3,893,335

DEVICE FOR SIMULATING REENTRY CONDITIONS IN A PARTICLE LADEN ATMOSPHERE

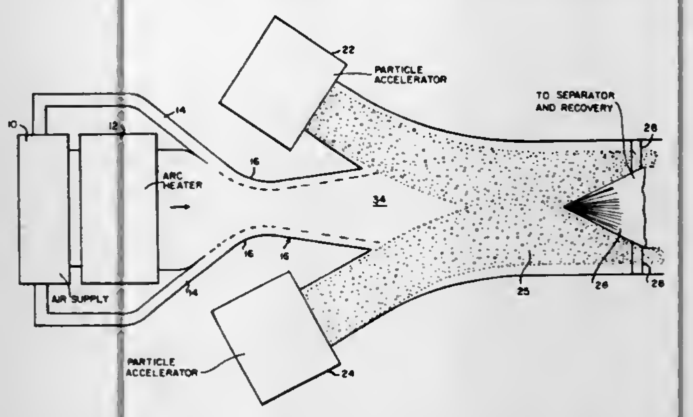
Elmer G. Johnson, Fairborn, and Hans J. P. Von Ohain, Dayton, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 13, 1974, Ser. No. 442,300

Int. Cl. G01m *9/00*

U.S. Cl. 73—147 **2 Claims**

1. An apparatus for providing a particle laden air stream simulating the reentry conditions encountered by a ballistic missile, comprising: an expansion nozzle; means for providing an air stream at a speed of between 10,000 and 12,000 ft/sec; said means for providing an air stream at a speed of between 10,000 and 12,000 ft/sec. including an arc heater, means for supplying high pressure air to said arc heater and an expansion nozzle connected to the output of said arc heater; means for accelerating solid particles, of a predetermined material and size, to a velocity between 10,000 and 20,000 ft/sec; means for introducing said particles into said arc heated air near the output end of the expansion nozzle to thereby provide high speed particle laden air stream; means for supporting a test device in the particle laden air stream in close proximity to the position where the particles are introduced.



3,893,336

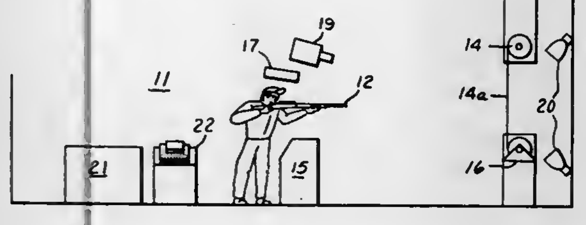
METHOD AND APPARATUS FOR AUTOMATICALLY EVALUATING ACCURACY AND PATTERN DENSITY FOR A SHOTGUN

Henry G. Tucker, Norwalk, Conn., assignor to Remington Arms Company, Inc., Bridgeport, Conn.

Filed Mar. 5, 1973, Ser. No. 337,881

Int. Cl. F41c *31/04*

U.S. Cl. 73—167 **8 Claims**



1. A method of evaluating a shotgun, said method comprising the steps of aiming a shotgun at a predetermined aiming spot on an opaque target having a center point, firing the shotgun to produce a plurality of randomly distributed holes in the target, illuminating the target to cause light to pass through the holes in the target, and activating optical scanning means responsive to light passing through said holes for automatically scanning the target to generate two dimensional positional data locating each hole in the target.

3,893,337

ANGULAR DIRECTION RECORDERS

John Ivor Parry Jones, Winterslow, near Salisbury, England, assignor to British Secretary of State for Defence, London, England

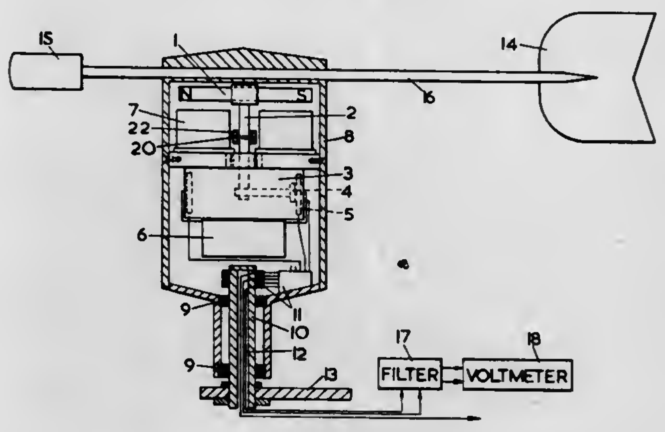
Filed July 16, 1973, Ser. No. 379,663

Claims priority, application United Kingdom, July 19, 1972, 33662/72

Int. Cl. G01w *1/00*

U.S. Cl. 73—188 **8 Claims**

1. An angular direction sensing device having rotatably mounted on a support member a circular motion potentiometer having electrical power supply connections and input and output connections thereto and a plurality of tapping points, a magnet rotatably mounted so that it can align itself substantially freely with the earth's magnetic field, a rotor driven by rotation of the magnet and operable to connect said tapping points in accordance with its angular position to an output electrical connection, whereby the angular position of the rotor in relation to a given tapping point of the potentiometer, and hence any electrical output signal thereof, is proportional to the angle between said given tapping point and the magnet independent of the orientation of said support member, said device having a fin rotatably mounted so that it can align itself with an ambient fluid flow, and means for rotating the potentiometer tapping points with said fin so that the tapping points are rotated relative to the rotor in accordance with the angular position of said fin.



3,893,338

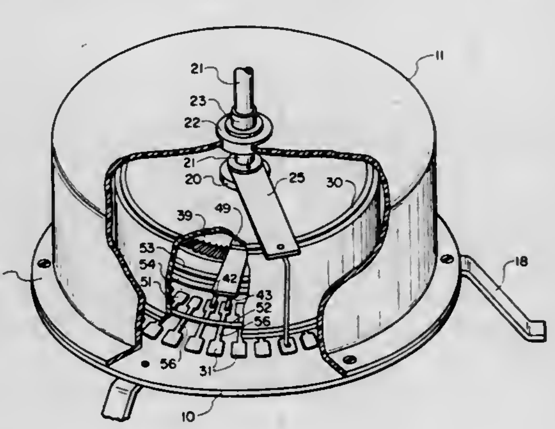
SELF-ORIENTING POTENTIOMETER

Grady O. Floyd, Saugus, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 26, 1974, Ser. No. 500,836

Int. Cl. G01w *1/00;* **G01p** *13/02*

U.S. Cl. 73—188 **10 Claims**



1. A potentiometer capable of self-orientation with respect to a predetermined reference comprising:

a plate having an upper surface and a lower surface;

an endless loop of resistive material mounted on said upper surface of said plate;

a first arm including two contacts mounted at one end thereon, said first arm being rotatably mounted on said plate;

means, mounted on said first arm, for aligning said first arm with a predetermined reference;

means mounted on said plate for fixedly positioning said two contacts into conductive contact with said resistive loop;

means connected to each of said contacts for applying a potential across said two contacts, said potential being of sufficient value to remove the smaller portion of said resistive loop conductively connected between said two contacts; and

a second arm including a third contact at one end thereon, said second arm being rotatably mounted on said plate so that said single contact is in conductive contact with said resistive loop throughout the rotation of said second arm.

3,893,339

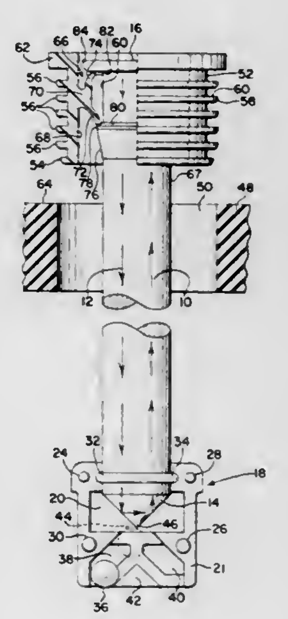
LIQUID LEVEL INDICATOR

Robert Richard Melone, Des Plaines, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Mar. 18, 1974, Ser. No. 452,086

Int. Cl. G01f *23/02*

U.S. Cl. 73—327 **10 Claims**



1. A liquid indicator comprising an elongated rod of a light transmitting material having an upper viewing surface and a lower reflective surface, a projecting disc near its upper viewing surface having a diameter greater than the diameter of the rod, an outwardly inclined surface below said disc which extends upwardly, an inwardly inclined surface above said outwardly inclined surface, a closure member which surrounds said rod, an annular sealing element extending inwardly towards said rod from the inner periphery of said closure member comprising a relatively rigid downwardly extending sealing member and a relatively flexible upwardly extending sealing member constructed so that said closure member is held in sealing engagement with said rod when said closure member is forced upwardly from the bottom of the said rod to the point where said rigid sealing member abuts against said inwardly inclined surface in sealing relationship and said flexible sealing member is deflected inwardly by the lower surface of said disc so as to form a seal between said lower surface, said disc, and the outer periphery of said rod.

3,893,340

THERMALLY INSULATED THERMOMETER

Robert Parker, Danville, Calif., assignor to RPR, Inc., Dublin, Calif.

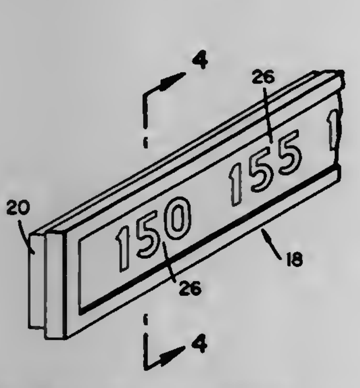
Filed June 27, 1973, Ser. No. 374,214

Int. Cl. G01k *11/12, 11/20*

U.S. Cl. 73—356 **17 Claims**

1. Apparatus for measuring relatively extreme temperatures comprising an insulator having a first surface for attachment to an object the temperature of which is to be measured and a second surface opposite and spaced apart from the first surface, the insulator having a known and constant thermal conductivity coefficient and a constant still convection coefficient so that the temperature at the second surface is a linear

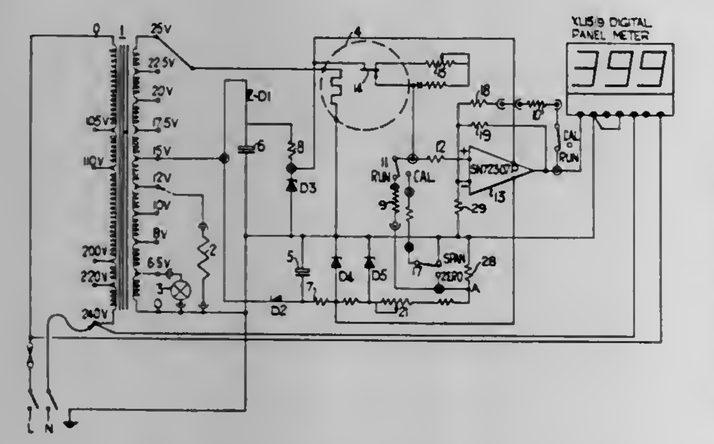
function of the temperature of the object, liquid crystal a thermometer thermally coupled to the second surface, and



means cooperating with the thermometer for indicating the temperature of the object.

3,893,341
MEASURING DEVICES

Alan Birt Acres, Leigh-on-Sea, England, assignor to Electro-thermal Engineering Limited, London, England
Filed Jan. 5, 1973, Ser. No. 321,119
Claims priority, application United Kingdom, Jan. 6, 1972, 682/72
Int. Cl. G01k *7/20*
U.S. Cl. 73—362 AR **10 Claims**

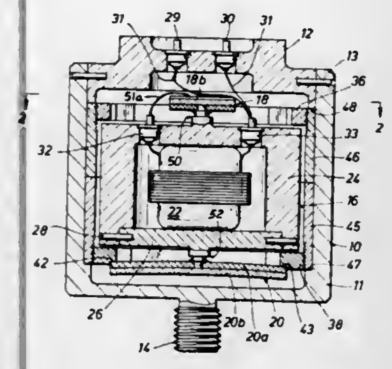


1. Melting point determination apparatus comprising a heatable sample holder for supporting and heating a sample of material whose melting point is to be determined, first and second similar metallic temperature dependent resistances positioned so that their temperature remains close to that of said sample holder, an amplifier having a negative feedback path between its output and its input, said first resistance being arranged in said feedback path for varying the gain of said amplifier by varying the amount of feedback supplied by said feedback path in accordance with said temperature, a constant current source connected to said second resistance for supplying current which passes through the second resistance to form across the terminals thereof a voltage signal whose value depends on said temperature, the input of the amplifier being connected to the second resistance for amplifying said voltage signal to form an output signal which varies substantially linearly with variations in said temperature, and means, connected to the amplifier output, for indicating said temperature, the apparatus further including a projection lamp and a lens system for projecting an observable image of said sample, when the latter is present, onto a screen.

9. A measuring device comprising an amplifier, a negative feedback path between its output and its input, a first metallic temperature dependent resistance for being subjected to an ambient temperature to be measured for its resistance value to depend on said ambient temperature and arranged in said feedback path for varying the amount of feedback supplied by said feedback path in accordance with said physical condition, a constant current source, a reference voltage point, and a second metallic temperature dependent resistance for being subjected to said ambient temperature for its resistance value to depend on said ambient temperature, the second resistance having one terminal connected to said constant current source and to the input of the amplifier and its other terminal connected to said reference voltage point, for supplying to the input of the amplifier an electrical input signal indicative of said ambient temperature, whereby the output of said amplifier varies substantially linearly with variations in said ambient temperature.

3,893,342
ACCELEROMETER

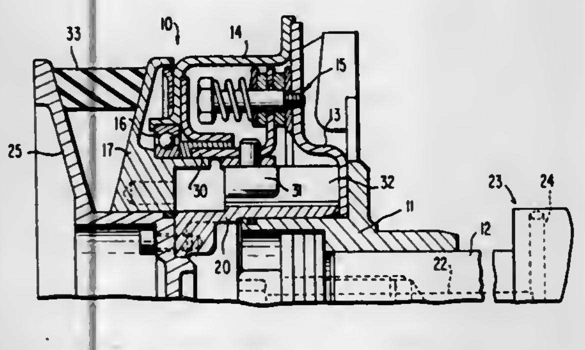
Eugene F. Florian, and Samuel E. Haggard, both of Houston, Tex., assignors to Mark Products, Inc., Houston, Tex.
Filed May 21, 1973, Ser. No. 362,538
Int. Cl. G01p *15/08*
U.S. Cl. 73—517 R **12 Claims**



1. An accelerometer comprising a housing, two beams located in the housing, means in the housing supporting the beams in spaced generally parallel planes, each beam comprising a first layer of material of relatively high tensile strength and a second layer of piezoelectric material, and a mass located between the beams and supported thereby, said beams being bent by the mass to place the piezoelectric material layer of the beams in compression and the high tensile strength layer of the beams in tension.

3,893,343
CONTROLLABLE AGGREGATE-DRIVE FOR INTERNAL COMBUSTION ENGINES

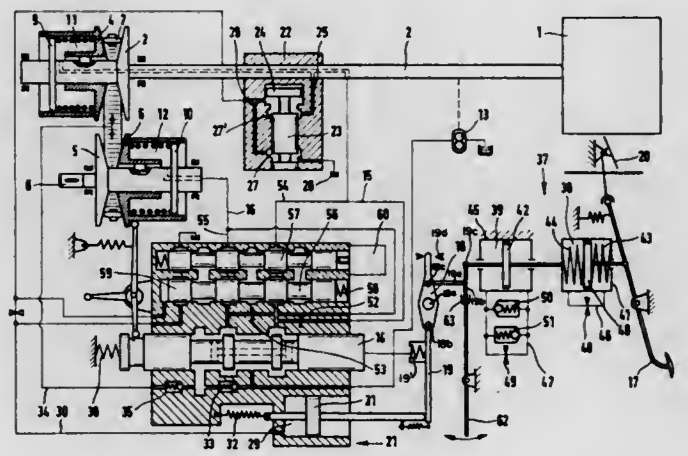
Wolfgang Zaiser, Althutte, and Sigurd Hainmuller, Aichschiess, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany
Filed Nov. 20, 1973, Ser. No. 417,576
Claims priority, application Germany, Nov. 21, 1972, 2256989
Int. Cl. F16h *55/52, 5/48*
U.S. Cl. 74—230.17 F **30 Claims**



1. A controllable aggregate drive for internal combustion engines having a crankshaft, which comprises a controllable V-belt transmission means for driving at least one auxiliary aggregate from said crankshaft including a driving pulley means having a movable pulley member, and means controlling the transmission ratio of said V-belt transmission means in such a manner that at low rotational speeds of the crankshaft a transmission with a speed increase results and with increasing rotational speeds of the crankshaft the speed increase transmission ratio is automatically reduced, including a piston means acted upon by a pressure medium, said piston means being operatively connected with the driving pulley means of the V-belt transmission means and displacing against spring action the movable pulley member thereof, characterized in that the piston means is acted upon directly by the lubricating oil pressure of the internal combustion engine without the interposition of any control means for controlling the lubricating oil pressure.

3,893,344
CONTROL DEVICE FOR A MOTOR AND AN INFINITELY VARIABLE CONE-PULLEY GEAR

Jorg Dantlgraber, Bad Homburg, and Rudolf Schrodt, Kronberg, both of Germany, assignors to P.I.V. Antrieb Werner Reimers KG, Bad Homburg, Germany
Filed Dec. 20, 1973, Ser. No. 426,575
Claims priority, application Germany, Jan. 15, 1973, 2301776
Int. Cl. F16h *55/22*
U.S. Cl. 74—230.17 F **14 Claims**



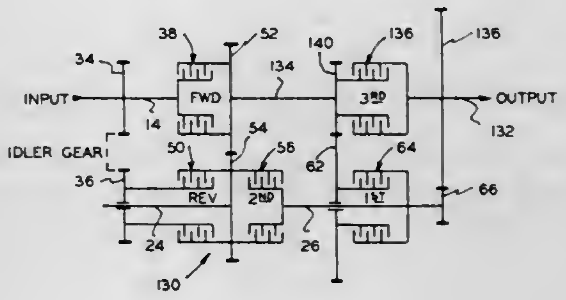
1. In a drive comprising a motor of variable power output and load-dependent speed of rotation and an infinitely variable cone-pulley transmission driven by said motor, and fluid-pressure means supplying fluid to the transmission for controlling the sides of the transmission to adjust the transmission ratio, a control slide for adjustment of the pressure of the fluid, a motor regulating lever and a centrifugal governor rotating proportionally with the speed of rotation of an element of the drive, and including means at each setting of the regulating lever to provide a specific motor speed at which the centrifugal governor is in the steady state, and means to transmit the motion of the motor regulating lever to the control slide, said transmitting means including delay means for retarding the movement of the control slide by the movement of the regulating lever, said delay means including means to delay the movement of the control slide in inverse proportion to the speed of movement of the regulating lever.

3,893,345
TRANSMISSIONS

Ronald L. Sisson; Phillp J. Dreves; James E. Shellberg, all of Jackson, and Burton S. Zeller, Parma, all of Mich., assignors to Clark Equipment Company, Buchanan, Mich.
Continuation of Ser. No. 392,140, Aug. 27, 1973, abandoned. This application Sept. 9, 1974, Ser. No. 504,576
Int. Cl. F16h *3/08*
U.S. Cl. 74—331 **24 Claims**

1. In a multispeed constant-mesh-gear transmission of the type having a plurality of shafts, gears and bidirectionally engageable clutches, the combination comprising:

a. an input shaft;
b. a first gear fixed to said input shaft;
c. a first shaft lying in a common plane with and capable of bidirectional rotation with respect to said input shaft;
d. a second gear mounted on and capable of being rotated with respect to said first shaft and drivingly connected with said first gear so as to rotate in the same direction therewith;
e. a second shaft axially aligned with and capable of bidirectional rotation with respect to said input shaft;
f. first clutch means for connecting said input shaft with said second shaft;
g. second clutch means for connecting said second gear to said first shaft for conjoint rotation therewith;
h. a third gear fixed to said second shaft;
i. a fourth gear fixed to said first shaft and in mesh with said third gear;



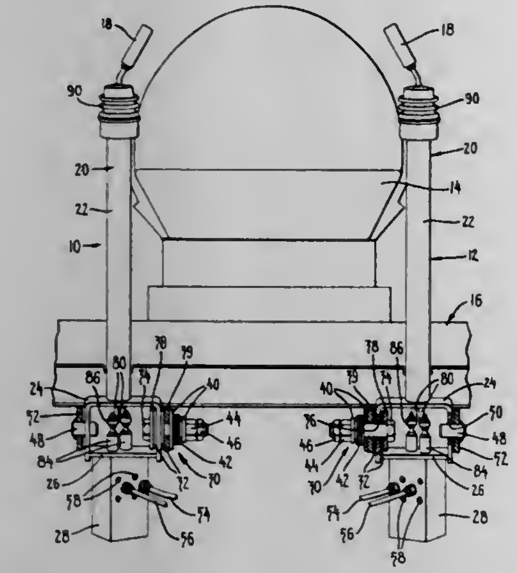
j. a third shaft axially aligned with one of said first and second shafts and capable of bidirectional rotation with respect to said input shaft;
k. third clutch means for connecting said third shaft with one of said first and second shafts;
l. a fifth gear mounted on and capable of being rotated with respect to said third shaft;
m. fourth clutch means for connecting said fifth gear to said third shaft;
n. a sixth gear fixed to said third shaft, said fifth gear being located intermediate said third clutch means and said sixth gear;
o. an output shaft capable of bidirectional rotation with respect to said input shaft; and
p. means for drivingly connecting said output shaft with at least said sixth gear, with all of said shafts lying in a common plane.

3,893,346
ARTICULATELY MOUNTED FLUID CONTROLS

David S. Paul, Mississauga, Canada, assignor to Massey-Ferguson Inc., Detroit, Mich.
Filed Jan. 4, 1974, Ser. No. 430,831
Int. Cl. G05g *9/04*
U.S. Cl. 74—471 R **10 Claims**

1. A control for a fluid control system providing power to controlled components comprising, a lever, a pivotal connection for mounting said lever on and pivoting said lever with respect to said system in at least one direction, a control valve mounted on one end of said lever, said control valve movable with said one end, means for actuating said control valve mounted on the opposite end of said lever from said control

valve, and conduit means interconnecting said control valve with the controlled components to permit operation of the controlled components by said means for actuating in a range of positions through which said lever pivots.



3,893,347

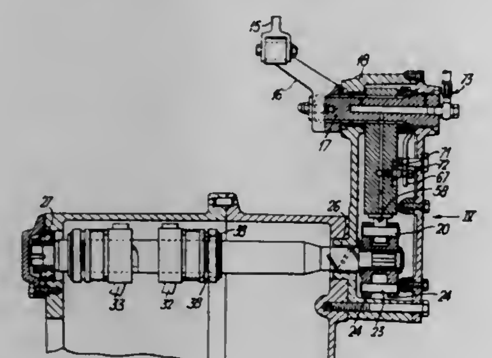
CHANGE SPEED TRANSMISSIONS AND CONTROLS THEREFOR

Bruno Fracchioni, Rome, and Guglielmo Villani, Lavinio, both of Italy, assignors to Massey-Ferguson Services N.V., Curacao, Netherlands

Filed June 25, 1973, Ser. No. 373,537

Int. Cl. G05g *9/02;* **F16h** *5/08*

U.S. Cl. 74—473 R **4 Claims**



1. A change speed transmission providing a finite plurality of speed ratios, said transmission comprising drive means adapted to drivingly engage said speed ratios, a rotatable shaft with a surface, said drive means slidable on said shaft, cam means including two cam tracks on the surface of said shaft between said shaft and said drive means to engage selectively said drive means, indexing means operable and mounted on said shaft to move said cam means, one of said cam tracks comprising a zigzag form and the other of said cam tracks comprising two substantially parallel linear portions interconnected by a linear and curved portion, and in which a first drive means is associated with said one cam track and a second drive means is associated with said other cam track, the arrangement being such that rotation of said shaft firstly axially moves said first drive means in a first axial direction and maintains said second drive means axially stationary, secondly reverses the direction of movement of said first drive means and, moves said second drive means in an axial direction, and thirdly moves said first drive means axially in said first direction and maintains said second drive means axially stationary, and a manually operable control for indexing movement of said indexing means by successive movement for selection of alternate ratios which are zero speed ratios.

3,893,348

SAFETY STEERING FOR MOTOR VEHICLES

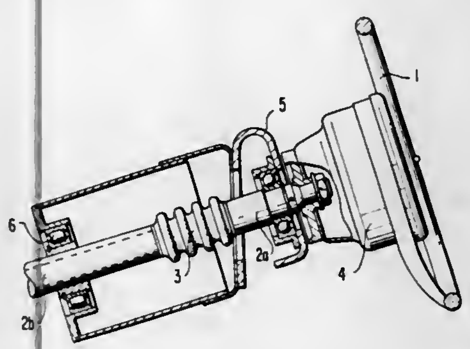
Egon Rieth, Boblingen, and Bela Barenyi, Maichingen, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany

Filed Apr. 2, 1974, Ser. No. 457,381

Claims priority, application Germany, Apr. 3, 1973, 2316515

Int. Cl. B62d *1/18*

U.S. Cl. 74—492 **19 Claims**



1. A safety steering for motor vehicles which includes a steering shaft means, a steering wheel and a deformation means plastically deformable in case of an impact of the driver, said deformation means being arranged between the steering wheel and the upper end of the steering shaft means, characterized by means for mounting an upper part of the steering shaft means at a fixed vehicle part in such a manner that it can be pivoted under the influence of forces engaging at the steering wheel which are smaller than the forces necessary for the deformation of the deformation means into such a position that its center longitudinal axis extends approximately horizontally or the plane of the steering wheel extends approximately vertically, and in that further means are provided in the train of the steering shaft means which enable the pivoting of the upper part of the steering shaft means with respect to a further part thereof.

3,893,349

STEERING WHEEL FOR VEHICLES

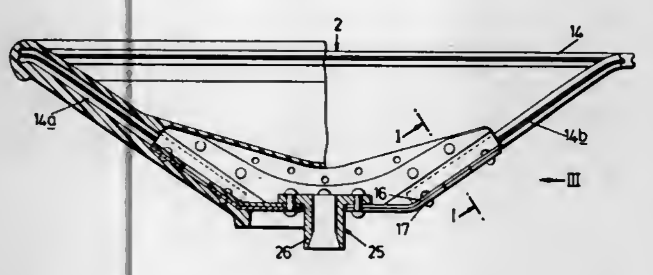
Vernon Denis Stent, Guildford, England, assignor to Creators Limited, England

Filed Feb. 20, 1974, Ser. No. 444,251

Claims priority, application United Kingdom, Feb. 21, 1973, 8395/73

Int. Cl. B62d *1/04*

U.S. Cl. 74—552 **7 Claims**



1. A steering wheel for a vehicle and comprising a rim connected to a hub by spokes, wherein the rim comprises a plurality of separately made metallic sections each of which is bent inwards towards the hub to provide spoke parts, characterized in that the hub is metal and includes oppositely extending radial arms each provided with longitudinally extending flanges which are bent over in opposite directions to grip the inner ends of the spoke parts of each section.

3,893,350

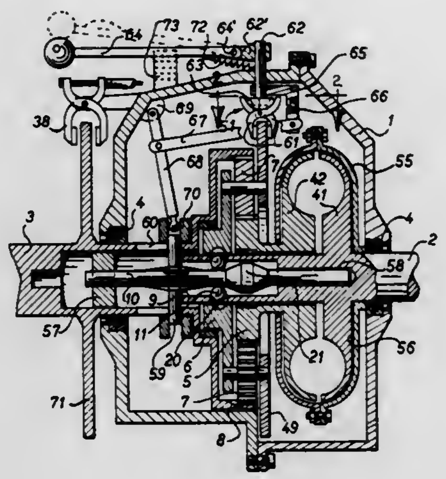
VARIABLE RATIO TRANSMISSION WITH REVERSE DRIVE

Claude A. Gingras, Dosquet, Canada

Filed June 3, 1974, Ser. No. 476,060

Int. Cl. F16h *47/08*

U.S. Cl. 74—688 **2 Claims**



1. A variable ratio transmission with reverse drive comprising an input shaft means, an output shaft means, a planetary gear set including a ring gear secured to said output shaft means, a sun gear, a freely rotatable planet carrier and planet gears freely rotatable on said planet carrier and intermeshing with said sun gear and said ring gear, means to releasably brake said planet carrier against rotation, means to releasably lock said planet carrier to said input shaft means, control means to effect release of said locking means and braking of said braking means, and vice versa, and a fluid coupling including an impeller member secured to said input shaft means and a turbine member secured to said sun gear, whereby acceleration of said input shaft means causes progressive coupling of said sun gear to said input shaft means, said input and output shaft means being coaxially mounted, together with said impeller and turbine members of said fluid coupling, said input and output shaft means having communicating adjacent hollow portions and said locking means include a rod located within and axially movable relative to said input and output shaft means hollow portions, a cross pin secured to said rod and extending through elongated slots made in the hollow portion of said output shaft means, a sliding ring surrounding said output shaft means and connected to said cross pin, and locking members rotatably carried by said input shaft portion and radially movable into locking arrangement with said planet carrier upon axial movement of said rod in one axial direction.

3,893,351

LIMITED SLIP DIFFERENTIAL DRIVE MECHANISM

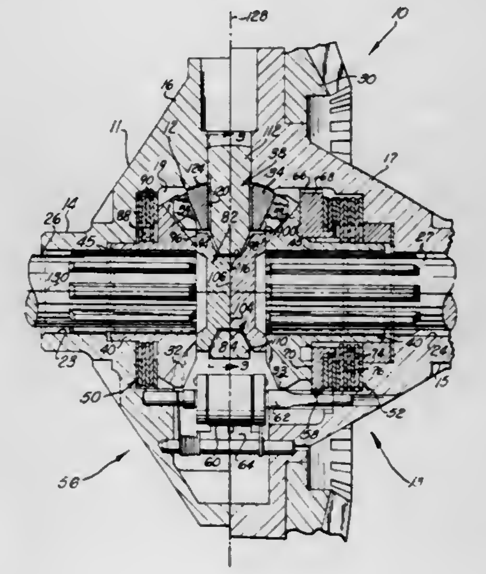
Jerry F. Baremor, Marshall, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed June 19, 1973, Ser. No. 371,479

Int. Cl. F16h *1/44*

U.S. Cl. 74—710.5 **5 Claims**

1. A differential drive assembly comprising a rotatable input member, a rotatable output member, differential gear means for drivingly connecting said input member with said output member and for enabling relative rotation to occur between said input and output members, said differential gear means including first and second axially movable side gears rotatable about their respective central axes and a pinion gear disposed in meshing engagement with said side gears, clutch means operable between an actuated condition in which said clutch means is effective to retard relative rotation between said input and output members and an unactuated condition in which said clutch means is ineffective to retard relative rotation between said input and output members, said clutch means including a first group of clutch discs disposed adjacent to said first side gear, a second group of clutch discs disposed adjacent to said second side bear, and means for applying force to said first side gear and said first group of clutch discs to press said first group of clutch discs into tight frictional engagement when said clutch means is in the actuated condition, force transmitting means for pressing said second group of clutch discs into tight frictional engagement when said clutch means is in the actuated condition, said force transmitting means including thrust block means spaced radially inward with respect to said side gear axes from said pinion gear and being free to rotate about said side gear axes independent of said pinion gear wherein said pinion gear and said first side gear mesh in such a manner as to have a first amount of backlash therebetween, and said pinion gear and said second side gear mesh in such a manner as to have a second amount of backlash therebetween, said first amount of backlash being greater than said second amount of backlash.

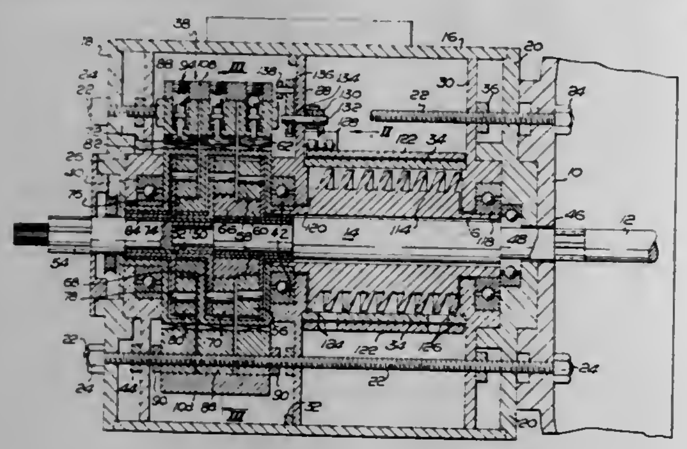


4. A differential drive assembly comprising a rotatable input member, a rotatable output member, differential gear means for drivingly connecting said input member with said output member and for enabling relative rotation to occur between said input and output members, said differential gear means including first and second side gears rotatable about their central axes and a rotatable pinion gear disposed in meshing engagement with said side gears, clutch means operable between an actuated condition in which said clutch means is effective to retard relative rotation between said input and output members and an unactuated condition in which said clutch means is ineffective to retard relative rotation between said input and output members, said clutch means including means for applying force to said first side gear when said clutch means is in the actuated condition, and force transmitting means for transmitting force from said first side gear to said second side gear independently of said pinion gear when said clutch means is in the actuated condition, said force transmitting means including a first thrust block disposed in radially and rotationally sliding abutting engagement with said first side gear and second thrust block disposed in radially and rotationally sliding abutting engagement with said second side gear and said first thrust block both of said thrust blocks being spaced radially inward with respect to said side gear axes from said pinion gear and being free to rotate about said side gear axes independent of said pinion gear.

5. A differential drive assembly comprising a rotatable input member, a rotatable output member, differential gear means for drivingly connecting said input member with said output member and for enabling relative rotation to occur between said input and output members, said differential gear means including first and second axially movable side bears rotatable about their central axes, spider means for positioning a plural-

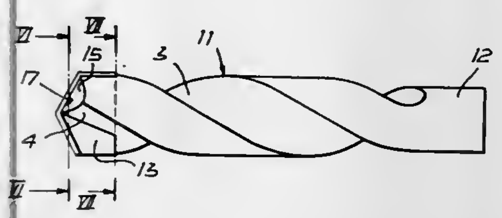
ity of pinion gears, and a plurality of pinion gears rotatably disposed on said spider means in meshing engagement with said side gears, said spider means including means for defining an opening having a central axis disposed in a coaxial relationship with the central axes of said side gears, clutch means operable between an actuated condition in which said clutch means is effective to retard relative rotation between said input and output members and an unactuated condition in which said clutch means is ineffective to retard relative rotation between said input and output members, said clutch means including a first group of clutch discs disposed adjacent to and in a coaxial relationship with said first side gear, a second group of clutch discs disposed adjacent to and in a coaxial relationship with said second side gear, and means for applying force to said first side gear and said first group of clutch discs to press said first group of clutch discs into tight frictional engagement when said clutch means is in the actuated condition, and force transmitting means for pressing said second group of clutch discs into tight frictional engagement when said clutch means is in the actuated condition, said force transmitting means including thrust block means extending between said side gears through said opening and being spaced radially inwardly along said spider central axis from said spider in a coaxial relationship with said first and second side gears and wherein said pinion gears and said first side gear mesh in such a manner as to have a first amount of backlash therebetween, and said pinion gears and said second side gear mesh in such a manner as to have a second amount of backlash therebetween, said first amount of backlash being greater than said second amount of backlash.

3,893,352
VARIABLE RATIO TRANSMISSION TRAINS
George Albert Cotton, 1 Machpelah, Hebden Bridge, England
Filed Sept. 27, 1973, Ser. No. 401,451
Claims priority, application United Kingdom, Oct. 27, 1972, 49624/72
Int. Cl. F16h *3/44*
U.S. Cl. 74—768 **5 Claims**



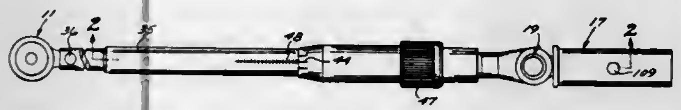
1. A variable ratio transmission gear comprising an input shaft, a first planetary gearset having a first member mounted coaxially of the input shaft and driveably connected to said input shaft, a second planetary gearset mounted coaxially with the first planetary gearset and having a first member driveably connected to a second member of the first planetary gearset, an output shaft co-axial with said input shaft and driveably connected to said second member of the second planetary gearset, a variable resistance hydraulic fluid worm pump carried on and coaxial with the input shaft driveably connected to a third member of the first planetary gearset, a stationary tube defining a chamber within which the worm of said pump rotates and a rotatable tube surrounding the stationary tube, ports in the tubes adapted to be brought into selective registry by rotation of said rotatable tube whereby rotation of the rotatable tube may selectively vary the effective overlapping areas of the ports from an open neutral position to a constant flow restricting driving position, and engaging means for preventing rotation of a third member of the second planetary gearset whereby when the rotatable tube is in said driving position and the third member of the second planetary gearset is engaged by said engaging means drive power is transmitted from said input shaft to said output shaft when the input shaft is rotated.

3,893,353
DRILL AND METHOD OF PRODUCING THE SAME
Hermann Lahmeyer, Bollen, Germany, assignor to Gebrueder Heller, Uphusen, Germany
Filed Nov. 17, 1971, Ser. No. 199,574
Claims priority, application Germany, Dec. 28, 1970, 2064024
Int. Cl. B21r *5/04*
U.S. Cl. 76—108 T **11 Claims**



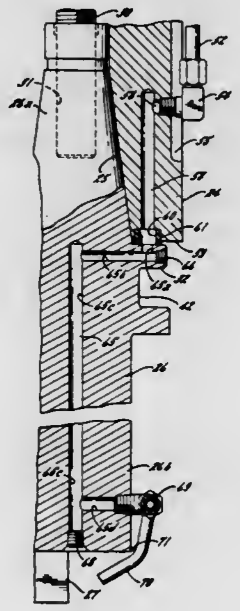
1. A method of producing a drill having a shank with a first longitudinal axis, a cutting end, a single channel coaxially extending along said first longitudinal axis, and at least one chip-removing flute extending from said cutting end in the outside surface and at least along a portion of the length of said shank, comprising the steps of supporting a tubular blank having a substantially cylindrical wall surrounding a bore of a substantially circular cross section which is coaxial with said blank, filling out said bore with a gaseous filling material, impressing said chip-removing flute into said blank by structurally deforming the material of said wall along at least a portion of the length of said blank by rolling said portion of said blank between two rollers, shifting one of said rollers in the direction toward the other of said rollers so that said portion of said blank is pressed to form said shank with said chip-removing flute thereby increasing at least one outer dimension of said portion by at least a part of the material being displaced by impressing said flute, thereby also deforming said bore in said portion so that said coaxial channel in said portion has elongated cross sections of substantially identical areas substantially coaxial with said first longitudinal axis, and cutting said deformed portion of said blank to form said cutting end.

3,893,354
TORQUE LIMIT WRENCH
William A. Knoll, Santa Ana, Calif., assignor to JO-Line Tools, Inc., Anaheim, Calif.
Filed Sept. 30, 1974, Ser. No. 510,578
Int. Cl. B25b
U.S. Cl. 81—52.4 R **11 Claims**



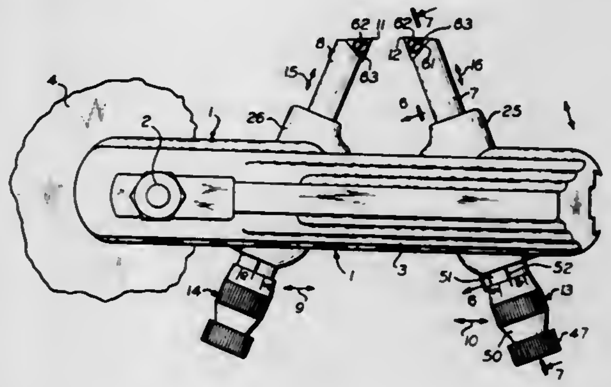
1. A torque limit wrench for applying a predetermined torque to a work piece and comprising:
work-receiving head means;
handle means;
pivot means coupling said handle to said head;
a latch for latching said pivot means against pivoting; and
limit means connected with said latch and operative in response to application of a sufficient force to said handle to apply said predetermined torque to said head to release said latch to free said handle for pivoting to render said handle inoperative for applying torque higher than said predetermined torque to said head whereby said head may be received over a work piece, a rotary force applied to said handle to apply said predetermined torque to said work piece and upon application of a rotary force sufficient to apply said predetermined torque to said work piece said limit means will release said latch to render said handle inoperative to thereby positively prevent application of a torque higher than said predetermined force to said work piece.

3,893,355
COOLANT SUPPLY SYSTEM FOR CUTTING TOOLS IN A MACHINE TOOL
Charles R. Maastricht, Fond du Lac, Wis., assignor to Giddings & Lewis, Inc., Fond du Lac, Wis.
Filed Dec. 21, 1973, Ser. No. 427,321
Int. Cl. B23b *21/00*
U.S. Cl. 82—24 **13 Claims**



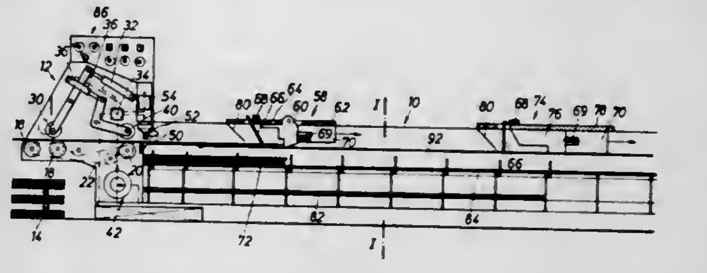
1. In a machine tool having a tool support with a socket in one end thereof for removably receiving and supporting a cutting tool adapter having a shank shaped complementary to said socket and an outwardly extending radial flange with a surface perpendicular to the longitudinal axis of said tool adapter, said socket and shank each having bearing surfaces that are mutually engageable when said tool adapter is secured in said support for a machining operation, a cutting tool coolant supply system comprising a coolant reservoir, said support being formed with a longitudinal internal passage having an inlet and an outlet, means connecting said passage inlet to said coolant reservoir, said passage outlet being located in the end of said support at a laterally offset position from said socket, said tool adapter being formed with an internal passage having an inlet on said radial flange surface at a position aligned with said support passage when said tool adapter is secured in said support, said tool adapter passage extending from said radial flange inlet to an outlet in close proximity to the cutting tool of said adapter, means for selectively supplying coolant from said coolant reservoir through said support and tool adapter passage during a machine operation, and means for directing the flow of coolant from said adapter passage outlet onto the cutting tool of said adapter.

3,893,356
ROTOR CUTTER
Frank Atzberger, 97-26 Sutphin Blvd., Jamaica 35, N.Y.
Filed Mar. 19, 1974, Ser. No. 452,544
Int. Cl. B23b *29/26*
U.S. Cl. 82—36 R **2 Claims**



1. A rotor cutter, comprising
a housing adapted to be pivotally connected to a drum lathe machine,
two cutter arms, operatively slidably mounted, at fixed angular orientations, relative to and on said housing,
further comprising
micrometer means for effecting a fine displacement of said cutter arms in a direction along said fixed angular orientations,
means for sliding said cutter arms relative to a longitudinal direction of said housing for effecting a coarse displacement of said cutter arms,
still further comprising
slides slidably mounted on said housing for movement towards and away, respectively, from one another,
said cutter arms being disposed in said slides, and
said micrometer means comprising
a micrometer screw threaded in said slides and rotatably yet displaceably immovably connected to said cutter arms.

3,893,357
PROCESS FOR CUTTING REINFORCING STEEL BARS FOR STEEL CONCRETE AND A BAR CUTTING MACHINE FOR EFFECTING THE PROCESS
Helmut Zahlaus, Calvinstrasse 3, D-3550 Marburg, Germany
Filed July 18, 1973, Ser. No. 380,524
Claims priority, application Germany, July 18, 1972, 2235120; June 15, 1973, 2330496
Int. Cl. B23d *23/00*
U.S. Cl. 83—80 **19 Claims**



1. In a steel bar cutting machine for cutting reinforcing steel bars for concrete steel including a conveying and carrying frame, secured to a base frame which is made of structural steel and is laterally displaceable and further including a conveying and cutting unit and a longitudinally displaceable measuring device, the improvements comprising:
a. a conveying and cutting unit (**12**) which is built over the base frame, having driven conveyor rollers (**18, 20**) at its lower part and pressure loaded pressure rollers (**30, 40**) at its upper part, one of said pressure rollers (**30**) being adapted to be released and adjusted automatically and in

synchronism with the cutting operation of a vertically guided blade;

b. a vertically reciprocable blade support having an upper cutting blade pivotally attached thereto;

c. a stationary lower cutting blade attached to said conveying and cutting unit; and

d. means to reciprocate said upper blade support and said upper blade with respect to said stationary lower blade so as to cut steel bars therebetween, said means engaging an upper portion of said pivotal upper cutting blade to prevent pivoting thereof during the downward cutting stroke.

3,893,358

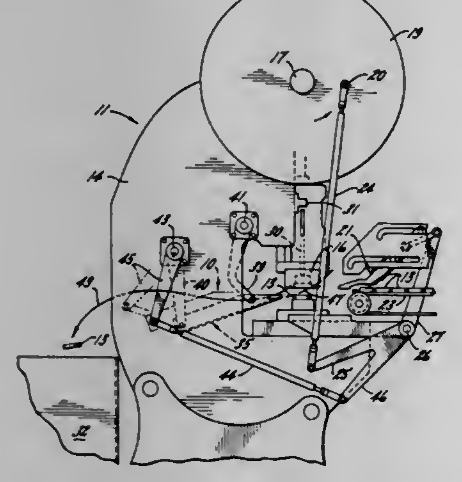
MECHANISM FOR UNLOADING PARTS FROM A MACHINE

Paul H. Dixon, Belvidere, Ill., assignor to Dixon Automatic Tool, Inc., Rockford, Ill.

Filed Aug. 2, 1974, Ser. No. 494,081

Int. Cl. B26d *7/06*

U.S. Cl. 83—82 **3 Claims**



1. A mechanism for unloading a part from a machine having a movable tool and having a drive for reciprocating the tool through upward and downward strokes, the part being carried upwardly with the tool as the latter moves upwardly and then dropping downwardly from the tool, said mechanism comprising a downwardly inclined tray, means mounting said tray on said machine for movement along an upwardly concave and generally arcuate path from a part-receiving position to a part-unloading position, said tray being located beneath said tool when in said receiving position and being located out of the path of the tool when in said unloading position, and means connecting said tray to said drive and operable to move said tray back and forth between said positions and along said path in timed relation with reciprocation of said tool whereby the tray first moves to said receiving position to catch the part dropped from the tool and then moves toward said unloading position to carry the part downwardly and then sling the part upwardly and to clear the tool as the latter moves through its downward stroke.

3,893,359

SCRAP STRIPPER FOR PRINTER

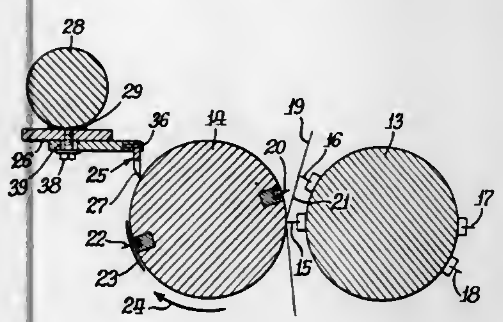
Clyde G. Gregoire, 4N194 Briar Ln., Bensenville, Ill. 60106

Filed May 22, 1974, Ser. No. 472,117

Int. Cl. B26d *7/18*

U.S. Cl. 83—154 **1 Claim**

1. A scrap paper retrieval and stripper from a printing press cutter of the type having a rotatable cutting roller and a cooperative rotatable anvil roller, comprising a pair of arcuately spaced apart paper cutting knives extending longitudinally on the circumference of said rotatable cutting roller, a plurality of longitudinally disposed in-line equally spaced apart radial pins projecting from the surface of the anvil roller and adapted to impale the paper at a position substantially midway between said arcuately spaced apart knives to thereby hold a severed piece of scrap paper from the cutting roller after the two knives have passed their cutting contact with the anvil roller, and a plurality of longitudinally disposed in-line equally spaced apart rigid tapered stationary stripping fingers located closely adjacent the surface of the anvil roller at a position remote from its cooperative engagement with the cutting roller, said longitudinally spaced apart pins intercalated relative to the longitudinal spaced apart tapered fingers, whereby upon rotation of the anvil roller the plurality of impaling pins pick up the freed scrap paper and carry it around to the stripping fingers for effecting a positive removal of the scrap paper from its impalement on the pins so that upon continued rotation of the rollers the operation may be repeated without any scrap paper interfering with a succeeding cutting and impaling operation.



3,893,360

COPY STRIP FEED ERROR CORRECTING DEVICE

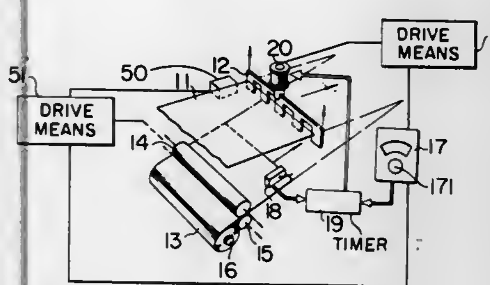
Takashi Yano; Yoichi Shibuya; Satoshi Kanda, all of Yokohama, and Shin Umeda, Tokyo, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed May 30, 1973, Ser. No. 365,215

Claims priority, application Japan, June 14, 1972, 47-70341

Int. Cl. B26d *5/34;* **B65h** *3/44*

U.S. Cl. 83—203 **2 Claims**



1. A copy strip feed error correcting device for copying apparatus of the type wherein an original and a strip of photosensitive material are cooperatingly fed through the apparatus comprising:

a. a speed varying means for setting a common feed speed for said original and said strip of photosensitive material;
b. first drive means for advancing said strip of photosensitive material at a feed speed in accordance with the setting of said speed varying means;

c. second drive means for advancing said original at a feed speed in accordance with the setting of said speed varying means;

d. first detector means for sensing the arrival of a leading end of said strip of photosensitive material and producing a signal in response thereto;

e. second detector means for sensing the arrival of the trailing end of said original and producing a signal in response thereto;

f. cutting means for severing said strip of photosensitive material; and

g. timer means operatively connected to said speed varying means, said second drive means, said first and second detector means and said cutting means for respectively actuating said second drive means and said cutting means in response to said signals from said first and second detector means after a time lapse which is in inverse proportion to the feed speed set by said speed varying means, whereby a sheet of photosensitive material is cut to a length consistent with the length of the original when the feed speed setting is varied by said speed varying means.

3,893,361

APPARATUS FOR SHEARING SHEET MATERIAL

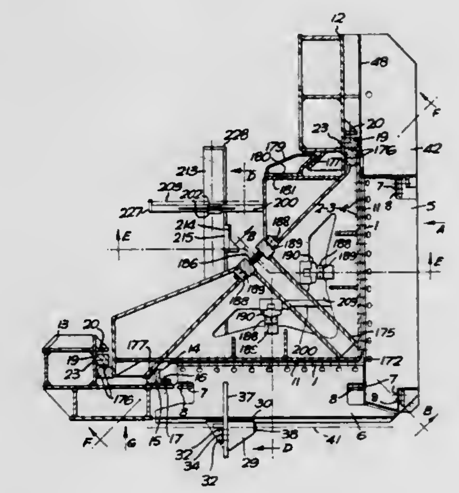
Roger Elwin Harris, 174, Plymouth Rd., Redditch, Worcester, England

Filed May 31, 1973, Ser. No. 365,559

Claims priority, application United Kingdom, May 31, 1972, 25531/72

Int. Cl. B26c *7/02;* **B26d** *7/16*

U.S. Cl. 83—375 **9 Claims**



1. In an apparatus for shearing sheet material comprising two simultaneously movable blades with their cutting edges set substantially at right angles to one another, and two static blades whose cutting edges are also set substantially at right angles to one another to co-operate with each of said movable blades, and power operable means for moving said movable blades towards said static blades to cut material, moved into the apparatus between the said blades, in two directions at right angles in a single cut, the improvement comprising the provision of such apparatus of a back gauge adjustable in two mutually perpendicular planes, each parallel to a respective plane of said movable and static blades, to gauge two mutually perpendicular edges of said material prior to said movable blades being power driven towards said static blades to cut said material in two directions at right angles in a single cut to form a substantially rectangular cut blank of material, wherein said back gauge comprises an elongate support, one longitudinal edge of which gauges one edge of the material, and a member slidable therealong one face of which member projects at right angles to said support to gauge the other edge of the material, said support being secured to one of said movable blades within the angle formed by both movable blades for movement therewith along a cut.

3,893,362

CORNER CLAMP MITRE BOX

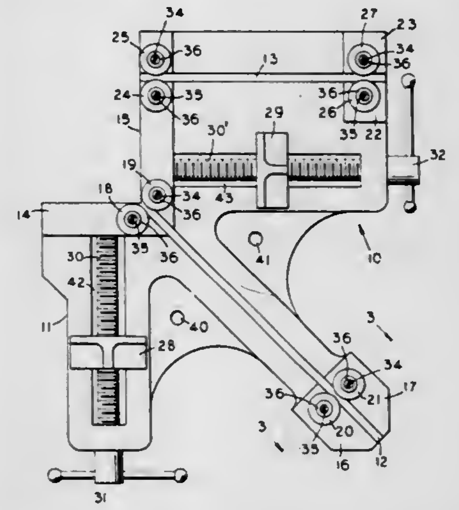
Nathan H. Schneider, and Sidney A. Schneider, both of Yonkers, N.Y., assignors to Durall Tool Corporation, Yonkers, N.Y.

Filed June 25, 1973, Ser. No. 373,027

Int. Cl. B27g *5/02*

U.S. Cl. 83—763 **6 Claims**

1. A mitre box comprising a base, a slot in said base, a first brace wall near one end of said slot, a second brace wall across said slot opposite said first brace wall, a first upright portion near the other end of said slot, a second upright portion across said slot opposite said first upright portion, said slot at a diagonal between said first and second brace walls and said first and second upright portions, a fixed roller on one of said brace walls, a fixed roller on one of said upright portions, said fixed rollers on said brace wall and said upright portions apposed to each other on the same side of said slot, said fixed rollers substantially tangent to said slot, and a laterally adjustable roller on said brace wall portion opposite said brace wall fixed roller and a laterally adjustable roller on said upright portion opposite said upright fixed roller, at least said adjustable rollers rotatable about sleeves, at least said adjustable rollers' sleeves longer than said adjustable rollers, at least said adjustable rollers' sleeves affixed to said respective brace walls and upright portions by screw means, said screw means of said adjustable rollers having a lesser diameter than said sleeves, a second slot in said base and through said second base wall and passing between a further pair of upright portions, said second slot at approximately a right angle in said brace wall and between said further set of upright portions, a fixed roller on one side of said slot on said second brace wall, a fixed roller on one of said further uprights apposed to said second brace wall's fixed roller, said fixed roller substantially tangent to said second slot and a laterally adjustable roller on each said respective second brace walls and said further upright portions opposite said fixed rollers.



3,893,363

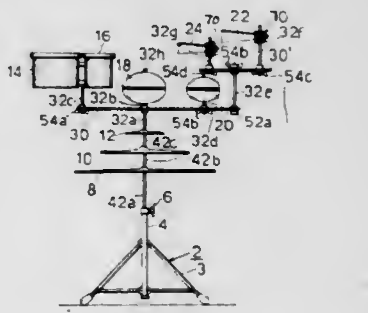
KIT PARTICULARLY USEFUL FOR MOUNTING PERCUSSION INSTRUMENTS TO A STAND

Yehuda Cohen, 25 Sokolov St., Tel Aviv, Israel

Filed May 3, 1974, Ser. No. 466,704

Int. Cl. G10d *13/02*

U.S. Cl. 84—402 **8 Claims**



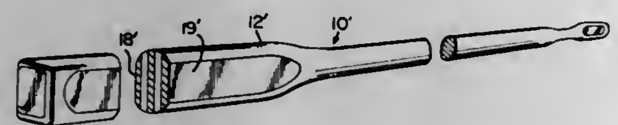
1. A kit particularly useful for mounting various percussion instruments to a stand, comprising: at least one mounting bar formed with a plurality of apertures; and a plurality of rods attachable to the bar by passing them through selected apertures of the bar for supporting various percussion instruments, each of said rods including an externally-threaded end of a diameter to pass through the apertures in the mounting bar, the opposite end of each rod being formed with an internally threaded, axially-extending bore of the same internal diameter

as the externally-threaded end enabling two such rods to be threadedly attached together and to a mounting bar clamped between them, at least one of said rods further including a plastic sleeve lining a portion of its externally-threaded end, and a pair of non-metal apertured discs passing through said externally threaded end for clamping a cymbal between them, with the cymbal when so clamped being isolated from the rod by said plastic sleeve and the two non-metal discs.

3,893,364
DRUMSTICK

Louis Duane Harrison, 2030 Covent Ave., Evansville, Ind. 47714

Filed June 18, 1973, Ser. No. 371,288
Int. Cl. G10d *13/00*
U.S. Cl. 84—422 **5 Claims**

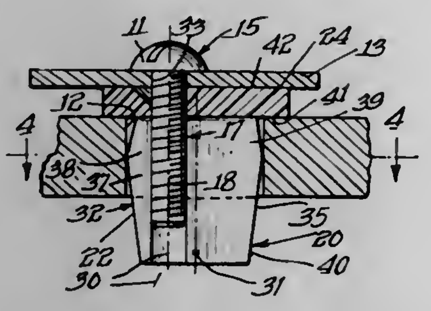


1. A drumstick comprising:
- a. an elongated shaft having a butt end and a tip end,
- b. said shaft comprising an elongated handle adjacent said butt end, a wooden striking tip portion adjacent said tip end, and an elongated intermediate wooden shaft portion extending longitudinally and coaxially from said handle to said tip portion,
- c. said handle comprising opposite flattened side portions, each flattened side portion having a width greater than the cross-sectional dimension of said intermediate shaft portion, and greater than the cross-sectional dimension of said tip portion,
- d. said handle further comprising a first radially enlarged portion connecting adjacent longitudinal edges of said flattened side portions and a second radially enlarged portion connecting adjacent opposite longitudinal edges of said flattened side portions, to facilitate gripping of said handle by a drummer,
- e. said wooden intermediate shaft portion and said wooden striking tip portion having growth rings extending substantially parallel to the longitudinal axis of said shaft.

3,893,365
PLASTIC SCREW GROMMET

George E. Gross, Arlington Heights, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Dec. 28, 1973, Ser. No. 429,620
Int. Cl.² F16B *13/04*
U.S. Cl. 85—80 **11 Claims**

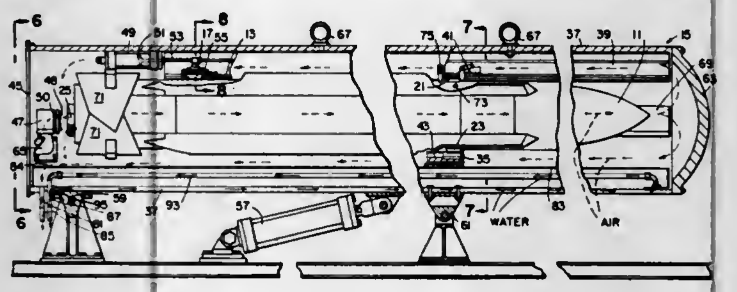


1. A fastening device for use in a workpiece having a round aperture therein, said device including a head and an integral, axially elongated, resilient shank having a generally circular cross-section for intimate acceptance within said aperture, shoulder means located intermediate the ends of said shank for engagement with one surface of the workpiece while said head engages the other surface, a bore traversing said head and a substantial portion of said shank, said bore having an initial diameter smaller than the diameter of a mating screw to cause the shank inserted in said aperture to resiliently expand and engage the surrounding workpiece when the screw is forced along the bore, the bore further having its axis offset and spread-apart from the central axis of the shank an amount sufficient to locate said bore at an eccentric position totally to one side of said shank axis to thereby inhibit rotation of the circular shank in the round workpiece aperture as the screw is turned into the bore.

3,893,366
MISSILE LAUNCHER GUIDE ASSEMBLY

Benjamin D. Murray, Bremerton, Wash., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 29, 1973, Ser. No. 410,847
Int. Cl. F41f *3/02*
U.S. Cl. 89—1.801 **5 Claims**



1. A missile launcher guide assembly for launching a missile having forward and rearward shoes for supporting the missile comprising:
- a. a housing having forward and rearward sections;
- b. a longitudinally extending fixed launch rail being operatively connected to the forward section of said housing for slidably guiding the forward and rearward shoes of a missile;
- c. a longitudinally extending removable launch rail for retaining and slidably guiding the forward and rearward shoes of said missile;
- d. a longitudinally extending launch rail support member operably connected to the rearward section of said housing;
- e. said launch rail support member having longitudinally extending slots for slidably receiving and supporting said removable launch rail;
- f. one end of said longitudinally extending removable launch rail abuting one end of said fixed launch rail and being in axial alignment with said fixed launch rail when mounted in said launch rail support member;
- g. said longitudinally extending removable launch rail being slidable through the rear end of said housing;
- h. a missile activating means operatively connected to said housing; and
- i. a missile actuating mechanism operatively connected to said housing for sliding a missile rearward on said removable launch rail and into contact with said missile activating means.

3,893,367
MECHANICALLY INITIATED IGNITER

Vernon D. Burklund, China Lake; Joseph A. Schmidt, Ridgecrest, and Michael D. Jacobson, Inyokern, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 10, 1974, Ser. No. 478,010
Int. Cl.² F41F *15/00*
U.S. Cl. 89—27 R **4 Claims**

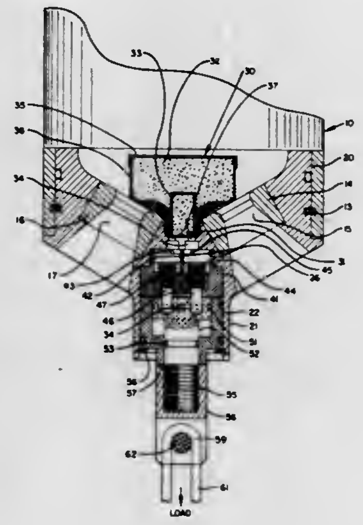
1. A propellant ignition mechanism for a rocket motor utilized to tow a load by means of a tow line fastened concentric with the center of the rocket motor and rearward of the nozzles comprising:

a chamber having an intermediate counter bore and axially rearwardly disposed bore with the center lying on a line through the longitudinal axis of the rocket motor;

first guide member formed into a piston chamber with a necked down collar positioned within said chamber;

piston means having a first shear pin for holding said piston means from operative movement within said guide member;

firing pin guide means extending through the top surface and a substantial distance into the body of said piston means;



firing pin means in slidable engagement with said firing pin guide means and held immovable by second shear pin means;

bias means operatively attached to said firing pin means to oppose a pulling force urging said psiton means in a rearward direction; and

ignition means positioned adjacent said firing pin means;

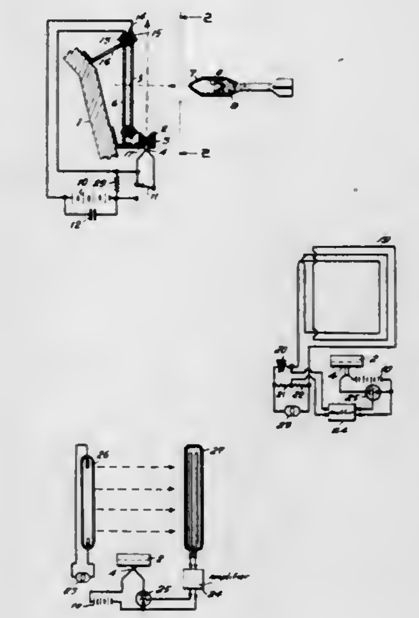
whereby a rearward pull of a first predetermined force on the piston means shears the first shear pin to allow the piston means to move against the opposing motion of the basing means until a second predetermined force is exceeded to break the second shear pin means and allow the firing pin means to be driven against the ignition means.

3,893,368
DEVICE FOR THE PROTECTION OF TARGETS AGAINST PROJECTILES

Nathaniel B. Wales, Jr., Morristown, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 1, 1954, Ser. No. 472,541
Int. Cl. F41h *9/00*
U.S. Cl. 89—36 R **5 Claims**

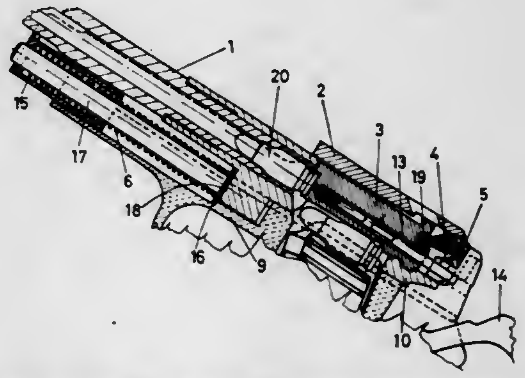
1. In a device for protecting a target from attack by a projectile the combination comprising a linear shaped charge to generate a jet sheet of high velocity particles, the plane of symmetry of said shaped charge disposed in spaced relation to said target and substantially at right angles to the projectile trajectory, a detonator to initiate explosion of said shaped charge, a source of electrical energy to fire said detonator, and a switch responsive upon impact of said projectile to establish connection between said source of electrical energy and said detonator said switch comprising a plurality of plates disposed in parallel planes and distortable by said projectile impact.



3,893,369
INERTIA DEVICE FOR RETARDING THE UNLOCKING OF A BOLT ASSEMBLY

Giovanni Benelli, Urbino, Italy, assignor to Benelli S.p.A. Divisione Armi, Urbino, Italy

Filed Feb. 23, 1973, Ser. No. 334,976
Claims priority, application Italy, Feb. 29, 1972, 44012/72
Int. Cl. F41d *1/08*
U.S. Cl. 89—182 **2 Claims**



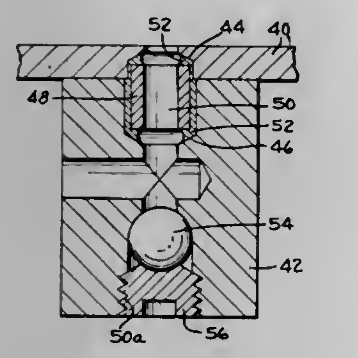
1. An automatic firing and defense pistol comprising
a fixed barrel having an axis;
a bolt carrier axially aligned with said barrel and located adjacent thereto;
said bolt carrier including a stop element extending transversely to said axis;
a bolt assembly slidably mounted within said bolt carrier, said bolt assembly having a plurality of projecting ribs, and said ribs having faces inclined with respect to said axis;
a receiver breech attached to said barrel and including a plurality of grooves corresponding to and providing mating engagement with said ribs prior to firing of the pistol;
a link having one end pivotally mounted on an end of said bolt assembly remote from said barrel and the other end of said link freely bearing against said stop element;
a preloaded spring associated with said barrel and applying a bias to said stop element thereby exerting a thrust force on said link to maintain engagement of said ribs;

said link having an inclination of approximately 45° to said axis prior to firing, and said link temporarily maintaining said inclination and rib engagement upon firing due to inertia force of said bolt carrier and stop element; and
said link movable to be axially aligned with said barrel due to force of residual gases following firing thereby allowing disengagement of said ribs and sliding movement of said bolt assembly.

3,893,370
GAS CYLINDER ATTACHMENT USING A FORMED PIN AS ORIFICE LINER

James Cameron Hutton; Merle Francis Carter, both of Mohawk, and Kenneth Charles Rowlands, Utica, all of N.Y., assignors to Remington Arms Company, Inc., Bridgeport, Conn.

Filed Jan. 30, 1974, Ser. No. 437,854
Int. Cl. F41d *5/04*
U.S. Cl. 89—193 **10 Claims**



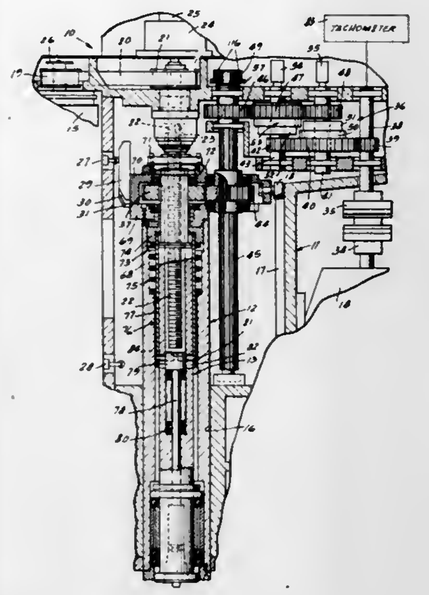
1. A firearm having an elongated barrel through which a projectile means is propelled by explosive propellant gases, an orifice, in said barrel for bleeding off said explosive gases after the projectile means has passed the orifice, a gas cylinder positioned adjacent to said barrel and having an opening in substantial alignment with said barrel orifice, a hollow spring pin means positioned in and biased outwardly against the barrel orifice and the gas cylinder opening for accurately locating and aligning the orifice and opening for permitting the explosive gases to pass from the barrel through the pin means to the gas cylinder, and means securing said hollow spring pin means to said barrel and gas cylinder.

3,893,371
METHOD AND MEANS FOR OPERATING A SPINDLE DRIVE IN A MACHINE TOOL

James L. Frazler, Los Alamitos, Calif., assignor to Houdaille Industries, Inc., Buffalo, N.Y.

Filed Mar. 27, 1972, Ser. No. 238,434
Int. Cl. B23c *5/26;* **B23q** *21/00*
U.S. Cl. 90—11 A **6 Claims**

1. A machine tool comprising in combination:
a. a head;
b. a quill non-rotatably slidably mounted on said head for axial movement with respect to said head during machining;
c. a spindle rotatably carried by and within said non-rotatable quill for joint axial movement with said quill with respect to said head, and adapted to drivably carry a tool;
d. a spindle motor drivably connected to said spindle to rotate it;
e. a quill motor drivably connected to said quill to reciprocate said quill and said quill-supported spindle;
f. a detent wheel connected at all times to be rotatably driven at a speed having a fixed ratio to the spindle speed, and having at least one peripheral detent;
g. a movable stop member disposed to be driven into and retracted from said spindle detent for locking said spindle in a predetermined angular position after said spindle motor has been fully deenergized;
h. means defining a pressurized air inlet port directed toward said spindle;

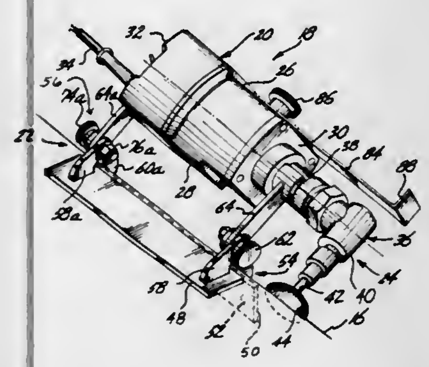


i. a ring corotatably carried on said spindle and having a bulge rotatable past said inlet port to restrict air flow therefrom for producing a change in static pressure; and
j. a pressure switch responsive to said pressure change and connected to control locking movement of said stop member.

3,893,372
FINISHING TOOL

Heinz Strakeljahn, 13228 S. E. 231 St., Kent, Wash. 98031

Filed Aug. 6, 1973, Ser. No. 385,955
Int. Cl. B23c *1/20*
U.S. Cl. 90—12 D **8 Claims**



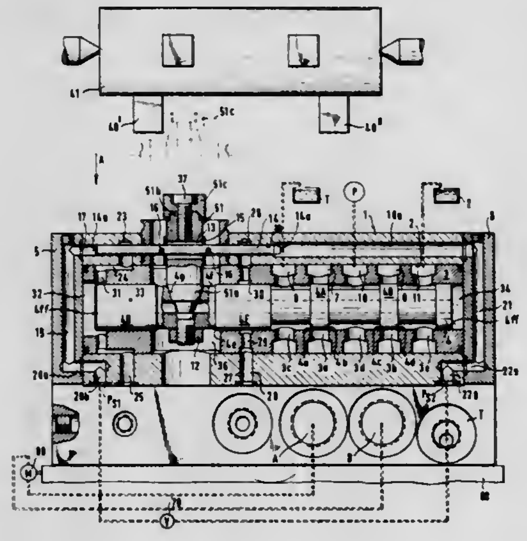
1. A hand operable power tool especially adapted for finish trimming an edge portion of a structure, such as that formed by the juncture of two surface sheets on a substrate, which sheets lie in different planes and meet at a juncture line, as for example, two laminated plastic sheets joined to top and side surfaces of a counter top, said tool comprising:
a. a main housing having forward, rear, top and bottom portions, said housing having a longitudinal axis,
b. a mounting base attached to said housing and comprising a first guide foot providing a first contact surface adapted to engage one of said surface sheets, and a second guide foot providing a second contact surface adapted to engage the other of the surface sheets, thereby orienting said housing with respect to said edge portion, while permitting travel along said edge portion,
c. said mounting base further comprising longitudinally oriented pivot means permitting angular adjustment of said housing about said guide feet along a generally longitudinal axis, whereby the angle of engagement of said tool with said edge portion can be varied, and said pivot means is at a location proximate a juncture line of planes defined by the contact surfaces of said first and second guide feet, whereby said working assembly remains in proper position for engagement with said edge portion when the angular position of said tool is adjusted about said axis, and
d. a working assembly comprising a right angle power transmission housing comprising a first longitudinal housing portion and a second transmission housing portion depending from the forward end of the longitudinal transmission housing portion and carrying a working shaft adapted to hold a trimming head at the lower end thereof, the lower end of the shaft being positioned forwardly of said main housing and said mounting base, so that a trimming head on said shaft can operate forwardly of said main housing and said mounting base,

whereby said tool can be oriented by said guide feet into working engagement with said edge portion and moved forwardly into a limited access area, such as a blind corner, with said working assembly being able to perform a finishing operation on the edge portion in said limited access area.

3,893,373
PROGRAMMING SYSTEM FOR MACHINE TOOLS OR THE LIKE

Hubert Bernd, and Friedel Liedhegener, both of Lohr, Main, Germany, assignors to G. L. Rexroth GmbH, Lohr, Main, Germany

Filed July 26, 1973, Ser. No. 382,712
Claims priority, application Germany, July 27, 1972, 2236801
Int. Cl. F15b *21/02, 13/16*
U.S. Cl. 91—35 **5 Claims**

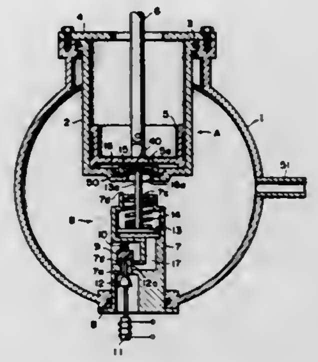


1. In a programming system for machine tools or the like the combination of a control member having a plurality of projections each movable to and from a predetermined position in response to actuation of the control member; a hydraulic flow regulating valve including a housing, a valve member having an extension provided with two cylindrical guide portions slidable in said housing, said valve member being reciprocable in said housing between a neutral position and two operative positions, a follower extending laterally from said housing and being fixedly secured to said extension of said valve member between said guide portions thereof, and a plunger parallel to said valve member fixedly secured to said follower and movable in said housing by a pressurized control fluid to shift said valve member from said neutral to a selected operative position; and means for moving said housing and said control member relative to each other, said follower being in register with each projection which assumes said predetermined position to move said valve member from an operative position selected by said plunger back to said neutral position while said housing and said contral member move relative to each other after said follower engages one of said projections in said predetermined position.

3,893,374
CIRCUIT BREAKER OPERATING DEVICE

Kunio Hirasawa, Ibaraki, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed June 24, 1974, Ser. No. 482,728
Claims priority, application Japan, July 4, 1973, 48-74823
Int. Cl. F15b *11/08*
U.S. Cl. 91—461 **21 Claims**



1. A circuit breaker operating device comprising a storage tank filled with an operating fluid under pressure; circuit breaking mechanism actuating means including a cylinder fixed to said storage tank and having an inlet port disposed within said storage tank, and a first piston disposed slidably within said cylinder and operatively connected to the movable contact in the circuit breaking mechanism; a fluid introducing valve disposed to openably close said inlet port of said cylinder so as to permit flow of the operating fluid under pressure contained in said storage tank into a main introducing space defined between said first piston and said cylinder in the position in which it opens said inlet port and to shut off the flow of the operating fluid into said main introducing space in the position in which it closes hermetically said inlet port; and valve actuating means including a second piston for controlling the movement of said fluid introducing valve in response to the application of a breaking instruction signal.

3,893,375
AXIAL PISTON HYDRAULIC DEVICE WITH FORCED LUBRICATION MEANS

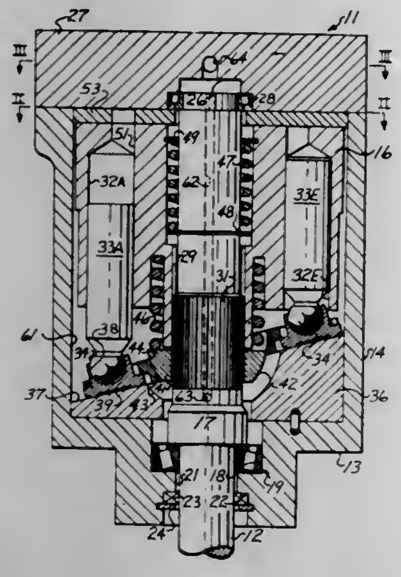
Allyn J. Hein, and Gilbert Tribley, both of Joliet, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 7, 1973, Ser. No. 330,414
Int. Cl. F01b *13/04*
U.S. Cl. 91—486 **1 Claim**

1. A rotary hydraulic device comprising:
a housing having a chamber therein,
a shaft extending into said housing and being journalled thereto for rotation about an axis extending therein,
an annular barrel member disposed in said housing in coaxial relationship to said shaft and being coupled thereto for rotation about said axis with said shaft, said barrel having a plurality of angularly spaced cylinder bores extending parallel to said axis, wherein said barrel member has internal splines engaging external splines on said shaft to couple said barrel member thereto,
a plurality of pistons each being disposed in an individual one of said cylinder bores for reciprocation therein and having an end protruding from said bore,
means disposed within said housing chamber and engaging said protruding ends of said piston for causing each piston to reciprocate in the associated one of said cylinder bores as said barrel rotates,
port means in said housing for admitting fluid to said cylinder bores when said pistons therein are moving away from said port means and for releasing fluid from said bores

when said pistons therein are moving towards said port means, and

means defining a fluid drain passage for said housing chamber, said drain defining means being communicated with said chamber at a point which is radially inward from the circumferential portions thereof and which is at least in proximity to said rotary axis whereby said fluid must move radially inward relative towards said axis in order to escape from said chamber, and wherein at least a portion of said drain passage is defined by at least one omitted one of said splines.



3,893,376

RADIAL PISTON MACHINE

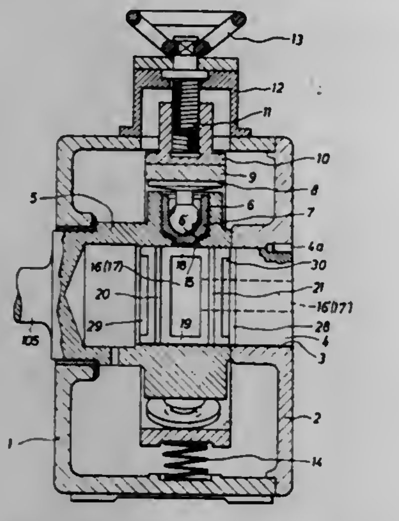
Gerhard Nonnenmacher, Korntal, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Sept. 24, 1973, Ser. No. 399,821

Claims priority, application Germany, Oct. 2, 1972, 2248316

Int. Cl. F01b *13/00*

U.S. Cl. 92—55 **19 Claims**



1. In a radial piston machine, a pintle for a cylinder block wherein pistons move radially under the action of a slide block in response to rotation of the cylinder block around the pintle in the interior of a housing, said pintle having a peripheral surface provided with high-pressure and low-pressure chambers extending in the circumferential direction of said pintle, lands separating said chambers from each other, a pair of sealing elements extending circumferentially of said pintle and being spaced apart from opposite sides of said chambers, recesses extending circumferentially of said pintle and each located between said chambers and one of said sealing elements, a first pair of sealing projections disposed between said recesses and said high-pressure chamber, and a second pair of sealing projections disposed between said recesses and said low-pressure chamber, the area of each of said sealing elements in the region of said high-pressure chamber being less than the area of each of said sealing elements in the region of said low-pressure chamber.

3,893,377

HYDRAULIC SERVOMOTOR

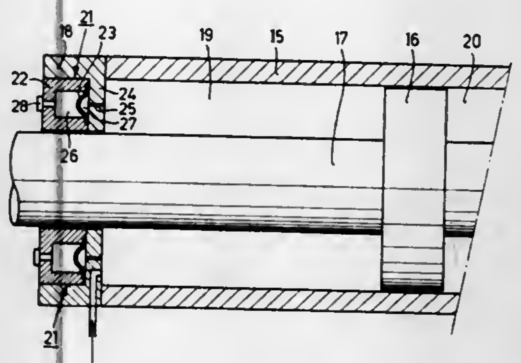
Jacob Johan't Mannetje, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 9, 1973, Ser. No. 404,337

Claims priority, application Netherlands, Oct. 17, 1972, 7214004

Int. Cl. F01b *31/14*

U.S. Cl. 92—60 **3 Claims**



1. A hydraulic servomotor comprising a controlled motor space, means for conducting hydraulic medium to said space, and means for damping oscillations of pressure of the hydraulic medium, said damping means comprising an accumulator having first and second compartments separated by a flexible diaphragm, said accumulator comprising a disk member and a block member, said disk member being a wall of said first compartment, and a viscous flow restriction means for connecting said first compartment directly to said motor spaces, said viscous flow restriction means being at least one restrictive passage through said disk member, said second compartment containing a gas under pressure.

3,893,378

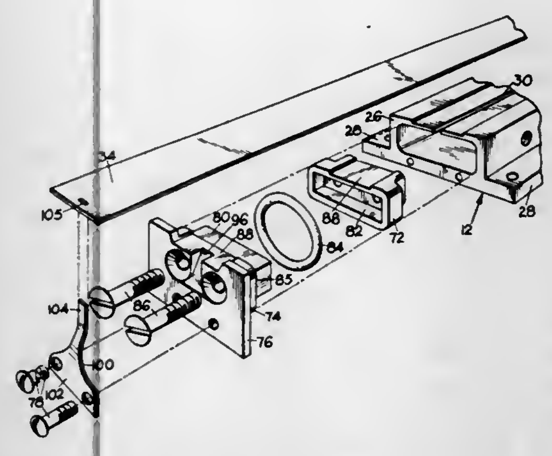
DOUBLE ACTING FLUID CYLINDER

Delbert C. Hewitt, 522 S.E. Alder, Portland, Oreg. 97214

Filed Nov. 23, 1973, Ser. No. 418,564

Int. Cl. F16j *13/02, 15/16, 15/50*

U.S. Cl. 92—88 **4 Claims**



1. A double acting fluid cylinder comprising an elongated cylinder housing having opposite ends, a plug fitted snugly in each end of said housing having an outer end edge and a central recess, a cap disposed at each end of said housing, an end flange on said caps abutted against respective ends of said housing, screw means extending through said flange and engageable with said housing to secure said caps on the housing, a reduced end portion on said caps extending into the recesses of respective plugs, said reduced end portions forming an inwardly directed shoulder on said caps, a resilient sealing ring between the shoulders of said caps and the outer edges of respective plugs, screw means extending through said caps and engageable with respective plugs for securing the caps and plugs together and also to compress said sealing rings for accomplishing a positive seal between said cap and said housing, a pair of ports located at opposite ends of said housing respectively to serve alternately as inlet and outlet ports, a piston assembly slidably mounted in said cylinder housing, means defining a slot extending longitudinally along one side of said housing, an arm on said piston assembly projecting through said slot and arranged to be connected to means to be driven, a flexible strip extending longitudinally of said housing interiorly thereof covering said slot from the inside and sealing the latter on opposite sides of said piston assembly by internal fluid pressure, means defining a groove in said piston assembly slidably engaging said strip, means anchoring one end of said strip to one of said caps, said strip at its end opposite from the anchored end having an aperture therein, and a leaf spring lever secured at one of its ends to the adjacent cap and having its other end engaged in said aperture, said other end extending toward said strip but normally positioned outwardly from said aperture longitudinally of the housing when not engaged in said aperture whereby said spring is flexed when engaged with said aperture and a tensioning force is exerted and maintained on said strip for positive sealing by said strip.

3,893,379

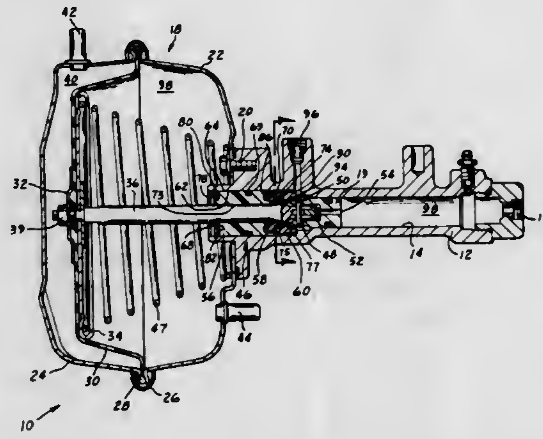
PUSH ROD BEARING AND SEAL MEANS

Maxwell L. Cripe, and Richard H. Rosback, both of South Bend, Ind., assignors to The Bendix Corporation, South Bend, Ind.

Filed Mar. 1, 1974, Ser. No. 447,459

Int. Cl. F16j *15/18;* **F01b** *19/00;* **F16j** *3/00*

U.S. Cl. 92—94 **5 Claims**



1. In a servomotor, a bearing and seal means retained in a first section of a bore in a housing for aligning a push rod attached to a movable wall in a power producing chamber with a piston retained in a second section of said bore to prevent air from being communicated from the power chamber into the first section in a first condition and to prevent fluid under pressure present in the first bore from being communicated into the power producing chamber in a second condition, said bearing and seal means comprising:

a cylindrical member having a first end and a second end with an axial bore concentric to the first section, said cylindrical member having a first annular groove on its peripheral surface, and a second annular groove on its second end, said peripheral surface on the cylindrical member substantially matching that of the first section of the housing, said axial bore being adapted to receive said push rod;

first resilient means located in said first annular groove for preventing the occurrence of said first and second conditions along the periphery of said cylindrical member;

second resilient means having a first projection extending from a first side of a disc section and a second projection having a rib on the end thereof, said rib being adapted to bias the second projection into an interference contact with said push rod, said second resilient means preventing the occurrence of the first and second conditions along the axial bore of the cylindrical member;

spacer means located in the first section between the second end of the cylindrical member and a shoulder adjacent the second section of said bore, said spacer means overlying a portion of said disc to rigidly position said first annular projection in the second annular groove; and

keeper means secured to said housing for maintaining said cylindrical member and said spacer means in a stationary position within said first section of said bore.

3,893,380

MACHINE FOR ERECTING A CARTON BLANK TO A CARTON

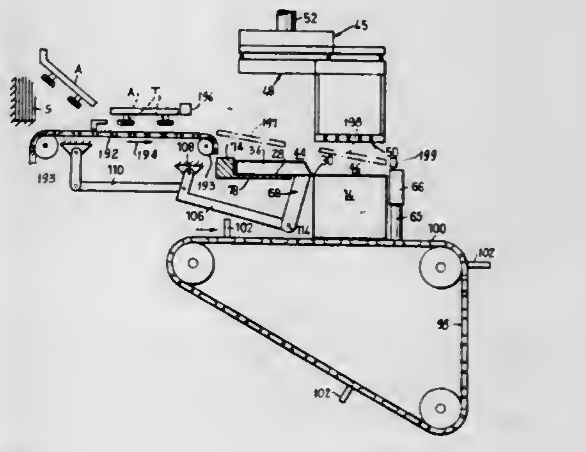
Kay Arne Wallin; Bengt Anders Ewjen, and Jan Ingemar Nilsson, all of Halmstad, Sweden, assignors to Sprinter Pack AB, Halmstad, Sweden

Filed May 11, 1973, Ser. No. 359,449

Claims priority, application Sweden, Dec. 21, 1972, 16812/72

Int. Cl. B31b *1/46*

U.S. Cl. 93—51 HW **14 Claims**



1. Apparatus for erecting cartons from a substantially flat carton blank having tray and lid portions, side panels forming the sides of said tray portion and side panels forming the sides of said lid portion wherein said lid portion is hingedly coupled to one of said tray portion side panels along a fold line, said apparatus comprising:

blank receiving means having first and second cavities positioned adjacent one another and each having a stationary floor and a common pair of sidewalls;

said floors being positioned adjacent one another;

reciprocating plunger means having first and second bottom surfaces respectively cooperating with the floors of said first and second cavities;

said first and second surfaces being adapted to respectively enter said first and second cavities when said plunger is moved in a carton erecting direction to press the lid and tray portions of a carton blank respectively against said first and second floors and cause said lid and tray side panels to be moved to the erected position;

means for moving the erected carton out of said cavities when said plunger moves in a reset direction.

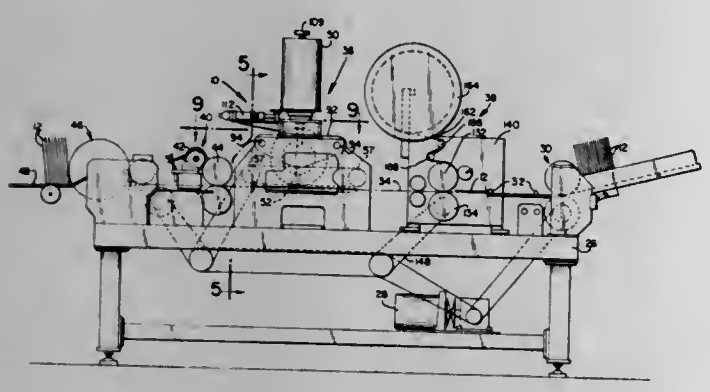
3,893,381
ENVELOPE FASTENER ATTACHING MACHINE

William A. Chapman, Hubbardston, and John J. Crowley, Ware, both of Mass., assignors to United States Envelope Company, Springfield, Mass.

Filed Nov. 7, 1973, Ser. No. 413,699

Int. Cl. B31b *1/90*

U.S. Cl. 93—61 B **34 Claims**



1. A machine for attaching a fastener including a clasp having a base and a plurality of attaching prongs to an envelope, said machine comprising means for continuously advancing an envelope along a generally predetermined path and a clasp attaching unit mounted in said path and including a prong clinching anvil, means for positioning said anvil in engagement with one panel of the continuously advancing envelope and for continuously advancing said anvil along at least a portion of said path in engagement with the one panel, a clasp attaching element supported for movement relative to said anvil, means for releasably retaining a clasp on said attaching element, and means for moving said attaching element relative to said anvil to move said retaining means with the clasp retained thereon toward said anvil and generally along a portion of said path with the continuously advancing envelope and anvil while said anvil is positioned in engagement with the one panel to cause the prongs of the clasp to penetrate the one panel and clinchingly engage the anvil whereby to attach the clasp to the one panel by cooperation of the base and prongs thereof while the envelope is in motion.

3,893,382
PROCESS AND APPARATUS FOR MANUFACTURING PADS OF BAGS MADE OF SYNTHETIC THERMOPLASTICS

Frank Bosse, Ibbenburen-Dorenthe; Konrad Tetenborg, and Friedhelm Mundus, both of Lengerich, all of Germany, assignors to Windmoller & Holscher, Lengerich, Germany

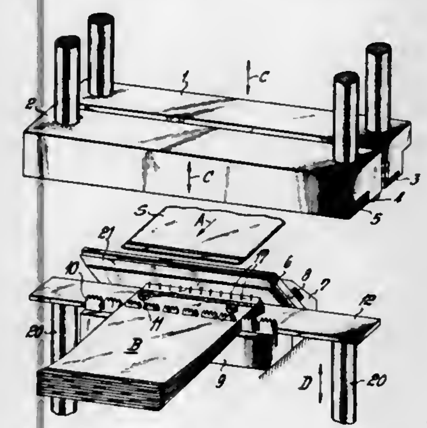
Filed Nov. 7, 1973, Ser. No. 413,457

Claims priority, application Germany, Nov. 7, 1972, 2254448

Int. Cl. B31b *1/64, 1/98*

U.S. Cl. 93—93 HT **8 Claims**

1. Apparatus for manufacturing pads of bags made of synthetic thermoplastics, comprising a welding means and a severing means which extends over the width of the thermoplastic tubing being formed into bags and operate in step with the intermittent advance of the thermoplastic tubing through the apparatus, piercing means positioned downstream of said severing means, perforating means positioned downstream of said piercing means, and tools extending transversely to the tubing over the width thereof, said welding means comprising a welding bar, which bar is transversely disposed with respect to said tubing between said severing means and said perforating means so as to cooperate with said severing and perforating means to join the last formed bag to the preceeding formed bag, and a vertically moveable support, which support is adapted to be raised or lowered in accordance with the increasing height of the pad of bags, said support positioned so as to support bags approximately adjacent said piercing and perforating means, said support being adapted to push the pad of bags from the piercing and the perforating means when said pad has a desired height.



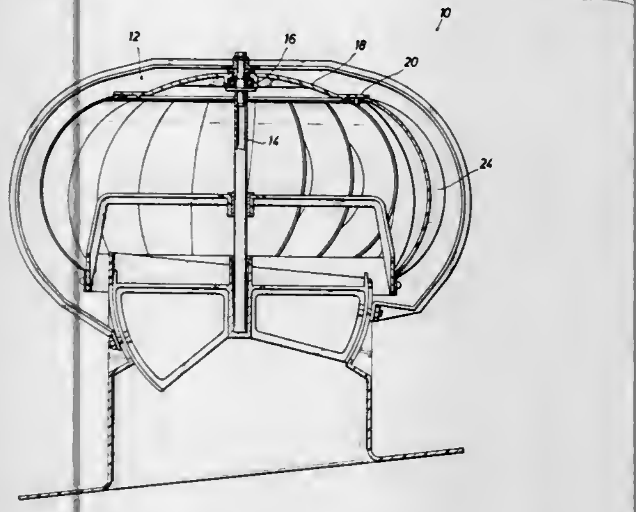
3,893,383
TURBINE VENTILATOR

James D. Jones, 6309 Westline Dr., Houston, Tex. 77036

Filed Mar. 19, 1974, Ser. No. 452,543

Int. Cl. F23l *17/02*

U.S. Cl. 98—72 **7 Claims**



1. In a turbine ventilator which includes a rotatable turbine supported by a generally upright support shaft where the rotatable turbine includes a central top bonnet and a plurality of similar ribs extending therefrom which are spaced about the bonnet, the improvement which comprises means for joining the ribs to the bonnet on sliding insertion of the ribs into a mating slot comprising a portion of said bonnet and aligned relative to said bonnet, and abutting shoulder lock means preventing retrieval of the ribs therefrom.

3,893,384
CURED MEAT PROCESSING MACHINE

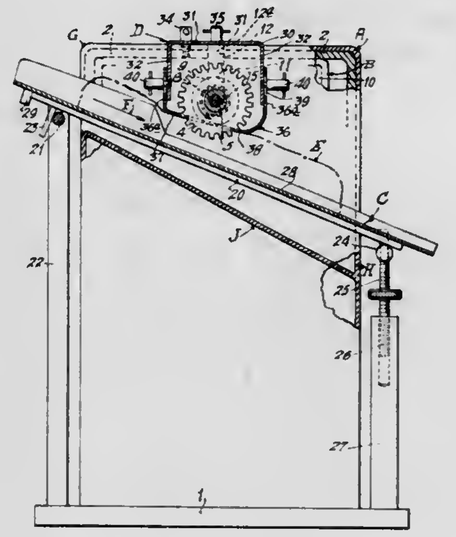
Salvatore J. Lo Biondo, 12 Decamp Ct., West Caldwell, N.J. 07006, and Joseph V. Lo Biondo, 12 Winding Ln., Bloomfield, N.J. 07003

Filed May 17, 1973, Ser. No. 361,231

Int. Cl. A22c *9/00*

U.S. Cl. 99—485 **5 Claims**

1. A meat processing machine comprising a frame having spaced and opposed vertical supports, a horizontal mascerating blade shaft removably rotatably journaled in said supports and having a plurality of circular blades mounted thereon in spaced apart relation longitudinally thereof, a meat-supporting table removably mounted on said frame beneath said blades along which a piece of meat may be slid in contact with said blades for slitting said meat, a pressure device including an inverted channel shaped beam having a main wall separably and rigidly secured at its ends on said supports, respectively, above said shaft and blades and having depending spaced and parallel side walls covering and embracing said blades, and a channel-shaped pressure plate device having a flat bottom wall and parallel side flanges mounted on said beam with said bottom wall beneath said shaft to be engaged by the top surface of said meat, said bottom wall having slots through each of which extends one blade and said flanges extending upwardly in sliding contact with the respective side walls of the beam, and means adjustably securing said flanges to said side walls for up and down movement of said bottom wall.



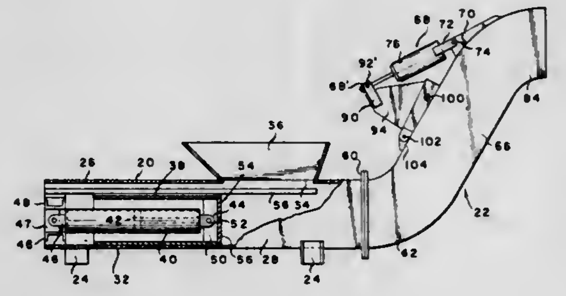
3,893,385
HORIZONTAL TRASH COMPACTOR

Lewis P. White, 3436 Brookwood Rd., Birmingham, Ala. 35223

Continuation-in-part of Ser. No. 55,706, July 17, 1970, Pat. No. 3,657,999. This application Apr. 24, 1972, Ser. No. 246,640

Int. Cl.² B30B *15/28*

U.S. Cl. 100—53 **18 Claims**



1. A trash compactor comprising:

a. an elongated chamber,

b. said chamber including a rectilinear section and a curvilinear section,

c. said curvilinear section being of S-shape conformation and comprising a pair of spaced, reversely curved portions connected by a straight portion,

d. means for admitting trash to the interior of said rectilinear section,

e. a packer assembly movable longitudinally of said rectilinear section for forcing trash in advance thereof into said S-shape curvilinear section, whereby the trash is compressed by frictional engagement with the wall thereof, and

f. power means engageable with said packer assembly for moving the latter longitudinally of said rectilinear section.

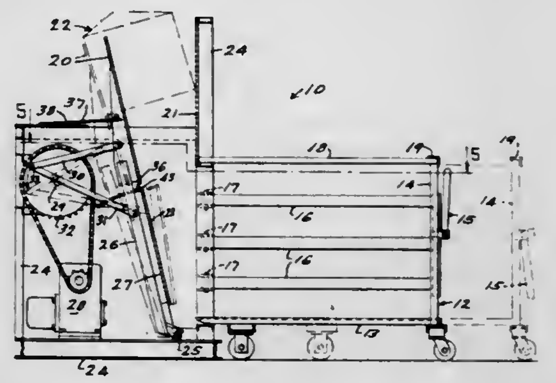
3,893,386
BOX BALING MACHINE AND CART

William P. Wise, Napoleon, Ohio, assignor to Ohio Baler Corporation, Napoleon, Ohio

Filed Oct. 4, 1973, Ser. No. 403,381

Int. Cl. B30b *15/14*

U.S. Cl. 100—50 **14 Claims**



1. An apparatus for crushing, compacting and baling compactible charges, said apparatus comprising a frame having a rigid abutment thereon, a crushing platen adjacent said abutment, a baling container adjacent said frame, a baling and compacting platen adjacent said baling container and said crushing platen, shielding means positioned between said crushing platen and said baling and compacting platen for directing a charge between said compacting platen and said baling container, said shielding means including a generally horizontal shield member positioned below the lower edge of said crushing platen during various positions of said platens and eccentric driving means connected to said crushing platen and said compacting platen for effecting reciprocating communication between said crushing platen and said abutment and for effecting reciprocating communication between said compacting platen and said baling container, whereby a charge loaded between said crushing platen and said abutment is crushed by said crushing platen and forced by said compacting platen into said baling container.

3,893,387
COMPACTOR HAVING IMPROVED CABINET STRUCTURE

William A. Eckerle, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed June 5, 1974, Ser. No. 476,529

Int. Cl. B30b *15/04*

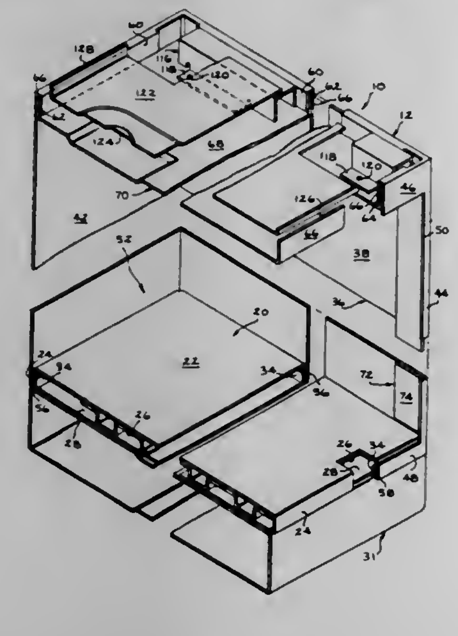
U.S. Cl. 100—229 A **8 Claims**

1. A compactor of the type comprising a cabinet having a top, a bottom, opposed sides, a closed back, an open front and a door closing the open front; means for mounting an open-topped refuse receiving container to said door for movement through the open front between positions in and out of the cabinet; and means for compressing refuse in the container, including a downwardly movable platen adapted to enter the open top of the container when the container is in the cabinet; a floor, inside the cabinet, having a central section for supporting the container during refuse compression and a down-turned edge extending at least along both sides and the back of the cabinet;

a one-piece sheet metal member, generally U-shaped in horizontal cross section, providing opposed side walls each lying substantially in a single plane constituting the cabinet sides and a planar back wall constituting the closed cabinet back, the upper and lower portions of the side and back walls being reverted to provide an upper and lower groove respectively extending at least along both sides and the back of the cabinet and opening respectively downwardly and upwardly, the downturned floor edge cooperating with the lower groove; and

a top wall having a central section for reacting against the compression means during refuse compression and an upturned edge extending at least along both sides and the back of the cabinet and cooperating with the upper groove thereof;

the cabinet being free of convolutions forming stress-bearing columns in the side walls and back.



3,893,388
LABELING DEVICE WITH AN INSTALLATION FOR MARKING LABELS

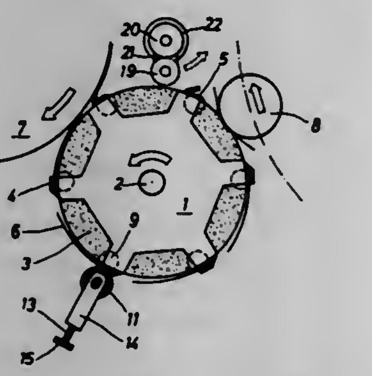
Hermann Kronseder, Neutraubling, and Franz Wetter, Regensburg, both of Germany, assignors to Hermann Kronseder, Neutraubling, Germany

Continuation of Ser. No. 223,204, Feb. 3, 1972, abandoned. This application July 20, 1973, Ser. No. 381,184

Claims priority, application Germany, Feb. 20, 1971, 2108256; Apr. 24, 1971, 2120241; July 17, 1971, 27471

Int. Cl. B41l ***21/06***

U.S. Cl. 101—91 **8 Claims**



1. In a label applying turret for picking labels from an extraction cylinder at one side of the turret and transferring the labels to objects to be labeled at another side of the turret, said turret having a series of outwardly facing label transfer and support pads and grip means at the leading edge of the pads to hold labels on the pads as the turret rotates between the extraction cylinder and the objects to be labeled, the improvement comprising a corresponding series of outwardly facing label markers mounted on the turret adjacent to the leading edge of the pads and substantially flush with said pads, each label marker being associated with a corresponding pad whereby respective labels gripped by the grip means and carried by said pads also lie against associated adjacent markers, and inwardly pressing means for pressing the labels against the markers to cause marked impressions on the labels in the course of transfer of the labels from the extraction cylinder to the objects to be labeled, said grip means respectively comprising for each pad a pair of gripper elements disposed adjacent the opposite sides of the marker at the leading edge of that pad whereby to grip the leading edge of the label in close proximity to and at opposite sides of the marker and hold the leading edge of the label between said gripper elements against movement during the marking thereof between said gripper elements.

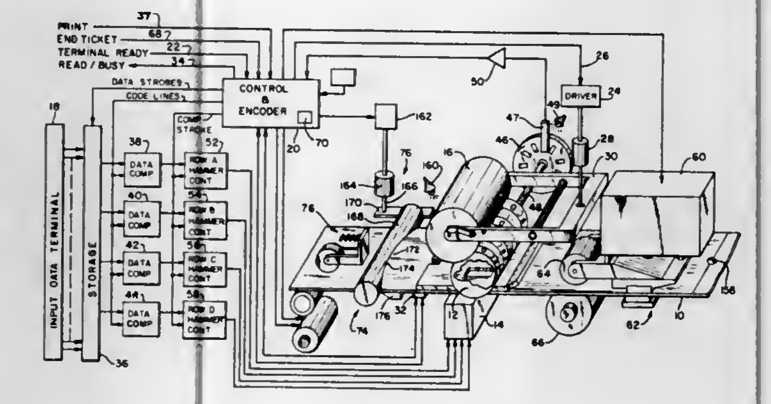
3,893,389
TICKET PRINTER

Robert D. Kodis, Brookline, Mass., assignor to Di/An Controls, Inc., Boston, Mass.

Continuation of Ser. No. 347,349, April 2, 1973, abandoned, which is a continuation of Ser. No. 259,090, June 2, 1972, abandoned. This application Aug. 9, 1974, Ser. No. 496,058

Int. Cl. B41j ***15/00***

U.S. Cl. 101—93.07 **16 Claims**



1. A system for printing selected characters on a web having spaced indicia thereon, said system comprising:

a. web feeding means for selectively advancing the web, said web feeding means including first and second means adapted for mutually exclusive engagement and disengagement with the web, the web being advanced when said first means is engaged and said second means is disengaged, the web being held stationary when said second means is engaged and said first means is disengaged;

b. a print drum having at least two rows of raised characters disposed about its periphery in arcuate columns;

c. ink impregnated means adapted for engagement and disengagement with said print drum for transferring ink thereto;

d. at least two ballistic elements, a first ballistic element mounted in spaced registration with one row of characters and a second ballistic element mounted in spaced registration with the other row of characters, each said ballistic element having energized and deenergized states;

e. third means including optical sensor means communicating with said first and second means;

f. fourth means electrically communicating with said third means and ballistic elements for controlling the state of each said ballistic element, said fourth means including a plurality of data comparators and a plurality of ballistic element controls, one each of said plurality of data comparators and one each of said plurality of ballistic element controls being associated with one each of said rows;

g. encoder means coupled to said print drum for generating selected signals representing the position of each said character, said encoder means electrically connected to said third means;

h. rotary cutter means electrically communicating with said third means, said cutting means responsive to a first signal generated by said third means, said rotary cutter means operating to sever the web;

i. said optical sensor means positioned between said print drum and said rotary cutter means, said optical sensor means detecting a selected one of the indicia disposed between said print drum and said rotary cutter means;

j. said web feeding means advancing the web to a selected position between said print drum and said ballistic elements in response to position signals generated by said optical sensor means, said position signals generated by said optical sensor means when the selected one of the indicia is disposed between said print drum and said rotary cutter means;

k. said fourth means receiving signals from said third means and, in response thereto, generating signals for energizing selected ones of said ballistic elements, said signals received from said third means being responsive to said selected signals generated by said encoder means;

l. portions of the web in registration with an energized ballistic element being pressed against the character in spaced registration with said energized ballistic element, whereby the character is printed on the web;

m. said web feeding means incrementally advancing the web between said print drum and said ballistic elements until all the selected characters are printed on the web;

n. when all of the selected characters are printed on the web, said web feeding means advances the web until another selected one of the indicia is disposed between said print drum and said rotary cutter means and is detected by said optical sensor means;

o. when the other one of the indicia is detected by said sensor means, a portion of the web is severed by said rotary cutter means and the unsevered portion of the web being in position for the printing of selected characters.

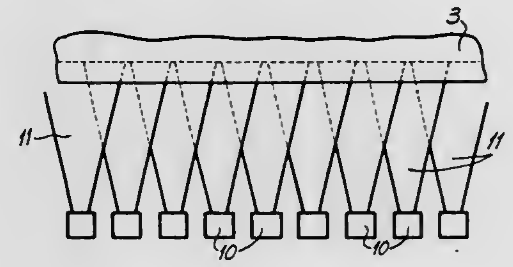
3,893,390
PRINTER WITH RECTILINEAR TYPE-CARRYING BELT

Jacques Roland Deproux, Sevres, France, assignor to Honeywell Information Systems Inc., Waltham, Mass.

Continuation of Ser. No. 249,304, May 1, 1972, abandoned. This application Aug. 15, 1973, Ser. No. 388,506

Int. Cl. B41j ***1/20***

U.S. Cl. 101—111 **9 Claims**



1. A printer comprising:

a plurality of print characters linearly supported on a moveable belt, said belt being moveable in a first direction parallel to a print receiving means;

a plurality of flexibly mounted print hammers for driving said linearly supported print characters in a second direction toward said print receiving means, said second direction being perpendicular to the first direction of motion of the print characters, each of said flexibly mounted print hammers being mounted at one end of a leaf spring, the other end of said leaf spring being fixedly attached to the frame of said printer,

a plurality of print hammer actuating means for moving said print hammers in said second direction; and

a plurality of intermediate members, each of which is disposed between one of said print hammers and said print characters,

means for resiliently mounting said intermediate members to the frame of said printer for movement under the action of said print hammers in said second direction only between said print hammers and said print characters, the arrangement of the intermediate member between one of said print hammers and said print characters being such as to prevent any lateral displacement in said first direction of any print hammer when said means for resiliently mounting said intermediate members to the frame of said printer comprises pairs of elastic leafs wherein each of said intermediate members is held between the free ends of a pair of elastic leafs, the length of said elastic leafs being substantially perpendicular to the direction of motion of said member, and wherein the other ends of said leafs are attached to the frame of said printer; and

wherein each of said pair of leafs associated with a particular member comprise two end portions and an angled middle portion, wherein the angled middle portion of a leaf attaching to one side of an intermediate member extends in an opposite direction relative to the middle portion of the leaf attaching to the opposite side of the intermediate member, and said end portions which fixedly attach to the frame are spaced apart by the amount by which said angled middle portions extend in opposite directions.

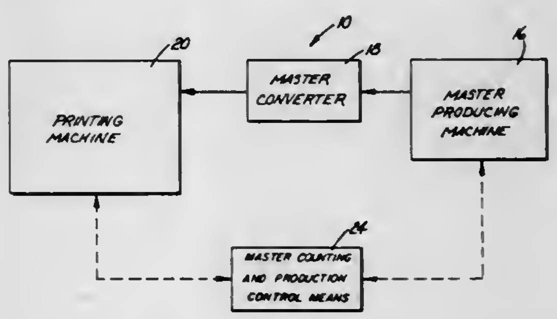
3,893,391
CONTROL CIRCUIT FOR MASTER QUANTITIES IN PRINTING SYSTEMS

Thomas J. Borke, Schaumburg, and Donald W. MacDonald, Barrington, both of Ill., assignors to Addressograph Multigraph Corporation, Cleveland, Ohio

Filed May 21, 1973, Ser. No. 362,370

Int. Cl. B41f ***7/02***

U.S. Cl. 101—141 **5 Claims**



1. In a printing system including a planographic master producing portion, a cyclically operable printing portion and a transport for causing movement of the planographic masters between the producing portion and the printing portion of said printing system, said printing portion and transport having the capability of successfully containing at predetermined detection locations only a predetermined plural number of masters at one time, and said master producing portion having a speed potential for introducing more than said predetermined number of masters before the presence of the excess is detectable at the predetermined locations, an improvement in controlling the number of planographic masters present in the printing system, comprising:

means operable during the initial startup of the system for counting the number of masters initially produced by said producing portion and producing a signal when said predetermined number has been counted; and

control means responsive to the signal provided by said counting means for so controlling operation of said master producing portion that no more than said predetermined number of planographic masters is ever present in said printing system,

said control means having a dual mode of operation allowing, during said initial production of masters and prior to the production of said signal, uninhibited production of masters until said predetermined number has been counted, and thereafter admitting a new master into the system upon the departure of a previous master therefrom.

3,893,392

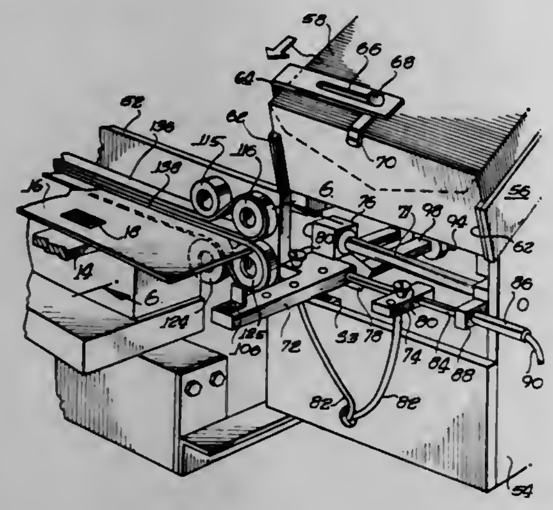
ARTICLE FEEDING APPARATUS FOR ENGRAVING PRESS OR THE LIKE

Relnhart Brenn, Lombard; Thomas F. O'Neill, Posen, and James Shenoha, Lockport, all of Ill., assignors to Bron Electronics, Inc., Bridgeview, Ill.

Filed Jan. 2, 1973, Ser. No. 320,529

Int. Cl. B41f *1/32, 21/06*

U.S. Cl. 101—150 **12 Claims**



1. Apparatus for performing an engraving operation on a substantially flat article, and comprising means for supplying a plurality of such articles in a stack and for feeding such articles substantially perpendicular to their faces, pivotally mounted means for removing an article from a stack of such articles and for tipping a removed article to a different plane of orientation, means for conveying the articles from said removing means to and through a work station, means for shifting said removing means in said plane of orientation and in the direction of movement of said conveying means for transfering the article to said conveying means, working means at said work station for performing an engraving operation on an article while associated with said conveying means, and means for operating said working means in timed relation to said conveying means for performing a working operation on an article by said working means at said work station.

3,893,393

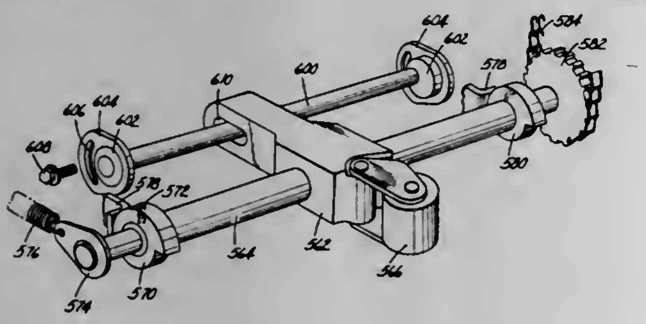
PLATEN ALIGNMENT CONTROL

Gary G. See, Chagrin Falls, Ohio, assignor to Addressograph Multigraph Corporation, Cleveland, Ohio

Filed Mar. 1, 1974, Ser. No. 447,234

Int. Cl. B41f *3/56*

U.S. Cl. 101—269 **6 Claims**



1. In a data recorder in which a bed anvil provides a support plane for a raised character print plate, a rail support system which establishes a guide path over the bed anvil, and a platen is transported on said rail support system in a print cycle from a home position over said bed anvil to a terminous and return for imprinting a form from the print plate, the improvement of said rail support system for establishing the attitude and elevation of said platen with respect to said anvil, comprising:

a carriage transport rail having a first and a second end;

a first end mount for said first end of the transport rail;

a second end mount for said second end of the transport rail;

first and second means for movably supporting said first and second rail ends respectively for coordinated movement towards and away from said bed anvil simultaneously to a selected location;

a platen carriage mounted to run on said transport rail, said platen carriage slidably mounted and pivotal on said rail for establishing the guide path thereof, said platen carried by said carriage for travel in said print cycle, said platen thereby being adjusted in spacing with respect to said bed anvil for establishing proper print pressure of a form to be imprinted by a print plate on said bed anvil;

a guide rod for attitude control located a distance from said carriage transport rail and substantially parallel thereto said guide rod having a first and a second end;

a first end mount for said first end of the guide rod;

a second end mount for said second end of the guide rod; means for adjusting the position of said mounts to shift said rod in a plane generally parallel to said anvil and normal to itself;

said platen carriage having guide surfaces closely fitting said guide rod in said normal direction whereby shifting of said end mounts of the guide rod will cause a rotation of said carriage about said transport rail for platen attitude control.

3,893,394

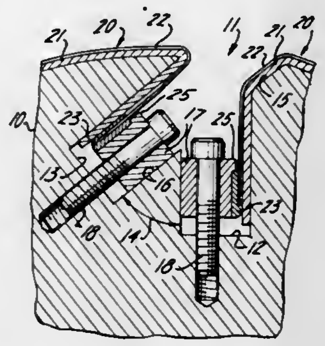
BLANKET CYLINDER SLOT ARRANGEMENT

Ralph L. Fusco, Commack, N.Y., and Burton D. Polglase, Plainfield, N.J., assignors to Wood Industries, Inc., Middlesex, N.J.

Filed Mar. 28, 1973, Ser. No. 345,508

Int. Cl. B41f *27/12*

U.S. Cl. 101—415.1 **5 Claims**



1. In a clamping and tightening arrangement for a flexible packing in a printing machine, said packing comprising a printing blanket having reinforced clamping edges and an underpacking, the improvement of said arrangement comprising in combination a rotatable blanket cylinder having at least two grooves each of said grooves having an opening in the periphery of said cylinder, said grooves axially extending the entire length of said cylinder, said grooves comprising two narrow slots of substantially rectangular section in the bottom thereof, the first one of said slots radially extending in said opening in the periphery of said cylinder, the second one of said slots disposed at an angle to said first slot and extending from said opening of said first slot in said periphery of said cylinder, said cylinder having a slanted edge on one side of said opening of said groove, said slanted edge having first and second rounded edges connected by a straight surface to form a contacting ramp, said slanted edge straight surface being substantially in line with the inside wall of said second slot such that said angle between said first and second slots is substantially equal to the angle formed between said slanted edge straight surface and said first radial slots, and a blanket clamping bar having a substantially rectangular section fitted together with said reinforced clamping edge of said blanket and with said underpacking in each one of said slots and means fastening said bar in said slot, said fastening means for each of said slots being substantially identical and interchangeable.

3,893,395

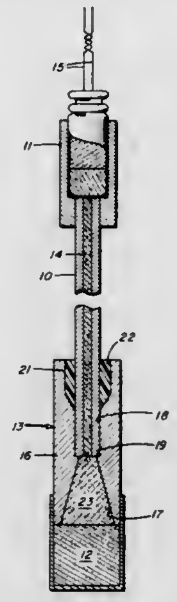
END COUPLER FOR HEAT RESISTANT MILD DETONATING FUSE

Earl E. Kilmer, College Park, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 26, 1965, Ser. No. 475,035

Int. Cl. C06c *5/06*

U.S. Cl. 102—27 R **10 Claims**



1. An end coupler for transmitting a detonation from a heat resistant mild detonating fuse to a base charge having a diameter greater than the diameter of the mild detonating fuse comprising,

an elongated housing,

said housing having a tapered recess formed in one end thereof,

said housing having an axial bore formed in the other end thereof and intersecting said tapered recess,

tapered recess being filled with hexanitrostilbene (Grade 1) explosive,

whereby a heat resistant mild detonating fuse may be inserted into said axial bore and a base charge may be positioned adjacent said one end of said housing so that said end coupler may amplify a shock wave produced by the mild detonating fuse to a magnitude necessary for the detonation of the base charge.

3,893,396

PARACHUTE-BORNE FLARE DEVICE

Björn Herman Olof Simmons, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Continuation-in-part of Ser. No. 93,995, Dec. 1, 1970, abandoned. This application Aug. 27, 1973, Ser. No. 391,760

Claims priority, application Sweden Dec. 3, 1969, 16623/69

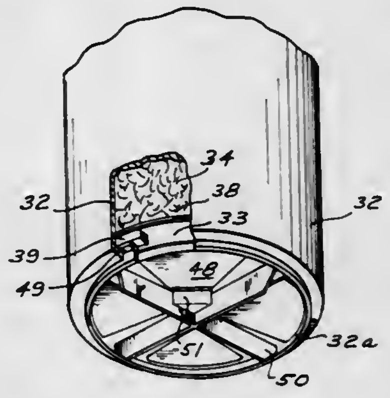
Int. Cl. C06d *1/10*

U.S. Cl. 102—35 **16 Claims**

1. A parachute-borne flare device, said device comprising: an elongate body of a combustile flare composition;

a covering means covering the side wall and one end of said body to limit burning of the body to the area thereof exposed at the other end of the covering means, said one end of the covering being arranged for attachment to a parachute and the exposed area being the bottom area in the operational position of the device;

flare dividing means supported by the covering means at said exposed area of the body of the flare composition for dividing a single flare generated upon ignition of the body at said exposed area into partial flares, said dividing means including guide vanes downwardly extending in relation to said bottom area and circumferentially spaced about the center axis of said body, said vanes being canted radially outwardly



and curved to deflect partial flares radially outwardly to define a first angle β of 5° to 50° to said center axis and also to define a second angle $\gamma 2$ deflecting said partial flares into angular positions relative to each other and defining a gap between each two partial flares to allow passage of air therebetween and further defining an approximately linear pattern approximately normal to said center axis.

3,893,397

CONTINUOUS TRANSPORT SYSTEM FOR TRAINS WITH PROGRAMMED VEHICLES

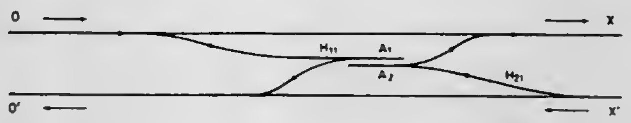
Jean Gayot, Meudon, France, assignor to Engins Matra, Paris, France

Filed Feb. 26, 1974, Ser. No. 445,841

Claims priority, application France Feb. 28, 1973, 73-07199

Int. Cl. B61k *1/00*

U.S. Cl. 104—18 **3 Claims**



1. A track transport system for trains with programmed vehicles comprising a principal outward track and a principal return track, contiguous station platforms located between the tracks respectively for passengers leaving the outward and return trains, and respective connecting tracks of cissoid shape, one connecting track joining the outward track to the return track while servicing one of the passenger platforms and the other connecting track joining the return track to the outward track while servicing the other station platform, characterized in that each connecting track has a section enabling the train to approach its station platform from one direction while leaving the platform in the opposite direction.

3,893,398

LOCK MEANS FOR SLIDE GATE OF HOPPER OUTLET ASSEMBLY

Robert T. Fischer, Homewood, Ill., assignor to Miner Enterprises Inc., Chicago, Ill.

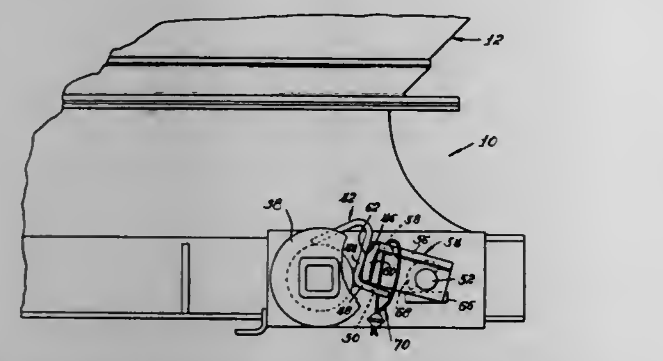
Filed June 14, 1974, Ser. No. 479,217

Int. Cl. B61d *7/20*

U.S. Cl. 105—308 R **3 Claims**

1. For use in a hopper outlet assembly including a generally rectangular main frame having a front frame section and a rear frame section and side frame sections defining a discharge opening through which lading can flow by gravity, a generally rectangular gate slidably supported in the main frame, and a transverse operating shaft rotatably mounted in

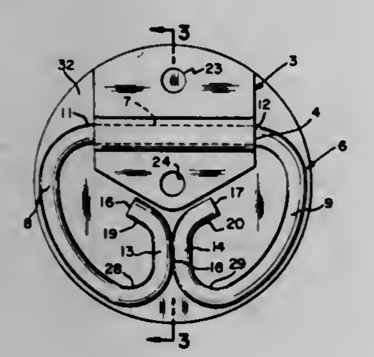
the main frame adjacent the rear portion thereof for selectively moving the gate forwardly and rearwardly between open and closed positions relative to the discharge opening, lock means comprising a stop member secured to the operating shaft and presenting a bearing surface which faces rearwardly when the gate is in closed position, a transverse lock shaft rotatably mounted in the main frame parallel to the operating shaft rearwardly thereof, a radially extending lock hub unit secured to said lock shaft adjacent said stop member and presenting an arcuate cam surface, said lock hub unit normally being rotatable in one direction to pivot said cam surface into engagement with said bearing surface when the gate is in its fully closed position to block rotation of the operating shaft and movement of the gate away from its fully closed position, said lock hub unit being inactivated by rotation in the other direction to pivot said cam surface out of engagement with said bearing surface to permit rotation of the operating shaft and movement of the gate away from its closed position, and a radially extending follower arm secured to said lock shaft and being engageable with the underside of the gate when the latter is open whereby said lock hub unit is maintained inactivated until the gate is substantially closed.



3,893,399
DUAL CARGO ANCHORING DEVICE

Dean F. Lewis, Lafayette, and Vearne D. Pinney, Hayward, both of Calif., assignors to Cargotrol Corporation, Hayward, Calif.

Filed Sept. 5, 1974, Ser. No. 503,377
Int. Cl.² B61D *45/00*; F16G *15/00*
U.S. Cl. 105—484 **5 Claims**

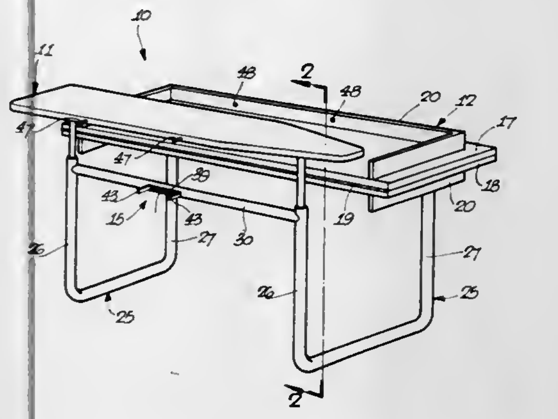


1. A dual cargo anchoring device for a cargo vehicle having sidewalls and frame members comprising:
   a. a hold-down clip having an elongated U-shaped portion and adapted for connection to said frame members of said vehicle;
   b. a B-shaped tie down member having:
      1. a straight portion for pivotal support between said U-shaped portion of said clip and said frame member,
      2. first and second curved portions integrally connected to opposite ends of said straight portions and curving inwardly with the portions adjacent the ends being connected as by welding,
      3. first and second end portions integrally connected to said first and second curved portions splaying away from each other and;
   c. means for attaching said clip to said frame members.

3,893,400
COMBINATION KITCHEN TABLE-IRONING BOARD

Philippe G. Grant, 1200 Alta Vista Dr., Ottawa, Ontario, Canada

Filed Mar. 25, 1974, Ser. No. 454,529
Claims priority, application Canada, Aug. 7, 1973, 178159
Int. Cl.² A47B *57/20*
U.S. Cl. 108—63 **2 Claims**



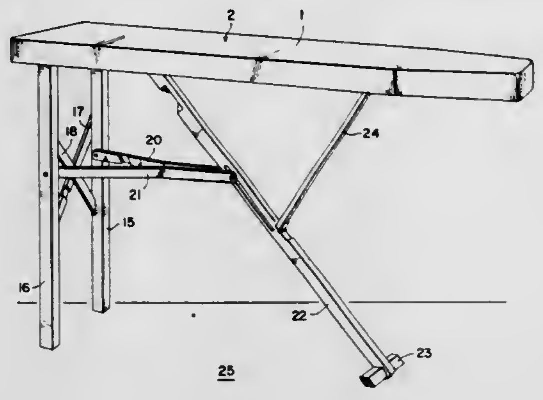
1. A combination kitchen table-ironing board comprising,
a pair of table top leaves,
two U-shaped tubular supporting members each having a ground-contacting cross bar with a pair of upwardly extending legs,
one of said leaves being fixedly supported between a corresponding leg of each supporting member,
an ironing board connected to a pair of tubular extensions, each extension being telescopically received in a corresponding one of the remaining legs of the supporting members whereby the ironing board is vertically movable between a first position below the level of said one of said leaves and a second, elevated position,
a pair of movable abutments positioned to extend through holes formed in the extension receiving legs,
the extensions being formed with a plurality of apertures therein whereby an abutment extends through a hole into an aperture thereby securing the extensions relative to the legs,
the other of said leaves being hingedly connected to said fixedly supported leaf to cover and be supported by the ironing board in its first position.

3,893,401
IRONING BOARD

James F. Casey, Woodside, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Aug. 12, 1974, Ser. No. 496,443
Int. Cl.² C09D *3/04, 3/10*
U.S. Cl. 108—129 **1 Claim**

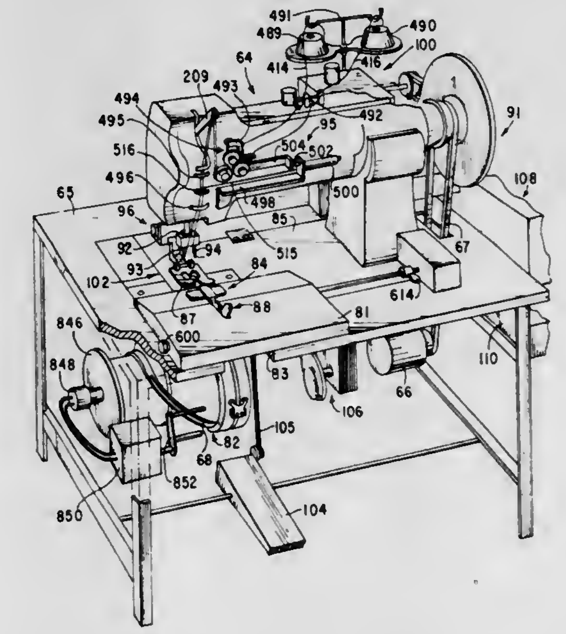
1. An ironing board, comprising
a substantially elongated board-like member having a substantially planar upper surface for supporting articles to be ironed and a substantially planar under surface having a plurality of recesses formed therein; and
a plurality of interconnected supporting strut-like members retractably accommodated in the recesses of the under surface of the board-like member in a manner whereby in one position of the strut-like members they extend away from the board-like member and cooperate with each other to support the board-like member in a substantially horizontal plane spaced above a supporting surface and in another position of the strut-like members they are retracted into the recesses and present a substantially uniplanar under surface of the board-like member.



3,893,402
SEWING APPARATUS

Ronald J. Boser, Huntington Station, N.Y., assignor to B & W Manufacturing Co., Inc., New York, N.Y.

Filed Oct. 2, 1973, Ser. No. 402,876
Int. Cl. D05f *3/18*
U.S. Cl. 112—105 **24 Claims**

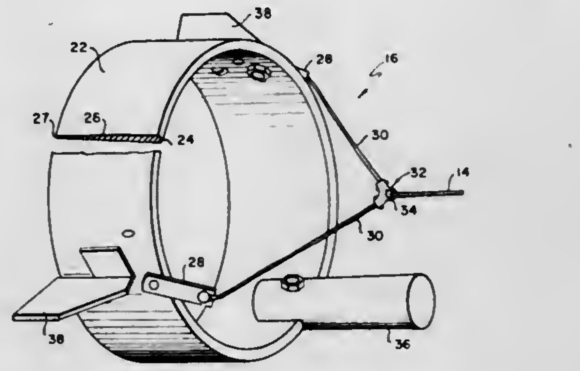


1. An apparatus for sewing a pair of tapes of a fastener chain to respective portions of an article having an opening between the portions which are joined at a terminal point at one end of the opening, the apparatus comprising
a pair of means each including a needle for forming stitches from a respective thread,
means for feeding the pair of tapes and the portions of the article through the pair of stitch forming means to form a pair of parallel spaced lines of stitches each fastening a tape to a respective portion,
manual control means for initiating operation of the pair of stitch forming means and the feeding means,
means for sensing the terminal point of the opening; and
automatic control means responsive to the sensing means for terminating the operation of the pair of stitch forming means and the feeding means.

3,893,403
RING-SHAPED HYDROFOIL

Shelton M. Gay, Jr., Vienna, and Frederick C. Belen, Jr., Arlington, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 11, 1973, Ser. No. 405,358
Int. Cl.² B63B *21/56*
U.S. Cl. 114—235 B **2 Claims**

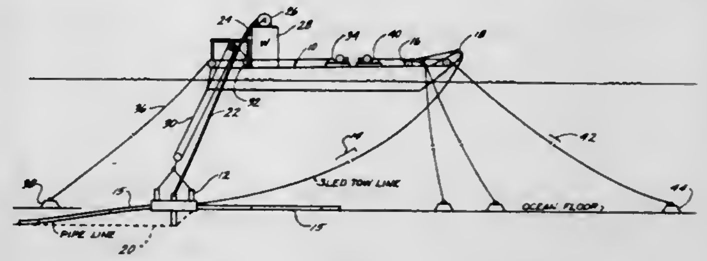


1. A hydrofoil for controlling the depth and lateral displacement of a cable being towed by a craft, comprising:
an annular ring having a thin radial cross section conducive to smooth flow and hydrodynamic lift presented edgewise to the slip stream having a blunt rounded leading edge, a tapered afterbody, and a sharp trailing edge;
a bridle attached adjacent to the leading edge of said annular ring at substantially diametrically opposed positions;
a tow cable attached to said bridle intermediate the ends thereof; and
a ballast weight affixed to said annular ring.

3,893,404
PULL-AHEAD WINCH CONTROL SYSTEM

William R. Chandler, Sedro-Woolley, Wash.; Donald R. Cooper, North Hollywood, Calif., and Edward J. Mangold, Burlington, Wash., assignors to Skagit Corporation, Sedro-Woolley, Wash.

Filed Mar. 25, 1974, Ser. No. 454,506
Int. Cl. B63h *15/00*
U.S. Cl. 115—7 **9 Claims**



5. For use with a barge in which a trenching jet sled is suspended from the barge and is pulled by means of a sled cable, and the barge is moved by means of an anchored forwardly directed cable and a pull-ahead winch which winds in on said forwardly directed cable to impart forward movement to said barge, said pull-ahead winch being driven by means of a suitable prime mover and an electrically controlled clutch connected between said prime mover and said pull-ahead winch, a method of controlling tension in said sled cable comprising the steps of
1. sensing the tension in said cable sled and producing a first electrical signal responsive to said tension,
2. producing a second electrical signal representative of a desired tension,
3. modifying said first electrical signal by means of a second order lead-lag filter,
4. comparing said modified first electrical signal with said second electrical signal to produce an error signal,

5. producing a third electrical signal representative of velocity and direction of movement of said forwardly directed cable,
6. further modifying said error signal by comparing said error signal with said third electrical signal, and
7. amplifying said modified error signal and connecting said amplified, modified error signal to said electrically controlled clutch.

3,893,405
HYDRO-JET PROPULSION DEVICE FOR DRIVING AND CONTROLLING OF WATERCRAFT

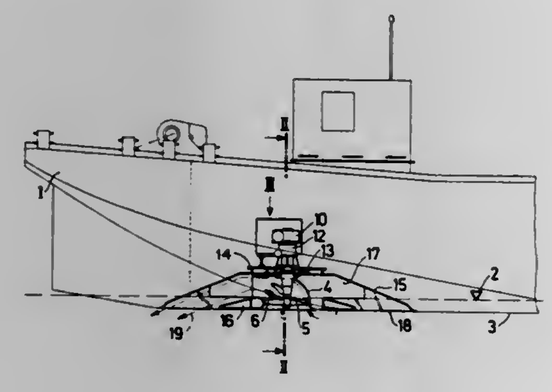
Siegfried Lais, Spay, Rhein, and Reinhold Reuter, Schwall, both of Germany, assignors to Schottel-Werft Josef Becker KG, Spay, Rhein, Germany

Filed Feb. 22, 1974, Ser. No. 444,912

Claims priority, application Germany, Mar. 28, 1973, 2315447

Int. Cl. B63h *11/04*

U.S. Cl. 115—12 R **5 Claims**



1. A hydro-jet propulsion device for driving and controlling shallow draught watercraft, comprising:
- hull means;
- means defining a conically shaped downwardly opening recess in a bottom surface of said hull means, the apex of said conically shaped recess being located above said bottom surface of said watercraft;
- stationary annular ring means having means defining an opening therethrough mounted in said conically shaped recess, the axis of said annular ring means and said opening being coaxial with the axis of said conically shaped recess;
- surface means facing inwardly of said conically shaped recess on said annular ring means being spaced from and extending generally parallel to the outwardly facing conical surface of said conically shaped recess whereby said spaced and parallel outwardly facing conical surface and said inwardly facing conical surface define a downwardly extending annular conically shaped passageway therebetween;
- elbow means consisting of first and second hollow sections generally perpendicular to each other rotatably mounted in said conically shaped recess, said first hollow section being mounted coaxially with said conically shaped recess, said annular ring means and said opening through said annular ring means, said hollow second section communicating with the upper end of said annular conically shaped passageway; and
- propeller pump means and drive means therefor, said propeller pump means being mounted in said elbow means for drawing in water through said opening in said annular ring means and into said first hollow section and ejecting water from said second section into said downwardly extending annular conically shaped passageway.

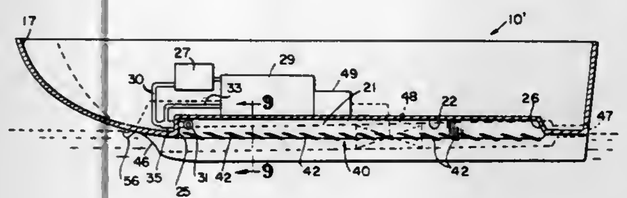
3,893,406
TWIN KEEL JET BOAT

Kermit H. Burgin, R.R. No. 1, Whitestown, Ind. 46075

Division of Ser. No. 329,061, Feb. 2, 1973, Pat. No. 3,811,398. This application Apr. 15, 1974, Ser. No. 460,714

Int. Cl. B63h *11/02*

U.S. Cl. 115—16 **7 Claims**



1. A boat having a bottom, twin longitudinal depending, laterally relatively narrow keels adjacent the lateral edges of said bottom and extending substantially throughout the length of said bottom, each said keel being formed to provide a passageway extending longitudinally therethrough and having at least one intake port adjacent its bow end and an exhaust port adjacent its stern end, a pump disposed in each said passageway intermediate its ends to draw water into said intake port and force it out through said exhaust port to propel said boat, an engine disposed in said boat, and means for drivingly connecting each said pump to said engine, each said keel being provided with a plurality of said intake ports in each of its depending side walls, each port being a longitudinally elongated, vertically narrow slot, said passageway being closed except for its intake ports and exhaust port.

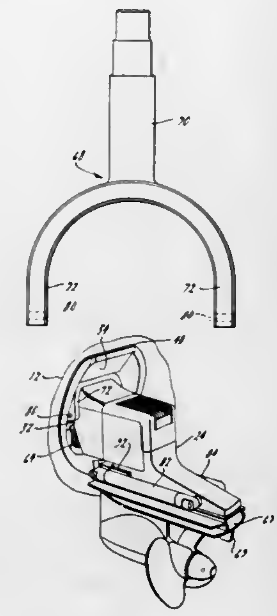
3,893,407
INBOARD-OUTBOARD MARINE DRIVE

John W. Hurst, Port Huron, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Sept. 23, 1974, Ser. No. 508,310

Int. Cl. B63h *5/12*

U.S. Cl. 115—41 R **11 Claims**



1. In an inboard-outboard marine drive unit for boats having an inboard engine connected to an outboard power leg through drive shaft means and universal joint means, the improvement comprising a yoke member having a generally upwardly extending center post directed oppositely from generally downwardly extending laterally spaced yoke arms, means pivotally mounting the power leg to the yoke arms about an axis to allow the power leg to be rotated upwardly and rearwardly for trimming, tilting and kick-up, and means pivotally connecting the upwardly extending center post of the yoke to the boat about an axis to allow the yoke and power leg to rotate laterally for steering the boat.

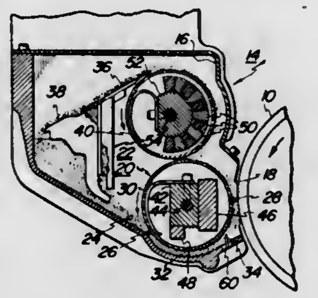
3,893,408
TONER DISPENSING SYSTEM

Jerome E. Lamel, Plano, Tex., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 26, 1973, Ser. No. 428,592

Int. Cl. G03g *15/00;* **B05c** *11/00*

U.S. Cl. 118—7 **2 Claims**



1. In a magnetic brush development system wherein a two-component developer, including conductive carrier particles and thermoplastic resinous toner particles adhering thereto tribo-electrically, is brought into contact with a photoreceptive surface to be developed under the effect of a magnetic field generated by a magnetic brush roller, the improvement comprising,
- conducting means spaced from said magnetic brush roller by a predetermined gap through which the magnetically conveyed developer is passed,
- means to bias the magnetic brush roller,
- circuit means coupling said biased magnetic brush roller with said conducting means,
- means responsive to shorts caused by undertoned carrier passing through said gap to determine the level of toner in the developer mixture, and
- means to dispense additional toner into the developer mixture in response to a predetermined number of shorts per unit time.

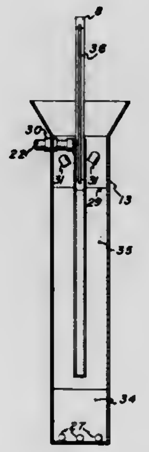
3,893,409
APPARATUS FOR SOLDER COATING PRINTED CIRCUIT BOARDS

Everett Arthur Rote, Corona, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 1, 1972, Ser. No. 311,206

Int. Cl. B05c *11/12*

U.S. Cl. 118—56 **19 Claims**



1. Apparatus for obtaining a uniform coating of solder on the conductive areas of a printed circuit board comprising:
- a tank having a first pool of molten solder and a second pool of a substance that is less dense than said solder and immiscible therewith floated on top of said pool of molten solder and in contact therewith,
- first means associated with said tank for contacting the conductive areas of said printed circuit board with molten solder from said first pool,
- second means for moving said board downwardly past said first means to immerse said board in said second pool, and upwardly to remove board from said second pool, and
- third means for vibrating said circuit board within said second pool in an orbital motion.

3,893,410
CASCADE COATER

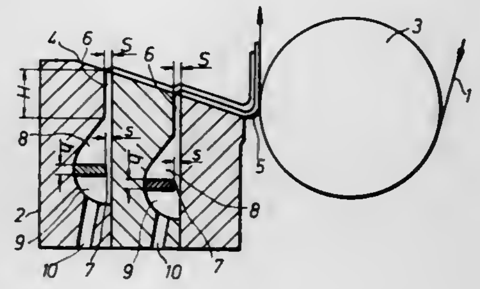
Peter Herzhoff, Leverkusen; Hans Gref, Cologne; Fritz Maus, Odenthal-Hahnenberg; Wolfgang Schweicher; Hans Frenken, both of Leverkusen; Kurt Browatzki, Opladen; Karl Voss; Willi Wasser, both of Leverkusen, and Heinrich Bubmann, Opladen, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed July 30, 1973, Ser. No. 384,080

Claims priority, application Germany, Aug. 3, 1972, 2238133

Int. Cl.^{2} B05C *3/02*

U.S. Cl. 118—412 **10 Claims**



1. A cascade coater for coating sheet material, comprising a coating block extending over the entire sheet width with an inclined flow plane interrupted by a delivery gap for the delivery or each coating liquid, and a coating roller arranged at a short distance from the coating block over which the sheet to be coated is guided, wherein the delivery gaps open into a second pressure-distributing chamber which is connected to a first pressure-distributing chamber through a narrow connecting gap means, the cross section of the connecting gap means being small in relation to the cross section of the delivery gap.

3,893,411
YARN LUBRICATOR

Josef Krausz, 43-44 Kissena Blvd., Flushing, N.Y. 11355

Continuation-in-part of Ser. No. 346,076, March 29, 1973, abandoned. This application Aug. 2, 1974, Ser. No. 494,128

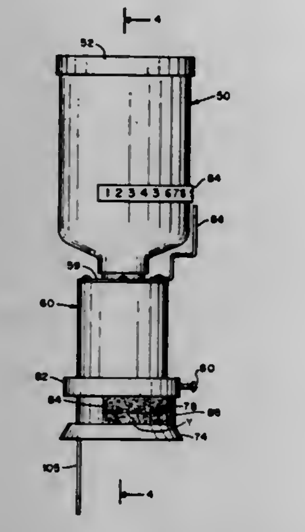
Int. Cl.^{2} B05C *3/12*

U.S. Cl. 118—420 **4 Claims**

1. A device adapted to function as an attachment for and to be mounted on yarn winding apparatus for lubricating a length of any one of a plurality of different traveling yarns having a non-continuous surface with a slow flowing viscous fluid having a fluidity of between 0.4 gr/min. to 10 gr/min., said device comprising:
- a. an elongated housing having a passageway therethrough and a notch portion;
- b. a container mounted on said housing, said container being adapted to hold a supply of the slow flowing fluid yarn lubricant;
- c. orifice means for providing fluid flow communication between the interior of said container and said passageway means through housing;
- d. a flange having a rigid surface extending radially from said housing with respect to the longitudinal axis thereof;
- e. a non-absorbent, resilient partial wall fitting into the

notch in the housing, which partial wall serves as a continuation and completion of the housing to define in combination therewith an internal lubricating chamber, for receiving the lubricant from the passageway and for receiving the yarn said partial wall including a transverse surface that is parallel and in opposition to said rigid flange surface for defining a radial yarn path between it and said radially extending rigid flange surface for the yarn to enter and exit said chamber in a substantially tensionless manner and without passing through said container and in any direction with respect to a vertical axis, said resilient wall acting to prevent leakage of the lubricant, to remove surplus lubricant from the yarn and to provide uniform distribution of the lubricant within the yarn which is positioned below the resilient wall and which passes between said resilient wall and said rigid flange surface with minimal functional contact; and

f. means for mounting said device on the yarn winding apparatus in a position such that the yarn lubricant flows from said container through said passageway means in said housing by gravity.



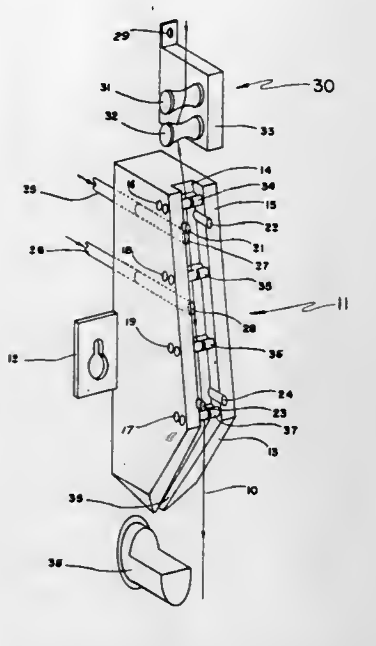
3,893,412
LIQUID APPLICATOR FOR A TRAVELING TEXTILE STRAND

James B. Louch; Hermann Buchert, and William Postman, all of Anderson, S.C., assignors to Dow Badische Company, Williamsburg, Va.

Filed July 19, 1974, Ser. No. 489,866
Int. Cl.^{2} B05C *3/12*
U.S. Cl. 118—420 **5 Claims**

1. In a device for the application of a liquid treating composition to a traveling textile strand, the improvement therein for effecting the separate, simultaneous, precise, and uniform application of individual liquid components of the treating composition to the traveling textile strand, which improvement comprises the combination of:

A. An elongated polyhedron having
  1. An open applicator channel extending along the length of an elongated face of the polyhedron, the applicator channel having
    a. Two end pins, each end pin being partially embedded in the body of the polyhedron at the bottom of the applicator channel and located in a transverse position therein in proximity to an end thereof;
    b. One or more middle pins, partially embedded in the body of the polyhedron at the bottom of the applicator channel and positioned transversely therein, the middle pins being spaced from each other and the end pins, the exposed surfaces of the end pins and the middle pins being positioned so that a textile strand traveling through the applicator channel will make contact with each exposed surface; and
    c. At least four guide pins, partially embedded in the body of the polyhedron and positioned normal to the longitudinal axis of the applicator channel, a guide pin being located on each side of the applicator channel in proximity to each end thereof, the exposed surfaces of the guide pins being positioned so that a textile strand passing through the applicator channel will contact the surfaces of the guide pins instead of the body of the polyhedron at the sides of the applicator channel; and



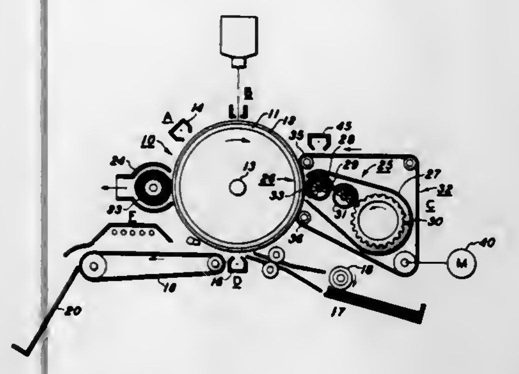
  2. At least one means for the supply of a liquid component of the treating composition to the applicator channel at a controlled rate, each such means communicating with the applicator channel by means of a separate inlet orifice located at the bottom of the applicator channel a small distance above a middle pin; and

B. Guide means for aligning and directing the textile strand into the applicator channel and causing the textile strand to pass through the applicator channel in contact with the exposed surfaces of the end and middle pins.

3,893,413
XEROGRAPHIC DEVELOPING APPARATUS

Ernest A. H. Weiler, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sept. 21, 1972, Ser. No. 291,111
Int. Cl. B05b *5/02;* G03g *13/06*
U.S. Cl. 118—637 **6 Claims**



1. Apparatus for developing a latent electrostatic image recorded upon the charged surface of a photosensitive plate including

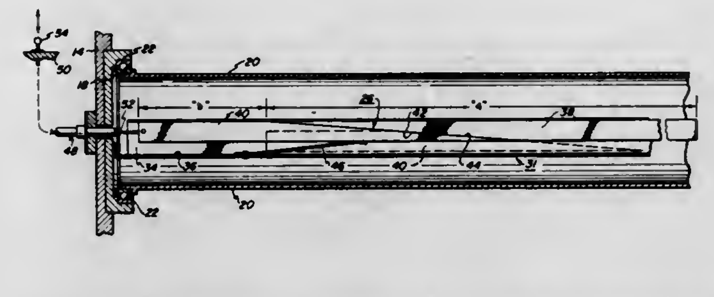
means to apply charged particulate developer material to the image bearing plate surface whereby the latent electrostatic image recorded thereon is rendered visible, and

a foraminous shield interposed between the developing means and the plate, the shield being in contact with the imaged plate surface and being formed of a dielectric material having a triboelectric characteristic such that the shield is charged to a polarity similar to the polarity of the charged plate surface and a potential about the same as that of the background potential recorded on the plate surface.

3,893,414
METHOD AND APPARATUS FOR VARYING DEVELOPER BANDWIDTH

Frederick W. Hudson, West Henrietta, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 29, 1974, Ser. No. 464,864
Int. Cl. G03g *13/08*
U.S. Cl. 118—637 **6 Claims**

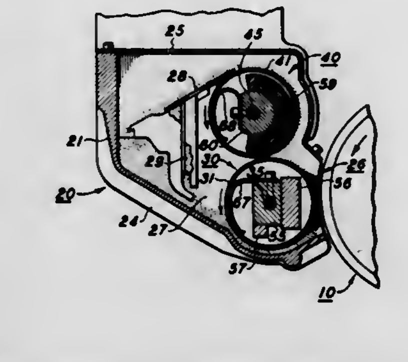


2. A copying machine comprising: a member having a developable image thereon, a developer sump containing developer therein having magnetic properties, means for transporting a bandwidth of the developer from said sump to the image for developing the same, said means comprising a rotatable non-magnetic member surrounding at least one magnetic member, said magnetic member being so constructed to vary in length, and means to selectively increase or decrease the length of said magnetic member to effect a corresponding change in the magnetic field emanating therefrom thereby effecting a corresponding change in the bandwidth of the developer transported to the image.

3,893,415
DEVELOPING APPARATUS

Raymond J. Ashton, Webster; Louis W. Reichart, and George J. Oriel, both of Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 199,481, Nov. 17, 1971, abandoned.
This application July 26, 1973, Ser. No. 382,996
Int. Cl. G03g *13/06*
U.S. Cl. 118—637 **17 Claims**



1. Apparatus for developing a latent electrostatic image that is recorded upon an image retaining plate including

a magnetic brush forming unit for establishing a brush like structure of developer material which is placed in operative communication with the image retaining plate within a developing zone,

means to move a flow of developer material into the developing zone,

a development electrode positioned within the development zone and being arranged to extend into the region wherein the developer material moves into said developing zone,

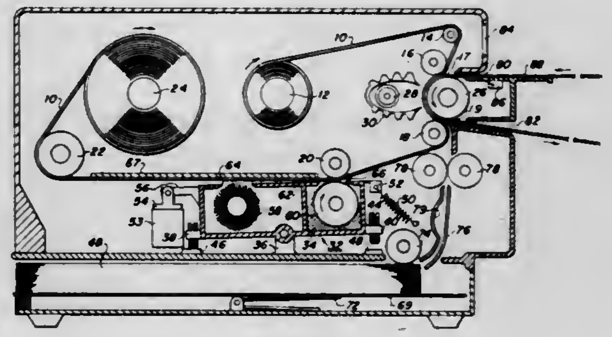
a conductive member complementary with the extended portion of the developing electrode and positioned adjacent thereto within the entrance region to the developing zone and being arranged to cooperate with the development electrode to provide a substantially enclosed flow path through which developer material passes as it enters said developing zone, and

means to electrically bias the electrode and the conductive member to substantially the same potential to provide an electrically neutral flow path through which the developer material enters the developing zone.

3,893,416
DEVELOPMENT AND CLEANING APPARATUS FOR REVERSE PATH MACHINE

Roger H. Eichorn, deceased, late of Rochester, N.Y. (by Lincoln First Bank of Rochester, executor), assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 27, 1973, Ser. No. 429,005
Int. Cl. G03g *15/08*
U.S. Cl. 118—637 **11 Claims**



1. A copying apparatus comprising: a development station, a member having a developable image thereon, means for moving said image containing member in opposite directions through said development station, said development station comprising a developer housing having toner particles therein, development means located to present toner particles from said housing to the image in a developing operating position, and cleaning means for cleaning toner particles from said image member in a cleaning operating position, means for moving said development means into developing operation position to be in such position when said image member is moved in one direction therepast, and means for moving said cleaning member into cleaning operating position to be in such position when said image member is moved in the opposite direction therepast.

3,893,417
APPARATUS FOR LIQUID DEVELOPMENT OF ELECTROSTATIC IMAGES

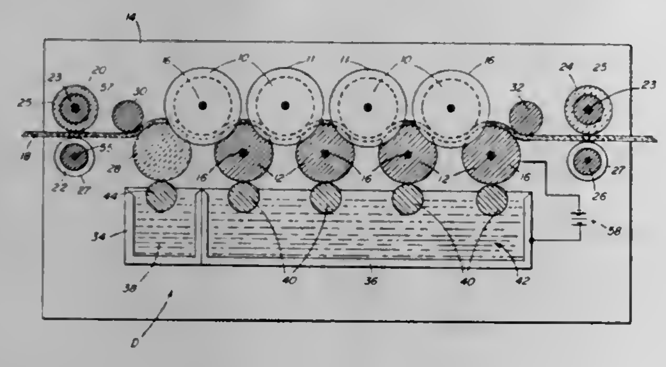
William C. York, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 17, 1974, Ser. No. 434,163
Int. Cl.^{2} G03G *15/10*
U.S. Cl. 118—637 **2 Claims**

1. A development apparatus for developing latent electrostatic images borne on an image-bearing surface of a flexible medium during movement along a development path, said apparatus comprising:

a. a plurality of rotatable development rollers, located in horizontally spaced relation generally below the development path and having a diameter such that upper peripheral portions thereof define a generally horizontal lower side of the development path, each of said development rollers having a length which extends across the image bearing area but is shorter than the width of the flexible medium;

b. a plurality of guide rollers located in horizontally spaced relation generally above the development path and having a diameter such that lower peripheral portions thereof define a generally horizontal upper side of the development path, the axis of rotation of said quide rollers and said development rollers being offset along the direction of feed and spaced vertically so as define a horizontally, undulating development path which causes a flexible medium fed along said path to partially wrap around each development roller;



c. means for applying to the outer periphery of each development roller a thin layer of liquid developer of the type comprising toner particles dispersed in an insulating liquid carrier; and

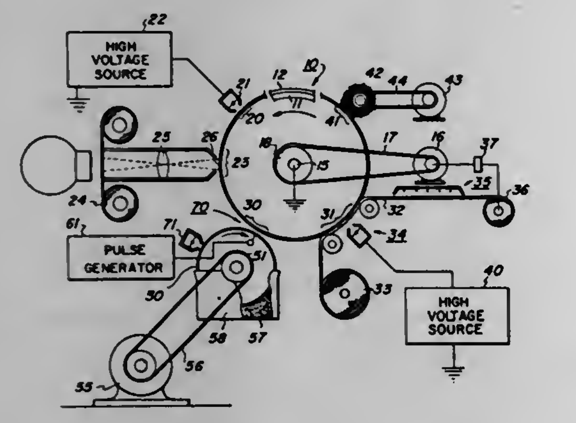
d. drive means for transporting the flexible medium along said development path at a predetermined rate with the image-bearing surface facing said development rollers and for rotating said development rollers at a peripheral speed substantially equal to said predetermined rate;

whereby said development rollers can apply a plurality of layers of liquid developer to the image-bearing surface without wetting the opposite side of the flexible medium with the liquid developer.

3,893,418
XEROGRAPHIC DEVELOPING APPARATUS

Alan J. Liebman, and Henry T. Chiavaroli, II, both of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 30, 1974, Ser. No. 474,743
Int. Cl. G03g ***13/06***
U.S. Cl. 118—637 **9 Claims**



1. An apparatus for developing a latent electrostatic image recorded on an image retaining member comprising:

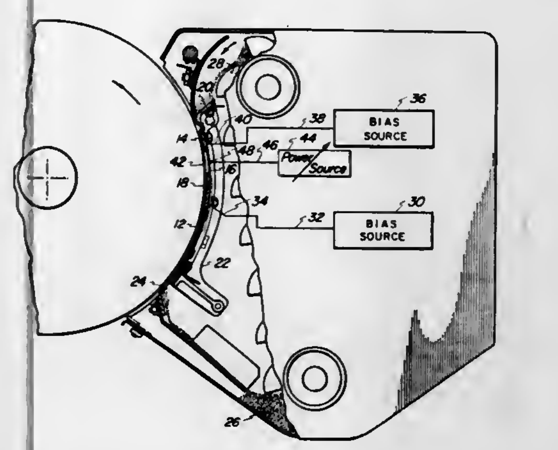
a. a donor member for supporting a uniform layer of electroscopic developing material adjacent to the image retaining member, said donor member and image retaining member being spatially disposed as to create a space gap between both members;

b. means to selectively introduce high and low frequency pulse biases across said gap, said pulses being comprised of an activation potential segment in which electroscopic particles are released from the donor member and a development potential segment of different polarity in which the electroscopic particles in non-image areas are attracted towards the donor thereby preventing particle deposition in the non-image areas.

3,893,419
BACKGROUND REDUCTION TECHNIQUE

Herbert L. Bresnick, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 26, 1973, Ser. No. 428,539
Int. Cl. G03g ***15/08***
U.S. Cl. 118—637 **6 Claims**



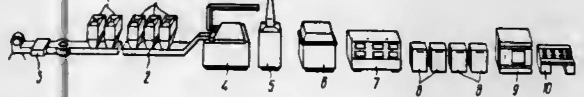
4. In a xerographic development system wherein two component developer including, carrier granules and triboelectrically adhering toner particles, is cascaded down a photoconductive surface support latent electrostatic images to be developed, and wherein the surface is moved upwardly against the flow of two component developer, and wherein the lower portion of the development zone is provided with a low potential development electrode and wherein the upper portion of the development zone is provided with a high potential clean up electrode, the improvement comprising

means within the development zone to reduce the charge on the photoreceptor in non-image areas to thereby minimize the deposition of background toner in non-image areas.

3,893,420
METHOD FOR MASS SCALE REPRODUCTION OF PARASITIC INSECTS

Sergei Vasilievich Andreev, prospekt Stachek, 57, kv. 62, Leningrad; Mikhail Grigorievich Leibenzon, zavod 4, dom 6, kv. 6, Moskovskava oblast; Jury Petrovich Trushin, Dmitrovskoe shosse 43, kv. 212, Moscow, and Mikhail Sergeevich Luzgin, prospekt Mechnikova, 3, kv. 27, Leningrad, all of U.S.S.R.

Continuation of Ser. No. 294,783, Oct. 4, 1972, abandoned. This application Oct. 25, 1973, Ser. No. 409,446
Int. Cl. A01k ***67/00***
U.S. Cl. 119—1 **4 Claims**

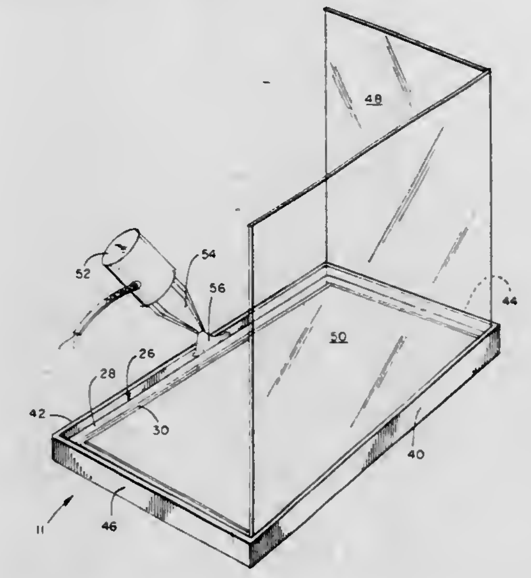


1. A method for mass-producing parasitic insects consisting of infecting seeds of grain crops with eggs of a host-insect; transferring imagoes hatched from the eggs into an insect-duct by using phototaxis and to horizontal nets with a substrate and collecting host-eggs from the imagoes on the substrate; removing the host-eggs from the nets; the improvement comprising attaching host-eggs removed from the nets in strips to a severable band including means for dividing the band into uniform sections containing a determinable number of host-eggs; subjecting the host-eggs attached to the band to controlled climatic conditions and infecting the host-eggs with eggs of parasitic insects; subjecting the parasitic insects during infection of the host-eggs to phototaxis to insure substantially complete infection of the host-eggs; and maintaining the infected host-eggs under climatic conditions normally encouraging birth of the parasitic insects in the infected host-eggs.

3,893,421
AQUARIUM AND METHOD OF FORMING THE SAME

Albert J. Dinnerstein, Brooklyn, N.Y., assignor to Metaframe Corporation, Elmwood Park, N.J.

Continuation-in-part of Ser. No. 307,540, Nov. 17, 1972, abandoned. This application June 25, 1973, Ser. No. 373,249
Int. Cl.² A01K ***64/00***
U.S. Cl. 119—5 **5 Claims**



1. In the assembly of an aquarium having upper and lower molded, grooved thermoplastic frame members, the method comprising the steps of:

disposing a thermoplastic adhesive within the grooves of at least a lower frame member, said adhesive being capable of setting in approximately 30 seconds;

disposing the lower horizontal edge portions of a plurality of vertical glass panels within the grooves of said lower frame member before said adhesive sets, said vertical glass panels forming an enclosure closed about the lateral sides thereof;

adjusting said vertical glass panels so that adjacent vertical panels form corners at their junctures;

permitting said lower frame member and said adjusted vertical glass panels to remain undisturbed for approximately 30 seconds until said thermoplastic adhesive sets to thereby maintain said panels in their adjusted positions;

disposing a horizontal bottom glass panel on the bottom frame member contiguously with said vertical glass panels, each of said vertical glass panels forming a corner with said bottom glass panel; and

applying sealing means along all of said corners.

3,893,422
MILKING UNIT SUPPORT AND DETACHER MECHANISM

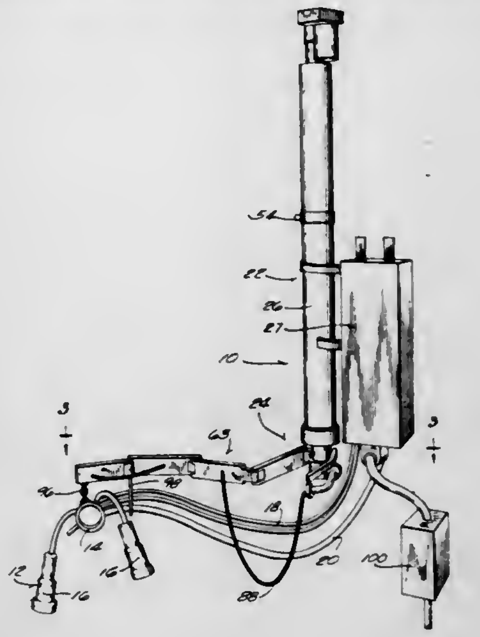
James J. Schnitzler; Gary W. Schluckbier, both of Madison, and Paul E. Krueger, McFarland, all of Wis., assignors to DEC International, Inc., Madison, Wis.

Filed May 10, 1974, Ser. No. 468,925
Int. Cl. A01j ***5/04***
U.S. Cl. 119—14.08 **20 Claims**

1. A milking unit support and detacher mechanism comprising:

a main support assembly;

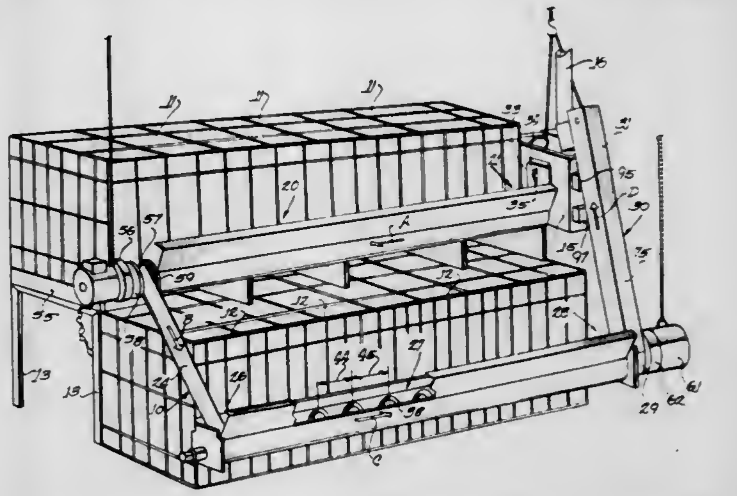
a horizontally extending retractable milking unit support assembly mounted on said main support assembly, said milker unit support assembly comprising a plurality of horizontally extending link members pivotally connected together in end-to-end relationship and adapted to support a milker unit on the outer end thereof when the milker unit is attached to a cow for milking, a flexible retract member fastened to one end to the end link member and threaded back through openings in at least two of the other link members, and retract means for pulling on said flexible retract member to cause said link members to fold up on themselves which in turn will cause the milker unit to be retracted from underneath the cow; and a control means for automatically initiating the actuation of said retract means at a predetermined point in the milking cycle.



3,893,423
RECIRCULATING FEEDER

Eldon S. Hostetler, Middlebury, Ind., assignor to Chore-Time Equipment, Inc., Milford, Ind.

Filed Jan. 14, 1974, Ser. No. 433,147
Int. Cl. A01k ***5/02***
U.S. Cl. 119—52 AF **18 Claims**



1. A conveyor system for feeding poultry and the like, comprising an interconnected belt conveyor and auger conveyor, the belt conveyor including a housing having intake and discharge ends, an endless belt member mounted for cyclic motion between said ends and adapted to engage feed deposited at the intake end and transport the feed to the discharge end, and belt conveyor belt drive means mounted adjacent one opening for driving the belt in its cyclic motion, the auger conveyor including an auger member having a plurality of spiral flights for urging feed along the auger conveyor from an intake end to a discharge end and extending into the belt

conveyor housing, and auger conveyor drive means for rotating the auger within the auger conveyor, and interconnector means including a shaft engaging both the auger conveyor auger and the belt conveyor belt drive means for common rotation and common operation from a single power source.

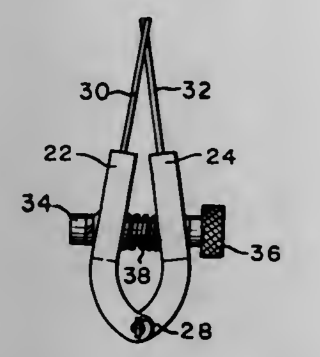
3,893,424
ANIMAL COMB

Mary C. Casler, Washington, Conn. 06793

Filed Apr. 26, 1974, Ser. No. 464,366

Int. Cl. A01k *13/00*

U.S. Cl. 119—83 **2 Claims**



1. A comb for stripping loose hairs from the coat of an animal comprising a base having a pair of members hingedly connected together and each of said members being provided with spaced apart, straight and upstanding teeth, all of said teeth of one member being parallel and angularly directed in one direction and all of the teeth of the other member being parallel and angularly directed in the opposite direction, means for interconnecting said members to provide a plurality of adjacent pairs of teeth, the teeth of each pair crossing and contacting each other with a predetermined force, and means for adjusting one member relative to the other member to vary the predetermined force between said contacting teeth.

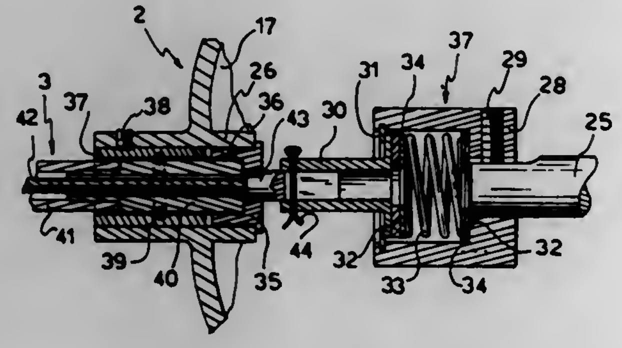
3,893,425
HAIR GROOMING MOTORIZED BRUSH

Jean-Claude Lapres, 803 Boucher St., Apt. 1, Montreal, Quebec, Canada

Filed Nov. 20, 1973, Ser. No. 417,537

Int. Cl.^{2} A01K *13/00*

U.S. Cl. 119—91 **4 Claims**



1. A hair grooming motorized brush comprising a handle, a brush having a shank portion rotatably mounted in said handle and a brushing portion projecting outwardly from said handle, a motor, a flexible cable drive, said motor driving said brush through said flexible cable drive, said flexible cable drive having an outer tubular sheathing rotatably secured at one end to said handle for rotation of the latter relative to said tubular sheathing, and a friction clutch having a pair of coupling members connected to said flexible drive and to said motor respectively for rotation therewith and relative to each other, friction face means positioned between and in interengagement with said coupling members, spring means biasing said friction face means into said interengagement and one of said coupling members forming an external casing having the other coupling member displaceable therein and enclosing said friction face means and said spring means.

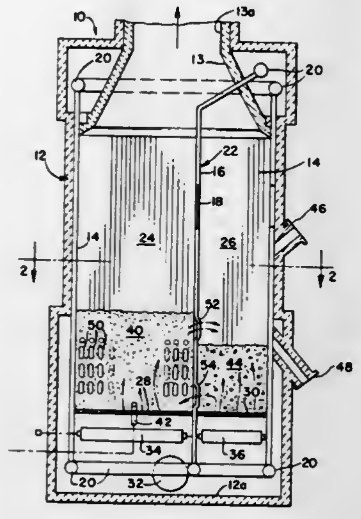
3,893,426
HEAT EXCHANGER UTILIZING ADJOINING FLUIDIZED BEDS

Richard W. Bryers, Cranford, N.J., assignor to Foster Wheeler Corporation, Livingston, N.J.

Filed Mar. 25, 1974, Ser. No. 454,045

Int. Cl.^{2} F22B *1/02*

U.S. Cl. 122—4 D **15 Claims**



1. A heat exchanger comprising a housing, at least one substantially vertical partition dividing said housing into at least two adjoining chambers, means for establishing a bed of relatively coarse particulate fuel material in one of said chambers, means for establishing a bed of relatively fine particulate fuel material in the other chamber, and means to pass air through each of said beds to promote the combustion of said fuel material and maintain said chambers at predetermined temperatures, said partition being formed by a plurality of finned tubes for circulating a heat exchange medium in a heat exchange relation to said beds, portions of said tubes being bent in a manner to form a plurality of slots in said partition to communicate said chambers and permit circulation of portions of said fuel between said chambers.

3,893,427
GAS HEATED STEAM GENERATOR

Robert O. Barratt, Cedar Knolls, N.J., assignor to Foster Wheeler Corporation, Livingston, N.J.

Filed Sept. 16, 1974, Ser. No. 506,665

Int. Cl.^{2} F22B *1/02;* **F22G** *1/00*

U.S. Cl. 122—32 **4 Claims**

1. A gas heated steam generator comprising:

a generally cylindrical shell closed at both ends;

a first reheater section adjacent one end of said shell;

a second reheater section axially spaced from said first heater section;

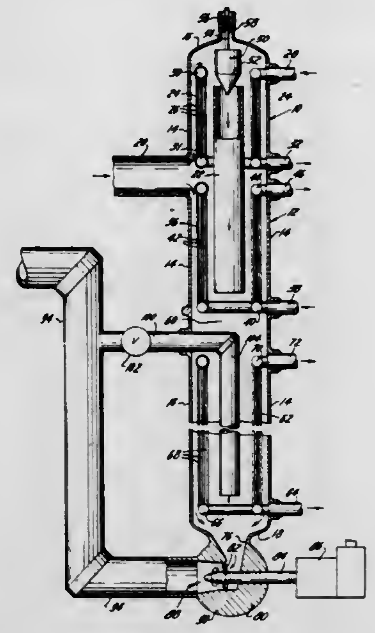
a central flow tube coaxial with and within said cylindrical shell and extending through said first reheater section and said second reheater section;

an evaporator spaced adjacent to the other end of said shell;

a gas inlet in said shell for allowing gas to flow between said first reheater section and said second reheater section and to divide into two streams one flowing upward over said first reheater section to said one end to reverse its direction and to flow down through said central flow tube, the other stream flowing downward over said second reheater section with said streams merging to flow over said evaporator-superheater section;

a gas outlet in the other end of said shell; and

an adjustable valve adjacent to said one end of said shell for adjusting the rate of flow through said central flow tube to thereby control the portion of the gas coming in through said inlet which flows over said first reheater section.



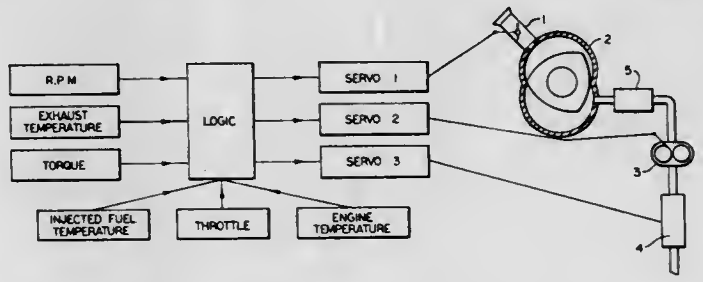
3,893,428
THERMODYNAMIC CYCLE FOR ROTARY ENGINES

Isidoro N. Markus, 65-36 99th St., Rego Park, N.Y. 11374

Filed July 27, 1973, Ser. No. 383,067

Int. Cl. F02b *53/04*

U.S. Cl. 123—8.11 **3 Claims**



3. In an internal combustion engine wherein fuel from a supply is preheated before being injected into the internal combustion engine,

the combination of a fuel pump,

a thermoinsulated hydraulic restrictor comprising a block of ceramic having cold fuel inlet means and hot fuel outlet means,

said ceramic block having at least a fuel path,

said fuel path hydraulically connecting said fuel inlet means to said fuel outlet means,

said fuel being pumped along said fuel path by said fuel pump to frictionally increase its temperature prior to its introduction into a combustion chamber of said internal combustion engine.

3,893,429
STRATIFIED CHARGE ROTARY ENGINE WITH CARBURETOR FUEL CONTROL

Charles Jones, Hillsdale, N.J., assignor to Curtiss-Wright Corporation, 02, Wood-Ridge, N.J.

Filed Dec. 12, 1973, Ser. No. 426,663

Int. Cl. F02b *53/04*

U.S. Cl. 123—8.13 **5 Claims**

1. A rotary combustion engine comprising:

a. an outer body having a peripheral wall and axially-spaced side walls defining an internal cavity therebetween and also having first and second intake ports and an exhaust port opening into said cavity with the inner surface of said peripheral wall having a multi-lobe profile;

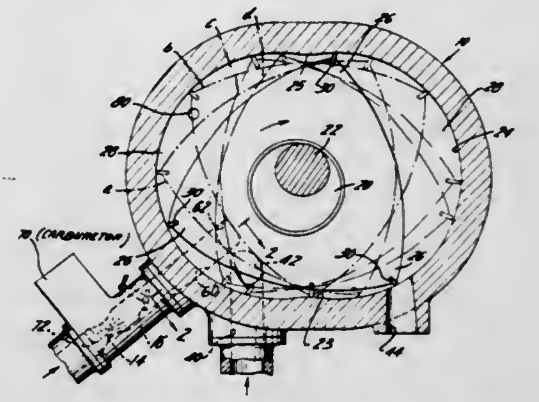
b. a shaft coaxial with said outer body cavity and having an eccentric portion;

c. an inner body of generally polygonal profile journaled on said eccentric portion for relative rotation within said outer body, the apex portions of said inner body having sealing cooperation with said peripheral surface to define a plurality of working chambers which vary in volume in response to said relative rotation and the communication of said ports with said chambers being controlled by said relative rotation;

d. a passageway for supplying air only through said first intake port into said working chambers,

e. a passageway for supplying a fuel-rich mixture through said second intake port into said working chambers, and

f. said two intake ports being so shaped and positioned that the first intake port opens to a working chamber before the second intake port and closes before the second port whereby the trailing portion of each working chamber is supplied with a relatively fuel-rich mixture.



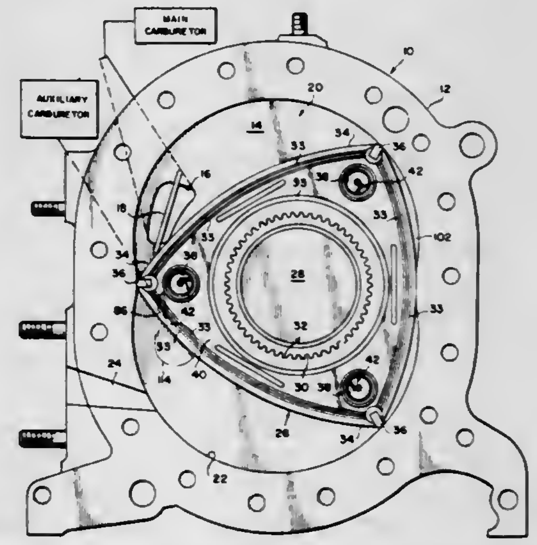
3,893,430
COMBINATION SPARK PLUG AND PRECOMBUSTION CHAMBER FOR ROTARY ENGINE

Harvey A. Burley, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 30, 1973, Ser. No. 420,548

Int. Cl. F02b *53/04*

U.S. Cl. 123—8.13 **4 Claims**



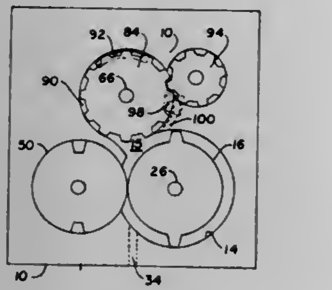
1. A combination spark plug and precombustion chamber for a stratified charge rotary engine comprising in combination an engine housing including opposed end walls in conjunction with a central peripheral wall defining a rotor cavity, a rotor, an output shaft, an eccentric on said output shaft, said rotor planetating on said eccentric as it rotates within said cavity compressing a main relatively lean air fuel mixture supplied to the main combustion chamber on the peripheral wall of the said rotor, at least one precombustion chamber

cavity formed in said rotor, an electrical contact secured to said rotor in said cavity, an engine ignition circuit, electrical circuit means connecting said contact with said ignition circuit, a liner defining a precombustion chamber, a spark plug secured in said liner forming a precombustion chamber and spark plug assembly, said assembly being positioned within said precombustion cavity in said rotor and being open to a peripheral surface of said rotor, an electrical contact on said spark plug engaging said rotor contact, said rotary engine housing having a passage sequentially and periodically supplying a rich air fuel mixture to said precombustion chamber as its opening rotates past said housing passage, and a throat passage connecting said precombustion chamber with said main combustion chamber whereby said precombustion chamber receives the rich air fuel mixture that is sequentially and periodically ignited by said ignition circuit so that the burning mixture expands through said throat passage igniting the charge in the main combustion chamber.

3,893,431
ROTARY INTERNAL COMBUSTION ENGINE

Oscar P. Gregg, 2928 Fort Henery Dr., Kingsport, Tenn. 37664

Filed Apr. 30, 1973, Ser. No. 355,341
Int. Cl. F02b *53/04*
U.S. Cl. 123—8.13 7 Claims



1. A rotary internal combustion engine comprising rotor means mounted in a cavity formed by internal side wall means of a block and internal end wall means of opposite heads, said rotor means being spaced from said side wall means over at least a substantial portion of its periphery to provide work chamber means, piston means on said rotor means adapted to extend outwardly from the periphery thereof to adjacent said side wall means, interrupter means in said side wall means extending into said work chamber means and adapted to remain adjacent to either said rotor means or said piston means to provide substantially continuous interruption of said work chamber means, exhaust means adapted to communicate with said work chamber means, conduit means connecting angularly spaced portions of said work chamber means, and fuel-air feed means for feeding fuel and air to said work chamber means at a rate independent of rotor speed, said conduit means being adapted to communicate simultaneously with said fuel-air feed means and said angularly spaced portions of said work chamber means.

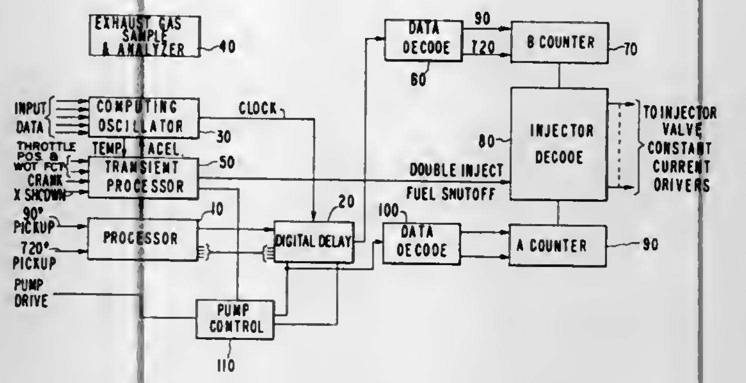
3,893,432
ELECTRONIC CONTROL SYSTEM

David M. Krupp, Mountain View, and Robert B. Hood, Los Altos, both of Calif., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Dec. 30, 1971, Ser. No. 213,905
Int. Cl. F02b *3/00*
U.S. Cl. 123—32 EA 8 Claims

1. An electronic control system for a fuel injection system for use with an engine producing repetitive signals for synchronizing the injection of fuel with the fuel requirements of said engine, which control system comprises:

a. means for sensing the values of a plurality of parameters which determine the amount of fuel to be injected into utilization means of said engine, and for producing a plurality of first signals representing these values;
b. means, responsive to said first signals, for producing a second signal representing the injection time necessary to inject the required amount of fuel into said utilization means;
c. means for generating timing signals from the repetitive signals;
d. delay means for receiving said timing signals, said timing signals being shifted through said delay means at a rate determined by said second signal; and,
e. means, responsive to the time necessary for said timing signals to be shifted through said delay means, for controlling the opening and closing of fuel injection means disposed for injecting fuel into said utilization means comprising:



1. means for detecting the presence of said timing signals in said delay line and for producing a start signal in response to said timing signals;
first means, responsive to a signal from said means for detecting, for counting the number of timing signals placed in said delay line and for controlling an injector decode selector matrix in response to each timing signal placed in said delay means;
3. an injector decode selector matrix means, responsive to said first means for counting, for selecting a particular fuel injector means the opening and closing times of which are to be controlled by a corresponding timing signal travelling through the delay line; and,
4. second means for detecting and counting the timing signals arriving at the end of said delay means and for producing a signal in response to the arrival of each timing signal to control, through said injector decode selector matrix means, the closing of the fuel injector means opened by said timing signal.

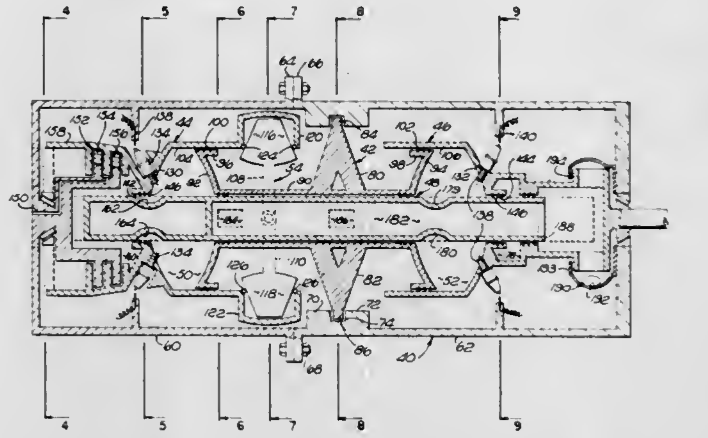
3,893,433
ROTARY ENGINE WITH ROTATING CYLINDERS

Mihai C. Demetrescu, Irvine, Calif., assignor to Resonance Motors, Inc., Monrovia, Calif.

Filed July 2, 1973, Ser. No. 375,394
Int. Cl. F02b *53/00*
U.S. Cl. 123—45 A 14 Claims

1. A gas-expansion engine comprising:
means defining expansion chamber means, including movable piston means for providing a reciprocal motion pattern upon expansion of gas in said chamber means;
means for expanding gas in said chamber means;
means for converting said reciprocal motion pattern of said piston means to revolve said means defining expansion chamber means;
force-displacement means for applying a force to said piston

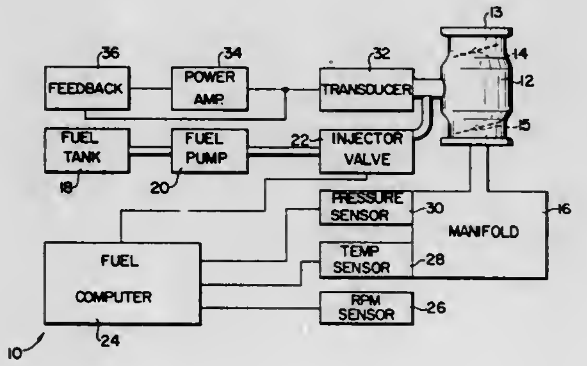
means, which force is related and opposed to the reciprocating displacement of said piston means; and
means for coupling said means defining expansion chamber means to provide mechanical rotary energy.



3,893,434
COMPUTER CONTROLLED SONIC FUEL SYSTEM

Arthur K. Thatcher, Merritt Island, and Ed R. McCarter, Maitland, both of Fla., assignors to Arthur K. Thatcher, Merritt Island, Fla.

Filed Sept. 29, 1972, Ser. No. 293,377
Int. Cl. F02b *33/00*
U.S. Cl. 123—119 R 41 Claims

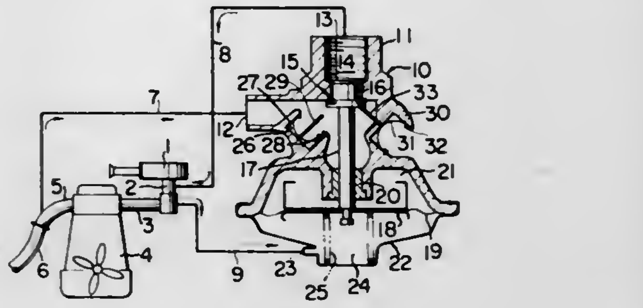


1. In an internal combustion engine having an intake manifold, an air source for providing an airstream for entry into said intake manifold and a fuel source for said internal combustion engine, a computer controlled sonic fuel system for providing fuel from said fuel source to the airstream entering the intake manifold comprising sonic transducer means having an active surface mounted for receiving fuel and providing a fuel dispersion to said airstream to cause a fuel-air dispersion to be present at the entrance to said intake manifold, fuel computer means connected to receive fuel from said fuel source and to provide a fuel output which varies as a function of variations in the operating condition of said internal combustion engine, and fuel input means for delivering the fuel output from said fuel computer means to the active surface of said sonic transducer means, said fuel computer means operating to maintain a substantially constant fuel-air ratio to said intake manifold for all operating conditions of said internal combustion engine.

3,893,435
EXHAUST GAS RECIRCULATION SYSTEM FOR AUTOMOBILE ENGINES

Toshiaki Konomi, and Hidetaka Nohira, both of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Dec. 14, 1973, Ser. No. 424,763
Claims priority, application Japan, Jan. 24, 1973, 48-9480
Int. Cl. F02m *25/06*
U.S. Cl. 123—119 A 7 Claims



1. In an exhaust gas recirculation system for an automobile engine, comprising an exhaust gas recirculation conduit extending from an exhaust manifold to an intake system of the automobile engine for providing communication of engine exhaust gases between the manifold and carburetor, a flow control valve device disposed midway of said exhaust gas recirculation conduit for controlling the communication of the exhaust gases, said valve device having an intake vacuum chamber and including a valve element normally biased into a closing position of said valve device and movable in said valve device, when actuated, into an opening position of said valve device, an intake vacuum conduit extending from an intake manifold of the automobile engine to the intake vacuum chamber of said valve device for introducing an intake vacuum into said intake vacuum chamber, and actuating diaphragm means extending in said valve device for defining said intake vacuum chamber and connected to said valve element for actuating the same in response to a vacuum which is introduced from the intake manifold, the improvement comprising means including temperature responsive bistable metal spring means, responsive to the operating conditions of the automobile engine in terms of temperatures of both the atmospheric air and the exhaust gases both, for leaving the actuating action of said diaphragm means free only in the case where the temperature of the atmospheric air is higher than a first predetermined value and where the temperature of the exhaust gases is lower than a second predetermined value and for buckling in the remaining operating conditions of the automobile engine to render the actuating action of said diaphragm means inoperative so that said valve element may be held in the closing position even in the presence of the vacuum in the intake vacuum chamber of said valve device.

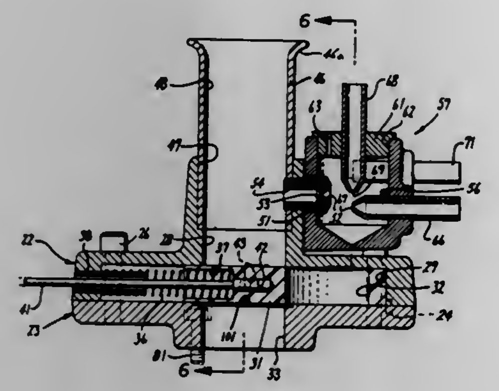
3,893,436
FUEL SUPPLY SYSTEM, CARBURETOR FOR USE IN THE SAME AND METHOD

William H. Beekhuis, Jr., 27686 Natoma Rd., Los Altos Hills, Calif. 94022

Continuation of Ser. No. 268,736, July 3, 1972, abandoned. This application May 13, 1974, Ser. No. 469,474
Int. Cl. F02m *7/10*
U.S. Cl. 123—119 R 30 Claims

1. A fuel supply system for an internal combustion engine having at least one combustion chamber which is adapted to be placed in communication with an intake opening during each intake event, comprising wall means forming a wave tube having a substantially unimpeded flow passage with one end open to the atmosphere and with the other end adapted to be placed in communication with the intake opening of the internal combustion engine, means forming an orifice disposed in

the wall means forming the wave tube and opening into the flow passage of the wave tube, means for supplying fuel to the orifice so that the fuel has a level which will reach the orifice but will not flow through the orifice solely because of the level of the fuel with respect to the orifice, and throttle valve means disposed in the wave tube between the region in which the fuel is introduced into the wave tube and the intake opening, said throttle valve means being formed so that a shock wave from the engine can be propagated down the wave tube to cause fuel to be drawn into the wave tube through the orifice substantially solely during propagation of the pressure shock wave along the wave tube and to atomize the fuel so that the atomized fuel can be carried into the combustion chamber by the incoming air stream flowing in the wave tube, the pressure effect of said wave serving as substantially the sole means for metering fuel from the orifice, said wall means forming a wave tube including a body, said body being formed with shock wave terminating means for preventing a shock wave from traveling substantially more than one round trip in the flow passage in the wave tube for each intake event.



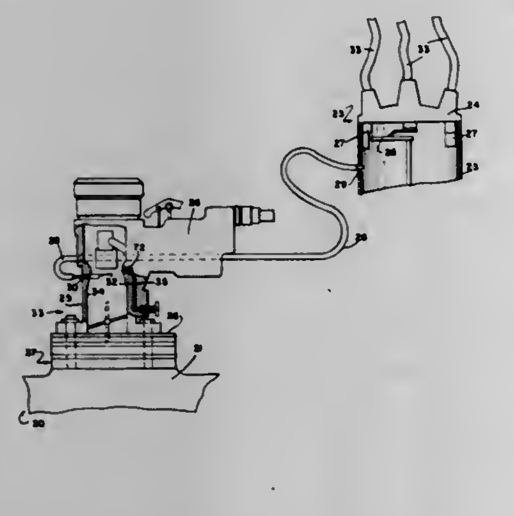
3,893,437
CARBURETOR SYSTEM

Gordon E. Ries, 4423 Third Ave., E., and Harley D. Johnson, 708 9th St., W., both of Bradenton, Fla. 33505

Filed May 3, 1972, Ser. No. 466,917

Int. Cl.^{2} F02M *27/04*

U.S. Cl. 123—119 E **7 Claims**



1. In an internal combustion engine, an intake manifold, a carburetor connected to said intake manifold, a distributor, and means for conveying ionized air from the distributor to said carburetor.

3,893,438
CAPACITOR IGNITION DEVICE FOR INTERNAL COMBUSTION ENGINES

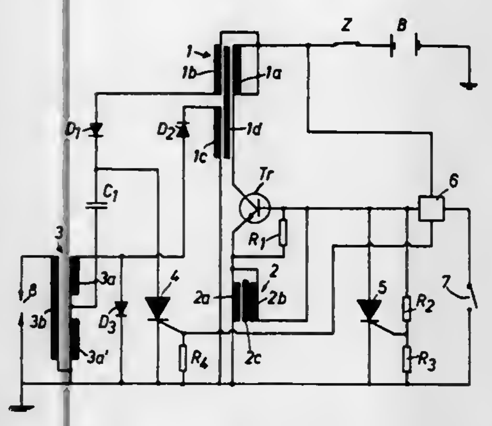
Rudolf Diener, Zurich, Switzerland, assignor to Autoelektronik AG, Chur, Switzerland

Filed Dec. 27, 1973, Ser. No. 428,710

Claims priority, application Switzerland, Dec. 22, 1972, 18786/72

Int. Cl. F02p *3/06*

U.S. Cl. 123—148 E **3 Claims**



1. A capacitor ignition arrangement for an ignition combustion engine having spark plugs, comprising

an ignition transformer including primary winding means and a secondary winding connectable with each of the spark plugs;

a storage capacitor;

a thyristor having a control electrode;

means connecting together said thyristor to form a discharge path for said storage capacitor, discharging of the storage capacitor through said discharge path producing a high voltage firing pluse across the spark plug connected with the secondary winding of said ignition transformer;

a charging transformer having a pick-up winding and an outputwinding on a ferromagnetic core;

means connecting together said storage capacitor and said output-winding to form a charging path for said storage capacitor;

a source of direct current;

a transistor having an emitter, a collector, and a base;

means connecting in series said source of direct current, said pick-up winding, and the collector-emitter path of said transistor, so that when said transistor is conductive, current flows through the pick-up winding and electrical energy is stored in said charging transformer, and when current flow is interrupted by blocking said transistor the stored energy is delivered via said charging path to said storage capacitor;

a control pulse generator synchronized with said engine; and

a control circuitry responsive to control pulses delivered from said control pulse generator, said control circuitry including said transistor, switch-on means for triggering conductive said transistor with each control pulse, and cut-off means sensitive to the strength of the collector current of said transistor to block the transistor upon reaching a maximum collector current, and also having an output connected with the control electrode of said thyristor so that with each control pulse said thyristor is triggered conductive and a firing pulse is delivered,

wherein the charging transformer is equipped with an additional winding, said additional winding and the pick-up winding of said charging transformer forming a transducer which delivers electrical energy when current flows through said pick-up winding, and

wherein said additional winding, a blocking diode and the primary winding means of the ignition transformer are connected in series, so that each firing pulse produced by discharging of the storage capacitor is prolonged by an after-discharge of electrical energy delivered from said transducer.

3,893,439
MAGNETO IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES

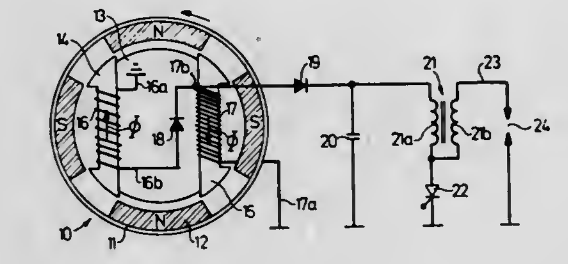
Peter Chudoba, Nurnberg, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Nov. 8, 1973, Ser. No. 413,975

Claims priority, application Germany, Nov. 11, 1972, 2255396

Int. Cl. F02p *3/06*

U.S. Cl. 123—149 R **5 Claims**



1. A magneto ignition system for an internal combustion engine, comprising:

a capacitor;

a spark coil having its primary winding in circuit with a semiconductor switch and said capacitor and having its secondary winding in circuit with at least one spark plug of said engine;

means for closing said semiconductor switch at the desired ignition time for said engine to produce a spark;

said magneto generator having first and second armature windings positioned so as to be excited in phase synchronism, said first winding having a substantially larger number of turns than said second winding;

a first diode (**19**) connected between one end (**16b**) of said first winding (**16**) and said capacitor (**20**) for the charging of said capacitor by said generator; and

additional diode rectifying means (**18**) connected in series with said second armature winding (**17**), the series combination of said second armature winding (**17**) and said additional diode rectifying means (**18**) being connected in parallel with said first armature winding, said additional diode rectifying means being so poled that during a generated half-wave of polarity such that said first diode conducts, said second diode is blocked so long as the voltage across said first winding exceeds the voltage across said second winding.

3,893,440
AUTOMATIC DECOMPRESSION VALVE TO FACILITATE STARTING OF AN INTERNAL COMBUSTION ENGINE

James Linville Dooley, Santa Monica, Calif., assignor to McCulloch Corporation, Los Angeles, Calif.

Filed Oct. 26, 1972, Ser. No. 301,114

Int. Cl. F01l *13/08*

U.S. Cl. 123—182 **27 Claims**

1. An automatic decompression valve to facilitate starting of an internal combustion engine, said valve comprising:

housing means defining valve cylinder means and including:

gas inlet means for receiving compression gas from the cylinder of an internal combustion engine, and

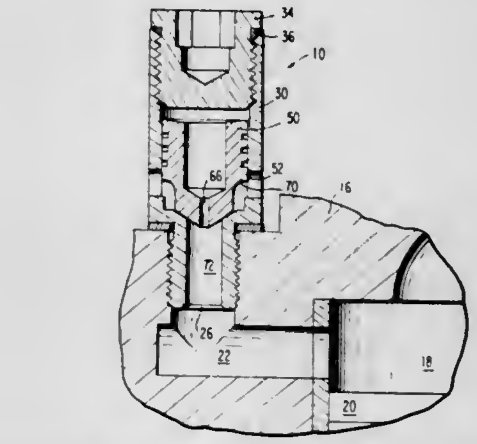
gas outlet means for venting compression gas from the cylinder of the internal combustion engine to effect decompression thereof;

valve piston means movable in said valve cylinder means between a valve closed position wherein said valve piston means is operable to block communication between said gas inlet means and said gas outlet means, and a valve open position wherein said valve piston means is operable to render said gas inlet means communicable with said gas outlet means;

said valve piston means including a valve opening reaction surface means and valve closing reaction surface means; said valve opening reaction surface means being responsive to pressurized gas entering said gas inlet means for producing a force on said piston means tending to move said piston means to said valve open position;

piston position control chamber means;

gas flow restriction means, including an orifice, for providing restricted fluid communication between said piston position control chamber means and pressurized gas entering said gas inlet means;



said valve closing reaction surface means being responsive to gas pressure in said piston position control chamber means for producing a force on said piston means tending to move said piston means to said valve closed position; said gas flow restriction means being operable to resist flow into said piston position control chamber means of gas entering said gas inlet means so as to maintain said valve piston means in said valve open position during initial cranking of the internal combustion engine; and

said gas flow restriction means being further operable to resist flow of gas out of said piston position control chamber means so as to maintain said piston means in said valve closed position during operation of the internal combustion engine after initial cranking.

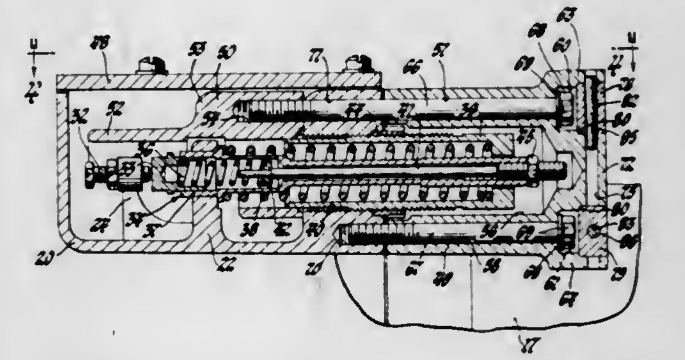
3,893,441
TAMPER RESISTANT ENGINE GOVERNOR

Edwin E. Hebb, Jr., Dearborn, and Edward D. Baugh, Union Lake, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 31, 1974, Ser. No. 474,969

Int. Cl. F02f *7/00*

U.S. Cl. 123—195 C **3 Claims**



1. The combination in an internal combustion engine of:

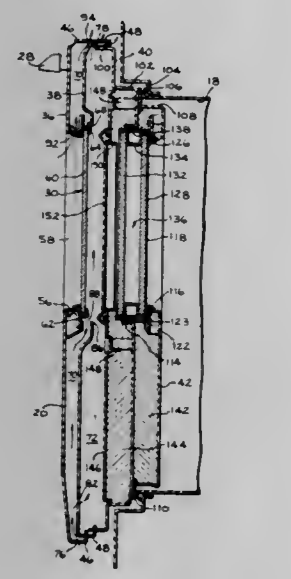
an engine driven component having a housing,

an engine governor including a body mounted on said housing and having means for adjusting the governor speed settings, a protective cover mounted on said governor body, said cover extending adjacent said component housing and enclosing said governor speed setting adjusting means,

means securing said cover to said governor body, said securing means being received in recesses in said cover, said recesses being formed in adjacent boss portions of said cover and one of said boss portions extending adjacent said component housing,

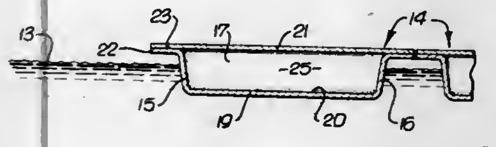
removable plugs closing said recesses and preventing removal of said securing means without removing said plugs, said plugs being retained by pins driven into openings through said plugs and boss portions, at least one of said openings having one end blocked by adjacency to said component housing, said one opening having its pin installed from its other end and removable only by driving out from said blocked end, whereby said protective cover may be installed after installation of said governor on said component but, after installation of said plugs and pins, said governor must be removed from said component in order to remove said protective cover for readjustment of the governor speed settings.

3,893,442
OVEN DOOR WITH AIR COOLING SYSTEM
James J. Nuss, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.
Filed Oct. 3, 1974, Ser. No. 511,766
Int. Cl. F23n *7/00*
U.S. Cl. 126—198 **7 Claims**



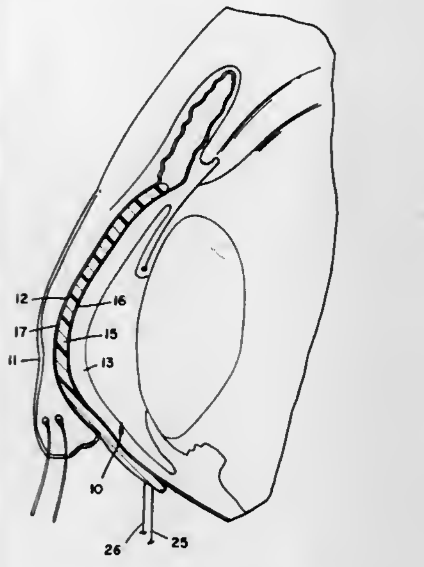
1. A windowed oven door comprising an outer door panel, intermediate door panel positioned behind and spaced from the outer door panel, an inner door liner and an inner panel carried by the inner door liner, a multiple pane window module supported within the inner panel and the inner door liner, at least one window pane supported by the outer door panel, thermal insulation means combined within the inner panel and inner door liner in the area surrounding the said window module, the said intermediate door panel having a window opening substantially coinciding with the said window panes for allowing viewing, the intermediate door panel having a rearwardly facing peripheral flange at least along the two sides and the top edge of the door, the outer door panel having a rearwardly facing peripheral flange at least along the two sides of the door which overlies the adjacent flange of the intermediate door panel, and air entrance openings arranged along the bottom edge of the door and air outlet openings arranged in the top portion of the peripheral flange of the intermediate door panel, whereby room air may pass up through the door passing both sides of the intermediate door panel before exiting from the top of the door.

3,893,443
FLOATING SOLAR POOL HEATER
Richard H. Smith, 30 Bater Rd., Hillsborough, Calif. 94010
Filed Jan. 11, 1973, Ser. No. 322,792
Int. Cl. E04n *3/19*
U.S. Cl. 126—271 **7 Claims**



1. The combination of a pool of selected length and width and a floating solar heater means, said heater means comprising a plurality of separate individual heater units each having opposite sides of uniform length and opposite ends of uniform length and with sides and ends respectively of shape complementary to each other and to the sides and ends of the pool; the distance between sides of each unit being many times less than the width of the pool and the distance between ends of each unit being many times less than the length of the pool whereby a multiplicity of said separate individual units are used for the pool, each unit comprising a fixed side wall structure, a fixed bottom structure and a fixed top wall structure joined to form a relatively rigid shallow vessel with a chamber inside of uniform depth wherein air is at substantially ambient pressure, wall elements of the side wall structure comprising stiffening means, said top wall structure comprising a translucent sheet sealed at the edges to said sides and ends adjacent one edge of the side wall structure substantially closing said chamber, one of said wall structures having elements at sides and ends of each unit extending beyond the immediately adjacent wall structure whereby to provide mutual areas of abutment at sides and ends of adjacent units, there being a substantially closed air space between sides and ends of adjacent units.

3,893,444
NON-INVASIVELY MEASURING ARTERIAL OXYGEN TENSION
Irving Fatt, Berkeley, Calif., assignor to The Regents of the University of California, Berkeley, Calif.
Continuation-in-part of Ser. No. 273,422, July 20, 1972, abandoned. This application Jan. 17, 1974, Ser. No. 434,191
Int. Cl. A61b *5/00*
U.S. Cl. 128—2 E **12 Claims**



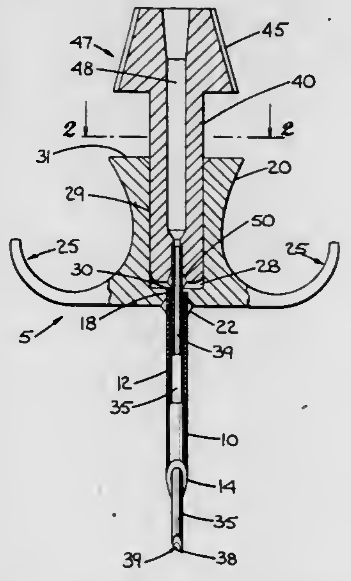
1. A method for non-invasively determining continuous arterial oxygen tension of a patient, comprising the steps of

a. non-invasively measuring the palpebral conjunctival oxygen tension,

b. multiplying said tension by a constant dependent upon the relationship between the oxygen tension of the palpebral conjunctiva and the arterial oxygen tension of the patient, and

c. subtracting a second constant also dependent upon said relationship.

3,893,445
BONE MARROW BIOPSY INSTRUMENT
Paul W. Hofsess, Ridgefield, N.J., assignor to Becton, Dickinson and Company, East Rutherford, N.J.
Filed Jan. 9, 1974, Ser. No. 432,044
Int. Cl. A61b *10/00, 17/16*
U.S. Cl. 128—2 B **11 Claims**



1. A bone cutting component of a bone marrow biopsy apparatus including an alignment needle, which comprises;

a bone cutting assembly which comprises;

i. a handle for rotation; attached to a first end of

ii. a cylindrical shank having one end attached to said handle and the second end affixed to the proximal end of

iii. a cannula having an open distal end defining a bone cutting point which comprises a top rake primary grind of from about 18° to about 20° to the longitudinal axis of said cannula, a cutting edge at an angle of from about 25° to about 30° to a line perpendicular with the longitudinal axis of said cannula, said cutting edge being peripherally relieved; said shank and said cannula being adapted to be received within the bore of said alignment needle of the bone marrow biopsy apparatus.

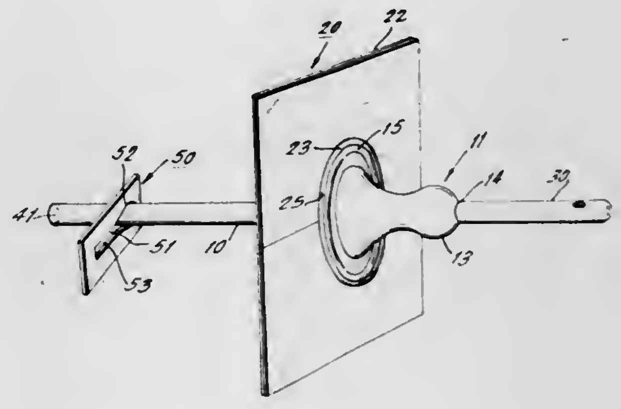
3,893,446
ABDOMINAL CATHETER AND SUPPORT COMBINATION FOR OPAQUE MEDIUM FLUIDS
Peter S. Miller, 125 C-2 15th St., Garden City, N.Y. 11530
Filed Apr. 8, 1974, Ser. No. 458,788
Int. Cl.^{2} A61B *06/00;* A61M *25/02*
U.S. Cl. 128—2 A **1 Claim**

1. A catheter assembly comprising the combination of a catheter tube and a supporting member on said tube having a hollow nipple-like configuration comprising a bulbous tip with an opening flexibly and frictionally gripping said catheter tube;

said supporting member terminating in a radial flange having one face to engage the skin of a patient marginally about a body opening;

an adhesive patch having an aperture and said catheter tube passing therethrough with said aperture in generally axial alignment with the opening in said bulbous tip so that said catheter tube may pass through said patch aperture and through said bulbous tip opening into a body opening;

said adhesive patch marginally encompassing the opposite face of said flange and extending radially outward thereof for an area greater than the area of said flange and have adhesive thereon to adhere to the skin of a patient and to said opposite face of said flange to thereby secure said

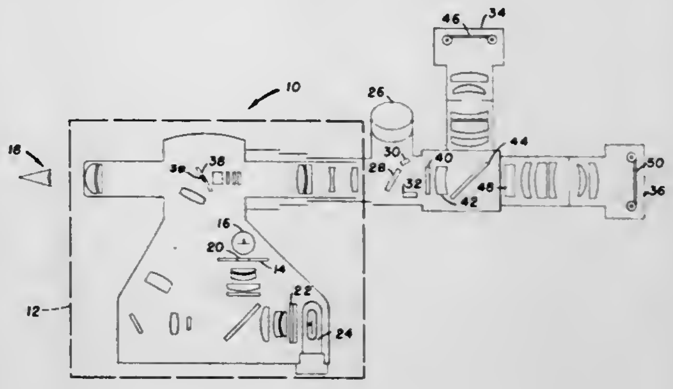


supporting member for support of said catheter tube within a body opening;

wherein said catheter tube is adjustable to frictionally held positions in said supporting member and thereby in a body opening; and

whereby said bulbous tip aids securement of said supporting member in a body opening.

3,893,447
SIMULTANEOUS ANGIOGRAPHY OF THE SEPARATE RETINAL AND CHOROIDAL CIRCULATIONS
Bernard F. Hochheimer, Lineboro, and Robert W. Flower, Timonium, both of Md., assignors to The Johns Hopkins University, Baltimore, Md.
Filed June 4, 1973, Ser. No. 366,408
Int. Cl.^{2} A61B *5/00*
U.S. Cl. 128—2 A **11 Claims**



1. A method for the simultaneous angiography of the separate retinal and choroidal circulations of the eye, comprising the steps of:

injecting a mixture of substances into the circulatory blood system of the human body, the substances of the mixture transmitting electromagnetic radiation in different portions of the electromagnetic spectrum;

irradiating the eye with electromagnetic radiation;

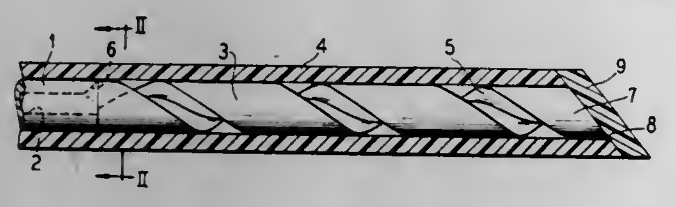
splitting the electromagnetic radiation transmitted from the eye into at least two components having different wavelength ranges; and,

recording the separate radiation components independently of each other.

3,893,448
CATHETER DEVICE FOR USE IN DETECTING GAS IN BODY FLUIDS AND TISSUE

John W. Brantigan, 914 Medical Plaza, Salt Lake City, Utah 84112

Filed Nov. 26, 1973, Ser. No. 419,109
Int. Cl. A61b *05/00*
U.S. Cl. 128—2 G **10 Claims**



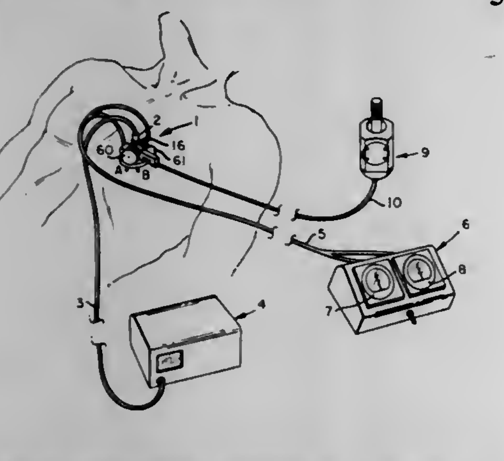
1. A catheter device for use with analyzing apparatus to obtain samples of gases from the blood or tissue of a patient, said device including a cannula carrying a distal end portion covered by a tubular membrane permeable to body gases and insertable into a blood vessel or tissue of a patient, wherein the improvement comprises:

said distal end portion being solid throughout its length, and said solid end portion being shaped to provide a path for gases between its external surface and said membrane covering it leading to the lumen of said cannula.

3,893,449
REFERENCE APPARATUS FOR MEDICAL ULTRASONIC TRANSDUCER

Robert D. Lee, San Mateo; Robert J. Hudock, and Dale I. Shute, both of San Jose, all of Calif., assignors to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 21, 1973, Ser. No. 427,395
Int. Cl. A61b *10/00*
U.S. Cl. 128—2 V **5 Claims**



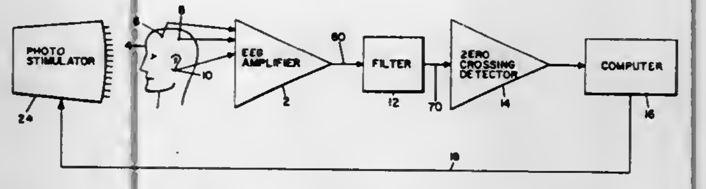
1. A transducer positioning apparatus comprising:

a base member with an aperture therethrough;
an elongated transducer receiving sleeve;
a ball joint including a seat, and a ball with a channel therethrough, said seat being fastened to said base member around the periphery of said aperture, said sleeve being secured about its midsection to the channel wall of said ball whereby said sleeve may swivel in two orthogonal directions about a point inside said sleeve;
first and second U-shaped yokes each having a slotted midsection, said slotted midsections being located over said aperture;
means for pivotably mounting the extremities of said yokes to said base member so that said yokes are orthogonally disposed to each other and said sleeve slidably engages the slotted midsection of each yoke;
means coupled to said yokes for remotely moving said yokes; and
means for remotely indicating the orientation of said transducer receiving sleeve with respect to said base member.

3,893,450
METHOD AND APPARATUS FOR BRAIN WAVEFORM EXAMINATION

John P. Ertl, 15 Linden Ter., Ottawa, Canada

Filed Oct. 9, 1973, Ser. No. 404,669
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.1 B **8 Claims**



1. A method of determining the response of a subject to an external stimulus including the steps of

a. positioning detection means in relation to a subject and detecting the electrical activity of the brain of the subject, said brain activity comprising a plurality of brain waveforms,
b. positioning a source of stimulation in an operative position in relation to the subject,
c. providing control means for causing said source to be activated a number of times in succession to provid a plurality of subject stimuli,
d. obtaining the resultant electrical activity by means of said detection means,
e. determining the passage of each resultant brain waveform through at least one particular selected mathematically determinable point,
f. determining a characteristic of said particular selected mathematically determinable point in the respective resultant brain waveform,
g. obtaining the sum of said characteristic for said plurality of subject stimuli,
h. effectively dividing said sum of characteristics by the number of said stimuli and providing an indication of the average value of said characteristic,
i. wherein said characteristic is the time interval between activation of said course of stimulation and the second falling zero crossing of the brain waveform, said average value being identified as the A score of the subject, and including the steps of obtaining the sum of the time intervals from the activation of said source of stimulation and the third falling zero crossing and effectively dividing the latter sum by the number of stimuli to provide an average value of the third falling zero crossings identified as the B score, said A score and said B score being utilized to indicate the condition of the subject, and
j. indicating the condition of the subject as represented by said A score and B score.

3,893,451
PRESSURE TRANSMISSION DEVICE

Herve Durand, 12 rue Jean Jaures, 95600 Eaubonne, France, and Theo Grandjean, 31 rue Rumine, 1011 Lausanne, Switzerland

Filed Oct. 10, 1973, Ser. No. 405,049
Claims priority, application France, Oct. 11, 1972, 72.36033
Int. Cl.^{2} A61B *5/02*
U.S. Cl. 128—2.05 D **11 Claims**

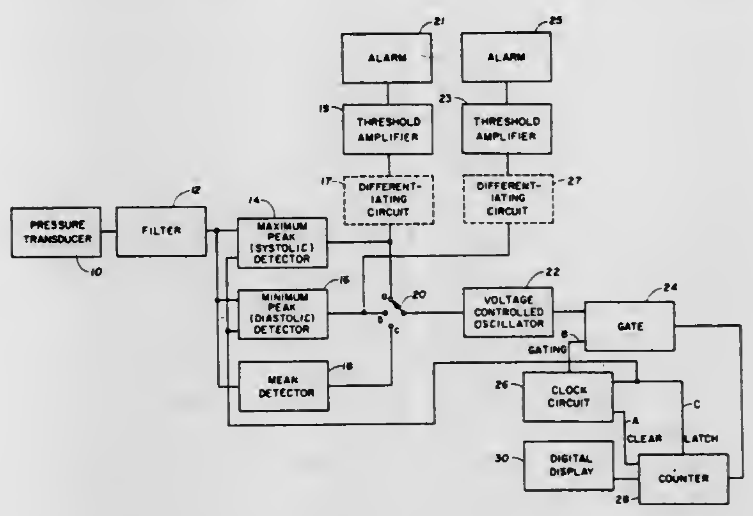
1. In a device for use in measuring blood characteristics, particularly blood pressure or the like, having a catheter tube for insertion into the blood stream of a body and a transducer apparatus for picking up and converting pressure variations into proportional electrical voltage variations susceptible of measurement, a combination comprising a pressure transmission tube having two spaced end portions and adapted to be filled with a substantially immobile liquid pressure transmission medium, said end portions respectively communicating

with said catheter tube and said transducer, and said pressure transmission tube defining an internal passage free of turbulence-producing projections and composed of at least two communicating main sections, one of said main sections having a constant inner diameter of between 0.5 and 2.5 mm and having a first self-resonant frequency, and the other of said main sections having a second self-resonant frequency and being of narrower diameter than said one main section and having a constant inner diameter of between 10 through 85 percent of said inner diameter of said one main section, whereby the self-resonant frequencies of said catheter tube and said pressure transmission tube are shifted away from the frequencies of the pressure variation signals to be measured so as to provide error-free measurement of the latter; and joining means forming a continuous internal channel located intermediate said sections of said pressure transmission tube and communicating with said internal passage so as to accommodate said liquid medium therein in a non-turbulent manner.

3,893,452
BLOOD PRESSURE MONITORING SYSTEM

Michael R. Birnbaum, New Brighton, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed July 9, 1974, Ser. No. 486,855
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 A **11 Claims**



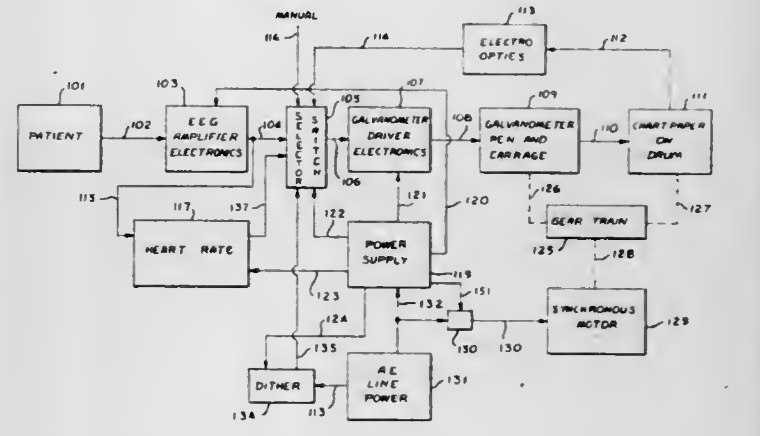
1. A system for monitoring the blood pressure of a patient, said system comprising:

a. transducer means adapted to be coupled to the arterial system of the patient for providing an output indicative of the patient's blood pressure;
b. detector means for sampling the output of said transducer means to detect and to store the maximum and minimum magnitudes of the transducer means output within a predetermined period and to provide first and second outputs indicative thereof, said detector means responsive to a reset signal to remove the stored magnitudes in preparation for sampling the next portion of said transducer means output;
c. oscillator means responsive to one of the first and second outputs of said detector means for providing a train of pulses whose frequency is dependent upon the magnitude of the one output of said detector means;
d. gate means for selectively gating the train of pulses derived from said oscillator means therethrough in response to a gating pulse signal;
e. counter means responsive to the gated train of pulses for providing an output indicative of the number of the train of pulses applied thereto;
f. display means for receiving the output of said counter to provide a display thereof; and
g. free-running clock means for providing and applying a latch signal of the predetermined period to said counter means to transfer the output of said counter means to said display means, the predetermined period being set in accordance with the lowest pulse beat of the patient to be monitored by said system, and for providing and applying the gating pulse signal of the predetermined period to said gate means to gate the passage of the oscillator means output to said counter means, the pulsewidth of the gating pulse signal being sufficient to permit said oscillator means to generate a number of pulses corresponding to the highest blood pressure of interest, the periodic latch signal also being applied to said detector means whereby the stored minimum and maximum magntidues are removed from said detector means.

3,893,453
COMPRESSED DATA DISPLAY SYSTEM

Herbert E. Goldberg, Concord, and Robert L. Cannon, Waltham, both of Mass., assignors to American Optical Corporation, Southbridge, Mass.

Filed Feb. 11, 1974, Ser. No. 441,684
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 G **40 Claims**



16. A system for displaying vital signs of a patient, said system comprising means for sensing said vital signs and for providing analogous electrical signals, supporting means, a looped markable surface supported by said supporting means, means for advancing and recycling said surface about a first axis, and marking means responsive to said signals for coating said surface with representations of said signals in a helical path about said axis.

3,893,454
INSTRUMENT FOR USE IN CONIOTOMY

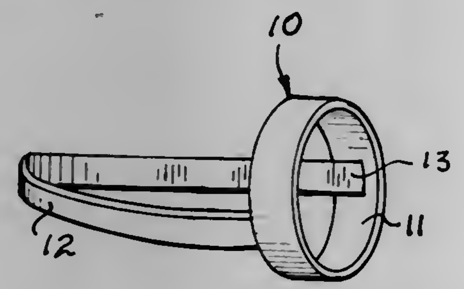
Karl Wilhelm Hagelin, Backvagen, Sweden, assignor to Aktiebolaget Stille-Werner, Stockholm, Sweden
Filed Feb. 6, 1974, Ser. No. 440,121
Claims priority, application Sweden, Dec. 4, 1973, 7316352
Int. Cl. A61b *17/24*
U.S. Cl. 128—17 **8 Claims**

1. An instrument for use in coniotomy, comprising:
a. a speculum portion including blades jointly defining an air flow passage extending between an outer and an inner end thereof; and
b. a knife unit having a blade movably introducible through said air flow passage and so advanceable that the point of the blade can protrude from said inner end of said speculum portion;

whereby said speculum portion provides guidance for said knife unit, and whereby said air-flow passage becomes unrestricted in response to retraction of said knife unit.

3,893,455
MALE RETAINING DEVICE

Aubrey D. McNally, 1136 N. Grimes, McPherson, Kans. 67460
Filed July 16, 1971, Ser. No. 163,384
Int. Cl. A61f *5/00*
U.S. Cl. 128—79 **1 Claim**

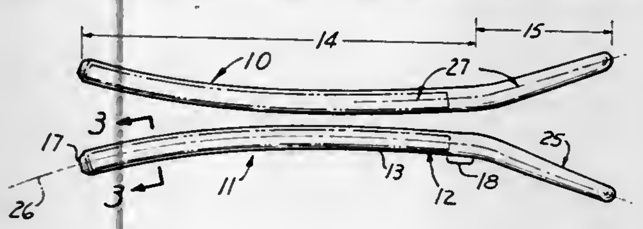


1. A device of the character described comprising, annulus means adapted to encircle and engage a penis of a human male, said annulus means being circular, and breeching means connected to said annulus means for encircling and engaging a scrotum of the human male for retaining said annulus means on the penis of the human male, and said breeching means having end means thereof connected to said annulus means along a chord of said annulus means parallel to a diameter thereof.

3,893,456
PENILE PROSTHESIS

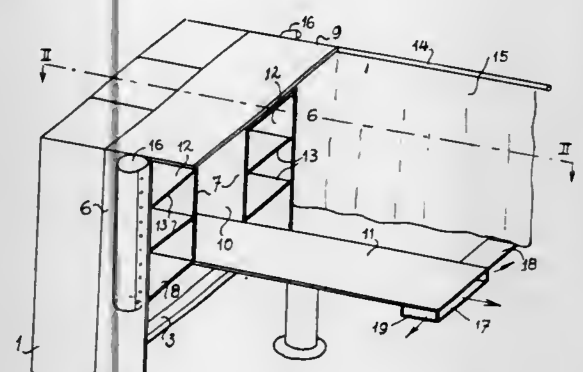
Michael P. Small, Miami Lakes, Fla., and James E. Cox, Goleta, Calif., assignors to Heyer-Schulte Corporation, Goleta, Calif., by said James E. Cox
Filed Aug. 7, 1974, Ser. No. 495,315
Int. Cl. A61f *5/00*
U.S. Cl. 128—79 **20 Claims**

1. A prosthesis for implantation in the penis to provide a flaccid penis with rigidified dimensions of length and width and with the property of flexural stiffness, said prosthesis comprising a one-piece member which includes a composite rod having a dimension of axial length and, for the major proportion of its length, comprising two physically distinct bodies that are integrally joined to each other, one of which is more resistant to bending and to compressive deformation than the other, and a prong extending from said rod, said prong decreasing in lateral cross-section as it extends away from the rod, one of the bodies being stiffly flexible.



3,893,457
GERM-FREE OPERATING TABLE

Dirk van der Waaij, Voorburg, Netherlands, assignor to Pielkenrood-Vinitex N.V., Assendelft, Netherlands
Filed June 16, 1972, Ser. No. 263,587
Claims priority, application Netherlands, June 17, 1971, 7108371; Dec. 10, 1971, 7116954
Int. Cl. A61g *7/04, 13/00*
U.S. Cl. 128—132 R **7 Claims**



1. A device for providing germ-free air flow above an operating table on which a patient is to be placed who is to be isolated as to air from the environment of the table and from the room in which the table is located, said operating table having first and second opposite ends and two sides, the device having a cabinet with blower means in said cabinet, the blower means having an air intake and an air outlet, the cabinet further containing air filter means to filter said airflow and having an air exit arranged vertically for discharging laminar air flow in a substantially horizontal direction, said operating table being disposed with said first end positioned adjacent the cabinet, so that the air, as blown and discharged, flows in a longitudinal direction in relation to said table, the improvement comprising:

said exit being divided into three portions; a central portion, through which air is blown and discharged adjacent to the first end of the table to yield an air flow above and along the table and two lateral portions on opposite sides of said central portion, the exit having a lower border sufficiently above the floor so that air is not blown over the floor surface;

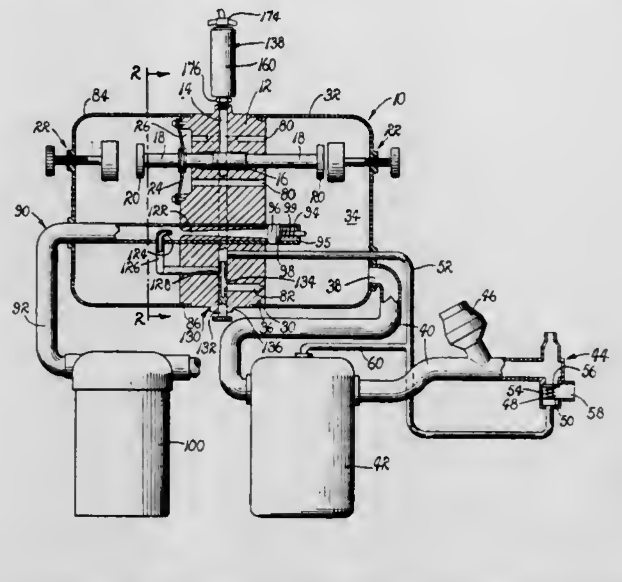
each of said two lateral portions having outwardly extending baffle portions on both sides thereof to direct air laterally and alongside said table into the area occupied by a person or persons standing at the sides of said table;

the air intake for the blower means disposed below the exit to suck air from underneath said table, thereby creating a low pressure region under the flow along the underside of the table; curtains extending from the outwardly extending baffle portions located farthest from the operating table, along said table, said curtains being suspended from guides extending from the upper portions of said baffles, the curtains having lower edges ending above the floor, but below the table, so that the air blown from the lateral exit portions flows along the curtains and is confined therewith;

the blower means being capable of providing substantially horizontal air flow over the whole length of the table when the air is discharged from the central as well as the lateral portions of the exit; and means defining additional discharge means connected to receive germ free air from said blower and having first discharge means adjacent the second end of the table opposite the cabinet for blowing air laterally away from the table, transverse to said longitudinal direction.

3,893,458
HEAT STERILIZABLE PATIENT VENTILATOR

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Alexander S. Irons, La Canada; Paul P. Muehter, Tujunga, and Willie D. Kent, Los Angeles, all of Calif.
Filed Mar. 7, 1974, Ser. No. 449,153
Int. Cl. A61m *16/00*
U.S. Cl. 128—145.8 **6 Claims**

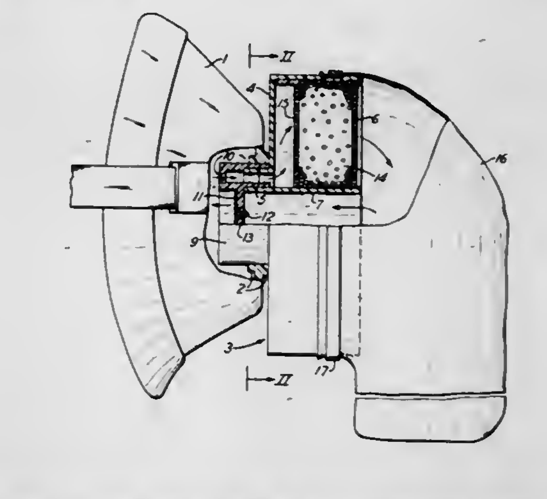


1. In a heat-sterilizable patient ventilator of the type including a ported center-body having means defining a circumscribing annular shoulder, a shell mounted on said shoulder for defining in juxtaposition with the center-body an hermetically sealed reservoir for confining gas consisting essentially of a bacteria-free mixture of ambient atmospheric gas and pure oxygen, and means for discharging said mixture from said reservoir including a first tubular gas conduit extended from said reservoir to a discharge fitting, the improvement comprising:

means for delivering bacteria-free gas to said reservoir including,
  A. a second tubular gas conduit of relatively constant diameter extending from said reservoir having means defining at one end thereof a gas discharge port communicating with said reservoir and means defining at the other end thereof an ambient gas intake port remotely related to said gas discharge port;
  B. filter means connected to the second tubular gas conduit at the said other end thereof for substantially sealing said ambient gas intake port against entry of microorganisms including:
    1. a filter housing,
    2. a dust filtration unit seated in said housing formed of Scott filter foam,
    3. a microbial filtration unit seated in said housing in juxtaposition with said dust filter unit including a plurality of screen-supported bacterial retentive pads formed of FM-004 fiberglass filter material, and
    4. a media migration filtration unit seated in said housing in juxtaposition with said microbial filtration unit formed of Scott filter foam; and
  C. means including a gas jet coaxially related to said second tubular gas conduit for discharging into the second conduit a stream of gas consisting essentially of pure oxygen.

3,893,459
EMERGENCY BREATHING APPARATUS

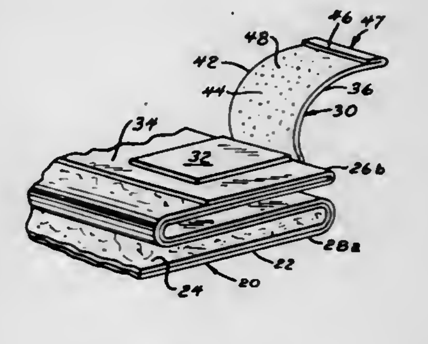
John W. Mausteller, Evans City, and Miles J. McGoff, Warrendale, both of Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.
Filed Mar. 4, 1974, Ser. No. 447,855
Int. Cl. A61m *15/00*
U.S. Cl. 128—191 R **4 Claims**



1. Emergency breathing apparatus comprising a mask member having an open inner side, a closed outer side and provided with a breathing opening in said outer side, a chemical cartridge member secured to the mask member, the cartridge member having an exhalation passage extending therethrough registering with said breathing opening, a carbon dioxide removing and oxygen generating chemical in said exhalation passage, a breathing bag provided with an opening receiving said mask member with said cartridge member inside the bag, said bag being sealed against the mask member about the periphery of said opening whereby the mask member supports the bag, one of said members being provided with an inhalation passage by-passing said chemical for connecting the inside of the bag with the inside of the mask member, and an inhalation check valve in said inhalation passage preventing exhalation through that passage.

3,893,460
DIAPER TAPE FASTENER

Hamzeh Karami, Crystal Lake, Ill., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed May 23, 1974, Ser. No. 472,530
Int. Cl. A61f *13/16;* **A41b** *13/02*
U.S. Cl. 128—287 **14 Claims**



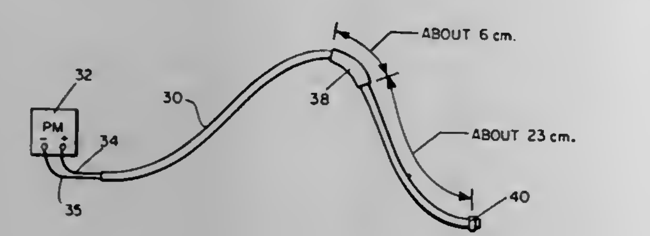
1. A tape fastener for a disposable diaper having front and back surfaces facing toward and away from an infant, respectively, after placement of the diaper, said fastener comprising:

a release sheet secured to the front surface of the diaper adjacent a side edge of the diaper; and

a pressure-sensitive tape strip extending around the side edge of the diaper, said strip having a first end section secured to the back surface of the diaper, and a second end section having a securement portion releasably attached to said release sheet, and tab means adjacent the outer end of said securement portion relative the side edge of the diaper and having an adhesive free surface portion facing the front surface of the diaper to provide for easy removal of the securement portion from said release sheet, said tab means comprising a strip of material covering at least a portion of adhesive adjacent the outer end of the second end section, and including means for releasably retaining said tab means adjacent a surface of said diaper.

3,893,461
PACING APPARATUS AND METHOD UTILIZING IMPROVED CATHETER

Thomas A. Preston, 820 37th Ave., Seattle, Wash. 98122
Filed Nov. 28, 1972, Ser. No. 309,996
Int. Cl. A61n *1/36*
U.S. Cl. 128—419 P **23 Claims**



10. A method of artificially pacing a human patient comprising periodically generating outside of said patient electrical pacing signals, positioning a first electrode at a first position within said patient's heart and a second electrode at a second position within said patient's vascular system but outside of said patient's heart, transmitting said signals into said patient and connecting them to said electrodes with said signals being negative at said first position with respect to said second position.

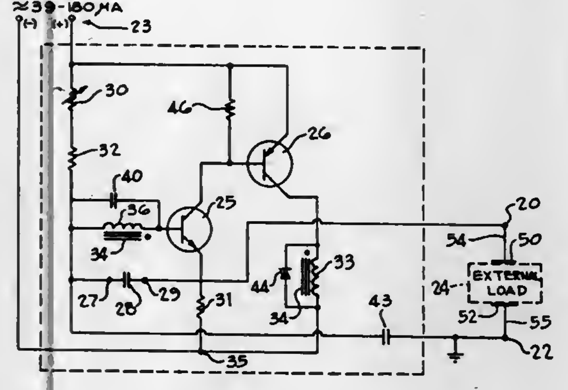
3,893,462
BIOELECTROCHEMICAL REGENERATOR AND STIMULATOR DEVICES AND METHODS FOR APPLYING ELECTRICAL ENERGY TO CELLS AND/OR TISSUE IN A LIVING BODY

Michael R. Manning, Philadelphia, Pa., assignor to ESB Incorporated, Philadelphia, Pa.
Continuation-in-part of Ser. Nos. 221,653, Jan. 28, 1972, abandoned, and Ser. No. 290,391, Sept. 19, 1972, abandoned. This application Dec. 22, 1972, Ser. No. 315,901
Int. Cl. A61n *1/36*
U.S. Cl. 128—421 **30 Claims**

1. An electrical medical device for artificially stimulating normal bone growth and repair processes in a predetermined zone of a living body by modifying the electrical potential of the predetermined zone of the living body comprising:

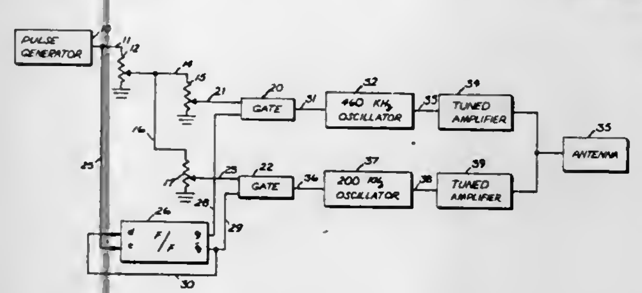
a. means for generating an electrical signal undulating in both the positive and negative directions and having a wave-form whose rise time is different from its fall time; and

b. means for reactively coupling said signal to said predetermined zone of said living body and for effecting a voltage in said predetermined zone undulating both in the positive and negative directions with the maximum amplitude of said voltage in one direction being greater than the maximum amplitude of said voltage in the opposite direction thereby to artificially stimulate normal bone growth and repair processes in said predetermined zone.



3,893,463
DUAL CHANNEL STIMULATOR

Terrell M. Williams, Minneapolis, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.
Filed Dec. 7, 1973, Ser. No. 422,897
Int. Cl.^{2} A61N *1/36*
U.S. Cl. 128—421 **10 Claims**



1. A body implantable receiver which comprises: antenna means;

first and second passive frequency detector means connected in parallel with each other and said antenna means for resonating with said antenna means at a first and a second frequency, respectively;

dual channel output means including active output electrode means in each channel; and

means interconnecting said passive frequency detector means and said dual channel output means for isolating each output means channel from signals produced by resonance at a different one of said first and second frequencies.

3,893,464
TOBACCO COMPOSITION

Vello Norman, and Herman G. Bryant, Jr., both of Durham, N.C., assignors to Liggett & Myers Incorporated, Durham, N.C.
Filed Dec. 19, 1973, Ser. No. 426,114
Int. Cl. A24b *15/02*
U.S. Cl. 131—17 R **8 Claims**

1. A smoking composition comprising:

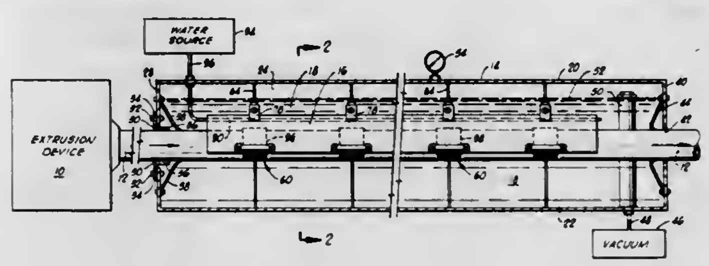
a. tobacco;

b. finally divided zinc oxide in a catalytic amount of from about 0.1 to about 15 weight percent sufficient to reduce the amount of polycyclic aromatic compounds in tobacco smoke; and

c. a nitrate of calcium, magnesium or zinc in an amount of from about 0.25 to about 0.75 weight percent calculated as nitrate nitrogen, based upon the weight of said tobacco, said amount being sufficient to effect a further reduction in the amount of polycylic aromatic compounds in said smoke.

3,893,465
GUIDE DEVICE FOR PLASTIC TUBE EXTRUSION

Lowell K. Cheatwood, Oklahoma City, Okla., assignor to Jess & Lowell Well Casing Co., Oklahoma City, Okla.
Filed Apr. 22, 1974, Ser. No. 462,819
Int. Cl. B05c *3/15*
U.S. Cl. 134—122 **8 Claims**



1. Apparatus for use in combination with a tubing extrusion device of the type which heat extrudes continuous tubing for axial passage through a coolant filled elongated chamber, comprising:

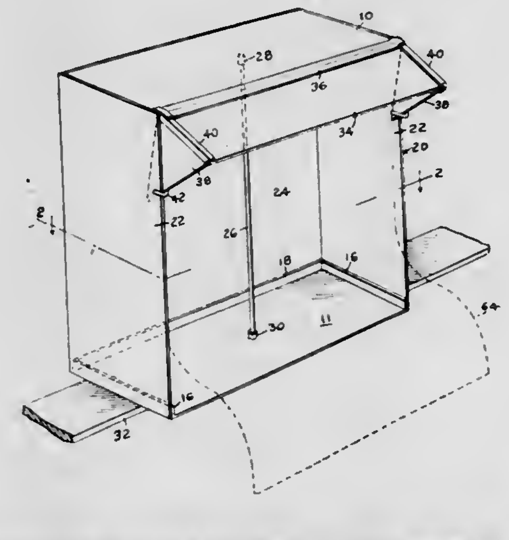
an elongated guide member formed as a downward opening transversely concave member and having first and second sides, said guide member being secured within said chamber to extend longitudinally axially and above the path of said tubing axial passage;

at least one resilient means adjustably secured to opposite ones of said first and second sides, said resilient means being adjusted to form a transverse, upwardly concave and generally parabolic shape wherein the uppermost arcuate portion of said resilient means is disposed in contact with said extruded tubing passing therebeneath; and

means for adjusting the lateral and vertical positioning of said resilient means in relation to the axial passageway of said tubing through said elongated chamber.

3,893,466
PORTABLE COLLAPSIBLE SHELTER

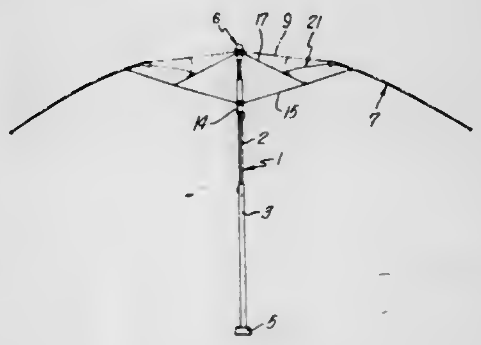
Joseph K. Barker, Rt. 2, Abingdon, Va. 24210
Filed May 7, 1973, Ser. No. 357,833
Int. Cl.^{2} E04F *10/10*
U.S. Cl. 135—5 R **4 Claims**



1. A portable temporary shelter comprising top and bottom substantially rigid plates, flexible waterproof end and side walls secured at their upper and lower ends respectively to the end edge portions of said plates and the back portions thereof, movement of said top plate upwardly from said bottom plate stretching said end and rear walls into substantially planiform shape, and a unit structurally separate from said plates and comprising solely a single vertical post extending between said top and bottom plates and having with said plates interengaging portions centrally of said plates, said post being of such a length as to exert an upward force against said upper plate, which force is transmitted by said upper plate radially from said post to maintain said end and side walls in planiform shape, engagement of opposite ends of said post with the respective plates being solely by tight frictional contact therewith, said bottom plate being adapted to support a user of the device on each side of said post.

3,893,467
UMBRELLA

Wilhelm Wingen, Weimlingen, Germany, assignor to Telesco Brophey Limited, Montreal, Canada
Filed Dec. 10, 1973, Ser. No. 423,567
Claims priority, application Germany, Dec. 11, 1972, 7245328[U]
Int. Cl. A45b *19/00*
U.S. Cl. 135—25 R **7 Claims**



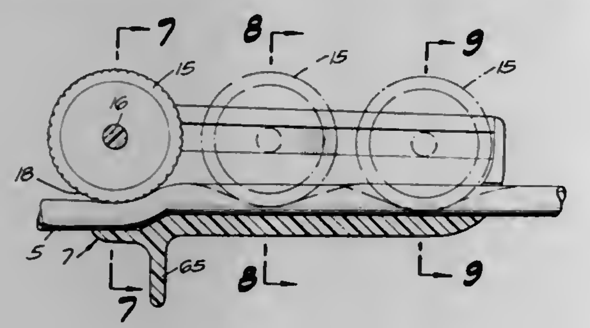
1. An umbrella frame having a stick; a runner slidable on the stick; a plurality of dome rib assemblies each including a stretcher member pivotably connected at one end to the runner; a dome rib pivotably connected, intermediate its ends, to the other end of each stretcher member; a strut pivotably connected at one end to each stretcher member, intermediate the ends of the stretcher member, and at the other end to the stick; a link connected to the end of each dome rib and to a point on the strut member, the link member, strut member, stretcher member and dome rib member of each assembly forming a quadrilateral structure; at least one member forming said quadrilateral including means for biasing the dome rib away from the stretcher member when the dome rib is moved to a position substantially parallel to, and adjacent, the stretcher member.

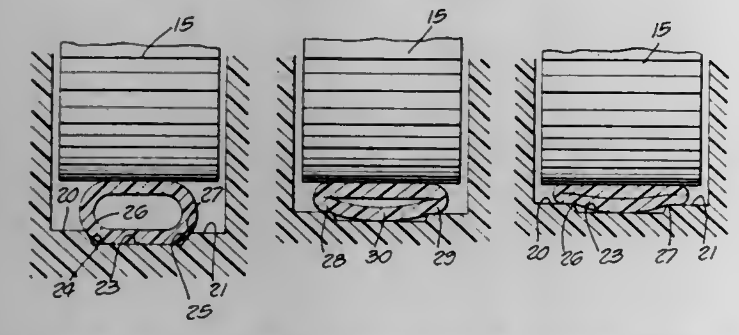
3,893,468
CLAMP FOR FLEXIBLE TUBE AND METHOD OF REGULATING FLOW IN SUCH TUBE

Carles J. McPhee, Sylmar, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.
Filed June 22, 1970, Ser. No. 47,958
Int. Cl. F16k *7/06*
U.S. Cl. 137—1 **19 Claims**

1. For regulating fluid flow rates, the combination of: a resilient tube having a bore therethrough; a clamp body having front and rear ends, a longitudinal channel receiving the tube, and a floor element in the channel fitting against the tube; longitudinal guide means on the body that converges toward the floor element as it proceeds in a forward direction along the clamp body; a pressure element movable along the longitudinal guide means for progressively pinching the tube against the floor element to partially collapse the tube and regulate fluid flow through its bore; the clamp body and pressure element forming about the tube an external clamping structure that includes a pair of ledge surfaces laterally separated by a groove surface defining a longitudinal groove between the ledge surfaces; and which clamping structure pinches opposite side portions of the tube to a greater extent against the ledge surfaces than it pinches a longitudinal central

portion of the tube received within the groove as the pressure element moves along the longitudinal guide means, thereby





reducing flow rate drift over a period of time at a particular clamp setting.

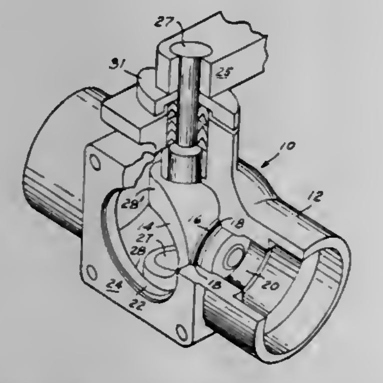
3,893,469
ROTARY PLUG VALVE

Joseph Winston Baker, Plainfield, N.J., assignor to Brunswick Corporation, Skokie, Ill.

Continuation of Ser. No. 278,467, Aug. 7, 1972, abandoned. This application Dec. 16, 1974, Ser. No. 532,873

Int. Cl.² F16K *5/06, 27/06*

U.S. Cl. 137—584 **10 Claims**



1. In a rotary plug valve containing a main valve housing with a circular main flow cavity therein and a rotary plug to control fluid flow therethrough journaled on an axis of rotation within the main valve housing, the improvement comprising:

a. a C-shaped rotary plug having two ears and a face, journaled on removable trunnions;
b. circular seal means mounted on the face of the plug for fluid-tight engagement against a sealing surface surrounding the main flow cavity when the valve is in a closed position;
c. a circular access port having a diameter that is smaller than the exterior ear-to-ear distance of the plug but large enough to permit insertion or removal of the plug by manipulation when the plug's trunnions and seal are removed and the plug is rotated from the closed position, having a cross-sectional area of 1.0–1.6 times greater than the cross-sectional area of the main flow cavity, and having a location in a side wall of the housing parallel to the fluid flow, the seal means being completely exposed through the port when the valve is in an open position;

whereby the C-shaped rotary plug and its circular seal means may each be inspected, serviced, installed or removed through a single access port only 1.0–1.6 times greater in cross-sectional area than the cross-sectional area of the main flow cavity.

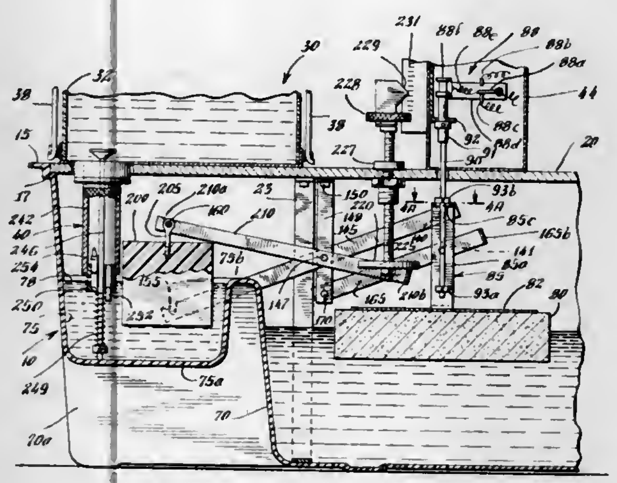
3,893,470
LIQUID MIXING AND DISTRIBUTING APPARATUS

John MacPhee, Rowayton, and Harold W. Gegenheimer, Darien, both of Conn., assignors to Baldwin-Gegenheimer Corporation, Stamford, Conn.

Filed May 20, 1974, Ser. No. 471,208

Int. Cl. G05d *11/13*

U.S. Cl. 137—101.27 **10 Claims**



1. Liquid mixing and distributing apparatus comprising

A. a first compartment for receiving a primary liquid and having a combination therewith
   1. first liquid supply means having an on condition in which it can introduce primary liquid into the first compartment and an off condition in which introduction of further primary liquid into the first compartment is precluded;
   2. a float in the first compartment which rises and falls with the level of primary liquid in that compartment;
   3. a liquid supply control connected with said float and operative when the liquid in the first compartment falls to a predetermined minimum level to turn said first liquid supply means to its on condition and operative when the liquid reaches a predetermined maximum level to turn that supply means to its off condition; and
   4. control means effective when the liquid level in the first compartment reaches its maximum level to cause the liquid in that compartment to flow into a use conduit and effective when the liquid level in the compartment reaches its minimum level to preclude further flow of such liquid into the use conduit, whereby under the joint action of said control means and the said liquid supply control, the liquid in said compartment will oscillate between its maximum and minimum levels;
B. A second compartment arranged in proximity to said first compartment for receiving a secondary liquid to be mixed in measured quantities with the primary liquid, said second compartment
   1. having a point above which liquid contained in that compartment will overflow into the first compartment; and
   2. being provided with secondary liquid supply means effective during use of the apparatus to maintain a constant minimum level of the secondary liquid in the second compartment;
C. a piston extending downwardly into the second compartment, said piston being movable vertically between a relatively elevated position in which it does not displace sufficient secondary liquid to cause such liquid to rise above the overflow point of the second compartment and a relatively depressed position in which it does displace sufficient secondary liquid to cause such liquid to rise above said overflow point and to flow into intermixing relationship with the liquid contained in the first compartment; and
D. means effective to move the piston towards its relatively elevated position as the liquid level in said first compartment falls and effective to move the piston towards its relatively depressed position as the liquid level in the first compartment rises.

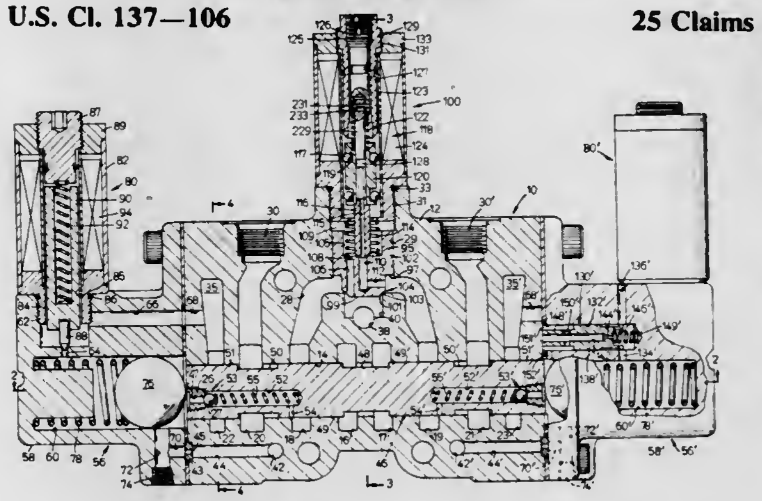
3,893,471
PRESSURE COMPENSATING FLUID CONTROL VALVE

James Otto Byers, Jr., Racine, Wis., assignor to Tomco, Inc., Racine, Wis.

Filed Oct. 4, 1973, Ser. No. 403,509

Int. Cl. F16k *11/07*

U.S. Cl. 137—106 **25 Claims**



1. A control valve of the type having a body with a valve spool shiftable from a neutral position at which fluid from a fluid inlet passage network flows through the valve to an operating position at which fluid is directed from the fluid inlet passage network to a pressure passage, said pressure passage in the operative position of said valve spool being connected to one of a pair of cylinder passages, the other of said pair of cylinder passages being connected to a tank passage, the valve being characterized by a flow restricting orifice controlled by said valve spool for restricting fluid flow through the valve, valve means for controlling the flow rate between said inlet passage network and said pressure passage, pressure compensating means operatively associated with each end of said valve spool, means for selectively actuating said pressure compensating means for maintaining the flow rate through said valve means to the pressure passage, said compensating means being in fluid communication with said inlet fluid passage network and said pressure passage whereby said valve spool responds to variations in the pressure differential across said valve means to maintain a fixed flow rate through said valve means.

3,893,472
MANUALLY CONTROLLED REGULATOR VALVE WITH EXHAUST CONTROL

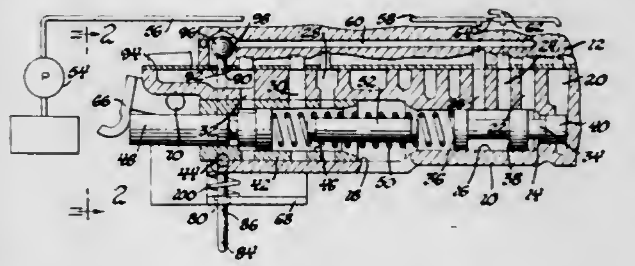
David A. Schuster, New Boston, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed June 12, 1974, Ser. No. 478,597

Int. Cl. B60k *23/00*

U.S. Cl. 137—116.3 **3 Claims**

1. A manually controlled throttle pressure regulator valve comprising; a valve body; fluid passage means in said valve body including an inlet pressure passage, an outlet pressure passage, and an exhaust pressure passage; valve means disposed in said valve body for providing selective fluid communication between said inlet and outlet passages and between said outlet and exhaust passages; manually operated means for imposing a manually controlled bias on said valve means for establishing a variable pressure between maximum and minimum values in said outlet passage proportional to said bias, said valve means establishing communication between said outlet passage and said exhaust passage for reducing the pressure in said outlet passage when the pressure therein is greater than the bias; operator control means mechanically connected to said manually operated means for transmitting operator motion to said manually operated means; and exhaust control means for preventing exhausting of said outlet passage and maintaining the pressure level in said outlet passage at a predetermined value when said operator control means is disconnected from said manually operated means.



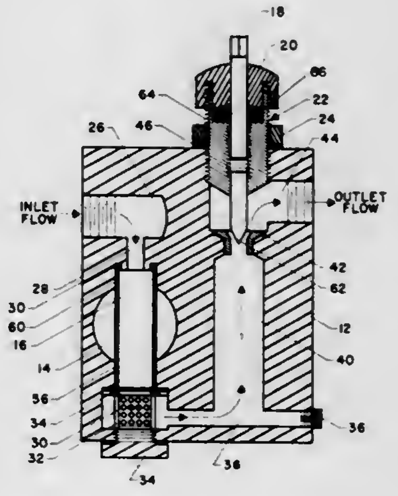
3,893,473
CONDENSATE DRAINER

George E. Breece, 1390 S. Ocean Blvd., Pompano Beach, Fla. 33062

Filed May 14, 1973, Ser. No. 359,908

Int. Cl. F16t *1/34*

U.S. Cl. 137—171 **1 Claim**



1. A condensate drainer in which the internal level of the condensate may be visually determined and is manually maintained comprising:

a housing of unitary construction, said housing having a steam inlet condensate chamber, and a condensate outlet chamber, a vertical passage in communication with said inlet chamber, said vertical passage opening at its upper end into said inlet chamber, a vertically disposed cylindrical chamber coupled at the bottom in communication with said vertical passage having an enlarged radius the inside surface of which is disposed concentrically outside of said vertical passage end, said housing having a lateral passage disposed therethrough, the lower edge of said vertical cylindrical passage opening into said housing lateral passage, a second vertical passage axially in line with said first vertical passage opening into the diametrically opposite side of said housing lateral passage, a strainer chamber in communication with said second vertical passage, a cross-over conduit, a third vertical passage, said cross-over conduit connecting said strainer chamber with said third vertical conduit; and

a tubular glass conduit connected into said housing upper end into the first vertical passage in a fluid-sealed manner having its lower end received into said strainer chamber with portion of said glass cylinder conduit in contact with said second vertical chamber whereby a portion of said glass conduit disposed within said housing lateral passage is observable from said front face and said rear face of said housing;

a threaded plug coupled into said straining chamber;

a strainer disposed within said strainer chamber, held in position by said plug;

an adjustable valve means separating said third vertical chamber from said outlet flow chamber, said valve movable from an open position allowing for communication between third vertical chamber and said outlet chamber to a closed position stopping fluid communication between said third vertical chamber and said outlet chamber.

3,893,474

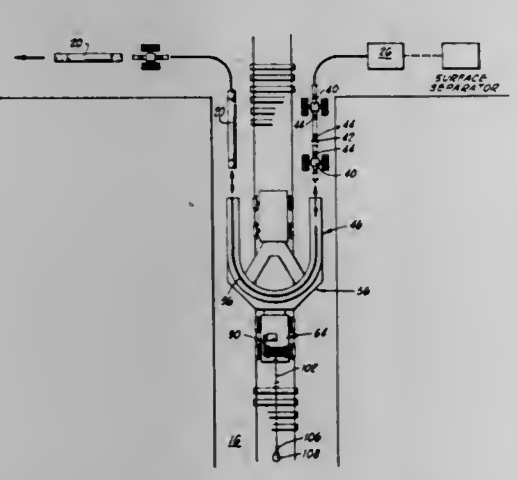
CARRIER FOR A BEND-FORMING CONVEYOR

Ronald W. Umphrey, and David L. McCain, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed May 15, 1974, Ser. No. 470,037

Int. Cl. B65g *53/30*

U.S. Cl. 137—344 **11 Claims**



1. In a system for transporting a slurry from a mining machine in a mine having a floor, and which includes at least one flexible hose supported by a plurality of carts spaced along the length of the hose and pivotally interconnected, and wherein the hose is required to be moved around a bend, the improvement comprising:

an elevating conveyor movably supporting the hose and carts off the mine floor in the bend portion of the hose;

a vehicle supporting the elevating conveyor;

guide means movably guiding the vehicle; and,

powered means connected to the vehicle and to the mine for moving the elevating conveyor along the guide means.

3,893,475

FLOAT VALVE

George D. Hudson, 120 Hobbs Cir., Santa Paula, Calif. 93060

Filed Oct. 5, 1973, Ser. No. 403,814

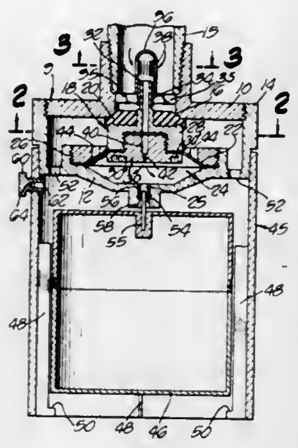
Int. Cl. F16k *31/18*

U.S. Cl. 137—414 **20 Claims**

1. In a float valve for replenishing a body of liquid from a pressurized liquid source in response to drop in the level of the liquid body, wherein a control chamber is in communication with the pressurized source and has a movable wall to exert pressure to close a main valve to cut off the source from the liquid body and a pilot valve operated by a float opens and closes a bleeder port of the control chamber,

the improvement comprising:

said pilot valve including a pilot valve member to open and close the bleeder port, said pilot valve member being fixedly mounted on the float and movable therewith to engage or disengage a seat around said bleeder port to



thereby close or open the bleeder port in response to rise and fall of the float.

3,893,476

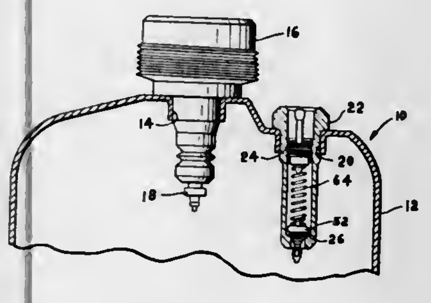
RELIEF VALVE CORE

William Sylvester Stroh, Dickson, Tenn., assignor to Scovill Manufacturing Company, Waterbury, Conn.

Filed Mar. 8, 1974, Ser. No. 449,333

Int. Cl. F16k *15/02*

U.S. Cl. 137—543.17 **3 Claims**



1. A pressure vessel having a tubular valve housing mounted in an opening therein, the housing having an interiorly threaded upper portion and an upwardly-facing valve seat therebelow; and a relief valve core in the housing comprising:

a. an exteriorly threaded cylindrical body engaging the interior threads of the housing, the body having an axial recess extending up from the lower end thereof and a bridge extending transversely across the upper end thereof, the bridge having a bore on the axis of the body with a bevelled lead-in from the underside of the bore;

b. a downwardly-facing plunger cup disposed at the lower end of the core and having a radial wall and a connected downward sidewall;

c. a sealing washer disposed in the cup and adapted to seat on the upwardly-facing valve seat to close the valve;

d. a stub shaft having a short section above the cup and extending axially through the center of the radial wall of the cup and being snugly embraced by the sealing washer;

e. pin means extending freely upward through the bore in the bridge and having an outwardly sloping shoulder and an enlarged head below the bridge, the shoulder engaging the bevelled lead-in of the bridge; and

f. a spiral compression spring secured to the head at its upper end and wrapped around the short section of the shaft at its lower end;

whereby when the body is screwed into the housing, the body may be rotated without rotation of the sealing washer.

3,893,477

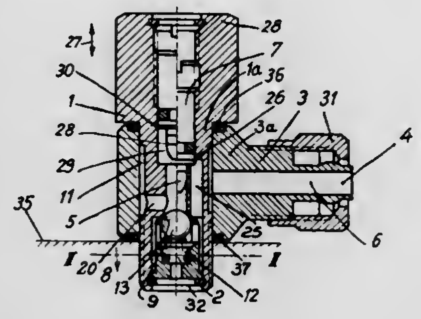
CONNECTING DEVICES

Kurt Stoll, Lenzhalde, Esslingen, and Gerhard Hihn, Schurwaldstr. 7, Berkheim, both of Germany

Filed July 31, 1973, Ser. No. 384,254

Int. Cl. F16k *15/18*

U.S. Cl. 137—614.2 **9 Claims**



1. An adaptor/connector for a conduit for a gaseous medium comprising a casing having a central bore with a first outlet connection at one end and a connector combined into one unit with the casing and including an inlet connection, which fits over the housing providing an annular distributing channel connected therewith, the inlet connection including a bore therethrough which extends substantially perpendicular to the bore of the housing and communicates with said annular distributing channel, and a radial channel connecting the distributing channel with the central bore, a connection between the outlet connection and the annular bore, a check valve means in such connection for normally preventing the flow of medium from the outlet channel to the annular bore, a connecting channel in the housing parallel to and separate from the annular bore, and extending from a point in the outlet member below the check valve to the end of the annular bore remote from the check valve, and a throttle valve at the end of the annular bore remote from the check valve for controlling the opening between the connecting channel and the end of the central bore remote from the check valve.

3,893,478

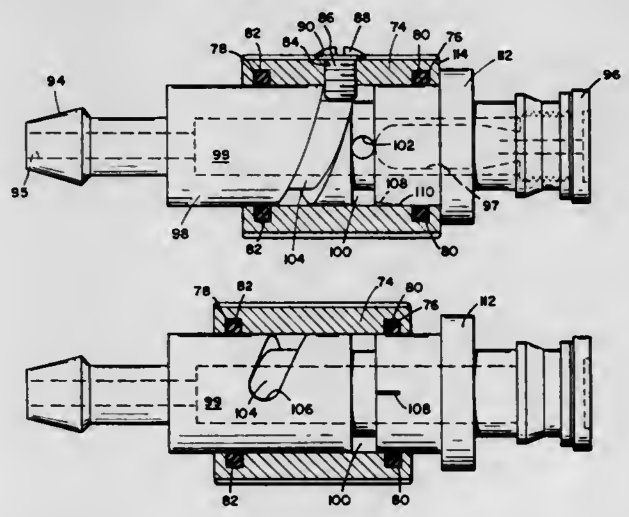
SPHYGMOMANOMETER PRESSURE RELIEF VALVE

Rudolph W. Peters, 5786 Balmoral Dr., Oakland, Calif. 94619

Continuation-in-part of Ser. No. 318,575, Dec. 26, 1972, abandoned. This application Feb. 4, 1974, Ser. No. 439,400

Int. Cl.² F16K *11/085*

U.S. Cl. 137—614.2 **8 Claims**



1. A valve for controlling the rate of flow of a fluid from a zero flow through gradual pressure relief to substantially complete and instantaneous full pressure relief, comprising: an axially and rotationally displaceable collar having an axial passage therein and a pin radially extending into said passage; a stationary first member generally disposed within said passage in said collar and having a helical slot wherein is tracked said pin, said pin and said helical slot constituting means for axially moving said collar on said first member when said collar is rotated with respect to said first member, said first member having a through axial passage providing an inlet and an axially opposed outlet, and said first member further having an outwardly opening vent slot having its effective cross sectional area axially increasing in one direction and being in fluid communication with said first member axial passage; sealing means axially displaceable in said one direction and rotationally displaceable in unison with said collar and said pin from a first position on a first axially side of said vent slot and axially spaced therefrom, through a plurality of intermediate positions immediately radially adjacent said vent slot at a plurality of locations along the axial length of said vent slot, to a second position on the axially opposite side of said vent slot and axially spaced therefrom for correspondingly sealing said vent slot with respect to the atmosphere in said first position, providing increasing pressure relief for said first member axial passage through said intermediate positions and completely venting the pressure from said first member axial passage in said second position.

3,893,479

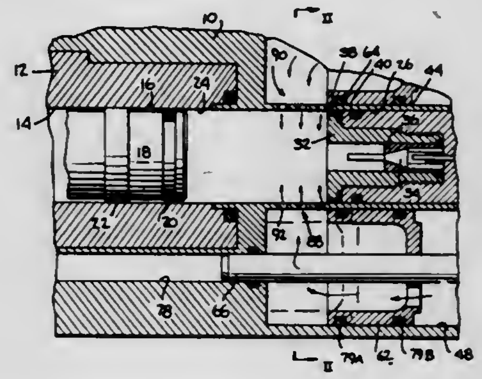
HIGH RATE OF FLOW PORT FOR SPOOL VALVES

Douglas P. Tassie, St. George, Vt., assignor to General Electric Company, Burlington, Vt.

Division of Ser. No. 148,833, June 1, 1971. This application July 11, 1973, Ser. No. 378,146

Int. Cl. F16k *3/24, 3/34*

U.S. Cl. 137—625.3 **4 Claims**



1. A valve for controlling the passage of fluid therethrough, for providing a steep rise to the fluid pulse envelope, comprising:

a valve chamber having a surface which has therein a port means for fluid,

a valve spool having a longitudinal axis and having a ring type seal abuting said surface for closing and for exposing said port means, said valve spool being disposed for rectilinear movement along its longitudinal axis,

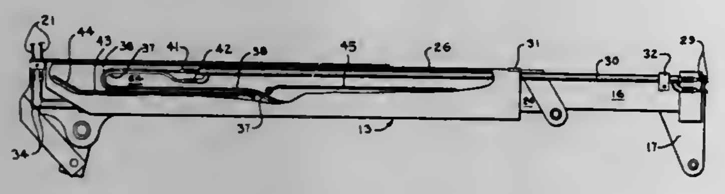
said ring type seal having a cross-sectional diameter parallel to said axis,

said port means comprising a plurality of bores, each having a respective and identical diameter parallel to said spool longitudinal axis which is smaller than said cross-section diameter of said ring type seal, the total cross-sectional area of said port means being equal to the sum of the cross-sectional areas of said bores,

said plurality of bores being arranged in a pattern of rows transverse to said spool longitudinal axis, the number of said bores in each of said rows being a variable to predetermine the steepness of the rise of the fluid pulse envelope generated by operation of said valve, and arranged in a pattern of acceleration of cross-sectional port area such that as said valve spool moves at a constant velocity to open said port, an increasing cross-sectional port area is exposed per unit time.

3,893,480
HYDRAULIC LINE ASSEMBLY

Glenn G. Dunbar, 2608 Overbrook Dr., Toledo, Ohio 43614
Filed Dec. 26, 1973, Ser. No. 427,986
Int. Cl. B65h *75/36*
U.S. Cl. 137—615 **6 Claims**



1. A hydraulic line assembly for use on an extensible boom having a fluid supply source, a non-extending base section and a movable arm section extending outwardly from said base section, said assembly comprising,

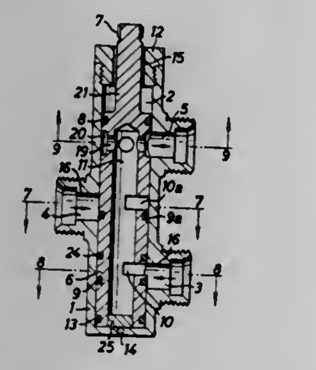
a rigid conduit assembly having at least two independent fluid transfer conduits, said rigid conduit assembly having its forward end attached adjacent the forward end of such movable arm and its rearward end slidably mounted on such base section,

a plurality of flexible conduits positioned adjacent such base section, said flexible conduits having forward ends attached to and in fluid communication with said independent fluid transfer conduits, their other ends being in communication with the fluid supply source, and

a housing positioned on the exterior of the non-extending base section, said housing defining a chamber for receiving said flexible conduits and stationary divider means mounted within said housing for maintaining separation between portions of said flexible conduits during extension and retraction of the movable arm.

3,893,481
MIXER TAPS OR VALVES

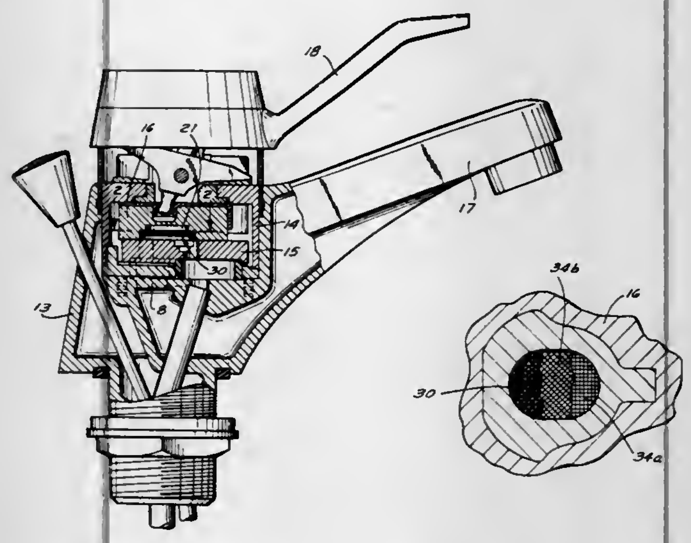
Horace Watts, Pinner, England, assignor to H. & D. E. Watts Limited, Pinner, England
Filed Mar. 13, 1973, Ser. No. 340,688
Int. Cl. F16k *11/02*
U.S. Cl. 137—625.17 **3 Claims**



1. A mixer tap or valve for hot and cold water supplies comprising a housing having an inner surface defining a cylindrical chamber; laterally disposed inlet ports for the respective supplies, said inlet ports being spaced apart in the longitudinal direction of said chamber and communicating therewith; at least one outlet port for said supplies or a mixture thereof communicating with said chamber; a cylindrical piston arranged for rotation and reciprocation in said chamber and movable axially between an open and a closed position; passage means in said piston for providing communication between said inlet ports and said at least one outlet port and adapted to cooperate with said inlet ports so as to select or mix the supplies and to control the volume thereof; and sealing means between said piston and said surface and comprising a plurality of axially spaced coaxially disposed annular sealing members located respectively in annular grooves in said piston and bearing with sliding and sealing engagement against said surface, one of said sealing members being arranged in such a manner as to be located always between the two inlet ports without overlapping either of the same in open as well as in closed position of the valve and at least one other of said sealing members being located with a slight stretch fit in its groove to prevent said at least one other sealing member to bulge locally unduly into the associated inlet port, said at least one other sealing member being positioned to move at least partially across at least one of said inlet ports upon axial movement of said piston to said closed position, the arrangement being such that surge pressure occurring upstream of said other annular sealing member at the instant of closure acts on the transverse projected area thereof in the same axial direction as that in which the piston is moved to close the valve.

3,893,482
LOW NOISE FAUCET

Bernd Loose, Krov, Mosel, Germany, assignor to American Standard Inc., New York, N.Y.
Filed Nov. 5, 1974, Ser. No. 521,129
Claims priority, application Germany, Nov. 10, 1973, 2356326
Int. Cl.^{2} F16K *11/00*
U.S. Cl. 137—625.17 **10 Claims**



1. In a water faucet having a valve body with control elements formed by two discs, the first disc being stationary and having water inlet openings and water outlet opening connected on one side to a valve manifold and on the other side directed towards the second disc which is movably arranged on the first disc, the second disc having a surface cavity arranged and constructed to overlap the inlet openings and the outlet opening formed in the first disc, the improvement comprising:

noise reducing assembly disposed within the surface cavity of the second disc and including a plurality of overlapping screens, the wire orientation of each screen being angularly offset with respect to that of the other screens;

said noise reducing assembly being spaced a predetermined distance from the ceiling of said cavity defining a noise-isolating chamber within the cavity.

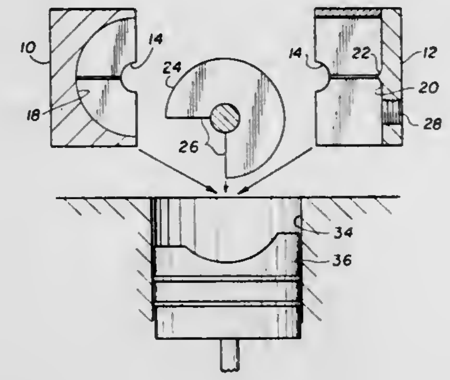
3,893,483
ROTARY VALVE TRAIN

Timothy Ackerman, Main St., Centerbrook, Conn. 06409
Filed Jan. 4, 1974, Ser. No. 430,904
Int. Cl. F01l *7/00*
U.S. Cl. 137—625.21 **4 Claims**

1. A rotary valve train comprising:

an elongated block having an axial bore and a plurality of longitudinally spaced recesses centered on the bore and extending outward at right angles, each recess being ported and having first and second halves, the first half being semi-circular, the second half being rectangular;

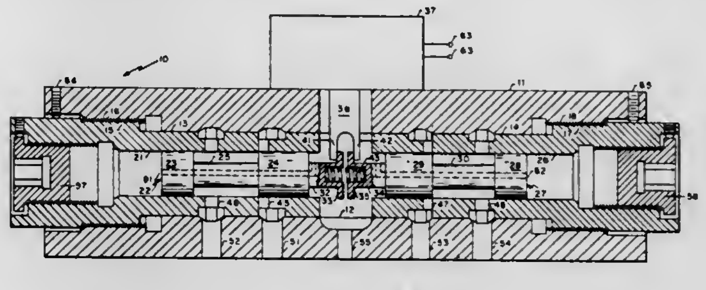
an elongated shaft rotatable about its axis disposed in the bore; and



a like plurality of circular discs, each centered on and secured to the shaft and rotated therewith, the discs being longitudinally spaced, each disc being disposed in a corresponding recess and rotatable therein, each disc having a cut out portion defining a circular sector.

3,893,484
CYLINDER AND PISTON VALVE

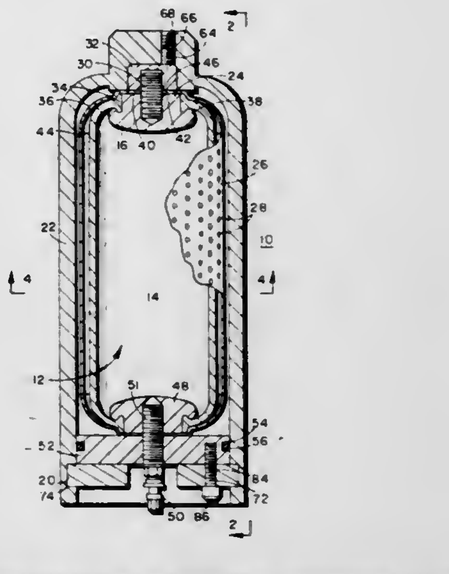
James Thomas Greene, Salem, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.
Filed July 27, 1973, Ser. No. 383,367
Int. Cl. F15b *13/02, 5/00;* **F16k** *11/07, 11/10*
U.S. Cl. 137—625.65 **5 Claims**



1. A valve system including a housing formed to define a hollow cylinder, first and second separate pistons, each including a plurality of lands, disposed in opposite ends of said cylinder, said housing being formed to define first and second groups of generally radial passageways each providing communication between the interior of said cylinder and the exterior of said housing and cooperating with said first and second pistons respectively, a torque motor including an actuating arm and responsive to an input signal for displacing said arm in a first or a second direction in accordance with the sense and magnitude of said signal, said torque motor being disposed with said actuating arm extending within said hollow cylinder at approximately the axial midpoint thereof, resilient means for urging said pistons into engagement with said arm, whereby said arm and said resilient means cooperate to displace said pistons in response to said input signal and to return said pistons to their former positions in the absence of an input signal, characterized in that said valve system includes first means for adjusting the relative positions between said first group of passageways and said first piston without adjusting the relative positions between said second group of passageways and said second piston and second means for adjusting the relative positions between said second group of passageways and said second piston without adjusting the relative positions between said first group of passageways and said first piston in order to establish a reference position at which the lands of each piston are located symmetrically with respect to said passageways in the absence of an input signal.

3,893,485
PULSATION DAMPENER

Ernest W. Loukonen, 615 W. Civic Center Dr., Long Beach, Calif. 92701
Continuation of Ser. No. 178,307, Sept. 7, 1971, abandoned. This application June 25, 1973, Ser. No. 373,110
Int. Cl. F16l *55/04*
U.S. Cl. 138—30 **7 Claims**



1. A bladder assembly for a pulsation dampener comprising: a flexible cylindrical bladder with generally dome shaped end walls each having an opening on the axis of the bladder and a thickened annular rim portion surrounding said opening and forming about the opening an inner axially projecting sealing lip at the inner side of the respective end wall and an outer axially projecting sealing lip at the outer side of the respective end wall,

two anchors each having a central portion extending through a respective bladder opening and an enlarged head portion seating against the inner side of the respective bladder end wall and containing an annular sealing groove receiving the respective inner sealing lip of the bladder,

two anchor bolts each coaxially secured to a respective anchor and extending externally of said bladder,

two generally dome shaped end caps each fitting over a respective end of said bladder and having an annular sealing shoulder surrounding and engaging the respective outer sealing lip of said bladder and a central opening through which the corresponding anchor bolt extends,

a generally cylindrical screen extending between the two end caps in surrounding relation to said bladder and joined to said end caps, and

one anchor bolt containing an axial passage through which the interior of said bladder may be pressurized.

3,893,486
ACCUMULATOR WITH TEMPERATURE COMPENSATION

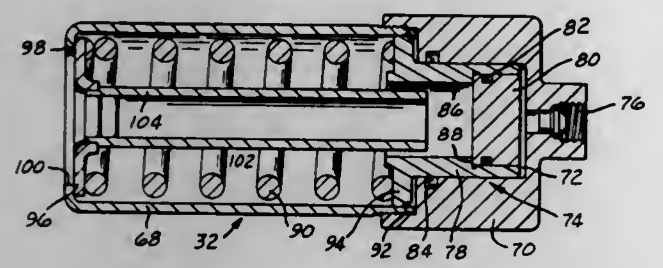
Robert E. Meyers, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.
Filed May 16, 1973, Ser. No. 360,705
Int. Cl. F16l *55/04*
U.S. Cl. 138—31 **10 Claims**

1. A vessel for storing fluid under pressure comprising:

a hollow housing having a closed end connectible to a fluid pressure source;

composite piston means including first and second relatively movable portions, said composite piston means being slidably disposed in the housing and forming a variable volume chamber with the closed end;

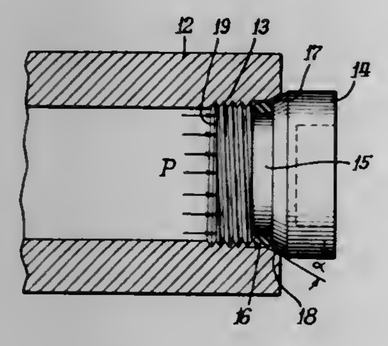
resilient means engaging the first portion of the composite piston means and urging the composite piston means toward the closed end; and stop means against which the second portion of the composite piston means is urged when the pressure and volume of fluid in the chamber have attained predetermined values respectively;



said composite piston means being responsive to an increase in volume of fluid above said predetermined volume to increase the volume of said chamber to compensate for fluid expansion due to temperature rise.

3,893,487
HIGH PRESSURE HYDRAULIC FITTING

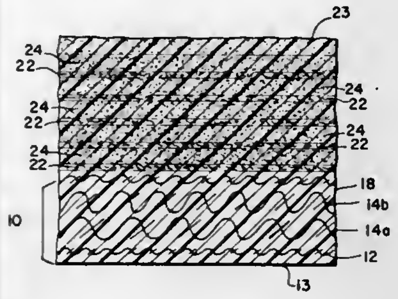
Frederick S. Engelking, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Dec. 26, 1973, Ser. No. 428,614
Int. Cl. B65d *51/00*
U.S. Cl. 138—89 **6 Claims**



1. A fitting assembly for a high pressure fluid system including; housing means for containing said high pressure fluid, said housing means including an axially extending bore, plug means for being received within said bore for selective closure thereof, seal means disposed between said plug means and said housing means for preventing egress of fluid from said bore when said plug means is positioned for closure thereof, said housing means including a first bevelled surface proximate said seal means and disposed at a first predetermined angle with respect to the axis of said bore, said plug means including a second bevelled surface proximate said seal means and disposed at said first predetermined angle with respect to said axis for abutting engagement with said first bevelled surface when said plug means is positioned for closure of said bore, said first predetermined angle being acute, said plug means including a plug member having an enlarged head portion and having a reduced section shank portion, said plug member further having a further reduced section annular groove thereon axially between said head portion and said shank portion, said seal means being disposed in said annular groove and not between said first and second bevelled surfaces.

3,893,488
CORROSION RESISTANT GEL COATING LINING FOR COMPOSITE PLASTIC PIPE

Philip A. Rogers, Neshanic Station; Jack E. Hesse, Somerville, and Joseph P. Ferraro, Scotch Plains, all of N.J., assignors to Johns-Manville Corporation, Denver, Colo.
Continuation of Ser. No. 197,397, Nov. 10, 1971, abandoned. This application Jan. 25, 1974, Ser. No. 436,572
Int. Cl. B32b *15/02;* **D03d** *13/00*
U.S. Cl. 138—141 **14 Claims**



1. An improved corrosion resistant gel coat for use as an exposed inner lining in reinforced plastic sewer pipe, comprising:

a cylindrical inner layer formed by a spunbonded polyester fibrous sheet, said sheet having a break elongation of at least 40 percent and formed of fibers that retain at least 50 percent of their tensile strength when exposed to 60 percent H_2SO_4 at 70°F for 100 hours;

an adjacent cylindrical layer of woven polyester fabric, said adjacent layer having a break elongation of at least 20 percent and formed of fibers that retain at least 50 percent of their tensile strength when exposed to 60 percent H_2SO_4 at 70°F for 100 hours; and

a cured acid resistant polymeric matrix encasing said layers and bonding said layers together in a laminar relationship.

14. A composite plastic pipe, comprising:

a cylindrical body portion comprising reinforced plastic material; and

a cylindrical corrosion resistant gel coat located concentrically within and against said body portion so as to provide an inner liner for said body portion, said gel coat including

a cylindrical inner layer comprising a sheet of spunbonded polyester fibers,

a cylindrical layer of woven polyester fabric located radially outwardly from said inner layer, and a cured polyester matrix bonding said layers together in a laminar relationship and bonding the gel coat to said body portion.

3,893,489
APPARATUS FOR REGULATING THE TENSION OF WARP THREADS IN POWER LOOMS

Friedrich Wilhelm Bassing, and Gottfried Gerhard Wilhelm Hoffmann, both of Hamburg, Germany, assignors to ALFA-LAVAL Bergedorfer Eisenwerke GmbH, Hamburg, Germany
Filed Dec. 11, 1973, Ser. No. 422,937
Claims priority, application Germany, Dec. 12, 1972, 2260607
Int. Cl.^{2} D03D *49/06, 49/10*
U.S. Cl. 139—110 **10 Claims**

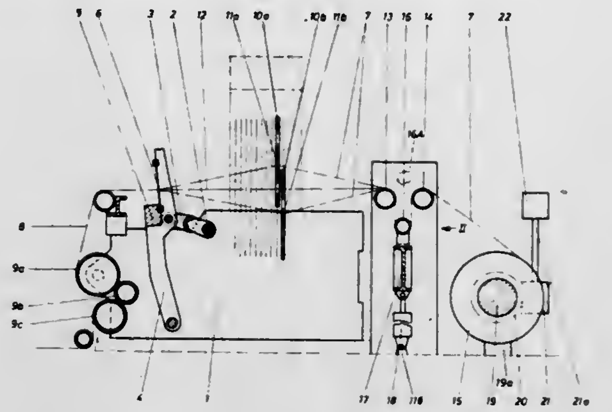
1. In a power loom, a combination comprising a frame; at least one rotary warp beam; a variable-speed hydraulic motor for rotating said warp beam in a direction to pay out warp threads; means for collecting the fabric obtained by interweaving said warp threads with filling threads at a weaving station; and an arrangement for regulating the let-off of the warp threads with constant warp thread tension, said arrangement comprising:

a. a pair of spaced-apart guides located between said warp beam and said weaving station and arranged to engate one side of each warp thread,

b. a displaceable dancer roll resting in a bight of the warp threads between said guides and engaging the other side of each warp thread,

c. a support member rotatably supporting said dancer roll,

d. hydraulic cylinders connecting said support member to said frame and each having a piston reciprocably therein and defining at least one pressure chamber,



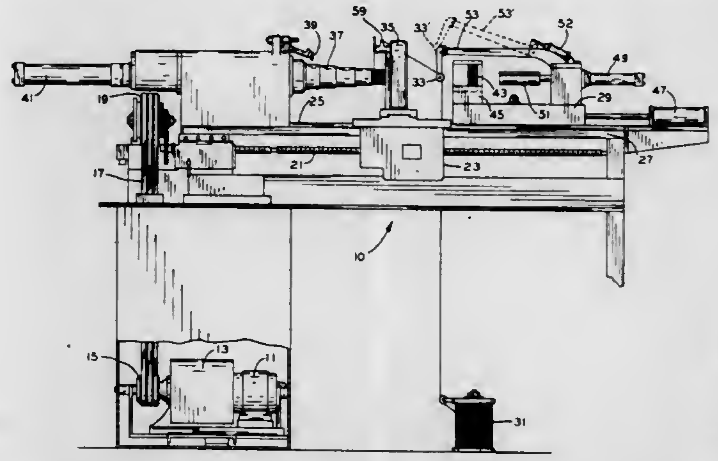
e. conduit means connecting each pressure chamber to a source of pressurized hydraulic fluid for urging said dancer roll against the warp threads,

f. an adjustable constant pressure regulating valve connected to said conduit means for maintaining a constant pressure in said pressure chambers irrespective of the position of said dancer roll, and

g. regulating means continuously actuated by said support member for adjusting the flow of pressurized hydraulic fluid to said hydraulic motor in response to displacement of said dancer roll.

3,893,490
WINDING AND INSERTING APPARATUS AND METHOD

Hollace R. McKinley, and Leo M. Schlaudroff, both of Fort Wayne, Ind., assignors to General Electric Company, Fort Wayne, Ind.
Division of Ser. No. 306,527, Nov. 15, 1972, abandoned. This application Apr. 8, 1974, Ser. No. 458,460
Int. Cl. B21f *3/04*
U.S. Cl. 140—92.1 **8 Claims**



1. A method of winding and inserting at least one coil group into a stator core, comprising:

winding electrically conductive wire about a coil form to thereby create a coil group;

collapsing the coil form to relieve the tension on individual turns and thereby allow movement of the coil group;

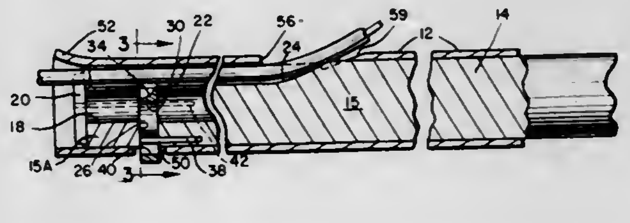
passing a guide member through the stator core so as to align the core and guide member;

moving a portion of the coil form with the coil group suspended therefrom toward the guide member until the portion of the coil form and guide member mesh to thereby properly align the portion with the guide member;

continuing to move the portion of the coil form so as to force the guide member back through the stator bore, with the guide member maintaining porper alignment of the portion of the coil form and the stator core until the portion of the coil form enters the bore of the stator and at least until means associated with the portion of the coil form engage the stator core so as to maintain proper alignment of the portion of the coil form and the stator core.

3,893,491
COMBINATION INSULATED CONDUCTOR WIRE STRIPPING CUTTING AND WRAPPING TOOL

Edmond F. Jackson, Jr., West Warwick, and Daniel T. Hannify, Warren, both of R.I., assignors to Ostby & Barton Co., Providence, R.I.
Filed Sept. 6, 1974, Ser. No. 503,592
Int. Cl.^{2} B21F *15/00*
U.S. Cl. 140—122 **4 Claims**



1. A device for stripping and wrapping wire about a terminal in a series of successive convolutions comprising

a rotatable wrapping bit having an end face,

said bit having a terminal receiving means and insulated conductor receiving means with both means opening to said end face,

a transverse slot extending diametrically across said bit inwardly of said end face,

a knife means received in said slot for sliding movement therein,

said knife means having a central aperture and a cutting edge at one end thereof disposed normally out of said conductor receiving means,

the other end of said knife means having an arcuate edge,

a sleeve disposed about said bit and including a partial circumferential slit forming an opening to receive the other end of the knife,

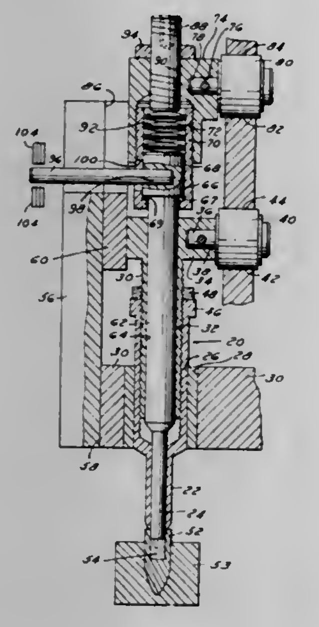
and means to reciprocate said knife in said slot.

3,893,492
APPARATUS AND METHOD FOR ACCURATELY DISPENSING AND CONSOLIDATING POWDERED MATERIAL INTO RECEPTACLES

John E. Nohren, 1760 Long Bow Ln., Clearwater, Fla. 33516
Filed Aug. 6, 1973, Ser. No. 385,890
Int. Cl. B65b *1/16*
U.S. Cl. 141—1 **21 Claims**

1. A method for repetitively dispensing an accurate charge of particulate material from a supply container to a charge container comprising the steps of creating a predetermined volume open ended charge cavity after and while the open end of said charge cavityis submerged within said particulate material in said supply container in a manner adapted through the creation of said cavity per se to cause the filling of said cavity with said material, creating a predetermined volume reduction of said cavity while the open end of said charge cavity remains submerged within said particulate material in said supply container in a manner adapted to cause deaeration

and precompaction of the charge material within said cavity, the removal of said reduced cavity with said charge material



from said supply container, and the dispensing of said charge material from said cavity to said charge container.

3,893,493
PNEUMATIC DEVICE FOR CONTROLLING THE FILLING OF A CONTAINER

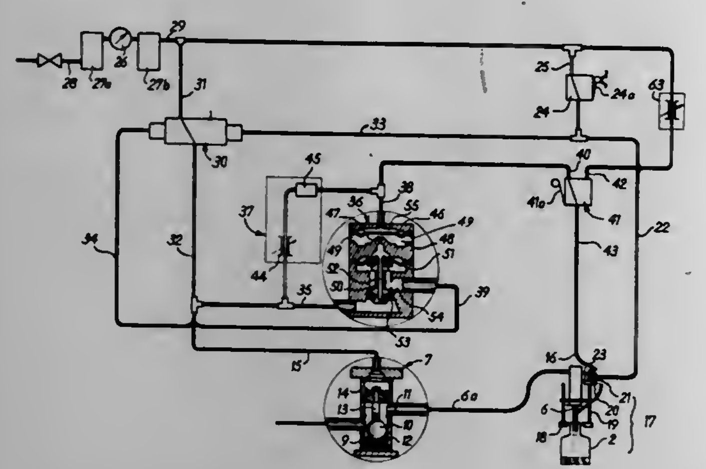
Jacques Foirest, Montfermeil; Emile Ballin, Aulnay-sous-Bois, and Guy Favero, Tremblay-les-Gonesse, all of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

Filed Dec. 20, 1973, Ser. No. 426,688

Claims priority, application France, Dec. 21, 1972, 72.45571

Int. Cl. B65b *31/00*

U.S. Cl. 141—47 **10 Claims**



1. In a pneumatic device for controlling the filling of containers, said device comprising at least one filling head including a liquid supply tube for introducing liquid into a container and a level detecting probe through which a flow of air is simultaneously introduced into said container, said probe having an opening positioned near a predetermined level to which a container in filling position relative to said head is to be filled, said liquid supply tube being provided with a liquid control valve controlling the flow of liquid therethrough, and control means connected between said liquid control valve and said level detecting probe, the improvement according to which said control means comprises:

- a detector valve responsive to the presence of a container in said filling position and a first gas control valve connected to supply gas to said detector valve,
- a pneumatic distributor having a control member therein which controls the flow of gas through said distributor, the output of said distributor being connected to actuate said liquid control valve and the output of said first gas valve being connected to said distributor at one side of said control member, the pressure supplied to said distributor from said first gas valve being insufficient to operate said control member to open said liquid control valve when said detector valve is open, but sufficient to do so when said detector valve is closed,
- a pneumatic pressure regulator having a main inlet, a main outlet and a control inlet the application of pressure to which increases the flow between said main inlet and main outlet, with said main inlet connected to the output of said pneumatic distributor and its main outlet connected to the other side of said control member,
- a flow-limiting device connected between the output of said pneumatic distributor and the control inlet of said pneumatic pressure regulator,
- a second gas control valve having a first input connected to said flow-limiting device and a second input connected to a source of compressed gas, the output of said second gas-control valve being connected to supply said level-detecting probe only with gas from said flow limiting device when said second gas valve is in a first position and only with gas from the second input of said second gas control valve when said second gas control valve is in a second position,

whereby whenever flow from said second gas control valve input through said second gas valve is blocked by closure of the opening in said probe or by location of said second gas valve in its second position, the resulting pressure in the second input of said second gas control valve is applied to the control inlet of said pneumatic pressure regulator to increase the output pressure applied through said regulator to said other side of said control member, thereby reversing the position of said distributor to close said liquid supply valve.

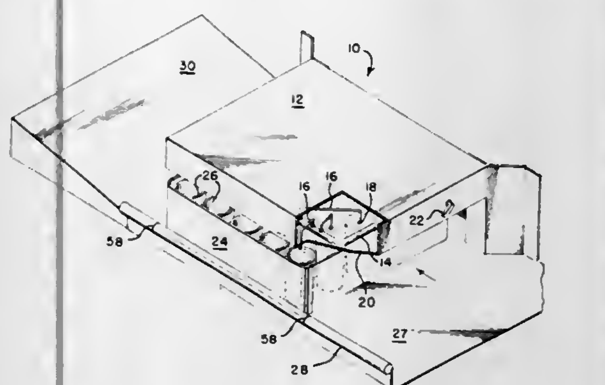
3,893,494
MULTIPLE GLASS FILLER APPARATUS

Robert W. Whitney, 1235 Second Ave., Seattle, Wash. 98109

Filed June 22, 1973, Ser. No. 372,661

Int. Cl. B65b *3/36*

U.S. Cl. 141—244 **7 Claims**



1. Apparatus for simultaneously filling a plurality of glasses in racks of varying size with ice water including:

- a rack supporting counter having glass icing, filling, leveling and draining stations;
- said glass filling station including a water supply pipe, three-way valve means regulating the flow of water from said supply pipe, first and second sets of branch pipe means separately selectively interconnectable with said water supply pipe by said three-way valve means, a plurality of distribution tubes mounted on the top surface of said branch pipes and extending outwardly to points above each glass in a rack positioned therebeneath;

- said glass filling station further including a cabinet enclosing said sets of branch pipes and said distribution tubes and including a bottom plate having a plurality of holes therein, each hole being associated with the outlet end of one of said distribution tubes;
- said rack supporting counter including an inclined portion over which a rack of filled glasses is moved to cause a portion of the water therein to spill to equalize the level of water in all glasses in said rack; and,
- drain means on said counter associated with said filled glass draining station to collect water spilled from said glass.

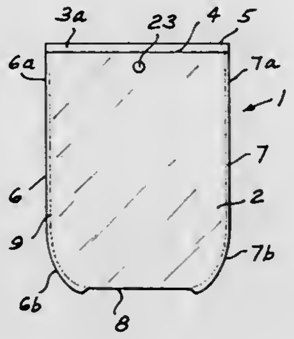
3,893,495
HOLDER FOR A TRANSLUSCENT OR TRANSPARENT BOTTLE CONTAINING A LIQUID

Robert Standifer, Fort Lauderdale, Fla., assignor to North American Biologicals, Inc., Miami, Fla.

Filed May 16, 1974, Ser. No. 470,531

Int. Cl. A61j *12/00*

U.S. Cl. 150—52 R **4 Claims**



1. A holder for a bottle having a neck portion and containing a therapeutic liquid, said holder comprising bag made of a pliable translucent synthetic plastics material, said bag having two sides biased to assume a flat and engaging relationship when the bag is empty, one end edge of the bag being open, said edge constituting the entry end of the bag for inserting a bottle thereinto, the width of the bag being reduced toward the end edge thereof opposite to the open edge of the bag, said opposite end being open for a length shorter than said one edge to constitute a slot for passage of the neck portion of the bottle, the two sides of the bag being spreadable relative to each other for accommodating the body of the bottle therebetween, said slot retaining the bottle within the bag except for the neck portion thereof.

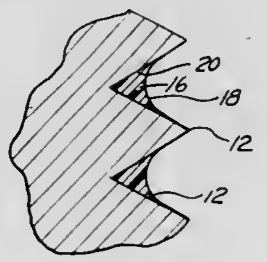
3,893,496
FRICTION COATING AND SEALANT FOR THREADED PARTS

Richard B. Wallace, Bloomfield Hills, and Sidney L. Reegen, Oak Park, both of Mich., assignors to The Oakland Corporation, Troy, Mich.

Continuation-in-part of Ser. No. 231,420, March 2, 1972, abandoned. This application July 27, 1973, Ser. No. 383,059

Int. Cl. F16b *39/00*

U.S. Cl. 151—14.5 **34 Claims**



1. A friction construction comprising a first member having a smooth surface normally movable in sliding relation under pressure against a similarly shaped smooth surface of a companion member, said first member having a dry deposit of a solid friction producing material permanently bonded to the smooth surface of said first member prior to bringing said first member into juxtaposition to said companion member, said deposit having a non-tacky outer surface to prevent treated members from sticking together, having a high viscosity such that viscous flow takes place under continuous applied force, and characterized in that the resistance to separation of the bond to the smooth surface of said one member exceeds the resistance to viscous flow under continuous applied force, and in that the outer surface of said deposit has a high friction value opposing relative movement between said one member and a companion member, said material being essentially a resinous mixture comprising a major proportion of an acrylic polymeric material, and a minor proportion of an adhesion promoting polymer in an amount effective to increase the strength of the bond of the resinous mixture to the smooth surface of said first member compared to the strength of the characteristic bond between the acrylic polymeric material and the smooth surface.

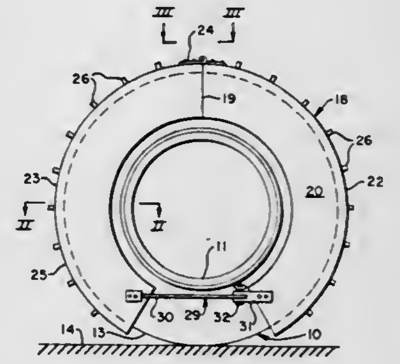
3,893,497
ANTI-SKID DEVICE FOR AUTOMOBILE TIRES AND THE LIKE

Ernest Vagias, 265 Prospect St., Baden, Pa. 15005

Filed Nov. 20, 1973, Ser. No. 417,502

Int. Cl. B60c *11/00*

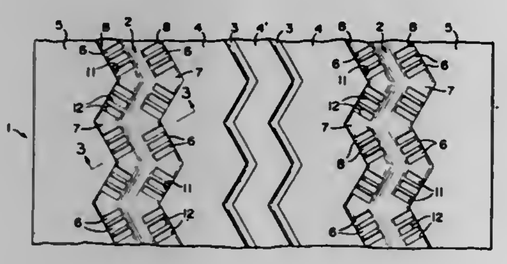
U.S. Cl. 152—179 **7 Claims**

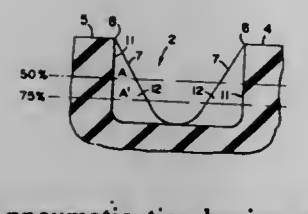


1. An anti-skid apparatus to envelop all but a circular segment just sufficient to permit independent support of a vehicle by the exposed tread of a pneumatic tire thereof upon the ground, said apparatus comprising:

- an anti-skid casing including a tread wall and two spaced-apart side walls extending from the edges of said tread wall; said casing excluding a circular segment just sufficient to insure the establishment of an enveloping relation with said pneumatic tire while the tire independently supports the vehicle upon the ground; said casing defining the remaining portion of the circular segment and being divided at its two side walls to form two casing parts and that are hinged together only at the tread wall, at least said tread wall and one of said side walls being discontinuous to define an arcuate gap between terminal ends of the two casing parts just sufficient to independently support said vehicle by the pneumatic tire thereof,
- the hinged connection at the tread wall joining said casing parts together for pivotal movement only at the tread wall by displacing the terminal ends of the casing parts so as to pass said anti-skid casing into a partially surrounding relation with the tread portion of said pneumatic tire while supporting said vehicle upon the ground, and
- interconnecting fastening means carried by at least one of the side walls of said casing parts at the free ends thereof to span the distance between the terminal ends thereof for holding said anti-skid casing onto said pneumatic tire.

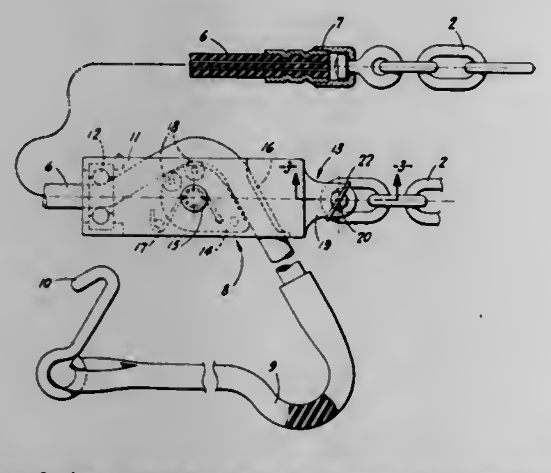
3,893,498
PNEUMATIC TIRE
Lee Wayne, Barberton, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio
Filed June 13, 1974, Ser. No. 478,992
Int. Cl.² B60C *11/06, 11/12*
U.S. Cl. 152—209 R **12 Claims**





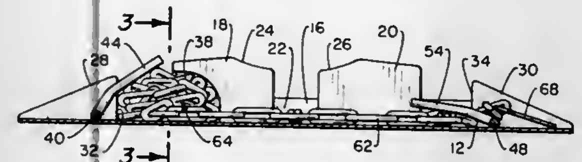
1. A pneumatic tire having a tread with a tread design therein, said design having at least one groove, said groove having a substantially V-shaped cross-section with at least one of its walls at an angle of at least 18° to the radial plane of the tire, said angled wall having lateral channels, each said channel having a lateral wall extending radially inwardly from the junction of said angled groove wall and the road-contacting surface of the tread and two spaced transverse walls, said lateral walls of said channels forming an angle to said radial plane of said tire which is equal to or greater than the angle of said radial plane but less than the corresponding angle of said angled wall in which they are contained so that the tire's resistance to stone holding is improved and the effective road-contacting length of said transverse walls of said channel is increased as the tire tread is progressively worn.

3,893,499
INSIDE LATCH UNIT FOR TIRE CHAINS
Robert L. Von Der Hellen, Riley Rd., Eagle Point, Oreg. 97524
Filed Mar. 8, 1974, Ser. No. 449,346
Int. Cl. B60c *27/06*
U.S. Cl. 152—213 A **3 Claims**



1. In tire chains which include an outer circumferential tire chain, an inner circumferential tire chain, spaced cross chains connected between the side chains at intervals, an outside latch unit adapted to end-connect the outer side chain, and a flexible pull-cord actuated inside latch unit adapted to end-connect the inner side chain; the improvement characterized by the inside latch unit comprising a self-acting, eccentric-cam, cord-locking device through which the pull-cord extends intermediate its ends, the pull-cord being connected to one end of the inner side chain, and means connecting the cord-locking device to the other end of the inner side chain, the pull-cord extending in initially slidable relation through the cord-locking device, and the latter being arranged to lock the cord against retraction when said cord is manually pulled through the device until tensioned between the ends of the inner side chain and the latter is drawn taut; said connecting means for the cord-locking device including initially engaged but manually disengageable parts whereby to disconnect the cord-locking device from the inner side chain, and a case in which the eccentric-cam is pivoted, the cam having a peripheral edge leading to a cord-locking point, said case including an annular bearing ahead of the eccentric-cam; the cord entering the case in free-sliding relationship through said annular bearing and then extending about said peripheral edge.

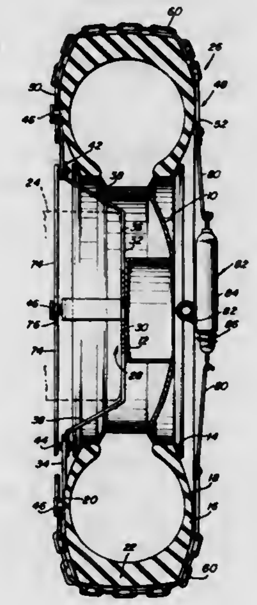
3,893,500
TIRE CHAIN CADDY
Vernon L. Planz, 469 Shady Ln., Big Bear Lake, Calif. 92315
Filed Aug. 30, 1974, Ser. No. 502,051
Int. Cl. B60c *27/00*
U.S. Cl. 152—213 R **9 Claims**



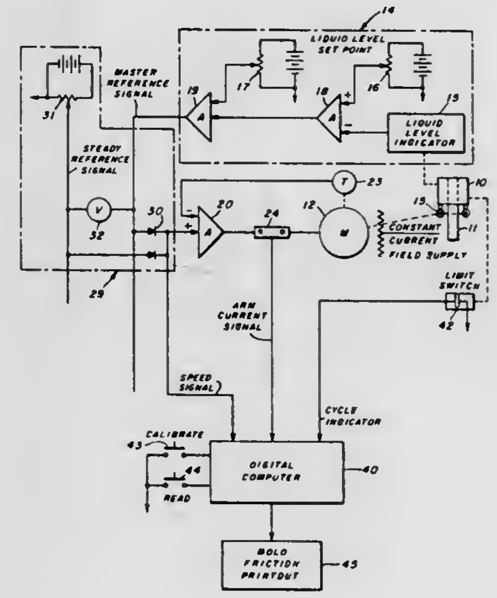
1. A tire chain caddy comprising:
a base;
a pair of spaced apart main members attached to said base;
a pair of inclined members attached to said base with a said inclined member located adjacent each longitudinal end of said base, a pocket located between each said inclined member and its adjacent main member, side passageways formed upon said base on either side of said main members; and
locking means for closing each of said pockets thereby preventing removal of links of chain contained within said pockets.

3,893,501
VEHICLE WHEEL SKID CHAINS
William J. Brummer, 6930 S. 123rd St., No. 186, Seattle, Wash. 98178, and Richard F. Brummer, 31055 168th Way S.E., Auburn, Wash. 98002
Filed Sept. 24, 1974, Ser. No. 508,764
Int. Cl.² B60C *27/10*
U.S. Cl. 152—213 R **9 Claims**

1. A skid chain construction including at least one pair of skid chain assemblies, each of said skid chain assemblies including a pair of generally arcuate and parallel anchor assemblies, a plurality of elongated flexible traction members extending between and secured to corresponding portions of said anchor assemblies spaced therealong, a mounting adapter plate including a central portion provided with a pattern of apertures formed therethrough for registry with the wheel mounting lugs of a vehicle hub portion upon which a vehicle wheel may be mounted, said adapter plate being adapted for clamped mounting between the inner side of the central portion of a vehicle wheel and the vehicle hub portion upon which the wheel is mounted, said adapter plate including a pair of generally radially outwardly projecting diametrically opposite mounting arms including outer end portions deflected outwardly to the same side of said plate, mounting means carried by the outer end portions of said arms to which the mid-portions of one pair of corresponding anchor assemblies are releasably anchored for oscillation about axes disposed generally normal to the plane containing the central portion of said plate, and an elongated adjustable length tension member assembly extending between and anchored to the other pair of corresponding anchor assemblies.

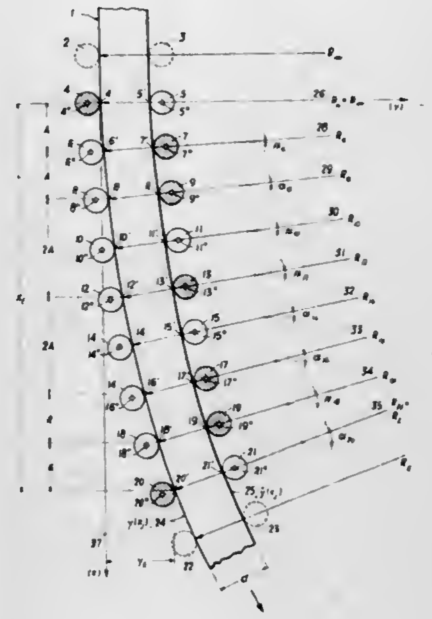


3,893,502
METHOD AND MECHANISM FOR INDICATING MOLD FRICTION IN A CONTINUOUS-CASTING MACHINE
Frank Slamar, Pittsburgh, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.
Filed May 31, 1974, Ser. No. 475,082
Int. Cl. G01l *5/00*
U.S. Cl. 164—4 **20 Claims**



1. In a continuous-casting operation in which liquid metal is introduced continuously to the top of an open-ended mold, a partially solidified casting of indefinite length emerges from the bottom of the mold, and the mold is oscillated vertically, the movement of said casting through said mold being opposed by friction, and in which the drive means for oscillating the mold includes a motor operatively connected therewith, the magnitude of the armature current to said motor being proportional to the load on the motor, an improved method of determining the magnitude of the mold friction, said method comprising measuring the magnitude of the armature current to said motor with the motor oscillating the mold through a representative number of cycles during a casting operation, and compensating for factors which contribute to the load on the motor other than mold friction.

3,893,503
CONTINUOUS CASTING PLANT
Erich Eibl, Linz, Austria, assignor to Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft, Linz, Austria
Filed Oct. 18, 1973, Ser. No. 407,473
Claims priority, application Austria, July 24, 1973, 6511/73
Int. Cl. B22d *11/12*
U.S. Cl. 164—282 **21 Claims**



1. In a continuous casting plant for strands comprising a mold and means defining a secondary cooling zone following the mold, the secondary cooling zone including guiding rollers and bending rollers arranged to define a bending zone of a certain extent, the bending rollers being arranged along a transition curve from the vertical direction into a circular arc, the improvement comprising that the bending rollers are arranged along a curve corresponding to the differential equation

$$Y''' = \phi'(x_j)\cdot\frac{1}{R_E \quad \overset{X_E}{\mathrm{O}} \quad \phi'(x_j)\,dx}$$

$\phi'(x_j)$ being a function of the change in elongation of a radially outer side of a cast strand, which function, over the extent of the bending zone, is graphically represented, in a Cartesian coordinate system in which change in elongation in 10^3%/mm is plotted as the y-coordinate and relative position along the transition curve in mm is plotted as the x-coordinate, by a curve that at first takes an ascending course, reaches a maximum permissible change in elongation and then takes a descending course, R_E standing for the radius in mm of the circular arc at the end of the bending zone measured to the outer side of the strand, X_E for the vertical component of the length of the bending zone, and x_j being a position coordinate in a Cartesian coordinate system whose origin lies at the beginning of the transition curve and whose x-axis is a tangent to the transition curve on the outer side of the strand.

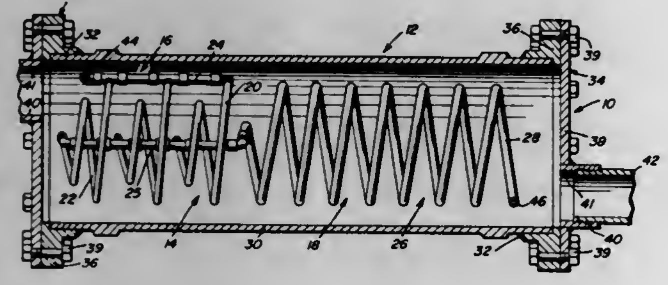
3,893,504
METHOD FOR TRANSFERRING HEAT

Paul C, Gaines, Jr., 1043 Algonquin Trl., Frankfort, Ky. 40601

Division of Ser. No. 199.989, Nov. 18, 1971. This application Dec. 7, 1973, Ser. No. 422,780

Int. Cl.^{2} F28F *9/22;* **G05D** *15/00*

U.S. Cl. 165—1 **1 Claim**



1. A method for cooling a medium passed from a high temperature system, comprising the steps of:
- a. providing a flow path for a liquid cooling medium;
- b. retarding expansion of a medium to be cooled while passing same through the flow path of the cooling medium, the retarding step (b) including the steps of:
  - i. passing the medium to be cooled into a first header;
  - ii. passing the medium to be cooled from the first header to a second header through a plurality of loops of smaller diameter than coils of the coil section of step (b) and connected in parallel between the first header and the second header; and
  - iii. passing the medium to be cooled from the second header to the coil section of step (b);
- c. limiting cooling of step (b) to an amount sufficient for preventing evaporation of the cooling medium;
- d. passing medium retarded by step (b) through a coil section for further cooling the medium in the presence of the cooling medium; and
- e. providing the coil section of step (d) with size sufficient to completely reduce the temperature of the medium being cooled to that of the cooling medium.

3,893,505
ROTARY REGENERATIVE HEAT EXCHANGERS COMPRISING SEALING DEVICES HAVING ANNULAR SEALING PLATES

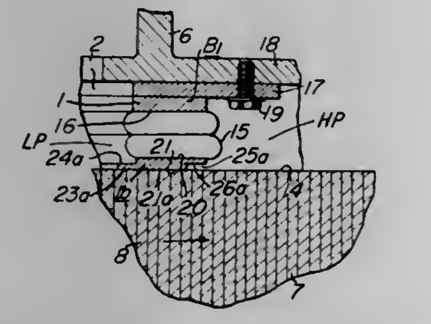
Kenji Fujikake; Masao Kitano; Tsubura Nishiyama, all of Nagoya, and Hisashi Sugimoto, Aichi, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Nagoyo, Japan

Filed Dec. 28, 1971, Ser. No. 213,007

Claims priority, application Japan, Dec. 29, 1970, 45-129803

Int. Cl. F28d *19/00*

U.S. Cl. 165—9 **9 Claims**



1. A rotary regenerative heat exchanger comprising:
- a casing having exhaust gas passage openings and compressed air passage openings,
- a regenerative matrix rotor rotatably mounted in said casing,
- a first and second sealing devices disposed between said casing and said regenerative matrix rotor, said first sealing device being provided annularly along the peripheral edge of one of said compressed air passage openings, and said second sealing device being provided annularly along the peripheral edge of each of said exhaust gas passage openings, each of said first and second sealing devices comprising:
- a flange secured to said casing,
- a resilient spring means secured to said flange,
- a sealing plate supported by said resilient spring means for slidably engaging the sidewall surface of said rotor, said sealing plate having an arcuate portion and remaining portion extending between opposite ends of said arcuate portion, said remaining portion being traversed by the rotational direction of the rotor when it is rotated from one pressure side to the other pressure side, and said sealing plate of at least one of said first and second sealing devices that has large pressure differential between the interior and exterior thereof having a projecting portion formed integrally therewith, said projecting portion being projected from that portion of the sealing plate which is fixed to the resilient spring means toward the counter-direction of the rotation of the rotor, and said projecting portion being in direct contact with said one face of the rotor and being elongated continuously over a predetermined length from one end part of said arcuate portion to the middle portion of the length of said remaining portion of the sealing plate, with the width of said projecting portion being gradually varied,

thereby to receive sufficient pressure on said projecting portion whereby the sealing plate is pressed against the side wall surface of the rotor with optimum pressure distribution over the entire length thereof.

3,893,506
DEVICE FOR THE ABSORPTION AND EMISSION OF HEAT

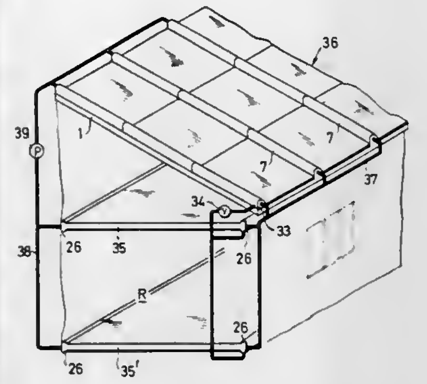
Nikolaus Laing, Hofener weg 35 bis 37, 7141 Aldingen near Stuttgart, Germany

Filed Sept. 15, 1972, Ser. No. 289,628

Claims priority, application Austria, Sept. 17, 1971, 8082/71

Int. Cl. F24d *11/00*

U.S. Cl. 165—18 **20 Claims**



1. A combination of a building structure having an outer roof area facing the free space exterior of the structure and an inner area facing the interior of the structure and a device for the absorption of solar energy or emission of heat into the free space and for thermally conditioning the inner area, said device comprising a large surface first element forming part of said roof area and having therein a plurality of fluid channels connected in parallel in good heat conducting contact with said first element, a large surface second element forming a part of said inner area having a plurality of fluid channels connected in parallel in good heat contact with said second element, a heat storage body associated with one of said elements whereby heat may be transferred between the one element and said heat storage body, a saturated vapor of a heat carrying fluid and a condensate of said vapor contained within said channels, piping means connecting the channels of said first element with the channels of said second element whereby heat may be transferred between said elements by said saturated vapor when one of said elements acts as a heat source and the other said element acts as a heat sink, and a conveying device for conveying condensate of the heat carrying fluid from said second element to said first element through said channels when said device is absorbing solar energy.

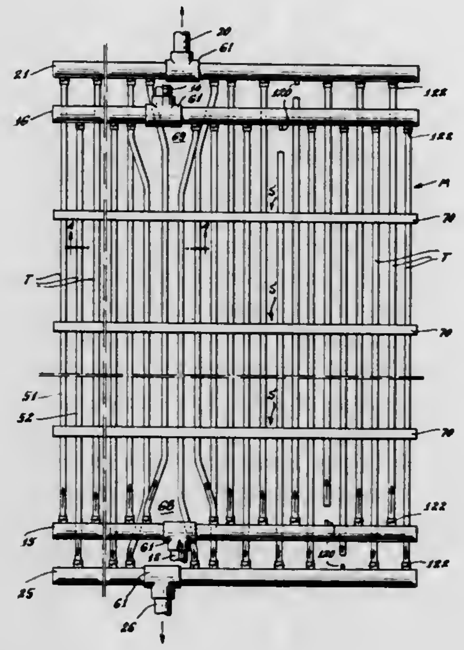
3,893,507
APPARATUS FOR CREATING AND MAINTAINING AN ICE SLAB

Calvin D. MacCracken, Fort Lee, and Helmut J. Schmidt, Oakland, both of N.J., assignors to Calmac Manufacturing Corporation, Englewood, N.J.

Division of Ser. No. 204,112, Dec. 2, 1971, Pat. No. 3,751,935. This application Aug. 9, 1973, Ser. No. 387,148

Int. Cl. F28f *7/00;* **A63c** *19/10*

U.S. Cl. 165—46 **6 Claims**



1. A flexible portable plastic tubing mat adapted to be laid side-by-side with other similar mats for creating and maintaining an ice slab for skating and for preventing snow from melting on a ski slope and adapted to be laid end-to-end with other similar mats for creating an ice chute or trough for a toboggan slide or similar sliding purposes,
- a. said portable mat having a length many times greater than its width with a plurality of small diameter flexible plastic tubing members extending lengthwise of said mat adapted to have cooled anti-freeze liquid pumped therethrough,
- b. said flexible plastic tubing members having an inside diameter in the range from one-eighth to three-eighth of an inch,
- c. securing means connected to said tubing members for securing them in a grid pattern in said mat,
- d. said mat including supply and return sub-headers extending across one end of said mat with the ends of a plurality of said tubing members being connected respectively to said supply and return sub-headers with the direction of flow of the anti-freeze liquid being opposite in neighboring tubing members in the mat,
- e. said flexible portable mat being rollable into a roll for ease of transportation, and
- f. said sub-headers, being adapted to be connected to main headers in an installation for interconnecting the plurality of said tubing members through the subheaders to the main headers.

3,893,508
PRESSURE VESSEL

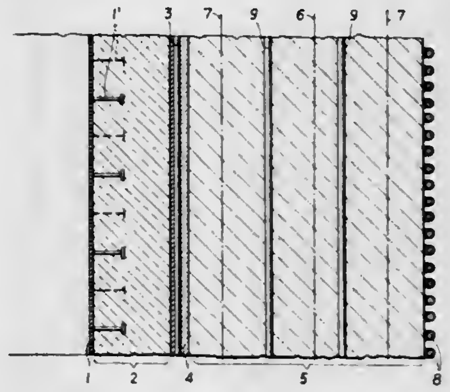
Josef Német, Badenwein, Austria, assignor to Reaktorbau Forschungs- und Baugesellschaft m.b.H. & Co. OHG, Selbersdorf, Austria

Filed July 26, 1972, Ser. No. 275,326

Claims priority, application Austria, July 30, 1971, A6661/71

Int. Cl. F28f *13/00*

U.S. Cl. 165—136 **11 Claims**



1. A pressure vessel for use in containing a high pressure, high temperature fluid medium, comprising:
- an inner steel sealing layer having a high heat-resistant characteristic;
- an outer supporting, prestressed concrete, layer encircling said inner sealing layer and being spaced from said inner sealing layer to define a space therebetween;
- thermal insulating and pressure transmitting layer means positioned between said inner sealing layer and said outer supporting layer, said insulating layer means being free of expansion joints and made of a material which has a higher heat insulative characteristic than said outer support layer, said insulating and pressure-transmitting layer means continuously and directly engaging said inner sealing layer over the entire interface; and
- at least one temperature control system for controlling the temperature in at least one of said insulating layer means and said outer supporting layer.

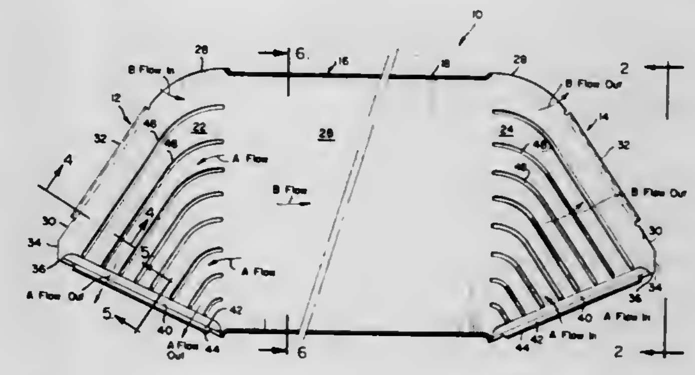
3,893,509
LAP JOINT TUBE PLATE HEAT EXCHANGER

David L. Satchwell, Rolling Hills Estates, and Uriel F. Gardner, Redondo Beach, both of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Apr. 8, 1974, Ser. No. 459,250

Int. Cl. F28f *3/10*

U.S. Cl. 165—166 **9 Claims**



1. A counter-flow plate type heat exchanger for two fluid media comprising:
- a plurality of alternately stacked first and second plates, each plate having substantially triangular end portions with first and second adjacent sides each defining edges,

and third sides interconnected by a substantially rectangular intermediate portion having opposing edges;
depending flanges on said opposing edges of said first plates, said flanges including upper and lower first plate flange portions offset from each other to provide a shoulder;
depending flanges on said opposing edges of said second plates, said second plate flanges including upper and lower second plate flange portions offset from each other to provide a shoulder, the plurality of alternately stacked first and second plates being arranged such that second plate lower flange portions overlap said first plate upper flange portions and said first plate lower flange portions overlap said second plate upper flange portions;
means integral with each first and second plate for sealing said first side edges of adjacent triangular end portions of each first plate and one of the two adjacent second plates at each said triangular end portion to form fluid inlet and outlet passage portions for one fluid medium, and; means integral with each first and second plate for sealing said second side edges of adjacent triangular end portions of each first plate and the other of the two adjacent second plates at each said triangular end to form fluid inlet and outlet passage portions for the other fluid medium.

3,893,510

EMULSION METHOD OF INTRODUCING POLYMERS INTO A SUBTERRANEAN FORMATION

Eugene A. Elphingstone; Homer C. McLaughlin, and Charles W. Smith, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Aug. 12, 1974, Ser. No. 496,614

Int. Cl.^{2} E21B *33/138, 43/22*

U.S. Cl. 166—295 **10 Claims**

1. A method of treating a subterranean formation to reduce the permeability of the formation to the flow of aqueous liquids therethrough, which comprises the steps of:
introducing a polymer containing treating composition into the subterranean formation, and
maintaining the treating composition in the subterranean formation until the polymers contained in the treating composition have been hydrated;
said polymer containing treating composition comprising a water-in-oil emulsion which comprises about 10 to 500 parts by weight oil per 100 parts by weight water, said water-in-oil emulsion having about 0.01 to 35 parts by weight particulated water soluble polymers per 100 parts by weight emulsion dispersed therein; said treating composition further comprising a homogeneous mixture of said water-in-oil emulsion with a carrier liquid which comprises about 10 to 70 parts by weight aqueous liquid and about 30 to 90 parts by weight liquid hydrocarbon per 100 parts by weight of said carrier liquid.

3,893,511

FOAM RECOVERY PROCESS

Paul J. Root, Norman, Okla., assignor to Sun Oil Company, Southland Center, Tex.

Filed June 9, 1971, Ser. No. 151,535

Int. Cl.^{2} E21B *43/16*

U.S. Cl. 166—305 R **4 Claims**

1. A method of recovering oil from a formation having zones of both high and low permeability comprising: injecting a foaming agent solution into the formation; injecting a gas into the formation, a portion of which gas together with the foaming agent solution forms a foam in the formation; continuing the injection of the gas and foaming agent until excessive pressures occur thereby allowing the remainder of the injected gas to enter the low permeability zone and go into solution with oil therein; and relieving the pressure on the formation without intermediate treatment thereof thereby producing fluid from the low permeability zone by solution gas drive.

3,893,512

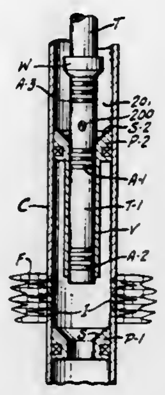
METHOD AND APPARATUS FOR CONTROLLING FLOW FROM WELLS

Albert W. Carroll, and Phillip S. Sizer, both of Dallas, Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 143,879, May 17, 1971, abandoned. This application May 1, 1972, Ser. No. 249,212

Int. Cl. E21b *23/00*

U.S. Cl. 166—315 **6 Claims**



1. Apparatus for controlling flow of well fluids from a well having a string of well casing in place in the well, said casing having flow communication with a producing formation surrounding the well bore, which includes: a well flow conductor disposed in said casing and having flow inlet means providing flow communication with said producing formation and having at least a portion movable longitudinally in said well; a well packer disposed in said well above the communication of said casing and said flow conductor with said producing formation; means for sealing between said packer and said casing and said flow conductor to close the annulus therebetween against fluid flow therethrough; means for isolating said flow inlet means of said flow conductor from flow from said producing formation below said packer upon downward movement of said movable portion of said flow conductor from an upper position to a lower position in the well; said flow conductor movable portion being provided with a port positioned above said well packer when said movable portion of said flow conductor is in said upper position for flow into said casing above said packer and said port is sealed when said movable portion of said flow conductor is in said lower position; support means for supporting said movable portion of said flow conductor in said upper position in which said flow inlet means is open to permit fluid flow from said producing formation through said inlets means and to the surface in said well, said support means being operable between supporting and release conditions to permit controlled downward movement of said movable portion of said flow conductor to said lower position to close said flow inlet means to close off fluid flow from said producing formation.

3,893,513

DISCHARGE HEAD AND FIRE PROTECTION SYSTEM UTILIZING SAID HEAD

William S. Marsh, Needham, Mass., assignor to Factory Mutual Research Corporation, Norwood, Mass.

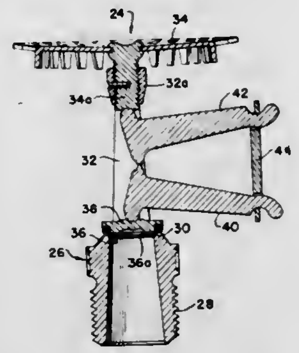
Filed Sept. 9, 1974, Ser. No. 504,283

Int. Cl. A62c *37/08*

U.S. Cl. 169—16 **10 Claims**

1. A discharge head for use in a fire protection system comprising a body member for containing pressurized extinguishant, said body member having an inlet for connecting to a source of said extinguishant and an outlet for discharging said extinguishant, closure means for said outlet, linkage means for applying a force against said closure means greater than, and in an opposite direction to, the force of said extinguishant against said closure means to retain said closure means in an operative position relative to said outlet where it prevents the discharge of extinguishant from said outlet, said

linkage means adapted to respond to a predetermined fire condition in its vicinity for releasing its force, and adhesive means for securing said closure means in said operative position, said adhesive means adapted to release said closure means in response to the pressure of said extinguishant in said body member exceeding a predetermined value, said closure means being forced from said operative position by said extinguishant upon the existence of said fire condition and said predetermined extinguishant pressure to permit the discharge of said extinguishant from said outlet.



3,893,514

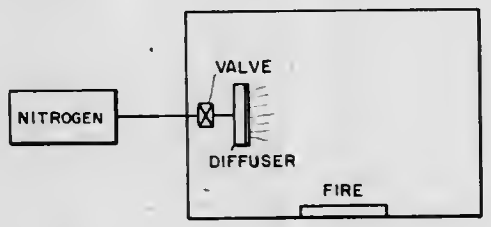
SUPPRESSION OF FIRES IN CONFINED SPACES BY PRESSURIZATION

Homer W. Carhart, Annandale; G. H. Fielding, Alexandria, and R. G. Gann, Springfield, all of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 23, 1973, Ser. No. 418,346

Int. Cl. A62c *1/14*

U.S. Cl. 169—46 **1 Claim**



1. A method of extinguishing a fire in a habitable space while maintaining an environment suitable for human sustenance and activity therein, which comprises:
sealing off the space to prevent gas escapement;
diffusing nitrogen gas at a pressure greater than ambient into said space initially at ambient pressure and uniformly mixing said nitrogen with the gases within said habitable space and
adding said diffused nitrogen gas into said confined space until the oxygen % by volume is from 10–15% with a partial pressure of oxygen of from 0.2–0.3 atmospheres with an increase in total gas pressure to 1.5 to 2.0 atmospheres;
whereby the reduced oxygen % by volume is sufficient to extinguish the fire and the partial pressure of oxygen is sufficient to sustain human life and permit work activity within the increased pressure environment.

3,893,515

ALL PURPOSE HOE AND DUSTER

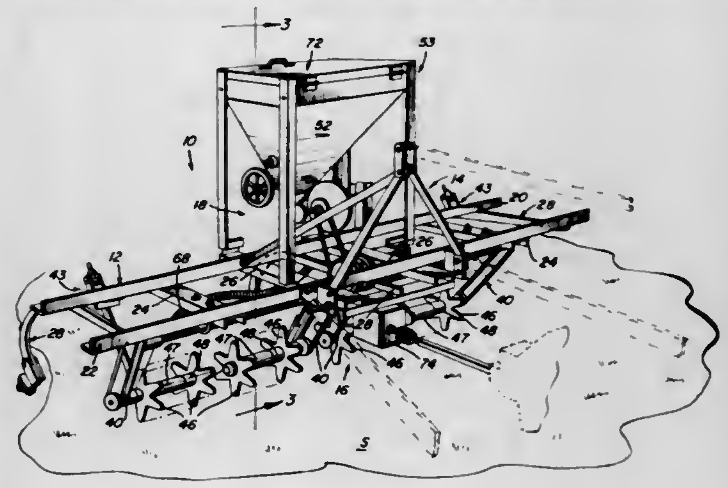
Cecil Sadler, Rt. 10, Box 756, Tallahassee, Fla. 32304

Filed June 6, 1973, Ser. No. 367,453

Int. Cl. A01b *33/00*

U.S. Cl. 172—60 **2 Claims**

1. A cultivating attachment, comprising, in combination:
- a. a frame;
- b. means mounted on the frame for moving earth in an area traversed by the frame, the means for moving earth including:
  - i. a rotatably mounted main shaft arranged on the frame for selective rotation;
  - ii. a plurality of mandrel shafts arranged spaced from and substantially parallel to the main shaft;
  - iii. belt means associated with all of the mandrel shafts for transmitting power from the main shaft to the mandrel shafts;
  - iv. a plurality of hoe blades, each mandrel shaft having a plurality of hoe blades mounted thereon; and
  - v. means for mounting the hoe blades on associated mandrel shafts for rotation therewith, the means for mounting including spacers associated with the blades for maintaining a predetermined spacing between them, bearing arm assemblies arranged for mounting the mandrel shafts, the mandrel shafts divided into pairs, with each pair mounted on associated bearing arms and arranged extending coaxially toward one another, and spring-biased braces forming portions of the bearing arm assemblies for permitting a cushioned movement of each bearing arm assembly and providing each mandrel shaft with a shock-absorbing assembly arrangement; and
- c. a plurality of rakes mounted on the bearing arm assemblies and arranged rearwardly of and adjacent to the hoe blades.



3,893,516

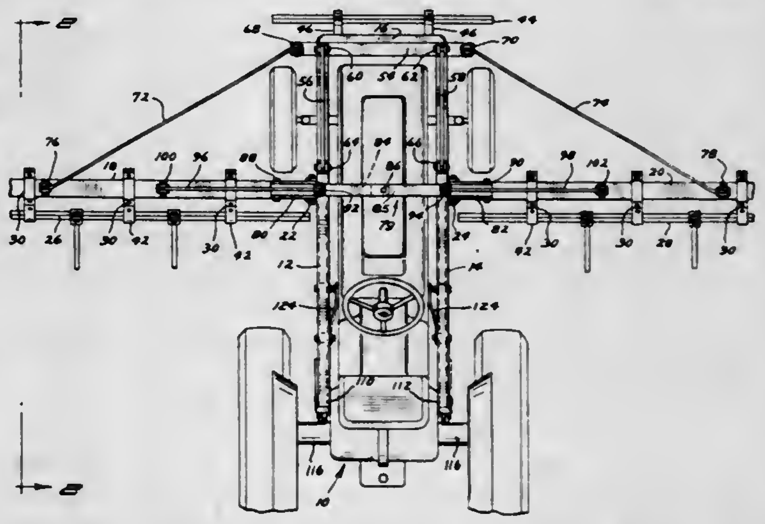
TOOL CONNECTING APPARATUS FOR TRACTORS

Emil F. Zimmerman, Richardton, N. Dak. 58652

Continuation-in-part of Ser. No. 380,209, July 18, 1973, abandoned. This application Apr. 8, 1974, Ser. No. 458,670

Int. Cl.^{2} A01B *51/00, 63/102*

U.S. Cl. 172—273 **10 Claims**



1. Tool-connecting apparatus for mounting on a tractor provided with a hydraulically-actuated lift apparatus having

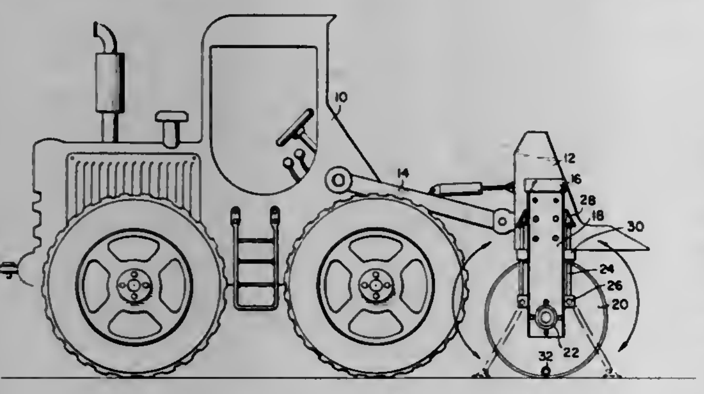
co-acting lifting arms pivotally attached to the rear of the tractor for upward and downward swinging movement and extending forwardly along the sides of the tractor and joined forwardly thereof by a transverse lifting beam, said tool-connecting apparatus being borne by the tractor solely through said lift apparatus and comprising:

a. a pair of longitudinal booms respectively extending transversely outwardly at the sides of the tractor rearwardly of the front wheels and having inner ends removably attached respectively to said lifting arms intermediate the length of the tractor;
b. a pair of longitudinal tool-mounting bars attached respectively to said booms in parallel relationship thereto;
c. a detachable, frontal tool-mounting bar extending laterally across the front of said tractor and supported by said lift apparatus; and
d. means supporting the booms against rearward movement thereof with respect to the lift apparatus; whereby said tool-connecting apparatus is raised and lowered by raising and lowering said lift apparatus, permitting the tool-connecting apparatus to be attached to and detached from the tractor with ease.

3,893,517
REMOVABLE ROLLER FOR LOADER

Karl A. Norvell, Box 1135, Rt. No. 1, Libby, Mont. 59923

Filed Apr. 26, 1974, Ser. No. 464,457
Int. Cl. A01b *49/02*
U.S. Cl. 172—438 **3 Claims**



1. In combination with a vehicular loader having a bucket secured to support arms whereby the bucket can be raised or lowered:

a horizontal hollow roller having an axle extending transversely to the longitudinal axis of the loader, said roller having filler and drain plug means whereby the roller can be filled with water or emptied;

first roller support means secured to the sides of the bucket and extending below the bottom of the bucket;

second support means connected to the roller to be freely rotatable about its own axis, the second means detachably engaging the first means; and

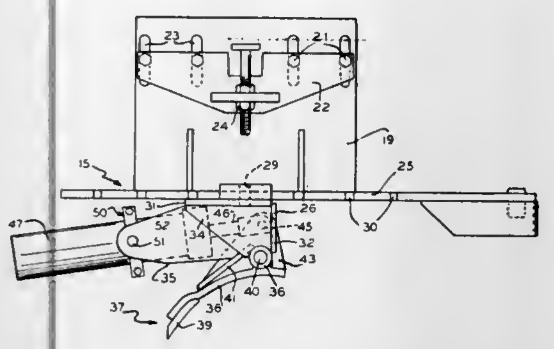
outrigger means connected to the first means for supporting the first means in vertical position when the loader is not in use to facilitate ease of connecting or disconnecting the roller.

3,893,518
BLADE ROTATING, BLADE TRIPPING AND SHOCK ABSORBING HYDRAULIC CYLINDER FOR SCRAPER-TYPE SNOW PLOWS

Eugene A. Farrell, Evans Mills, N.Y., assignor to Frink Sno-Plows, Clayton, N.Y.

Filed Mar. 11, 1974, Ser. No. 449,857
Int. Cl. E02f *3/12*
U.S. Cl. 172—794 **3 Claims**

1. In a vehicle carried snow scraper having a blade rotatable in one direction to a raised position out of contact with the road and rotatable in a reverse direction to a lowered position in contact with the road, motor means for rotating the blade, comprising: a fluid reservoir and a source of fluid under pressure, at least one hydraulic cylinder oscillatably secured to a scraper portion fixed to the vehicle, the cylinder having a piston therein fixed to one end of a piston rod, a second floating piston through which the rod is slideable, the pistons being resiliently spaced by a compression coil spring around the rod, passages into the cylinder at the fixed piston end and at the floating piston end, the blade having ear means projecting therefrom, the other end of the rod being pivotally secured to the ear means, a four way pilot valve; tubular lines from the pilot valve connected respectively to the source of pressure fluid, the fixed piston end passage, the reservoir, and the floating piston end passage; the pilot valve having a first position for connecting fluid under pressure to the fixed piston end passage by one valve passage for raising the blade and connecting the floating piston end passage to the reservoir by another valve passage, the pilot valve having a second position for connecting fluid under pressure to the floating piston end passage by one valve passage for lowering the blade and connecting the fixed piston end passage to the reservoir by another valve passage, the line from the pilot valve to the floating piston end passage including a hydraulic relief valve and a pilot operated check valve in that order connected therein, the relief valve having a cracking pressure chosen to turn the blade into contact with the road and to apply sufficient pressure to the road so as to compress the cylinder spring to substantially half its free length, a tubular line leading from the relief valve to the reservoir for carrying off fluid when the relief valve is cracked, the check valve having a chamber therein and a piston in the chamber adapted to open the check valve when the chamber is subjected to pressure, and a tubular line from the chamber connected to the line from the pilot valve to the fixed piston end passage for opening the check valve when the blade is raised, whereby the blade is raised when the pilot valve is moved to its first position and the blade is lowered and spring loaded when the pilot valve is moved to its second position and the cylinder acts as a shock absorbing trip for the blade when it meets an obstruction thereby further compressing the cylinder spring.

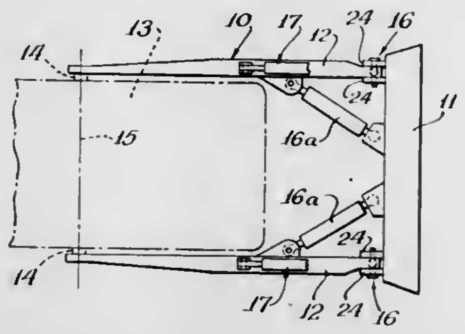


3,893,519
SLIDE BALL JOINTS AND BULLDOZER FRAME EMPLOYING SAME

Jack M. Deli, Wheaton, and William P. Macarus, Palos Park, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed July 13, 1973, Ser. No. 378,847
Int. Cl.^{2} E02F *3/76*
U.S. Cl. 172—803 **6 Claims**

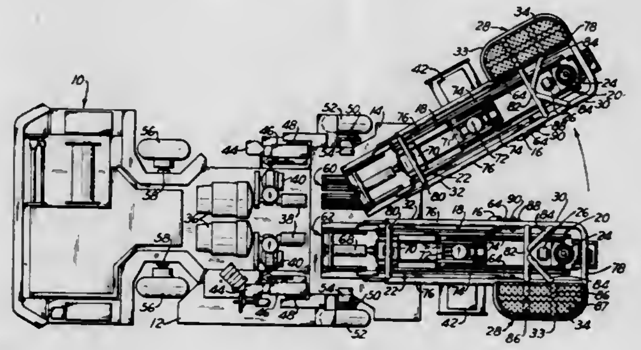
1. An assembly comprising a bulldozer blade, push arms having ends adjacent end portions of the bulldozer blade, diagonal struts provided with screw threaded connections between the ends of the struts for individual adjustment of each of same to a fixed strut length, and connecting regions of the push arms and the bulldozer blade spaced from said end portions of the bulldozer blade and said ends of the push arms, means comprising power unit means connecting the push arms with the bulldozer blade for tilting the same, and joints between said ends of the push arms and said end portions of the bulldozer blade accommodating the tendency of the angles between the push arms and the bulldozer blade to change with tilting of the bulldozer blade and the tendency of the diagonal struts to resist such change, each joint comprising a cross pin carried by medial and lateral pin-mounting-means on one of the bulldozer blade and the associated push arm, a ball part encountering predetermined clearance between the associated medial and lateral pin-mounting-means, and mounted on the pin, said ball part capable of predetermined limited movement to slide with respect to the pin between the pin-mounting-means and along the pin access, and a socket part connected to the other of the bulldozer blade and the associated push arm and receiving the ball part in a spherical connection, one of said joints in initial installation with the blade horizontal being without clearance between the associated push arm end and the medial lug, and having said predetermined clearance established between the associated push arm end and the lateral lug, the other joint being similarly without medial clearance and having as lateral clearance said predetermined clearance, all in the interest of automatic stress relief during blade tilt.



3,893,520
CANOPY ASSEMBLY FOR A DUAL BOOM DRILL

Thomas W. McCormick, Morgantown, W. Va., assignor to FMC Corporation, Fairmont, W. Va.

Filed Jan. 21, 1974, Ser. No. 435,196
Int. Cl. E21c *11/02*
U.S. Cl. 173—34 **12 Claims**



1. A canopy for a dual boom drill comprising,

a mobile body having a horizontal platform,

drill means,

a forwardly extending frame pivotally mounted to said horizontal platform,

a boom assembly having front end and rear end portions, said boom assembly rear end portion pivotally secured to said forwardly extending frame to permit movement of said drill means supported by said boom assembly front end portion in a vertical plane,

a canopy assembly having front end and rear end portions maintained in overlying relationship with said forwardly extending frame,

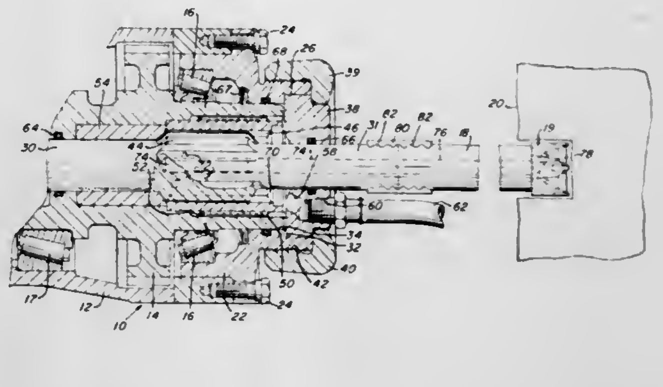
extensible means for moving said canopy assembly front end portion in a linear vertical path to a preselected height above said frame, and

articulating means for connecting said canopy assembly rear end portion to said forwardly extending frame.

3,893,521
ROCK DRILL

Edward A. Bailey, Newport, and Louis H. LeBlanc, Jr., Claremont, both of N.H., assignors to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Jan. 30, 1974, Ser. No. 437,913
Int. Cl. B25d *9/00*
U.S. Cl. 173—80 **5 Claims**



1. In an elongated percussively actuated rock drill wherein a piston member repetitively engages an elongated striking bar within a body member, the improvement comprising: a chamber defined intermediate said striking bar and said body member; sealing means cooperable with said body member and said striking bar to restrict flow from said chamber; said striking bar including forward and rear bearing portions and a splined driver portion located axially intermediate said bearing portion; first longitudinally extending forwardly open passageway means in said striking bar having the rearward end thereof terminating intermediate the axial ends of said striking bar; second passageway means in said striking bar and communicating between said first passageway means and said chamber; said second passageway means including at least one transversely extending bore having the outer end thereof in communication with said chamber adjacent a root surface of a respective one of the splines of said driver portion; and third passageway means having one end thereof communicating with said chamber and having the other end thereof adapted to communicate with a fluid flow source.

3,893,522
METHOD OF DETERMINING REDOX POTENTIAL

Walter H. Fertl, and Paul J. Zuvanich, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

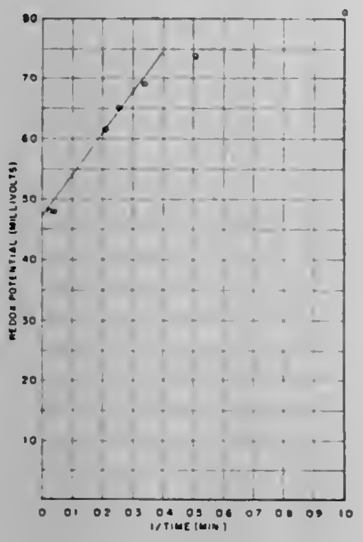
Filed June 27, 1973, Ser. No. 374,206
Int. Cl. E21b *47/00*
U.S. Cl. 175—50 **5 Claims**

1. A method of determining the redox potential of a fluid system comprising:

a. contacting said fluid system with a two electrode redox potential measuring system,
b. observing the redox potential values after the measuring system is in contact with the fluid system for four minutes and for 5 minutes,
c. plotting on linear graph paper the observed redox poten-

tial versus the time factor 1/time, and

d. drawing a straight line through the plotted redox potential values and extrapolating to infinite time to give the desired infinite time value of the redox potential.



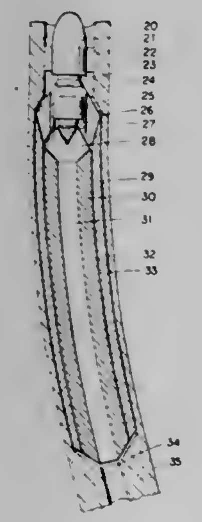
3,893,523
CURVABLE PIPE SECTION

John Doise Jeter, Midland, Tex., assignor to Texas Dynamatics Inc., Dallas, Tex.

Filed Nov. 15, 1973, Ser. No. 416,086

Int. Cl. E21b *7/08*

U.S. Cl. 175—74 **5 Claims**



1. A curvable drill pipe section carried by a pipe string extending into a well bore that can be actuated to change the radius of curvatures of the longitudinal centerline of the section comprising; an inherently curved tubular outer member, an inherently curved cylindrical inner member axially supported and radially constrained within the bore of said tubular outer member such that the longitudinal centerline of the inner member is generally coincident with the longitudinal centerline of said outer member for relative rotation and relative rotational positioning within said outer member, means to rotate said inner member relative to said outer member, means to lock said inner member in selected rotational position relative to said outer member, so that by changing the rotational position of said inner member relative to said outer member said inner member will strain said outer member to change the curvature of the longitudinal centerline of the section.

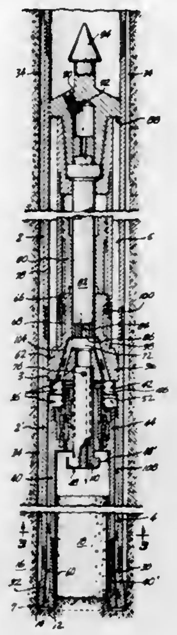
3,893,524
ROTARY DRILL ROD

Gerald T. Sweeney, Federal Way, Wash., assignor to Tigre Tierra, Inc., Puyallup, Wash.

Division of Ser. No. 283,208, Aug. 23, 1972, Pat. No. 3,854,539. This application June 3, 1974, Ser. No. 475,598

Int. Cl.^{2} E21B *5/00*

U.S. Cl. 175—92 **9 Claims**



1. A rotary drill rod comprising an elongated pipe having a longitudinally extending bore therethrough and an annular bit at the distal end thereof, the proximal end portion of the bore being adapted to slidably receive a piston-like means therein, but there being an annular shoulder about the periphery of the bore at the terminus of said portion to engage the means in the rod adjacent the bit, and means defining an annular seat about the periphery of the bore between the shoulder and the mouth of the bit, which is of lesser inside diameter than that of the shoulder, to engage an elongated member which is slidably inserted into the distal end portion of the bore through the opening of the shoulder when the piston-like means is engaged with the shoulder, the distal end portion of the bore having substantially the same diameter as the opening in the shoulder, but there being fluting in the peripheral wall of the bore, which extends generally longitudinally thereof between a point adjacent the shoulder and a point about the periphery of the seat, and porting in the body of the bit, which extends generally axially thereof between the fluting and the working face of the bit at the distal end thereof, to form a passage about the member through which fluid can be released into the working face of the bit from a point adjacent the opposite end of the member, said bit having a greater diameter than the pipe and being adapted so that the released fluid can discharge from the face of the bit toward the proximal end of the pipe on the opposite side of the pipe from the member.

3,893,525
DRILLING CONTROL TRANSFER SYSTEMS

Ethell J. Dower; Lester L. Cain, and Hubert Irvin Smith, all of Houston, Tex., assignors to Drill-Au-Mation, Inc., Houston, Tex.

Filed Oct. 4, 1973, Ser. No. 403,345

Int. Cl. E21b *3/12*

U.S. Cl. 175—24 **24 Claims**

1. A system for controlling drilling operations interchangeably between a remote control location and a manual control location on a drilling rig comprising:

means on a drilling rig responsive to a control input means for developing a drilling operation parameter;

first manual control input means on a drilling rig for producing a first control function for controlling the operation of said developing means;

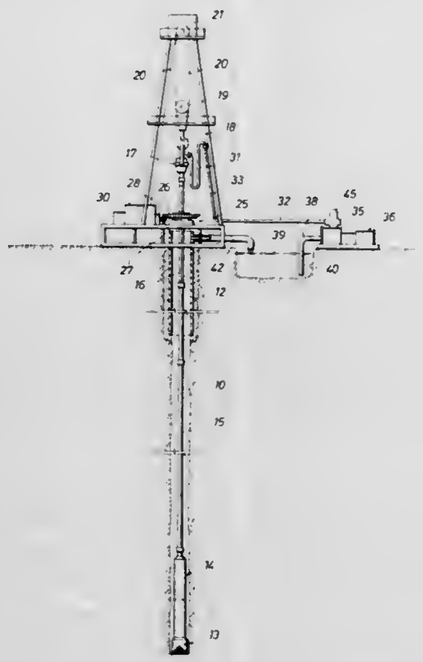
first translation means for coupling said first manual control input means to said developing means and for providing a control input for said developing means in response to said first control function;

second control input means at a location remote to a drilling rig for producing a second control function for controlling the operation of said developing means;

second translation means for coupling said second remote control input means to said developing means and for providing a control input for said developing means in response to said second control function;

means for selectively coupling one of said translation means to said developing means; and

means for comparing the magnitude of said control inputs for said developing means and for producing an indication of the difference between said control inputs thereby permitting an adjustment of one control input means relative to the other control input means to bring said control functions into parity for facilitating a bumpless transfer of said control functions whenever said selective coupling means is operated.



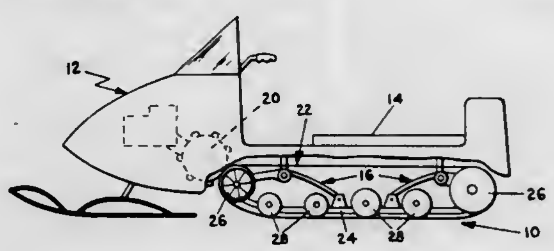
3,893,526
TRACK ASSEMBLY FOR SNOWMOBILES

Richard E. Esch, Sparta, Mich., assignor to C. L. Frost & Son, Inc., Grand Rapids, Mich.

Filed July 30, 1973, Ser. No. 383,690

Int. Cl. B62d *57/02*

U.S. Cl. 180—5 R **33 Claims**



1. Apparatus for movably supporting tracked vehicles including snowmobiles and the like including a pair of elongated, parallel frame members, a pair of idler wheels generally adjacent either end of said frame members, and a flexible, endless track extending longitudinally around said frame members and supported for movement therearound on said idler wheels; each of said frame members including at least one pair of bogie wheels and means for mounting each of said pairs of bogie wheels relative to one of said frame members; said bogie wheels in each pair mounted coaxially with each other adjacent opposite sides of and intermediate the ends of said respective frame members longitudinally between said pairs of idler wheels; each of said pairs of bogie wheels spacing a portion of said track adjacent said bogie wheels a predetermined distance beneath the respective one of said frame members for support of said vehicle above a supporting surface portions of said track being engageable intermittently with said rails during use thereof; said pairs of bogie wheels being secured at spaced intervals along each of said frame members whereby uneven wearing of the frame members by uneven contact with said track is prevented.

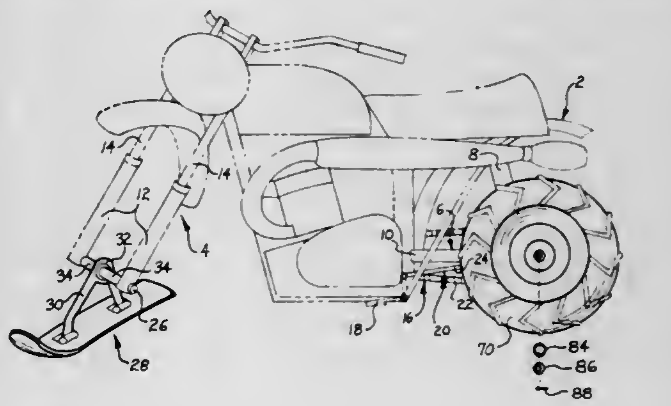
3,893,527
MEANS AND TECHNIQUE FOR CONVERTING A MOTORCYCLE TO A SNOWMOBILE

Milo C. Walker, Seattle, and Robert M. Bradford, Brier, both of Wash., assignors to Snow-King Enterprises, Inc., Brier, Wash.

Filed June 4, 1973, Ser. No. 366,742

Int. Cl. B62m *13/00*

U.S. Cl. 180—6 A **18 Claims**



1. In combination with a motorcycle body having front and rear yokes thereon, normally for mounting tandem ground-engaging wheels inboard between the respective arms thereof, and a chain and sprocket drive mechanism thereon, normally for driving the rear inboard ground-engaging wheel thereof, a modified ground engaging assembly comprising a pair of apertured axle mounting blocks releasably slidably engaged with the end portions of the arms of the rear yoke so as to assume fixed orientations thereon in which the apertures of the blocks are mutually opposed to one another across the rear yoke, means releasably clamping the blocks to the arms of the rear yoke in said orientations, axle means rotatably supported in the apertures of the blocks and projecting laterally outboard therefrom, ground engaging elements on the yokes including a pair of wheels fixed to the laterally projecting outboard portions of the axle means to rotate in conjunction therewith, and a sprocket fixed on the axle means and engaged within the chain of the drive mechanism to rotate the axle means under the power thereof, said clamping means including pin and slot connections between the blocks and the end portions of the arms of the rear yoke, the slots of which connections are elongated lengthwise of the drive mechanism to enable the chain to be tightened by sliding the blocks in relation to the arms of the rear yoke when the clamping means are released.

3,893,528
FRONT BRAKE STEERING ASSIST

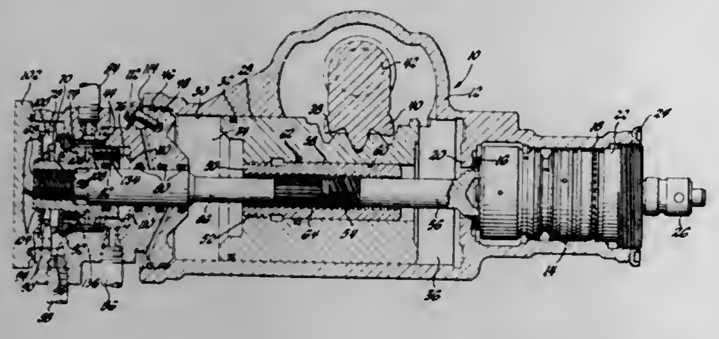
Frederick L. J. Rehfeld, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 17, 1974, Ser. No. 506,699

Int. Cl. B62d *5/06*

U.S. Cl. 180—6.3 **4 Claims**

1. In a vehicle having a pair of steerable road wheels, independently operable hydraulically actuated brake means associated with each of said road wheels respectively for retarding rotation of each of said road wheels selectively, and steering means including linkage means interconnecting said road wheels for simultaneously controlling the position of the latter in unison and relative to said vehicle to thereby control the direction of motion of said vehicle and a manually rotatable steering shaft operatively connected to said linkage means, the combination comprising; hydraulic pump means operatively connected to each of said independently operable brake means respectively for operating said brake means for the wheels, respectively, drive means disposed between said steering shaft and said pump means responsive to the magnitude and direction of torque applied to said steering shaft, said pump means being coupled to said steering shaft through said drive means when the applied torque achieves a predetermined magnitude, and respective passage means between said pump means and each of said brake means to be selectively pressurized by said pump means in response to the direction of said applied torque for directing pressurized hydraulic fluid from said pump means to selectively operate the respective one of said independently operable brake means to enforce turning of the steerable wheels in the same direction as the vehicle turn associated with said applied torque.



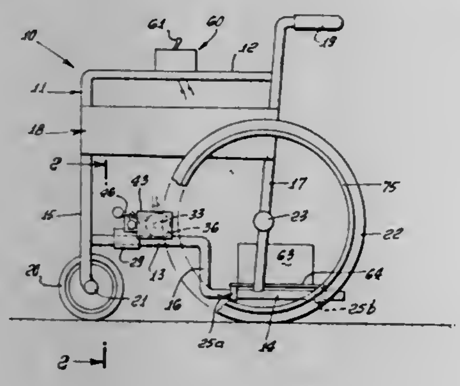
3,893,529
WHEELCHAIR DRIVE PACKAGE

Andrew Karchak, Jr., 9530 Ardine St., and James R. Allen, 10418 Chaney Ave., both of Downey, Calif. 90241

Filed Apr. 22, 1974, Ser. No. 462,666

Int. Cl. B62d *11/04*

U.S. Cl. 180—6.5 **8 Claims**



1. A drive assembly adapted for connection onto a wheelchair to drive the chair relatively large wheels, said assembly comprising,

a. supports to be carried on the chair and a horizontal mounting bar of a length to be removably received by the supports, each support having a recess for reception of the bar,

b. drive means carried on the bar and including a pair of drive rotors, and

c. clamping means carried on the bar for urging the drive means relatively about an axis parallel to the bar to effect clamping engagement of the rotors with the peripheries of the wheels, respectively, the clamping means transmitting force to the drive means in offset relation to said axis and including rotatably adjustable members engageable with housings defined by the drive means, and rotatable to effect said urging, the rotors having axes offset from said axis which is defined by the bar.

3,893,530
FLOOR TREATING MACHINES

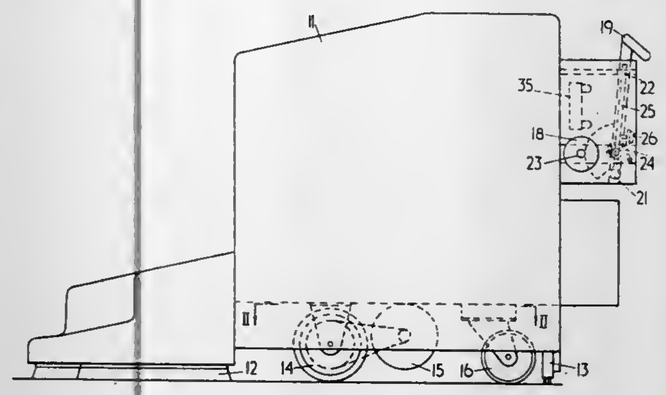
Sidney Gordon, Stanmore, England, assignor to R. G. Dixon & Company Limited, Wembley, England

Filed Sept. 10, 1973, Ser. No. 395,551

Claims priority, application United Kingdom, Sept. 12, 1972, 42345/72

Int. Cl. B62d *11/04, 51/04*

U.S. Cl. 180—6.5 **2 Claims**



1. A floor treating machine comprising a body, a floor engaging rotary brush mounted for rotation on said body, a pair of laterally spaced driving wheels mounted on said body, electric motor means for driving the wheels, independent speed control means for each of the driving wheels, a pair of independently movable, manually operable control arms pivotally mounted in a swivel joint at one end thereof to move on parallel axes side-by-side on the machine, spring means loading each of the control arms to an off position, an individual electrical voltage control component mechanically and drivably connected to each of the control arms, each of the electrical control components forming part of the speed control means for a separate one of the said driving wheels, a common handle operatively connected between each of the control arms at a point removed from the pivotal mounting to give either conjoint synchronised movement or differential movement thereof, whereby synchronised movement of the control member provides equal adjustment of the wheel speeds and differential movement of the control members provides differential adjustment of the wheel speeds to give a steering effect and reversing switch means for the motor means located adjacent each control arm with each control arm being arranged to operate the reversing switch means when moved in an opposite direction from the off position.

3,893,531
HYDROSTATIC DRIVE MEANS FOR AMPHIBIOUS VEHICLE UNDERCARRIAGE

James E. Gee, Washington, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed June 24, 1974, Ser. No. 482,509

Int. Cl.^{2} B62D *11/04*

U.S. Cl. 180—6.48 **4 Claims**

1. A crawler-type traction unit for amphibious vehicles comprising:

a pair of generally parallel track frames;

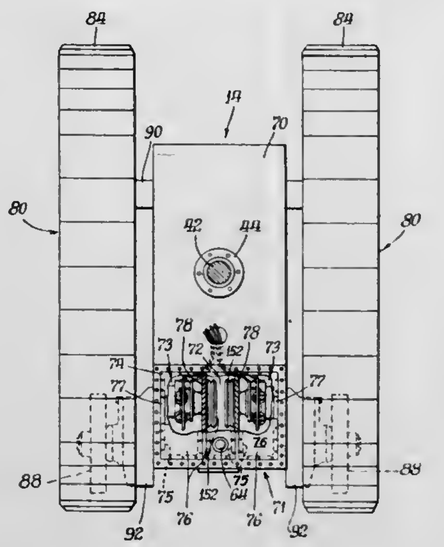
a pair of track chains, one for each track frame, trained about an associated track frame for movement therearound;

a gear case interconnecting said track frames and having a central chamber flanked by two "steering clutch" chambers each having openings to said central chamber and to an associated one of said track frames, said "steering clutch" chambers otherwise being sealed;

a pair of hydraulic motors, one in each "steering clutch" chamber and each having a rotatable output shaft;

means establishing a driving connection from each of said hydraulic motors to the track chain on the associated track chain through the opening thereto;

means establishing a seal about each of said driving connections for precluding entry of foreign matter therearound into the associated "steering clutch" chambers;



a pair of diaphragm means, one for each "steering clutch" chamber, sealingly closing the associated opening to said central chamber; and

a body of liquid within and filling each "steering clutch" chamber,

whereby pressures external of said "steering clutch" chambers are transmitted to the interiors thereof.

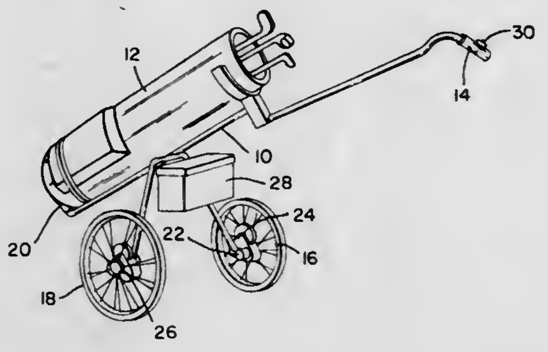
3,893,532
POWER ASSISTED GOLF CART

Paul R. Perlowin, Concord, Calif., assignor to Panpacific Recreational Products, Concord, Calif.

Filed Apr. 29, 1974, Ser. No. 464,868

Int. Cl. B62d *51/04*

U.S. Cl. 180—19 R **6 Claims**



1. In a manually operated golf cart comprising a frame for supporting a golf bag in a position inclined from vertical, said frame having a lower portion adapted to abut the ground when the cart is at rest to partially support said golf bag, and a pair of spaced wheels rotatably attached to the frame to provide the support for said frame when the cart is in motion, the improvement comprising:

a pair of electric motor means located adjacent the respective wheels; and

a pair of drive train means connecting each electric motor means to its adjacent wheel respectively for driving said wheel with said motor, each said drive train means including an elastic drive belt to insulate each electric motor means from its associated wheel so that shocks on the wheels are at least partially insulated from the electric motor means.

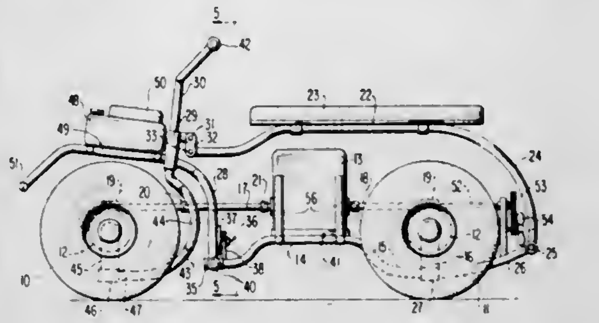
3,893,533
RECREATIONAL VEHICLE

Hubert Tidwell, Box 57, Wellington, Utah 84542

Filed Jan. 25, 1974, Ser. No. 436,785

Int. Cl. B62k *11/04*

U.S. Cl. 180—31 **5 Claims**



1. A vehicle comprising forward and rear dual wheel assemblies, a lower vehicle frame section and a separately formed upper frame section, a yoke including a generally upright steering shaft bearing, a longitudinal axis swivel bearing carried by the bottom of the yoke and rotatably receiving the forward end of said lower frame section, means forming a transverse axis pivotal connection between the rear extremity of the lower frame section and the rear end of the upper frame section, an engine mounted on the lower frame section between said forward and rear dual wheel assemblies, fore and aft longitudinal drive shafts connected with and driven by the engine and drivingly connected with said forward and rear dual wheel assemblies, a front steering fork for the vehicle including an upper shaft portion engaged rotatably within said steering shaft bearing and also including a lower longitudinal axis forward extension, a forward bracket carrying the forward dual wheel assembly rotatably and having a lower end longitudinal axis swivel bearing rotatably receiving said lower longitudinal axis forward extension, a rear bracket carrying the rear dual wheel assembly rotatably and having a lower end longitudinal axis swivel bearing rotatably receiving said lower vehicle frame section, and a seat carried by said upper frame section.

3,893,534
SERVO AIDED STEERING SYSTEM

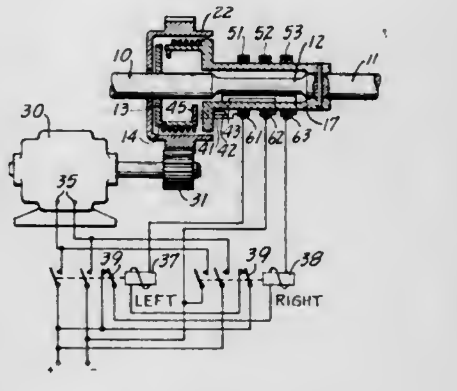
Helmut Steinmann, Baden-Baden, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Feb. 27, 1974, Ser. No. 446,167

Claims priority, application Germany, Mar. 10, 1973, 2312009

Int. Cl. B62d *5/04*

U.S. Cl. 180—79.1 **7 Claims**



1. Servo aided steering system comprising:

a manually actuatable driving shaft (10);

a driven steering shaft (11);

torsion coupling means (12) for mechanically connecting said driving and driven shafts, while allowing relative displacement therebetween dependent on direction and amount of transmitted torque;

- motor means (30–63) for aiding manual actuation, said motor means being responsive to the presence and direction of the first predetermined minimum amount of torque transmitted through said torsion coupling and being unenergized in the absence of said first predetermined minimum amount of torque, and
- second coupling means (17–27) for coupling said motor means to said driven shaft and for releasing said motor means from said driven shaft when said torque falls below a second predetermined amount of torque, said second coupling means including a rotary element driven by said motor means coaxial with elements respectively mounted on and driving and driven shafts and including also at least one intermediate coupling element and being operable automatically by mechanical engagement and disengagement to couple and to release said motor means as aforesaid, said second predetermined amount of torque being determined by the deformability of at least one of said elements of said second coupling means in response to said relative displacement allowed by said torsion coupling means.

3,893,535

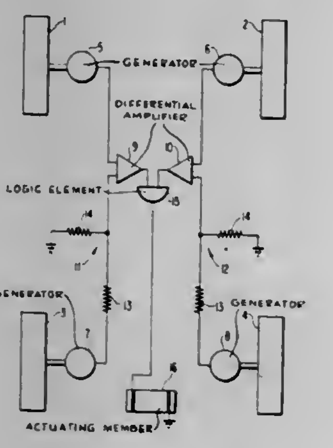
INSTALLATION FOR PREVENTING SPINNING OF THE DRIVEN WHEELS OF A MOTOR VEHICLE

Manfred H. Burckhardt, Waiblingen; Hans-Jorg Florus, Goppingen, and Horst Grossner, Geradstetten, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany

Division of Ser. No. 872,892, Oct. 31, 1969, Pat. No. 3,667,813. This application Mar. 21, 1972, Ser. No. 236,652

Int. Cl. B60q *1/00*

U.S. Cl. 180—82 R **14 Claims**



1. An installation for preventing the spinning of the driven wheels on a motor vehicle of the type having driven and non-driven wheels on each of two respective vehicle sides, said installation comprising monitoring means for determining the rotational speed differential between the driven and non-driven wheels and control means for controlling the rotational speed of the driven wheels in response to a predetermined rotational speed differential determined by the monitoring means; said monitoring means including wheel generator means for each wheel for producing a voltage corresponding to the rotational speed of a respective wheel, differential amplifier means for each vehicle side having inputs for accepting voltages produced by respective driven and non-driven wheels from the respective vehicle side, and voltage divider means operatively connected to respective driven wheel generator means for establishing a voltage difference corresponding to said predetermined rotational speed differential in the circuit between the respective driven wheel and its amplifier input, each of said differential amplifier means providing an output when the rotational speed differential between the driven wheel and the non-driven wheel of the corresponding side exceeds the predetermined rotational speed difference, wherein outputs of the respective differential amplifier means of both vehicle sides are operatively connected to an actuating means which reduces the engine torque in the presence of a signal in its input.

3,893,536

VEHICLE GUIDANCE SYSTEM OPERATING IN THE BANG BANG MODE

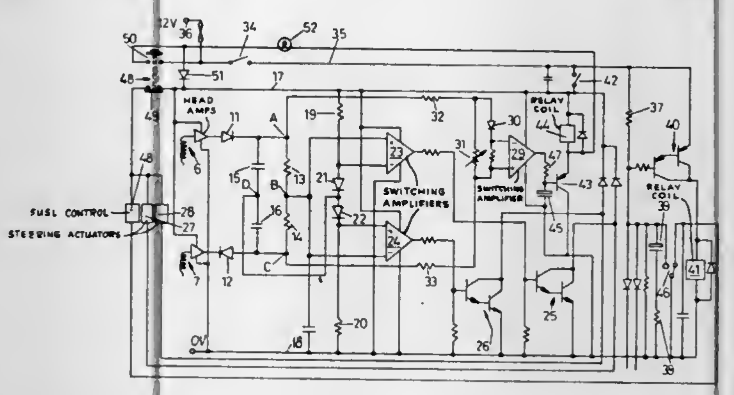
Leonard Marshall, Fleet, and David S. Hobday, Farnborough, both of England, assignors to E. R. A. Patents Limited, Surrey, England

Filed Nov. 13, 1973, Ser. No. 415,347

Claims priority, application United Kingdom, Nov. 14, 1972, 52586/72

Int. Cl. B62d *1/24*

U.S. Cl. 180—98 **14 Claims**



1. A guidance system for operating a steering mechanism of a vehicle for guiding the vehicle along a path defined by a guidance conductor, the system including means for sensing the deviation of the vehicle from the defined path; steering control means operable to activate said steering mechanism by a fixed amount selectively to the left or to the right about a datum condition; and means responsive to the sensed deviation to cause the steering control means to activate the steering mechanism by said fixed amount in the appropriate direction for correcting the deviation when said deviation exceeds a predetermined value, and to maintain the activation by said fixed amount until the deviation reduces below the predetermined value, the steering mechanism then being de-activated to the datum condition.

3,893,537

APPARATUS FOR CONTROL OF A VEHICLE CONSTANT SPEED MECHANISM

Naoji Sakakibara, Kariya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Division of Ser. No. 159,969, July 6, 1971, Pat. No. 3,752,252. This application Aug. 14, 1973, Ser. No. 388,303

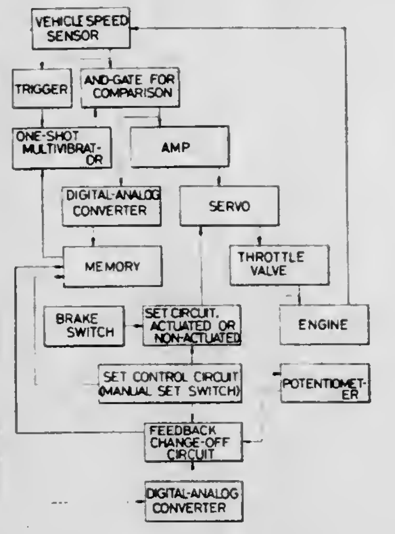
Claims priority, application Japan, July 3, 1970, 45-58594; July 3, 1970, 45-58595

Int. Cl. B60k *31/00*

U.S. Cl. 180—105 E **2 Claims**

1. Apparatus for constant speed control of vehicle travel speed, comprising:
- a throttle servo means,
- a first electrical circuit providing an electrical signal responsive to actual vehicle speed,
- means for establishing a desired vehicle speed,
- a second electrical circuit for providing a second electric signal responsive to the desired vehicle speed,
- a third electrical circuit including a potentiometer for obtaining a negative feedback signal responsive to throttle valve opening degree, said third circuit being connected with said second circuit, for varying said desired vehicle speed,
- a fourth electric circuit for providing an artificial throttle valve opening degree signal corresponding to the vehicle running condition when traveling on an even traffic surface at a speed equal to the said actual vehicle speed by modifying said first signal,

- a fifth electric circuit for memorizing said second electric signal,
- a sixth electric circuit for replacing said negative feedback signal from said third electric circuit with said artificial throttle valve opening degree signal upon operation of said means, and
- a seventh electric circuit for comparing said memorized signal in said fifth circuit with said first electric signal for the control of said throttle servo means.



3,893,538

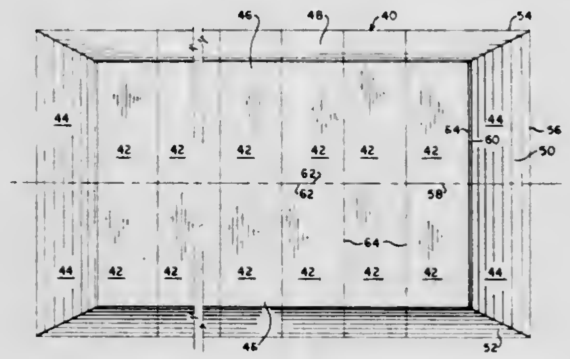
GROUND EFFECTS VEHICLE AND AN AIR TERMINAL

J. Dale Thompson, deceased, late of Seattle, Wash., and Dorothy B. Thompson, executrix, 3265 41st. Southwest, Seattle, Wash. 98116

Filed Aug. 10, 1970, Ser. No. 62,307

Int. Cl. B60v *1/04, 3/00*

U.S. Cl. 180—117 **103 Claims**



1. An assembly of a primary section and a ramp section, said assembly comprising:
- a. said primary section comprising a structural frame:
- b. an air-tight base;
- c. an upper surface deck;
- d. a first means, free of contact with the surrounding area, for varying the elevation of said section;
- e. said ramp section comprising a structural frame;
- f. an upper surface deck;
- g. a zero side;
- h. a connection side;
- i. a zero end;
- j. a connection end;
- k. said connection side being of greater thickness than said zero side;
- l. said connection end varying in thickness from said connection side to said zero side;
- m. said zero end being of substantially uniform thickness;
- n. said connection side, in the vicinity of said zero end, varying in thickness from the average thickness of said connection side to the thickness of said zero end;
- o. said zero side being of substantially uniform thickness;
- p. means to join said primary section to said ramp section at said connection side; and
- g. said first means comprising a source of compressed gas and a controlled release means for said gas for releasing said gas to said air-tight base.

3,893,539

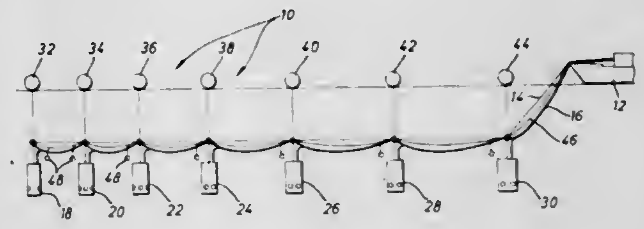
MULTIPLE AIR GUN ARRAY OF VARIED SIZES WITH INDIVIDUAL SECONDARY OSCILLATION SUPPRESSION

Lewis M. Mott-Smith, Houston, Tex., assignor to Petty-Ray Geophysical, Inc., Houston, Tex.

Continuation of Ser. No. 291,881, Oct. 21, 1972, abandoned. This application Sept. 28, 1973, Ser. No. 401,856

Int. Cl. G01v *1/02*

U.S. Cl. 181—115 **11 Claims**



9. A method for generating an underwater seismic pulse having a signal-to-bubble ratio signature of at least eight-to-one, comprising the steps of:
- placing a plurality of bubble generating devices of different sizes in spaced apart relationship, the devices being spaced apart sufficiently to prevent coalescence of adjacent bubbles;
- simultaneously actuating the bubble generating devices to produce a like pluraltiy of initially expanding bubbles of correspondingly different maximum diameters; and
- introducing a guantity of compressed gas into at least one of the bubbles as the bubble approaches its maximum diameter to suppress secondary oscillations thereof.

3,893,540

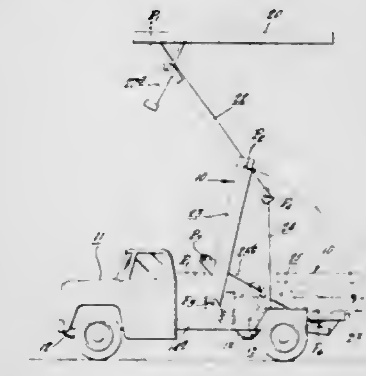
LIFTING MECHANISM

Robert A. Beucher, 216 Howarth Road, Media, Pa. 19063

Filed Dec. 7, 1973, Ser. No. 422,971

Int. Cl. B66f *11/04;* **B04g** *1/22*

U.S. Cl. 182—2 **14 Claims**



1. Load lifting apparatus, comprising:
- a frame,
- a compression member pivotally connected to said frame at one location,
- an elongated boom pivotally connected to said compression member,
- an elongated load support platform pivotally connected to one end of said boom and extending therefrom so as to overlie said boom and said frame for supporting a load moveable on the platform above the frame,

a rigid tension member pivotally connected to the other end of said boom and pivotally connected to said frame at another location spaced from said one location,

first actuator means connecting said compression member to said frame for pivoting the compression member and causing said tension member to pivot said boom relative to the compression member for raising and lowering said load support, and

second actuator means associated with said support and boom for pivoting said support relative to said boom to permit leveling of said support during raising and lowering thereof, whereby said load support platform may be raised and lowered upon extension and retraction of said first actuator means.

3,893,541

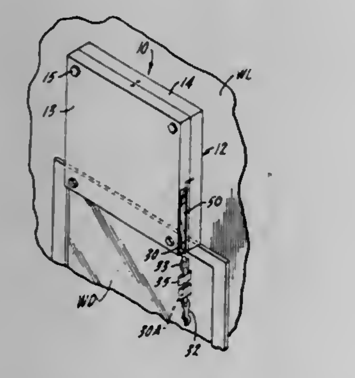
WINDOW ESCAPES

Donald A. Servais, 1823 32nd St., Kenosha, Wis. 53140

Filed Oct. 29, 1974, Ser. No. 518,495

Int. Cl. A62b *1/14*

U.S. Cl. 182—73 **5 Claims**



1. Apparatus facilitating escape from the window of an upper story dwelling comprising a housing, a reel inside the housing containing a wound length of life line, a body-support harness attached to the free end of the life line, shock absorber means comprising a rod and a fluid-charged cylinder together having opposed ends, one such end being anchored pivotally to the interior of the housing and the other end being pivotally attached in eccentric relation to the reel, and guide means secured in spaced relation to the interior of the housing and rotatably supporting the periphery of the reel.

3,893,542

COUNTERWEIGHT ARRANGEMENT FOR A RACK AND PINION ELEVATOR

Thorbjörn Svensson, Skelleftea, Sweden, assignor to Linden-Alimak AB, Skelleftea, Sweden

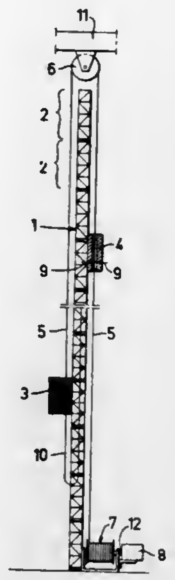
Filed Mar. 25, 1974, Ser. No. 454,536

Claims priority, application Sweden, Apr. 6, 1973, 7304892-8

Int. Cl. B66b *17/12*

U.S. Cl. 187—94 **6 Claims**

1. An elevator comprising a vertically oriented mast having a rack extending along said mast, a load carrier mounted for vertical movement along said mast, motor means carried by said load carrier and having an output gear in drive engagement with said rack for moving said load carrier along said mast, and counterweight means comprising a pulley mounted for rotation adjacent the top of said mast, a rotatable cable drum mounted at a fixed position adjacent the lower end of said mast, a counterweight cable attached at one of its ends to said load carrier and extending upwardly from said load carrier over said pulley and thence downwardly to said cable drum whereby the other end of said cable is always located at the lower end of said mast thereby to assure that the counterweight cable includes a section which always extends along the entire length of said mast on the side of said pulley opposite to said load carrier regardless of the position of said load carrier along said mast, said cable drum being operative to automatically take in and feed out said counterweight cable as the vertical position of said load carrier is varied along said mast, and a counterweight attached to said counterweight cable section between said pulley and said cable drum.



3,893,543

RESILIENT STRUCTURE FOR DISC BRAKE FRICTION PAD

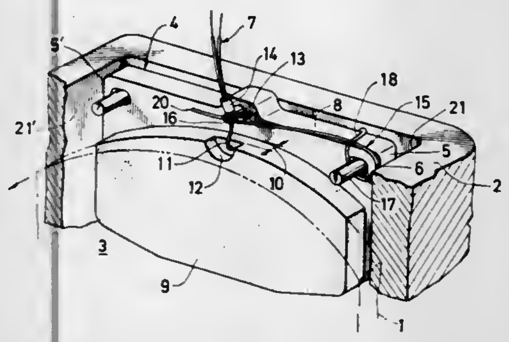
Juichi Sibatani; Sadayoshi Itou; Masachika Yamamoto, and Mithuhiko Nakagawa, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka and Toyota Motor Co., Ltd., Aichi, both of, Japan

Filed Oct. 23, 1973, Ser. No. 408,909

Claims priority, application Japan, Oct. 21, 1972, 47-121891

Int. Cl. F16d *66/02*

U.S. Cl. 188—1 A **7 Claims**



1. In a disc brake assembly wherein: a friction pad is mounted for limited movement toward and away from a rotating brake disc in a direction parallel to the axis of disc rotation and between laterally spaced guide surfaces of a fixed guide member, and wherein an insulated wire is loop coupled to the movable brake friction pad and a resilient member is mounted on the back plate of the movable friction pad and engages the insulated wire to move at least one portion of the loop away from the back plate upon severance of the wire by brake pad wear, the improvement wherein: said resilient member comprises: a resilient guide member pressor which protrudes laterally from one side of the back plate and laterally engages one of said laterally spaced guide surfaces for biasing the other side of said back plate into contact with the other guide surface to eliminate squeal when applying the brake, and said resilient member further comprises a unitary resilient arm, said arm engaging said insulated wire loop and exerting a tensioning force thereon to bias said wire loop radially outwards relative to the axis of rotation of said brake disc such that the resilient arm carries the loop portion of said insulated

wire radially outwards of said brake disc when loop severance occurs.

3,893,544

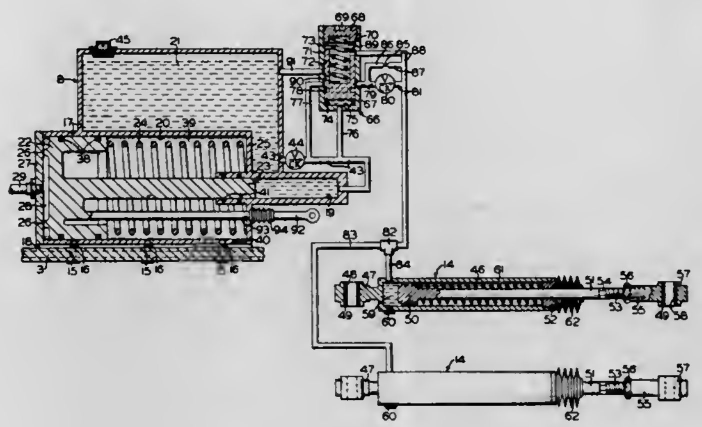
PNEUMATIC-HYDRAULIC BRAKE APPARATUS FOR A FOUR-WHEEL TRUCK

Donald C. Means, Export, Pa., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Mar. 13, 1974, Ser. No. 450,871

Int. Cl. B61h *13/24*

U.S. Cl. 188—52 **11 Claims**



1. A brake rigging for a four-wheel type of railway vehicle truck having two spaced-apart side frames disposed on opposite sides of a longitudinal axis and each perpendicular to a transverse axis of the truck, said brake rigging comprising:

a. two brake-shoe-carrying brake beams extending in spaced substantially parallel relation to the transverse axis of the vehicle truck, and guidably supported at the ends thereof on the side frames of the truck for bodily movement longitudinally of the truck, each of said brake beams having adjacent each end thereof a cavity out of which extends in opposite directions a pair of coaxial bores, wherein the improvement comprises,

b. a pair of hydraulic brake actuators each disposed between the two wheels on one side of the truck and having a pair of oppositely extending arms, the pair of arms of each actuator being disposed in the cavities at one end of said brake beams and respectively operatively connected to said brake beams, and

c. a hydraulic-pneumatic master cylinder carried by one of said brake beams and operatively responsive to the application and release of pneumatic pressure to cause the supply and release of hydraulic fluid under pressure to and from said brake actuators whereby said actuators, in response to said supply of hydraulic fluid under pressure thereto, effect movement of said brake beams in opposite directions to a brake applying position with respect to said wheels of the truck.

3,893,545

MECHANICAL ACTUATOR FOR DISC BRAKE

Richard T. Burnett, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed Oct. 25, 1973, Ser. No. 409,490

Int. Cl. F16d *55/26*

U.S. Cl. 188—72.6 **5 Claims**

1. In a brake:

a rotor having a pair of friction faces;

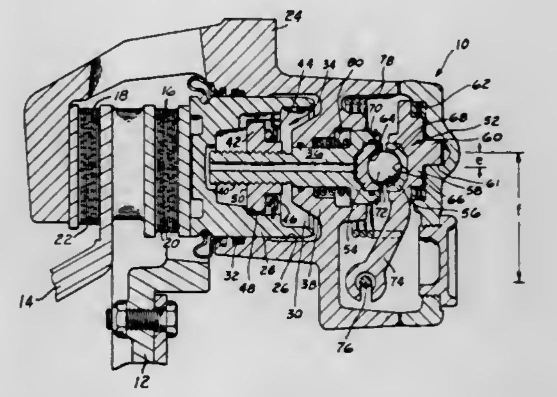
a pair of friction elements, one of said elements being disposed adjacent each of said friction faces;

a stationary torque member;

a caliper housing slidably mounted on said torque member and having portions disposed adjacent each of said friction elements for urging the latter into frictional engagement with the corresponding friction faces when a brake application is effected;

said caliper housing defining a bore therewithin, fluid pressure responsive means within said bore for effecting a service brake actuation, and mechanical actuating means for effecting a mechanical actuation of said brake;

said mechanical actuating means including a force transmitting member operably connected to one of said friction elements, a pair of mating recessed sockets, each of said sockets having an axis, said sockets carried on said force transmitting member and on said housing respectively, said sockets cooperating with each other to define a cavity therebetween, a substantially spherical force transmitting element disposed in the cavity defined by said sockets, one of said sockets being mounted coaxial with said force transmitting member, and pin means for mounting the other socket for rotative movement about an axis offset from the axis of the one socket, the offset between said axes being less than the sum of the radius of the spherical force transmitting element and the radius of said pin means, and lever means for rotating said other socket about said pin means from a neutral position wherein the other socket is aligned with the one socket to an actuated position wherein the other socket is displaced from the one socket, said force transmitting element being urged up the sides of said sockets upon rotation of said other socket to the actuated position to thereby generate a force tending to separate said sockets whereby forces are generated acting through said force transmitting member to effect a mechanical brake actuation.



3,893,546

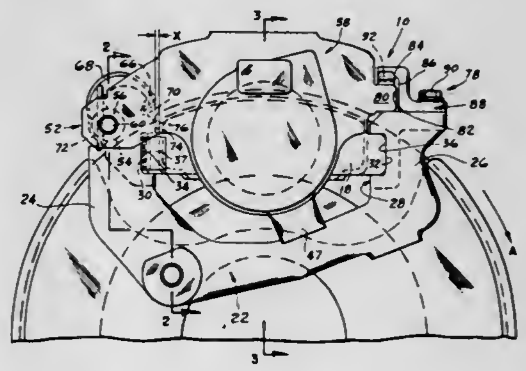
DISC BRAKE SUPPORT AND CALIPER MOUNTING

William J. Kestermeier, and Richard T. Burnett, both of South Bend, Ind., assignors to The Bendix Corporation, South Bend, Ind.

Filed May 20, 1974, Ser. No. 471,377

Int. Cl. F16d *65/02*

U.S. Cl. 188—73.3 **10 Claims**



1. In a brake, a rotor having a pair of friction faces, a pair of friction elements, one of said elements being disposed adjacent each of said friction faces, a support member mounted adjacent one of said friction faces, said support member having a pair of circumferentially spaced arms defining a recess therebetween, a member straddling said rotor and

engaging each of said friction elements for urging the latter into braking engagement with their corresponding friction faces when a brake application is effected, at least one of the friction elements being secured to the straddling member, means slidably mounting said straddling member on said support member for transverse relative movement with respect to said rotor, said slidably mounting means including a socket on the outer edge of one of said arms, and pin means connected to said straddling member and received in said socket whereby braking torque is transmitted from the straddling member to the support member through the pin means and said socket when braking during rotation of said rotor in one direction, the edge of said one arm facing into said recess having a bearing surface cooperating with a corresponding bearing surface on said straddling member whereby braking torque is transmitted from the straddling member to said torque member through said bearing surfaces upon braking during rotation of said rotor in the opposite direction, and means operatively connecting the other arm of the support member and the straddling member for inhibiting rotation of said straddling member about said pin means.

3,893,547

BRAKE SHOE SUSPENSION

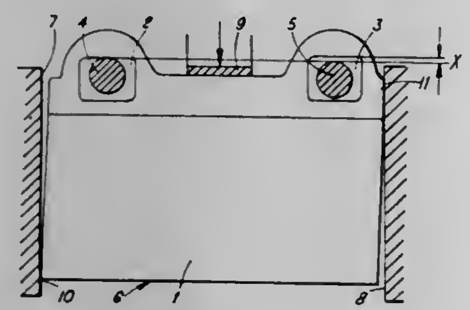
Johannes Hans Schanz, Mariannenweg, Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Aug. 27, 1973, Ser. No. 391,927

Claims priority, application Germany, Sept. 30, 1972, 2248143

Int. Cl. F16d *65/02*

U.S. Cl. 188—73.5 **4 Claims**



1. A brake shoe suspension arrangement for disc brakes comprising:

a brake shoe shaft having a pair of spaced lateral guide surfaces;

a brake shoe having a pair of edges, each of said pair of edges being parallel to each other and adjacent an associated one of said lateral guide surfaces, said brake shoe being disposed in said brake shoe shaft between said lateral guide surfaces so that there is clearance between each of said pair of edges of said brake shoe and the associated one of said lateral guide surfaces;

a pair of spaced holding holes disposed through said brake shoe adjacent the top surface of said brake shoe shaft;

a pair of locking pins each extending through a different one of said holding holes with clearance to secure said brake shoe in said brake shaft; and

a spring disposed parallel to said locking pins and engaging said brake shoe on an edge thereof having a perpendicular relation to said pair of edges between said holding holes; said spring exerting a vertical force on said brake shoe to urge said brake shoe radially inwardly;

a clearance between the radial outer most surfaces of one of said holes and said pin being greater than a clearance between the radial outer most surfaces of the other of said holes and said pin;

said holding holes, said spring, and said locking pins cooperating with each other to tilt said brake shoe relative to said lateral guide surfaces so that one portion of each of said pair of edges of said brake shoe abuts the associated one of said lateral guide surfaces.

3,893,548

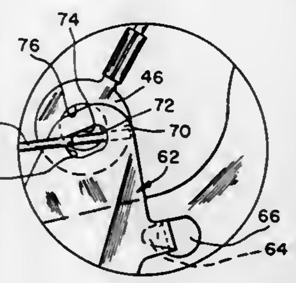
APPLICATION ADJUSTER FOR DRUM BRAKE

Daniel L. Bolenbaugh, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed Mar. 11, 1974, Ser. No. 450,116

Int. Cl. F16d *51/52*

U.S. Cl. 188—79.5 GC **11 Claims**



1. In a drum brake, a backing plate for mounting on a non-rotative portion of a vehicle, a drum mounted for rotation with a member to be braked, a pair of brake shoes slidably mounted on said backing plate in end-to-end relationship, fluid motor means for urging said brake shoes into frictional engagement with said drum, resilient means yieldably urging said brake shoes away from said drum, an extendible adjusting strut between contiguous ends of said shoes, said adjusting strut including a starwheel for extending said strut upon rotation of the starwheel, an adjusting lever pivotally mounted on one of said shoes adjacent said starwheel for rotating the latter upon pivoting of the lever, wherein the invention comprises a spring extending between said adjusting lever and the other brake shoe, and a force transmitting member interconnecting the spring, the shoe, and the backing plate of the brake whereby upon movement of the shoe toward the drum in excess of a predetermined amount an actuating force is transmitted through said spring to pivot said lever as the brake is applied thereby effecting adjustment of the brake, and an overtravel connection between said spring and said lever to permit movement of the spring relative to the lever when the adjuster lever is prevented from moving.

3,893,549

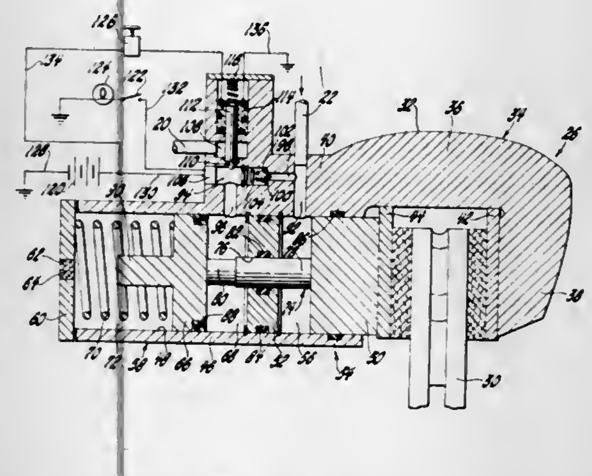
BRAKE APPLY AND RELEASE MECHANISM

Ronald W. Bennett, Miamisburg, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 25, 1974, Ser. No. 454,096

Int. Cl. F16d *65/24*

U.S. Cl. 188—170 **1 Claim**



1. A parking and service brake comprising:

a rotatable element to be braked and friction braking means for friction braking engagement therewith;

a brake actuating and release mechanism;

a selectively actuated master cylinder having a fluid pressurizing chamber and a fluid reservoir;

a first fluid conduit fluidly connecting said master cylinder fluid reservoir and said brake actuating and release mechanism;

a second fluid conduit fluidly connecting said master cylinder fluid pressurizing chamber and said brake actuating and release mechanism;

said brake actuating and release mechanism including

a housing having a cylinder bore therein,

a fixed wall dividing said cylinder bore into first and second fluid pressure chambers,

first and second pistons reciprocably received in said cylinder bore on opposite sides of said fixed wall and respectively defining movable end walls of said first and second chambers, said second piston operatively engaging said friction braking means to exert braking forces thereon as said second piston is urged in the brake applying direction away from said fixed wall,

an axially movable push rod sealingly extending through an aperture in said fixed wall and engageable by said pistons to transmit forces only in compression between said pistons,

a pre-loaded compression spring in said cylinder bore engaging said first piston and continually urging said first piston toward said push rod and said second piston, said spring exerting a brake apply force compressibly therethrough in one condition of operation,

and first and second fluid passages in said housing respectively connecting with said first and second chambers and having a check valve therebetween permitting fluid flow and pressure communication only from said second fluid passage to said first fluid passage,

said first passage having an outlet port fluidly connected with said first fluid conduit and a normally closed but selectively opened valve fluidly intermediate said outlet port and the connection of said first passage and said check valve,

said second passage having a port fluidly connected with said second fluid conduit to receive fluid delivered under pressure from said master cylinder pressurizing chamber and deliver the same to said second fluid pressure chamber at desired brake actuating pressure levels when said master cylinder is actuated;

said master cylinder also delivering fluid under pressure from said fluid pressurizing chamber to said second passage and through said check valve and said first passage to said first fluid pressure chamber to urge said first piston away from said fixed wall and compress said spring to store force therein, said check valve and said normally closed valve holding fluid pressure in said first fluid pressure chember and said first passage upon release of fluid pressure in said second fluid chamber and said second passage to keep force stored in said spring by compression thereof and to permit said second piston to move toward said fixed wall to release the brake;

and means controlled independently of actuation of said master cylinder to open said normally closed valve to communicate said first fluid pressure chamber and said first passage to said reservoir through said first fluid conduit to release the pressurized fluid in said first fluid pressure chamber and said passage, thereby releasing the force stored in said spring to move said first piston against said push rod and to move said push rod against said second piston to exert the force released from said spring to cause said friction braking means to engage said rotatable element in friction braking relation, said check valve acting when said normally closed valve is open and fluid pressure is being delivered to said second passage to permit fluid flow therethrough from said second passage into said first passage and thence through said open normally closed valve and said first fluid conduit to said fluid reservoir to return any fluid displaced through said second passage under these conditions to said fluid reservoir.

3,893,550

HYDRAULIC SHOCK ABSORBER OF THE TELESCOPIC TYPE

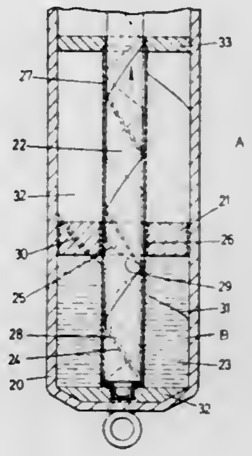
Victoriano San Pablo De La Rosa, Manuel Gonzales Longaria No. 2, Madrid 10, Spain

Filed Oct. 23, 1973, Ser. No. 408,587

Claims priority, application Spain, Oct. 20, 1972, 407795

Int. Cl. F16f *9/32*

U.S. Cl. 188—322 **7 Claims**



1. A hydraulic shock absorber comprising: a cylinder having a first helicoidal surface on the interior thereof; a piston rod movable within said cylinder; a piston, said piston having at least one helicoidal surface adapted to coact with said helicoidal surface of said cylinder and having an axially disposed bore through which said piston rod extends, and at least one interengaging helical formation interposed between said piston rod and piston such that movement of the piston rod causes the piston to move along the piston rod, axial displacement of the piston exerting a pressure on fluid in said cylinder.

3,893,551

TORQUE CONVERTER TRANSMISSION HAVING ROTATING CASING, AND RELEASABLE PUMP

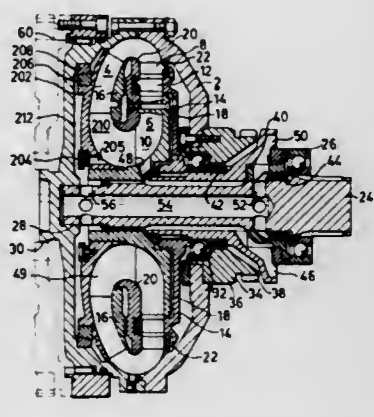
Karl Gustav Ahlen, Stockholm, Sweden, assignor to S.R.M. Hydromekanik AB, Sweden

Filed June 14, 1972, Ser. No. 262,514

Claims priority, application United Kingdom, June 25, 1971, 29886/71; Sept. 9, 1971, 42130/71

Int. Cl. F16d *33/10;* **F16h** *47/00*

U.S. Cl. 192—3.33 **45 Claims**



1. A torque converter of the type having a rotating casing adapted to be connected to a drive source and forming therein a working chamber having therein a pump part including at least one ring of pump blades, a reaction part including at least one ring of guide blades and a turbine part including at least one ring of turbine blades, at least one of said pump part and said casing being a movable member movable axially towards and away from the other, such that the pump part and the casing are relatively movable axially between at least a first position in which the pump part is connected to the said casing

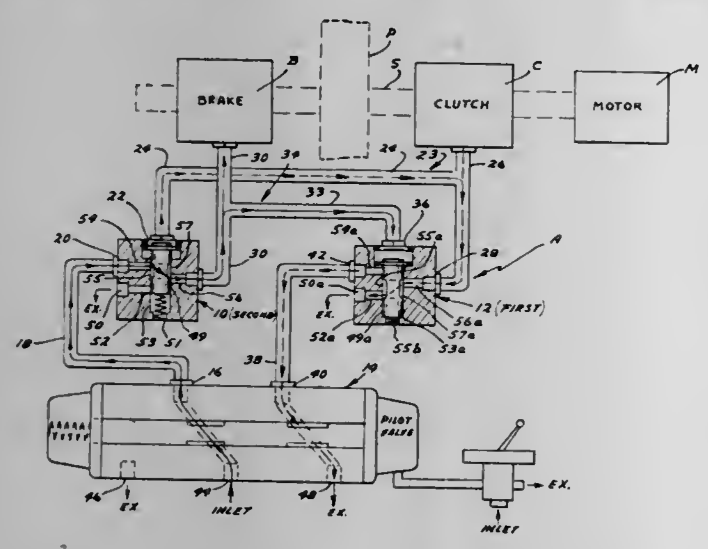
for rotation therewith and a second position in which the pump part is released from the casing to rotate in relation thereto, a servo-motor means for moving the movable member between said first and second positions, the pump part being the piston of said servo-motor, such that a fluid pressure differential on opposite sides of said pump part effects movement of said movable member between said first and second positions.

3,893,552
CLUTCH AND BRAKE WITH INTERLOCK VALVES

Eugene L. Dahl, Minneapolis, Minn., assignor to Horton Manufacturing Co., Minneapolis, Minn.

Filed Oct. 5, 1973, Ser. No. 403,803
Int. Cl. F16d *67/04*

U.S. Cl. 192—12 C **1 Claim**



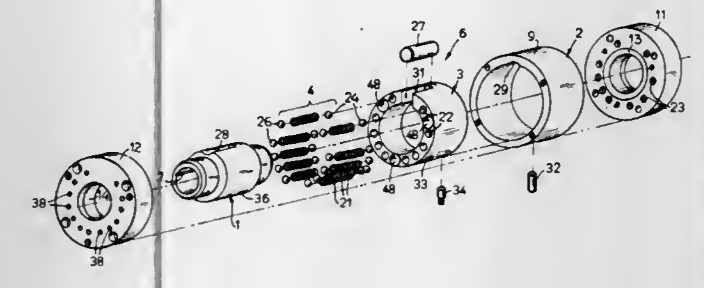
1. A fluid control system for controlling the operation of a mechanism, comprising in combination:
- a. a mobile part;
- b. a motor driving the mobile part;
- c. a fluid sensitive, operated brake operatively interconnected to the mobile part having a fluid pressure sensor port;
- d. a fluid sensitive, operated clutch operatively interconnected to the mobile part having a fluid pressure sensor port;
- e. a first delay member including a piston having a first position and second position, a first port, a second port, a third port, and an exhaust port, and means for biasing the piston to the first position, the first position of the piston communicating the first port with the third port and the second position of the piston communicating the third port with the exhaust port, and the second port directly communicating with the piston such that when fluid is supplied under pressure to the second port, the piston will move from the first position to the second position;
- f. a second delay member including a piston having a first position and second position, a first port, a second port, a third port, and an exhaust port, and means for biasing the piston to the first position, the first position of the piston communicating the first port with the third port and the second position of the piston communicating the third port with the exhaust port, and the second port directly communicating with the piston such that when fluid is supplied under pressure to the second port, the piston will move from the first position to the second position;
- g. a fluid line connecting the third port of the first delay member to the fluid pressure sensor port of the clutch and to the second port of the second delay member;
- h. a fluid line connecting the third port of the second delay member to the fluid pressure sensor port of the brake and to the second port of the first delay member;
- i. a spool valve having a first position and a second position including a first port, second port, a third port, a fourth port, and a fifth port, the first position communicating the fourth port with the first port and communicating the second port with the fifth port, and the second position communicating the first port with the third port and communicating the fourth port with the second port;
- j. a fluid line connecting the first port of the spool valve with the first port of the second delay member;
- k. a fluid line connecting the second port of the spool valve with the first port of the first delay member;
- l. means for supplying pressurized fluid to the fourth port of the spool valve; and
- m. means for allowing the exhausting of fluid from the third port and the fifth port of the spool valve, the exhaust port of the first delay member, and the exhaust port of the second delay member whereby when the spool valve is in the first position, fluid under pressure is supplied through the second delay member to the fluid pressure sensor port of the brake and to the second port of the first delay member and simultaneously the second port of the second delay member and the fluid sensor port of the clutch communicate through the first delay member to the exhaust means and when the spool valve is in the second position, fluid under pressure is supplied through the first delay member to the fluid pressure sensor port of the clutch and to the second port of the second delay member and simultaneously the second port of the first delay member and the fluid pressure sensor port of the brake communicate through the second delay member to the exhaust means thus preventing overlap in clutch-brake cycles where there is a fast cycle from clutch to brake or brake to clutch.

3,893,553
OVERLOAD RELEASE CLUTCH

Quinten A. Hansen, Highway 38, Franksville, Wis. 53126

Filed May 13, 1974, Ser. No. 469,308
Int. Cl. F16d *7/02*

U.S. Cl. 192—56 R **9 Claims**



1. An overload release clutch comprising radially inner and outer clutch members defining an annular space therebetween, a rotor within said space; detent means operatively interposed between said rotor and one of said clutch members; and double throw lock-up means operatively associated with said inner and outer clutch members and with said rotor whereby said rotor may be coupled selectively with either said inner or with said outer clutch member.

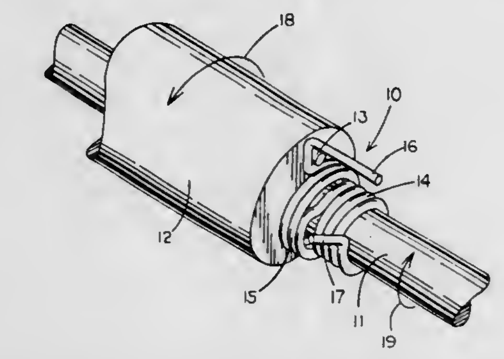
3,893,554
TORQUE LIMITING CLUTCH

Thomas D. Wason, 313 W. Park Dr., Raleigh, N.C. 27605

Filed June 7, 1974, Ser. No. 477,446
Int. Cl.^{2} F16D *43/21, 41/20*

U.S. Cl. 192—56 C **8 Claims**

1. A torque limiting device comprising: a first shaft; a second shaft juxtaposed to and in general axial alignment with said first shaft; a clutch means including a coil portion encircling said first shaft in gripping contact therewith; a second coil portion continuous with said first portion and encircling said first shaft, said second portion having an interior diameter greater than the diameter of the said encircled shaft; means extending from said second coil into drive contact with said second shaft; means extending from said first coil in normally spaced relation to said means extending from said second coil in such a position that, under torsion, said arms travel in a path so that they operatively contact each other when under predetermined torque whereby said second extending means, under predetermined load, will move against and exert pressure on said first extending means thereby at least partially unwinding the same to at least partially release the gripping pressure of said first coil on said first shaft thereby allowing rotational slippage between said first and second shafts.



3,893,555
ROTARY FANS

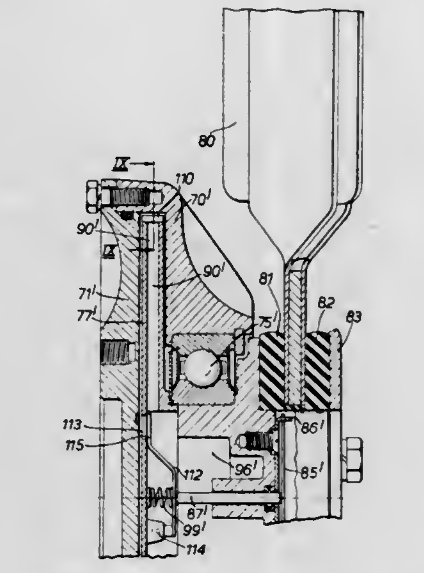
Arthur Ernest Henry Elmer, Painswick, England, assignor to Dynair Limited, Gloucestershire, England

Filed Mar. 8, 1974, Ser. No. 449,375

Claims priority, application United Kingdom, May 24, 1973, 24931/73

Int. Cl. F01p *7/02*

U.S. Cl. 192—58 B **8 Claims**



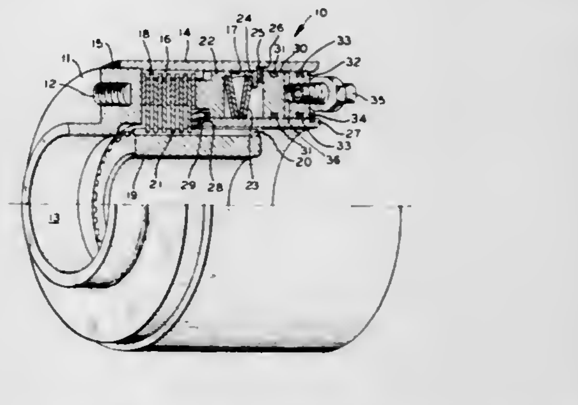
1. A rotary cooling fan including a variable speed torsion drive, comprising an annular casing provided with means for connection to an input drive shaft at one end, an output shaft extending through a central aperture at the other end of said casing and having a plurality of fan blades secured thereto, an inner rotary body located within said casing and secured to said output shaft, said rotary body and said casing being formed with cooperating closely spaced surfaces defining a clearance space, means for retaining a quantity of a viscous liquid in the space between said surfaces, a liquid reservoir formed within said rotary body or in said output shaft, scoop means mounted on said inner body for impelling liquid from said clearance space to said reservoir as a result of relative rotation between said rotary body and casing, valve means controlling the return flow of liquid from said reservoir to said clearance space, a temperature responsive element located externally of said casing, and actuating means for operating said valve in response to sensed changes of temperature by said element.

3,893,556
FLUID RELEASED CLUTCH

Ted Lech, Jr., Roseville, Mich., and Christian M. Waldhelm, San Diego, Calif., assignors to Dana Corporation, Toledo, Ohio

Filed May 2, 1974, Ser. No. 466,094
Int. Cl.^{2} F16D *25/00*

U.S. Cl. 192—91 A **1 Claim**



1. A normally engaged torque transmitting device for connecting an input and output comprising:
- a. a tubular housing adapted for connection to said output including a bore, a first axially extending spline within said bore and an annular groove defined in said bore;
- b. a first snap ring carried in said groove;
- c. a friction disc carried within said bore and axially piloted on said first spline;
- d. an input member adapted for connection to said input and including a second axially extending spline thereon;
- e. a separator plate adjacent said friction disc, carried on said input member and axially piloted on said second spline;
- f. an annular pressure plate slidably received within said bore and adjacent said friction disc and separator plate;
- g. release means carried within said bore to selectively urge said pressure plate away from said friction disc and separator plate, said release means comprising:
  - i. an annular reaction plate slidably and sealingly carried within said bore and secured against axial movement therealong in the direction of said annular pressure plate by said first snap ring;
  - ii. a tubular axially shiftable member defining an annular groove on the exterior of each end thereof, a second and third snap ring carried in respective ones of said grooves therein, said second snap ring engaging said annular pressure plate, said tubular member slidably and sealingly engaging the interior of said annular reaction plate;
  - iii. a third annular plate, located within and slidably and sealingly engaging said bore and engaging the exterior said axially shiftable tubular member and said third snap ring;
  - iv. said third annular plate being adjacent and spaced from said annular reaction plate and forming a cavity therebetween; and
  - v. means for introducing fluid within said cavity whereby said third annular plate moves away from said reaction plate and thereby moves said pressure plate away from said discs; and
- h. belville spring means between said pressure plate and said reaction plate, said spring means reacting against said pressure plate and said first snap ring to normally bias

said pressure plate toward said friction disc and separator plate.

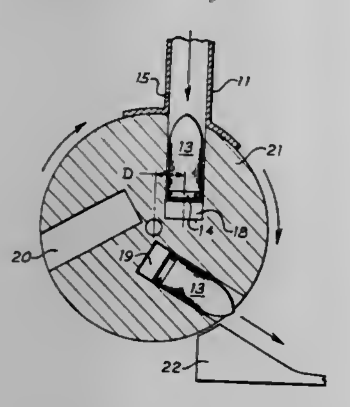
3,893,557
PNEUMATIC STRIKEDOWN SYSTEM FOR PROJECTILES

J. Luis Frenk, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 29, 1974, Ser. No. 456,082

Int. Cl.^{2} B65G *11/20*

U.S. Cl. 193—32 **1 Claim**



1. A handling device for a projectile having a temporarily mounted resilient boot on one end comprising,

a vertically oriented tube having an inner diameter slightly larger than the diameter of said projectile and slightly smaller than the diameter of said resilient boot whereby said resilient boot provides an air seal when said projectile is falling through said tube,

at least one orifice in the side of said tube near a lower end for allowing air to escape during descent of said projectile through said tube thereby regulating the speed of descent of said projectile,

a drum rotatably positioned at the lower end of said tube providing a closure for the lower end of said tube, said drum being rotatable about a horizontally oriented shaft offset a first fixed distance from the central axis of said vertically oriented tube, and

at least three cavities in said drum each having its central axis offset a fixed distance equal to said first fixed distance whereby said central axis of each said cavity is alignable with the central axis of said vertically oriented tube and whereby loading of a projectile through said vertically oriented tube into one of said cavities causes rotation of said drum.

3,893,558
SPECIAL SYMBOL GENERATOR FOR HIGH SPEED PRINTER

John R. Fulton, Brookfield, and George W. Volling, Round Lake Beach, both of Ill., assignors to Extel Corporation, Northbrook, Ill.

Filed May 17, 1974, Ser. No. 470,846

Int. Cl. B41j *3/04*

U.S. Cl. 197—1 R **8 Claims**

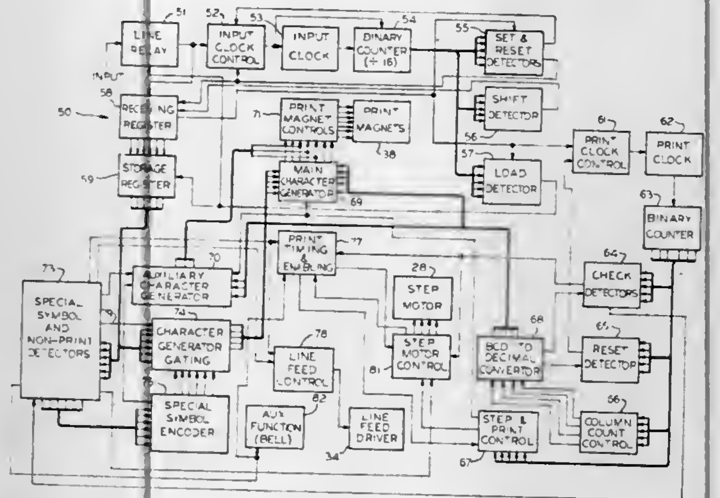
1. In a high-speed dot matrix printer of the kind comprising a plurality of individual signal-actuated dot printer elements that print standard data characters in a basic format constituting a group of dot-position columns each including a given number of dot positions, with each such group of columns normally separated from the next adjacent group by a predetermined number of blank columns, a control system enabling the printer to print special symbols unsuited to the basic format, utilizing an input signal comprising a series of intermixed code words individually respresentative of standard data characters and special symbols, said control system comprising:

a plural-level data store for receiving said input signal and capable of storing a plurality of received code words, each received code word being initially recorded in an input level of said store and then advanced to an output level;

a main character signal generator, coupled to said dot printer elements, for actuating said dot printer elements to print characters in said basic format;

encoding means for generating a series of modified code words each representative of a part of a special symbol, which part is reproducible in said basic format;

an auxiliary character signal generator, coupled to said dot printer elements, for actuating said dot printer elements to print dots in a predetermined pattern in one or more columns adjacent the columns of said basic format to complete the reproduction of said special symbols;



gating means, coupling an output level of said data store and said encoding means to said main character signal generator;

and special symbol detector means, coupled to said data store, said gating means, and said encoding means, for identifying received code words representative of said special symbols, and for actuating said gating means and said encoding means to apply modified code words to said main character generator;

said encoding means also being coupled to said auxiliary character generator to actuate said auxiliary character signal generator.

3,893,559
HAND-OPERATED TYPEWRITER

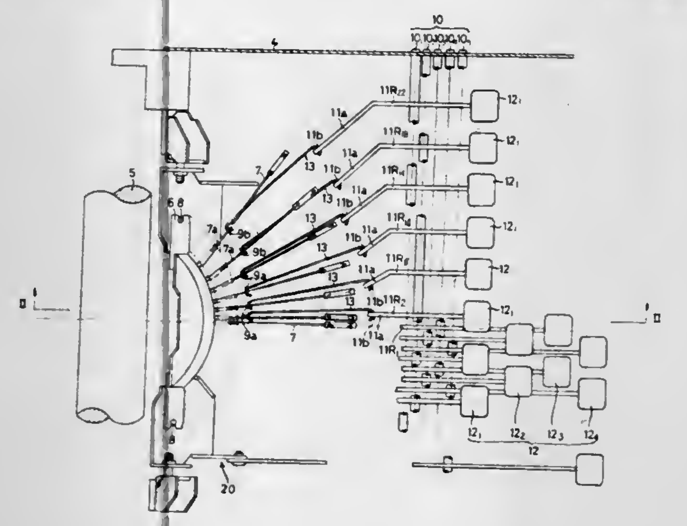
Yukio Hishida, Nagoya, and Yoshio Tsuru, Iwakura, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Japan

Filed Apr. 26, 1974, Ser. No. 464,481

Claims priority, application Japan, May 8, 1973, 48-51482

Int. Cl. B41j *23/08*

U.S. Cl. 197—17 **6 Claims**



1. In a hand-operated typewriter wherein characters are typed by applying fingers to keys (12) disposed in rows, the keys being located at the center part and the outer parts of each row, said typewriter having:

- a. a frame (4) extending from the front near to the operator to the rear far from the operator;
- b. a type bar supporting segment (6) shiftably mounted on said frame, for movement to a high and a low position with a semicircular pivot wire (8) held therein;
- c. a plurality of type bars (7) having at least two type characters at the upper end which can be selectively applied to paper and a boot shaped part at the lower end for pivotal lever action pivotally supported on said segment (6) by said wire (8);
- d. key levers (11) and connecting means (13), there being one key lever (11) connected to the lower end of each type bar (7) by said connecting means (13) so adapted and disposed that the pivoting action of the key lever (11) and said connecting means on said lower end causes type bar to pivot about said wire;
- e. shift means (20) connected to said segment (6) to move said segment (6) to the high and low positions to select one of the characters thereon for typing; wherein the improvement comprises
- f. several key lever shafts mounted on said frame in several rows at different heights and different distances from the front side of said frame for pivotally supporting said key levers;
- g. said type bars having connecting apertures for said connecting means in the boot shaped part there being at least two kinds of apertures at a relatively near and relatively far distance from said pivot wire;
- h. said key levers corresponding to each row of the keys being supported by using of at least two adjacent shafts of said key lever shafts, the lowest one of said at least two adjacent shafts supporting said key levers corresponding to the keys positioned at the center part of each row of the keys and some of those said key levers which correspond to the keys positioned at the outer parts of each row, and said other shaft or shafts except said lowest shaft supporting other of the keys positioned at the outer parts of each row;
- i. said connecting means corresponding to said key levers of the keys in a center part of each row being connected with said connecting aperture having a rather short distance from said pivot wire;
- j. and said connecting means corresponding to said key levers supported on said other shaft or shafts being selectively connected with said other of said apertures,

so that the strokes of all keys are equalized.

3,893,560
WORD PROCESSOR HAVING SELECTIVELY PRINTED DATA BLOCK ADDRESS CODES

Richard E. Heitman, Acton; Peter G. Martin, Arlington; Richard C. Norris, Belmont, and Genio R. Arciprete, Lexington, all of Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Filed May 18, 1972, Ser. No. 254,744

Int. Cl. B41j *5/30*

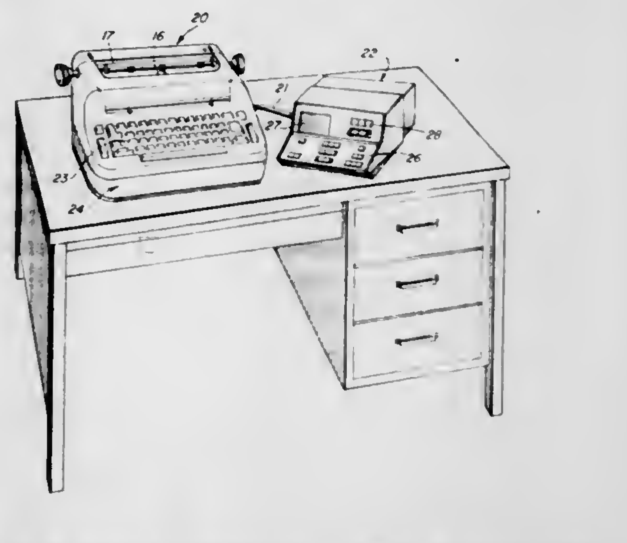
U.S. Cl. 197—19 **18 Claims**

1. A data writing system comprising;

storage means for storing data in a plurality of storage blocks, each storage block having the same fixed maximum capacity for storage of said data, each of said storage blocks having associated therewith a unique stored address code;

means for converting data stored in said storage means to corresponding indicia written in a sequence of separate lines; and

means for selectively converting the particular stored address code associated with the data corresponding to the indicia in any of said lines, to written form on said any line.



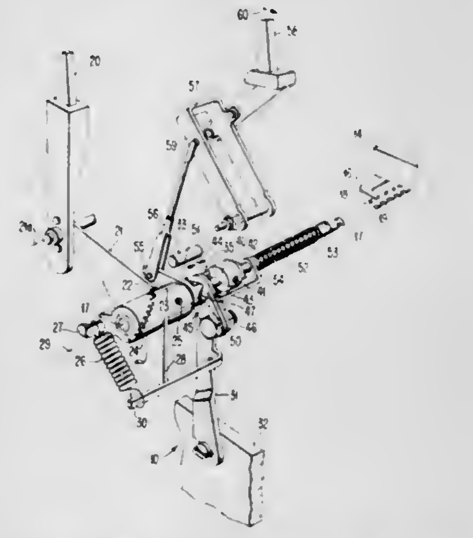
3,893,561
HALF BACKSPACE FOR DUAL PITCH TYPEWRITER

John Gilbert Gibbons, and Raymond Michael Marowski, both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 23, 1973, Ser. No. 418,349

Int. Cl.^{2} B41J *19/62*

U.S. Cl. 197—91 **1 Claim**



1. A typewriter having printing and paper support means defining therebetween a printing point movable along a writing line, frame means, letter feeding mechanism comprising an escapement rack, means supporting said escapement rack on said frame means for movement along an axis that is parallel to said writing line, wherein the improvement comprises:

first and second opposed camming members,

connecting means connecting said first camming member to said escapement rack for unitary movement therewith in a first direction that is parallel to said writing line,

means connected with said frame means for supporting said second camming member against movement in said first direction,

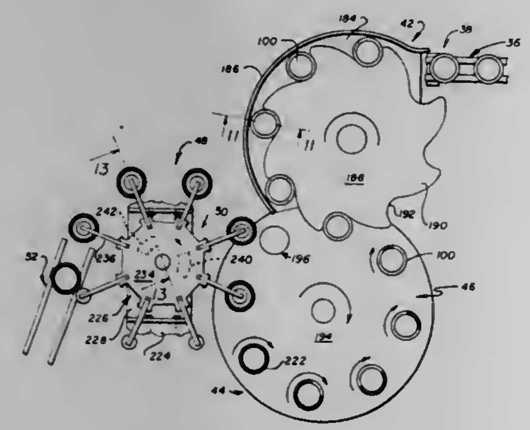
one of said camming members being supported for movement relative to the other said camming member in a second direction that is transverse to said first direction, said first and second camming members each providing a plurality of camming surface portions that are symmetrically spaced about said axis of rack movement and are mutually configured such that relative movement therebetween in said second direction produces relative movement of said first camming member in said first direction, a control arm connected to said one of said camming

members for moving said one of said camming members in said second direction,
stop means mounted on said escapement rack, and
abutment means supportedly connected to said frame means in cooperatively spaced relationship with respect to said stop means whereby the motion of said escapement rack along said axis of rack movement is limited by engagement of said stop means with said abutment means,
said escapement rack comprises a cylindrical rod,
said first camming member is rotatably carried by said cylindrical rod for rotational movement in said second direction and said second camming member is stationarily secured with respect to said frame means.

3,893,562
ROTATABLE APPARATUS FOR TRANSFERRING ARTICLES

Robert L. Hurst, Muncie, Ind., assignor to Ball Corporation, Muncie, Ind.

Division of Ser. No. 99,405, Dec. 18, 1970, Pat. No. 3,712,453, which is a division of Ser. No. 784,845, Dec. 18, 1968, Pat. No. 3,641,959. This application Dec. 20, 1972, Ser. No. 316,956
Int. Cl. B65g *47/06*
U.S. Cl. 198—25 **2 Claims**



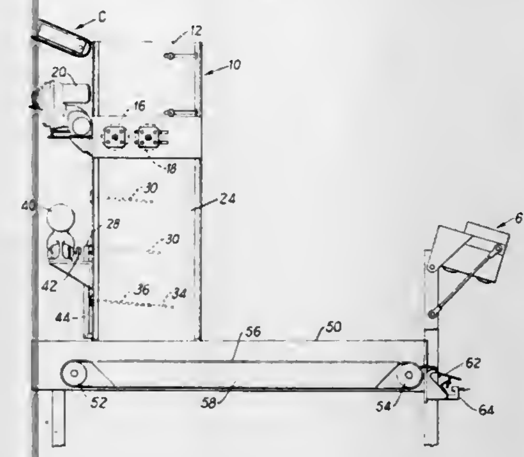
1. Apparatus for sequentially removing plate-like articles from the processing stations of a processing table rotating about a vertical axis and transferring them to the adjacent end of a conveyor, comprising: a support positioned between the table and the conveyor; a standard mounted on said support for rotation about a vertical axis; a plurality of arms extending radially outward from said standard in a generally horizontal plane; means at the outer free end of each arm adapted to engage and lift and article vertically from an underlying processing station, said means comprising a magnet to attract an article as the magnet overlies a processing station and to support the article during arcuate travel to the adjacent end of the conveyor and means to create a magnetic field to remove said article from said magnet for deposit on the conveyor; each arm being of such length that its article engaging means will directly overlie a processing station at one point in its rotation and will overlie the adjacent end of the conveyor at another point in its rotation; and means to cause continuous sequential transfer of articles from the processing table to the conveyor.

3,893,563
TOBACCO LEAF HANDLING AND DISTRIBUTING APPARATUS

Charles D. Hansen, Jr., Richmond, Va., assignor to AMF Incorporated, White Plains, N.Y.

Filed Nov. 29, 1973, Ser. No. 420,112
Int. Cl. B65g *47/18, 47/44*
U.S. Cl. 198—45 **8 Claims**

1. Apparatus for delivering distributed articles, comprising: a conveyor for delivering articles along a predetermined path, first means for positively metering at a predetermined rate articles to be delivered.
a hopper for receiving a supply of articles to be delivered and a pair of laterally spaced apart rotatable members forming the bottom of said hopper providing said first means;
said rotatable members being rotated in directions each opposite to the other on substantially parallel axes disposed transverse to the path along which the articles are delivered, and

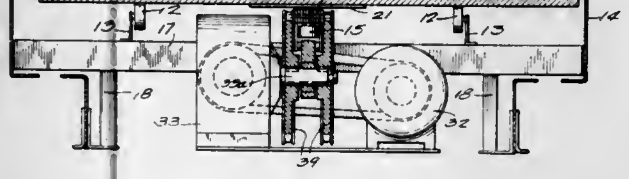


second means being disposed substantially horizontally for receiving metered articles and oscillating for distributing such articles in a lateral direction relative to the predetermined path along which said articles are delivered,
said second means showering such articles on to said conveyor so that the relative movement of said conveyor distributes the showered articles on said conveyor in a longitudinal direction relative to the predetermined path along which such articles are delivered.

3,893,564
ARTICLE CARRIER AND DRIVE MEANS THEREFOR

Warren S. Raynor, Port Hope, and Jacob Hermans, Cobourg, both of Canada, assignors to Rexnord Incorporated, Milwaukee, Wis.

Continuation of Ser. No. 308,891, Nov. 22, 1972, abandoned. This application Mar. 7, 1974, Ser. No. 449,169
Int. Cl. B65g *17/00*
U.S. Cl. 198—189 **7 Claims**

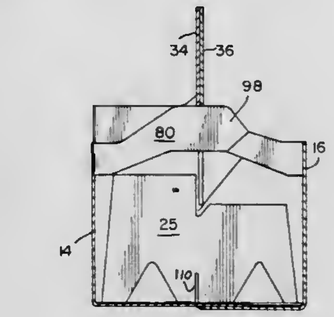


1. A horizontal conveyor comprising an endless series of roller-supported pallets having interconnecting links and a drive system therefor, each link comprising a plate attached to the underside of a pallet, a rod and first and second members which are pivotally interconnected for relative rotation on a vertical axis, the first member being attached to the plate extending downwardly therefrom and the second member being joined to one end of said rod, the other end of said rod being attached to the underside of said plate whereby said links and pallets are interconnected to form a closed loop, said drive system comprising a driven member attached to the underside of each plate and disposed intermediate said links, a series of drive members adapted to engage successive driven members, a pair of drive chains, said series of drive members being disposed between and carried by said chains, and a spaced pair of drive sprockets over which said chains operate; said chains and sprockets being disposed and spaced laterally to allow the driven members and links to pass between said chains and sprockets, the adjacent links and the intermediate driven members being spaced in the loop direction to allow a drive member to engage the driven member in the horizontal plane immediately below said plate whereby the movement of the chains drives the links and pallets in said closed loop.

3,893,565
BOTTLE CARRIER

Harry J. Rossi, deceased, late of Parsipanny, N.J. (by Evelyn A. Rossi, executrix), and Edwin L. Arneson, Hillsdale, N.J., assignors to Federal Paper Board Company, Inc., Montvale, N.J.

Filed Oct. 16, 1972, Ser. No. 297,742
Int. Cl. B65d *75/00*
U.S. Cl. 206—183 **7 Claims**



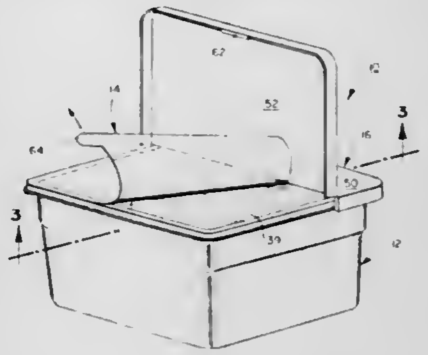
1. A multi-cellular carrier for bottled products which is formed from an elongate blank of foldable sheet material cut and scored to provide a plurality of connected wall and partition forming panels, said carrier comprising, in set up position, hingedly connected, body forming upstanding side and end walls and a bottom wall, which bottom wall comprises two panel members each having an integrally hinged connection with said side walls at the bottom edges of said side walls and having overlapping marginal portions which are opposite said hinged connection with the side walls and which have means securing said marginal portions in interlocked relation, a multi-ply longitudinal partition and handle structure, formed of a plurality of panel members in face engaging relation, which partition and handle structure is connected at its opposite ends to the end walls on vertical hinge lines, and longitudinally spaced cross partition panels in the form of strap members dividing the space on opposite sides of the longitudinal partition and handle structure into a plurality of bottle accommodating cells of equal size, said cross partition forming strap members each having one end integrally connected on a vertical hinge line to a top marginal portion of a side wall and said cross partition forming strap members each having an opposite end portion extending to a hinge connection with said longitudinal partition and handle structure so as to swing relative thereto on a vertical hinge line, and at least one of said cross partition strap members having said opposite end portion thereof extending beyond the plane of said longitudinal partition and handle structure and secured to a corresponding cross partition strap member on the opposite side of said longitudinal partition and handle structure so as to reinforce the hinge connection of said cross partition strap member with said longitudinal partition and handle structure.

3,893,566
PACKAGING SYSTEM INCLUDING REMOVABLE MOISTURE-IMPERVIOUS SEALING SHEET

Richard T. Ross, Aston, Pa., assignor to Scott Paper Company, Philadelphia, Pa.

Filed Oct. 17, 1973, Ser. No. 407,146
Int. Cl. B65d *5/54*
U.S. Cl. 206—498 **3 Claims**

1. A packaging system comprising:
a. a container body including a bottom wall, peripheral walls extending upwardly from said bottom wall and having upper margins which define an opening into an inner compartment of said body;
b. a unitary closure attached to said body, said closure including a top wall overlying the open end of the compartment, said top wall including a thinned transverse section intermediate forward and rearward ends thereof for forming a transversely extending hinge and tearing edge, said hinge dividing said closure into a forward movable door portion and rearward stationary cover portion; and
c. a moisture-impervious sheet secured to said container body and being disposed between the container body and

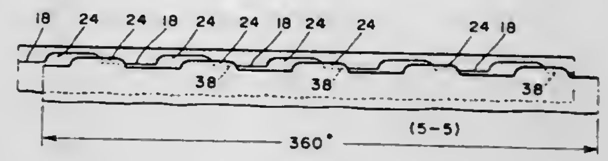


unitary closure, said sheet overlying the open end of the inner compartment and including a weakened region intermediate forward and rearward ends thereof for dividing said sheet into a forward section underlying the movable door portion of the closure and a rearward section underlying the stationary cover portion of said closure, said weakened region of the sheet being adjacent the tearing edge of the closure whereby the forward section of the sheet is separated from the rearward section of the sheet by peeling the forward section off of the container body toward the weakened region, whereat the forward section follows the tearing edge of the closure and is thereby separated from the rearward section.

3,893,567
VERTICAL STACKER

Paul Davis, Swampscott, and David N. Shore, Brookline, both of Mass., assignors to Sweetheart Plastics, Inc., Wilmington, Mass.

Filed Aug. 16, 1972, Ser. No. 280,962
Int. Cl. B65d *21/02*
U.S. Cl. 206—520 **8 Claims**



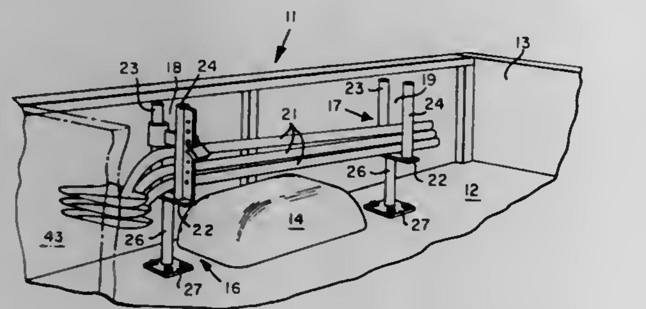
1. A one-piece, thin wall, disposable, plastic article comprising
an outwardly inclined axially extending wall and a transverse wall integral with the axially extending wall,
and a nesting facility formed in the axially extending wall, said nesting facility having
a lower external shoulder and an upper internal shoulder,
a substantially vertical disposed intermediate wall section interconnecting the inner radial edge of one shoulder and the outer radial edge of the other,
a plurality of substantially vertically disposed protrusions formed in the intermediate wall extending the full axial height thereof, said protrusions being spaced apart about the intermediate wall a distance substantially equal to the circumferential width of the protrusions so that each protrusion has a circumferential width equal to the circumferential width of each intermediate wall portion

between each protrusion, with said protrusions acting to provide a stacking interference at equally spaced portions about the circumference of the article when it is stacked with a similar article out of circumferential phase therewith,

said intermediate wall section being free of undercuts between the upper and lower shoulders.

3,893,568
TOOL HOLDER

William H. Lile, 771-6 N. Fair Oaks, Sunnyvale, Calif. 94086
Filed Oct. 11, 1973, Ser. No. 405,394
Int. Cl.^{2} A47F *7/00;* **B60R** *9/00;* **A47B** *81/00*
U.S. Cl. 211—49 R **3 Claims**



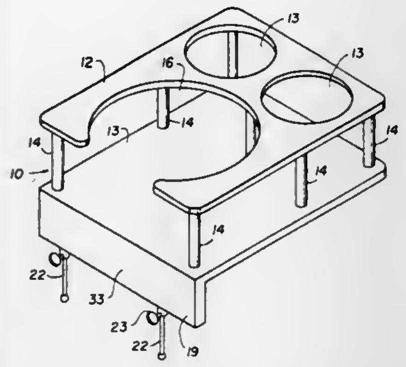
1. A holder for preventing theft of elongated tools or other implements, each of which has a portion along its length wider than another portion thereof, comprising first bracket means defining a slot having an open end opposite the bottom wall and within which a plurality of implements are stackable between opposed slot sidewalls with such sidewalls on opposite sides of said implements, the width of said slot between said sidewalls being less than the width of said wider portion of each of said implements intended to be held thereby, whereby transverse movement of said implement wider portions through said slot is prevented; means for securely mounting said first bracket means on a surface; a closure associated with said first bracket means selectively moveable between a first position free of said slot and a second position extending across said slot to block removal of implements through the open end of said slot, one of said slot sidewalls having a plurality of apertures extending in a column depthwise of said slot, said closure cooperable with any selected one of said apertures to provide adjustment depthwise of said slot of the location at which said closure is extendable across said slot, said closure further including means for locking the same in said second position and preventing unauthorized movement thereof to said first position; second bracket means spaced from said first bracket means defining a second slot in alignment with said first slot of said first bracket means to cooperate therewith by positioning at a location spaced from said bracket means elongated tools or implements stacked within said first slot, said lockable closure being pivotally secured to said second bracket means for pivotal movement between said first and second positions, and said means for locking said closure in said second position including an aperture at the free end of said closure which is registerable with any selected one of said plurality of apertures on said first bracket means for passage therethrough of a lock for securing said closure free end to said bracket at a selected location of said closure.

3,893,569
THERMOS SUPPORT TRAY

Frank R. Hoch, 200 Garcia, Trinidad, Colo. 81082
Filed Mar. 21, 1974, Ser. No. 453,268
Int. Cl.^{2} A47B *85/00*
U.S. Cl. 211—74 **1 Claim**

1. A support structure adaptable for mounting about the floor hump of an automobile and shaped to support one or more thermos jugs comprising

a base plate mounted by posts to a parallel shelf plate, said base plate fitted along the underside of a first edge with a pair of telescopic legs of adjustable length, said base plate fitted on the underside of a second edge with a stop bracket,

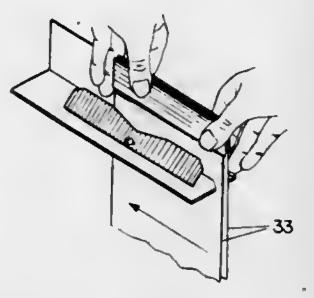


said shelf plate fitted with cut-outs of a circular shape of a size to each retain a jug in place that is resting on the base plate, together with

a threaded adjustable length leg which is threadably fastened through the central section of the base plate.

3,893,570
TROUSER HANGER

Kuno J. Vogt, 5854 Kantor Ct., San Diego, Calif. 92122
Filed Oct. 23, 1973, Ser. No. 408,462
Int. Cl. A47g *25/04;* **A47j** *51/14*
U.S. Cl. 211—89 **2 Claims**



1. A trouser hanger comprising:
a bracket;
said bracket having a vertical section and a horizontal section, the vertical section being adapted for mounting to a vertical surface;
a slot in said horizontal section dimensioned for receiving at least one pair of trouser legs;
a clamp plate coupled to said horizontal section in proximity with said slot and dimensioned for clamping a pair of trouser legs slidably received by said slot and holding said trouser legs through gravitational force;
said clamp plate being angled in an upward direction from each side of a center portion thereof; and
said plate being coupled adjacent said center portion by means for loosely and pivotally coupling said clamp plate for limited oscillatory movement about at least a vertical axis and a horizontal axis which axes generally intersect.

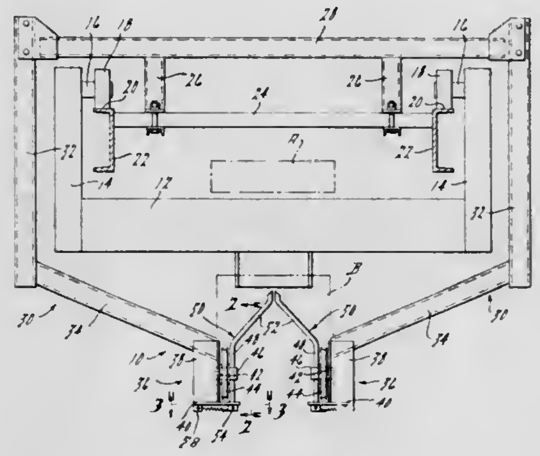
3,893,571
CABLE FLEX LIMITING DEVICE

Roger Metailler, Grenoble, France, assignor to Ford Motor Company, Dearborn, Mich.
Filed May 28, 1974, Ser. No. 473,862
Int. Cl. B66c *19/00, 21/00*
U.S. Cl. 212—117 **3 Claims**

1. In a boom having a movable crane crab mounted for movement thereon with cables, the improvement comprising a device for limiting the flexing of said cables comprising:

a generally C-shaped frame with a horizontal back portion and two generally vertically depending branches, means mounting said back portion transversely on said boom so that a portion of said branches extend below said boom to define a space of sufficient size for said crane crab to move therethrough;

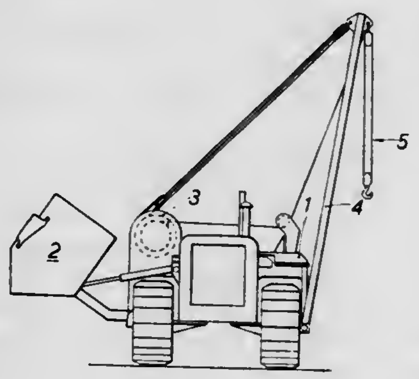
a pulley mounting structure attached to at least one end of one of said branches, a horizontal shaft rotatably mounted on said pulley mounting structure, a pulley rotatably mounted on said shaft;



an arm mounted on said shaft, said arm having a lower vertical portion and an upper bent portion, means operatively connecting said arm to said shaft so that said arm is rotatable therewith, said upper bent portion of said arm being located above said pulley and extending in a direction transversely of said boom so as to guide a flexing cable over said pulley and means for retractably connecting said arm to said pulley mounting structure to maintain said arm in a normal vertical position.

3,893,572
SYSTEMS FOR OPERATING AND CONTROLLING HYDRAULICALLY DRIVEN WINCHES, HOISTS, WINDLASSES AND THE LIKE

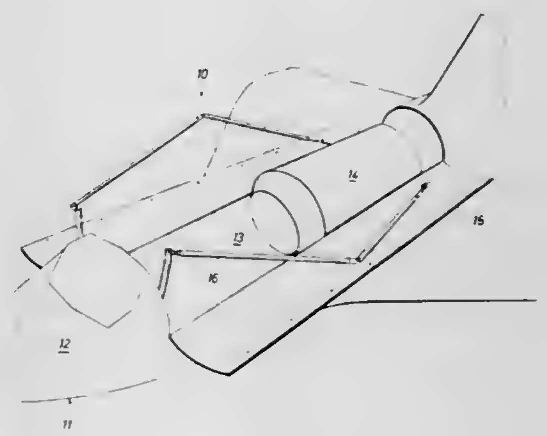
Evald Gustav Axelsson, Stafford, and David Collier, Brewood, both of England, assignors to Caterpillar Tractor Co., Peoria, Ill.
Division of Ser. No. 84,978, Oct. 29, 1970. This application July 16, 1973, Ser. No. 379,759
Claims priority, application United Kingdom, June 26, 1970, 31078/70
Int. Cl. B66c *23/72*
U.S. Cl. 212—49 **2 Claims**



1. In a crane system for operating and controlling a winding gear driven by a hydraulic motor of the kind including a stationary cylinder having a plurality of radial bores, a piston displaceable in each of the bores and each having an associated driving means, a cam ring having cam faces engaged by the driving means, and means for selectively supplying hydraulic fluid to the bores to displace the pistons radially in a predetermined sequence and by pressure engagement of the driving means with the cam faces to rotate the cam ring, the system including operator controlled pump means for supplying hydraulic fluid to the hydraulic motor, the improvement of free-run means for applying to the pistons of the hydraulic motor a hydraulic pressure differential to displace the pistons radially inwards and withdraw the associated driving means from contact with the cam faces of the cam ring whereby the cam ring can rotate freely, the hydraulic pressure for said free-run means being derived from a source separate from the pump means supplying said motor, a hoist including said free-run means, movable counterweight means for balancing the load on the hoist, hydraulic means, including second pump means, for moving the counterweight means, wherein the hydraulic pressure for the free-run means is supplied by the second pump means.

3,893,573
VARIABLE RATIO MIXED-MODE BILATERAL MASTER-SLAVE CONTROL SYSTEM FOR SHUTTLE REMOTE MANIPULATOR SYSTEM

James C. Fletcher, Deputy Administrator of the National Aeronautics and Space Administration, with respect to an invention of Fredrick J. Greeb; Shepard B. Brodie, both of Denver, Colo., and Carl R. Flatau, Shoreham, N.Y.
Filed Aug. 20, 1973, Ser. No. 389,916
Int. Cl. B25j *3/00*
U.S. Cl. 214—1 CM **18 Claims**



1. A remote manipulator system comprising
an articulated slave arm adapted to be fixedly attached for extension;
a master arm adapted to be manipulated by a user in a manner to impart movement to said slave arm; said slave arm and said master arm each being made up of a plurality of pivotally connected, constant length segments, the length of the segments of the slave arm to those of the master arm being a fixed ratio;
a control system connected between said master and said slave arms, said control system imparting movement to said slave arm at least partly in accordance with manipulation of said master arm, said control system at least enabling said slave arm to exercise two degrees of freedom, said control system including a controller receiving signals resulting from master arm manipulation and converting said signals from the master arm into signals for manipulation of the slave arm, means for providing different ratio of movement between said master arm and slave arms, and, means for selecting between different ratios, whereby in a coarse mode of operation, movement of the slave arm to the master arm is at a ratio of the length of slave arm to the master arm and in fine mode movement of the slave arm to the master arm is by a ratio of one-to-one.

3,893,574

GRIPPER DEVICES FOR LAYERS OF BRICK MOULDINGS

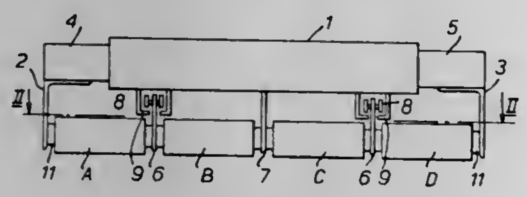
Hermann Kamphues, Prinzhugel 19b, 5433 Laggenbeck, Germany

Filed Nov. 6, 1973, Ser. No. 413,376

Claims priority, application Germany, Nov. 7, 1972, 2254432

Int. Cl. B66c *1/32*

U.S. Cl. 214—6 A **4 Claims**



1. In a gripper device for locating layers of brick mouldings in stacks in inclined cross combination, each said layer consisting of an even number of parallel rows of bricks,

outer jaws arranged to grip the outer longitudinal edges of the layers and, said outer jaws extending longitudinally of the rows and being fixed against longitudinal displacement relative to the rows, and

first and second intermediate jaw means located between the outer jaws and arranged to engage between the longitudinal edges of the rows, said first and second intermediate jaw means extending longitudinally of the rows, the first intermediate jaw means being located between pairs of rows and being fixed against longitudinal displacement relative to the rows, and the second intermediate jaw means being displaceable longitudinally relative to the rows in a substantially rectilinear direction.

3,893,575

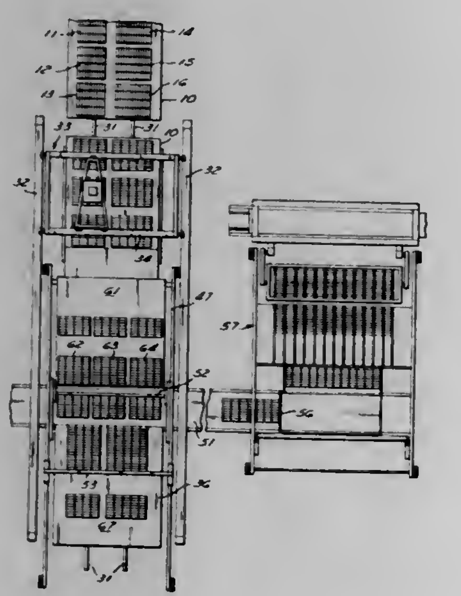
BRICK HANDLING SYSTEM

Frank S. Pearne, San Gabriel; Florentin J. Pearne; William P. Osborn, both of Whittier, and Joseph A. Guzzetta, Costa Mesa, all of Calif., assignors to Aircraft Mechanics, Inc., Downey, Calif.

Filed Oct. 15, 1973, Ser. No. 406,579

Int. Cl. B65g *59/02*

U.S. Cl. 214—8.5 C **16 Claims**



1. A handling system for unloading elongated kiln cars or the like when said cars are loaded with a plurality of stacks of bricks in grids stacked on each other and having rows of bricks therein extending normal to the rows of bricks in the adjacent grids in each stack and wherein the number of stacks along the length of the car differs from the number of stacks across the width of the car comprising support means, a gripper transfer operable in a first orientation to simultaneously grip groups of aligned rows of bricks along the entire length of said kiln car and to position said bricks in ranks and files at a first location on said support means, said gripper transfer being operable in a second orientation to simultaneously grip groups of aligned rows of bricks across the entire width of said car and to position said bricks in ranks and files on said support means at a second location, transport means operable to receive rank files of bricks from both said first and second locations and to transport such bricks to a delivery position, and transfer means operable to move ranks and files of bricks from said first and second locations to said transport means in ranks having a predetermined number of bricks therein.

3,893,576

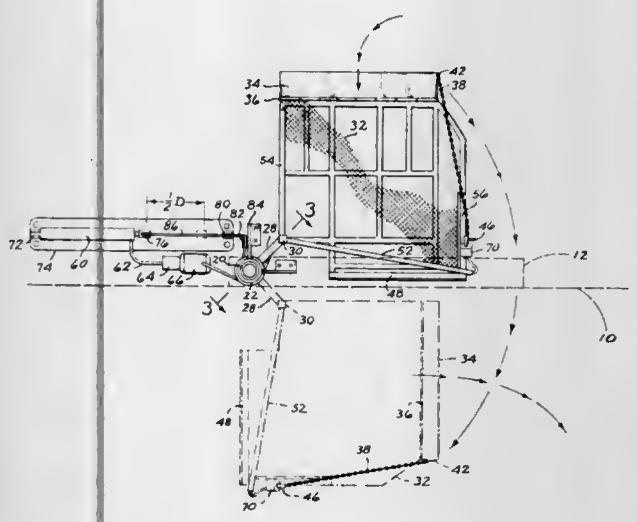
ROTATING PLATFORM ELEVATOR

Chris D. Casady, 1627 Linnea Ave., Eugene, Oreg.

Filed Sept. 17, 1973, Ser. No. 397,679

Int. Cl. B60p *1/44*

U.S. Cl. 214—75 R **1 Claim**



1. A rotating platform elevator comprising:

a. a vertical support pipe,
b. securing means for securing the support pipe to a structural member,
c. a sleeve slidably mounted on the pipe,
d. platform means mounted on the sleeve,
e. drive means connected to the sleeve or platform for reciprocating them between raised and lowered positions relative to the support pipe, and
f. cam means interconnecting the pipe and the sleeve and operative to rotate the sleeve and the platform in a horizontal plane through a selected angle of rotation at a predetermined elevation of the platform, the cam means comprising a vertical slot on the pipe having a reverse turn in its upper end and a cooperating cam follower fixed to the sleeve and received in the slot, the slot having a J shape with the leg of the J corresponding to the position of the platform inside the vehicle being shorter than the leg of the J corresponding to the position of the platform outside the vehicle, whereby the platform may be lowered slightly in the inside position of the platform.

3,893,577

METHOD FOR DEMOLISHING A CONSOLIDATED AND HARDENED IRON ORE POWDER BODY CONTAINED IN A HOLD OF AN IRON ORE CARRIER

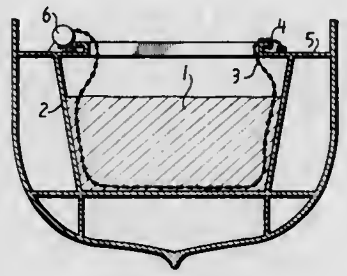
Koetsu Asai, Chiba; Nobuyuki Imanishi, and Terutoshi Yamada, both of Kobe, all of Japan, assignors to Kobe Steel, Ltd., Kobe and Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, both of, Japan

Filed Aug. 7, 1973, Ser. No. 386,328

Claims priority, application Japan, Aug. 9, 1972, 47-79591

Int. Cl. B63b *27/24*

U.S. Cl. 214—152 **12 Claims**



1. A method for demolishing a consolidated and hardened iron ore powder body for the purpose of facilitating unloading the same from a hold of an iron ore carrier, comprising the steps of:

placing a plurality of mechanical members within a planar array in said hold of said iron ore carrier, before the iron ore in a slurry state is charged into said hold;

loading the iron ore in a slurry state into said hold;

permitting said iron ore to consolidate and harden so as to form a dry and hardened iron ore body;

causing said mechanical members to move relative to the iron ore body in which said members are buried, at the time of unloading said iron ore from said carrier, thereby demolishing the iron ore body in a consolidated and hardened state; and

unloading said demolished iron ore body from said carrier while in said dry state.

3,893,578

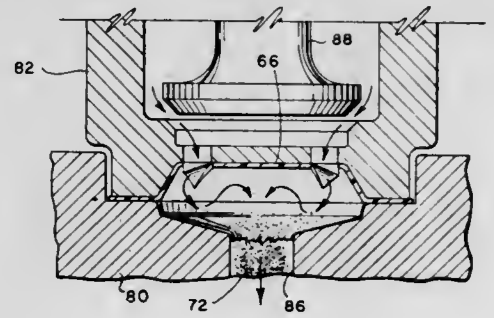
SYSTEM FOR INJECTING PARTICULATE MATERIAL INTO THE COMBUSTION CHAMBER OF A REPETITIVE COMBUSTION COATING APPARATUS

Rosser B. Melton, Jr., Helotes, and Elbert M. Hubbard, Dallas, both of Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Filed Apr. 8, 1974, Ser. No. 458,884

Int. Cl. B65g *65/04*

U.S. Cl. 214—305 **9 Claims**



1. A system for injecting predetermined quantities of particulate coating material into a chamber of hot gases which comprises:

an elongated tape forming a plurality of discrete capsules each containing a predetermined quantity of particulate coating material, each capsule having an inlet face and an outlet face,

an inlet manifold and an outlet manifold for sequentially clamping the tape to seal the inlet face from the outlet face,

the outlet manifold having a chamber configured to permit expansion of the outlet face of each capsule and including an outlet port having an area less than the area of the outlet face of the capsule,

the inlet manifold including valve means for applying a pneumatic pulse to the inlet face of the capsule of sufficiently higher pressure to pass through the inlet face and burst the outlet face thereby stripping the particulate material from the tape and propelling the particulate material out through the outlet port.

3,893,579

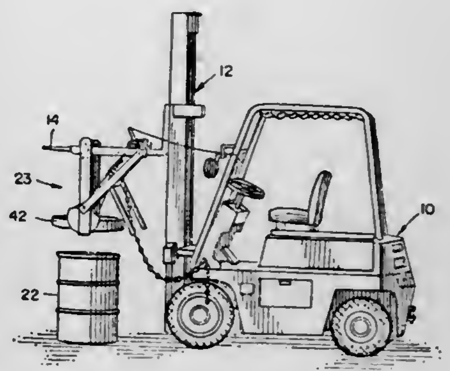
DRUM DUMPING LIFT TRUCK ATTACHMENT

Vern K. Glewwe, Davenport, Iowa, assignor to Dozier Equipment Company, Inc., Nashville, Tenn.

Filed June 22, 1972, Ser. No. 265,355

Int. Cl. B65f *3/00*

U.S. Cl. 214—313 **8 Claims**

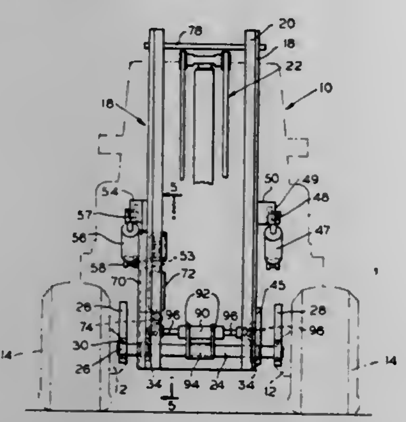


1. Apparatus for attachment to the lifting element of a lift truck mechanism for holding and dumping an open-top container having a top rim, comprising:

a. a bracket,
b. means for detachably attaching said bracket to the lifting element of a lift truck mechanism,
c. a container support frame adapted to receive and support an open-top container,
d. journal means supporting said support frame on said bracket for rotational movement about a substantially horizontal axis between an upright position and dumping position, said journal means being supported below said lifting element of said lift truck mechanism,
e. lever means on said container support frame for rotating said support frame relative to said bracket,
f. said container support frame comprising a circumferential member and rim gripping means,
g. said rim gripping means having a pair of cooperating holding elements adapted to releasably hold one side of the top rim of an open-top container received within said container support frame,
h. said circumferential member comprising at least a bearing portion spaced on the opposite side of a container received in said support frame from said rim gripping means and spaced below said rim gripping means when said support frame is in said upright position,
i. said circumferential member being adapted to, upon lowering, loosely position a container within said support frame in said upright position, said bearing portion being adapted to engage the opposite side of the container from the side gripped by said gripping means and bear a portion of the weight of said container when said support frame is rotated to said dumping position.

3,893,580
SIDE AND FRONT TILTABLE LIFT TRUCK MAST

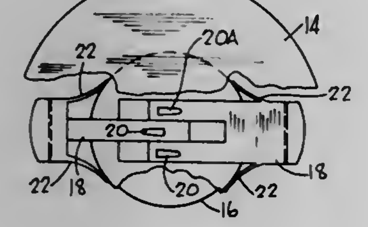
Daryl W. Stevens, Battle Creek, Mich., assignor to Clark Equipment Company, Buchanan, Mich.
Filed Dec. 12, 1973, Ser. No. 424,121
Int. Cl. B66f *9/20*
U.S. Cl. 214—672 **21 Claims**



12. In a lift truck having an upright mast assembly mounted from one end of the truck, first bearing means comprising a pair of transversely spaced spherical bearings supported from the truck and supporting the mast assembly for arcuate movement both longitudinally and transversely of the truck, forward tilt means connected to the mast assembly for actuating it arcuately on said first bearing means in a direction longitudinal of the truck forwardly and rearwardly of a central position, second bearing means connecting said forward tilt means to the truck and to the mast assembly such that said tilt means pivots generally transversely of the truck during transverse arcuate movement of said mast assembly on said first bearing means, and side tilt means for actuating said mast assembly in said transverse arcuate movement on said first bearing means.

3,893,581
PILL BOTTLE SAFETY LOCK

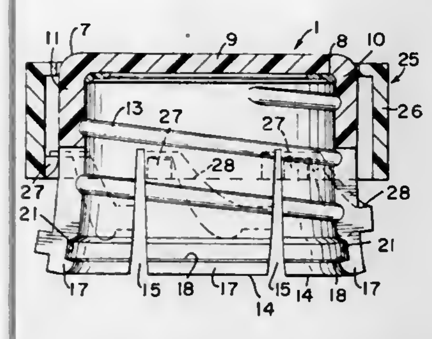
Richard Kapphahn, 1310 Elm Ave., N., Wheaton, Minn. 56296
Filed Dec. 5, 1973, Ser. No. 421,823
Int. Cl. B65d *55/14*
U.S. Cl. 215—207 **3 Claims**



1. In combination:
- a bottle having an open neck with an inwardly disposed lock ledge;
- a cover removably disposed on the neck;
- a tumbler body disposed in the cover with tumblers normally engaging the ledge, said tumblers having slots, all but one of the slots having like widths, said one slot being wider than all other slots; and
- a bayonet key having blades, the number of blades being equal to the number of slots, all but one of the blades having like widths, said one blade being wider than all other blades, each blade being engagable with a corresponding slot with said one blade being engagable only with the said one slot whereby insertion of said blades in the slots causes the tumblers to move away from the ledge to permit removal of the cover, the cover otherwise being rotatable but not removable.

3,893,582
CHILD PROOF CLOSURE

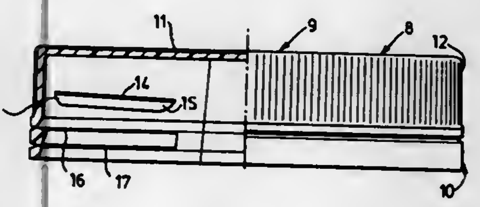
John J. Kowalik, Glenview, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Oct. 5, 1973, Ser. No. 403,736
Int. Cl. B65d *55/02, 85/56;* **A61j** *1/00*
U.S. Cl. 215—221 **11 Claims**



1. A childproof plastic closure for a container having a neck and a locking shoulder at the base of the neck comprising:
- a cap having a skirt with an upper cylindrical portion and splayed fingers forming the lower portion;
- means on the fingers for interlocking engagement with the shoulder;
- holding means mounted on the cap and movable to release and locking positions and in said locking position closing the fingers about the neck and thereby forcing said interlocking means into locking relation with the shoulder to prevent removal of the cap from the associated container; and supplementary means for releasably securing said locking means in locking and unlocking positions with the cap, said holding means comprising a ring sleeved over the skirt and movable axially and circumferentially thereon over and off said fingers;
- said supplementary means comprising interengaging cam means on the ring and the external sides of said fingers, said cam means on the fingers extending diagonally axially and circumferentially of the cap, and means axially spaced of the cap and being disposed at the ends of the cam means on the fingers and offset circumferentially from each other, said cam means effective to guide said ring into and out of locking position attendant to rotation of the ring in conventional manner to lock and unlock the closure.

3,893,583
TAMPERPROOF CONTAINER AND CLOSURE ASSEMBLY

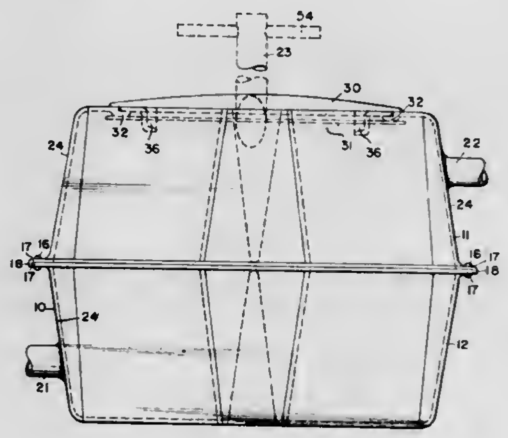
Kevin William McLaren, Barnehurst, England, assignor to Johnsen & Jorgensen (Plastics) Ltd., London, England
Filed Mar. 7, 1974, Ser. No. 448,997
Claims priority, application United Kingdom, Mar. 15, 1973, 12611/73
Int. Cl.² B65D *41/34*
U.S. Cl. 215—256 **8 Claims**



8. A container and closure assembly in which the complete closure comprises a screw cap and a retaining band to be torn away when it is desired to open the container characterised by the provision of a discontinuous external screw thread with sloping upper surfaces and straight lower surfaces around the mouth of the container for engagement by a discontinuous internal screw thread with straight upper surfaces and straight lower surfaces provided on the screw cap, the arrangement being such that when the complete closure is being screwed on to the container there is an interlocking action between the screw threads but if an attempt be made to unscrew the complete closure there is a sliding action and the closure simply goes round and round but does not come off the container.

3,893,584
UTILITY METER CONTAINER

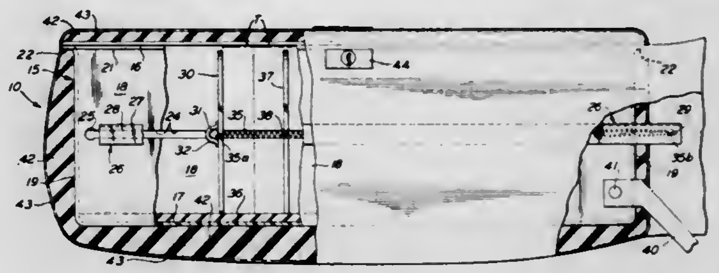
Jonathan Ledford, Washington, D.C., assignor to The Raymond Lee Organization, Inc., New York, N.Y.
Filed June 26, 1973, Ser. No. 373,673
Int. Cl. B65d *1/22;* **E05C** *19/06;* **B65d** *45/28;* **220** *4 B;4 E;5 A;5 R;18;323*
U.S. Cl. 220—4 B **1 Claim**



1. A container for the installation of a utility meter, with provisions to remove the cover of said unit by a key for the reading of the meter installed therein,
- said container being formed of a molded plastic composition with a hollow top section and a hollow bottom section, both of which are formed with sloping tapered walls so as to be able to nest into each other and into similar units in the stored unassembled condition, with the edges of the top and thee bottom sections formed with flanges adaptable for joining together by means of blind rivets or bolts, and with a central opening in the top section of a shape to hold a cover plate fabricated of similar material, with said cover plate being held fast to the said top section so as to enclose the opening in said top section by means of a flat latch plate, slidably fastened to the underside of the latch plate,
- the ends of said latch plate normally engaging projections fitted to the underside of the said top section and of a spring construction so that pressure applied to the latch plate, perpendicular to the plane of the latch plate acts to bend the latch plate into an arcuate shape, thus foreshortening its extended length and withdrawing the latch plate ends from engagement with the projection of the top section,
- said cover plate having an opening to admit a key,
- said opening located in alignment with the mid-section of the latch plate,
- said key formed of a shank faced on one end with a plane surface oriented at an inclined angle to the axis of the shank and fitted with projections on the shank adjacent to the said inclined plane surface, with the opening of the cover plate shaped to admit the shank of the key and the projections, such that manual pressure on the key in the axial direction of the shank, after the inclined plane surface of the key contacts the latch plate, serves to both disengage the latch plate from engagement with the top section and to also slide the key laterally in relation to the opening and to the latch plate so as to cause the projections on the shank of the key to slide past the opening in the top cover and thus engage the underside of the cover when the manual pressure on the key is relaxed, thus freeing the cover from the top section and latching the key to the latch section, without rotation of the key.

3,893,585
AUTOMOBILE ARM REST TAPE HOLDER

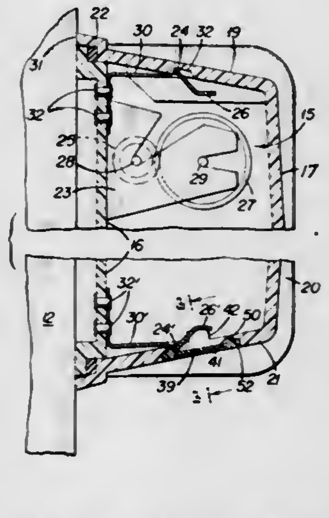
Gary N. Morrison, 333 Chase Rd., Columbus, Ohio 43214, and Stanley Roger Ward, 2356 Brentnell Ave., Columbus, Ohio 43211
Filed Oct. 29, 1973, Ser. No. 410,637
Int. Cl. B65d *57/00*
U.S. Cl. 220—22.6 **10 Claims**



1. An automobile arm rest with storage compartment for sound recording tapes comprising
- An elongated body having a bottom wall, sidewalls and end walls defining an open topped cavity adapted to receive a plurality of the tapes in upstanding, serially disposed relationship, each of said sidewalls having an elongated slot extending longitudinally thereof, said body including hinge pivots interconnectable with support brackets of a vehicle seat;
- a follower plate transversely disposed in said body cavity in upright relationship and movable longitudinally thereof, said plate provided with support trunnions projecting laterally from each side thereof into a respective slot of an adjacent sidewall and movable longitudinally thereof; spring means interconnected between said body and said follower plate biasing said follower plate toward one of said body end walls, and
- a cover hingedly connected with said body and selectively positionable in closing relationship to the open top of said body cavity, said body and cover including latch means cooperatively interengageable to maintain said cover in closed relationship to said body.

3,893,586
TAMPER-PROOF CASE FOR METER OR REGISTER

Ralph A. Derose, Villa Park; Anthony W. Rigazio, Oglesby, and George V. Zimmerman, St. Charles, all of Ill., assignors to Neptune International Corporation, Atlanta, Ga.
Filed May 10, 1974, Ser. No. 468,729
Int. Cl. B65d *45/16*
U.S. Cl. 220—324 **6 Claims**

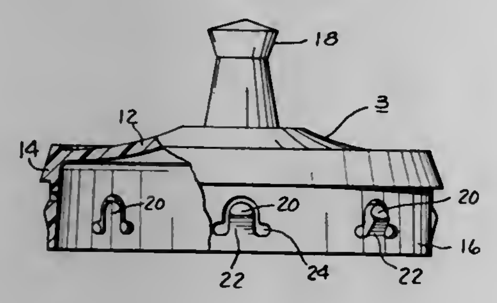


1. A tamper-proof case for a meter or other device comprising:

- a base member adapted to be secured to a surface;
- a cover, respective portions of which are adapted to be secured to said base member, said cover having a plurality of opposing sides, a top; and, a hole in one side;
- a first latch member secured to said base within said cover, said first latch member adapted to cooperate with a recess in said cover to secure a portion of said cover to said base;
- a second latch member positioned opposite said first latch member; and,
- a replaceable plug positioned in said hole in said cover in proximity to said second latch member, said plug adapted to cooperate with said second latch member to secure another portion of said cover to said base whereby access into said case is gained by rupturing said replaceable plug and depressing said second latch member out of engagement with said plug to free said cover from said base.

3,893,587
COFFEEMAKER LID

Joseph Frank Loch, R.D. 1, Center Valley, Pa. 18034, assignor to General Electric Company, Bridgeport, Conn.
Filed Nov. 5, 1973, Ser. No. 412,617
Int. Cl. B65d *43/08*
U.S. Cl. 220—356 **6 Claims**

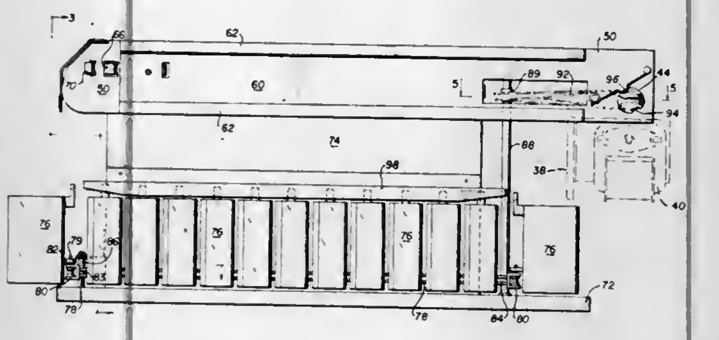


1. A utensil comprising:
- a. a container having a top opening and a downwardly extending inside wall;
- b. a lid for closing said top opening having a top wall larger than the top opening of said container and a molded plastic skirt wall extending downwardly from the top wall, said skirt wall being generally smaller than the top opening of said container so that it may extend within the container, and said skirt wall having upper and lower wall portions;
- c. a plurality of lid retaining fingers integrally formed with said skirt wall, said fingers being integrally formed with the lower wall portion of said skirt and extending upwardly from the lower portion of said skirt for gripping the downwardly extending inside wall of said container when the lid is positioned on said container; and
- d. the lower wall portion of said skirt extending a significant distance downwardly from said fingers and the wall portion of said skirt that extends downwardly from said fingers having a generally smooth circular outer surface and being thinner than portions of said fingers.

3,893,588
VENDING MACHINE MODULE

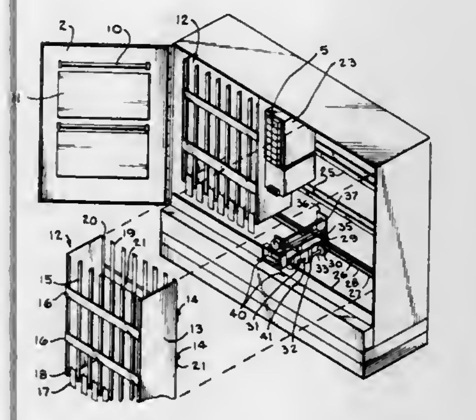
James Edward Patrick, Mayflower, Ark., assignor to Polyvend, Inc., Conway, Ark.
Filed Nov. 12, 1973, Ser. No. 414,751
Int. Cl.² G07F *11/00*
U.S. Cl. 221—85 **6 Claims**

1. A merchandise dispensing module for vending machines having an elongated merchandise module housing including trackways and an associated power means mounted therein comprising an elongated inverted U-shape structure including flanges for slidable mounting in the trackways of the housing to be substantially encompassed thereby; a merchandise supporting platform depending from said U-shaped structure and including a discharge opening; an endless chain arranged on driving and driven sprockets mounted on said module just above said platform; a plurality of vertically disposed, open ended merchandise-receiving compartments fixed to said chain to move the merchandise packages along said platform to said discharge opening; and drive means for said chain connectible with the power means when said module is mounted in said housing.



3,893,589
VENDING MACHINE WITH TRAVELING RELEASE

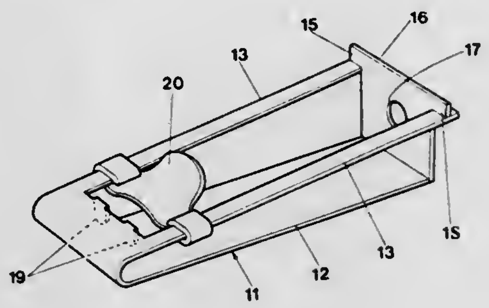
Darla R. Mandell, Houston, Tex., assignor to Marrick Industries, Inc., Houston, Tex.
Filed Mar. 23, 1973, Ser. No. 344,449
Int. Cl. G07f *11/10*
U.S. Cl. 221—123 **13 Claims**



1. A vending apparatus comprising
- a cabinet having two hinged doors,
- two storage racks having a plurality of vertical chutes therein said racks being spaced apart and mounted in said cabinet and positioned behind said doors
- a plurality of moveable holding latch means, each associated with one of said chutes at the lower end thereof and projecting into said chutes for supporting items in said chute;
- a releasing and receiving means slidably mounted on longitudinal rods below and in cooperative alignment with said racks for receiving and delivering vended items, said releasing and receiving means having a platform, a means for moving said platform horizontally to a predetermined location below a chute comprising a stepper motor operably connected to a cog wheel, said cog wheel being functionally associated with a track, and means to actuate said moveable holding latch means associated with said chute for withdrawing said holding latch from said chute to allow an item to drop from said chute on to said platform and
- a plurality of blocking means each associated with a chute for holding items above the first item in said chutes when said first item is released therefrom, said holding latch means and said blocking means being independently pivotally mounted on said chutes.

3,893,590
TUBE COMPRESSOR

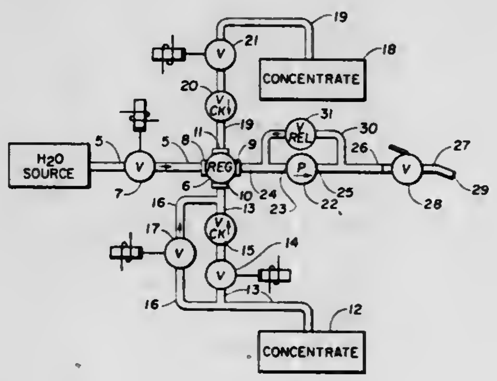
Demitri Paroussiadis, 23B Tontine St., Folkestone, England
Filed Feb. 1, 1974, Ser. No. 438,718
Int. Cl. B65d *35/28*
U.S. Cl. 222—103 **4 Claims**



1. A tube holder comprising a generally V-shaped holder for receiving a tube including:
- a first arm having a pair of generally parallel members arranged to lie on each side of the tube;
- a second arm formed of a solid member to provide a support for said holder;
- an apertured member arranged across said first and second arms and containing an aperture for receiving the nozzle of said tube;
- a slidable member engaging and bridging said parallel members and slidable therealong, said slidable member being curved to facilitate actuation of said slidable member toward said apertured member;
- means for resiliently urging apart said arms; and
- step formation means on said apertured member for restraining separating of said arms, said arms being movable together upon depression of said slidable member toward said tube during actuation of said slidable member toward said apertured member to cause emission of the contents of said tube.

3,893,591
HIGH PRESSURE SPRAY WASHING SYSTEM

Gerald L. Hockmuth, and Iven R. Norstrud, both of Britt, Iowa, assignors to Britt Tech Corporation, Britt, Iowa
Filed Feb. 11, 1974, Ser. No. 441,377
Int. Cl. B67d *5/14*
U.S. Cl. 222—1 **22 Claims**



1. In a high pressure washing system,
- a. positive displacement pump having a liquid inlet and a liquid discharge outlet;
- b. means for operating said pump to cause the same to draw liquid thereinto at its inlet and to discharge such liquid through its discharge outlet;
- c. flow directing means connected to said pump outlet for directing the flow of such liquid against a surface to be cleaned;
- d. conduit means connected with said pump inlet and having an intake adapted to be connected to a source of water;
- e. a pressure-sensitive flow control device interposed within said conduit means and sensitive to the downstram pressure within said conduit means and having a variable flow-control orifice;
- f. second conduit means connected in fluid communicating relation with said first mentioned conduit means at a point between said pump and the point of control of said control device and having an intake adapted to be connected to a source of liquid cleaner;
- g. a valve movable between open and closed positions interposed within said second mentioned conduit means between its intake and the point at which it is connected with said first mentioned conduit means for permitting said pump to draw cleaner into the flow of said first mentioned conduit means when the valve is in open position;
- h. said flow control device and said valve having flow control orifices the combined dimensions of which at all times are insufficient to permit said pump to operate at rated capacity, whereby said first mentioned conduit means is always subjected to a negative pressure when said pump is operating;
- i. said flow control device including down-stream pressure-sensitive control means located down-stream of said control device flow control orifice and constructed and arranged to vary its flow control orifice dimensions to increase the same when the downstream pressure decreases and decrease the same when the down-stream pressure increases to thereby maintain a constant negative pressure in said first mentioned conduit means between said pump and said control device irrespective of changes which may take place in the pressure at which the water may be supplied to said first mentioned conduit means.

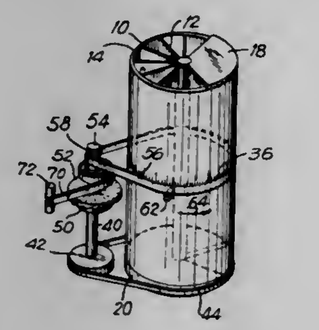
8. A method of accurately metering proportions of a plurality of liquid components of a mixed cleaning solution within the fluid line of a high pressure washing system wherein the source of one of the components is furnished under variable pressures, consisting in:
- a. providing a positive action displacement pump having a fluid inlet and outlet;
- b. connecting the inlet of the pump by conduit with a constant pressure source of one of the liquid components of the solution to be mixed;
- c. concurrently connecting the fluid inlet of the pump by conduit to the variably pressurized source of liquid component;
- d. restricting the flow of the liquid from the first source to less than that at which the pump is rated, and
- e. variably restricting the flow to the pump from the source of the second liquid component sufficiently to create a pressure of essentially zero at the point of restriction when the pump is not operating and to produce at all times when the pump is operated a combined flow from the two sources of less than that at which the pump is rated.

3,893,592
MEASURING AND DISPENSING APPARATUS

Louis T. Friedman, 2 Leonard St., Farmingdale, N.Y. 11735
Filed Oct. 29, 1973, Ser. No. 410,420
Int. Cl. B67d *5/30;* **G01f** *11/26*
U.S. Cl. 222—14 **15 Claims**

1. Apparatus comprising a source of flowable material, passage means having a sequence of parallel passages adapted for being fed by said source, said passages having inlets and outlets, first blocking means displaceable to obturate selected of said inlets whereby to prevent feeding of the associated passages from said source while the remainder of said inlets are open so that the corresponding passages can be fed from

said source, second blocking means to obturate selected of said outlets constituting less than all of the same but including at least those of said outlets associated with the passages whose inlets are not obturated by said first blocking means, and drive means for the concomitant driving of said first and second blocking means to displace the same relative to said sequence of passages whereby said material can flow into selected passages and out of selected passages but is prevented from flowing from said source directly through any of the passages; said drive means including control means displaceable through distances corresponding to selectable numbers of said passages, storage means to store energy corresponding to



the displacement of said control means, coupling means effective on release of said control means and responsive to said storage means to drive the first and second blocking means across said inlets and outlets to release material from the selected number of passages and to permit the recharging of the passages from said source, and scale means cooperatively related to said control means whereby displacement of said control means can be related to selectable amounts of said material, said control means including a drive mechanism, means for manually displacing said drive mechanism, a shaft driven by said drive mechanism, and a spring loading said shaft to return the same to a normal position of rest.

3,893,593

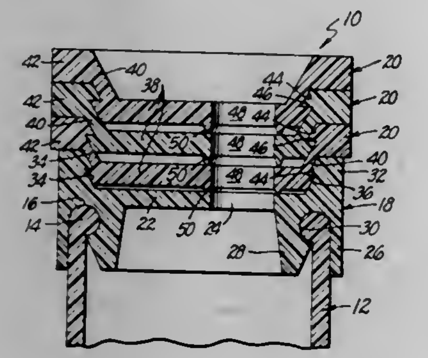
CHILD-RESISTANT CLOSURE USING A PLURALITY OF ROTATABLE CLOSURE MEMBERS

Robert E. Hazard, North Kingstown, R.I., assignor to Polytop Corporation, Slatersville, R.I.

Filed Oct. 29, 1973, Ser. No. 410,973

Int. Cl. B67d *5/22*

U.S. Cl. 222—48 **2 Claims**



1. A dispensing closure having a base including a first closure member and a dependent means for attaching said base to a container located around the periphery of said first closure member, said closure also having a second closure member rotatably mounted on said first closure member so as to be capable of being rotated about an axis, said first and said second closure members having openings extending therethrough which are offset from said axis, said second closure member being capable of being rotated so as to bring the opening therein into alignment with the opening in said first closure member in which the improvement comprises:

at least one additional closure member rotatably mounted adjacent to said second closure member, each additional closure member also having an opening formed therein which is offset with respect to said axis,

each of said closure members having integral interlocking means for securing said second and said additional closure member together on said first closure member so as to form a stack of said closure members, said interlocking means holding said members against axial movement away from one another,

all of said closure members being of a resilient material permitting said interlocking means on said closure members to be popped together,

the adjacent surfaces of all of said closure members being parallel surfaces of revolution,

one of each of the two adjacent surfaces between adjacent of said closure members carrying an integrally formed sealing means for forming a seal between the two adjacent closure members,

said interlocking means holding said second and said additional closure members so that each of said sealing means resiliently engages the adjacent surface of the next adjacent closure member,

said interlocking means holding said second and said additional closure members so that each of them can be independently rotated completely around said axis,

the exteriors of all of said closure members being exposed to the exterior of said dispensing closure so that said closure members are capable of being manually engaged, said closure members being capable of being independently rotated so that the openings of all of said closure members are in alignment in order for material to be moved through said closure.

3,893,594

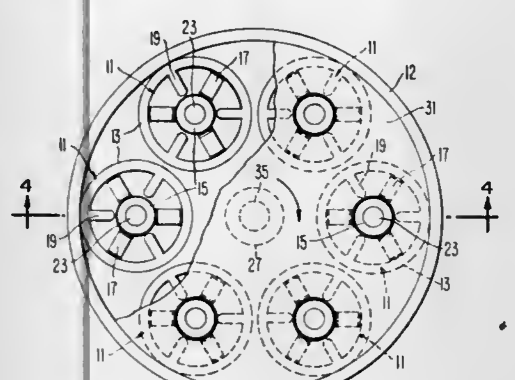
ROTARY DEVICE TO CONTROL OPERATIONS IN AN INCREMENTALLY CONTROLLED METERING SYSTEM

Joseph C. Carbine, Wyncote, and Edward A. Wojtowicz, Bryn Mawr, both of Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed May 15, 1974, Ser. No. 470,182

Int. Cl. B67d *5/10*

U.S. Cl. 222—76 **6 Claims**



1. In an incrementally controlled metering system, a rotary device effective to control incremental metering operations, said rotary device comprising:

a rotatable support wheel;

a plurality of molded unitary bistable means equally spaced within said support wheel near the circumference thereof, each of said bistable means including a member reciprocatably movable axially to one position in an active state from a normal second position in an inactive state to initiate rotation of said rotatable support wheel and further including pivotable means connected to said reciprocatable member and said support wheel for maintaining said reciprocatable member in either its active state or its inactive state;

a plurality of stationary control means located at spaced positions contiguous to said support wheel adjacent to the circumference thereof for cooperation with said reciprocatable members, said plurality of control means being equal in number to said plurality of bistable means, said control means at all but one of said positions adapted to set a selectable reciprocatable member of one of said plurality of bistable means into its active state, said control means at said position not occupied by said setting control means adapted to reset said selectable reciprocatable member of one of said plurality of bistable means in its active state into its inactive state when said reciprocatable member in its active state is positioned in juxtaposition therewith; and

means at said position not occupied by said setting control means for detecting the presence of said reciprocatable member in its active state to cause cessation of rotation of said rotatable support wheel.

3,893,595

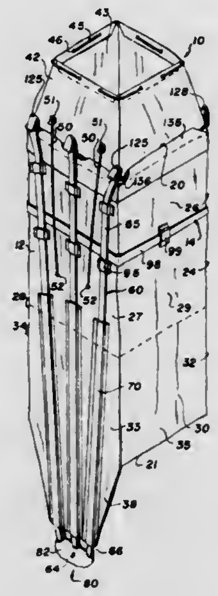
SUSPENDED FLEXIBLE CONTAINER WITH LATCHED BOTTOM OPENING

Jitendra Khanna, and Desmond Williams, both of North Vancouver, Calif., assignors to False Creek Industries Ltd., Vancouver, Calif.

Filed Sept. 21, 1973, Ser. No. 399,371

Int. Cl. B67d *5/64*

U.S. Cl. 222—185 **24 Claims**



15. Transporting container apparatus including a container in the form of a bag having a closable top, first and second opposed walls, a tube-like bottom connected to said walls and foldable over and across the bottom area of the bag and upwardly along said first wall; and a cradle fitting around said bag and comprising a first section extending from near the top of the bag down along said second wall thereof and over said bottom to extend therewith upwardly along said first wall, a second section overlying said first wall near the top of the bag, lifting means connected to said first section and said second section near the top of the bag by means of which said apparatus can be lifted, releasable latch means extending between and coacting with said first section and second section releasably to secure said sections together, said latch means, when unreleased, and said first section preventing the bag bottom from straightening out to discharge material from the bag when the latter is supported by means of the cradle.

3,893,596

UPRIGHT-INVERTED AEROSOL DISPENSER

Steven W. Beres, and James L. Gentile, both of Bridgeport, Conn., assignors to VCA Corporation, Greenwich, Conn.

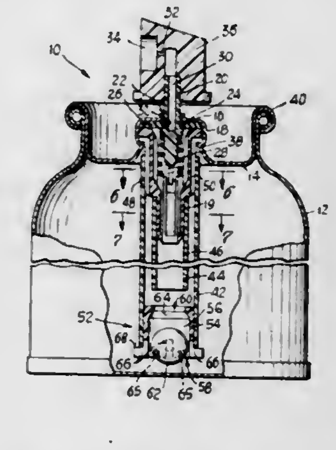
Filed Feb. 25, 1974, Ser. No. 445,734

Int. Cl. B65d *83/14*

U.S. Cl. 222—402.19 **3 Claims**

1. An aerosol dispenser of the hand-held type, comprising in combination:

a. a container and dispensing valve carried at the top thereof for controlling the discharge of its contents,
b. an outer dip tube,
c. means connecting one end of said outer dip tube to said dispensing valve,
d. an inner dip tube freely disposed inside said outer dip tube, connected at one end to and communicating with said dispensing valve,
e. said dip tubes being coextensive and having spaced-apart annular wall portions defining an annular channel therebetween,
f. a check valve connected to the other end of said outer dip tube and having a port communicating with said annular channel,



g. said check valve being disposed adjacent the other end of said inner dip tube,
h. said check valve having a gravity actuated valve part which moves in response to tilting of the container to upright and inverted positions respectively,
i. that end of said inner dip tube which is adjacent the check valve being free from and unattached to said check valve,
j. said dispensing valve having means thereon enabling communication to be had between the annular channel defined by the dip tubes and the upper area in the container, and
k. said check valve closing off said other end of said outer dip tube when the container is in an inverted position and opening said other end when the container is upright.

3,893,597

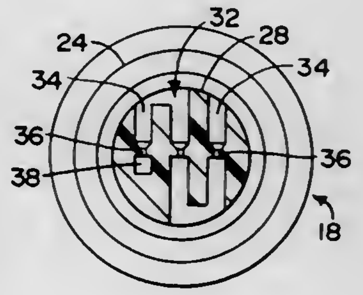
LOW DELIVERY RATE VALVE

Ronald F. Ewald, 2700 Cardinal Dr., Rolling Meadows, Ill. 60008

Filed Aug. 20, 1973, Ser. No. 389,729

Int. Cl. B65d *83/14*

U.S. Cl. 222—402.22 **14 Claims**

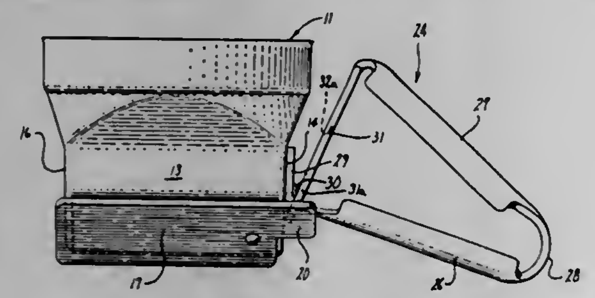


1. A low delivery rate aerosol valve for use in combination with an aerosol dispenser comprising a valve body including an enlarged upper portion and a lower portion connected to said upper portion, said enlarged upper portion including a valve body cavity formed on the interior of said valve body, restricted feed passage means formed in said lower portion in fluid communication with said valve body cavity, a valve stem movably mounted within said valve body cavity to open and

close the valve, said restricted feed passage means comprising a plurality of expansion chambers and a plurality of restricted channels, said plurality of expansion chambers disposed in substantially successive relation to one another, each two successively disposed expansion chambers interconnected by at least one of said plurality of restricted channels, said successively arranged plurality of expansion chambers and plurality of restricted channels disposed in predetermined flow reversing relation to one another so as to substantially reverse the main fluid flow through said restricted feed passage means, said restricted feed passage means disposed in fluid communicating relation between said valve body cavity and the interior of the dispenser, whereby upon actuation of the valve the contents of the dispenser pass through said restricted feed passage means to the atmosphere.

3,893,598
DISPENSING DEVICE

Gunter G. Fuss, Daly City, Calif., assignor to Free-Flow Packaging Corporation, Redwood City, Calif.
Continuation of Ser. No. 314,583, Dec. 13, 1972, abandoned.
This application Apr. 1, 1974, Ser. No. 456,453
Int. Cl.² B65D *47/08, 47/20*
U.S. Cl. 222—473 **16 Claims**



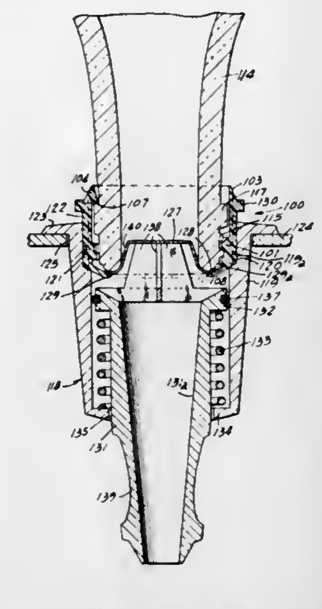
1. A dispensing device, said device comprising a dispensing housing having side walls forming a generally rectangular dispensing opening, a pair of dispensing flap means pivotally carried by opposed parallel side walls of said housing forming said dispensing opening, said flap means being mounted for pivotal movements about parallel pivot axes as respects said opposed parallel side walls between a first material restraining position and a second substantially open material dispensing position, biasing means to normally hold said flap means in said first position, tab means carried by said flap means, and pivotally operable actuating means carried by a transverse side wall of said housing as respects said opposed parallel side walls, said actuating means comprising pivotally operable squeeze handle means formed to be responsive to squeezing pressures exerted thereupon and camming means operable with respect to said tab means in a plane which is generally transverse to the planes of said opposed parallel side walls, said camming means contacting said flap means to move the same in a camming action between said first and second positions.

3,893,599
MEANS FOR DISPENSING

Peter Leslie Birell, Delta, Calif., assignor to The Cornelius Company, Anoka, Minn.
Division of Ser. No. 300,505, Oct. 25, 1972, Pat. No. 3,828,973. This application Oct. 17, 1973, Ser. No. 407,260
Int. Cl. B67d *3/00*
U.S. Cl. 222—518 **15 Claims**

1. A dispensing closure assembly for the discharge end of a container for use with a separate dispenser mechanism, comprising:

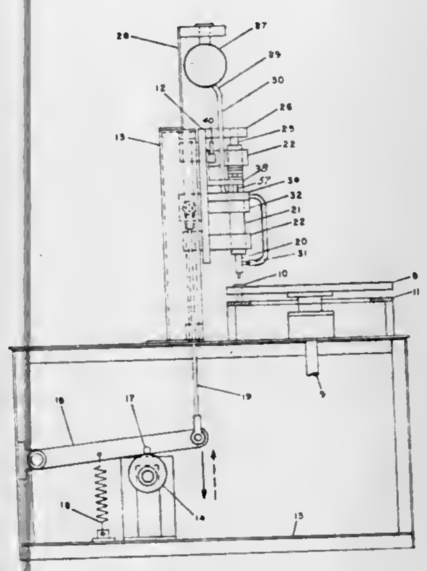
a. a unitary diaphragm-like closure member for being only initially attached to the container, said closure member having a peripheral margin with a free shape conforming to the mouth of the container for resealing engagement therewith, said closure member forming with the mouth an axially displaceable loose flow controlling element as soon as the initial attachment thereof has been released to provide a dispensing opening around the entire closure member, said closure member having a central body portion with a configuration adapted to the shape of axially movable support structure on the separate dispenser mechanism for engagement with the loose closure member; and



b. a cap for surrounding the closure member on the container and having means by which the cap can be secured to the separate dispenser mechanism, said cap having means by which it can be secured to the container and means to provide only the initial attachment of said closure member on the container, said cap being axially displaced to release such initial attachment means in response to its first axial displacement to enable the closure element to be thereafter positioned by the support structure.

3,893,600
LIQUID GRAVITY FEED SYSTEM

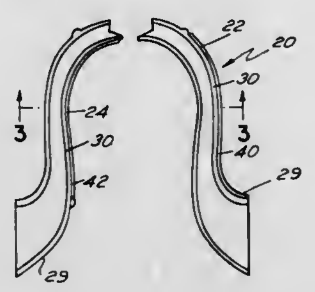
Walter A. Shields, Jamaica, N.Y.
Filed Apr. 24, 1974, Ser. No. 463,535
Int. Cl. B67c *3/28;* **F16l** *55/14*
U.S. Cl. 222—529 **3 Claims**



1. In a liquid gravity feed system, a liquid reservoir having an outlet, a nozzle reciprocally supported below the reservoir, a flexible conduit connecting the reservoir outlet to the nozzle, an anvil reciprocally mounted between the reservoir and the nozzle and supporting an intermediate portion of the flexible conduit, and a clamping member carried by the nozzle above the anvil and yieldingly urged to squeeze the conduit against the anvil and close said conduit, whereby reciprocal movement of the nozzle toward the reservoir will move the clamping member from the anvil and permit the flow of liquid through the conduit from the reservoir to the nozzle.

3,893,601
SPOUT CONSTRUCTION

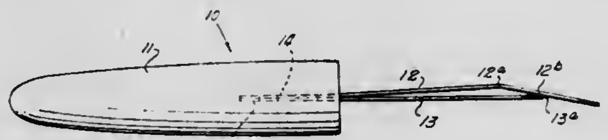
Samuel J. Winslow, 19 Clarendon St., Providence, R.I. 02906
Filed May 14, 1973, Ser. No. 359,885
Int. Cl. B65d *5/74*
U.S. Cl. 222—566 **2 Claims**



1. A liquid container comprising a hollow body, an elongated spout secured to said body through which liquid contained in said body is poured, said spout comprising a pair of elongated complementary sections formed of a metallic material that are joined together, each section extending for the length of said spout and having a concave inner surface so that a through passage is defined by said sections as located in the joined position thereof, a protective coating covering the entire inner surface of each of said sections, and means joining said sections to each other whereby a pair of oppositely disposed elongated seams are provided, each seam extending for the length of said spout, marginal mating surfaces formed on said complementary sections, the mating surface of each section having a longitudinally extending groove formed therein for receiving a solder strip that is used to join the sections together, locating pins joined to one of said sections adjacent to the marginal mating surface thereof, and complementary bores formed in the other section adjacent to the marginal surface thereof, said holes receiving said pins for aligning said sections prior to the joining thereof by soldering, said joined sections defining a finished spout completely coated on its inner surface so as to eliminate any deleterious effects of the material from which said sections are formed when the container is in use and liquid in the hollow body is poured through the elongated passage defined by said spout.

3,893,602
NEEDLE THREADER

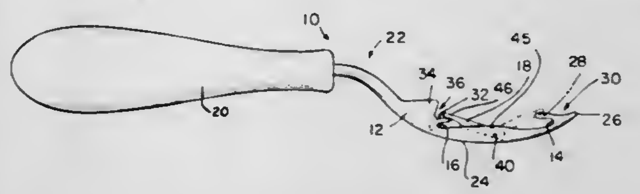
David M. Ivy, 4635 Southern, Dallas, Tex. 75209
Continuation-in-part of Ser. No. 274,329, July 24, 1972, abandoned. This application July 2, 1973, Ser. No. 375,904
Int. Cl. D05b *87/00*
U.S. Cl. 223—99 **13 Claims**



1. A needle threader comprising a handle; a first thread engaging member secured along one end portion in said handle; a second thread engaging member secured along one end portion in said handle in juxtaposition with said first thread engaging member; said thread engaging members being flat elongated leaves of resilient material and being biased together for frictionally engaging a thread portion therebetween for pulling said thread portion through the eye of a needle; one of said leaves being longer than the other of said leaves and having a free end portion extending outwardly from said handle farther than the free end portion of said other of said leaves; and at least one of said leaves being bent along a line transversely of the longitudinal axis of said leaf providing a free end portion of said leaf converging toward the other of said leaves biasing said leaves together providing means for restraining said needle on said leaves.

3,893,603
LATCH HOOK

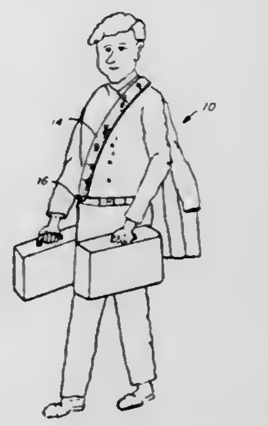
Joseph A. Rush, 507 E. May, Walton, Ind. 46994
Filed Apr. 26, 1974, Ser. No. 464,997
Int. Cl.² D05B *85/00*
U.S. Cl. 223—104 **7 Claims**



1. A latch hook comprising: a shank having a first projection extending from near the forward end thereof generally rearwardly above the shank to form a rearwardly open first hook; a second projection on said shank spaced rearwardly from said first hook and extending generally forwardly above said shank to form a second hook in opposed relation with said first hook; and a latch pin pivotally mounted on said shank and movable about its pivot between engagement with the ends of said first and second projections to selectively close one of said first and second hooks.

3,893,604
GARMENT CARRYING AID

Raymond O. Skinner, 6755 E. 24 St., Tulsa, Okla. 74129
Filed Feb. 20, 1973, Ser. No. 334,026
Int. Cl. A45f *5/00*
U.S. Cl. 224—5 N **1 Claim**

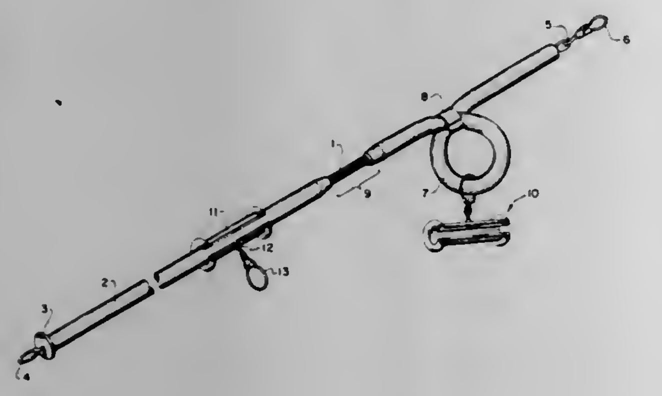


1. A garment carrying aid comprising:
an elongated flexible but substantially inelastic strap having a first and a second end and an inner and an outer surface, the strap being adapted to extend over one shoulder and obliquely across the front of the user such that the inner surface contacts the user;
a releasable clamp connected to said first end of the strap and adapted to clamp to the belt or top of the trousers at the front of the user with the strap extending upwardly across the chest and over one shoulder;
a terminal portion of the strap adjacent the second end being folded and secured to define a loop at said end of the strap to receive garment carrying hanger hooks;
non-slip surface means affixed to the strap inner surface over a portion of the length of the strap adjacent the loop, the length of the strap being proportioned to the user

such that the non-slip surface is positioned over the shoulder of the user and said loop portion hangs over the back of the user when the clamp is attached to the belt or trouser top in the front of the user; and

a flat protector pad affixed to the inner surface of the strap adjacent the loop, the pad being parallel to and below the loop and wider than the strap, the pad serving to protect the user and his clothing from hooks of garment hangers or the like received in said loop.

3,893,605
FISH STRINGER
James T. Mew, Kings Lakeside Terr., Rt. 1, Viola, Mo. 65748
Filed Aug. 20, 1973, Ser. No. 383,619
Int. Cl. A45f *3/00*
U.S. Cl. 224—7 D **1 Claim**



1. A fish stringer comprising a flexible cable of small diameter, a coating of flexible material adhered thereto to present an elongated flexible assemblage of relatively large diameter, means at one end of said flexible assemblage to secure it to a selected support, stop means at the other end, a plurality of snap hook and slider elements each of said snap hook and slider elements to successively receive a caught fish, said slider elements each comprising a slotted tubular element, the elongated flexible assemblage being reduced in diameter by the thickness of said coating to the diameter of said flexible cable for a short length near the means to secure it to a selected support, the width of the slot in said tubular element being approximately equal to the diameter of said flexible cable, and the inside diameter of said tubular element being such as to slide freely along said flexible assemblage, but of less diameter than said stop means, and a loop formed on said flexible assemblage between said means to secure it on a selected support and said short length of reduced diameter for removably carrying extra snap hook and slider elements.

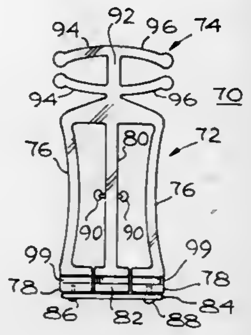
3,893,606
PORTABLE CARRIER APPARATUS
Gary L. Hofmann, 2702 Ardmore Ave., Manhattan Beach, Calif. 90266
Filed Sept. 26, 1973, Ser. No. 400,850
Int. Cl. B60r *7/00*
U.S. Cl. 224—42.1 F **6 Claims**

1. An improved ski carrier rack assembly, said assembly comprising a pair of racks which define longitudinally spaced channels and at least one pair of ski holders, each of said holders including:

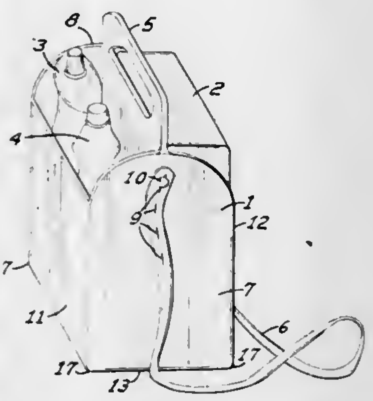
a. means for releasably securing said holder to one of said channels;

b. a ski support member including a pair of spaced and vertically depending resilient legs, wherein said legs include, adjacent the lower ends thereof, transversely extending inwardly directed ski detents adapted to be matedly received within one of said channels, said legs being adapted to releasably grip the sides of one or a pair of skis when disposed therebetween; and,

c. a ski pole support member connected to said ski support member and including a central member and a pair of resilient arms closely spaced outwardly therefrom on opposite sides thereof to define therebetween a pair of ski pole recesses.



3,893,607
LAUNDRY SUPPLY TOTE DEVICE
John Jones, Rural Route No. 1, Box 542, Hartford City, Ind. 47348
Filed Jan. 18, 1974, Ser. No. 434,610
Int. Cl. A45c *71/00*
U.S. Cl. 224—45 R **1 Claim**



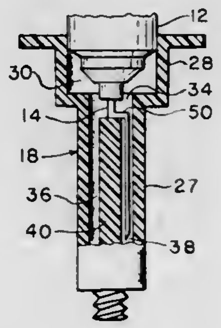
1. A means to tote commonly used laundry supplies consisting of the following:

A. A container having:
  1. Two substantially similar opposite spaced apart parallel first sides,
  2. Two substantially similar opposite spaced apart parallel first ends attached to said first sides having a similar height as and less width than each said first side and a button holding means located outwardly and generally centered near the top of each said first end for use in attaching and securing a shoulder strap carrying means if desired,
  3. A bottom attached to said first sides and first ends,
  4. A center divider handle means the substantially same width as, having a greater height than, and suitably spaced between and parallel to said first sides attached to each said first end having an elongated slot therein generally laterally parallel to said bottom with a portion thereof extending above said first sides sufficient to accommodate the insertion of a user's hand for gripping and carrying purposes,
  5. An open space at the top between said center divider handle means and each said first side and first ends and

B. A removable hollow laundry supply box inserted between said center divider handle means and a said side having
  1. Two similar opposite spaced apart parallel second sides having a height less than said center divider handle means but greater than the said first side next to said box and a length substantially similar to but less than the said first side next to said box,
  2. Two similar opposite spaced apart parallel second ends having a height equal and attached to said second sides and a width substantially similar to but less than the space between said center divider handle means and said first side between which said box is inserted,
  3. A second bottom attached to said second sides and second ends which when said box is inserted rests generally upon that uppermost portion of the first bottom between said center divider handle means and said first side, and
  4. A second top attached to said second sides and second ends having a suitable small first opening therein centered near one end thereof for use in pouring the laundry supply out of said box and a second larger opening therein nearer the other end thereof to accommodate an inserted portion of the following described box top cover means and

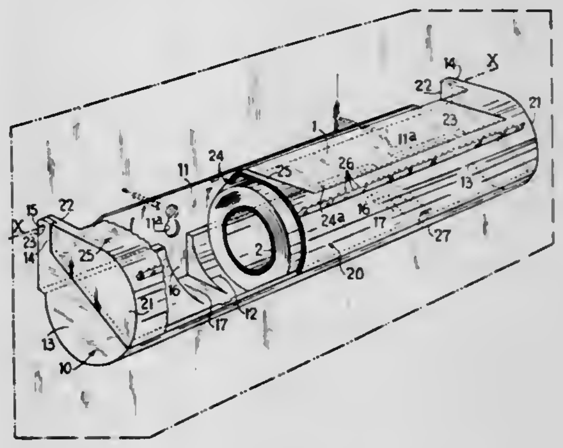
C. A removable box top cover means having
  1. A closed upper portion the underside of which fits down upon and against the upper portion of the said box second top when positioned atop said box,
  2. Two similar spaced apart opposite parallel third sides attached to said upper portion which extends down and over a portion of the said second sides of said box when said box top cover means is placed atop said box,
  3. Two similar spaced apart opposite parallel third ends attached to said upper portion and said third sides which extend down and over a portion of the said second ends of said box when said box top cover means is placed atop said box, and
  4. A measuring means, which fits down into the said second opening in said second top when said box top cover means is placed atop said box, having the top of same open and the bottom thereof consisting of a portion of the underside of said box top cover means said upper portion when said box top cover means is removed from the said box and turned over and four parallel spaced apart sides which are attached to and extend sufficiently away from the underside of said box top cover means said upper portion which have internal ribs or markings around the inside of said four sides to show the quantity of content thereof, preferrably in parts of a cup volume measure, as the user fills same with a laundry supply for measuring purposes.

3,893,608
SYRINGE WITH NEEDLE DESTROYING MEANS
Elmer A. Koenig, Kirkwood, Mo., assignor to Sherwood Medical Industries, Inc., St. Louis, Mo.
Filed June 3, 1974, Ser. No. 475,678
Int. Cl. B26f *3/00*
U.S. Cl. 225—1 **8 Claims**



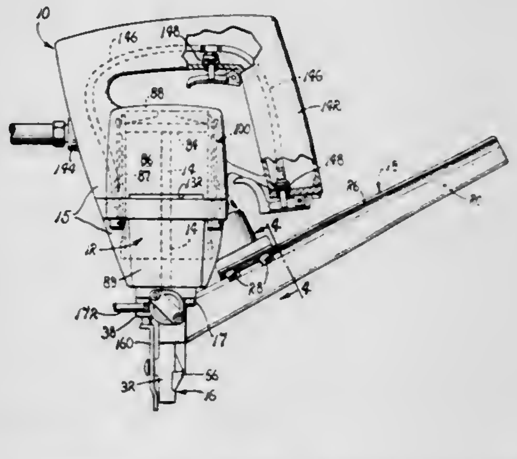
7. A method of destroying a needle of a packaged hypodermic syringe having a plurality of members in axial alignment, including a syringe barrel, a hypodermic needle connected to the distal end of said syringe barrel, a needle sheath removably covering said needle, and a piston rod connectable with a piston for moving the piston in the barrel, one of said members having a chamber offset from the axis of said one member and a recess open to said chamber and coaxial with said one member, comprising the steps of inserting the hypodermic needle into the offset chamber of said one member, moving said one member and syringe barrel toward each other with the walls of said recess effecting axial alignment between the barrel and said one member, and rotating said one member and said barrel relative to each other to twist said needle about the axis of the barrel for breaking the same and rendering it useless.

3,893,609
DISPENSER FOR PLASTIC FILM WRAP
Gerard Jamois, Nogent sur Marne, and Sylvain Bluntz, Paris, both of France, assignors to Colgate-Palmolive Company, New York, N.Y.
Filed Feb. 7, 1974, Ser. No. 440,588
Int. Cl. B26t *3/02*
U.S. Cl. 225—42 **1 Claim**



1. A dispenser device for sheet material comprising a housing adapted to be fastened to a mounting surface, means in said housing to rotatably support a roll of said sheet material, a lid articulated to the upper portion of said housing, a dispensing slit disposed in said lid adjacent to said mounting surface, and a cutting means disposed on the front surface of said lid a predetermined distance from said slit, said predetermined distance being defined by a portion of said lid that is in the same horizontal plane as said slit for at least half of said predetermined distance and that is arcuate from said horizontal plane to said cutting means to facilitate guiding, whereby said sheet material is supported from said dispensing slit to said cutting means.

3,893,610
PNEUMATIC DEVICE FOR DRIVING HEADED OBJECTS
Arthur J. Smith, P.O. Box 3898, Visalia, Calif. 93277
Filed Mar. 13, 1974, Ser. No. 450,733
Int. Cl. B27f *7/22*
U.S. Cl. 227—8 **10 Claims**



1. A pneumatic device for driving a headed object having a head and an elongated shank extended therefrom comprising:

A. a driver housing;

B. a cyclically operable ram supported within said housing for axial displacement along a rectilinear path and characterized by means including at one end thereof a face for striking the head of a headed object positioned within said path; and

C. object feeding means mounted on said housing adapted to position a headed object within the path of the ram including,
  1. retainer means disposed adjacent to said rectilinear path for supporting said object in a pre-delivery disposition relative to said path with the shank thereof being extended through a reference plane intersecting the longitudinal axis of symmetry for said path, along the length thereof,
  2. means including a barrel having an axial bore concentrically related to the path of said ram for receiving said headed object, and
  3. means for delivering said headed object from said retainer means to said bore.

3,893,611

JIG FOR BRAZING ELONGATED HEAT EXCHANGERS

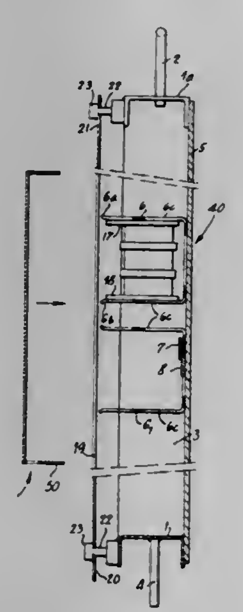
André Chartet, Meudon, France, assignor to Societe Anonyme des Usines Chausson, Asnieres (Haut de Seine), France

Filed Aug. 15, 1973, Ser. No. 388,343

Claims priority, application France, Sept. 21, 1972, 72.33494

Int. Cl. B23k *19/00*

U.S. Cl. 228—44.1 **14 Claims**



1. An installation for use in brazing by gas flow elongated heat exchangers having a piling of tubes separated by corrugated fins and enclosed between side flanges, comprising:
  a jig with a lower member and an upper member connected by transverse elements, said transverse elements supporting at least one holder;
  said holder comprising two horizontally extending plate elements, mounted on said transverse elements and abutting said transverse elements at one end of each of said horizontal plate elements, said plate elements being slightly movable and spaced apart by a distance slightly smaller than the width of the heat exchangers placed therebetween for brazing, whereby said plate elements slightly urge said side flanges, corrugated fins and tubes together during brazing while allowing enough expansion of said side flanges, corrugated fins and tubes due to the heat of brazing to prevent deformation of said side flanges, corrugated fins and tubes;
  means for passing hot gas through the corrugated fins and tubes of the heat exchanger while the heat exchanger is in said holder, and
  wherein said holder is made up of two plates, an upper plate and a lower plate connected to said transverse elements through extension arms, supported on said plates and wherein said extension arms of at least said upper plate are movably mounted on said transverse elements to thereby allow at least said upper plate to move by translation in a direction substantially parallel to said transverse elements.

3,893,612

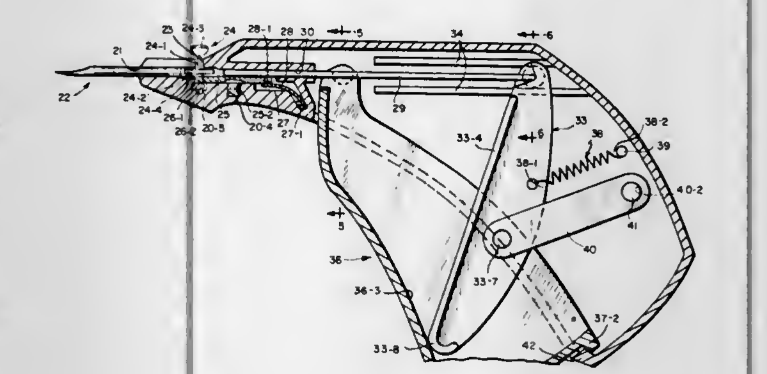
FASTENER ATTACHING DEVICE

Arnold R. Bone, Needham, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Filed June 21, 1973, Ser. No. 372,071

Int. Cl. B65c *5/06*

U.S. Cl. 227—67 **15 Claims**



1. In an attaching device including a casing having a trigger pivotally coupled to said casing, a needle projecting from the casing, the needle having a central bore and a slot open at the top and opening into the bore, and a plunger slidable within the bore to push a portion of a fastener attachment member or the like through the bore and the slot of the needle, the improvement characterized by a lever pivotally coupled intermediate its ends to a link which is in turn pivotally coupled to said casing, a first end of the lever coupled to the plunger to reciprocate it and the second end slidable upon a camming surface of said trigger, means for linearly guiding said first lever end and resilient biasing means coupled to said casing and said lever for rotating said lever about the link thereby urging said second end of said lever against said camming surface of said trigger to resiliently bias said trigger.

3,893,613

HYDRAULIC JIG FOR CORRECTION OF MIS-ALIGNMENT

Tatuyuki Une, Hiroshima; Akira Kamata, Tokyo, both of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha and Kabushiki Kaisha Osaka Jack Seisakusho, both of Tokyo, Japan

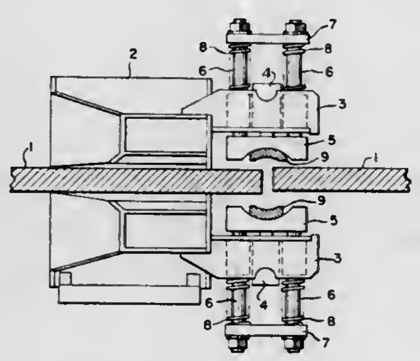
Continuation of Ser. No. 227,905, Feb. 22, 1972, abandoned. This application May 20, 1974, Ser. No. 471,577

Claims priority, application Japan, Feb. 23, 1971, 46-10802

Int. Cl. B23k *1/00*

U.S. Cl. 29—200 J **2 Claims**

1. A hydraulically operated apparatus for the alignment and the holding of the terminal edges of a pair of elongated workpieces that are to be welded together, characterized by a transportable jig provided with a U-shaped groove for receiving and supporting said workpieces, a pair of vertically spaced arms disposed on the vertical sides of said U-shaped groove, said arms extending beyond the terminal area of said workpieces and in spaced normal relationship to the sides of said workpieces and on either side thereof, each of said arms being provided with a hydraulic jack having a supporting member positioned to overlie the joint between the free edges of said workpieces, a pair of columns, each of said columns being connected between one of the pairs of said vertically spaced arms at the supporting member and cooperating with each jack for preventing application thereto of eccentric loads during operation of said jacks to align the joint.



3,893,614

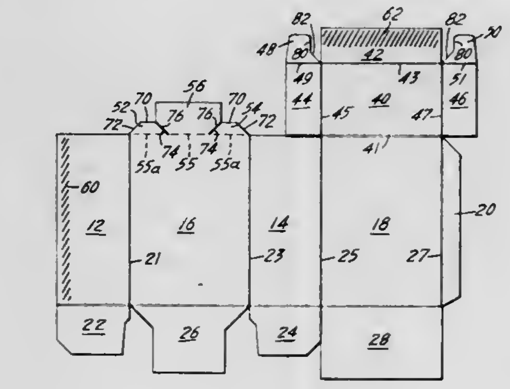
TAMPERPROOF RECLOSABLE CARTON

George Leroy Meyers, Menasha, Wis., assignor to American Can Company, Greenwich, Conn.

Filed Nov. 23, 1973, Ser. No. 418,360

Int. Cl. B65d *5/54, 5/68, 17/24*

U.S. Cl. 229—51 TC **5 Claims**



1. A tamperproof reclosable carton formed of a single suitably cut and scored blank having a receptacle portion and a cover portion which telescopes over the upper edges of the receptacle portion, said receptacle portion comprising hingedly connected front, rear, end and bottom receptacle panels, said cover portion comprising a top cover panel hingedly connected to the upper edge of said rear panel, end cover panels and a front cover panel all hingedly connected to said top cover panel and forming skirt portions parallel and adjacent to the respective underlying receptacle panels, a sealing tab hingedly connected along a detachable line of weakness to the center portion of the upper edge of said front receptacle panel and folded ouwardly along said hinge line to lie sandwiched between said front cover panel and said front receptacle panel, said sealing tab being adhesively secured to the inner surface of said front cover panel; a pair of locking tabs hingedly connected to the upper edge of said front receptacle panel in flanking relationship to said sealing panel, said locking tabs being folded about their respective hinge connections to lie sandwiched between siad front cover panel and said front receptacle panel; a pair of cover front glue flaps each hingedly connected to a respective one of said end cover panels and adhesively secured to the inner surface of said front cover panel to lie sandwiched between said front receptacle panel and said front cover panel in the same plane as said sealing tab and said locking tabs; said locking tabs each having at least one side edge thereof lying at an acute angle to said hinge line between said locking tab and said front receptacle panel, said side edge being in edge to edge locking abutment with a complementary edge formed on one of said glue flap and sealing tab carton elements lying in the same plane as said locking tab.

3,893,615

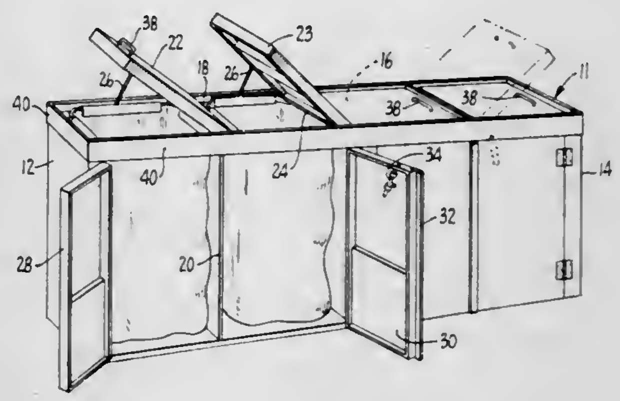
MULTIPLE COMPARTMENT REFUSE CONTAINER

William R. Johnson, Santa Cruz, Calif., assignor to Peerless Portable Metal Buildings, Inc., Santa Cruz, Calif.

Filed Nov. 1, 1973, Ser. No. 411,680

Int. Cl. B65d *91/00*

U.S. Cl. 232—43.2 **1 Claim**



1. In an above-ground container for refuse and the like comprising a rectangular box-like structure divided into a plurality of compartments by partitions, each of said compartments being provided with a top surface with an opening for inserting refuse and an upstanding rim surrounding said opening, a top raising hinged door with a downward depending flange along each edge, said door normally held in a closed position solely by gravity to cover said opening and said rim, and a handle retractable by gravity, and a side door whereby a receptacle within the container can be filled through the top door and the contents removed through the side door, the improvement comprising a second rim closely surrounding all sides of the top door, said rim rising from said top surface to a height approximately equal that of the top surface of the door whereby an animal or the like cannot get its claws under said handle or the edges of said door to raise the door.

3,893,616

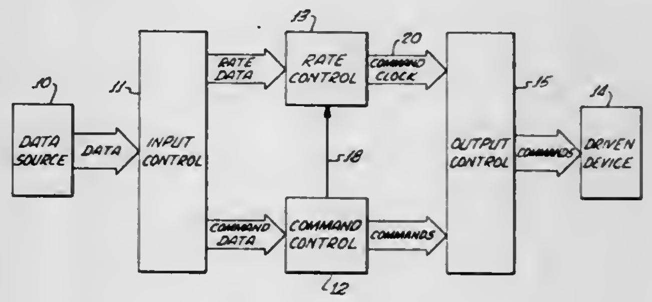
SPEED CONTROL FOR ELECTROMECHANICAL PLOTTERS

Robert B. Trousdale, Santa Ana, Calif., assignor to California Computer Products, Inc., Anaheim, Calif.

Filed Nov. 23, 1973, Ser. No. 418,367

Int. Cl.^{2} G06F *15/46;* **G05B** *19/18*

U.S. Cl. 235—151 **9 Claims**



1. A system for driving electromechanical devices comprising:
  a data source including a means for supplying data for modifying the velocity and acceleration profile parameters;
  an input control unit responsively connected to said data source including means for buffering and means for transferring signals from the data source;

- command control means responsively connected to said input control unit for transforming source data into command sequences;
- a rate control unit responsively connected to said input control unit and said command control means including a means for generating a variable command clock said rate control unit comprising:
- a base rate oscillator;
- velocity register means for storing a digital number which represents the scaling exponent portion of a velocity constant;
- means for holding the coefficient portion of the velocity constant;
- velocity rate multiplier means responsively connected to said base rate oscillator and said means for holding the velocity coefficient and velocity scaling exponent for multiplying the base rate oscillator output by the velocity scaling exponent and velocity coefficient so as to generate a command clock pulse rate profile which is proportional to the velocity parameters supplied by said data source;
- output control means responsively connected to said rate control unit and said command control means for transferring signals;
- means responsively connected to said output control means for producing a mechanical movement in response to the signals transferred by said output control means.

3,893,617
FAILURE DETECTING SYSTEM FOR DEVICES EMPLOYING DIGITAL PARALLEL-TO-SERIES CONVERTERS

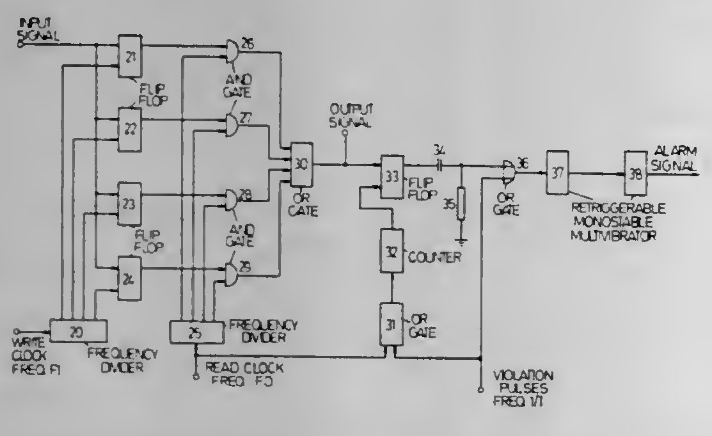
Bjorn Ragnar Solberg, Oslo, Norway, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Apr. 22, 1974, Ser. No. 462,704

Claims priority, application Italy, July 11, 1973, 26438/73

Int. Cl. G06f *11/00;* H03k *13/32*

U.S. Cl. 235—153 A **2 Claims**



1. A system for detecting abnormal conditions in a digital parallel-to-series converter comprising:
- a digital store connected to the output of said converter, said store storing the output of said converter and producing a constant logical level for a period longer than a certain threshold time upon occurrence of any one of said abnormal conditions;
- A clock generator coupled to said store, said generator producing clock pulses to clock said store and to cause said store to produce said constant logic level upon occurrence of any one of said abnormal conditions, said clock pulses having a nominal period of Xn/f_o, where n equals the number of parallel input channels, f_o is the digit rate of serialized data and X is any positive integer, with the time period between two successive ones of said clock pulses being instantaneously shifted to $Xn/f_o + k/f_o$, where k is a positive or negative integer, and the time between said shifts may occur periodically or non-periodically as long as the time between two of said shifts is larger than a certain minimum value; and
- a detector coupled to the output of said store to generate an alarm signal upon detecting repeatedly said constant logic level lasting longer than said threshold time.

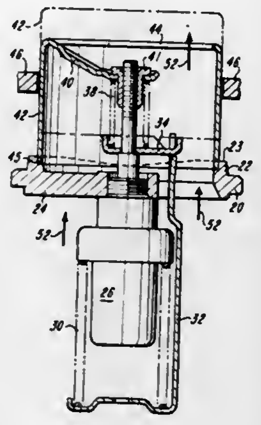
3,893,618
THERMOSTATIC VALVE DEVICE HAVING NON-LINEAR FLOW CHARACTERISTICS

Backman Wong, Wayland, and Earl L. Wilson, Wellesley, both of Mass., assignors to Standard-Thomson Corporation, Waltham, Mass.

Filed Aug. 1, 1973, Ser. No. 384,519

Int. Cl. G05d *23/02*

U.S. Cl. 236—100 **13 Claims**



1. A thermally responsive fluid flow control valve device for elimination of temperature fluctuations during initial opening operation comprising:
- a stationary valve member having an annular valve seat portion forming a fluid port,
- a linearly movable valve member having a closure portion normally engaging the valve seat portion to close the fluid port and movable with respect thereto,
- the stationary valve member including an annular flange encompassing the valve seat portion, the annular flange being substantially parallel with the line of movement of the movable valve member, the flange having an end spaced from the annular valve seat portion, the end having an inclined part so that initial movement of the movable valve member creates a small fluid flow passage between the inclined part and the movable valve member and increased movement of the movable valve member is non-linear with respect to the fluid flow passage created, thermally responsive actuator means,
- means joining the thermally responsive actuator means to the movable valve member for movement thereof with respect to the stationary valve member.

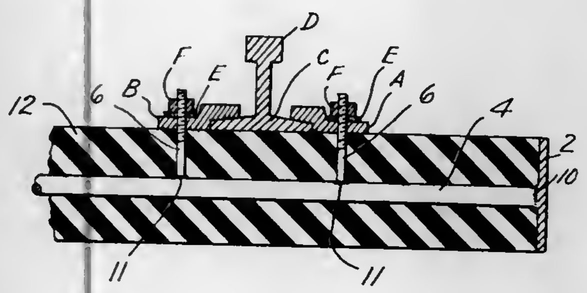
3,893,619
CROSSTIE FOR RAILROAD TRACK

A. J. Bruner, 2166 Katherine St., Fort Myers, Fla. 33901

Filed Oct. 18, 1972, Ser. No. 298,772

Int. Cl. E01b *3/00*

U.S. Cl. 238—83 **3 Claims**



1. A crosstie for railroad tie plates and tracks comprising an elongated block of elastomeric material having a flat top and opposite flat ends, a pair of plates each positioned on a different one of said flat ends of said blocks, at least on cross-rod attached to and extending laterally of and between said plates and longitudinally through said block and rods attached to said cross-rod and extending therefrom laterally of and from said cross-rod and said block.

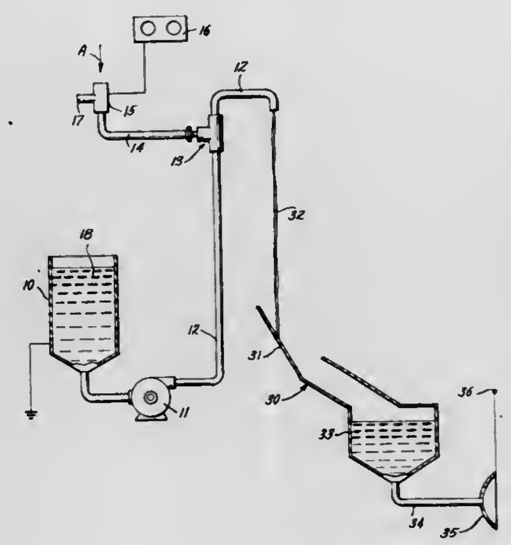
3,893,620
ELECTROSTATIC ATOMIZATION OF CONDUCTIVE PAINTS

Abdullah M. Rokadia, Schaumberg, Ill., assignor to DeSoto, Inc., Des Plaines, Ill.

Filed Oct. 4, 1973, Ser. No. 403,364

Int. Cl. B05b *5/02*

U.S. Cl. 239—3 **1 Claim**



1. A method for electrostatically spraying an electrically conductive aqueous paint comprising supplying an unconfined continuous column of said paint through an intervening air space to an electrically isolated paint reservoir, and then conveying said aqueous paint from said electrically isolated reservoir as a confined column in a paint supply line to an electrostatically charged atomizing device so that said electrostatic charge is conducted back through said paint to the electrically isolated paint reservoir to create a charged field around said reservoir, the paint providing said unconfined continuous column supplied to said reservoir being released to provide said unconfined column from a point at least about 2 feet above said reservoir.

3,893,621
PLASTIC SPRAY GUN

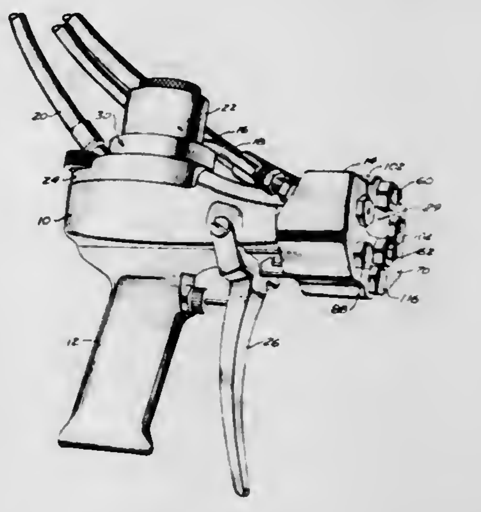
Jay Johnson, 5350 Tessen Dr., La Canada, Calif. 91011

Filed Jan. 24, 1974, Ser. No. 436,028

Int. Cl. B05b *7/14, 7/08*

U.S. Cl. 239—9 **14 Claims**

1. A spray gun for spraying fiberglass and liquid resins, comprising:
- means having an opening for discharging a stream of air and solid particles into the atmosphere,
- air atomizing nozzle means positioned adjacent the opening, means connecting low pressure liquid catalyst and low pressure air to said nozzle means for providing an air atomized spray of catalyst from said nozzle means,
- airless nozzle means positioned adjacent the opening,
- and means connecting a liquid mixture of promoted resin under relatively high pressure to the airless nozzle means to provide a liquid spray of promoted resin,
- the air atomized catalyst spray and the liquid resin airless spray intersecting each other and the air and solid particle stream outside the spray gun to provide a combined spray pattern of solid particles, promoted resin and catalyst.



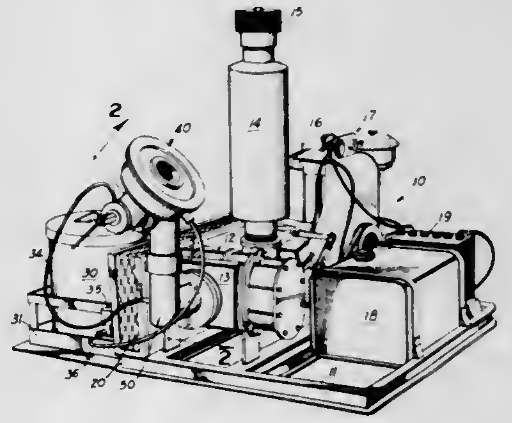
3,893,622
FOG GENERATOR

David W. Waldron, Valdosta, Ga., assignor to Lowndes Engineering Co., Inc., Valdosta, Ga.

Division of Ser. No. 216,396, Jan. 10, 1972, abandoned, which is a continuation-in-part of Ser. No. 20,364, March 17, 1970, Pat. No. 3,633,855. This application Jan. 14, 1974, Ser. No. 433,201

Int. Cl. A01m *17/00*

U.S. Cl. 239—77 **12 Claims**



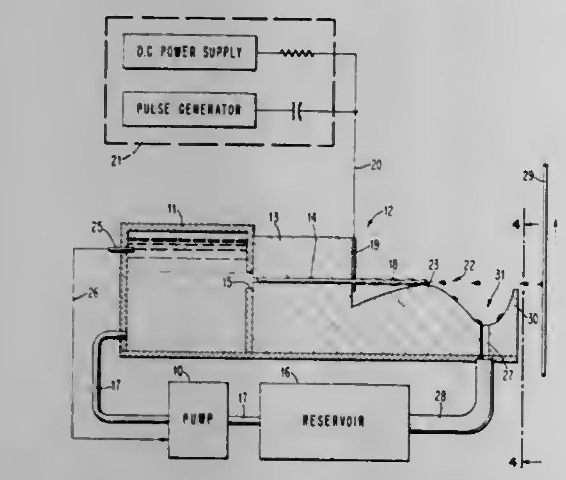
1. A fog generator comprising:
- a. an air blower means;
- b. a conduit connected to said air blower means, said air blower means discharging air into said conduit;
- c. a generally flat nozzle having a relatively small central opening with respect to the size of the nozzle, said nozzle being carried by said conduit, said conduit directing air from said air blower conduit and then through said central opening of said nozzle; and
- d. means for introducing a liquid into said nozzle for mixing with the air passing through said nozzle;
- e. said conduit including:
  - i. a first conduit means having a first conduit portion connected by one end to and communicating with said air blower means, said first conduit means extending generally horizontally from said air blower means,
  - ii. said first conduit means including a second conduit portion extending from and communicating with said first conduit portion, said second conduit portion opening generally in an upright direction,
  - iii. a second conduit means including a generally upright third conduit portion secured by its lower end to the open upper end of said second conduit portion, said

third conduit portion being disposed coaxially with and communicating with and being rotatable with respect to said second conduit portion,

iiii. said second conduit means including a fourth conduit portion connected to and communicating with said third conduit portion, said fourth conduit portion opening sidewise of said third conduit portion and forming with said third conduit portion an elbow,

iiiii. a nozzle supporting conduit section rotatably connected to and communicating with and carried by the open end of said fourth conduit portion, said nozzle supporting conduit section having an open outer end opening sidewise of said fourth conduit section, said nozzle being secured to and extending radially across the open outer end of said nozzle supporting conduit section for essentially closing the outer end of said conduit section so that substantially all of the air directed through said nozzle supporting conduit section passes through the central opening of said nozzle.

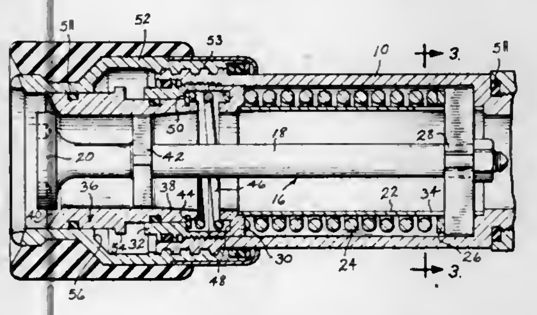
3,893,623
FLUID JET DEFLECTION BY MODULATION AND COANDA SELECTION
Richard A. Toupin, Briarcliff Manor, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 21, 1973, Ser. No. 427,193
Int. Cl. B05b *1/08*
U.S. Cl. 239—102 **7 Claims**



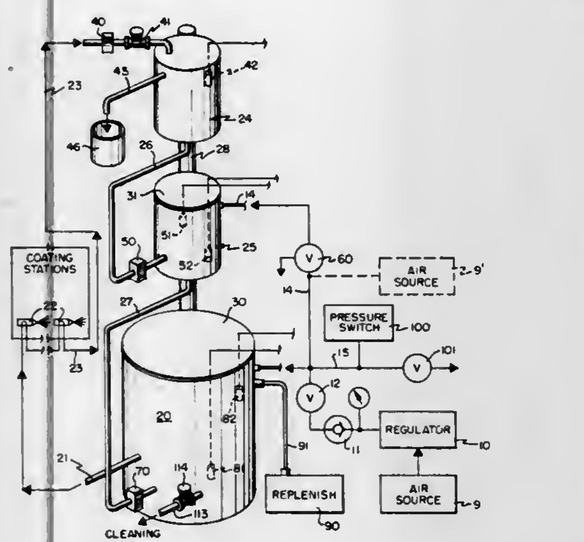
1. A fluid jet switching system including jet means for producing a high speed stream of fluid, means for modulating the diameter of said stream of fluid to produce discrete droplets, a droplet deflecting surface adjacent to said stream of fluid located downstream from said jet means at a critical location adapted to contact with an impact parameter sufficient to cause capture of a drop by said convex surface and thereby deflect droplets separated from said stream within a predetermined range of distances from said jet means in response to a predetermined range of modulation.

3,893,624
AUTOMATIC VOLUME ADJUSTING FIRE HOSE NOZZLE WITH FLUSHING MECHANISM
William Stanley Thompson, Elkhart, Ind., assignor to Elkhart Brass Manufacturing Co., Inc., Elkhart, Ind.
Filed Sept. 23, 1974, Ser. No. 508,064
Int. Cl. B05b *1/32, 15/02*
U.S. Cl. 239—107 **4 Claims**

1. In a fire hose nozzle including a tubular body part having an inlet end and an outlet end, a pressure responsive valve assembly shiftable in said body part and including a valve head and a valve stem, said valve head being shiftable toward and away from said body part outlet in response to variations in pressure of liquid supplied to said nozzle, the improvement comprising a barrel member having fore and aft ends surrounding said valve stem, the aft end of said barrel member fitting slidably within the outlet end of said body part, said barrel member being shiftable longitudinally relative to said body part between a forward position in which the barrel member fore end spacedly encircles said valve head to define a liquid flow path from the nozzle and a rearward position in which the barrel member fore end is shifted rearwardly of the valve head to increase the spacing between the barrel member and valve head, a sleeve member encircling the fore end of said body part and surrounding said barrel member, means rotatably connecting said sleeve member to said body part wherein rotation of the sleeve member upon the body part causes the sleeve member to shift longitudinally of the body part between extended and retracted positions, said sleeve member including abutment part means for contacting said barrel member to shift the barrel member from its forward position into its rearward position as said sleeve member is shifted from its extended position into its retracted position.



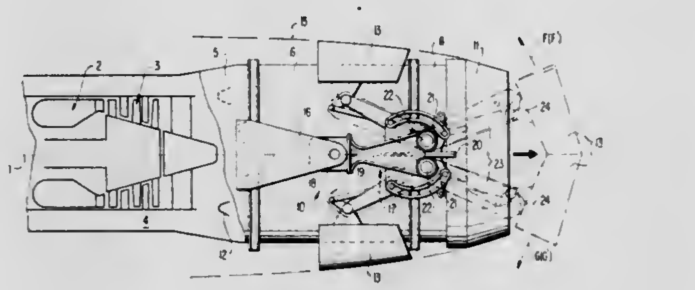
3,893,625
PUMPLESS RECIRCULATING SYSTEM FOR FLOWABLE MATERIALS
Richard F. Wiggins, Fairfield, Conn., assignor to The Gyromat Corporation, Stratford, Conn.
Filed July 1, 1974, Ser. No. 484,658
Int. Cl. B05b *9/00, 7/24;* **F17d** *1/00*
U.S. Cl. 239—127 **10 Claims**



1. A closed loop system for continuously circulating nonpumpable coating medium to a spray device, including
- a. inlet line means for supplying said spray device;
- b. return line means for recirculating non-sprayed medium supplied to said spray device;
- c. a non-pressurized collection tank in communication with and receiving the coating material exiting from said return line means;
- d. a lock tank disposed beneath said collection tank and being normally maintained at atmospheric pressure while being selectively pressurizable at predetermined times to predetermined higher pressure;
- e. lock tank supply line means communicating between said collection tank and said lock tank and having a selectively actuatable lock tank supply valve included therein;

- f. a pressurized source tank for supplying a coating material under pressure to said inlet line;
- g. source tank supply line means extending from the bottom of said lock tank to said source tank and having a source tank supply valve included therein;
- h. first air line means for pressurizing said source tank and the coating medium therein communicating between said source tank and a supply of gas under pressure;
- i. second air line means communicating between said lock tank and said source of gas under pressure;
- j. air line valve means selectively actuatable either to interconnect said first and second air line means or to isolate said first air line means from said second air line means while venting said lock tank to atmospheric pressure;
- k. control means for said supply valves and said selectively actuatable air line valve means to normally maintain said source supply valve closed, said lock tank supply valve opened, and said lock tank vented to the atmosphere through said selectively actuatable air line valve;
- l. whereby said non-pumpable coating material normally flows from said collection tank to said lock tank by gravity while said coating material is forced through the remainder of said recirculating closed loop under air pressure;
- m. whereby, from time to time, said lock tank supply valve may be closed and said source tank valve may be opened and said air line valve means may be actuated selectively to interconnect said first and second air line means to equalize the pressure in said lock tank and said source tank to accommodate the flow of non-pumpable coating material from said lock tank to said source tank under gravity.

3,893,626
THRUST REVERSING APPARATUS FOR TURBOJET ENGINES
Heinrich Leibach, Grafrath-Wildenroth, and Hans Zinner, Dachau, both of Germany, assignors to Motoren-und Turbinen-Union Munchen GmbH, Germany
Filed Oct. 25, 1973, Ser. No. 409,430
Claims priority, application Germany, Oct. 25, 1972, 2252208
Int. Cl. B64c *15/06*
U.S. Cl. 239—265.19 **26 Claims**



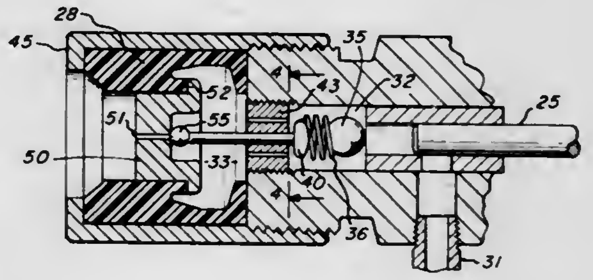
1. A jet exhaust control arrangement for controlling exhausting of gases supplied by at least one engine; said arrangement comprising:

jet pipe means for discharging gases from said at least one engine as thrust gases,

thrust reversing deflecting flap means which are movable between inoperative positions out of the path of said thrust gases and operative positions in deflecting engagement with said thrust gases for accommodating reversal of the thrust forces resulting from said thrust gases,

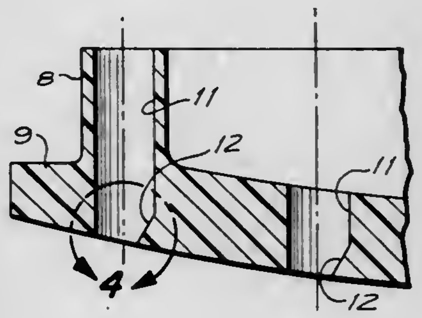
and baffle means disposed on said deflecting flap means for inducing asymmetric deflection of said thrust gases.

3,893,627
ELECTRIC AIRLESS CUP GUN APPARATUS
Bernard W. Siczek, Chicago, and Gene H. Hall, Westchester, both of Ill., assignors to Graco Inc., Minneapolis, Minn.
Filed Aug. 29, 1974, Ser. No. 501,851
Int. Cl. B05b *9/02*
U.S. Cl. 239—332 **17 Claims**



1. Apparatus for accumulating incremental fluid pulses and for developing an elevated fluid pressure therein for subsequent release to the exterior, comprising
- a. means for receiving said fluid pulses, including a check valve for admitting said fluid and preventing reverse flow therefrom;
- b. an accumulator chamber connected to said means for receiving, said accumulator chamber having a pressure-deformable member therein;
- c. a housing having a fluid release passage therethrough, said housing seated against said deformable member, with said fluid release passage connecting the interior of said accumulator chamber with the exterior;
- d. valve means for opening said fluid release passage, sealably seated in said fluid release passage and operatively connected to move from its sealably seated position under conditions of elevated pressure in said accumulator chamber;

3,893,628
SPRAY HEAD
James A. McCollum, Hillsdale, Mich., assignor to Alsons Corporation, Somerset, Mich.
Filed Apr. 8, 1974, Ser. No. 458,588
Int. Cl. B05b *1/26, 1/18*
U.S. Cl. 239—521 **6 Claims**



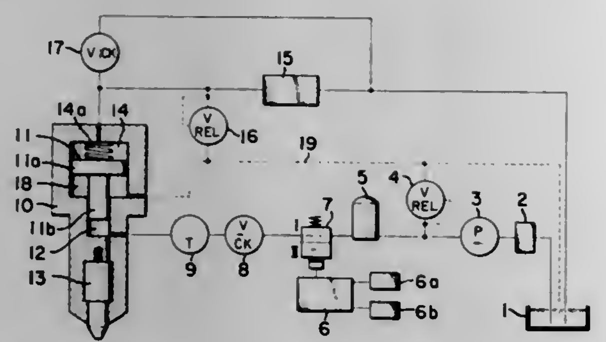
1. A spray head, adapted to be placed over means forming a water distribution cavity for discharge of water therefrom, the spray head comprising:
- a. a disk member;
- b. a plurality of discharge bores formed in the disk member;
- c. a set of deflector means within selected bores adjacent the exit ends thereof, each deflector means forming with the remaining portion of the corresponding bore an asymmetrical discharge orifice; said deflecting means directing angularly a portion of the water passing through the bore to cause impingement thereof against the remaining water passing in the bore as it issues from the discharge orifice to deflect the resulting water jet in angular relation to the axis of the corresponding bore; the set of discharge means being relatively oriented and so proportioned as to

cause the water jets to produce a preselected spray pattern.

3,893,629
FUEL INJECTION DEVICE FOR DIESEL ENGINES

Kazuo Okamoto, Saitama, Japan, assignor to Diesel Kiki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 22, 1974, Ser. No. 499,591
Claims priority, application Japan, Aug. 29, 1973, 48-96954
Int. Cl.^{2} B05B *1/30*
U.S. Cl. 239—585 **1 Claim**

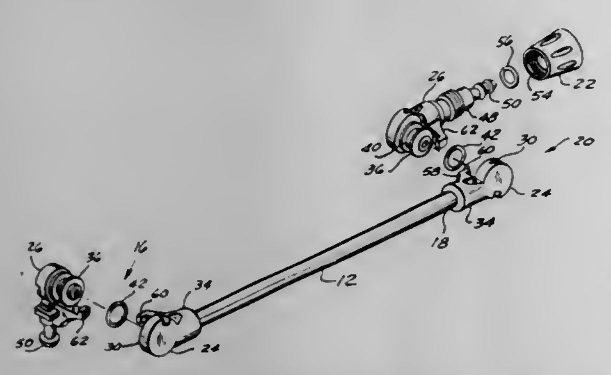


1. A fuel injection device for Diesel engines comprising a body including a large diameter portion and a small diameter portion of a servopiston to define a piston chamber, a counter piston chamber and a plunger chamber, a pressure generating device having a relief valve at the outlet side thereof and connected to said piston chamber, said pressure generating device including a plunger with inclined notches determining period and time of pressure generating operable synchronously to rotation of an engine, a fuel tank connected to said counter piston chamber, an injection nozzle in the body connected to said plunger chamber, a check valve preventing fuel from flowing out of said plunger chamber, and electromagnetic valve for closing and opening a passage of fuel under pressure and a fuel supply pump connected at the outlet side thereof through said electromagnetic valve and said check valve to said plunger chamber, whereby said pressure generating device and said electromagnetic respectively control piston strokes in fuel injection direction and fuel intake direction.

3,893,630
SWIVEL OUTLET FOR SPRAYER OR THE LIKE

Carl E. Bochmann, Brecksville, and Richard W. Germuska, Middleburg Heights, both of Ohio, assignors to H. D. Hudson Manufacturing Company, Chicago, Ill.

Filed Mar. 29, 1974, Ser. No. 456,010
Int. Cl. B05b *15/08*
U.S. Cl. 239—587 **4 Claims**

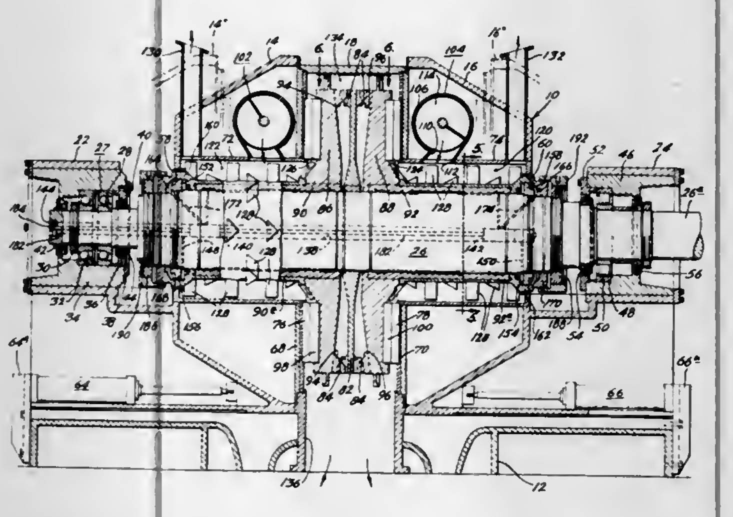


1. A swivel outlet for a sprayer discharge tube or the like comprising: a first housing member, a recessed cylindrical portion defined by surfaces of said first housing, a radial passageway extending through said surfaces to said recess, a second housing member, a cylindrical portion of said second housing sealingly mated for rotation within said recess, first passage means extending axially through said cylindrical portion to communicate with said recess, second passage means communicating with said first passage means and extending transversely thereto; and, means for removably coupling said first and second housing members, said coupling means comprising a key affixed to one of said housings and a keyway in the other of said housings, said key including portions adapted to overlie portions of said other housing.

3,893,631
TWIN REFINER WITH DOUBLE FLOATING DISCS

Chester Donald Fisher, and Beatrice Pearl Fuller, both of Muncy, Pa., assignors to Sprout, Waldron & Company, Inc., Muncy, Pa.

Filed July 17, 1974, Ser. No. 489,416
Int. Cl.^{2} B02C *7/14*
U.S. Cl. 241—37 **13 Claims**



1. A disc type refiner comprising a base, a casing supported by said base, a drive shaft extending through said casing, means on said casing for rotatably supporting said drive shaft, a pair of stationary heads mounted within said casing in spaced opposed relation, a refining plate assembly radially disposed on each said stationary head, a pair of rotating heads mounted on said drive shaft, a refining plate assembly on each said rotating head in parallel juxtaposed relation to the refining plate assembly of the adjacent stationary head, means connecting said drive shaft and said rotating heads to provide rotation of said heads with said shaft while permitting axial movement thereof along said shaft, conveying means for directing stock to be refined into said casing between said juxtaposed refining plate assemblies, and means for adjusting the axial position of said rotating heads on said drive shaft, said latter means comprising cylinder-piston means on said shaft connected with each said rotating head, and a parallel hydraulic circuit operatively connecting said piston-cylinder means to equalize the positioning force on each said rotating head thereby permitting said rotating heads to float axially to balance the hydraulic cylinder-piston force against the axial force developed between the refining plate assemblies.

3,893,632
HAMMER MILL

Robert D. Helms, 73-845 Flagstone Ln., Palm Desert, Calif. 92260

Filed July 16, 1973, Ser. No. 379,581
Int. Cl. B02c *13/284*
U.S. Cl. 241—73 **4 Claims**

1. A hammer mill comprising:

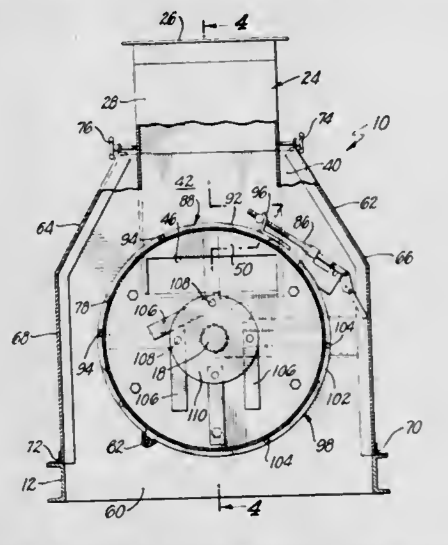
a housing having an inlet for coarse material to be comminuted, an outlet for fine comminuted material and a comminuting chamber between said inlet and outlet bounded by spaced end walls and intervening side walls of said chamber,

coaxial bearings on said end walls,

a shaft extending across said chamber and rotatably supported at opposite ends of said chamber in said bearings, a hammer assembly mounted on said shaft within said chamber for rotation with said shaft,

circular shoulders on the inner sides of said end walls in coaxial surrounding relation to said shaft,

a cylindrical comminuting screen assembly within said comminuting chamber coaxially enclosing said hammer assembly and having open ends surrounding and disposed in seating contact with said shoulders, said screen assembly comprising two semi-cylindrical screen sections having adjacent axially extending edges, hinge means joining said screen sections along two adjacent edges thereof, and means releasably joining said screen sections along their other adjacent edges, whereby said screen sections may be hingably separated for removal and replacement about said hammer assembly,



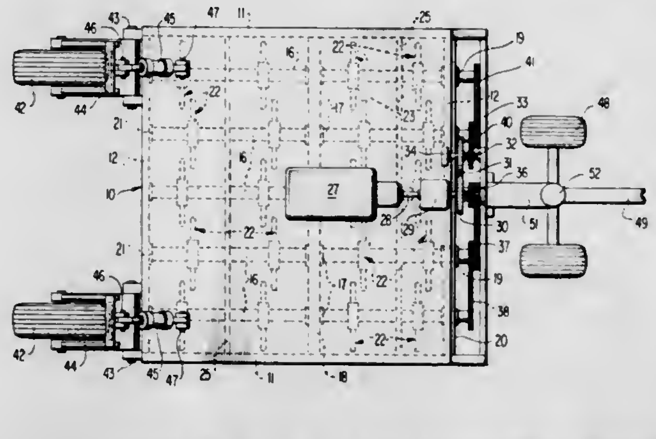
said housing having passage means communicating said inlet to the interior of said screen assembly and a comminuting chamber space about said screen assembly communicating with said outlet, and

at least one side wall including a wall element which may be removed to provide access to said comminuting chamber for removal and replacement of said screen assembly.

3,893,633
TREE THINNING AND REDUCING MACHINE

Ernest P. Cox, P.O. Box 154, Lolo, Mont. 59847

Filed Aug. 15, 1974, Ser. No. 497,668
Int. Cl.^{2} B02C *13/09, 21/02*
U.S. Cl. 241—101.7 **10 Claims**

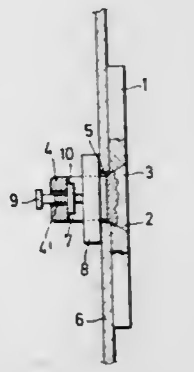


1. A tree thinning and wood reduction machine comprising a wheeled body portion adapted to travel through standing timber at an elevation close to ground level, plural spaced parallel longitudinal rotor shafts on said body portion and extending in the front-to-back direction thereon, plural toothed rotor heads on each rotor shaft turning therewith with the teeth of the rotor heads traveling close to the ground during turning and with the teeth turning in planes which are at right angles to the axes of the rotor shafts, said rotor heads on each shaft spaced apart axially thereon, and power means on the body portion coupled with the rotor shafts for turning the shafts in unison and in rotational directions causing said teeth to engage timber downed by the machine and to force the timber upwardly, and plural transversely extending front-to-back spaced breaker bars on said body portion substantially at right angles to said rotor shafts and crossing the latter and disposed between pairs of said rotor heads on said shafts and coacting with said teeth to reduce downed timber into roughly uniform relatively short lengths.

3,893,634
INNER LINING CONSTRUCTION FOR IMPACT CRUSHERS

Horst Schmidt, Altenberger Dom 226, 5072 Schildgen, Germany

Filed Sept. 17, 1973, Ser. No. 397,886
Claims priority, application Germany, Sept. 15, 1972, 2246059
Int. Cl.^{2} B02C *17/22*
U.S. Cl. 241—182 **5 Claims**



1. Armor structure for the housing of impact crushers, comprising a housing wall having inner and outer surfaces, means defining an opening through said housing wall, a plurality of armor plates, each of said armor plates comprising at least one recess, a pin including a wear-proof head extending through the wall opening with said head disposed in said recess, said pin further including a shaft extending through the wall opening, a transverse opening through said shaft, and means on the outer surface of said housing wall clampingly urging said pin outwardly of the housing, including a cross bar extending through the transverse opening through said shaft and spanning the housing wall opening, and a screw threadingly engaging said shaft for pressing said cross bar tightly against the outer surface of said housing wall.

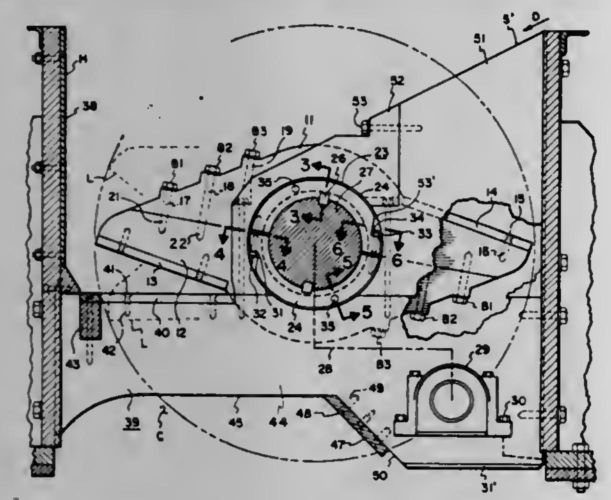
3,893,635
SHREDDER STRUCTURE

John C. Brewer, Salt Lake City, Utah, assignor to Garbalizer Corporation of America, Salt Lake City, Utah

Continuation-in-part of Ser. No. 335,008, Feb. 23, 1973, Pat. No. 3,840,187. This application May 1, 1974, Ser. No. 465,898
Int. Cl.^{2} B02C *18/06*
U.S. Cl. 241—243 **7 Claims**

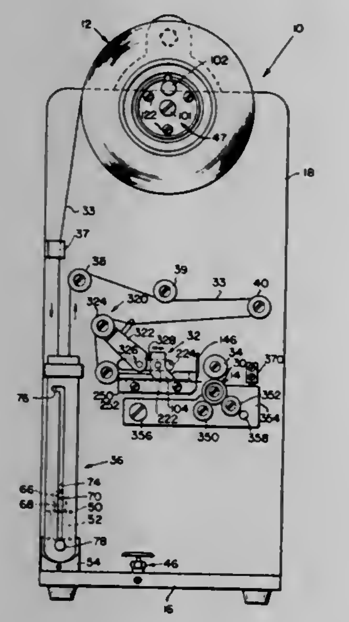
1. A shredder construction including, in combination, a revolving shaft, a series of interspaced cutter blades having respective shearing portions and keyed to said shaft for revolvement therewith about the shaft's axis of revolvement, a series of mutually spaced, fixedly disposed cutter bars having opposite ends, said cutter bars having upper and lower edges and being cooperatively disposed in alignment between and positioned at least in part beneath the said axis of revolvement of said shaft, said cutter blades in their revolvement cyclically extending beneath said cutter bar lower edges, whereby debris as might tend to cling to said cutter blades will tend to be thrown off through centrifugal force, to deter re-entry of such debris upwardly between said cutter bars, said upper and lower edges of said cutter bars having respective shearing

portions respectively disposed cooperatively with said cutter blade shearing portions and positioned for mutual angular disposition with respect to said cutter blade shearing portions, in acute-angle fashion when said cutter blades are coacting with said shearing portions of said cutter bars at times of the proximate shear-crossing of said cutter blade shearing portions with both of said cutter bar shearing portions of each of said cutter bars, to effect an angular, scissor-type shear, whereby to shear any remaining debris as might cling to said cutter blades as the same approaches said re-entry between said cutter bars.



3,893,636
TAPE WRAPPING METHOD, APPARATUS, AND ARTICLE

Walter R. Wise, Pittsford, and Nicholas L. A. Martucci, Rochester, both of N.Y., assignors to Garlock Inc., Palmyra, N.Y.
Continuation-in-part of Ser. No. 224,520, Feb. 8, 1972, abandoned. This application Jan. 17, 1973, Ser. No. 322,289The portion of the term of this patent subsequent to Apr. 22, 1992, has been disclaimed.
Int. Cl. B65h *75/02*
U.S. Cl. 242—55 **43 Claims**



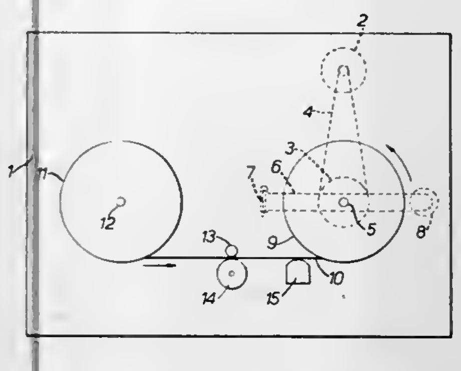
24. Apparatus for feeding tape from a tape roll to a workpiece to be wrapped with a length of the tape, said apparatus comprising:

a. a primary tape feed means for feeding tape to a workpiece; and

b. an air tape feed turbine for initiating rotation of said tape roll for feeding tape from said roll, said air impulse turbine including stationary air jet manifold, a turbine wheel rotatable with said tape roll and including a plurality of air fan blades, and also including means for generating an impulse force and a steady state force, said impulse force being sufficient to overcome tape feed resistance of said roll and initiate rotation thereof and said steady state force being less than said impulse force and also being less than the force necessary to produce sustained rotation of said tape roll whereby tape override is prevented.

3,893,637
RECORDING AND/OR PLAY BACK APPARATUS

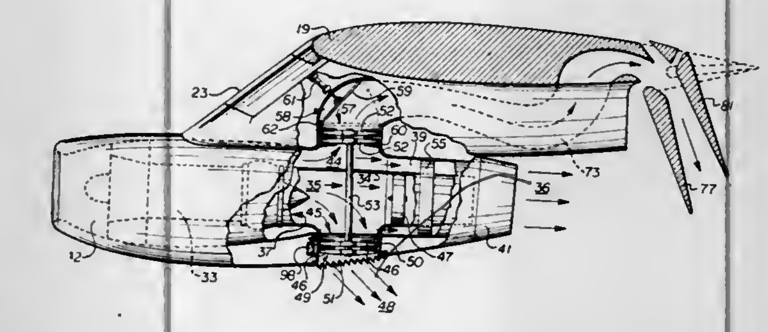
Vernon Seale-Finch, Woodcote, England, assignor to Plessey Handel und Investments A.G., Zug, Switzerland
Filed Dec. 3, 1973, Ser. No. 421,186
Claims priority, application United Kingdom, Dec. 2, 1972, 55751/72
Int. Cl. G03b *1/04;* **G11b** *15/32*
U.S. Cl. 242—206 **1 Claim**



1. A method of magnetic tape recording and/or playback utilising apparatus comprising a feed spindle, a tape feed spool received upon the feed spindle, a tape take-up spindle, a tape take-up spool received upon the tape take-up spindle, drive means, a clutch through which torque is transmissable from the drive means to the tape take-up spindle, a capstan and pinch roller assembly, head means forming part of a magnetic head assembly and operable to provide the function of record/playback, the head means being positioned between the capstan and pinch roller assembly and the take-up spindle, the method comprising drawing tape from the said feed spool by means of the capstan and pinch roller assembly and further drawing by means of the tape take-up spool tape from the said capstan and pinch roller assembly across the said head means to effect the record and playback function.

3,893,638
DUAL CYCLE FAN JET ENGINE FOR STOL AIRCRAFT WITH AUGMENTOR WINGS

George S. Kelley, Bellevuè, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Feb. 14, 1974, Ser. No. 442,330
Int. Cl.² B64C *15/06*
U.S. Cl. 244—12 D **11 Claims**



5. In a STOL aircraft including ducted augmentor wings adapted to direct air energized by a jet engine to augmentor flaps, said augmentor flaps adapted to direct said air generally downwardly and, thereby, augment the lift provided by the aerodynamic shape of the wings of said STOL aircraft, the improvement comprising a dual cycle fan jet engine comprising:

a fan jet engine adapted to generate primary air and fan air;

air driven means for extracting energy from air flow and generating power in accordance therewith, said air driven means having an inlet in communication with the primary air of said fan jet engine;

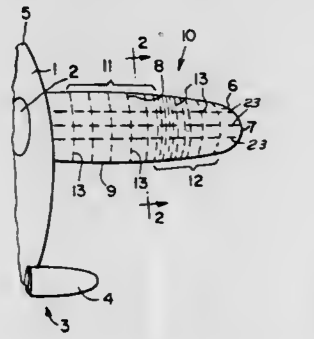
air compression means for compressing air, said air compression means connected to said air driven means so as to be powered by the power generated by said air driven means and said air compression means having an outlet in communication with the duct of one of said ducted augmentor wings of said STOL aircraft;

duct means, mounted between the rear of said fan jet engine, said air driven means and said air compression means, for ducting primary air from said fan jet engine between an axial exhaust and said air driven means, and for ducting fan air from said fan jet engine between an axial exhaust and said air compression means; and,

control means for selectively controlling the flow of primary air between said axial exhaust and said air driven means, and for selectively controlling the flow of fan air between said axial exhaust and said air compression means.

3,893,639
AIRPLANE WING CAMBER CONTROL

Thomas L. Croswell, Jr., Vienna, Va., assignor to Thomas L. Croswell, Jr., Baden, Pa.
Division of Ser. No. 390,399, Aug. 22, 1973, which is a continuation-in-part of Ser. No. 201,417, Nov. 23, 1971, abandoned. This application Sept. 25, 1974, Ser. No. 509,212
Int. Cl. B64c *3/44*
U.S. Cl. 244—44 **5 Claims**

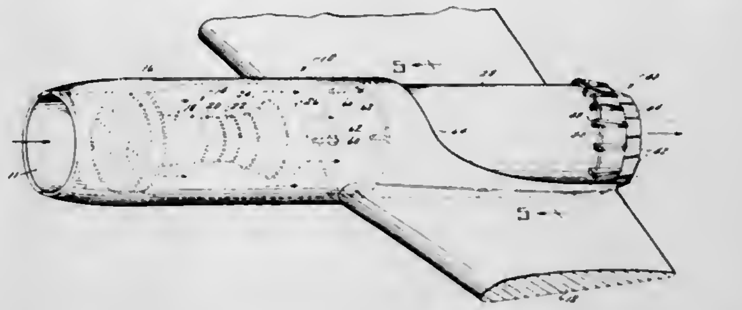


1. A fluid flow affecting generally planar member having opposed fluid flow surfaces on opposite sides of a geometric central plane, defining generally a leading edge and a trailing edge with respect to the relative flow direction; structural means maintaining said member in a particular geometric shape with a relatively fixed curvature for said central geometric plane; said structural means at least in part being constructed of a magnetostrictive material having the property that in the presence of a changing magnetic field the magnetostrictive material will change in shape to correspondingly change the shape of said structural means and thereby correspondingly warp the member and change the curvature of its geometric central plane; and electrical drive means for selectively impressing a magnetic field upon the magnetostrictive material.

4. A member for controlling the curvature of a fluid flow control member having a leading edge generally transverse to the fluid flow, a trailing edge generally transverse to the fluid flow, opposed surfaces over which the fluid flows, which surfaces are on opposite sides of a geometric central plane having a predetermined normal curvature, and structural means on opposite sides of said plane to maintain said control member in the predetermined curvature of said geometric central plane, comprising the steps of: orienting magnetostrictive material as an integral part of the structural means so that with a magnetic field applied to the magnetostrictive material, it will change in length to correspondingly change the effective length of the structural means and warp the control member as defined by a change in curvature of the geometric central plane; and selectively applying a magnetic field to the magnetostrictive material in an amount and of a characteristic to provide a desired curvature of the control member.

3,893,640
SOUND SUPPRESSING NACELLE ARRANGEMENT

Thomas Neil Hull, Jr., Marblehead, and Denis Pierpont Edkins, Lynnfield, both of Mass., assignors to General Electric Company, Lynn, Mass.
Filed Nov. 27, 1973, Ser. No. 419,264
Int. Cl. B64d *27/00*
U.S. Cl. 244—54 **7 Claims**



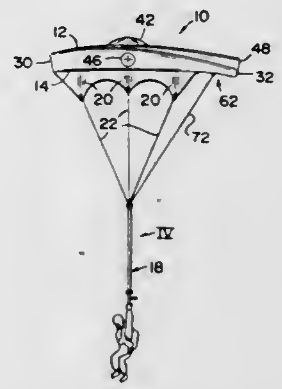
1. A sound suppressing nacelle arrangement housing a gas turbine engine for propulsion of a winged aircraft comprises: a nacelle mounted over the wing of the aircraft with an opening at the upstream end thereof for receipt of an inlet airflow to the gas turbine engine, said wing including a trough-like surface;

an exhaust duct translatably disposed in serial flow relation downstream of the nacelle for telescoping engagement within the nacelle,

and means for translating the exhaust duct forwardly over the wing to expose rearwardly of the exhaust duct a portion of the nacelle overlying said trough-like surface of the wing, said trough-like surface operating as a sound reflecting shield when said exhaust duct is in its forward position.

3,893,641
FLOW FORM DEVICE

Stephen John Sutton, 16 Edgevalley Dr., Islington, Ontario, Canada
Filed Apr. 18, 1974, Ser. No. 462,027
Int. Cl. B64d *17/18*
U.S. Cl. 244—145 **36 Claims**



1. A flow form device of the type used primarily to maintain both vertical and horizontal stability and maneuverability in a predetermined fluid environment, said device comprising: a first skin means of predetermined configuration; a second skin means of predetermined configuration disposed in substantially spaced apart relation from said first skin means; a plurality of third skin means disposed in interconnecting relation between said first and second skin means; at least one spor means defined by said first, second and third skin means, one end of said spor means at least partially defining a leading edge of said device, at least a portion of said spor means being

closed at its opposite end to at least partially define the trailing edge of said device; a plurality of first Jordan clusters formed in said first skin means; a plurality of second Jordan clusters formed in said second skin means; a plurality of holonomic ports formed in said third skin means; a jet port means defined by at least a portion of said one spor means being open at its aft end; a jiro port means formed in said second skin means; and control means operatively connected with said second skin means, whereby the passage of said device through a predetermined fluid environment may be controlled with respect to both horizontal and vertical planes.

3,893,642
POLYETHYLENE TEREPHTHALATE PLASTIC COATED WIRE

Robert Van Vlaenderen, Zwevegem, Belgium, assignor to N. V. Bekaert S. A., Zwevegem, Belgium

Continuation-in-part of Ser. No. 108,355, Jan. 21, 1971, abandoned. This application Feb. 28, 1973, Ser. No. 336,469

Int. Cl. B21b *25/00, 27/00, 29/00*

U.S. Cl. 245—2 **2 Claims**

1. As an article of manufacturing, a mechanically processed wire product comprising barbed wire, wire fence, wire mesh, wire netting or the like, manufactured from a steel wire coated with a coating of polyethylene terephthalate wherein said polyethylene terephthalate coating is at least 95% amorphous and has a thickness ranging from about 0.1 to 0.3 mm. and wherein said steel wire has a diameter greater than about 1 mm.

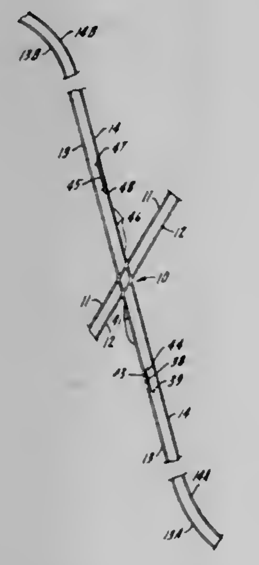
3,893,643
SHOCK-PROTECTED RAILWAY CROSSING

Earl E. Frank, Tallman, N.Y., assignor to Abex Corporation, New York, N.Y.

Filed Jan. 30, 1974, Ser. No. 437,802

Int. Cl. E01b *7/18*

U.S. Cl. 246—465 **2 Claims**



1. A shock-protected railway crossing comprising:

first and second pairs of parallel traffic rails crossing each other at a crossing intersection;

crossing guards positioned adjacent the crossing segments of the traffic rails respectively and each crossing guard being adapted to guide a railway wheel along its associated traffic rail through the intersection;

and an elongated guide rail located upstream of said crossing and positioned parallel to and on the gauge side of one of the traffic rails, said guide rail being spaced from the outer end of the related crossing and crossing guard by one to three standard lengths of traffic rail for engaging and straightening any skewed wheel before that wheel reaches the related crossing guard;

the outer end of the guide rail having an elongated flare to minimize the shock of engagement of a skewed wheel with said guide rail; and

said one traffic rail between the guide rail and the crossing and crossing guard being firmly boxed by said anchor means on both sides to the base on which said one traffic rail is supported so that the force applied to the guide rail and said one traffic rail in straightening a skewed wheel is transferred to the base and does not distort the angle of intersection of the paired traffic rails.

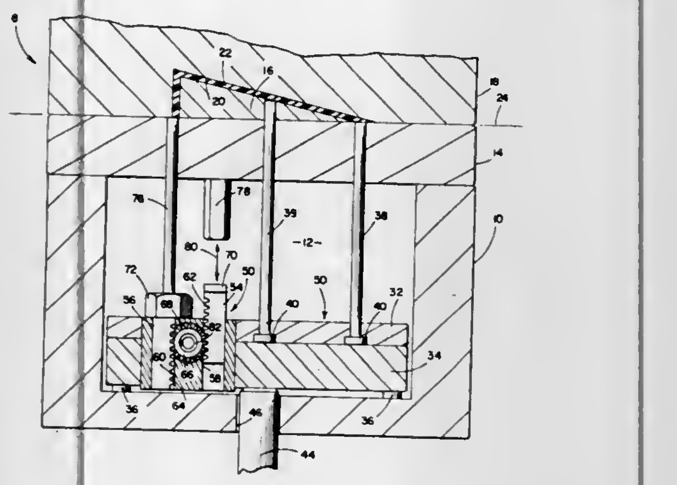
3,893,644
EJECTOR ACCELERATOR FOR MOLDING APPARATUS

Herman J. Drazick, 3558 Darcy, Birmingham, Mich. 48010

Filed Aug. 6, 1973, Ser. No. 386,188

Int. Cl. B28b *7/10*

U.S. Cl. 249—68 **19 Claims**



1. Injection molding apparatus comprising:

a movable mold plate including a core upon which molded articles are formed and deposited, the movable mold plate being movable between a molding position and a retracted position, the movable mold plate further including an ejector box and ejector means disposed within the ejector box, the ejector means being movable relative to the mold plate to impinge upon the core during motion of the mold plate from the molding position to the retracted position, for ejecting molded articles disposed on the core, and an actuating member on said movable mold plate; and

ejector accelerator means for varying the relative velocity of the ejector means during at least a portion of the motion of the movable mold plate to the retracted position, the ejector accelerator means including a housing with means forming first and second elongated slots in said housing, a first non-rotatable and longitudinally movable element in said first slot for engaging the actuating member on said movable mold plate during retractive motion thereof thereby urging the first movable element away from the core, a second non-rotatable and longitudinally movable element in said second slot movable toward the core when the first movable element moves away from said core and engaging the ejector means, a coupling element coupling the first movable element to the second movable element so that the latter element moves in response to motion of the former element, and spring return means operatively connected to said coupling means for biasing said first movable element toward the core and the second movable element away from the core when the first movable element is no longer in engagement with the actuating member, said first and second movable elements moving toward and away from the core through movement of said mold plate and engagement of said first movable element with said actuating member during said retractive motion and through the action of said spring return means without any external drive means so that the first and second movable elements move primarily in response to movement of said mold plate and through action of said spring return means.

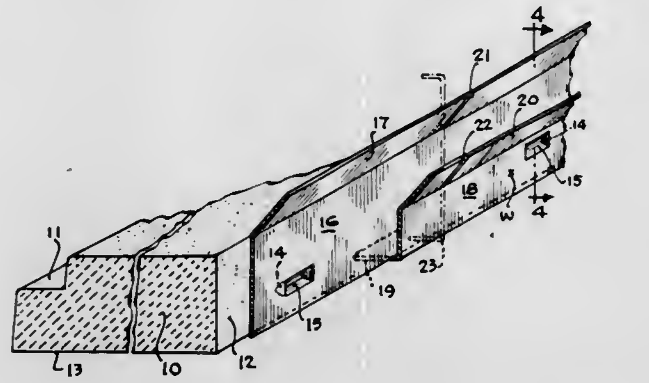
3,893,645
REFRACTORY BOTTOM RING WITH TWO FLEXIBLE WIPER ELEMENTS

Ervin A. Marcec, 4800 Chicago Beach Dr., Chicago, Ill. 60615

Division of Ser. No. 297,719, Oct. 16, 1972, Pat. No. 3,758,942, which is a continuation-in-part of Ser. No. 64,162, Aug. 17, 1970, abandoned. This application June 25, 1973, Ser. No. 372,952

Int. Cl. B22d *7/10*

U.S. Cl. 249—202 **2 Claims**



1. A preassembled bottom ring for a conventional nondisposable steel hot top comprising a refractory bottom member or ring having a central opening defined at least in part by a bottom surface, and a plurality of outer and inner surfaces substantially normal to said bottom surface, the said outer surfaces generally conforming to the outer configuration of the lower end of the hot top from which said ring is adapted to be suspended, and means disposed about said outer surfaces of said ring including two complete sets of flexible wiper elements spaced one above the other extending outwardly and upwardly about the entire periphery of the refractory bottom member, adapted and arranged to protect the hot top casing from damage and prevent leakage of hot metal from the mold, said means comprising two sheet metal pieces per outer surface preformed to matingly engage in partially overlapping juxtaposition the outer surface and bottom surface of said refractory bottom member, each said two pieces per side being joined together and said joined pieces being joined one to another at each corner of the ring.

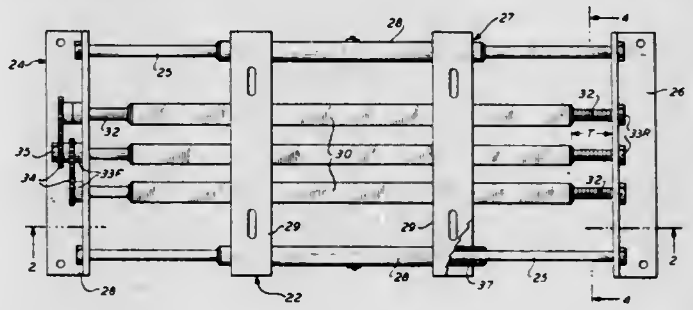
3,893,646
OSCILLATION ABSORBING MOTOR BASE

Jerome J. Sloyan, c/o Automatic Motor Base Co., Windsor, N.J. 08561

Filed Mar. 27, 1974, Ser. No. 455,366

Int. Cl.² F16M *3/00*

U.S. Cl. 248—23 **5 Claims**



1. A motor base for absorbing equipment oscillations, comprising a basal body portion capable of being secured in a fixed position and having parallel rails extending from front to rear thereof, a carriage slidably mounted on said rails adapted to be moved forwardly and rearwardly a limited distance commensurate with the normal belt-tightening function of the spring and with the imposed oscillations, and a spring positioned and retained continuously under pressure providing a forwardly acting work stroke urging said carriage in a forward direction throughout said limited distance, said spring having a compressability range in excess of its said work stroke and in excess of said limited distance of movement of the carriage, thereby restricting the used spring pressure to initial low-pressure range of the spring compression without involving use of maximum high pressure range of compression of said spring.

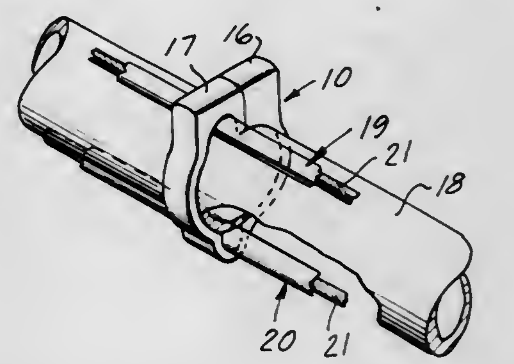
3,893,647
CYCLE FRAME CLAMP

James D. Kennedy, Streamwood, Ill., assignor to Beatrice Foods Company, Elgin, Ill.

Filed June 6, 1973, Ser. No. 367,416

Int. Cl.² F16L *3/00*

U.S. Cl. 248—68 R **1 Claim**



1. A one-piece, self-locking clamp of resilient, flexible plastic, said clamp being adapted to extend circumferentially about a cycle frame member and being further adapted to hold a pair of cable-like members which longitudinally extend along a bicycle frame member in circumferentially spaced relationship without exerting any substantial radial compressive force upon either one of such cable-like members, said clamp comprising: a centrally disposed, elongated mid-section having a front face and a back face and whose facial width is generally substantially greater than the thickness thereof, said mid-section being interrupted at a generally central location by having integrally, permanently formed therein a cross-sectionally U-shaped projection extending transversely across said mid-section outwardly from said front face and inwardly from said back face whose inside width and inside height are adapted to accommodate therewithin a single, prechosen one of said cable-like members, a first thickened portion integrally formed at one end of said mid-section having a socket defined therein, a second thickened portion integrally formed at the opposite end of said mid-section having defined permanently therein a cross-sectionally generally U-shaped channel which extends transversely across said mid-section outwardly from said front face and inwardly from said back face and whose inside width and inside height are adapted to accommodate therewithin a single prechosen one of said cable-like members, said channel being in longitudinally spaced, parallel relationship to said U-shaped projection, an integrally formed prong projecting from said second thickened portion and adapted to make mating engagement with said socket, said prong having serrated outer side wall portions, which serrated portions are adapted to make yielding, biased engagement with inside wall portions of said socket, thereby adapting said prong to interlock with said socket when so engaged therewith, wherein the axis of said socket is generally normally inclined relative to said mid-section and said socket generally upstands relative to said back face in the region of said first thickened portion when said clamp is assembled, wherein the axis of said prong is generally normally inclined relative to said mid-section and said prong generally upstands relative to said back face in the region of said second thickened portion when said clamp is assembled, and wherein behind said socket and behind said prong, and integrally formed one in each of said

first and second thickened portions, respectively, shoulders are provided each of which is adapted as a base against which pressure may be manually applied to engage said socket with said prong.

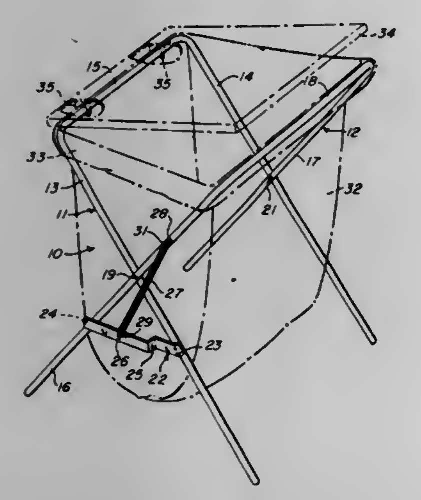
3,893,648
BAG HOLDER

Robert B. Gilbert, New Lebanon, Ohio, assignor to TDC Inc., Dayton, Ohio

Filed Nov. 15, 1973, Ser. No. 415,968

Int. Cl. B65b *67/12*

U.S. Cl. 248—97 **16 Claims**



1. A bag holding device including a frame to mount a bag-like element in an opened condition and in a selected attitude of suspension, said frame including leg portions having means defining a point of their interconnection for pivoting of one relative another and adjustment thereof between open and collapsed positions, means for limiting said leg portions in their movement toward an open position, and an over-center spring device attached at one end to one of said leg portions and at the other end to said limiting means and shifting from side to side of said point of interconnection in response to opening and collapsing movements of said leg portions to apply alternatively a yielding pressure to hold said leg portions in an open position and a yielding pressure to hold said leg portions in a collapsed position.

3,893,649
BAG HOLDER

Robert J. Cornell, Watchung, and Louis Vitale, Mountainside, both of N.J., assignors to Dynamic Form Systems, Inc., Scotch Plains, N.J.

Filed Aug. 9, 1971, Ser. No. 170,099

Int. Cl. B65b *67/12*

U.S. Cl. 248—99 **1 Claim**

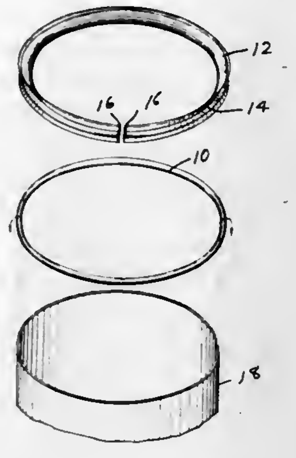
1. A bag holder to spread the mouth of a bag, comprising a freely movable basic ring into which the mouth of a bag is inserted and folded over with a return flap; and

a freely movable supplemental retainer ring having a circumferential groove receiving said frame ring with said bag mouth therebetween;

said basic frame ring comprising a hollow tube of plastic with the ends secured together;

said retainer ring comprising a length of plastic extruded into U-shaped cross section which faces perpendicularly outward from the common axis so as to engage the inside of the hollow tube;

the wall thickness of said U-shaped retainer ring being substantially equal to that of said plastic hollow tube, and the resilience thereof, enabling the bag with its holder to be pressed down onto the ground so as to flatten the bottom portion to facilitate sweeping thereover, and to return to its normal shape when the pressure is released.



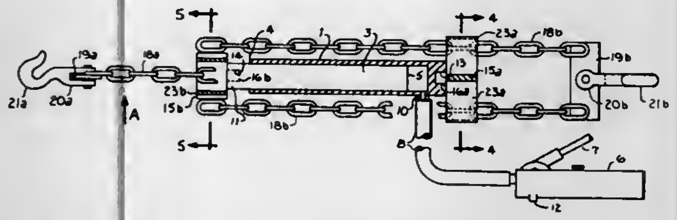
3,893,650
TENSION ATTACHMENT FOR PORTO POWER

Frank W. Turben, Columbus, Pa., assignor to Frank D. Turben, Columbus, Pa.

Filed June 17, 1974, Ser. No. 480,008

Int. Cl. B66f *3/24*

U.S. Cl. 254—93 R **1 Claim**



1. A unitary attachment for a porto power ram having spaced compression thrust exerting surfaces movable apart along an axis by hydraulic pressure and movable toward each other when the hydraulic pressure is relieved, first and second substantially identical closed loops extending along said axis with adjacent ends of the loops linked together to sustain axial tension, the plane of the first loop being transverse to the plane of the second loop, each loop having a pair of axially extending link chains spaced on opposite sides of said axis and having one end fixed to a crosshead in the plane of the loop and the other end fixed to an equalizer bar in the plane of the loop, the adjacent ends of the loops being the crossheads and the remote ends of the ends of the loops being the equalizer bars, said crossheads being in compression thrust relation to said thrust surfaces so that when said crossheads are pushed apart the equalizer bars are pulled together, and a hook at the center of each equalizer bar for making connections to parts to be tensioned.

3,893,651
MAGNETIC BALL CHECK VALVE

Donald Frederick Uecker, Simsbury, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed May 18, 1973, Ser. No. 361,672

Int. Cl. F16k *31/44*

U.S. Cl. 251—82 **5 Claims**

1. A magnetic ball check valve comprising:

a valve body,

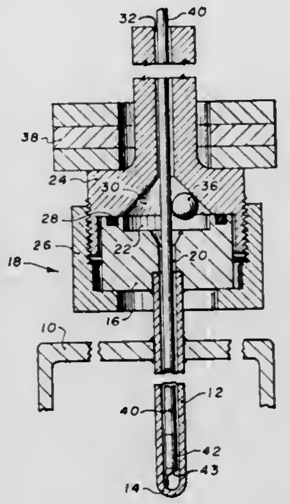
a conically shaped chamber in said valve body,

a first channel communicating with the base of said conically shaped chamber and extending through said valve body to the surface thereof,

a second channel communicating with the apex of said conically shaped chamber and extending through said valve body to the surface thereof,

a ball contained in the conically shaped chamber, said ball being larger in diameter than the diameter of said first and said second channels and said ball and said chamber being sized such that said ball may be displaced in said chamber from said apex by means so as to provide a clear straight path through said chamber from said first channel to said second channel, and

a magnet attached to said valve body, said magnet being located proximate to the apex of said conically shaped chamber and of sufficient strength so as to be adapted to attract said ball to said apex from anywhere in said chamber to close off and prevent flow from said chamber into said second channel.



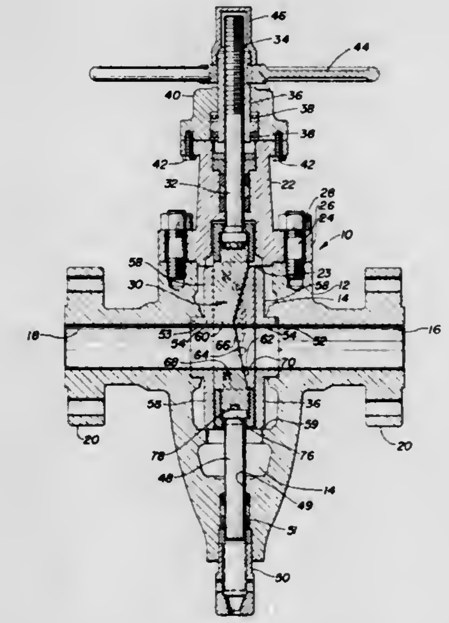
3,893,652
MEANS CONNECTING GATE VALVE AND VALVE STEM

Paul J. Natho, Houston, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.

Continuation-in-part of Ser. No. 404,066, Oct. 5, 1973, abandoned. This application July 15, 1974, Ser. No. 488,647

Int. Cl.^{2} F16K *25/00*

U.S. Cl. 251—84 **8 Claims**



1. A gate valve structure comprising a valve body having a valve chamber therein and inlet and outlet flow passages communicating with the valve chamber, a gate member slideably mounted within the valve chamber for movement between open and closed positions of the gate valve structure, a threaded extension on an end of the gate member, a stem at the end of said gate member adjacent said threaded extension and having an enlarged annular shoulder adjacent said gate member, a nut having a central opening receiving said stem and an annular abutment adjacent said central opening engaging said annular shoulder in abutting relation to retain the stem, said nut being threaded onto said extension and thereby connecting said stem and gate member, said gate member adjacent said threaded extension having at least one outwardly biased plunger thereon, said plunger having a portion thereof extending laterally outwardly beyond the outer peripheral surface of the end of said nut, and a plurality of recessed portions spaced along the circumferential end surface of said nut adapted to selectively receive the plunger therein to restrain the nut against rotation and position the nut relative to said threaded extension.

3,893,653
VALVE FOR A PRESSURIZED DISPENSER

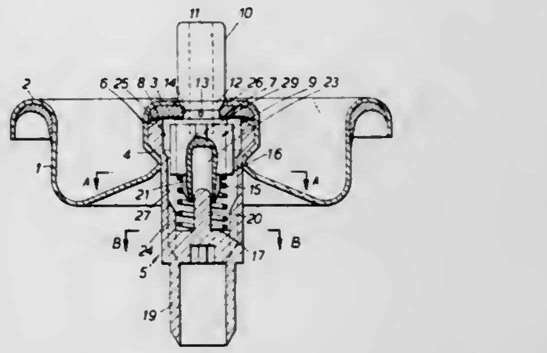
Günter Kolanus, Hattersheim/Main, Germany, assignor to Precision Valve Corporation, Yonkers, N.Y.

Filed July 17, 1973, Ser. No. 380,003

Claims priority, application Germany, July 22, 1972, 2236068

Int. Cl. F16k *31/00*

U.S. Cl. 251—353 **3 Claims**



1. A dispensing valve for a pressurized dispenser comprising: a valve housing, a valve body movable axially within the housing, said valve body including an integral hollow valve stem extending axially upwardly and an integral hollow spring retaining sleeve extending downwardly, a valve port in the valve stem communicating with the interior of the valve stem, an annular gasket encompassing and sealing the valve port when the valve body is in a raised position, a helical compression spring which biases the valve body upwardly, the upper portion of said spring overlying and being retained on said spring retaining sleeve, the lower portion of said spring being disposed on a spring supporting surface on the interior bottom of the valve housing, and a guide pin extending axially upwardly from the interior bottom of said valve housing through the interior of said spring and telescopically received in the interior of said spring retaining sleeve.

3,893,654
MIXING APPARATUS

Harunobu Miura, 8-40 Kumoi-cho, Nishinomiya-shi, Hyogo-ken, and Kenji Asano, Murakami Sue 2137-2 1-chome Hakozaki, Maekawacho, Fukuokashi, both of Japan

Filed Mar. 16, 1973, Ser. No. 342,032

Claims priority, application Japan, Mar. 18, 1972, 47-027558

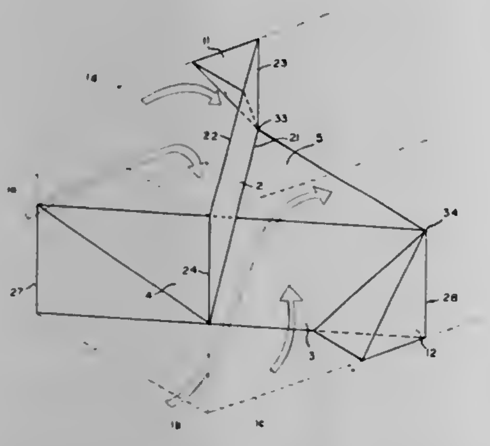
Int. Cl.^{2} B01F *15/02*

U.S. Cl. 259—4 **4 Claims**

1. A mixing apparatus for mixing a substance comprising:

an elongated hollow conduit having a substantially rectangular cross section, and having four sides each of said four sides having a substantially flat inner surface;

- a plurality of mixing elements contained within said hollow conduit, each mixing element comprising:
- first and second rectangular members, disposed on a common transverse axis and having first and second longitudinal edges and first and second lateral edges,
- first and second generally triangular members each leading normal to said first and second rectangular members,
- said first generally triangular member leading from one half of said first longitudinal edge of said first rectangular member and having one edge thereof abutting one half of said first longitudinal edge of said second rectangular member, and
- said second generally triangular member leading from the other half of said first longitudinal edge of said second rectangular member, and having one edge thereof abutting the other half of said first longitudinal edge of said first rectangular member;
- said mixing elements being placed in said hollow conduit, such that, said second longitudinal edge of said first rectangular member abuts said flat inner surface of one of said sides of said conduit, and said first lateral edge of said first rectangular member abuts said flat inner surface of one of the sides adjacent said one of said sides and said second lateral edge of said first rectangular member abuts said flat inner surface of the other of said sides adjacent said one of said sides, and said second longitudinal edge of said second rectangular member abuts said flat inner surface of the side opposite said one of said sides, and said first lateral edge of said second rectangular member abuts said flat inner surface of said one side adjacent said one of said sides and said second lateral edge of said second rectangular member abuts said flat inner surface of the other of said sides adjacent said one of said sides;



- a first quasi-conical body having an apex substantially coinciding with the end, away from said transverse axis, of said one half of said first longitudinal edge of said first rectangular member, said quasi-conical member being disposed on the opposite side of said first rectangular member from said first triangular member, and abutting said flat inner surface of said one of said sides of said conduit and also abutting said flat inner surface of said one side adjacent said one of said sides;
- a second quasi-conical body having an apex substantially coinciding with the end, away from said transverse axis, of said other half of said first longitudinal edge of said second triangular member, said quasi-conical member being disposed on the same side of said second rectangular member as said second triangular member, and abutting said flat inner surface of the side opposite said one of said sides and also abutting said flat inner surface of said other of said sides adjacent said one of said sides; and
- said quasi-conical bodies acting to prevent viscosity resistance which would normally be generated in the space occupied by said quasi-conical bodies thereby aiding the substance to smoothly flow through said conduit.

3,893,655

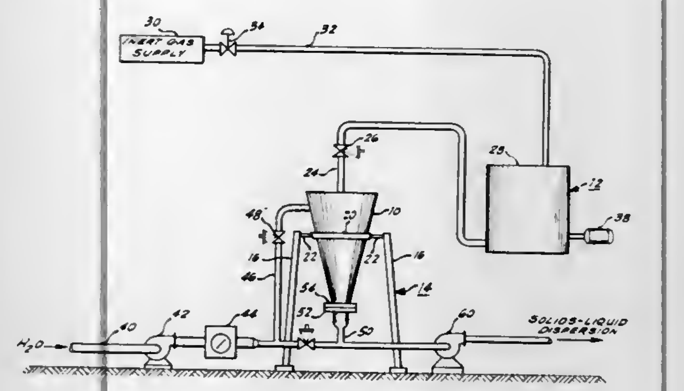
APPARATUS AND METHOD FOR DISPERSING SOLID PARTICLES IN A LIQUID

Burton B. Sandiford, Placentia, Calif., assignor to Union Oil Company of California, Brea, Calif.

Continuation-in-part of Ser. No. 270,495, July 10, 1972, Pat. No. 3,782,695. This application Aug. 9, 1973, Ser. No. 387,176

Int. Cl. B01f *15/02*

U.S. Cl. 259—4 **15 Claims**



1. A solids-liquid mixing apparatus for dispersing a particulate solid material in a liquid, which comprises:

- a wetted wall funnel having a throat of reduced cross-section;
- a solids container;
- frame means for supporting said wetted wall funnel in a substantially vertical position with said throat at the bottom;
- solids conduit means communicating said solids container and said wetted wall funnel for conducting particulate solid material from said solids container to said wetted wall funnel;
- liquid distributor means for flowing liquid substantially uniformly over the interior surface of said wetted wall funnel;
- liquid conduit means attached to and communicating with the throat of said wetted wall funnel for flowing liquid past the throat of said funnel; and
- a pump installed in said liquid conduit means downstream of said wetted wall funnel, said pump having a volumetric capacity exceeding the combined volumetric liquid supply rate to said apparatus whereby a vacuum is induced in said liquid conduit means adjacent to the throat of said wetted wall funnel.

3,893,656

MOBILE UNIT FOR TREATING LIQUID WASTE

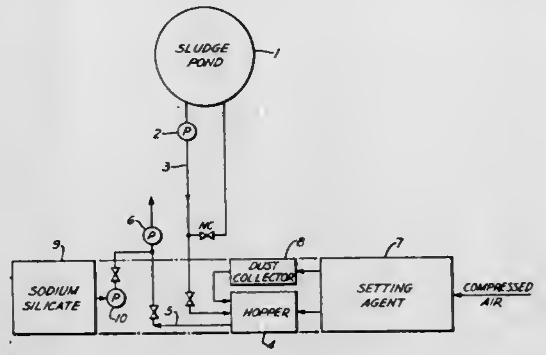
Donald J. Opacic; Arpad L. Lengyel, both of Pittsburgh; Edward A. Zawadzki, McMurray, and Fred H. Jackson, Bridgeville, all of Pa., assignors to Chemfix Inc., Pittsburgh, Pa.

Filed Aug. 20, 1973, Ser. No. 389,565

Int. Cl.^{2} B01F *5/00, 7/16*

U.S. Cl. 259—7 **9 Claims**

1. A mobile unit for treating liquid waste to render it nonpolluting and fit for ultimate disposal, comprising a truck trailer chassis provided with wheels for transportation over the ground, a mixing hopper supported by said chassis and provided with an inlet and an outlet, said inlet being adapted to be connected with means for delivering liquid waste to the hopper from a source of supply, said outlet being adapted to be connected to conduit means extending from the hopper to a disposal area, a substantially rectangular bin for a powdered silicate setting agent mounted on said chassis and having an outlet at its bottom, upright partition walls in said bin mounted on its bottom to form a plurality of chambers, substantially flat porous members covering said chambers to form a porous floor in the bin spaced above its bottom and sloping toward said bin outlet, a source of compressed air, pipe means connecting said source with each of said chambers for delivering compressed air to the space in the bin beneath its porous floor to form a fluidized bed of setting agent above said floor, valves in said pipe means for controlling flow of air therethrough to the different chambers independently of one another, said pipe means and said valves being constructed and arranged to control the bulk density of the setting agent in said bin and prevent dead-spots therein, means for delivering setting agent from said bin outlet to said hopper, means in the hopper for mixing setting agent with liquid waste therein, a tank for liquid alkali metal silicate mounted on said chassis and having an outlet, and a conduit connected to said tank outlet for delivering silicate to the hopper mixture.



3,893,657

METHOD FOR SEPARATING METAL WHICH ACCOMPANIES SLAG SKIMMED FROM A BATH OF MOLTEN METAL, AND A DEVICE FOR CARRYING OUT THE METHOD

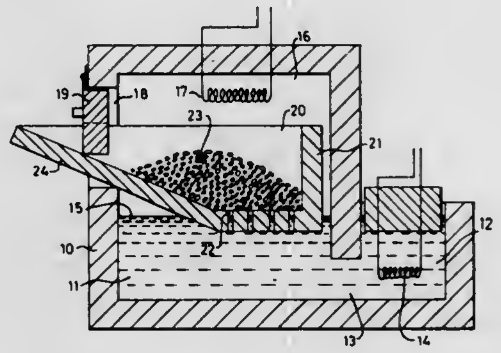
Sven Ivar Sieurin, Upplands Vasby, Sweden, assignor to Granges Essem Aktiebolag, Vasteras, Sweden

Filed May 31, 1973, Ser. No. 365,744

Claims priority, application Sweden, June 5, 1972, 7371/72

Int. Cl.^{2} C21C *21/00*

U.S. Cl. 266—37 **3 Claims**



1. An apparatus for recovering metal from slag skimmed from the surface of a mass of molten metal, comprising a heat-insulated furnace, a basin in the bottom region of said furnace, capable of holding the mass of molten metal up to a desired level therein; said furnace defining therein a space containing an atmosphere above said basin; an opening provided through a wall of said furnace; closure means for said opening, for shielding the atmosphere in said space from the ambient atmosphere; a container placed in said space for receiving and collecting a batch of the skimmed slag entering through said opening; the bottom wall of said container having therein a number of through apertures, for leading the metal, recovered from the slag, in the molten state down into the mass of molten metal, while retaining a residual portion of the slag in said container; heating means in said space for keeping the atmosphere therein at a suitable temperature, for melting the metal contents out of the slag in said container, to flow through said apertures; and means for leading the molten metal away from said basin.

3,893,658

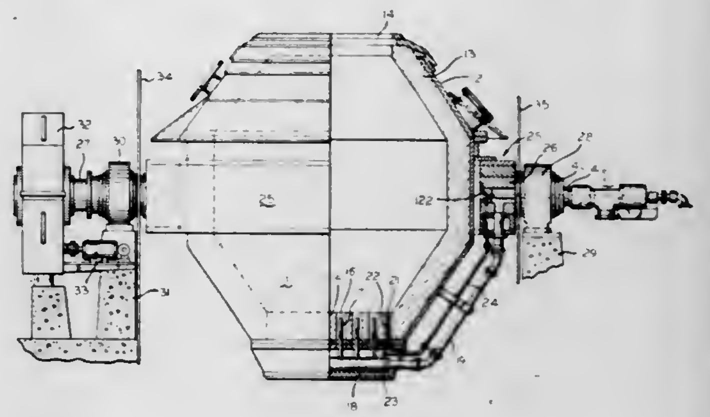
MULTIPLE GAS FEED ROTARY JOINT FOR METALLURGICAL VESSELS

Howard M. Fisher, New Castle, Pa., assignor to Pennsylvania Engineering Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 213,386, Dec. 29, 1971, abandoned. This application Feb. 15, 1973, Ser. No. 332,650

Int. Cl. C21c *5/46*

U.S. Cl. 266—36 P **35 Claims**



1. A rotary joint for conducting multiple fluids to a metallurgical vessel and the like, comprising:

- a. tubular means adapted to connect to a rotatable vessel for delivering a first fluid to the interior of the vessel in one path,
- b. swivel joint means coupled with said tubular means, said swivel joint means being constructed and arranged for being connected with a first source of fluid and for permitting said tubular means to turn with said vessel,
- c. hollow means through which said tubular means extends, said hollow means providing in cooperation with the outside of said tubular means a passage for delivering a second fluid to a vessel along another path, said hollow means having an inlet for said second fluid,
- d. means effecting a rotational seal joint between said hollow means and said vessel for permitting said vessel to rotate while said hollow means remains stationary,
- e. chamber means through which said tubular means extends from said hollow means,
- f. rotational seal means constructed and arranged to prevent gaseous fluid from leaking from said hollow means to said chamber means and to permit said tubular means to rotate with said vessel in respect to said hollow means and said chamber means, and
- g. means adapted to sense gas in said chamber means which gas may be present as a result of leakage from said hollow means.

3,893,659

PRECIPITATOR FOR REMOVING COPPER FROM SOLUTION USING IRON MINI-PELLETS

Kris S. Krish, Gibsonia, Pa., assignor to Dravo Corporation, Pittsburgh, Pa.

Division of Ser. No. 286,451, Sept. 5, 1972, Pat. No. 3,841,865. This application May 29, 1974, Ser. No. 474,243

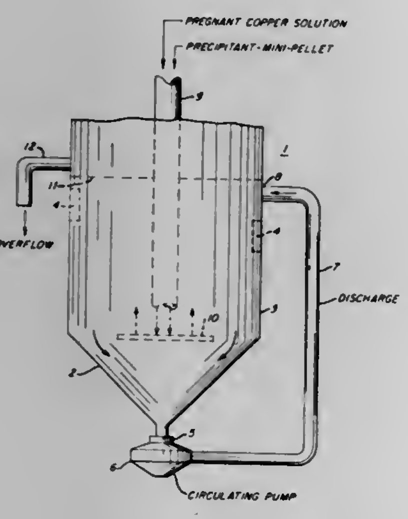
Int. Cl.^{2} C22B *3/02, 15/12*

U.S. Cl. 266—22 **6 Claims**

1. An apparatus for precipitating copper from pregnant solution onto iron precipitant-mini-pellets and dislodging the precipitated copper therefrom, and for removing the copper from the solution comprising:

- a treatment vessel of generally conical formation having an apex directed downwardly and an open base facing upwardly, a vertically disposed inflow pipe centrally disposed relative to the vessel, which inflow pipe ends proximate the top of the inverted cone formation, for continuously introducing into the treatment vessel at its open end pregnant solution and iron pellets;

a diffuser plate placed a short distance immediately below and transverse to the axis of the inflow pipe, with the inflowing mixture being directed against the diffuser plate, to dynamically suspended the inflowing mixture whereby the copper precipitates on the iron pellets and is thereafter dislodged therefrom;



a circulating pump at the lower apex of said vessel, the pumping rate of which exceeds the rate of the new inflowing solution, for constantly drawing off a portion of the mixture of precipitant-mini-pellets and pregnant solution;
conduit means connected to said circulating for constantly returning the drawn off mixture tangentially to the upper part of the treatment vessel as a circulating stream;
means for allowing spent solution and precipitated copper to escape from the upper part of the treatment vessel, said escape means being a screen means with openings of a size which allows the particulate copper and not the iron pellets to escape the treatment vessel; and,
an overflow tube located above said screen means.

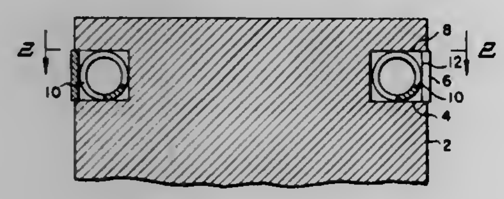
3,893,660
PISTON RING EXPANDER SPRING

E. Crosby Bush, Corry, Pa., assignor to Associated Spring Corporation, Bristol, Conn.

Filed Nov. 28, 1973, Ser. No. 419,628

Int. Cl. F16f *1/34*

U.S. Cl. 267—1.5 **2 Claims**



1. A helical spring constructed and adapted to be positioned in the ring groove of a piston behind the piston ring with the outer surface of each of its coils in engagement with the inner surface of the piston ring, in which the outer surface of each coil of the spring has a curvature circumferentially of the annular spring which corresponds to the circumferential curvature of the inner surface of the piston ring.

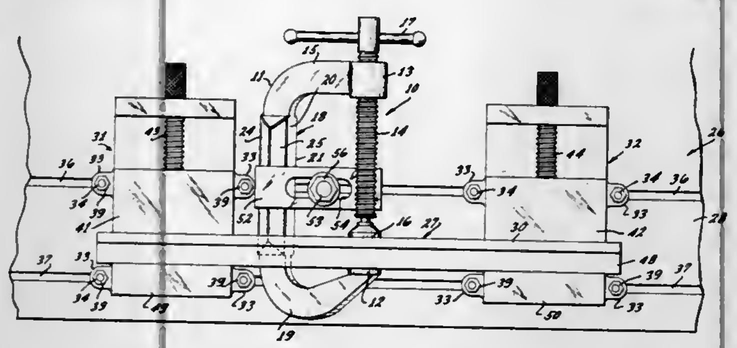
3,893,661
C CLAMP STRUCTURE

Lorin B. Brown, 1501 S. Manhattan Pl., Los Angeles, Calif. 90019

Filed Apr. 1, 1974, Ser. No. 456,834

Int. Cl. B23q *3/04*

U.S. Cl. 269—97 **4 Claims**



1. A clamp useful for holding a workpiece down on a support, comprising: a substantially C shaped frame having a straight bight portion; a pair of opposing coacting jaws provided on the ends of said frame; said bight portion being elongated and enlarged with a hexagonal cross section to thereby provide substantially long, wide, flat surfaces about the bight portion with pairs of opposite, flat surfaces being parallel to each other; and means including a flat, engaging surface for securing the frame of said clamp to said support by having a flat surface of said bight portion bearing against a flat surface of said support while said flat surface on said means engages the spaced, opposite, parallel, flat surface on said bight portion.

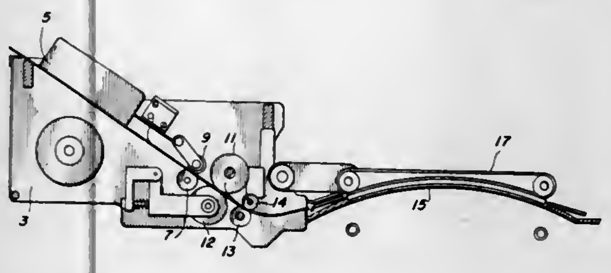
3,893,662
SHEET FEEDING DEVICE

Kenneth M. Boyd, Ross-on-Wye, England, assignor to Rank Xerox, Ltd., London, England

Filed Dec. 11, 1973, Ser. No. 423,830

Int. Cl. B65h *9/00*

U.S. Cl. 271—10 **4 Claims**



1. A sheet feeding apparatus adapted for sequentially receiving and forwarding single sheets being transported along a sheet path comprising:

a plurality of feed roll pairs disposed in the path of sheet travel for contact with the lead edge of the sheet at opposite sides thereof, each roll pair having a first roll formed of a substantialy non-deformable material, each of said roll pairs having a second roll formed of a deformable material, the rolls of each roll pair being adjustable relative to each other to vary the deformation of the deformable roll, thereby increasing the length of the sheet path therethrough to correct skew of the sheet passing therebetween.

4. A method of correcting skew in a sheet being forwarded along a sheet feed path wherein one side of the lead edge of the sheet is in advance of the other side of the lead edge of the sheet including the steps of passing the side of the sheet in advance of the other side of the sheet through a first path having a predetermined length; and,

passing the other side of the sheet through a path having a predetermined length less than the predetermined length of said first path.

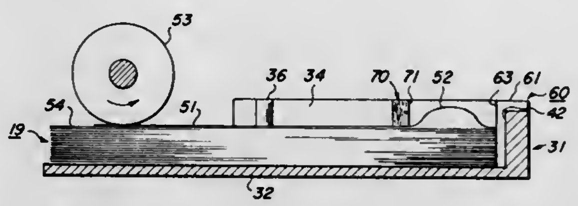
3,893,663
REVERSE BUCKLE SHEET FEEDING APPARATUS

Hector J. Sanchez, Webster, and Donald W. Tates, Fairport, both of N.J., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 352,131, April 18, 1973, abandoned. This application Jan. 16, 1974, Ser. No. 433,623

Int. Cl. B65h *3/56*

U.S. Cl. 271—21 **23 Claims**



1. A reverse buckle sheet feeding apparatus for feeding individual sheets from a stack comprising:

means for supporting said stack, said stack having a plurality of individual sheets, each of said sheets having side edges in opposing relationship, a leading edge and a trailing edge;
feeding means adapted to contact the top sheet of said stack for advancing it first rearwardly to form a buckle and then forwardly to feed said top sheet from said stack; and
means for constraining said buckle for limiting the size of said buckle, said constraining means being located between said feeding means and the trailing edge of said top sheet, said constraining means being adapted to contact said opposed side edges of said sheets of said stack, said constraining means permitting substantially free movement of said top sheet in the forwardly and rearwardly feeding directions;
whereby said buckle forms between said constraining means and the trailing edge of said top sheet during feeding, and the size of said buckle is reduced as compared to an unconstrained buckle.

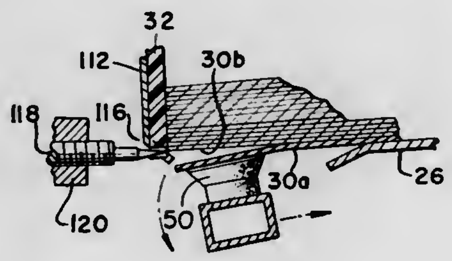
3,893,664
STOCK FEEDER FOR PRINTING PRESS

Elmer R. Thomsen, 1021 N.E. 135th Ave., Portland, Oreg. 97230

Filed July 20, 1973, Ser. No. 381,352

Int. Cl.² B65H *3/08*

U.S. Cl. 271—100 **8 Claims**



1. A feeder for flexible sheet material comprising: a hopper means for receiving and supporting a plurality of flexible sheets in a stack; a vacuum gripping means movably disposed under said stack and adapted to engage a marginal edge portion of the lowermost sheet in the stack; means for initially moving said gripping means in a twisting motion while it is engaged with the lowermost sheet so as to twist the engaged sheet off of the stack and thereby separate such sheet from the next uppermost sheet in the stack and consequently break the vacuum between such sheets; means after cessation of the operation of the foregoing means and consequent completion of the twisting action for moving said gripping means downwardly away from the stack with the sheet held thereby and thus lowering the sheet from the stack; means for engaging the edge portion of the next lowermost sheet in the stack and thus assisting in the separation of the sheets and also retaining the stack properly within the hopper means as the engaged sheet is lowered from the stack; a conveying means to which the sheet is delivered by the gripping means for conveying the sheet from the feeder; means for returning the gripping means upwardly back into engagement with the next lowermost sheet in the stack, said gripping means including a sucker rod constituting a manifold and having a plurality of suction cups constituting suckers mounted therein in communication therewith; means connecting the sucker rod to a vacuum source; said means for moving the gripping means downwardly from the stack including a pair of arms mounted for vertical swinging movement, and a rod supporting and actuating said arms and said sucker rod being carried by the arms, said sucker rod being rotatably journaled in the arms and said means for initially moving the gripping means in a twisting motion including a constraining linkage connected to the sucker rod and to a fixed point so as to cause the sucker rod to rotate counterclockwise as the arms first attempt to move it down away from the stack and spring means connected to said arms to prevent the sucker rod from lowering until the twisting action is completed and constituting the means for returning the gripping means to its raised position with the suction cups engaging the next lower most sheet in the stack.

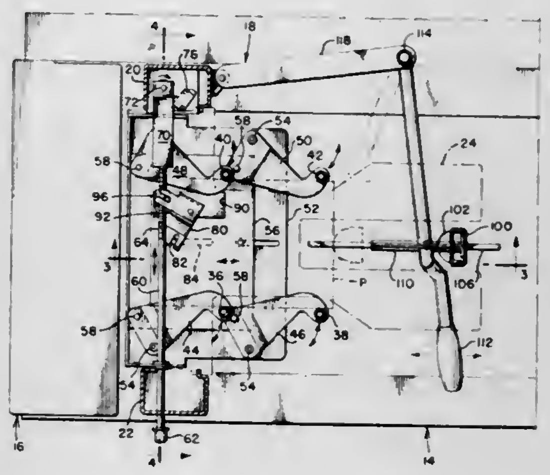
3,893,665
JOGGING AND ALIGNING APPARATUS FOR SORTING AND COLLATING DEVICE

Ronald W. Greene, Seattle, Wash., assignor to EMF Corporation, Seattle, Wash.

Filed Nov. 26, 1973, Ser. No. 419,032

Int. Cl. B65h *31/38*

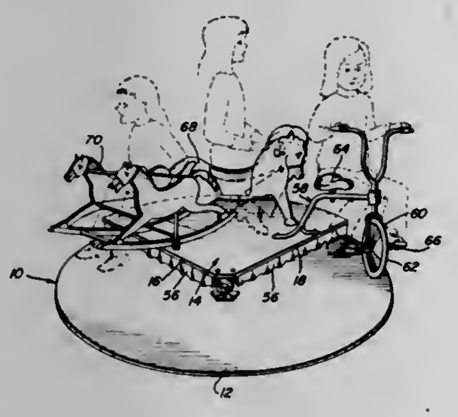
U.S. Cl. 271—221 **11 Claims**



1. A sheet stack jogging and aligning mechanism for collator/sorter devices having a vertical stack of copy receiving bins, comprising:

a. at least one generally vertically extending jogger bar on each side of said stack of bins, said jogger bars being attached top and bottom to pivotal support arms attached to said collator/sorter device,
b. the bottom support arms comprising linkage arms for arcuately swinging said jogger bars inwardly and outwardly,
c. said linkage arms being pivotally secured to a stationary plate below said stack of bins and detachably secured to a slide means located above said stationary plate so that by movement of said slide means said linkage arms may be swung outwardly or inwardly according to the direction of movement of said slide means,
d. adjustable backstop means for engaging the leading edge of a sheet of paper when it enters a bin, and
e. actuator-adjustor means for moving said slide means.

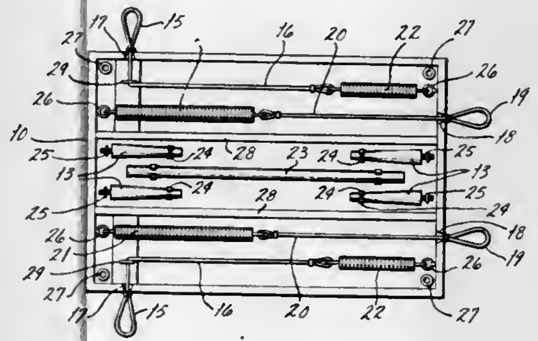
3,893,666
OCCUPANT PROPELLED ROUNDABOUT
Joseph L. Parsons, Star-Rt. 1, Box 81 A, Union, Wash. 98592
Filed Mar. 6, 1974, Ser. No. 448,740
Int. Cl. A63g *1/12*
U.S. Cl. 272—33 B **4 Claims**



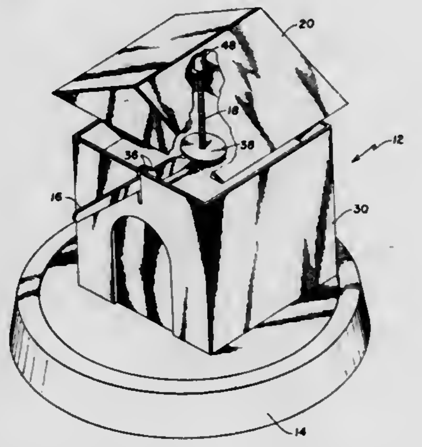
1. A roundabout comprising a generally circular base panel having a central area and adapted to be disposed in horizontal position on a horizontal support surface, a rotary platform disposed above said base panel and including supporting wheel means rollingly engaged with said base panel, means pivotally anchoring said platform to said base panel for rotation of the platform relative to said base panel about an upright axis extending through said central area and adjacent a predetermined portion of said platform, said platform including two relatively angulated generally straight sides converging toward a point at least closely adjacent said predetermined platform portion, said platform including a convex arcuate side interconnecting the divergent ends of said straight sides and having the opposite ends of said arcuate side generally equally spaced from said axis, the included angle defined by said straight sides being at least **90** degrees and no more than **120** degrees, the distance between said opposite ends of said arcuate side and said axis being generally equal to the radius of said base panel, said supporting wheel means being disposed entirely beneath and dependingly supported from said platform inwardly of said straight sides and said arcuate side, a pedal crank-equipped drive wheel journaled from said platform for rotation about an axis extending substantially radially of the axis of rotation of the platform relative to said base and a seat supported from said platform in position, relative to said wheel, such that a child seated on said seat may drive said wheel with his legs in the manner in which a child drives the front wheel of a tricycle, said wheel being rollingly engaged with an outer peripheral portion of said base panel and disposed entirely outwardly of one of said straight sides of said platform.

3,893,667
EXERCISE DEVICE WITH COMBINED SPRING TENSION AND FRICTIONAL RESISTANCE
Owen D. Snyder, Jr., St. Louis, and Cranmer W. Wilson, Hazelwood, both of Mo., assignors to Hide-A-Gym International, Inc., St. Louis, Mo.
Filed Apr. 3, 1974, Ser. No. 457,601
Int. Cl. A63b *21/02*
U.S. Cl. 272—58 **12 Claims**

1. A portable exercise device comprising in combination a frame, support means, and exercise means, said frame having a longer and shorter dimension, bottom, interior and exterior surfaces and two ends, said frame having a bottom surface, an exterior surface and an interior surface, said frame being attached to and supporting said support means, and said frame housing exercise means, said exercise means comprising at least one side pull exercise means comprising attachment means, coil spring means, a side pull, a side pull loop, an eyelet and a side pull channel intersecting the bottom surface of the frame and being generally curvilinear in cross-section, said attachment means attaching one end of said coil spring means to one end of said frame whereby said coil spring means is positioned so that its direction of elongation is substantially parallel to the longer dimension of said frame, the other end of said coil spring means being attached to one end of said side pull, said side pull extending from said coil spring means to said eyelet in a direction substantially parallel to the longer dimension of said frame, said eyelet being attached to the other end of said frame passing and changing direction by about 90° through said eyelet and passing through said side pull channel in a direction substantially perpendicular to the longer dimension of said frame, the other end of said side pull being attached to said side pull loop, said side pull channel having a vertical depth at the interior surface of said frame of from about two to five times the maximum dimension of said side pull, a radius of curvature at the interior surface of said frame of from about 2.5 to about 4.5 times one half the maximum dimension of said side pull, a radius of curvature at the exterior surface of said frame of from about 1.25 to about 2 times one half of the maximum dimension of said side pull and a horizontal dimension at the bottom surface of said frame at least equal to the widest horizontal dimension of said channel in the plane parallel to the exterior surface of said frame and containing said horizontal dimension and said end pull exercise means comprising attachment means, coil spring means, end pull, end pull loop and end pull channel intersecting the bottom surface of the frame and being generally curvilinear in cross-section said attachment means attaching one end of said coil spring means to one end of said frame whereby said coil spring means is positioned so that its direction of elongation is substantially parallel to the longer dimension of said frame, the other end of said coil spring means being attached to one end of said end pull, said end pull extending from said coil spring means and passing through said end pull channel in a direction substantially parallel to said longer dimension of said frame, the other end of said end pull being attached to said end pull loop, said end pull channel having a vertical depth at the interior surface of said frame of from about two to about four times the maximum dimension of the end pull, a vertical depth at the exterior surface of said frame of from about one to about two times the maximum dimension of the end pull, a radius of curvature at the interior surface of said frame of from about 2.5 to about 4.5 times one half of the maximum dimension of said end pull, a radius of curvature at the exterior surface of said frame of from about 1.25 to about 2 times one half of the maximum dimension of said end pull, and a horizontal dimension at the bottom surface of said frame at least equal to the widest horizontal dimension of said channel in the plane parallel to the exterior surface of said frame and containing said horizontal, dimension, whereby said exercise device provides healthful and invigorating exercise activity resulting from the interaction of spring tension and frictional resistance and, when not in use for exercising, provides a useful and decorative piece of furniture.

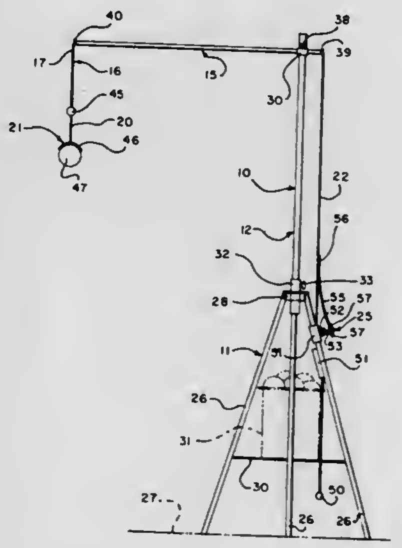


3,893,668
OPERATING MECHANISM FOR A TOY GAME
Joseph E. Mitchell, 435 Orlena Ave., Long Beach, Calif.
Filed Aug. 22, 1974, Ser. No. 499,514
Int. Cl.^{2} A63F *9/00*
U.S. Cl. 273—1 R **12 Claims**



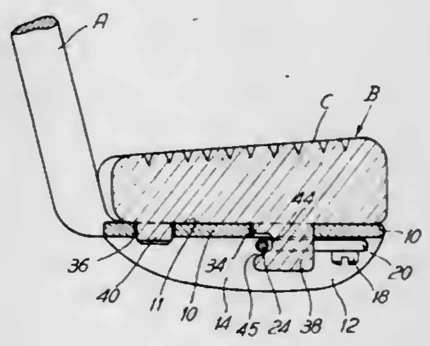
1. An operating mechanism for a toy game comprising
a flexible rod;
housing means for the rod;
lever support means positioned a fixed distance from the rod;
a lever pivotally attached to the lever support means; and
an apertured disc surrounding the rod and operatively positioned relative to the lever so that when the lever is pivoted the edge of the aperture formed in the disc engages the rod to withdraw the rod from the housing.

3,893,669
TETHERED BALL TENNIS INSTRUCTION DEVICE
Gilford Myers, 1141 Westbury Rd., Jenkintown, Pa. 19046
Filed Apr. 2, 1973, Ser. No. 347,323
Int. Cl. A63b *69/38*
U.S. Cl. 273—29 A **7 Claims**



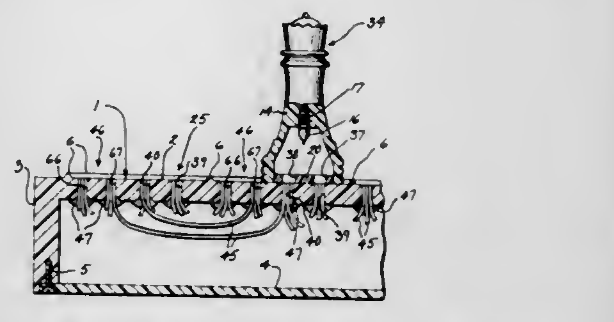
1. A tennis instruction device comprising a standard, an arm projecting laterally from said standard, a filamentary suspension member extending along said arm having one end depending freely from the projecting end of said arm and having its other end depending along said standard, a fabric having split pile loops on said one suspension member end for releasable holding engagement with a standard tennis ball, and an elongated suspension member retaining finger attached at one end to said standard and having its free end movable for retaining cooperation with said other suspension member end and selectively releasing the latter to drop said one suspension member end for ball replacement thereon.

3,893,670
GOLF CLUB WITH INTERCHANGEABLE HEADS
Franco Franchi, Via Montepulciano, 11, Milan, Italy
Filed Nov. 2, 1973, Ser. No. 412,266
Int. Cl. A63b *53/06*
U.S. Cl. 273—80.1 **11 Claims**



1. In combination, a golf club and a plurality of interchangeable and uniquely lofted club heads, comprising an elongated club shaft having a support plate fixedly secured to said shaft adjacent the lower end thereof, said support plate being elongated and extending outwardly from said shaft with its longitudinal axis perpendicular to the line of flight, said support plate having opposed front and rear surfaces, the front surface defining a support surface which is oriented at an angle with respect to the axis of said shaft, said plurality of interchangeable heads individually adapted for attachment to said support plate, each of said heads having a front impact surface and a rear mounting surface adapted to be engaged with said support surface when the respective head is mounted on said support plate, the impact surfaces as provided on the different heads being oriented at different angles with respect to the axis of said shaft, and connecting means coacting between said heads and said support plate for permitting each head to be individually releasably connected to said support plate, said connecting means including an opening formed in said support plate and extending therethrough from said support surface to said rear surface and a projection fixedly secured to each of said heads and projecting outwardly from the mounting surface thereof, said projection having a length greater than said opening so as to project through said opening and beyond said rear surface when said head is mounted on said support plate, said connecting means further including a locking member movably mounted on said support plate adjacent the rear surface thereof and engageable with said projection for fixedly connecting the head to the support plate.

3,893,671
FIBER OPTIC CHESSBOARD
Robert C. Gardner, 1629 W. Lawn Ave., Milwaukee, Wis. 53209
Filed Sept. 3, 1974, Ser. No. 502,757
Int. Cl. A63f *3/02*
U.S. Cl. 273—136 A **8 Claims**



1. In a game having playing pieces and a playing board which indicates a plurality of positions to which a set of playing pieces can be moved, the improvement therein comprising:

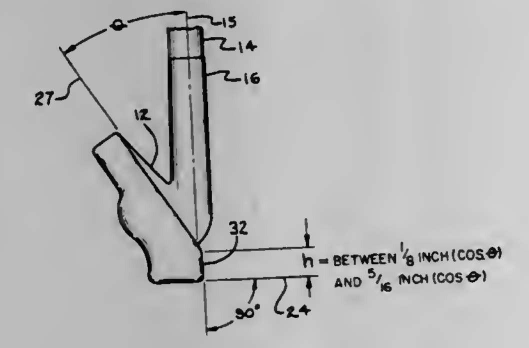
illuminator means mounted within each playing piece;
light transmission stations formed on said playing board and located within indicated positions thereon to receive light from the illuminator means within a playing piece which is moved onto one of said indicated positions;
light receiving stations formed on said playing board and located within said indicated positions; and
light conducting means connecting each light transmission station with a selected set of light receiving stations, each of said sets of selected light receiving stations indicating the character of a playing piece positioned on its associated light transmitting station.

3,893,672

GOLF CLUB

Theodore R. Schonher, 4818 Gifford Ave., Cleveland, Ohio 44144

Filed May 23, 1974, Ser. No. 472,538
Int. Cl. A63b *53/04*
U.S. Cl. 273—167 A **7 Claims**



1. In a golf club having a shaft and club head, said club head having a bottom surface sole disposed between a heel and toe, the sole of said club head having a horizontal baseline, said club head having a hosel interconnected with said shaft, said club head having a sloped, planer surface inclined with the vertical to define a loft angle therebetween of between about 20° to 46°, said sloped hitting surface disposed between said heel and toe and having a centroid on said sloped hitting surface, the improvement which comprises:
a blunt leading surface disposed between said toe and heel and extending vertically upward from said sole, said blunt leading surface being a non-hitting surface terminating with the intersection of said sloped surface below the centroid on the sloped hitting surface, said vertical leading surface being at least about one-sixteenth inch in vertical height from said baseline and less than about 70 percent of the vertical distance of the centroid from said baseline of the sole of said club.

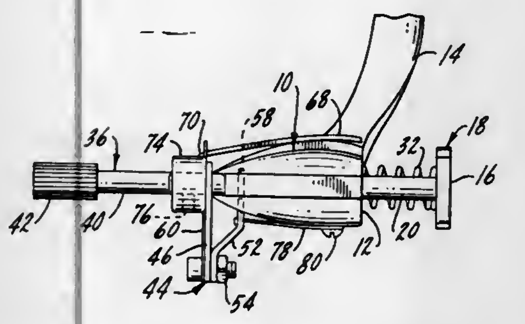
3,893,673

TRAINING PUTTER

Medard W. Welch, 1111 Sheridan Rd., Winnetka, Ill. 60093

Filed Sept. 30, 1974, Ser. No. 510,481
Int. Cl. A63b *69/36*, *53/08*
U.S. Cl. 273—183 R **3 Claims**

1. A device for use in the instruction of putting a golf ball comprising a club head having a front face, an elongated handle affixed to the club head, an impact surface associated with the front face of the club head, said impact surface being rigidly mounted at the end of a pin which is slidably supported in an opening through the club head extending axially generally normal to the front face thereof, urging means comprising a compression spring effective to force the impact surface outward away from the face of the club head, loading means effective to preset the force to be exerted by the urging means to any of an infinite number of settings within a predetermined range, said loading means comprising a micrometerlike threaded load dial, the rotation of which in one direction being effective to compress the compression spring and rotation in the other direction allowing the spring to expand, calibrations associated with said loading means for indicating the setting thereof, an indicator effective to cooperate with said calibrations to indicate the position of the threaded load member relative to the club head, and a release mechanism for activating the urging means, said device further comprising at least two of said pins, each having a notch cut laterally across its top surface for engaging the release mechanism, said release mechanism comprising a generally vertical release plate, guide means associated with the club head, to restrict said release plate to movement in a generally vertical plane adjacent the backside of the club head, and a lock spring urging the release plate downward into engagement with the pins, thereby being effective to engage the release plate in the notches of the pins and to retain the impact surface in a position adjacent the front face of the club head against the urging of the compression spring.

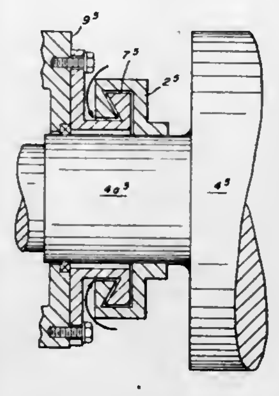


3,893,674

NON-FRICTIONAL CLOSURE FOR EXCLUSION OF CONTAMINANTS

Terry E. Paradine, Gary, Ind., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Dec. 26, 1973, Ser. No. 428,469
Int. Cl. F16j *15/44*
U.S. Cl. 277—56 **4 Claims**



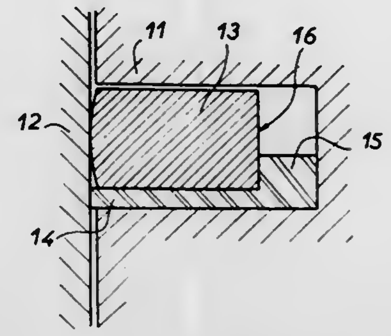
1. In an apparatus which includes a rotating, generally cylindrical shaft; a housing circumscribing a journaled portion of said shaft, said housing having a clearance between it and the shaft; a closure for sealing said clearance against the entry of contaminating substances, said closure comprising (i) a shaft-connected member having a bore, the surface of which is in tight engagement with an outwardly displaced circumferential portion of said shaft, said shaft-connected member having a flange portion with a washer-like face, and (ii) encircling said shaft, a housing-connected member having a flange portion with a washer-like face for non-frictionally mating with the washer-like face of said shaft-connected member, whereby said housing-connected and shaft-connected members form a substantially enclosed chamber sealed against the entry therein of said contaminating substances,
the improvement wherein said mated washer-like faces are inclined toward the direction of ingress of said contaminating substances, at an angle of from about 10°–40° with respect to a plane orthoganol to the axis of said shaft.

3,893,675

SEALING JOINTS FOR PISTON RINGS

Robert Geffroy, Neuilly-sur-Seine, France, assignor to Sealfire, Luxembourg

Filed May 10, 1973, Ser. No. 358,992
Claims priority, application France, May 16, 1972, 72.17495
Int. Cl. F16j *15/00*
U.S. Cl. 277—194 **2 Claims**



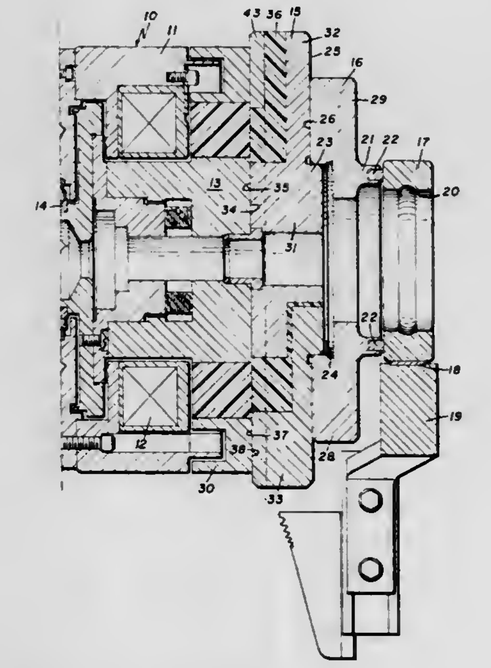
1. A seal comprising an outer cylindrical member of an internal combustion engine, a piston adapted to reciprocate within said member and have one axial end subjected to internal combustion actuating pressure, a groove in the outer periphery of said piston, a ring assembly within said groove consisting of two pieces, one piece being a metal piston ring, the other piece being a plastic sealing joint having a cross section with L-shaped legs, one of said legs extending between adjacent surfaces of said ring and groove remote from said piston end and being adapted to contact said cylindrical member for sealing purposes, the other leg engaging the radially inner face of said metal ring, whereby peripheral wear of the sealing joint against said cylindrical member is limited to the wear of said metal ring, axial clearance between said ring assembly and the groove surface closest to said piston end providing a path for combustion pressure to act on adjacent surfaces of said metal ring and plastic joint.

3,893,676

MAGNETIC CHUCK

Leon J. Gloshinski, Northboro, and Donald R. Johnson, Worcester, both of Mass., assignors to Cincinnati Milacron-Heald Corp., Worcester, Mass.

Filed Jan. 17, 1974, Ser. No. 433,988
Int. Cl. B23b *31/10;* **B25b** *11/00;* **B24b** *5/02*
U.S. Cl. 279—1 M **3 Claims**



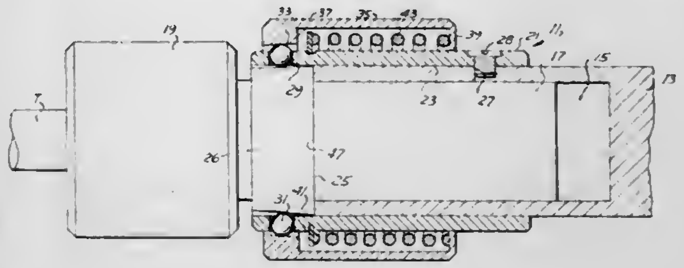
1. A machine tool, comprising
a. a housing having an annular electro-magnetic coil mounted therein,
b. a rotatable spindle mounted in the housing concentrically of the coil,
c. a first backing plate element mounted on the spindle and rotatable with it, the first element being provided with a central hub from which integral arms extend outwardly to provide a first pole, there being segmental inserts located between the arms and being held fixedly in place and insulated from the arms to form second poles,
d. a second backing plate element mounted on the first backing plate element and having an axially-extending lip for contact with a workpiece, the second element being provided with an axial bore concentric with the said lip and being divided into a plurality of segments by radial layers of insulation, the segments being alternately first poles and second poles to match the arms and inserts, respectively, of the first element, the first element being provided with an axially-extending boss, while the second element is provided with a recess to receive the boss, the elements being held in face-to-face relationship,
consisting of an annular element inserted in a groove on the lip that is concentric with the bore and consisting of a plurality of hardened inserts separated by narrow gaps which are filled with material that acts as an insulation to electro-magnetic lines of force.

3,893,677

QUICK CHANGE SPINDLE ADAPTER FOR TOOL HOLDER

Theodore M. Smith, Detroit, Mich., assignor to Lucille G. Smith, trustee and Theodore M. Smith, trustee, both of Mt. Clemens, Mich.

Filed Dec. 26, 1973, Ser. No. 428,243
Int. Cl. B23b *31/22*
U.S. Cl. 279—75 **6 Claims**

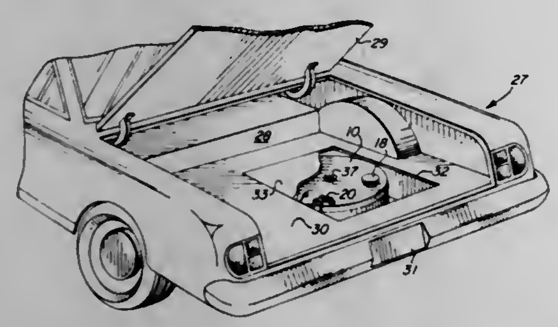


1. A quick change adapter for a power rotated spindle having a bore adapted to receive a tool holder;
a cylindrical body having a uniform axial bore mounted upon and secured to said spindle and projecting forwardly thereof;
a forwardly retractable spring biased sleeve movably mounted on said body and including a rearwardly and outwardly tapered inner wall;
a tool holder mounting a tool projected into said body with a shank snugly nested in the spindle bore;
and a collar of circular crossection on said tool holder intermediate its ends projected into said body and bearing against the end of said spindle;
there being a series of spaced balls movably nested in said body in a single transverse plane; portions of said balls projected radially inward retainingly engaging said collar and projected radially outward for cooperative engagement with said tapered inner wall;
the tapered inner wall of the sleeve converging relative to the collar surface providing a cooperating wedging action of the balls between the collar and the sleeve inner wall for anchoring said tool holder within said body and against the end of said spindle, whereby forward manual retraction of said sleeve releases said balls facilitating assembly to and manual removal of said tool holder from said body and spindle.

3,893,678

AUXILIARY FUEL TANK

Victor E. Engdahl, 28 W. Lewis, Phoenix, Ariz. 85003
Filed Mar. 27, 1974, Ser. No. 455,356
Int. Cl. B60p *3/22*
U.S. Cl. 280—5 A **1 Claim**



1. For use in connection with a motor vehicle which includes

a standard equipment fuel tank having filler means and vent means,
a fuel pump for drawing fuel from said standard equipment fuel tank,
a fuel line communicating between said standard equipment fuel tank and said fuel pump,
a spare tire receptacle sized and shaped to receive a wheel and tire assembly for said vehicle, and
an anchor within said receptacle for attaining retaining means for detachably securing said wheel and tire assembly,

an auxiliary fuel tank system comprising:

a. a generally cylindrical fluid-tight tank having a pair of spaced end walls and sized and shaped to be received within said spare tire receptacle;
b. a tube extending through said auxiliary tank and sealingly engaged with each said end wall;
c. retaining means, extendable through said tube and engageable with said anchor, for detachably securing said auxiliary tank within said spare tire receptacle;
d. filler means associated with said auxiliary tank including
  i. a filler neck extending from one of said end walls proximate said side wall, and
  ii. a cap sealingly engageable with said filler neck;
e. a vent proximate said filler means for atmospheric relief of fuel vapors and pressure within said auxiliary tank and capable of connection to the vent means of said standard fuel tank;
f. fluid pick-up means extending into said auxiliary tank and spaced diametrically from said filler means for receiving fuel from said auxiliary tank,
whereby said tank is operative when placed in either horizontal or vertical spare tire receptacles; and
g. a valve in said fuel line and communicating with said fluid pick-up means for operatively and selectively connecting either said standard equipment fuel tank or said auxiliary tank with said fuel pump.

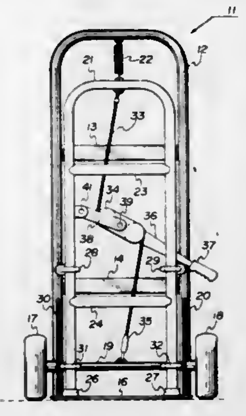
3,893,679

HAND TRUCK STEP CLIMBER

Howell M. Sumrall, 4447 Marraco Dr., San Diego, Calif. 92115
Filed May 14, 1973, Ser. No. 360,400
Int. Cl. B62b *5/02*
U.S. Cl. 280—5.3 **1 Claim**

1. A hand truck step climber mechanism comprising:

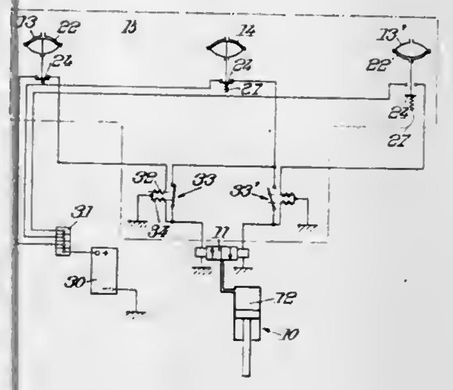
a standard hand truck having a frame, an axle and a pair of wheels rotatably coupled to the axle together with a loading platform coupled to the bottom portion of the frame;
a lifting frame slideably coupled to said hand truck frame and disposed behind the hand truck on the opposite side of the lifting platform;
an expansion spring coupled between said lifting frame and the top of said hand truck frame;
a cable coupled between the top of said lifting frame and said hand truck axle through a lifting winch, said lifting winch being rotatably coupled to said lifting frame; and
a lifting arm coupled to said lifting winch for pivoting said lifting winch and effectively shortening the length of said cable whereby said standard hand truck is lifted with respect to said lifting frame.



3,893,680

DEVICES FOR LIMITING TRANSVERSAL LEANING OF VEHICLES

Roland Marcillat, Chevannes, and Gérard Mantoux, Bois D'Arcy, both of France, assignors to Ets NICOLAS & Fils, France
Filed Jan. 21, 1974, Ser. No. 435,330
Claims priority, application France, Jan. 24, 1973, 7302492
Int. Cl. B60g *19/00*
U.S. Cl. 280—6 H **6 Claims**

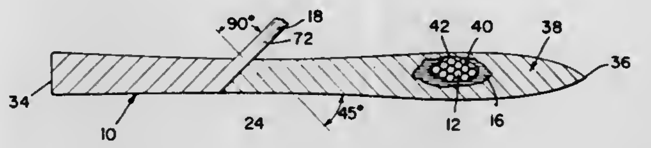


1. A device for limiting the degree of transversal leaning of a vehicle having two longitudinal side rows of independent axles, each axle having a single-acting fluid ram for adjusting the vertical distance between the axis of the wheels of the axle and the vehicle body, said device comprising a sensor of the degree of leaning including a casing securely connected to the body and a weight member mounted in the casing for rotation about an axis parallel to the longitudinal axis of the vehicle, at least two electrical switches symmetricallypositioned with respect to a vertical line passing through said member axis each for operating one of said switches when the degree of leaning exceeds a predetermined value, said switches being arranged in an electrical circuit controlling solenoid valves which control supply and exhaust of the rams in one row at least, each said sensing switch being provided with means for resiliently urging said switch into one of its closed and open conditions, each switch being subjected to the action of a gas jet delivered by a nozzle carried by the casing, urging the switch into the other of said conditions, said weight member being constructed and arranged such as to interrupt one of said jets upon the degree of leaning exceeding said predetermined value.

3,893,681

SKI

Lindley Manning; Robert B. McKee, both of Reno, Nev.; Hubert Zemke, Dublin, Calif., and Bruce M. Douglas, Sparks, Nev., assignors to The Tensor Corporation, Reno, Nev.
Division of Ser. No. 162,600, July 14, 1971, Pat. No. 3,740,301, which is a continuation-in-part of Ser. No. 55,768, July 17, 1970, abandoned. This application Mar. 30, 1973, Ser. No. 346,380
Int. Cl. A63c *5/04*
U.S. Cl. 280—11.13 N **7 Claims**

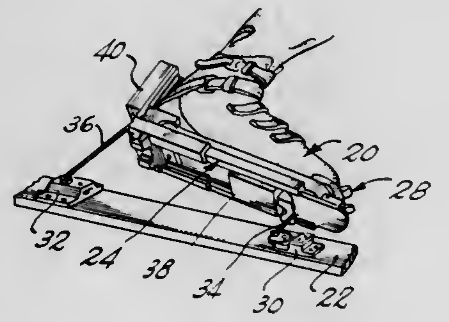


1. A lightweight ski comprising an elongate honeycomb sandwich defined by an open celled core having a ribbon direction parallel to the ski length, and facings bonded to the core and having a length greater than the length of the core, said facings being comprised of a multiplicity of substantially straight parallel strands extending over and beyond the length of the core, a curved ski tip formed by the portion of the facings which extend beyond the length of the core and which curved tip extends out of the plane of the remainder of the ski, a plurality of individual tabs bonded to the sandwich on both of the lateral sides of the sandwich, and a longitudinally extending ski edge connected to and depending downwardly from the tab on each of the lateral sides of the sandwich, said ski edges being constructed of a plurality of wound metallic strands which are wound to have a substantially square cross section.

3,893,682

RELEASABLE SAFETY SKI BINDING HAVING A SELF-ESTORING CAPABILITY

Burton A. Weinstein, New York, and Gordon C. Lipe, Skaneateles, both of N.Y., assignors to National Recreation Industries, Inc., Stamford, Conn.
Filed Apr. 4, 1973, Ser. No. 347,870
Int. Cl. A63c *9/08*
U.S. Cl. 280—11.35 N **25 Claims**



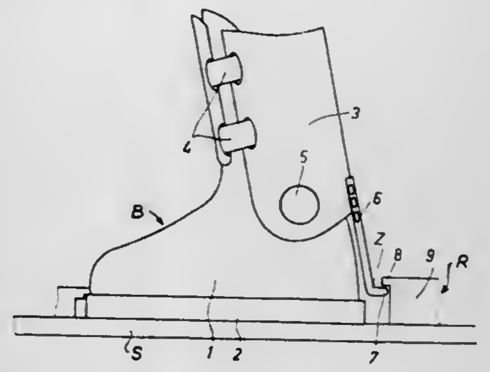
1. A ski binding coupling a ski boot on a ski and releasably holding it in alignment therewith in a normal skiing position, the binding comprising:

a soleplate arranged for positioning in underlying contact with the ski boot and for detachable connection thereto; at least one mounting element secured to the ski, said mounting element being proximate said soleplate when the ski boot is in such skiing position;
at least one connecting means carried by said soleplate for connecting said soleplate to said mounting element, said connecting means including:
  a leash support on said soleplate;
  an elongated, flexible leash supported at least partially on said leash support and connected with said mounting element, said leash being extendible and retractable from said leash support to permit said soleplate and mounting element to move toward and away from one another and being in a retracted condition when said mounting element is proximate said soleplate; and
biasing means on said soleplate acting on said leash and including means for applying a retraction force to said leash to resist separation of said soleplate from said position proximate said mounting element and control means for varying the effectiveness with which said retraction force is applied, said biasing means being responsive to a force, acting through said leash and tending to separate said soleplate from said mounting element, in excess of a predetermined magnitude to permit said leash to extend from its retracted condition and said soleplate to move out of such skiing position and, thereafter, being responsive to reduction of such separating force to a magnitude below the retraction force being then applied to said leash to initiate retraction of said leash toward its retracted condition and to continue such retraction so long as the separating force is below the retraction force being then applied to said leash, until said leash returns to its retracted condition.

3,893,683

APPARATUS FOR RELEASING A SAFETY SKI BINDING

Ernst Gertsch, Wengen, and Ulrich Gertsch, Interlaken, both of Switzerland, assignors to Gertsch AG, Wengen, Switzerland
Filed Mar. 27, 1972, Ser. No. 238,062
Claims priority, application Switzerland, Apr. 1, 1971, 4746/71
Int. Cl. A63c *9/08*
U.S. Cl. 280—11.35 R **26 Claims**



1. An apparatus for releasing a safety ski binding comprising actuation means adapted to be affixed to the lower shank of the leg above the ankle joint in cooperating relation with a ski boot, said actuation means further adapted to be operatively connected to an automatic release mechanism of a safety ski binding for releasing said automatic release mechanism upon pronounced bending of the lower shank of the leg relative to the ski, said actuation means comprising a double-arm lever and further adapted to be pivotally retained on the ski boot at a location spaced from the point of operative connection of said actuation means with said automatic release mechanism.

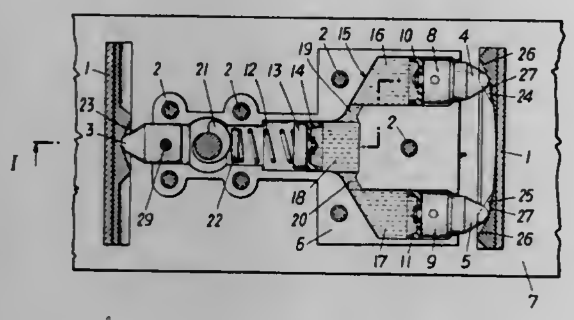
3,893,684

SAFETY SKI BINDING

Gottfried Schweizer, Vienna, Austria, assignor to Gertsch AG, Zug, Switzerland
Filed Dec. 26, 1973, Ser. No. 427,499
Claims priority, application Austria, Dec. 29, 1972, 11173/72
Int. Cl. A63c *9/08*
U.S. Cl. 280—11.35 T **10 Claims**

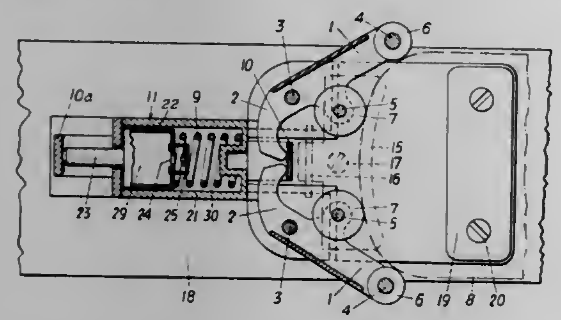
1. In a safety ski binding for use in securing a ski boot to a ski having an improved safety release mechanism, in which a damping and/or delay mechanism comprising piston means for effecting a displacement of a fluid through a throttle open-

ing prevents the unintended release of the binding, whereby said fluid in turn moves a reaction piston which is under the pressure of a resilient means, the improvement comprising wherein said iston means comprises means defining at least three cylinders, two of said cylinders each having a piston therein adapted to receive the forces attempting to effect a release of said ski binding, said reaction piston being mounted in the third cylinder and being movable against the force of said resilient means in response to a displacement of fluid from one of said two cylinders into said third cylinder and external force receiving means engaging each of said two pistons and effecting an application of a force to each of said two pistons, one of said pistons engaged with said force receiving means being moved in response to a relative horizontal lateral movement between said one piston and said force receiving means, both of said pistons engaged with said force receiving means being simultaneously moved in response to a relative vertical movement between said pistons and said force receiving means, a simultaneous movement of both of said pistons requiring more force than a movement of just one of said pistons.



3,893,685
SAFETY SKI BINDING

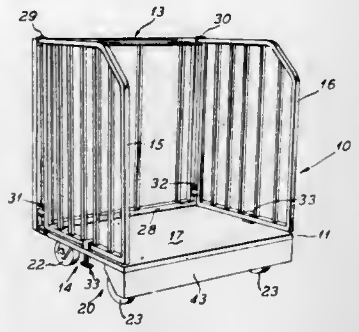
Josef Svoboda, Schwechat, Austria, assignor to Gertsch AG, Zug, Switzerland
Filed May 28, 1974, Ser. No. 474,040
Claims priority, application Austria, May 30, 1973, 4786/73
Int. Cl. A63c *9/08*
U.S. Cl. 280—11.35 T **8 Claims**



1. In a safety ski binding having a binding element with locking means which lock to a predetermined normal level of force said binding element in an effective position and upon exceeding said predetermined normal level of force release said binding element for a movement out of said effective position and retarding means for retarding a release movement of said locking means to a force level higher than a normal release force, said retarding means being defined by a pneumatic damping first cylinder having reciprocal piston means therein biased to one end of said first cylinder by a spring, the improvement comprising wherein said piston means includes means defining a pneumatic second cylinder having means defining at first opening therein, a closure element mounted for movement into and out of engagement in said first opening and means defining a throttle second opening for restricting the movement of gas therethrough, said closure member permitting no gas movement through said first opening in one direction but permitting gas flow therethrough in the other direction.

3,893,686
COLLAPSIBLE CART

Lawrence M. Morgan, Anoka, Minn., assignor to The Cornelius Company, St. Louis Park, Minn.
Filed Mar. 18, 1974, Ser. No. 451,929
Int. Cl. B62b *3/00*
U.S. Cl. 280—36 R **12 Claims**



1. A collapsible merchandise cart, comprising:

a. a bottom frame having a normally generally horizontal platform for support of goods thereon, and a rear edge; b. a transverse hinge having a front portion secured to the rear of said bottom frame;

c. front and rear support means disposed below said bottom frame and below said hinge and all secured to said bottom frame, said rear support means normally extending horizontally beyond said rear edge of said bottom frame;

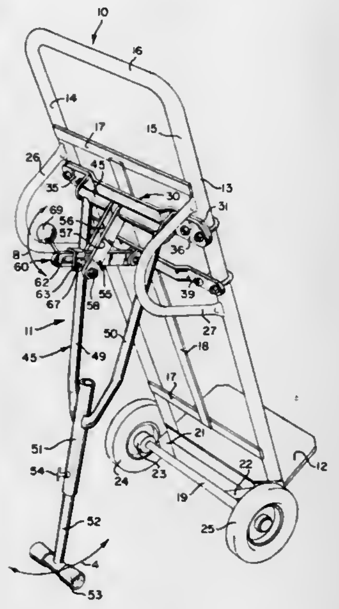
d. a rear frame secured to a rear portion of said hinge and having a lower edge, said rear frame being pivotable between a normally upright position generally perpendicular to said bottom frame, and a collapsed position generally horizontal and parallel to said bottom frame;

e. means operable between said frames to lock said rear frame in said upright position; and

f. said rear support means and said lower edge of said rear frame jointly forming means for supporting the cart, when collapsed, in an upstanding position in which both said frames are upright.

3,893,687
HAND TRUCK WITH SAFETY STAND

Leslie E. Victor, 120 Linden Dr., Ventura, Calif. 93003
Filed May 30, 1974, Ser. No. 474,357
Int. Cl.² B62B *1/10*
U.S. Cl. 280—47.27 **9 Claims**



1. A safety stand for use with a hand truck of the type having a back support and base platform, the safety stand comprising:

a. bracket means capable of being removably mounted to a relatively upper portion of the hand truck back support; b. a support leg unit pivotally coupled to a relatively upper part of the bracket means and arranged for free swinging movement in response to gravity force towards and away from the hand truck back support as the hand truck is tilted forwardly and rearwardly respectively the support leg including,

b.1 a cross bar pivotally coupled by its opposing ends to the bracket means,

b.2 a pair of side members depending from adjacent the opposing ends of the cross bar,

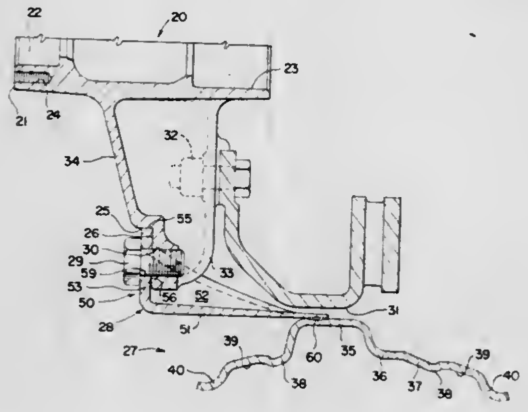
b.3 a joint interconnecting the side members, and,

b.4 a depending strut coupled to the joint; and,

c. locking means connected to the support leg unit including a hand operable release mechanism coupled to a relatively lower part of the bracket means and releasably engaging the locking means, the release mechanism having an adjustable catch for selectively varying and fixing the swing angle of a support leg unit.

3,893,688
TIRE CARRYING RIM

Robert A. De Regnaucourt, Centerville, Ohio, assignor to Dayton-Walther Corporation, Dayton, Ohio
Continuation-in-part of Ser. No. 361,067, May 17, 1973, abandoned. This application July 5, 1974, Ser. No. 486,020
Int. Cl. B60c *5/16*
U.S. Cl. 301—12 R **8 Claims**



1. A tire carrying rim having a radially inwardly directed flange for mounting on a wheel,

a wheel having a hub with a series of spokes, the

outer end of each wheel spoke having a felloe comprising two intersecting surfaces, an axially oriented rim flange piloting surface and a radially directed rim flange seating surface, said seating surface having a first bore for receiving a fastening means inserted through said flange,

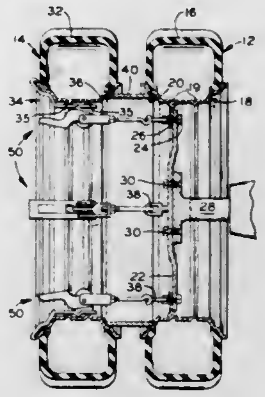
a flange being secured to and mounted beneath a conforming annular surface on said rim and providing a series of spoke cap areas uniformly spaced with each having a second bore for receiving the fastening means to be inserted in the first bore,

each flange spoke cap area having an axially extending web portion, dual axially directed side portions and a radially directed face portion, said web portion, side portions and face portion being interconnected to provide a unitary spoke cap area, each second bore being formed in a face portion,

said tire carrying rim being mounted by positioning each of said spoke cap areas over and on a spoke felloe, with each spoke cap area face portion on a spoke felloe piloting surface and against a spoke felloe seating surface.

3,893,689
AUXILIARY WHEEL ATTACHING MEANS

Leonard J. Verhoff, R.R. No. 2, Box No. 150, Continental, Ohio 45831
Filed Apr. 16, 1968, Ser. No. 721,737
Int. Cl. B60b *11/06*
U.S. Cl. 301—39 R **13 Claims**



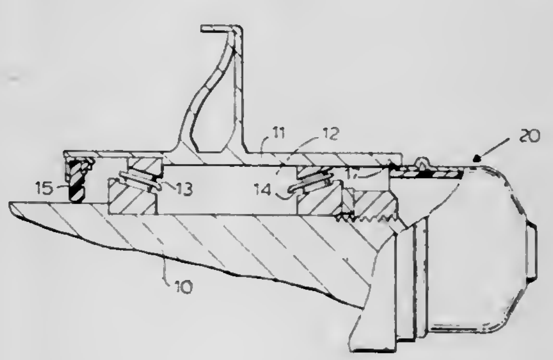
1. In combination with a dual rim assembly of the type wherein an auxiliary rim is spaced by a cylindrical ring means from a main rim of a vehicle wheel having a plurality of clamp lugs with hook engaging means thereon, and said auxiliary rim includes inner and outer axially outwardly extending terminal rim edge flanges and therebetween a central base portion and a stepped portion including an axially extending tire bead seat flange, the improvement comprising at least three independent releasable and longitudinally adjustable connecting devices extending between and releasably engaging each hook engaging means and said auxiliary rim, each device comprising:

A. link means having a hook portion for attachment to one of said hook engaging means on the main vehicle wheel, B. a flat strip means bridging said axially extending tire bead seat flange and supported by and parallel to the central base portion of said auxiliary rim, said strip means having a hook portion at one end for removably engaging the outer axially extending terminal rim edge flange of said auxiliary rim, and

C. adjustable means secured to said link means and engaging said flat strip means near its other end for varying the distance between said link means and said strip means.

3,893,690
HUB CAP ASSEMBLY

Ronald A. Yapp, Ann Arbor, Mich., assignor to Federal-Mogul Corporation, Southfield, Mich.
Filed Nov. 16, 1973, Ser. No. 416,690
Int. Cl. B60b *27/00*
U.S. Cl. 301—108 A **21 Claims**



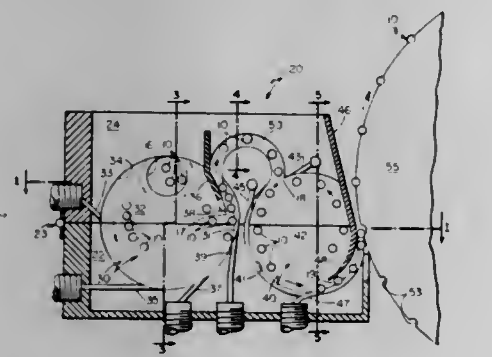
1. A closure device for a wheel hub rotatably mounted upon an axle, including in combination:

a diaphragm member having a generally cylindrical wall joined to a cover wall that is movable axially with respect to said hub to accommodate expansions and contractions of gases and lubricant contained within said hub,

and

a protective metal shell having a cylindrical portion surrounding, overlying and continuously engaging the cylindrical wall of said diaphragm member in a leak-tight fit and having a radially extending retention means at one end for limiting axial movement of said cover wall and normally spaced therefrom and a central opening in said radially extending retention means.

3,893,691
COMPONENT FEEDING APPARATUS
David Kearney, and Harold Kontrovitz, both of Keene, N.H., assignors to Markem Corporation, Keene, N.H.
Filed Oct. 11, 1973, Ser. No. 405,393
Int. Cl.^{2} B65G *53/04*
U.S. Cl. 302—2 R **11 Claims**



1. Component feeder apparatus for discrete parallelized feeding of axially extended components, said apparatus comprising

a chamber having a generally closed curved inner surface for guiding said components therearound in a closed path, the maximum transverse dimension of said inner surface being substantially less than its axial dimension to prevent reversal of said components within said chamber air jet passages communicating through said surface at an angle thereto for blowing said components around said surface

an inlet for feeding said components into said chamber and a tangential slot for feeding a series of parallelized components from said chamber while others of said components continue to move around said surface.

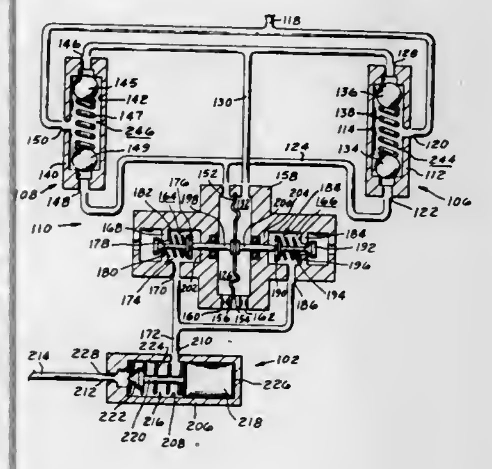
3,893,692
COMBINATION VEHICLE STABILIZER COMPENSATED TO PREVENT AUTOMATIC BRAKE APPLICATION IN NORMAL TURN OR IN PASSING
Rex W. Presley, and Lawrence E. Slimak, both of Southfield, Mich., assignors to The Bendix Corporation, South Bend, Ind.
Filed Feb. 27, 1974, Ser. No. 446,246
Int. Cl. B60t *11/00*
U.S. Cl. 303—7 **9 Claims**

1. An anti-sway apparatus for use in a braking system of a tow vehicle-trailer combination to reduce motion adverse to a direction of travel, said anti-sway apparatus comprising:

first sensor means located in said tow vehicle-trailer combination having first weight means responsive to lateral movement for establishing a first signal;

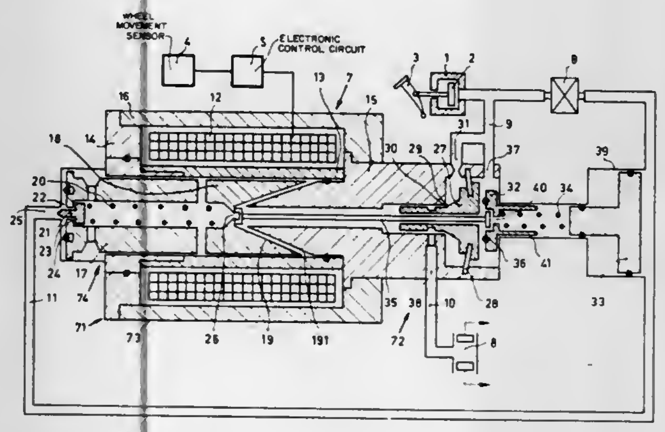
second sensor means located on said tow vehicle-trailer combination, a fixed distance from said first sensor means having second weight means responsive to lateral movement for establishing a second signal;

comparator means connected to said first sensor means and said second sensor means for developing a brake actuation signal for simultaneously operating the brakes of the trailer when said first signal is different than said second signal; and



control means located on said tow vehicle-trailer combination for nullifying said brake actuation signal during periods of longitudinal acceleration of the tow vehicle-trailer combination.

3,893,693
ANTI-LOCK CONTROL VALVE INCLUDING A DISPLACEABLE FLOW-MEASURING PISTON
Derek Robert Skoyles, Salfords, England, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Sept. 10, 1973, Ser. No. 395,911
Claims priority, application United Kingdom, Aug. 29, 1973, 43227/73
Int. Cl. B60t *8/06*
U.S. Cl. 303—21 F **5 Claims**



1. A fluid pressure control device comprising:

a fluid flow control assembly having a fluid path extending between inlet and outlet ports, said assembly including a flow control orifice, for producing a pressure differential between said inlet and outlet ports of said assembly:

a displaceable flow-measuring piston across which a fluid pressure difference can be established due to the restriction by said flow control orifice to flow of fluid in said path, a seat disposed in said fluid path for cooperation with said flow measuring piston, said fluid pressure difference providing a force tending to displace said flow-measuring piston into sealing engagement with said seal to limit fluid flow out of said outlet port;

an elongated axial first passageway having an orifice disposed therein, said passageway extending axially through said flow-measuring piston;

a sealing and balancing member disposed at the side of the flow-measuring piston remote from said outlet port having a surface configured for sealing engagement about one end of said elongated axial first passageway which is in fluid communication with said outlet port, a second passageway disposed in said sealing and balancing member in fluid communication with said orifice and within the seal boundary to provide a fluid pressure equalizing part for applying fluid pressure at said outlet port to an equalizing area of said sealing and balancing member about said aperture, which equalizing area is isolated from fluid pressure at said inlet port;

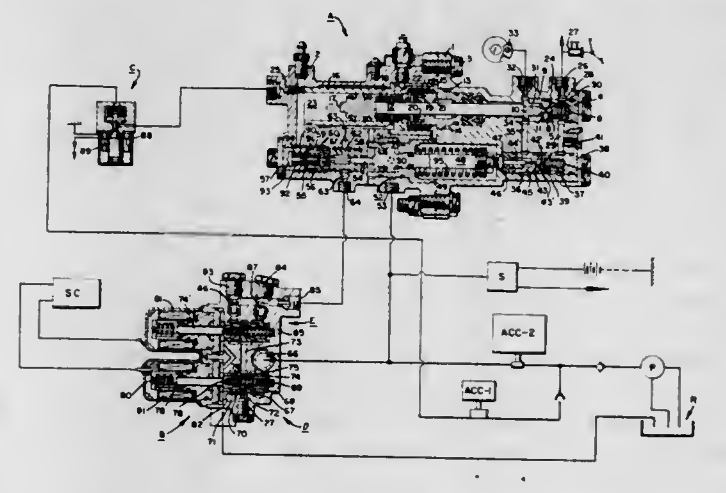
a solenoid valve mechanism disposed in said fluid flow path, said mechanism having a relief port;

an armature of said mechanism, said armature being responsive to an electric potential to cause said valve mechanism to open said relief port, said mechanism including biasing means urging said valve mechanism toward a closed position;

said mechanism further including a flow-measuring member which is displaceable against the force of said biasing means by a force produced by a fluid pressure difference across said flow-measuring member due to a flow of fluid into said relief port, to displace said armature against said solenoid force so as to tend to cause said valve to close said relief port, the flow rate into said relief port being thereby held at a substantially constant value at which the force produced by said fluid pressure difference is substantially equal to said solenoid force; and

means for mechanically engaging said flow-measuring member with said sealing and balancing member so that said biasing means acts effectively when said solenoid is unenergized to urge said flow-measuring piston away from said cooperating seat in opposition to the force due to the fluid pressure difference across said flow-measuring piston, whereby the flow rate of fluid into said outlet port is a function of the force of said biasing means and the cross-sectional area of said flow control orifice, until the difference between the fluid pressures at said inlet and said outlet ports is sufficiently low for the biasing means, acting through said means for mechanically engaging said flow-measuring member, to separate said sealing and balancing member from said flow-measuring piston, whereafter to permit flow of fluid between said inlet and outlet ports via said orifice through the flow-measuring piston.

3,893,694
HYDRAULIC PRESSURE ANTISKID CONTROL APPARATUS FOR A VEHICLE
Masami Inada, Toyoake, Japan, assignor to Aisin Seiki Co., Ltd., Japan
Filed Oct. 31, 1973, Ser. No. 411,439
Claims priority, application Japan, Oct. 31, 1972, 47-109053
Int. Cl. B60t *8/02*
U.S. Cl. 303—21 F **11 Claims**



4. A hydraulic pressure antiskid control apparatus for a vehicle braking system having a master cylinder and slave wheel cylinders, comprising:

a first pressure accumulator;

first valve means interposed within a flow path between the vehicle master cylinder and the wheel cylinders;

power piston means for receiving the hydraulic pressure within the flow path which includes said first valve means, upon one side thereof and for receiving the hydraulic pressure of said pressure accumulator upon the other side thereof;

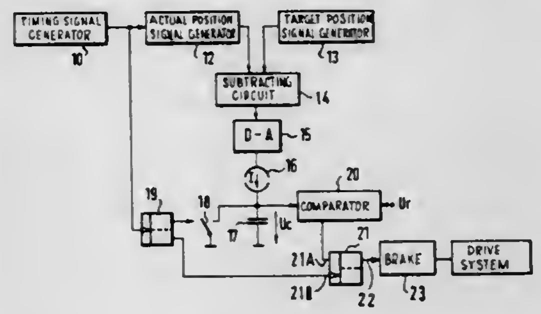
chamber means for transmitting said hydraulic pressure from said pressure accumulator to said power piston means;

changeover valve means for alternately connecting said chamber means to said pressure accumulator and a reservoir, said changeover valve means being operative by electrocircuit means for detecting wheel lock conditions; means for detecting failure of said hydraulic pressure for actuating said power piston means;

a second pressure accumulator; and

second valve means responsive to said failure detecting means and connecting said second pressure accumulator with said chamber means.

3,893,695
METHOD AND CIRCUIT ARRANGEMENT FOR CONTROLLING THE BRAKING OF A DRIVE
Alfons Rickert, Schallern, Germany, assignor to Nixdorf Computer AG, Paderborn, Germany
Filed Jan. 2, 1974, Ser. No. 429,792
Claims priority, application Germany, Dec. 30, 1972, 2264323
Int. Cl. B60t *8/00*
U.S. Cl. 303—21 P **8 Claims**



1. A method for controlling the braking of a drive to slow the movement of an object along a predetermined path until a target position is reached, comprising the steps of:

generating a plurality of time cycles which are repeated at equally spaced intervals along the path of movement;

generating a first signal which is the analogue of the respectively remaining distance to be travelled;

generating during a single time cycle a second signal having a magnitude which is proportional to the relationship between the actual velocity of the moving object and the respective remaining distance to be travelled;

comparing during said time cycle the magnitude of said second signal with a selected value which is constant during the braking operation to define a relationship between velocity and the remaining distance to be travelled corresponding to a linear velocity reduction which is effective over the predetermined distance compared with a parabolic slower speed reduction;

generating adjacent the end of said time cycle a third signal in response to said comparison to effect, depending on the sign of the comparison, either a braking or a freewheeling or an acceleration of the drive for the object; and

repeating, during other and progressively longer sequentially following time cycles, the foregoing steps to effect a step-by-step energizing and deenergizing a brake until said object has come to a complete stop at said target position.

6. A circuit for controlling the braking of a drive to slow the movement of an object along a predetermined path until a target position is reached utilizing a time cycle which is derived from equally spaced path segments and indicating a value which is the analogue of the respectively remaining distance to be travelled for controlling the braking operation, comprising first signal generating means for generating a first signal indicating the end of the path, second signal generating means for generating a second signal indicating the actual position of the object along the path, a subtracting circuit responsive to said first and second signals, said subtracting circuit generating a first output signal which corresponds to the difference between said first and second signals, a variable output constant current source, a digital-analogue converter responsive to said first output signal for adjusting the working point of said current source, a capacitor adapted to be charged by the current from said current source, a switching mechanism controllable by timing signals which are derived from the movement of the object along the path for producing a time controlled discharging of said capacitor, a source of reference voltage, a comparator circuit for comparing said reference voltage with the voltage on said capacitor and adapted to produce a second output signal indicative of the comparison and a brake control circuit responsive to said second output signal for initiating a time controlled operation of said brake to effect a predetermined rate of decrease in said velocity of said object.

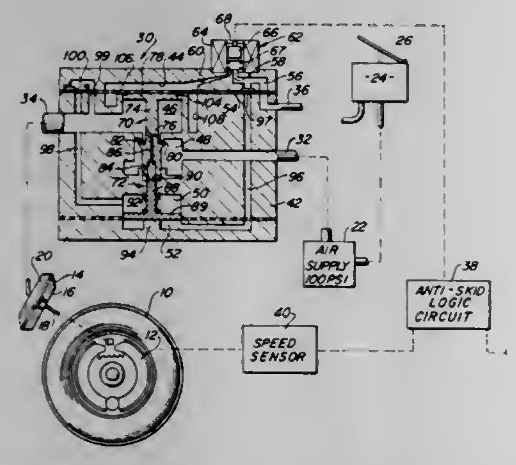
3,893,696
RELAY COMPENSATOR VALVE

John A. Urban, Livonia, and Gary L. Hopkins, Southfield, Mich., assignors to Eaton Corporation, Cleveland, Ohio

Continuation of Ser. No. 293,868, Oct. 2, 1972, abandoned, which is a continuation-in-part of Ser. No. 271,824, July 14, 1972, abandoned, which is a continuation of Ser. No. 125,280, March 17, 1971, abandoned. This application Apr. 8, 1974, Ser. No. 458,608

Int. Cl. B60t *8/06, 15/12*

U.S. Cl. 303—21 F **23 Claims**



6. In a skid control system for controlling the application of fluid pressure to fluid actuated brakes, a valve adapted for the cylical application of fluid pressure from a constant fluid pressure source to said fluid actuated brakes, said valve comprising:

a valve housing having an inlet pressure chamber adapted to be connected to the pressure source and an outlet pressure chamber,

an exhaust port in said housing,

valve means movable between an open and closed position for selectively interconnecting said pressure chambers,

fluid pressure operated control means for selectively actuating said valve means and communicating said exhaust port with said outlet chamber when said valve means is in a closed position,

operator means for cyclically applying control pressure to said control means to open said valve means and for cyclically releasing pressure on said control means to close said valve means and communicate said exhaust port with said outlet chamber, and

means operatively associated with said valve means for varying the position of said valve means during the cylical application of control pressure to said control means whereby the pressure in said outlet chamber rises first at a rapid rate and subsequently at a lower rate.

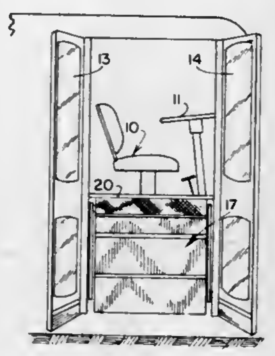
3,893,697
LOADING AND UNLOADING SYSTEM FOR BUS

Carmont Blitz; Hari N. Agrawal, and Leon S. Oliver, all of Chicago, Ill., assignors to The Blitz Corporation, Chicago, Ill.

Filed May 16, 1973, Ser. No. 360,762

Int. Cl. B60t *7/12*

U.S. Cl. 303—6.1 **11 Claims**



1. In an interlocked system for a driver controlled passenger carrying vehicle equipped with power operated doors and power operated brakes, the combination of an electrically controlled brake actuating means, a driver actuated control member for initiating brake application, driver actuated control means for initiating door operation including members for initiating door closing and door opening, respectively, each of said members having a normal, stand-by position from which it is moved to initiate an operation, the brake control member having one switch associated therewith and each door operating member having two switches associated therewith, all switches normally open in the stand-by condition of the associated member and being closed when the associated member is moved to initiate an operation, a power operated horizontal passenger accommodating platform, movable between an up position within the vehicle and a down position on the ground outside said vehicle, a platform up electric switch closed only when said platform is in the up position, a first power circuit through said closed up platform switch and, when operated, through the closed brake switch to one terminal of one door opening switch and to one terminal of one door closing switch; the remaining terminal of the one door opening switch and remaining terminal of the one door closing switch being respectively connected to an electromagnetic means for applying power to a door opening or door closing mechanism, a second power circuit independent of said first power circuit and including the other of said door operating switches and going through a one door two position control switch having door open and door closed positions, for operating doors, whereby when the platform is in the up position and the brakes applied, the driver can open or close doors; a second door control switch controlling a third power circuit and closed only when the doors are open and connected between a source of power and a distributing wire, said distributing wire having a connection to the electric brake actuator for locking brakes in set condition, supplemental circuits for applying power to move said platform in a desired direction, said last named supplemental circuits being connected to said distributing wire whereby platform movement is possible only when said doors are open and vehicle brakes are applied.

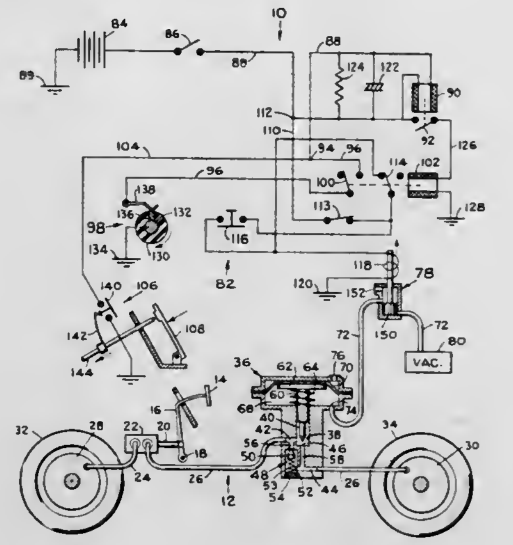
3,893,698
BRAKE CONTROL APPARATUS

John G. Fontaine, Fort Lauderdale, Fla., assignor to Fail Safe Brake Corporation, Fort Lauderdale, Fla.

Continuation-in-part of Ser. No. 261,968, June 12, 1972, Pat. No. 3,763,975. This application Oct. 24, 1972, Ser. No. 300,128

Int. Cl.^{2} B60T *17/16, 13/74*

U.S. Cl. 303—89 **3 Claims**



1. An apparatus for controlling hydraulic brakes of a vehicle in which brakes are applied by hydraulic pressure in a conduit responsive to depression of a brake pedal, said apparatus comprising the combination of automatic two-way valve means in said conduit for controlling the hydraulic pressure therein, electrical control means controlling the opening and closing of said two-way valve means, said electrical control means automatically closing said two-way valve means to keep hydraulic pressure in said conduit applied to the brakes after depression of said brake pedal and being operative to maintain said two-way valve means closed against increased hydraulic pressure in said conduit, selectively operable means for causing said electrical control means to open said two-way valve means following the latter's automatic closing by said electrical control means to release the hydraulic pressure in said conduit, and normally-closed check valve means connected between opposite sides of said two-way valve means and operable automatically to open for allowing increasing hydraulic pressure in said conduit to bypass said two-way valve means to the brakes when said two-way valve means is kept closed by said electrical control means.

3,893,699
REFUSE BAG HOLDER

Ervin E. Morris, 1906 Waunona Way, Madison, Wis. 53713

Continuation-in-part of Ser. No. 162,610, July 14, 1971, abandoned. This application July 13, 1973, Ser. No. 379,169

Int. Cl. B62b *1/04*

U.S. Cl. 280—34 B **7 Claims**

1. A holder for a refuse bag having an open and closed end comprising:

a. a bottom supporting plate for supporting the closed end of said refuse bag,

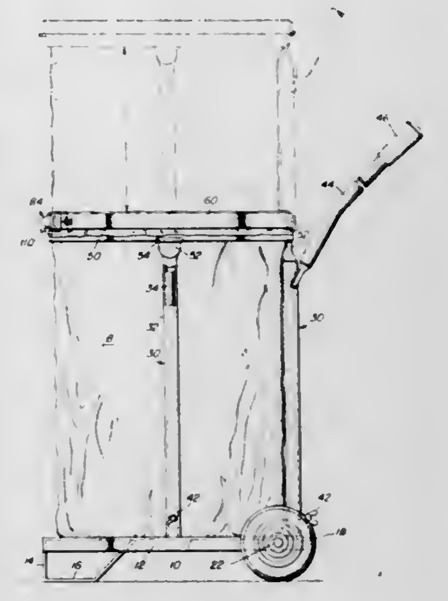
b. a pair of wheels operatively connected to and supported from said supporting plate for elevating the holder from the ground or supporting surface and permitting rolling movement of said holder thereover,

c. a plurality of legs securely mounted on said plate and extending upwardly in circumferentially spaced relation therefrom,

d. a circular shell securely mounted on the upper ends of said legs for receiving a refuse bag in folded position thereover, said shell comprising an outer, radially enlarged lower skirt section and a radially reduced upper section integrally formed with said skirt and separated therefrom by a generally flat shoulder section of substantial radial dimension, said upper section having an outwardly directed rim at its upper end over which a refuse bag can be stretched and retained,

e. a clamp ring for clamping a refuse bag on said shell, said clamp ring comprising a split ring which when closed tightly engages and holds the bag on the upper section of said shell and which when opened rests on said shoulder section of said shell and permits the bag to be removed from the rim,

f. means for pivotally mounting said clamp ring on said shell, said pivot means permitting movement of said clamp ring between a lower position resting on said shoulder section and encompassing said upper section of said shell and an upper, withdrawn position spaced from said shell for permitting placement or removal of a bag from said shell, and



g. clamp means forming part of said clamp ring for tightly clamping the bag around the upper section of said shell and for releasing said clamp ring from said shell to permit said ring to be moved to its upper, withdrawn position for removal of said bag from said holder, said clamp means comprising a latch mechanism carried by the free ends of said split ring, the closing of said latch mechanism effecting the closing of said split ring thereby to tightly clamp said bag around said upper section of said shell.

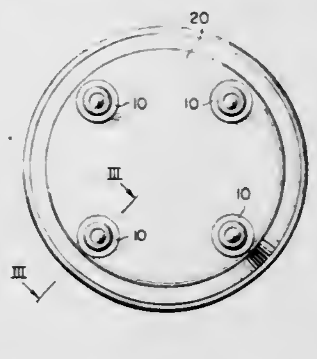
3,893,700
MOBILE DEVICE

Kent W. Dunmyer, 1831 Port Clinton Rd., Fremont, Ohio 43420

Filed Oct. 3, 1974, Ser. No. 511,641

Int. Cl. B62d *53/06*

U.S. Cl. 280—79.1 **3 Claims**



1. An object adapted to be moved over a horizontal surface and having a bottom portion, said bottom portion carrying caster apparatus, said apparatus comprising:

at least one vertical support having a bottom disposed recess, said recess defining generally an upper hemisphere but being somewhat more of a spherical section, said recess having a circular horizontal groove in the recess surface;
at least one sphere having a diameter smaller than that of said recess; and
at least one ball bearing ring in which said sphere is rotatably disposed, said ring being locked onto the sphere, said ring engaging said groove whereby a portion of the sphere extends downwardly out of the recess and defines a spherical caster.

3,893,701
WHEEL SUSPENSION FOR VEHICLES WITH AN ELASTIC TOE-IN CHANGE

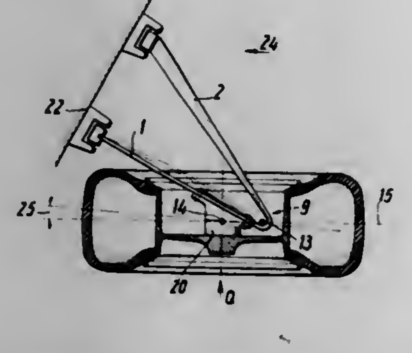
Wilhelm Kroniger, Munchingen-Kallenberg, Germany, assignor to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Germany

Filed Nov. 16, 1973, Ser. No. 416,519

Claims priority, application Germany, Nov. 17, 1972, 2256358

Int. Cl. B60g *3/28*

U.S. Cl. 280—124 A **8 Claims**



1. A wheel suspension for vehicles having an elastic toe-in change which comprises guide means including guide arm means pivotally connected at a relatively fixed part and operatively connected with a wheel carrier means for guiding the wheel with respect to the relatively fixed part of the vehicle, characterized in that one guide arm consists of a leaf spring and is operatively connected with a relatively rigid guide arm means, and in that said guide arm means are connected with each other at the side thereof, opposite the pivotal connection of the guide means at the relatively fixed part, by way of a joint means effectively providing a substantially vertical pivot axis located substantially in the wheel center plane passing through the point of contact of the wheel with the road surface to effect a defined toe-in of the wheel when lateral forces occur and to prevent changes in wheel position in the toe-out direction when peripheral forces occur.

3,893,702
VEHICLE SUSPENSION SYSTEM

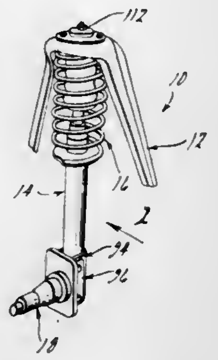
Johan H. Keijzer, 7 Septemberlaan 3, 3500 Hasselt, and Gerry O. Maes, Terbiestweg, 29A, 3800 Sint-Truiden, both of Belgium

Filed May 2, 1974, Ser. No. 466,230

Int. Cl. B60g *11/26*

U.S. Cl. 280—124 F **18 Claims**

1. A vehicle suspension system for use in operatively supporting the road engaging wheels on an automotive vehicle,
said suspension including at least one suspension strut comprising an elongated tubular pressure cylinder,
a valved piston reciprocably disposed in said cylinder and connected to one end of a piston rod extending axially from one end of said cylinder,
attachment means operatively securing one end of said piston rod to a sprung portion of the associated vehicle,
a rod guide assembly disposed at one end of said pressure cylinder for supporting said piston rod for reciprocal movement relative to said cylinder,
said assembly including a rod guide member defining a central bore within which said piston rod is reciprocally disposed, the outer end of said bore being formed with a counterbore defining an axially upwardly projecting annular flange and an annular recess extending around said piston rod,
an annular sealing element disposed within said recess adapted to slidably and sealingly engage the outer periphery of said piston rod,
an elongated reserve tube extending concentrically around said pressure cylinder,
said reserve tube being spaced radially outwardly from said pressure cylinder and defining a fluid reservoir therewith,
a base valve located at the opposite end of said pressure cylinder from said rod guide and operable to control fluid flow between the interior of said pressure cylinder and said reservoir,



a wheel spindle located adjacent one end of said strut and including a first portion fixedly secured to the outer periphery of said reserve tube and a second portion removably secured to said first portion and adapted to support a vehicle wheel thereon,
the inner periphery of the end of said reserve tube adjacent said rod guide assembly being of substantially the same size as the outer periphery of said upwardly projecting annular flange and extending axially beyond the axially outer end of said flange, with the terminal portion thereof being deformed radially inwardly over at least a portion of the axially outer end of said flange, and
a helical coil spring extending around at least a portion of said strut and supported at one end by a spring support plate fixedly secured to said reserve tube, with the opposite end of said spring acting against the associated sprung portion of the vehicle.

3,893,703
AUTOMATICALLY DEPLOYED OCCUPANT RESTRAINT SYSTEM

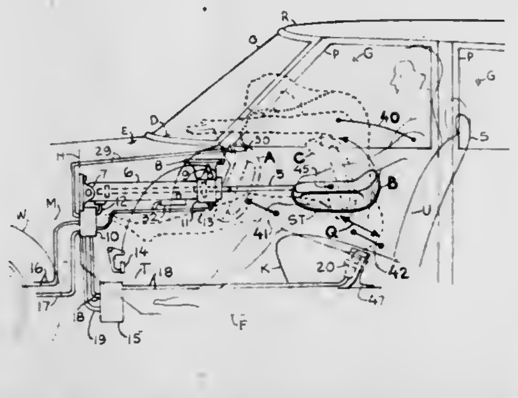
John J. Chika, 1350 Orchard Ridge Rd., Bloomfield Hills, Mich. 48013

Filed Aug. 7, 1972, Ser. No. 278,559

Int. Cl. B60r *21/06*

U.S. Cl. 280—150 B **47 Claims**

1. In a safety device for protecting an occupant of a transportation vehicle seat including an occupant compartment defined by a seat and a rigid structure spaced adjacently to the seat, a protective element having a relatively narrow surface and a relatively wider surface portion, means including a supporting structure attached to the adjacent rigid structure of the compartment for adjustably supporting and automatically positioning the protective element in an active position in proximity to said seat with its wider surface portion substantially horizontal and extending in proximity to the occupant and transversely to and higher than the seat-cushion and removing it there-from to a stored away from the proximity to said seat, means tiltably connecting said protective element to said supporting structure for tiltable movement about an axis transverse with respect to said seat whereby said wider surface portion of said protective element may be turned from said horizontal position to a position wherein it presents said wider surface portion toward the torso of the occupant of said seat when any forward pressure is exerted against the rear edge of said protective element as when the occupant moves forwardly as a result of any sudden deceleration of the vehicle and his torso is forced against said protective element,



wherein said means for the automatic positioning of said protective element is controlled by two sensing means: a first one for sensing when said seat is occupied and second for sensing when said vehicle reaches predetermined forward speed, the two sensing means acting in sequence and being in series with each other effecting the actuation of said means for automatic positioning of said protective element into proximity of said seat only when both of them are actuated.

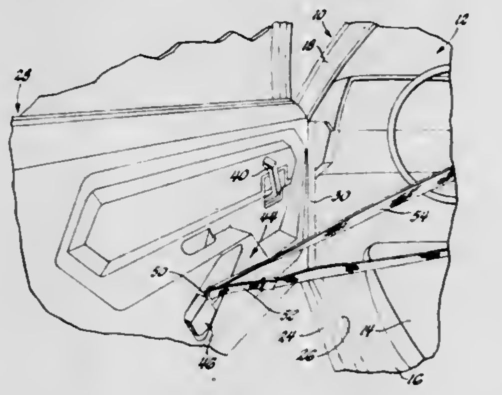
3,893,704
VEHICLE BODY OCCUPANT RESTRAINT BELT ARRANGEMENT INCLUDING DOOR MOUNTED BUCKLE

Charles H. Torner, Rochester, and Richard F. Carella, Mount Clemens, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 27, 1974, Ser. No. 510,123

Int. Cl. B60r *21/10*

U.S. Cl. 280—150 SB **5 Claims**



1. In a vehicle body including a door movable between open and closed positions laterally adjacent a seat and having a door lock for holding the door in closed position, a restraint belt arrangement for restraining an occupant of the seat, the belt arrangement comprising:
a restraint belt having one end secured adjacent an inboard portion of the seat and having a male latch member secured to the other end thereof;
a female buckle for selectively receiving and securing the latch member, the buckle being actuatable to release the latch member;
a slide assembly mounted on the door and supporting the buckle for movement between retracted and extended positions relative thereto, the retracted buckle being positioned in a lower rearward position relative to a seated occupant when the door is closed so that the buckle secures the latch member at a location positioning the restraint belt in an occupant restraining position across this occupant, the extended buckle being located upwardly and forwardly from the retracted buckle so as to be readily accessible to the seated occupant for receiving the latch member;
means on the slide assembly for normally biasing the buckle to the extended position so as to facilitate access of the occupant to the buckle for securement of the latch member thereto; and
a releasable detent on the slide assembly for holding the buckle in the retracted position upon movement thereto so as to thereby secure the belt in the restraining position when the latch member is secured to the buckle, the detent being released to allow the buckle bias to return the buckle to extended position for convenient access to the occupant.

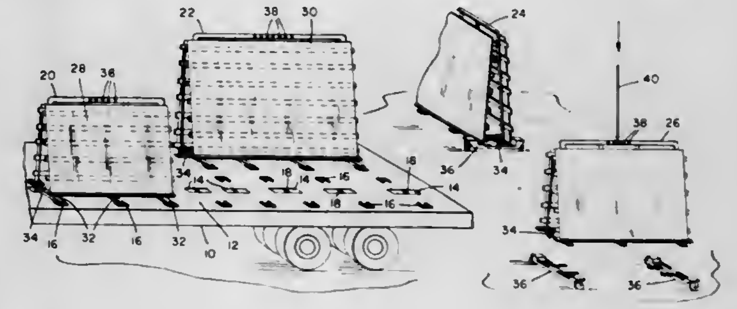
3,893,705
TRANSPORTABLE RACK CONSTRUCTION

Donald D. Allen, Pittsburgh, Pa., assignor to Cobbledick-Kibbe Glass Company, Oakland, Calif.

Filed Apr. 29, 1974, Ser. No. 465,043

Int. Cl. B60p *7/00*

U.S. Cl. 280—179 R **11 Claims**



1. A system for transporting flat glass from a distribution point to a dealer or job site, said system comprising:
a truck bed having at least one row of slots formed therein and a plurality of pins located in the respective slots, one of the pins at least partially spanning each of the slots;
a rack adapted to support a quantity of flat glass, said rack including a base portion adapted to be placed on the truck bed for transporting the glass thereon;
a pair of hooks, one hook disposed at each end of the base portion of the rack, said hooks adapted to selectively project downwardly into respective slots in the truck bed and releasably engage the pins associated with the respective slots to fix the rack to the truck bed for transportation of glass, said hooks being releasable from said pins to allow the rack containing the quantity of flat glass thereon to be removed from the truck bed; and
means for actuating the hooks so that said hooks project downwardly into respective slots in the truck bed, said actuating means including toggle locking means for locking the hooks in the engaged position.

3,893,706
RIDING TOY

Elmer R. Hagen, 230 W. Genesee St., Royal Arms, and Taras Hrynyk, 19 Richardson Ave., both of Auburn, N.Y. 13021

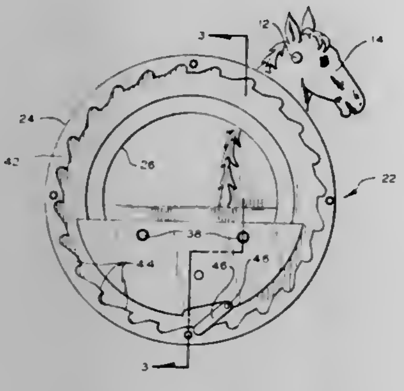
Filed May 22, 1974, Ser. No. 472,165

Int. Cl. A63g *15/00*

U.S. Cl. 280—207 **10 Claims**

1. A childs riding toy comprising:
a. a seat portion disposed to support a rider;
b. a pair of coaxial wheels of equal diameter;
c. support means connecting said seat to said wheels for relative rotational movement therebetween; and
d. said seat, wheels and support means being relatively arranged so that a rider on said seat has a center of gravity

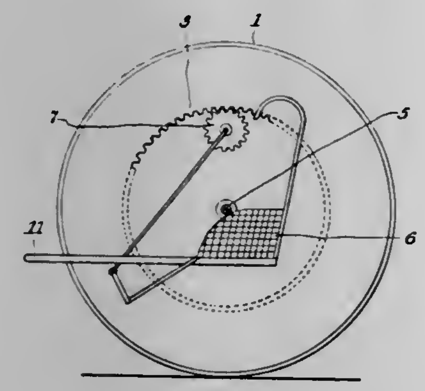
higher than the axis of said wheels, whereby shifting the rider's body forward and backward produces rotation of said seat; and



e. ratchet means connected between said support means and said wheels to transmit rotation of said seat in one direction through said support means to said wheels while allowing rotation of said seat and support means relative to said wheels in the opposite direction.

3,893,707
TOY VEHICLE

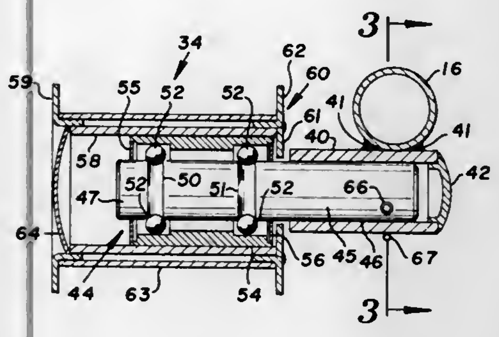
Frederick F. Samsel, Berwick, Pa., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Feb. 19, 1974, Ser. No. 443,356
Int. Cl. B62k *9/11*
U.S. Cl. 280—208 1 Claim



1. A toy vehicle, comprising
a pair of wheels in spaced parallel relation each having an internally toothed annular member on the surface thereof facing the other;
an axle rotatably mounted in the wheels at the centers thereof;
a seat rotatably supported on the axle and hanging below the axle;
a pair of drive gears each drivably coupled to a corresponding one of the annular members;
hand crank means mounted on the seat and supporting the drive gears for rotation with the hand crank means for manually rotating the sheels, the hand crank means comprising a pair of hand cranks each independently rotatably mounted and each affixed to a corresponding one of the drive gears; and
rod means removably affixed to the front of the seat and extending beyond the rims of the wheels for halting rotation of the seat with the wheels upon rotation of the wheels with the drive gears fixed in position.

3,893,708
BEARING ASSEMBLY FOR WHEELCHAIR STRUCTURES

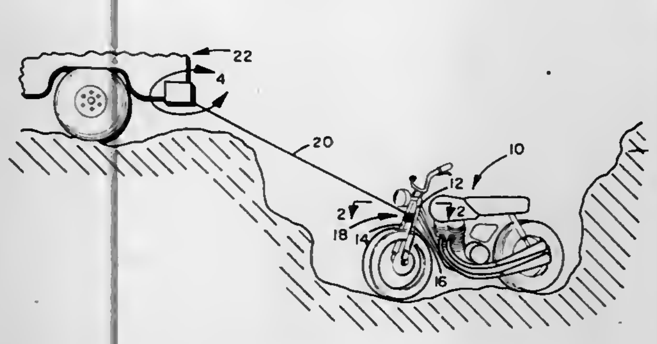
Richard D. Moroney, Bloomington, Minn., assignor to Theradyne Corporation, Jordan, Minn.
Filed Feb. 6, 1974, Ser. No. 439,873
Int. Cl. B62m *1/14*
U.S. Cl. 280—242 WC 5 Claims



1. In an invalid supporting wheelchair having frame means, seat means supported upon said frame means, and wheel receiving spindle means mounted upon said frame means, said wheel receiving spindle means comprising:
a. wheel supporting spindle receiving sleeve means rigidly mounted upon said frame means, a bearing assembly having a journal shaft spindle extending laterally therefrom and having the inner end thereof received within said sleeve means;
b. means arranged along said journal shaft spindle and adjacent the outer end thereof defining a pair of axially spaced inner bearing races;
c. bearing means disposed along said inner races and outer race means disposed radially outwardly of said bearing means and retaining said bearing means radially therewithin, said outer race means comprising a bearing means retaining sleeve with axially spaced outer bearing races;
d. wheel hub means comprising a central spindle receiving sleeve with hub flanges disposed at either end thereof and mounted radially outwardly of said bearing means and receiving said outer race means rigidly therewithin, and arranged to turn with said outer race means;
e. a generally radially extending bore formed within said wheel supporting spindle receiving sleeve means and having releasable locking pin means extending therethrough, and recess means formed along said journal means for receiving said releasable locking pin means therewithin.

3,893,709
VEHICLE TOWING CABLE APPARATUS

Bernard H. Gertler, Jr., 1696 Samar Dr., Costa Mesa, Calif. 92626
Filed Feb. 11, 1974, Ser. No. 441,013
Int. Cl.² B60D *1/18*
U.S. Cl. 280—292 12 Claims

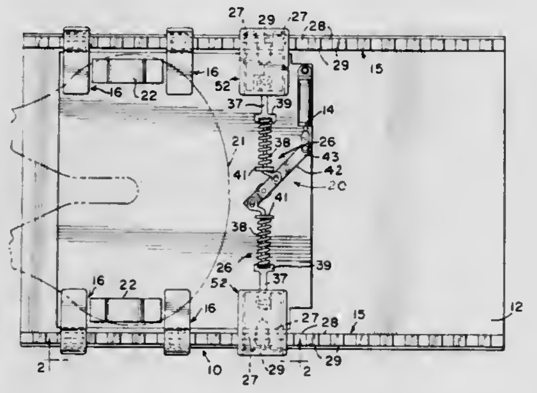


1. A motorcycle towing apparatus comprising:
a cylindrical spindle;
a spool mounted for rotational movement on said cylindrical spindle;

a collar member for movement along the axis of said spindle to cause said spindle to be held in expanded relationship against the motorcycle fork member;
means for locking said spool against rotation; and,
a cable attached to said spool for rolled retraction thereon.

3,893,710
SLACK-FREE FIFTH WHEEL SLIDER

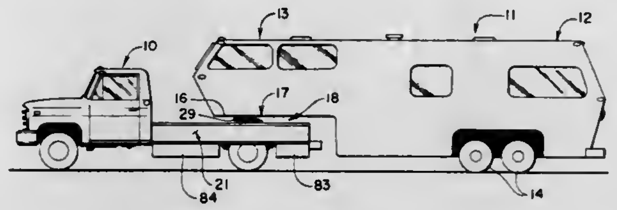
Francis Eli Madura, Whiting, Ind., assignor to Amsted Industries Incorporated, Chicago, Ill.
Filed June 3, 1974, Ser. No. 475,588
Int. Cl. B62d *53/06*
U.S. Cl. 280—407 15 Claims



1. A fifth wheel slider for adjustably positioning a fifth wheel on the frame of a tractor, said slider comprising a base plate adapted to be fixedly attached on a tractor, a pair of laterally spaced racks including a plurality of teeth having parallel side walls separated by spaces along the length thereof, fifth wheel support means mounted on said base for lengthwise movement and adapted to support a fifth wheel, latch means on said fifth wheel support means mounted for engagement with said rack teeth for retaining said support means fixed against lengthwise movement, said latch means including pairs of lengthwise spaced fingers have confronting tapered edges merging toward the inner end and parallel opposed edges disposable within the spaces and tapering to a width greater than the width of the space to wedgingly engage with the side walls of the teeth located on the opposite sides of one of said rack teeth of each of said racks to selectively position said fifth wheel support means on said base.

3,893,711
PICKUP TRUCK BODY AND COUPLER FOR TRAILERS

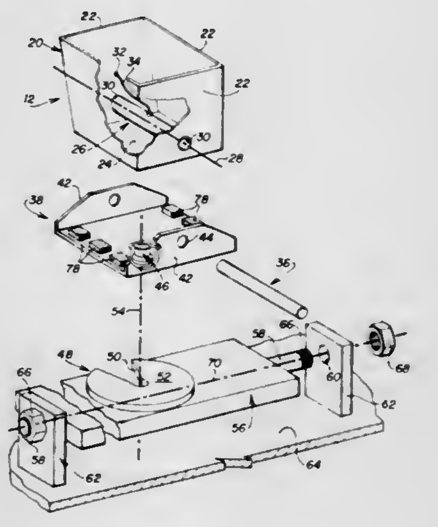
Frank E. Goodwin, 1015 N. 23rd St., Billings, Mont. 59101
Filed June 6, 1973, Ser. No. 367,465
Int. Cl.² B62D *53/06*
U.S. Cl. 280—423 R 7 Claims



1. The combination of a truck and a recreational trailer having a forward portion overhanging the body of the truck and swivelly secured to the truck body,
said truck having longitudinal frame members, a rear axle secured thereto, and a truck body;
said truck body having a floor extending the full length of said truck body, a pair of enclosed wheel wells extending above the floor and into which the rear wheels of the truck can extend, and two narrow side body panels of a height above said floor substantially equal to that of said wheel wells so that the side panels of said truck body do not extend appreciably above the tops of said wheel wells, the tops of each of said wheel wells being relatively flat for a substantial portion of its length, said wheel wells extending lengthwise for only a portion of the length of said truck body,
a plurality of transverse beams secured to the underside of said truck body beneath said floor and resting upon said longitudinal frame members of the truck,
a first swivel coupling unit,
a support for said first swivel coupling unit,
means for supporting said coupling unit support above said floor between said wheel wells from at least two of said transverse beams,
said truck body providing a cargo carrying space above said floor between said side panels which extends the full length of said truck body and which cargo carrying space is relatively unobstructed except for the relatively short region occupied by said wheel wells, said first swivel coupling unit, and the supporting means therefor,
and said trailer having a forward portion overhanging the body of the truck and a second swivel coupling unit extending downwardly from said forward portion and swivelly coupled to said first swivel coupling unit to support said forward portion in a vertical position in which the bottom of said forward portion is as close to the tops of said wheel wells as it is to the tops of said side panels.

3,893,712
HITCH FOR FIFTH WHEEL TRAVEL TRAILER

Eugene A. Sallier, 2211 W. Oak St., Denton, Tex. 76201
Filed May 28, 1974, Ser. No. 473,564
Int. Cl. B62d *53/08*
U.S. Cl. 280—440 6 Claims

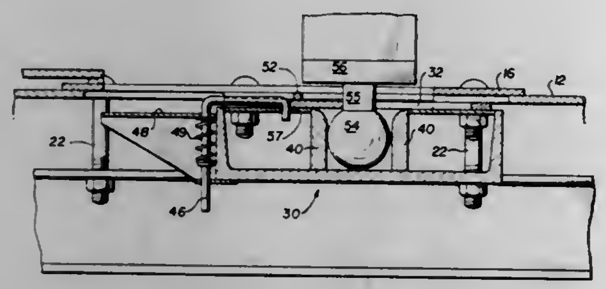


1. A hitch for connecting a fifth wheel travel trailer to a pickup truck which comprises:
a box frame depending from the frame of the travel trailer at the front end thereof and comprising side walls and a bottom wall;
a rod;
means supporting the rod on the box frame for pivotal movement about a longitudinal axis and comprising a sleeve mounted on the box frame and defining said longitudinal axis and having the rod pivotally received therein; a saddle mounted on the rod for pivotal movement about said longitudinal axis and comprising a bottom wall and side walls extending adjacent to and positioned outside of the side walls of the box frame;
the rod being secured to the side walls of the saddle so that the saddle pivots with the rod about the longitudinal axis; a king pin depending from the bottom wall of the saddle for engagement with latching apparatus mounted on the bed of the pickup truck to connect the travel trailer to the pickup truck; and

a plurality of resilient members mounted on the bottom wall of the saddle in engagement with the bottom wall of the box frame for regulating pivotal movement of the saddle about said longitudinal axis and thereby stabilizing the pivotal movement of the' travel trailer relative to the pickup truck.

3,893,713
PICK-UP TRUCK COUPLER FOR GOOSENECK BALL TRAILER HITCHES

Charles D. Ivy, Rt. 5, Box 243, Monroe, La. 71201
Filed June 28, 1974, Ser. No. 484,114
Int. Cl.² B60D *1/06*
U.S. Cl. 280—511 **2 Claims**

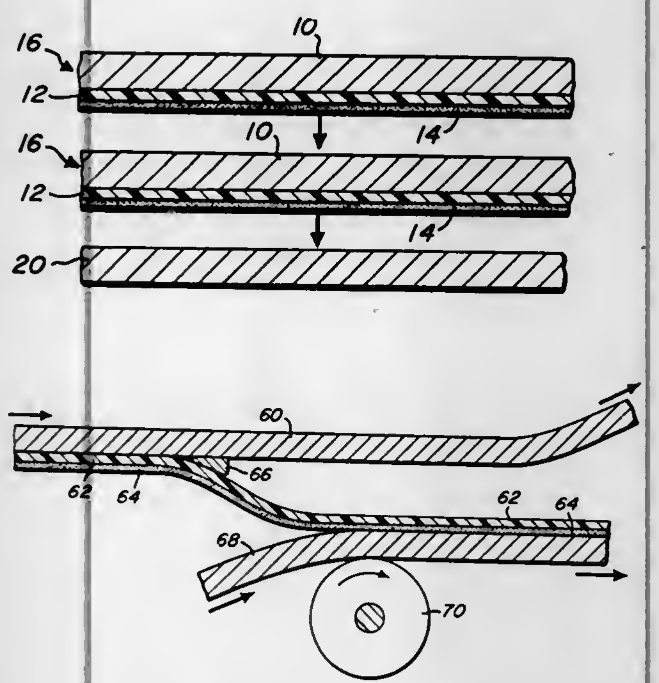


1. The combination with the load carrying bed of a truck having an opening formed in said bed over the rear axle thereof; of a bed plate covering said opening and fixed to said bed; said plate having a trailer hitch ball receiving coupler fixed to the bottom of the central area thereof and an access door formed therein; said coupler having a horizontally extending plate with a ball receiving opening therein; longitudinally extending guide members mounted on opposite sides of said opening; said plate including a lock receiving aperture; a planar horizontally moving locking slide movable in said guide members and having a key hole slot including a large opening for the reception of said ball and a smaller opening for engaging the neck of said ball to lock it in said coupler; and locking means connectable with said lock receiving aperture.

3,893,714
BUSINESS SHEET HAVING REMOVABLE TRANSFER MEANS AND METHOD OF MAKING

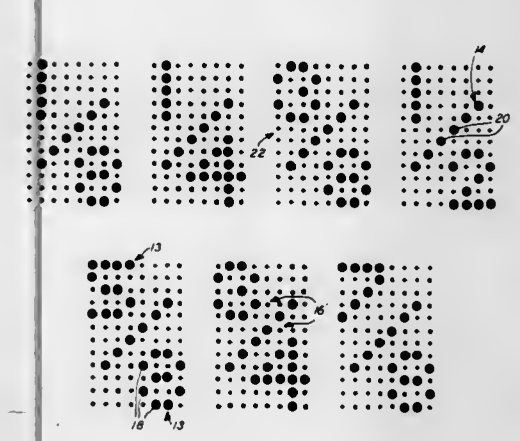
William T. Paulson, Kettering, Ohio; David M. Davidson, deceased, late of Dayton, Ohio, and by Clara A. Davidson, executrix, Dayton, Ohio, assignors to The Standard Register Company, Dayton, Ohio
Continuation-in-part of Ser. No. 156,704, June 25, 1971, Pat. No. 3,766,755, which is a continuation-in-part of Ser. No. 800,167, Feb. 18, 1969, abandoned. This application July 12, 1973, Ser. No. 378,546The portion of the term of this patent subsequent to Dec. 4, 1990, has been disclaimed.
Int. Cl. B41m *5/10*
U.S. Cl. 282—28 R **11 Claims**

5. A method of producing a continuous business form article, comprising the steps of directing a continuous paper web from a supply roll to a plastics material coating unit, releasably coating a thin film of plastics material onto the web to form a film thickness less than 0.0005 inch, coating a layer of image transfer material onto at least a portion of said film, releasing the combined said film and layer of image transfer material from said web, and winding the assembly of the paper web, the film of plastics material and the coating of image transfer material into a roll.



3,893,715
MATRIX FRACTION FONT

Gary R. Haak, Chicago, Ill., assignor to Teletype Corporation, Skokie, Ill.
Filed Dec. 28, 1973, Ser. No. 429,338
Int. Cl. B42d *15/00*
U.S. Cl. 283—1 R **10 Claims**

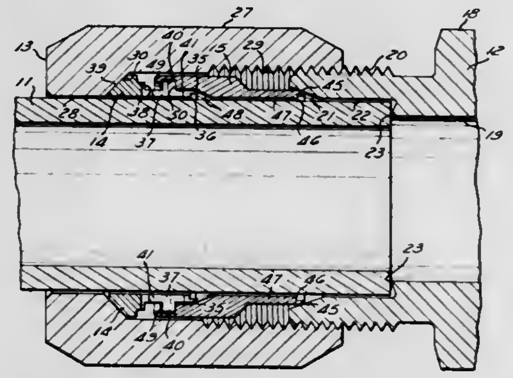


1. A font of numerical fraction-like figures for use with a character element printing system having a parallelogram-shaped major matrix of possible character-element positions, said major matrix having corners, including:

- a first minor matrix of possible character-element positions located in a first corner of the major matrix;
- a second minor matrix of possible character-element positions located in a second corner of the major matrix diagonally opposite from the first corner; and
- a discontinuous line extending generally between a third corner of the major matrix and a fourth corner of the major matrix.

3,893,716
FLARELESS FITTING

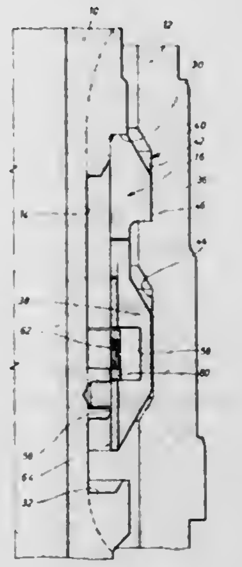
Luis Moreiras, Northfield, and Hiralal V. Patel, Euclid, both of Ohio, assignors to The Weatherhead Company, Cleveland, Ohio
Filed Apr. 1, 1974, Ser. No. 456,777
Int. Cl. F16l *19/06*
U.S. Cl. 285—3 **11 Claims**



1. In combination, a tube, a body, a nut, a rear sleeve, and a front sleeve, said body including a threaded body portion and a conical internal body camming surface, said nut including a threaded nut portion for threadably engaging said threaded body portion to axially advance said nut relative to said body from a starting position to a midway position and from said midway position to a tightened position, and a nut abutment surface, said front sleeve being annular and being disposed between said rear sleeve and said body camming surface, said front sleeve including a front sleeve annular pilot at one of its ends and a conical internal front sleeve camming surface at its other end, said rear sleeve including a rear sleeve annular pilot at one of its ends and a rear sleeve abutment surface at its other end, a radially outwardly extending shear section means on one of said sleeves transmitting a force in the axial direction between said sleeves when said nut is axially advanced from said starting position to said midway position, said shear section means being frangible to render said shear section means abruptly inoperable to transmit said force when said nut is in said midway position, said front and rear sleeve pilots each being in a radially outward position and said nut abutment surface loosely engaging said rear sleeve abutment surface when said nut is in said starting position, said front sleeve pilot being radially inwardly contracted from said radially outward position by operation of said body camming surface and said rear sleeve pilot being in said radially outward position when said nut is in said midway position, said nut abutment surface exerting a predetermined force in the axial direction on said rear sleeve abutment surface when said nut is in said midway position, said predetermined axial force being equal to the shear force of said shear section means and said shear section means being abruptly broken and rendered inoperable to transmit forces in the axial direction when said midway position is reached whereby the torque required to advance said nut is abruptly decreased when said nut reaches said midway position, said rear sleeve pilot engaging said front sleeve internal camming surface and providing the sole means for transmitting forces in the axial direction from said rear sleeve to said front sleeve when said nut is axially advanced from said midway position to said tightened position whereby only said nut and said rear sleeve are axially advanced relative to said tube when said nut is advanced from said midway position to said tightened position, said rear sleeve pilot being radially inwardly contracted from said radially outward position by operation of said front sleeve internal camming surface when said nut is in said tightened position, said rear sleeve is axially slotted from said rear sleeve pilot, and said rear sleeve pilot is radially inwardly contractible by a substantially lesser axial force than said front sleeve pilot whereby said rear sleeve cannot push said front sleeve axially forwardly when said nut is advanced from said midway position to said tightened position.

3,893,717
WELL CASING HANGER ASSEMBLY

Norman A. Nelson, Houston, Tex., assignor to Samuel W. Putch, Houston, Tex., a part interest
Filed May 15, 1974, Ser. No. 465,028
Int. Cl.² F16L *37/08*
U.S. Cl. 285—3 **6 Claims**

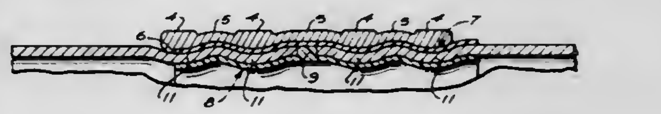


6. In an assembly for connecting first and second tubular members to and from each other in a well by longitudinal movement of the first member, said first member including an annular recess in its peripheral surface adjacent the second member, a radially extending stop shoulder on the first member at each end of the recess, a resiliently expandable and contractible locking means positioned in said recess and axially slidable therein between said stop shoulders, locking shoulder on the first member for locking said locking means in an expandable position, a locking notch on the second member in its peripheral surface adjacent the first member for receiving the expanded and locked locking means, the improvement comprising,

- shearable holding means intermediate the ends of the resiliently expandable and contractible locking means said shearable holding means acting to prevent axial movement of said expandable and contractible locking means on the first member until said locking means engages said locking notch and the shearable holding means which when sheared by downward longitudinal movement of the first member allows the upper portion of the locking means to releasably lock the first anad second members together.

3,893,718
CONSTRICTED COLLAR INSULATED PIPE COUPLING

Jonathan S. Powell, 11 W. State St., Pasadena, Calif. 91105
Filed Nov. 23, 1973, Ser. No. 418,254
Int. Cl. F16l *11/12*
U.S. Cl. 285—53 **2 Claims**



1. A constricted collar pipe coupling, comprising:

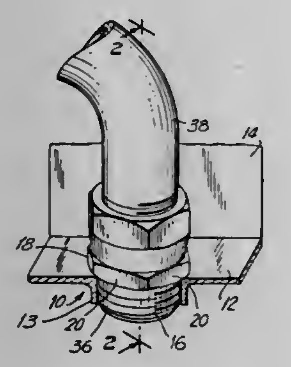
a. an inner sleeve of electrical insulating material having an external stop flange;

b. a pair of pipe ends initially fitted over the sleeve and abutting the stop flange;
c. an outer sleeve of electrical insulating material fitted over the pipe ends;
d. and a collar formed of mallable material having initially a cylindrical bore receiving the outer sleeve, pipe ends and inner sleeve;
e. said collar having, initially, a cylindrical outer surface interrupted by at least a pair of external flanges of uniform thickness overlying each pipe end;
f. said flanges being constricted to essentially the same dimension of the outer cylindrical surface of the collar therebetween producing a pair of undulated depressions in each pipe end and corresponding portions of the sleeves and inner surface of the collar.

3,893,719
LIQUID-TIGHT SWIVEL ADAPTOR FOR ELECTRICAL CONNECTOR

Jonah Eidelberg, Huntington Station, and Thomas Mooney, Mount Sinai, both of N.Y., assignors to Electrical Fittings Corporation, East Farmington, N.Y.

Filed Oct. 21, 1970, Ser. No. 82,557
Int. Cl. F16l *19/00*
U.S. Cl. 285—55 **7 Claims**



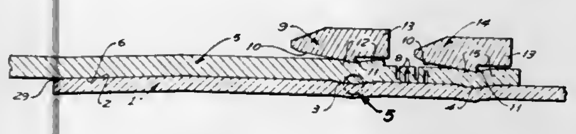
1. A swivel adaptor for coupling an electrical connector to a surface, comprising a tubular body having a bore therethrough and upper and lower portions, the upper portion having an outwardly directed flange and said body being outwardly flared proximate said flange, a resilient sleeve fixedly received within and abutting the surface defining the bore of said upper portion of said body, said sleeve protruding beyond the upper end of said body and positioned to engage the connector end in assembled condition and having its upper portion flexed radially inwardly by the connector end when said connector is in assembled position and said sleeve having an outwardly flared portion being forced against said body flared portion, connector coupling means for maintaining said body, connector and sleeve in assembled sealing relation and including a nut with an inwardly directed collar portion adapted to slidably fit said body upper portion and engage said flange when in connector assembled tightened condition, the inner and outer peripheral end surfaces of said connector being engaged respectively by the end peripheral faces of said sleeve and body upper portion, and means for sealingly mounting said adaptor to said surface.

3,893,720
CONSTRICTOR RING JOINT

Kurt O. Moebius, P.O. Box 2339, Palos Verdes Peninsula, Calif. 90274

Filed Feb. 9, 1973, Ser. No. 331,319
Int. Cl. F16l *13/14*
U.S. Cl. 285—187 **4 Claims**

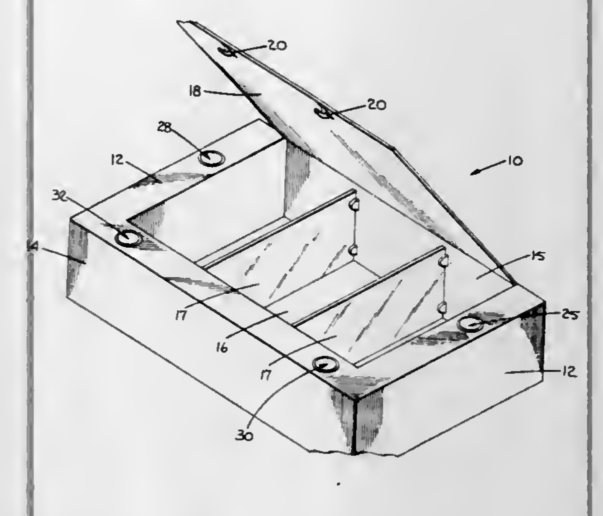
1. A connector comprising:
a. an inner tube having an external cylindrical portion;
b. an outer tube having outer cylindrical surfaces and an internal cylindrical portion telescopingly received over the external cylindrical portion of the inner tube;
c. the outer tube having axially inward of its extremity, a first zone of greater wall thickness and external cylindrical diameter, and having at its extremity, a second zone of lesser wall thickness and external cylindrical dimension;
d. a first constrictor ring surrounding said first zone and having a tapered bore forming an abrupt shoulder at its smaller end, the first constrictor ring being of an inner diameter freely movable axially over the second zone and being internally dimensioned in the region of its shoulder to directly effect progressive localized constriction of both of the inner and outer tubes as the first constrictor ring is moved axially along the first zone thereby to form a first mechanical bond and seal between the tubes within the first zone;
e. a second separate constrictor ring surrounding said second zone and having a tapered bore and abrupt shoulder at its smaller end, the second constrictor ring being internally dimensioned in the region of its shoulder to directly effect progressive localized constriction of both the outer tube and inner tube as the second constrictor ring is moved axially along the second zone thereby to form a second mechanical bond and seal between the tubes within the second zone;
f. one of the tubes including between the first and second constrictor rings a set of corrugations to permit relative axial expansion and contraction of the tubes while maintaining intact the bonds and seals between the tubes.



3,893,721
MEDICINAL SAFETY CABINET

Harry F. Upton, Ridgewood, N.J., assignor to Becton, Dickinson and Company, East Rutherford, N.J.

Filed Nov. 23, 1973, Ser. No. 418,677
Int. Cl. E05c *19/10*
U.S. Cl. 292—30 **7 Claims**

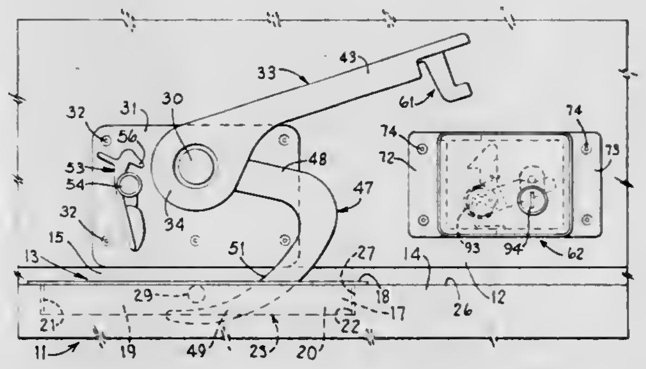


1. An enclosure fitted with a closure secured in the closed position by a latch means;
means for releasing said latch; and
actuating means for operating said latch release means;
said actuating means comprising;
1. first and second sets of push-buttons, each set consisting of two push-buttons and each push-button within a set being spaced from the other push-button a distance greater than the average span between the thumb and any one of the remaining fingers of the hand of a child, but less than the average span between thumb and any one of the remaining fingers of an adult; each of the push-buttons of said first set being located a distance from each of the push-buttons of said second set greater than the average span between thumb and any one of the remaining fingers of a child but less than the average span between the hands of an adult when held in a position of maximum separation;
2. means for blocking operation of one of each of said first and second sets of push-buttons, said means being connected to the remaining push-button of each of said first and second sets of push-buttons and being removable by simultaneous depression of said remaining push-buttons.

3,893,722
LATCH AND LOCK STRUCTURE

Gerald W. Galbreath; Alfred T. Dietrich, and George E. Mosbarger, all of Marion, Ohio, assignors to Overhead Door Corporation, Dallas, Tex.

Filed Nov. 1, 1973, Ser. No. 411,802
Int. Cl.^{2} E05C *3/16*
U.S. Cl. 292—100 **3 Claims**

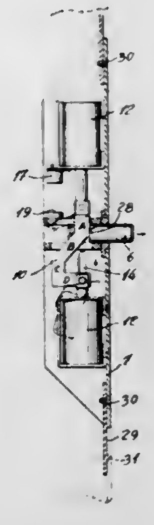


1. In combination, a truck van having a door frame defining an access opening into the interior of said van, a door movably supported on said van and having interior and exterior surfaces, said door being positionable in a closed position wherein it closes said access opening and being movable upwardly into an open position, catch means mounted on the bed of said van, and latch means movably mounted on said door adjacent said exterior surface and coacting with said catch means for holding said door in said closed position, said latch means including a hook-shaped latch bolt swingably mounted on said door and releasably engageable with said catch means, said latch means further including an elongated actuating handle pivotally supported on said door for swinging movement about a pivot axis and coacting with said latch bolt for controlling the movement thereof, said actuating handle being pivotally movable relative to said door between latched and unlatched positions, the improvement comprising:
bracket means fixedly mounted on said door adjacent the exterior surface thereof and projecting outwardly therefrom, said bracket means comprising a boxlike casing cooperating with said exterior surface to define a substantially closed compartment therebetween, said compartment being totally closed except for an opening formed in the top wall of said casing;
said casing also having a front wall which is spaced outwardly from and is substantially parallel to the exterior surface of said door;
said actuating handle having a recessed portion defining a recess therein, the recessed portion of said handle comprising a C-shaped portion fixedly connected to said handle adjacent the free end thereof and defining said recess which extends radially with respect to said pivot axis, the bight and the lower leg of said C-shaped portion projecting through said opening and being totally enclosed within said compartment when said handle is in said latched position, the upper leg of said C-shaped portion abutting the top wall of said casing and overlapping said opening for closing same, whereby said compartment is totally closed when the handle is in said latched position;
lever means disposed within said compartment and pivotally mounted relative to said bracket means, said lever means having a projection means fixedly mounted thereon and disposed for movement between locked and unlocked positions responsive to swinging movement of said lever means, said projection means being disposed within said recess when said projection means is in said locked position and said actuating handle is in its latched position for positively preventing material movement of said handle away from said latched position;
resilient means coacting with said lever means for yieldably urging said lever means in a direction whereby said projection means is automatically moved into said locked position; and
key-operated release means mounted upon said bracket means and engageable with said lever means for pivoting said lever means so that said projection means is moved from its locked position into its unlocked position, said key-operated release means being operated solely by a key and being the sole means for permitting movement of said lever means away from its locked position so as to release said actuating handle, said key-operated release means including a rotatable lock cylinder disposed within said compartment for rotation about an axis which is substantially perpendicular to the front wall of said casing, said lock cylinder being rotatably mounted solely on said front wall and having the key-receiving end thereof projecting through said front wall.

3,893,723
ELECTROMAGNETIC DOOR LOCK

Esdras Boule, 1160 Armand St., Drummondville, Quebec, Canada

Filed Jan. 31, 1974, Ser. No. 438,380
Int. Cl.^{2} E05B *47/02*
U.S. Cl. 292—140 **9 Claims**



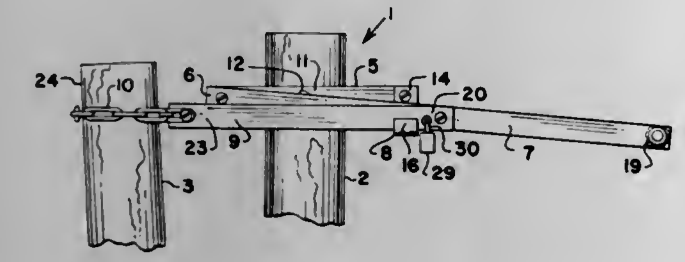
1. An electrically operated door lock comprising:
a. a housing for mounting the door lock and having a bore on one side thereof;
b. a locking pin having a longitudinal axis, said locking pin being disposed in said bore for axial movement therein;
c. a lock operating mechanism mounted in said housing, said mechanism including a first electromagnetic means for driving said locking pin through said bore into a lock position and a second electromagnetic means for driving said pin into an unlock position;

d. a guiding member extending through the locking pin and adapted upon actuation of said first and second electromagnetic means to lead said pin into the lock and unlock positions, respectively;
e. said guiding member including first, second, and third sections;
f. said first section having a centerline which is perpendicular to the longitudinal axis of said locking pin;
g. said second section including a segment having a centerline which is inclined at an angle of approximately 30°–60° with respect to the centerline of said first section, said second section extending between said first and third sections to join said first, second, and third sections together;
h. said third section extending from said section and having a centerline which is substantially perpendicular to the centerline of said first section;
i. said first electromagnetic means being coupled with a distal end of said first section;
j. said second electromagnetic means being coupled with a distal end of said third section;
k. said locking pin including a passage, said passage being partially defined by first, second, and third surfaces, said first and second surfaces being parallel to each other and parallel to said inclined centerline of said segment of said second section of said guiding member, said third surface joining said first surface and being disposed perpendicularly to the longitudinal axis of said locking pin and parallel to the centerline of said first section;
l. said inclined segment of said second section of said guiding member engaging said first surface when said locking pin is driven from the unlock position into the lock position, said inclined segment engaging said second surface when said locking pin is driven from said lock position to said unlock position, said first section of said guiding member engaging said third surface in abutting relationship therewith when said locking pin is in the lock position to thereby maintain said locking pin in such position until it is driven therefrom by said electromagnetic means.

3,893,724

GATE LOCKING DEVICE

Frederick A. Reinfeld, 137 N. 69 Highway, Liberty, Mo. 64068
Filed Feb. 28, 1974, Ser. No. 446,637
Int. Cl.² E06B *3/80*
U.S. Cl. 292—247 **2 Claims**

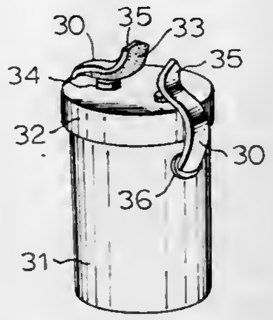


1. A gate locking device for use with a fence gate, having a plurality of spaced wires connecting a post at one side of a gate opening and a gate end member with the wires being of a length that the gate extends substantially across the gate opening, said gate locking device comprising:
a. an elongated mounting member secured to a generally upstanding fence post and positioned adjacent a top thereof in a substantially level position, said fence post being at the other side of a gate opening, said mounting member being substantially normal to the fence post and having an upwardly opening generally U-shaped stop mounted adjacent one end thereof in depending relation thereto;
b. an elongated lever member having one end thereof pivotally mounted on the other end of said mounting member, said lever member being movable between a position depending from the other end of said mounting member and a position above and in engagement with said stop, said lever member having a handle on the other end thereof;
c. an arm having one end thereof pivotally mounted on said lever member at a point intermediate the ends of said lever member, said arm being movable with said lever member;
d. a flexible means on the other end of said arm movable over and engageable with an upper end portion of an end member of a fence gate having a lower end portion thereof retained in a position adjacent the fence post for moving the upper end portion of the end member toward the fence post upon movement of said lever member and arm toward and into engagement with said stop and for holding the upper end portion of the end member adjacent the stationary fence post;
e. said stop extending outwardly from adjacent the one end of said mounting member and being adapted to support thereon said lever member and said arm when in gate closing position;
f. said stop being positioned between the one end of said arm and the one end of said lever member when said lever member is above and in engagement with said stop; and
g. said stop being positioned below the other end of said mounting member whereby the pivotal mounting of the one end of said lever member on said mounting member is positioned above the pivotal mounting of the one end of said arm on said lever member when said lever member is above and in engagement with said stop and gate retaining force on said arm acts to retain the lever member engaged with said stop.

3,893,725

DEVICE FOR LATCHING CONTAINERS

Glenn A. Coulter, and Thomas L. Coulter, both of 3113 Norris Cr., Columbus, Ga. 31907
Filed Feb. 25, 1974, Ser. No. 445,461
Int. Cl. B65d *51/100, 45/08*
U.S. Cl. 292—258 **7 Claims**

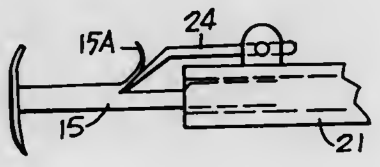


1. A latching device for both securely retaining the cover of a container in place and providing for quick removal of said cover from said container, comprising:
a container having a pair of straps, each of which is secured at one end thereof to opposite sides of said container;
a pad of separable pile fastener material firmly affixed adjacent the other end of each strap; and
a cover having a pair of pads of separable pile fastener material firmly affixed to the cover, wherein said separable pile fastener material affixed to said cover complements the material affixed to the straps so that the straps retain the cover on the container when the material affixed thereto is pressed into engagement with the material affixed to the cover.

3,893,726

SHOCK ABSORBER VEHICLE BUMPER

Clayton B. Strohschein, Channelview, Tex., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Apr. 1, 1974, Ser. No. 456,749
Int. Cl. B60r *19/04*
U.S. Cl. 293—1 **1 Claim**

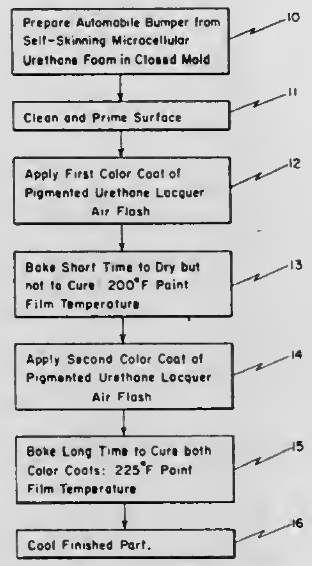


1. A vehicle bumper mechanism for the reduction of collision forces on a protected vehicle to which the bumper mechanism is mounted, comprising a
vehicle bumper mounted on a support member, said support member being in longitudinal telescopic engagement with a chassis support member of the attached vehicle, said bumper support member fitted with means for extending the bumper away from the attached vehicle, prior to a collision, together with shear knife means fitted on the chassis support member for shearing a lamina of the bumper support member when the bumper support member is driven back abruptly towards the chassis support member by the impact of a collision, in which the shear knife means positions the shear knife to shear a variable thickness of bumper support member, with the thickkness of the sheared lamina being proportional to the rate of deceleration of the attached vehicle.

3,893,727

TWO-TONE PAINTING OF FLEXIBLE URETHANE FOAM AUTOMOBILE EXTERIOR PARTS

Kenneth G. Desilets, Dover, N.H., assignor to McCord Corporation, Detroit, Mich.
Filed Oct. 30, 1973, Ser. No. 411,046
Int. Cl. B60r *19/08;* **B32b** *27/40*
U.S. Cl. 293—71 R **4 Claims**

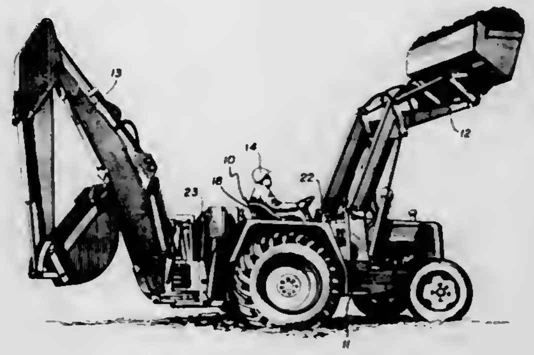

Prepare Automobile Bumper from Self-Skinning Microcellular Urethane Foam in Closed Mold
10
Clean and Prime Surface
11
Apply First Color Coat of Pigmented Urethane Lacquer Air Flash
12
Bake Short Time to Dry but not to Cure 200°F Paint Film Temperature
13
Apply Second Color Coat of Pigmented Urethane Lacquer Air Flash
14
Bake Long Time to Cure both Color Coats: 225°F Paint Film Temperature
15
Cool Finished Part.
16

2. In the finishing of the surface of an automobile exterior part of a self-skinning microcellular urethane foam with a well adhered flexible, extensible, and pigmented top coat having thermo-setting resin vehicle requiring heating to a cure temperature to cure, wherein said automobile exterior part after application of said top coat is baked at an ambient temperature substantially in excess of said cure temperature for a substantial period of time; the improvement permitting two-tone finishing of said article with minimum degradation of said microcellular urethane foam, comprising in combination the steps of:
1. Applying a first paint coat 0.8 to 3 mils thick, dry basis, to said surface composed of:
   a. a thermosetting polyester-extended melamine resin vehicle
   b. pigment
   c. solvent
   d. a cure catalyst for said vehicle in an amount substantially greater than that, if any, contained in a second paint coat, described in step 3, as an aid in controlling the extent of partial cure of said first paint coat;
2. Baking the thus coated article for a short period of time to dry but not completely cure said first paint coat;
3. Immediately applying to said surface said second paint coat 1 to 4 mils thick, dry basis, composed of:
   a. a thermosetting polyester-extended melamine resin vehicle
   b. a pigment substantially different from the pigment of step 1
   c. a solvent;
4. And baking the thus twice coated article for a substantial period of time at an oven temperature in excess of said cure temperature to cure both said first and second paint coats.

3,893,728

MATERIAL HANDLING APPARATUS

Vaino J. Holopainen, East Sullivan, N.H. 03445
Filed Nov. 19, 1973, Ser. No. 416,829
Int. Cl. B60n *1/02*
U.S. Cl. 296—65 R **11 Claims**

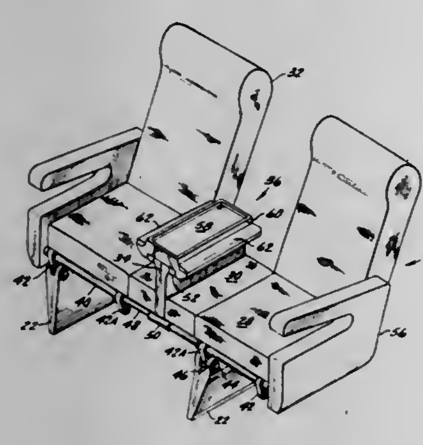


1. Material handling apparatus, comprising:
a. a vehicle body having a substantial horizontal deck longitudinally of the body,
b. a pair of spaced, parallel fenders extending longitudinally of the body, one fender being located on each side of the deck,
c. a seat mounted above the deck between the fenders,
d. a support arm pivoted at one end to a fender for swinging movement through an angle of approximately 90° in a horizontal plane below the level of the bottom of the seat, the other end of the arm being pivotally attached to the bottom of the seat at the center front thereof, and
e. means to cause the seat to rotate through an angle of 180° when the arm swings through its angle of 90°, the means also serving to cause the seat to move a substantial distance longitudinally as it pivots through its angle of 180° from a forwardly-directed position were the operator has access to the driving controls of the vehicle to a rearwardly-directed position where the operator has access to handling controls of the vehicle, the means consisting of a control arm pivotally connected at one end to the same fender to which the support arm is pivoted, but at a point spaced forwardly a substantial distance from the connection of the support arm, the other end of the control arm being pivotally connected to the bottom of the seat at the center of one side.

3,893,729
CONVERTIBLE PASSENGER SEAT

Gale K. Sherman, Tustin, and Guy A. Smith, Newport Beach, both of Calif., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed Nov. 18, 1974, Ser. No. 524,385
Int. Cl.^{2} A47C *13/00*
U.S. Cl. 297—118 **8 Claims**

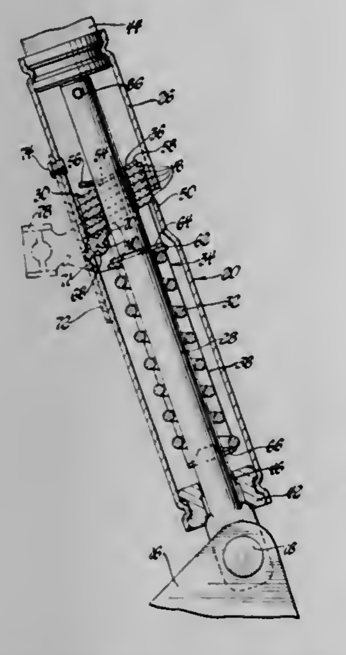


1. A convertible passenger seat comprising a two-seat unit having an extensible seat bottom frame removably attachable to a pair of seat supports remaining in spaced relationship;
- said seat bottom frame comprising an I-shaped central member and a pair of U-shaped end members, the legs of which are telescopically engageable with said central member;
- fastening means on said end members at a first position thereon for fastening said end members to said seat supports in a first position; and
- fastening means on at least one of said end members at a second position thereon for fastening said one of said end members to one of said seat supports in a second position.

3,893,730
SEAT POSITIONER

Robert I. Homier, Farmington, and Raymond C. Posh, Livonia, both of Mich., assignors to Lear Siegler, Inc., Detroit, Mich.

Filed Aug. 5, 1974, Ser. No. 494,687
Int. Cl. B60n *1/06*
U.S. Cl. 297—375 **15 Claims**



1. Seat positioning mechanism comprising: a pair of elongated members slidably connected for telescopic movement between extended and retracted positions with respect to each other; friction lock means carried by one of said members; said friction lock means having a lock position in frictional engagement with the other of said members to frictionally restrain said members in any selected position between said extended and retracted positions against relative movement with respect to each other, and an unlock position to permit free relative movement of said members; and locking and biasing means interconnecting said friction lock means and said other member; said locking and biasing means including a return spring and a plunger; said plunger having a base and arm means projecting therefrom, said base extending transversely of the longitudinal axis of said members and engaging said friction lock means on one side thereof, said arm means extending from said base to the opposite side of said friction lock means, and said return spring being connected between said other member and the end of said arm means opposite said base to resiliently urge said members toward the retracted position and said friction lock means toward its lock position.

3,893,731
ADJUSTABLE COUCH WITH ACOUSTICAL HEAD REST

Richard G. Maggs, 4050 La Junta Dr., Claremont, Calif. 91711

Filed Oct. 9, 1973, Ser. No. 404,266
Int. Cl. A47c *7/2, 7/14*
U.S. Cl. 297—456 **3 Claims**

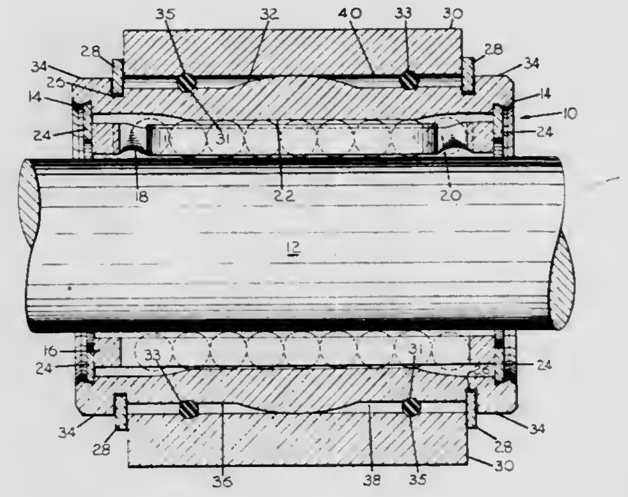
1. A couch structure, comprising:
- a. a bag member including side walls of greater dimension at their central portions and lesser dimension at their end portions, and a botton wall, back wall, end walls and top wall of essentially uniform width;
- b. mobile pellets contained in the bag member;
- c. the bag member being dimensioned to receive a person thereon, and the mobile pellets being responsive to body pressure so as to permit the upper surface of the bag member to conform to a person supported thereon;
- d. a head rest extension formed by an end wall and adjacent end portions of the side walls, back wall and top wall of the bag member and forming a compartment exposed to the interior of the bag member;
- e. and a cushion block filling the compartment and presenting an end surface exposed to the mobile pellets whereby a varying direction of force exerted by the pellets against the end surface of the cushion block due to body movement on the bag member causes the head rest to tilt as a unit.

3,893,732
ANTI-FRICTION BALL BEARING ASSEMBLY

Albert R. McCloskey, Fairfield, Conn., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Mar. 18, 1974, Ser. No. 451,864
Int. Cl.^{2} F16C *29/06*
U.S. Cl. 308—6 C **7 Claims**

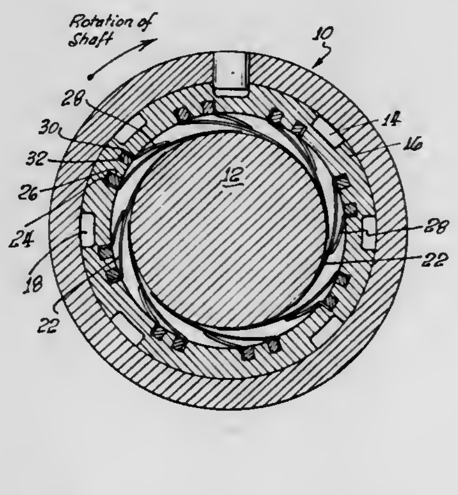
1. An anti-friction ball bearing assembly, adapted for mounting within a housing comprising an outer sleeve and an inner sleeve concentrically fitting within said outer sleeve, said inner sleeve having a number of tracks defining paths for the circulation of balls between said sleeves and said shaft during movement between said shaft and said bearing assembly, said balls, during a portion of their circulation path, contacting said shaft and the inner surface of said outer sleeve at a plurality of raceway surfaces provided thereon, said outer sleeve having a spherical seat on its outer surface and integral thereto to accommodate misalignment between said housing and said shaft, a resilient 0 ring disposed at least one side of said spherical seat to resiliently restrain the movement of said ball bearing assembly on said spherical seat.



3,893,733
FOIL BEARING ARRANGEMENTS

Alexander Silver, Tarazana, and Johan A. Friedericy, Palos Verdes Estates, both of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Dec. 13, 1972, Ser. No. 314,890
Int. Cl. F16c *17/16*
U.S. Cl. 308—9 **6 Claims**

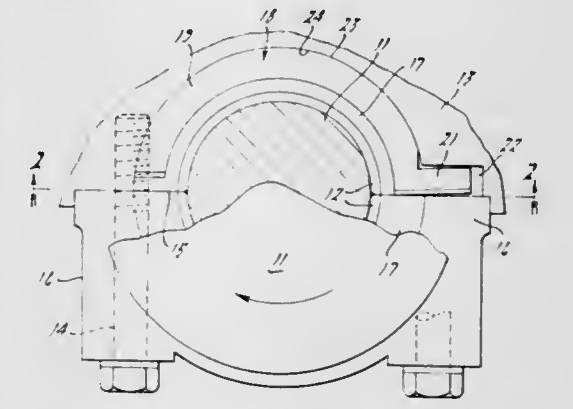


1. A hydrodynamic fluid bearing comprising:
- first and second bearing elements movable with respect to each other and spaced apart to form a fluid gap therebetween;
- at least one bearing foil attached to one of said bearing elements said foil loosely conforming to the shape of said bearing elements;
- foil stiffening means attached to one of said bearing members and contacting said bearing foil at at least one point for increasing the effective stiffness of said bearing foil, said foil stiffening means comprising a generally U-shaped member attached to one of said bearing means at the closed end of said member and the bifurcated open ends being in contact with said bearing foil.

3,893,734
THRUST BEARING

Dieter Ulbrich, Cologne, Germany, assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 1, 1974, Ser. No. 457,048
Int. Cl.^{2} F16C *9/02*
U.S. Cl. 308—23 **10 Claims**

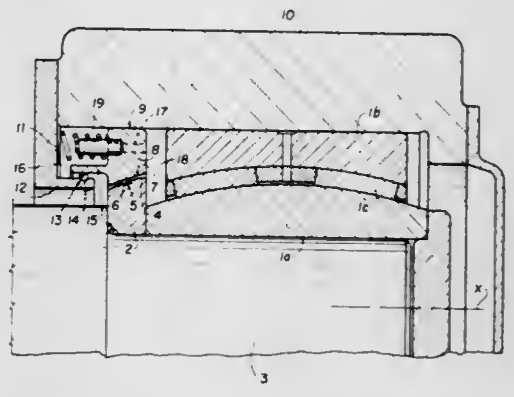


1. Internal combustion engine structure including an engine block having crankshaft support means, a crankshaft mounted within said support means to rotate about a given axis, thrust bearing means separating axially adjacent parallel surfaces on said crankshaft support means and on said crankshaft, said adjacent surface on said bearing support means comprising an annular seat, said thrust bearing means including a partial annulus positioned between said adjacent surfaces, said bearing including a tang protruding from one end of said partial annulus positioned between and engaging said adjacent surfaces, a recess formed in said crankshaft support means adjoining said annular seat, said tang being received within said recess to prevent said thrust bearing from angular displacement relative to said annular seat.

3,893,735
RESILIENT SEALING MEANS FOR SELF-ADJUSTING BEARINGS

Adolf Brenner, Schweinfurt, Germany, assignor to SKF Industrial Trading and Development Company, B.V., Amsterdam, Netherlands

Filed Sept. 6, 1973, Ser. No. 394,667
Claims priority, application Germany, Sept. 16, 1972, 7234157
Int. Cl. F16c *23/04, 33/74;* F16j *15/54*
U.S. Cl. 308—36.1 **7 Claims**

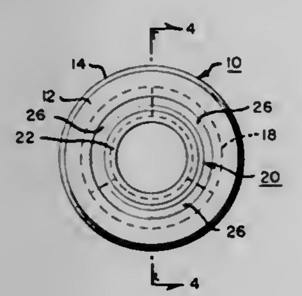


1. A spherically adjustable bearing having a body, an inner and outer race ring mounted therein, sealing means for axially closing one end of said bearing comprising a pair of concentric sealing discs, one of which being axially movable with respect to the other, said discs having cooperating surfaces and means acting in conjunction with said surfaces to provide a first seal therebetween, said movable sealing disc having an axial flange extending away from the one end of said bearing, a locking ring for supporting said movable sealing disc, said locking ring

being secured to said body and having an axial flange extending adjacent the axial flange of said movable disc, spring means interposed between said locking ring and said movable disc to normally bias said movable disc with respect to the other disc, and means interposed between the extending flanges of said locking ring and said movable disc to form a second seal for said movable disc.

3,893,736
SELF-ADJUSTING BEARING

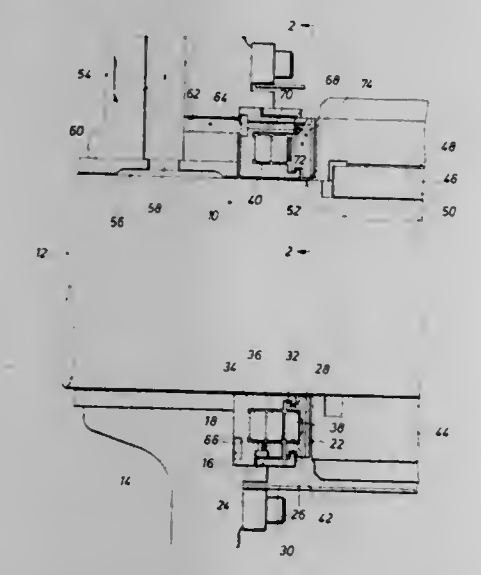
Albert R. McCloskey, Fairfield, Conn., assignor to Rockwell International Corporation, Pittsburgh, Pa.
Filed Jan. 21, 1974, Ser. No. 434,934
Int. Cl. F16c *9/06, 23/08, 27/04*
U.S. Cl. 308—72 **1 Claim**



1. A spherical bearing assembly having an inner race member and an outer race member, the inner surface of the outer race member having a concave spherical surface, the outer surface of the inner member having a complimentary convex spherical surface, said inner member having a unitary spool member, at least three spherical segments interlocked in an axial direction on said spool member, said spool member has two annular lips one disposed at each end thereof, said annular lips maintaining said segments on said spool so as to mechanically interlock them on said spool member when said inner member is in its operational position, said annular lips of said spool member have an outer surface which is a chordal section, subtending the convex spherical surface of said inner member.

3,893,737
THRUST BEARING HAVING LUBRICATION SYSTEM

Leonard L. Tyson, Houston, Tex., assignor to Marchem Resources, Inc., Houston, Tex.
Filed Apr. 19, 1974, Ser. No. 462,243
Int. Cl. F16c *17/06, 17/08*
U.S. Cl. 308—160 **20 Claims**



1. A lubricated self-leveling thrust bearing construction capable of sustaining thrust loads applied thereto by a rotatable shaft, said thrust bearing construction comprising:

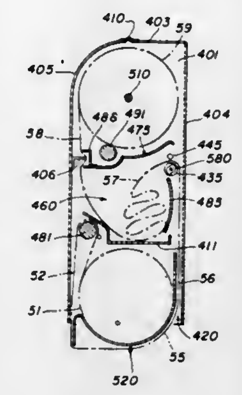
rotatable thrust force applying means being disposed in fixed relation to said rotary shaft;

thrust pad means being disposed in movable but non-rotatable position relative to said rotatable shaft and being disposed to receive thrust loads applied thereto by said rotatable thrust force applying means;

lubricant supply means for maintaining a hydrodynamic film of lubricant between said thrust pad means and said thrust force applying means, said lubricant supply means directing at least one jet of lubricant toward said thrust force applying means and causing said jet of lubricant to impinge upon said thrust force applying means, said jet of lubricant having a component of direction that opposes the direction of lubricant flow that is induced to said hydrodynamic film of lubricant by centrifugal force; and means communicating a quantity of pressurized lubricant to said lubricant supply means.

3,893,738
RETRACTABLE TOWEL CABINET

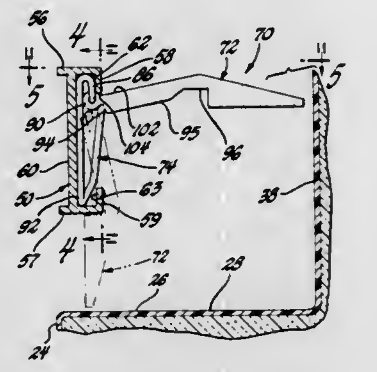
Erwin B. Bahnsen, Oak Brook, Ill., assignor to Steiner American Corporation, Salt Lake City, Utah
Filed Apr. 30, 1973, Ser. No. 356,042
Int. Cl. B65h *19/00*
U.S. Cl. 312—38 **9 Claims**



1. In a toweling dispenser of the continuous type having a housing with a loop of toweling that extends along an exit path from a clean toweling supply within the housing and into an exposed use position exteriorly of the housing accessible to a user and thence along a return path through a soiled toweling accumulation chamber to a soiled toweling storage position within the housing, the combination comprising dispensing mechanism operatively disposed within the housing for dispensing a length of clean toweling from the clean toweling supply into the toweling loop along the exit path and into use position exteriorly of the housing when the accessible portion of the toweling loop is pulled by a user, a lift roller operatively disposed within the housing spaced from said dispensing mechanism for taking up soiled toweling from the toweling loop along the return path and into the soiled toweling accumulation chamber, a spring driven motor operatively mounted in said housing and operatively connected through a clutch to said lift roller, collecting mechanism operatively associated within the housing for taking soiled toweling from the soiled toweling accumulation chamber into the soiled toweling storage position within the housing, drive mechanism operatively interconnecting said dispensing mechanism and said collecting mechanism and said motor, and time-stop mechanism operatively connected to said dispensing mechanism and said clutch for controlling the time interval between successive operations of said dispensing mechanism and for controlling said clutch, means within said drive mechanism causing said collecting mechanism during operation of said dispensing mechanism to operate to take toweling from the soiled toweling accumulation chamber into the soiled toweling storage position and causing said spring motor to be wound so that operation of said clutch by said time-stop mechanism causes said motor to drive said lift roller to take up all slack in the toweling between the clean toweling supply and said lift roller and to deposit same in the soiled toweling accumulation chamber, means operatively connected within said dispensing mechanism and said drive mechanism and said motor whereby successive operations wind said spring motor to a predetermined extent to insure the trailing end of the clean toweling is pulled into the soiled towel accumulation chamber.

3,893,739
RETAINER FOR REFRIGERATOR SHELF

James A. Bernard, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 24, 1974, Ser. No. 517,455
Int. Cl.² A47D *73/00;* **A47F** *5/13*
U.S. Cl. 312—138 A **2 Claims**

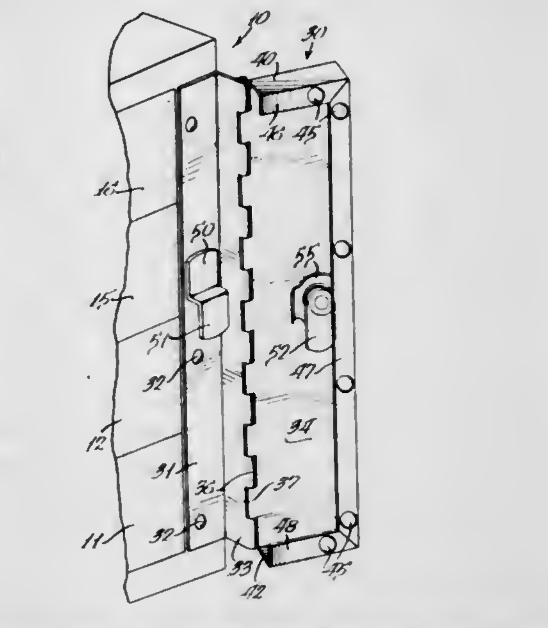


1. In a refrigerator door of the type having a recess therein for the storage of foodstuffs, a shelf construction comprising a horizontal surface for supporting objects, a shelf guard extending across the recess above the shelf surface; said shelf guard having vertically opposed longitudinally extending upper and lower grooves on the inner surface thereof facing said recess, a retainer assembly mounted on said guard, said assembly including a finger member and an integral wire hinge and torsion spring having a generally inverted U-shaped configuration, said spring having its lower portion disposed in said bottom groove and its upper portion disposed in said upper groove, said spring including a cross bar resiliently biased to a first overcenter position outward from the inner face of said guard, the upper portion of said U-shaped spring bent inwardly to provide axially aligned opposed pintles, said finger member having aligned bores in one end receiving respective pintles so as to rotatably support said finger member for substantially right-angled pivotal movement about a horizontal axis from a downwardly extending vertical retracted position to a horizontal position extending normally from the rear face of said shelf guard, said finger member having a transverse groove formed in the under surface thereof receiving said cross bar, whereby said U-shaped retainer assembly being slidably movable in said grooves when said retainer is in its retracted position snapping said cross bar to a second overcenter position adjacent the guard inner face, and whereupon said finger member being rotated to its horizontal position said cross bar is snapped to its first overcenter position biasing said finger member into contact with said upper return flange such that said finger member is retained in its horizontally extending position adjacent a tall container to prevent same from tipping over when the door is closed.

3,893,740
LOCKING DEVICE FOR A MULTI-DRAWER CABINET

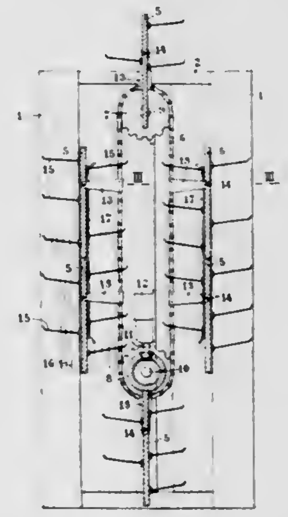
William G. England, Elmhurst, Ill., assignor to Bretford Manufacturing, Inc., Schiller Park, Ill.
Filed Jan. 2, 1974, Ser. No. 430,179
Int. Cl.² E05B *65/46*
U.S. Cl. 312—216 **3 Claims**

1. A locking device for a multi-drawer cabinet having a structural frame mounting a plurality of vertically stacked drawers individually movable forwardly to an open position, comprising: an elongate mounting plate having a relatively narrow width for attachment to a part of the structural frame laterally adjacent said drawers; a flange on said mounting plate extending outwardly from an edge of said mounting plate and spaced laterally from said drawers; an upright locking bar having a length to cover a forward portion of each of the number of drawers that are to be locked against movement and pivotally connected at an edge thereof to an edge of said outwardly extending flange of said mounting plate for pivotal movement between an inactive position out of the path of movement of said drawers and a drawer locking position in front of said drawers, said locking bar in drawer locking position and said flange afford a lock protecting chamber with said mounting plate; and keyoperated lock means including coacting elements on said mounting plate and locking bar positioned entirely within the chamber for holding said locking bar in drawer locking position.



3,893,741
DISPLAY DEVICE

Jean Francois Schick, 7 rue de la Chaise, Paris, France
Filed May 10, 1974, Ser. No. 468,655
Claims priority, application France, Nov. 28, 1973, 73.42284
Int. Cl.² A47B *49/00*
U.S. Cl. 312—268 **6 Claims**

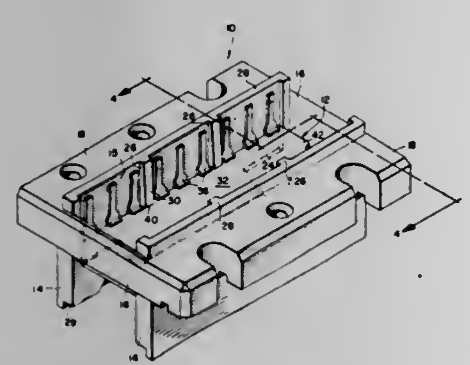


1. A moving display for exhibiting objects, comprising a frame having a first and an opposite second side each provided with an aperture; drive means for moving the objects to be exhibited intermediate said sides and in a closed path having

an ascending and a descending portion inwardly of the respective apertures; a plurality of vertically oriented panel members each having opposite planar surfaces and being driven by said drive means, said planar surfaces of each of said panel members facing said first and second sides, respectively; projecting elements mounted on said planar surfaces for supporting the objects to be displayed; and a plurality of mounting arms extending transversely of said sides and each having a first end portion pivotally supporting one of said panel members, a second end portion fixedly mounted on said drive means, and supporting the respective panel member at a predetermined distance outwardly of said drive means which is sufficient so that the projecting elements provided on respective panel members located in said ascending and descending portions of said path are free from interference with one another, whereby the objects supported on said planar surfaces of said panel members can move into register with the respective apertures without interference.

3,893,742
CARRIER FOR MICROCIRCUIT PACKAGES

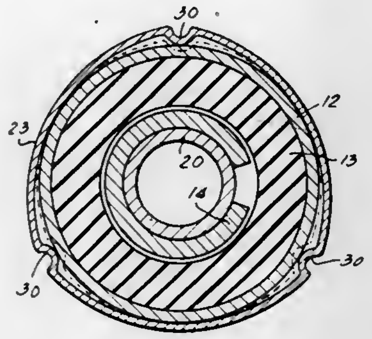
Kenneth E. Blanchard, South Bend, Ind.; Kenneth R. Hook, West Trenton, N.J., and Arthur R. Midili, South Bend, Ind., assignors to Wells Electronics, Inc., South Bend, Ind.
Filed Nov. 29, 1973, Ser. No. 420,209
Int. Cl. H01r *13/60*
U.S. Cl. 339—119 R **5 Claims**



1. A carrier for a dual-in-line integrated circuit package, said package having a body defined in part by opposite first and second side faces and interconnecting side edges, said side edges each carrying a plurality of spaced transverse leads having free ends projecting beyond said first side face, said carrier comprising a box-like structure having a vertical opening therethrough defined by two side walls and two end walls extending between upper and lower edges, said side walls having opposed inner faces, each inner face having shoulder means formed thereon located adjacent one of said carrier edges, each inner face of the carrier side walls carrying protrusion means located between the other of said carrier edges and the shoulder means formed on the inner face, each protrusion means forming a part of a rib which extends toward said other carrier edge, each protrusion means for adjacently overlying the second of the side faces of said package body with said carrier being supported upon said shoulder means and the free ends of said leads extending along said inner faces whereby said package is interlockingly retained within said carrier between said shoulder and projection means, each rib including an inner face means tapering toward said other carrier edge to define a camming surface over which said package body slides as said body is pressed into said carrier opening from said other carrier edge, said carrier end walls having sufficient flexibility to accommodate movement of the side walls as the package body is urged into said carrier opening and over said rib face means until said package engages said shoulder means.

3,893,743
SOLID SHELL PHONOCONNECTORS

William H. Wallo, Clearwater, Fla., assignor to Perfection Enterprises, Inc., Chicago, Ill.
Filed Jan. 30, 1974, Ser. No. 437,905
Int. Cl. H01r *17/18*
U.S. Cl. 339—183 **18 Claims**



1. In a phonoconnector pin plug assembly for coupling with a phono receptacle, said assembly having an electrically conductive pin plug and an electrically conductive socket shell in electrically insulated concentric relation thereabout, the improvement comprising:

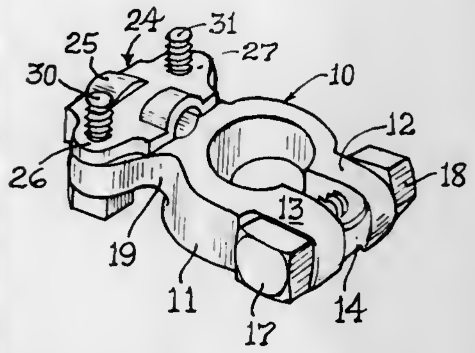
said shell having a circumferentially solid but resiliently flexible wall;

said shell having inwardly projecting indentation means in said wall for retaining engagement with the perimeter of a phono receptacle shell coupled therein; and

said shell wall having plain arcuate areas extending to a substantial width from opposite sides of the projection means and which areas are resiliently flexibly deflectable radially inwardly into engagement with the receptacle shell by radially outward tensioning of the indentation means when engaged with the receptacle shell.

3,893,744
BATTERY TERMINAL CLAMP

Julius Porazinski, Chicago, Ill., assignor to Triple A Specialty Co., Chicago, Ill.
Filed Jan. 2, 1974, Ser. No. 429,762
Int. Cl.^{2} H01R *11/26*
U.S. Cl. 339—230 R **1 Claim**



1. A battery terminal clamp for connecting an electric cable to a battery post, comprising

a. a ringlike body formed from a highly conductive inexpensive soft metal material,

b. a pair of arms provided by said body and extending laterally therefrom in a normal spaced apart relation and providing axially aligned openings therethrough,

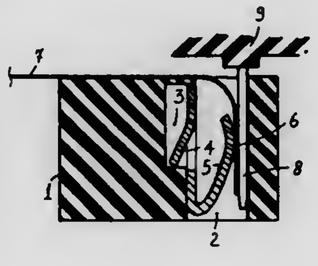
c. a thin pliable narrow bridge extending between the free ends of said arms and spaced outwardly from said openings therein and deformable away from said openings upon relative movement of said arms toward each other when said ringlike body is connected onto the battery post,

d. a flat tail portion extending laterally from said ringlike body in a direction opposite to said pair of arms, and providing a substantially flat top and bottom surface and having a pair of spaced openings formed therethrough to either side of coaxially extending semicircular grooves of different radii formed in said top and bottom surfaces of said tail portion, and

e. a clamping plate connecting the electric cable to said body and provided with threaded apertures adapted to be aligned with said openings formed in said tail portion to threadably receive connecting bolts for attaching said clamping plate onto either side of said tail portion of said body with the electric cable therebetween.

3,893,745
DEVICE FOR THE ELECTRICAL CONNECTION BETWEEN A FLEXIBLE BAND-LIKE CONDUCTOR AND THE END CONTACTS OF AN ELECTRICAL ENERGY UTILIZING APPARATUS

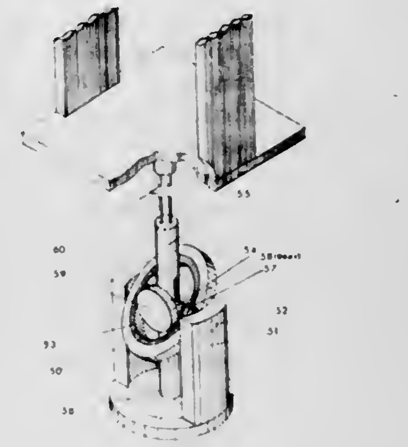
Giuseppe Codrino, Quattordio, Alessandria, Italy
Continuation of Ser. No. 328,625, Feb. 1, 1973, abandoned. This application Oct. 16, 1974, Ser. No. 515,419
Claims priority, application Italy, Mar. 18, 1972, 22075/72
Int. Cl. H01r *13/12*
U.S. Cl. 339—244 R **7 Claims**



1. An electrical connector for connecting a flexible ribbon-like conductor with a rigid terminal of an electrical energy utilizing apparatus, comprising a block of electrically insulating material having an opening and a first and a second abutment means; and a single generally U-shaped spring accommodated in said opening and having one leg resiliently bearing against a surface of said block which defines said opening, and a second leg making electrical contact between said ribbon-like conductor and said terminal when the latter is inserted in a first direction into said opening, one of said legs having a leg portion which engages said first abutment means so as to prevent said spring from axially moving out of said opening in a second direction opposite to said first direction, and a bight portion engaging said second abutment means so as to prevent said spring from axially moving through said opening in said first direction without stressing said spring.

3,893,746
TRACKING MOUNTS FOR CELESTIAL RAY DETECTING DEVICES

Elihu Hassell McMahon, 1870 Schieffelin Ave., Bronx, N.Y. 10466
Continuation-in-part of Ser. No. 177,356, Sept. 2, 1971, Pat. No. 3,751,134. This application May 3, 1973, Ser. No. 357,030The portion of the term of this patent subsequent to Aug. 7, 1990, has been disclaimed.
Int. Cl. G02b *23/16*
U.S. Cl. 350—83 **15 Claims**



1. A tracking mount for a celestial ray detecting device comprising

a. a base;

b. support means mounted on the base for rotation about a vertical axis;

c. a plate assembly mounted on the base and operable to assume a position coplanar with the equator of the earth;

d. a tracking arm pivotably mounted on the support means about an axis perpendicular to and intersecting the vertical axis of the support means;

e. means operable to effect such pivoting of the tracking arm as is necessary during rotation of the support means to maintain said tracking arm in a position parallel to the line defined by the intersection of the plane of the plate assembly and the plane within which said tracking arm pivots;

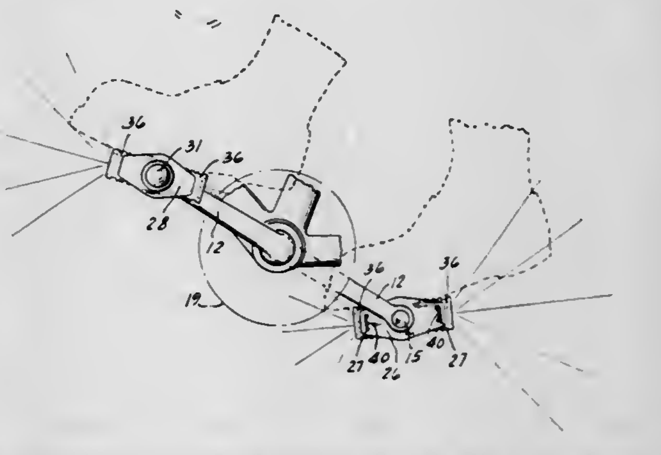
f. means operable to receive and support a ray detecting device, said means being mounted for rotation about a first axis which is parallel to the axis of rotation of the support means and simultaneously about a second axis which is perpendicular to and intersects said first axis;

g. means operable to rotate said ray detecting device receiving and supporting means about said first axis at the same rate as said support means are rotated; and

h. means operable to convey the direction and magnitude of any pivoting of said tracking arm to said ray detecting device receiving and supporting means for a corresponding movement of said ray detecting device receiving and supporting means about its second axis.

3,893,747
CONSTANTLY VIEWABLE REFLECTORIZED PEDAL

Robert I. Nagel, Skokie, Ill., assignor to Beatrice Foods Company, Elgin, Ill.
Filed Dec. 28, 1973, Ser. No. 429,097
Int. Cl.^{2} G02B *5/12*
U.S. Cl. 350—99 **9 Claims**



1. A reflectorized pedal assembly for a bicycle or the like comprising

A. a pedal shaft means including means for connection at one end thereof to a cycle crank,

B. A hub rotatably mounted on said pedal shaft means,

C. a pair of elongated foot support means in spaced, generally aligned relationship to each other, each one on an opposite side of said hub,

D. mounting means to secure said foot support means in fixed relationship to said hub,

E. a pair of reflector units, each such reflector unit having at least one region comprised of transparent solid material and having a region axis normal thereto, said region having formed therein at least three groups of cube corner reflector elements, all such elements each having a central optical axis, the respective such optical axes of such elements in each such group being disposed substantially parallel to the respective such optical axes of the other such elements in each such group, the respective optical axes of such elements in one such group being generally parallel to said region axis, the respective optical axes of such elements in a second such group being inclined at a predetermined angle relative to said region axis, the respective optical axes of such elements in a third such group being inclined at a different predetermined angle relative to said region axis, said region being retroreflective of light directed thereon over an angle extending up to at least about 45° on either side of said region axis in a plane extending through said region axis,

F. each such reflector unit being adapted for functional association with a longitudinal side of a different one of said foot support means and having both its respective said region axis and its respective said plane generally normal to the axis of rotation of said hub relative to said pedal shaft means, the respective region axes of such reflector units being generally parallel to each other when each such reflector unit is so associated with said foot support means, and

G. mounting means to mount each such reflector unit fixedly in such association with said foot support means.

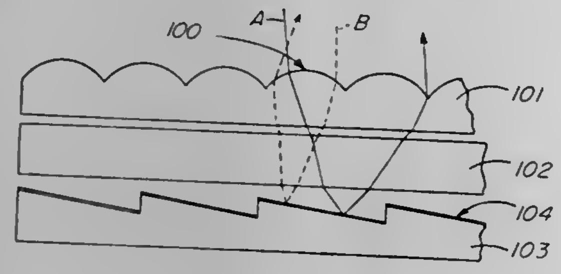
3,893,748
LOW SCINTILLATION, MULTI-COMPONENT PROJECTION SCREEN

James J. De Palma, and Alan P. Van Kerkhove, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 420,755, Nov. 30, 1973. This application Oct. 15, 1974, Ser. No. 514,965

Int. Cl. G03b *21/60*

U.S. Cl. 350—128 **14 Claims**



1. An improved low scintillation screen for use with means for projecting image light, said screen having a light ingress and a light egress surface and further comprising:

a. incident light redirecting means, including a plurality of closely spaced micro-optical elements, for refracting a substantial portion of the projected light rays simultaneously entering each retina-resolvable screen area, respectively along non-parallel paths within the screen; and

b. spacing means for providing a distance for intra-screen light ray travel between said redirecting means and said egress surface, said distance being of magnitude sufficient that the paths of intra-screen travel of such refracted light rays differ by more than the coherence length of the image light projected onto said screen.

3,893,749
PROCESS FOR THE DETERMINATION OF AN ASSEMBLY HAVING ISOTROPIC OBLIQUE REFLECTION IN AN EXTENSIVE SPECTRAL REGION AND ASSEMBLIES OBTAINED BY THIS PROCESS

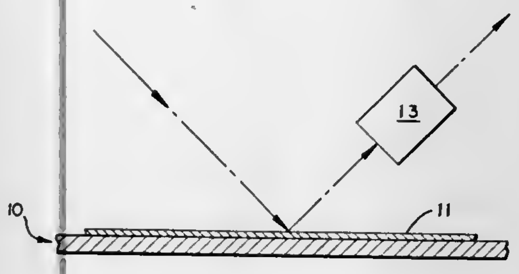
Michael Ferray, Chevilly-Larue, France, assignor to Societe d'Optique, Precision Electronique et Mechanique - Sopelem, Paris, France

Filed Oct. 24, 1973, Ser. No. 409,160

Claims priority, application France, Nov. 20, 1972, 72.41106

Int. Cl. G02b *5/30*

U.S. Cl. 350—147 **7 Claims**



1. Optical assembly for the oblique reflection of a beam of polarized light covering a wide spectrum of wave lengths comprising a plane metallic mirror, a protective layer of transparent dielectric on said mirror having an optical thickness of between 0 and 600A, the beam of light impinging on and being reflected by the mirror and protective layer and crystalline birefringent compensating means receiving the reflected light having birefringent compensation equivalent to that of a crystalline plate having a thickness for which the anisotropy of phases created by said means compensates exactly for the anisotrophy of phases created by said mirror for the means wave length of the spectrum of the beam of light.

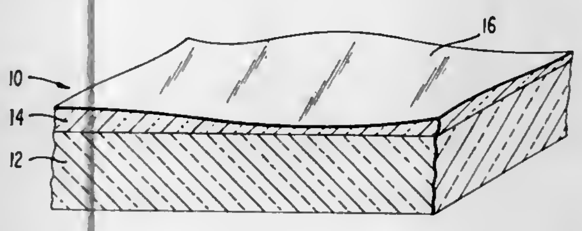
3,893,750
CATHODE-RAY TUBE SCREENING CORRECTION LENS WITH A NON-SOLARIZING MATERIAL

Ralph James D'Amato, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed May 2, 1973, Ser. No. 356,454

Int. Cl. B29d *13/18;* **G02b** *3/04*

U.S. Cl. 350—189 **9 Claims**



1. A refractive device for correcting the paths of light rays in the formation of a color television picture tube screen comprising,

at least a portion of said device having an effective surface thereon for correcting paths of light rays passing therethrough during formation of said screen to substantially correspond to paths electron beams will take in striking the screen in a completed tube, said portion being a silicone resin that is substantially nonsolarizing when exposed to ultraviolet radiation in the range of 290 to 400 nanometers, and

a rigid transparent substrate for supporting said portion.

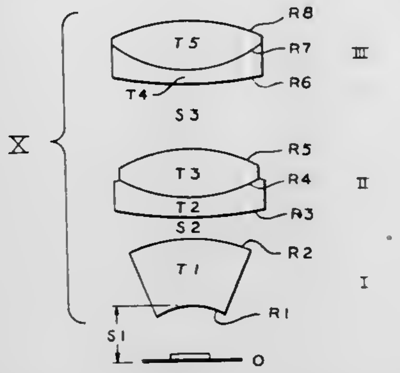
3,893,751
40X MICROSCOPE OBJECTIVE

Arthur H. Shoemaker, East Aurora, N.Y., assignor to American Optical Corporation, Southbridge, Mass.

Filed Apr. 26, 1974, Ser. No. 464,383

Int. Cl.² G02B *9/12, 21/02*

U.S. Cl. 350—229 **2 Claims**



1. A microscope objective which is well corrected for chromatic image aberrations, spherical aberration, coma and astigmatism and has three elements aligned along an optical axis, which comprises a concavo-convex positive singlet I as a first element, a double convex positive doublet II as a second element and a double convex positive doublet III as a third element, said elements having the following optical parameters:

Lens	Radius	Thickness	Space	Refractive Index	Abbe Number
			S_1= 0.1591F		
	R_1=− 0.5720F				
I		T_1= 0.7659F		ND(1)= 1.78833	ν(1)=50.47
	R_2= 0.7315F				
			S_2= 0.0468F		
	R_3= 4.1284F				
		T_2= 0.3282F		ND(2)= 1.80491	ν(2)=25.42
II	R_4= 1.2737F	T_3= 0.6565F		ND(3) = 1.69669	ν(3)=56.13
	R_5=− 1.6057F				
			S_3= 1.0865F		
	R_6= 11.4873F				
		T_4= 0.3282F		ND(4)= 1.8078	ν(4)=40.74
III	R_7= 1.3057F				
		T_5= 0.6565F		ND(5)= 1.52241	ν(5)=59.50
	R_8=− 3.2142F.				

wherein axial thicknesses of successive lens element are T1 to T5, successive axial spaces are S1 to S3, successive lens radii are R1 to R8 where − applies to surfaces whose center of curvature lies on the object side of the vertices, refractive indices and Abbe numbers of the successive lenses are ND(1) to ND(5), ν(1) to ν(5) respectively, and *F* is the focal length of the objective in millimeters.

3,893,752
MICROSCOPE OBJECTIVE

Tsutomu Tojyo, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 17, 1974, Ser. No. 471,060

Claims priority, application Japan, May 18, 1973, 48-56034

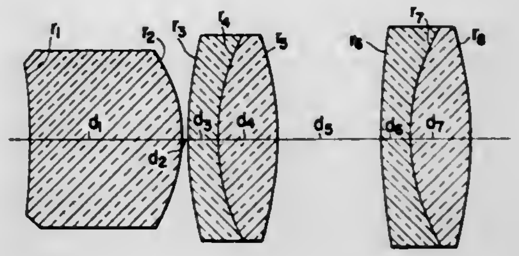
Int. Cl. G02b *9/12, 1/00*

U.S. Cl. 350—229 **1 Claim**

1. A microscope objective comprising three lens components of five lenses wherein the first lens component is positive meniscus lens with its concave surface positioned on the object side, the second lens component is a positive cemented lens comprising a negative meniscus lens and a biconvex lens and the third lens component is also a positive cemented lens comprising a negative meniscus lens and a biconvex lens, said microscope objective having the following numerical values:

f = 1

$r_1 = -4.498$			
	$d_1 = 0.949$	$n_1 = 1.7865$	$\nu_1 = 50.2$
$r_2 = -0.926$			
	$d_2 = 0.023$		
$r_3 = 2.564$			
	$d_3 = 0.186$	$n_2 = 1.7847$	$\nu_2 = 25.7$
$r_4 = 1.349$			
	$d_4 = 0.391$	$n_3 = 1.4866$	$\nu_3 = 84.5$
$r_5 = -2.151$			
	$d_5 = 0.660$		
$r_6 = 4.399$			
	$d_6 = 0.186$	$n_4 = 1.8061$	$\nu_4 = 40.8$
$r_7 = 1.318$			
	$d_7 = 0.384$	$n_5 = 1.4978$	$\nu_5 = 66.8$
$r_8 = -2.587$			



where reference symbols r_1 through r_8 represent radii of curvatures of respective surfaces of lenses, reference symbols d_1 through d_7 represent thicknesses of respective lenses and spaces between lenses, reference symbols n_1 through n_5 represent refractive indexes of respective lenses, reference symbols ν_1 through ν_5 represent Abbe's numbers of respective lenses.

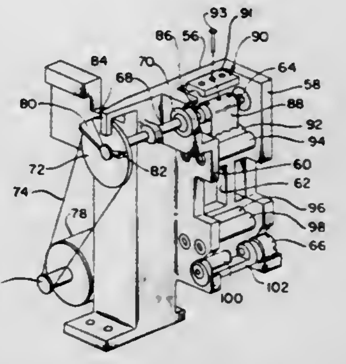
3,893,753
OPTICAL ATTENUATOR

Thomas J. Glenn, Irvine, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Feb. 25, 1974, Ser. No. 445,246

Int. Cl. G02f *1/30*

U.S. Cl. 350—271 **12 Claims**



1. In an optical attenuator for adjusting the amount of radiant energy passing through a variable aperture therein, the combination comprising:

a frame having a window therein for passage therethrough of a beam of radiant energy;

first and second parallel shafts mounted on said frame on opposite sides of said window for rotation about the axes thereof;

an opaque strip encircling said first and second shafts, the free ends thereof being secured to said first shaft to form a continuous loop, said strip having a width at least equal to the width of said window, said strip having a pair of apertures adapted to be in alignment with each other and with said window in one angular position of said first shaft;

bias means engaging at least one outer surface of said strip to urge the portion of the strip so engaged into sliding relation with the adjacent surface of said strip, said bias means being positioned intermediate said first and second shafts and being configured for noninterference with said beam;

cam means mounted on said frame and engaging at least one of said first and second shafts for displacing the axis of rotation thereof to thereby adjust the tension on said continuous loop; and

drive means coupled to one of said shafts for providing bidirectional angular rotation thereof to thereby vary the relative positions of said pair of apertures with respect to each other to control the amount of radiant energy passing therethrough.

3,893,754

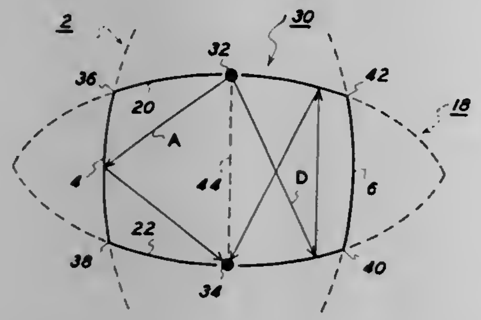
COMBINATION PARABOLOID-ELLIPSOID MIRROR SYSTEM

John A. McInally, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed June 21, 1973, Ser. No. 372,435

Int. Cl. G02b *5/10*

U.S. Cl. 350—294 **3 Claims**



1. A combination ellipsoidal-paraboloidal mirror including: an ellipsoidal reflector surface disposed about a pair of ellipsoidal focal points defining the principal axis of said mirror,
  a first paraboloidal reflector surface having a first paraboloidal focal point,
  a second paraboloidal reflector surface facing said first paraboloidal reflector surface and coaxial therewith and having a second paraboloidal focal point,
  said first and second paraboloidal focal points each corresponding to one of said pair of ellipsoidal focal points,
  the paraboloidal and ellipsoidal geometries of said reflector surfaces being coplanar in all planes which include both of said focal points,
  said reflector surfaces arranged so that said ellipsoidal reflector surface and said paraboloidal reflector surface together comprise the inner reflecting surface of said mirror.

3,893,755

MIRROR WITH ADJUSTABLE FOCAL DISTANCE

Claus Christian Cobarg, Steinbach, and Walter Kliegel, Schwalbach, both of Germany, assignors to Braun Aktiengesellschaft, Kronberg; Taunus, Germany

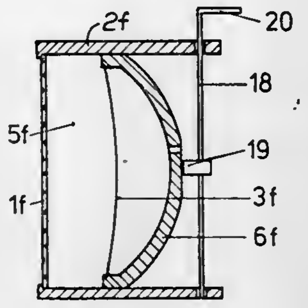
Filed Nov. 12, 1973, Ser. No. 415,005

Claims priority, application Germany, Nov. 15, 1972, 2255789

Int. Cl. G02b *5/10*

U.S. Cl. 350—295 **10 Claims**

1. An adjustable focal length mirror comprising a tubular member, a first transparent wall closing one end of said tubular member, a second deformable wall having a reflecting surface in opposition to said transparent wall and defining a first hollow space in combination with a portion of said tubular member and with said transparent wall, a frame for supporting said deformable wall in spaced opposition to said transparent wall, means for sealing said supporting frame relative to said tubular member to thereby make said first hollow space airtight and means for displacing said supporting frame and said deformable wall in directions towards and away from said transparent wall.



3,893,756

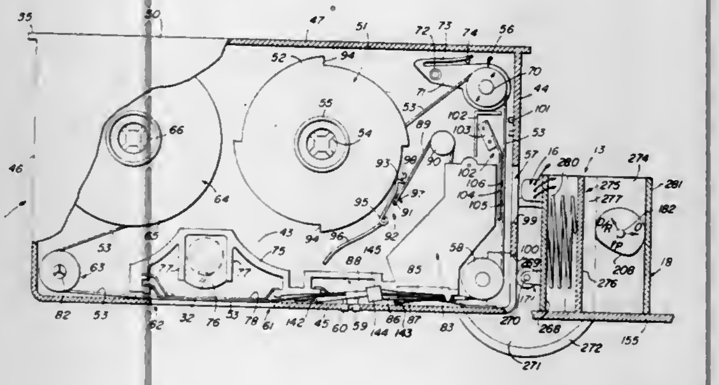
SOUND MOTION PICTURE PROCESSING AND PROJECTION SYSTEM

Donald T. Scholz, Watertown, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed June 28, 1973, Ser. No. 374,639

Int. Cl. G03b *31/02*

U.S. Cl. 352—29 **6 Claims**



2. Apparatus for sound cinematography, comprising a housing, means forming a receptacle in said housing for receiving a film cassette, incremental drive means engageable with the film in a cassette in said receptacle and operable to advance the film incrementally past a projection station in said housing, second drive means operatively engageable with the film in a cassette and operable to advance the film toward a storage position in the cassette, a film drive capstan, means mounting said capstan in said housing for rotation and for translation between a first position in which said capstan will engage the film in a cassette in said receptacle and a second position in which said capstan will not engage the film in a cassette in said receptacle, sequencing means for sequentially engaging said incremental drive means to engage the film and advance the film incrementally past the projection station and then operating said second drive means to advance the film toward said storage position, and means controlled by said sequencing means for moving said capstan to its first position when said incremental drive means is engaged and to its second position when said second drive means is engaged.

3,893,757

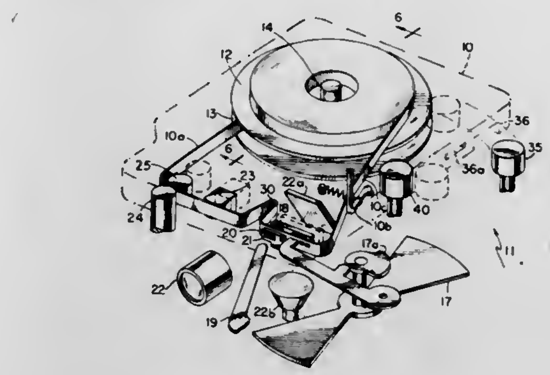
SOUND-AND-PICTURE-ON-FILM REPRODUCING SYSTEM

Kenneth Li Donnici, Brooklyn, N.Y., assignor to Avom Inc., Lynbrook, N.Y.

Filed June 1, 1973, Ser. No. 366,160

Int. Cl.^{2} G03B *23/02, 01/22*

U.S. Cl. 352—78 R **3 Claims**



3. A film magazine for use with a film strip having uniformly spaced perforations near one edge for a sound-and-picture reproducing system including a drive puck having first and second engaging positions, said first engaging position being a direct drive for said drive puck, and said second engaging position being a slip-clutch drive for said drive puck and a disengaging position and a play-back drive puck having engaging and disengaging positions, said magazine comprising, in combination:
  a housing;
  a central hub disposed within said housing and having first and second coaxial shoulders;
  a take-up reel having a rim,rotatably mounted on said first shoulder;
  a supply reel having a rim rotatably mounted on said second shoulder, said supply reel and said take-up reel being independently rotatable;
  a first recess in the bottom of the housing, said first recess being of a size to receive said drive puck throughout at least part of its path to and from its second engaging position to permit said drive puck to engage and be located to slip-clutch drive a rim portion of said take-up reel;
  a second recess in the housing for receiving said play-back drive puck throughout at least part of its path to and from its engaging position at which it engages and drives a rim portion of said supply reel;
  projecting means for projecting an image on a portion of said film in a predetermined projecting position;
  claw means operable for engaging said perforations at predetermined intervals of time and thereby to move successive portions of said film into said projecting position; and snubbing means cooperating with said claw means for regulating the movement of said film transferred between said reels.

3,893,758

DEVICE FOR PROJECTING PICTURES ON A SCREEN

Jean Jacques Hunzinger, Paris, and Claude Hily, Champigny, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

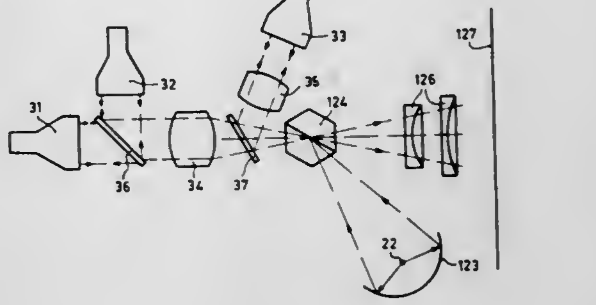
Filed Apr. 18, 1974, Ser. No. 461,873

Claims priority, application France, Apr. 20, 1973, 73.14524

Int. Cl. G03b *21/14;* **G02b** *5/30, 27/28*

U.S. Cl. 353—20 **4 Claims**

1. A device for projecting pictures on a screen comprising: a light source, a polarizer/analyzer, a birefringent optical relay, a collimator for collimating the light of the light source on said optical relay, said collimator comprising a first projection objective element, the birefringence of said optical relay being controlled by an electric charge pattern, said first objective element being situated between the polarizer/analyzer and the optical relay, and a second objective element situated between the polarizer/analyzer and the screen and correcting for optical errors of the first projection objective element, said first objective element determining the power of the projection device.



3,893,759

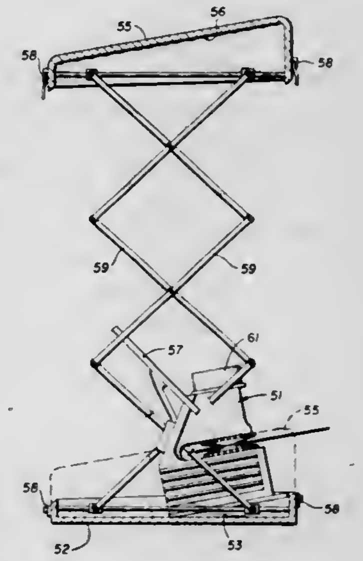
OFF-AXIS VIEWING APPARATUS

Wynn D. Crew, Lakewood, Colo., assignor to Microtech Press Inc., Lakewood, Colo.

Filed Nov. 14, 1973, Ser. No. 415,704

Int. Cl. G03b *21/24*

U.S. Cl. 353—79 **12 Claims**



1. Projector-viewer apparatus for display of information stored in microimage size on microfiche and film strip elements comprising a projector, a high gain retroreflector screen having directional refraction characteristics redirecting received light predominantly along lines of refraction substantially coincident with the line of incidence thereof to provide a luminance factor of at least forty at a divergence angle of one and one-half degrees, said projector and reflector screen being cooperatively positioned whereby the center line of projection for said projector is tilted with respect to the plane of said reflector screen, and a conventional plano mirror positioned adjacent said projector in off-axis position with respect to the center line of projection for said projector and away from said predominant lines of refraction of light from said high gain screen whereby images projected to and displayed on said screen are viewed in the mirror without glare.

3,893,760

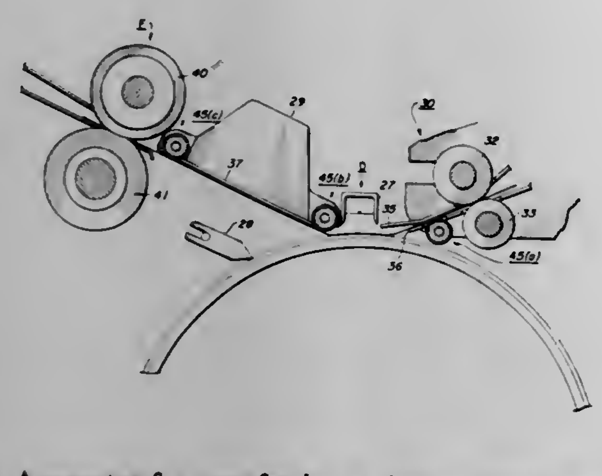
TRANSFER APPARATUS

Raghulinga R. Thettu, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed July 16, 1973, Ser. No. 379,273

Int. Cl. G03g *15/16*

U.S. Cl. 355—3 R **1 Claim**



1. Apparatus for transferring a charged toner image from he surface of an image bearing plate onto a sheet of final support material including

means defining an image transfer zone for transferring the toner image from the image bearing plate to the sheet of final support material brought in contact therewith within the transfer zone,

means for moving the sheet of final support material into and through the image transfer zone wherein at least a portion of the sheet moves in contact with the image bearing plate, and

dampening means positioned at the support material entrance and exit regions to the transfer zone for preventing shock waves which may be induced in the support material outside of the transfer zone by the moving means from moving into the transfer zone, the dampening means including at least one roller positioned at each of the regions and mounted to rotate so that the velocity of the outer periphery of each roller is at least substantially equal to the velocity at which the support material is advanced through the transfer zone, and vacuum drawing means associated with each roller for placing a uniform tension upon the support material as it moves through the transfer zone, and wherein the roller positioned at the exit to the transfer zone is arranged to contact the non-image bearing side of the support material.

3,893,761

ELECTROPHOTOGRAPHIC TONER TRANSFER AND FUSING APPARATUS

William R. buchan, Lincoln, Mass., and Robert A. Moore, Amherst, N.H., assignors to Itek Corporation, Lexington, Mass.

Continuation-in-part of Ser. No. 303,168, Nov. 2, 1972, abandoned. This application Oct. 4, 1973, Ser. No. 403,696

Int. Cl. G03g *15/22*

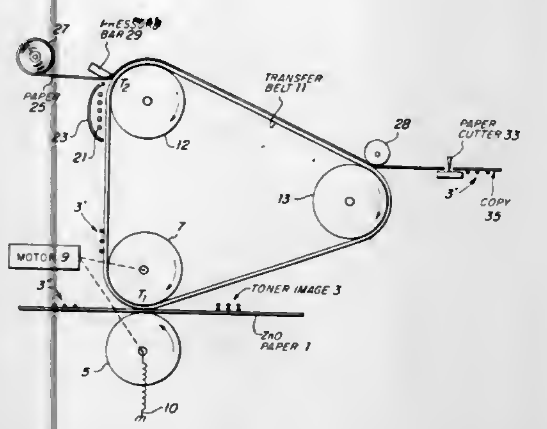
U.S. Cl. 355—3 R **26 Claims**

1. An apparatus for transferring a non-fused xerographic toner image from a first support material to a second support material and fusing the toner image to the second support material, comprising, in combination:

a. an intermediate transfer member positioned to receive toner from said first support material, said intermediate transfer member having a smooth surface with a surface free energy of below about 40 dynes per centimeter, a hardness of from about 3 to about 70 durometers, and a heat capacity of below about 3.1×10^{-3} cal/cm^2/°C.;

b. means for transferring toner from said first support material to said intermediate transfer member;

c. means for heating toner on said intermediate transfer member to a temperature at which it flows prior to transfer to said second support material;



d. means for supplying second support material; and,

e. means for bringing said second support material into pressure contact with heated toner on said intermediate transfer member in a manner whereby toner is transferred and fused to the second support material.

3,893,762

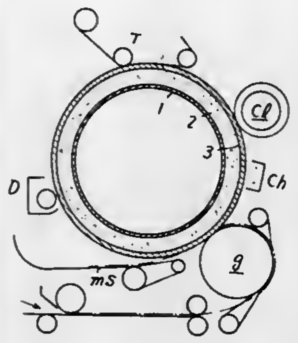
MASTER PAPER WINDING DRUM IN ELECTROPHOTOGRAPHIC COPYING MACHINE OF CONTACT PRINTING TYPE

Keiichi Inagaki, 4-12 Goshikiyama 7-chome, Taramiku Kobe, Japan

Filed Jan. 23, 1974, Ser. No. 435,989

Int. Cl. G03g *15/00*

U.S. Cl. 355—12 **3 Claims**



1. In an electrophotostatic copying machine of the contact printing type in which images on an original paper are copied on a master paper wound around a master drum, and subsequently transferred to a copy paper, and in which the master drum respectively advances the master paper to a charging means, a light exposure means, a developing means, transfer means, and an image erasing means disposed in series around and adjacent the master drum, the improvement comprising the master drum having a rigid central cylinder, an intermediate resilient coating layer disposed around said central cylinder and a thin metallic outer layer disposed over said resilient layer whereby the outer surface of the master drum is both yieldable and conductive.

3,893,763

LIQUID GATE FOR INDIVIDUAL FILM FRAME PRINTING

Howard F. Ott, Victor, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 31, 1974, Ser. No. 438,494

Int. Cl. G03b *27/68*

U.S. Cl. 355—52 **7 Claims**

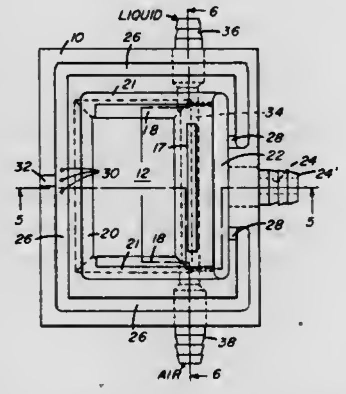
1. In a liquid film gate for use in processing and printing individual film frames, the combination comprising:

a fixed gate member having a first optical window defining a printing aperture, said first window having a first window surface;

said fixed gate member further having first raised lands partially encircling said first window surface and a first slot encircling said first lands and said first window;

a movable gate member in register with said fixed gate member and having a second optical window defining a printing aperture, said second window having a second window surface in register with said first window surface; said movable gate member further having a pair of second raised lands partially encircling said second window surface, and a second slot encircling said second lands and said second window;

said movable gate member being movable relative to said fixed gate member between an open position in which it is spaced from said first gate member to permit insertion of a film frame therebetween, and a closed position in which said first and second windows are in registry, and said first and second lands are substantially in contact with opposite side surfaces of said film frame to support said film frame with said side surfaces cooperating with said first and second window surfaces to form cavities on each side of said film frame;



means on said fixed and movable gate members operative when said movable gate member is in its closed position for successively directing and guiding a processing liquid into said cavities for filling said cavities, and drying air into said cavities for drying said film frame;

said directing and guiding means comprising a passageway in each of said fixed and movable gate members in which one end of each passageway is connected to a source of liquid and the opposite end of each passageway is connected to a source of drying air;

slits defined by said gate members for connecting each of said passageways to its corresponding cavity;

vacuum means connected to at least one of said first and second slots for drawing said liquid and air into said cavities and across said side surfaces of said film frame in succession for processing and drying said film frame and exhausting said liquid and air; and

bleeder holes defined by said gate members for connecting each of said passageways to said vacuum means.

3,893,764

PLURAL REFLECTOR, SINGLE SPEED UNI-DIRECTIONAL SCANNING DEVICE

Jack Chia Kai Pei, Machida, and Hitoshi Kitahara, Yamato, both of Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jan. 17, 1974, Ser. No. 434,182

Claims priority, application Japan, Jan. 29, 1973, 48-11149

Int. Cl. G03b *27/70;* **G03g** *15/04*

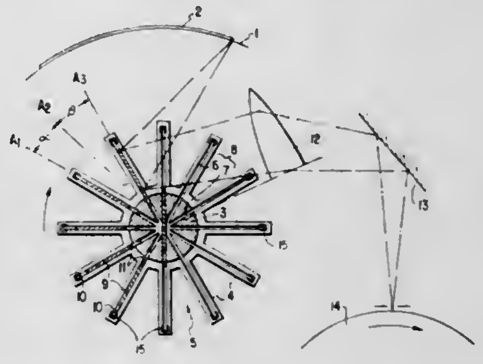
U.S. Cl. 355—66 **6 Claims**

6. A manuscript scanning device for copying machines and the like comprising;

a light source for illuminating a stationary document;

a plurality of reflectors for successive scanning of said document;

a plurality of pairs of rotatable reflector support members disposed radially about a predetermined axis, the two members of each pair of reflector support members being radially, co-planarly, respectively disposed on opposite sides of said axis and having internal slots for slideably receiving and supporting one of said reflectors and for providing a continuous path between the two reflector supporting members each pair for said one reflector; and



means for continuously rotating said reflector support members about said predetermined axis only in one direction at a constant speed so that each reflector, after scanning a document, retracts along said continuous path from a scanning position on one side of said predetermined axis to a sheltered position on the side of said axis opposite said one side where it does not interfere with scanning by the following reflector and shuttles back and forth between said scanning and sheltered positions as said reflector support members are rotated.

3,893,765

SHEET HANDLING DEVICE FOR PHOTOCOPYING MACHINE

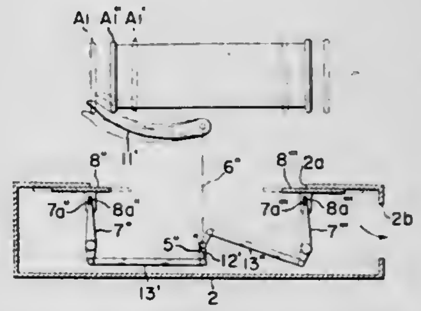
Takashi Yano, Yokohama, and Masumi Ikesue, Tokyo, both of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed May 9, 1973, Ser. No. 358,649

Claims priority, application Japan, May 11, 1972, 47-45836

Int. Cl. G03b *27/60*

U.S. Cl. 355—73 **3 Claims**



1. A device for positioning and supporting copy sheets for exposure in a photocopying machine comprising

a. a conveyor belt comprising a plurality of belts which are spaced apart from and in parallel with each other on said device and moved in the longitudinal direction of said device,

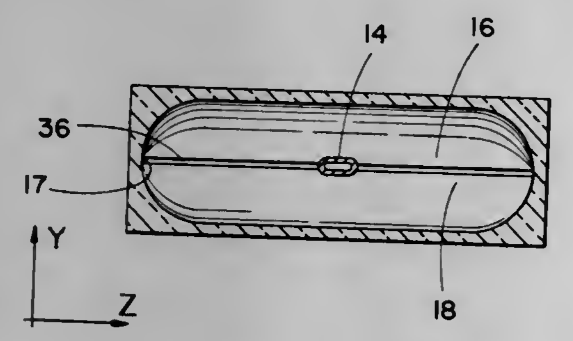
b. a top plate provided with an aperture whose longitudinal length is smaller than the length of the smallest-sized copy sheet used and whose transverse length or width is substantially equal to that of the largest-sized copy sheet used,

c. a negative pressure chamber formed below said top plate integral therewith and opened at the upper surface of said top plate through said aperture thereof, whereby a copy sheet placed upon said conveyor belt may be attracted and pressed thereupon by the difference pressure between atmospheric pressure and negative pressure produced in said negative pressure chamber, and air flows flowing in the longitudinal direction of said device may be formed between the copy sheet upon said conveyor belt and said top plate due to the difference between the atmospheric pressure and said negative pressure to prevent production of local, excessive suction forces, thereby maintaining the flatness of the exposure plane regardless of the sizes of copy sheets used,

d. flaps disposed in said aperture of said top plate for controlling the opening of said aperture,
e. a contact lever adapted to engage with a flange of a spool of a rolled copy sheet loaded in the photocopying machine so as to be rotated depending upon the size thereof, and
f. cam levers operatively coupled to said contact lever for controlling the movement of said flaps in response to the angle of rotation of said contact lever, whereby the effective opening of said aperture may be automatically controlled in response to the size of a rolled copy sheet used.

3,893,766
APPARATUS FOR ORIENTING GENERALLY FLAT PARTICLES FOR SLIT-SCAN PHOTOMETRY

Walter R. Hogg, Miami Lakes, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.
Filed June 14, 1973, Ser. No. 369,910
Int. Cl. G01n *21/26*
U.S. Cl. 356—36 **14 Claims**

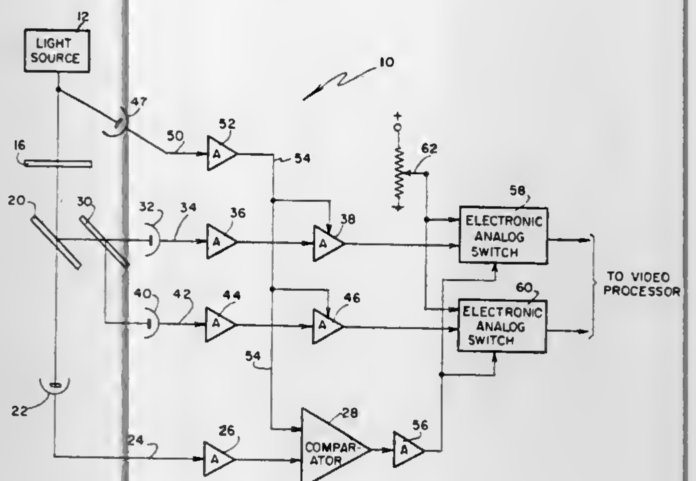


2. Apparatus for orienting sample particles suspended in a fluid for observation by slit-scan photometry comprising:
a flow chamber;
means for introducing the fluid suspension into the axial center of said flow chamber;
means for producing a flow of sheath fluid for surrounding said sample fluid and producing a planar laminar flow;
said flow chamber having walls configured in the direction of fluid flow therethrough such that said fluid suspension is caused to accelerate gradually and monotonically; said walls narrowing to form an exit for said fluid suspension located at a point approximately in the center of the fluid flow, and observation means for transmitting a light beam through the flow chamber located at a point prior to said exit adjacent a location where said narrowing of the walls is ended and said acceleration would be substantially terminated.

3,893,767
ELECTRO-OPTICAL SYSTEM FOR CANCELLATION OF THE EFFECTS OF RED BLOOD CELLS IN A SAMPLE OF BIOLOGICAL CELLS

Mack J. Fulwyler, Los Alamos, N. Mex.; Garret Francis Ziffer, Natick, Mass.; Gerard Adelard Paquette, Amherst, N.H., and Michael Thomas Gilmore, Watertown, Mass., assignors to Coulter Electronics, Inc., Hialeah, Fla.
Filed Oct. 23, 1973, Ser. No. 408,817
Int. Cl. G01m *1/00*
U.S. Cl. 356—39 **25 Claims**

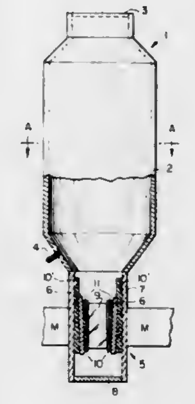
1. In a method for nondestructively analyzing biological cells located in a sample including cells of at least two types supported in fixed locations relative to each other and which differentially absorb light of known wavelength, the steps of: illuminating discretely at least parts of each of the cells at their fixed locations in the sample with first light within a first wavelength range;



detecting discretely the amount of said first light from each cell part after absorption thereby; and
generating a tag signal each time when the thus detected cell part light is different from a chosen value, said tag signal useable for indicating the fixed location in the sample of that cell part.

3,893,768
ZEEMAN MODULATED SPECTRAL SOURCE

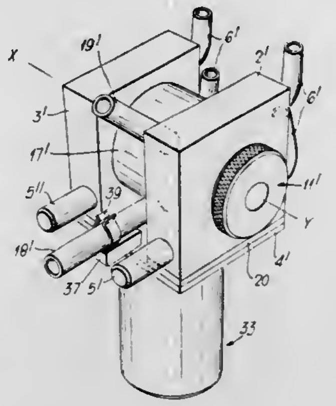
Roger Stephens, Hubbards, Canada, assignor to Canadian Patents & Development Limited, Ottawa, Canada
Filed Oct. 23, 1973, Ser. No. 408,273
Int. Cl. G01j *3/30*; H01j *1/50*
U.S. Cl. 356—85 **9 Claims**



1. A spectral source comprising:
first and second spaced electrodes mounted within said spectral source, said first and second electrodes adapted to be connected across a potential source to produce a plasma causing electric field having substantially parallel straight lines of electric force in a predetermined discharge region between said electrodes and at least one of said electrodes including a material adapted to emit radiation having predetermined spectral lines; and
means adapted to apply a magnetic field to said discharge region with the axis of the magnetic field substantially parallel to said lines of electric force, for producing Zeeman splitting of said spectral lines.

3,893,769
GRAPHITE TUBE FURNACE

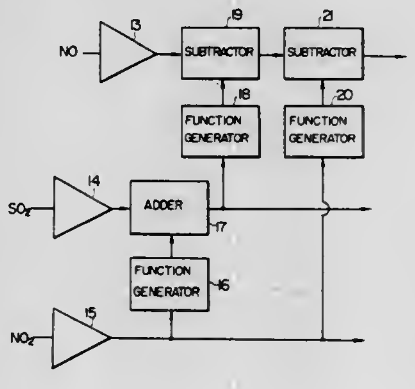
John Frederick Woolley, Sawbridgeworth, England, assignor to International Standard Electric Corporation, New York, N.Y.
Filed May 30, 1974, Ser. No. 474,398
Claims priority, application United Kingdom, Aug. 21, 1973, 39440/73
Int. Cl.^{2} G01J *3/30*; G01N *21/16*
U.S. Cl. 356—85 **30 Claims**



1. A graphite tube furnace for atomic absorption spectroscopy, said furnace comprising: a support; a pair of electrically conductive heat sinks fixed to said support; a hollow ferrule threaded into each of said heat sinks; a hollow tapered bushing mounted inside each respective ferrule; a graphite tube having both ends open and having the said ends thereof mounted inside respective ferrules, each of said bushings being slotted and having spring fingers clamping respective graphite tube ends, each heat sink having a tapered hole cooperating with the taper of respective bushings, said ferrules, bushings and graphite tube forming an assembly defining a hollow, unobstructed path extending completely therethrough through which light can pass in the direction of the axis of the tube.

3,893,770
APPARATUS FOR ANALYSING A PLURALITY OF MIXED GASES

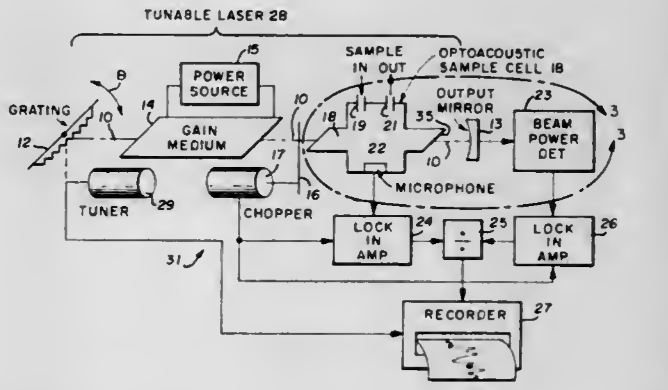
Katsumi Takami, Tokyo; Chiaki Shimbo, Hachioji, and Kyo Suda, Mitaka, all of Japan, assignors to Hitachi, Ltd., Japan
Filed Sept. 4, 1973, Ser. No. 394,256
Claims priority, application Japan, Sept. 5, 1972, 47-88826
Int. Cl. G01n *21/34*
U.S. Cl. 356—96 **2 Claims**



1. An apparatus for analyzing a composite gas comprising: means for obtaining an absorption spectrum of each of NO_2 gas, SO_2 gas and NO gas, the interferences between each gas being irreversible;
means for converting said each respective absorption spectrum into a first, a second, a third electrical signal in accordance with the intensity of the spectrum thereof;
means for generating a fourth electrical signal for simulating the interference between said NO_2 gas and SO_2 gas, which has the first electrical signal as an input signal;
a first adder which has the fourth electrical signal and the second electrical signal as an input signal;
means for generating a sixth electrical signal for simulating the interference between said SO_2 gas and NO gas, which has a fifth electrical signal derived from said adder as an input signal;
a first subtractor which has the third electrical signal and the sixth signal as an input signal;
means for generating a seventh electrical signal for simulating the interference between said NO_2 gas and said NO gas, which has the first electrical signal as an input;
a second substractor which has the seventh electrical signal and a eighth electrical signal derived from the first subtractor as an input signal.

3,893,771
LASER ABSORPTION SPECTROSCOPY

William E. Bell, Mountain View, Calif., assignor to Diax Corporation, Sunnyvale, Calif.
Filed Aug. 22, 1974, Ser. No. 499,442
Int. Cl.^{2} G01J *3/42*; G01N *21/24*
U.S. Cl. 356—97 **18 Claims**



1. In a laser absorption spectrometer:
means for defining an optical resonator;
means for producing a laser beam of coherent radiation within said optical resonator;
means for interposing a sample medium to be analyzed in said laser beam within said optical resonator for absorbing coherent radiation from said beam and for converting said absorbed coherent radiation of the beam into a second form of energy; and
means coupled in energy exchanging relation with the sample medium for detecting said second form of energy resulting from absorption of energy, if any, by said sample medium from said laser beam.

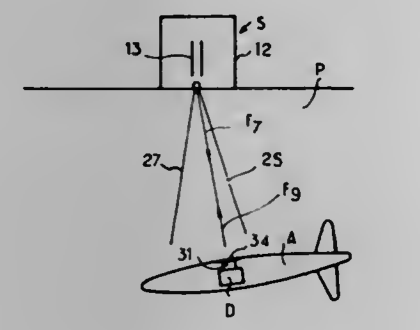
3,893,772
INSTALLATION FOR RESETTING A HEADING INDICATOR

Henri Le Tilly, Paris, and Henri Robin, Rueil-Malmaison, both of France, assignors to Electronique Marcel Dassault, Paris, France
Filed Feb. 21, 1973, Ser. No. 334,448
Claims priority, application France, Feb. 21, 1972, 72.05754
Int. Cl. G01b *11/26*
U.S. Cl. 356—141 **9 Claims**

1. A system for determining the azimuthal deviation between a reference direction and a heading indication given by an instrument aboard a craft moving over a surface area, comprising:
land-based equipment including a source of radiation at the level of said surface area emitting an outgoing laser beam;
sweep means in said equipment for periodically deflecting the outgoing laser beam between predetermined boundaries in a horizontal plane;

a mirror retroreflective in a vertical plane and symmetrically reflective in a horizontal plane aboard said craft for returning said outgoing laser beam toward said source upon passage of said craft through the deflection path thereof with an azimuthal orientation making the returning beam coincident with the outgoing beam;

timing means controlled by said sweep means for marking the start of a deflection cycle of said laser beam;



detector means in said equipment for generating an output signal upon impingement thereon of a laser beam returned by said reflector means; and

calculating means controlled by said timing means and said detector means for deriving said azimuthal deviation from the time position of said output signal within a deflection cycle.

3,893,773
PAINT APPLICATOR

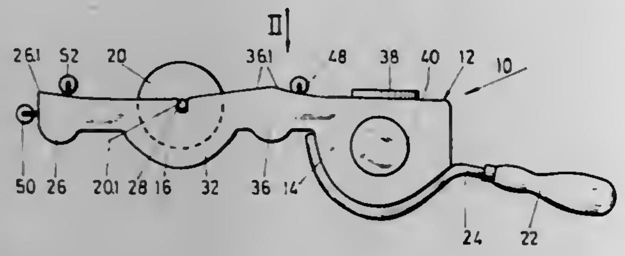
Gerrit Johan Ten Heuw, 28 St. Catherine Rd. Plumstead, Cape Town, South Africa

Filed Mar. 8, 1973, Ser. No. 339,134

Claims priority, application South Africa, Mar. 10, 1972, 72/1672

Int. Cl. A46b *15/00;* **B43m** *11/02, 3/40*

U.S. Cl. 401—15 **6 Claims**



1. A paint applicator comprising a paint container which includes a paint reservoir and an elongated tank having an elongated opening; an axially elongated cylindrical paint applying roller mounted to be partly encased by the elongated tank; supporting means on the tank for supporting the roller; a passage leading from the paint reservoir to the elongated tank for supplying paint under gravity to the elongated tank; a subsidiary reservoir on the side of the tank remote from the paint reservoir and in bidirectional communication with said tank within the confines of said container, into which subsidiary reservoir excessive paint can flow under gravity from the tank; and an additional subsidiary reservoir between said tank and reservoir, said additional subsidiary reservoir extending parallel to said tank.

3,893,774
PIPE CONNECTOR

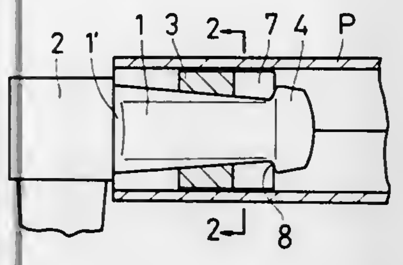
Noriyasu Hashioka, Nishigahara 1-chome, Kita-ku, Tokyo, Japan

Filed Nov. 2, 1973, Ser. No. 412,274

Claims priority, application Japan, Nov. 7, 1972, 47-128311

Int. Cl. E04b *7/08*

U.S. Cl. 403—171 **3 Claims**



1. A two-piece pipe connector for connecting square pipes to form a finished structure wherein

a. a first member comprises a cube-like base piece (2) with at least two connecting legs (1) each leg having an elongated body portion said body portion being connected to said cube-like base at one end and outwardly tapered therefrom to a free end with a disk-like head (4) portion at said free end; and,

b. a second member comprises a locking sleeve (3) having an open end and a rectangular end designed and sized to enter a square pipe open end, four walls extending from said rectangular end having a rounded interior conforming to the shape of said head, at least two end slots along at least two junctions of said four walls and at least two inner slots extending along the centers of at least two walls, so that said second member can be inserted into a square pipe and one head of said first member can be inserted into said second member open end.

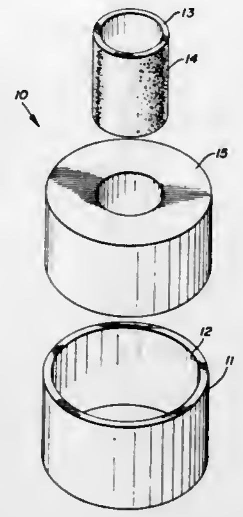
3,893,775
RESILIENT BUSHING WITH LONG FATIGUE LIFE

David L. Sievers; Gary L. Hipsher, both of Logansport, Ind., and Robert Vosburgh, Royal Oak, Mich., assignors to The General Tire & Rubber Company, Akron, Ohio

Filed May 13, 1974, Ser. No. 468,970

Int. Cl. F16b *1/00*

U.S. Cl. 403—225 **13 Claims**



2. A resilient bushing comprising:

an outer rigid member having curvilinear inner surface portions;

an inner rigid member having curvilinear outer surface portions;

at least one of said surface portions being provided as a sandblasted surface with an effective phosphate coating formed on said surface to define an effective roughness surface height rating selected in accordance with SAE Standard J448a; and

an elastomeric insert compressively positioned between said inner surface portions of the outer member and said outer surface portions of the inner member.

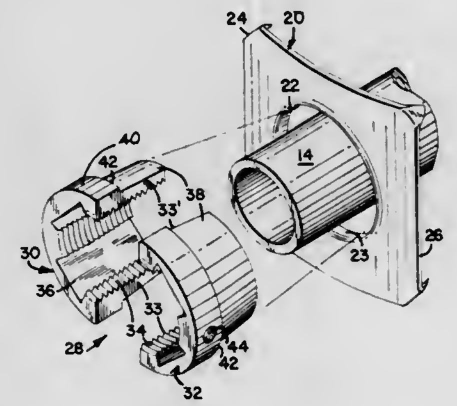
3,893,776
FASTENING APPARATUS FOR PLAYGROUND EQUIPMENT AND METHOD OF ASSEMBLY

John M. Beattie, Bloomington, Minn., assignor to The Toro Company, Minneapolis, Minn.

Filed Jan. 8, 1974, Ser. No. 431,612

Int. Cl.² F16L *5/00*

U.S. Cl. 403—259 **13 Claims**



1. A basic unit of construction for use in playground equipment, comprising:

a. a compressible post member having a clearance hole therethrough for receipt of a bar member;

b. a bar member received into the clearance hole in said post member;

c. retaining means engaging one side of said post member and said bar member for preventing said bar member from being withdrawn from said clearance hole from the opposite side of said post member;

d. a first support plate, placed in contact with said post member between said retaining means and said post, having a guide hole substantially axially aligned with said clearance hole, said bar member extending through said clearance hole;

e. first split ring means having an external surface bearing against and adapted to rotate with respect to the periphery of said guide hole, said split ring means threadedly engaging said bar member; and

f. means for preventing relative rotation between said first support plate and said post member, whereby rotation of said split ring means in one sense forces said first support plate toward said fixed means.

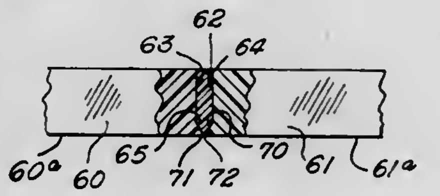
3,893,777
STRUCTURAL JOINT

Wilson M. Jones, 1703 N. Beckley, Dallas, Tex. 75203

Filed July 31, 1974, Ser. No. 493,231

Int. Cl. F16b *12/04*

U.S. Cl. 403—268 **10 Claims**



1. A cast joint between at least two plastic body members comprising: means providing a mold space between said members along said joint, said mold space being defined by spaced edge surfaces on said members, an outer portion of said mold space along the length of said space between said members being defined by parallel spaced edge surfaces on said members and an inner bottom portion of said mold space being defined by two surfaces at least one of which is a surface converging with the other of said two surfaces to a line of contact along the length of the bottom of said mold space; and a bonding agent in said mold space between said two body members, said bonding agent being of the same material comprising said two body members and initially being in a liquid form including an inhibitor, said liquid form being mixed with a catalyst and being introduced into said mold space, said liquid bonding agent with said inhibitor and said catalyst being cured within said mold space reacting with said material forming said two members along the boundary of said bonding agent and said edge surfaces of said members defining said mold space whereby said bonding agent and said body members form a homogeneous continuous integral mass.

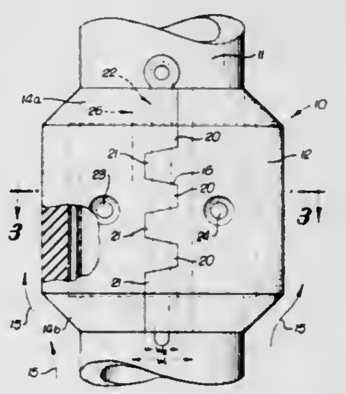
3,893,778
ANTI-CORROSION PIPE PROTECTOR

Fred D. Williams, Long Beach, Calif., assignor to Hydril Company, Los Angeles, Calif.

Filed June 10, 1974, Ser. No. 477,813

Int. Cl.² F16L *58/00*

U.S. Cl. 403—344 **9 Claims**



1. In a well pipe protector,

a. a C-shaped body defining a zig-zag split,

b. terminals on the body to be drawn together in interfitting relation for retention proximate said split after application of the body about the pipe, and

c. a protective flap carried by said body and having freely projecting inwardly and outwardly flexible extent to protectively overlap the side of the pipe inwardly of said terminals and to fully bridge said zig-zag split at the inner side thereof in response to said drawing together of the terminals.

3,893,779
HUB-TO-SHAFT CONNECTION

Joachim W. Schroeter, North Tonawanda, N.Y., assignor to Buffalo Forge Company, Buffalo, N.Y.

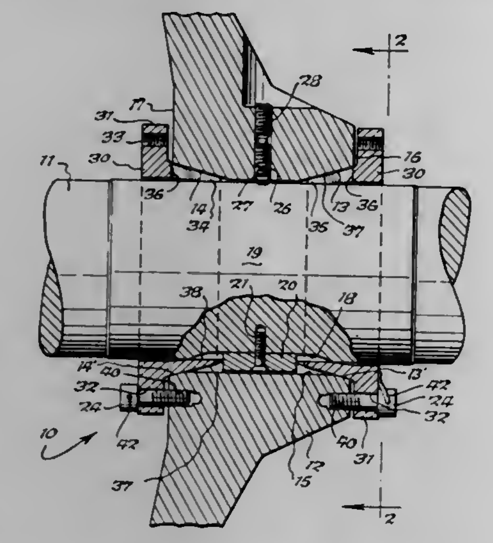
Filed May 13, 1974, Ser. No. 469,368

Int. Cl. F16d *1/06*

U.S. Cl. 403—370 **1 Claim**

1. A hub-to-shaft connection comprising a hub, a shaft, a tapered surface on said hub, a collar having a plurality of tapered flexible leaf means circumferentially spaced thereon, and moving means for effecting relative axial movement between said tapered surface on said hub and said tapered leaf means in engagement therewith so as to effect a tight locking engagement between said hub and said shaft; a second tapered surface on said hub spaced from and extending in the opposite direction from said tapered surface, a second collar having a plurality of second tapered flexible leaf means circumferentially spaced thereon, and second wedge-moving means for effecting relative axial movement between said second tapered surface on said hub and said second tapered leaf means

in engagement therewith so as to effect a tight locking engagement between said hub and said shaft at the location of said second leaf means, key means positioned directly between and engaging both said hub and said shaft, said key means being axially spaced on said hub from said leaf means so as to permit



substantially 360° engagement between said leaf means and said hub, screw means for securing said key means to said shaft, and set screw means for securing said hub to said shaft in a predetermined axial position prior to effecting said tight locking engagement between said hub and said shaft.

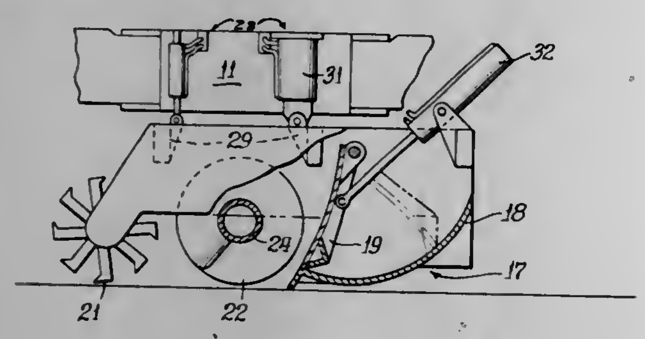
3,893,780
EJECTOR BUCKET FOR EARTH FINISHING MACHINE

Nathan Gutman, Loudonville, N.Y.; Dorwin R. Larsen, Oswego, and Everette M. Volle, Morton, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed June 28, 1974, Ser. No. 483,913

Int. Cl. E01c *19/15*

U.S. Cl. 404—91 **9 Claims**



1. A surface finishing machine including: frame means; a plurality of extending arm means mounted upon said frame means; road traction means for selective movement of said machine mounted upon said extending arm means; and collection means for collecting and selectively dispersing surface building materials, said collection means including a bucket member adjustably mounted upon said frame means, said bucket member having a frontal opening for ingress of surface building material, and ejection means for selectively ejecting said materials from said bucket member through said frontal opening for material ingress.

3,893,781
CENTRIFUGAL PUMP

Yutaka Aga, 603 Higashiune, Akoh, Japan

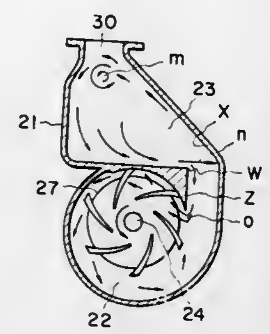
Filed Nov. 27, 1973, Ser. No. 419,388

Int. Cl.² F04D *5/00, 9/02*

U.S. Cl. 415—53 **4 Claims**

1. A centrifugal pump comprising:

a volute chamber having a rotary impeller supported therein, and an air-liquid separating chamber having a substantially right-triangular cross-section and including a bottom planar surface and an oblique planar surface which is inclined with respect to said bottom surface, said bottom surface having an opening therein adjacent one



end of said oblique surface, said opening connecting said volute chamber with said separating chamber, and said separating chamber further including an exhaust port adjacent a second end of said oblique surface.

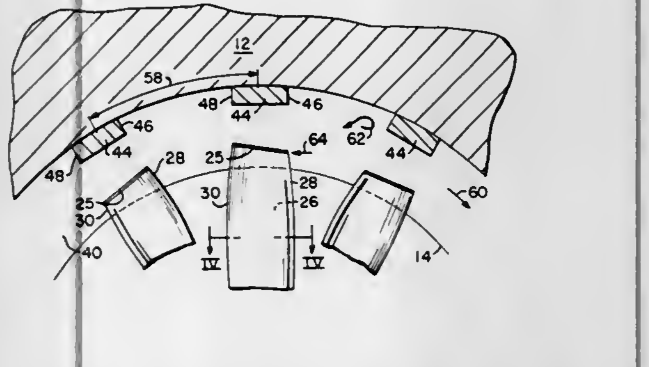
3,893,782
TURBINE BLADE DAMPING

Mario F. Pierpoline, Media, and Frank J. Kuchma, Lansdowne, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 20, 1974, Ser. No. 452,867

Int. Cl. F01d *5/16, 5/10*

U.S. Cl. 415—119 **6 Claims**



1. An axial flow elastic fluid turbine apparatus comprising: a casing having a central axial bore extending therethrough, said casing having a circumferential groove disposed on the interior surface thereof,

a predetermined plurality of baffle members disposed in said groove, said baffle members being disposed at a predetermined circumferential distance from one another, each of said baffle members traversing said groove and extending radially inward from said groove relative to an axis extending through said bore,

a predetermined number of nozzles directing the flow of elastic fluid in said turbine, and,

a rotating member extending centrally and axially through said bore, said rotating member having a predetermined number of rotating blades thereon, each of said blades having a root portion attached to said rotating member and a tip portion thereon, said tip portion of each of said blades being adjacent to said groove in said casing, said rotating member being operable to direct said elastic fluid from said nozzles into said groove, said elastic fluid directed into said groove being deflected by said baffle members against said rotating blades to reduce vibration in said blades.

3,893,783
GAS TURBINE ENGINES AND BLADED ROTORS THEREFOR

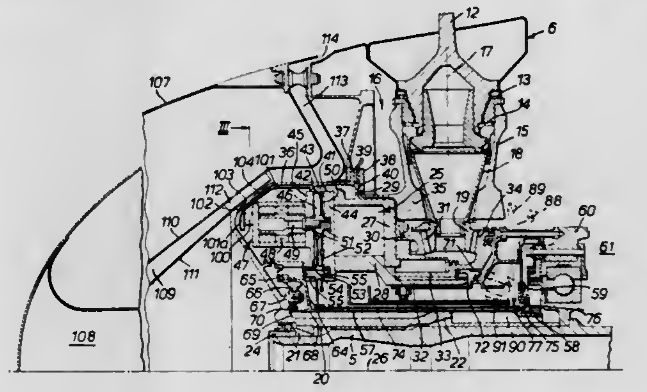
John Gregory Keenan, Cheltenham; John Alfred Chilman, Stroud, and Ivor Harold Brooking, Gloucester, all of England, assignors to Dowty Rotol Limited, Gloucester, England

Filed Feb. 15, 1974, Ser. No. 443,147

Claims priority, application United Kingdom, Feb. 17, 1973, 7883/73; Feb. 17, 1973, 7885/73

Int. Cl. F01d *7/00*

U.S. Cl. 415—129 **9 Claims**



1. A bladed rotor, suitable for a gas turbine engine of the by-pass type, including a hub, which carries, so as to be rotatable therewith, at least one pump operable upon rotation of the rotor, a liquid-pressure-operable actuator for adjusting the blades of the rotor to vary flow of fluid over the blades, control valve means by way of which liquid under pressure is directed from said pump to operate the actuator, and a further pump operable, when said one pump is inoperative or substantially so, by motor means carried by non-rotative structure external of the rotor to supply pressure liquid to the actuator for feathering of the blades.

3,893,784
APPARATUS FOR ADJUSTING STATOR BLADES

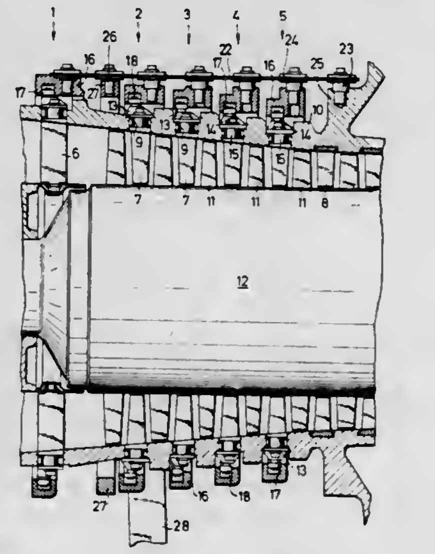
Ferdinand Zerlauth, Andelfingen, Switzerland, assignor to Brown Boveri Sulzer-Turbomachinery Ltd., Zurich, Switzerland

Filed Nov. 6, 1973, Ser. No. 413,313

Claims priority, application Switzerland, Nov. 8, 1972, 16246/72

Int. Cl. F04d *29/56, 27/00*

U.S. Cl. 415—149 R **6 Claims**



1. In combination with a multi-stage axial flow turbomachine having a casing and a plurality of stages of adjustable stator blades mounted in said casing about a longitudinal axis; an apparatus for adjusting said stator blades of each stage comprising

a plurality of axially movable adjusting rings rotatably mounted in concentric relation about said axis, each adjusting ring being mounted adjacent a respective stator stage;

a plurality of levers connecting each adjusting ring to each blade of an adjacent stator stage; and

a plurality of resilient twistable strips secured across and to said rings and pivotally mounted at one end on said casing whereby upon rotation of said one ring, said rings simultaneously rotate and move axially of said axis to turn said blades of successive stages in a linear pattern while said strips are subjected to twisting.

3,893,785
DEVICE FOR MIXING AND IMPELLING OF HEAT-EXCHANGE FLUIDS

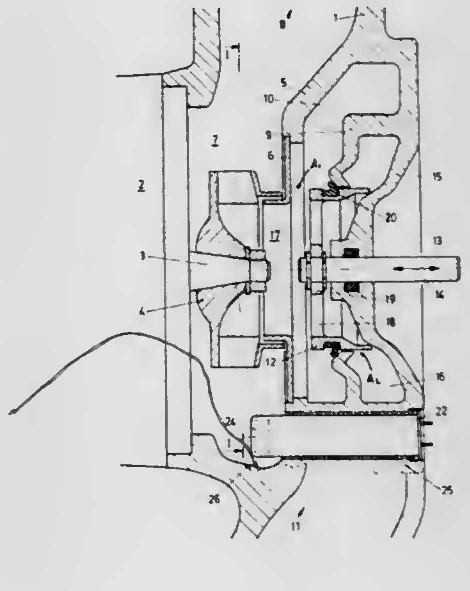
Edmund Maron, Steinach, Switzerland, assignor to Aktiengesellschaft Adolph Saurer, Arbon, Switzerland

Filed Aug. 31, 1973, Ser. No. 393,681

Claims priority, application Switzerland, Sept. 5, 1972, 13028/72

Int. Cl. F04d *31/00*

U.S. Cl. 415—157 **6 Claims**

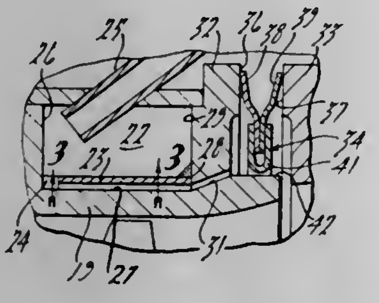


1. In a device for mixing and impelling of heat-exchange fluids, a combination comprising wall means defining a first, a second and a third chamber; an impeller interposed between said first and second chamber and having a suction side adapted to communicate with said first and said third chamber, and a pressure side communicating with said second chamber; and outlet communicating with said second chamber and with a user; a pair of inlets for cooler or hotter heat-exchange fluid each communicating with one of said first and third chambers, respectively; a pair of axially aligned apertures axially spaced from said suction side of said impeller and connecting said first and third chambers with one another; and tubular baffle means shiftable axially in said apertures and operative for increasing the effective cross-section of one of said apertures while simultaneously decreasing the effective cross-section of the other aperture, and vice versa.

3,893,786
AIR COOLED SHROUD FOR A GAS TURBINE ENGINE

Christian J. Rahnke, Roseville, and James K. Vallance, Dearborn Heights, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed June 7, 1973, Ser. No. 368,004
Int. Cl.² F01D *25/08*
U.S. Cl. 415—178 **7 Claims**

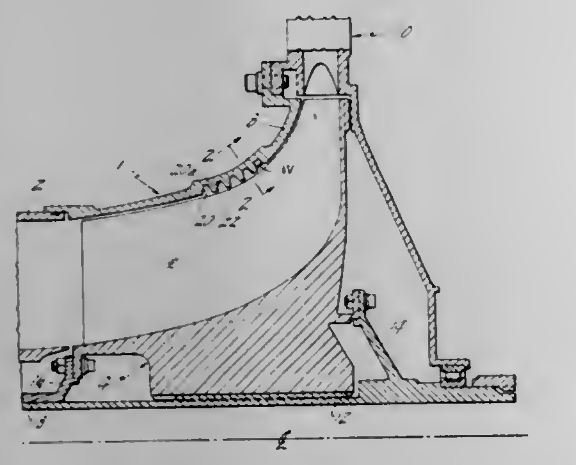


1. In a gas turbine engine having a rotor and a shroud positioned about said rotor,
- said rotor being rotatable about a given axis,
- said shroud having a generally annular portion encircling said rotor,
- a radially inwardly directed first surface of said annular portion having a predetermined clearance from the outer circumference of said rotor,
- a second surface of said annular portion being the side opposite said first surface,
- means together with said second surface defining a plurality of slots.
- said slots forming a portion of passage means connecting a higher pressure area to a lower pressure area whereby air moves through said slots during engine operation,
- said slots having a depth in a range of 0.005 to 0.020 inches and being sufficiently small so that the air passing therethrough disturbs the normal boundary layer of heated air against said second surface.

3,893,787
CENTRIFUGAL COMPRESSOR BOUNDARY LAYER CONTROL

Burton A. Jones, North Palm Beach, Fla., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Mar. 14, 1974, Ser. No: 451,257
Int. Cl.² F04D *7/02*
U.S. Cl. 415—213 R **3 Claims**

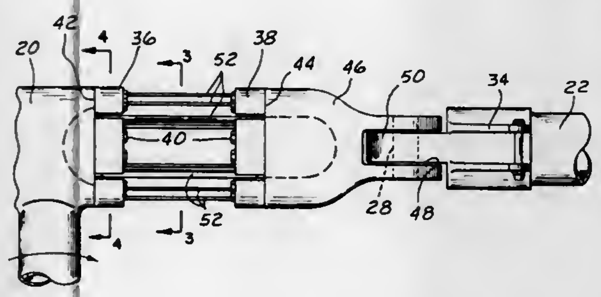


1. A centrifugal compressor being mounted for rotation having an axial inlet for delivering a fluid thereto, and a radial outlet for receiving a compressed fluid therefrom, said compressor having blades thereon each blade having a continuous outer free edge from said inlet to said outlet, said blades having an abrupt flow path section from axial flow to radial flow, a fixed shroud located between said inlet and outlet spaced from the edges of said blades, said shroud having annular grooves located therearound facing said blades, said circumferential grooves being located on the surface of the shroud opposite the abrupt flow path section where the flowpath from said inlet turns abruptly toward a radial direction into said outlet.

3,893,788
FLEXIBLE COUPLING

Richard J. Ditlinger, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed Feb. 6, 1973, Ser. No. 330,154
Int. Cl. B64c *27/48*
U.S. Cl. 416—134 **11 Claims**

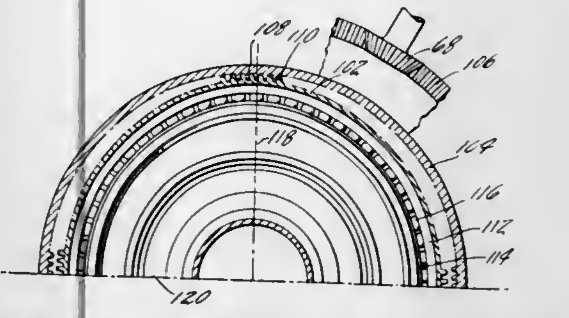


1. A flexible tension-torsion coupling for joining a first member and a relatively movable second member having a longitudinal axis, said coupling comprising:
- a plurality of torsionally flexible endless belts each having parallel side portions and opposite end portions connecting the same;
- said plurality of endless belts being arranged in circumferentially spaced apart formation around said longitudinal axis;
- first retaining means operatively connecting one of said end portions of each of said belts to said first member;
- second retaining means operatively connecting the other of said end portions of each of said belts to said movable second member;
- said plurality of endless belts being operative to maintain said second member in fixed spaced apart relationship to said first member and torsionally responsive to rotational movement of said second member about said longitudinal axis.

3,893,789
PITCH CHANGE ACTUATOR FOR A VARIABLE PITCH FAN PROPULSOR

Merritt B. Andrews, Westfield, Mass., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Feb. 21, 1973, Ser. No. 334,334
Int. Cl. B63h *3/02;* B64c *11/32*
U.S. Cl. 416—160 **5 Claims**

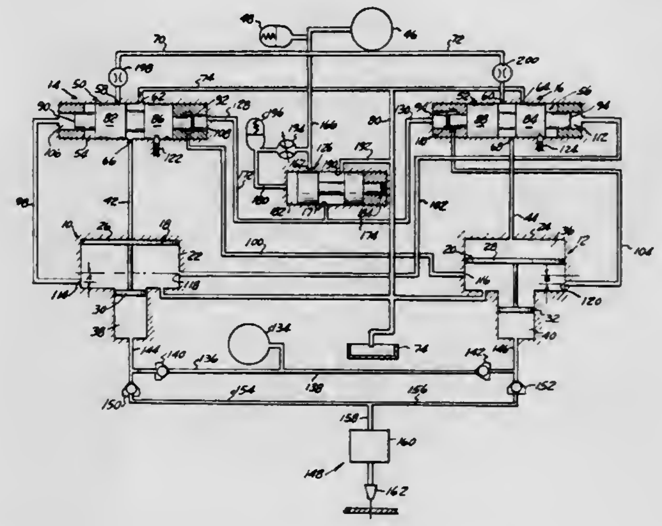


1. For a ducted fan propulsor having a plurality of circumferentially spaced blades supported in a hub driven by a power plant, pitch change means for imparting rotary motion to said blades for varying the blade angle, said pitch change means including a harmonic drive means operatively connected to said blades, and means secured to a nonrotating element spaced from said hub for imparting a pitch change input signal to actuate said harmonic drive means to position said blades to various blade angles.

3,893,790
DUAL SINGLE ACTION RAM INTENSIFIER

Endre A. Mayer, Birmingham, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Continuation-in-part of Ser. No. 139,098, April 30, 1971, abandoned. This application May 29, 1973, Ser. No. 364,595
Int. Cl.² F04B *17/00;* F16D *31/02*
U.S. Cl. 417—346 **1 Claim**

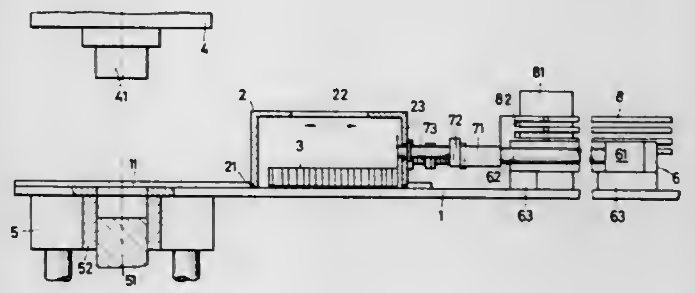


1. A fluid actuated intensifier comprising:
- first ram intensifier means including a piston member disposed in a cylinder means to form an upper chamber defined by said cylinder means and one head of said piston and a lower chamber defined by the other head of said piston and said cylinder means;
- second ram intensifier means including a piston member disposed in a cylinder means to form an upper chamber defined by said cylinder means and one head of said piston and a lower chamber defined by the other head of said piston and said cylinder means;
- means for introducing fluid into said lower chambers;
- means for pressurizing said upper chambers including a constant pressure source capable of supplying said fluid to said upper chambers without a substantial drop in pressure due to substantial flow into said upper chambers resulting from compression of said fluid in said lower chambers;
- said means for pressurizing said upper chambers also including control means cyclically pressurizing said upper chambers by communication with said constant pressure source so as to cause said piston members to alternately move to pressurize said fluid introduced into said lower chambers and including means causing each of said pistons to move to a return position after said pressurization cycle, said control means further including means causing simultaneous pressurization of both of said upper chambers and means causing both piston members to simultaneously move to pressurize said lower chambers preceding the return movement of either of said piston members by said simultaneous pressurization, said control means including a pair of control valve means operatively associated with each of said ram intensifiers operable independently of each other to produce said simultaneous pressurization of said ram intensifier means, and further including start-up valve means causing said control valves to momentarily pressurize one of said upper chambers and depressurize the other of said upper chambers during start-up of said intensifier, whereby said piston members initially assume oppositive positions in said cylinder means;
- common outlet means receiving fluid pressurized in said lower chambers, including means providing communications of said lower chamber with said common outlet means during said pressurization and discontinuing communication during said return movement.

3,893,791
PRESSING APPARATUS

Werner Plocher, Horb-Ihlingen; Franz Kuhl, Herdecke; Karl Mertl, and Bernhard Huttermann, both of Glinde, all of Germany, assignors to Jurid Werke GmbH, Glinde and Maschinenfabrik Lauffer & Butscher, Muhlen, both of, Germany

Filed June 3, 1974, Ser. No. 476,147
Claims priority, application Germany, June 6, 1973, 2328699
Int. Cl. B30b *11/02, 15/30*
U.S. Cl. 425—78 **5 Claims**



1. A pressing apparatus for compacting powdered material into compacted bodies comprising
- a table having a table surface,
- a die chamber within said table and having a filling opening bordered by parts of said table surface, compacting means cooperating with said die chamber for compacting the contents thereof,
- a frame having wall means which are provided with lower and upper edges and which enclose an interior space, said upper edges defining a top opening for receiving powdered material, and said lower edges which are in substantially close and complete contact with said table surface, defining a bottom opening for the discharge of said powdered material,
- grating means in said interior space free of contact with said wall means,
- driving means for reciprocatingly moving said frame on the table surface from a first receiving position to a second discharge position on top of the filling opening and back, and for oscillatory motion of said grating means,
- rigid coupling means between said grating means and said driving means,
- and lost motion coupling means between said frame and said driving means.

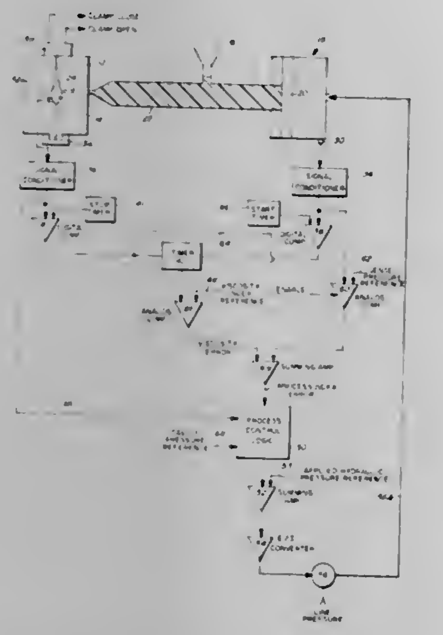
3,893,792
CONTROLLER FOR INJECTION MOLDING MACHINE

Frank Laczko, Duxbury, Mass., assignor to BBF Group, Inc., Westwood, Mass.

Filed Apr. 6, 1973, Ser. No. 348,614
Int. Cl. L29f *1/06*
U.S. Cl. 425—149 **24 Claims**

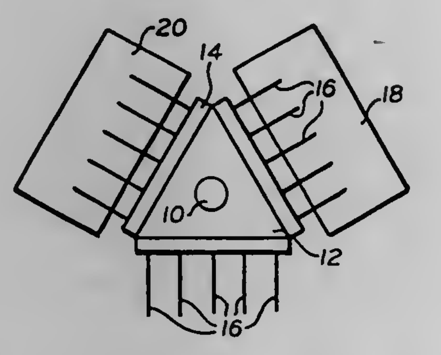
1. For an injection molding machine having a mold defining a cavity for receiving a plasticized material to form an article during a cycle of operation of the machine, a controller comprising;
- variable pressure applying means for forcing the material into the cavity,
- means associated with the variable pressure applying means for sensing applied pressure,
- transducer means in or proximate said cavity for sensing cavity pressure,

means responsive to the applied and cavity pressures for establishing a time reference viscosity signal,
means for establishing a viscosity error signal during an initial portion of the cycle when the time reference viscosity signal deviates from a predetermined reference signal,
and means responsive to said viscosity error signal for operating the pressure applying means at a new pressure level during the remainder of the cycle.



3,893,793
MOLDING APPARATUS WITH TEMPERATURE COMPENSATING CORE RODS

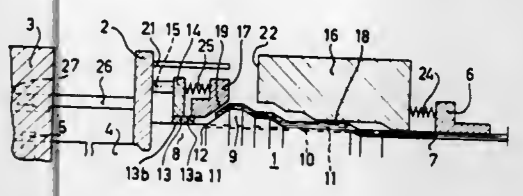
John J. Farrell, Green Brook, N.J., assignor to Farrell Patent Company, Dunellen, N.J.
Filed Mar. 23, 1973, Ser. No. 344,128
Int. Cl. B29d *23/03*
U.S. Cl. 425—242 B **9 Claims**



1. Molding apparatus including a head having a side face, a mold adjacent to said face and having spaced apart openings opposing said face, core rods carried by the head and projecting therefrom for extending into said openings in the mold, holders carried by the head for supporting the core rods, and bearings in the holders and on the core rods, said bearings and holders having surfaces confronting one another and extending substantially normal to the longitudinal axes of the core rods for holding the core rods that extend from said face in parallel relation to one another, the bearing and holder surfaces having relative movement with respect to one another and the care rods having relative movement with respect to the head and normal to said axes for changing the spacings of the core rods from one another to compensate for differences between the temperature of the head and the temperature of the mold and the resulting changes in the spacings of the openings in the mold into which the core rods must extend.

3,893,794
APPARATUS FOR FORMING A SOCKET IN THERMOPLASTIC PIPE

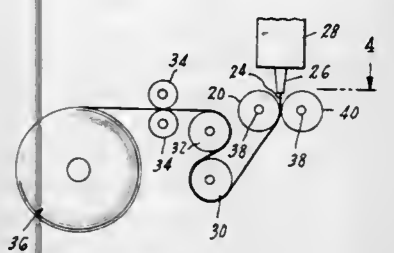
Petrus Marinus Acda, Enkhuizen, Netherlands, assignor to Polva Nederland B.V., Enkhuizen, Netherlands
Filed Oct. 9, 1973, Ser. No. 404,335
Claims priority, application Netherlands, Oct. 13, 1972, 7213924
Int. Cl. B29c *17/00*
U.S. Cl. 425—393 **7 Claims**



1. An apparatus for forming a socket in a pipe end, comprising:
a mandrel adapted to be inserted in the pipe end, comprising a base part and a removable shaping ring having at least one portion having a diameter greater than the outside diameter of the pipe;
clamping means for holding said pipe coaxially with said mandrel;
a mold enclosing a cavity coaxial with the mandrel, comprising axially separable first and second parts having a parting face intersecting said cavity at a location of greatest diameter of said cavity, said first mold part at an end away from said parting face and adjacent said clamping means having a first interior cylindrical surface having a diameter substantially equal to the outside diameter of the pipe, said second mold part at an end away from said parting face having a second interior cylindrical surface having a diameter at least equal to said outside diameter; a thrust member having a tubular portion whose wall thickness is at least equal to that of the pipe, said tubular portion slidably mounted on said base part of said mandrel for relative axial motion and having an outside surface slidable within said second interior surface of the second mold part;
means for producing relative axial displacement between said clamping member and said mandrel, mold and thrust member; and
means for displacing said thrust member axially with respect to said mandrel and mold.

3,893,795
EMBOSSING ROLLS WITH AREAS OF DIFFERENTIAL HARDNESS

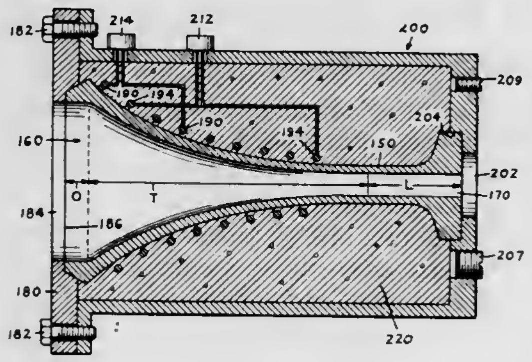
Jan P. Nauta, West Hartford, Conn., assignor to Rowland Development Corporation, Kensington, Conn.
Division of Ser. Nos. 65,433, Aug. 20, 1970, Pat. No. 3,751,550, and Ser. No. 360,370, May 14, 1973, Pat. No. 3,839,514. This application Aug. 5, 1974, Ser. No. 494,703
Int. Cl. B29c *15/00*
U.S. Cl. 425—403 **6 Claims**



1. An embossing roll having a surface coating of elastomeric synthetic resin, and a circumferential inner portion having valleys and ridges therein, said elastomeric resin of said surface coating being relatively resilient and of lesser hardness than the material of said circumferential inner portions, said surface coating covering said circumferential inner portion including the ridges thereof and having a multiplicity of embossing formations extending over substantially the entire surface thereof, said surface coating being of greater depth in the valleys of said inner portion than at the ridges of said inner portion to provide varying depths of sald elastomeric resin underlying said embossing formations, the surface resilience of said surface coating being greater at said valleys than at said ridges, said resin of said surface coating being relatively resilient so as to permit resilient distortion of said coating at least in said areas of greater depth upon application of sufficient pressure thereto.

3,893,796
EXTRUSION DIES HAVING DIFFERENT SHAPED INPUT AND OUTPUT ORIFICES AND AN INTERMEDIATE REGION OF UNIFORM VARIATION IN CROSS-SECTION PER UNIT OF DISTANCE

Edward Korostoff, and Gary K. Zin, both of Philadelphia, Pa., assignors to Matcon, Inc., Philadelphia, Pa.
Continuation of Ser. No. 118,595, Feb. 25, 1971, abandoned, which is a division of Ser. No. 18,499, March 11, 1970, Pat. No. 3,588,987. This application Oct. 1, 1973, Ser. No. 402,297
Int. Cl. B29f *3/04*
U.S. Cl. 425—461 **7 Claims**

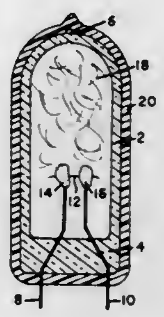


1. A liner for use in an extrusion die for extruding material into a desired profile, the liner comprising a wall having an input orifice, an output orifice, an internal contour connecting the input orifice to thte output orifice, a transition region of said internal contour having at a first end, a shape substantially identical to the shape of the input orifice and at a second end, a shape substantially identical to the shape of the output orifice, said region having a gradual transition in cross-sectional area from the first end to the second end and the output orifice having a pattern, the pattern land portion of said internal contour having third and fourth ends, said third end corresponding to the second end of the transition portion and the fourth end corresponding to the output orifice of the liner.

3,893,797
PHOTOFLASH LAMP AND METHOD OF COATING SAME

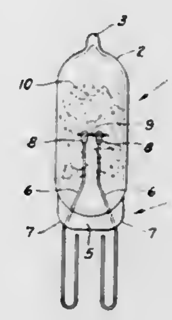
Harold L. Hough, Beverly; Emery G. Audesse, Salem, and Thomas J. Sentementes, Wakefield, all of Mass., assignors to GTE Sylvania Incorporated, Danvers, Mass.
Filed July 3, 1972, Ser. No. 268,576
Int. Cl.^{2} F21K *5/02*
U.S. Cl. 431—94 **12 Claims**

1. A photoflash lamp comprising an hermetically sealed glass envelope, a combustion-supporting gas in said envelope, a quantity of combustible material located in said envelope, ignition means attached to said envelope and disposed in operative relationship to said combustible material, and a thermoplastic coating of substantially uniform thickness vacuum formed onto the entire exterior surface of said glass envelope and exerting a compressive load thereon.



3,893,798
PHOTOFLASH LAMP

Vaughn C. Sterling, Cleveland, Ohio, assignor to General Electric Company, Schenectady, N.Y.
Filed Dec. 15, 1972, Ser. No. 315,663
Int. Cl. F21k *5/02*
U.S. Cl. 431—95 **1 Claim**



1. In a miniature flashlamp comprising a hermetically sealed light-transmitting envelope having an internal volume of approximately 0.4cc or less, a quantity of filamentary combustible material distributed within said envelope, a filling of combustion-supporting gas in said envelope, and an electrical-ignition system secured at one end and in communication with the interior of said envelope, the improvement wherein said electrical-ignition system includes 0.5–2.5 milligrams of an adhesively bonded solid primer mixture which comprises in percentages by weight of 1–5% sodium chlorate, 1–4% polyvinyl pyrrolidone, 1–6% sodium perchlorate, and the balance being zirconium with said primer mixture having been applied as an aqueous suspension of zirconium having the sodium chlorate, sodium perchlorate and polyvinyl pyrrolidone dissolved therein.

3,893,799
ABRASIVE WHEELS FOR CIGARETTE LIGHTERS AND METHOD OF MAKING SAME

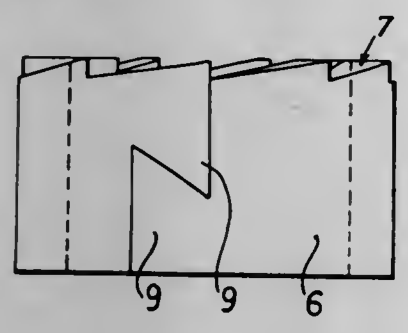
Robert Hocq, Boulogne-sur-Seine, France, assignor to Societe Franco-Hispano-Americaine (FRANCISPAM), Saint-Gratien, France

Filed Apr. 24, 1973, Ser. No. 353,990

Claims priority, application France, Apr. 26, 1972, 72.14817

Int. Cl. F23q *1/02*

U.S. Cl. 431—274 **3 Claims**



1. Abrasive wheel for a cirgarette lighter which comprises a metallic strip provided with integral lateral ratchet teeth on one side thereof and having ends which interfit to hold it in a cylindrical shape, the outer cylindrical surface of said strip being knurled.

3,893,800
BACKSIDE HEATING AND FIXING APPARATUS IN AN ELECTRONIC PHOTOGRAPH DUPLICATOR

Shoji Wako, Atsugi, Japan, assignor to Rank Xerox, Ltd., London, England

Filed Nov. 14, 1973, Ser. No. 415,598

Int. Cl. G03g *15/00;* **B65h** *17/28*

U.S. Cl. 432—60 **5 Claims**

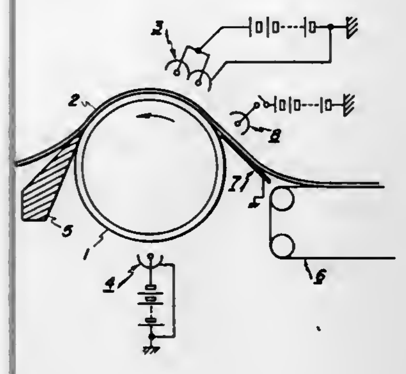
1. A method of fusing toner images to a substrate utilizing a heated member and guide means for directing the substrate into contact with the heated member and further utilizing first means for effecting intimate contact between said substrate and said heated member and second means for effecting intimate contact between the substrate and said guide means, said method comprising the steps of:

moving said substrate into contact with said guide means and said heated roll, in that order;

energizing said first means for affecting intimate contact between said substrate and said heated roll; and

subsequently energizing said second means for effecting intimate contact between said substrate and said guide means for preventing trail-end flip-up of said substrate.

2. Apparatus for fusing powder images to a substrate, said apparatus comprising:



a heated roll for contacting the side of said substrate opposite said powder images;

means for guiding said substrate into contact with said heated roll;

means for effecting intimate contact between said substrate and said heated roll once said substrate contacts said heated roll;

means for providing an attractive force between said guide means and said substrate subsequent to the energization of said means for effecting contact between said substrate and said heated roll; and

means for rendering said attractive force providing means operative only after intimate contact is established between said substrate and said heated roll.

CHEMICAL

3,893,801
TRANSFER DYEING

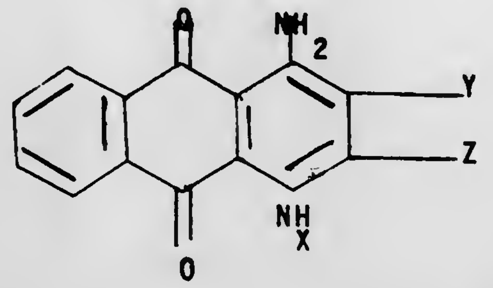
Cyril Eric Vellins, Cheadle; Leonard Fox Dixon, Elland, and Bryan Ronald Hinchliffe, Huddersfield, all of England, assignors to L. B. Holliday & Co. Limited, Huddersfield, England

Filed June 14, 1973, Ser. No. 369,970

Int. Cl. D06p *1/20*

U.S. Cl. 8—2.5 **12 Claims**

1. A method of transfer printing comprising printing with an ink a desired design onto a transfer backing material, and thereafter transferring the printed design by the application of heat from the backing material to a synthetic fabric which is to be dyed or printed, the ink comprising a base medium and at least one dyestuff having the formula



in which: X is an unsubstituted alkyl group having from 1 to 6 carbon atoms, Y and Z are cyano or hydrogen, at least one of Y and Z being cyano.

3,893,802
INDAMINES AND METHOD OF USING THE SAME

Gregoire Kalopissis, Paris; Andree Bugaut, Boulogne-sur-Seine, and Francoise Estradier, Paris, all of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

Continuation-in-part of Ser. No. 131,458, April 5, 1971, abandoned. This application Aug. 13, 1973, Ser. No. 387,612

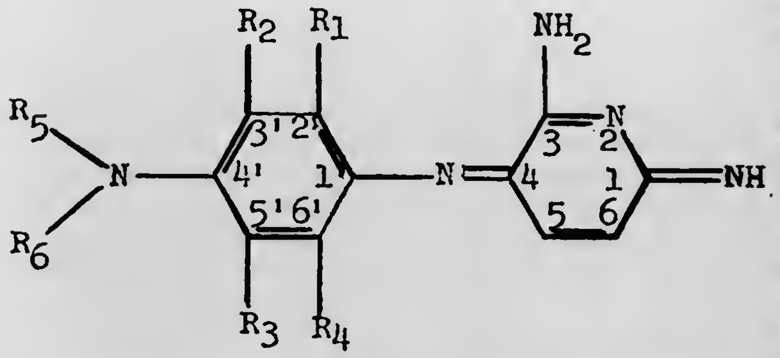
Claims priority, application Luxembourg, Apr. 10, 1970, 60702

Int. Cl. D06p *3/04*

U.S. Cl. 8—10 **15 Claims**

1. A dye composition for coloring keratinic fibers comprising a solution of an indamine in a solvent selected from the group consisting of water and wanter and a lower alkanol, said indamine being present in amounts effective to dye said deratinic fibers and being selected from the group consisting of

a. an indamine having the formula



wherein R_1, R_2, R_3 and R_4 each independently are selected from the group consisting of hydrogen, halogen, lower alkyl having 1–4 carbon atoms and lower alkoxy having 1–4 carbon atoms, and R_5 and R_6 independently are selected from the group consisting of hydrogen, lower alkyl having 1–4 carbon atoms and lower alkyl having 1–4 carbon atoms and substituted with a member selected from the group consisting of hydroxy, acylamino, carbamyl and piperidino,

b. an acid salt of said indamine in (*a*), and

c. a double chloride of zinc and said indamine in (*a*).

3,893,803
HAIR DYEING PREMIXES CONTAINING PEROXIDASE ENZYMES STABILIZED WITH HEME COMPLEXING AGENTS

Emil Thomas Kaiser, Chicago, Ill., assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 10, 1972, Ser. No. 296,465

Int. Cl. A61k *1/12*

U.S. Cl. 8—10.2 **6 Claims**

1. A premix solution for dyeing hair comprising:

A. from about 0.005 ppm to about 500 ppm of a peroxidase enzyme;

B. from about 0.01 to about 1% of a nitrogenous ligand which is a heme complexing agent selected from the group consisting of imidazole, benzimidazole, pyridine, ammonia, benzotriazole, 1,2,3-triazole, 1,2,4-triazole, pyrazole, 2-isoimidazole and pyrrole;

C. from about 0.1 to about 1% of an anti-oxidant selected from the group consisting of sodium sulfite, sodium dithionite, thioglycolate and ascorbic acid;

D. from about 0.01 to about 6% of an oxidation dye precursor selected from the group consisting of a primary oxidation dye precursor, a secondary dye precursor and mixtures thereof; and

E. balance, water, said composition having a pH of from about 4 to about 10.

3,893,804
CONTINUOUS PROCESS FOR THE SIMULTANEOUS HIGH GRADE FINISHING AND DYEING OF CELLULOSIC PIECE GOODS

Josef Hepp, Frankfurt am Main, and Joachim Walter Lehmann, Kelkheim/Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Feb. 22, 1973, Ser. No. 334,834

Claims priority, application Germany, Feb. 25, 1972, 2208991

Int. Cl. D06p *1/30*

U.S. Cl. 8—17 **3 Claims**

1. A continuous process for the simultaneous highgrade finishing and dyeing of piece-goods of cellulose fibres and mixtures thereof with linear polyester fibres, with leuco esters of vat dyestuffs wherein: the textile material is impregnated at room temperature with an aqueous bath which contains (1) a leuco ester of a vat dyestuff; (2) an aminoplastprecondensate which may be heat hardenable and/or a reactant resin selected from the group of cyclic urea derivatives consisting of methylol-ethylene urea, methylol-hydroxy-ethylene urea, dimethylol dihydroxy-ethylene urea, dimethylol-ethylene urea, dimethylol-propylene urea, dimethylol triazinone, dimethylol-glyoxal monoureine, tetramethylol-acetylene diurea, dimethyl-dihydroxyimidazolone and dimethylol-hexahydropyrimidinone which crosslink with the cellulose fibre; and (3) a condensation catalyst acting as acid donator selected from the group consisting of chlorides, nitrates, and sulfates of zinc, magnesium and ammonium, hydrochlorides of aliphatic and aromatic amines, alkali salts of aliphatic monocarboxylic acids containing a halogen atom, and halogenacetamides; and the material thus treated is then dried and then subjected to dry heat at 150° to 230°C.

3,893,805

PROCESS FOR DYEING SYNTHETIC FIBERS EMPLOYING NAPHTHYL DYE ASSISTANTS

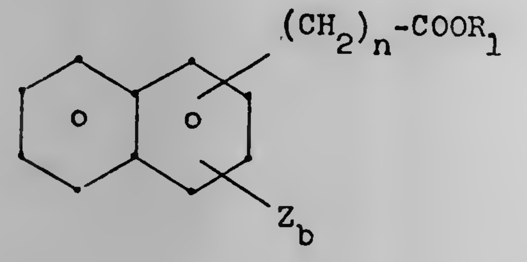
Kurt A. Dellian, Ossining, N.Y., and Samuel Lee, Fairlawn, N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 26, 1973, Ser. No. 326,921

Int. Cl. D06p *1/68*

U.S. Cl. 8—173 **4 Claims**

2. A process for dyeing polyester fibers or fabric in a dyebath which comprises a mixture of a disperse dyestuff and a carrier of the formula



wherein R_1 is C_1–C_4 alkyl, benzyl or phenyl; Z is halogen or C_1–C_4-alkyl; *n* is 0 or 1 and *b* is 0, 1 or 2.

3. The process of claim **2** wherein the carrier is added to the dyebath in the form of an emulsion which comprises the carrier, from 3–20% by weight of carrier of an emulsifier and water.

3,893,806

METHOD FOR CONTINUOUS WARP DYEING POLYESTER AND BLENDS OF POLYESTER ON CONVENTIONAL PAD-STEAM DYE SLASHER

Wilton C. Finch, and David C. Eller, both of Burlington, N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.

Filed Jan. 19, 1973, Ser. No. 325,035

Int. Cl. D06p *1/68*

U.S. Cl. 8—174 **13 Claims**

1. A process for the continuous dyeing of polyester yarns, said process comprising first forming a disperse dye solution by admixing water, 0.5 to 5 oz. of at least one disperse dye per gallon of solution, and 5 to 35 oz. per gallon of solution of at least one at most somewhat water miscible, unemulsified, halogenated aromatic compound containing at least 6 carbon atoms which is a solvent for said disperse dye and which is soluble in water at room temperature before emulsification at most to the extent of about 10% by weight, and thereafter adding 0.2 to 1 oz. per gallon of solution of an anionic wetting agent per gallon of water, adding at least 1 oz. per gallon of solution of a thickener, thereafter applying said disperse dye solution to polyester yarns on a steam-pad dye slasher in an amount of at least 50 percent by weight of the yarn, and fixing the disperse dye upon said yarn by steaming the yarn to a temperature of at least 220°F. until the dye is fixed on the yarn.

3,893,807

DEVICE FOR HEATING OF INSTRUMENTS PARTICULARLY FOR STERILIZATION

Bedrich Člzinský, Prague, Czechoslovakia, assignor to Universita Karlova, Prague, Czechoslovakia

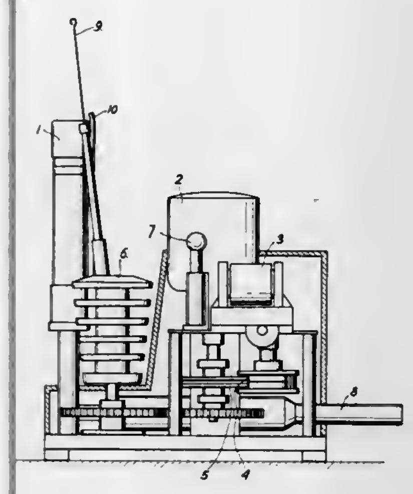
Filed Nov. 30, 1973, Ser. No. 420,386

Int. Cl. A61l *3/00;* **C12k** *1/10*

U.S. Cl. 21—82 R **5 Claims**

1. An apparatus for the flame sterilization of the work-end for instruments which comprises:

a base, a shaft mounted to said base; a burner means providing a flame, said burner means being mounted on said base adjacent and parallel to said shaft; a container rotatably mounted on said shaft, said container holding instruments having a work-end and a handle end, the instruments to be sterilized being placed with instrument handle-end on the bottom and to one side of the container and the working-end of each instrument extending beyond and supported by the upper edge of the opposite side of the container so as to hold said instrument work-ends within the flame of said burner means; a means operatively connected to said shaft for rotating said container for moving said instruments into and out of said flame, and an automatic means operatively connected to said burner means for maintaining a flame on said burner means only when said instruments are within said flame.



3,893,808

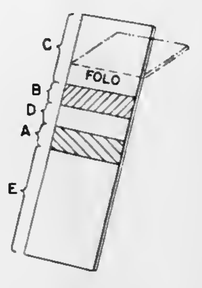
METHOD AND PAPER TEST STRIP FOR DETERMINING LOW LEVELS OF LEAD IN HYDROCARBON FUELS

Ralph L. Campbell, Brecksville, Ohio, assignor to Standard Oil Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 372,863, June 22, 1973, abandoned. This application Sept. 20, 1974, Ser. No. 504,606

Int. Cl. G01n *31/22, 33/22*

U.S. Cl. 23—253 TP **17 Claims**



1. In a method for determining the presence of organic lead compounds in hydrocarbon fuels wherein the organic lead is reacted with iodine to form lead iodide and the lead iodide is subsequently reacted with dithizone to form a colored lead dithizonate when extracted into an organic solvent, the improvement comprising: contacting said organic lead-containing hydrocarbon fuel with a strip of chemically treated paper, said paper strip having at least three distinct separate zones, A through C, wherein

Zone A is treated with iodine;

Zone B is treated with a mixture of iodine and potassium iodide; and

Zone C is an untreated area adjacent to Zone B;

whereon contacting said hydrocarbon fuel with the paper test strip, the organic lead compounds in the fuel by means of capillary action are reacted in sequence at Zone A and then at Zone B to form lead iodide, and the lead iodide thusly formed is converted to characteristically colored lead dithizonate in Zone C of the paper strip by applying to Zone C a solution of dithizone in an organic solvent.

3,893,809

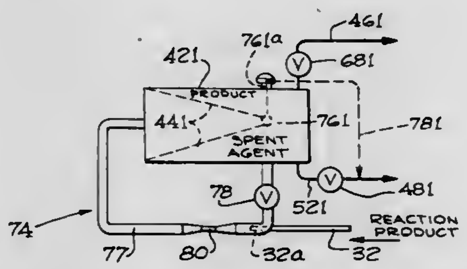
SULFONATION PROCESS AND APPARATUS

William L. Rifenberick, 1645 Cielito Dr., Glendale, Calif. 91207

Division of Ser. No. 803,551, March 3, 1969, abandoned. This application Jan. 10, 1974, Ser. No. 432,212

Int. Cl.² B01F *3/08;* **C07L** *143/24*

U.S. Cl. 23—260 **4 Claims**



1. Apparatus for sulfonation comprising means for circulating a fluid reaction stream including circulation loop means and first and second pump means in opposed relation in the loop means, each of said pump means having inlet and outlet means, said first pump means having a larger capacity than said second pump means to provide a greater output head, separate means for feeding sulfonatable compound and sulfonating agent into the inlet of said first pump means to mix with said circulating reaction stream in said first pump means, and means to discharge the thus formed reaction mixture into the outlet of said second pump means, the greater output head of said first pump means forcing the reaction mixture through the second pump means at a desired circulating rate against the opposing pumping action therein to provide shearing turbulence in the reaction mixture within the second pump means, means downstream of said pump means for cooling the reaction stream in said loop means and means for withdrawing from said loop means a portion of said circulating reaction stream containing sulfonated product.

3,893,810

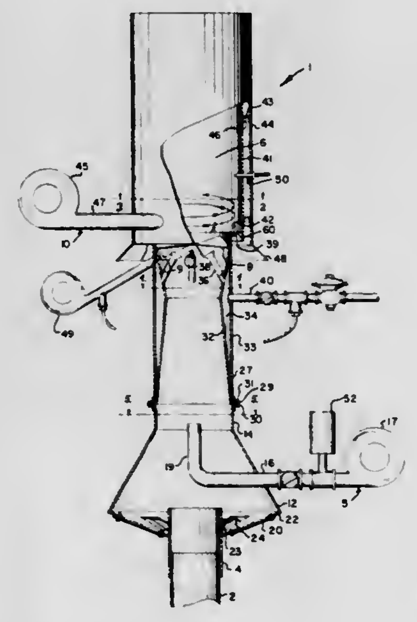
FLARE STACK BURNER FOR ODOR AND POLLUTANT ELIMINATION

La Clede Llentz, P.O. Box 430, Branson, Mo. 65616

Filed Dec. 18, 1972, Ser. No. 316,260

Int. Cl. F23g *7/06;* **F23c** *9/04;* **B01j** *9/16*

U.S. Cl. 23—277 C **9 Claims**



1. A flare stack burner comprising:

a. a conduit operable for conducting an effluent waste gas from its source in a stream;

b. a primary air supply means communicating with said conduit to supply air to the effluent waste gas;

c. means associated with the primary air supply means for adjusting the flow rate of air therefrom;

d. a housing means having portions defining an annular fuel supply manifold extending around the stream of air and effluent waste gas, said fuel supply housing means having a plurality of circumferentially spaced jet members directed generally downstream for discharge of flowable combustible fuel in streams into the mixture of effluent waste gas and air downstream of the primary air supply means;

e. an elongate tubular housing forming a combustion chamber having an interior larger than the interior of the fuel supply housing means and having one end portion mounted on the fuel supply housing means downstream therefrom, said tubular housing having a second end remote from said fuel supply housing means forming an exhaust opening;

f. means adjacent the fuel jet members discharge for igniting the mixture of fuel, air and effluent waste gases;

g. a mixing chamber means between the fuel supply housing means and the combustion chamber, said mixing chamber means including a plurality of circumferentially spaced baffles each positioned downstream of a respective jet member for deflecting the mixture of air and effluent waste gas generally transversely through the streams of fuel for mixing therewith, said baffles sloping upwardly and away from said respective jet members for inducing the mixture of air, fuel and effluent waste gas to flow in a vortical path into the combustion chamber; and

h. temperature sensing means located in the combustion chamber to determine the temperature of the gases therein, and means responsive to said temperature sensing means for controlling the rate of flow of fuel into the combustion chamber from the fuel supply housing means.

3,893,811

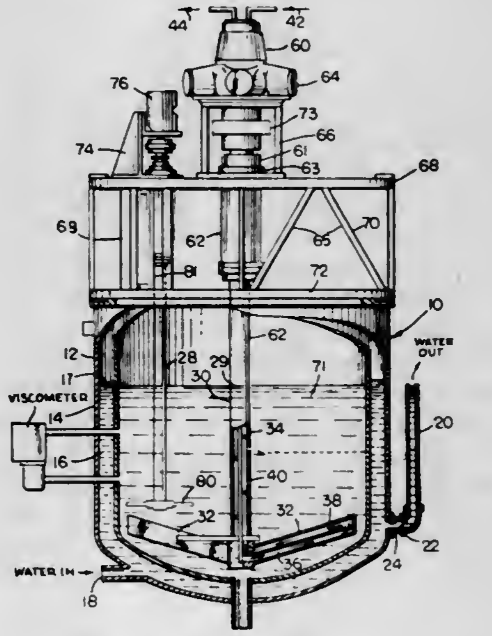
APPARATUS FOR PRODUCING POLYAMIDE ESTERS

Adrian J. Good, and Thaddeus P. Kurek, both of Fort Wayne, Ind., assignors to Valspar Corporation, Ft. Wayne, Ind.

Continuation of Ser. No. 122,056, March 8, 1971, abandoned. This application Apr. 18, 1973, Ser. No. 352,273

Int. Cl. C08f *1/98*

U.S. Cl. 23—285 **4 Claims**



1. Apparatus for producing a polyamide resin from an aromatic dianhydride and an aromatic diamine compising a reaction vessel for receiving an essentially anhydrous organic solvent having functional groups which are non-reactive with

the polymer-forming reactants and a solvent for at least said aromatic dianhydride, means for supplying under anhydrous conditions and carefully controlled temperatures an aromatic dianhydride with said solvent to form a high viscosity slurry by combining an amount of such dianhydride in said solvent which is in excess of the dianhydride solubility limits within said solvent; means for charging to said vessel a quantity of aromatic diamine in close succession to the formation of said slurry before said slurry precipitates into an insoluble mass and thereby converting the aromatic dianhydride and aromatic diamine to a precursor having a greater solubility in said solvent sand and of molar proportions consisting of two parts of one of said reactants to one part of the other of said reactants whereby a reaction mass is formed within said vessel, means for cooling said reaction mass within said vessel as determined by the viscosity of said reaction mass so produced to closely control the reactions occurring in said solvent; means for controlling the viscosity of the reaction mass by controlling the temperature of such mass and including means forming a part of said vessel for regulating the order and concentration of dianhydride and diamine additions to said vessel; means for withdrawing a portion of the reaction mass within said vessel and returning said portion after testing the viscosity thereof, a high speed first agitating means disposed within said vessel for stirring at a relatively high speed the low viscosity mixture of aromatic dianhydride and solvent, a lower speed second agitating means also within said vessel for stirring the mixture of aromatic dianhydride, aromatic diamine and solvent as said initial mixture is converted to a precursor of substantially greater viscosity; means for heating the aromatic dianhydride prior to its introduction into said reaction vessel whereby said dianhydride is rendered substantially water free; means for rendering the organic solvent substantially anhydrous by passing such solvent through a molecular sieve connected between said supply and vessel whereby said molecular sieve renders the solvent substantially anhydrous and means for withdrawing the product from within said vessel at the termination of reaction conditions.

3,893,812
REGENERATION APPARATUS WITH EXTERNAL REGENERATED-CATALYST RECYCLE MEANS

Algie J. Conner, Downers Grove; Daniel Dudych, Des Plaines, and Willas L. Vermillion, Arlington Heights, all of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 258,135, May 30, 1972, Pat. No. 3,843,330. This application Dec. 28, 1973, Ser. No. 429,421

Int. Cl. B01j *9/20*

U.S. Cl. 23—288 B **5 Claims**

1. An apparatus for oxidizing coke on spent catalyst which comprises in combination:

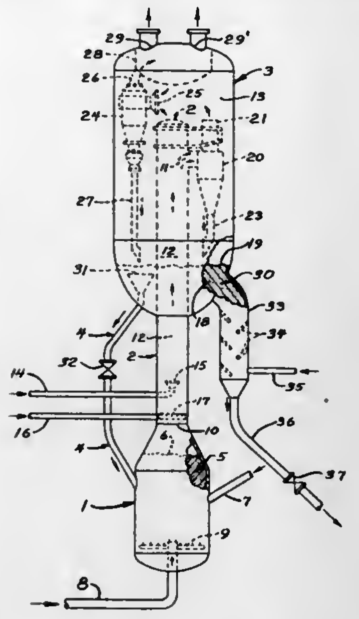
a. a spent-catalyst receiving chamber for containing a dense-phase fluidized bed of catalyst having an interface maintained within said chamber, said chamber having upper and lower sections, a means for introducing fresh-regeneration-gas into said chamber through said lower section to form said dense-phase fluidized bed, said fresh-regeneration-gas introduction means being connected at the lower section of said spent catalyst receiving chamber, a spent-catalyst inlet means connected to said chamber to allow passage of spent catalyst into said chamber, and a regenerated-catalyst/regeneration-gas outlet means at the top of said upper section of said chamber above the dense phase fluidized bed interface to allow passage of regenerated catalyst and regeneration gas in admixture from said chamber;

b. a transfer conduit having an upper closed end, an inlet at its lower end connected to said regenerated catalyst/regeneration-gas outlet means, said transfer conduit extending vertically upward from said spent catalyst receiving chamber and extending vertically upward through the lower portion of a hereinafter described regenerated-catalyst receiving chamber into said chamber, and having an outlet adjacent its upper end located within said chamber, said outlet connected to the inlet of a first cyclone separation means whereby regenerated catalyst and regeneration gas are carried in admixture from said spent-catalyst receiving chamber to said separation means and separated thereby;

c. a regenerated-catalyst receiving chamber for containing separation means and a dense-phase bed of catalyst, said chamber being positioned entirely above said spent-catalyst receiving chamber and having upper and lower sections, a spent-regeneration-gas outlet means connected to said chamber at its upper section to allow passage of spent regeneration gas from said chamber, and a regenerated catalyst stripper connected to said chamber at its lower section, said stripper having connected to its outlet a regenerated-catalyst outlet means to allow passage of regenerated catalyst from said stripper; and,

d. an external regenerated-catalyst recycle means connected to said regenerated-catalyst receiving chamber and to said spent-catalyst receiving chamber to allow passage of regenerated catalyst from the regenerated-catalyst receiving chamber to the spent-catalyst receiving chamber;

said spent-catalyst receiving chamber, said transfer conduit, and said regenerated-catalyst receiving chamber being positioned substantially on a common vertical centerline.



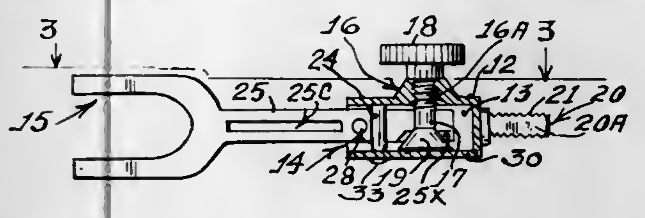
3,893,813
LABORATORY CLAMP

Arthur F. Johnson, Northbrook, Ill., assignor to Humboldt Manufacturing Company, Norridge, Ill.

Filed Oct. 26, 1973, Ser. No. 409,929

Int. Cl. B01l *9/00;* **B25b** *5/04*

U.S. Cl. 23—292 **8 Claims**



1. An adjustable laboratory clamp having structural configurations suited to fabrication by die-casting processes and comprising a cavitateous head structure defined by integrally conformed bottom wall and surrounding side wall portions providing an open face opposite said bottom wall portion, said side wall portions providing a passage therethrough; a pair of tong legs entering said passage and each having an inner end portion disposed in the cavity of the head structure; post members integrally conformed with said bottom wall and having respective free ends terminating substantially at the plane of said open face, said inner end portions of the tong legs each being pivotally captured on one of said post members; spring means acting on said legs to diverge the same; helically-displaced rotary wedge means in said cavity cooperative with said inner ends of the tong legs to converge the same when rotatively displaced in one direction and permitting spring-urged divergence of the legs when rotatively displaced in the opposite direction; closure means for said open face comprising a plate having support on said head structure and at the free ends of said post members; and means at said free ends of the post members securing said plate in position as aforesaid.

3,893,814
INSTALLATION OF INCENDIARY LINERS IN BOMBS THROUGH USE OF PRELINED TUBULAR STEEL STOCK

Barry L. McGhee, Virginia Beach, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 16, 1972, Ser. No. 281,065

Int. Cl. B21k *21/06*

U.S. Cl. 29—1.21 **5 Claims**

1. A method of producing an incendiary casing for an ordnance device comprising the steps of:

inserting a tube of pyrophoric material into a tubular member to form a liner thereof, said pyrophoric material being susceptible of either hot or cold forming;

forming said tubular member and said tube of pyrophoric material into a desired final configuration; and

heat-treating the final configuration to produce the desired physical characteristics.

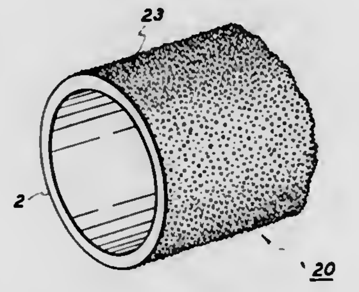
3,893,815
MAGNETIC BRUSH SUPPORT MEMBER

Arthur Drummond, Jr., Walworth, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 8, 1973, Ser. No. 414,015

Int. Cl. B21b *31/08*

U.S. Cl. 29—132 **8 Claims**



1. A magnetic brush support member comprising a hollow sleeve having an endless surface for supporting a magnetic brush including magnetic particles the improvement wherein: said sleeve is formed of a composite comprising, a metal binder component and a particulate second phase component, said second phase component comprising a material which has a greater abrasion resistance than said metal binder component, a portion of said particulate second phase component protruding from said binder component at said support surface of said member.

3,893,816
GEAR PUMPS

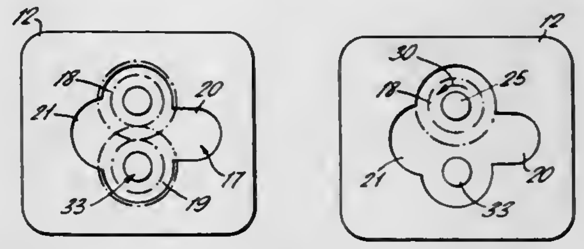
Allan John Payne, Asthal Leigh, near Leafield, England, assignor to Smiths Industries Limited, London, England

Filed Nov. 21, 1972, Ser. No. 308,613

Claims priority, application United Kingdom, Nov. 24, 1971, 54678/71; Jan. 3, 1972, 72/72; Sept. 8, 1972, 41702/72

Int. Cl. B23p *13/00*

U.S. Cl. 29—156.4 WL **9 Claims**



1. A method of manufacturing a gear pump of the kind comprising a housing including a body having surfaces defining a recess, a pair of metal gears disposed in the recess in meshing engagement, each gear having a multiplicity of teeth spaced apart around its periphery, individual shafts for the gears, means mounting the gears on respective ones of the shafts for rotation therewith, and bearing apertures in which the shafts are rotatably mounted, said recess including an inlet region centrally and to one side of an imaginary line joining the rotational axes of the gears and an outlet region centrally and to the opposite side of the imaginary line whereby hydraulic fluid is impelled by the gears from the inlet region to the outlet region; said method comprising the steps of partially forming the said recess in which the meshing gears are to be disposed, mounting a said gear on a said shaft for rotation therewith, rotatably mounting the said shaft in one of said bearing apertures with said gear being positioned outside of said recess in overlapping relation to a portion of said body which bounds said recess, rotatably driving the said gear and the said shaft about their rotational axis, and effecting relative movement between the gear and the said body by moving said shaft longitudinally within its bearing aperture to draw said gear toward and into said recess while the gear is being rotatably driven thereby to cause the gear teeth to cut into said body portion to increase the transverse dimensions of the said recess.

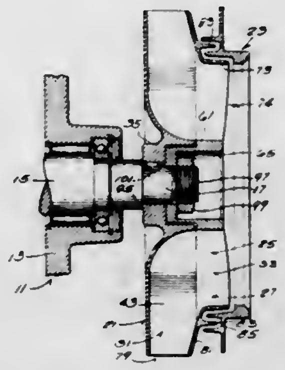
3,893,817
DIE CASTABLE CENTRIFUGAL FAN

Eugene R. Hackbarth, Kenosha, Wis., and Harry M. Ward, III, Waukegan, Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Division of Ser. No. 320,073, Jan. 2, 1973, Pat. No. 3,782,851. This application Oct. 3, 1973, Ser. No. 403,177

Int. Cl. B21k *3/00*

U.S. Cl. 29—156.8 CF **5 Claims**



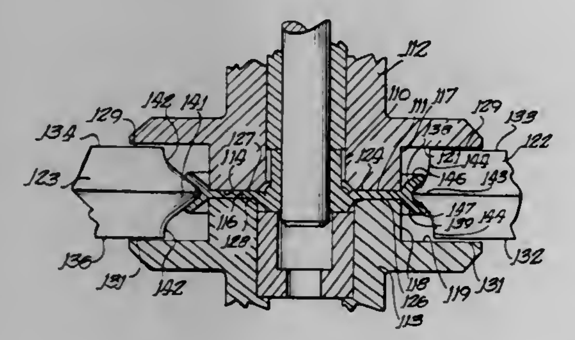
1. A method of manufacturing a fan assembly including a flange extending radially outwardly in relation to the intended rotational axis, and a plurality of angularly spaced vanes each extending from the flange in generally radially outwardly

projecting relation to the intended rotational axis and having an outer part extending arcuately in a plane extending parallel to the intended rotational axis and perpendicularly to a plane extending radially from and containing the intended rotational axis, said method comprising the steps of die casting a first fan member with the flange and with a plurality of angularly spaced vane portions projecting from one surface of the flange, die casting a second fan member with a second plurality of vane portions corresponding in number and angular spacing to the vane portions of the first fan member, each of the second member vane portions including the vane outer parts, aligning the first and second fan members to locate the vane portions in alignment, and assembling the first and second fan members with the vane portions in alignment and so as thereafter to maintain the vane portions in alignment.

3,893,818
METHOD OF MAKING ROTARY MEMBER

Frank Mickus, Chicago, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 17, 1973, Ser. No. 425,453
Int. Cl. B21d *53/26;* **B21k** *1/28, 1/42*
U.S. Cl. 29—159 R **5 Claims**



1. A method of making a circular grooved member comprising the steps of:

providing a metal blank having a disc-like web;
confining an inner portion of said web between corresponding annular faces of a pair of dies with an outer annular portion of said web projecting outwardly beyond the annular faces of said dies;
rotating said dies and blank together at a speed providing a selected linear velocity of the outer perimeter of said web;
rotating said blank in contact with at least one rotating forming roller;
permitting said blank to rotate relative to the annular faces of said dies while feeding said roller toward the axis of rotation of said blank for subjecting the mid part of the web projecting portion to radial and axial plastic flow forming a root and a pair of diverging walls, and simultaneously spin forming the resulting walls to define a pair of oppositely facing cup-like portions extending from said web; and
forming the walls of said cup-like portions to define a groove of desired shape.

3,893,819
METHOD OF MAKING TIEPIN LATCHING MEMBER

Daniel O. Schalewitz, 3111 S. Semoran Blvd., Orlando, Fla. 32807

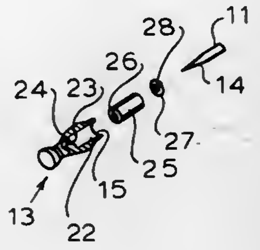
Filed June 17, 1974, Ser. No. 480,056
Int. Cl. B21f *43/00;* **B23p** *13/60*
U.S. Cl. 29—160.6 **6 Claims**

1. The method of making a decorative latching member comprising the steps of:

a. making a decorative member having an opening in one end thereof;
b. placing a plastic insert having an aperture therein into the opening of said decorative member;
c. placing an insert guide having angled surfaces and a center opening therethrough into said opening in said decorative member over said plastic insert; and
d. rolling the edges of said opening in said decorative member onto said insert guide to hold said insert guide and plastic insert in said decorative member whereby a pin of predetermined size may be guided into said aperture in said plastic insert by said insert guide and frictionally held by said plastic insert.

3. A method of making a decorative jewelry latching member comprising the steps of:

a. making a sleeve having one end partially closed with means for removably attaching a holding arm;



b. removably attaching a holding arm through said sleeve to said partially closed end;
c. molding a settable decorative material onto said sleeve;
d. removing said removable attached holding arm from said sleeve;
e. inserting a plastic insert having an opening therein into said sleeve; and
f. sealing said plastic insert having an opening therein into said sleeve whereby inserting a pin of predetermined size into said opening in said plastic insert will frictionally engage and removably hold said pin thereto.

3,893,820
CU-[AG]-CDO ELECTRIC CONTACT MATERIALS

Terrence Ardern Davies; Peter Douglas, and David John Pedder, all of Northampton, England, assignors to Square D Company, Park Ridge, Ill.

Filed Oct. 25, 1972, Ser. No. 300,629
Claims priority, application United Kingdom, Oct. 27, 1971, 49876/71
Int. Cl. C22c *1/05*
U.S. Cl. 29—182.5 **22 Claims**

1. A sintered composite material which consists essentially of copper and between approximately 2.5 percent and 20.0 percent by weight cadmium oxide.

3,893,821
SILVER ELECTRICAL CONTACT MATERIALS CONTAINING $La_{1-x}Sr_xCrO_3$

Terrence Ardern Davies, St. James, N.Y., and Peter John Swallow, Blisworth, England, assignors to Square D Company, Park Ridge, Ill.

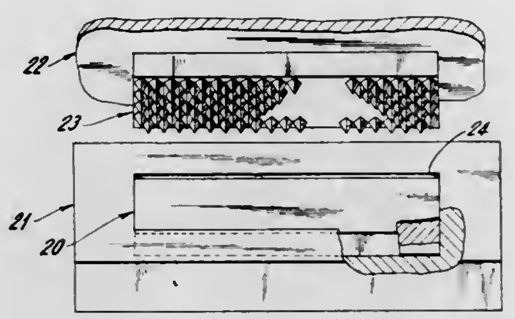
Filed July 16, 1973, Ser. No. 379,512
Claims priority, application United Kingdom, July 18, 1972, 33656/72
Int. Cl. B22f *1/00, 3/00*
U.S. Cl. 29—182.5 **10 Claims**

1. An electrical contact material which consists of a mixture of silver and 1.0 to 20 weight per cent of lanthanum, strontium chromite of formula $La_{1-x}Sr_xCrO_3$, where the values of x lie between 0 and 1.0, formed as a hard, chemically inert, nonmetallic phase of high electrical conductivity both within the bulk of, and at the surface of, the contact material.

3,893,822
MASTER PATTERN FOR PRODUCING CAST RAISED FIGURES

Thomas M. Camilleri, 277 Avenue West, Brooklyn, N.Y. 11223

Division of Ser. No. 186,690, Oct. 5, 1971, Pat. No. 3,747,440. This application June 11, 1973, Ser. No. 368,642. The portion of the term of this patent subsequent to July 24, 1990, has been disclaimed.
Int. Cl. B22f *5/00*
U.S. Cl. 29—183 **1 Claim**



1. The product of a method of producing a mirror image imprint of figures in a metal nonsheet material to serve as a master for the casting of raised figures such as lettering found on plaques and plates which method comprises:

a. forming a plurality of voids in said nonsheet material without removing material in the surface which is to receive said imprint, said voids being suitable to accommodate the flow of material to be displaced during the imprinting of said figures and being located both within and without the areas to be occupied by said imprinted figures;
b. Arranging and securing forms of the figures to be cast in fixed relationship corresponding to the raised figures to be produced by castings; and
c. Impressing said forms into said material thereby causing that material in the areas occupied by said forms to be displaced and causing a flow of material into a plurality of said voids to occur to produce in undistorted imprint constituting an exact mirror image replica of the figures to be cast, said plurality of voids which receive said material including voids located outside the areas occupied by said figures.

3,893,823
CLADDING SYSTEM

Thomas E. Webb, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Division of Ser. No. 316,177, Dec. 18, 1972, Pat. No. 3,850,585, which is a continuation of Ser. No. 78,276, Oct. 5, 1970, abandoned. This application May 31, 1974, Ser. No. 474,883The portion of the term of this patent subsequent to Nov. 26, 1991, has been disclaimed.
Int. Cl. B32b *15/20;* **A47j** *27/00*
U.S. Cl. 29—195 **13 Claims**

1. In the art of making porcelain enameling sheet having a cladding layer of aluminous metal selected from the group consisting of type 1XXX aluminum of at least 99.0% purity and aluminum base alloys of the 3XXX series containing up to about 1.5% manganese by weight, the improvement which comprises bonding said cladding to a core of aluminum base alloy consisting essentially of aluminum, 2.2 to 3.0% copper, 0.3 to 0.6% magnesium and 0.10 to 0.40% manganese by weight.

3,893,824
FERROMAGNETIC THIN FILMS BY ELECTROPLATING

Eiichi Tadokoro; Masashi Aonuma, and Tatsuji Kitamoto, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara, Japan

Filed Oct. 3, 1973, Ser. No. 403,295
Claims priority, application Japan, Oct. 3, 1972, 47-99226
Int. Cl. B23p *3/00;* **G11c** *11/02*
U.S. Cl. 29—194 **6 Claims**

1. A magnetic recording medium comprising a support having thereon an electroplated ferromagnetic thin layer consisting essentially of from 90 to 99.98 wt.% of cobalt-nickel alloy based on 100 wt.% of said thin layer consisting of from 30 to 90 wt.% of cobalt and from 10 to 70 wt.% of nickel, and said ferromagnetic thin layer additionally containing from 0.01 to 5 wt.% of copper and from 0.01 to 5 wt.% of zinc.

3,893,825
INHIBITION OF CORROSION

Leonhard A. Goeller, Des Plaines, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 103,001, Dec. 30, 1970, abandoned. This application Jan. 8, 1973, Ser. No. 321,888
Int. Cl. C10l *1/22*
U.S. Cl. 44—66 **2 Claims**

1. Jet fuel which is corrosive to metal on contact with water containing, as an inhibitor against corrosion, a corrosion inhibiting concentration of a secondary amine comprising a salt of hydrogenated N,N-ditallowamine and hydroxystearic acid.

3,893,826
COATED ABRASIVE MATERIAL COMPRISING ALUMINA-ZIRCONIA ABRASIVE COMPOSITIONS

James R. Quinan, Loudonville, N.Y., and Joseph E. Patchett, Niagara Falls, Canada, assignors to Norton Company, Worcester, Mass.

Continuation-in-part of Ser. No. 196,838, Nov. 8, 1971, abandoned, which is a continuation of Ser. No. 814,162, April 7, 1969, abandoned. This application Aug. 13, 1973, Ser. No. 388,013
Int. Cl.[2] B24D *11/00;* **C09K** *3/14*
U.S. Cl. 51—295 **1 Claim**

1. A coated abrasive article comprising or plate flexible backing having co-fused alumina-zirconia abrasive grits adhesively bonded thereto, said alumina-zirconia abrasive having been solidified from the molten state at least as rapidly as is accomplished by casting molten alumina-zirconia abrasive into a mold filled with ¾ inch lumps of abrasive grains, said grits having an average maximum to minimum dimensional ratio of at least 1.2 to 1, the zirconia in the eutectic being in the form of rods or platelets with the average diameter orplate thickness being less than 3000 angstroms as measured at the colony centers, said alumina-zirconia grits containing from 20 to 50% zirconia, and including eutectic alumina-zirconia colonies having an average size of less than 65 microns, the adhesive bond being sufficiently strong to hold the alumina-zirconia grits to permit fracture thereof during grinding with creation of new cutting edges on the individual grits as the result of the fracture.

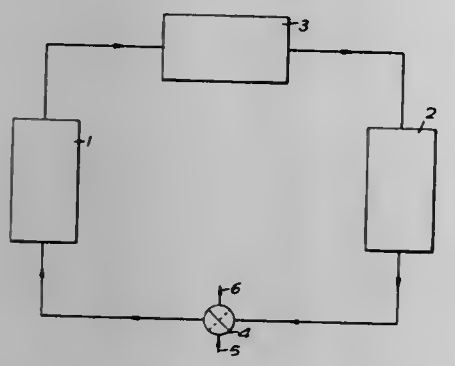
3,893,827
SELECTIVE REMOVAL OF CONSTITUENTS FROM FLUIDS

Colin James Leppard, Emsworth, England, assignor to CJB Development Limited, London, England

Filed Aug. 15, 1973, Ser. No. 388,352
Int. Cl. B01d *53/14, 53/02*
U.S. Cl. 55—25 **3 Claims**

1. A process for removing a first constituent from a gas containing at least a first, second and third constituent wherein said second constituent interferes with the removal of said first constituent, which process comprises the steps of:

(i). subjecting the gas containing said first and second constituents to a first treatment with a first bed of a reversible absorbent for said second constituent to remove said second constituent therefrom;
ii. removing said first constituent from the gas treated in step (i);
iii. subjecting the product gas of step (ii) to a second treatment with a second bed of a reversible absorbent for said second constituent which absorbent has previously absorbed said second constituent, the second constituent being desorbed from said second bed of reversible absorbent and being reintroduced into the gas to produce a product gas containing said second constituent in the absence of said first constituent;
iv. operating steps (i), (ii) and (iii) in a cyclical manner by reversing the direction of flow of the gas before said absorbent becomes saturated and before the desorbing material becomes denuded of the second constituent; energy being supplied to the system to accommodate incidental energy losses during operation solely by operating the first treatment in step (i) at a pressure which is higher than that of the second treatment in step (iii).



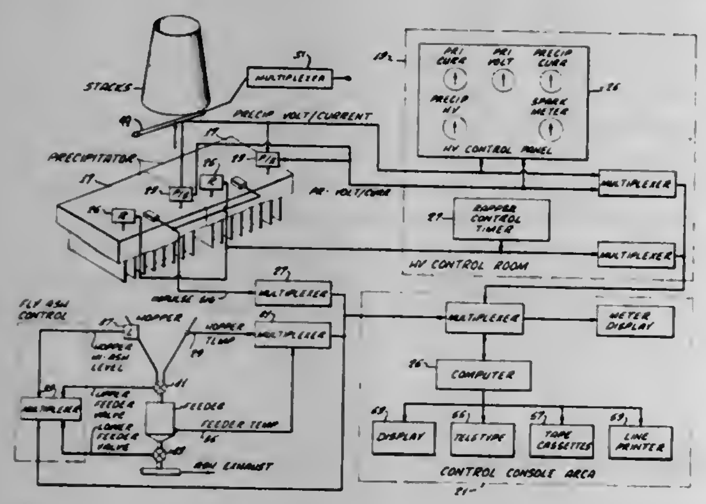
3,893,828
ELECTROSTATIC PRECIPITATOR CENTRAL MONITOR AND CONTROL SYSTEM

William E. Archer, San Pedro, Calif., assignor to Wahlco, Inc, Costa Mesa, Calif.

Continuation of Ser. No. 379,637, June 11, 1973, abandoned. This application June 28, 1974, Ser. No. 484,360

Int. Cl. B03c *3/68*

U.S. Cl. 55—104 **10 Claims**



1. An emission monitor and control system for an industrial electrostatic precipitator used to remove particulate contaminants from process waste gases prior to discharging such waste gases into the atmosphere comprising: condition responsive means operatively connected to said precipitator for sensing power supply, and rapper and dust disposal operating conditions and exhaust gas contact conditions; and computer monitoring and display means in operative communication with said condition responsive means for monitoring said conditions.

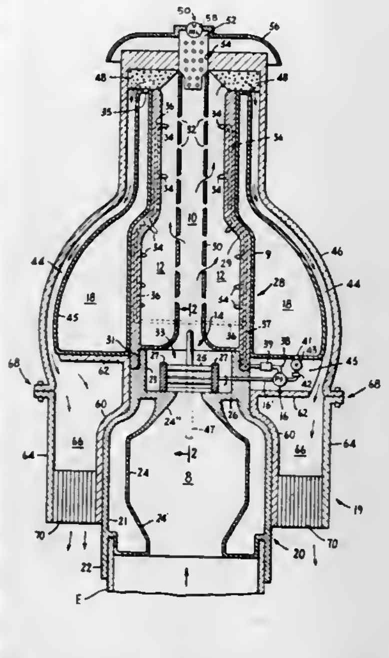
3,893,829
GAS PURIFICATION APPARATUS

Joseph V. Valentino, 1120 Jensen Ave., Mamaroneck, N.Y. 10543

Filed July 13, 1972, Ser. No. 271,484

Int. Cl. B01d *47/06*

U.S. Cl. 55—225 **25 Claims**



1. An apparatus for the purification of gases comprising a gas column having a gas receiving inlet and a normally closed substantially cylindrical portion of substantially uniform diameter in fluid communication therewith, said portion having a plurality of openings therein, a closed scrubbing chamber annularly disposed around said portion and in fluid communication therewith through said openings to permit the passage of gas from said to said chamber, turbine means mounted for rotation in said column and adapted to be rotated by gas moving through said column, liquid pumping means operatively connected to said turbine means to be driven thereby, a liquid reservoir, said liquid reservoir being annularly disposed about said chamber, means for introducing liquid into said chamber in a direction substantially opposite to the direction of the flow of gas as the gas enters said chamber, said liquid pumping means being operatively connected between said reservoir and said liquid introducing means and effective when driven to pump liquid from said reservoir through said introducing means into said scrubbing chamber and a gas discharge outlet in communication with said chamber.

3,893,830
CO-CURRENT ABSORBER FOR RECOVERING INORGANIC COMPOUNDS FROM PLANT EFFLUENTS

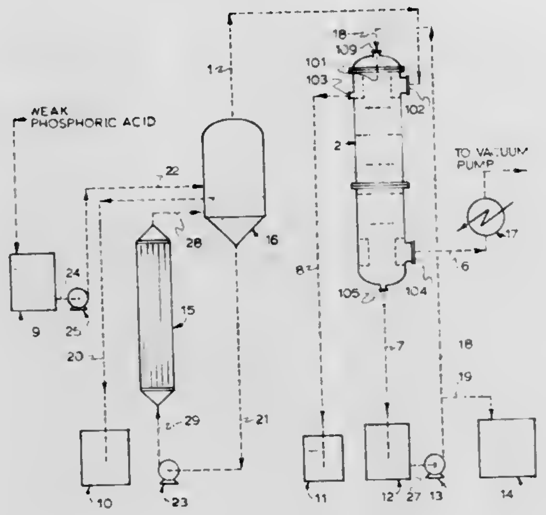
Alfred W. Petersen, and John M. Stewart, both of Salt Lake City, Utah, assignors to Stauffer Chemical Company, Westport, Conn.

Filed June 7, 1973, Ser. No. 367,923

Int. Cl. B01d *47/06*

U.S. Cl. 55—236 **11 Claims**

1. A co-current absorber useful in recovering inorganic compounds from plant effluents comprising:
a substantially vertical housing having an upper portion and a lower portion;
said upper portion of said housing having a first entry port for circulating liquid; a second entry port in said upper portion of said housing for entry of vapors; and said upper portion having a cyclone entrainment separator concentrically positioned within said housing forming an annular space therebetween and cooperating with respect to said second entry port; means for closing said annular space at the bottom of said upper portion; a first exit port in said upper portion of said housing for removing de-entrained liquids from said cyclone entrainment separator;
a plurality of baffles rigidly and spacially mounted within said housing between said upper portion and said lower portion to form a tortured path for the liquid and vapors resulting in renewed droplet surfaces;
a vapor exit port in the side of said lower portion of said housing and a liquid exit port in the bottom of said housing;



a centrifugal entrainment separator having a tubular member communicating with the housing between the upper and lower portion containing said baffles consisting of a tubular wall with an opening therein remote to said vapor exit port, said tubular member being concentrically positioned within said lower portion and having a connecting wall member forming an annular space between the housing and the tubular wall and communicating with said vapor exit port in the side of said lower portion of said housing and means for closing the annular space at the top of said lower portion.

3,893,831
GREASE EXTRACTOR FOR KITCHEN VENTILATING SYSTEMS

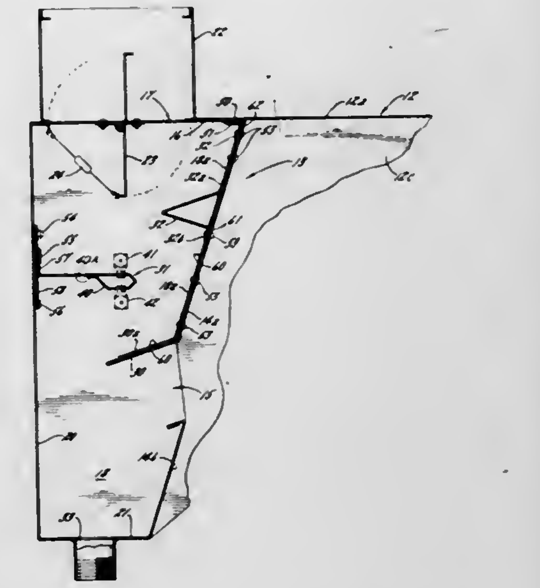
DeWitt H. Doane, Long Grove, Ill., assignor to Doane Manufacturing Company, Wheeling, Ill.

Filed Oct. 10, 1972, Ser. No. 296,128

Int. Cl. B01d *45/18*

U.S. Cl. 55—242 **10 Claims**

1. A grease extractor for removing grease, oil, and other contaminants from a vaporous exhaust stream in a kitchen ventiliating system, said extractor comprising the combination of a housing having top and bottom walls, front and rear walls, and a pair of side walls, said front wall forming a restricted, horizontally elongated entranceway for receiving the vaporous exhaust stream; an entrance baffle extending rearwardly from the top of the entranceway for deflecting the entering exhaust stream rearwardly over the bottom wall and against said rear wall for deflecting the exhaust stream upwardly past the rear edge of said entrance baffle; a substantially horizontal rear baffle extending forwardly from said rear wall above said entrance baffle toward the front wall of the extractor, said rear baffle extending forwardly beyond the rear edge of said entrance baffle and being formed of a single sheet of metal which is turned back at the forward end of the baffle to form a fluid manifold extending across the length of the baffle and to strengthen said rear baffle, and the turned back portion of the single sheet of metal has a longitudinal edge which is joined to the main body portion of said sheet by a fluid-tight continuous well extending across the full length of the baffle; a plurality of nozzles in fluid communication with said manifold and spaced along both the top and bottom of said manifold for discharging a selected fluid into the extractor both above and below said rear baffle; top baffle means extending rearwardly from said front wall above said rear baffle means for deflecting the exhaust stream rearwardly from said front wall; an exit opening formed by the top wall of said housing for discharging the exhaust stream from the extractor; and drain means in said bottom wall for receiving the extracted contaminants deposited on said baffle means and the walls of said housing and conducting the same out of the housing.



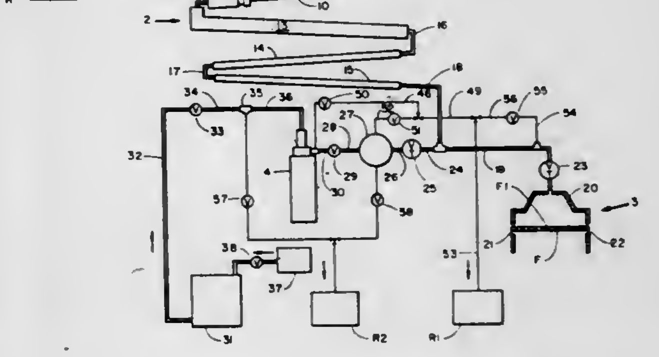
3,893,832
STERILE FLUID SYSTEM

John H. Perry, Doraville, Ga., and Jean Roger Nasica, Paris, France, assignors to The Mead Corporation, Dayton, Ohio

Filed Nov. 1, 1973, Ser. No. 411,980

Int. Cl. B01d *46/00*

U.S. Cl. 55—268 **7 Claims**



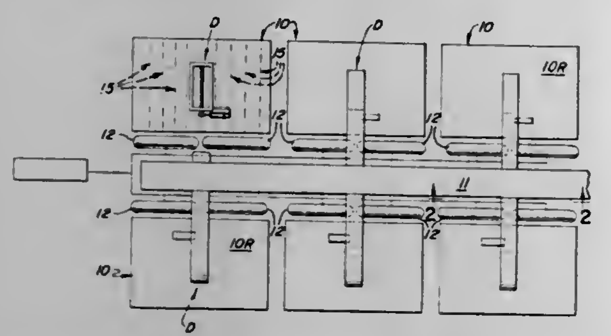
1. A sterile fluid system comprising source means of gas under pressure, gas conditioning means interconnected with said source means for sterilizing said gas, at least one point of use means of conditioned gas, conduit means interconnecting said gas conditioning means and said point of use means to supply gas under pressure to said point of use means, a source means of pressurized sterilizing fluid interconnected through normally closed valve means with said conduit means, normally closed separate vent valve means interconnected with said gas conditioning means, said conduit means and said point of use means and arranged when open to vent said gas conditioning means, said conduit means, and said point of use

means to atmosphere, and means for simultaneously opening said valve means and said vent valve means thereby to cause said sterilizing fluid to scavenge and sterilize said point of use means, said conduit means and said gas conditioning means so as completely to sterilize all interior surfaces of said gas conditioning means, said conduit means and said point of use means.

3,893,833
COMPARTMENTED PULSE JET DUST COLLECTOR

Edward A. Ulvestad, Naperville, Ill., assignor to Flex-Kleen Corporation, Chicago, Ill.

Filed Apr. 26, 1972, Ser. No. 247,701
Int. Cl.² B01D *29/28, 46/04*
U.S. Cl. 55—273 4 Claims



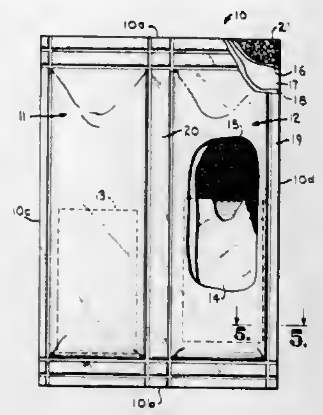
1. In a dust collector system that includes a plurality of pulse jet dust collector units for filtering operation with carrier gas at typical pulse jet air-to-cloth flow ratios; each collector unit conventionally including a dirty air plenum, a clean air plenum above the dirty air plenum, a plurality of compressed air gas distribution pipes mounted in each clear air plenum, each of said pipes having a plurality of orifices, a plurality of assemblies supported in the dirty air plenum and each comprising a conventional needled felt filter bag mounted to filter incoming carrier gas and outlet means providing an outlet passage for directing filtered air into the clean air plenum, each of said outlet means comprising a venturi nozzle, each assembly of filter bag and outlet means being in jet pulse cleaning relation to a separate one of said orifices, for directing a pulse jet through the filter bag in a direction opposite to normal can velocity flow therethrough and a plurality of first actuating means for separately controlling supply of compressed gas at a pressure from about 60 to about 100 PSIG to different ones of said pipes; and timer means for controlling actuation and sequencing of the first actuating means of all of said collector units; an improved arrangement for cleaning the filter bags for maintaining normal bag life at stable air-to-cloth flow ratios when applied to the recovery of extremely fine fume particles from a carrier gas, said arrangement including a common clean gas outlet duct, separate duct means establishing individual communications between each of said clean air plenums and said common duct, separate damper means for controlling flow of carrier gas from each of said clean air plenums through the corresponding one of each separate duct means and into said common duct, and a plurality of second actuating means each controlling one of said damper means, said timer means connecting the first and second actuating means in separate composite sets, each of said last-named sets consisting of the plurality of first actuating means corresponding to a predetermined one of said collector units and the second actuating means corresponding to the same collector unit,

said timer means including means for sequentially energizing the composite sets at time spaced intervals and means for energizing the actuating means of each composite set in a sequence wherein the corresponding damper means closes for a predetermined damper interval that is from about 20 to about 60 seconds in duration to allow the can velocity of the corresponding collector unit to become and remain minimal and wherein each of the corresponding first actuating means operates in a predetermined sequence of time spaced pulse intervals occurring at a time when the can velocity is minimal, the first pulse interval beginning about 10 seconds after the beginning of its corresponding damper interval and each pulse interval being from about 100 to about 150 milliseconds in duration and the off time between successive pulse intervals being from about one second to about 4 seconds in duration such that each pulse jet acts to dislodge the extremely fine fume particles from within a myriod of interstices in the corresponding filter bag for free fall while the can velocity remains minimal.

3,893,834
INSULATED COLD PACK

Arthur E. Armstrong, 413 Greenbrier, Moberly, Mo. 65270

Filed Mar. 4, 1974, Ser. No. 447,927
Int. Cl. F25d *5/00*
U.S. Cl. 62—4 14 Claims



1. In a heat exchanging package which comprises a sealed outer bag of flexible, fluid tight sheet material,

a dry heat exchanging chemical (when mixed with water) disposed within said outer bag,

a sealed water containing inner bag disposed within the outer bag,

the inner bag of smaller dimensions than the outer bag,

and the interior of the outer bag not entirely filled with air whereby an inwardly directed force applied through the outer bag of sufficient magnitude will rupture the inner bag without breaking the outer bag to effect mixing of the water and the heat exchanging chemical,

the improvement which comprises one entire side of the heat exchanging package having a sheet of aqueous liquid impervious heat insulating material integrally fixed thereto, and

a flexible aqueous liquid impervious web provided, communicating between and connecting to opposite edges of said package, whereby to form a closed loop sleeve.

3,893,835
METHOD OF GOB DISTRIBUTION

Ronnie G. Jones, and John P. Daly, both of Winchester, Ind., assignors to Maul Brothers Inc., Millville, N.J.

Division of Ser. No. 404,475, Oct. 9, 1973. This application June 19, 1974, Ser. No. 481,076
Int. Cl. C03b *5/32;* B03b *5/26*
U.S. Cl. 65—122 4 Claims

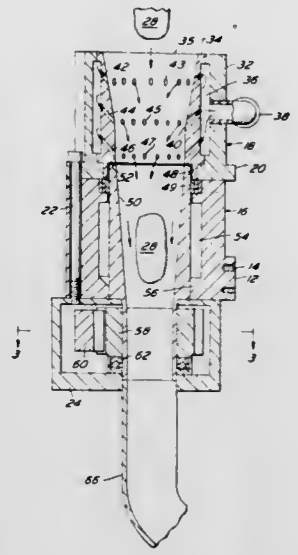
1. A method of accelerating distribution of gobs of glass from shears to a mold in a multi-section I.S. machine comprising

a. providing a cartridge having a downwardly converging I.D. below the elevation of shears, providing said cartridge with a plurality of groups of circumferentially disposed axially spaced gas jets exiting on said converging surface,

b. creating a suction at the inlet end of said cartridge by discharge of gas through said jets into said cartridge,

c. causing a gob of glass cut by said shears to be sucked into the upper end of said cartridge and to fall downwardly through the cartridge, centering the gob with respect to said converging surface by discharge of gas through said jets, using said gas jets orientated in a manner so that they converge downwardly in the direction of flow and cause pressurized gas to build up pressure behind the gob,

d. using the gas pressure behind the gob to accelerate the speed of the gob in excess of the effect of gravity,



e. maintaining a positive gas pressure in a manifold chamber communicating with said jets,

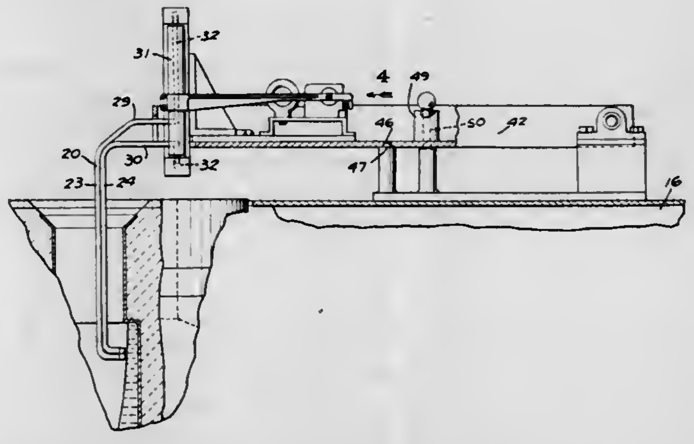
f. introducing the accelerated gob into a scoop, and

g. transferring the gob from the scoop to a mold in a I.S. machine, said transferring step including moving the scoop about an upright axis so that it may direct the gob to means which transfers it to a mold.

3,893,836
ROTARY GLASSMAKING REFINE WITH DIAMETER SENSING MEANS

Robert R. Rough, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Continuation of Ser. No. 342,291, March 16, 1973, abandoned. This application Oct. 16, 1974, Ser. No. 515,283
Int. Cl. C03b *5/18*
U.S. Cl. 65—164 1 Claim



1. Apparatus for measuring the volume of molten glass in a rotating chamber comprising:

a. an open-ended rotatable chamber for receiving molten glass;

b. a probe, said probe positioned within the container so as to be within a void developed in a rotating mass of glass in the container, said probe comprising a pair of hollow tubes, a portion of each tube extending horizontally, said tubes being interconnected forming a molten glass contacting point, said tubes extending radially outwardly;

c. a manifold, said manifold connecting with said tubes to provide a continuous path for circulating cooling fluid in said tubes;

d. an arm, said arm connected with said probe, and said arm yieldingly urging the probe so as to urge the tip of the probe against the molten glass;

e. an electrical transducer, said transducer connected to the probe so that the transducer produces an electrical signal corresponding to the position of the probe;

f. means for movably positioning said probe in said container, movable freely into or out of the chamber;

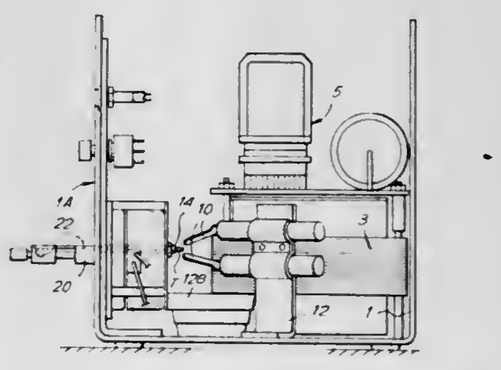
g. readout means for visually displaying the position of the probe; and

h. means for circulating cooling fluids within the hollow tubes to prevent damage from contact with molten glass in the chamber.

3,893,837
EQUIPMENT FOR WELDING GLASS CAPILLARY TUBES FOR BIOLOGICAL ANALYSES

Luciano Gasbarro, Florence, Italy, assignor to Pratiga S.r.l., Florence, Italy

Filed Dec. 21, 1973, Ser. No. 427,407
Claims priority, application Italy, Dec. 22, 1972, 9814/72
Int. Cl. C03b *23/12*
U.S. Cl. 65—270 4 Claims



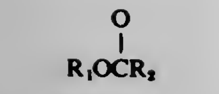
1. Laboratory equipment for the welding of capillary tubes comprising, a pair of electrodes for high voltage electric discharge; means to supply voltage to said electrodes, including a booster transformer; means for forming a seat for a piece to be welded; actuating means to impose on said means forming seat suitable motions to obtain smooth welding, said seat forming means including a member forming a tubular housing to accommodate a capillary tube to be welded, said actuating means comprising further an electric motor for the rotation of said housing, and an adjustable timer switch for controlling the actuating of said motor and simultaneously the supply of said electrodes for the generation of said electric arc.

3,893,838
HALOGENATED ESTERS AS HERBICIDE ANTIDOTES

Ferenc M. Pallos, Walnut Creek, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Nov. 16, 1972, Ser. No. 307,277
Int. Cl. A01n *9/12*
U.S. Cl. 71—100 11 Claims

1. The method of reducing injury to corn crops injured by thiocarbamate herbicides comprising applying to the corn seeds prior to planting a nonphytotoxic antidotally effective amount of a compound corresponding to the formula



$$R_1O\overset{\overset{\displaystyle O}{|}}{C}R_2$$

wherein R_1 is lower haloalkyl, alkynyl, alkenyl and N,N-dialkenylaminoalkyl and R_2 is lower haloalkyl.

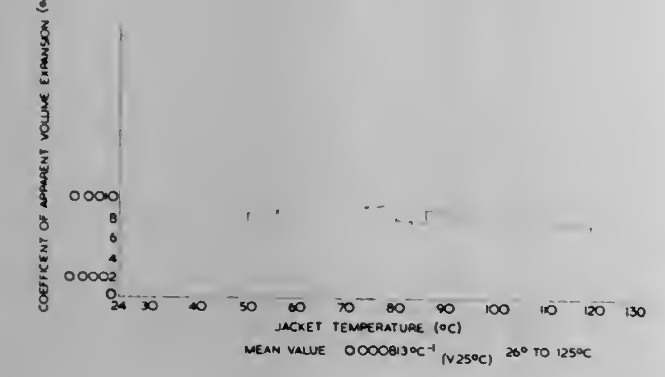
3,893,839
TELEPHONE CABLE FILLING COMPOSITION

Frederick Cartmer Elliot, and Reginald Arthur Hunn, both of c/o Campbell Technical Waxes Limited, Thames Rd., Crayford, England

Filed Mar. 21, 1974, Ser. No. 453,191

Int. Cl. C08h *9/10*

U.S. Cl. 106—272 **27 Claims**



1. A composition suitable for use in filling telecommunications cables and the like, comprising:

1. 50.0 – 70.0 percent of a high viscosity mineral oil meeting the following general specification:

Viscosity/98.8°C.	120 SUS – 220 SUS
Viscosity/37.8°C.	2000 SUS – 3500 SUS
Flash Point	204.4°C. minimum
Specific Gravity/15.6°C.	0.875 – 0.925
Color	ASTM 2 – ASTM 8
Boiling Range (at atmospheric pressure)	260°C. – 704.5°C.

2. 5.0 – 20.0 percent microcrystalline slackwax, or of an equivalent of said microcrystalline slackwax, said equivalent consisting essentially of a mixture of a microcrytalline wax with a high viscosity mineral oil having the specification recited above;

3. 3.0 – 10.0 percent of at least one wax selected from the group consisting of (a) paraffin waxes having melting points in the range of 38° – 74°C., (b) synthetic Fischer-Tropsch type waxes having melting points in the range of 71° – 120°C., and (c) natural waxes selected from the group: Beeswax, Carnauba wax, Chinese insect wax, Japan wax, Myrtle wax and Spermaceti wax;

4. 5.0 – 15.0 percent polybutene, of average molecular weight in the range of 500 – 3,500; and

5. from about 0.5 to about 8.0 percent finely divided silica of average particle size in the range of 0.0007 – 0.05 micron, said percentages of ingredients being by weight, based on the entire composition.

3,893,840
AMORPHOUS PRECIPITATED SILICEOUS PIGMENTS AND METHODS FOR THEIR PRODUCTION

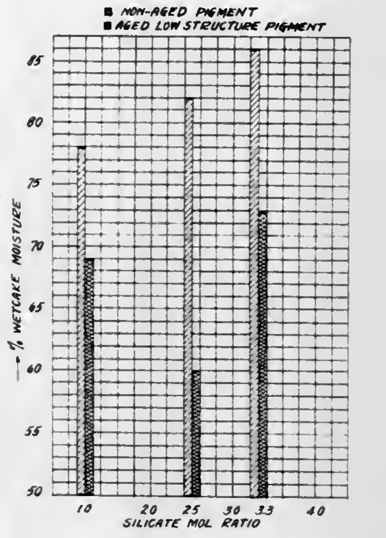
Satish K. Wason, Havre de Grace, Md., assignor to J. M. Huber Corporation, Locust, N.J.

Filed Sept. 6, 1972, Ser. No. 286,655

Int. Cl. C09c *1/30;* **C08h** *17/04*

U.S. Cl. 106—288 B **1 Claim**

1. A new composition of matter comprising an amorphous, finely divided precipitated silica pigment having a wet cake moisture content of less than 70 percent; a surface area of less than 100 m²/g; an oil absorption on the order of less than 125cc/100 gm; pack densities of greater than 12 pounds/cu. ft. and a valley abrasion of greater than 5.0 mg. wire loss.



3,893,841
BONE CHINA

Krishan Kumar Nijhawan, Stoke-on-Trent, and Derek Taylor, Congleton, both of England, assignors to Doulton & Co. Limited, London, England

Filed Oct. 2, 1973, Ser. No. 402,757

Claims priority, application United Kingdom, Oct. 10, 1972, 46717/72

Int. Cl. C09c *1/02*

U.S. Cl. 106—306 **8 Claims**

1. A synthetic bone ash substitute suitable for use as a complete or partial replacement for bone ash in the manufacture of bone china by conventional pottery methods, being the product obtainable by (a) producing a mixture consisting essentially of a calcium phosphate and a calcium substance selected from calcium oxide and compounds which on heating decompose to form calcium oxide, said calcium phosphate and said calcium substance being mixed in proportions such that after the subsequent calcining step (b), the Ca:P ratio lies in the range of from 1:1 to 2:1; (b) calcining said mixture at a temperature of at least 900°C. so as to form a sintered product having a surface area of less than 5 m.²g.⁻¹; and (c) grinding the resulting sintered product to a mean particle size in the range of from 0.5 to 10μm to obtain the required product.

3,893,842
SOLIDIFIED PRODUCT FROM MOLASSES AND SOY PROTEIN

Elmer F. Glabe, Chicago; Perry W. Anderson, Niles, and Stergios Laftsidis, Chicago, all of Ill., assignors to Food Technology, Inc., Chicago, Ill.

Division of Ser. No. 348,135, April 5, 1973, Pat. No. 3,843,821. This application July 1, 1974, Ser. No. 484,462

Int. Cl. A23l *1/08;* **C13f** *3/00*

U.S. Cl. 127—29 **3 Claims**

1. A dehydrated molasses consisting essentially of the following ingredients:

Ingredients	Parts by Weight
Molasses solids	40–60
Partially gelatinized starch of a type having a gelatinization temperature of at least 150°F.	60–0
At least partially defatted soy protein flour having a protein content of at least 45% by weight, a water soluble protein content of at least 20% by weight of the total protein content, and a weight ratio of water soluble protein to fat content of at least 1.5:1	0.25–40
Water	0.5–4.0
Emulsifier	0–1
Anti-humectant	0–1

with the further proviso that the product contains at least 0.25% by weight of said soy flour, based on the total weight of molasses solids, soy solids and starch solids.

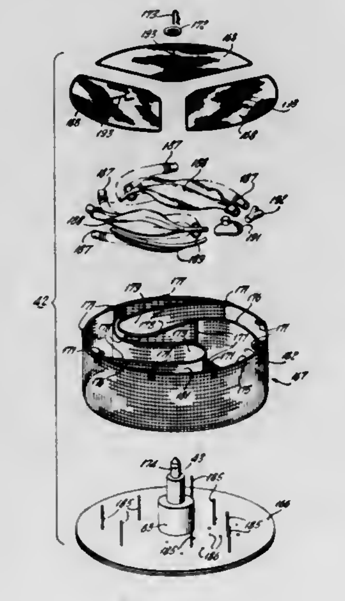
3,893,843
METHOD FOR WASHING AND DISINFECTING HOLLOW, FLEXIBLE ARTICLES

Jack E. Fry, Dallas; Joseph C. Gerard, Arlington; Chester C. Hickman, and John E. Hummel, both of Dallas, all of Tex., assignors to Arbrook, Inc., Arlington, Tex.

Division of Ser. No. 49,407, June 24, 1970, Pat. No. 3,739,791. This application Oct. 20, 1972, Ser. No. 299,526

Int. Cl. B08b *9/00;* **A61l** *1/00*

U.S. Cl. 134—10 **2 Claims**



1. The method of decontaminating hollow flexible articles having central openings extending therethrough which comprises drivably mounting said articles for rotation in a curvalinear relation about a central axis inside a washing and disinfecting tub with at least one end of each opening facing in a direction of rotation of said tub, placing a supply of washing liquid in said tub and immersing said articles in said washing liquid bath, washing said articles by oscillating them rotatively back and forth about said axis to agitate the articles in said washing liquid, said agitation being accomplished by centrifugal and centripetal forces of said bath upon said curvalinearly positioned articles, removing the washing liquid supply from said tub, rinsing the articles in said tub and rotating them relatively rapidly in one direction to complete the removal of the rinsing liquid from said articles, transferring a supply of liquid chemical disinfectant to said tub and immersing said articles in said disinfectant for a period of time sufficient to disinfect the articles, oscillating the articles relatively back and forth about said axis to agitate the articles in said disinfectant and insure complete wetting of the internal and external surfaces of the articles with said disinfectant during the disinfectant period by the centrifugal and centripetal action of the disinfectant against the curved surfaces of said articles, removing the disinfectant supply from said tub, rinsing the articles in said tub and rotating them relatively rapidly in one direction to complete the removal of the rinsing liquid from the articles, and removing said articles from the tub to complete the decontaminating cycle.

3,893,844
DISPERSION STRENGTHENED METALS

Anil V. Nadkarni, Baltimore, Md., assignor to SCM Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 217,506, Jan. 13, 1972, Pat. No. 3,779,714. This application July 30, 1973, Ser. No. 384,028

Int. Cl. B22f *9/00*

U.S. Cl. 75—0.5 R **1 Claim**

1. An improved powdered alloy suitable for dispersion strengthening by internal oxidation, comprising:

an alloy comprising a relatively noble matrix metal having a negative free energy of oxide formation at 25°C of up to 70 kilocalories per gram atom of oxygen and a solute metal having a negative free energy of oxide formation exceeding the free energy of oxide formation of said noble matrix metal by at least about 60 kilocalories per gram atom of oxygen at 25°C; and

said powdered alloy being recrystallized and having a Grain Size of at least Number 6 as measured by ASTM E-112.

3,893,845
METHOD FOR REDUCING MATTER TO CONSTITUENT ELEMENTS AND SEPARATING ONE OF THE ELEMENTS FROM THE OTHER ELEMENTS

Derek W. Mahaffey, and James E. Drummond, both of Bellevue, Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 269,634, July 7, 1972, which is a continuation-in-part of Ser. No. 172,674, Aug. 18, 1971, abandoned. This application June 1, 1973, Ser. No. 365,925

Int. Cl. C22d *7/00*

U.S. Cl. 75—10 R **10 Claims**

1. A process for separating a constituent specie from the remaining species in a gas, said gas being at a temperature where the specie is partly ionized and the remaining species are insignificantly ionized, comprising:

a. flowing said gas along a magnetic field B whose field intensity increases in the general direction of gaseous flow, and the direction of said magnetic field also being in the general direction of said gaseous flow;

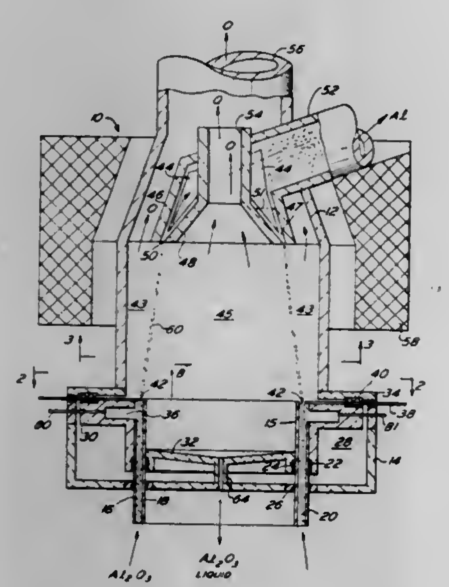
b. spacing the plasma of partly ionized specie at a position remote from the wall structure of a containing vessel as it flows along said magnetic field B;

c. applying a force F to said plasma to confine it to a region of space, said force being created by the movement of the plasma at an angle β relative to the magnetic field;

d. permitting the current J created by the interaction of the moving electrons of the ionized specie with the perpendicular component of the magnetic field B to flow in a closed path;

e. using said current J flowing in a closed path to interact with the parallel component B of the magnetic field B to generate the confining force F acting upon the partly ionized specie; and

f. collecting the partly ionized specie apart from the remaining species.



3,893,846

SLAG FORMING AGENT FOR STEEL MAKING

Masaru Takashima, Tokyo, Japan, assignor to Aikoh Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 269,045, July 5, 1972, abandoned. This application Nov. 23, 1973, Ser. No. 418,737

Int. Cl. C22b *9/10;* **C21c** *7/00*

U.S. Cl. 75—94 **4 Claims**

1. A method of forming slag during a steel making process which comprises adding to molten steel being processed a slag forming agent comprising:

a. 54 to 90 percent by weight of aluminum dross which contains more than 30 percent by weight of aluminum oxide;

b. 5 to 20 percent by weight of cement;

c. 2 to 10 percent by weight of a calcium compound selected from the group consisting of calcium carbonate, calcium hydroxide and mixtures thereof;

d. 1 to 15 percent by weight of a chloride compound selected from the group consisting of magnesium chloride, sodium chloride and mixtures thereof; and

e. from about 1 to about 7 percent by weight of water.

3,893,847

COMPOSITION OF MATTER AND PROCESS

Arthur Percy Derrick, Sylvania, Australia, assignor to Catoleum Pty. Limited, Botany, Australia

Filed July 19, 1971, Ser. No. 164,149

Claims priority, application Australia, Aug. 7, 1970, 2107/70

Int. Cl. C04b *25/00;* **C22b** *1/14*

U.S. Cl. 75—3 **4 Claims**

1. A process of manufacturing indurated agglomerates which process comprises mixing a finely ground mineral in the size range from 10 to 1,000 microns with an aqueous solution of from 0.001 to 10 lbs. polymer per ton of said finely ground mineral, said polymer being a substantially straight chain water soluble polymer having a molecular weight from 1,000,000 to 20,000,000; treating the resultant mixture to form green agglomerates and indurating said green agglomerates by heating.

3,893,848

VALVE SEAT MATERIAL FOR INTERNAL COMBUSTION ENGINES AND THE SIMILAR MATERIAL

Kenya Motoyoshi, Itami, and Makoto Osawa, Tokyo, both of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka and Honda Giken Kogyo Kabushiki Kaisha, Tokyo, both of, Japan

Division of Ser. No. 177,719, Sept. 3, 1971, Pat. No. 3,834,898. This application Nov. 12, 1973, Ser. No. 415,192

Claims priority, application Japan, Sept. 3, 1970, 45-77402; Nov. 11, 1970, 45-98655The portion of the term of this patent subsequent to Sept. 10, 1991, has been disclaimed.

Int. Cl. C22c *39/54*

U.S. Cl. 75—122 **2 Claims**

1. A valve seat material for an internal combustion engine consisting of an alloy matrix consisting essentially of 0.5–30 weight % Cr, 0.1–3.0 weight percent carbon, about 5 to 45 weight percent copper and iron as the balance, and having dispersed in said matrix from about 0.3 to about 10 weight percent of a member selected from the group consisting of Pb and a Pb oxide or sulfate and from 1 to 10 weight percent of a low melting point glass.

3,893,849

OXIDATION-RESISTANT FERRITIC STAINLESS STEEL

Kenneth G. Brickner, Pittsburgh, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Oct. 30, 1970, Ser. No. 85,738

Int. Cl. C22c *39/02*

U.S. Cl. 75—124 **1 Claim**

1. A ferritic stainless steel consisting essentially of

carbon	0.03% max.
manganese	0.50% max.
silicon	0.10% max.
phosphorus	0.025% max.
sulfur	0.025% max.
chromium	2.75 to 5.0%
aluminum	5.0 to 7.0%
molybdenum	about 1%
iron	balance plus incidental impurities,

wherein the percent chromium plus two times the percent molybdenum is at least equal to the integer 5, said steel characterized by high-temperature oxidation resistance at all temperatures up to about 2,200°F, and sufficient ductility to be hot and cold worked into sheet and strip products.

3,893,850

NICKEL FREE AUSTENITIC STAINLESS STEELS

Kazuo Hoshino, and Koutaro Morita, both of Yamaguchi, Japan, assignors to Nisshin Steel Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 97,494, Dec. 14, 1970, abandoned. This application Mar. 26, 1973, Ser. No. 344,509

Claims priority, application Japan, Apr. 30, 1970, 45-36324

Int. Cl. C22c *39/26, 39/54*

U.S. Cl. 75—125 **7 Claims**

1. Substantially nickel free austenitic stainless steels with excellent formability and corrosion resistance, consisting essentially of 0.06 to 0.15% of C, 0.3 to 1.0% of Si, 13 to 16% of Cr, 7.55 to 10.19% of Mn, 0.05 to 0.15% of N, and 1.0 to 4.0% of Cu and the balance of Fe as the essential ingredients.

3,893,851

CORROSION-RESISTANT ALLOYS

John H. Culling, Kirkwood, Mo., assignor to Carondelet Foundry Company, St. Louis, Mo.

Filed Sept. 11, 1974, Ser. No. 505,005

Int. Cl. C22c *19/00*

U.S. Cl. 75—171 **6 Claims**

1. An air-meltable, castable, workable low hardness alloy resistant to corrosion by sulfuric acid over a wide range of acid concentrations consisting essentially of between about 50.18 and about 55.48% by weight nickel, between about 33.20 and about 35.15% by weight chromium, between about 3.23 and about 3.85% by weight molybdenum, between about 2.85 and about 3.86% by weight copper, up to about 1.50% by weight silicon, up to about 2.50% by weight manganese, up to about 1.00% by weight titanium, up to about 1.00% by weight niobium, up to about 1.00% by weight tantalum, up to about 0.01% by weight boron, up to about 0.30% by weight of a rare earth component selected from the group consisting of cerium, lanthanum and misch metal, carbon in a proportion between 0 and a maximum which is the greater of 0.08% by weight and the sum of

$$\frac{[Ti]}{5} + \frac{[Nb]}{8} + \frac{[Ta]}{16}$$

where

[Ti] = the titanium content

[Nb] = the niobium content

[Ta] = tantalum content

the sum of the tantalum content and the niobium content being no greater than about 1.00% by weight, and the balance essentially iron.

3,893,852

METHOD OF MANUFACTURING BILLETS FROM POWDER

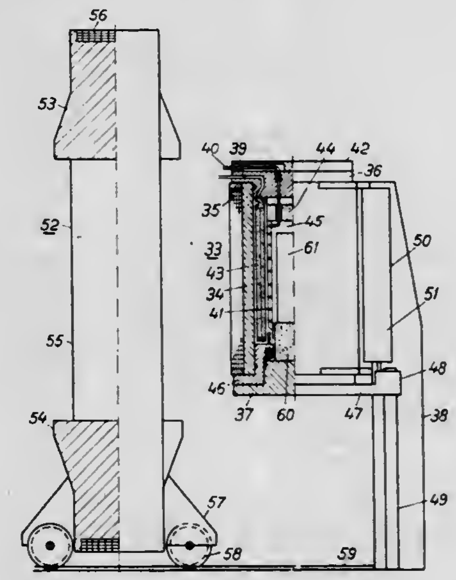
Carl Bergman; Nils Ivar Landgren; Hans Gunnar Larsson, all of Vasteras, and Torsten Strandberg, Soderfors, all of Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed June 5, 1973, Ser. No. 367,105

Claims priority, application Sweden, June 12, 1972, 7685/72

Int. Cl. B22f *1/00*

U.S. Cl. 75—224 **1 Claim**



1. In a method of manufacturing high-speed steel from metal powder which comprises enclosing powder or a green body shaped of powder in a container, heating the container with its contents and subjecting the container to a high, all-sided fluid pressure in a pressure furnace at such a temperature that the powder body is bonded together and a solid body is formed, the steps of degassing the container and powder therein and, after degassing, supplying to the container gas consisting essentially of nitrogen, said gas acting during the subsequent heating as a heat transfer agent circulating within the container, heating the container with the gas therein, and subjecting the closed, heated container to a pressure which is required for bonding at a selected pressing temperature, said nitrogen being included as a constituent in the manufactured material.

3,893,853

PROCESS OF PREPARING PHOTOCONDUCTIVE POLY-VINYL-CARBAZOLE TYPE CHARGE-TRANSFER COMPLEXES

Kenji Nukina, Showa, and Yoshi Arai, Oyama, both of Japan, assignors to Dainippun Ink & Chemicals Inc., Tokyo and Dainippun Ink Institute of Chemical Research, both of, Japan

Continuation of Ser. No. 260,191, June 6, 1972, abandoned. This application June 10, 1974, Ser. No. 478,054

Claims priority, application Japan, Jan. 8, 1972, 47-4457

Int. Cl. G03g *5/06*

U.S. Cl. 96—1.5 C **6 Claims**

1. A process of preparing a charge-transfer complex with improved photoconductivity which comprises reacting 100 parts by weight of poly-N-vinylcarbazole with 30 – 220 parts by weight of tetranitro-9-fluorenone for a period of 1 to 10 hours at a temperature of from 50° to the reflux temperature in a solvent of a chlorinated hydrocarbon-ketone mixture having a 9:1 – 4:6 volume ratio, said poly-N-vinylcarbazole being used in an amount of 2 – 15% by weight based on the solvent.

3,893,854

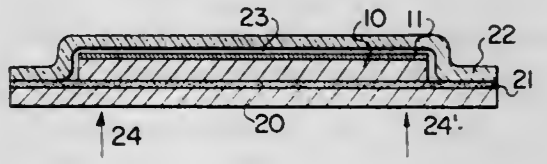
PHOTOGRAPHIC ARTICLES WITH GAPS FOR PROCESSING FLUIDS

Satoru Honjo, Asaka, Japan, and Masamichi Sato, Tucson, Ariz., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 30, 1973, Ser. No. 346,481

Int. Cl. G03g *5/00, 7/00;* **G03C** *5/04;* **G03c** *5/24, 1/58, 5/22, 5/34, 5/24, 1/76, 1/48, 3/00*

U.S. Cl. 96—1.5 **8 Claims**



1. A photographic member comprising a photosensitive element having a supporting layer, a substrate contiguous with said supporting layer, a photosensitive layer on the free surface of said substrate and a transparent film associated with said photosensitive layer whereby a gap is formed therebetween,

the side edges of said supporting layer extending beyond the side edges of the photosensitive layer and the substrate, and the transparent film being bonded to the surface of said supporting layer which extends beyond the side edges of the photosensitive layer and the substrate.

3,893,855
PHOTOGRAPHIC LIGAND FOR INDUCING DISPROPORTIONATION OF SILVER +1 AND PROCESSES OF USE THEREOF

John C. Charkoudian, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

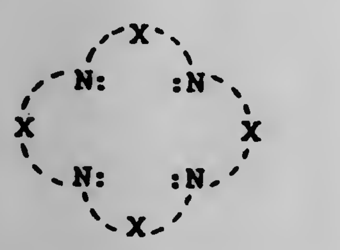
Continuation-in-part of Ser. No. 327,797, Jan. 29, 1973, abandoned. This application June 3, 1974, Ser. No. 475,778

Int. Cl. G03c *7/00, 5/54, 1/48*

U.S. Cl. 96—3 **31 Claims**

27. A silver diffusion transfer photographic process which comprises, in combination, the steps of:

a. exposing a photographic film unit comprising photosensitive silver halide and silver precipitating nuclei wherein said silver halide has associated therewith a non-aromatic macrocyclic ligand having four electron donor atoms of the formula:



wherein each X is a carbon chain of at least two carbon atoms; and

b. contacting said exposed film unit with a processing composition containing a silver halide developing agent and a silver halide solvent, thereby providing a visible diffusion transfer process silver image to said unit, as a function of the point-to-point degree of exposure thereof.

29. A diffusion transfer color photographic process as defined in claim 27 wherein said film unit includes a color screen and exposure of said film unit is accomplished by radiation transmitted through said screen.

3,893,856
METHOD OF PRODUCING GEOMETRIC OPTICAL RASTERS

Friedrich Bestenreiner, and Reinhold Deml, both of Munich, Germany, assignors to Agfa-Gevaert AG, Leverkusen, Germany

Continuation-in-part of Ser. No. 830,073, June 3, 1969, Pat. No. 3,775,110. This application Nov. 26, 1973, Ser. No. 418,818

Claims priority, application Germany, June 4, 1968, 1772567The portion of the term of this patent subsequent to Nov. 27, 1990, has been disclaimed.

Int. Cl. G03c *5/00, 11/00*

U.S. Cl. 96—38.3 **4 Claims**

1. A method of producing a geometric optical raster which comprises the steps of forming a ray of coherent light; splitting said ray into a plurality of rays; deflecting and overlapping said plurality of rays to form an interference pattern; exposing selected areas of a layer of photosensitive material to said interference pattern, including directing light against said layer through at least one confined area, periodically varying the intensity of light, and effecting relative movement at a constant speed between said confined area and said layer; and stabilizing said layer.

3,893,857
PHOTOGRAPHIC TIN AMPLIFICATION PROCESS

John E. Wyman, Lexington, Mass., assignor to Itek Corporation, Lexington, Mass.

Continuation of Ser. No. 743,982, July 11, 1968, abandoned. This application Sept. 25, 1972, Ser. No. 291,843

Int. Cl. G03c *5/24, 5/26*

U.S. Cl. 96—48 PD **9 Claims**

1. Process of amplifying a metal image on a photographic medium which image is capable of initiating deposition of free tin when contacted with a physical developer comprising a solution of stannous ions, and which comprises contacting said medium with a source of stannous ions and then in a separate step contacting the medium with a source of chromous ions as reducing agent for said stannous ions.

3,893,858
PHOTOGRAPHIC BLEACH ACCELERATORS

Herbert E. Wabnitz, Jr., Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

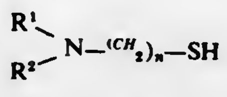
Filed Mar. 26, 1973, Ser. No. 345,148

Int. Cl. G03c *5/32, 7/16*

U.S. Cl. 96—60 R **23 Claims**

1. An improved method of photographic processing in which an imagewise exposed and color developed photographic element is contacted with a ferric aminopolycarboxylic acid complex which functions as a bleaching agent to oxidize photographic silver and with a thiosulfate which functions as a fixing agent, wherein the improvement comprises contacting said element, subsequent to color development and prior to or simultaneously with the contact with said bleaching agent, with a bleach-accelerating amount of a thiol or a salt thereof, said thiol being selected from the group consisting of monothioglycerol,

cystine,
cystamine,
cysteine,
and aminoalkylenethiols of the formula:

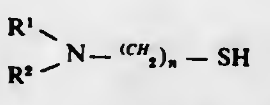


$$\begin{matrix}R^1\\R^2\end{matrix}\!\!>N-(CH_2)_n-SH$$

wherein each of R^1 and R^2 is H, CH_3 or C_2H_5 and n is an integer having a value of from 1 to 3.

10. A photographic bleach-fixing composition containing a thiosulfate fixing agent, a ferric aminopolycarboxylic acid complex which functions as a bleaching agent to oxidize photographic silver, and a bleach-accelerating amount of a thiol or a salt thereof, said thiol being selected from the group consisting of

monothioglycerol,
cystine,
cystamine,
cysteine,
and aminoalkylenethiols of the formula:



$$\begin{matrix}R^1\\R^2\end{matrix}\!\!>N-(CH_2)_n-SH$$

where each of R^1 and R^2 is H, CH_3 or C_2H_5 and n is an integer having a value of from 1 to 3.

3,893,859
4-ARYL-1-CARBAMOYL-2-TETRAZOLINE-5-THIONE STABILIZER PRECURSOR IN A HEAT STABILIZABLE PHOTOGRAPHIC ELEMENT

Donald M. Burness; Hans G. Ling, and Ronald H. Ericson, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 23, 1974, Ser. No. 435,806

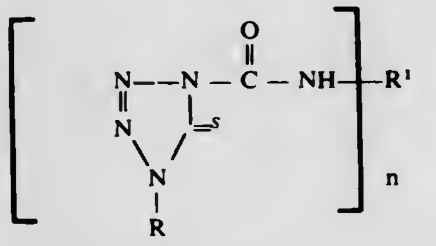
Int. Cl. G03c *5/24*

U.S. Cl. 96—61 R **38 Claims**

10. In a photothermographic element comprising a support having thereon a layer comprising

a. photosensitive silver halide,
b. an oxidation-reduction image-forming combination comprising
   i. a silver salt oxidizing agent with
   ii. a reducing agent,
c. a polymeric binder, and
d. a thione, image stabilizer precursor, the improvement wherein said stabilizer precursor comprises a 4-aryl-1-carbamoyl-2-tetrazoline-5-thione.

20. A photographic composition comprising (a) photosensitive silver halide, (b) a stabilizer precursor represented by the formula:



wherein R is aryl containing 6 to 12 carbon atoms and R^1 is alkyl containing 1 to 12 carbon atoms, aryl containing 6 to 12 carbon atoms, cycloalkyl containing 3 to 8 carbon atoms when n is 1; or alkylene containing 1 to 6 carbon atoms when n is 2; n is 1 or 2; and (c) a polymeric binder.

3,893,860
PHOTOTHERMOGRAPHIC ELEMENT AND PROCESS

Richard C. Sutton, and Heinz E. Stapelfeldt, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

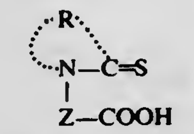
Filed July 16, 1974, Ser. No. 489,029

Int. Cl. G03c *5/30, 1/04, 1/72*

U.S. Cl. 96—66 T **17 Claims**

1. In a photothermographic element comprising a support having thereon (I):

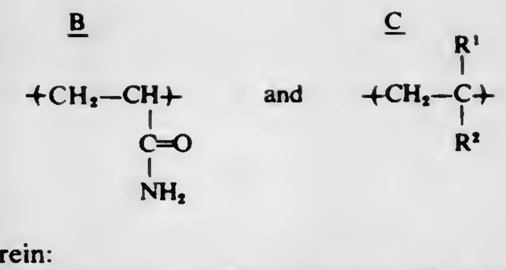
a. photographic silver halide in association with
b. a silver salt of a heterocyclic thione, said heterocyclic thione being represented by the formula:



(XX)

   wherein R represents atoms completing a 5-member heterocyclic nucleus and Z is alkylene containing 1 to 30 carbon atoms,
c. an organic reducing agent for said silver salt of a heterocyclic thione, and
d. a polymeric, synthetic binder and

contiguous to (I), at least one polymer layer (II), the improvement wherein said polymer layer (II) comprises at least 50% by weight of a polymer (A) comprising the repeating units represented by the formulas:



$$\underline{B}\quad -\!\!\left[CH_2-\underset{\underset{\displaystyle NH_2}{|}}{\underset{C=O}{\underset{|}{CH}}}\right]\!\!-\qquad\text{and}\qquad\underline{C}\quad -\!\!\left[CH_2-\overset{R^1}{\underset{R^2}{\overset{|}{\underset{|}{C}}}}\right]\!\!-$$

wherein:

R^1 is hydrogen or alkyl containing 1 to 4 carbon atoms;

R^2 is an imidazolyl, N-substituted carbamoyl, 2-pyrrolidonyl, acetoacetoxyethoxycarbonyl, acetoacetonylmethylphenyl, ethoxycarbonylaceto, pyridyl, hydroxy, hydroxyalkyl containing 1 to 4 carbon atoms, carboxy, carboxyethoxycarbonyl, a heterocyclic ammonium salt group having a 5- or 6-membered azonia nitrogen-containing ring, or a pyridinium salt group, and

the weight ratio of starting monomers for said units B and C is, respectively, about 60:40 to 100:0.

3,893,861
SILVER HALIDE PHOTOSENSITIVE MATERIAL

Motoo Kogure; Yasuji Muroi; Kiyoyuki Miura, and Motoo Watanabe, all of Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Sept. 24, 1973, Ser. No. 400,237

Claims priority, application Japan, Sept. 28, 1972, 47-96592

Int. Cl.² G03C *1/72*

U.S. Cl. 96—67 **7 Claims**

6. A silver halide photosensitive material according to claim **5**, wherein said group consists of methyl methacrylate, methyl acrylate, ethyl acrylate, diacetone acrylate, diacatone methacrylate, 2-chloroethylacrylate, 2-chloroethyl methacrylate, chloromethyl acrylate, chloromethyl methacrylate, glycidyl acrylate, glycidyl methacrylate, acrylamide, N-phenyl-acrylamide, N-alkylacrylamide, diacetone acrylamide, diacetone methacrylamide, N,N-ethyl-eneimino-acylamide, N-methoxymethyl-acrylamide, N-ethoxy methylacrylamide, N-butoxymethyl-acrylamide, N-hydroxy methyl acrylamide, styrene, P-chloromethylstyrene, P-formylstyrene, P-acetylstyrene, P-benzoylstyrene, vinyl acetate, vinyl chloroacetate, methylvinylether, acrylic acid, itaconic acid, maleic anhydride, acrolein, vinylmethylketone, vinylethylketone, vinylphenylketone, vinylalcohol, vinyl chloride, vinylidene chloride, allyl chloride, acrylonitrile, and methacrylonitrile.

3,893,862
REDUCED PYRIDINE COMPOUNDS

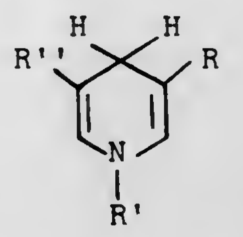
Jal F. Munshi, and Richard L. White, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 24, 1973, Ser. No. 400,276

Int. Cl. G03c *5/30, 1/48*

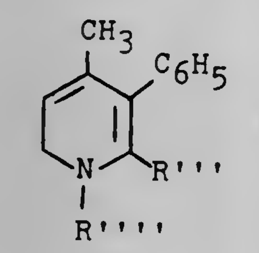
U.S. Cl. 96—66.3 **24 Claims**

1. An alkaline photographic developer composition for silver halide comprising an aromatic silver halide developing agent and a reduced pyridine compound selected from the class consisting of 1,4-dihydropyridine compounds having the formula:



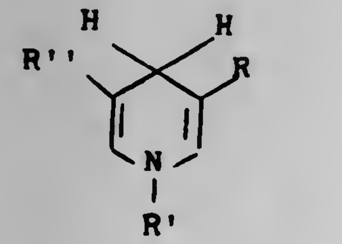
wherein R is a carbamoyl radical, a carboxyalkyl radical having from 1 to 8 carbon atoms, an alkoxycarbonyl radical having from 1 to 8 carbon atoms, an acyl radical having from

1 to 8 carbon atoms, a cyano radical or a halogen atom; R′ is an aryl radical or an alkyl radical, each being substituted or unsubstituted and having from 1 to 12 carbon atoms; and R″ is a hydrogen atom or a halogen atom, and 1,2-dihydropyridine compounds having the formula:

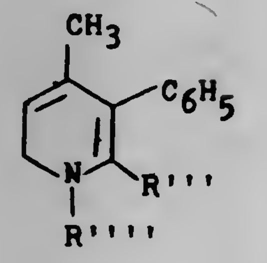


wherein R‴ and R⁗, taken separately, are each an aliphatic radical of not more than five carbon atoms that is selected from the group consisting of an alkyl radical, a chloroalkyl radical, a bromoalkyl radical, a hydroxyalkyl radical, a carboxymethyl radical, a carbalkoxymethyl radical and an alkoxy alkyl radical and R‴ and R⁗, taken together, are the atoms necessary to form a 5-6 member heterocyclic ring containing an O, N or S atom.

13. A photographic image forming composition comprising silver halide and a reduced pyridine compound selected from the class consisting of 1,4-dihydropyridine compounds having the formula:



wherein R is a carbamoyl radical, a carboxyalkyl radical having from 1 to 8 carbon atoms, an alkoxycarbonyl radical having from 1 to 8 carbon atoms, an acyl radical having from 1 to 8 carbon atoms, a cyano radical or a halogen atom; R′ is an aryl radical or an alkyl radical, each being substituted or unsubstituted and having from 1 to 12 carbon atoms; and R″ is a hydrogen atom or a halogen atom, and 1,2-dihydropyridine compounds having the formula:



wherein R‴ and R⁗, taken separately, are each an aliphatic radical of not more than five carbon atoms that is selected from the group consisting of an alkyl radical, a chloroalkyl radical, a bromoalkyl radical, a hydroxyalkyl radical, a carboxymethyl radical, a carbalkoxymethyl radical and an alkoxy alkyl radical and R‴ and R⁗, taken together, are the atoms necessary to form a 5-6 member heterocyclic ring containing an O, N or S atom.

3,893,863

PHOTOGRAPHIC ELEMENTS, COMPOSITIONS AND PROCESSES

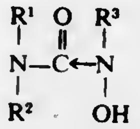
Burton D. Wilson; Paul E. Woodgate, both of Rochester, and Richard W. Henn, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 252,036, May 10, 1972. This application July 3, 1974, Ser. No. 485,405

Int. Cl. G03c *1/06, 1/02*

U.S. Cl. 96—95 **25 Claims**

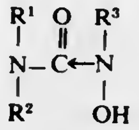
1. A photosensitive composition comprising a photosensitive silver salt and an N-hydroxyurea silver halide developing agent represented by the following formula:



$$\overset{R^1}{\underset{R^2}{N}}-\overset{O}{\overset{\|}{C}}\leftarrow\overset{R^3}{\underset{OH}{N}}$$

wherein R^1, R^2, and R^3 individually represent hydrogen, alkyl containing 1 to 4 carbon atoms or aryl containing 6 to 10 carbon atoms.

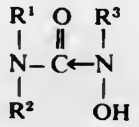
5. A photosensitive silver halide emulsion comprising photosensitive silver halide, a polymeric binder and an N-hydroxyurea silver halide developing agent represented by the following formula:



$$\overset{R^1}{\underset{R^2}{N}}-\overset{O}{\overset{\|}{C}}\leftarrow\overset{R^3}{\underset{OH}{N}}$$

wherein R^1, R^2, and R^3 individually represent hydrogen, alkyl containing 1 to 4 carbon atoms or aryl containing 6 to 10 carbon atoms.

12. A photothermographic element comprising a support having thereon (a) photographic silver salt in association with (b) an oxidation-reduction image-forming combination comprising (i) an oxidizing agent with (ii) an N-hydroxyurea reducing agent and (c) a polymeric binder, said N-hydroxyurea reducing agent being represented by the following formula:



$$\overset{R^1}{\underset{R^2}{N}}-\overset{O}{\overset{\|}{C}}\leftarrow\overset{R^3}{\underset{OH}{N}}$$

wherein R^1, R^2, and R^3 individually present hydrogen, alkyl containing 1 to 4 carbon atoms or aryl containing 6 to 10 carbon atoms.

3,893,864

QUICK-CURING WATER RESISTANT SILICA-ALKALI METAL COATINGS AND PROCESSES THEREFOR

Ronald Wentworth Beers, Spring, Tex., assignor to Exxon Research and Engineering Company, Linden, N.J.

Filed Dec. 20, 1973, Ser. No. 426,438

Int. Cl. C09d *5/10*

U.S. Cl. 106—1 **18 Claims**

1. A liquid composition especially well adapted to function as a vehicle from which especially fast-curing water-resistant coatings can be obtained comprising in combination:

I. 10 to 45 percent by weight of solids comprising:
  A. From about 10 to 60 weight percent solids of fugative NH_4^+ ion stabilized colloidal silica based on total silica solids in said composition:
  B. The 90 to 40 weight percent balance of silica solids comprising silica or silicate containing materials: selected from the group consisting essentially of:

1. Organic quaternary ammonium silicates;
2. Alkali stabilized colloidal silicates;
3. Alkali metal silicates selected from the group consisting of:
   a. potassium silicates
   b. lithium silicates
   c. sodium-lithium silicates and;
4. Mixtures of the foregoing

II. 90 to 55 weight percent of water.

3,893,865

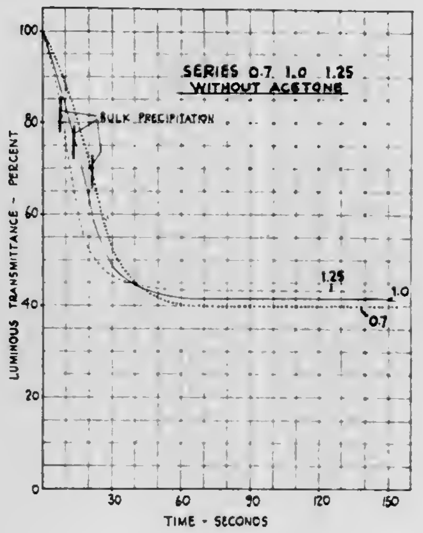
METHOD FOR STABILIZING A CHEMICAL FILMING COMPOSITION

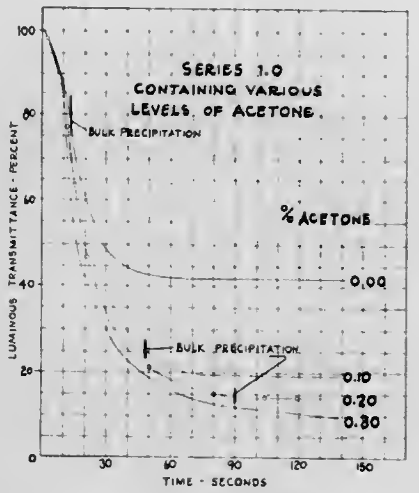
Helmut Franz, Oakmont, and David E. Lecoco, New Kensington, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 111,904, Feb. 2, 1971. This application Nov. 28, 1972, Ser. No. 310,066

Int. Cl. C23c *3/02*

U.S. Cl. 106—1 **19 Claims**





1. In a method for stablizing an aqueous chemical filming composition comprising (a) a water soluble compound of a reducible metal selected from the group consisting of nickel, cobalt and iron and mixtures of such compounds in an effective amount to deposit a film on a substrate when reduced in contact therewith; and (b) a borohydride reducing agent for the contemplated metal in an effective amount to reduce the water soluble, reducible metal; wherein the filming composition is capable of depositing a film on a sensitized substrate and is characterized by its instability due to bulk precipitation; the improvement comprising the addition of a mono-carbonyl containing compound having an active carbonyl selected from the group consisting of ketones, condensed ketones, and mixtures thereof in an effective amount to stabilize the composition against bulk precipitation of the reducible metal while permitting the composition to retain its capability of depositing a film on a sensitized substrate at a rate that is substantially undiminished relative to the effective deposition rate of the unimproved composition.

3,893,866

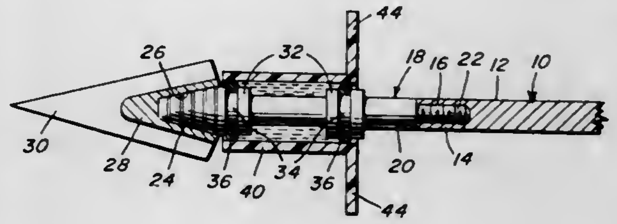
ARROW HEAD WITH FLUENT MATERIAL RELEASE MEANS

Jimmy D. Hollingsworth, Rt. 2, Florence, Miss. 39073

Filed Feb. 12, 1974, Ser. No. 441,843

Int. Cl. F41b *5/02;* **A61m** *5/00*

U.S. Cl. 273—106.5 R **3 Claims**



1. A projectile for injecting fluent materials, said projectile including an elongated shank having front and rear ends, the front end portion of said shank including a sharpened head, said shank, rearward of said head including a generally cylindrical portion provided with a zone of reduced diameter intermediate its opposite ends with the opposite ends of said cylindrical portion defining zones of greater diameter than said zone of reduced diameter, a sleeve member having its opposite ends slidingly telescoped over at least adjacent portions of said zones of greater diameter and defining an annular chamber for receiving fluent material within said sleeve about said zone of reduced diameter, said sleeve, at least slightly spaced from the forward end thereof, including a laterally outwardly projecting abutment for engagement with a target penetrated by said sharpened head to terminate forward movement of said sleeve and allow said zone of reduced width to advance relative to said sleeve upon further penetration of said target by said head and shank, said zones of greater diameter including seal means extending thereabout slidingly and sealingly engaged with the inner surfaces of said sleeve, said head including a rear end portion immediately forward of the forward end of said sleeve, said rear end portion of said head being circular in crosssection and of a diameter at least closely equal to the outside diameter of said sleeve.

3,893,867

MAGNESIA-BASE SINTERED ARTICLE AND PROCESS FOR PRODUCING THE SAME

Kiyoshi Ogasawara; Gentaro Kokubo, both of Tokyo, and Takashi Hojo, Yokohama, all of Japan, assignors to Nihon Kaisuikako Co., Ltd., Tokyo, Japan

Filed Oct. 25, 1973, Ser. No. 409,472

Claims priority, application Japan, Oct. 25, 1972, 47-106161

Int. Cl. C04b *35/04*

U.S. Cl. 106—58 **16 Claims**

1. A process for producing a light and porous magnesia-base sintered article comprising blending a finely divided first component selected from the group consisting of magnesia and a substantially homogeneous mixture of magnesia and calcium oxide containing at least 70 % by weight of magnesia, with a finely divided second component selected from the group consisting of magnesium hydroxide and a substantially homogeneous mixture of magnesium hydroxide with calcium hydroxide containing at least 70 % by weight of magnesium hydroxide, to form a uniformly blended mixture containing from 20 to 90 % by weight of said first component and the balance of said mixture consists essentially of said second component, forming the thus-blended mixture into a shaped article and calcining the article at a temperature in the range of from about 1,400°C to about 2,000°C to form a sintered product.

3,893,868

SEPARATION AGENT FOR MOLDED POLYURETHANE FOAMS

Gunter Klement, Dusseldorf-Holthausen; Horst Baumann, Leichlingen, and Eugen Scheidt, Dusseldorf-Holthausen, all of Germany, assignors to Henkel & Cie GmbH, Dusseldorf, Germany

Filed Oct. 29, 1973, Ser. No. 410,521

Claims priority, application Germany, Nov. 11, 1972, 2255310

Int. Cl. C08g *9/00*

U.S. Cl. 106—38.24 **11 Claims**

1. A separating agent solution for the facilitating of the release of molded polyurethane foams from molds consisting essentially of a solution of a neutral magnesium salt of an aliphatic α-sulfocarboxylic acid having 8 to 26 carbon atoms in an aqueous solvent mixture consisting essentially of (I) from 30 to 70 parts by volume of water and (II) from 70 to 30 parts by volume of a solvent consisting essentially of (A) from 50 to 100 parts by volume of said solvent of an alkanol having 1 to 4 carbon atoms and (B) from 0 to 50 parts by volume of said solvent of an alkanone having 3 to 4 carbon atoms.

3,893,869

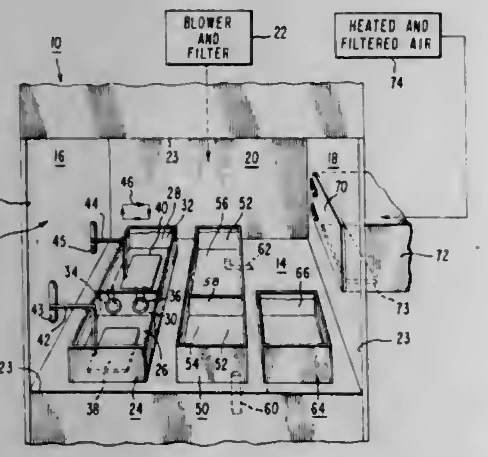
MEGASONIC CLEANING SYSTEM

Alfred Mayer, Plainfield, and Stanley Scwartzman, Somerville, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed May 31, 1974, Ser. No. 475,173

Int. Cl. B08b *3/04*

U.S. Cl. 134—86 **9 Claims**



1. Apparatus for cleaning a surface of an article comprising: a dust-free compartment having an opening communicating with the ambience,

- air pressure means cooperatively associated with said compartment to maintain air pressure within said compartment slightly higher than in said ambience, whereby a laminar flow of air proceeds from said compartment into said ambience,
- a first container for a first cleaning fluid for said article,
- a transducer adapted to oscillate at a frequency of between 0.2 and 5 MHz for propagating a beam of ultrasonic energy along a predetermined direction disposed in said first container,
- means within said first container for disposing said article with said surface substantially parallel to said propagated beam within said first container,
- means for a liquid rinse for rinsing said surface of said article after it is removed from said first container, and
- means communicating with said compartment for drying said article when removed from said liquid rinse.

3,893,870

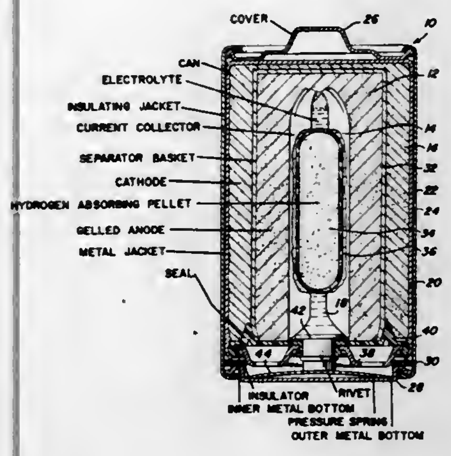
HYDROGEN ABSORBING MATERIAL FOR ELECTROCHEMICAL CELLS

Akiya Kozawa, Middleburg Heights, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 268,785, July 3, 1972, which is a continuation of Ser. No. 853,311, Aug. 27, 1967, abandoned. This application June 14, 1973, Ser. No. 369,866

Int. Cl. H01m *1/08*

U.S. Cl. 136—107 **3 Claims**



1. In a hermetically sealed electrochemical cell having a central, hollow current collector, a zinc anode, a manganese dioxide cathode, and an aqueous potassium hydroxide solution as electrolyte, the improvement which comprises a hydrogen absorbing pellet positioned within said hollow current collector in contact with said electrolyte, said pellet comprising a solid compound which will react chemically with hydrogen gas, a catalyst for the hydrogen gas consuming reaction, a binder for retaining the solid compound and catalyst in a discrete, self-supporting shaped body which will be porous to hydrogen gas so as to allow hydrogen gas to circulate through said body and contact the surfaces of the solid compound and catalyst, and an outer sheath encasing said body which is permeable to hydrogen gas but impermeable to the electrolyte of the cell.

3,893,871

PHENOLIC RESIN AND BATTERY SEPARATOR IMPREGNATED THEREWITH

Robert T. Jones, Pelham, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Jan. 9, 1974, Ser. No. 432,028

Int. Cl. H01m *3/02*

U.S. Cl. 136—146 **11 Claims**

1. A cellulosic permeable battery separator which comprises a cellulosic substrate thoroughly impregnated with a resole of number average molecular weight of between 130 and 300 and a combined aldehyde to phenol molar ratio of between 1.6:1 and 2.8:1 and an anti-migratory agent for reducing the degree of migration and improving oxidative resistance selected from the group consisting of phenol, o-, m-, and p-cresol, hydroquinone and catechol, wherein the weight ratio of resole to anti-migratory agent is between 100:7 and 100:32 and wherein the resole is advanced to an infusible state.

3,893,872

OXALIC ACID TREATMENT OF FOIL

Ehrlich M. Eiland, Lower Burrell, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 21, 1972, Ser. No. 317,106

Int. Cl. C23f *7/00*

U.S. Cl. 148—6.14 A **4 Claims**

1. A process for improving the susceptibility of aluminum foil for adhesion of coatings applied thereto which comprises treating as-rolled foil with from about 0.05 mg/ft² to about 0.30 mg/ft² oxalic acid to replace residual lubricant on the surface of said foil therewith and thereafter heating the treated foil to a temperature of from 100° to 750°F, thereby removing said acid from said surface by volatilization and improving its susceptibility to adherence of inks and lacquers thereto.

3,893,873

METHOD FOR MANUFACTURING SPHEROIDAL GRAPHITE CAST IRON

Kenichi Hanai, Urawa, and Tsukasa Fukumura, Okaya, both of Japan, assignors to Nippon Kinzoku Co. Ltd. and Teikoku Piston Ring Co. Ltd., both of Tokyo, Japan

Filed May 7, 1973, Ser. No. 358,028

Int. Cl. C21d *5/00*

U.S. Cl. 148—12 R **4 Claims**

1. A method for manufacturing spheroidal graphite cast iron comprising applying hot plastic deformation treatment to a spherical graphite cast iron at a reduction ratio of 30 to 80% and subsequently subjecting the said material to heat treatment to obtain high tensile strength.

3,893,874

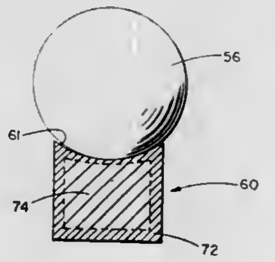
CAMS

James M. Denker, Scituate, Mass., assignor to Nutron Corporation, Hingham, Mass.

Division of Ser. No. 327,651, Jan. 29, 1973, Pat. No. 3,848,481. This application Apr. 25, 1974, Ser. No. 464,135

Int. Cl. C21d *1/00, 1/06;* **C23d** *11/12*

U.S. Cl. 148—12.1 **10 Claims**



1. The method of making a longitudinally-extending cam track including the steps of:

- case-hardening a cam to provide a case-hardened layer of relatively high yield point material overlying a core of relatively low yield point material, said layer being of substantially uniform thickness in transverse cross-section and underlying and defining a surface of the cam; and,
- removing a central longitudinally-extending portion of said layer to form said cam track,
- the remaining portions of the layer defining portions of said cam track and being of greater thickness along the sides than along the center of the track.

3,893,875

METHOD OF MAKING A LUMINESCENT DIODE

Naozo Watanabe, Tokyo; Kunio Kaneko, and Masasi Dosen, both of Yokohama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 27,794, April 13, 1970, Pat. No. 3,689,330. This application Mar. 21, 1972, Ser. No. 236,695

Claims priority, application Japan, Apr. 18, 1969, 44-30117

Int. Cl. H01l *7/38*

U.S. Cl. 148—172 **3 Claims**

1. A method of making a luminescent diode comprising the steps of providing a gallium phosphide substrate having an impurity donor of a first type therein and a melt of gallium-gallium phosphide solution, heating said substrate and said melt to the temperature range 1,050° to 1,200°C to render said melt a solution, passing a carrier gas of hydrogen containing hydrogen sulfide and ammonia over said melt and said substrate to cause the same to be reacted with said melt to diffuse sulfur and nitrogen thereinto and growing an epitaxial layer of gallium phosphide on said gallium phosphide substrate from said melt of gallium-gallium phosphide solution, and further including the step of producing zinc vapor over said substrate as said epitaxial layer is grown by heating zinc to a temperature range of 600°–620°C.

3,893,876

METHOD AND APPARATUS OF THE CONTINUOUS PREPARATION OF EPITAXIAL LAYERS OF SEMICONDUCTING III-V COMPOUNDS FROM VAPOR PHASE

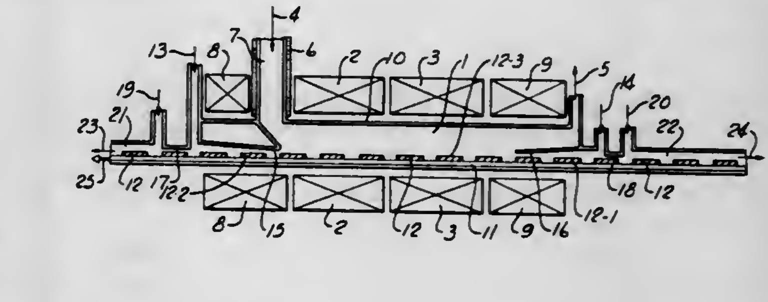
Shin-Ichi Akai; Makoto Hayashi; Shin-Ichi Iguchi, and Takashi Shimoda, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Aug. 31, 1972, Ser. No. 285,379

Claims priority, application Japan, Sept. 6, 1971, 46-68658

Int. Cl. H01l *7/36;* **C23c** *11/00*

U.S. Cl. 148—175 **4 Claims**



1. A method for the continuous preparation of the epitaxial layers of a III-V ternary compound semiconductor represented by a general formula $AB_{1-x}C_x$ on a III-V binary compound semiconductor from a gas mixture, wherein $AB_{1-x}C_x$ stands for both $A^{III}B^{V}_{1-x}C^{V}_{x}$ and $B^{III}_{1-x}C^{III}_{x}A^{V}$, A^{III} and A^{V} being a III-B element and a V-B element, respectively, and B^{III} and C^{III} and B^{V} and C^{V} being two different III-B elements and V-B elements, respectively, and the value of x being between 0 and 1, wherein said III-V ternary compound semiconductor with a graded composition is grown without changing timewise the composition of said gas mixture entering into the reaction furnace, which is given a temperature gradient decreasing with distance in the direction of the gas flow, and by gradually changing the temperature of said III-V binary compound semiconductor, and which is characterized by continuously changing the value of x to result in the graded composition by continuously moving the plurality of said III-V binary compound semiconductor substrates, upstream of said gas flow in the situation when the substrate has a lower melting point, and downstream of said gas flow in the situation when the substrate has a higher melting point than said ternary compound semiconductor, respectively, thus effectively growing said epitaxial layers on said substrates thereby gradually decreasing the constituent C and increasing the consituent B in the gas mixture in the reaction furnace downstream of said gas flow in the situation when the compound AB has a lower melting point than the compound AC and vice versa in the situation when the compound AB has a higher melting point than the compound AC.

3,893,877

METHOD AND STRUCTURE FOR METALIZING A CATHODE RAY TUBE SCREEN

Philomena C. Libman, Mt. Prospect, and William E. Wainscott, Morton Grove, both of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Filed Jan. 2, 1974, Ser. No. 429,603

Int. Cl. B29 *3/00, 27/00;* **H01j** *9/00*

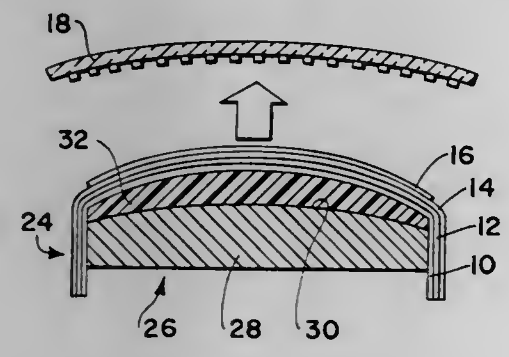
U.S. Cl. 156—80 **5 Claims**

1. A method for metalizing a phosphor screen on the faceplate of a cathode ray tube, comprising:

depositing on the inner surface of a cathode ray tube faceplate a phosphor layer containing a phosphor material and a photosensitized binder;

draping over a mandril having generally the contour of the inner surface of the cathode ray tube faceplate a web comprising a flexible and deformable sheet substrate, a release agent deposited on the substrate, and a layer of electrically conductive, light-reflective metal deposited on the release agent;

introducing between the layer of metal and the inner surface of the faceplate an adherent layer in liquid phase which is capable of being converted to solid phase by a depression in temperature below its conversion temperature;



uniformly pressing the web against the phosphor layer on the inner surface of the faceplate;

cooling the faceplate below the said liquid-solid conversion temperature of said adherent layer to cause said web to adhere to said phosphor layer;

stripping off the substrate; and

baking the faceplate to drive off at least the binder so as to leave a phosphor screen covered with a layer of the metal.

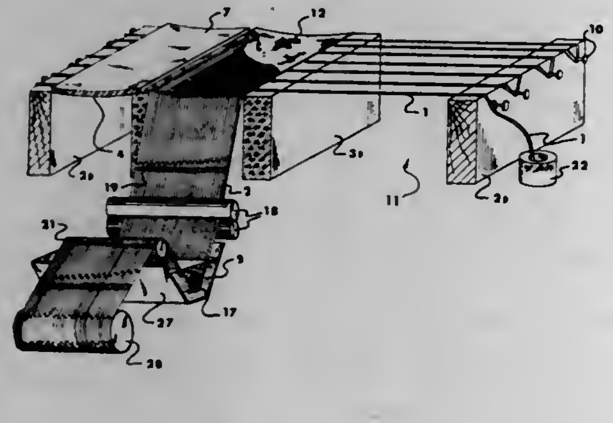
3,893,878
METHOD FOR MAKING A COMPOSITE STRUCTURE

Charles E. Kaempen, Orange, Calif., assignor to Kaempen Industries, Inc., Orange, Calif.

Division of Ser. No. 161,536, July 12, 1971, Pat. No. 3,784,441. This application Sept. 21, 1973, Ser. No. 399,370

Int. Cl. B32b *1/08, 5/12*

U.S. Cl. 156—161 **9 Claims**



1. A method for making a composite structure along a longitudinal axis thereof comprising the steps of

disposing a first ply of continuous first filament strands to extend in the direction of said axis,

freely suspending said first filament strands across a forming gap, defined between a pair of support members disposed at least substantially perpendicular relative to said first filament strands to solely support the same,

gripping the ends of said first filament strands to maintain them in a semi-taut condition,

applying a second ply of continuous and tensioned second filament strands transversely across said first ply to impose a substantially uniform load thereon to tension said first filament strands,

simultaneously deflecting said first and second plies into a concave parabolic configuration in said forming gap defined in accordance with the formula $p = G^2/8H$ wherein p equals the distance between the focus and directrix of said parabolic configuration, G equals the width of said gap and H equals the maximum depth of said gap,

impregnating all of said first and second filament strands with a liquified adhesive means, and

at least partially curing and hardening said adhesive means to maintain said first and second plies in said concave parabolic configuration to form a biaxially tensioned laminate therewith.

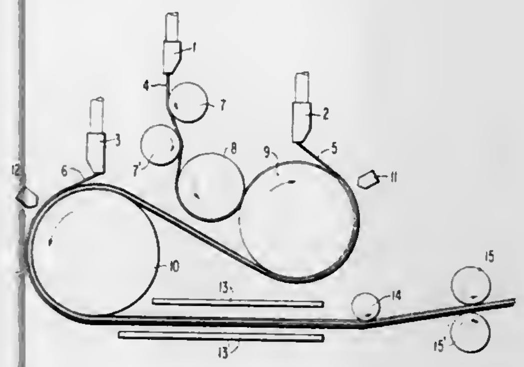
3,893,879
PROCESS FOR PRODUCING A PLASTIC CORRUGATED BOARD AND APPARATUS THEREFOR

Tadashi Ito, and Nobuo Tsuru, both of Tokyo, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Oct. 22, 1971, Ser. No. 191,867

Int. Cl. B29f *3/00;* **B31f** *1/20*

U.S. Cl. 156—164 **10 Claims**



1. A process for producing a corrugated board of a thermoplastic resin which comprises:

1. extruding said thermoplastic resin to form a first flat sheet;
2. passing said first flat sheet through a gap formed between a pair of corrugating rolls having corrugated surfaces to form a corrugated core sheet having corrugations extending parallel to the direction of passage of said core sheet between said corrugating rolls;
3. maintaining one of said corrugating rolls carrying said corrugated core sheet at a peripheral speed from 1 to 20 percent higher than that of the other of said corrugating rolls to provide tension to said corrugated core sheet;
4. extruding a second flat sheet of thermoplastic resin;
5. laying said second flat sheet on said corrugated core sheet from above while said corrugated core sheet is retained on said corrugating roll having the higher peripheral speed;
6. press-adhering said second flat sheet to said corrugated core sheet to form a single-face corrugated board while said second flat sheet is at a sufficiently high temperature to maintain it in the plastic state and said corrugated core sheet is at a sufficiently high temperature to effect adhering, said press-adhering being completed by the weight of said second flat sheet and the tension therein in addition to the pressure of cool air blown onto said second flat sheet; and
7. cooling both sides of said single-face corrugated board separately and under tension thereby correcting curving and improving the flatness thereof.

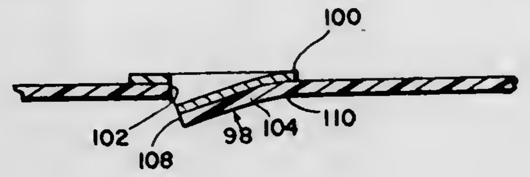
3,893,880
METHOD OF MANUFACTURING APPARATUS ACTUATING PHOTOGRAPHIC FILM

Gerald H. Cook, Lynnfield, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 262,044, June 12, 1972, Pat. No. 3,812,515. This application Oct. 4, 1973, Ser. No. 403,520

Int. Cl. B32b *31/18, 31/20*

U.S. Cl. 156—211 **3 Claims**



1. A method of manufacturing a photographic film strip having a protuberance extending from a given side thereof, said protuberance being configured for actuating an operational element of a photographic system during advancement of the film strip therein, said method comprising the steps of: positioning a segment of material over a selected portion of said film strip wherein said protuberance is to be located, said segment having an area exceeding the perimeter of said protuberance and adapted for bonding to said film strip;

forming a short transverse cut through both said segment and said film strip, said cut having a length shorter than the width of said segment and said film strip; and

pressing said segment to bond it with said strip while simultaneously forming a depression bordering on said cut in both said segment and said film strip to thereby form said protuberance.

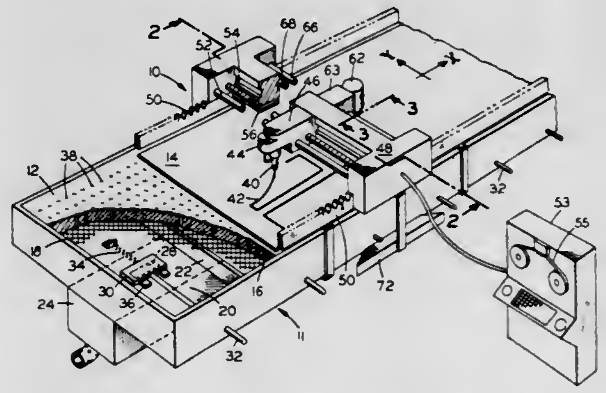
3,893,881
METHOD FOR PRODUCING SEAMED ARTICLES FROM SHEET MATERIAL

Heinz Joseph Gerber, and David Raymond Pearl, both of West Hartford, Conn., assignors to Gerber Garment Technology, Inc., East Hartford, Conn.

Division of Ser. No. 217,921, Jan. 14, 1972, Pat. No. 3,785,898. This application Oct. 15, 1973, Ser. No. 406,694

Int. Cl. B32b *31/00;* **B29c** *19/02*

U.S. Cl. 156—250 **12 Claims**



1. The method of producing a seamed article from sheet material, which method comprises the steps of: spreading two sheets of sheet material on top of one another over a stationary supporting surface, bonding said two sheets to one another by means of a bonding agent different from the material of said two sheets along at least one desired seam line forming a part of said article, said bonding step including providing a bonding member movable in two dimensions relative to said supporting surface and moving said bonding member along said desired line while said two sheets are held stationary relative to said supporting surface, and cutting said article from said two sheets of sheet material before said two sheets of sheet material are removed from said supporting surface and while they are held stationary relative to said supporting surface, said cutting step including providing a cutter movable in two dimensions relative to said supporting surface and moving said cutter along a desired line of cut, said bonding step and said cutting step being performed independently of one another during different periods of time.

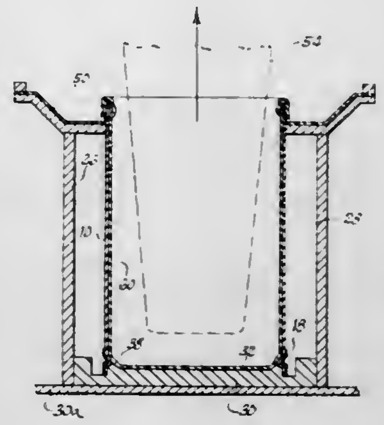
3,893,882
METHOD FOR LINING DRUMS WITH PLASTIC MATERIAL

William Repenning, Haddonfield, N.J., assignor to Natico, Inc., Chicago, Ill.

Filed Mar. 19, 1973, Ser. No. 342,696

Int. Cl. B29c *17/04, 25/00;* **B29d** *3/02*

U.S. Cl. 156—287 **14 Claims**



1. In the method for producing a plastic lined drum using the drum shell as a mold element, the steps of positioning a drum shell, open at the top and at the bottom, in a frame member which engages the outer wall of the shell all around substantially in sealing relationship a short distance below the open upper end of the shell and sealing off the open bottom end of the shell as a bottom wall, heating to the stretchable stage a film of thermoplastic material dimensioned to extend across the open end at the top of the shell and a short distance therebeyond, effecting a sealing engagement between a portion of the film extending beyond the open end of the shell and the portion of the frame member in sealing engagement with the outer wall of the shell below the upper edge, displacing a mold member vertically downwardly into the interior of the drum towards the open end at the bottom of the shell for a distance less than the length of the shell to displace.the strip by expansion into the interior of the shell, drawing a vacuum in the space between the interior of the shell and the expanded film and between the frame member and the portion of the film extending beyond the open upper end to stretch the film by vacuum forming into intimate engagement with the interior walls of the shell and the bottom wall, and about the upper edge of the shell and the adjacent outer wall of the shell to the portion engaged by the frame member and downwardly beyond the open end at the bottom of the shell for a distance corresponding to the shrinkage calculated to take place during cool-down of the stretched film and then removing the entire shell continuously lined with the plastic material throughout the interior and about the upper edge portion from the frame, and positioning the bottom wall of the drum adjacent the open end at the bottom and forming the lower chime about the edge of the bottom wall to join the bottom wall to the drum with the bottom of the thermoplastic liner, having undergone said shrinkage, resting thereon.

3,893,883
HEAT BONDABLE SHEET MATERIALS

Takashi Higuchi, Hikone, and Katsuyoshi Yamauchi, Moriyama, both of Japan, assignors to Firma Carl Freudenberg, Weinheim an der Bergstrasse, Germany

Filed Feb. 16, 1973, Ser. No. 333,255

Claims priority, application Germany, Feb. 25, 1972, 2208976

Int. Cl. C09j *7/00*

U.S. Cl. 156—334 **1 Claim**

1. The process for making a textile-bonded-to-textile product comprising applying to a surface of a textile fabric support about 5 to 100 g/m² of an adhesive composition consisting essentially of 100 parts by weight of polyethylene having a melt index of about 0.2 to 50 and a molecular weight of at least about 22,000, per about 5 to 45 parts by weight of a terpene resin having a softening point of about 60° to 120°C, placing the surface of said support carrying said adhesive composition on a textile fabric, and ironing said support for at least about 5 seconds at a temperature of about 120° to 160°C and a pressure of about 0.15 to 0.35 Kg/m² whereby bonding is effected.

3,893,884
BAG-MAKING MACHINE

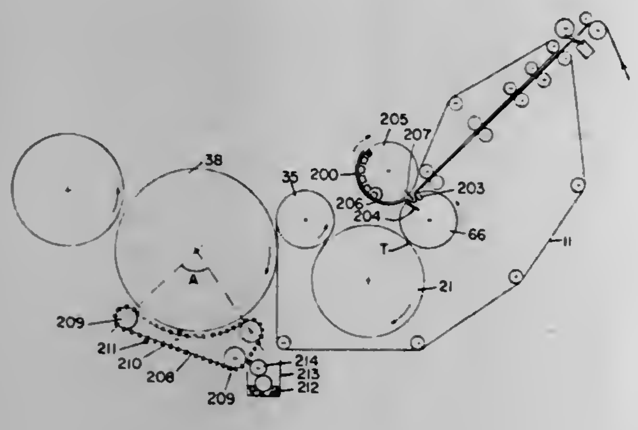
Jean Class, Strasbourg, France, assignor to Les Ateliers de Constructions Mecaniques C. & A. Holweg S.A., Strasbourg, France

Filed Sept. 20, 1972, Ser. No. 290,750

Claims priority, application France, Apr. 26, 1972, 72.15771

Int. Cl.² B31B *21/14, 21/26, 21/60*

U.S. Cl. 156—498 **5 Claims**



1. In a machine for the manufacture of bags from thermoplastic material, comprising means for advancing a continuous tube of thermoplastic material, means for severing lengths from said tube, a welding drum on which one end of each said length is heat-sealed closed along a transverse weld line, and a further drum about which said lengths pass after leaving said welding drum; the improvement comprising means disposed between said severing means and said welding drum for folding said lengths about at least one transverse fold line, and an endless belt that coacts with said further drum so that said lengths pass between said belt and said further drum, said belt having thereon a plurality of spaced bars that contact the heat-sealed ends of said lengths along said transverse weld line, and means to cool said bars.

3,893,885
AUXILIARIES FOR THE MANUFACTURE OF PAPER

Heinz Ziemann, Leichlingen; Gerhard Troemel, Peach near Cologne, and Wolfgang Lehmann, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Germany

Continuation of Ser. No. 840,051, July 8, 1969, abandoned. This application Nov. 23, 1973, Ser. No. 418,205

Claims priority, application Germany, July 16, 1968, 1771814

Int. Cl. D21l *3/58*

U.S. Cl. 162—164 **5 Claims**

1. Process for increasing the retention of fibers, fillers and pigments in the manufacture of paper, for accelerating the dehydration of suspensions of paper raw material, and for processing waste waters from paper machines by filtration, sedimentation and flotation, by the addition of basic polyamides to the suspensions of paper raw material and/or to the waste waters from paper machines, which comprises adding as basic polyamides, high-molecular water-soluble reaction products which have been obtained by the reaction of compounds which are polyfunctional with regard to amino groups, with basic polyamides which are dissolved or dispersed in water and are prepared by the reaction of polyvalent amines containing at least two amino groups capable of forming amides and at least one further primary, secondary or tertiary amino group, with saturated aliphatic dicarboxylic acids containing 4 to 10 carbon atoms and with ω-amino-carboxylic acids containing 5 to 8 carbon atoms, or their lactams, and for the preparation of said reaction products there are used less than 1 gram-equivalent of reactive groups in the polyfunctional compounds for every gram-equivalent of basic amino groups in the basic polyamides using high molecular water-soluble reaction products for the preparation of which has been used 0.6 – 0.01 gram-equivalent of reactive groups in the polyfunctional compounds for every gram-equivalent of basic amino groups in the basic polyamides and wherein the whiteness of the paper is not adversely affected by the increased retentive effects.

3,893,886
REMOVABLE DIAGRID FOR SUPPORTING THE FUEL ASSEMBLIES OF A NUCLEAR REACTOR

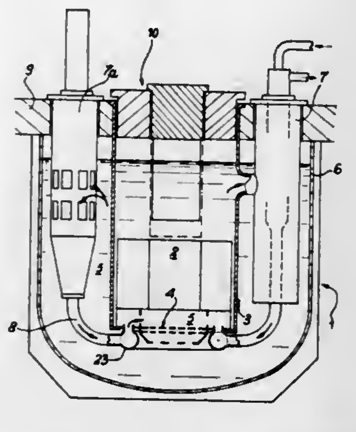
Michel Aubert, Pierrevert; Michel Bellier, Saint-Germain-en-Laye, and Jean-Marie Berniolles, Pierrevert, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jan. 15, 1973, Ser. No. 323,636

Claims priority, application France, Jan. 20, 1972, 72.01864

Int. Cl. G21c *15/00*

U.S. Cl. 176—87 **4 Claims**



1. A removable diagrid for a nuclear reactor having fuel assemblies supported by the diagrid, a lateral cylindrical shell for a reactor tank and a reactor core, said diagrid being made up of a single-unit assembly which is laid by means of a horizontal peripheral bearing surface on an internal shoulder formed in said lateral cylindrical shell of said reactor tank having a vertical axis which surrounds the diagrid and said reactor core, said single-unit assembly being made up of two parallel and horizontal support plates which are braced with respect to each other by vertical hollow columns in which the lower ends of the fuel assemblies to be supported are engaged in coaxial relation therewith, wherein the horizontal support plates are rigidly fixed at their periphery to an annular box element for the distribution of a coolant fluid at high pressure which is conveyed to the diagrid by means of a toric manifold, said manifold being connected to the annular box element and rigidly fixed beneath the bottom support plate by locking means which are independent of said support plate and said annular box element, vertical ducts being so arranged as to open at one end into the manifold and at the other end into the annular box element, the upper ends of said ducts being passed through apertures which are formed in the opposite bottom wall of said annular box element and which are surrounded by coaxial collars welded to said ducts at the end faces thereof.

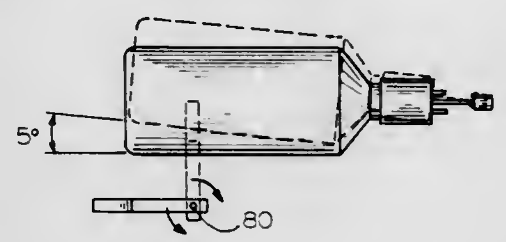
3,893,887
METHOD FOR RAPID HARVESTING OF ROLLER CULTURE SUPERNATANT FLUID

Ralph E. Smith, and Frank E. Kozoman, both of Durham, N.C., assignors to Duke University, Inc., Durham, N.C.

Division of Ser. No. 3[illegible]7,806, July 9, 1973, Pat. No. 3,847,749. This application May 30, 1974, Ser. No. 474,369

Int. Cl.² C12B *1/00;* **C12K** *9/00*

U.S. Cl. 195—1.7 **5 Claims**



1. The method of operating a roller tissue culture apparatus of the type having a plurality of parallel drive and idler rollers on which a plurality of roller culture bottles are rotated during cell growth and which permits supernatant fluids to be removed from the bottles and fresh nutrient fluid added on an intermittent basis, comprising the steps, under automatic programmed control of:

a. periodically interrupting the normal rotation of the bottles on the rollers;
b. during such interruptions and while leaving all of the mouth ends of the bottles positioned on the rollers, engaging all of the rear ends of the bottles with mechanical positioning means and gradually tilting all of the bottles with such positioning means to an acute angle of tilt sufficient to allow the supernatant fluid in each bottle to gradually flow to the respective lowest point within the mouth end of the tilted bottle and there collect proximate an open end of an effluent line proximate such point;
c. while holding the bottles so tilted, removing the supernatant fluid essentially completely from each of the bottles through such effluent lines by pumping;
d. gradually lowering all of the bottles with said positioning means until they assume the same respective positions on said rollers as were occupied prior to being tilted;
e. disengaging said positioning means from contact with said bottle rear ends;
f. at a selected time after the supernatant fluid has been removed from the bottles and prior to resuming their normal rotation on the rollers feeding a new supply of nutrient fluid into the bottles through an influent line; and
g. resuming the normal rotation of the bottles until the bottle rotation is again interrupted for the purpose of repeating the cycle.

3,893,888
FERMENTATIVE PRODUCTION OF L-VALINE

Takayasu Tsuchida, Kawasaki, and Fumihiro Yoshinaga, Fujisawa, both of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Mar. 1, 1974, Ser. No. 447,379

Claims priority, application Japan, Mar. 9, 1973, 48-27738

Int. Cl. C12d *13/06*

U.S. Cl. 195—29 **5 Claims**

1. A method of producing L-valine by fermentation which comprises:

a. culturing a microorganism of the genera Brevibacterium or Corynebacterium on a nutrient medium under aerobic conditions,
  1. said microorganism being capable of producing extracellular L-valine in said medium,
  2. said medium containing sources of assimilable carbon and nitrogen and minor organic and inorganic nutrients necessary to the growth of said microorganism,
  3. said microorganism being cultured on said nutrient medium until L-valine accumulates in said medium,
  4. said microorganism being resistant to 2-thiazolalanine, and
b. recovering accumulated L-valine from said medium.

3,893,889
CULTURE MEDIUM FOR DIFFERENTIATION OF ENTEROBACTERIACEAE

Bert Warren, Tuxedo Park, N.Y., and Ronald K. Miller, Fort Lee, N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Feb. 25, 1974, Ser. No. 445,507

Int. Cl. C12k *1/10*

U.S. Cl. 195—100 **10 Claims**

1. An agarose-based culture medium for differentiation and identification of bacteria of the family Enterobacteriaceae which comprises a citrate substrate, and as a sole additional carbohydrate substrate, a member selected from the group consisting of inositol, raffinose and rhamnose and a compatable pH responsive dye system, whereby the color change produced by the reaction of Enterobacteriaceae bacteria with said carbohydrate substrate on said dye system does not interfere with the color change produced by the reaction of said bacteria with said citrate.

3,893,890
PROCESS FOR INHIBITING THE ACTION OF PEPSIN

Otto B. Wurzburg, Whitehouse Station; Chester D. Szymanski, Martinsville, and Leo Kurger, Kendall Park, all of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Oct. 23, 1973, Ser. No. 408,317

Int. Cl. A61k *19/00;* **C12b** *1/00*

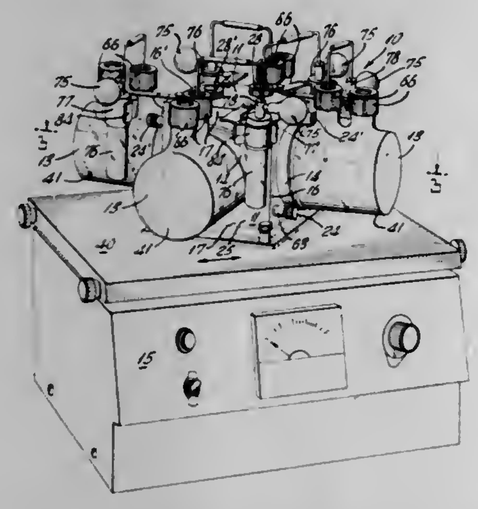
U.S. Cl. 195—104 **9 Claims**

1. A process for inhibiting the action of pepsin comprising exposing pepsin, in an aqueous solution at a pH less than 5.0 to the action of a water-soluble polymer selected from the group consisting of sulfonated homo- and copolymers of styrene and salts thereof; said sulfonated polymer having a degree of substitution of from about 0.7 to about 1.3 sulfonate groups per unit of styrene and an average molecular weight greater than 600.

3,893,891
MULTIPLE DIFFUSION CHAMBER

Myron Tannenbaum, East Brunswick, N.J., and Joseph M. Kornfeld, Coventry, Conn., assignors to New Brunswick Scientific Co., Inc., New Brunswick, N.J.

Filed June 14, 1973, Ser. No. 370,083
Int. Cl.² C12B *1/00*
U.S. Cl. 195—127 **11 Claims**

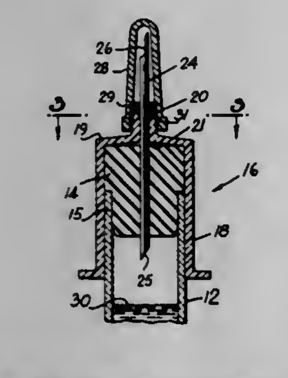


1. A multiple diffusion chamber for mixed culture interactions under controlled conditions comprising a fluid tight housing defining a central diffusion reservoir for carrying a liquid culture nutrient medium, a plurality of discrete radially extending fluid tight organism growth chambers for carrying organism cultures in said liquid culture nutrient medium, said organism growth chambers communicating with said central diffusion reservoir, each organism growth chamber being radially spaced on the periphery of said central diffusion reservoir housing and connected thereto, each organism growth chamber including means for selectively controlling communication between organism growth chambers and said central diffusion reservoir for thereby permitting continuous dialysis of said culture nutrient medium and metabolic products suspended therein into and out of each of said organism growth chambers and preventing egress of an organism culture therefrom, and means for shaking said multiple diffusion chamber for thereby affecting communication between said central diffusion reservoir and each of said organism growth chambers.

3,893,892
VENTING ASSEMBLY FOR THE CULTIVATION OF MICROORGANISMS FROM BODY FLUID

Jack Judson Mehl, Landing, N.J., assignor to Becton, Dickinson and Company, East Rutherford, N.J.

Division of Ser. No. 342,086, March 16, 1973, and a continuation-in-part of Ser. No. 215,730, Jan. 6, 1972, abandoned. This application Feb. 11, 1974, Ser. No. 440,966
Int. Cl. C12b *1/00*
U.S. Cl. 195—127 **4 Claims**



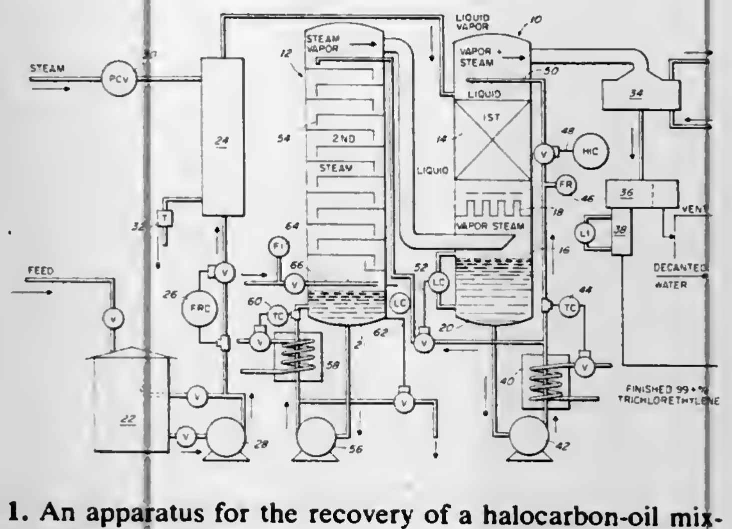
1. A venting assembly adapted to be removably mounted on a container having an open end and a resilient closure thereon and having a culture medium disposed therein for the collection, cultivation and identification of microorganisms contained in a specimen of body fluid, said assembly comprising: a tubular body portion having a closed end and an open end; a hub formed on said closed end and having an axial bore formed therethrough;

- a cannula rigidly mounted in the axial bore between the ends of said bore;
- said cannula having a pointed end positioned within the tubular body and being capable of piercing the resilient closure means mounted in the open end of said container when said assembly is mounted on said container;
- a shield enclosing said other end of said cannula and being removably mounted on said hub;
- said shield being constructed with a plurality of ribs disposed around the inner surface thereof so that the shield mounted on the hub forms a plurality of passageways between said shield and said hub, said ribs being of a dimension to provide passageways which prevent the passage of microorganisms therethrough, whereby when said assembly is mounted on said container, the plurality of passageways provide for the circulation of microbial gases from the interior of said container to the atmosphere and for diffusion of atmospheric oxygen from the outside to the inside of the container but prevent the passage of microorganisms therethrough.

3,893,893
APPARATUS FOR THE RECOVERY OF TRICHLORETHYLENE FROM OIL WASTE

John G. Miserlis, Lowell, and Arthur Petrou, Haverhill, both of Mass., assignors to Silresim Chemical Corporation, Lowell, Mass.

Division of Ser. No. 185,529, Oct. 1, 1971, Pat. No. 3,803,005. This application Feb. 22, 1974, Ser. No. 444,863
Int. Cl. E01d *3/00*
U.S. Cl. 202—154 **4 Claims**



1. An apparatus for the recovery of a halocarbon-oil mixture which comprises:

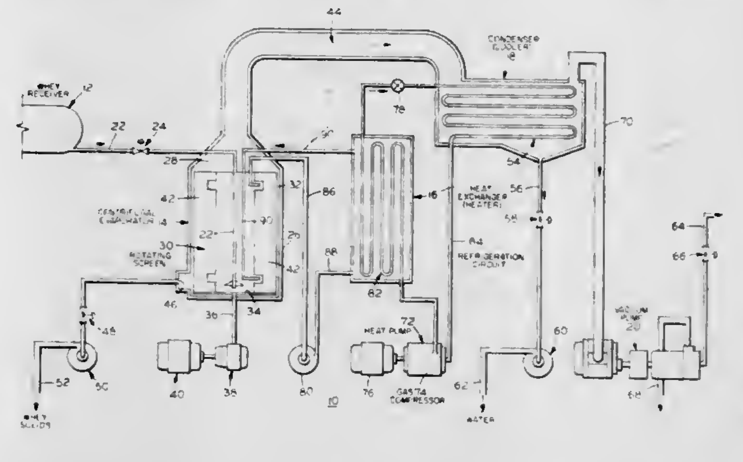
- a. a first distillation column having an upper vapor section and a lower liquid section;
- b. means to introduce the mixture as a liquid portion and a vapor portion into the upper vapor section of the first distillation column, the liquid flowing to the lower liquid section of said column;
- c. a second distillation column downstream of the first distillation column and in communication therewith, the second distillation column having upper and lower sections;
- d. means to introduce a portion of the liquid in the lower liquid section of the first distillation column into the upper section of the second distillation column;
- e. means to introduce a carrier fluid immiscible with the halocarbon into the lower section of the second distillation column to volatilize the halocarbon contained in the liquid mixture introduced into the second distillation column from the first distillation column, thereby volatilizing at least a portion of the halocarbon, the volatilized halocarbon and the carrier fluid forming a vapor stream;

- f. means to recover from the second distillation column the liquid portion from the lower section of the second distillation column;
- g. means to introduce the vapor stream from the second distillation column into the lower liquid section of the first distillation column, the vapor stream immiscible with the halocarbon to lower the partial pressure of the halocarbon in the first distillation column;
- h. means to recycle directly from the lower liquid section of the first distillation column a portion of the liquid in the lower liquid section to the upper vapor section above the point of introduction of the mixture, to exchange thermal energy with and control the temperature of the mixture introduced into the upper section of the first distillation column, and to form a vaporous portion; and
- i. means to recover the vaporous portion from the upper section of the first distillation column.

3,893,894
LOW TEMPERATURE WATER PURIFICATION SYSTEM

Gerald F. Humiston, South Barre, Vt., assignor to Pollution Control, Inc., South Barre, Vt.

Filed June 13, 1973, Ser. No. 369,515
Int. Cl. B01d *3/00, 3/10, 1/22*
U.S. Cl. 202—235 **5 Claims**



1. A low temperature purification system operable for purposes of separating from a solution the solids and dissolved substances contained therein comprising:

- a. a source of supply of a solution containing solids and dissolved substances;
- b. evaporator means connected to said source of supply for receiving solution therefrom, said evaporator means comprising a centrifugal vacuum evaporator operable to separate solids from the solution by centrifugal acceleration and to separate dissolved substances from the solution by vacuum distillation, said centrifugal vacuum evaporator including a stationary housing providing a chamber, a plurality of vanes mounted within said chamber for rotation therewithin, drive means connected to said plurality of vanes operable for causing the rapid rotation thereof, an inlet for solution containing solids and dissolved substances, an outlet for solids adjacent the base of said chamber and an outlet for vapors adjacent the top of said chamber, said inlet for said evaporator means being connected to said source of supply by a conduit, said chamber, conduit and source of supply comprising the solution intake portion of the purification system;
- c. vacuum means operable for producing a vacuum;
- d. condenser means operatively connected between said vapor outlet of said evaporator means and said vacuum means, said condenser means being operable at reduced pressure during operation of said vacuum means and said condenser means in turn producing a reduced pressure within said evaporator means to cause at least a portion of the solution in said evaporator means to vaporize to produce vapors therefrom for transmission to said condenser means, said condenser means including a coil supported therewithin in the path of flow of the vapors received from said evaporator means, said coil being connected into a heat pump closed loop flow path so as to receive a heat transfer refrigerant fluid at a temperature below the condensation temperature of the vapors in said condenser to cause the vapors coming into contact with said coil to condense and thereby produce condensate with the heat produced during condensation being absorbed by the fluid flowing through said coil;
- e. outlet means connected to said condenser means for discharging the condensate therefrom; and
- f. a refrigerant fluid compressor means and an additional coil connected in series in said heat pump loop, said additional coil comprising part of an indirect heat transfer means operatively connected in another closed loop with said evaporator means to transfer the heat of condensation from said condenser means through said additional coil to solution being introduced into said evaporator means, said heat transfer means including pumping and conduit means for transporting at least a portion of the solution containing solids and dissolved substances from a point of supply in said solution intake portion and into heat exchange with the heat transfer fluid to transfer heat of condensation to that portion of the solution and effect an increase in the temperature thereof, said pumping means and conduit then transporting the heated solution to said vacuum centrifugal evaporator to prevent reduction of the temperature of the body of the solution within said evaporator as evaporation takes place, said heat transfer means including mechanical means providing additional heat energy in the solution being introduced to said vacuum evaporator to provide a preselected minimum temperature in the body of the solution within said centrifugal vacuum evaporator during evaporation and to compensate for heat losses within the system

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3,893,895
DISTILLATION OF 1,2-UNSATURATED CARBOXYLIC ACIDS IN SOLUTION WITH SELECTED AMINES

Jurgen Dehnert, Bruhl; Axel Kleemann; Theodor Lussling, both of Grossauheim; Ewald Noll, Grosskrotzenburg; Hans Schaefer, and Gerd Schreyer, both of Grossauheim, all of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Germany

Filed July 19, 1973, Ser. No. 380,664
Claims priority, application Germany, July 19, 1972, 2235326
Int. Cl.² B01D *3/34*
U.S. Cl. 203—59 **15 Claims**

1. A process for the purification of 1,2-unsaturated carboxylic acids containing carbonyl compounds comprising treating the impure carboxylic acid with an amine which is selected from the group consisting of hydroxylamine, a monoalkyl amine, naphthylamine and 1,2-dianilinoethane to chemically bind said carbonyl compounds and then recovering said carboxylic acid by distillation.

3,893,896
GOLD PLATING BATH AND PROCESS

Alexander Korbelak, Southbury, and John King, Trumbull, both of Conn., assignors to Handy & Harman, New York, N.Y.

Filed July 2, 1973, Ser. No. 375,616
Int. Cl. C23b *5/42, 5/46*
U.S. Cl. 204—44 **9 Claims**

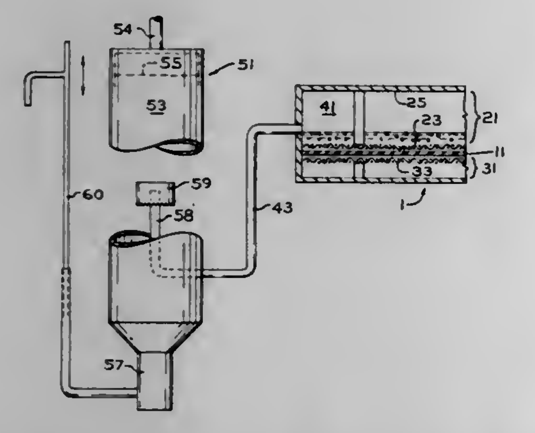
1. An acidic electrolytic bath comprising:

- a. an alkali gold cyanide in an amount ranging from 0.1 to 50 grams per liter;
- b. a weak lewis acid in an amount ranging from 5 to 250 grams per liter and selected from the group consisting of a quinone, boric acid, phthalic acid, potassium acid phthalate and mixtures thereof;
- c. a weak polyfunctional water-soluble aliphatic carboxylic acid in an amount ranging from 5 to 500 grams per liter;

d. a non-depositing metallic compound in an amount ranging from 5 to 250 grams per liter;
e. a metallic hardener in an amount ranging from 0.01 to 15 grams of metal ion per liter; and
f. water.

3,893,897
METHOD OF OPERATING ELECTROLYTIC DIAPHRAGM CELLS HAVING HORIZONTAL ELECTRODES

Carl W. Raetzsch, and Daniel E. Wiley, both of Corpus Christi, Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Filed Apr. 12, 1974, Ser. No. 460,414
Int. Cl. C01f *7/06*
U.S. Cl. 204—98 **15 Claims**

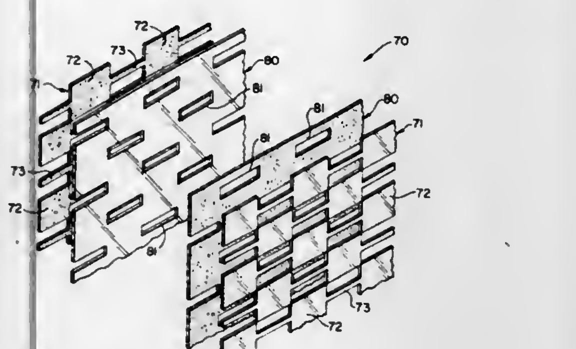


1. A method of operating an electolytic cell which cell has an electrolyte chamber divided horizontally by a permeable barrier into an anolyte chamber containing a substantially horizontal anode above said permeable barrier, and a catholyte chamber containing a substantially horizontal cathode below said horizontal barrier; which method comprises feeding alkali metal chloride brine to said anolyte chamber; passing electrical current through said cell at a current density high enough to generate sufficient hydrogen gas on said cathode to oppose the unaided flow of electrolyte through said permeable barrier from said anolyte chamber to said catholyte chamber; generating chlorine gas on said anode; collecting the chlorine gas in said anolyte chamber above the anolyte therein to maintain a chlorine gas pad in said anolyte chamber; withdrawing the chlorine gas from said anolyte chamber to a liquid-containing tank; discharging the chlorine gas from said cell into the liquid in said liquid-containing tank and maintaining a level of liquid in said liquid-containing tank above the level of anolyte liquor in said cell sufficient to augment the flow of anolyte liquor through said permeable barrier against the pressure of the hydrogen to said catholyte chamber.

3,893,898
METHOD FOR REMOVING AND/OR SEPARATING PARTICLES FROM FLUID CONTAINING THE SAME

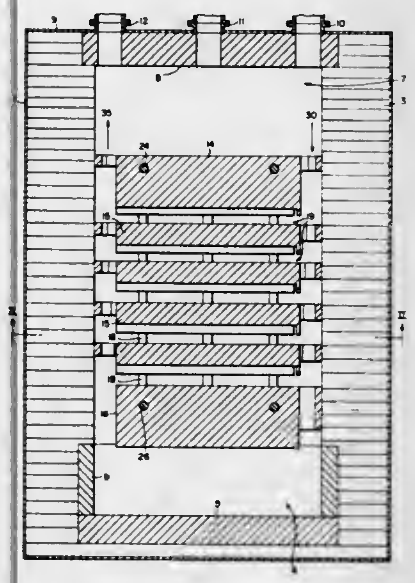
James T. Candor, 5440 Cynthia Ln., Washington Twp., Ohio 45429
Continuation-in-part of Ser. No. 383,255, July 27, 1973, which is a division of Ser. No. 263,605, June 16, 1972, Pat. No. 3,795,605, which is a continuation-in-part of Ser. No. 53,402, July 9, 1970, abandoned, which is a continuation-in-part of Ser. No. 25,938, April 6, 1970, Pat. No. 3,687,834, which is a continuation-in-part of Ser. No. 864,851, Oct. 8, 1969, abandoned, which is a continuation-in-part of Ser. No. 811,421, March 28, 1969, abandoned. This application Aug. 21, 1974, Ser. No. 499,178
Int. Cl. B01k *5/00*
U.S. Cl. 204—180 R **10 Claims**

1. A method for separating particles from a fluid carrying the same comprising the steps of directing said fluid through an inlet means of a passage defining means having an outlet means, electrostatically directing at least some of said particles intermediate said inlet means and said outlet means solely by an electrostatic action, creating electroconvection in said fluid intermediate said inlet means and said outlet means, and removing said fluid from said outlet means, said steps of electrostatically directing at least some of said particles and of creating electroconvection in said fluid comprising the step of creating a plurality of non-uniform electrostatic fields with each field at least partially extending across said passage means and with the higher intensity portion of each field being substantially oppositely located relative to the higher intensity portion of an adjacent non-uniform field.



3,893,899
ELECTROLYTIC CELL FOR METAL PRODUCTION

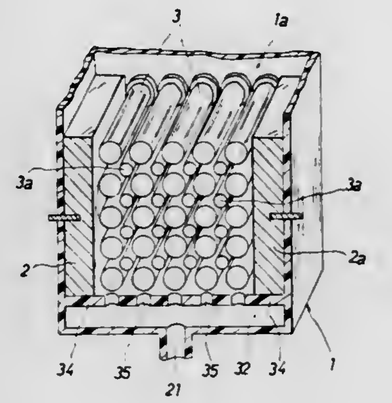
M. Benjamin Dell, Pittsburgh; Warren E. Haupin, Lower Burell, and Allen S. Russell, New Kensington, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.
Division of Ser. No. 178,650, Sept. 8, 1971, Pat. No. 3,822,195. This application Oct. 25, 1973, Ser. No. 409,588
Int. Cl. C22d *3/02*
U.S. Cl. 204—244 **9 Claims**



1. A cell for producing metal comprising
an anode, at least one intermediate bipolar electrode and a cathode in superimposed, spaced relationship defining inter-electrode spaces, each bounded by an anode surface and a cathode surface, for electrolyzing bath composed essentially of metal chloride dissolved in molten solvent, a bath supply passage extending downwardly to each inter-electrode space,
a gas lift passage extending upwardly from each inter-electrode space at a location spaced from the bath supply passage for receiving chlorine, bath and metal from the inter-electrode space, said gas lift passage being adapted upon electrolysis of bath in each inter-electrode space to cause flow of bath out of the inter-electrode space, and thus induce concurrent outward flow of metal swept therewith, and to pump bath upwardly by employment of the gas lift effect of the chlorine produced and conducted to said passage, and to permit metal flowing into said passage to settle therein,
in which cell the flow of bath down through the supply passage, through the inter-electrode spaces, and back up through the gas lift passage may be maintained by the flow of chlorine produced, while metal produced may settle in a direction counter current to the gas lift.

3,893,900
APPARATUS FOR TREATING WASTEWATER USING AN ELECTROLYTIC CELL

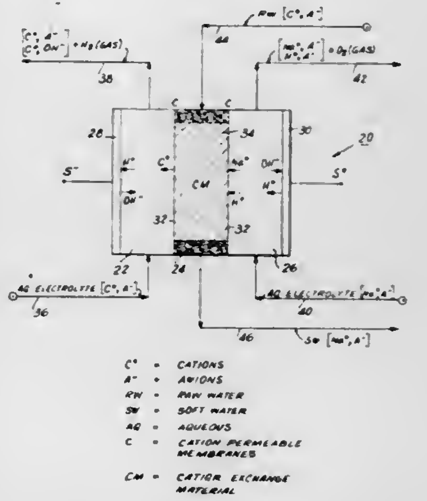
Toru Teshima, Hadano; Toshiie Nagasao; Minoru Tanaka; Kazuo Ariga, all of Tokyo, and Yoshiko Takamura, Kawasaki, all of Japan, assignors to Stanley Denki Kabushiki Kaisha, Tokyo and Kabushiki Kaisha Inoue Japax Kenkyusho, Kanagawa-ken, both of, Japan
Filed May 21, 1973, Ser. No. 362,511
Claims priority, application Japan, May 24, 1972, 47-51403; June 9, 1972, 47-57389; June 30, 1972, 47-76565
Int. Cl. B01k *3/00*
U.S. Cl. 204—268 **2 Claims**



1. Apparatus for treating wastewater comprising an electrolytic cell
a pair of main electrodes opposed in the electrolytic cell to each other,
a power source connected to the main electrodes,
a plurality of auxiliary electrodes disposed between the main electrodes, the auxiliary electrodes being bar electrodes of conductive material arranged at such spaces as to avoid short circuits thereamong and so as to form a plurality of rows and a plurality of columns, thereby effectively increasing the contact surface areas of the auxiliary electrodes and the wastewater,
said electrolytic cell having a perforated partition spaced from the bottom of the cell and defining therewith a storage cell, said storage cell having a wastewater inlet whereby wastewater is introduced into the electrolytic cell through the storage cell and the perforations in the partition, and
a plurality of insulating bars disposed in the spaces, respectively, parallel with and repetitively staggered relative to said auxiliary electrodes and isolated therefrom whereby to cause pulsating currents of the wastewater in the electrolytic cell.

3,893,901
SYSTEM FOR SOFTENING AND DEALKALIZING WATER BY ELECTRODIALYSIS

Alvaro R. Tejeda, New York, N.Y., assignor to J. Vast Associates, Inc., New York, N.Y.
Filed Dec. 4, 1973, Ser. No. 421,510
Int. Cl. B01d *13/02*
U.S. Cl. 204—301 **15 Claims**



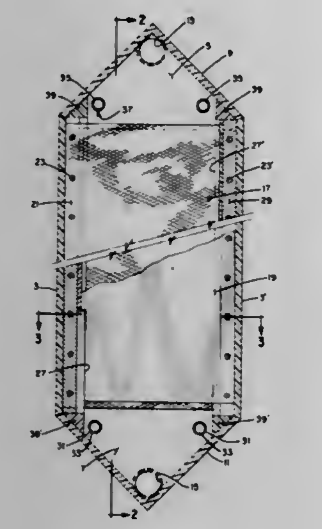
1. An electrodialytic apparatus for softening hard raw water, said apparatus comprising at least five serially disposed compartments including a first compartment having a ferrous cathode electrode disposed therein, a second compartment immediately adjacent said first compartment and separated therefrom by a cation permselective membrane, a third compartment immediately adjacent said second compartment and separated therefrom by an anion permselective membrane, a fourth compartment immediately adjacent said third compartment and separated therefrom by a cation permselective membrane, a body of cation exchange material disposed within said fourth compartment, a fifth compartment immediately adjacent said fourth compartment and separated therefrom by a cation permselective membrane, a ferrous anode electrode disposed in said fifth compartment, means for introducing hard raw water into the fourth compartment, means for introducing into and removing from the second compartment an aqueous solution of sodium chloride, means for introducing into and removing from the third compartment electorlyte fluid, means for introducing into and removing from the first and fifth compartments an aqueous caustic solution, means for impressing a direct electric current across said cathode and anode electrodes, and means for removing softened water from the fourth compartment.

3,893,902
ELECTROLYTIC SEA WATER PROCESS

Richard E. Loftfield, Chardon; John E. Bennett, and John E. Cinke, both of Painesville, all of Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio
Filed Apr. 12, 1973, Ser. No. 350,598
Int. Cl. B01k *1/00*
U.S. Cl. 204—95 **4 Claims**

1. In the method of operating a cell for the electrolysis of sea water to produce hypochlorite, which cell comprises an enclosure containing a plurality of vertically disposed electrodes in an alternate array of anodes and cathodes, the improvement which comprises reducing the formation of undesirable deposits on the electrodes by:
A. introducing sea water to the cell at a point below the electrodes through a series of orifices, substantially corresponding in number and location to at least the cathodes, the direction of the orifices being such that the sea water

first impinges primarily on nonelectrode surfaces immediately subjacent the electrodes, and the sea water velocity through the orifices being between 5 and 25 feet per second; and



B. maintaining a sea water velocity through the cell during electrolysis sufficient to at least suspend substantially all particulate matter present.

3,893,903

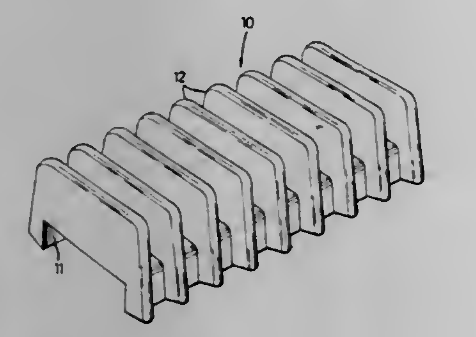
CATHODIC PROTECTION OF VEHICLES, ESPECIALLY MOTOR CARS

Jan Lindholm, Malmvagen 12 C., Sollentuna, Sweden

Filed Feb. 22, 1973, Ser. No. 334,906

Int. Cl. C23f *13/00*

U.S. Cl. 204—197 **1 Claim**



1. A device for protecting from corrosion a surface of a steel structure of a road vehicle, said device comprising a galvanic anode having a flat inner side and an outer side means carried by said inner side for attaching the anode to a surface section exposed to road dirt, said means including a permanent magnet connected to said anode, means for electrically connecting said anode with said structure, and means carried by said outer side for collecting road dirt, the last-mentioned means comprising spaced outwardly projecting parallel flange-like elongations extending on the outer side for collecting layers of dirt of greater thickness than those which would be deposited upon the unprotected surface of the steel structure.

3,893,904

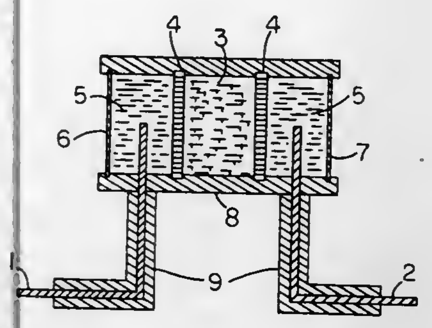
ELECTROOSMOTIC PRESSURE CELL

Albert F. Hadermann, Rt. 1, Ijamsville, Md. 21754; Paul F. Waters, 3318 45th St., Northwest, Washington, D.C. 20016, and Jung Woo Woo, 2008 N. Adams, Arlington, Va. 22201

Filed July 2, 1973, Ser. No. 375,515

Int. Cl. B01d *13/02*

U.S. Cl. 204—301 **5 Claims**



1. An electroosmotic cell, capable of use at voltages in the kilivolt range and capable of generating very high pressures, comprising a housing having flexible diaphragms on opposite sides thereof, two porous frit walls dividing the cell into three chambers, said wall of a coarse, porous insulating frit; a nonaqueous polar liquid containing a field-dissociable weak electrolyte, and a pair of platinum electrodes in the electrode compartments.

3,893,905

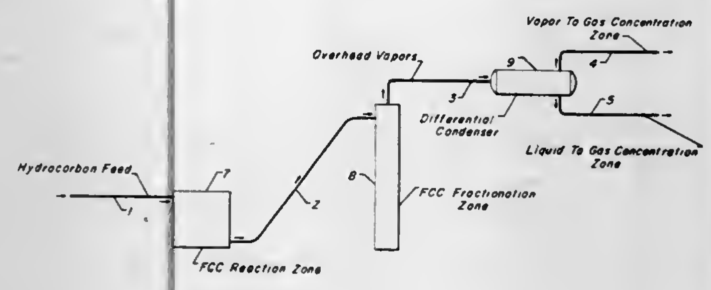
FLUID CATALYTIC CRACKING PROCESS WITH IMPROVED PROPYLENE RECOVERY

Ellsworth R. Fenske, Palatine, and Robert F. Anderson, La Grange Park, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Sept. 21, 1973, Ser. No. 399,561

Int. Cl. B01j *9/20;* **C07c** *11/06;* **C01b** *33/28*

U.S. Cl. 208—103 **3 Claims**



1. In a fluid catalytic cracking process wherein (i) a hydrocarbon feed contacts cracking catalyst at cracking conditions in a reaction zone, (ii) reaction products are withdrawn from the reaction zone and introduced into a fractionation zone, (iii) overhead vapors from the fractionation zone are passed to a condenser, and (iv) effluent from the condenser passes in separate conduits to gas concentration facilities, the improvement which comprises: condensing said overhead vapors in a differential condenser and in said differential condenser separating the overhead vapor into a gaseous phase containing propylene and a liquid phase comprising hydrocarbon molecules having 4 or more carbon atoms, said separation being effected by withdrawing liquid phase upon condensation to form gaseous and liquid phases containing a non-equilibrium distribution of propylene.

3,893,906

PRODUCTION OF LOW POUR POINT GAS OIL AND HIGH OCTANE NUMBER GASOLINE

William Everett Garwood, Haddonfield, N.J., and John J. Wise, Media, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 391,380, Aug. 24, 1973. This application Mar. 21, 1974, Ser. No. 453,246

Int. Cl.² C10G *13/02;* **C07C** *3/52*

U.S. Cl. 208—111 **11 Claims**

1. A process of upgrading petroleum fractions which comprises contacting an admixture, containing at least 10% benzene, of gasoline boiling range fraction having a boiling range of at least about C_6 to 239°F which contains at least about 20 weight percent aromatics and a gas oil fraction having an end point up to about 850°F and a pour point of at least about +20°F with a catalyst comprising a zeolite consisting essentially of a synthetic crystalline aluminosilicate zeolite derived in an organic cation containing form, having a silica to alumina ratio of at least about 12 to 1 and having a hydrogenation/dehydrogenation component; converting said admixture in the presence of hydrogen at a space velocity of about 0.5 to 20 WHSV, at a temperature of about 500° to 1,000°F and at a hydrogen to hydrocarbon ratio of about 1 to 20 to 1 to a product comprising a gas oil fraction having a lower pour point, a gasoline fraction having a higher octane and a light gas fraction; and resolving said product into said gas oil fraction, said gasoline fraction and said light gas fraction.

3,893,907

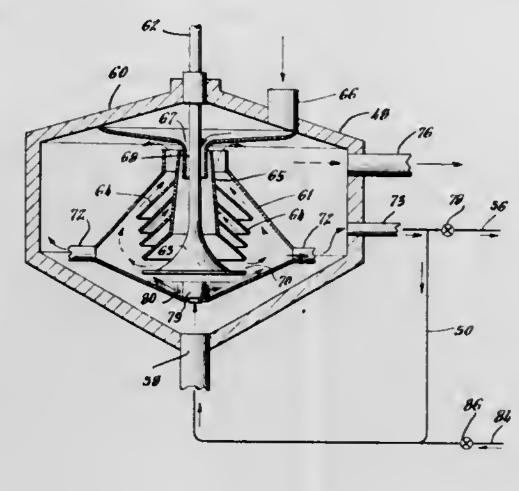
METHOD AND APPARATUS FOR THE TREATMENT OF TAR SAND FROTH

Gerard P. Canevari, Cranford, N.J., assignor to Exxon Research and Engineering Company, Linden, N.J.

Filed Sept. 10, 1973, Ser. No. 395,930

Int. Cl. C10g *1/04*

U.S. Cl. 208—11 **10 Claims**



1. A method of separating bitumen from bitumen-coated particles comprising the steps of:

forming a froth of the bitumen-coated particles by contacting and agitating the coated particles with a hot liquid;

separating the particles of the froth from the bitumen by centrifuging the froth in a disc recycling apparatus which provides a relatively light overflow effluent and a relatively heavier underflow effluent and wherein the underflow effluent of the centrifuge is fed back to an input of the centrifuge through a return flow path; and,

combining a liquid wetting transfer agent with the underflow effluent in the return flow path.

3,893,908

REFORMING WITH CATALYSTS CONTAINING A GROUP VI A METAL COMPONENT AND TECHNETIUM AS A PROMOTER

Albert L. Hensley, Jr., Munster, and Thomas D. Nevitt, Valparaiso, both of Ind., assignors to Standard Oil Company, Chicago, Ill.

Division of Ser. No. 285,302, Aug. 31, 1972, which is a continuation of Ser. No. 127,808, March 24, 1971, abandoned. This application Mar. 15, 1974, Ser. No. 451,357

Int. Cl. C10g *35/06*

U.S. Cl. 208—136 **12 Claims**

1. A process for the reforming of a petroleum hydrocarbon stream which is a member selected from the group consisting of a virgin Naphtha, a cracked Naphtha, a hydrocarbon fraction boiling in the gasoline boiling range, mildly - reformed Naphthas and mixture thereof, which process comprises contacting said hydrocarbon stream in a reforming zone under suitable reforming conditions and in the presence of hydrogen with a catalytic composition comprising a component having hydrogenation-dehydrogenation activity and dehydrocyclization activity comprising the oxides of chromium, a suitable support comprising a catalytically active alumina, and as a promoter a small amount of technetium.

3,893,909

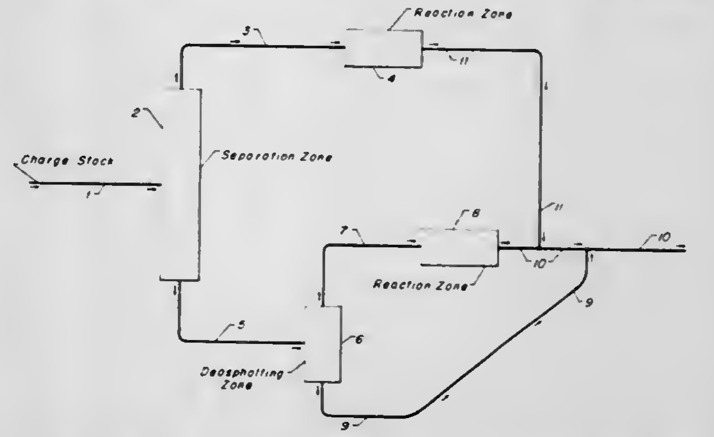
FUEL OIL PRODUCTION BY BLENDING HYDRODESULFURIZED VACUUM GAS OIL AND HYDRODESULFURIZED DEASPHALTED RESIDUUM

Charles W. Selvidge, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 212,477, Dec. 27, 1971, abandoned. This application Oct. 26, 1973, Ser. No. 409,988

Int. Cl. C10g *23/02*

U.S. Cl. 208—211 **4 Claims**



1. A process for producing fuel oil containing less than about 1.0% by weight of sulfur, from an asphaltic hydrocarbonaceous charge stock containing more than about 150 ppm. of metals, which process comprises the steps of:

a. separating said charge stock in a vacuum distillation zone to provide a vacuum gas oil fraction substantially free from asphaltics and a vacuum residuum asphaltenic fraction;

b. reacting said vacuum gas oil fraction and hydrogen in a first catalytic reaction zone containing a hydrodesulfurization catalyst, at desulfurization conditions selected to convert sulfurous compounds into hydrogen sulfide and hydrocarbons, including a catalyst bed temperature in the range of about 600°F. to about 880°F. and a pressure from about 500 to about 1,500 psig.;

c. deasphalting at least a portion of said vaccum residduum fraction with a deasphalting solvent in a solvent extraction zone to provide a solvent-rich liquid oil phase containing from about 30 to about 100 ppm. by weight of metals and a solvent-lean asphaltene concentrate;

d. reacting at least a portion of said liquid oil phase from step (c) with hydrogen in a second catalytic reaction zone, at desulfurization conditions selected to convert sulfurous compounds into hydrogen sulfide and hydrocarbons, including a pressure from about 500 to about 1,500 psig. and a catalyst bed temperature in the range of about 620°F. to about 900°F., and at least about 20°F. higher than the temperature in said first reaction zone, said catalyst in said second catalytic reaction zone comprising a Group VI-B and a Group VIII metal on alumina, said catalyst having a pore volume greater than 0.5 cc./gm.; and,

e. recovering a fuel oil product, containing less than about 1.0% by weight of sulfur by blending the desulfurized gas oil with the desulfurized liquid oil from step (d).

3,893,910
PROCESS FOR REFORMING NAPHTHAS WITH NOVEL CHYRSOTILE CATALYST COMPOSITIONS
Harry E. Robson, Baton Rouge, La.

Division of Ser. No. 233,368, March 9, 1972, Pat. No. 3,804,741, which is a division of Ser. No. 68,324, Aug. 31, 1970, Pat. No. 3,729,429. This application Aug. 24, 1973, Ser. No. 391,352

Int. Cl. C10g *35/06*

U.S. Cl. 208—138 **33 Claims**

1. A process for improving the octane quality of naphthas comprising contacting the said naptha at reforming conditions including temperatures ranging from about 400°C to about 550°C and pressures ranging from about 150 psi to about 550 psi with a catalyst composite including a chrysotile component and a metal hydrogenation component, said chrysotile component comprising a layered complex metal silicate composition characterized as having repeating units defined by the following structural formula:

$$(1-x)M^{(a)}+xM^{(b)}{}_{n}\quad(OH)_4Si_2O_5\cdot wH_2O$$

where M and M are selected from monovalent and multivalent metal cations selected from Groups I, II, III, IVB, VB, VIB, VIIB and VIII metals, of the Periodic Table of the Elements, having an effective ionic radius ranging from about 0.5 to about 1A, x is a number ranging from 0 to 1 which expresses the atomic fraction of the metals M and M, a is the valence of M, b is the valence of M, n is a number equal in value to that defined by the ratio $6/[a(1-x)+bx]$, w is a number ranging from 0 to 4, and

where $x = 0$, and M is magnesium, the surface area of the composition ranges above about 110 m²/g,

where $x = 0$, and M is nickel, the surface area of the compsotion ranges above about 125 m²/g, and

where $x = 0$, and M is cobalt, the surface area of the composition ranges above about 190 m²/g.

3,893,911
DEMETALLIZATION OF HIGH METALS FEEDSTOCKS USING REGENERATED CATALYST
William C. Rovesti, Levittown, Pa., and Ronald H. Wolk, Trenton, N.J., assignors to Hydrocarbon Research, Inc., New York, N.Y.

Filed June 24, 1974, Ser. No. 482,277

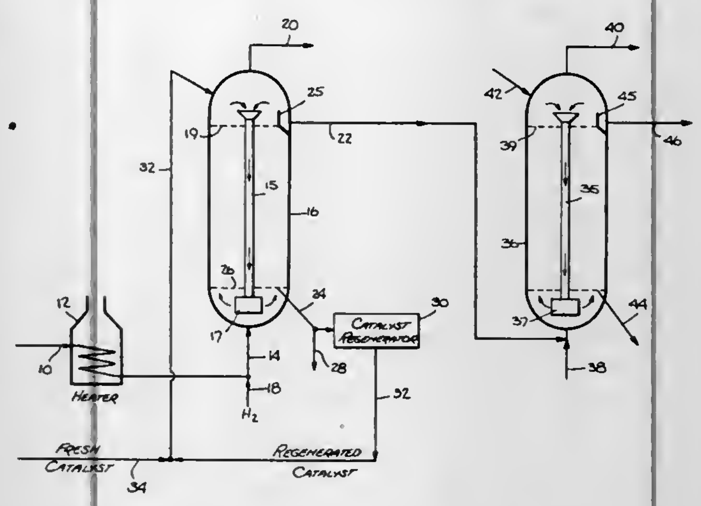
Int. Cl. C10g *23/00*

U.S. Cl. 208—251 H **10 Claims**

1. A method for demetallizing a petroleum residuum containing at least 10 ppm vanadium to obtain a product having at least 65% demetallization, wherein the residuum liquid and hydrogen are passed upwardly through a reaction zone containing a particulate catalyst at a rate sufficient to place the catalyst in random motion in the liquid but without substantial carryover of catalyst from the reaction zone and at conditions within the range of 1,000 to 3,000 psi hydrogen partial pressure, 700°–850°F temperature, and liquid space velocity of 0.2 to 2.0 $V_f/hr/V_r$, the improvement which comprises:

a. maintaining an initial charge of particulate catalyst within the reaction zone until its demetallization activity passes through a minimum value then increases and stabilizes at a relatively constant level and the catalyst contains at least about 0.5 wt. % vanadium with catalyst age exceeding about 0.3 bbl/lb;

b. then commencing withdrawal of used catalyst from the reaction zone at sufficient rate so as to maintain substantially the same stabilized demetallization activity level;



c. regenerating the withdrawn used catalyst so as to substantially remove the carbon deposits therefrom and yet retain the vanadium deposits;

d. returning the regenerated catalyst to the reaction zone at a rate approximately equal to the withdrawal rate so as to achieve a higher average vanadium removal activity in the reaction zone than by replacing the withdrawn used catalyst with fresh catalyst; and

e. withdrawing a liquid product from the reaction zone that is at least about 65 percent demetallized.

3,893,912
METHOD OF REMOVING ORGANOMETALLIC COMPOUNDS FROM LIQUID HYDROCARBONS
Abraham A. Zimmerman, New Providence, N.J., assignor to Exxon Research and Engineering Company, Linden, N.J.

Filed Apr. 8, 1974, Ser. No. 458,668

Int. Cl. C10g *17/00*

U.S. Cl. 208—253 **15 Claims**

1. A method for separating an organolead compound from liquid hydrocarbons comprising the steps of first contacting a liquid hydrocarbon having an organolead compound dissolved therein with a pretreating agent selected from the group consisting of silicon tetrachloride, iodine, cupric chloride and cupric bromide and thereafter contacting the pretreated hydrocarbon with an adsorbent useful for separating lead compounds from liquid hydrocarbons selected from the group consisting of activated carbon, acid treated clays and silica gels, and then recovering a liquid hydrocarbon having a reduced dissolved lead content therein.

3,893,913
METHOD OF REMOVING ORGANOMETALLIC COMPOUNDS FROM LIQUID HYDROCARBONS
Abraham A. Zimmerman, New Providence, N.J., assignor to Exxon Research and Engineering Company, Linden, N.J.

Filed Apr. 8, 1974, Ser. No. 458,669

Int. Cl. C10g *17/00*

U.S. Cl. 208—253 **12 Claims**

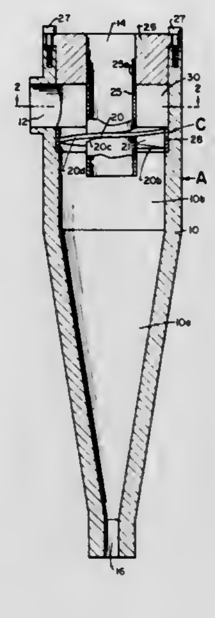
1. A method for separating an organo lead compound from liquid hydrocarbons comprising the steps of contacting a liquid hydrocarbon containing an organo lead compound dissolved therein with a substantially amorphous activated carbon impregnated with cupric chloride and recovering a liquid hydrocarbon having a reduced dissolved lead content therein.

3,893,914
CYCLONE CENTRIFUGE APPARATUS
Roy A. Bobo, Suite 215, 2000 N. Loop West, Houston, Tex. 77018

Filed Apr. 5, 1973, Ser. No. 348,336

Int. Cl. B04c *3/06, 5/06*

U.S. Cl. 209—144 **15 Claims**



1. A cyclone centrifuge apparatus for separating or classifying at least two components of different densities, comprising: a housing having a separating chamber with an inlet, a first outlet and a second outlet;

a choke assembly disposed in said chamber downstream of said inlet for creating vortical flow in said separating chamber;

a static flow chamber section between said inlet and said choke assembly;

said choke assembly controlling substantially all flow of fluid from said inlet and said flow chamber to the portion of the chamber downstream from said choke assembly, whereby said fluid enters said separating chamber from a substantially static inlet feed, preventing the inlet fluid from cutting across the fluid flow in said separating chamber; and

said choke assembly including:

a central vane support disposed in said housing and spaced radially therefrom to provide an annular area adjacent said static flow chamber; helical vane means in said annular area and having an inner edge contacting said central vane support and an outer area contacting said housing to direct all fluid from said static flow chamber across said vane means before entering the rest of the housing; and said vane means having at least two terminal vane ends which are longitudinally spaced from each other, with a downstream vane end extending substantially radially, and an upstream vane end overlapping said downstream vane end for a distance equal to approximately the radius of said central vane support and extending substantially parallel to said downstream end.

3,893,915
FLUORSPAR ORE FLOTATION
Venancio V. Mercade, Metuchen, N.J., assignor to Engelhard Minerals & Chemicals Corporation, Menlo Park, Edison, N.J.

Filed June 14, 1973, Ser. No. 369,892

Int. Cl. B03d *1/02*

U.S. Cl. 209—166 **5 Claims**

1. In the froth flotation of fluorite from a calcareous gangue with a fatty acid collector for the fluorite in an aqueous alkaline ore pulp, the improvement which consists in activating said pulp for the selective flotation of fluorite by adding a material selected from the group consisting of alkali metal bisulfite, alkali metal thiosulfate and mixtures thereof.

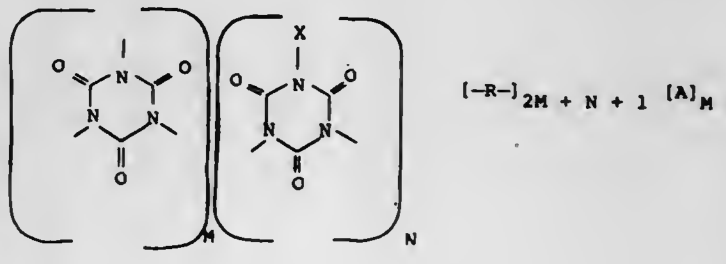
3,893,916
PRECIPITATION OF METALS FROM AQUEOUS SOLUTIONS
Perry A. Argabright, Larkspur; Larry M. Echelberger, and Brian L. Phillips, both of Littleton, all of Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Nov. 2, 1973, Ser. No. 412,056

Int. Cl. C02c *5/02*

U.S. Cl. 210—54 **4 Claims**

1. A method for the removal of metals by precipitation of of metal salts from aqueous solutions comprising dissolving into said aqueous solutions, polyisocyanurate salts which are soluble in said aqueous solutions wherein said polyisocyanurate salts are selected from the group consisting of alkali metal and ammonium salts of polyisocyanuric acids and wherein said metals are selected from the groups consisting of Al, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, Ga, Ge, Y, Zr, Nb, Mo, Tc, Ru, Rh, Pd, Ag, Cd, In, Sn, Sb, Ba, La, Hf, Ta, W, Re, Os, Ir, Pt, Au, Hg, Tl, Pb, Bi, Ra, Ac, Th, Pa, and U, wherein said isocyanurate salts have the structure:



$$[-R-]_{2M+N+1}\,[A]_{M+2}$$

and wherein

R = a divalent radical containing 2 to about 40 carbon atoms

X = an alkali metal, alkaline earth metal, or quarternary ammonium radical or combination thereof;

A = a monovalent group selected from the following: isocyanate, urethane ($NHCO_2R'$), urea and amino radicals;

R′ = a monovalent radical containing 1 to about 40 carbon atoms

M = the average number of trisubstituted isocyanurate rings

N = the average number of isocyanurate acid and/or isocyanurate salt groups;

2M + N + 1 = average of divalent R groups

M + 2 = average number of A groups and wherein there are no N—to—N bonds and no A—to—N bonds, and no A—to—A bonds, and no R—to—R bonds, and wherein said polyisocyanurate salts are present in a ratio equivalent to from about 0.5 to about 5 moles of basic isocyanurate salt groups for each mole of metals present in said aqueous solutions to be treated.

3,893,917
MOLTEN METAL FILTER
Michael J. Pryor, Woodbridge, Conn., and Thomas J. Gray, Halifax, Canada, assignors to Swiss Aluminium Limited, Chippis, Switzerland

Filed Jan. 2, 1974, Ser. No. 430,229

Int. Cl. B01d *23/02*

U.S. Cl. 210—69 **9 Claims**

1. A low cost method of filtering molten metal through a disposable filter which comprises: providing a mass of molten metal; providing a ceramic foam material having an open cell structure characterized by a plurality of interconnected voids surrounded by a web of said ceramic, said ceramic foam

material having a density of less than 30% of the theoretical density for a ceramic material of the same size, said ceramic foam material being formed by impregnating an open cell flexible organic foam having a plurality of interconnected voids surrounded by a web of said foam with an aqueous ceramic slurry so that the web is coated therewith and the voids are filled therewith, expelling slurry therefrom while leaving the web coated therewith, drying said coated foam and heating the dried coated foam to form said ceramic foam; and pouring said molten metal through said ceramic foam material at a rate of from 5 to 500 cubic inches per square inch of filter area per minute, thereby removing entrained solids from said molten metal.

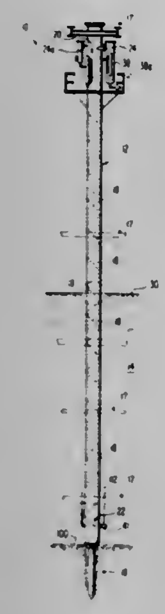
3,893,918
METHOD FOR SEPARATING MATERIAL LEAVING A WELL

Uncas Favret, Jr., Metairie, La., assignor to Engineering Specialties, Inc., Kenner, La.

Continuation of Ser. No. 201,091, Nov. 22, 1971, abandoned. This application July 24, 1973, Ser. No. 382,156

Int. Cl. B01d *17/02*

U.S. Cl. 210—84 **6 Claims**



1. A method of recovering oil from an oil-containing fluid mixture at an oil-handling facility located adjacent a body of water and disposing of the relatively oil-free fluid into the body of water, the method utilizing an elongate separator conduit means, the method comprising:

disposing the separator conduit means in a generally upwardly extending posture with an exit zone thereof in continuous communication with the body of water beneath the surface thereof to establish within the separator conduit means a fluid column to a height responsive to the mean water level of the body of water; supplying an oil-containing fluid mixture into the fluid column within the separator conduit means to cause the fluid in the separator conduit means to flow downwardly through a flowing zone established along the separator conduit means and over a plurality of baffle means spaced along the flowing zone to induce coalescent separation of oil from the fluid;

intermittently interrupting the supply into the fluid column to impede the downward velocity of fluid in the flowing zone for a waiting time period sufficient to permit oil to rise from the flowing zone into quiescent zones defined by the baffle means adjacent the undersides thereof;

flowing oil accumulated in the quiescent zones upwardly in the separator conduit means along a flow path essentially isolated from the downward flowing zone to the upper region of the fluid column therewithin so as to establish an upper oil layer of the fluid column;

said oil flowing step including the step of flowing oil accumulated in lower ones of the quiescent zones through upper ones of the quiescent zones;

sensing, at a location below the mean water level of the body of water, the interface between the upper oil layer and fluid of the fluid column therebelow;

controllably withdrawing oil from that upper oil layer in response to sensing of that interface;

flowing relatively oil-free fluid from the exit zone of the separator conduit means into the body of water beneath the surface thereof; and

the supply of the oil-containing fluid mixture into the fluid column being at a level in the separator conduit means below a predetermined low interface level.

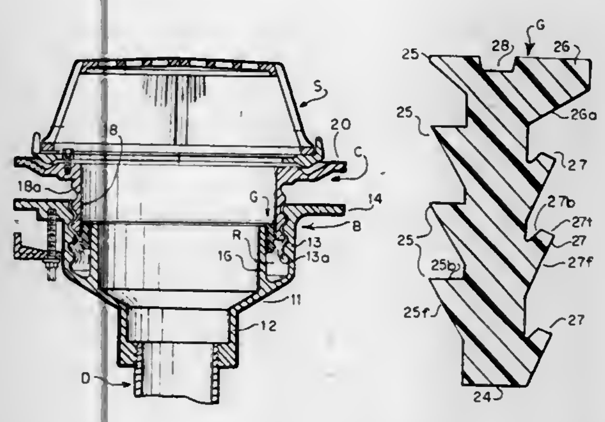
3,893,919
ADJUSTABLE TOP DRAIN AND SEAL

George J. Flegel, Michigan City, Ind., and William L. Zopfi, Ferndale, Mich., assignors to Josam Manufacturing Co., Michigan City, Ind.

Filed Oct. 31, 1973, Ser. No. 411,447

Int. Cl. B01d *23/00*

U.S. Cl. 210—166 **6 Claims**



1. In a combination, with a roof drain comprising, as a top inlet portion, an adjustable collar having a male-threaded downward annularly cylindrical extension vertically adjustably threadedly engaged in a female-threaded bowl as a drain bottom portion having a drain outlet, the bowl having an annular caulking recess receiving the bottom end of the threaded extension, said recess being defined by an upwardly open cylindrical integral bowl caulking flange coaxially spaced inwardly from the female-threaded bowl portion and circumferentially joined to the bowl below the bottom end of the female thread thereof, said flange being coaxially spaced also from the cylindrical interior of the collar extension;

a collar-to-bowl seal provided by a resilient elastomeric sleeve gasket, said gasket comprising

a cylindrical body,

a heavy continuous inward peripheral lip projecting from the top end of the body inwardly over, and having an undersurface continuously sealingly engaged with, a top edge of the said caulking flange,

a set of at least two upwardly sloped, circumferentially continuous, internal thin fins axially spaced on said body under the said lip, and

a set of at least two upwardly sloping, heavy circumferentially continuous external ribs axially spaced on said body,

said sets making sealing contacts respectively with the flange exterior and collar interior cylindrical surfaces.

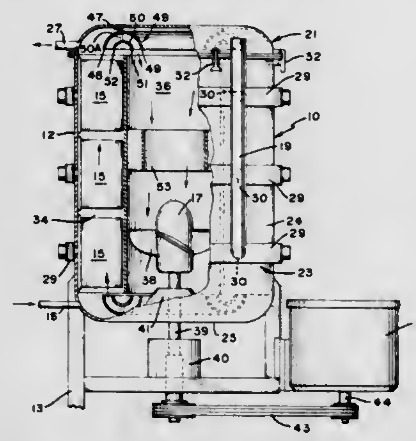
3,893,920
MEMBRANE SEPARATION EQUIPMENT

Peter J. Hubbard, Darien, and Eric L. Sandstrom, Bethel, both of Conn., assignors to Dorr-Oliver Incorporated, Stamford, Conn.

Filed May 3, 1973, Ser. No. 356,727

Int. Cl.² B01D *31/00*

U.S. Cl. 210—197 **11 Claims**



1. Apparatus for housing in operative relationship a plurality of individual ultrafiltration separation units each having a plurality of semi-permeable membrane surfaces for separating solids from a carrier liquid fed to said apparatus, said apparatus comprising:

a. an enclosed casing having inner and outer sidewall surfaces;

b. inlet means for receiving the carrier liquid and outlet means for discharging a concentrated solution both provided on said casing,

c. means mounting said separation units in spaced relationship within said casing upon said inner sidewall surfaces, d. permeate outlet means extending from each of said separation units through said casing sidewalls,

e. liquid circulation and solids concentrating means provided within said casing for directing said carrier liquid fed to said casing across the membrane surfaces of said separation units,

f. said circulation and solid concentrating means including an open circulation conduit provided within said casing and spaced from said separation units for providing an uninterrupted flow path for the carrier liquid and pump means within said conduit operable to direct said carrier liquid through said conduit and across the membrane surfaces of all of said separation units, said pump means further operable to recirculate the carrier liquid containing said concentrated solids through the open circulation conduit in a continuous path until a selected concentrated solids level is effected.

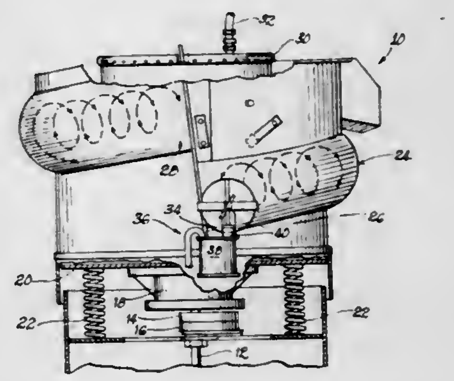
3,893,921
FLOCCULATION DEVICE FOR WASTE FLUID TREATMENT

Carl Kurt Walther, Wuppertal-Vohwinkel; Klaus Beckschäfer, Kaarst, and Karl E. Temme, Wuppertal, all of Germany, assignors to Wheelabrator-Frye Inc., New York, N.Y.

Filed Nov. 27, 1973, Ser. No. 419,261

Int. Cl. B01f *9/00*

U.S. Cl. 210—206 **4 Claims**



1. An apparatus for flocculation of a waste fluid discharge comprising:

a vibrational treatment device;

a tank connected to and vibrating with said treatment device and receiving said waste fluid via a first inlet communicating with said tank adjacent a bottom surface thereof; means for supplying a flocculating agent to said tank including a second inlet in the proximity of said first inlet through which said flocculating agent is injected into said tank to effect flocculation of said waste fluid upon mixing therewith due to the vibration of said tank; and

means for discharging the floccule-containing waste fluid from said tank.

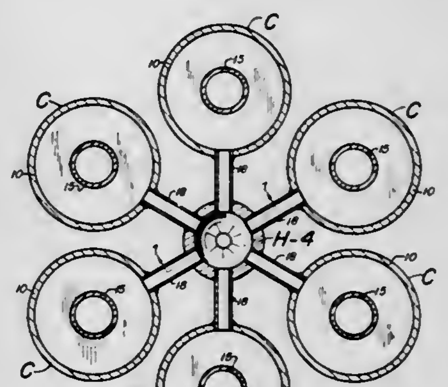
3,893,922
CYLINDRICAL CYCLONE CENTRIFUGES

Roy A. Bobo, 2000 N. Loop West, Suite 215, Houston, Tex. 77018

Filed Dec. 14, 1972, Ser. No. 315,233

Int. Cl. B04c *3/06*

U.S. Cl. 209—211 **6 Claims**



1. Cyclone centrifuge apparatus, comprising:

a cylindrical separator tank having an upper inlet and a lower outlet, and a cylindrical vertical tank wall, which is entirely cylindrical, between said inlet and said outlet;

means for directing a feed fluid having solid particles of various weights therewith from said inlet in a direction to create a cyclone flow of such fluid within said tank to effect a separation of the solid particles into a heavy phase near said wall of said tank and a light phase towards the center of said tank;

said tank having a closed lower end with said lower outlet for the discharge of the light phase from said tank;

a heavy phase fluid outlet in the wall of said tank near its lower end for the discharge of the heavy phase of the solid particles; and

heavy phase control means connected to said heavy heavy fluid outlet only and having a plurality of means therewith for creating substantially equal successive pressure drops in the fluid discharging for thereby creating a predetermined pressure drop in the fluid discharging with said heavy phase with an adequate size for said outlet to inhibit plugging thereof with solid particles in said heavy phase while the same time avoiding an excessive pressure drop which would interfere with the cyclone separation in said cylindrical separator tank.

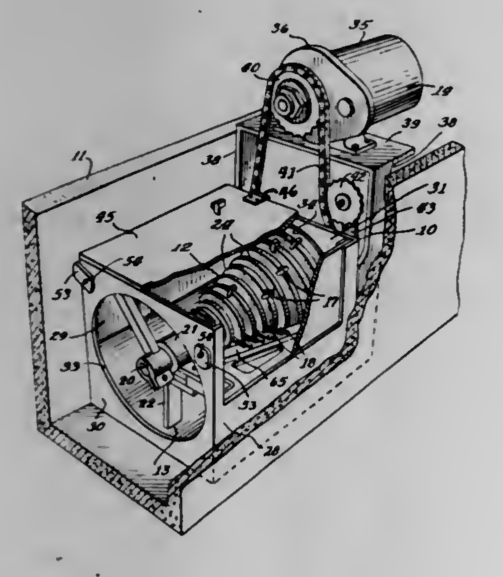
3,893,923
SCREENING AND COMMINUTING DEVICE

Stanley P. Rudzinski, 1156 S. Lombard Ave., Oak Park, Ill. 60304

Continuation-in-part of Ser. No. 329,585, Feb. 5, 1973, Pat. No. 3,812,967. This application May 23, 1974, Ser. No. 472,681The portion of the term of this patent subsequent to May 28, 1991, has been disclaimed.

Int. Cl. B01d *33/00*

U.S. Cl. 210—161 **9 Claims**



1. In a screening and comminuting device including a rotor having co-axial screening rings spaced apart axially to form fluid passages therebetween, a stationary cutter support bar and support structure for rotatably supporting said rotor in a channel for flow of fluid through said passages and for maintaining said support bar in fixed relation to the upstream surface of said rotor, the combination comprising movable cutter bits mounted on said rings, each bit having a cutting edge portion extending generally axially of the rotor and projecting from the upstream side of said rings, and stationary cutter bits mounted on said support bar, each of said stationary bits having a cutting edge aligned for coaction with said cutting edge of a respective one of said bits on said rings; said stationary bits also having a radially extending portion projecting into a respective one of said passages between adjacent ones of said rings for removing solid material deposited in said passage.

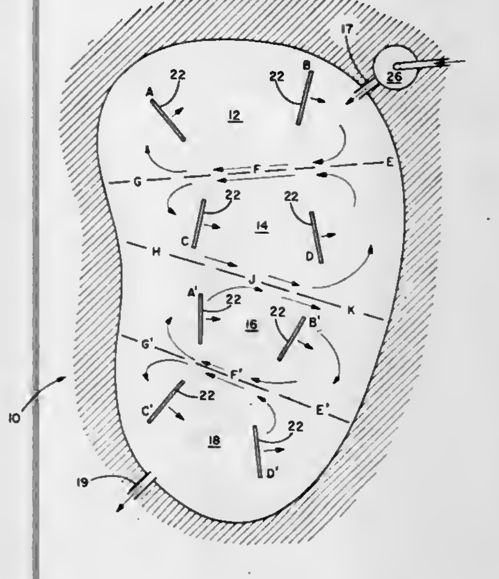
3,893,924
AEROBIC LAGOON WASTE TREATMENT SYSTEM AND METHOD

Archie R. Le Compte, Jr., Neenah, and David W. Appel, Oshkosh, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Oct. 19, 1973, Ser. No. 407,922

Int. Cl. C02c *1/12*

U.S. Cl. 210—220 **6 Claims**



1. Aerobic waste treatment system comprising, in combination,

a. a lagoon for receiving waste-containing liquids, said lagoon including at least one circulation cell having a length, α, width, β, and liquid depth, Σ; and

b. unidirectional ejector manifolds having a length, Δ, positioned at a plurality of locations within said cell at a depth, Γ, in said receiving means and wherein the ejectors are substantially horizontally directed to induce a primary circulation pattern around each cell having an average velocity of at least about 0.3 foot per second and a helical secondary circulation pattern within said cell so as to substantially reduce the tendency of solids to settle within said cell and form sludge; wherein α/β is between 1 and 3, Δ/β is between 0.25 and 0.45, and Γ/Σ is greater than 0.5.

3,893,925
OIL SEPARATOR WITH COALESCING MEDIA

Loyd W. Jones, Tulsa, Okla., assignor to Amoco Production Company, Tulsa, Okla.

Filed Aug. 16, 1971, Ser. No. 171;822

Int. Cl. B01d *17/04*

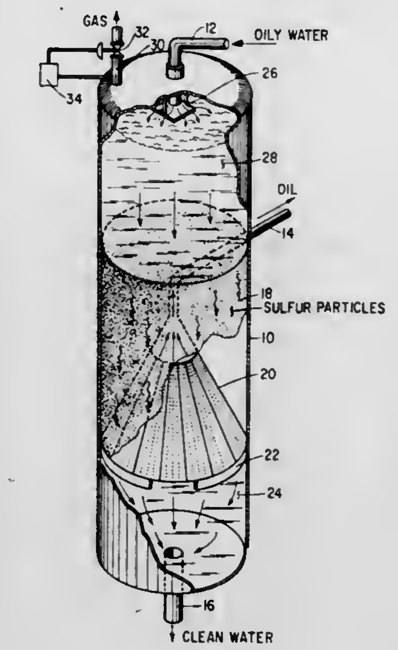
U.S. Cl. 210—266 **9 Claims**

8. A downflow apparatus for removing finely dispersed oil from oily water which comprises:

a vessel having an oily water inlet at the top thereof, a water outlet at the bottom, and an oil outlet intermediate said oily water inlet and said water outlet;

a bed of particles in said vessel having a coalescing effect on oil;

an inverted cone member in and extending across said vessel forming a bottom support for said bed, said inverted cone member being perforated and provided with a plurality of protected channels for collecting coalesced oil and extending from the lower edge of the core members to its apex which is connected to said oil outlet.



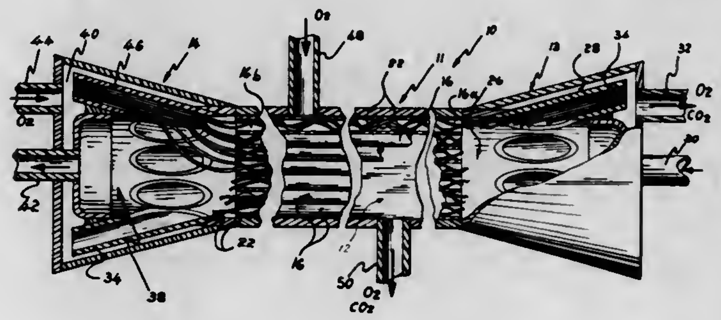
3,893,926
MEMBRANE FLUID DIFFUSION EXCHANGE DEVICE

John A. Awad, 632 Charron, Ste-Foy, Quebec, Canada

Filed July 24, 1973, Ser. No. 382,110

Int. Cl. A61m *1/03;* **B01d** *13/00*

U.S. Cl. 210—321 **12 Claims**



1. A membrane fluid diffusion exchange device comprising: a housing defining a closed chamber therein; a plurality of tubular diffusing membranes extending through said chamber; first inlet and outlet means opening in said chamber for circulating a treating fluid therein over the external surfaces of said tubular membranes; second inlet and outlet means provided in said housing for circulating in said tubular membranes a fluid to be treated; a plurality of capillary diffusing membranes disposed in each of said tubular membranes; and third inlet and outlet means provided in said housing for circulating a similar treating fluid in said capillary membranes; said treating fluid diffusing through the walls of said tubular membranes and said capillary membranes to treat said fluid circulating in said tubular membranes.

3,893,927
FILTERED THROTTLING VALVE

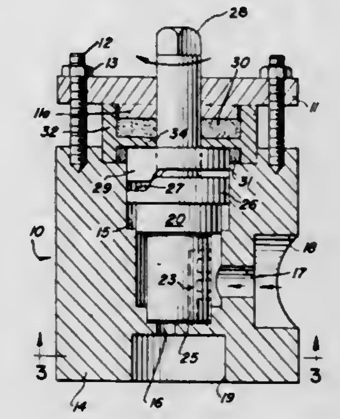
Ramsey L. Cronfel, 1391 Cumberland, Elk Grove, Ill. 60007

Filed July 27, 1973, Ser. No. 383,181

Int. Cl. B01d *29/20;* **F16k** *1/52*

U.S. Cl. 210—418 **6 Claims**

1. A pressure valve for throttling flow comprising a valve body having an inlet port and an outlet port, control means in said body for providing a fluid communication from said inlet to said outlet, said control means including a descending well extending from the top of said body to said outlet port and being in communication with said inlet port, an elongated valve stem movably mounted in said well for controlled axial and rotary motion, seating means within said well around said outlet port for cooperating with said valve stem to throttle the flow, movement means for imparting axial and rotary motion to said valve stem, and said valve stem having internal transfer passages which cooperate with said seating means when said valve stem is in a valve throttling position allows fluid flow through said transfer passages between said inlet and outlet ports and when said stem is cammed into a valve seated position prevents fluid flow through said transfer passages between said inlet and outlet ports; filtering means integral with said transfer passages and having a filtering inlet area which is greater than the filtering outlet area and being arranged to strain the throttled flow, packing means for movably sealing said valve stem at the upper part of said body to prevent fluid from leaking from said body.



3,893,928
CARBONACEOUS COMPOSITE MATERIAL AND PROCESS FOR PREPARING SAME

Katsuhiro Ono; Haruo Shikuma; Tadao Shigeta; Toshihide Nishimura, and Makoto Kitamura, all of Chiba, Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo-to, Japan

Filed July 14, 1972, Ser. No. 271,736

Claims priority, application Japan, July 17, 1971, 46-53284; July 20, 1971, 46-54465

Int. Cl. B32b *5/16*

U.S. Cl. 252—1 **2 Claims**

1. Carbonaceous composite material consisting essentially of discrete hollow vitreous microspheres and powdered inorganic reinforcing agent generally uniformly distributed in a carbonized pitch or asphalt binder, said reinforcing agent being selected from the group consisting of a metal, metal salt, and metal oxide, said microspheres being present in an amount having a weight ratio relative to said carbonized binder of about 4:1–1:1 and said reinforcing agent constituting about 1–20% by weight of the aggregate weight of the microspheres and carbonized binder.

3,893,929
COMPOSITIONS FOR IMPARTING RENEWABLE SOIL RELEASE FINISH TO POLYESTER-CONTAINING FABRICS

Marino S. Basadur, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 193,569, Oct. 28, 1971, abandoned. This application Feb. 1, 1973, Ser. No. 328,824

Int. Cl. D06m *13/20*

U.S. Cl. 252—8.6 **11 Claims**

1. A composition of matter, particularly suitable for use in preparing dilute aqueous acidic baths wherein a renewable soil release finish is applied to polyester-containing fabrics, said compositions comprising from about 5 percent to about 97.5 percent by weight of a soil release agent, said soil release agent being a copolymer comprising

1. a dibasic carboxylic acid of the following general formula
   HOOCH-A-COOH
   wherein A is a bivalent organic radical selected from the group consisting of alkylene, arylene, aralkylene, alkarylene and cycloalkylene radicals having from 3 to about 14 carbon atoms,
2. a glycolic compound which is a polyglycol selected from the group consisting of compounds of the following general formula

$$H[\text{-O-B-}]_nOH$$

wherein B is a bivalent organic radical selected from the group consisting of alkylene and cycloalkylene radicals having from 2 to about 4 carbon atoms, and wherein n indicates the degree of polymerization and ranges from about 6 to about 500, and wherein the ratio of dicarboxylic acid to total glycolic compounds is 1:1 and the average molecular weight is from about 1,000 to about 100,000, and from about 2.5 to 95 percent of a water soluble acidic compound, said composition being substantially free of materials which cause swelling of polyester fibers and also being substantially free of synthetic acid emulsion polymers.

3,893,930

DETERGENT-SOFTENER COMPOSITIONS CONTAINING ESTERS OF DICARBOXYLIC ACIDS AND POLYHYDROXY TERTIARY AMINES

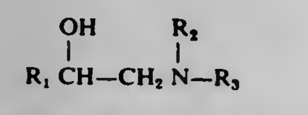
Bjorn Sundby, Piscataway, and Harold Eugene Wixon, New Brunswick, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Dec. 6, 1971, Ser. No. 205,290

Int. Cl. D06m *13/20*

U.S. Cl. 252—8.8 **15 Claims**

1. A detergent composition having inherent softening properties containing as essential ingredients about 5–30 percent weight of a dual detergent and softening compound selected from the group consisting of esters of dicarboxylic acids of the group consisting of phthalic, succinic, maleic, glutaric, tartaric, malic, adipic, diphenic and naphthalic acids and polyhydroxy tertiary mono functional amines, said amine having the structural formula:



$$R_1\,\overset{\displaystyle OH}{\overset{|}{C}H}-CH_2\,\overset{\displaystyle R_2}{\overset{|}{N}}-R_3$$

wherein R_1 is an alkyl radical of 8 to 24 carbon atoms, R_2 is an alkyl or alkylol radical containing 1 to 6 carbon atoms, and R_3 is an alkylol radical containing 1 to 6 carbon atoms and the alkali metal, ammomium, mono-, di- and trialkyl, or mono-, di- and trialkanol amines salts of said ester in which the alkyl and alkanol groups of the amine contain from 1 to 4 carbon atoms salts thereof and about 70-95 percent by weight of water-soluble builder salt.

3,893,931

ESTER LUBRICANTS SUITABLE FOR USE IN AQUEOUS SYSTEMS

Robert J. Sturwold, and Fred O. Barrett, both of Cincinnati, Ohio, assignors to Emery Industries, Inc., Cincinnati, Ohio

Division of Ser. No. 384,674, Aug. 1, 1973, Pat. No. 3,857,865. This application July 22, 1974, Ser. No. 490,874

Int. Cl.² C10M *1/06, 3/04, 5/04, 7/08*

U.S. Cl. 252—49.5 **4 Claims**

1. An aqueous lubricant composition suitable for metalworking and having improved rust protection properties containing about 0.1 to about 25 percent by weight of an ester comprising the condensation product of 0.05 to about 0.5 equivalent polyoxyalkylene glycol having a molecular weight from about 200 to about 1000 and having repeating alkylene units containing from 2 to 4 carbon atoms, 0.5 to 0.95 equivalent monofunctional alcohol of the formula ROH where R is an aliphatic hydrocarbon radical containing from 1 to about 20 carbon atoms and 1.0 equivalent of an aliphatic dibasic acid containing from about 30 to 60 carbon atoms, said ester having an acid value less than 25, a hydroxyl value less than 25 and containing about 2 to about 40 percent by weight polyoxyalkylene glycol.

3,893,932

PRESSURE FIXABLE TONER

Jack C. Azar, Rochester, and Marianne C. O'Neill, Macedon, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed July 13, 1972, Ser. No. 271,330

Int. Cl. G03g *9/00*

U.S. Cl. 252—62.1 **2 Claims**

1. An electrostatographic toner material comprising finely divided toner particles, said toner particles having a particle size range from about 0.5 to about 1000 microns and a blocking temperature of at least about 100°F, said toner material comprising a colorant selected from the group consisting of pigments, dyes and mixtures thereof, an adhesive soft solid core material said core material including the reaction product of isopropylidenediphenoxypropanol and adipic acid and a plasticizer encapsulated in a shell material.

3,893,933

PROCESS FOR PRODUCING ENCAPSULATED TONER COMPOSITION

Robert Warren Brown, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 23, 1973, Ser. No. 335,279

Int. Cl. G03g *9/02*

U.S. Cl. 252—62.1 **5 Claims**

1. A process for producing encapsulated toners comprising dissolving a polymer A in a monomer whose polymer B is incompatible with polymer A to form a solution, said polymer B being soluble in its own monomer, dispersing said solution in a continuous phase, polymerizing said monomer resulting in polymer B phase separating as the solvent-rich phase to provide a wall for a core which comprises polymer A.

3,893,934

SOLID DEVELOPER FOR ELECTROSTATIC LATENT IMAGES

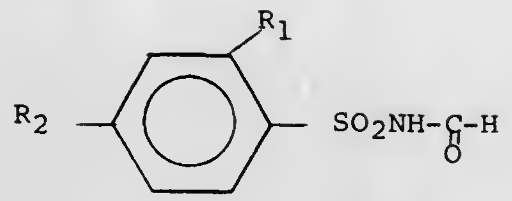
Robert A. Braun, and Robert Mermelstein, both of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 26, 1973, Ser. No. 336,158

Int. Cl. G03g *9/02*

U.S. Cl. 252—62.1 **10 Claims**

1. A solid electrostatographic developer material comprising particles, said particles including finely-divided toner material having a particle size of up to about 30 microns, a melting point of at least about 110°F, a melt viscosity of less than about 2.5×10^{-4} poise at temperatures up to about 450°F, said toner material comprising a colorant selected from the group consisting of pigments, dyes, and mixtures thereof, a thermoplastic resin consisting essentially of a vinyl polymer having a melting point of at least about 110°F, and from about 5 percent to about 55 percent by weight, based on the weight of said vinyl polymer, of an arylsulfonamide formaldehyde adduct having a melting point between about 50°F and about 250°F and having the general structure



wherein R_1 and R_2 are either hydrogen or methyl provided that where R_1 or R_2 is methyl, the other is hydrogen.

7. A solid electrostatographic developer material according to claim 1 wherein said finely-divided toner particles are electrostatically coated on the surface of carrier particles having an average particle diameter between about 50 to about 1,000 microns.

3,893,935

ELECTROGRAPHIC TONER AND DEVELOPER COMPOSITION

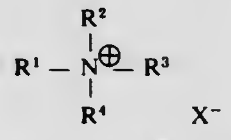
Thomas A. Jadwin; Alec N. Mutz, and Bruce J. Rubin, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 257,524, May 30, 1972, abandoned. This application Sept. 20, 1973, Ser. No. 399,226

Int. Cl. G03g *9/00*

U.S. Cl. 252—62.1 **18 Claims**

1. A dry particulate electroscopic toner composition for use in developing electrostatic charge patterns comprising finely-divided particles comprising a resin having incorporated therein a quaternary ammonium charge control agent having the following formula:



$$R^1-\overset{\displaystyle R^2}{\underset{\displaystyle R^4}{\overset{|}{\underset{|}{N}}}}{}^{\oplus}-R^3 \qquad X^-$$

wherein R^1, R^2, R^3 and R^4 represent an aliphatic hydrocarbon group having one to seven carbon atoms and X^- represents an anionic function.

3,893,936

CONTROL OF BACTERIA WITH DETERGENT OR CLEANING COMPOSITIONS CONTAINING PHENYLTHIOUREAS

Adolf Hubele, Riehen, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

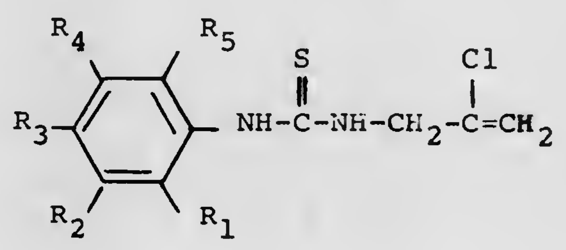
Division of Ser. No. 34,594, May 4, 1970, abandoned. This application May 8, 1972, Ser. No. 250,937

Claims priority, application Switzerland, May 7, 1969, 7008/69; July 25, 1969, 11440/69. The portion of the term of this patent subsequent to May 21, 1991, has been disclaimed.

Int. Cl. C11d *3/48*

U.S. Cl. 252—106 **15 Claims**

1. A method for controlling bacteria comprising applying to an area infested with said bacteria a detergent or cleaning composition comprising bacteriostatically effective amount of a compound of the formula



in which each of R_1, R_2, R_3, R_4 and R_5 is hydrogen, chlorine, bromine, nitro, alkyl of from 1 to 4 carbon atoms, or trifluoromethyl.

3,893,937

WETTING AGENTS FOR ALKALINE BATHS

Franz Landauer, Frankfurt am Main; Claus Beermann, Neu-Isenburg; Martin Reuter, Kronberg, Taunus; Karl Heinz Lebkucher, Hofheim, Taunus, and Hubert Kiesling, Schwalbach, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation-in-part of Ser. No. 99,264, Dec. 17, 1970, Pat. No. 3,730,903, which is a continuation-in-part of Ser. No. 701,119, Jan. 29, 1968, abandoned. This application Feb. 12, 1973, Ser. No. 331,467

Claims priority, application Germany, Feb. 2, 1967, 1619040The portion of the term of this patent subsequent to May 1, 1990, has been disclaimed.

Int. Cl. C11d *7/12*

U.S. Cl. 252—156 **5 Claims**

1. Detergent mixture consisting essentially of
   a. about 10 to about 80 percent by weight of an alkyl sulfonic acid derived from light petrol boiling at 30°– 80°C or an alkali metal salt thereof, having on an average one sulfonic acid group per 7 carbon atoms at most or a mixture thereof,
   b. about 20 to about 85 percent by weight of an amine of the formula

$$R-N\,[\,(C_nH_{2n}\text{–}O)_mH]\;2$$

in which R is alkyl of 2 to 5 carbon atoms, *n* is 2 or 3 and *m* is a number of 1 to 2, and

   c. about 1 to about 15 percent by weight of a phosphoric acid ester of alkanols of 4 to 8 carbon atoms.

3,893,938

CHEMILUMINESCENT ARTICLE OF BIS-ESTER OF OXALIC ACID AND METHOD OF PROVIDING CHEMILUMINESCENT LIGHT

Michael McKay Rauhut, Norwalk, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 162,698, July 14, 1971, abandoned, which is a continuation of Ser. No. 741,517, July 1, 1968, abandoned. This application May 14, 1973, Ser. No. 360,287

Int. Cl. C09k *3/00*

U.S. Cl. 252—188.3 CL **5 Claims**

1. An article of manufacture comprising a substrate in sheet form having incorporated therewith a chemiluminescent component comprising a bis-ester of oxalic acid, said substrate being inert to said component.

4. A method for providing chemiluminescent light which comprises applying to a substrate having an oxalate-type chemiluminescent component incorporated therewith as in claim 1, a vapor capable of causing a reaction with said oxalate in the presence of a fluorescer, to produce chemiluminescence.

3,893,939

ACTIVATED PHOSPHORS HAVING MATRICES OF YTTRIUM-TRANSITION METAL COMPOUND

Edward L. De Kalb, and Velmer A. Fassel, both of Ames, Iowa, assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Jan. 4, 1973, Ser. No. 321,064

Int. Cl. C09k *1/36*

U.S. Cl. 252—301.4 P **2 Claims**

1. A luminescent phosphor composition comprising an iron-yttrium phosphate as a matrix host having a stoichiometric composition of $Y_xFe_yPO_4$ where *x* is about 0.8 and *y* is about 0.2, said matrix host incorporating a quantity of activator element in effective amount in excess of 5 ppm by weight to produce detectable luminescence on X-ray excitation, said

activator element selected from the group of fluorescing lanthanides consisting of Ce, Pr, Nd, Sm, Eu, Tb, Dy and Er.

3,893,940

METHOD OF MANUFACTURING SURFACE ACTIVE AGENT HAVING LOW CONTENT OF UNREACTED OIL

Toshiaki Ohogoshi, and Akira Kawakami, both of Funabashi, Japan, assignors to Lion Fat & Oil Co., Ltd., Tokyo, Japan
Filed Oct. 31, 1972, Ser. No. 302,511
Claims priority, application Japan, Nov. 5, 1971, 46-87682
Int. Cl. B01f *17/02*

U.S. Cl. 252—353 **9 Claims**

1. A method of removing unreacted oil from a member of the group consisting of a salt of (A) a sulfate and (B) a sulfonate of an oil selected from the group consisting of (1) olefin having 12 to 22 carbon atoms, (2) paraffin having 12 to 22 carbon atoms, (3) aliphatic monohydric alcohol having eight to 22 carbon atoms, and mixtures of said salts, said salt containing an appreciable amount of unreacted oil, which comprises: mixing a material consisting essentially of an aqueous solution of said salt containing said unreacted oil, with 0.1 to 10.0 times as much, based on the weight of said salt, of a substance selected from the group consisting of (a) a polyhydric alcohol, (b) a polyoxyalkylene alkyl ether, (c) a polyoxyalkylene alkyl phenyl ether, and (d) mixtures of (a), (b) and (c), said substance being essentially the only treating agent added to said solution, and then subjecting the resulting liquid mixture consisting essentially of said aqueous solution of said salt, said oil and said substance, to stripping to remove said unreacted oil.

3,893,941

FOAM INHIBITING COMPOSITION

Raymond J. Michalski, Riverdale, and Chappelle C. Cochrane, Maywood, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.
Division of Ser. No. 179,161, Sept. 9, 1971, Pat. No. 3,772,207. This application July 11, 1973, Ser. No. 378,378
Int. Cl. B01d *19/04*

U.S. Cl. 252—358 **3 Claims**

1. A foam inhibiting composition for inhibiting foaming in aqueous systems having a pH within the range of 1 to 7.5 comprising:

	Ingredients	Parts by Weight
(A)	A long chain water insoluble, oil insoluble amide having one or more hydrogen atoms attached to the amide nitrogen atom substituted by a hydrocarbon group containing 6 to 24 carbon atoms, said amide being selected from the group consisting of sulfamides, ureas and thioureas,	2–10
(B)	A water insoluble, oil insoluble copolymer of ethylene and polyvinyl acetate having a weight average molecular weight within the range of 300 to 1000 which has been saponified to replace acetate groups by hydroxyl groups	2–10
(C)	A water insoluble hydrocarbon oil	65–90

and a sufficient amount of a surfactant having an HLB value within the range of 8 to 12 to act as a spreading agent for said composition in said aqueous system, the weight ratio of (A) to (B) being within the range of 5:1 to 1:5.

3,893,942

ISOPARAFFIN ALKYLATION PROCESS WITH PERIODIC CATALYST REGENERATION

Chang-Lee Yang, Ossining, N.Y., assignor to Union Carbide Corporation, New York, N.Y.
Filed Sept. 27, 1973, Ser. No. 401,396
Int. Cl. B01j *11/02*

U.S. Cl. 252—411 **5 Claims**

1. In an alkylation process in which an olefin containing from two to five carbon atoms inclusive is contacted and reacted with isobutane in a catalytic conversion zone containing a catalyst composition comprising at least one hydrogenation agent of the group nickel, platinum, palladium rhodium and ruthenium and a three-dimensional crystallene zeolitic molecular sieve having a pore size large enough to adsorb 2,2,3 trimethylpentane, an alkali metal content less than 3.5 weight percent based on the weight of dehydrated zeolite and an SiO_2/Al_2O_3 molar ratio of at least 2.0, said contact being continued until the alkylation activity of the catalyst has decreased, the improvement which comprises contacting and hydrogenating said catalyst composition having decreased activity with hydrogen gas at a partial pressure of from 0.01 to 1000 atmospheres and at a temperature of from 80°F to 572°F for a sufficient period of time to improve the alkylation activity of the catalyst, and thereafter again contacting said hydrogenated catalyst composition with a feed stock comprising a monoolefin and isobutane under the said alkylation conditions without an intervening oxidative regeneration of said catalyst composition.

3,893,943

NOVEL CATALYST AND PROCESS FOR PREPARING THE SAME

John W. Willard, Sr., Rapid City, S. Dak., assignor to CAW Industries, Inc., Rapid City, S. Dak.
Continuation of Ser. No. 108,198, Jan. 20, 1971, abandoned. This application Dec. 20, 1972, Ser. No. 317,097
Int. Cl. B01j *11/32, 11/40*

U.S. Cl. 252—428 **39 Claims**

1. A process for preparing a catalyst comprising
admixing a water soluble alkali metal silicate with an aqueous medium containing a dissolved substance which is a source of calcium ion and a dissolved substance which is a source of magnesium ion,
the aqueous medium containing said dissolved substances in amounts to provide between about 1×10^{-4} and 1×10^{-1} mole per liter each of calcium ion and magnesium ion,
the aqueous medium containing said dissolved substances in amounts to provide a molar ratio of calcium ion to magnesium ion between about 2.0:1.0 and 1.0:2.0;
the alkali metal silicate having an alkali metal oxide to silicon dioxide ratio between about 0.9:1.0 and less than 2.0:1.0 and being admixed with the aqueous medium in an amount of about 0.05–2 moles per liter,
reacting the alkali metal silicate with said dissolved substances providing calcium ion and magnesium ion to produce an aqueous suspension of finely divided particles of the reaction product,
admixing a micelle-forming surfactant with the aqueous medium in an amount to form catalyst micelles comprising said finely divided particles of the reaction product upon agitating the aqueous medium, and
agitating the aqueous medium containing said finely divided particles of the reaction product and surfactant to form said catalyst micelles.

3,893,944

CATALYST FOR HYDROGENATION OF ORGANIC COMPOUNDS

Joseph Z. Mertzweiller, and Horace M. Tenney, both of Baton Rouge, La., assignors to Exxon Research and Engineering Company, Linden, N.J.
Continuation of Ser. No. 253,762, May 16, 1972, Pat. No. 3,758,614, which is a continuation-in-part of Ser. No. 1,282, Jan. 7, 1970, Pat. No. 3,677,970, which is a continuation-in-art of Ser. No. 674,097, Oct. 10, 1967, abandoned. This application Apr. 9, 1973, Ser. No. 349,113. The portion of the term of this patent subsequent to July 18, 1989, has been disclaimed.
Int. Cl. B01j *11/06*

U.S. Cl. 252—431 C **7 Claims**

1. A catalyst composition formed by the process of:
impregnating a support containing at least about 0.1 millimoles of hydroxyl groups per gram of support with an aqueous solution of a salt of a transition metal wherein the transition metal is selected from the group consisting of Groups IB, IVB, VB, VIB, VIIB and VIII metals and mixtures thereof;
heat-treating the impregnated support at a temperature of at least about 500°F.;
activating the heat-treated impregnated support by contacting same with an organometallic compound having the formula: QR_n wherein Q is selected from Groups I, II and III metals of the Periodic Chart of the Elements, R is selected from the group consisting of hydride, alkyl, aryl, alkylaryl, arylalkyl and cycloalkyl radicals containing up to about 20 carbon atoms and wherein *n* ranges from 1 to 3 and satisfies the valance of Q;
treating the activated supported metal complex in the presence of hydrogen at a temperature of at least about 300°F.; and
contacting the hydrogen-treated activated supported metal complex with a gaseous stream containing hydrogen sulfide at a temperature of from about 0°F. to about 1,000°F.

3,893,945

CATALYST COMPOSITION FOR OXIDATION OF BUTENES

Masao Kobayashi; Minoru Ikeda; Kantaro Yamada, and Hiromichi Ishii, all of Ohotake, Japan, assignors to Mitsubishi Rayon Company, Ltd., Tokyo, Japan
Filed Nov. 5, 1973, Ser. No. 412,680
Claims priority, application Japan, Nov. 13, 1972, 47-113724; Nov. 20, 1972, 47-116443; Nov. 20, 1972, 47-116444
Int. Cl. B01j *11/82, 11/22*

U.S. Cl. 252—435 **5 Claims**

1. The catalyst composition for the vapor-phase oxidation of butenes at a temperature in the range of 250°–450°C which oxidizes n-butenes and iso-butene respectively to 1,3-butadiene and methacrolein respectively, consisting essentially of:
a first component of a mixture of oxides of tungsten, molybdenum, tellurium and antimony, wherein the W/Mo atomic ratio ranges from 0.01 to 100, the Te/(W+Mo) atomic ratio ranges from 0.01 to 0.2, and the Sb/(W+Mo) atomic ratio ranges from 0.01 to 1;
a second component of one metal oxide mixture of nickel and cobalt; nickel and iron; nickel, cobalt and bismuth; or nickel, iron and bismuth; wherein the atomic ratio of the combined metals of each metal oxide mixture to W+Mo is in the range of 0.08–2 and wherein the atomic ratio of the individual metals of each metal oxide mixture to W+Mo is in the range of 0.02–1; and
a third component of at least one alkali metal oxide selected from the group consisting of potassium, rubidium and cesium, wherein the atomic ratio of the alkali metal of each alkali metal oxide or each alkali metal oxide mixture to W+Mo ranges from 0.0005 to 0.3.

3. The catalyst composition of claim 1, which further comprises the presence of phosphorous oxide, wherein the P/(W+Mo) atomic ratio has an upper limit of 1.

3,893,946

DEHYDRATION CATALYSTS, PARTICULARLY FOR THE DEHYDRATION OF DIOLS

Joseph Edouard Weisang; Georges Szabo, both of Le Havre, and Jean Maurin, Montivilliers, all of France, assignors to Compagnie Francaise de Raffinage, Paris, France
Continuation of Ser. No. 132,892, April 9, 1971, Pat. No. 3,781,222. This application Sept. 11, 1973, Ser. No. 396,219
Claims priority, application France, Apr. 16, 1970, 70.13791The portion of the term of this patent subsequent to Dec. 25, 1990, has been disclaimed.
Int. Cl. B01j *11/82*

U.S. Cl. 252—437 **2 Claims**

1. A dehydration catalyst for vicinal diols prepared by a method consisting essentially of forming an intimate mixture of finely divided solid particles of at least one pyrophosphate and at least one acid orthoposphate of at least one metal belonging to the group consisting of lithium, sodium, strontium, and barium into a formed mass and calcinating said mass to transform said acid orthophosphate into pyrophosphate.

3,893,947

GROUP VI-B METAL CATALYST PREPARATION

Dean Arthur Young, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.
Filed Sept. 10, 1973, Ser. No. 395,624
Int. Cl. B01j *11/74, 11/06*

U.S. Cl. 252—439 **6 Claims**

1. A method for producing a particle-form catalyst consisting essentially of a refractory inorganic oxide support and a hydrogenation component, said hydrogenating component consisting essentially of at least one Group VI-B metal constituent selected from the group consisting of molybdenum, tungsten and catalytically active compounds thereof, which method consists essentially of forming a particle-form combination of said refractory oxide support, a combustible support modifier and at least one Group VI-B metal compound selected from the group consisting of the oxides, sulfides and thermally decomposable compounds of molybdenum, tungsten, or mixture thereof wherein at least about 80% of the total molybdenum and tungsten content is in a valence state below 6, and heating said combination in an oxidizing atmosphere to a temperature above about 600°F for a period sufficient to oxidize said support modifier.

3,893,948

CATALYST OF REDUCING-DEHYDRATING TYPE FOR SYNTHESIZING VINYLAROMATIC COMPOUNDS AND METHOD OF PREPARING IT

Khachik Egorovich Khcheyan, prospekt Mira, 118a, kv. 190; Ninel Iosifovna Yakovich, ulitsa Fadeeva 6, kv. 108; Larisa Borisovna Kotelnikova, ulitsa Gertsena 10/5, kv. 28; Alexei Fedorovich Pavlichev, Nikitinskaya ulitsa 6, kv. 13, and Nina Nikolaevna Zhilnina, ulitsa Alimova, kv. 1, all of Moscow, U.S.S.R.
Filed May 21, 1973, Ser. No. 362,075
Int. Cl. B01j *11/82*

U.S. Cl. 252—440 **6 Claims**

1. A reduction-dehydration catalyst for the synthesis of vinylaromatic compounds consisting of 5–50 wt. percent of magnesium sulfate and 50–95 wt. percent of zinc oxide.

3. A reduction-dehydration catalyst for the synthesis of vinylaromatic carbonyl compounds from aromatic compounds consisting of 5–20 wt. percent of magnesium sulfate, 45–88 wt. percent of zinc oxide, and 2–45 wt. percent of magnesium oxide.

5. A reduction-dehydration catalyst for the synthesis of vinylaromatic compounds from aromatic carbonyl com-

pounds consisting of 10–20 wt. percent of magnesium sulfate, 80–90 wt. percent of zinc oxide, and 0.05–1 wt. percent of an alkali metal hydroxide based on the total catalyst weight.

3,893,949

CATALYSTS FOR USE IN CONVERSION OF GASES AND METHODS OF MANUFACTURING THEM

Toshiyuki Sakai, Funabashi; Kazuhide Miyazaki, Tokyo; Yutaka Ushimaru, Tokyo, and Michiaki Yamamoto, Tokyo, all of Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Tokyo, Japan

Filed July 26, 1972, Ser. No. 275,325

Claims priority, application Japan, July 28, 1971, 46-55984; July 31, 1971, 46-57795

Int. Cl. B01j *29/00, 35/00*

U.S. Cl. 252—454 **19 Claims**

1. A method for manufacturing a catalyst composition for oxidizing a gas, which comprises

effecting an electroless plating of catalytic oxide selected from the group consisting of manganese oxide, copper oxide, iron oxide, chromium oxide, nickel oxide, cobalt oxide, bismuth oxide, zinc oxide, lead oxide, compounds containing at least one of said oxides and mixtures of said oxides by sensitizing same with an aqueous solution of stannous chloride, then activating same with an aqueous solution of a noble metal salt and then treating same with an electroless plating bath to deposit on the catalytic oxide from 0.1 to 10% by weight, based on the weight of catalytic oxide, of metal capable of promoting the catalytic effect of said catalytic oxide selected from the group consisting of Cu, Fe, Ni, Co, Cr, Sn and Ag.

3,893,950

METHOD FOR PREPARING A CATALYST FOR THE OXIDATIVE PURIFICATION OF EXHAUST GASES

Gerhard Mai, Bruchkobel, and Reiner Siepmann, Niederrodenbach, both of Germany, assignors to W. C. Heraeus GmbH, Hanau am Main, Germany

Continuation-in-part of Ser. No. 330,137, Feb. 6, 1973, abandoned. This application Nov. 23, 1973, Ser. No. 418,789

Claims priority, application Germany, Aug. 3, 1973, 2339338

Int. Cl. B01j *11/08*

U.S. Cl. 252—466 PT **4 Claims**

1. Method for preparing a catalyst for the oxidative purification of exhausts gases which comprises applying a suspension whose solid content consists essentially of boehmite to a ceramic suport body, followed by a first heat treatment at 100° to 300°C and a second heat treatment at 450° to 600°C, impregnating the so coated support body before or after the second heat treatment with an aqueous solution containing at least one salt of at least one metal of the platinum group and thereafter reducing the metal or metals of the platinum group to the metallic state by reduction with hydrogen.

3,893,951

CATALYSTS FOR OXIDATION REACTIONS

Robert K. Grasselli, Chagrin Falls, and Dev D. Suresh, Warrensville Hts., both of Ohio, assignors to Standard Oil Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 228,375, Feb. 22, 1973, Pat. No. 3,840,595. This application Sept. 25, 1973, Ser. No. 400,468

Int. Cl. B01j *11/06, 11/22*

U.S. Cl. 252—468 **7 Claims**

1. A catalyst composition having the formula:

$A_a Sn_b W_c V_d Mo_e O_x$

wherein

A is one or more of the elements selected from Fe, Ni, Co, Zn, Mn, Cu and Mg;

and wherein

a is 0 to less than about 6;

b is a number greater than zero up to about 12;

c is a number of about 0.1 to about 6;

d is a number of about 0.5 to about 12;

e is a number of about 8 to about 16; and

x is the number of oxygens required to satisfy the valence requirements of the other elements present

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3,893,952

CATALYST CARRIER IN PARTICULAR FOR APPLIANCES FOR REMOVING CARBON MONOXIDE FROM EXHAUST GASES OF INTERNAL COMBUSTION ENGINES

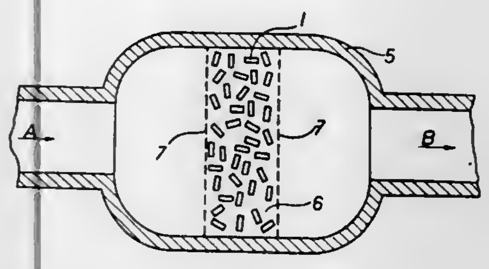
Josef Ryska, Ostrava; Jiri Frkal, Havirov; Eduard Kolos, Frydek-Mistek; Bretislav Panak, Ostrava; Lubomir Vagner, Ostrava, and Miroslav Pospisil, Ostrava, all of Czechoslovakia, assignors to Ostravsko-karvinske doly, oborove reditelstvi, Ostrava, Czechoslovakia

Filed Nov. 14, 1972, Ser. No. 306,205

Claims priority, application Czechoslovakia, Nov. 22, 1971, 8120/71

Int. Cl. B01j *11/40;* **F01n** *3/14;* **B01j** *11/46*

U.S. Cl. 252—477 R **6 Claims**



1. Catalyst carrier for use in an apparatus for the removal of carbon monoxide from the exhaust gases of internal combustion engines, said carrier consisting of a plurality of heat-resistant porous ceramic bodies having catalytic material deposited on all surfaces thereof and having catalyst material impregnating the pores of said bodies, each said body having a cylindrical shape and at least one axial internal through channel, the wall thickness of said body not exceeding the diameter of the axial through channel, said bodies being freely placed in said carrier.

3,893,953

3-OXABICYCLO[10.3.0]PENTADECENE-(6), ITS PREPARATION AND ITS USE AS A PERFUMING AGENT

Erich Klein, and Albrecht Roth, both of Holzminden, Germany, assignors to Dragoco Spezialfabrik Konz. Reich-und Aromastoffe Gerberding & Co. GmbH, Germany

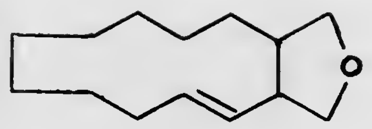
Division of Ser. No. 268,091, June 30, 1972, Pat. No. 3,824,258. This application Dec. 28, 1973, Ser. No. 429,651

Claims priority, application Germany, Feb. 28, 1972, 2209372

Int. Cl. A61k *7/00;* **C11b** *9/00*

U.S. Cl. 252—522 **1 Claim**

1. A perfume composition comprising an odor-imparting amount of 3-oxabicyclo[10.3.0]-pentadecene-(6) of the formula:



and at least one additional scenting agent.

3,893,954

DETERGENT COMPOSITIONS CONTAINING ENZYME AND CHLORINE SCAVENGER

Fred Tivin, Springfield Twp., Hamilton County, and Eugene Zeffren, Wyoming, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 76,994, Sept. 30, 1970, Pat. No. 3,755,085. This application June 5, 1973, Ser. No. 367,278

Int. Cl. C11d *1/42*

U.S. Cl. 252—548 **2 Claims**

1. A detergent composition comprising from about 1 – 99 percent by weight of an organic synthetic detergent, from about 1 – 99 percent by weight of an enzyme, and from about 0.001 – 5 percent by weight of a chlorine scavenger selected from the group consisting of tris(hydroxymethyl)-aminomethane, 2-amino-2-methyl-1,3-propanediol; 2-amino-2-ethyl-1,3-propanediol; 2-amino-1-butanol; 1-amino-2-propanol; 2-amino-1-propanol; and 2-amino-2-methyl-1-propanol.

3,893,955

AQUEOUS CONCENTRATE DETERGENT COMPONENT

Thomas Hewitt, Maryport; Douglas Edward Mather, Whitehaven, and Edward Tunstall Messenger, High Harrington, all of England, assignors to Albright & Wilson Limited, West Midlands, England

Filed Oct. 19, 1972, Ser. No. 298,989

Claims priority, application United Kingdom, Oct. 20, 1971, 48699/71; May 26, 1972, 25051/72

Int. Cl. C11d *1/12*

U.S. Cl. 252—551 **20 Claims**

1. An aqueous concentrate comprising 30–75% by weight of a sulphate of an alkoxylated aliphatic C_8-C_{24} alcohol and form 2 to 10% by weight of a water soluble salt of a carboxylic acid of the general formula

$A\ (COOH)_n$

wherein *n* is an integer of 1 to 4, and A is selected from the group consisting of hydrogen, a saturated aliphatic residue having from 1 to 8 carbon atoms, an unsaturated aliphatic residue of 2 to 8 carbon atoms, and when *n* is 2 the said formula also may be $(COOH)_2$.

18. A free-flowing aqueous concentrate comprising an admixture of

i. between 2 and 10% by weight of a water soluble salt of a carboxylic acid of general formula $A(COOH)_n$,

wherein *n* is an integer of 1 to 4, and A is selected from the group consisting of hydrogen, a saturated aliphatic residue of 1 to 8 carbon atoms, an unsaturated aliphatic residue of 2 to 8 carbon atoms, and when *n* is 2, the said formula also may be $(COOH)_2$; and

ii. an aqueous concentrate comprising between 30 and 75by weight of a sulphate of an alkoxylated aliphatic C_8-C_{24} alcohol which aqueous concentrate would be a thick paste or gel in the absence of admixture with component (i).

3,893,956

THIXOTROPIC COATING AGENTS BASED ON UREA ADDUCT OF POLYAMINE AND DIISOCYANATES

Dieter Brandt, Eschweiler, Germany, assignor to August Merckens Nachfolger Kommanditgesellschaft, Eschweiler, Germany

Filed Dec. 7, 1973, Ser. No. 422,951

Claims priority, application Austria, Dec. 11, 1972, 10493/72; Mar. 28, 1973, 2741/73

Int. Cl. C08g *22/00*

U.S. Cl. 260—18 TN **22 Claims**

1. A thixotropic coating agent comprising a binder and a thixotropizing agent, wherein the thixotropizing agent comprises a urea adduct obtained by reacting (a) a diisocyanate compound with (b) polyamine containing at least two amino groups which are primary or secondary amino groups, in the presence of the binder, using the diisocyanate compound in such quantities that, stoichiometrically, the amino groups do not outnumber the isocyanate groups to any appreciable extent.

3,893,957

FOAMED AND ORIENTED BLENDS OF LOW DENSITY POLYETHYLENE AND POLYPROPYLENE

Donald E. Mixon, and Dan F. Stewart, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 14, 1968, Ser. No. 752,502

Int. Cl. C08f *47/10*

U.S. Cl. 260—2.5 HA **11 Claims**

1. A foamed and oriented extrudate, the orientation of which has been effected by longitudinally stretching the same, composed essentially of approximately 5 to 20 weight percent of the composition of a low density polyethylene having a density in the approximate range of 0.914–0.925 and crystalline polypropylene said low density polyethylene being present in an amount such that the foamed and oriented extrudate will have increased opacity and improved sheen, flexibility and feel and when dye is contained therein a greater color intensity.

3,893,958

CATALYSTS FOR THE REACTION OF CYCLIC NITRILE COMPOUNDS WITH HYDROXYL GROUPS TO PRODUCE UREAS, URETHANES OR THIOURETHANES

Larry G. Wolgemuth, 100 E. Eagle Ln., Cherry Hill, N.J. 08003

Filed Dec. 21, 1973, Ser. No. 427,153

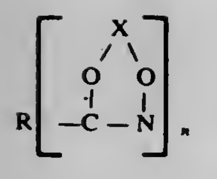
Int. Cl. C08g *22/44*

U.S. Cl. 260—18 TN **10 Claims**

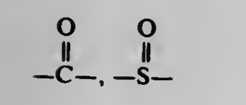
1. In the method of preparing an organic compound having one or more urea, urethane or thiourethane groups obtained by condensing

a. A nucleophilic organic compound having at least one reactive hydrogen-containing radical selected from the group consisting of primary amino radicals, secondary amino radicals, hydroxyl radicals, and mercapto radicals with

b. A cyclic nitrile compound having the structure

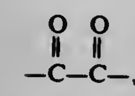


wherein X is



$-\overset{O}{\overset{\|}{C}}-,\ -\overset{O}{\overset{\|}{S}}-$

or



$-\overset{O}{\overset{\|}{C}}-\overset{O}{\overset{\|}{C}}-,$

R is an organic radical which consists essentially of carbon and hydrogen and is free of reactive hydrogens as determined by the Zerewitinoff test and *n* is 1 to 4, the condensation which comprises catalyzing the condensation reaction by contacting said (a) and (b) with a catalytically-effective amount of

c. The catalyst combination of
  1. A metal ion selected from the metals of Groups III through V of the Periodic Chart of the Elements, and
  2. An alkali metal salt of a fatty acid.

3,893,959

ALKYL RESIN CONTAINING AN OLIGOMER MIXTURE OF UNSATURATED LONG CHAIN FATTY ACIDS

Ralph Earl Layman, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 409,223, Oct. 24, 1973, abandoned. This application Sept. 5, 1974, Ser. No. 503,218

Int. Cl. C09d *3/64, 5/02*

U.S. Cl. 260—22 D **10 Claims**

1. A hydrolytically stable alkyd resin which is capable of being rendered water dispersible comprising the esterification reaction product of

a. a mixture of (1) from about 40 to 82 percent of at least one aromatic dicarboxylic acid; (2) from about 5% to 20 percent of at least one aromatic tricarboxylic acid; (3) from about 10 to 20 percent of an oligomer mixture of unsaturated long chain fatty acids; and (4) from about 0 to 20 percent of at least one aliphatic dicarboxylic acid, wherein said percentages of acids are by weight based on the total weight of said acids used and total 100 percent, and

b. a mixture of (1) from about 90 to 50 percent of at least one hindered diol free of any carboxyl groups; (2) from about 0 to 25 percent of at least one hindered diol containing a tertiary carboxyl group; and (3) from about 0 to 25 percent of at least one unhindered diol or at least one polyhydric alcohol having at least three alcoholic hydroxy groups, wherein said percentages of diols and polyhydric alcohols are by weight based on the total weight of the alcohols used and total 100 percent.

3,893,960

ACRYLIC COATING COMPOSITION FOR FINISHING FLEXIBLE SUBSTRATES

Ronald J. Sheppard, Flushing, Mich., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.

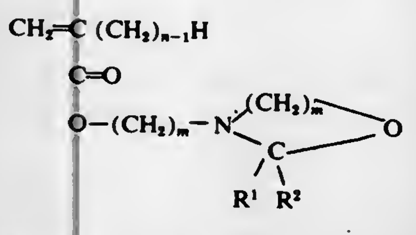
Division of Ser. No. 285,094, Aug. 30, 1972, Pat. No. 3,829,397. This application May 9, 1974, Ser. No. 468,482

Int. Cl. C08b *21/08;* **C08f** *37/18, 37/06, 45/38*

U.S. Cl. 260—23 AR **5 Claims**

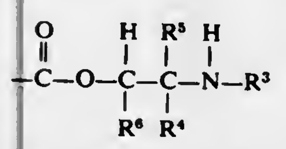
1. A coating composition which comprises 40 to 60% by volume, based on the total volume of the coating composition of Composition I and correspondingly, 60 to 40% by volume, based on the total volume of the coating composition of Composition II; wherein Composition I consists essentially of 10–50% by weight of film-forming binder and correspondingly, 90–50% by weight of an organic solvent for the binder wherein the binder consists essentially of

1. 35–65% by weight, based on the weight of the binder, of a copolymer consisting essentially of the reaction product of 80–90% by weight of methyl methacrylate and correspondingly, 10–20% by weight of an alkyl acrylate or an alkyl methacrylate having 2–12 carbon atoms in the alkyl groups;
2. 5–20% by weight, based on the weight of the binder, of a copolymer consisting essentially of the reaction product of 85–95% by weight of methyl methacrylate and 5–15% by weight of polymerized adhesion promoting monomer of the formula



wherein *n* is 1–2, *m* is 2–3 and R^1 and R^2 are selected from the group consisting of hydrogen, phenyl, benzyl, an alkyl group having 1–12 carbon atoms, or in combination are 2,2-spirocyclohexyl; and

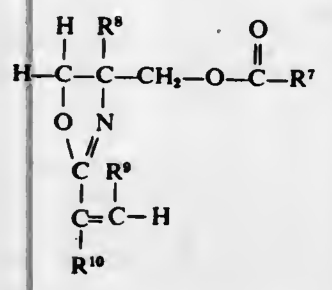
3. 30–50% by weight, based on the weight of the binder, of an organic plasticizer of a phthalate ester or an alkyd resin, and Composition II comprises a pigmented coating composition containing 0.1–20% by weight pigment and 10–50% by weight, based on the weight of the coating composition, of a film-forming binder which consists essentially of
  1. 40–90% by weight, based on the weight of the binder, of a polymer consisting essentially of
    a. 75–90% by weight, based on the weight of the polymer, of methyl methacrylate,
    b. less than about 20% by weight, based on the weight of the polymer, of an alkyl acrylate or an alkyl methacrylate having 2–12 carbon atoms in the alkyl groups;
    c. 3–25% by weight, based on the weight of the polymer, of monovalent aminoester radicals attached to the backbone carbon atoms of the polymer backbone of the formula



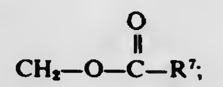
$-\overset{O}{\overset{\|}{C}}-O-\underset{R^6}{\overset{H}{C}}-\underset{R^4}{\overset{R^5}{C}}-\overset{H}{N}-R^3$

wherein R^3, R^4, R^5 and R^6 are hydrogen, benzyl or an alkyl radical having 1-4 atoms; and

  2. 60–10% by weight, based on the weight of the binder, of a polymer which consists essentially of
    a. 30–70% by weight, based on the weight of the polymer, of methyl methacrylate,
    b. less than about 35% by weight of an ester of an alkyl acrylate or an alkyl methacrylate having 2–12 carbon atoms in the alkyl group,
    c. less than about 10% by weight of acrylonitrile,
    d. 15–35% by weight of a compound of the formula



wherein R^7 is a saturated hydrocarbon group of 3 – 21 carbon atoms or an unsaturated hydrocarbon group of 3 – 21 carbon atoms; R^8 is H, an alkyl group having 1 – 4 carbon atoms or



$CH_2-O-\overset{O}{\overset{\|}{C}}-R^7;$

R^9 is H, an alkyl group having 1 – 4 carbon atoms; R^{10} is a saturated hydrocarbon group having 2 – 20 carbon atoms or an unsaturated hydrocarbon group having 2 – 20 carbon atoms.

3,893,961

TELEPHONE CABLE SPLICE CLOSURE FILLING COMPOSITION

Basil Vivian Edwin Walton, 54 Melrose Crescent, and William Edward John Wannamaker, 121 Avondale Rd., both of Belleville, Ontario, Canada

Filed Jan. 7, 1974, Ser. No. 431,161

Int. Cl. C08f *19/14, 21/04*

U.S. Cl. 260—23 H **31 Claims**

1. A composition suitable for use in filling splice closures in telecommunications cables, and the like, comprising:

a. from 85% – 98% by weight polybutene, said polybutene being in the form of a viscous, oily liquid having a viscosity within the range of about 200 to about 1750 Saybolt Universal seconds (SUS)/98.8°C; and

b. from about 0.25% to about 6.0%, by weight, of a gelling agent selected from the group consisting of hydrogenated castor oil and finely divided silica; said composition being a thixotropic, semi-solid, petrolatum-like material having a Brookfield viscosity at 98.8°C. (ASTM D 2669) within the range of about 125 to about 290 c.p.

3,893,962

TELEPHONE CABLE FILLING COMPOSITION (II)

Basil Vivian Edwin Walton, 54 Melrose Crescent, and William Edward John Wannamaker, 121 Avondale Rd., both of Belleville, Ontario, Canada

Filed Jan. 7, 1974, Ser. No. 431,160

Int. Cl. C08f *45/52*

U.S. Cl. 260—28.5 A **32 Claims**

1. A composition suitable for use in filling telecommunication cables and the like, comprising:

1. 50.0% - 65.0% poly(butene-1), of average molecular weight in the range of 500 - 3500;
2. 25.0% - 45.0% microcrystalline slackwax; or of an equivalent of said microcrystalline slackwax, said equivalent consisting essentially of a mixture of at least one microcrystalline wax with a high viscosity mineral oil meeting the following general specification:

Viscosity/98.8°C — 120 SUS — 220 SUS
Viscosity/37.8°C. — 2000 SUS — 3500 SUS
Flash Point — 204.4°C Minimum
Specific Gravity/15.6°C — 01875 – 0.925
Colour ASTM 2 — ASTM 8
Boiling Range (at atmospheric pressure) – 260°–704.5°C;

3. 1.0% – 8.0% polyethylene, of average molecular weight in the range of 10,000 to 20,000;
4. 1.0% – 10.0% of at least one wax selected from the group consisting of
  a. paraffin waxes having melting points in the range of 37.8° – 79.5°C., (b) synthetic Fischer-Tropsch type waxes having melting points in the range of 71.1° – 115°C., and (c) natural waxes selected from the group: Beeswax, Carnauba wax, Chinese insect wax, Japan wax, Myrtle wax and Spermaceti wax; and
5. from about 0.5% to about 8.0% finely divided silica, said percentages of ingredients being by weight, based on the entire composition.

3,893,963

COMPOSITION

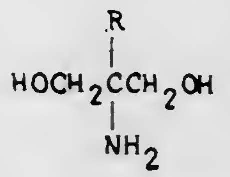
David K. Sausman, Terre Haute, Ind., assignor to Commercial Solvents Corporation, Terre Haute, Ind.

Filed Oct. 13, 1970, Ser. No. 80,480

Int. Cl.² C08L *61/20*

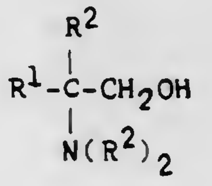
U.S. Cl. 260—29.4 R **8 Claims**

1. A pre-catalyzed aqueous urea-formaldehyde composition consisting of, by weight, 50–51% formaldehyde, 20–21% urea, water and about 0.5–1.5% of a latent catalyst mixture of the hydrochloride salt of an amino alkanediol corresponding to the formula



$HOCH_2\underset{NH_2}{\overset{R}{C}}CH_2OH$

where R is methyl or ethyl, and an alkanolamine corresponding to the formula



$R^1-\underset{N(R^2)_2}{\overset{R^2}{C}}-CH_2OH$

where R^1 is hydrogen or alkyl of 1 or 2 carbon atoms, and R^2 is hydrogen or methyl in a mole ratio of about 1.5–2.0 of the amino alkanediol per mole of alkanolamine.

3,893,964

BINDER FOR FOUNDRY SAND

Hirotaka Kawai, Osaka; Hidetsugu Takenaka, Arita, and Osamu Yamamoto, Wakayama, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Aug. 24, 1973, Ser. No. 391,267

Claims priority, application Japan, Aug. 30, 1972, 47-86848

Int. Cl. C08g *51/24*

U.S. Cl. 260—29.4 R **5 Claims**

1. A fluid, acid-hardening binder for foundry sand, consisting essentially of

A. from 2.5 to 55 percent by weight, based on the total weight of the binder, of the reaction product of a urea-glyoxal-formaldehyde composition, in which
  1. the total number of moles of aldehyde groups, per one mole of urea, is from 2 to 4,
  2. the percentage of glyoxal aldehyde groups of the total aldehyde groups is from 10 to 60%,
  3. the number of moles of glyoxal does not exceed the number of moles of urea, and
  4. the number of moles of formaldehyde does not exceed 2.5 times the number of moles of urea, said reaction product containing less than 5 wt. % of unreacted formaldehyde,

B. from 30 to 95 percent by weight, based on the total weight of the binder, of furfuryl alcohol, and

C. from 0 to 40 percent by weight, based on the total weight of the binder, of water.

3,893,965

COPOLYMERS OF SULFUR DIOXIDE WITH ALLYL GLYCEROL ETHERS

William Ross Moore, Lake Jackson, Tex., and Ralph Rolland Langner, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 274,583, July 24, 1972, abandoned, which is a continuation-in-part of Ser. No. 86,948, Nov. 4, 1970, abandoned. This application Feb. 4, 1974, Ser. No. 438,957

Int. Cl. C08f *45/34*

U.S. Cl. 260—29.6 H **6 Claims**

1. A film prepared from the reaction of the copolymers of sulfur dioxide with a glycerol allyl ether selected from the group consisting of alpha allyl glycerol ether, beta allyl glycerol ether, and mixtures thereof with a member of the group consisting of glyoxal, paraformaldehdye, and mixtures thereof.

3,893,966

IMPACT-RESISTANT THERMOPLASTIC MOLDING MATERIAL

Dieter Stein, Limburgerhof; Franz Haaf, Ludwigshafen, and Karl-Heinz Illers, Otterstadt, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Continuation of Ser. No. 126,944, March 22, 1971, abandoned. This application June 27, 1973, Ser. No. 373,979

Int. Cl. C08f *45/36*

U.S. Cl. 260—30.8 R **3 Claims**

1. An impact-resistant thermoplastic molding material comprising:

A. from 5 to 100 parts by weight of a graft copolymer prepared by grafting from 10 to 95% by weight of a mixture of styrene and acrylonitrile in a ratio of 60 : 40 to 90 : 10 onto from 90 to 5% by weight of a polyacrylate rubber which contains at least 30% by weight of polymerized units of an alkyl acrylate having not more than eight carbon atoms in the alkyl radical;

B. from 0 to 95 parts by weight of a copolymer of styrene and acrylonitrile in a ratio of 60 : 40 to 90 : 10 with the proviso that (A) plus (B) contains at least 50% by weight of styrene and acrylonitrile; and

C. from 1 to 10 parts by weight, with reference to 100 parts by weight of (A) + (B), of an ester having the formula: $R^1—X—R^2$

where R^1 and R^2 each denotes an alkyl or aryl radical having four to twenty carbon atoms and X is either a —OOC— group or a $—OOC—R^3—COO—$ group where R^3 denotes an alkylene or arylene grouping having 1 to 20 carbon atoms, the groupings R^1, R^2 and R^3 optionally also containing heteroatoms selected from the group consisting oxygen and sulfur and the sum of the carbon atoms in the ester molecule being at least 15.

3,893,967

COATING COMPOSITIONS AND PROCESS FOR THE PRODUCTION THEREOF

Paul Sunder-Plassmann, Marl; Klaus Gorke, Hullern, and Walter Dittmann, Marl, all of Germany, assignors to Chemische Werke Huels, A.G., Marl, Germany

Filed July 27, 1973, Ser. No. 383,254

Claims priority, application Germany, July 27, 1972, 2236842. The portion of the term of this patent subsequent to Nov. 6, 1990, has been disclaimed.

Int. Cl. C08g *33/10*

U.S. Cl. 260—32.8 A **17 Claims**

1. A coating composition comprising a phenolic adduct of an unsaturated liquid polybutadiene wherein said adduct consists essentially of:

a. 62–70% by weight of a liquid polybutadiene having, prior to the adduct formation, a viscosity of 200 – 5,000 cp. at 20° C., a molecular weight of 500 – 4,000 as determined by vapor pressure osmosis, an iodine number of 400 – 470 g. iodine/100 g., and double bonds which are 50 – 95% in the 1,4-cis-configuration; and

b. correspondingly 38-25% by weight of phenol, 35–50% of which is joined to the polybutadiene as a phenyl ether and the remaining 65 – 50% of which is joined thereto ortho- and parato the phenolic hydroxy group; said adduct containing 5–35% of the olefinic double bonds of the liquid polybutadiene.

3,893,968

THERMOPLASTIC RESIN COMPOSITION HAVING HIGH IMPACT AND WEATHER RESISTANCE

Shujiro Shiga; Masayoshi Morimoto; Hideki Horiike; Mikio Hirai, and Yasuhiko Higashio, all of Ichihara, Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Filed Jan. 2, 1974, Ser. No. 429,915

Claims priority, application Japan, Jan. 6, 1973, 48-4875

Int. Cl. C08c *11/22, 11/30, 11/52*

U.S. Cl. 260—33.6 AQ **9 Claims**

1. A thermoplastic resin composition having excellent resistance to weather and impact, which comprises

a binary or ternary graft-copolymer of 5 to 20 percent by weight of a rubber component consisting essentially of an ethylene-propylene rubber and 95 to 80 percent by weight of an aromatic vinyl compound or an aromatic vinyl compound and a vinyl cyanide compound, the ratio of the aromatic vinyl compound to the vinyl cyanide compound being 4:3 to 5:1;

0.5 to 10 percent by weight of liquid paraffin having a specific gravity of 0.860 to 0.905;

0.05 to 3 percent by weight of antioxidant, an ultraviolet absorber or both thereof, based on the weight of the resin composition, said ethylene-propylene rubber comprising ethylene and propylene in a molar ratio of 5:1 to 1:3 and selected from the group consisting of ethylene-propylene copolymer and ethylene-propylene terpolymer containing as a third component dicyclopentadiene, ethylidenenorbornene, 1,4-hexadiene, 1,5-hexadiene, 2-methyl-1,5-hexadiene, 1,4-cycloheptadiene, 1,5-cyclooctadiene or mixtures of these compounds and having an iodine number of 4 to 50.

3,893,969

REINFORCED POLYAMIDE MOLDING COMPOSITION

John Newbould, Sterling Heights, and Elio Eusebi, Troy, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 29, 1974, Ser. No. 456,182

Int. Cl. C08g *51/04*

U.S. Cl. 260—37 EP **3 Claims**

1. A filled and reinforced polyamide composition comprising, by weight, 100 parts of a polyamide resin and from 5 to 220 parts of a finely divided filler dispersed therethrough, said filler being characterized by reactive surface hydroxyl groups, the particles of said filler being coated with the reaction product of from 0.1 percent to about 5 percent by weight, based on said filler, of an initially uncured, acetone soluble epoxy resin and an epoxy curing agent, said reaction product in said composition being chemically combined with the said filler particles by reaction with said hydroxyl groups.

3,893,970

FIRE RETARDANT POLYPROPYLENE COMPOSITIONS CONTAINING A HALOGENATED FLAME RETARDANT AND A PHOSPHITE ADJUVANT

John Versnel, Plainsboro, N.J., assignor to Cities Service Company, Tulsa, Okla.

Continuation-in-part of Ser. No. 185,832, Oct. 1, 1971, abandoned. This application Aug. 27, 1973, Ser. No. 391,901

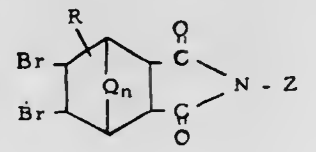
Int. Cl. C08f *45/54;* **C09k** *3/28*

U.S. Cl. 260—45.75 K **10 Claims**

1. A composition comprising:

A. polypropylene,

B. a primary flame retardant comprising a halogenated cyclic imide corresponding to the formula:

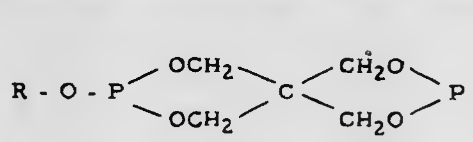


wherein Z is a hydrocarbon, chlorinated hydrocarbon, or brominated hydrocarbon radical, R is hydrogen or methyl, Q is methylene or oxygen, and *n* is an integer of 0–1, and

C. about 5–95%, based on the weight of the halogenated cyclic imide, of an organic phosphite flame retardant adjuvant containing 1–6 phosphorus atoms, 6–60 carbon atoms per phosphorus atom, and not more than one aromatic radical per phosphorus atom; said phosphite being selected from the group consisting of:

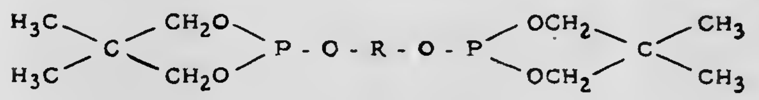
1. a phosphite corresponding to the formula $P(QR)(QR')(QR'')$ in which Q is oxygen or sulfur, R and R′ are aliphatic or cycloaliphatic hydrocarbon radicals, and R″ is an aliphatic, cycloaliphatic, or aromatic hydrocarbon radical,

2. a phosphite corresponding to the formula:



in which R and R′ are hydrocarbon radicals containing 1–20 carbon atoms, and

3. a phosphite corresponding to the formula:



in which R is a hydrocarbon or hydrocarbonoxy radical containing 1–20 carbon atoms.

3,893,971

STABILIZED ETHYLENE-TETRAFLUOROETHYLENE COPOLYMER COMPOSITION

Hiroshi Ukihashi; Masaaki Yamabe, both of Tokyo; Hiromichi Nishimura, and Haruhisa Miyake, both of Yokohama, all of Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Dec. 26, 1973, Ser. No. 428,414

Claims priority, application Japan, Dec. 25, 1972, 47-129387

Int. Cl. C08f *45/56*

U.S. Cl. 260—45.7 R **5 Claims**

1. An ethylene-tetrafluoroethylene copolymer composition having improved thermal stability, which comprises:

an admixture of an ethylene-tetrafluoroethylene copolymer, wherein the mold ratio of tetrafluoroethylene to ethylene is 40 – 70/60 – 30 and from 0.001 to 5 wt. % of α-alumina, based on the weight of the copolymer.

3,893,972

ACYL HYDRAZONES OF 2,2,6,6-TETRAMETHYLPIPERIDINE-4-ONES

Brian Holt, Royton; Donald Richard Randell, Stockport, and James Jack, Bramhall, all of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

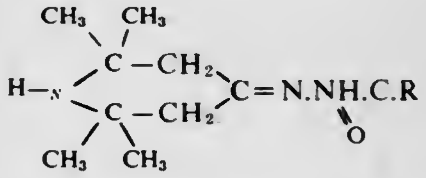
Division of Ser. No. 182,181, Sept. 20, 1971, Pat. No. 3,828,052. This application Jan. 25, 1974, Ser. No. 436,554

Claims priority, application United Kingdom, Sept. 19, 1970, 44760/70

Int. Cl. C08f *45/58*

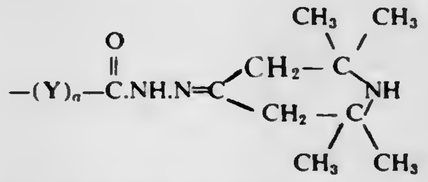
U.S. Cl. 260—45.8 N **14 Claims**

1. A composition comprising an organic material and from 0.01 to 5% by weight of a compound having the formula



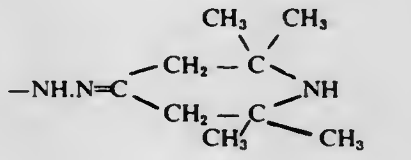
I

and their acid salts, wherein R represents hydrogen, a straight- or branched- alkyl residue having from 1 to 20 carbon atoms in which the alkyl chain may be uninterrupted or interrupted by one or more sulphur atom, a cycloalkyl residue having from 5 to 12 carbon atoms, a phenyl residue, a naphthyl residue, an arylalkyl residue containing from 7 to 14 carbon atoms or an alkylaryl residue having from 7 to 14 carbon atoms or R represents the grouping of formula



II

wherein Y is a divalent, straight- or branched chain alkylene residue having from 1 to 20 carbon atoms in which the alkylene chain is uninterrupted or interrupted by one or more sulfur atom, or an arylene residue having from 6 to 12 carbon atoms and *a* is 0 or 1, or R represents the grouping having the formula:



3,893,973

MANGANESE-(II)SALTS OF PHOSPHONIC ACID HALF-ESTERS, POLYAMIDE STABILIZERS

Jean Rody, Basel, and Paul Moser, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

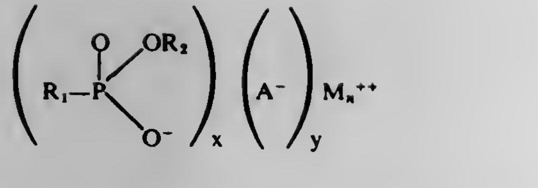
Division of Ser. No. 282,636, Aug. 21, 1972, Pat. No. 3,839,380. This application Feb. 7, 1974, Ser. No. 440,635

Claims priority, application Switzerland, Sept. 30, 1971, 14210/71

Int. Cl. C08g *51/62*

U.S. Cl. 260—45.75 R **16 Claims**

1. A composition containing a polyamide and a stabilizing amount of a compound of the formula I


(I)

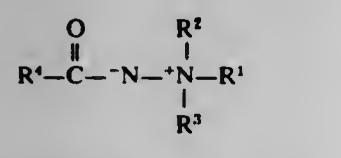
wherein

- R_1 is selected from the group consisting of alkyl with 1 to 18 carbon atoms, cyclohexyl, aryl with 6 to 10 carbon atoms which is unsubstituted or substituted by 1 or 2 methyl groups, and aralkyl with 7 to 11 carbon atoms;
- A^- is selected from the group consisting of an anion of an aliphatic carboxylic acid with 1 to 18 carbon atoms, an anion of an aromatic carboxylic acid with 7 to 11 carbon atoms, and the chloride, bromide, and iodide anion;
- *x* is 1 or 2,
- *y* is 0 or 1, with x+y being 2, and
- R_2 is alkyl with 1 to 18 carbon atoms.

3,893,974
EPOXY RESIN COMPOSITIONS CONTAINING AMINIMIDE COMPOUND

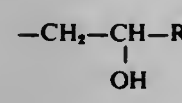
Hideki Niino, and Yo Marayama, both of Yokohama, Japan, assignors to Permachem Asia Co. Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 236,348, March 20, 1972, abandoned. This application Oct. 2, 1973, Ser. No. 402,839
Claims priority, application Japan, Apr. 20, 1971, 46-24982; July 1, 1971, 46-47637
Int. Cl. C08g ***30/14***
U.S. Cl. 260—47 EN **22 Claims**

1. Epoxy resin composition of excellent hardening property consisting essentially of a 1,2-polyepoxy resin and 0.002 to 8 parts by weight of an aminimide compound of the formula,



$$R^4-\overset{\overset{O}{\|}}{C}-{}^{-}N-{}^{+}\overset{\overset{R^2}{|}}{\underset{\underset{R^3}{|}}{N}}-R^1$$

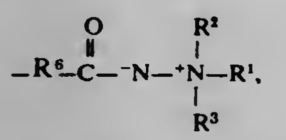
in which R^1 represents an alkyl radical or a residue,



$$-CH_2-\underset{\underset{OH}{|}}{CH}-R^5,$$

R^2 and R^3 represent alkyl radicals,

R^4 represents an optionally substituted alkyl, aryl, aralkyl, cycloalkyl, alkoxy or allyloxy radical, or a vinyl radical, isopropenyl radical or a residue,



$$-R^6-\overset{\overset{O}{\|}}{C}-{}^{-}N-{}^{+}\overset{\overset{R^2}{|}}{\underset{\underset{R^3}{|}}{N}}-R^1,$$

R^5 represents a hydrogen atom, or an alkyl, aryl, alkoxymethyl, aryloxymethyl, allyloxymethyl, hydroxyalkyl, methacryloyloxymethyl, or acryloyloxymethyl radical, and

R^6 represents an aliphatic, alicyclic, or aromatic hydrocarbon residue,

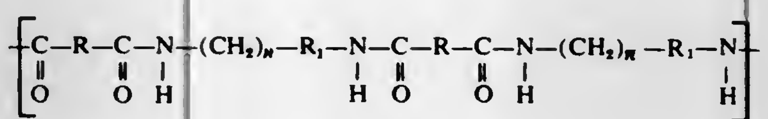
per 100 parts by weight of said epoxy resin.

3,893,975
HIGH MOLECULAR WEIGHT LINEAR POLYAMIDES FROM ARALIPHATIC DIAMINES

Geert Christoph; Eduard Radlmann, and Gunther Nischk, all of Dormagen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Bayerwerk, Germany
Continuation of Ser. No. 269,840, July 7, 1972, abandoned. This application Mar. 11, 1974, Ser. No. 450,209
Claims priority, application Germany, July 9, 1971, 2134172
Int. Cl. C08g ***20/20***
U.S. Cl. 260—47 CZ **5 Claims**

1. A high molecular weight linear copolyamide consisting essentially of:

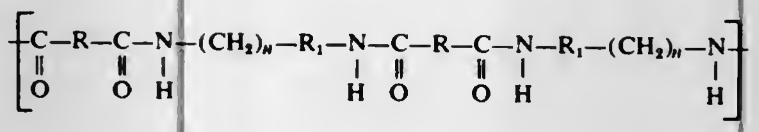
a. recurring structural elements corresponding to the general formula



$$\left[-\underset{\underset{O}{\|}}{C}-R-\underset{\underset{O}{\|}}{C}-\underset{\underset{H}{|}}{N}-(CH_2)_n-R_1-\underset{\underset{H}{|}}{N}-\underset{\underset{O}{\|}}{C}-R-\underset{\underset{O}{\|}}{C}-\underset{\underset{H}{|}}{N}-(CH_2)_n-R_1-\underset{\underset{H}{|}}{N}-\right]$$

(I)

and



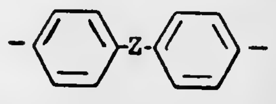
$$\left[-\underset{\underset{O}{\|}}{C}-R-\underset{\underset{O}{\|}}{C}-\underset{\underset{H}{|}}{N}-(CH_2)_n-R_1-\underset{\underset{H}{|}}{N}-\underset{\underset{O}{\|}}{C}-R-\underset{\underset{O}{\|}}{C}-\underset{\underset{H}{|}}{N}-R_1-(CH_2)_n-\underset{\underset{H}{|}}{N}-\right]$$

(II)

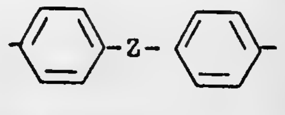
where:

R represents a linear or branched alkylene radical with 4 to 10 carbon atoms;

R_1 represents an unsubstituted radical selected from the group consisting of 1,3-phenylene, 1,4-phenylene, 1,4-naphthylene, 1,5-naphthylene, 4,4′-diphenylene, and


or

R_1 represents substituted radicals selected from the group consisting of 4,4′-diphenylene substituted one or more times by halogen or lower alkyl groups and a radical substituted one or more times by halogen or lower alkyl groups of the general formula

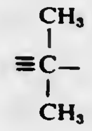


wherein in the above formulae

Z is a member selected from the group consisting of —O—,

—S—, —CH₂—, —(CH₂)₂—,

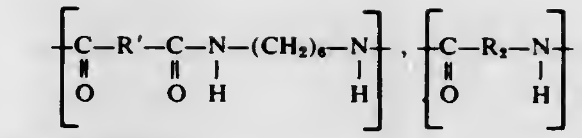
and



$$\equiv\overset{\overset{CH_3}{|}}{\underset{\underset{CH_3}{|}}{C}}-$$

n is an integer from 1 to 4; and

b. less than 90% by weight recurring structural elements corresponding to a general formula selected from the group consisting of



$$\left[-\underset{\underset{O}{\|}}{C}-R'-\underset{\underset{O}{\|}}{C}-\underset{\underset{H}{|}}{N}-(CH_2)_6-\underset{\underset{H}{|}}{N}-\right],\ \left[-\underset{\underset{O}{\|}}{C}-R_2-\underset{\underset{H}{|}}{N}-\right]$$

and mixtures thereof wherein:

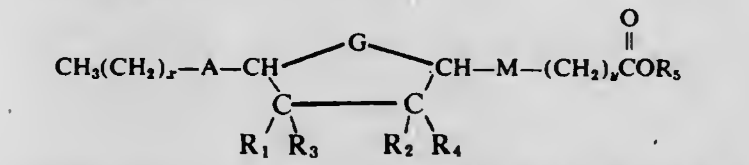
R' represents a linear or branched alkylene radical with 4 to 10 carbon atoms; and

R_2 represents a linear or branched alkylene radical with 3 to 20 carbon atoms; said polyamide having a relative solution viscosity in the range from 1.1 to 4.0 as measured on a solution of 1 g of polyamide in 100 ml of n-cresol at 25°C.

3,893,976
POLYESTER RESINS

Robert F. Modler, and Stuart A. Harrison, both of Minneapolis, Minn., assignors to General Mills Chemicals, Inc., Minneapolis, Minn.
Continuation-in-part of Ser. No. 362,641, May 21, 1973, abandoned. This application Aug. 23, 1974, Ser. No. 499,817
Int. Cl. C08g ***17/10***
U.S. Cl. 260—75 A **2 Claims**

1. A polyester having an inherent viscosity of about 0.4 to 1.0 measured in orthochlorophenol solvent, at a concentration of 0.5% by weight and at a temperature of 30°C. consisting essentially of the condensation product of 1,4-butanediol, terephthalic acid, isophthalic acid and a cyclical dicarboxylic acid having the structural formula



wherein *x* is 1 to 3, *y* is 5 to 8, and the sum of *x* and *y* is 6 to 11, R_1 and R_2 are H or CH_3 and at least one is H, and R_3 and R_4 are H, $-COOH$, $-COOCH_3$ or $-COOCH_2CH_3$ with the proviso that one of such radicals must be H and the other must be $-COOH$, $-COOCH_3$ or $-COOCH_2CH_3$ R_5 is $-COOH$, $-COOCH_3$ or $-COOCH_2CH_3$, A, G and M are selected from $-CH_2CH_2-$ and $-CH{=}CH-$ groups with the proviso that A, G and M all can be $-CH_2-CH_2-$ groups and when G is $-CH{=}CH-$, A and M can be $-CH_2CH_2-$ or $-CH{=}CH-$ but one must be $-CH_2CH_2-$ and the other $-CH{=}CH-$, wherein the 1,4-butanediol component and the total acid component are in an equivalent ratio of about 1:1 and the equivalent percent of the acids based upon the total acid equivalent are about 65 to 75 equivalent percent terephthalic acid, about 20 to 25 equivalent percent isophthalic acid and about 5 to 10 equivalent percent dicarboxylic acid having the above structural formula.

3,893,977
PULVERULENT BINDERS FOR THE ELECTROSTATIC POWDER-SPRAYING PROCESS

Frank Wingler, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany
Filed May 11, 1973, Ser. No. 359,579
Claims priority, application Germany, May 27, 1972, 2225958
Int. Cl. C08g ***22/32***
U.S. Cl. 260—77.5 TB **3 Claims**

1. A pulverulent solvent free composition of matter suitable as a binder for powder lacquers comprising mixtures of

- A. 40 to 98 parts by weight of copolymers with an average molecular weight of from 3,000 to 20,000 of
  - i. 20 to 60% by weight of styrene, α-methylstyrene, o-chlorostyrene, p-chlorostyrene, p-tert. butyl styrene or mixture thereof
  - ii. 30 to 65% by weight of acrylic acid alkyl ester with 1 to 12 carbon atoms in the alkyl radical and/or methacrylic acid alkyl ester with 2 to 12 carbon atoms in the alkyl radical;
  - iii. 0 to 30% by weight of methacrylic acid methyl ester and
  - iiii. 3 to 20% by weight of acrylic acid and/or methacrylic acid glycidyl ester;
- B. 1 to 20 parts by weight of a polycarboxylic acid and/or polycarboxylic acid anhydride, and
- C. 1 to 20 parts by weight of a blocked polyisocyanate.

3,893,978
PULVERULENT COATING AGENTS BASED ON BLOCKED AROMATIC DIISOCYANATES

Eckhard de Cleur, Duisburg; Rolf Dhein; Hans Rudolph, and Hans-Joachim Kreuder, all of Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Bayerwerk, Germany
Filed Mar. 22, 1973, Ser. No. 343,798
Claims priority, application Germany, Mar. 28, 1972, 2215080
Int. Cl.² C08G ***22/32;*** **B05B** ***5/00***
U.S. Cl. 260—77.5 TB **7 Claims**

1. A pulverulent solvent-free coating agent curable at a temperature of above 130°C. comprising

a. at least one polymer containing hydroxyl groups and having a softening temperature of at least 40°C. and

b. a crosslinking amount of an adduct of an aromatic diisocyanate, a dihydric alcohol, and ϵ-caprolactam, said dihydric alcohol being selected from the group consisting of ethylene glycol, propanediol, butanediol, hexanediol, diethyleneglycol, triethyleneglycol, thiodiglycol, N-methyldiethanolamine and mixtures thereof and said dihydric alcohol, diisocyanate and ϵ-caprolactam being present in said adduct in the molar ratio of 0.5–1: 2:2–3.

3,893,979
POLYETHERURETHANES WHICH CONTAIN HYDANTOIN RINGS AND THEIR USE AS ANTISTATIC AGENTS

Gerhard Dieter Wolf, Dormagen; Helmut Engelhard, Leverkusen, and Francis Bentz, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Germany
Filed Sept. 14, 1973, Ser. No. 397,418
Claims priority, application Germany, Sept. 15, 1972, 2245345
Int. Cl. C08g ***22/16***
U.S. Cl. 260—77.5 AQ **4 Claims**

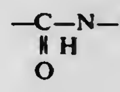
1. Polyetherurethanes containing hydantoin rings corresponding to the general formula

$$X-(OC_nH_{2n})_p-(OC_mH_{2m})_q-Hyd-Y-Hyd-(C_mH_{2m}O)_q-(C_nH_{2n}O)_p-X$$

in which

Y represents a bivalent $C_{2\text{-}18}$ hydrocarbon group or a bivalent C_2-C_8 hydrocarbon group substituted with halogen, alkyl, $-NO_2$ or $-CN$ and

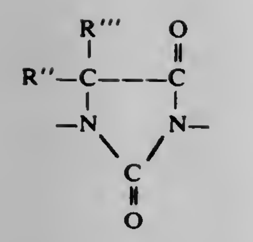
X represents the group



$$-\underset{\underset{O}{\|}}{C}-\underset{H}{N}-R$$

and

Hyd represents a bivalent group of the formula



in which

- R represents a $C_{1\text{-}18}$ alkyl, cycloalkyl, aryl, aralkyl, alkaryl group or such a group substituted with halogen, alkyl, $-NO_2$ or $-CN$,
- R′ has the meanings defined for R or it represents the group $-(C_mH_{2m}O)_q-(C_nH_{2n}O)_p-X$,
- R″ and R‴ represent a $C_{1\text{-}4}$ alkyl or aryl group or together represent a $C_{5\text{-}6}$ cycloalkyl group and
- *n* and *m* represent an integer of from 2 to 6 and
- *p* and *q* represent 0 or an integer of from 1 to 50, and at least *p* or *q* must be greater than 0.

3,893,980
POLY(AMINO ACID ALKYL ESTER PHOSPHAZENES)

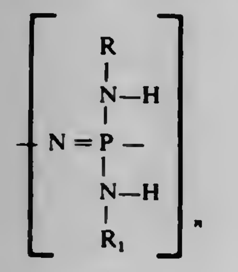
Harry R. Allcock; Karen M. Smeltz, and Daniel P. Mack, all of State College, Pa., assignors to Pennsylvania Research Corporation, University Park, Pa.

Filed Mar. 29, 1974, Ser. No. 456,351

Int. Cl. C08g *20/08*

U.S. Cl. 260—78 A **46 Claims**

1. An amino acid substituted polymer of the formula:



$$\left[\begin{array}{c} R \\ | \\ N-H \\ | \\ -N=P- \\ | \\ N-H \\ | \\ R_1 \end{array}\right]_n$$

wherein:

- A. R is $R_2CHCOOR_3$, R_2 being the residual group of an amino acid, and R_3 being alkyl containing up to five carbon atoms;
- B. R_1 is R, as defined above, methylamino or ethylenimino; and
- C. *n* is from about 500 to 20,000; the average number of methylamino groups per repeating unit, when present, being from about 0.25 to 1.75; the average number of ethylenimino groups per repeating unit, when present, being from about 0.0001 to 0.2.

3,893,981
PROCESS FOR THE PRODUCTION OF BASIC MODIFIED POLYAMIDES

Wilhelm Thoma, Berg Neukirchen; Dietrich Hildebrand, Odenthal; Wolf-Dieter Last, and Heinrich Rinke, both of Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Germany

Filed July 6, 1973, Ser. No. 377,090

Claims priority, application Germany, July 8, 1972, 2233768; July 8, 1972, 2233703

Int. Cl. C08g *20/20, 20/12*

U.S. Cl. 260—78 L **8 Claims**

1. A process for the production of basic modified polyamides by the polycondensation of lactams or ω-aminocarboxylic acids in the presence of triamines of the formula

$H_2N - (CH_2)_n - NH - (CH_2)_n - NH_2$,

wherein n equals 2 to 6

dicarboxylic acids and monocarboxylic acids, which comprises adding to the reaction mixture 0.1 to 5.0 mol of the aliphatic triamine per 100 mol of the polycondensable lactam and 2 equivalents of carboxyl groups in the form of dicarboxylic acids and monocarboxylic acids per mol of triamine and the molar ratio of said monocarboxylic acids to said dicarboxylic acids being between 10 : 1 and 1 : 20.

3,893,982
PRESSURE-SENSITIVE ADHESIVE RESIN SOLUTIONS AND ARTICLES MANUFACTURED THEREFROM

Donald M. Gardner, Springfield, and Lawrence W. McKenna, Wilbraham, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Feb. 20, 1973, Ser. No. 333,916

Int. Cl. C08f *15/40*

U.S. Cl. 260—78.5 R **5 Claims**

1. An organic solvent solution which comprises:

A. an interpolymer comprising:
  1. between 0.1 and 15 weight percent of an α, β-ethylenically unsaturated aliphatic carboxylic acid,
  2. between 0.1 and 2 weight percent of a glycidyl monomer selected from the group consisting of glycidyl acrylate, glycidyl methacrylate and allyl glycidyl ether,
  3. between 35 to 84.9 weight percent of a monomer selected from the group consisting of esters of acrylic acid and methacrylic acid containing from 6 to 20 carbon atoms, and
  4. optionally, a monomer selected from the group consisting of α-olefins containing from 2 to 10 carbon atoms, vinyl esters of alkanoic acids containing from 3 to 10 carbon atoms, ethyl and methyl esters of acrylic and methacrylic acids, acrylonitrile, methacrylonitrile, styrene and vinyl chloride,

wherein the interpolymer has a weight average molecular weight in the range of 10,000 to 500,000 and a glass transition temperature in the range of −15° to −75°C.; and

B. 1,3-bis(dimethylamino)-2-hydroxypropane;

wherein there are between 0.01 and 1.0 parts by weight of the 1,3-bis(dimethylamino)-2-hydroxypropane per 100 parts by weight of interpolymer.

5. A pressure-sensitive permanently tacky resin which comprises:

A. an interpolymer comprising:
  1. between 0.1 and 15 weight percent of an α, β-ethylenically unsaturated aliphatic carboxylic acid,
  2. between 0.1 and 2 weight percent of a glycidyl monomer selected from the group consisting of glycidyl acrylate, glycidyl methacrylate, and allyl glycidyl ether,
  3. between 35 to 84.9 weight percent of a monomer selected from the group consisting of esters of acrylic acid and methacrylic acid containing from 6 to 20 carbon atoms, and
  4. optionally, a monomer selected from the group consisting of α-olefins containing from 2 to 10 carbon atoms, vinyl esters of alkanoic acids containing from 3 to 10 carbon atoms, ethyl and methyl esters of acrylic and methacrylic acids, acrylonitrile, methacrylonitrile, styrene, and vinyl chloride,

wherein the interpolymer has a weight average molecular weight in the range of 10,000 to 500,000 and a glass transition temperature in the range of −15° to −75°C.; and

B. 1,3-bis(dimethylmaino)-2-hydroxypropane; -bis(dimethylamino)-

wherein there are between 0.01 and 1.0 parts by weight of the 1,3-bis(dimethylamino)-2-hydroxypropane per 100 parts by weight of interpolymer.

3,893,983
PROCESS FOR OBTAINING MODIFIED DIENE POLYMERS

Aldo Brancaccio, Cremona; Giuseppe Ghetti, and Mario Bruzzone, both of San Donato Milanese, all of Italy, assignors to Snamprogetti S.p.A., San Donato Milanese, Italy

Filed Jan. 21, 1974, Ser. No. 435,082

Claims priority, application Italy, Feb. 2, 1973, 19946/73

Int. Cl. C08f *27/00*

U.S. Cl. 260—78.4 D **3 Claims**

1. Process for obtaining modified polyisoprene having improved green strength consisting in feeding maleic acid and polyisoprene having a high cis 1,4 content and containing at least 3% imbibition water to a mixer-desiccator, at a temperature of from 140° to 200°C, and at a rate such that 0.01 to 5 parts by weight of maleic acid are fed per 100 parts of polyisoprene, whereby the reaction of the maleic acid with the polyisoprene and the desiccation thereof occur at the same time.

3,893,984
FLUORINE AND SULFUR-CONTAINING COMPOSITIONS

Robert Bonner Hager, Collegeville; Sameeh Said Toukan, Phoenixville, and Gerald Joseph Walter, King of Prussia, all of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Division of Ser. No. 283,886, Aug. 25, 1972, abandoned. This application Apr. 8, 1974, Ser. No. 459,137

Int. Cl. C08f *3/84, 15/00, 19/00*

U.S. Cl. 260—79.7 **5 Claims**

1. A polymer consisting essentially of polymerized units of an ester selected from the class consisting of the methacrylic acid esters and the acrylic acid esters of a twin-tailed alcohol of the structure: $[R_f(CH_2)_nSCH_2]_2CHOH$ where *n* is 1-12 and R_f is selected from the group consisting of $CF_3(CF_2)_y$, $(CF_3)_2CF(CF_2)_y$ and $(CF_3)_2CFO(CF_2)_y$ where *y* is an integer of 1 to 14.

3,893,985
COPOLYMERS OF CYCLIC VINYL ETHERS AND CYCLIC ACETALS

Anthony Joseph Papa, Saint Albans, and William Robert Proops, Charleston, both of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 146,843, May 25, 1971, Pat. No. 3,784,594. This application Aug. 29, 1973, Ser. No. 392,497

Int. Cl. C08f *15/00*

U.S. Cl. 260—80.3 R **12 Claims**

1. A polymeric composition of matter which consists essentially of the reaction product formed by polymerization of: (1) a di-(3,4-dihydro-2H-pyranyl) compound with (2) a substituted 1,3-cyclic acetal in which the cyclic nucleus consists of from three to four carbon atoms in addition to the two oxygen atoms at the 1- and 3- positions thereof, at a mole ratio of (1):(2) of between about 0.2.1 **and about** 10:1.

3,893,986
PROCESS FOR THE PREPARATION OF NOVEL HYDROCARBON RESINS

Hisataka Komai; Atsuo Ishikawa, and Hidemi Tsubaki, all of Kawasaki, Japan, assignors to Nippon Zeon Co. Ltd., Tokyo, Japan

Filed Oct. 5, 1973, Ser. No. 404,023

Claims priority, application Japan, Oct. 12, 1972, 47-102154

Int. Cl. C08f *1/72*

U.S. Cl. 260—80.7 **7 Claims**

1. A process for the preparation of hydrocarbon solvent-soluble hydrocarbon resins, characterized by polymerizing a monomeric mixture comprising 35 – 85 percent by weight of 1,3-pentadiene, 5 – 30 percent by weight of cyclopentene and 10 – 50 percent by weight of diisobutylene, in the presence of a Friedel-Crafts type acidic metal halide catalyst.

3,893,987
MODIFIED HEXA FLUOROISOBUTYLENE/VINYLIDENE FLUORIDE COPOLYMERS HAVING IMPROVED PROCESSING CHARACTERISTICS

Swayambu Chandrasekaran, East Orange, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Filed May 20, 1974, Ser. No. 471,512

Int. Cl. C08f *15/40*

U.S. Cl. 260—80.77 **10 Claims**

1. A solid copolymer of 3,3,3-trifluoro-2-trifluoromethyl propene, 1,1-difluoroethylene and perhalogenated comonomer selected from the group consisting of tetrafluoroethylene, chlorotrifluoroethylene and mixtures thereof, containing from about 5 to 52 mol percent of 3,3,3-trifluoro-2-trifluoromethyl propene, from about 30 to 90 mol percent of 1,1-difluoroethylene and from about 0.1 to 30 mol percent of perhalogenated comonomer.

3,893,988
COPOLYMERS OF ALKOXY AND HYDROXY ALKYL METHACRYLATES AND A PROCESS FOR THEIR PREPARATION

Donald Edwin Seymour, London, and Nicholas Mario Da Costa, Harlow, both of England, assignors to Hydron Limited, London, England

Division of Ser. No. 867,379, Oct. 17, 1969, Pat. No. 3,780,003. This application May 10, 1973, Ser. No. 359,045

Int. Cl. C08f *15/16*

U.S. Cl. 260—86.1 E **2 Claims**

1. A copolymer prepared by copolymerizing in the presence of a free-radical initiator (a) 90 to 50 parts by volume of an alkoxy alkyl methacrylate selected from the group consisting of ethoxy ethyl methacrylate and methoxy ethyl methacrylate with (b) from 10 to 50 parts by volume of a hydroxy alkyl methacrylate selected from the group consisting of hydroxy ethyl methacrylate and hydroxy propyl methacrylate and optionally with a minor amount of a further monomer.

3,893,989
PROCESS FOR POLYMERIZING PROPYLENE

Giorgio Leicht, Terni, and Alberto Tanchi, Torre Orsina, both of Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Continuation of Ser. No. 165,844, July 6, 1971, abandoned. This application Oct. 9, 1973, Ser. No. 404,674

Int. Cl. C08f *1/42, 3/10*

U.S. Cl. 260—93.7 **8 Claims**

1. A method for preparing stereoregular propylene polymers having a high bulk density, comprising polymerizing propylene in the liquid phase at a temperature of from about 40° to 90°C in the presence of (1) a catalytic system which is the reaction product of:

- a. violet crystalline titanium trichloride obtained by reducing titanium tetrachloride with an aluminum alkyl compound; and
- b. an organic aluminum compound of the formula

  AlR_3 or AlR_2X,

  wherein R is a hydrocarbon radical having from 2 to 6 carbon atoms and X is halogen,

and in the presence of (2) polypropylene prepared by low temperature polymerization of propylene in the liquid phase in the presence of the catalytic system as defined above, the low temperature being less than 40°C.

3,893,990

CLARIFICATION OF BLOOD SERUM AND PLASMA USING A BLOCK COPOLYMER OF ETHYLENE OXIDE AND POLYOXYPROPYLENE

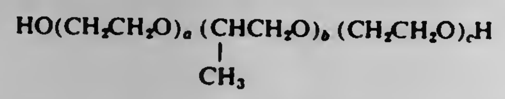
Lajos F. Fekete, Costa Mesa, and Frank Peetoom, Laguna Beach, both of Calif., assignors to Baxter Laboratories, Inc., Morton Grove, Ill.

Continuation of Ser. No. 348,463, April 5, 1973, abandoned, which is a division of Ser. No. 158,111, June 29, 1971, Pat. No. 3,770,631. This application Apr. 1, 1974. Ser. No. 456,698

Int. Cl. C02b *1/20;* **C07g** *7/00*

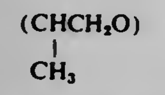
U.S. Cl. 260—112 B **2 Claims**

1. The process in which a clarified plasma for use as a thromboplastin control is obtained from blood plasma by admixing said blood plasma with a compound of the formula



$$HO(CH_2CH_2O)_a\underset{\substack{|\\ CH_3}}{(CHCH_2O)_b}(CH_2CH_2O)_cH$$

wherein a and c are integers such that the hydrophile portion represented by (CH_2CH_2O) constitutes at least about 50% of the molecule and b is an integer such that the hydrophobic portion represented by



$$\underset{\substack{|\\ CH_3}}{(CHCH_2O)}$$

has a molecular weight of at least about 950 to a concentration of from greater than about 20 to about 30% on a weight per volume basis of said compound and at a pH of 6 to 7, admixing the resulting precipitate in normal physiological saline to 80 to 120% of the original volume of said blood plasma, admixing the resulting mixture with from about 0.5 to about 2% tribasic calcium phosphate at a pH of 7 to 7.4, removing the resulting precipitate and admixing the supernatant with aqueous buffer selected from the group consisting of (a) citrate-imidazole buffer comprising from about 0.0130 molar to 0.0140 molar trisodium citrate and about 0.025 to 0.035% imidazole and (b) oxalate-imidazole buffer comprising from about 0.0130 molar to 0.0140 molar sodium oxalate and about 0.025 to 0.035% imidazole, said buffers adjusted to pH 7.6 to 8.0.

3,893,991

CLARIFICATION OF BLOOD SERUM AND PLASMA USING BLOCK COPOLYMERS OF ETHYLENE OXIDE AND POLYOXYPROPYLENE

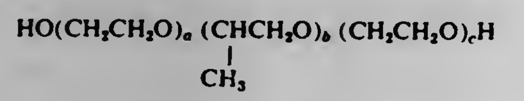
Lajos F. Fekete, Costa Mesa, and Frans Peetoom, Laguna Beach, both of Calif., assignors to Baxter Laboratories, Inc., Morton Grove, Ill.

Continuation of Ser. No. 348,438, April 5, 1973, abandoned, which is a division of Ser. No. 158,111, June 29, 1971, Pat. No. 3,770,631. This application Apr. 1, 1974, Ser. No. 456,697

Int. Cl. C02b *1/20;* **C07g** *7/00*

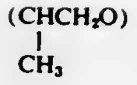
U.S. Cl. 260—112 B **2 Claims**

1. The process in which a clarified plasma for use as a thromboplastin control is obtained from blood plasma by admixing said blood plasma with a compound of the formula



$$HO(CH_2CH_2O)_a\underset{\substack{|\\ CH_3}}{(CHCH_2O)_b}(CH_2CH_2O)_cH$$

wherein a and c are integers such that the hydrophile portion represented by (CH_2CH_2O) constitutes at least about 50% of the molecule and b is an integer such that the hydrophobic portion represented by



$$\underset{\substack{|\\ CH_3}}{(CHCH_2O)}$$

has a molecular weight of at least about 950 to a concentration of from greater than 20 to about 30% on a weight per volume basis of said compound and at a pH of 6 to 7, admixing the resulting precipitate in aqueous buffer to 50 to 70% of the original volume of said blood plasma, said buffer selected from the group consisting of (a) citrate-imidazole-normal saline buffer comprising about 0.9% to NaCl solution, about 0.0130 molar to 0.0140 molar tri-sodium citrate and about 0.025 to 0.035% imidazole and (b) oxalate-imidazole-normal saline buffer comprising about 0.9% NaCl solution, about 0.0130 molar to 0.0140 molar sodium oxalate and about 0.025 to 0.035% imidazole, said buffers adjusted to pH 7.0 to 7.4.

3,893,992

N-ACYLATED PEPTIDES OF AMINO AROMATIC SULFONIC ACIDS AND THEIR DERIVATIVES

Peter L. De Benneville, Philadelphia, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 91,176, Nov. 19, 1970, Pat. No. 3,801,562. This application Dec. 12, 1973, Ser. No. 424,020

Int. Cl. C07c *103/52, 143/78, 143/56*

U.S. Cl. 260—112.5 **11 Claims**

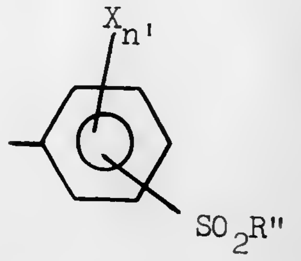
1. A compound of the formula

$$RCO—A_n—NHR'CO—B_m—NHZ$$

wherein R is a hydrogen atom; a phenyl group; a phenyl group substituted with one or more halogen atoms, $(C_1—C_4)$alkyl groups, hydroxy groups, $(C_1—C_4)$alkoxy groups, $(C_1—C_4)$alkanoyloxy groups, or $(C_1—C_4)$alkoxycarbonyl groups; a $(C_1—C_{12})$alkyl group; a $(C_1—C_{12})$alkyl group substituted with one or more halogen atoms, $(C_1—C_4)$alkoxy groups, hydroxy groups, $(C_1—C_4)$— alkanoyloxy groups, polyalkoxyalkyl groups, or phenyl groups; a $(C_1—C_{12})$alkoxy group; an aralkoxy group of up to 10 carbon atoms; or a divalent alkylene group having up to 6 carbon atoms;

NHR'CO is an amino acid linkage derived from L-phenylalanine, L-tyrosine, L-leucine; L-methionine, L-tryptophan, L-arginine, or L-lysine;

Z is a group of the formula



wherein

R'' is a hydroxy group, a $(C_1—C_4)$alkoxy group, a $(C_1—C_4)$alkoxyalkoxy group, an amino group, a $(C_1—C_4)$monoalkylamino group, a $(C_1—C_4)$dialkylamino group, a group of the formula $—NHCH_2COR''$, or a salt of the group in which R'' is a hydroxy group;

X is a hydroxy group, a $(C_1—C_4)$alkyl group, a halogen atom, or a $(C_1—C_4)$alkoxy group; and

n' is 0, 1, or 2;

A and B are the residues of low molecular weight amino acids selected from the group consisting of glycyl, alanyl, and glycylglycyl; and

m and *n* are 0, 1, or 2.

3,893,993

ALLERGENIC EXTRACTS CROSS LINKED UNDER ACID CONDITIONS WITH INORGANIC CYANATES

Noel Austin Mullan, and Brian George Overell, both of Dorking, England, assignors to Beecham Group Limited, Great Britain

Division of Ser. No. 59,745, July 30, 1970, Pat. No. 3,794,630. This application July 20, 1973, Ser. No. 381,342

Claims priority, application United Kingdom, Aug. 6, 1969, 39289/69; May 15, 1970, 23621/70; May 16, 1970, 23853/70

Int. Cl. C07g *7/00*

U.S. Cl. 260—112 R **16 Claims**

1. A process for the preparation of a modified allergenic material which comprises an allergenic extract of pollen or house dust which consists principally of a protein or glycoprotein, which allergenic extract is crosslinked under acidic conditions inter- or intra-molecularly with an inorganic cyanate, said modified allergenic material being substantially water-insoluble or only sparingly water-soluble and having a reduced allergenicity relative to the uncrosslinked protein or glycoprotein and having the ability to stimulate the production of antibodies having cross-specificity for the unlinked protein or glycoprotein, which comprises reacting an allergenic extract of a pollen extract selected from the group consisting of Cocksfoot pollen, mixed grass pollens and timothy pollen or house dust with an inorganic cyanate at an acidic pH to reduce the allergenicity and recovering the modified allergenic material so produced.

3,893,994

4-(ALKYL)-4'-(ALKOXY OR ALKYLCARBONYLOXY)-1,1'-AZOBENE

Ralf Steinstrasser, Darmstadt-Eberstadt, Germany, assignor to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

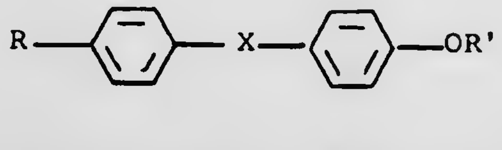
Continuation-in-part of Ser. No. 91,522, Nov. 20, 1970, Pat. No. 3,773,747. This application July 27, 1973, Ser. No. 383,253

Claims priority, application Germany, Mar. 28, 1970, 2014989

Int. Cl. C07c *107/06;* **C09k** *3/02*

U.S. Cl. 260—206 **14 Claims**

1. A compound of the formula



wherein X is azo, R is straight-chain alkyl of 3–8 carbon atoms and R' is straight-chain alkyl of 1–10 carbon atoms or straight-chain alkanoyl of 2–10 carbon atoms.

3,893,995

METHOD FOR OBTAINING POLYFRUCTOSANS

Ernst Nitsch, and Siegried Muhlbock, both of Linz, Austria, assignors to Laevosan-Gesellschaft mbH & Co. KG, Linz, Austria

Filed Dec. 6, 1971, Ser. No. 205,293

Claims priority, application Austria, Dec. 9, 1970, 11055/70

Int. Cl. C07g *3/00*

U.S. Cl. 260—209 R **7 Claims**

1. A method for obtaining the highly water-soluble polyfructosans from the storage organs of monocotyledon plants, which comprises;

a. extracting said polyfructosan with a member selected from the group consisting of a low alcohol and acetone having a water content of from 80–40 percent,
b. bringing said extract to a pH of about 9 with calcium hydroxide,
c. filtering and concentrating said extract into a thick syrup under reduced pressure,
d. adding to said extract, in an amount equal to about half of said extract's weight, a low alcohol,
e. acidifying said extract with a strong acid, to obtain a pH of between 1 and 3,
f. subsequently precipitating the polyfructosan with a member selected from the goup consisting of a low alcohol and acetone, in an amount of 2 to 8 times the weight of said extract, and
g. converting the precipitate thus formed into a powdery crystalline state by repeatedly kneading the same with a water-free precipitation agent.

3,893,996

HYDROXYALKYL AND MERCAPTOALKYL DERIVATIVES OF β-(1 → 3) GLUCANS

Junji Hamuro, Tokyo, and Masao Akiyama, Kawasaki, both of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Aug. 2, 1973, Ser. No. 385,173

Claims priority, application Japan, Aug. 7, 1972, 47-78992

Int. Cl. C07c *47/18*

U.S. Cl. 260—290 R **7 Claims**

1. A water-soluble hydroxyalkyl glucan or mercaptoalkyl glucan having a glucan moiety essentially consisting of glucose units connected by β-(1 3) bonds and 0.02 to 1.2 hydroxyalkyl or mercaptoalkyl moieties per glucose unit, said hydroxyalkyl or mercaptoalkyl having 2 to 4 carbon atoms, said compound having a molecular weight of more than 10,000.

3,893,997

PSEUDODISACCHARIDE INTERMEDIATES

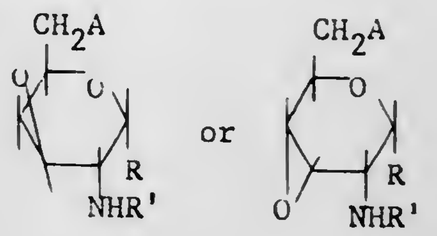
David J. Cooper, Downingtown, Pa., and Jerry A. Weisbach, Cherry Hill, N.J., assignors to SmithKline Corporation, Philadelphia, Pa.

Filed July 1, 1974, Ser. No. 484,495

Int. Cl.^{2} C07C *47/18*

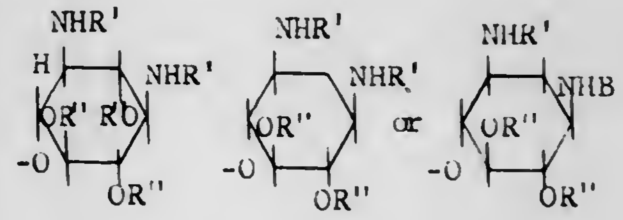
U.S. Cl. 260—210 R **12 Claims**

1. A compound of the formula



wherein

R is



R' is an amino protecting group or hydrogen;
A is OR'', NHR', or NYR';
Y is lower alkyl of 1 to 4 carbon atoms,
R'' is a hydroxy protecting group or hydrogen; and
B is $—COCHOR''CH_2CH_2NHR'$;

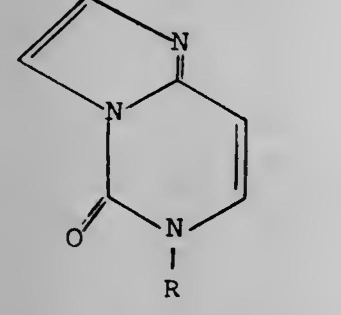
3,893,998
FLUORESCENT DERIVATIVES OF CYTOSINE-CONTAINING COMPOUNDS

John A. Secrist, III, Cambridge, Mass.; Jorge R. Barrio; Nelson J. Leonard, both of Urbana, and Laurence G. Dammann, Champaign, all of Ill., assignors to University of Illinois Foundation, Urbana, Ill.

Filed Feb. 22, 1973, Ser. No. 334,674
Int. Cl. C07d *51/52*
U.S. Cl. 260—211.5 R **8 Claims**

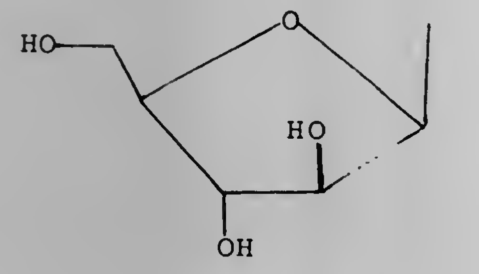
1. A biologically active fluorescent coenzyme selected from the group consisting of:

A. compounds having the formula

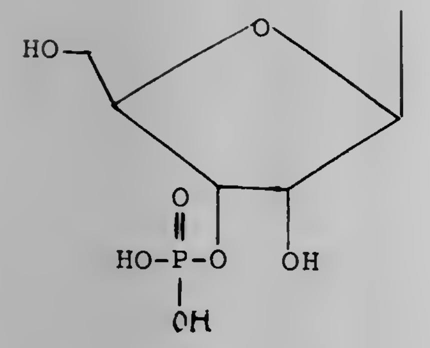


wherein R has any of the following formulas:

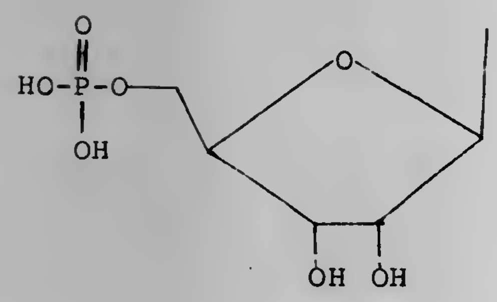
(1)



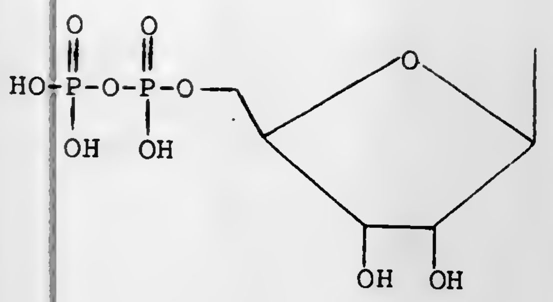
(2)



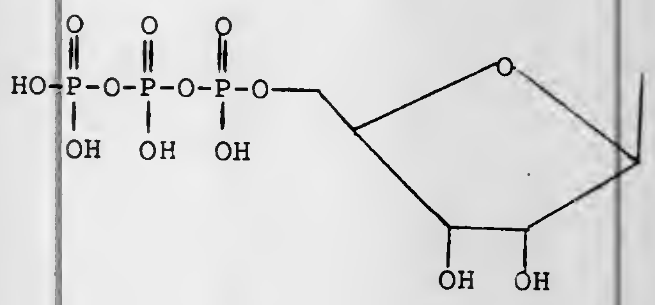
(3)



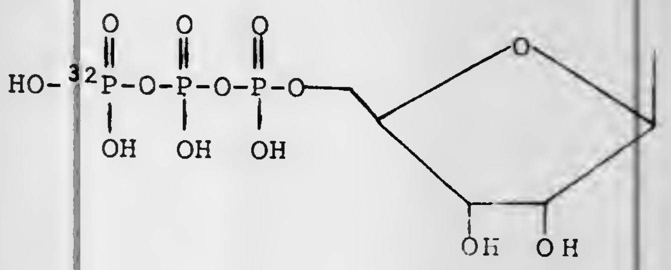
(4)



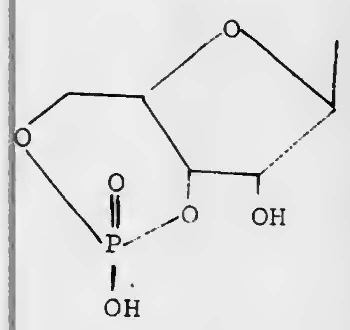
(5)



(6)



(7)



B. anhydrides of A(3) above with nicotinamide mononucleotide or flavin mononucleotide; and

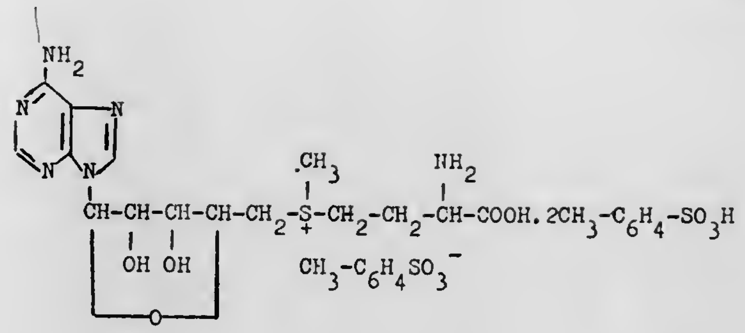
C. salts of any of the compounds of Groups A(2)–A(7) or (B) above with inorganic bases.

3,893,999
SALT OF S-ADENOSIL-L-METHIONINE AND PROCESS OF PREPARATION

Alberto Fiecchi, Milan, Italy, assignor to Bioresearch S.a.s., Milan, Italy

Filed July 17, 1973, Ser. No. 380,097
Claims priority, application Italy, Aug. 2, 1972, 27793/72
Int. Cl. C07d *51/54*
U.S. Cl. 260—211.5 R **18 Claims**

1. The tri-p-toluenesulphonate of S-adenosil-L-methionine of formula

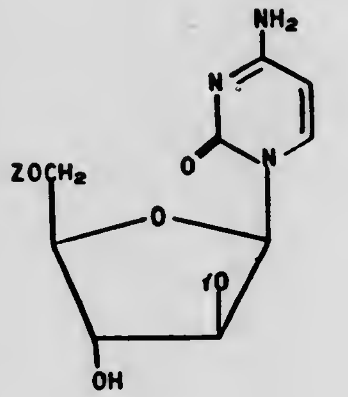


3,894,000
ARA-CYTIDINE DERIVATIVES AND PROCESS OF PREPARATION

William J. Wechter, and Donald T. Warner, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

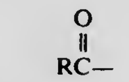
Continuation of Ser. No. 110,312, Jan. 27, 1971, abandoned. This application July 19, 1973, Ser. No. 380,850
Int. Cl. C07d *51/52*
U.S. Cl. 260—211.5 R **45 Claims**

1. A compound of the formula



I, II

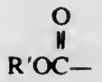
wherein Y is selected from the group consisting of 1.



$$RC(=O)—$$

wherein R is a radical selected from the group consisting of aliphatic of from 1 through 20 carbon atoms, aromatic of from 6 through 10 carbon atoms, cage-type hydrocarbon of from 7 through 20 carbon atoms, monocyclic aliphatic of from 4 through 10 carbon atoms, araliphatic of from 7 through 12 carbon atoms and monocyclic heterocyclic of from 4 through 10 carbon atoms, including such radicals substituted by halogen, hydroxyl, carboxyl, nitro, alkoxyl or mercapto groups, and

2.



$$R'OC(=O)—$$

wherein R′ is a radical selected from the group consisting of aliphatic of from 1 to 20 carbon atoms, aromatic of from 6 through 10 carbon atoms, and araliphatic of from 7 through 12 carbon atoms,

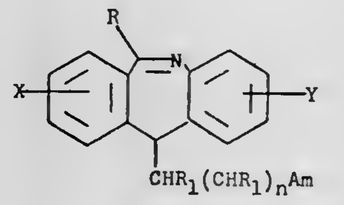
and Z is selected from thr group consisting of Y and hydrogen; and pharmaceutically acceptable acid additon salts thereof.

3,894,001
11-AMINOALKYL- AND 11-CYCLICAMINOMORPHANTHRIDINES

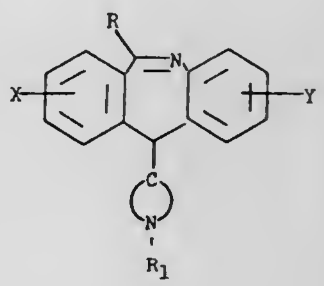
Alexander E. Drukker, Milwaukee, Wis., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 848,355, Aug. 7, 1969, Pat. No. 3,699,099, and a continuation-in-part of Ser. No. 48,506, June 22, 1970, abandoned. This application Nov. 20, 1972, Ser. No. 307,933
Int. Cl. C07d *41/08*
U.S. Cl. 260—239 D **10 Claims**

1. A compound selected from compounds of the formulae:

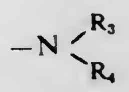


I



II

in which X and Y are hydrogen, halo, alkoxy of 1 to 3 carbons, alkyl of 1 to 4 carbons, thio-lower alkyl or trifluoromethyl, n is 0 to 4, R, R_1 and R_2 are hydrogen or alkyl of 1 to 4 carbon atoms, Am is



$$—N\langle^{R_3}_{R_4}$$

a.

in which R_3 and R_4 are hydrogen, alkyl of 1 to 4 carbons or phenyl-lower alkyl of 7 to 13 carbons, or

b. a heterocyclic amino group selected from morpholino, pyrrolidino, piperidino, N-lower alkyl piperazino, N-phenyl-lower alkyl piperazino and N-(hydroxy-lower alkyl) -piperazino, and

-C N-

is a cyclicamino group selected from 3-piperidyl, 4-piperidyl, 3-pyrrolidyl, 3-homopiperidyl and 4-homopiperidyl and pharmaceutically acceptable acid addition salts thereof.

10. A compound of Formula II of claim 1 in which X and Y are hydrogen or chloro,

-C N-

is 3 or 4-piperidyl and R_1 is an alkyl of 1 to 4 carbons.

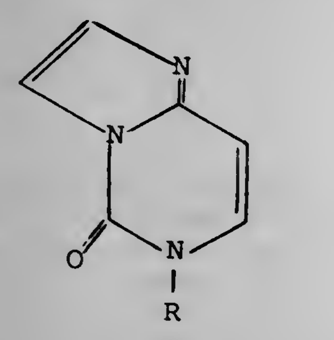
3,893,998
FLUORESCENT DERIVATIVES OF CYTOSINE-CONTAINING COMPOUNDS

John A. Secrist, III, Cambridge, Mass.; Jorge R. Barrio; Nelson J. Leonard, both of Urbana, and Laurence G. Dammann, Champaign, all of Ill., assignors to University of Illinois Foundation, Urbana, Ill.

Filed Feb. 22, 1973, Ser. No. 334,674
Int. Cl. C07d *51/52*
U.S. Cl. 260—211.5 R **8 Claims**

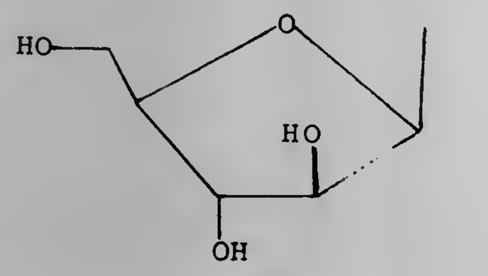
1. A biologically active fluorescent coenzyme selected from the group consisting of:

A. compounds having the formula

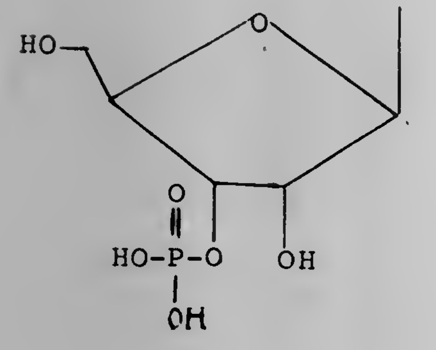


wherein R has any of the following formulas:

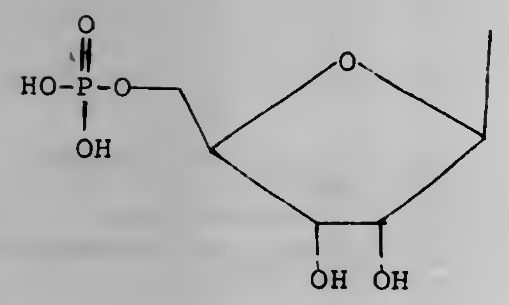
(1)



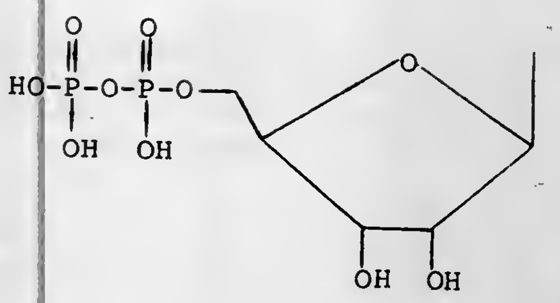
(2)



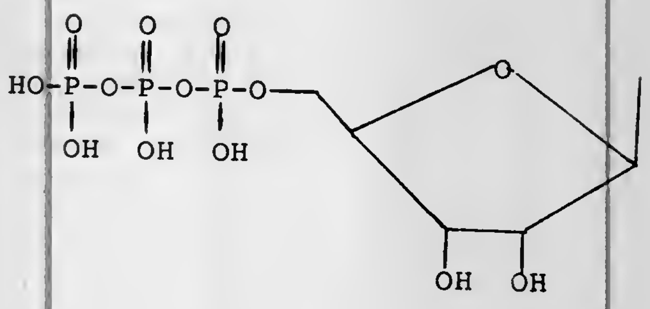
(3)



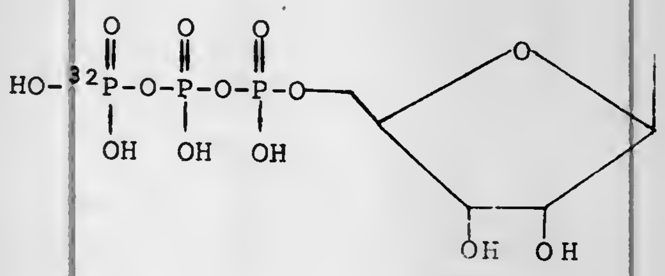
(4)



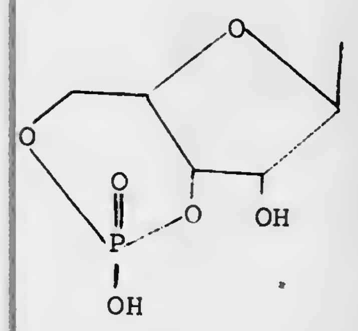
(5)



(6)



(7)



B. anhydrides of A(3) above with nicotinamide mononucleotide or flavin mononucleotide; and

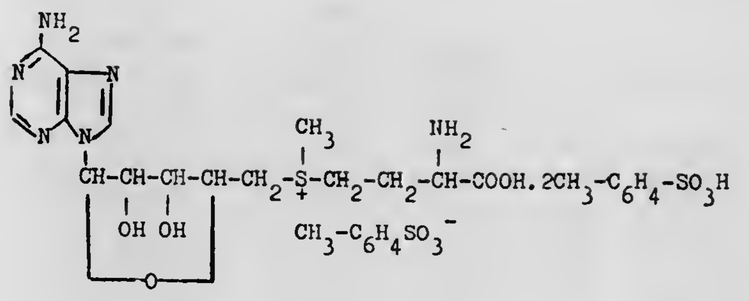
C. salts of any of the compounds of Groups A(2)–A(7) or (B) above with inorganic bases.

3,893,999
SALT OF S-ADENOSIL-L-METHIONINE AND PROCESS OF PREPARATION

Alberto Fiecchi, Milan, Italy, assignor to Bioresearch S.a.s., Milan, Italy

Filed July 17, 1973, Ser. No. 380,097
Claims priority, application Italy, Aug. 2, 1972, 27793/72
Int. Cl. C07d *51/54*
U.S. Cl. 260—211.5 R **18 Claims**

1. The tri-p-toluenesulphonate of S-adenosil-L-methionine of formula

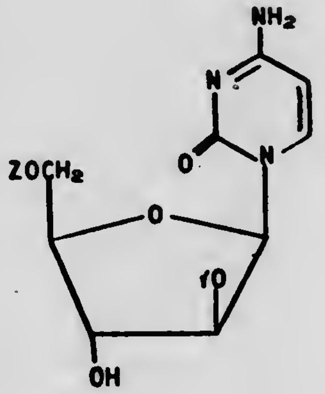


3,894,000
ARA-CYTIDINE DERIVATIVES AND PROCESS OF PREPARATION

William J. Wechter, and Donald T. Warner, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

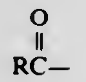
Continuation of Ser. No. 110,312, Jan. 27, 1971, abandoned. This application July 19, 1973, Ser. No. 380,850
Int. Cl. C07d *51/52*
U.S. Cl. 260—211.5 R **45 Claims**

1. A compound of the formula



I, II

wherein Y is selected from the group consisting of 1.



$$R\overset{\overset{\displaystyle O}{\|}}{C}-$$

wherein R is a radical selected from the group consisting of aliphatic of from 1 through 20 carbon atoms, aromatic of from 6 through 10 carbon atoms, cage-type hydrocarbon of from 7 through 20 carbon atoms, monocyclic aliphatic of from 4 through 10 carbon atoms, araliphatic of from 7 through 12 carbon atoms and monocyclic heterocyclic of from 4 through 10 carbon atoms, including such radicals substituted by halogen, hydroxyl, carboxyl, nitro, alkoxyl or mercapto groups, and

2.

$$R'O\overset{\overset{\displaystyle O}{\|}}{C}-$$

wherein R′ is a radical selected from the group consisting of aliphatic of from 1 to 20 carbon atoms, aromatic of from 6 through 10 carbon atoms, and araliphatic of from 7 through 12 carbon atoms,

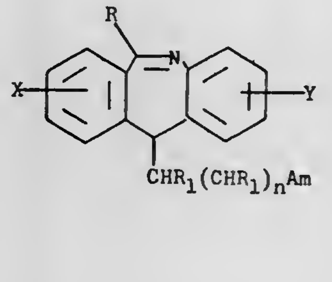
and Z is selected from thr group consisting of Y and hydrogen; and pharmaceutically acceptable acid additon salts thereof.

3,894,001
11-AMINOALKYL- AND 11-CYCLICAMINOMORPHANTHRIDINES

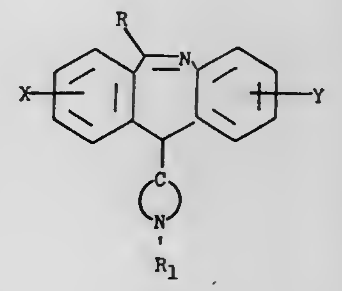
Alexander E. Drukker, Milwaukee, Wis., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 848,355, Aug. 7, 1969, Pat. No. 3,699,099, and a continuation-in-part of Ser. No. 48,506, June 22, 1970, abandoned. This application Nov. 20, 1972, Ser. No. 307,933
Int. Cl. C07d *41/08*
U.S. Cl. 260—239 D **10 Claims**

1. A compound selected from compounds of the formulae:

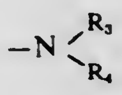


I



II

in which X and Y are hydrogen, halo, alkoxy of 1 to 3 carbons, alkyl of 1 to 4 carbons, thio-lower alkyl or trifluoromethyl, n is 0 to 4, R, R_1 and R_2 are hydrogen or alkyl of 1 to 4 carbon atoms, Am is



$$-N\Big\langle\begin{matrix}R_3\\R_4\end{matrix}$$

a. in which R_3 and R_4 are hydrogen, alkyl of 1 to 4 carbons or phenyl-lower alkyl of 7 to 13 carbons, or

b. a heterocyclic amino group selected from morpholino, pyrrolidino, piperidino, N-lower alkyl piperazino, N-phenyl-lower alkyl piperazino and N-(hydroxy-lower alkyl)-piperazino, and

-C N-

is a cyclicamino group selected from 3-piperidyl, 4-piperidyl, 3-pyrrolidyl, 3-homopiperidyl and 4-homopiperidyl and pharmaceutically acceptable acid addition salts thereof.

10. A compound of Formula II of claim 1 in which X and Y are hydrogen or chloro,

-C N-

is 3 or 4-piperidyl and R_1 is an alkyl of 1 to 4 carbons.

3,894,002

SUBSTITUTED NAPHTHYLALKYLENE LACTAMIMIDES

Robert D. MacKenzie; Thomas R. Blohm, and Edward M. Roberts, all of Cincinnati, Ohio, assignors to Richardson-Merrell Inc., Wilton, Conn.

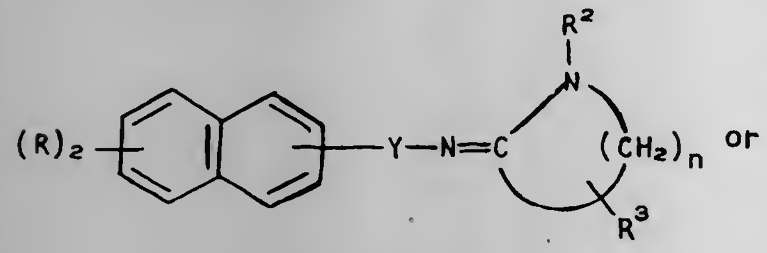
Continuation-in-part of Ser. No. 143,258, May 13, 1971, abandoned. This application Aug. 9, 1973, Ser. No. 386,997

Int. Cl. C07d *27/04, 29/28, 41/08*

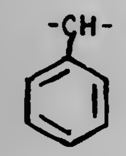
U.S. Cl. 260—239 B **13 Claims**

1. A compound selected from

A. a compound of the formula



B. a pharmaceutically acceptable acid addition salt thereof, wherein each R is selected from the group consisting of hydrogen, halogen, trifluoromethyl, alkyl of from 1 to 12 carbon atoms, alkoxy of from 1 to 3 carbon atoms or nitro; Y is an alkylene chain of from 1 to 6 carbon atoms or



in which the phenyl moiety may be substituted with substituents selected from the group consisting of halogen or lower alkyl of from 1 to 3 carbon atoms; R^2 is selected from the group consisting of hydrogen or lower alkyl of from 1 to 4 carbon atoms; R^3 is selected from the group consisting of hydrogen, lower alkyl of from 1 to 4 carbon atoms or halogen; and n is a whole integer of from 3 to 11.

3,894,003

4-BIPHENYLCARBONYLACYLAMIDO PENICILLANIC ACID AND SALTS

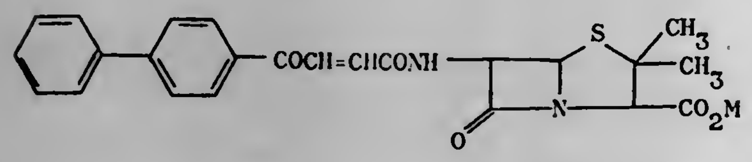
Peter H. L. Wei, Springfield, and Ronald J. McCaully, Malvern, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Mar. 18, 1974, Ser. No. 452,016

Int. Cl.² C07D *499/44*

U.S. Cl. 260—239.1 **2 Claims**

1. A compound of the formula:



in which M is a member selected from the group consisting of -H, an alkali metal and -NH₄.

3,894,004

NOVEL 11-OXYGENATED PREGNENO (17,16α-D)-1,3-OXATHIOLANES AND PROCESS FOR THE PREPARATION THEREOF

Helmut Hofmeister; Henry Laurent; Klaus Prezewowsky; Rudolf Wiechert; Klaus Mengel, and Hans Wendt, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin, Germany

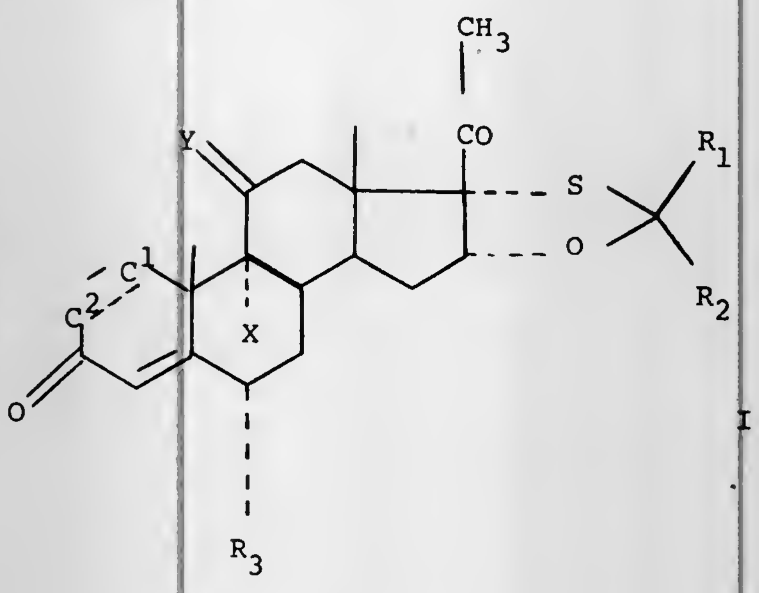
Filed Dec. 20, 1973, Ser. No. 426,600

Claims priority, application Germany, Dec. 22, 1972, 2264001

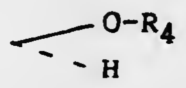
Int. Cl.² C07C *173/00*

U.S. Cl. 260—239.5 **14 Claims**

1. 11-oxygenated pregneno [17,16α-d]-1′,3′-oxathiolanes of the Formula I



wherein R_1 and R_2, can be the same or different and are a hydrogen atom, a saturated or unsaturated alkyl of 1–5 carbon atoms, a cycloalkyl, a cycloalkyl of 3–8 carbon atoms, phenyl, or thienyl; R_1 and R_2 together can be a $(CH_2)_n)$ bridge wherein n has the values of 2–6; R_3 represents a hydrogen or fluorine atom, or methyl; X is a hydrogen, fluorine, or chlorine atom; Y is an oxygen atom or the group



wherein R_4 represents a hydrogen atom or an alkanoyloxy of 1–4 carbon atoms; and $C^1 \cdots C^2$ represents a single or double bond between the C-1 and C-2 carbon atoms.

3,894,005

HYDRAZONES OF PYRAZOLO[3,4-B]PYRIDINES

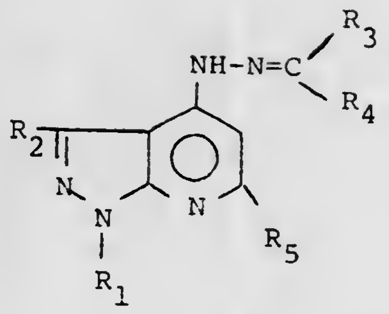
Hans Hoehn, Tegernheim, and Ernst Schulze, Regensburg, both of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed May 24, 1974, Ser. No. 473,122

Int. Cl. C07d *31/42, 39/00*

U.S. Cl. 260—240 G **12 Claims**

1. A compound of the formula



wherein R_1 is lower alkyl or phenyl-lower alkyl; R_2 is hydrogen or lower alkyl, R_3 is lower alkyl, phenyl or substituted phenyl; R_4 is hydrogen, lower alkyl, phenyl or substituted phenyl, said phenyl substituents being halogen, lower alkyl or carboxy; or R_3 and R_4 together complete a C_3 to C_6 cycloalkyl ring; and R_5 is hydrogen, lower alkyl or phenyl; and physiologically acceptable acid addition salts thereof.

3,894,006

PROCESS FOR MANUFACTURE OF β-(3-OXC-7 α-THIOACYL-17β-HYDROXY-4-ANDROSTENE-17α-YL) PROPIONIC ACID γ-LACTONES

Ulrich Stache, Hofheim, Taunus, and Kurt Radscheit, Kelkheim, Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

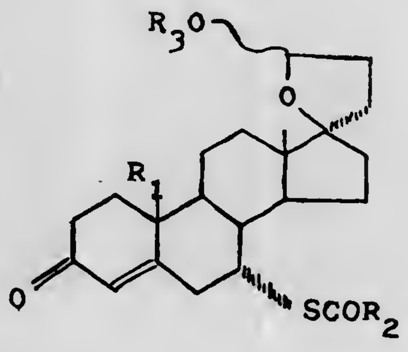
Filed Oct. 3, 1973, Ser. No. 403,018

Claims priority, application Germany, Oct. 5, 1972, 2248835

Int. Cl. C07c *173/00*

U.S. Cl. 260—239.55 R **9 Claims**

1. A compound of the formula



in which R_1 stands for the methyl group or a hydrogen atom and R_2 and R_3 each stand for an alkyl group having 1 to 5 carbon atoms.

3,894,007

2-[(2,4-DIOXO-1-IMIDAZOLIDINYL)IMINO]ETHYL-P-CHLOROBENZOATE

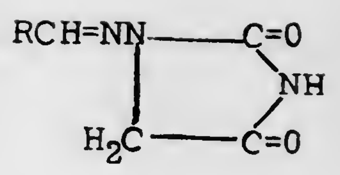
Ralph L. White, Jr., Norwich, N.Y., assignor to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Jan. 25, 1974, Ser. No. 436,465

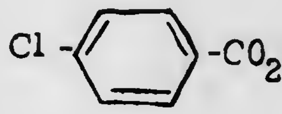
Int. Cl. C07d *49/32*

U.S. Cl. 260—240 G **3 Claims**

1. A compound of the formula:



wherein R is ClCH₂- or



3,894,008

2-IMIDAZOLIN-5-ONES

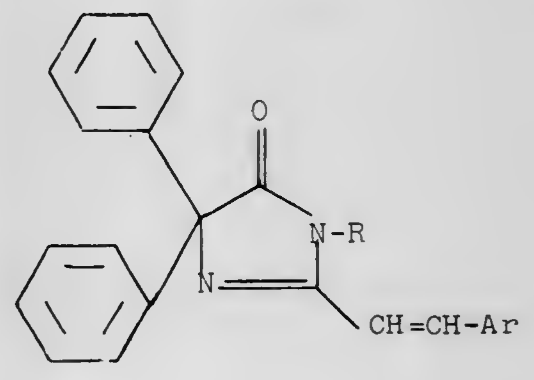
John L. Irvine, West Allis, Wis., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed May 31, 1974, Ser. No. 475,049

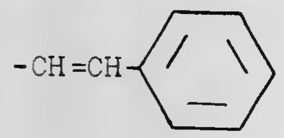
Int. Cl. C07d *5/04, 49/36*

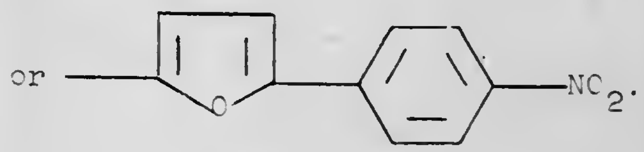
U.S. Cl. 260—240 A **9 Claims**

1. A compound of the formula



in which R is a lower alkyl of 1 to 4 carbon atoms, phenyl, halo-substituted phenyl or tolyl, and Ar is phenyl, halo-substituted phenyl, pyridyl,





3,894,009

PROSTAGLANDIN DERIVATIVES AND PROCESS FOR THE PREPARATION THEREOF

Kiyoshi Sakal; Takashi Yusa; Shigeo Amemiya; Masaaki Ito; Hamako Katano; Mitsuo Yamazaki; Mitsuko Sugiura; Koichi Kojima, and Masaaki Sasaki, all of Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

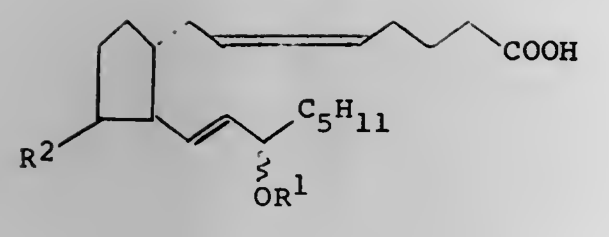
Continuation-in-part of Ser. No. 292,513, Sept. 27, 1972, abandoned. This application Dec. 4, 1973, Ser. No. 421,601

Claims priority, application Japan, July 5, 1972, 47-67342

Int. Cl. C07c *61/32*

U.S. Cl. 260—240 R **4 Claims**

1. A 11,15-dihydroxyprosta-5(cis),13(trans)-dienoic acid having the formula



wherein R^1 represents a hydrogen atom or a 2-tetrahydropyranyl group and R^2 represents a hydroxy group and the pharmaceutically acceptable salts thereof.

3,894,010

3-[2-(THIOACYLTHIO)ALKANAMIDO]-1,4-[CYCLO(1'-ARBOXY)-ALKYLENETHIO]AZETIDIN-2-ONE DERIVATIVES AND THEIR PREPARATION

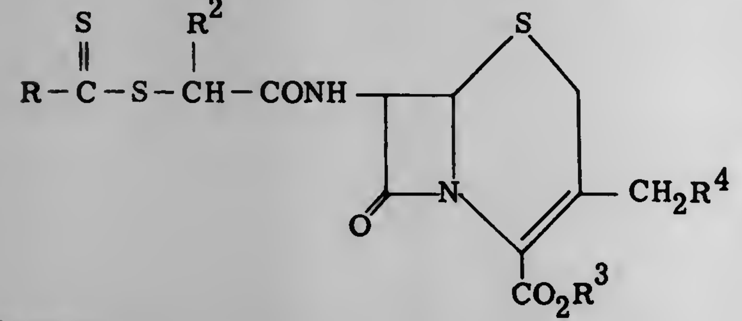
Daniel M. Teller, Devon, and John H. Sellstedt, King of Prussia, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Apr. 16, 1973, Ser. No. 351,662

Int. Cl. C07d *99/16, 99/24*

U.S. Cl. 260—243 C **8 Claims**

1. A compound of the formula:



in which

R is a member selected from the group consisting of (lower)-alkyl, phenyl, (lower alkoxy)phenyl, and 2-thienyl;
R^2 is a member selected from the group consisting of —H, (lower)alkyl, phenyl and carboxy;
R^3 is a member selected from the group consisting of —H and an alkali metal cation; and
R^4 is a member selected from the group consisting of —H, (lower)alkanoyloxy and N-pyridinium.

3,894,011

TRIAZOLO[4,3-D][1,4]BENZODIAZEPINE-3,6-DIONES

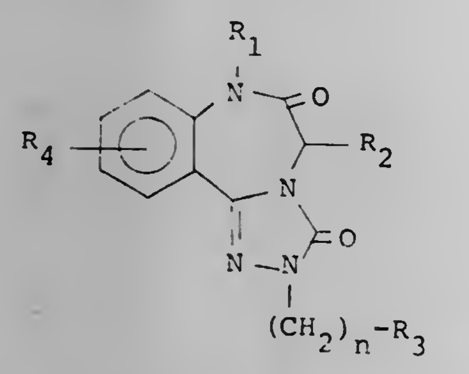
B. Richard Vogt, Yardley, Pa., and Peter C. Wade, Pennington, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Mar. 4, 1974, Ser. No. 447,625

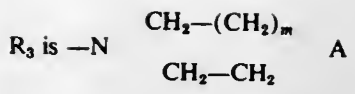
Int. Cl. C07d *57/02*

U.S. Cl. 260—239.3 T **4 Claims**

1. A compound having the formula



or a pharmaceutically acceptable acid-addition salt thereof, wherein R_1 is hydrogen, alkyl, phenyl or benzyl; R_2 is hydrogen or alkyl;



$$R_3 \text{ is } -N\begin{matrix}CH_2-(CH_2)_m\\ CH_2-CH_2\end{matrix}A$$

wherein A is CH—Q, oxygen or N—Q, Q is hydrogen, alkyl or phenyl, and m is 0 or 1; R_4 is hydrogen, halogen, nitro, cyano, trifluoromethyl, alkyl, alkoxy, or alkylthio; and *n* is 2, 3, or 4; wherein alkyl is alkyl of 1 to 4 carbon atoms and alkoxy is alkoxy of 1 to 4 carbon atoms.

3,894,012

PRODUCTION OF OXAZINE DYE

Hans Baumann, Ludwigshafen, and Udo Mayer, Frankenthal, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

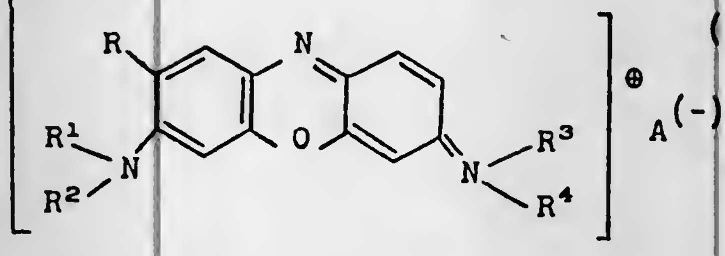
Filed Feb. 7, 1973, Ser. No. 330,253

Claims priority, application Germany, Feb. 11, 1972, 2206508

Int. Cl. C09b *19/00*

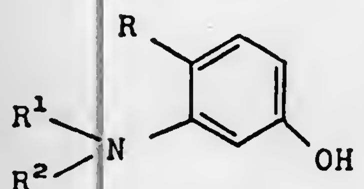
U.S. Cl. 260—244 R **2 Claims**

1. In the process for the production of an oxazine dye of the formula (I):



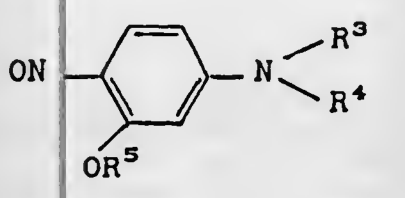
(I)

R is hydrogen or alkyl;
R^1 is hydrogen, unsubstituted or substituted alkyl, cycloalkyl or aralkyl;
R^2 is hydrogen or unsubstituted or substituted alkyl;
R^3 is unsubstituted or substituted alkyl, cycloalkyl, aralkyl or phenyl;
R^4 is hydrogen or unsubstituted or substituted alkyl; and
$A^{(-)}$ is an anion,
by condensation at an elevated temperature in an alcoholic or glycolic solution of a compound of the formula



(II)

and a compound of the formula



(III)

where R^5 is alkyl of one to four carbon atoms and R to R^4 have the meanings given above, the improvement which comprises carrying out the condensation in the presence of both a zinc salt as a Lewis acid and a basic zinc compound as a base.

3,894,013

SULFIN AND SULFONAMIDINO DERIVATIVES OF CEPHALOSPORINS.

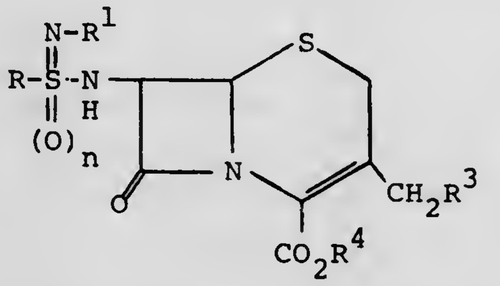
Abraham Nudelman, Montgomery, and Ronald J. McCaully, Chester, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed May 7, 1973, Ser. No. 357,761

Int. Cl.² C07D *501/16*

U.S. Cl. 260—243 C **5 Claims**

1. A compound selected from the group consisting of:



wherein R is selected from the group consisting of (lower)alkyl, tolyl, xylyl, phenyl, naphthyl, benzyl, β-phenylethyl, α-phenylpropyl, α-phenylethyl, α-naphthylethyl, and phenoxy(-lower)alkyl and naphthoxy(lower)alkyl; R^1 is selected from the group consisting of (lower)alkyl, phenyl, naphthyl, phenyl sulfonyl and naphthyl sulfonyl; R^3 is selected from the group consisting of hydrogen, hydroxyl, (lower)alkanoyloxy; benzoyloxy,; R^4 is selected from the group consisting of hydrogen or a pharmaceutically acceptable cation and *n* is 1 or 0.

3,894,014

PRODUCTION OF OXAZINE DYES

Hans Baumann, Ludwigshafen, and Udo Mayer, Frankenthal, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

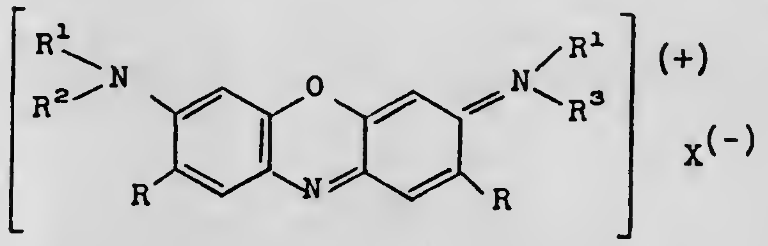
Filed Feb. 26, 1973, Ser. No. 335,695

Claims priority, application Germany, Mar. 2, 1972, 2210074

Int. Cl. C09b *19/00*

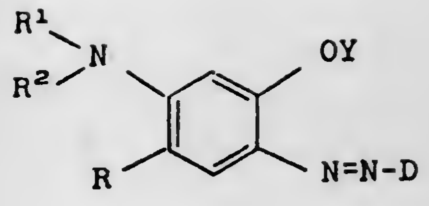
U.S. Cl. 260—244 R **11 Claims**

1. A process for the production of an oxazine dye of the formula:

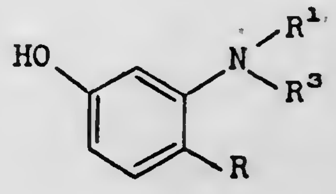


in which

R is hydrogen, methyl, methoxy or ethoxy;
R^1 is hydrogen, alkyl of one to four carbon atoms, benzyl or phenylethyl;
R^2 is hydrogen, alkyl of one to four carbon atoms, cyanoethyl, hydroxyalkyl of two or three carbon atoms, phenyl or methylphenyl;
R^3 is hydrogen, alkyl of one to four carbon atoms or cyanoethyl; and
$X^{(-)}$ is an anion. which process comprises:
reacting at a temperature within the approximate range from 50°C. to 150°C. a compound of the formula:



with a compound of the formula:



in the presence of an acid condensing agent selected from the group consisting of inorganic or organic acids, phenol, complex glycol or glycerol boric acids, and Lewis acids,
Y being alkyl,
D being phenyl; phenyl substituted by methyl, chloro, methoxy or sulfonic acid; naphthyl; or naphthyl substituted by sulfonic acid and
R, R^1, R^2 and R^3 having the same meaning given above.

3,894,015

BASICALLY SUBSTITUTED 1(2H)-PHTHALAZINONE DERIVATIVES

Adolf Stachel, deceased, late of Frankfurt am Main; by Lydia Katharina Stachel, heiress, Offenbach; Rudi Beyerle, Bruchkobel; Wilhelm Kunze, Bad Homburg v.d.H.; Rolf-Eberhard Nitz, Bergen-Enkheim, and Josef Scholtholt, Frankfurt, Germany, assignors to Cassella Farbwerke Maindur Akt., Frankfurt am Main-Fechenheim, all of Germany

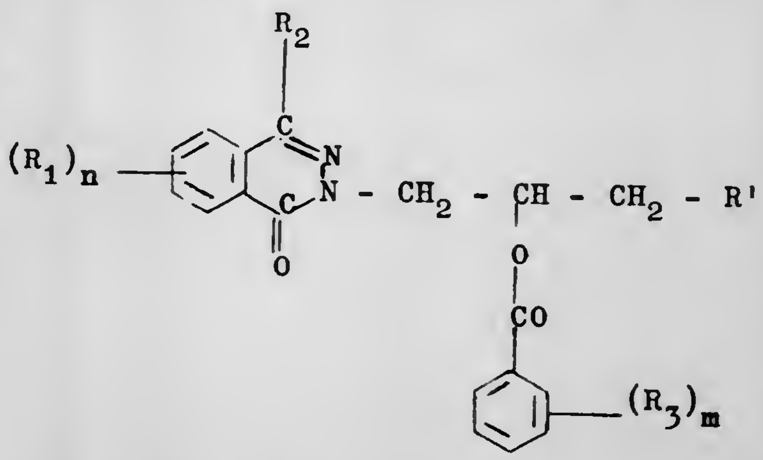
Division of Ser. No. 237,957, March 24, 1972, Pat. No. 3,845,052. This application May 11, 1973, Ser. No. 359,405

Claims priority, application Germany, Mar. 27, 1971, 2114884

Int. Cl.² C07D *51/06*

U.S. Cl. 260—247.2 A **6 Claims**

1. Basically substituted 1(2H)-phthalazinone derivatives having the general formula



and their pharmaceutically acceptable acid addition salts,
wherein R′ stands for a radical selected from the group consisting of 5,6 or 7-membered heterocyclic nitrogen bases, which contain in addition to the nitrogen atom a corresponding number of methylene groups as well as, optionally, an additional member selected from the group consisting of a nitrogen, an oxygen and a sulfur atom, said radical being bound via a nitrogen atom,
R_1 stands for a member selected from the group consisting of a hydrogen atom and an alkoxy radical having 1 to 4 carbon

atoms, which radical may be in the 6,7 7,8 or 5,6,7 position of the phthalazine nucleus,
R_2 is a member selected from the group consisting of hydrogen, methyl or benzyl;
R_3 stands for alkoxy groups having 1 to 4 carbon atoms,
m is an integer selected from 1, 2 and 3 and
n is an integer selected from 2 and 3.

3,894,016
POLYACRYLATES OF ISOCYANURATES

Juergen Habermeier, Pfeffingen; Daniel Porret, Binningen, and Ernst Leumann, Arlesheim, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

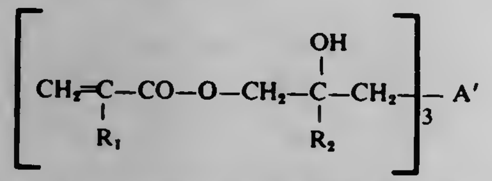
Division of Ser. No. 217,629, Jan. 13, 1972, Pat. No. 3,808,226. This application Jan. 16, 1974, Ser. No. 433,629

Claims priority, application Switzerland, June 14, 1971, 8634/71; Jan. 15, 1971, 624/71

Int. Cl. C07d *55/38*

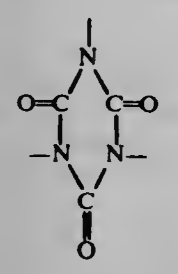
U.S. Cl. 260—248 NS **2 Claims**

1. A triacrylate of the formula



$$\left[CH_2{=}\underset{R_1}{C}-CO-O-CH_2-\overset{OH}{\underset{R_2}{C}}-CH_2-\right]_3 A'$$

wherein R_1 and R_2 independently of one another each represent a hydrogen atom or the methyl group and A′ is a radical of the formula



3,894,017
PREPARATION OF ALKALI METAL SALTS OF DICHLOROISOCYANURIC ACID

John A. Wojtowicz, Cheshire, Conn., and Wade Wolfe, Jr., Lake Charles, La., assignors to Olin Corporation, New Haven, Conn.

Filed Sept. 4, 1974, Ser. No. 503,204

Int. Cl. C07d *55/40*

U.S. Cl. 260—248 C **19 Claims**

1. A process for preparing an alkali metal salt of dichloroisocyanuric acid which comrpises reacting trichloroisocyanuric acid with sufficient alkali metal chloride in the presence of water to effect the evolution of chlorine gas, and recovering the alkali metal salt of dichloroisocyanuric acid produced thereby.

3,894,018
DICHLOROISOCYANURIC ACID PRODUCTION

John A. Wojtowicz, Cheshire, and William C. Herms, Meriden, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Sept. 4, 1974, Ser. No. 503,203

Int. Cl. C07d *55/40*

U.S. Cl. 260—248 C **15 Claims**

1. A process for preparing dichloroisocyanuric acid which comprises:
- a. admixing finely-divided trichloroisocyanuric acid particles having a particle size of less than about 60 microns with water to form a mixture containing from about 30 to about 98 percent by weight of water,
- b. maintaining said finely divided trichloroisocyanuric acid particles in contact with said water until said particles of trichloroisocyanuric acid are completely wet,
- c. heating said wet particles to a temperature above about 90° C., whereby hypochlorous acid and water are vaporized and evolved, and a solid dichloroisocyanuric acid residue is formed.

3,894,019
S-TRIAZINE DERIVATIVES CONTAINING NAPHTHYLAMINO GROUPS

Hermann Westlinning, Kleinostheim; Werner Schwarze, Frankfurt, and Horst Fleischhauer, Grossauheim, all of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Germany

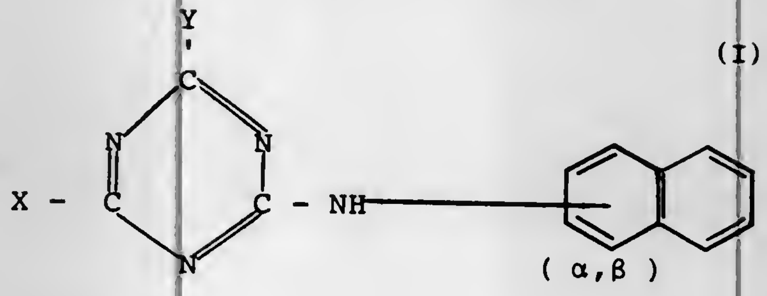
Filed Nov. 9, 1972, Ser. No. 305,139

Claims priority, application Germany, Nov. 10, 1971, 21557697

Int. Cl. C07d *55/18, 55/20*

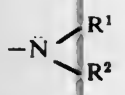
U.S. Cl. 260—249.5 **30 Claims**

1. A 1,3,5-triazine derivative of the formula:

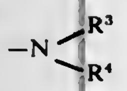


(I)

wherein X is



or $—SR^6$, and Y is



or $—SR^7$,
R^1, R^2, R^3 and R^4 being hydrogen, alkyl of 1 to 18 carbon atoms, phenyl, allyl or methallyl alkyl may be substituted by —OH, $—OR^5$ (R^5 being lower alkyl) or —CN and wherein R^1 and R^3 may also be α -naphthyl or β -naphthyl with the provision that the R^2 or R^4 group which is attached to the same N must then be hydrogen; and wherein R^6 and R^7 are alkyl of 1 to 18 carbon atoms or a thioether group of the formula $C_nH_{2n+1} — S — CH_2 — CH_2 —$, n being 1 to 18 and with the further proviso that when R^1 and R^2 are both alkyl then R^3 and R^4 are not alkyl.

3,894,020
3,4,-DIHYDRO-4-OXO-QUINAZOLIN (3)-YL-(THIONO)-PHOSPHORIC (PHOSPHONIC) ACID ESTERS

Fritz Maurer; Hans-Jochem Riebel; Lothar Rohe, all of Wuppertal; Wolfgang Behrenz; Ingeborg Hammann, both of Loeln, and Wilhelm Stendel, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

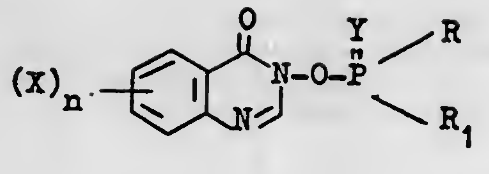
Filed May 2, 1973, Ser. No. 356,646

Claims priority, application Germany, May 10, 1972, 2223025

Int. Cl. C07d *51/48*

U.S. Cl. 260—251 P **7 Claims**

1. A 3,4-dihydro-4-oxo-quinazolino(thiono)-phosphoric (phosphonic) acid ester of the formula



(I)

in which
R is alkoxy with 1 to 6 carbon atoms,
R_1 is alkyl, alkoxy or alkylmercapto with 1 to 6 carbon atoms, or phenyl,
X is hydrogen or halogen,
Y is oxygen or sulfur, and
n is an integer from 1 to 4.

3,894,021
DERIVATIVES OF 1,7-DIHYDRO-2H-PYRAZOLO[4′,3′:5,6]PYRIDO[4,3-D]PYRIMIDINE-2,4-(3H)-DIONES

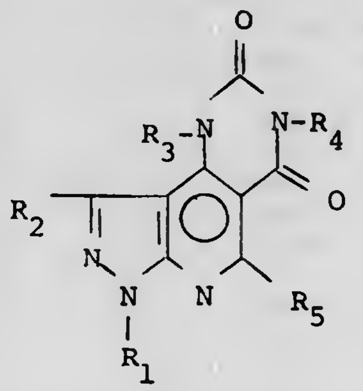
Theodor Denzel, Nurnberg, and Hans Hoehn, Tegernheim, both of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jan. 28, 1974, Ser. No. 437,461

Int. Cl. C07d *51/42*

U.S. Cl. 260—256.4 F **13 Claims**

1. A compound of the formula



wherein R_1 is hydrogen, lower alkyl, phenyl or phenyl-lower alkyl; R_2 is hydrogen, lower alkyl or phenyl; R_3 is hydrogen, lower alkyl, phenyl, phenyl-lower alkyl, (lower alkyl) amino-lower alkyl or di(lower alkyl)amino -lower alkyl; R_4 is lower alkyl, phenyl, (lower alkyl)-phenyl or three to six carbon cyclo-lower alkyl; and R_5 is hydrogen or lower alkyl, said lower alkyl groups having up to seven carbons.

3,894,022
TETRACYCLIC QUINAZOLINONES AND QUINAZOLINIUM SALTS

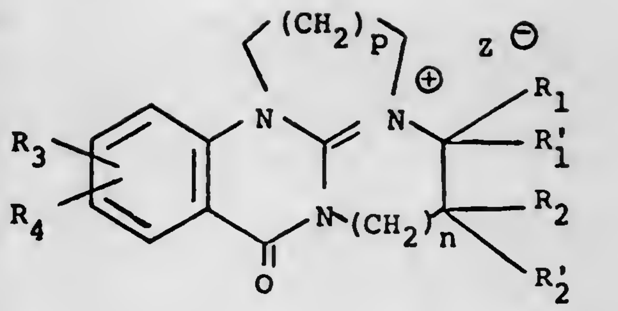
Goetz E. Hardtmann, Florham Park, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Filed June 25, 1973, Ser. No. 373,474

Int. Cl. C07d *51/42*

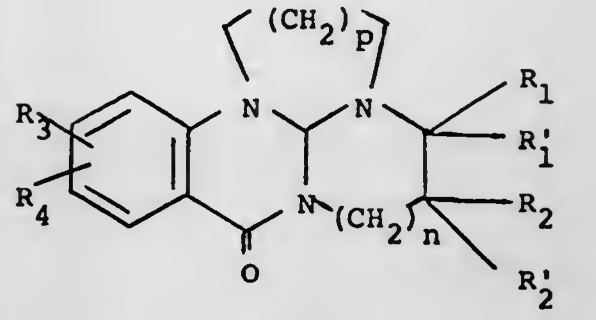
U.S. Cl. 260—256.4 F **12 Claims**

1. A compound of the formulae:



IA

or



IB

wherein
p is 0 or 1 n is 0 or 1
each of R_1 and R_1'
is, independently, hydrogen or methyl,
each of R_2 and R_2'
is, independently, hydrogen or alkly of 1 or 2 carbon atoms, provided no more than 3 or R_1, R_1', R_2 and R_2' are alkyl, each of R_3 and R_4
is, independently, hydrogen, halò of atomic weight of from 18 to 36, alkyl of 1 to 3 carbon atoms or alkoxy of 1 to 3 carbon atoms, and
Z^- is a pharmaceutically acceptable inorganic anion, or
a pharmaceutically acceptable acid addition salt of a compound of the formula IB.

3,894,023
5-PIVALOYLOXY-5-(1-PHENYLETHYL) BARBITURIC ACID

Carlos M. Samour, Wellesley, and Julius A. Vida, Billerica, both of Mass., assignors to The Kendall Company, Walpole, Mass.

Filed July 12, 1973, Ser. No. 378,482

Int. Cl. C07d *51/20*

U.S. Cl. 260—257 **1 Claim**

1. A compound having the name 5-pivaloyloxy-5-(1-phenylethyl) barbituric acid.

3,894,024
METHOD FOR CASTING RESINS

Joseph Cherenko, Valencia; Raymond P. Harrison, Pittsburgh; Joseph D. Kelly, Cheswick, and William I. Frey, Curtisville, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 204,504, Dec. 3, 1971, abandoned, which is a continuation of Ser. No. 881,106, Dec. 1, 1969, abandoned. This application Jan. 9, 1974, Ser. No. 431,995

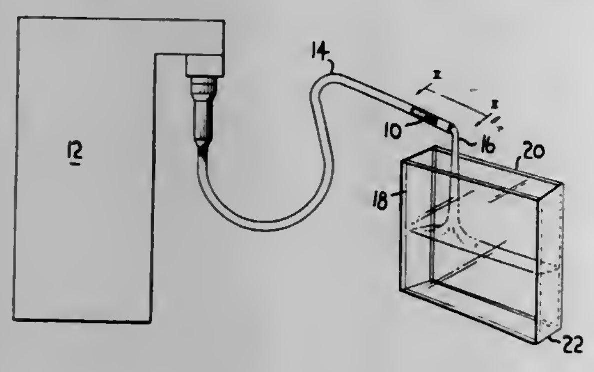
Int. Cl. B29b *1/04*

U.S. Cl. 264—261 **8 Claims**

1. In a method for making a transparent laminated window from two spaced-apart glass sheets separated by a cured resinous interlayer, said method comprising mixing at a first mixing zone essentially immiscible, reactive constituents, followed by flowing said mixture into and through a conduit connecting and separating the first mixing zone from a pair of spaced-apart transparent rigid sheets, said mixture partially reacting in the conduit to form a flowable resinous liquid; casting said

resinous liquid between the pair of rigid transparent sheets and curing the cast resinous liquid to produce the transparent laminated window, the improvement comprising:

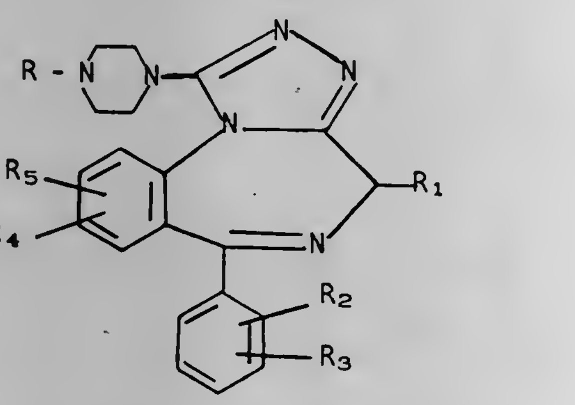
a. subsequently mixing the resinous liquid while it is flowing through said conduit in a second mixing zone located apart from said first mixing zone by means of a mixing device to homogenize the resinous liquid such that when it is cast between a pair of rigid transparent sheets and cured, the resultant cured resinous interlayer is visually free of striae.



3,894,025
1-PIPERAZINO-6-PHENYL-4H-S-TRIAZOLO[4,3-A][1,4]-ENZODIAZEPINE COMPOUNDS

Jackson B. Hester, Jr., Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
Filed Mar. 21, 1974, Ser. No. 453,195
Int. Cl. C07d *57/02*
U.S. Cl. 260—268 TR **10 Claims**

1. A compound of the formula II



II

wherein R is hydrogen, alkyl of 1 to 3 carbon atoms, inclusive, or β-hydroxyethyl; wherein R_1 is hydrogen or alkyl defined as above; and wherein R_2, R_3, R_4 and R_5 are hydrogen, alkyl as defined above, fluoro, chloro, bromo, nitro or trifluoromethyl, and the pharmacologically acceptable acid addition salts thereof.

3,894,026
PRODUCTION OF THEBAINE

Paul Sohar, Warren, and Erwin F. Schoenewaldt, Watchung, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.
Filed Oct. 16, 1973, Ser. No. 407,004
Int. Cl. C07j *43/28*
U.S. Cl. 260—285 **15 Claims**

1. The process which comprises the steps of:

reacting salutaridinol with a lower aliphatic C_{2-4}) acid anhydride or with thionyl chloride, thionyl bromide, phosphorous oxychloride, phosphorous oxybromide, phosphorous trichloride, phosphorous tribromide, phosphorous pentachloride, phosphorous pentabromide, phosgene, methane sulfonyl chloride, and sulfur dioxide, methane sulfonyl bromide, methylchlorocarbonate, benzylchlorocarbonate or p-dinitrophenylchlorocarbonate in the presense or absense of an additional tertiary amine; and

treating the resulting reaction product with an alkali metal hydroxide, carbonate or phosphate.

3,894,027
RESOLUTION OF RACEMIC RETICULINE AND PACEMIZATION OF ITS ENANTIOMERS

Paul Sohar, Warren, and Erwin F. Schoenewaldt, Watchung, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.
Filed July 31, 1973, Ser. No. 384,185
Int. Cl. C07d *33/32*
U.S. Cl. 260—286 R **14 Claims**

1. The process which comprises the steps of reacting (±) -reticuline with mandelic acid enantiomer in a suitable solvent medium,

seeding the resulting reaction mixture with a crystalline diastereomeric salt of the enantiomeric acid and a reticuline enantiomer, and

separating and recovering the crystalline diastereomeric salt of the enantiomeric acid and the reticuline enantiomer corresponding to said seeding crystalline diastereomeric salt.

3,894,028
PROCESS FOR THE PREPARATION OF OPTICAL ANTIPODE OF VINCAMINE AND NEW INDOLE DERIVATIVES

Jean Levy, Reims, France, assignor to Omnium Chimique Societe Anonyme, Brussels, Belgium
Filed Apr. 10, 1972, Ser. No. 242,743
Claims priority, application Belgium, Apr. 15, 1971, 765795
Int. Cl. C07d *33/48*
U.S. Cl. 260—287 R **17 Claims**

1. A process for the preparation of the optical antipode of vincamine, which comprises the steps of:

a. oxidizing (+)-vincadifformine with a peracid under nitrogen, in the absence of light and in the presence of a water-immiscible solvent selected from the group consisting of aromatic solvents, aliphatic chlorinated hydrocarbons and ether for a time at least sufficient for producing (+)-1,2-dehydro-16-carbomethoxy-16-hydroxy-N-oxyaspidospermidine; and

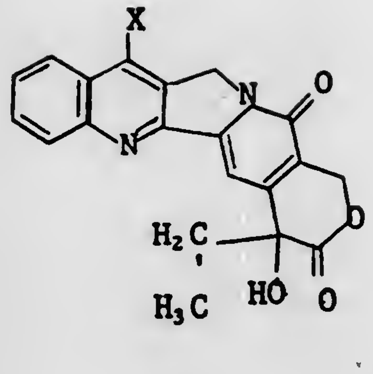
b. reducing the (+)-1,2-dehydro-16-carbomethoxy-16-hydroxy-N-oxyaspidospermidine of step (a) in the presence of a liquid low molecular weight organic acid with triphenylphosphine for a time at least sufficient for forming a product comprising a mixture of the optical antipodes of:

1. vicamine,
2. 16-epi-vicamine, and
3. apo-vincamine.

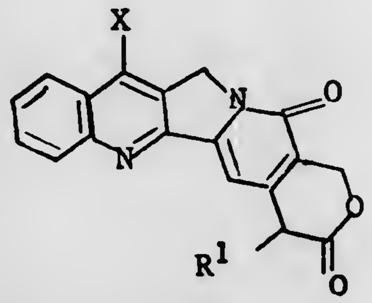
3,894,029
PRODUCTION OF CAMPTOTHECIN AND CAMPTOTHECIN-LIKE COMPOUNDS

Ekkehard Winterfeldt, Grossburgwedel, and Tilmann Korth, Hannover, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Rhine, Germany
Filed Aug. 16, 1972, Ser. No. 281,115
Claims priority, application Germany, Aug. 26, 1971, 2142715; Oct. 8, 1971, 2150234
Int. Cl. C07d *39/00*
U.S. Cl. 260—287 R **4 Claims**

1. A process for producing a compound of the formula:



wherein X is a member of the group consisting of hydrogen and chlorine which comprises dissolving a compound of the formula

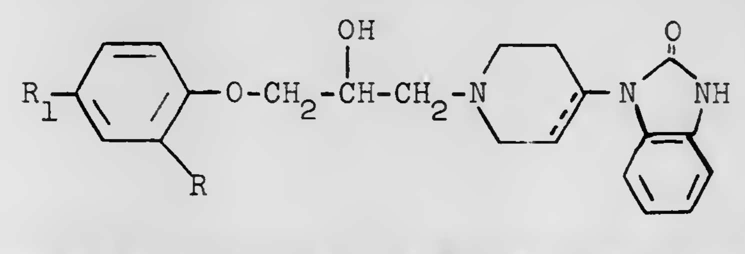


wherein R^1 is ethyl and X is selected from the group consisting of hydrogen and chlorine in a solvent, and selectively oxidizing said compound by allowing molecular oxygen to act thereon in the presence of a oxidation catalyst selected from the group consisting of salts of cerium (IV), copper, silver, chromium, manganese, iron, cobalt, nickel, mercury, palladium and platinum at a pH from about 8 to about 4.

3,894,030
1-[1-(2-HYDROXY-3-ARYLOXYPROPYL)-4-PIPERIDYL]-2-BENZIMIDAZOLINONES AND RELATED COMPOUNDS

Paul Adriaan Jan Janssen, Vosselaar; Ineke Van Wijngaarden, Beerse, and Willem Soudijn, Turnhout, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium
Division of Ser. No. 321,509, Jan. 4, 1973, Pat. No. 3,181,017.
This application Feb. 6, 1974, Ser. No. 459,500
Int. Cl. C07d *49/38*
U.S. Cl. 260—293.6 **5 Claims**

1. A chemical compound selected from the group consisting of a benzimidazoline derivative having the formula:

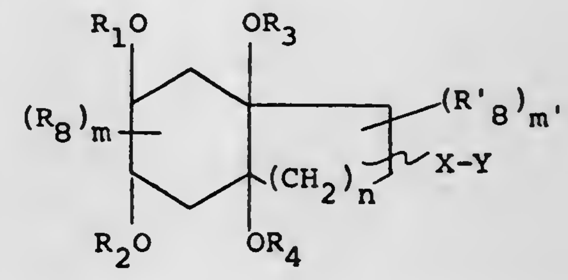


and the therapeutically active acid addition salts thereof, wherein R is a member selected from the group consisting of cyano and loweralkoxycarbonyl; R_1 is a member selected from the group consisting of hydrogen, halo and loweralkenyl; and the dotted line represents an optional bond.

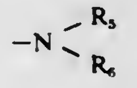
3,894,031
INDANTETROL DERIVATIVES

Frederic Peter Hauck, Somerville; Joyce Reid, Highland Park; Venkatachala L. Narayanan, Hightstown; Christopher M. Cimarusti, Hamilton; Rudiger D. Haugwitz, Titusville, and Joseph E. Sundeen, Trenton, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.
Continuation of Ser. No. 71,229, Sept. 10, 1970, abandoned. This application June 21, 1973, Ser. No. 372,448
Int. Cl. C07d *29/24*
U.S. Cl. 260—293.56 **9 Claims**

1. A compound of the structure

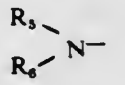


wherein R_1, R_2, R_3 and R_4 are the same or different and are selected from the group consisting of hydrogen, lower alkyl, trifluoromethyl, mono-halo-lower alkyl wherein the halogen is F, Cl, Br or I, lower alkanoyl, amido, lower alkoxyalkylene and lower alkoxy carbonyl, X is a single bond or a straight or branched chain alkylene group of the structure $(CH_2)_{n'}$ wherein n′ is 0 to 10, Y



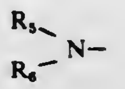
$$-N\begin{matrix} R_5 \\ R_6 \end{matrix}$$

wherein R_5 and R_6 are the same or different and are selected from the group consisting of hydrogen, lower alkyl, trifluoromethyl, monocyclic cycloalkyl having 3 to 6 ring members, monocyclic cycloalkyl lower alkyl, wherein the cycloalkyl has 3 to 6 ring members, hydroxy-lower alkyl, phenyl, lower alkylphenyl, di(lower alkyl)phenyl, halophenyl, mono-, di-or tri-nitrophenyl, phenylalkyl, monocyclic heterocyclic, wherein alkyl contains 1 to 8 carbons, R_8 and R'_8 are lower alkyl or cycloalkyl having 3 to 6 ring members, and



$$\begin{matrix} R_5 \\ R_6 \end{matrix} N-$$

can be taken together to form a heterocyclic radical; wherein the heterocyclic radicals represented by R_5, R_6 or



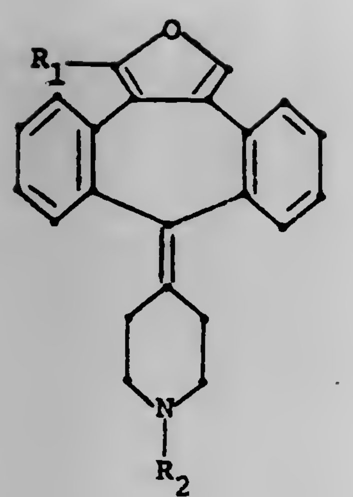
$$\begin{matrix} R_5 \\ R_6 \end{matrix} N-$$

taken together contain 5-, 6- or 7-members in the heterocyclic ring, the ring being pyrrolidine, piperidine, morpholine, thiamorpholine, piperazine or homopiperazine, and *n* is 1 to 3; *m* and *m′* are 0, 1 or 2; stereoisomers thereof, physiologically acceptable acid salts thereof, physiologically acceptable quaternary salts thereof and N-oxides thereof.

3,894,032
10,11-FURO DERIVATIVES OF CYPROHEPTADINE

David C. Remy, North Wales, Pa., assignor to Merck & Co., Inc., Rahway, N.J.
Filed Apr. 10, 1974, Ser. No. 459,493
Int. Cl. C07d *29/12*
U.S. Cl. 260—293.58 **10 Claims**

1. A compound of the formula:



wherein R_2 is lower alkyl having from one to five carbon atoms, and R_1 is hydrogen or lower alkyl having from one to five carbon atoms, and the nontoxic, pharmaceutically acceptable acid addition salts thereof.

3,894,033
5-ARYLTETRAZOLES

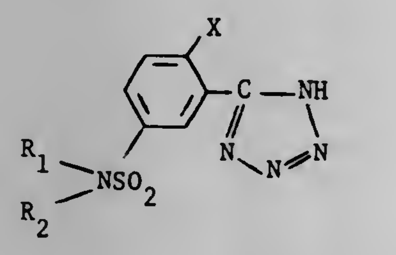
Gerald F. Holland, Old Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed May 16, 1974, Ser. No. 470,512

Int. Cl. C07d ***29/34***

U.S. Cl. 260—293.69 **12 Claims**

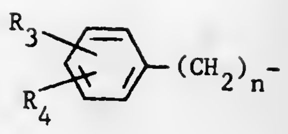
1. A compound selected from those of the formula



and the pharmaceutically acceptable basic salts thereof, wherein

X is selected from the group consisting of methyl, chloro, fluoro and bromo;

R_1 is selected from the group consisting of hydrogen and alkyl having from 1 to 4 carbon atoms;



wherein *n* is an integer of 0 to 3 and R_3 and R_4 are each selected from the group consisting of hydrogen, methyl, chloro and bromo; and

R_1 and R_2 when considered together with the nitrogen atom to which they are attached form a heterocyclic ring selected from the group consisting of morpholino, hexamethyleneimino, piperidino and mono- and dimethylpiperidino.

3,894,034
PROCESS FOR PRODUCING AZASULFONIUM SALTS

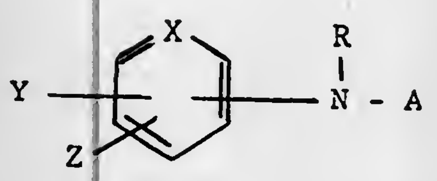
Paul G. Gassman, and Gordon D. Gruetzmacher, both of Columbus, Ohio, assignors to The Ohio State Research Foundation, Columbus, Ohio

Filed Jan. 29, 1973, Ser. No. 327,294

Int. Cl. C07d ***31/48***

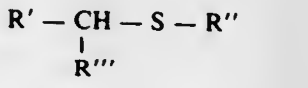
U.S. Cl. 260—294.8 R **8 Claims**

1. A process which comprises (a) reacting a compound of the formula:



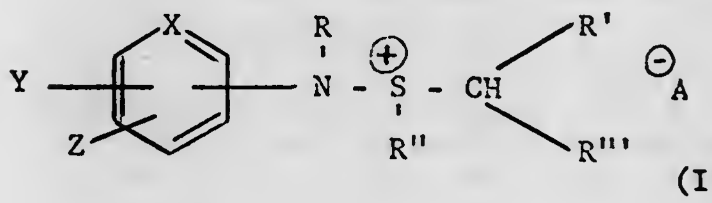
(I)

wherein R is hydrogen or a hydrocarbon radical free of aliphatic unsaturation containing 1 to 8 carbon atoms; X is —CH= or —N=, and Y and Z are hydrogen, halogen, nitro, cyano, amino, lower alkylamino, lower alkyl, lower alkyloxy, lower-alkanoyloxy, or a carbonyloxy-lower alkyl, or carbonyloxy-phenyl, and A is chlorine or bromine, with a sulfide of the formula:



$$R'-\underset{\substack{|\\ R'''}}{CH}-S-R'' \qquad \text{(II)}$$

wherein R′ is hydrogen, lower alkyl or phenyl; R″, taken separately, is lower alkyl or phenyl, and R‴, taken separately, is hydrogen or lower alkyl, or phenyl, and R″ and R‴ when taken together with the -CH-S- moiety denote a ring containing 3 to 5 methylene carbon atoms, under substantially anhydrous conditions, in an organic solvent for a time sufficient to form an azasulfonium salt of the formula:



(III)

wherein:

X, Y, Z, R, R′, R″ and R‴ are as defined above, and A is a halogen ion, or another ion which replaces the halogen ion.

3,894,035
BIS-(THIOALKYLTHIO CYANATO)HALO PYRIDINES

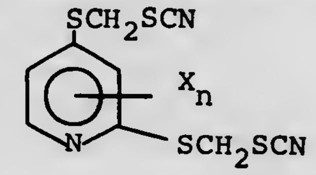
Penelope B. Domenico, Fairfax, Va., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 15, 1974, Ser. No. 461,063

Int. Cl. C07d ***31/50***

U.S. Cl. 260—294.8 G **4 Claims**

1. A compound corresponding to the formula



wherein X is chloro or bromo and *n* is an integer of from 2 or 3.

3,894,036
CERTAIN
3-OXO-2(HALOPHENYL)-4,5,6,7-TETRAHYDRO-V-TRIAZOLO[1,5A]-PYRIDINES

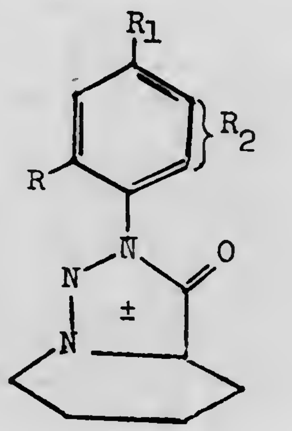
Marwan J. Abu-el-Haj, Groton, and James W. McFarland, Lyme, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 170,996, Aug. 11, 1971, abandoned. This application Sept. 10, 1973, Ser. No. 395,713

Int. Cl.² C07D ***31/44***

U.S. Cl. 260—295 K **6 Claims**

1. A compound of the formula



wherein

R is hydrogen, halogen, methyl, or nitro;

R_1 is halogen; and

R_2 is hydrogen, halogen, or nitro.

3,894,037
CERTAIN ISOTHIOCYANOBENZIMIDAZOLES

Paul Brenneisen, Basel; Thomas Wenger, Riehen, Basel; Jean-Jacques Gallay, Magden, Aayau, and Wolfgang Schmid, Neuallschwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

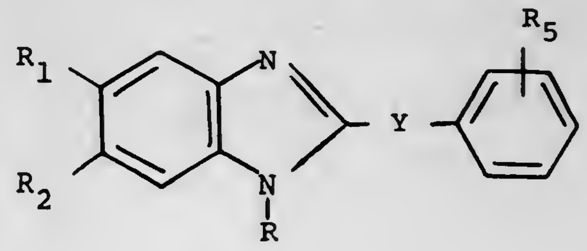
Division of Ser. No. 255,334, May 22, 1974, Pat. No. 3,840,550. This application July 24, 1974, Ser. No. 491,585

Claims priority, application Switzerland, May 24, 1971, 7542/71

Int. Cl. C07d ***49/38***

U.S. Cl. 260—309.2 **13 Claims**

1. An isothiocyanobenzimidazole compound of the formula



-NH-

wherein R is hydrogen or methyl; one of R_1, R_2 and R_5 is isothiocyano and the others are selected from the group consisting of hydrogen, isothiocyano, nitro, chlorine, alkyl of from 1 to 4 carbon atoms and methoxy; and Y is oxygen, sulphur or —NH—.

3,894,038
HYDROXYALKYL DERIVATIVES OF ALKYLENE-BIS-HYDANTOINS

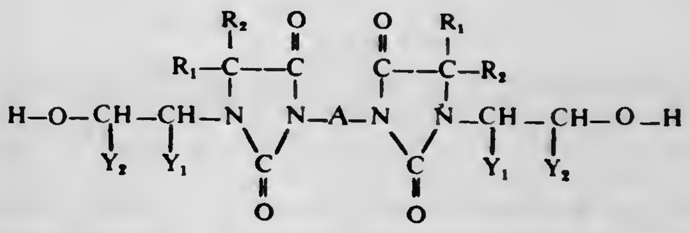
Juergen Habermeier, Allschwil; Hans Batzer, Arlesheim, and Daniel Porret, Binningen, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Division of Ser. No. 118,499, Feb. 24, 1971, Pat. No. 3,821,242. This application Jan. 4, 1973, Ser. No. 321,102

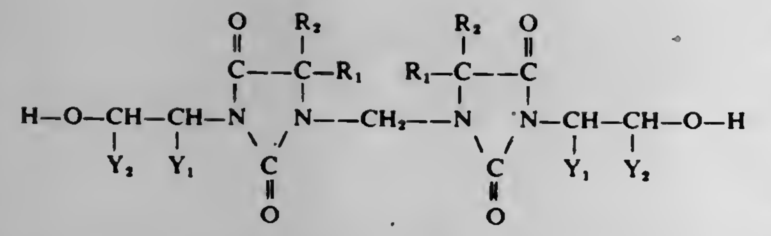
Int. Cl. C07d ***49/32***

U.S. Cl. 260—309.5 **5 Claims**

1. An alcohol of the formula:



or



wherein Y_1 is hydrogen, Y_2 is ethyl, or wherein Y_1 and Y_2 together are trimethylene or tetramethylene; R_1 and R_2 is hydrogen or lower alkyl of 1 to 4 carbon atoms or R_1 and R_2 together are tetramehtylene or pentamethylene; and A is alkylene of 1 to 12 carbon atoms or lower alkylene interrupted by one oxygen atom.

3,894,039
1-HALOPHENYL-2-IMINO-IMIDAZOLIDINES

Rudolf Hiltmann; Hartmund Wollweber, both of Wuppertal-Elberfeld, and Günther Hermann, Opladen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

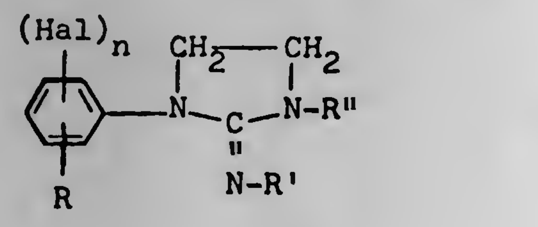
Filed Aug. 7, 1972, Ser. No. 278,699

Claims priority, application Germany, Aug. 12, 1971, 2140405

Int. Cl. C07d ***49/30, 49/34***

U.S. Cl. 260—309.7 **10 Claims**

1. A 1-phenyl-2-imino-imidazolidine of the formula:



(I)

in which
- Hal is halogen,
- R is hydrogen, halogen, lower alkyl, lower alkoxy or halo-lower alkyl,
- R′ and R″ each independently is hydrogen or alkyl of one to six carbon atoms, and
- *n* is 1, 2, 3 or 4,

or a salt thereof.

3,894,040
2,5,6,7-TETRAHYDRO-3H-IMIDAZO(1,2-D)(1,4)BENZODIAZEPINE-5,6-DICARBOXYLIC ACID ESTERS

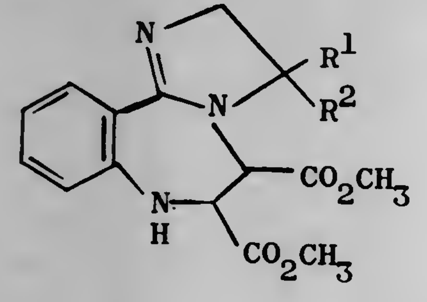
George C. Buzby, Jr., Philadelphia, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Sept. 16, 1974, Ser. No. 506,085

Int. Cl. C07d ***49/34***

U.S. Cl. 260—309.6 **5 Claims**

1. A compound of the formula:



in which R^1 and R^2 are independently —H, $—CH_3$, $—C_2H_5$ or C_3H_7, and pharmaceutically acceptable acid addition salts thereof.

3,894,041
PROCESS FOR PREPARING N-ETHYLOL CARBAZOLE

Hiroshi Otsuki, Tokyo; Kenzo Sakuma, Kanagawa, and Isamu Matsuzawa, Tokyo, all of Japan, assignors to Takasago Perfumery Co., Ltd., Tokyo, Japan

Filed Oct. 26, 1973, Ser. No. 410,152

Claims priority, application Japan, Oct. 30, 1972, 47-107941

Int. Cl. C07d ***27/68***

U.S. Cl. 260—315 **10 Claims**

1. A process for preparing N-ethylol carbazole, which consists essentially of reacting (1) a carbazole alkali metal salt with (2) ethylene oxide in (3) an aliphatic or an aromatic hydrocarbon in the presence of (4) a carbonyl compound, to obtain a reaction product containing N-ethylol carbazole and then decomposing the reaction product with water to obtain said N-ethylol carbazole.

3,894,042
PREPARATION OF INDOLES AND CATALYST COMPOSITIONS USED IN THEIR PREPARATION

Kunio Tanaka, and Toshio Fukada, both of Hino, Japan, assignors to Teijin Ltd., Osahn, Japan

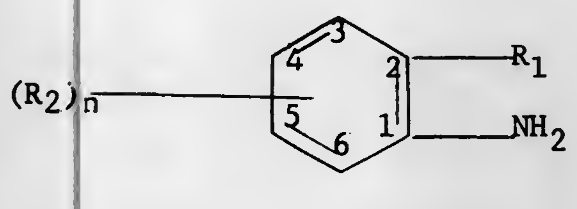
Filed Jan. 16, 1973, Ser. No. 324,084

Claims priority, application Japan, Jan. 25, 1972, 47-9244; Apr. 22, 1972, 47-40766

Int. Cl. C07d ***27/56***

U.S. Cl. 260—319.1 **7 Claims**

1. In the process for preparing indoles by the vapor phase catalytic reaction of compounds of the following formula:



(1)

wherein R_1 is selected from the group consisting of phenyl or cyclohexyl substituted and unsubstituted alkyl of two to eight carbon atoms and phenyl or cyclohexyl substituted and unsubstituted alkenyl of two to eight carbon atoms, R_2 is selected from the group consisting of amino, alkylamino, hydroxy, alkoxy and cyano, halogens and the substituted and unsubstituted hydrocarbon groups of not more that C_8, and *n* is an integer from 0 to 4, which several R_2-groups may be the same or different when *n* is from 2 to 4, at an elevated temperature in the absence of molecular oxygen;

the improvement which comprises carrying out said vapor phase catalytic reaction in the presence of a catalyst consisting essentially of (a) an iron oxide selected from FeO, Fe_2O_3, Fe_2O_4 or mixtures thereof, (b) an alkali metal compound of a metal selected from Li, Na or K and (c) up to 30% by weight of the catalyst of a compound selected from the group consisting of a compound of an alkaline earth metal selected from Be, Mg, Ca, Sr or Ba and an oxide of a metal element selected from Cr, Mo, W, Bi, Al, Mn or Ce in the presence of steam.

3,894,043
IMIDES, THEIR MANUFACTURE AND THEIR USE AS MICROBIOCIDES

Hans Moser, Magden/AG; Elmar Sturm, Aesch, and Raphael Menasse, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

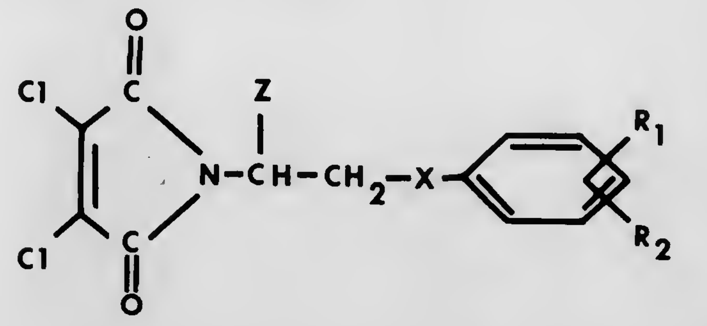
Filed Jan. 8, 1973, Ser. No. 321,624

Claims priority, application Switzerland, Jan. 12, 1972, 438/72; Dec. 4, 1972, 17626/72

Int. Cl. C07d ***27/18***

U.S. Cl. 260—326.5 S **6 Claims**

1. Compounds of the formula



wherein Z represents hydrogen or methyl, X represents oxygen, sulphur or the group NR_3, in which R_3 represents hydrogen or methyl, R_1 represents hydrogen, chlorine, bromine or trifluoromethyl, and R_2 represents hydrogen, halogen, methyl or trifluoromethyl.

3,894,044
1-ALKENYLTHIS AND CHLOROALKYLTHIA-CARBONYL)-OCTAHYDROINDOLES

Elmar Sturm, Arlesheim; Hans Joerg Cellarius, Riehen, and Christian Vogel, Binningen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

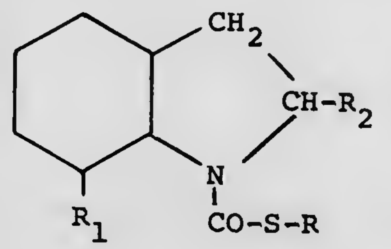
Division of Ser. No. 216,778, Jan. 10, 1972, Pat. No. 3,776,912. This application Sept. 10, 1973, Ser. No. 395,884

Claims priority, application Switzerland, Jan. 14, 1971, 553/71

Int. Cl. C07d ***27/56***

U.S. Cl. 260—326.12 R **2 Claims**

1. A compound of the formula



wherein R is chloroalkyl having 2 or 3 carbon atoms or a straight chain or branched alkenyl having 3 or 4 carbon atoms; and one of R_1 and R_2 is hydrogen and the other is hydrogen or methyl.

3,894,045
1-ACYLOXY(LOWER) ALKYL-3-SUBSTITUTED PYRROLIDINE DERIVATIVES AND PROCESS FOR PREPARING SAME

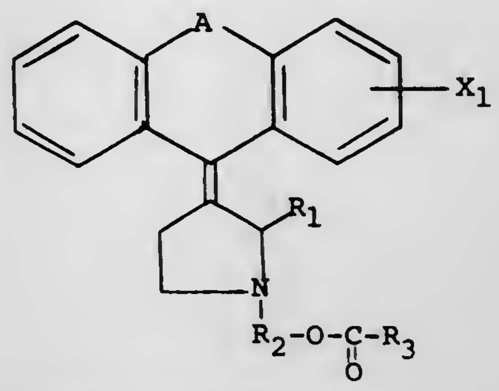
Suminori Umio, Kawanishi, and Hiroshi Nojima, Suita, both of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Mar. 1, 1973, Ser. No. 336,942

Int. Cl. C07d ***70/04, 27/04***

U.S. Cl. 260—326.33 **9 Claims**

1. A compound of the formula



wherein A is ethylene or oxygen,
- R_1 is hydrogen or lower alkyl,
- R_2 is lower alkylene,
- R_3 is lower alkyl, phenyl or phenyl substituted with 1-3 lower alkoxyl groups,
- X_1 is hydrogen or chloro, and its pharmaceutically acceptable acid addition salts.

3,894,046
DITHIOLANYL ANILIDS

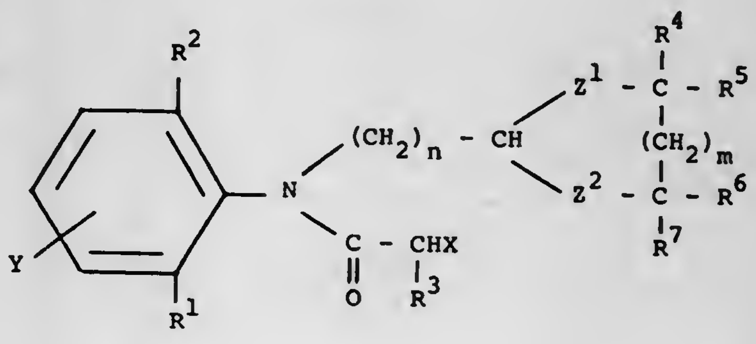
Sidney B. Richter, Chicago, and John Krenzer, Oak Park, both of Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

Division of Ser. No. 357,746, May 7, 1973. This application June 3, 1974, Ser. No. 475,543

Int. Cl. C07d ***71/00***

U.S. Cl. 260—327 M **2 Claims**

1. A compound of the formula



wherein Y is selected from the group consisting of hydrogen, lower alkyl and halogen; R^1 is selected from the group consisting of hydrogen, lower alkyl and lower alkoxy; R^2 is lower alkyl; R^3, R^4, R^5, R^6 and R^7 are independently selected from the group consisting of hydrogen and lower alkyl; X is halogen; *m* is the integer 0; Z^1 and Z^2 are sulfur; and *n* is an integer from 1 to 2.

3,894,047
PROCESS FOR THE PREPARATION OF 1,3,6-TRIOXOCANE

Takami Ishii, Chiba; Naohisa Takikawa, and Katsumi Furukawa, both of Ube, all of Japan, assignors to Ube Industries, Ltd., Ube, Japan

Filed Dec. 3, 1973, Ser. No. 421,482
Claims priority, application Japan, Dec. 5, 1972, 47-121211
Int. Cl.^{2} C07D *323/00*
U.S. Cl. 260—338 **7 Claims**

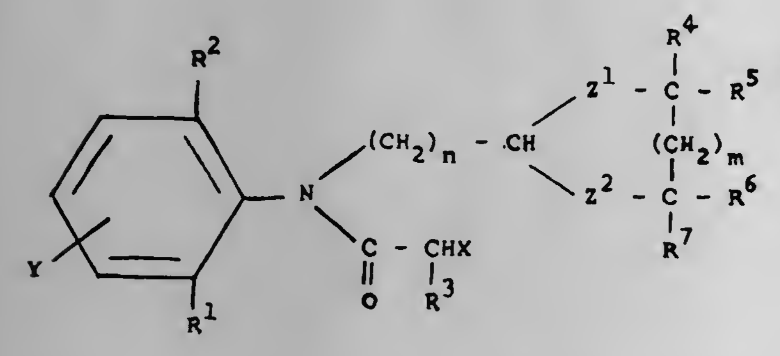
1. In a process for the preparation of 1,3,6-trioxocane comprising reacting diethylene glycol with a substance capable of releasing formaldehyde therefrom under the reaction conditions in the presence of a catalyst selected from the group consisting of inorganic acids, acid salts of inorganic acids, alkali metal salts of persulfuric acid and organic sulfonic acids while removing water produced by the condensation of the diethylene glycol and formaldehyde, to prepare an oligomer consisting of condensed diethylene glycol and formaldehyde, cyclizing the oligomer to 1,3,6-trioxocane, and isolating the resultant 1,3,6-trioxocane from the reaction mixture by distillation, the improvement comprising heating the oligomer to cyclize it to 1,3,6-trioxocane, in the presence of a catalyst selected from the group consisting of alkali metal salts of persulfuric acid, ferrous sulfate and ferric sulfate at a temperature of 150° to 250°C under a normal or reduced pressure while distilling the resultant 1,3,6-trioxocane to isolate it from the reaction mixture.

3,894,048
DITHIEPANYL ANILIDS

Sidney B. Richter, Chicago, and John Krenzer, Oak Park, both of Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

Division of Ser. No. 357,746, May 7, 1973. This application June 3, 1974, Ser. No. 475,547
Int. Cl. C07d *75/00*
U.S. Cl. 260—327 M **2 Claims**

1. A compound of the formula



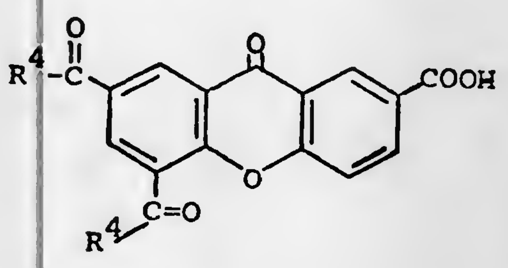
wherein Y is selected from the group consisting of hydrogen, lower alkyl and halogen; R^1 is selected from the group consisting of hydrogen, lower alkyl and lower alkoxy; R^2 is lower alkyl; R^3, R^4, R^5, R^6 and R^7 are independently selected from the group consisting of hydrogen and lower alkyl; X is halogen; *m* is the integer 2; Z^1 and Z^2 are sulfur; and *n* is an integer from 1 to 2.

3,894,049
DISUBSTITUTED XANTHONE CARBOXYLIC ACID COMPOUNDS

Jurg R. Pfister, Los Altos; Ian T. Harrison, and John H. Fried, both of Palo Alto, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 259,852, June 5, 1972, which is a continuation-in-part of Ser. No. 217,287, Jan. 12, 1972, Pat. No. 3,849,565. This application Jan. 8, 1974, Ser. No. 431,794
Int. Cl. C07d *7/44*
U.S. Cl. 260—335 **2 Claims**

1. The compound of the formula:



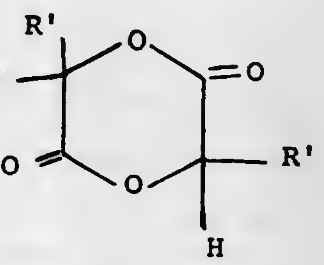
wherein R^4 is lower alkyl, and the pharmaceutically acceptable, non-toxic alkyl or glycerol esters, amides and salts thereof.

3,894,050
CHLORINATED GLYCOLIDE

Donald Roy Maulding, Branchburg Twp., N.J., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 248,768, April 28, 1972, abandoned. This application July 8, 1974, Ser. No. 486,716
Int. Cl. C07d *15/16*
U.S. Cl. 260—340.2 **1 Claim**

1. A compound of the formula:



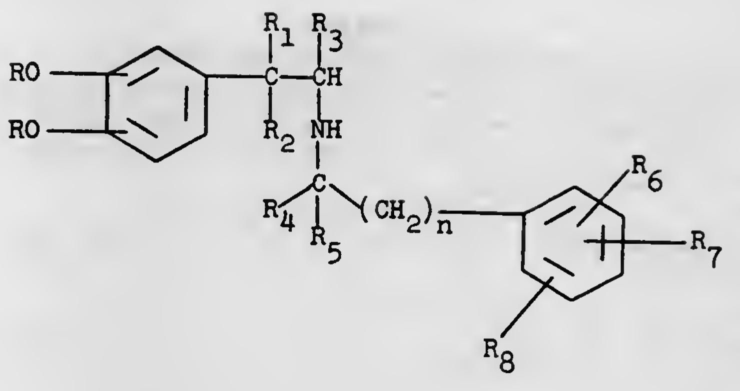
wherein R′ is a chloro- substituent, and R″ is a chloro- or hydrogen substituent.

3,894,051
N-METHYLENEDIOXYPHENYLALKYL)-β-(ALKYL)-DISUBSTITUTED PHENETHYLAMINES

John T. Suh, Mequon, Wis., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed July 5, 1973, Ser. No. 376,686
Int. Cl. C07d *13/10*
U.S. Cl. 260—340.5 **9 Claims**

1. A compound of the formula



in which R is hydrogen, alkyl of 1 to 4 carbon atoms or benzyl, R$_1$ is straight chain alkyl of 1 to 7 carbon atoms, branched chain alkyl of 3 to 7 carbon atoms, or cycloalkyl of 3 to 7 carbon atoms, R$_2$, R$_3$ and R$_4$ are hydrogen or lower alkyl of 1 to 4 carbon atoms, R$_5$ is lower alkyl of 1 to 4 carbon atoms, R$_8$ is hydroxy, lower alkoxy of 1 to 4 carbon atoms, halogen or trifluoromethyl, R$_6$ and R$_7$ together are methylenedioxy and *n* is 1 or 2.

3,894,052
CYCLIC ETHYLENE ACETALS OF 3-ACETOXY-2-FORMYL-5-OXOCYCLOPENTANEHEPTANOIC ACID

Norman L. Wendler, Summit, and David Taub, Metuchen, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 48,548, June 22, 1970, Pat. No. 3,736,335. This application Nov. 24, 1972, Ser. No. 309,389
Int. Cl. C07d *13/04*
U.S. Cl. 260—340.9 **2 Claims**

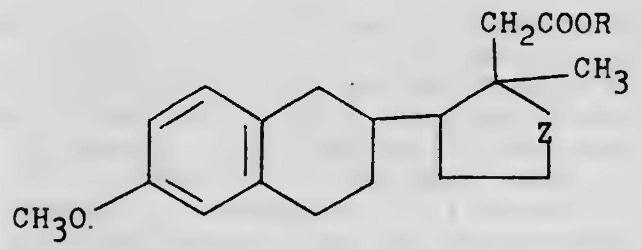
1. 3-Acetoxy-2-formyl-5-oxocyclopentaneheptanoic acid lower alkyl ester, 5-cyclic ethylene acetal.

3,894,053
2-OXYGENATED 5-(1,2,3,4-TETRAHYDRO-6-METHOXY-2-NAPHTHYL)-1-ETHYLCYCLOPENTANEACETIC ACID AND SALTS, ESTERS, AND A LACTONE THEREOF

John H. Dygos, Northbrook, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Filed Apr. 23, 1974, Ser. No. 463,294
Int. Cl. C07d *5/06*
U.S. Cl. 260—343.3 **7 Claims**

1. A compound of the formula



wherein R represents hydrogen, alkali metal, lower alkyl, or benzyl and Z represents carbonyl or optionally-esterified hydroxymethylene of the formula

CHOR′

in which R′ represents hydrogen, lower alkanoyl, or benzoyl.

4. cis-Hexahydro-4-(1,2,3,4-tetrahydro-6-methoxy-2-naphthyl)-3a-methyl-1-2H-cyclopenta[b]furan-2-one.

3,894,054
PROCESS FOR PRODUCTION OF TETRAHYDROFURAN

Bunji Miya, Tokyo, Japan, assignor to Kao Soap Co., Ltd., Tokyo, Japan

Filed July 5, 1973, Ser. No. 376,724
Claims priority, application Japan, Sept. 18, 1972, 47-93457
Int. Cl. C07d *5/02*
U.S. Cl. 260—346.1 R **3 Claims**

1. In a process for the production of tetrahydrofuran by catalytically hydrogenating and dehydrating maleic anhydride, in the gas phase, at a temperature of 200° to 300°C, under a pressure of 10 to 50 kg/cm^2, employing a molar ratio of hydrogen: maleic anhydride of from 10 : 1 to 200 : 1, the improvement which comprises: employing as the catalyst in the reaction a metal oxide catalyst composition consisting essentially of a mixture of (A) a catalyst component obtained by calcining at from 950° to 1,150°C a silica-alumina catalyst having a silica:alumina molar ratio of 0.03 to 0.5 : 1 and (B) a copper-chromium-zinc catalyst component, wherein the amount of said copper-chromium-zinc catalyst component in the mixture is 30 to 80 wt. %.

3,894,055
CATALYTIC OXIDATIVE DEHYDROGENATION OF ALKENES OR ALKADIENES TO FURAN COMPOUNDS

Floyd E. Farha, Jr.; Marvin M. Johnson, and Donald C. Tabler, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed July 19, 1973, Ser. No. 380,723
Int. Cl. C07d *5/14*
U.S. Cl. 260—346.1 R **16 Claims**

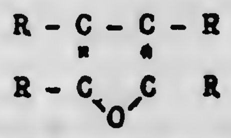
7. A process in accordance with claim 6 wherein said promoter is cobalt.

3,894,056
CATALYTIC OXIDATIVE DEHYDROGENATION OF ALKENES OR ALKADIENES TO FURAN COMPOUNDS

Brent J. Bertus; Donald C. Tabler, and Marvin M. Johnson, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed July 23, 1973, Ser. No. 381,552
Int. Cl. C07d *5/14*
U.S. Cl. 260—346.1 R **15 Claims**

1. A process which comprises reacting oxygen and at least one unsaturated acyclic feed hydrocarbon selected from the group consisting of alkenes and alkadienes having from 4 to 10 carbon atoms, in contact with a catalyst consisting essentially of molybdenum, cobalt, phosphorus, and oxygen, with an atom ratio of phosphorus to molybdenum in the range of about 0.5:1 to about 5:1 and an atom ratio of cobalt to molybdenum in the range of about 0.1:1 to about 3:1, under suitable vapor-phase reaction conditions for conversion of said at least one unsaturated acyclic feed hydrocarbon to at least one furan compound having the formula



wherein each R is individually selected from the group consisting of hydrogen and alkyl radicals having from 1 to 6 carbon atoms, the total carbon atoms in the R radicals being in the range of 0 to 6; and recovering at least a portion of the furan compounds thus produced.

3,894,057

TETRAHYDROBENZOFURANYLPHENOXYCARBOXYLIC ACIDS, ESTERS

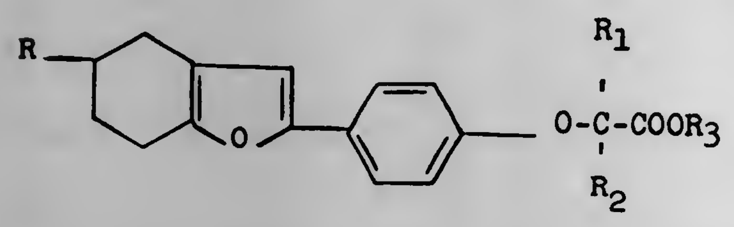
Richard C. Effland, Somerville, N.J., assignor to American Hoechst Corporation, Bridgewater, N.J.

Filed May 28, 1974, Ser. No. 474,010

Int. Cl. C07d *5/40*

U.S. Cl. 260—346.2 R **4 Claims**

1. A compound of the formula



in which R is hydrogen or alkyl of from 1 to 4 carbon atoms; R_1 is hydrogen, methyl or ethyl; R_2 is hydrogen, methyl, ethyl or phenyl; and R_3 is hydrogen or alkyl of from 1 to 3 carbon atoms.

3,894,058

TETRAHYDROBENZOFURANYLPHENOXYPROPYLAMINES

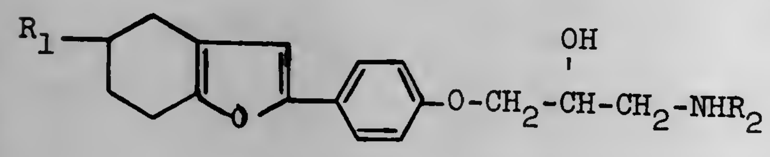
Richard C. Effland, Somerville, and Marc N. Agnew, Plainsboro, both of N.J., assignors to American Hoechst Corporation, Bridgewater, N.J.

Filed May 17, 1974, Ser. No. 471,123

Int. Cl. C07d *5/40*

U.S. Cl. 260—346.2 R **8 Claims**

1. A compound of the formula:



wherein R_1 is hydrogen or alkyl of from 1 to 5 carbon atoms and R_2 is alkyl of from 1 to 5 carbon atoms, cycloalkyl of from 3–7 carbon atoms, phenyl or phenalkyl of from 7-10 carbon atoms; and the physiologically tolerable acid addition salts thereof.

3,894,059

PROCESS FOR THE OXIDATION OF OLEFINES

Thillyampalam Selvaratnam, Sale, England, assignor to Petrocarbon Developments Limited, Manchester, England

Filed Apr. 30, 1973, Ser. No. 355,437

Claims priority, application United Kingdom, May 3, 1972, 20696/72

Int. Cl. C07d *1/04, 1/12, 1/14*

U.S. Cl. 260—348.6 **18 Claims**

1. A process for the production of an oxirane compound comprising the steps of:

1. reacting at a temperature not greater than 10°C. but above the freezing temperature of the system an olefinically unsaturated compound, carbon dioxide, water and a hypohalite in quantities sufficient to produce an aqueous product mixture comprising substantially equimolar quantities of bicarbonate and vic-halohydrin; and
2. heating at least a portion of said aqueous product mixture to a temperature resulting in reaction together of said vic-halohydrin and said aqueous bicarbonate to form an oxirane compound.

3,894,060

ANTHRAQUINONE COMPOUNDS

Volker Hederich, Cologne; Dieter Dieterich, Leverkusen; Helmut Reiff, and Gunter Gehrke, both of Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Germany

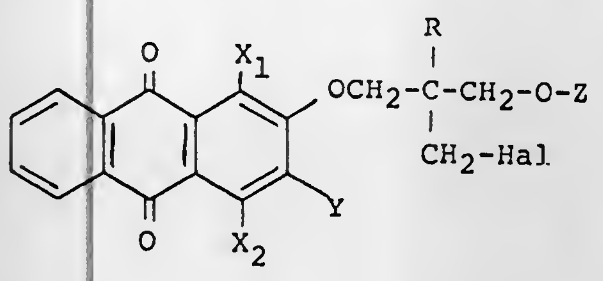
Filed Sept. 29, 1972, Ser. No. 293,590

Claims priority, application Germany, Sept. 30, 1971, 2148849

Int. Cl. C09b *1/54, 1/56*

U.S. Cl. 260—380 **4 Claims**

1. Anthraquinone compound of the formula



wherein

X_1 is hydroxyl or amino;

X_2 is hydroxyl, amino, C_1 –C_6 -alkylamino, cyclohexylamino, C_1 –C_6 -alkylcyclohexylamino, phenylamino, halophenylamino, C_1 –C_8 -alkylphenylamino, C_1 –C_4 -alkoxyphenylamino, C_1 –C_4 -alkylmercaptophenylamino, trifluoromethylphenylamino, acetylaminophenylamino, diphenylamino, phenoxyphenylamino, phenylaminophenylamino, naphthylamino, C_1 –C_{12} -alkylmercapto, phenylmercapto, halophenylmercapto, C_1 –C_4 -alkylphenylmercapto, C_1 –C_4 -alkoxyphenylmercapto, or radicals having the formula

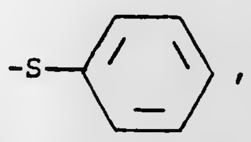
$$—NH—CO—T \text{ or } —NH—SO_2 —T$$

where

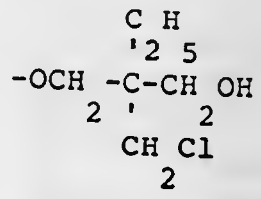
T is C_1 –C_{17} -alkyl, cyclohexyl, phenyl, halophenyl, C_1 –C_4 -alkylphenyl, C_1 –C_4 -alkoxyphenyl, C_1 –C_4 -alkylmercaptophenyl, or C_1 –C_{17} -alkyl substituted by chloro, cyano, hydroxyl or C_1 –C_4 -alkoxy;

Y is hydrogen, chloro, bromo,

$-SC_4H_9$, $-SC_{12}H_{25}$,



, or



$$-OCH_2-\overset{C_2H_5}{\underset{CH_2Cl}{C}}-CH_2OH$$

R is C_1 –C_4 -alkyl or methyl substituted by hydroxy, cyano, C_1 –C_8 -alkoxy, C_1 –C_8 -alkylmercapto, C_1 –C_8 -alkylamino, phenoxy, naphthoxy, phenylmercapto, naphthylmercapto, or any of the last four radicals further substituted by C_1 –C_8 -alkyl, C_1 –C_4 -alkylmercapto, C_1 –C_4 -alkoxy, or halo; Hal is chloro, bromo, or iodo; and Z is hydrogen, C_1 –C_{17} -alkylcarbonyl, cyclohexylcarbonyl, phenylacetyl, cinnamoyl, benzoyl, halobenzoyl, C_1 –C_4 -alkylbenzyl, C_1 –C_4 -alkoxybenzoyl, phenylbenzoyl, phenoxybenzoyl, naphthoyl, C_1 –C_{17} -alkylcarbonyl substituted by halo, acetyl, phenoxy, cyano, or C_1 –C_4 -alkoxy.

3,894,061

ANILINO DERIVATIVES OF CHELOCARDIN

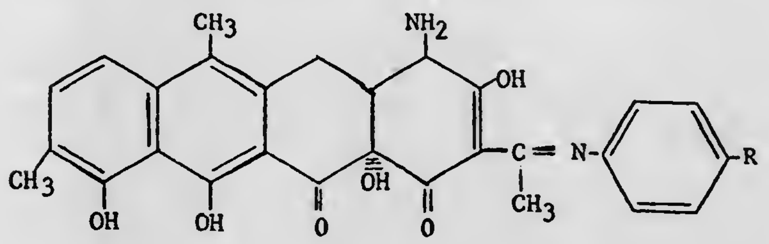
Daniel Tim-Wo Chu, Greenfield Park, and David Lyon Garmaise, Montreal, both of Canada, assignors to Abbott Laboratories, North Chicago, Ill.

Filed July 11, 1973, Ser. No. 378,305

Int. Cl. C07c *143/82*

U.S. Cl. 260—397.7 R **3 Claims**

1. A compound of the formula:



wherein R is sulfamyl, or acetylsulfamyl or a corresponding tautomeric form or a pharmaceutically acceptable acid addition salt thereof.

3,894,062

SUBSTITUTED PHENYL AND NAPHTHYL ESTERS OF PGE$_2$

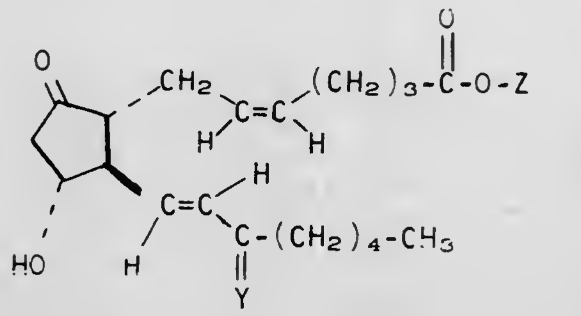
Walter Morozowich, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Nov. 23, 1973, Ser. No. 418,387

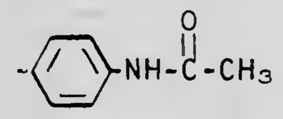
Int. Cl.^{2} C09B *11/06;* **C07C** *69/074*

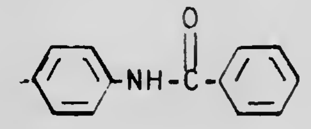
U.S. Cl. 260—395 **25 Claims**

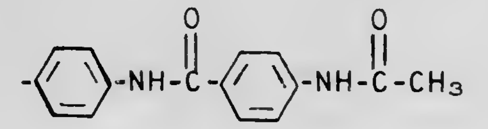
1. An optically active compound of the formula:

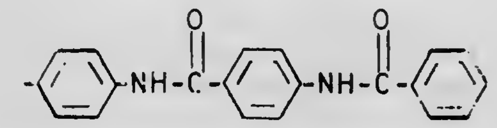


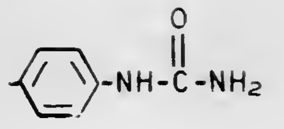
or a racemic compound of that formula and the mirror image thereof, wherein Z is

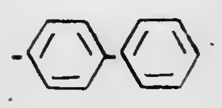


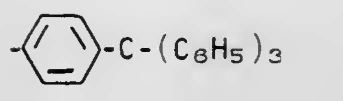


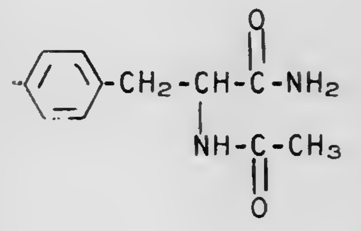


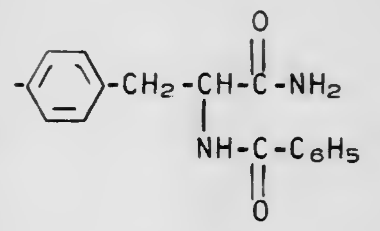


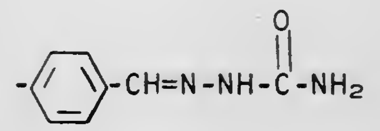


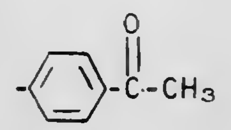


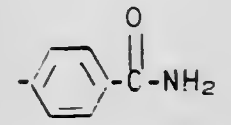


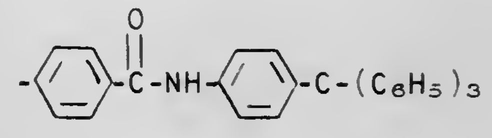


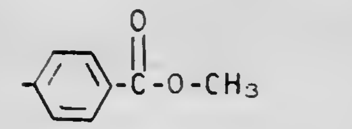


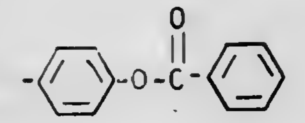


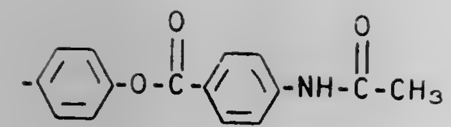


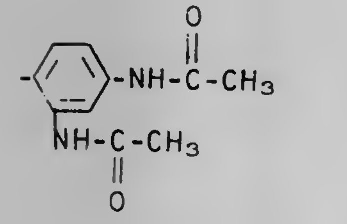


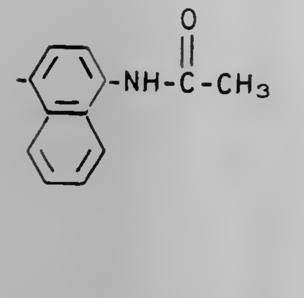


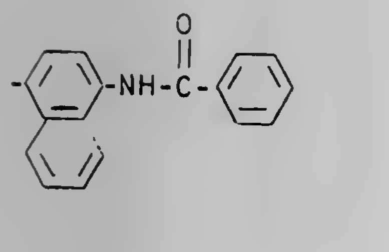




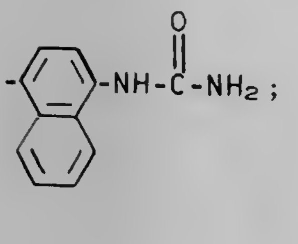




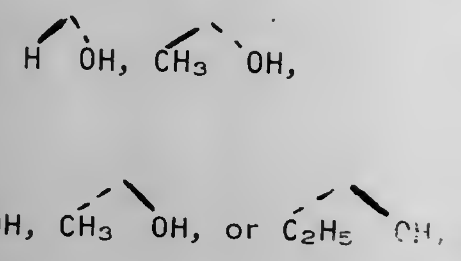




or



and wherein Y is



3,894,063

SELECTIVE DEHALOGENATION OF 6 ALPHA-FLUORO-9 ALPHA-HALO 11 BETA-HYDROXY STEROIDS

Henry Laurent, and Rudolf Wiechert, both of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin, Germany

Filed Apr. 8, 1974, Ser. No. 459,098

Claims priority, application Germany, Apr. 19, 1973, 2320999

Int. Cl.^{2} C07c *169/32*

U.S. Cl. 260—397.45 **8 Claims**

1. A process for the selective dehalogenation of the 9-halogen atom of 6α-fluoro-9α-halo-11β-hydroxy-Δ^4- and $\Delta^{1,4}$-3-keto steroids wherein halo is Cl, Br or I, which comprises dehalogenating with a trialkyltin hydride.

3,894,064

ω-AMINOALKANESULPHONIC ACID DERIVATIVES

Gunther Boehmke, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Germany

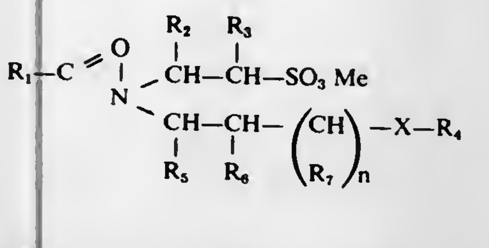
Filed June 22, 1973, Ser. No. 372,607

Claims priority, application Germany, June 24, 1972, 2231070

Int. Cl.^{2} C07C *143/90*

U.S. Cl. 260—401 **6 Claims**

1. New ω-aminoalkanesulphonic acid derivatives of the formula



$$R_1-\overset{O}{\overset{\|}{C}}-N\left\langle\begin{array}{l}\underset{}{\overset{R_2}{\overset{|}{CH}}}-\overset{R_3}{\overset{|}{CH}}-SO_3\,Me\\ \underset{R_5}{\underset{|}{CH}}-\underset{R_6}{\underset{|}{CH}}-\left(\underset{R_7}{CH}\right)_n-X-R_4\end{array}\right.$$

in which

- R_1 represents an optionally substituted C_8–C_{22}-alkyl or C_8–C_{22}-alkenyl radical,
- R_2 and R_3 independently of one another denote hydrogen or a C_1–C_2-alkyl radical and
- R_5, R_6 and R_7 independently of one another denote hydrogen or a C_1–C_6-alkyl radical,
- n is 0 or 1,
- X represents oxygen or sulphur,
- R_4 denotes hydrogen, a C_1–C_8-alkyl, cycloalkyl, aralkyl or an aryl radical and
- Me denotes a cation

3,894,065

ARYL-OXO-ALKANOIC ACIDS

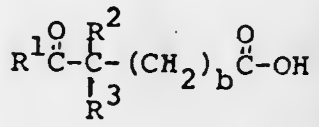
Edward J. Cragoe, Jr., Lansdale; Kenneth L. Shepard, Ambler, and Otto W. Woltersdorf, Jr., Chalfont, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Apr. 27, 1973, Ser. No. 355,121

Int. Cl. C07c *63/52*

U.S. Cl. 260—408 **11 Claims**

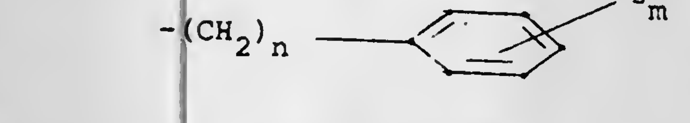
1. A compound having the formula



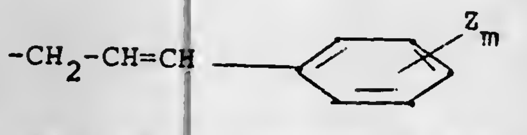
$$R^1\overset{O}{\overset{\|}{C}}-\underset{R^3}{\overset{R^2}{C}}-(CH_2)_b\overset{O}{\overset{\|}{C}}-OH$$

where

- R^1 represents alkyl of 1–3 carbons or cyclopropyl;
- R^2 represents phenyl, halophenyl, loweralkylphenyl or loweralkoxyphenyl;
- R^3 represents



or



where n is an odd number up to 7, m is 0–2, and Z is halogen, loweralkyl, loweralkoxy, hydroxy, cyano, trifluoromethyl, hydroxymethyl or acyloxymethyl;

b has a value of 6–8; and salts esters and amides thereof.

3,894,066

METHOD FOR MAKING HIGHER ALKYL TIN THICHLORIDES

Max Buschhoff, Luenen, and Karl Heinz Mueller, Werne, both of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Germany

Filed Jan. 25, 1974, Ser. No. 436,795

Claims priority, application Germany, Jan. 31, 1973, 2304617

Int. Cl. C07f *7/22*

U.S. Cl. 260—429.7 **2 Claims**

1. The method of making octyltin trichloride of the formula $C_8H_{17}SnCl_3$ which comprises

a. reacting an octyl aluminum compound of the formula

$$(C_8H_{17})_xAlCl_{3\text{-}x\ 3\text{-}x},$$

wherein *x* is 1, 2, or 3, or mixtures thereof, with a calculated amount of an aluminum alcoholate of the formula

$$Al(OR')_{3\ 3},$$

wherein R′ is a straight-chain or branched-chain saturated or unsaturated aliphatic or cycloaliphatic hydrocarbon having 3 to 18 carbon atoms, to form at least one intermediate compound of a formula selected from the group consisting of

$$C_8H_{17}Al(OR')Cl$$
$$(C_8H_{17})_2Al(OR')$$

and

$$C_8H_{17}Al(OR')_{2\ 2};$$

b. reacting said intermediate with a stoichiometric amount of tin tetrachloride to form the desired octyltin trichloride; and

c. isolating said octyltin trichloride from the reaction mixture by converting the dealkylated aluminum moiety to a water-soluble species at a pH outside the range of 3.5 to 13.

3,894,067

PRODUCTION OF PENICILLAMINE-MERCURIC-MERCAPTIDE AND OF PENICILLAMINE AND ACID ADDITION SALTS OF PENICILLAMINE

Manfred Bock, Berlin, Germany, assignor to Firma Heyl & Co. Chemisch-Pharmazeutische Fabrik, Berlin, Germany

Filed Mar. 22, 1972, Ser. No. 236,962

Claims priority, application Germany, Mar. 24, 1971, 2114329

Int. Cl. C07f *3/10*

U.S. Cl. 260—431 **6 Claims**

1. Method of producing penicillamine-mercuric-mercaptide, which comprises reacting a compound selected from the group consisting of penicilloic acid and penilloic acid with a mercuric salt in a mol ratio of 1:0.3 – 1:0.7 in a medium of at least one water miscible organic solvent and water in a ratio of organic solvent to water of between about 1:3 and 3:1, thereby forming penicillamine-mercuric-mercaptide in crystalline form which precipitates in such form from the solution and penilloaldehyde as by-product which remains dissolved in the solution, whereby the precipitated crystalline penicillamine-mercuric-mercaptide can be easily separated from the solution containing the by-product.

3,894,068

MANUFACTURE OF BASIC LEAD STYPHNATE

George William Charles Taylor, 7 The Cobbins, Waltham Abbey, Essex, and Arwyn Theophilus Thomas, 66 Gillmans Rd., Orpington, Kent, both of England

Filed Jan. 15, 1963, Ser. No. 252,271

Claims priority, application United Kingdom, Jan. 15, 1962, 1478/62

Int. Cl. C07f *7/24*

U.S. Cl. 260—435 A **4 Claims**

1. A process for the manufacture of basic lead styphnate in the beta polymorphic form which comprises forming an aqueous solution of alkali metal styphnate which contains 2-nitroresorcinol, reacting the solution so formed with an aqueous solution of a compound selected from the group consisting of lead nitrate and lead acetate whereby a precipitate of beta polymorphic basic lead styphnate is formed, and separating out the beta polymorphic basic lead styphnate from the reaction mixture.

3,894,069

PROCESS FOR PREPARING DITHIODICARBONYL METAL COMPLEXES

Donald G. Ries, Brookhaven, Miss., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed Aug. 3, 1973, Ser. No. 385,418

Int. Cl. C07f *15/02, 15/04, 15/06*

U.S. Cl. 260—439 R **9 Claims**

1. A process for preparing a dithiodicarbonyl metal complex which comprises:

a. reacting an acyloin with a phosphorus sulfide in the presence of ammonium ion in a solvent and

b. reacting the reaction solution from (a) with an aqueous solution of a reactive water soluble ionizable compound of a heavy metal to form a dithiodicarbonyl metal complex, the quantity of said ammonium ion corresponding to 0.1 to 2.0 $(NH_4)^+$ equivalents per mole of said acyloin, and said acyloin being selected from the group consisting of benzoin and substituted benzoins in which the substituents are from the group consisting of methyl, chloro- and methoxy, said ammonium ion being derived from substances from the group consisting of ammonia, and water soluble ammonium, amine and quaternary salts, and said heavy metal being selected from the group consisting of iron, cobalt and nickel.

3,894,070

SULFATE ESTERS OF POLYALKOXY ADDUCTS OF ETHYLENEDIAMINE

Iwao Tomiyama, Nanjo; Tadayoshi Sakai, Fukui; Shinobu Hashizume, Asuwa, and Kanjin Ikeda, Fukui, all of Japan, assignors to Nikka Chemical Industrial Co., Ltd., Fukui, Japan

Filed Aug. 8, 1972, Ser. No. 278,830

Int. Cl. C07c *93/04, 141/00*

U.S. Cl. 260—458 **1 Claim**

1. A surface-active compound produced by reacting ethylene diamine and propylene oxide at a temperature of 100° to 120°C, to obtain a reaction product comprising tetra-polyoxypropylene ethylene diamine, treating said diamine with potassium hydroxide and adding thereto ethylene oxide at a temperature of about 190° to 200°C to obtain an intermediate product, sulfonating said intermediate product with chlorosulfonic acid at a temperature ranging between about 20° and 35°C, and neutralizing the reaction mixture with aqueous sodium hydroxide to obtain the desired surface-active compound having 10 oxypropylene groups and 60 oxyethylene groups.

3,894,071

PROCESS FOR PRODUCING DIAMINOMALEONITRILE

Eiji Nishiwaki, Arai; Shigeharu Yamazoe, Tokyo; Mitsuyuki Hoshino, Urawa; Sadafumi Yoshino, and Katsunori Mikuma, both of Kurashiki, all of Japan, assignors to Nippon Soda Company, Limited, Japan

Filed Sept. 26, 1973, Ser. No. 400,858

Claims priority, application Japan, Dec. 11, 1972, 47-123381; Sept. 29, 1972, 47-97139

Int. Cl. C07c *121/42, 121/02*

U.S. Cl. 260—465.5 R **9 Claims**

1. In a process for the production of diaminomaleonitrile by tetramerization of hydrogen cyanide in a nonprotonic polar solvent selected from the group consisting of dimethylsulfoxide, dimethylformamide, dimethylacetoamide, hexamethylphosphoroamide and mixtures thereof, in the presence of a basic catalyst selected from the group consisting of alkali

cyanide, alkali hydroxide, ammonia, trialkylamine and mixtures thereof, the improvement which comprises tetramerizing hydrogen cyanide at a temperature ranging from 15°C to 100°C in the presence of at least one alkylmercaptan containing 1 to 8 carbon atoms wherein the amount of said alkylmercaptan is in the range of 0.1 to 8 weight percent of the amount of non-protonic polar solvent.

3,894,072

α-AMINOMETHYL-HYDROCINNAMONITRILES

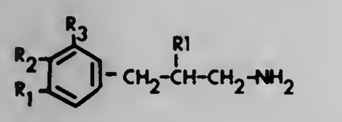
Joseph Albert Meschino, North Wales, Pa., assignor to McNeil Laboratories, Incorporated, Ft. Washington, Pa.

Division of Ser. No. 149,797, June 3, 1971, abandoned, which is a division of Ser. No. 850,280, June 9, 1969, abandoned, which is a division of Ser. No. 596,100, Nov. 22, 1966, Pat. No. 3,483,186. This application Sept. 27, 1973, Ser. No. 401,532

Int. Cl. C07c *121/78*

U.S. Cl. 260—465 E **2 Claims**

1. A chemical compound having the formula:



wherein R′ is cyano, R_1 is lower alkoxy; and each of R_2 and R_3 are selected from the group consisting of hydrogen and lower alkoxy.

3,894,073

EXTRACTION OF PYRETHRUM

David George Alexander, Westella, and Allen Forster, Hull, both of England, assignors to Rose, Downs & Thompson Limited, Kingston-upon-Hull, England

Filed Jan. 24, 1972, Ser. No. 219,954

Claims priority, application United Kingdom, Jan. 28, 1971, 3366/71

Int. Cl. C07c *67/06*

U.S. Cl. 260—468 H **13 Claims**

1. A process for extracting pyrethrins from a pyrethrin containing material, which process comprises the steps of:

a. making a solution of the material in a first hydrocarbon solvent for pyrethrins having 4-8 carbon atoms,

b. extracting the pyrethrins from said solution into a second organic solvent for pyrethrins miscible with water selected from the group consisting of methanol and ethanol and having a water content such that it achieves substantially complete extraction of said pyrethrins into said second solvent, and

c. back-extracting said pyrethrins from said second solvent into an organic solvent for pyrethrins different from said second solvent after partially evaporating said second solvent to increase the proportion of water and pyrethrins therein until the pyrethrins are extracted preferentially into said different solvent.

3,894,074

2,4-BIS(TRIFLUOROMETHYL)-6-NITROPHENOL COMPOUNDS

Klaus Wagner; Ludwig Eue; Robert R. Schmidt, and Ernst Roos, all of Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

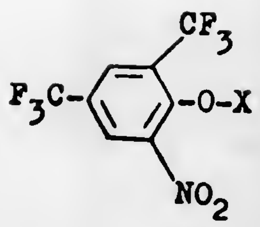
Filed Feb. 23, 1973, Ser. No. 335,400

Claims priority, application Germany, Feb. 29, 1972, 2209528

Int. Cl. C07c *125/06*

U.S. Cl. 260—468 E **7 Claims**

1. 2,4-bis-(trifluoromethyl)-6-nitrophenol compound of the formula



wherein

X is N,N-dimethylaminocarbonyl or —CO—NH—R^7; and

R^7 is alkyl of from 1 to 4 carbon atoms, alkenyl of from 2 to 4 carbon atoms, cycloalkyl of from 5 to 6 ring carbons, or phenyl.

3,894,075

PREPARATION OF HYDROXYL-TERMINATED POLYESTERS

Löwhardt A. A. Schoen, Geleen, Netherlands, assignor to Stamicarbon, N.V., Geleen, Netherlands

Filed Mar. 8, 1971, Ser. No. 122,217

Claims priority, application Netherlands, Mar. 7, 1970, 7003277

Int. Cl. C07c *69/66*

U.S. Cl. 260—484 A **6 Claims**

1. In a process for producing a hydroxy-terminated polyester by the catalytic polymerization of at least one lactone at a temperature of about 50° to about 250°C, the improvement consisting of conducting the polymerization in the presence of a catalyst, the catalyst consisting essentially of a bimetallic alkoxide derived from a bifunctional alcohol of up to about 10 carbon atoms, one metal in said bimetallic oxide being an alkali metal, and the other metal in said bimetallic alkoxide being selected from the group consisting of boron, aluminum, titanium and zirconium.

3,894,076

PRODUCTION OF ALKYL ESTERS OF UNSATURATED MONOCARBOXYLIC ACIDS

Roger L. Van Duyne, Seabrook; Adolfo Aguilo, and Dudley J. McCracken, both of Corpus Christi, all of Tex., assignors to Celanese Corporation, New York, N.Y.

Filed Jan. 24, 1974, Ser. No. 436,247

Int. Cl. C01c *69/54*

U.S. Cl. 260—486 R **8 Claims**

1. A continuous process for the production of a lower alkyl ester of an alpha-beta unsaturated monocarboxylic acid in which ester the alcohol moiety contains from 2 to 4 carbon atoms and in which ester the acid moiety contains 3 or 4 carbon atoms, which process comprises:

a. in a mass transfer zone to which a gaseous alpha-monoolefin of 2 to 4 carbon atoms is supplied so as to maintain an atmosphere of said gaseous alpha-monoolefin as a continuous phase, effecting the mass transfer of said alpha-monoolefin into liquid droplets of a hereafter defined recycle stream recycled from the hereafter defined first reaction zone, so as to obtain an alpha-monoolefin enriched liquid,

b. in a first reaction zone mixing and reacting the alpha-monoolefin enriched liquid so obtained in said mass transfer zone with a substantially anhydrous sulfuric acid medium, said sulfuric acid medium being substantially comprised of the residual liquid recycled from the hereafter defined recovery zone together with make-up sulfuric acid, said first reaction zone being operated at a temperature within the range of about 100° to 160°C, and at a pressure of about 100 to 300 psig,

c. withdrawing a portion of the reaction mixture from said first reaction zone and recycling such as said recycle stream to the said mass transfer zone,

d. passing the reaction mixture obtained from said first reaction zone to a second reaction zone, adding to and reacting with such reaction mixture obtained in said first reaction zone an anhydrous alpha-beta unsaturated monocarboxylic acid containing three or four carbon atoms, said second reaction zone being operated at a temperature within the range of about 100° to 150°C and a pressure within the range of about 100 to 300 psig,

e. in a recovery zone treating the effluent from said second reaction zone so as to recover said lower alkyl ester of the alpha-beta unsaturated monocarboxylic acid therefrom, and

f. recycling at least a portion of the residual liquid from said separation zone to said first reaction zone;

wherein said process is effected under substantially anhydrous conditions and wherein said process the rate of circulation and recirculation of the various streams therein is such that the residence time of the liquid reactants in the loop comprised of said first reaction zone and said mass transfer zone is from 8 to 20 minutes, and such that the residence time of the reactants in said second reaction zone is from 9 to 16 minutes.

3,894,077

ANTISTATIC AGENT FOR PLASTICS

Takeshi Horikawa; Hiroshi Yagihara, and Masayoshi Kubo, all of Saitama, Japan, assignors to Daicel Ltd., Osaka, Japan

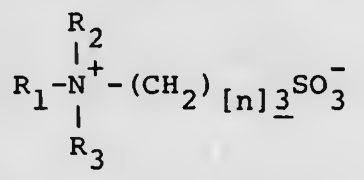
Filed Feb. 25, 1974, Ser. No. 445,587

Claims priority, application Japan, Feb. 27, 1973, 48-23518

Int. Cl. C07c *143/00*

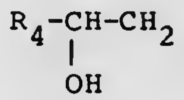
U.S. Cl. 260—501.12 **3 Claims**

1. An antistatic agent of the formula;



$$R_1-\overset{\overset{R_2}{|}}{\underset{\underset{R_3}{|}}{N^+}}-(CH_2)[n]\underline{3}SO_3^-$$

wherein R_1 is hydroxyalkyl having the formula



$$R_4-\underset{\underset{OH}{|}}{CH}-CH_2$$

in which R_4 is alkyl having 6 to 16 carbon atoms, R_2 is the same as R_1 or alkyl having 1 to 4 carbon atoms, and R_3 is alkyl having 1 to 4 carbon atoms.

3,894,078

5-ACETAMIDO-2,4-DIMETHYLTRIFLUOROMETHANESULFONANILIDE

Tomas L. Fridinger, Woodbury Village, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 12, 1973, Ser. No. 331,676

Int. Cl. C07c *143/74*

U.S. Cl. 260—501.19 **2 Claims**

1. 5-Acetamido-2,4-dimethyltrifluoromethanesulfonanilide or a horticulturally acceptable salt thereof.

3,894,079

PREPARATION OF 2,5-DIBROMOTEREPHTHALIC ACID

James O. Knobloch, Naperville, Ill., assignor to Standard Oil Company, Chicago, Ill.

Filed Dec. 29, 1972, Ser. No. 319,500

Int. Cl. C07c *63/26*, *63/30*

U.S. Cl. 260—515 A **4 Claims**

1. A process for the preparation of a 2,5-dibromoterephthalic acid compound, which comprises reacting a terephthalic acid compound in a solution of chlorosulfonic acid or fluorosulfonic acid containing sulfur trioxide, in the presence of iodine with bromine at 40° to 80°C.

3,894,080

PHENYLACETIC ACIDS

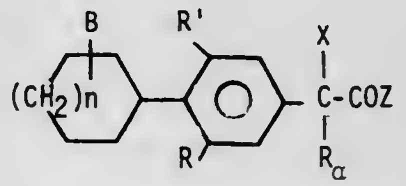
Julius Diamond, Lafayette Hill, and Norman Julian Santora, Roslyn, both of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Continuation of Ser. No. 152,368, Jan. 11, 1971, abandoned, which is a continuation-in-part of Ser. No. 34,870, May 5, 1970. This application Jan. 7, 1974, Ser. No. 431,502

Int. Cl.^{2} C07C *149/233*

U.S. Cl. 260—516 **6 Claims**

1. A compound of the formula



where:

R is loweralkyl;

n is 0-2;

B is hydrogen or loweralkyl;

R is halo,
haloloweralkyl or
loweralkyl;

R′ is hydrogen,
fluoro,
chloro,
bromo or
trifluoromethyl;

X is
amidinothio; and

Z is —OH,
loweralkoxy,
benzyloxy or
—OM where M is an alkali, alkaline earth or aluminum metal or an ammonium salt.

3,894,081

RECOVERY OF PENTAHYDRATE TRISODIUM SALT OF CARBOXYMETHOXY SUCCINIC ACID FROM AQUEOUS SOLUTION

William J. Dunlap, Seabrook, Tex., and Carroll W. Lanier, Baker, La., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 288,030, Sept. 11, 1972, abandoned. This application Feb. 15, 1974, Ser. No. 442,808

Int. Cl. C07c *59/22*

U.S. Cl. 260—535 P **8 Claims**

1. A process for recovering particulate pentahydrate trisodium carboxy methoxy succinic acid from a supersaturated aqueous solution of trisodium carboxy methoxy succinic acid which comprises:

holding said solution at a temperature of from about 0° to about 50°C for a period of time sufficient to permit growth of the particles of pentahydrate trisodium carboxy methoxy succinic acid to a selected particle size, and then separating the particulate pentahydrate trisodium carboxy methoxy succinic acid from the mother liquor.

3,894,082

PROCESS OF MAKING TRIFLUOROACETIC ACID

Günter Fernschild, Ahlem; Heinrich Paucksch, and Joachim Massonne, both of Hannover, all of Germany, assignors to Kali-Chemie Aktiengesellschaft, Hannover, Germany

Filed Jan. 5, 1973, Ser. No. 321,521

Claims priority, application Germany, Jan. 7, 1972, 2200725

Int. Cl.^{2} C07C *51/04*

U.S. Cl. 260—539 A **6 Claims**

1. An improvement in the process of making substantially anhydrous and chlorine-free trifluoroacetic acid in a continuous process by hydrolysis of trifluoroacetyl chloride with

water and distillation, the said improvement comprising carrying out the distillation in a continuous process in a distillation apparatus provided with a distillation column and an attached reflux condenser by

a. introducing in the still of the apparatus gaseous trifluoroacetyl chloride into a boiling mixture of trifluoroacetic acid, water and hydrogen chloride, the boiling point of the mixture being between the boiling point of the azeotropic mixture and 72°C/760 Torr, while
b. withdrawing the major portion of the trifluoroacetic acid condensing at the head of the column from the rising gas mixture at a place ahead of the condenser;
c. absorbing the gas mixture passing through the condenser, which mixture includes the hydrogen chloride formed in the reaction and residual trifluoroacetic acid, in an aqueous solution, and
d. simultaneously introducing the amount of water necessary for the hydrolysis into the still.

3,894,083
AMIDES

Kurt Hofer, Munchenstein, Basel-Land; Guenther Tscheulin, Riehen, Basel-Land, and Anton Voykowitsch, Binningen, Basel-Land, all of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

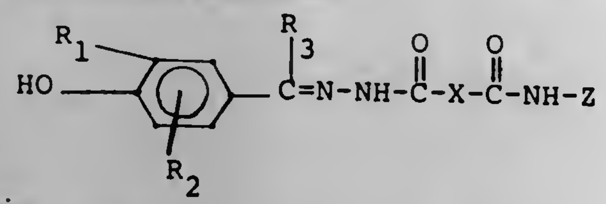
Filed Sept. 14, 1973, Ser. No. 397,227

Claims priority, application Switzerland, Sept. 21, 1972, 13796/72; Oct. 4, 1972, 14472/72

Int. Cl. C07c *103/30*

U.S. Cl. 260—559 H **19 Claims**

1. A compound of the formula



wherein

R_1 is tertiary alkyl (C_4-C_{12}),

R_2 is alkyl (C_1-C_{20}), cycloalkyl (C_5-C_{12}), cycloalkyl (C_5-C_{11}) alkyl (C_1-C_7), phenylalkyl (C_7-C_{12}), phenyl, or phenylalkyl (C_7-C_{12}) or phenyl mono- or di-substituted on the aromatic nucleus thereof by alkyl (C_1-C_6),

R_3 is hydrogen or alkyl (C_1-C_{20}),

X is a direct linkage, a 1,3-or a 1,4-phenylene,

Z is hydrogen ; alkyl (C_1-C_{22}); cycloalkyl (C_5-C_{12}); cycloalkyl (C_5-C_{11}) alkyl (C_1-C_7) phenylalkyl (C_7-C_{12}); phenoxyalkyl (C_7-C_{12}); phenylthioalkyl (C_7-C_{12}); phenylalkyl (C_7-C_{12}), phenoxyalkyl (C_7-C_{12}) or phenylthioalkyl (C_7-C_{12}), monosubstituted on the aromatic nucleus thereof by alkyl (C_1-C_4) or alkoxy (C_1-C_4); phenyl, or phenyl mono-, dior trisubstituted by any combination of the groups alkyl (C_1-C_9), alkoxy (C_1-C_9), alkylthio (C_1-C_9) (with C_1-C_{14} in the aggregate of the substituents alkyl, alkoxy and/or alkylthio), halogen, hydroxyl, cyano, phenoxy, phenyl, phenyl substituted by 1 or 2 alkyls (C_1-C_9) and/or by hydroxy,

and when

Z is alkyl, cycloalkylalkyl or substituted or unsubstituted phenylalkyl, phenoxyalkyl, phenylthioalkyl or alkyl, alkoxy or alkylthio substituted phenyl, then any aliphatic alkyl chain thereof is either uninterrupted or is interrupted by 1 or 2 ether and/or thiother linkages.

3,894,084
PROCESS FOR MAKING ACRYLAMIDE

Darrell L. Werges, Park Forest, and Louis A. Goretta, Naperville, both of Ill., assignors to Nalco Chemical Company, Chicago, Ill.

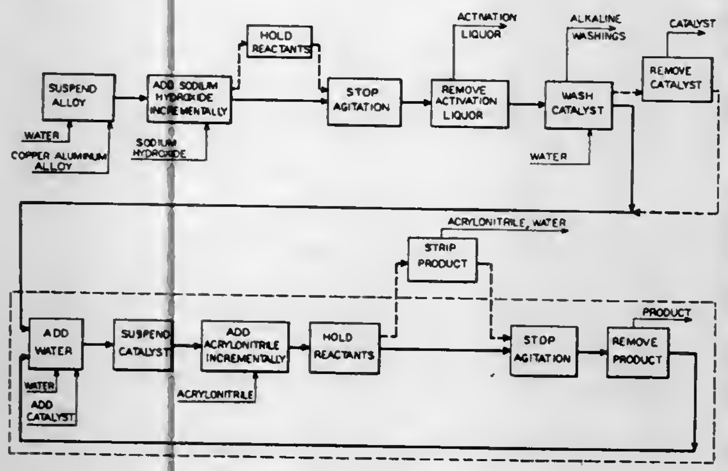
Filed Apr. 5, 1974, Ser. No. 458,434

Int. Cl. C07c *103/08*

U.S. Cl. 260—561 N **16 Claims**

1. A process for catalytically hydrolyzing acrylonitrile to acrylamide comprising the steps of sequentially

A. suspending in water contained in a reaction zone with agitation copper catalyst particles having a standardized nitrile hydrolysis activity of at least about 50 weight percent and further having a particle size ranging from about 0.002 to 0.1 inches in average diameters, the weight ratio of said water to said catalyst ranging from about 0.02 to 0.20,
B. adding to said water while said catalyst particles are suspended therein at an initial water temperature ranging from about 180° to 300°F incrementally acrylonitrile with agitation, the rate of said addition being such that the temperature of said water is maintained in the range of from about 180° to 300°F., the total amount of acrylonitrile so added being such that the weight ratio of said water to said total acrylonitrile ranges from about 50:50 to 75:25, said rate of addition being such as to produce a total conversion of acrylonitrile to acrylamide in said reaction zone of at least about 45% at the time when said adding is completed,
C. maintaining the resulting mixture in said reaction zone with agitation at a water temperature ranging from about 180° to 300°F until the total conversion of said acrylonitrile to produced acrylamide is at least about 65%,
D. terminating said agitation in said reaction zone, thereby causing said catalyst particles to fall to the bottom of said reaction zone,
E. removing at least a major portion of said acrylamide product solution from said reaction zone while retaining substantially all of said catalyst particles in said reaction zone,



F. charging water to said reaction zone in an amount sufficient to bring the weight ratio of said water to said catalyst into said range of from about 0.02 to 0.20,
G. repeating sequentially steps (A) through (F).

7. The process of claim 1 wherein initially prior to step (A) said process comprises the steps of

A. charging water to said reaction zone,
B. charging an alloy comprising copper and aluminum in a weight ratio of from about 30:70 to 70:30 copper to aluminum in the form of particles having a size ranging from about 0.002 to 0.1 inches in average maximum diameter to said reaction zone to produce an initial weight ratio of said alloy particles to said water in the range from about 0.01 to 0.35,
C. suspending said alloy particles in said water with agitation,
D. adding alkali metal hydroxide to such suspension while maintaining the bulk temperature of said water in the range from about 32° to 180° F., the total quantity of alkali metal hydroxide charged to such suspension ranging from about 0.5 to 20 times the number of moles of aluminum initially present in said alloy, the total time of such adding ranging from about 2 to 50 hours,
E. terminating said agitation in said reaction zone, thereby causing said catalyst particles to fall to the bottom of said reaction zone,
F. removing said water with said alkali metal hydroxide contained therein, and

G. washing with water said catalyst particles until a wash water pH not above about 8.0 is achieved.

3,894,085
2-HALO NITRONES, THEIR MANUFACTURE AND THEIR USE FOR THE MANUFACTURE OF N-SUBSTITUTED ARALIPHATIC ALDEHYDE-NITRONES

Albert Eschenmoser, Kusnacht, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

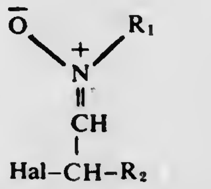
Filed Sept. 18, 1973, Ser. No. 398,511

Claims priority, application Switzerland, Sept. 19, 1972, 13677/72; Oct. 12, 1972, 14962/72

Int. Cl. C07c *119/00*

U.S. Cl. 260—566 R **4 Claims**

1. Nitrones of the general formula



wherein Hal represents a bromine or chlorine atom, R_1 denotes 5 or 6 ring-membered cycloalkyl or lower alkyl and R_2 denotes hydrogen or lower alkyl, phenyl or phenyl loweralkyl.

3,894,086
NITRODIFLUORAMINOTERPHENYL COMPOUNDS AND PROCESSES

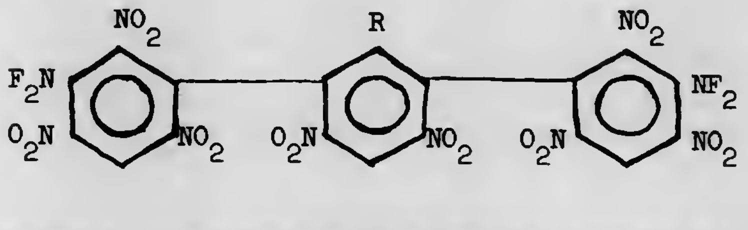
Michael W. Lerom, Menlo Park, and Howard M. Peters, Palo Alto, both of Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Apr. 20, 1972, Ser. No. 246,031

Int. Cl. C07c *87/100*

U.S. Cl. 260—576 **3 Claims**

1. A nitrodifluoraminoterphenyl compound having the formula



wherein R is a radical selected from the group consisting of H and NO_2 .

3,894,087
METHOD OF PRODUCING 2,2,6-TRICHLOROCYCLO-HEXANONE AND COMPOSITIONS THEREOF

Eugene C. Gilbert, Hanover Park; Donald C. McLean, Barrington, and Edward Sherman, Chicago, all of Ill., assignors to The Quaker Oats Company, Chicago, Ill.

Filed Feb. 16, 1971, Ser. No. 115,773

Int. Cl. C07c *49/30, 37/00, 45/00*

U.S. Cl. 260—586 R **13 Claims**

1. 2,2,6-Trichlorocyclohexanone.

2. A process for the preparation of 2,2,6-trichlorocyclohexanone which comprises:

a. contacting in a non-aqueous system a mixture of chlorine and a substrate selected from the group consisting of cyclohexanone, 2-chlorocyclohexanone, 2,2-dichlorocyclohexanone, and 2,6-dichlorocyclohexanone at a temperature between 0°C. or the temperature at which the reaction mixture is a liquid, whichever is higher, and 120°C. in the presence of an interagent selected from the group consisting of inert saturated hydrocarbons, inert saturated halogenated hydrocarbons, inert saturated carboxylic acids, and 2,2,6-trichlorocyclohexanone; said substrate being in a ratio to said chlorine between one to more than two moles of said chlorine minus one mole for each equivalent of chlorine in said substrate, and one to less than four moles of said chlorine minus one mole for each equivalent of chlorine in said substrate; and
b. separating said 2,2,6-trichlorocyclohexanone from the reaction mixture.

3,894,088
1-ISOPROPENYL-SPIRO[4,5]DEC-6-EN-8-ONES AND A PROCESS FOR PRODUCING THEM

Peter Naegeli, Wettingen, Switzerland, assignor to Givaudan Corporation, Clifton, N.J.

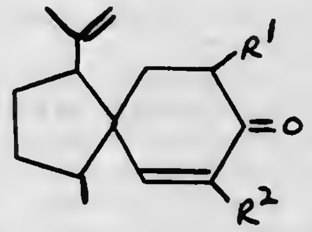
Filed Nov. 7, 1973, Ser. No. 413,471

Claims priority, application Switzerland, Nov. 15, 1972, 16606/72

Int. Cl. C07c *49/44, 45/00*

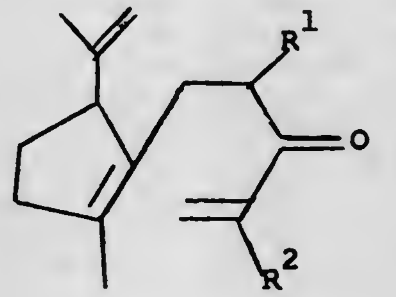
U.S. Cl. 260—586 C **8 Claims**

1. Spiro compounds of the general formula



wherein R^1 and R^2 each independently represent a hydrogen atom or a lower alkyl group.

4. A process for the manufacture of the spiro compounds claimed in claim 1, which process comprises cyclising a cyclopentene derivative of the general formula



(II)

wherein R^1 and R^2 have the significance given in claim 1, in an organic solvent in the presence of a Lewis acid, said organic solvent being a member selected from the group consisting of dioxane, diethyl ether, benzene, toluene and nitromethane, said Lewis acid being a member selected from the group consisting of tin tetrachloride and titanium tetrachloride and the reaction being conducted within the range from about −40°C to reflux.

3,894,089
METHOD FOR REACTING ORGANIC HALIDES

Michael F. Farona, Cuyahoga Hills, and James F. White, Akron, both of Ohio, assignors to The University of Akron, Akron, Ohio

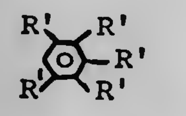
Division of Ser. No. 339,637, March 9, 1973, Pat. No. 3,832,403, which is a continuation-in-part of Ser. No. 119,908, March 1, 1971, abandoned. This application Apr. 10, 1974, Ser. No. 459,490

Int. Cl. C07c *49/76, 49/82*

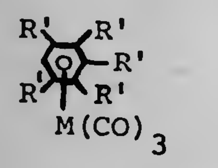
U.S. Cl. 260—591 **9 Claims**

1. The process of reacting an organic acyl halide with an aromatic substrate to form an aromatic product comprising the steps of: charging a reaction vessel with a metallic hex-

acarbonyl compound having the formula $M(CO)_6$ wherein M is selected from the group consisting of Cr, Mo and W, adding an aromatic substrate having the formula



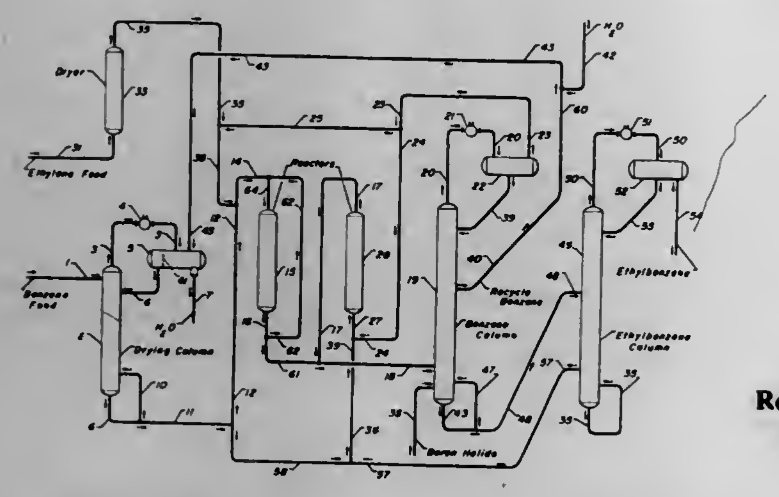
wherein R′ is selected from the group consisting of hydrogen, alkyl groups having from 1 to about 6 carbon atoms, alkoxide groups having from 1 to about 4 carbon atoms, aryl and aryloxide groups having from 6 to about 12 carbon atoms including alkyl substituents and hydroxide, reacting said metallic hexacarbonyl compound with part of said aromatic substrate to yield an arene metal tricarbonyl catalyst having the formula



charging the reaction vessel with an organic acyl halide having the formula $R{-}C{<}^{O}_{X}$
wherein R is an aryl group having from 6 to about 12 carbon atoms, and X is selected from the group consisting of bromine, chlorine and fluorine, heating said reaction vessel from ambient temperatures to a temperature sufficient to cause said catalyst to remove the halide from said organic halide with generation of an acyl cation from said organic halide so that said acyl cation will attack the remaining part of said aromatic substrate to yield the aromatic product.

3,894,090
WATER WASHING METHOD FOR BORATE REMOVAL IN AN AROMATIC ALKYLATION PROCESS

Earl J. Cleveland, Longview, Tex., assignor to Universal Oil Products Company, Des Plaines, Ill.
Continuation of Ser. No. 276,988, Aug. 1, 1972, abandoned. This application Feb. 15, 1974, Ser. No. 443,045
Int. Cl. C07c *3/56*
U.S. Cl. 260—671 R **6 Claims**



1. In a process for the boron halide promoted alkylation of an aromatic hydrocarbon wherein boron oxide hydrates are formed by the reaction of water with a boron halide, the method of removing boron oxide hydrates from the process which comprises the steps of:

a. passing resultant alkylation effluent comprising boron oxide hydrates, an unalkylated aromatic hydrocarbon and alkylated aromatic hydrocarbons into a fractional distillation column;
b. introducing a stream of substantially pure boron halide into the fractional distillation column at a point below the level at which the alkylation effluent passes into the column and therein reacting the boron halide with said boron oxide hydrates to form a volatile complex which is soluble in the unalkylated aromatic hydrocarbon;
c. removing as a side-cut stream from said column the resultant solution of the volatile boron oxide hydrate complex in unalkylated aromatic hydrocarbon;
d. admixing water with said side-cut stream and transferring the boron oxide hydrates from said solution to the water, thereby forming a mixed-phase liquid stream comprising water and unalkylated aromatic hydrocarbon; and
e. separating water from said liquid stream and returning resultant dried unalkylated aromatic hydrocarbon to the aforesaid boron halide promoted aromatic alkylation reaction.

3,894,091
PROCESS FOR PRODUCTION OF ACROLEIN

Kouzou Sakakibara; Iwao Abe, and Kazuyuki Matsuoka, all of Saitama, Japan, assignors to Daicel Ltd., Osaka, Japan
Filed July 5, 1973, Ser. No. 376,317
Claims priority, application Japan, July 6, 1972, 47-68001
Int. Cl. C07c *45/04*
U.S. Cl. 260—604 R **6 Claims**

1. In a process for the production of acrolein by catalytically oxidizing propylene in the gaseous phase with a molecular oxygen-containing gas, at a temperature of 250° to 400°C., the improvement which comprises conducting the reaction in the presence of a metal oxide catalyst, the metal content of which is expressed by the following empirical formula:

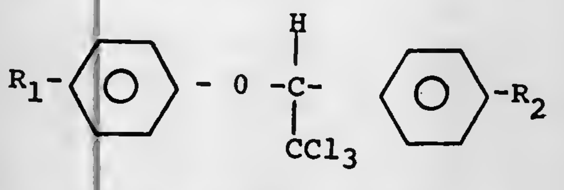
$$(Mo)_a(Bi)_b(Fe)_c(Sb)_d(L)_e$$

in which L is one or more metals selected from the group consisting of K, Rb and Cs, and *a*, *b*, *c*, *d* and *e* represent the numbers of atoms of Mo, Bi, Fe, Sb and L, respectively, *a* being 12, *b* being 0.5 to 6, *c* being 3 to 12, *d* being 0.01 to 1.0, and *e* being 0.1 to 10.

3,894,092
P,P′-DISUBSTITUTED ALPHA-TRICHLOROMETHYLBENZYL ETHERS

Robert L. Metcalf; Inder Kapoor, and Asha Hirwe, all of Urbana, Ill., assignors to University of Illinois Foundation, Urbana, Ill.
Filed Dec. 26, 1972, Ser. No. 318,206
Int. Cl. C07c *43/20*
U.S. Cl. 260—613 R **4 Claims**

1. Insecticides having the formula



where R_1 and R_2 are the same or different C_1 to C_2 alkoxy groups.

3,894,093
PROCESS FOR THE MANUFACTURE OF ADDITION PRODUCTS OF ETHYLENE OXIDE AND COMPOUNDS CONTAINING MOBILE HYDROGEN

Friedrich Raizner, deceased, late of Hofheim, Taunus, Germany (by Ilse Sofie Raizner nee Klotz, heiress); Ulfert Onken, Fischbach, Taunus, Germany; Horst Schrader, Frankfurt am Main, Germany, and Werner Wellbrock, Neuenland, Taunus, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany
Continuation of Ser. No. 54,214, July 13, 1970, abandoned. This application Aug. 1, 1973, Ser. No. 384,547
Claims priority, application Germany, July 13, 1970, 1636046
Int. Cl. C07c *41/02*
U.S. Cl. 260—613 B **2 Claims**

1. In a process for the manufacture of addition products of ethylene oxide and compounds containing mobile hydrogen, in which process the material to be reacted with the ethylene oxide is recycled in the course of the reaction and in which the reaction heat is abstracted by means of a tubular heat exchanger installed in the cyclic system, through the tubes of which heat exchanger the material to be reacted flows in a continuous stream, the improvement which comprises feeding the ethylene oxide in an atomized liquid state into a turbulent liquid stream of the material to be reacted and in a direction substantially perpendicular to the direction of flow of said liquid stream, passing the reaction mixture so obtained through a mixing chamber at a temperature and pressure to cause a portion of the ethylene oxide to vaporize in said chamber, and immediately thereafter passing the reaction mixture containing vapor bubbles through the tubes of said heat exchanger to remove heat of reaction therefrom.

3,894,094
HALOGENATED, TETRA-ALKYL BIPHENOLS

Thomas F. Rutledge, Wilmington, Del., assignor to ICI United States Inc., Wilmington, Del.
Filed Dec. 4, 1972, Ser. No. 311,496
Int. Cl. C07c *37/00*, *49/62*, *39/12*
U.S. Cl. 260—620 **6 Claims**

1. A method of preparing a chlorinated, tetra-alkyl biphenol, said method comprising reacting a 3,3′,5,5′-tetra-C_1-C_3-alkyl diphenoquinone dissolved in a halogenated hydrocarbon with HCl, said reaction being carried out at a temperature of from about 10°C. to about the boiling point of the solvent.

3,894,095
PROCESS FOR ISOLATING ARYLHYDROXY COMPOUNDS

Siegfried Pietzsch, Kelkheim, Taunus, and Georg Schaffer, Hofheim, Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany
Filed Jan. 30, 1973, Ser. No. 328,023
Claims priority, application Germany, Feb. 4, 1972, 2205227
Int. Cl. C07c *37/22*, *37/24*
U.S. Cl. 260—620 **4 Claims**

1. A process for separating and isolating arylhydroxy compounds and aqueous alkali metal hydroxide solutions from aqueous solutions of alkali metal arylates selected from the group consisting of unsubstituted phenolates and naphtholates of sodium and potassium and phenolates and naphtholates of sodium and potassium, substituted on the aromatic nucleus by alkyl, phenyl or chlorine, which comprises: extracting an aqueous solution containing the said alkali metal arylate, at a temperature in the range of from 15°C to 150°C, with a ketone selected from the group consisting of diethyl-ketone, methylisobutyl-ketone, di-n-propyl-ketone, diisopropyl-ketone, ethyl-n-butyl-ketone, methyl-tert.butyl-ketone, diisobutyl-ketone, decanone-2, acetophenone, benzophenone, cycloheptanone, isophorone, and mixtures thereof; separating the organic phase from the aqueous phase; eliminating small quantities, if any, of alkali metal hydroxide from the organic phase by washing with water; and isolating the free arylhydroxy compound from the organic phase by removing the ketone.

3,894,096
SEPARATION OF PARA-NITRATED PHENOLIC COMPOUNDS FROM CRUDE REACTION MIXTURES CONTAINING ORTHO-AND PARA-NITRATED PHENOLIC COMPOUNDS

Harvey Wade Whitten, Somerville, N.J., assignor to American Cyanamid Company, Stamford, Conn.
Continuation-in-part of Ser. No. 205,750, Dec. 7, 1971, Pat. No. 3,761,393. This application Apr. 12, 1974, Ser. No. 460,415
Int. Cl. C07c *79/24*
U.S. Cl. 260—622 R **4 Claims**

1. A process for recovering the para-nitrated phenolic product isomer in highly purified form from a crude reaction mixture resulting from the nitration of phenol or m-cresol, said mixture containing both para- and ortho-nitrated phenolic product isomers with the major proportion of said isomers being the para isomer, along with water and tar impurities, comprising the steps of (1) mixing the reaction mixture with toluene in a proportion of at least about 2 parts by weight of toluene per part of the reaction mixture, (2) heating the mixture formed in step 1 to a temperature of about 84°C. to extract the para and ortho isomers into the toluene, (3) further heating the mixture from step 2 at about 84°C. under reflux conditions to azeotropically distill off the water, (4) removing the insoluble tars from the hot mixture from step 3 by permitting the mixture to settle and separating the settled tars therefrom, (5) cooling the hot toluene solution from step 4 to a temperature of about 20° to 30° C. to precipitate the para isomer therefrom, (6) washing the precipitate with a small amount of fresh toluene to remove mother liquor therefrom and (7) drying the precipitate.

3,894,097
PROCESS FOR THE PREPARATION OF HEXAFLUOROISOBUTYLENE

Nicholas Vanderkooi, Jr., Pompton Plains, and Herbert J. Huthwaite, Florham Park, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.
Filed May 10, 1974, Ser. No. 468,797
Int. Cl. C07c *17/00*, *21/18*
U.S. Cl. 260—653.3 **22 Claims**

1. A process of producing hexafluoroisobutylene comprising combining a compound selected from the group consisting of acetic anhydride, acetone, acetic acid, isopropenyl acetate, acetyl acetone, diketene and mixtures thereof, with hexafluoroacetone in a reaction chamber maintained at a temperature in the range of about 340° to about 1000°C., retaining the reactants in said chamber for a residence time between about 0.1 seconds to 5 minutes whereby hexafluoroisobutylene is formed and collecting the reaction product.

3,894,098
PROCESS FOR PREPARATION OF 1-METHYLADAMANTANE

Naotake Takaishi; Yoshiaki Inamoto, both of Wakayama, and Kiyoshi Tsuchihashi, Kainan, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan
Filed June 24, 1974, Ser. No. 482,434
Claims priority, application Japan, June 27, 1973, 48-72523
Int. Cl. C07c *5/24*, *13/54*
U.S. Cl. 260—666 M **6 Claims**

1. The process for preparing 1-methyladamantane, which comprises isomerizing 2-methyl-tricyclo[$5.2.1.0^{2,6}$]decane in the presence of an anhydrous aluminum halide catalyst in a halogenated lower hydrocarbon solvent.

3,894,099

PROCESS FOR PREPARING 1-METHYLDAMANTANE

Naotake Takaishi; Yoshiaki Inamoto, both of Wakayama, and Kiyoshi Tsuchihashi, Kainan, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Oct. 9, 1973, Ser. No. 404,195

Claims priority, application Japan, Oct. 24, 1972, 47-106514

Int. Cl. C07c *13/32*

U.S. Cl. 260—666 M **2 Claims**

1. The process for preparing 1-methyladamantane, which comprises contacting (I) tricyclo[5.2.2.$0^{2,6}$] undecane dissolved in from 2 to 20 times by weight, based on the weight of I, of a solvent selected from the group consisting of methylene chloride, methylene bromide, chloroform, 1,2-dichloroethane, 1,2-dibromethane, 1,2-dichloropropane, 1,3-dichloropropane, 1,4-dichlorobutane, 2-methyl-1,4-dichlorobutane and chlorocyclohexane, with a catalyst selected from the group consisting of uncomplexed anhydrous aluminum chloride and uncomplexed anhydrous aluminum bromide, at a molar ratio of from 0.01 to 0.5 mole of said catalyst per one mole of I, at a temperature of −10° to +120°C, for a reaction time in the range of 1 to 20 hours until I is substantially completely transformed to 1-methyladamantane, and recovering 1-methyladamantane from the reaction mixture.

3,894,100

PROCESS FOR THE PREPARATION OF TRICYCLO (5.3.1.0.^{3,8}) UNDECANE

Naotake Takaishi; Yoshiaki Inamoto, both of Wakayama, and Kiyoshi Tsuchihashi, Kainan, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed July 2, 1974, Ser. No. 485,068

Claims priority, application Japan, July 10, 1973, 48-77621

Int. Cl. C07c *13/54*

U.S. Cl. 260—666 **4 Claims**

1. A process for preparing tricyclo[5.3.1.$0^{3,8}$]undecane which comprises isomerizing tetramethylenenorborane (I) in an inert solvent, at a temperature in the range of −30°C to 100°C, in the presence of an acid catalyst selected from the group consisting of (1) a Bronsted acid and (2) a Lewis acid in an amount of 0.01 to 0.2 mole per mole of I, terminating the isomerization reaction when the content of tricyclo[5.3.1.$0^{3,8}$]undecane in the reaction mixture is in the range of at least about 40 wt.%, excluding the solvent and the acid catalyst, and recovering tricyclo[5.3.1.$0^{3,8}$]undecane from the reaction mixture.

3,894,101

PROCESS FOR THE PREPARATION OF 1-METHYLADAMANTANE

Naotake Takaishi; Yoshiaki Inamoto, both of Wakayama, and Kiyoshi Tsuchihashi, Kainan, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed July 2, 1974, Ser. No. 485,069

Claims priority, application Japan, July 10, 1973, 48-77623

Int. Cl. C07c *5/24*

U.S. Cl. 260—666 M **6 Claims**

1. The process for preparing 1-methyladamantane, which comprises isomerizing tricyclo[5.3.1.$0^{3,8}$]undecane in the presence of an acid catalyst.

3,894,102

CONVERSION OF SYNTHESIS GAS TO GASOLINE

Clarence D. Chang, Princeton, N.J., and Anthony J. Silvestri, Morrisville, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 9, 1973, Ser. No. 387,217

Int. Cl. C07c *1/04, 1/20*

U.S. Cl. 260—668 R **5 Claims**

1. A process comprising contacting in a first stage a mixture of carbon monoxide and hydrogen with a catalyst comprising a mixture of a methanol synthesis catalyst and an acidic dehydration catalyst at an elevated temperature up to about 700°F and such combination of conditions as to produce a first stage product comprising dimethyl ether; and contacting at least said dimethyl ether with a crystalline aluminosilicate zeolite having a silica to alumina ratio of at least about 12 to 1 and a constraint index of about 1 to 12 in a second stage at about 550° to 850°F under such combination of conditions as to produce a product the organic portion of which is predominantly liquid hydrocarbons boiling in the C_5 to 400°F range.

3,894,103

AROMATIZATION REACTIONS

Clarence D. Chang, Princeton, N.J.; Anthony J. Silvestri, Morrisville, Pa., and Robert L. Smith, Hopewell, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 9, 1973, Ser. No. 387,218

Int. Cl. C07c *1/20*

U.S. Cl. 260—668 R **7 Claims**

1. In the process of converting as a reactant at least one lower aliphatic organic compound containing about 1 to 8 carbon atoms and at least one hetero constituent selected from the group consisting of oxygen, sulfur, nitrogen and halogen, by contacting such with a crystalline aluminosilicate zeolite having a constraint index of about 1 to 12 and having a silica to alumina ratio of at least about 12 at about 500° to 850°F. to produce a product comprising a highly aromatic C_5^+ gasoline boiling range liquid having a high octane number; the improvement, whereby increasing the proportion of the product which is C_5^+ gasoline, which comprises utilizing as the catalyst, a zeolite as defined having a silica to alumina ratio of about 60 to 600:1 while maintaining the other operating parameters of the process.

3,894,104

AROMATIZATION OF HETERO-ATOM SUBSTITUTED HYDROCARBONS

Clarence D. Chang, Princeton; William H. Lang, Pennington, both of N.J., and Anthony J. Silvestri, Morrisville, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 9, 1973, Ser. No. 387,219

Int. Cl. C07c *1/20*

U.S. Cl. 260—668 R **8 Claims**

1. In the process for converting a feed comprising compounds of the type $(R)_n - X$, where R is a lower hydrocarbon moiety having 1 carbon atom, X is a hetero moiety selected from the group consisting of oxygen, hydroxyl, sulfur, nitrogen, halogen and cyanide and *n* is a number up to the valence of X, to other compounds having a higher ratio of R to X than in the feed by contacting such feed with a crystalline aluminosilicate zeolite catalyst, having a silica to alumina ratio of at least about 12 and a constraint index of about 1 to 12, at an elevated temperature of about 500 to about 750°F at a space velocity of about 0.1 to 50 LHSV; the improvement, whereby to produce a product which is predominantly normally liquid hydrocarbon containing a larger proportion of aromatics, which comprises utilizing as said catalyst said zeolite which has been modified by the incorporation therewith of at least one metal of Groups I*b*, *IIa*, II*b*, III*a*, IV*a* and VIII of the Periodic Table.

3,894,105

PRODUCTION OF DURENE

Clarence D. Chang, Princeton, N.J.; Anthony J. Silvestri, Morrisville, Pa., and Robert L. Smith, Hopewell, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 9, 1973, Ser. No. 387,221

Int. Cl. C07c *1/20*

U.S. Cl. 260—668 R **8 Claims**

1. In the process of converting an aromatizable hetero organic compound feed to aromatic hydrocarbons by contacting such with an aluminosilicate crystalline zeolite molecular

sieve having a silica to alumina ratio of at least about 12 and a constraint index of about 1 to 12 at elevated temperatures up to about 850°F; the improvement, whereby maximizing durene production from said process, which comprises selecting a feed comprising compounds of the formula CH_3 - X wherein X is hydroxyl, alkoxy, thiol, alkylthio, amine, alkyl amine, dialkyl amine, halo or cyano; and carrying out the conversion at at least about 550°F and 20 atmospheres.

3,894,106

CONVERSION OF ETHERS

Clarence D. Chang, Princeton; William H. Lang, Pennington, both of N.J., and Anthony J. Silvestri, Morrisville, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 9, 1973, Ser. No. 387,222

Int. Cl. C07c *1/20*

U.S. Cl. 260—668 R **9 Claims**

1. A process for converting aliphatic ethers containing a hydrocarbon constituent which comprises contacting at least one aliphatic ether with a crystalline aluminosilicate zeolite having a silica to alumina ratio of at least about 12 and a constraint index of about 1 to 12 at an elevated temperature of about 500° to about 1000°F, a pressure of about 0 to 3000 psig and a space velocity of about 0.5 to 1000 WHSV under such combination of conditions as to convert said ether to a product comprising hydrocarbon compounds having a higher molecular weight than the longest hydrocarbon constituent of a respective reactant ether.

3,894,107

CONVERSION OF ALCOHOLS, MERCAPTANS, SULFIDES, HALIDES AND/OR AMINES

Stephen A. Butter, East Windsor; Anthony T. Jurewicz, Kendall Park, and Warren W. Kaeding, Westfield, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 9, 1973, Ser. No. 387,223

Int. Cl.^{2} C07C *15/02*

U.S. Cl. 260—668 R **21 Claims**

1. In a process of condensing an aliphatic organic compound of the formula R-X where X is at least one of halogen, oxygen, sulfur or nitrogen by contacting such with a high silica to alumina ratio crystalline aluminosilicate zeolite catalyst; the improvement which comprises: utilizing a catalyst comprising such zeolite having a silica to alumina ratio of at least about 12 and a constraint index of about 1 to 12; condensing at a temperature of about 500° to 1000°F, a pressure of about 0.5 to 1000 psig and a space velocity of about 0.5 to 50 WHSV; and converting said organic compound reactant to a product comprising a complex mixture of compounds including hydrocarbon compounds having a greater number of carbon atoms than said organic compound reactant, a higher ratio of carbon atoms to hetero atoms than said organic compound reactant and a longest carbon to carbon chain length which is longer than the longest carbon to carbon chain length of said organic compound reactant.

3,894,108

HIGH TEMPERATURE LIQUID ELUTION CHROMATOGRAPHY

Paul R. Geissler, Edison, N.J., assignor to Exxon Research and Engineering Company, Linden, N.J.

Filed Aug. 9, 1973, Ser. No. 386,948

Int. Cl. C07c *7/12;* **B01d** *15/08*

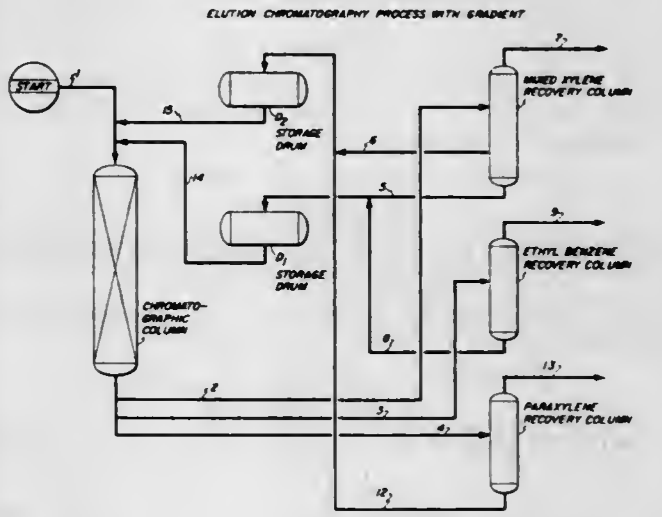
U.S. Cl. 260—674 SA **10 Claims**

1. In an elution chromatographic process conducted in a liquid phase for the separation of paraxylene and ethylbenzene from a C_8 aromatic feedstream containing ethylbenzene including the steps of:

a. contacting the feedstream mixture with a crystalline aluminosilicate adsorbent selected from the group consisting of potassium Y sieve and ammonium/potassium Y sieve;

b. passing through said bed an eluent selected from the group consisting of aromatics and substituted aromatics;

c. recovering from said bed a stream containing a portion of less preferentially adsorbed components; and


ELUTION CHROMATOGRAPHY PROCESS WITH GRADIENT
START
1
15
14
D_2 STORAGE DRUM
D_1 STORAGE DRUM
CHROMATOGRAPHIC COLUMN
MIXED XYLENE RECOVERY COLUMN
ETHYL BENZENE RECOVERY COLUMN
PARAXYLENE RECOVERY COLUMN
7
6
5
9
8
13
2
3
4
12

d. recovering a stream or streams substantially enhanced in concentration of paraxylene and ethylbenzene wherein the improvement comprises operating the above-described process at a temperature in the range from 160°C to 200°C, thereby reducing the overall elution volume to feed ratio and providing for the recovery of paraxylene and ethylbenzene at a reduced cost.

3,894,109

AROMATIC HYDROCARBON ISOMER SEPARATION BY ADSORPTION

Donald H. Rosback, Elmhurst, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 356,666, July 23, 1973. This application Feb. 15, 1974, Ser. No. 443,043

Int. Cl. C07c *7/12*

U.S. Cl. 260—674 SA **16 Claims**

1. A process for separating the paraisomer from a feed mixture comprising at least two bi-alkyl substituted monocyclic aromatic isomers, including the para-isomer, said isomers having from 8 to about 18 carbon atoms per molecule, which process comprises contacting said mixture with an adsorbent prepared by the steps of:

a. contacting a base material comprising X or Y zeolite with an aqueous sodium hydroxide solution at first ion exchange conditions to effect the addition of sodium cations to said base material;

b. treating the sodium-exchanged base material at second ion exchange conditions to effect the essentially complete exchange of sodium cations with barium or barium and potassium cations; and,

c. drying the material at conditions to reduce the LOI at 900°C. to less than about 10 wt. %

and thereby selectively adsorbing at adsorption conditions said para-isomer.

3,894,110

CATALYTIC DEHYDROGENATION PROCESS

Lewis E. Drehman, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 15, 1973, Ser. No. 415,944

Int. Cl. C07c *5/18*

U.S. Cl. 260—680 R **3 Claims**

1. A process for the dehydrogenation of a dehydrogenatable organic compound having from 2 to 12 carbon atoms per molecule in the presence of steam and in the absence of free oxygen which comprises contacting said compound under dehydrogenation conditions with a catalyst consisting essentially of platinum, tin and cerium, each of said platinum, tin and cerium being supported on a support selected from the

group consisting of alumina, silica, magnesia, zirconia, alumina-silicates, Group II aluminate spinels and mixtures thereof; wherein said platinum is present in said catalyst in an amount ranging from about 0.1 to about 1 weight percent; said tin is present in an amount ranging from about 0.1 to about 2 weight percent; and said cerium is present in an amount ranging from about 0.1 to about 2 weight percent, all weight percents being based on the weight of final catalyst; and wherein the mole ratio of said platinum to said tin is about 1:3 and the mole ratio of said platinum to said cerium is about 1:1.

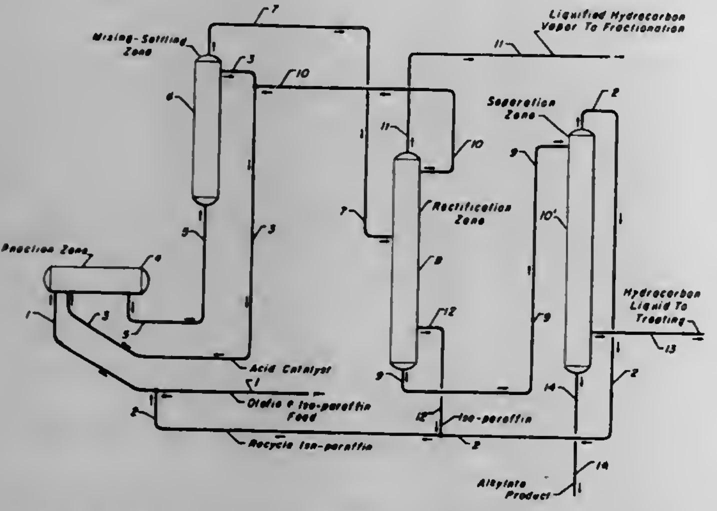
3,894,111
HYDROGEN FLUORIDE ALKYLATION UTILIZING A RECTIFICATION ZONE

Robert F. Anderson, La Grange Park, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Dec. 26, 1973, Ser. No. 428,148

Int. Cl. C07c *3/54*

U.S. Cl. 260—683.48 **8 Claims**



1. An alkylation process which comprises the steps of:
   a. reacting an isoparaffin with an olefin in contact with hydrogen fluoride catalyst at alkylation conditions in a reaction zone;
   b. separating the reaction zone effluent into a hydrogen fluoride phase and a hydrocarbon phase containing hydrogen fluoride;
   c. returning at least a portion of the hydrogen fluoride phase to said reaction zone;
   d. passing said hydrocarbon phase to a rectification zone to separate therefrom a hydrogen fluoride stream, an isoparaffin stream and an alkylate stream containing additional unreacted isoparaffin;
   e. recycling said hydrogen fluoride stream and said isoparaffin stream to said reaction zone;
   f. fractionating said alkylate stream to separate unreacted isoparaffin therefrom and recycling said unreacted isoparaffin to said reaction zone; and
   g. recovering the alkylate product from fractionating step (f).

3,894,112
BONDING FILM CONTAINING POLYTETRAMETHYLENEOXIDE ELASTOMERIC SEGMENTS AND POLYEPOXIDE

Warren C. Pagel, North Hudson, Wis., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Division of Ser. No. 873,132, Oct. 31, 1969, which is a continuation-in-part of Ser. No. 579,495, Sept. 15, 1966, abandoned. This application Feb. 23, 1974, Ser. No. 445,169

Int. Cl. C08g *45/00, 45/04*

U.S. Cl. 260—830 R **6 Claims**

1. A heat-curable self-supporting bonding film having a thickness between about 5 and 30 mils and consisting essentially of a single reactive layer that includes a heat-curable composition comprising (1) an epoxy resin which has on the average more than one reactive 1,2 epoxy group per molecule; (2) a high-molecular-weight flexibilizing polymer that (a) carries reactive functional groups for chemically linking the flexibilizing polymer to the epoxy resin, (b) provides 5 to 40 parts by weight of elastomeric segments in the composition for each 100 parts by weight of epoxy-resin segments; and (c) comprises sufficient molecules that have a molecular weight of at least 8,000 to account for at least about one-tenth of the weight of the composition; and (3) a room-temperature-latent curing agent active at elevated temperature to initiate reaction of the composition to an integrated cured state; said bonding film being substantially free of room-temperature-active curing agents, and being further characterized in that upon heating to an elevated temperature it (a) becomes flowable so as to wet and form a fillet on the edge portion of a honeycomb pressed against the film, and (b) subsequently cures to provide the high-strength bond necessary both (i) in a sheet-to-sheet structural member and (ii) in a sheet-to-honeycomb structural member; wherein said elastomeric segments provided by the flexibilizing polymer comprise poly(tetramethylene oxide) elastomeric segments.

3,894,113
BONDING FILM

Warren C. Pagel, North Hudson, Wis., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation-in-part of Ser. No. 579,495, Sept. 15, 1966, abandoned. This application Oct. 31, 1969, Ser. No. 873,132

Int. Cl. C08g *45/04*

U.S. Cl. 260—836 **15 Claims**

1. A heat-curable self-supporting bonding film having a thickness between about 5 and 30 mils and consisting essentially of a single reactive layer that includes a heat-curable composition comprising (1) an epoxy resin which has on the average more than one reactive 1,2 epoxy group per molecule; (2) a high-molecular-weight flexibilizing polymer that (a) carries reactive functional groups for chemically linking the flexibilizing polymer to the epoxy resin, (b) provides 5 to 40 parts by weight of elastomeric segments in the composition for each 100 parts by weight of epoxy-resin segments, and (c) comprises sufficient molecules that have a molecular weight of at least 8,000 to account for at least about one-tenth of the weight of the composition; and (3) a room-temperature-latent curing agent active at elevated temperature to initiate reaction of the composition to an integrated cured state; said bonding film being substantially free of room-temperature-active curing agents, and being further characterized in that upon heating to an elevated temperature it (a) becomes flowable so as to wet and form a fillet on the edge portion of a honeycomb pressed against the film, and (b) subsequently cures to provide the high-strength bond necessary both (i) in a sheet-to-sheet structural member and (ii) in a sheet-to-honeycomb structural member.

3,894,114
POLYAMIDE-POLYAMIDE-ACID BLOCK COPOLYMERS

Dieter Lohmann, Pratteln; Peter Furrer, Bottmingen; Roland Darms, Therwil, and Gerd Greber, Binningen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 1, 1973, Ser. No. 384,643

Claims priority, application Switzerland, Aug. 25, 1972, 12656/72

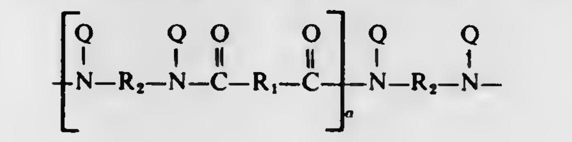
Int. Cl.² C08G *41/04*

U.S. Cl. 260—857 PA **9 Claims**

1. Polyamide/polyamide-acid block copolymers consisting of recurring structural units of the formula I

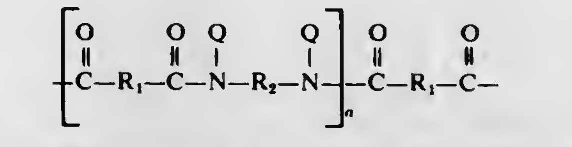
$$\left[-(A)-\!-(E)- \right]_n \qquad (I)$$

wherein *n* represents an integer from 1 to 500, A represents a polyamide block of average molecular weight 350 to 20,000 and having a base unit of the formula II or III



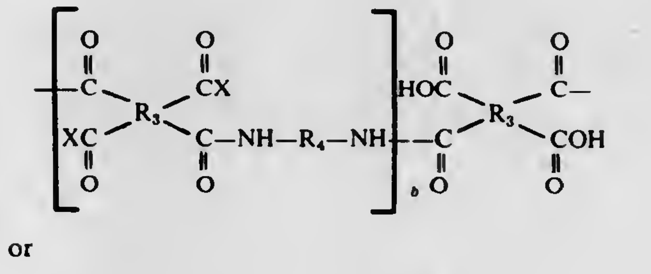
$$\left[-\overset{Q}{\overset{|}{N}}-R_2-\overset{Q}{\overset{|}{N}}-\overset{O}{\overset{\|}{C}}-R_1-\overset{O}{\overset{\|}{C}}- \right]_n -\overset{Q}{\overset{|}{N}}-R_2-\overset{Q}{\overset{|}{N}}- \qquad (II)$$

or



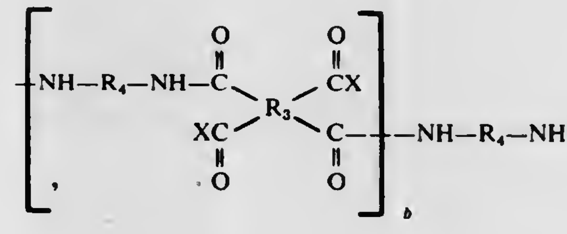
$$\left[-\overset{O}{\overset{\|}{C}}-R_1-\overset{O}{\overset{\|}{C}}-\overset{Q}{\overset{|}{N}}-R_2-\overset{Q}{\overset{|}{N}}- \right]_n -\overset{O}{\overset{\|}{C}}-R_1-\overset{O}{\overset{\|}{C}}- \qquad (III)$$

and E represents a polyamide-acid block with an average molecular weight of 750 to 20,000 and a base unit of the formula IV or V



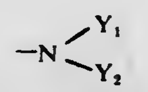
(IV)

or

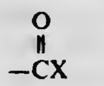


(V),

wherein *a* is an integer from 8 to 100 and *b* is an integer from 2 to 100, R_2 and R_4 independently of one another denote a monocyclic, a condensed polycyclic or uncondensed bicyclic aromatic radical in which latter radical the aromatic nuclei are linked to one another through a bridge member, or denote a heterocyclic radical, an aliphatic radical with at least two carbon atoms, a cycloaliphatic radical or an araliphatic radical, R_1 represents an aliphatic radical with at least two carbon atoms or a cycloaliphatic, carbocyclic-aromatic or heterocyclic radical, the carbonyl groups being bonded to different carbon atoms, R_3 represents a cycloaliphatic, carbocyclic-aromatic or heterocyclic radical, wherein the carbonyl groups are bonded to different ring carbon atoms adjoining one another in pairs, X denotes a hydroxyl, alkoxy or aryloxy group or a radical of the formula



and Y_1 and Y_2 independently of one another denote hydrogen or an alkyl, cycloalkyl, aryl, or aralkyl radical and the radicals



$$-\overset{O}{\overset{\|}{C}}X$$

are each located on a ring carbon atom adjoining the carbonamide group and Q denotes hydrogen or an alkyl or aryl radical, and the derivatives cyclised to the corresponding polyamide-polyimide block copolymers.

3,894,115
UNSATURATED POLYESTERS HAVING HIGH IMPACT STRENGTH AND LOW WATER ABSORPTION

Robert Bacskai, Kensington, and John B. Wilkes, Richmond, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 323,572, Jan. 15, 1973, abandoned. This application May 20, 1974, Ser. No. 471,623

Int. Cl. C08f *21/00*

U.S. Cl. 260—861 **14 Claims**

1. An unsaturated polyester composition comprising approximately equimolar amounts of:
   a. a dihydric alcohol or mixture of dihydric alcohols comprising at least 10 mol percent 3-methyl-1,5-pentanediol;
   b. a dicarboxylic acid or anhydride comprising at least 20 mol percent ethylenically unsaturated dicarboxylic acid or anhydride.

7. A composition comprising from 25 to 75 percent by weight of the polyester, according to claim **1**, and from 75 to 25 of a monoethylenically unsaturated polymerizable monomer having a $>C{=}CH_2$ group.

3,894,116
POLYMERIZATION INITIATOR

Bernhard Hess, Kapellen near Moers, and Karl Raichle, Krefeld-Bockum, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Germany

Continuation-in-part of Ser. No. 272,758, July 18, 1972, abandoned. This application Aug. 15, 1973, Ser. No. 388,484

Claims priority, application Germany, July 21, 1971, 2136493

Int. Cl. C08f *1/16, 1/18*

U.S. Cl. 260—863 **14 Claims**

1. A polymerizable composition comprising:
   A. an organic peroxide;
   B. a trivalent or pentavalent compound of vanadium which is soluble in styrene, ethyl acetate, isopropanol, dimethyl formamide and monobutylphosphate to a minimum degree of 0.1% by weight, based on vanadium;
   C. a compound having P—O—H acidity selected from the group consisting of an acid of phosphorus, a partial ester of such an acid or an acidic salt of such an acid or ester;
   D. an α-hydroxyketone; and
   E. an ethylenisally unsaturated compound or mixture of copolymerizable ethylenisally unsaturated compounds, the polymerization of which can be initiated by free radicals.

3,894,117
COMPOSITION OF POLYOLEFIN, POLYSTYRENE AND BLOCK OF SAID POLYMERS

Elias Agouri, Pau; Raymond Catte, Billere, and Jean-Louis Dauba, Pau, all of France, assignors to Aquitaine Total Organico, Paris, France

Filed Dec. 23, 1971, Ser. No. 211,667

Claims priority, application France, Dec. 29, 1970, 70.47018

Int. Cl. C08f *19/04*

U.S. Cl. 260—876 B **7 Claims**

1. A homogeneous polymer composition comprising a monoolefin polymer, polystyrene, and at least 1 polymonoolefin-polystyrene block copolymer containing 1 polymonoolefin and 1 polystyrene sequence.

3,894,118

CROSSLINKING AGENTS FOR FLUOROCARBON POLYMERS

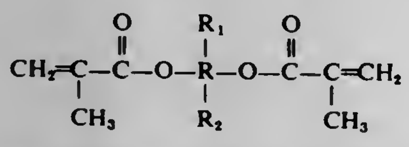
Elihu J. Aronoff, Framingham; Kewal Singh Dhami, Shrewsbury, and Tsu-Chia Shieh, Framingham, all of Mass., assignors to International Telephone & Telegraph Corporation, New York, N.Y.

Filed Jan. 21, 1974, Ser. No. 435,295

Int. Cl. C08f *29/22*

U.S. Cl. 260—884 **11 Claims**

1. A composition comprising a high temperature processing fluorocarbon polymer selected from the group consisting of ethylene-tetrafluroethylene copolymers, ethylene-chlorotrifluoroethylene copolymers, polyvinylidene fluoride homopolymers, tetrafluroethylene-vinylidene fluoride copolymers, tetrafluoroethylenehexafluoropropylene copolymers and vinylidene fluoride-hexafluoropropylene polymers, said polymer having incorporated therein a crosslinking agent for said polymer, said crosslinking agent comprising a dimethacrylate ester having the structural formula



$$CH_2{=}\underset{CH_3}{C}-\overset{O}{\overset{\|}{C}}-O-\underset{R_2}{\overset{R_1}{R}}-O-\overset{O}{\overset{\|}{C}}-\underset{CH_3}{C}{=}CH_2$$

wherein R is a radical selected from the group consisting of alkyl, cycloalkyl and aralkyl radicals, having from 5 to 14 carbon atoms; R_1 and R_2 are independently selected from the group consisting of hydrogen, alkyl, cycloalkyl, aralkyl and aryl radicals and mixtures thereof; and the total number of carbon atoms in R, R_1 and R_2 is at least 10.

3,894,119

GRAFT COPOLYMERS OF POLYSTYRENE AND POLYISOBUTYLENE

Eric Simon Forbes, Lightwater, and Ian Grieg Meldrum, Little Sandhurst near Camberley, both of England, assignors to The British Petroleum Company Limited, London, England

Filed Nov. 10, 1972, Ser. No. 305,228

Claims priority, application United Kingdom, Nov. 16, 1971, 53079/71

Int. Cl. C08f *29/12*

U.S. Cl. 260—896 **2 Claims**

1. A graft copolymer of polystyrene and polyisobutylene which consists essentially of 85 to 40% weight of a polystyrene of weight average molecular weight 50,000 to 500,000 and 15 to 60% weight of a polyisobutylene of number average molecular weight 2,500 to 20,000, the said graft copolymer being in the form of a polystyrene back-bone having each polyisobutylene group attached thereto and prepared by reacting polystyrene and polyisobutylene.

3,894,120

THERMOPLASTIC MOLDING COMPOUND COMPRISING A BLEND OF ISOTACTIC POLYBUTENES

Albert Frese; Otto Hahmann, and Horst Denzel, all of Marl, Germany, assignors to Chemische Werke Huels Aktiengesellschaft, Marl, Germany

Filed Oct. 31, 1973, Ser. No. 411,394

Claims priority, application Germany, Nov. 4, 1972, 2254128

Int. Cl. C08f *29/12*

U.S. Cl. 260—897 A **9 Claims**

1. An isotactic polybutene-1 mixture suitable for processing into heat sealable films with good dimensional stability at high temperatures, good transparency and tear transmission resistance in both directions, consisting essentially of:

a. 10–95% by weight of a highly isotactic polybutene-1 having an RSV value of 1.7–4.5 dl/g., a density of 0.913–0.920 g./cm³, an ether-soluble content of 1–15%, a yield stress of 190–240 kp/cm², a tensile strength at rupture of 200–400 kp/cm², an ultimate elongation of 200–400% and a Vicat temperature of 115°–124° C.; and correspondingly

b. 90–5% by weight of a substantially isotactic polybutene-1 having an RSV value of 1.2–4.5 dl/g., a density of 0.890–0.910 g./cm³, an ether-soluble content of 10–30%, a yield stress of 60–150 kp/cm², a tensile strength at rupture of 160–380 kp/cm², an ultimate elongation of 300–600% and a Vicat temperature of 74°–100° C.

3,894,121

PHOSPHONITRILIC ESTERS

Rainer Wolf, Allschwil, Basel-Land, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

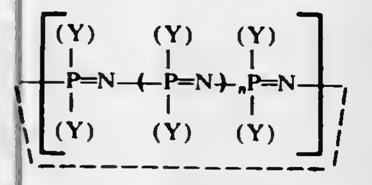
Continuation-in-part of Ser. No. 98,854, Dec. 16, 1970, abandoned. This application Oct. 11, 1973, Ser. No. 405,479

Claims priority, application Switzerland, Dec. 24, 1969, 19235/69; June 10, 1970, 8708/70

Int. Cl. C07d *105/04;* **C07f** *9/14*

U.S. Cl. 260—926 **10 Claims**

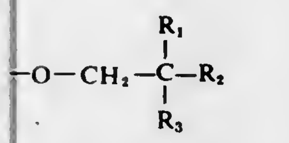
1. A phosphonitrilic ester of the general formula



$$-\left[\underset{(Y)}{\overset{(Y)}{P}}=N-\left(\underset{(Y)}{\overset{(Y)}{P}}=N\right)_n\underset{(Y)}{\overset{(Y)}{P}}=N-\right]-$$

where *n* is a whole number from 1 to 10; at least one Y is a radical

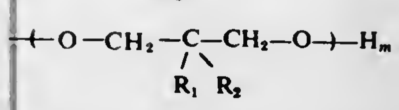
(a)



$$-O-CH_2-\underset{R_3}{\overset{R_1}{C}}-R_2$$

or

(b)



$$-\left(O-CH_2-\underset{R_1\ R_2}{C}-CH_2-O\right)-H_m$$

in which radical (*b*) *m* is 0 or 1 and when *m* is 0 the two free valencies are bound to the same phosphorus atom or are bound to two different phosphorus atoms, and each of the other Y's is halo or a radical (*a*) or (*b*); and R_1, R_2 and R_3, independently of each other, are monochloromethyl or monobromomethyl.

3,894,122

PHOSPHORUS COMPOUNDS CONTAINING AMIDE GROUPS

Walter Dursch, Schneidhain, Taunus, and Fritz Linke, Konigstein, Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Oct. 29, 1973, Ser. No. 410,779

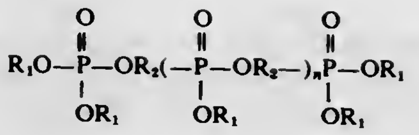
Claims priority, application Germany, Nov. 2, 1972, 2253663

Int. Cl. C07f *9/24*

U.S. Cl. 260—928 **14 Claims**

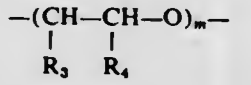
1. A compound obtained by

a. heating a compound of the formula



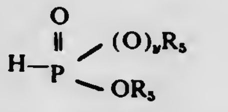
$$R_1O-\underset{OR_1}{\overset{O}{\overset{\|}{P}}}-OR_2\left(-\underset{OR_1}{\overset{O}{\overset{\|}{P}}}-OR_2-\right)_n\underset{OR_1}{\overset{O}{\overset{\|}{P}}}-OR_1 \qquad (I)$$

wherein *n* is a number from 0 to 4, R_1 is haloalkyl and hydroxyalkyl or either each with 1 to 4 carbon atoms with the proviso that at least one R_1 is haloalkyl and at least one R_1 is hydroxyalkyl, R_2 is a group of the formula



$$-(\underset{R_3}{CH}-\underset{R_4}{CH}-O)_m- \qquad (II)$$

wherein R_3 and R_4 are hydrogen or haloalkyl with 1–4 carbon atoms with the proviso that at least one of the radicals R_3 and R_4 is hydrogen and *m* is a number from 1 to 10 with a compound of the formula



$$H-\overset{O}{\overset{\|}{P}}\begin{matrix}(O)_yR_5\\OR_5\end{matrix} \qquad (III)$$

wherein *y* is 0 or 1 and R_5 are equal or different alkyl or alkenyl with 1 to 4 carbons; at 0° to 160°C at a pH value from 4 to 11 optionally in the presence of 0.005 to 4% by weight of an alkaline catalyst,

b. adding (meth)acrylamide and heating at 20° to 100°C in the presence of 0.005 to 4% by weight of an alkaline catalyst and

c. optionally adding formaldehyde and heating at 20° to 100°C at a pH value from 7 to 11.

3,894,123

O-ALKYL-S,S-di-(SUBSTITUTED-ALKYL)-PHOSPHOROITHIOLATES

Shigeo Kishino, Tokyo; Akio Kudamatsu, and Kozo Shiokawa, both of Kanagawa, all of Japan, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

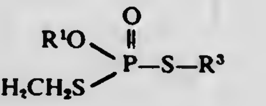
Filed Dec. 16, 1971, Ser. No. 208,938

Claims priority, application Japan, Dec. 29, 1970, 45-129545

Int. Cl. C07f *9/16;* **A01n** *9/36*

U.S. Cl. 260—941 **8 Claims**

1. A compound of the formula

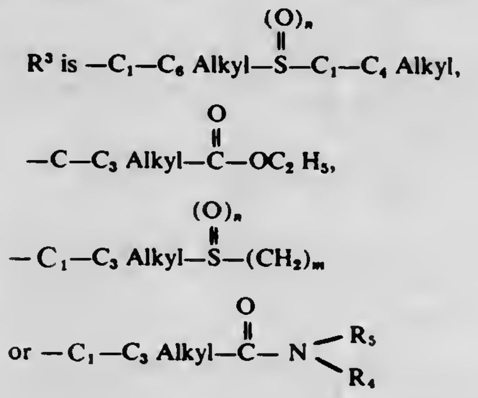


$$\begin{matrix}R^1O\\R^2OCH_2CH_2S\end{matrix}\!>\!\overset{O}{\overset{\|}{P}}-S-R^3$$

in which

R¹ is methyl or ethyl,

R² is lower alkyl of 1 to 4 carbon atoms and



$$R^3 \text{ is } -C_1-C_6\text{ Alkyl}-\overset{(O)_n}{\overset{\|}{S}}-C_1-C_4\text{ Alkyl},$$

$$-C-C_3\text{ Alkyl}-\overset{O}{\overset{\|}{C}}-OC_2H_5,$$

$$-C_1-C_3\text{ Alkyl}-\overset{(O)_n}{\overset{\|}{S}}-(CH_2)_m$$

$$\text{or } -C_1-C_3\text{ Alkyl}-\overset{O}{\overset{\|}{C}}-N\begin{matrix}R_5\\R_4\end{matrix}$$

Wherein *n* is o or 1, x is hydrogen or chloro, R_4 is hydrogen or Alkyl of 1 to 4, R_5 is alkyl of 1 to 4, cyclohexyl or benzyl.

3,894,124

S-ALKOXYETHYL-PHENYL-DI- AND -TRI-THIOPHOSPHONIC ACID ESTERS

Shigeo Kishino; Akio Kudamatsu, and Shozo Sumi, all of Tokyo, Japan, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

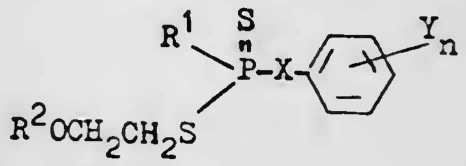
Filed Mar. 26, 1973, Ser. No. 344,799

Claims priority, application Japan, Apr. 6, 1972, 47-33844

Int. Cl. A01n *9/36;* **C07f** *9/16, 9/18*

U.S. Cl. 260—949 **9 Claims**

1. A di- or trithiophosphonic acid ester of the formula



in which

R¹ and R² each independently is C_1–C_6 alkyl,

X is oxygen or sulfur,

Y is C_1–C_6 alkyl, C_1–C_6 alkylmercapto or halogen, and

n is 1 or 2.

3,894,125

PHOSPHONIC ACID DITHIOL ESTERS

Ernst Beriger, Neuallschwil, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Division of Ser. No. 182,126, Sept. 20, 1971, Pat. No. 3,773,862. This application Aug. 29, 1973, Ser. No. 392,574

Claims priority, application Switzerland, Sept. 28, 1970, 14322/70

Int. Cl. C07f *9/40*

U.S. Cl. 260—940 **2 Claims**

1. The compound S,S-bis-(4′-cyanobenzyl)-2-chloroethylphosphone-dithioate.

2. The compound S,S-bis-(3′-trifluoromethylbenzyl)-2-chloroethylphosphonedithioate.

3,894,126

PHOSPHORUS CONTAINING BUTADIENE-1,3-TELOMERS

Siegfried Noetzel, Kelkheim, Taunus, and Edgar Fischer, Frankfurt am Main, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

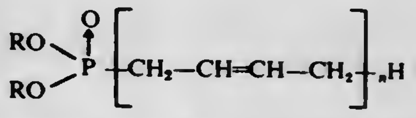
Filed June 10, 1974, Ser. No. 477,835

Claims priority, application Germany, June 12, 1973, 2329784

Int. Cl. C07f *9/40*

U.S. Cl. 260—956 **2 Claims**

1. Butadiene-1,3 telomers of the formula



$$\begin{matrix}RO\\RO\end{matrix}\!>\!\overset{O}{\overset{\uparrow}{P}}\left[-CH_2-CH{=}CH-CH_2-\right]_nH$$

where R is a lower straight-chain or branched alkyl radical having from 1 to 8 carbon atoms and *n* an integer of from 3 to 30.

3,894,127

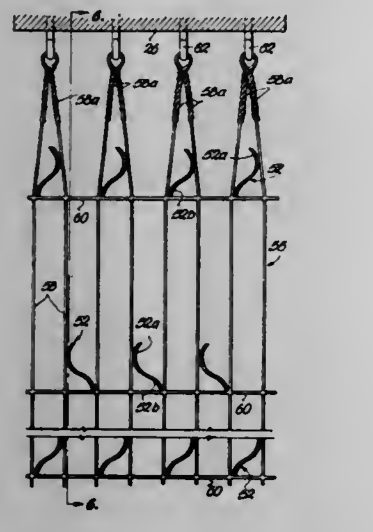
FILL ASSEMBLY STRUCTURE FOR CROSS FLOW WATER COOLING TOWER

Homer E. Fordyce, Kansas City, Mo., assignor to The Marley Company, Mission, Kans.

Division of Ser. No. 857,134, Sept. 11, 1969, Pat. No. 3,764,121. This application Feb. 12, 1973, Ser. No. 331,836The portion of the term of this patent subsequent to Sept. 11, 1990, has been disclaimed.

Int. Cl. B01f *3/04*

U.S. Cl. 261—111 **23 Claims**



1. For use with a cross flow water cooling tower having a hot water distributor, a cold water basin therebelow, and means for incuding cross flow movement of air therebetween, the combination wherewith of splash type fill assembly structure comprising:

- a series of elongated, substantially imperforate fill members each of substantially greater length than width and thickness respectively; and
- means supporting the fill members in the space between the hot water distributor and said cold water basin in a plurality of horizontal, vertically spaced rows with the longitudinal axes of the fill members extending in generally parallel relationship to the direction of air flow through said space,
- each of said fill members being provided with a substantially continuous major upwardly facing, longitudinally extending surface disposed for impingement of hot water thereagainst gravitating from the distributor toward the basin, said fill members being disposed in locations causing the upwardly facing major surfaces thereof to face in opposite directions in adjacent rows vertically,
- the vertical spaces between each fill member and the fill members immediately thereabove and immediately therebelow respectively being substantially greater than the effective vertical height of a corresponding fill member, said major surface of each fill member being disposed at an angle less than 90° but greater than 0° with respect to the horizontal and the fill members being located in relative offset relationship with respect to members thereabove or therebelow in disposition to cause said surfaces to be disposed in water intercepting relationship throughout substantially the entire plan area of the fill assembly and in angular relationship to the general path of the gravitating hot water.

3,894,128

TRAY FOR FLUID CONTACTOR APPARATUS

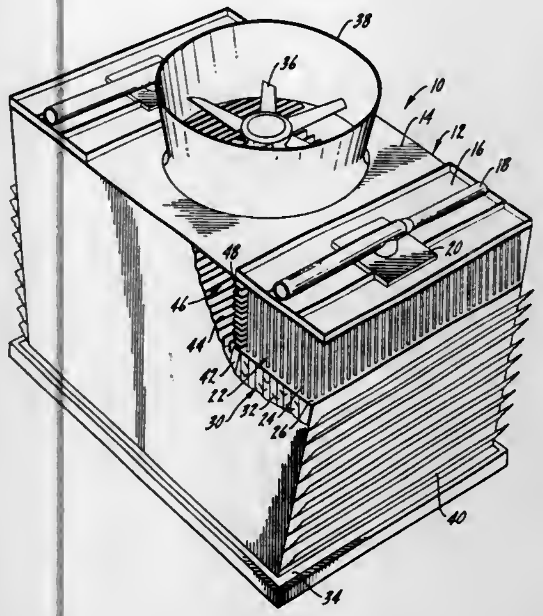
Shoichi Hirao, Kakogawa; Satoshi Ihara, Akashi, and Kanji Ueda, Ashiya, all of Japan, assignors to Seitetsu Kagaku Co., Ltd., Japan

Division of Ser. No. 116,450, Feb. 18, 1971, Pat. No. 3,807,711. This application Nov. 9, 1973, Ser. No. 414,301

Claims priority, application Japan, Feb. 27, 1970, 45-17415; Mar. 30, 1970, 45-27127

Int. Cl. B01f *3/04*

U.S. Cl. 261—114 VT **7 Claims**



1. A tray for fluid contacting comprising a plurality of elongated tiltable elements in the form of planar flat bars, planar, elongated, parallel supporting bars extending transversely to said flat bars for supporting said flat bars in spaced relation to one another, the supporting bars being spaced from one another and spaced intermediate the ends of said flat bars, said supporting bars having vertically oriented crosssections and further having recesses at spaced intervals therealong for receiving a portion of said flat bars, said flat bars abutting said support bars at mutual points of contact, said flat bars pivoting with respect to said support bars about said mutual points of contact so that each of said flat bars is tiltable with respect to the respective recesses to define fluid flow passages between adjacent flat bars, the flat bars being spaced from one another to define slit-like passages between adjacent bars in a load-free state and being tiltable in the same direction in a restricted range for varying the area of said passages in response to the flow rate of fluid and the fluid load conditions, the recesses in said supporting bars being shaped to allow said flat bars to pivot between a closed position in which the area of said passages is at a minimum and a maximum open position only.

3,894,129

METHOD OF MANUFACTURE OF STRAIN FREE CONTACT LENSES

Donald O. Hoffman, Sturbridge, and Edward Z. Zdrok, Webster, both of Mass., assignors to American Optical Corporation, Southbridge, Mass.

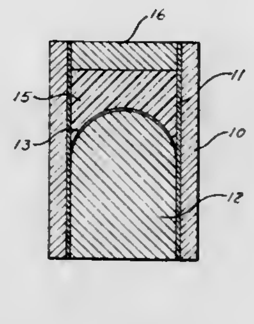
Filed Mar. 15, 1973, Ser. No. 341,614

Int. Cl.² B29D *11/00*

U.S. Cl. 264—1 **11 Claims**

1. The method of manufacturing a strain free, hydroscopic solid polymerized product suitable for contact lenses and the like which imbibes 40–80 per cent by weight water, comprising:

- preparing a mixture of 20–45 percent by weight of a solid, high molecular weight polyvinyl pyrrolidone and 80–55 percent by weight of a monomethacrylate ester of a glycol selected from the group consisting of ethylene glycol and propylene glycol, in the presence of a low temperature initiator and a medium temperature initiator, and said mixture containing not more than about 1.6 percent by weight of methacrylic acid and not more than about 1.0 percent by weight of an alkyl glycol dimethacrylate;



- pouring said mixture in a cup-type mold;
- closing said mold to exclude oxygen from said mixture;
- polymerizing said mixture at a first temperature of from 40° to 60°C, and
- curing said polymerized mixture at from 90°–120°C to complete the hardening of said mixture.

3,894,130

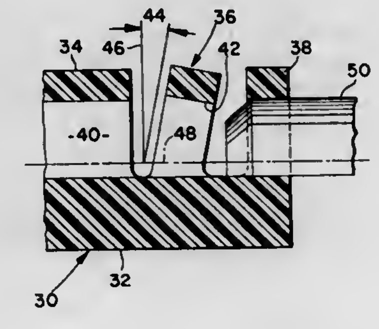
METHOD FOR PRODUCING SELF RETAINING KNOB

Thomas M. Moran, Cleveland, and Joseph H. Paskert, Lakewood, both of Ohio, assignors to Eaton Corporation, Cleveland, Ohio

Division of Ser. No. 258,965, June 2, 1972, Pat. No. 3,808,635. This application June 22, 1973, Ser. No. 372,574

Int. Cl. B29c *17/02*

U.S. Cl. 264—25 **4 Claims**



1. The method of manufacturing a molded one-piece shaft retaining device having at least a pair of axially spaced loops defining a guideway for receiving the shaft in proper axial relation to the device and a relatively resilient loop axially interposed at least two of said axially spaced loops defining an aperture partially offset said guideway through which said shaft must pass upon insertion into said guideway comprising the steps of:

- a. molding a blank having at least a pair of axially spaced loops defining a guideway and a relatively resilient loop interposed said axially spaced loops defining an aperture wherein the guideway and the aperture are axially aligned, said guideway and said aperture being molded about a substantially straight molding core;
- b. removing said molding core from said blank by axially sliding said molding core out of said blank;
- c. heating the blank;
- d. displacing the relatively resilient loop by the application of pressure to selectively partially offset the aperture with respect to the guideway; and
- e. allowing the relatively resilient loop to cool and harden in the displaced position.

3,894,131

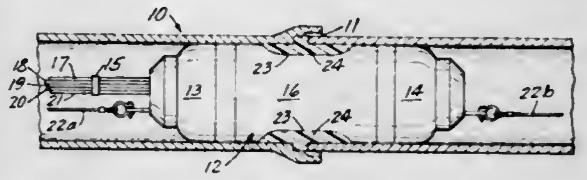
POLY(URETHANE-UREA) SEALANTS AND SEALING UNDERGROUND STRUCTURES THEREWITH

Steven R. Speech, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Co., St. Paul, Minn.

Filed May 18, 1972, Ser. No. 254,527

Int. Cl. B29d *27/00;* **C08g** *22/14;* **E02d** *3/12*

U.S. Cl. 264—45.2 **9 Claims**



1. A method for sealing a structure, comprising the steps of: placing and mixing at the locus to be sealed water, a basic urea-bond forming catalyst, and a sealing composition comprising a water-miscible mixture of isocyanate-terminated prepolymers having the formula:

$$Y[(CH_2CH_2O)_n—C(O)NH—R'(NCO)_p]_z$$

where Y is the active hydrogen-free residue of a compound having a plurality of active hydrogen atoms, n is the number of oxyethylene units sufficient to make said prepolymers water-miscible, R′ is the isocyanate-free residue of a polyisocyanate, p is an integer of 1–5, and z is an integer equal to the number of active hydrogens present in said compound, said mixture containing a prepolymer of said formuia having a molecular weight of about 850–1000 and a prepolymer of said formula having a molecular weight of about 1250–1550 with the average molecular weight of said mixture of prepolymers being about 1000–1300, said mixture of prepolymers being dissolved in a polar water-miscible solvent; allowing said mixture of prepolymers to react with water to form a foam; and forcing the foam into the locus to be sealed, thereby forming a poly(urethane-urea) foam seal at said locus.

3,894,132

METHOD OF FORMING COLLAGEN DISPERSIONS

Leonard Daniel, 44 Budyan Rd., Grays Point, New South Wales, Australia

Filed Sept. 10, 1973, Ser. No. 395,994

Int. Cl. A61l *17/00;* **C07g** *07/00*

U.S. Cl. 264—138 **15 Claims**

1. A method of forming a dispersion of collagenous fibres, comprising the steps of

- a. treating a collagenous material with an aqueous solution of an alkaline earth metal hydroxide and an alkali metal hydroxide to reduce the cohesion between the fibres, the alkali metal hydroxide having a concentration of from 0.25 to 2 molar and the treatment being carried out at a temperature between the freezing point of the mixture and 30°C;
- b. severing the collagenous material into particles containing fibres of a fibre length between about 3 and about 10 mm, and
- c. mechanically dispersing the collagen fibres to free the fibres from one another substantially along their whole length and substantially without further reduction of the fibre length.

3,894,133

ISO-THERMAL ABSORPTION COLUMN

Angelo C. Coste, Chicago, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

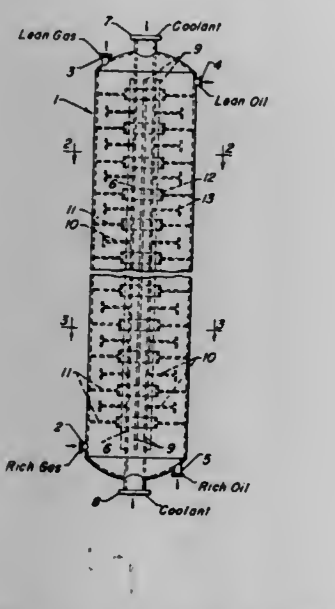
Filed Oct. 19, 1973, Ser. No. 408,026

Int. Cl. B01f *3/04*

U.S. Cl. 261—153 **2 Claims**

1. A gas-liquid contacting vessel having full vertical flow heat exchange therethrough to permit substantially iso-thermal countercurrent contacting operations, which comprises in

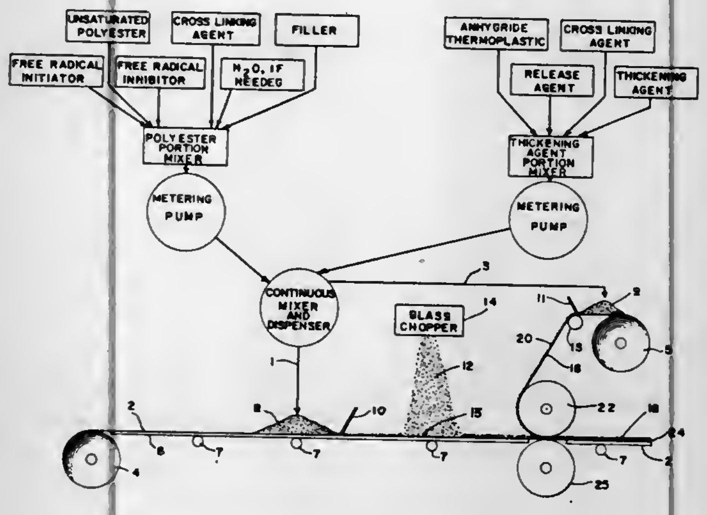
combination, a vertically elongated confined chamber with lower fluid port means and upper port means permitting the upward vertical passage of a gaseous stream and the downward flow of a liquid stream, a substantially vertical and interiorly positioned conduit member extending through the length of said chamber, with heat exchange fluid inlet means to one end of said conduit and fluid outlet means from the other end thereof, said interiorly positioned conduit member being provided with external longitudinally disposed fin means in order to enhance heat exchange contact with the gas and liquid phases passing therearound, whereby a heat exchange fluid may be passed therethrough, spaced baffle means throughout at least a portion of the height of said chamber around said conduit member to provide intermixing of countercurrently flowing streams while in the continuous heat exchange relationship with the latter, said spaced baffle means in said chamber comprising an alternating disc and doughnut arrangement, said disc arrangement comprising a series of discs radially extending from said fin means around said conduit member and said doughnut arrangement comprising an alternate series of doughnut-like baffle members around said fin means, said discs having weir members at the ends thereof, said baffle members having inner ring-like wall elements comprising weir means at a spaced distance from said conduit member, whereby the gas and liquid streams will necessarily be channeled back and forth across the interior portion of said vessel and effect a multiplicity of flow stream contacts with the exterior of said interiorly positioned conduit member.



3,894,134
METHOD OF MAKING REINFORCED POLYESTER SHEETS
David R. Williams, Vandergrift, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.
Filed Jan. 2, 1973, Ser. No. 320,006
Int. Cl. B29d *3/02, 7/02*
U.S. Cl. 264—171 **9 Claims**

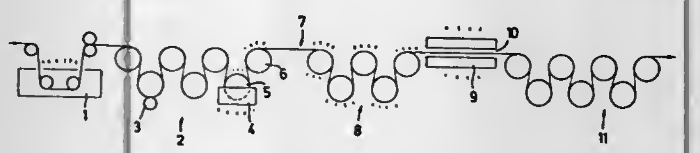
1. A method for preparing a polymerizable polyester resin mat from a polyester resin formulation by mixing different portions of the formulation comprising:

A. providing a portion of the formulation, the portion comprising an unsaturated polyester, an ethylenically unsaturated monomeric cross-linking agent capable of polymerizing with said polyester, and water, said portion being substantially stable in viscosity;
B. providing another portion of the formulation, said another portion comprising an ethylenically unsaturated monomeric cross-linking agent capable of polymerizing with said polyester, thickening agent and a thermoplastic polymer containing anhydride groups, said another portion being free of water in amounts which cause said thermoplastic polymer and said thickening agent to coact with each other thereby rendering said other portion substantially stable in viscosity;
C. preparing said formulation by separately mixing each of said portions to thoroughly distribute the ingredients thereof throughout each portion, and then mixing said portions together; and
D. promptly after mixing said portions together, forming an uncured sheet of said formulation and applying thereto fibrous reinforcements;



wherein said thickening agent is calcium oxide only or a mixture of calcium oxide and another thickening agent in which calcium oxide comprises at least about 80 weight percent of said mixture and wherein the amount of water and thickening agent in said formulation effects thickening thereof in a manner such that the viscosity of said formulation is sufficiently low to wet thoroughly said fibrous reinforcements and such that the formulation containing said fibrous reinforcements increases rapidly in viscosity after said fibrous reinforcements have been applied.

3,894,135
PROCESS FOR STRETCHING A CABLE OF POLYESTER THREADS
Karlheinz Riggert, Dornholzhausen; Willy Zahn, Heusenstamm; Bernhard Jantzen; Rolf Sander, both of Dornigheim, and Dietmar Wandel, Offenbach am Main, all of Germany, assignors to Zimmer Aktiengesellschaft, Frankfurt, Germany
Continuation of Ser. No. 295,166, Oct. 5, 1972, abandoned. This application Aug. 1, 1974, Ser. No. 493,557
Claims priority, application Germany, Oct. 6, 1971, 2149793
Int. Cl. B29c *17/02*
U.S. Cl. 264—290 T **8 Claims**

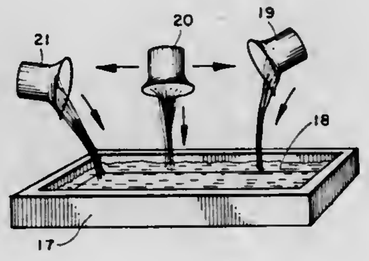


1. In a process for stretching a cable of polyester threads, between an inlet roller mechanism comprising a plurality of rollers and a first stretching roller mechanism, in which the stretching point is formed at the last roller of the inlet roller mechanism the improvement which comprises:

a. passing the cable while on the penultimate roller of the inlet roller mechanism through an immersion bath maintained at a temperature of 40° to 65°C;
b. maintaining the last roller of the inlet roller mechanism at a temperature 3° to 18°C higher than the immersion bath;
c. positioning the last roller higher than the penultimate roller with the angle between vertical and the cable as it rises from the penultimate roller to the last roller being less than 55° to remove fluid from the immersion bath on the cable;

d. maintaining a short residence time of less than 3 seconds for the cable between the exit point of the cable from the immersion bath and the beginning of the stretching of the cable at the last roller and,
e. stretching the cable in a stretching zone in the absence of the addition of water at a ratio of 1:25 to 1:6 to produce a cable with a low percentage unstretched fibers.

3,894,136
METHOD OF MAKING FREE FORM WAX DESIGNS BY CASTING WAX IN WATER
Alfred William Waddill, 16937 Willard, Van Nuys, Calif. 91406
Filed July 20, 1971, Ser. No. 164,338
Int. Cl. B29c *27/24*
U.S. Cl. 264—245 **3 Claims**

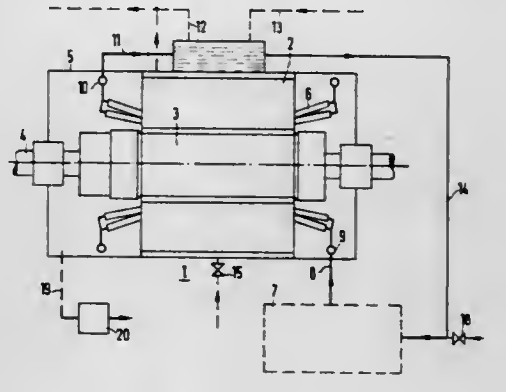


1. A method of making free form wax designs comprising the steps of: filling a shallow pan having a perimeter following a desired contour with cool water; melting a given quantity of wax sufficient to cover the area of the surface of the water in said pan to a given thickness; pouring the melted wax onto the surface of said water after the water is stationary by sweeping motions over the surface of the water following a desired path until the entire surface of the water is covered to said desired thickness, the pouring being done from a desired height above the water so that the wax penetrates the surface of the water as it strikes the surface and waiting until said wax at least solidifies to the extent that it can be removed from said pan as an integral mass of wax, the contour of said mass following that of the pan and the undersurface of the wax exhibiting a design in relief determined to a given extent by the sweeping path followed while pouring said wax into said pan and by the height above the water that the wax is poured.

3,894,137
METHOD OF DOMING PLANAR SHEETS
Theodor Peter Moench, Darmstadt, Germany, assignor to Rohm GmbH, Darmstadt, Germany
Filed Oct. 17, 1972, Ser. No. 298,458
Claims priority, application Germany, Oct. 27, 1971, 2153442
Int. Cl. B29c *25/00, 27/02*
U.S. Cl. 264—230 **10 Claims**

8. A cold-forming method for making a double-walled, domed, structural element which comprises tightly clamping two superimposed thermoplastic synthetic resin sheets along all edge portions thereof, heating only the clamped edge portions of the sheets to a temperature above the glass transition temperature of the resin to weld the sheets together in said edge portions, cooling the heated clamped edge portions slightly below the glass transition temperature of the resin, releasing the clamping, and further cooling the welded edges to room temperature, whereupon unheated central portions of said planar sheets deform to form a double-walled dome, at least one of said sheets having an aperture therein whereby the pressure between the walls of said dome and ambient pressure are equalized.

3,894,138
APPARATUS FOR MEASURING COOLANT LEAKAGE IN ELECTRICAL POWER GENERATING MACHINES
Jürgen Klaar, Mulheim-Ruhr, Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mulheim-Ruhr, Germany
Continuation of Ser. No. 304,260, Nov. 6, 1972, abandoned. This application Mar. 12, 1974, Ser. No. 450,481
Claims priority, application Germany, Nov. 5, 1971, 2159979
Int. Cl. H02k *9/24*
U.S. Cl. 310—53 **9 Claims**

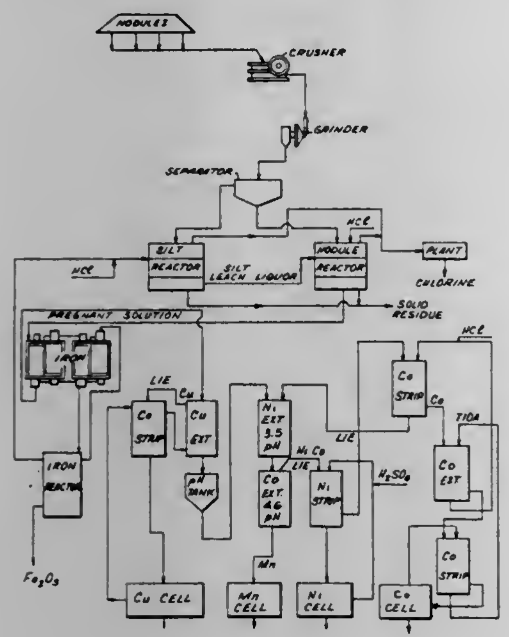


1. Device for detecting cooling water leakage in the cooling water cycle of turbogenerators which are cooled by water in the stator and the rotor and are provided with additional cooling by hydrogen gas within the housing of said turbogenerator, comprising inlet means for introducing tritium into the water in the cooling water cycle, discharge means connected to said housing for withdrawal of a portion of hydrogen contained in the housing, an isotope measuring device connected to said discharge means to measure tritium which during a leakage penetrates from said cooling water cycle into said hydrogen gas contained in said housing.

3,894,139
NICKEL-COBALT SEPARATION FROM AQUEOUS SOLUTIONS
Paul H. Cardwell, Zanoni; William S. Kane, Wicomico, and James A. Olander, Gloucester Point, all of Va., assignors to Deepsea Ventures, Inc., Gloucester Point, Va.
Continuation-in-part of Ser. No. 247,692, April 26, 1972. This application Feb. 28, 1973, Ser. No. 336,737
Int. Cl. C01g *3/00, 45/00, 51/00, 53/00;* **C22b** *3/00, 15/00, 23/00*
U.S. Cl. 423—24 **25 Claims**

1. A process for the separation of individual metal ions from a pregnant aqueous solution of metal salts, comprising the salts of cobalt and nickel, by extraction from an aqueous solution, followed by selective stripping, the process comprising: (1) contacting the pregnant aqueous solution with an organic solution of a liquid ion exchange agent, the agent being selected from the group consisting of alpha-hydroxyoximes and hydrocarbon-substituted-8-hydroxyquinolines, to extract both nickel and cobalt from the aqueous solution while maintaining the pH within a desired range of from about 3 to about 7 until the aqueous solution is substantially depleted in nickel and cobalt, thus forming a liquid organic extract solution containing dissolved nickel and cobalt values and an aqueous raffinate substantially depleted in nickel and cobalt; (2) selectively stripping the nickel value from the organic extract solution with an acidic aqueous solution of a mineral acid, which substantially does not strip cobalt, to form an organic phase substantially depleted of nickel and an aqueous phase containing a nickel salt; and (3) stripping the cobalt value from the organic phase using an aqueous acid solution containing a hydrogen ion and a halide ion concentration of

at least 6 Normal each so as to strip the cobalt from the extract phase so as to form a regenerated extract medium substantially depleted in nickel and cobalt values and a strongly acidic aqueous phase containing the cobalt value.



3,894,140

STABILIZATION OF ALUMINA CATALYST SUPPORTS

Abe Warshaw, Matawan, N.J., assignor to Chemical Construction Corporation, New York, N.Y.

Filed May 9, 1973, Ser. No. 358,707

Int. Cl. B01d ***53/34***

U.S. Cl. 423—213.5 **17 Claims**

1. In a process for the treatment of exhaust gas from an engine to eliminate noxious components selected from the group consisting of nitrogen oxides, carbon monoxide and hydrocarbons which comprises passing an exhaust gas through at least one stage of catalysis, the improvement comprising wherein said catalysis stage contains solid catalyst particles comprising an active catalytic agent deposited on particles of transitional alumina, said active catalytic agent comprising copper, cobalt and manganese, said transitional alumina particles being stabilized by the inclusion in said transitional alumina particles of at least two metallic additives selected from the group consisting of thorium, a rare earth metal, and an alkaline earth metal, whereby a treated exhaust gas of depleted content of noxious components is discharged from said catalysis stage.

3,894,141

PROCESS FOR REMOVING NITRIC OXIDE

William R. Moser, Westfield, N.J., assignor to Exxon Research and Engineering Company, Linden, N.J.

Filed Dec. 27, 1972, Ser. No. 318,875

Int. Cl. C01b ***21/00***

U.S. Cl. 423—235 **7 Claims**

1. A process for removing nitric oxide from a gaseous effluent combustion waste stream deficient in oxygen, the process comprising the steps of contacting said effluent with a liquid hydrocarbon at a pressure sufficient to maintain the hydrocarbon in the liquid state, at a temperature ranging from 100° to 310°C and at a mole ratio of hydrocarbon to NO ranging from 500:1 to 0.04:1.

3,894,142

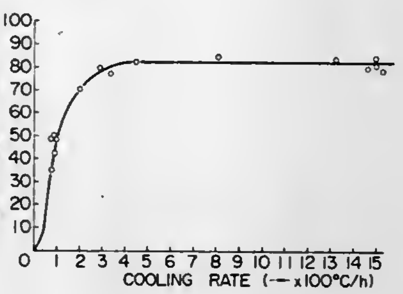
METHOD FOR PRODUCING GADOLINIUM MOLYBDATE SINGLE CRYSTALS HAVING HIGH TRANSPARENCY

Seikichi Akiyama, Kokubunji, Tokyo, and Hirotsugu Kozuka, Tokyo, both of Japan, assignors to Hitachi, Ltd., Japan

Filed July 28, 1972, Ser. No. 276,166

Int. Cl. C01g ***39/00, 57/00***

U.S. Cl. 423—263 **4 Claims**



1. In a method for producing gadolinium molybdate single crystals wherein a polycrystal of gadolinium molybdate or a mixture of molybdenum oxide and gadolinium oxide blended at such a rate as to meet the stoichiometric value for forming gadolinium molybdate is heated and melted, a seed crystal is immersed in said melt and a single crystal of gadolinium molybdate is grown according to the pull method, and the resulting single crystal is cooled; the improvement which comprises the cooling of said crystal during the cooling step in the temperature zone of at least 900°C. to 700°C. at a cooling rate of over 200°C./hr.

3,894,143

PROCESS FOR THE MANUFACTURE OF CRYSTALLIZED AMMONIA PHOSPHATES

Georg Von Semel, Dortmund, and Eduard Schibilla, Dortmund-Solde, both of Germany, assignors to Friedrich Uhde GmbH, Dortmund, Germany

Filed Jan. 2, 1973, Ser. No. 320,525

Claims priority, application Germany, Feb. 2, 1972, 2204779

Int. Cl.^{2} C01B ***15/16, 25/26***

U.S. Cl. 423—313 **1 Claim**

1. A process for manufacturing ammonium phosphate comprising the steps of:

I. forming a mixture of an aqueous technical grade phosphoric acid and acetone which forms a miscible mixture with water and phosphoric acid, wherein the miscible mixture is a non-solvent for ammonium phosphate,

whereby any impurities in the technical grade phosphoric acid are precipitated,

II. separating the precipitated impurities to form a purified mixture,

III. contacting the purified mixture with ammonia to produce ammonium phosphate crystals and a supernatant liquid,

IV. separating the ammonium phosphate crystals from the supernatant liquid,

V. distilling the supernatant liquid of Step IV to separate the acetone and,

VI. recycling the acetone produced in Step V to Step I.

3,894,144

PROCESS FOR MAKING SULFATE-CONTAINING BASIC ALUMINUM CHLORIDE

Wilfried Becher, Anderten, Ub. Han., and Joachim Massonne, Hannover, both of Germany, assignors to Kali-Chemie Aktiengesellschaft, Hannover, Germany

Filed Feb. 17, 1972, Ser. No. 227,301

Claims priority, application Germany, Feb. 19, 1971, 2107970; Dec. 22, 1971, 2163711

Int. Cl. C01b ***17/46***

U.S. Cl. 423—467 **10 Claims**

1. A process for the production of a composition of matter consisting essentially of an aqueous solution containing a substance having a chemical composition conforming to that of a sulfate-containing basic aluminum chloride having the general formula $[Al(OH)_xCl_y(SO_4)_{z/2}]_n$ in which z is a value between 0.02 and 0.3, the sum of y and z is a value between 1 and 2, and the sum of x, y and z is 3, and n is an integer of at least 1, which comprises heating together in a closed vessel at a temperature between 130° and 200°C under its own autogenous pressure a mixture of aluminum hydroxide, concentrated hydrochloric acid and concentrated sulfuric acid, the hydrochloric and sulfuric acids being present in a molecular ratio of Cl to SO_4 between 8 : 1 and 80 : 1 and the aluminum hydroxide being present in an amount that is at least equivalent stoichiometrically to that required to form a composition having the foregoing formula, and subsequently separating any unreacted aluminum hydroxide from the resulting solution.

3,894,145

PROCESS FOR DESULFURIZATION OF WASTE GAS

Minoru Morita, Tokyo; Masuo Hasegawa, Kanagawa, and Yasuhiko Kamijo, Saitama, all of Japan, assignors to Tsukishima Kikai Co., Ltd., Japan

Filed Sept. 18, 1973, Ser. No. 398,473

Int. Cl. C01b ***17/04***

U.S. Cl. 423—567 **15 Claims**

1. A process for the desulfurization of a waste gas comprising:

1. absorbing sulfur oxides contained in said waste gas with an aqueous alkali carbonate solution to form an aqueous solution containing sodium or potassium sulfite and sodium or potassium bisulfite and a desulfurized vent gas,
2. pyrolyzing said solution containing sodium or potassium sulfite and sodium or potassium bisulfite to form a pyrolysis gas product containing hydrogen sulfide and water and a pyrolysis solid product containing sodium or potassium carbonate and carbon,
3. condensing water contained in said pyrolyzed gas product to produce a condensed water solution containing at least one sulfide or hydrosulfide of sodium or potassium,
4. mixing said pyrolysis solid product with said condensed water solution whereby salts in said pyrolysis solid product are dissolved in said condensed water solution,
5. oxidizing said at least one sulfide or hydrosulfide of sodium or potassium in said condensed water solution,
6. recycling the condensed water solution containing the oxidized sulfide or hydrosulfide to absorption step 1,
7. recovering sulfur in elemental form from the hydrogen sulfide in said pyrolyzed gas product so as to produce a liquid residue containing sodium or potassium sulfur oxides and a desulfurized waste gas, and
8. recycling at least a portion of said liquid residue to pyrolysis step 2.

3,894,146

METHOD FOR PREVENTING OCCURRENCE OF DENTAL CARIES

Naoto Tsuyama, Okayama, Japan, assignor to Kabushiki-Kaisha Hayashibara Seibutsukagaku Kenkyujo, Okayama, Japan

Filed May 28, 1974, Ser. No. 474,091

Claims priority, application Japan, June 1, 1973, 48-62337

Int. Cl. A61k ***7/16***

U.S. Cl. 424—49 **3 Claims**

1. In a mouth-treatment composition containing a sweetener, the improvement wherein the sweetener contains oligoglucosyl fructose, whereby fewer dental caries will occur after use.

3,894,147

METHOD AND COMPOSITION FOR INHIBITING CALCULUS

Tayseer George Bahouth, deceased, late of Utica, N.Y., and by Zaher Bahouth, administrator, Utica, N.Y., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Mar. 2, 1973, Ser. No. 337,319

Int. Cl. A61k ***7/16***

U.S. Cl. 424—57 **9 Claims**

1. A method of inhibiting calculus formation by contacting the teeth with an effective amount of at least 0.1% of a dialkyl pyrophosphate having from about 8 to 14 carbon atoms, in the alkyl groups.

3,894,148

PROCESS FOR ENHANCING THE ENERGY METABOLISM OF AN ATHLETE

Richard E. Ecker, Hinsdale, Ill., assignor to Vitose Corporation, Clarendon Hills, Ill.

Filed Mar. 22, 1974, Ser. No. 454,011

Int. Cl.^{2} A61K ***31/70***

U.S. Cl. 424—180 **5 Claims**

1. A process for enhancing the energy metabolism of an athlete whereby physical endurance is improved during competition, comprising the steps of: regulating the athlete's dietary and physical conditioning to assure substantially full glycogen storage levels at the outset of said competition; eliminating the consumption by said athlete of substantially all insulin-inducing carbohydrates for a pre-competition period of sufficient duration such that during said competition the amount of insulin within the blood of said athlete will be lowered to about minimum levels; and,

administering to said athlete, orally and during said pre-competition period, between about 10 and 50 grams of fructose.

3,894,149

PESTICIDAL CONCENTRATES

Roy Clark Mast, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed July 6, 1973, Ser. No. 376,980

Int. Cl. A01n ***9/30, 9/32, 9/36***

U.S. Cl. 424—200 **2 Claims**

1. A concentrated liquid composition comprising

From about 1 to 40 percent, by weight, of diazinon, and the balance, equal parts, by weight, of

  1. ethoxylated oleyl sorbitan ester having a hydrophilic to lipophilic balance of 15, and
  ii. decyldiethanol amide.

3,894,150
CARBAMATE PESTICIDAL COMPOSITIONS

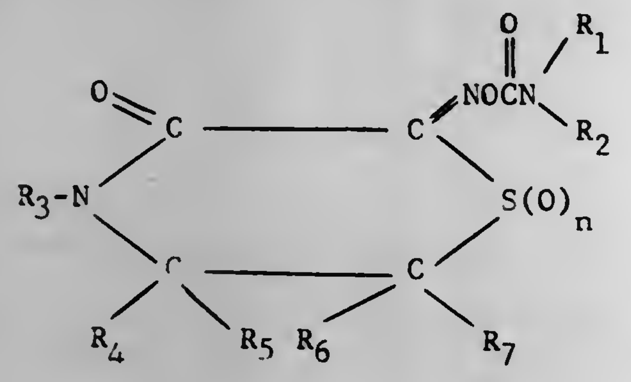
John A. Durden, Jr., South Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Filed Dec. 29, 1972, Ser. No. 319,532

Int. Cl. A01n *9/00, 9/12*

U.S. Cl. 424—246 **16 Claims**

1. An insecticidal and miticidal composition comprising an acceptable carrier and an an insecticidally or miticidally effective amount of a compound having the structure:



wherein:

R_1 and R_2 are individually, hydrogen, lower alkyl, halo substituted lower alkyl, lower alkenyl, lower alkynyl lower alkoxyalkyl, lower alkyl thioalkyl, lower trihaloalkanesulfenyl or acyl, with the proviso that when R_1 is lower trihaloalkanesulfenyl or acyl, R_2 is hydrogen or lower alkyl;

R_3 is cycloalkyl, lower dialkylamino, lower alkoxyalkyl, lower alkylthioalkyl, furyl methyl, lower alkylcarbamoyl, carbamoyl, alkylsulfinylalkyl, alkylsulfonylalkyl or acyl;

R_4, R_5, R_6 and R_7 are individually hydrogen or lower alkyl; and

n is 0.

3,894,151
PHARMACEUTICAL COMPOSITIONS AND METHODS OF INHIBITING H-1 AND H-2 HISTAMINE RECEPTORS

James Whyte Black, Hemel Hempstead, and Michael Edward Parsons, St. Albans, both of England, assignors to Smith-Kline & French Laboratories Ltd., Welwyn Garden City, England

Filed Apr. 9, 1973, Ser. No. 349,151

Claims priority, application United Kingdom, Apr. 20, 1972, 18301/72

Int. Cl.^{2} A61K *27/00*

U.S. Cl. 424—246 **19 Claims**

1. A pharmaceutical composition having H-1 and H-2 histamine receptor inhibiting activity which comprises about 30 mg. to about 250 mg. of an antihistamine, said antihistamine being a compound which inhibits those histamine receptors inhibited by mepyramine, about 50 mg. to about 500 mg. of an H-2 histamine receptor inhibitor, H-2 histamine receptors being those histamine receptors which are not inhibited by mepyramine but are inhibited by burimamide, and a pharmaceutically acceptable diluent or carrier, wherein said H-2 histamine receptor inhibitor is a compound selected from the group consisting of N-methyl-N′-[4-(4(5)-imidazolyl)butyl] thiourea, N-[4-(4(5)-imidazolyl)butyl]thiourea, N-methyl-N′-[4-(4-bromo-5-imidazolyl)butyl]thiourea, N-methyl-N′-[2-((4-methyl-5-imidazolyl)methylthio)ethyl]thiourea and N-methyl-N′-[2-((4-imidazolyl)methylthio)ethyl]thiourea.

3,894,152
USE OF (THIENYL-3)(3-N-MORPHOLINE-PROPY)KETONE

Andre Lucien Adrien Pons; Max Fernand Robba, both of Paris; Rene Henri, Espins, and Pierre Marcy, Sartrouville, all of France, assignors to Innothera, Val de Marne, France

Division of Ser. No. 72,496, Sept. 15, 1970, abandoned. This application Apr. 23, 1973, Ser. No. 353,362

Claims priority, application France, Sept. 15, 1969, 69.31306

Int. Cl.^{2} A61K *27/00*

U.S. Cl. 424—248 **1 Claim**

1. A process for the treatment of a patient to induce a neuroleptic, tranquilizing or analgesic effect which comprises administering to the patient 50 to 500 mg of (thienyl-3) (3-N-morpholino-propyl) ketone and a pharmaceutically acceptable diluent.

3,894,153
METHOD OF MEDICAL TREATMENT OF ASTHMA

Shinro Yamamoto, Saitama, Japan, assignor to Eisai Co., Ltd., Tokyo, Japan

Filed Oct. 30, 1973, Ser. No. 411,095

Claims priority, application Japan, Nov. 2, 1972, 47-110058

Int. Cl. A61k *27/00*

U.S. Cl. 424—331 **5 Claims**

1. A method of treating asthma which comprises administering orally to a human suffering from asthma, from 2.5 to 50 mg of menaquinone per day.

3,894,154
CENTER-FILLED GUM

Allan H. Graff, Hartsdale, and Wayne J. Puglia, Floral Park, both of N.Y., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Jan. 14, 1974, Ser. No. 432,921

Int. Cl. A23g *3/00, 3/30*

U.S. Cl. 426—5 **9 Claims**

1. A chewing gum piece comprising an enclosed cavity formed in said gum piece, and a liquid fill in said cavity; said liquid fill including an aqueous solution having a dissolved solids portion, and glycerin for retarding increases in viscosity of said liquid fill.

3,894,155
PROCESS FOR THE PREPARATION OF A FROZEN DOUGH FOR BAKERY PRODUCTS

Shoji Ono, Ohi-Machi; Ikuo Kitamura, Kawagoe; Tomoko Kuramoto, Tokyo; Keizaburo Taguchi, Fukuoka, and Tomozo Yoshizaki, Tokyo, all of Japan, assignors to Nisshin Flour Milling Co., Ltd., Tokyo, Japan

Filed Oct. 23, 1973, Ser. No. 409,000

Claims priority, application Japan, Dec. 8, 1972, 47-122439

Int. Cl. A21d *8/04, 2/04, 2/22*

U.S. Cl. 426—25 **8 Claims**

1. A process for the preparation of a frozen dough for bakery products, which comprises:

a. fermenting a dough containing 1% or less by weight, based on the flour in said dough, of active yeast to form a punchable fermented dough;

b. cooling the fermented dough to 2°–15° C. to suppress yeast fermentation activity;

c. admixing 2–6% by weight, based on the flour in said dough, of additional yeast with the cooled dough; and

d. freezing the resultant admixture while said additional yeast is in the stage of dormancy or induction.

3,894,156
METHOD FOR MASHING

Lars Karl Johan Ehnstrom, Tullinge, and Zigurds Sviestins, Enskede, both of Sweden, assignors to Alfa-Laval AB, Tumba, Sweden

Filed Apr. 12, 1973, Ser. No. 350,639

Claims priority, application Sweden, Apr. 13, 1972, 4774/72

Int. Cl. C12c *7/04*

U.S. Cl. 426—29 **3 Claims**

1. In the mashing of a finely divided raw material into a liquid for the production of wort, the method comprising the steps of passing said liquid through an enclosed path having a constricted portion, creating an underpressure in the path at the region of said constricted portion, subjecting the finely divided raw material to a cyclone separating operation to form a fine dispersion of said material in air, and causing said dispersion to be sucked into said path at a point where said underpressure prevails, thereby forming a suspension of said material in the liquid.

3,894,157
COLOR STABILIZATION IN FREEZE-DRIED CARROTS WITH ASCORBIC AND ERYTHORBIC ACIDS

Danny M. Gottlieb, and Jack R. Linaberry, both of Modesto, Calif., assignors to General Foods Corporation, White Plains, N.Y.

Filed June 4, 1973, Ser. No. 366,956

Int. Cl. A23b *7/04, 7/10*

U.S. Cl. 426—268 **5 Claims**

1. Process of stabilizing color in dehydrated carrots which comprises decorticating carrots, subdividing them into sliced and diced form, blanching and cooking the resulting carrot pieces, infusing a solutions of an acid selected from the group consisting of ascorbic, erythorbic and salts thereof into the pieces, freezing the pieces and freeze drying the frozen pieces to a stable moisture content.

3,894,158
MANUFACTURE OF EDIBLE COLLAGEN CASINGS USING LIQUID SMOKE

Albert T. Miller, Somerville, N.J., assignor to Devro, Inc., Somerville, N.J.

Filed Apr. 24, 1973, Ser. No. 354,053

Int. Cl. A22c *13/00*

U.S. Cl. 426—277 **6 Claims**

1. The process of manufacturing an edible collagen casing by the steps comprising: incorporating liquid-smoke into an extrusion mass of acid-swollen collagen, the amount of liquid-smoke used being 0.01 to 2.0 parts for each part of collagen solids in said extrusion mass; extruding said liquid-smoke containing acid-swollen collagen extrusion mass into the shape of a casing; and drying the resultant edible collagen casing.

3,894,159
METHOD FOR FILLING THE CAVITY OF AN EDIBLE SHELL WITH A CONFECTIONERY FILLING

Rudolf Franta, Breitenbrunn, Austria, assignor to Rondo-Neisse Susswarenindustrie Gesellschaft m.b.H., Breitenbrunn, Austria

Continuation of Ser. No. 212,273, Dec. 27, 1971, abandoned. This application Feb. 26, 1974, Ser. No. 446,115

Claims priority, application Austria, Dec. 31, 1970, 11768/70

Int. Cl. A23g *3/00, 3/20*

U.S. Cl. 426—284 **4 Claims**

1. A method of mechanically filling the cavity of an open edible tubular wafer with a melted confectionery filling whose solidification point at atmospheric pressure is no lower than normal room temperature, comprising the steps of supercooling the melted filling under superatmospheric pressure to a temperature below the solidification point thereof, and essentially horizontally injecting the supercooled filling through a jet nozzle into the cavity of the tubular wafer at the superatmospheric pressure while maintaining the tubular wafer in an essentially horizontal position whereby the filling solidifies in the cavity.

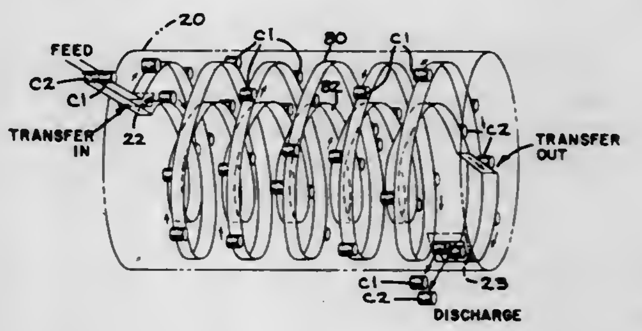
3,894,160
METHOD OF PROCESSING TWO LINES IN A SINGLE PASS COOKER

Harry E. Barney, Jr., Santa Clara, and Rodney A. Engdahl, Campbell, both of Calif., assignors to FMC Corporation, San Jose, Calif.

Division of Ser. No. 292,001, Sept. 25, 1972, Pat. No. 3,815,490. This application Oct. 25, 1973, Ser. No. 409,485

Int. Cl. B65b *55/06*

U.S. Cl. 426—407 **2 Claims**



1. The method of processing two separate lines of containers in a multi-pass rotary cooker of the type having a horizontal axis outer shell with an internal spiral, an inner shell with an external spiral, and a rotating container advancing reel between the shells; comprising the steps of feeding a first line of containers through an end zone of the outer shell and into its spiral while radially confining the containers between circumferentially extending portions of the reel and the outer shell, simultaneously feeding a second line of containers through an adjacent end zone of the outer shell past the associated end of the reel and into the inner shell spiral while radially confining the containers between circumferentially extending portions of the reel and the inner shell, simultaneously advancing both lines of containers along their respective spirals by the reel, discharging the first line of containers through the outer shell at a zone that is a convolution away from the end of the outer spiral, transferring the second line of containers past the other end of the reel and into the outer spiral, and discharging the second line of containers through the outer shell from the end of the outer spiral.

3,894,161
METHOD OF PROTECTING STORED SUGARBEETS AND AN ARTICLE USEFUL THEREFOR

Walter R. Akeson, Longmont, Colo., assignor to The Great Western Sugar Co., Denver, Colo.

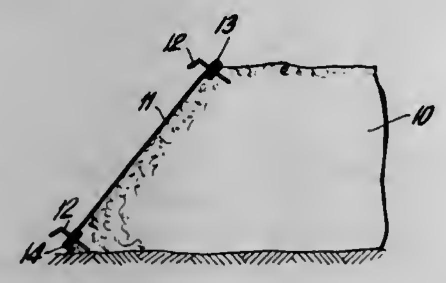
Filed Oct. 18, 1972, Ser. No. 298,525

Int. Cl. A23l *1/00*

U.S. Cl. 426—419 **2 Claims**

1. A method of protecting a pile of sugarbeets stored outside on the ground comprising covering at least the sides of the pile down to about 5 feet from the ground level with a plurality of mats at least 8 days after the pile was formed and after the ambient temperature has dropped to between about 40° and about 50° F., and covering the remainder of the pile down to ground level when the temperature has dropped to below about 40° F., said mats being formed of woven strips of polypropylene and having at least one rigid member attached to the upper and lower ends thereof, the mats being disposed on the pile so that the longitudinal dimensions thereof are generally parallel to the fall line of the pile sides and so that adjacent mats overlap along the longitudinal margins thereof, securing

the upper and lower ends of the mat to the pile by passing stakes through the rigid members, wrapping the overlapping



longitudinal margins of adjacent mats about at least one longitudinal rigid member to the pile by passing stakes therethrough.

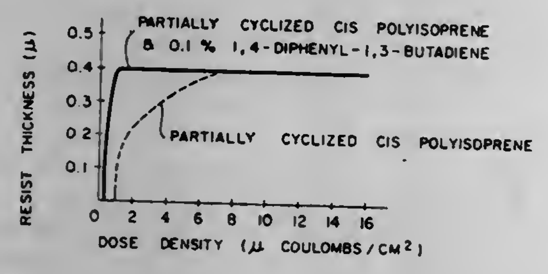
3,894,162
METHOD OF MAKING FRESH SKINLESS SAUSAGE
Edward Cole Jones, Jr., and Gerald Robert Johnson, both of Fort Atkinson, Wis., assignors to Jones Dairy Farm, Fort Atkinson, Wis.

Filed Sept. 26, 1974, Ser. No. 509,459
Int. Cl. A22c *11/00*
U.S. Cl. 426—442 **8 Claims**

1. A method of making fresh skinless sausage, comprising the steps of comminuting a fresh meat formulation, stuffing the fresh meat formulation into a water permeable casing, linking the casing at intervals throughout its length to provide a series of uniform links, reducing the temperature of the linked product to below 32°F to freeze the product and provide a frozen bond between the casing and said meat formulation, wetting out the casing by contacting the casing with water for a period of time sufficient to cause said water to penetrate the casing and melt the frozen bond between the meat formulation and the casing while maintaining the meat formulation in a substantially frozen state, and peeling the wetted out casing from the frozen meat formulation to provide fresh skinless sausage links.

3,894,163
ADDITIVES TO NEGATIVE PHOTORESISTS WHICH INCREASE THE SENSITIVITY THEREOF
Barret Broyde, Decatur, Ga., assignor to Western Electric Company, Incorporated, New York, N.Y.

Continuation-in-part of Ser. No. 122,121, March 8, 1971, abandoned, which is a division of Ser. No. 764,866, Oct. 31, 1968, abandoned. This application Mar. 26, 1973, Ser. No. 344,796
Int. Cl.^{2} B44D *1/50; C08F 236/08*
U.S. Cl. 427—43 **2 Claims**



1. A process for generating a pattern on a substrate comprising:

coating said substrate with a uniform thin film of a composition comprising (a) a partially cyclized cis-polyisoprene and a solvent therefor, and (b) 1,4-diphenyl-1,3-butadiene, present in an amount ranging from 0.1 to 5% of said partially cyclized cis-polyisoprene and solvent;

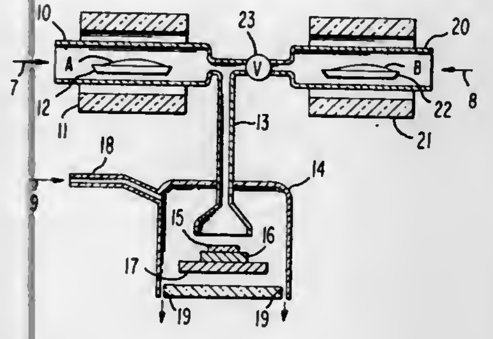
exposing areas of said substrate desired to be protected to sufficient electron beam radiation to crosslink and insolubilize the thin film on said areas;

dissolving and removing the areas of said thin film not radiated; and

etching, plating or oxidizing the now-exposed portions of said substrate.

3,894,164
CHEMICAL VAPOR DEPOSITION OF LUMINESCENT FILMS
John Pickett Dismukes, Princeton, N.J., and James Kane, Affoltern am Albis, Switzerland, assignors to RCA Corporation, New York, N.Y.

Filed Mar. 15, 1973, Ser. No. 341,597
Int. Cl.^{2} B44D *1/02; C23C 11/02*
U.S. Cl. 427—70 **8 Claims**



1. A method for depositing a luminescent film comprising a. vaporizing into a nonreactive carrier gas at least one $M(thd)_3$ beta-diketonate and at least one $Ln(thd)_4$ beta-diketonate, wherein M is at least one member of the group consisting of yttrium, lanthanum, gadolinium, and lutetium, Ln is at least one lanthanide selected from the group consisting of dysprosium, erbium, holmium, neodymium, praseodymium, samarium, terbium and thulium, and (thd) is a tetramethylheptanedionate radical,

b. mixing with said vapor-laden carrier gas a reactant gas selected from the group consisting of vanadium-containing betadiketonates, hydrogen sulfide, sulfur vapor, and carbon sulfide,

c. contacting the vapor-laden carrier gas mixture with a substrate that is heated to temperatures in the range of 400° to 750°C until the substrate is coated with said luminescent film,

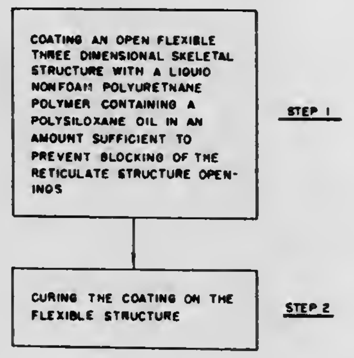
d. and then lowering the temperature of said substrate to room temperature.

3,894,165
COATED FLEXIBLE RETICULATE STRUCTURES AND METHOD FOR THE PREPARATION THEREOF
Lester W. Bates, Newark, Del., assignor to G. S. Staunton & Co., Inc., Royal Oak, Mich.

Filed May 23, 1973, Ser. No. 362,905
Int. Cl. B44d *1/44*
U.S. Cl. 427—244 **6 Claims**

1. The method for forming a rigid reticulate structure which comprises:

a. coating a core of a reticulate flexible three dimensional skeletal structure having openings between strands which form the structure with a liquid non-foam polyisocyanate derived polymer formed by mixing a polyisocyanate and a polyol having a hydroxyl number between 100 and 1,000 immediately prior to coating and which cures to a thin coating and containing in admixture therewith between about 0.1 and 10 parts by weight of polysiloxane oil per 100 parts by weight of the polyol so as to thinly coat the strands with polyurethane polymer witout blocking the openings between the strands; and


COATING AN OPEN FLEXIBLE THREE DIMENSIONAL SKELETAL STRUCTURE WITH A LIQUID NONFOAM POLYURETHANE POLYMER CONTAINING A POLYSILOXANE OIL IN AN AMOUNT SUFFICIENT TO PREVENT BLOCKING OF THE RETICULATE STRUCTURE OPENINGS
STEP 1
CURING THE COATING ON THE FLEXIBLE STRUCTURE
STEP 2

curing the polyurethane polymer coating to a rigid condition.

3,894,166
INTEGRAL REVERSE OSMOSIS MEMBRANE WITH HIGHLY PRESSED WOVEN FABRIC SUPPORT MEMBER
Barry M. Brown, and Walter D. Slowig, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 21, 1972, Ser. No. 282,219
Int. Cl.^{2} B44D *1/092*
U.S. Cl. 427—316 **5 Claims**

1. In a process for manufacturing semi-permeable integral cellulosic film membranes suitable for use in reverse osmosis processes, which process comprises the steps of

a. casting in the form of a film a concentrated cellulosic dope onto an elongated, permeable, casting and membrane support fabric;

b. exposing said film to a gaseous atmosphere for a sufficient period of time to develop an incipient active layer at the surface of the resulting partially evaporated layer of dope exposed to said gaseous atmosphere;

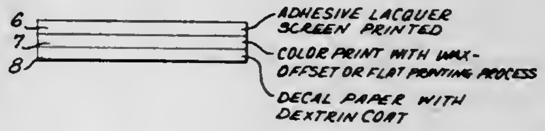
c. thereafter diverting the elongated fabric on which is coated said layer of dope into water to thereby cause said partially evaporated layer of dope to gel and form a wet membrane; and

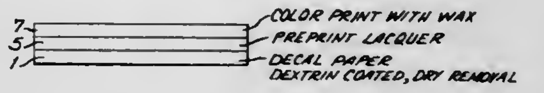
d. thereafter removing the resulting wet membrane and fabric from said bath as a substantially nonseparable semipermeable laminate, said concentrated dope being comprised of a blend of at least one cellulosic film-former selected from the group consisting of soluble film-forming cellulose esters, ethers and mixed ester ethers and at least one pore-producing material; said blend being dissolved in a volatile, water miscible solvent portion in which said fabric is insoluble;

the improvement therein being where the fabric comprises substantially unsized warp and fill strands of substantially continuous multifilaments of fiber-forming crystalline organic thermoplastic resin, said fabric being heat pressed to render it substantially completely free of interstices at the strand intersections, and the solvent consists essentially of an effective amount of acetic acid, formic acid, or a mixture of acetic and formic acids.

3,894,167
DECALCOMANIA FOR DECORATING CERAMIC WARE
Karl-Heinz Kluge, Mainz, and Alfred Eppich, Zirndorf, both of Germany, assignors to F. Xavier Leipold, Zirndorf, Germany

Filed Apr. 24, 1972, Ser. No. 246,964
Int. Cl.^{2} B44C *1/16*
U.S. Cl. 428—40 **10 Claims**


6
7
8
ADHESIVE LACQUER SCREEN PRINTED
COLOR PRINT WITH WAX-OFFSET OR FLAT PRINTING PROCESS
DECAL PAPER WITH DEXTRIN COAT

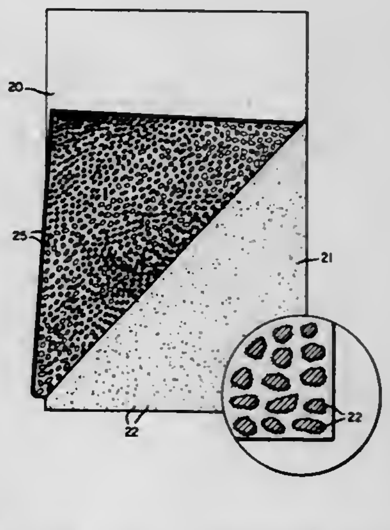


1. A decalcomania suitable for application to a ceramic substrate at high rate consisting essentially of a carrier layer, an overlying decal layer containing vitrifiable pigment and a thermoplastic resin, and an agent for facilitating the separation of said decal layer from said carrier layer, said agent consisting essentially of a member selected from the group consisting of a wax in said decal layer and a preprint lacquer layer between said decal layer and said carrier layer, said preprint lacquer layer containing a quantity of oil effective for facilitating said separation said wax being selected from the group consisting of polyethylene and polyethylene glycol.

10. A decalcomania suitable for application to a ceramic substrate at high rate consisting essentially of a carrier layer permeable to water and coated with dextrin or glue, an overlying decal layer containing vitrifiable pigment, wax, and a thermoplastic resin, and a finishing layer containing thermoplastic resin overlying said pigment-containing decal layer, said carrier being detachable from said decal layer by wetting said carrier subsequent to attaching said decalcomania to a substrate by heating.

3,894,168
PAPER COATING PIGMENT MATERIAL
Bruce W. Brockett, and Robert E. Miller, both of Dayton, Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Apr. 30, 1971, Ser. No. 139,118
Int. Cl.^{2} B41M *5/12*
U.S. Cl. 428—514 **21 Claims**



3. A dry, free-flowing, powder comprising particulate material consisting of water-insoluble, chemically neutral, paper-coating pigment particles a substantial portion of which have

adsorbed thereon an acid-colorable, water-insoluble, chromogenic, substantially colorless dye-precursor material.

13. A record sheet having a base web coated with water-insoluble, chemically neutral, paper-coating, mineral particles of minute size at least part of the particles having adsorbed thereon a water-insoluble, chromogenic, substantially colorless basic dye-precursor.

3,894,169

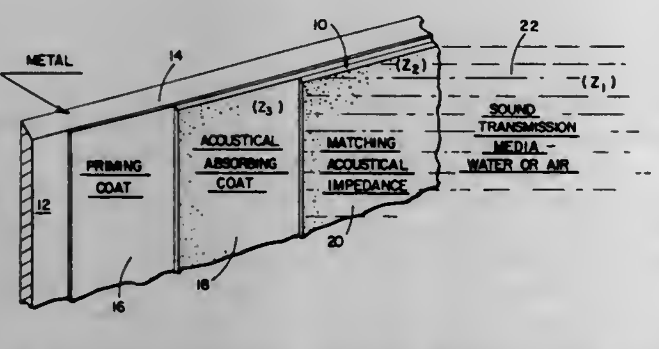
ACOUSTICAL DAMPING STRUCTURE AND METHOD OF PREPARATION

Darrow L. Miller, Los Angeles, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation-in-part of Ser. No. 227,590, Feb. 18, 1972, abandoned. This application July 13, 1973, Ser. No. 379,043

Int. Cl.² E04B *1/84;* **G10K** *11/04*

U.S. Cl. 428—425 **18 Claims**


METAL
14
10
22
(Z_2)
(Z_1)
(Z_3)
SOUND TRANSMISSION MEDIA - WATER OR AIR
ACOUSTICAL ABSORBING COAT
MATCHING ACOUSTICAL IMPEDANCE
PRIMING COAT
12
20
18
16

1. An acoustical damping structure effective over a wide frequency range comprising a substrate containing a composite coating, said composite coating consisting essentially of two coatings one positioned over the other, one of said coatings being a sound absorbing coating, said sound absorbing coating formed of an elastomer matrix containing particles of an inorganic filler in sufficient proportion such that said matrix containing said filler particles substantially completely absorbs sound waves entering said sound absorbing coating from an adjacent sound transmitting medium, said particles being selected from the group consisting of metal and siliceous particles, the other of said coatings being an impedance matching coating in the form of an organic polymeric material, said impedance matching coating being designed to match approximately the impedance of said sound absorbing coating to that of said adjacent sound transmitting medium, and permitting entry and passage of sound waves through said impedance matching coating without reflection and into said sound absorbing coating for absorption therein, said inorganic filler particles being present in a proportion of about 10 to about 50 percent by volume of said elastomer-filler particles mixture, and including said inorganic particles in said polymeric material of said impedance matching coating, in a proportion of from 0 to about 20 percent by volume of said polymeric material-filler particles mixture, said elastomer matrix of said sound absorbing coating being silicone elastomer, polyurethane, soft rubber, butyl rubber, buna or polyalkyl acrylates having alkyl groups of from 4 to 10 carbon atoms, said polymeric material of said impedance matching coating being silicone, polyurethane, soft rubber, butyl rubber, buna rubber elastomers, acrylic or epoxy resins, said metal particles being selected from the group consisting of aluminum, magnesium, beryllium, brass, nickel, copper, molybdenum, lead and tungsten particles, and said siliceous particles being selected from the group consisting of quartz, glass, borosilicate glass and porcelain powders.

ELECTRICAL

3,894,170

COMBINED INSULATING STRIP AND ELECTRICAL CONDUCTOR AND CONDUCTOR SUPPORT ASSEMBLY INCLUDING THE SAME

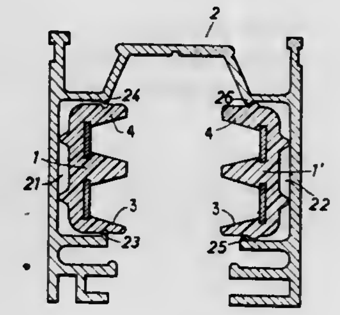
Hartmut Schinzel, Munchberg, Germany, assignor to Rehau-Plastiks GmbH, Rehau, Germany

Filed Dec. 20, 1973, Ser. No. 426,540

Claims priority, application Germany, Dec. 20, 1972, 7246552

Int. Cl. H01r *9/00;* **H02g** *5/04;* **B60m** *1/34*

U.S. Cl. 174—99 B **12 Claims**



7. In a conductor support assembly including: a carrier member having wall means that define a longitudinally extending holding channel; an insulating strip made of a hard synthetic material and having parallel spaced outer legs and a base interconnecting the legs, the base having a thickness and a reverse face and the outer legs having an external face, the legs and a portion of the strip base extending therebetween defining a longitudinally extending receiving channel; and a conductor held in the receiving channel of the insulating strip; the strip being inserted in and coextensively with the holding channel of the carrier member with the legs of the insulating strip oriented outwardly from the holding channel; the improvement comprising in combination:

a. a longitudinally extending rib provided on said reverse face centrally with respect to said receiving channel, said rib extending outwardly from said reverse face for increasing said thickness and being oriented toward said wall means of said carrier member;
b. oppositely oriented rib-like projections provided on said wall means of said carrier member and extending away therefrom; and
c. locking means provided on the external face of each said outer leg interlocking with each said rib-like projection and retaining said insulating strip in the holding channel of said carrier member.

9. In an assembly including a longitudinal, conductor-supporting insulating strip made of a hard synthetic material and having longitudinally extending parallel spaced outer legs and a base interconnecting the legs, the base having a thickness and a reverse face and the outer legs having an external face, the legs and a portion of the strip base extending therebetween defining a longitudinally extending receiving channel; and a conductor held entirely within the receiving channel of the insulating strip, the improvement comprising in combination:
a. a longitudinally extending rib provided on said reverse face centrally with respect to said receiving channel, said rib extending outwardly from said reverse face for increasing said thickness; and
b. locking means provided on the external face of said outer legs for interlocking with lateral rib-like projections of a holding channel in which said insulating strip is insertable.

3,894,171

ELECTRICAL TRANSFORMERS

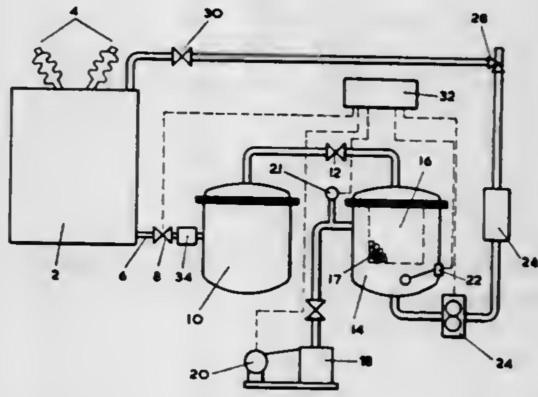
Roland Gregor Paul Kusay, Blechingley, England, assignor to The British Oxygen Company Limited, London, England

Filed Nov. 20, 1973, Ser. No. 417,559

Claims priority, application United Kingdom, Nov. 23, 1972, 54199/72

Int. Cl. H01b *9/06;* **B01d** *19/00, 39/00*

U.S. Cl. 174—14 R **2 Claims**



1. An oil insulated electrical transformer including a casing having an outlet permanently communicating its interior with vacuum degassing apparatus for treatment of the oil while the transformer is live, means for feeding oil to the degassing apparatus, and returning treated oil to the interior of the casing, either continually or intermittently, the degassing apparatus including a compartment containing packed column fillers over which the oil can flow in thin films, said compartment being connected to a vacuum pump, a control unit operatively connected between the compartment and vacuum pump to turn the vacuum pump on when the pressure in the compartment is above a chosen maximum; and to turn the pump off when the pressure is below a chosen minimum, a valve located at the outlet of the casing and controlling flow of oil from the interior of the casing, said control unit opening the valve when the contamination in the oil in the casing reaches a chosen level, and a second valve located at the inlet of the casing and controlling the flow of treated oil toward the interior of the casing.

3,894,172

MULTICABLE TELEPHONE CABLE IN A COMMON SHEATH

Ludwik Jachimowicz, Elizabeth, and Jerzy Adam Olszewski, Edison, both of N.J., assignors to General Cable Corporation, Greenwich, Conn.

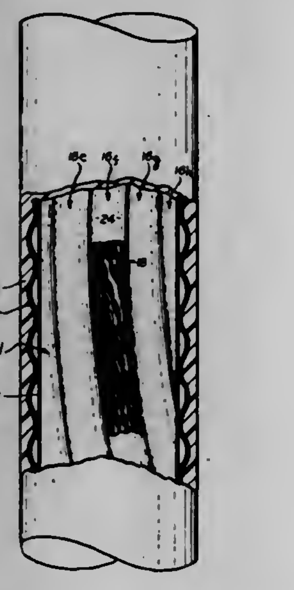
Filed Nov. 6, 1973, Ser. No. 413,206

Int. Cl. H01b *11/00*

U.S. Cl. 174—34 **10 Claims**

1. A communication cable including in combination a number of conductor pairs, each of which includes two conductors twisted together along a course which is a helix, and each pair having the pitch of its helix different from that of the other pairs, the helix differences being greater than 0.15 inch, means holding the pairs bundled together in a unit, a conducting shield around the unit, a plurality of like units shielded

from one another by their respective shields and cabled together to form a core for the cable, and a common enclosure surrounding all of the units and holding them together in the communication cable.



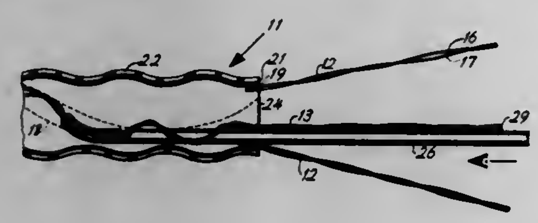
3,894,173
METHOD OF APPLYING TELEPHONE PAIR IDENTIFICATION SLEEVE, SLEEVE, AND REELED CABLE COMPRISING SAME

Franklin D. Andrews, Eden, N.C., assignor to The Anaconda Company, New York, N.Y.

Filed July 24, 1974, Ser. No. 491,579

Int. Cl. H01b *7/36;* **H02g** *15/04;* **G09f** *3/00*

U.S. Cl. 174—74 R **14 Claims**



1. The method of identifying a defective pair in a sheathed telephone cable comprising a plurality of helically cabled conductor pairs and having at least one defective pair, comprising the steps of:

A. removing a portion of the sheath from an end of said cable,

B. providing a tubular sealing cover having a selected length closed at one end, for said cable,

C. providing a smooth flexible sleeve for identifying said defective pair, said sleeve comprising a wall defining a notch at a selected distance along the length thereof opening into said sleeve,

D. inserting an end of said defective pair into one end of said sleeve, withdrawing said end of said defective pair radially through said notch and leaving a portion of said sleeve free from said defective pair,

E. while holding said end of said defective pair taut, gripping said free portion and therewith urging said sleeve into the sheathed portion of said cable along the helix of said defective pair, to a depth exceeding said length of said cover,

F. cutting said pairs and said sleeve at a section substantially flush with a cut end of said sheath, and

G. fitting and fastening said cover over said sheath thereby sealing said end of said cable.

3. A plastic sleeve for insertion into a cable around a helically stranded telephone pair comprising a tubular wall of polymeric material, said wall defining a close fitting passageway for said pair, said sleeve being tapered at one end thereof, said wall comprising a notch defining an opening therethrough for said pair said notch sloping radially outwardly away from the tapered end of said sleeve, said sleeve being sufficiently stiff for insertion into said cable by means of a force applied to said sleeve on a portion remote from said notch and said sleeve being sufficiently flexible to follow the helix of said pair.

9. A coil of sheathed telephone cable comprising a large plurality of insulated conductor pairs, of said pairs at least one being selected for marking, tubular covers sealing both ends of said cable and extending over said cable for substantial distances at said ends, polymeric sleeves having notches within said cable at both ends thereof, portions of said sleeves covering said selected pair forward of said notches and portions of said sleeves being free from said pair rearward of said notches, said sleeves extending to the ends of said cable and said portions of said sleeves covering said selected pair forward of said notches being within said cable and extending beyond the distances covered by said covers.

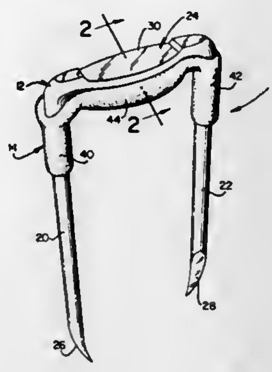
3,894,174
INSULATED STAPLE AND METHOD OF MAKING THE SAME

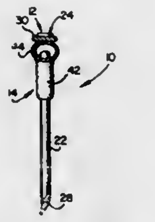
Walter P. Cartun, Avon, Conn., assignor to Emhart Corporation, Hartford, Conn.

Filed July 3, 1974, Ser. No. 485,426

Int. Cl. H01b *17/00;* **F16b** *15/00;* **B21g** *7/02*

U.S. Cl. 174—159 **10 Claims**





1. A method of making an insulated staple comprising the steps of:

providing a U-shaped body member having two spaced and generally parallel legs and a bridging section connected to one end of each leg opposite the spaced, free ends of the legs, the free ends being pointed;

providing a flexible tube formed from an insulating material and having a predefined length between the axial ends of the tube less than the combined lengths of the two parallel legs and the bridging section of the body member, and greater than the length of the bridging section alone;

piercing the pointed, free ends of the parallel legs on the body member through one side wall of the tube into the hollow tube interior at an intermediate portion of the tube between the opposite end portions of the tube;

bending the flexible tube into a U-shaped configuration with the opposite end portions of the tube substantially in alignment with the parallel legs of the body member respectively; and,

then forcing the parallel legs of the body member and the end portions of the bent tube relative to one another to slide the end portions of the tube coaxially onto the respective legs of the body member.

8. An insulated staple for anchoring objects to a base comprising:

a generally U-shaped body member having substantially parallel legs, each leg being pointed at its free end for penetration into a support, and a bridging section joining the legs; and

a non-metallic, flexible tube bent in a U-shaped configuration and mounted on the U-shaped body member with opposite end portions of the tube positioned coaxially on the respective legs of the body member, completely encircling the portions of the respective legs adjacent the bridging section and exposing the ends of the legs, the tube also including an intermediate portion having a tubular cross section connecting the end portions and extending under the bridging section between the legs to line a substantial part of the inner periphery of the U-shaped body member and to provide a double layer of insulation between the bridging section and a captured object.

3,894,175
LINE CONTROL UNIT FOR TELEPRINTERS

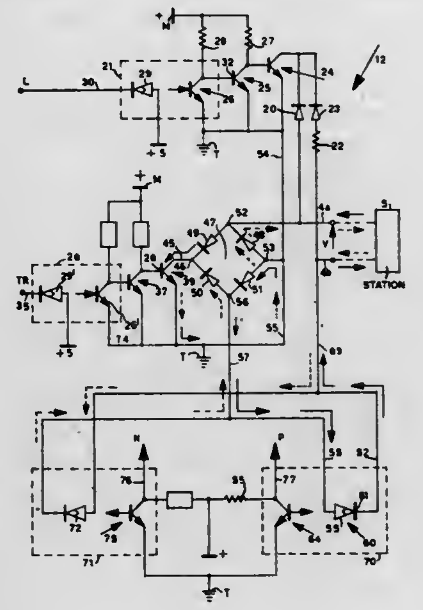
Giovanni Zaffignani, Ivrea, and Oscar Mannocchi, Torino, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea (Torino), Italy

Filed Nov. 16, 1973, Ser. No. 416,571

Claims priority, application Italy, Dec. 22, 1972, 71041/72

Int. Cl. H04l *25/02*

U.S. Cl. 178—2 R **3 Claims**



1. A line control unit for connecting a teleprinter to a transmission line comprising:

a switching circuit for defining different operation modes of the teleprinter by means of a pair of command signals,

a first combination of said pair of signals (L=0, TR=1) indicating a local operation mode, a second combination (L=1, TR=0) of said pair indicating a request for transmission mode,

an actuating circuit for modulating the amplitude of the electrical current flowing on said line from a first value to a second value according to the mode indicated by said couple of signals, and

a pair of optoelectronic coupling circuits for supplying said actuating circuit with a pair of control signals associated with said pair of command signals and for providing an electrical isolation between said switching circuit and said actuating circuit, wherein said actuating circuit comprises:

a first electronic switch disposed in series with said line through a resistor and having a control input via one of said pair of optoelectronic coupling circuits responsive to one control signal of said pair of signals for modulating the amplitude of said line current to said first value,

a second electronic switch disposed in series with said line and in parallel with said first electronic switch and responsive via the other of said optoelectronic coupling circuits to the other control signal of said pair for modulating the amplitude of said line current to said second value.

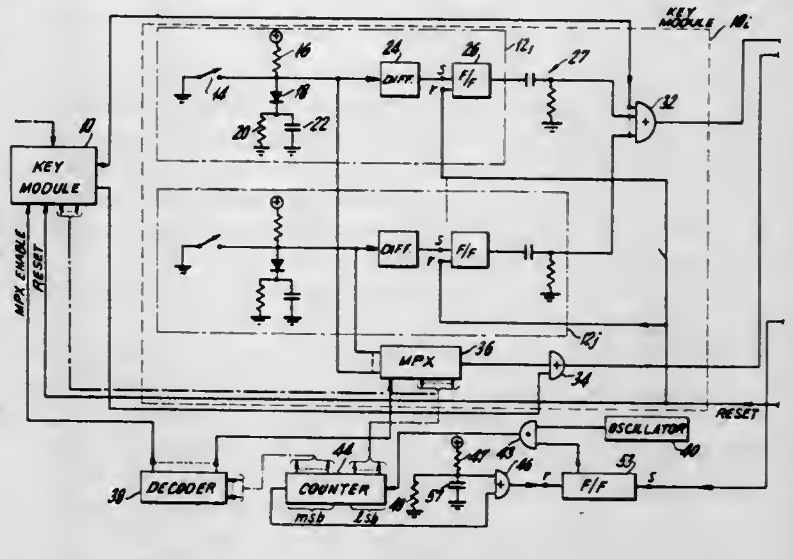
3,894,176
PREMIUM VIDEO DISTRIBUTION SYSTEM

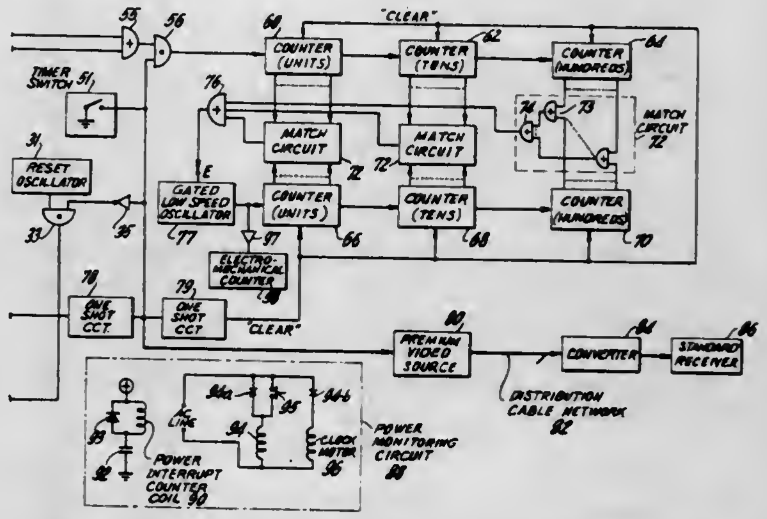
Regis Benedict Mellon, St. Petersburg, Fla., assignor to Digital Communications, Inc., St. Petersburg, Fla.

Filed Apr. 19, 1974, Ser. No. 462,581

Int. Cl. H04n *1/44*

U.S. Cl. 178—5.1 **10 Claims**





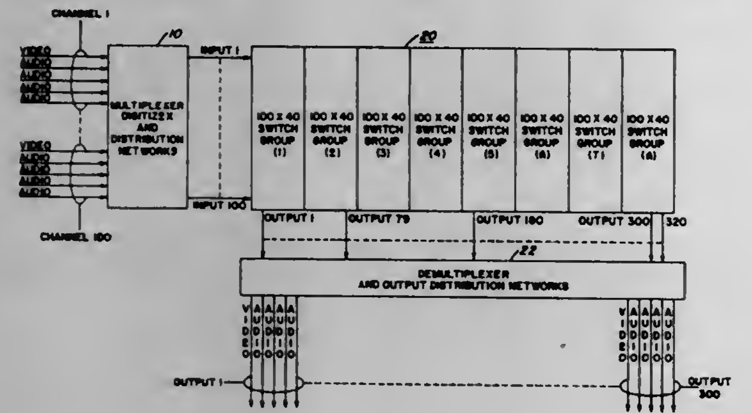
1. In combination in a key monitoring system, a plurality of key securing lock switches, each having electrical contacts exhibiting a closed or open state depending upon the presence of an associated key thereon, lock switch contact monitoring means connected to said lock switch contacts for supplying an output pulse when a key is removed from any of said lock switches, multiplex means having plural inputs connected to said lock switch electrical contact monitoring means, addressing means connected to said multiplex means for serially

gating onto a multiplexed output port the state of said plural lock switch electrical contacts, disjunctive logic means for providing an output responsive to an output of either said key removal pulse supplying means or an output of said multiplexing means, and key counting means for counting the outputs of said disjunctive logic means.

3,894,177
SIGNAL DISTRIBUTION SYSTEM

Norman E. Howell, Russell G. Thompson, and Eric R. Woods, all of San Diego, Calif., assignors to General Dynamics, St. Louis, Mo.

Filed Mar. 23, 1973, Ser. No. 344,374
Int. Cl.^{2} H04N *7/00*
U.S. Cl. 178—5.6 8 Claims


CHANNEL 1
VIDEO
AUDIO
AUDIO
AUDIO
AUDIO
10
MULTIPLEXER DIGITIZER AND DISTRIBUTION NETWORKS
INPUT 1
INPUT 100
20
100 X 40 SWITCH GROUP (1)
100 X 40 SWITCH GROUP (2)
100 X 40 SWITCH GROUP (3)
100 X 40 SWITCH GROUP (4)
100 X 40 SWITCH GROUP (5)
100 X 40 SWITCH GROUP (6)
100 X 40 SWITCH GROUP (7)
100 X 40 SWITCH GROUP (8)
CHANNEL 100
OUTPUT 1
OUTPUT 79
OUTPUT 180
OUTPUT 300
320
22
DEMULTIPLEXER AND OUTPUT DISTRIBUTION NETWORKS
VIDEO
AUDIO
OUTPUT 1
OUTPUT 300

1. For use in a television terminal or the like having switching means for distributing a plurality of input channels to a plurality of outputs, said input channels each including a plurality of analog signals, one of which is a video signal which occupies a certain frequency baseband and another of which is another analog signal, multiplexing apparatus for each of said channels which comprise:

a. means for converting at least said other analog signal into digital signals,
b. means responsive to said digital signals for providing a modulated signal corresponding thereto in a frequency band displaced above the band of said video signal,
c. means for additively combining said video signal and said modulated signal to provide a multiplexed signal with the video signal accompanying said modulated signal, said video signal occupying its baseband and the modulated signal corresponding to said other analog signal a band above said baseband, and
d. means for applying said multiplexed signal from said combining means separately in its respective input channel to said switching means.

3,894,178
IMAGE REPRODUCTION METHOD AND APPARATUS

Peter C. Pugsley, Pinner, England, assignor to Crosfield Electronics Limited, London, England

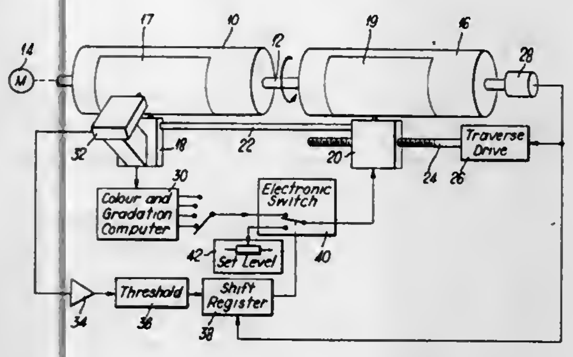
Filed Nov. 13, 1973, Ser. No. 415,428
Claims priority, application United Kingdom, Nov. 13, 1972, 52351/72
Int. Cl. H04n *1/38*
U.S. Cl. 178—6 6 Claims

1. Apparatus for use in the reproduction of an original, comprising a first scanning head including first photo-electric means for scanning an original, element by element, with a first aperture to provide a signal representing the density values of successively scanned elements on the original image, the image-representing signal constituting a control signal for a scanning image-reproduction device, the apparatus additionally comprising:

a second scanning head including second photo-electric means for scanning the said original with a second aperture larger than the first aperture and covering an area of the original larger than the element scanned by the first scanning head, the second scanning head being arranged to precede the first scanning head in the scanning of the original;

means responsive to a signal on said second photo-electric means having a value distinguishable from the image-representing signals to generate a replacement control signal;

replacement means responsive to a replacement control signal to replace an image-representing signal for a scanned element of the original by a signal having a predetermined value;



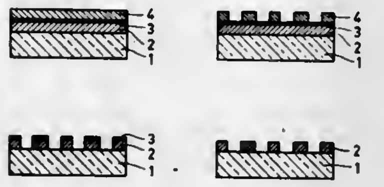
and a delay device to delay the operation of the replacement means in response to a distinguishable signal from the second photo-electric means, corresponding to an area scanned by the second scanning head, until the output of the first photo-electric means represents the density value of an element within said area;

whereby when defects in the original are so painted that they result in a distinguishable signal from said second photo-electric means, the signal of predetermined value constitutes the control signal for the scanning image-reproduction device for said element and the defects are omitted from the reproduction.

3,894,179
METHOD OF MANUFACTURING AN INFORMATION CARRIER

Bernardus Antonius Johannus Jacobs; Johannes Van Der Wal, and Gerrit Berend Gerritsen, all of Emmingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 344,636, March 26, 1973, abandoned. This application Mar. 26, 1973, Ser. No. 344,865
Claims priority, application Netherlands, Sept. 5, 1972, 7212045
Int. Cl. H04n *5/76*
U.S. Cl. 178—6.6 R 8 Claims

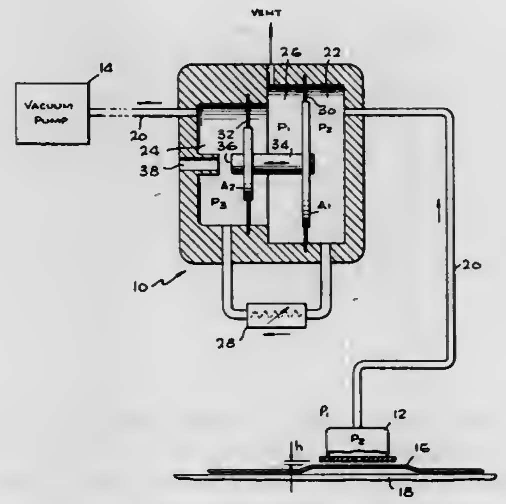


1. Method of manufacturing a disk-shaped information carrier provided with a substantially spiral information track, comprising the steps of coating a disk-shaped information carrier with an etchable base material having a predetermined height, coating the base material with a relatively thin metal layer, coating the metal layer with a photoresist, rotating the disk relative of a point source of radiation, in particular the beam of radiation emitted by a laser, intermittently exposing the photoresist for variable periods which correspond to the information, developing the photoresist, and etching the photoresist and exposed portions of the metal layer and base material.

3,894,180
HEAD HEIGHT CONTROL SYSTEM

Lawrence S. Canino, Los Angeles, Calif., assignor to MCA Disco-Vision, Inc., Universal City, Calif.

Filed Nov. 5, 1973, Ser. No. 413,165
Int. Cl. G11b *7/12, 15/64, 21/20*
U.S. Cl. 178—6.6 R 22 Claims



1. For use with an information handling system in which a transducer head assembly and a surface of an information bearing medium are immersed in fluid and are relatively movable with respect to each other to form a dynamic fluid bearing therebetween, a combination for maintaining a predetermined spacing between the transducer head assembly and the surface of the information bearing medium, said combination comprising:

a first fluid flow restricting conduit, said first conduit having predetermined fluid flow resistance characteristics and having first and second end portions, said conduit having its first end portion carried by the transducer head assembly and communicating with fluid in the spacing between the transducer head assembly and the surface of the information bearing medium;

a source of fluid at a variable controllable pressure;

a second fluid flow restricting conduit having a fluid flow resistance characteristic which has a predetermined relation to the fluid flow resistance characteristic of said first conduit, said second conduit being intercoupled between said source of fluid and the second end portion of said first conduit for series flow of fluid through said first and second conduits to said source; and

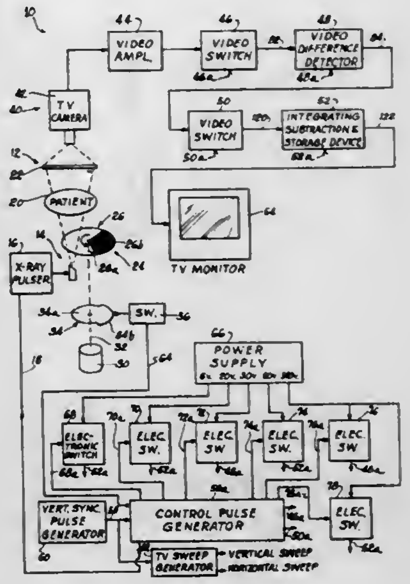
control means for controlling fluid pressure of said source, said control means being coupled to said first conduit and to said source of fluid and responsive to changes in fluid pressure in first conduit for varying the fluid pressure of said source to vary the fluid flow rate through said first and second conduits,

whereby changes in transducer head spacing are automatically corrected by varying flow rate through said first and second conduits in response to the corresponding pressure changes in the first conduit.

3,894,181
DIFFERENTIAL ENHANCEMENT OF PERIODICALLY VARIABLE IMAGES

Charles A. Mistretta, and Michael G. Ort, both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed June 14, 1973, Ser. No. 369,824
Int. Cl. H04n *7/18*
U.S. Cl. 178—6.8 14 Claims



1. Differential imaging apparatus,
comprising image producing means for alternately producing first and second sequential image with identical portions and differential portions,
means including a television system for converting said first and second images into first and second video signals,
a video difference detector,
means for sequentially supplying said first and second video signals corresponding to the first and second images to said video difference detector,
said detector being operative to produce a first differential video signal corresponding to the difference between said first and second video signals,
an image storage device,
first writing means for writing an image in a positive sense on said image storage device corresponding to said first differential video signal,
means for deriving a second differential video signal from said video difference detector corresponding to the difference between said second and first video signals,
second writing means for writing a second image in a negative sense on said image storage device corresponding to said second differential video signal whereby said image storage device additively integrates the differential portions of said differential video signals while subtractively combining the non-differential portions thereof,
reading means for reading the integrated image stored in said image storage device,
and display means for displaying said integrated image.

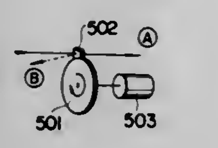
3,894,182
PICTURE REPRODUCING APPARATUS

Manabu Yamamoto, Odawara; Akira Hashimoto, Ohme, and Hideyuki Horiuchi, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 27, 1973, Ser. No. 391,838
Claims priority, application Japan, Aug. 25, 1972, 47-84547
Int. Cl. H04n *1/04*
U.S. Cl. 178—7.6 6 Claims

1. In a picture reproducing apparatus including a light beam source, a light modulating device positioned to modulate the

intensity of said light beam from said light beam source in correspondence with a predetermined video signal, and light receiving means for receiving the light beam modulated by said light modulating device, the improvement comprising optical path control means arranged between said light modulating device and said light receiving means for directing said modulated light beam along a first optical path to said light receiving means during a period for reproducing the video signal on said light receiving means and directing said modulated light beam along a second optical path away from said light receiving means during a retrace period, light detector means arranged on said second optical path of said modulated light beam for detecting the intensity of said modulated light beam in said second optical path, and input adjustment means for adjusting the operating point of said light modulating device in response to the output of said light detector means.



3,894,183

STYLUS ACTUATED ELECTRICAL DEVICES

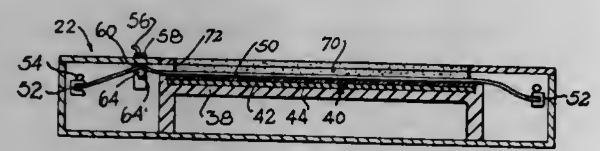
Benjamin J. Barish, 29 Benzalel St., Tel Aviv, Israel

Continuation of Ser. No. 265,985, June 26, 1972, abandoned. This application July 22, 1974, Ser. No. 490,682

Claims priority, application Israel, June 30, 1971, 37197

Int. Cl. G08b *5/22*

U.S. Cl. 178—18 **11 Claims**



1. An electrical switching device comprising a supporting member carrying at least one electrically conductive element, and a flexible sheet member carrying at least one electrically conductive element placeable on top of the supporting member with the two conductive elements facing each other, at least one of said members including a coating of insulating material to insulate the conductive elements from each other when the flexible sheet member is placed on top of the supporting member, said insulating coating being of a soft, pressure-flowable material which parts under the pressure of a stylus upon the application thereof to the flexible sheet member to thereby bring the two conductive elements into contact with each other, said insulating coating also being tacky to hold the two conductive elements in contact with each other upon removing the pressure of the stylus, the flexible sheet member being separable from the supporting member to interrupt said contact.

3,894,184

TIME DIVISION MULTIPLEX SUBSCRIBER CIRCUIT

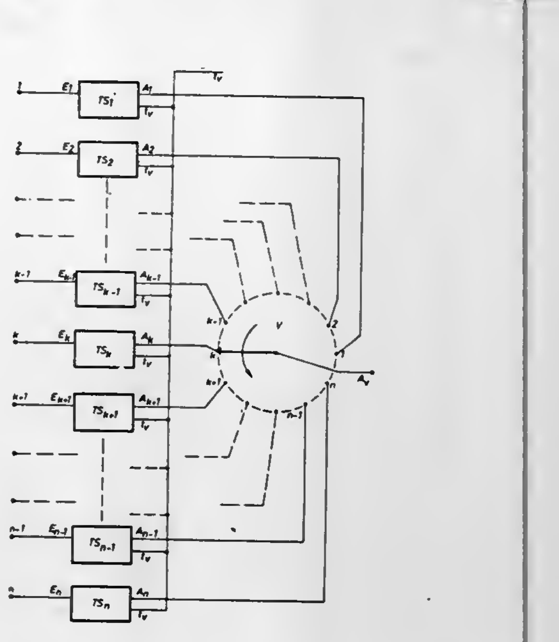
Herbert Aulhorn, Leonberg, and Harry Schulz, Stuttgart, both of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Apr. 8, 1974, Ser. No. 458,634

Claims priority, application Germany, Apr. 27, 1973, 2321469

Int. Cl. H04l *5/00*

U.S. Cl. 178—50 **5 Claims**



1. In a time-division-multiplex circuit arrangement including a transmitter-distributor, and a source of multiplex clock rate pulses and incoming dial and teleprinter character signals, a time-division-multiplex subscriber circuit comprising:

means for bit-wise transfer of the teleprinter character and dial signals according to a counting code and into the transmitter-distributor cycle, said transfer means including a buffer for storing the signals at the multiplex clock rate and with a delay, and a counting device for counting the clock rate pulses and ending the setting of the buffer after the counting device has reached a predetermined counting value, whereby said counting value is determined by the direction of the change of polarity of said signals at the beginning of counting.

3,894,185

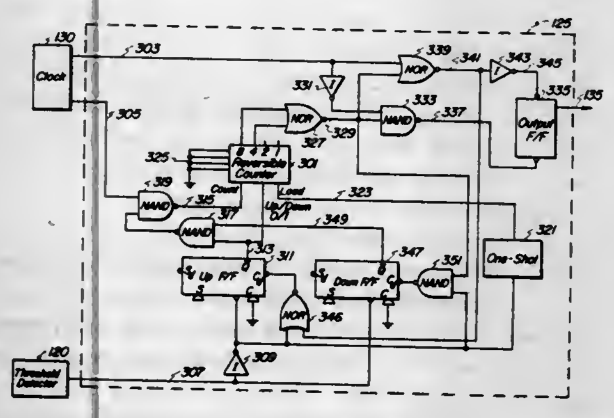
DIGITAL RUN LENGTH SYNCHRONIZER

Bruno J. Vieri, Dallas, Tex., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 6, 1974, Ser. No. 448,592

Int. Cl. H04l *7/00*

U.S. Cl. 178—69.5 F **7 Claims**



1. Apparatus for converting an asynchronous binary input signal into a binary output signal having transitions synchronous with a clock signal comprising

memory means responsive to a first transition of said input signal and pulses of said clock signal for storing an indication of the time displacement between said first transition and a succeeding clock pulse,

means initiating an output signal synchronous with a clock pulse when said stored displacement is greater than a predetermined amount,

means responsive to a second transition of said input signal for controlling said memory means to decrement said stored indication by the time displacement between said second transition and a succeeding clock pulse, and

means terminating said output signal synchronous with a clock pulse when the decremented indication is less than said predetermined amount.

3,894,186

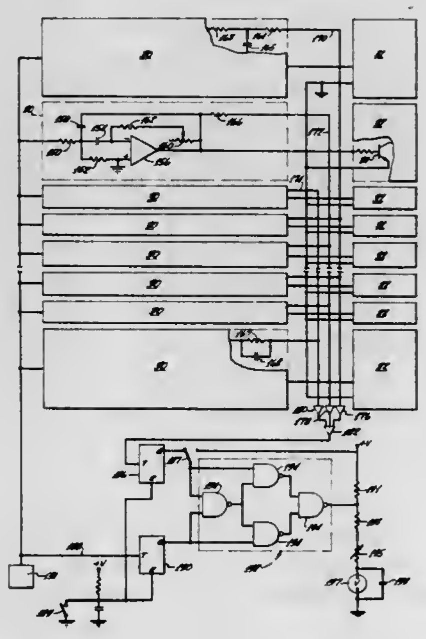
TONE ANALYSIS SYSTEM WITH VISUAL DISPLAY

Thomas D. Humphrey, Silberado, and John H. Humphrey, Los Angeles, both of Calif., assignors to Sound Sciences Inc., Santa Ana, Calif.

Continuation-in-part of Ser. No. 299,189, Oct. 20, 1972, abandoned. This application Aug. 30, 1973, Ser. No. 393,033

Int. Cl.^{2} G09B *15/02;* **G10L** *1/00*

U.S. Cl. 179—1 SA **3 Claims**



1. A device for identifying sound waves having different frequencies which comprises:

sound wave responsive means;

means comprising filters for separating waves of different frequencies appearing at the output of the sound wave responsive means;

means activated by said wave separating means for individually and visually identifying the sound waves; and

means for indicating relative conformity of said waves with the center frequency of the filters by comparing the phase of said waves at the input and output of said filters.

3,894,187

CIRCUIT FOR COMPARING AT LEAST TWO INPUT SIGNALS TO GENERATE CONTROL SIGNALS

Shinichi Shibata, and Takashi Saeki, both of Tokyo, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kanagawa-ken, Japan

Filed Oct. 31, 1973, Ser. No. 411,200

Int. Cl. H04m *1/60;* **H01h** *47/02*

U.S. Cl. 179—1 HF **10 Claims**

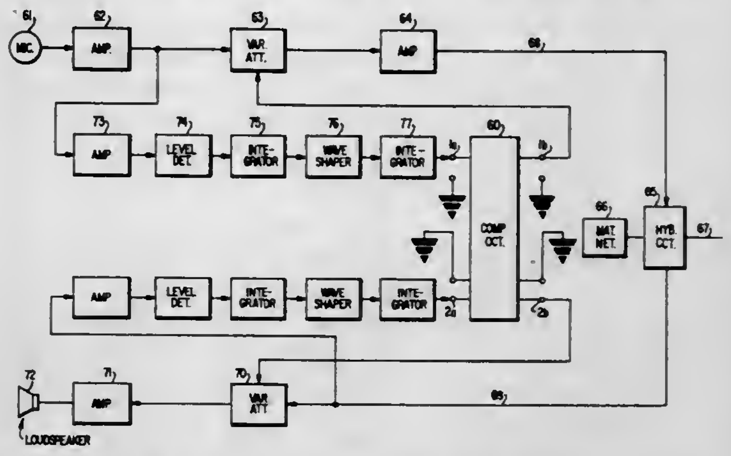
1. A loud-speaking telephone system including:

detecting means for detecting, transmitting and receiving voice signals;

transmitting and receiving variable attenuators; and,

circuit means for comparing signals detected by said detecting means to generate control signals for said variable attenuators,

said circuit means comprising first and second input terminals connected to said detecting means, first and second output terminals connected to said attenuators, a first transistor circuit connected to said first input terminals and to said first output terminals, a second transistor connected to said second input terminals and said second output terminals, first means for turning said second transistor off when said first transistor is conductive, and second means for turning said first transistor off when said second transistor is conductive, whereby the respective amounts of attenuation of said attenuators are controlled in accordance with said control signals.



3,894,188

REMOTE CONTROL DEVICE FOR AN AUTOMATIC TELEPHONE ANSWERING APPARATUS

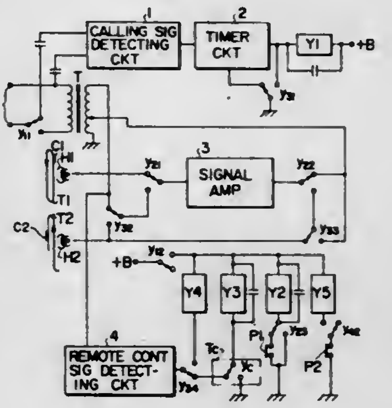
Akira Konno, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. Nos. 213,616, Dec. 29, 1971, abandoned, and Ser. No. 247,648, April 26, 1972, abandoned. This application Jan. 16, 1974, Ser. No. 433,636

Claims priority, application Japan, Dec. 30, 1970, 45-127693; Apr. 30, 1971, 46-29312

Int. Cl. Ho4m *1/64*

U.S. Cl. 179—6 E **14 Claims**



1. A remote control device for use with an automatic telephone answering apparatus, including a tape transport mechanism having a magnetic recording tape and a record/playback head for playing back previously recorded messages, said device comprising:

a. a remote control signal detecting means coupled to said answering apparatus for detecting a predetermined control signal,

b. counter means driven by said tape transport mechanism to count in a forward direction when said tape is advanced during either recording or playback modes and to count in a decreasing direction when said tape is reversed in a rewind mode,

c. reset means controlled by the initiation of said control signal detected by said detecting means for resetting said counter means to a predetermined initial count,

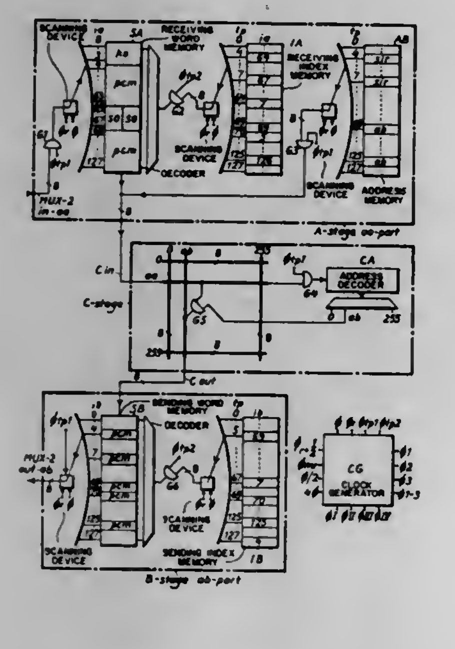
d. mode control means operable in response to the detection of said control signal by said detecting means for putting said tape transport mechanism in a rewind mode and to put said tape transport mechanism in a playback mode, and

e. switch means in said counter means and actuated by said counter means when said counter means returns to said predetermined initial count during the playback mode for returning said answering apparatus to a standby state.

3,894,189
METHOD OF OPERATING FILE GATES IN AN EXCHANGE FOR PCM WORDS

Nils Herbert Edstrom, Stockholm; Stig Gustaf Wilhelm Lindqvist, Enskede, and Erik William Sparrendahl, Handen, all of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Jan. 22, 1973, Ser. No. 325,639
Claims priority, application Sweden, Feb. 8, 1972, 1443/72
Int. Cl. H04q *11/04*
U.S. Cl. 179—15 AT **3 Claims**

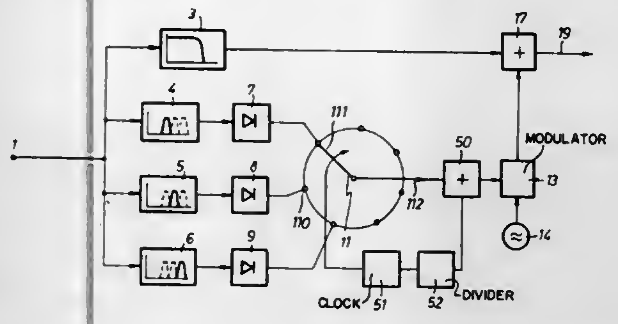


1. In an exchange wherein PCM words in a time divison multiplex format are transferred from incoming transmission links to a first time stage and from the first time stage, during time slots, on files via a space stage to a second time stage and hence to outgoing transmission links a method for operating the file gates of the exchange comprising the steps of dividing each time slot into two parts, transmitting to an address register in the space stage during the first part of a time slot an address allotted to one of the files outgoing from the space stage, transmitting to the space stage during the second part of a time slot the actual PCM word, storing in said address register said address and decoding the contents of said address register to generate one of a plurality of control signals, each of said control signals being associated with a particular address during the respective time slot, and activating, by means of the generated control signal an associated file gate which connects the file on which the address and the PCM word have been transmitted to the outgoing file identified by the address.

3,894,190
SYSTEM FOR TRANSFERRING WIDE-BAND SOUND SIGNALS

Gerhard Günter Gassmann, Berkheim, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Jan. 30, 1974, Ser. No. 438,124
Claims priority, application Germany, Feb. 28, 1973, 2309987; Apr. 26, 1973, 2321230
Int. Cl. H04j *3/18*
U.S. Cl. 179—15.55 R **17 Claims**



17. A system for transferring wide-band sound signals over a narrow frequency range, comprising:

a transmitter including means for receiving the sound signals, means for dividing the received sound signals into a lower frequency range and a plurality of higher frequency ranges, means for providing amplitude signals corresponding to the amplitude of the signals of each of the higher frequency ranges, means for providing at least one pilot frequency signal, means for positively modulating the pilot frequency signal with the amplitude signals in such a way that on a time average the amplitude of the modulated pilot signal is lowered with respect to the amplitude of the lower frequency range signals by an amount corresponding to the limit of perceptibility, and means for transferring the signals of the lowered frequency range and the modulated pilot frequency signal whereby the lower frequency range signals may be received and reproduced by existing receivers while the pilot frequency signal is inaudible in existing receivers; and

a receiver including means for receiving and demodulating the modulated pilot frequency signal to provide amplitude signals corresponding to the amplitudes of the signals in the high frequency range, means for providing synthetic signals having frequencies approximately equal to the mid-range frequency of each higher frequency range, means for modulating each synthetic signal with the appropriate amplitude signal, and means for receiving and reproducing the modulated synthetic signals and the directly transferred low frequency range signals.

3,894,191
SCANNER EMPLOYING SEQUENTIALLY ACCESSIBLE MEMORY

Dennis Joseph Sassa, Englishtown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 21, 1974, Ser. No. 499,122
Int. Cl.² H04M *3/22*
U.S. Cl. 179—18 FG **1 Claim**

1. In a traffic service position system having a plurality of trunks and a plurality of operator positions,

a first plurality of scan points respectively associated with said plurality of operators' positions and each indicating service request information for the position associated therewith;

a second plurality of scan points respectively associated with said plurality of trunks over which calls are instituted by the conveyance thereover of digits in the form of groups of pulses, each of said second plurality of scan points indicating the on- or off-hook state of the trunk associated therewith;

a sequentially accessible memory storing a first plurality of words respectively associated with said plurality of positions and storing a second plurality of words respectively associated with said plurality of trunks, said memory comprising

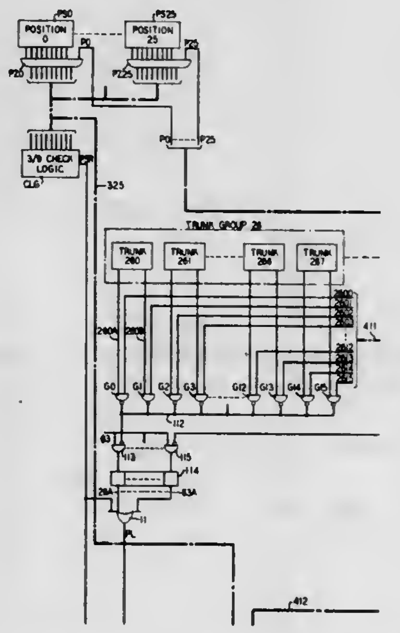
a first group of shift registers storing prior state information specifying the state of each of said positions and trunks at each of two previous interrogations thereof,

a second group of shift registers storing timing information associated with pulse, interdigit, and disconnect timing,

a third group of shift registers storing pulse count information specifying the number of pulses in each group of pulses received over said trunks,

a fourth group of shift registers storing information specifying whether each call is in a pulse-disconnect timing mode or an interdigit timing mode,

said words stored in said memory including information in each of said groups of shift registers;



means for controlling said four groups of shift registers to output said words in sequential order;

means for interrogating each said scan point concurrent with the outputting of the word associated therewith from said memory; and

logic means jointly responsive to the state of an interrogated scan point and to said output word associated with said interrogated scan point for generating reports indicating either

1. seizure of the trunk associated with said interrogated scan point,
2. the end of a digit received over the trunk associated with said interrogated scan point and the number of pulses therein,
3. release of the trunk associated with said interrogated scan point, or
4. a service request from an operator's position associated with said interrogated scan point.

3,894,192
DX SIGNALING CIRCUIT

Otto G. Wisotzky, San Francisco, Calif., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed July 29, 1974, Ser. No. 492,666
Int. Cl. H04m *7/10*
U.S. Cl. 179—18 AH **10 Claims**

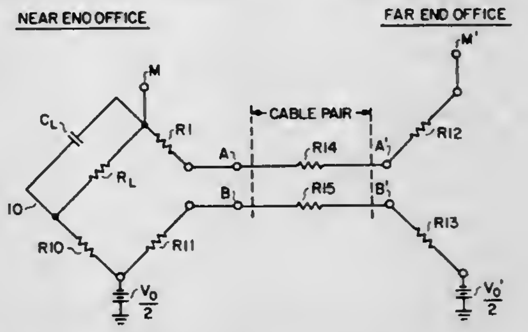
1. In a telephone signaling system, appartus for detecting the polarity of signaling voltages applied over a cable pair, and said apparatus comprising:

an input port having terminals (A and B) for connection to a cable pair;

a first resistor and a capacitor connected in parallel having a terminal (**10**) at one end, and terminal (M) at the other end, and the parallel combination having an impedance (Z_{RC});

a second resistor of resistance (**R1**), having one end connected to said terminal (A), and the other end connected to said terminal (M);

first means providing first and second voltage generators, said first voltage generator having a source impedance (**R10**) and having an output terminal connected to said terminal (**10**), and said second voltage generator having a source impedance (**R11**) and having an output terminal connected to said terminal (B);



second means having only two inputs and one output, providing a voltage summation of the voltages appearing on the inputs, one input connected to said terminal (A), and the second input connected to said terminal (**10**);

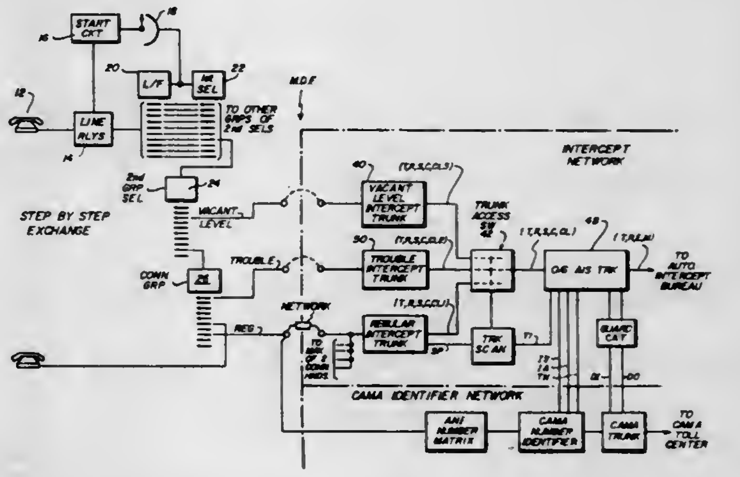
third means having only two inputs and one output, providing a voltage summation of the voltages appearing on said inputs, one input connected to said terminal (M), and the second input connected to said terminal (B); and

fourth means determining the voltage difference between only two inputs, one input connected to the output of said second means and the other input connected to the outut of said third means.

3,894,193
TELEPHONE INTERCEPT APPARATUS

Hari Keshav Puranik, Milan, and James Lawrence Stepan, Humboldt, both of Tenn., assignors to International Telephone & Telegraph Corporation, New York, N.Y.

Filed May 15, 1974, Ser. No. 470,054
Int. Cl. H04m *3/52*
U.S. Cl. 179—27 FG **5 Claims**



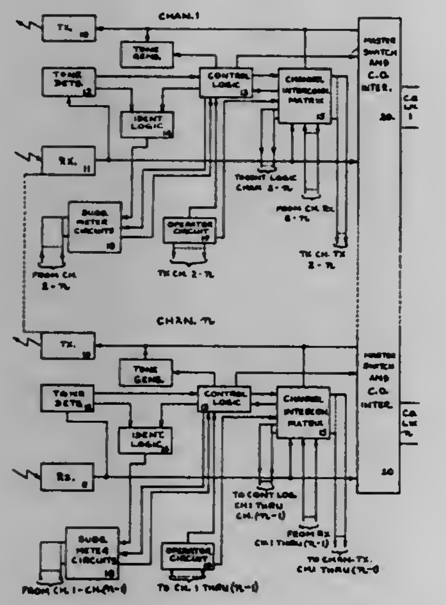
1. An intercept apparatus for a multiple exchange network comprised of at least one step-by-step exchange and centralized intercept equipment and apparatus coupled to the plural leads of a terminal of a final switch in said step exchange for providing intercept service for calls directed to said terminal, said apparatus including means for connecting certain of the leads from said terminal directly to equipment for forwarding

said call from said exchange toward said intercept equipment, and other means interposed in another one of said leads from said terminal directed toward said equipment in which said final switch includes means for switching through a call and a guard means both connected to said one other lead, said interposed means preventing operation of said switch-through relay and permitting operation of said guard relay on the occurrence of a call to said terminal whereby to prevent ring current being sent to said terminal.

3,894,194
AUTOMATIC MOBILE RADIO TELEPHONE SYSTEM

Edward G. Frost, 12000 Old Georgetown Rd., Rockville, Md. 20852

Filed Feb. 16, 1973, Ser. No. 333,142
Int. Cl.² H04M *5/08*
U.S. Cl. 179—41 A **45 Claims**



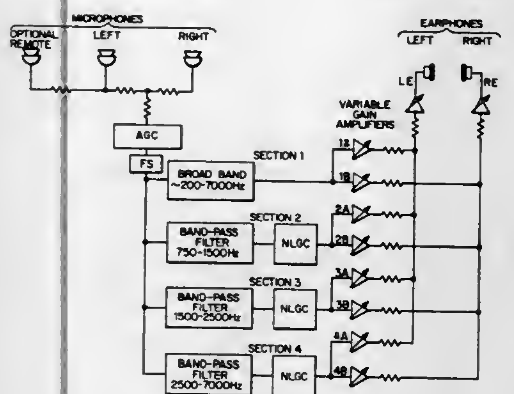
27. A mobile station for use in a radio telephone system employing multiple communication channels via each of which said mobile station is capable of transmitting and receiving radio signals, said mobile station having a home channel on which it receives calls, said mobile station being characterized in that it is adapted for use in areas where its home channel is not available, said mobile station comprising:
means for detecting unavailability of the home channel of said mobile station;
means for establishing an alternate home channel; and
tuning means responsive to unavailability of said home channel for automatically tuning said mobile station to said alternate home channel.

3,894,195
METHOD OF AND APPARATUS FOR AIDING HEARING AND THE LIKE

Karl D. Kryter, 13725 Robleda Rd., Los Altos, Calif. 94022

Filed June 12, 1974, Ser. No. 478,462
Int. Cl. H04r *25/00*
U.S. Cl. 179—107 FD **12 Claims**

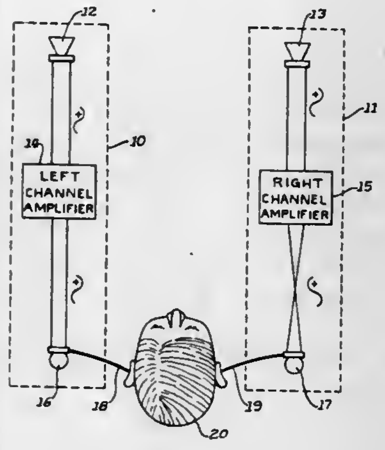
1. A method of aiding hearing, that comprises, adjusting the over-all intensity level of speech signals with substantially linear gain over a predetermined range of intensities; applying the adjusted-intensity signals along a plurality of frequency filtering paths, one passing a broad band of the speech signal frequencies, and the others passing successive adjacent narrow bands within said broad band; reducing separately in each of the other paths, the dynamic range of intensity levels corresponding to segments of speech signals that vary in intensity for brief moments in the corresponding narrow bands, as distinguished from the more steady state segments of background noise and steady-state signals; and combining the signals from said paths.



3,894,196
BINAURAL HEARING AID SYSTEM

Robert J. Briskey, Des Plaines, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed May 28, 1974, Ser. No. 473,970
Int. Cl. H04r *25/00*
U.S. Cl. 179—107 FD **6 Claims**

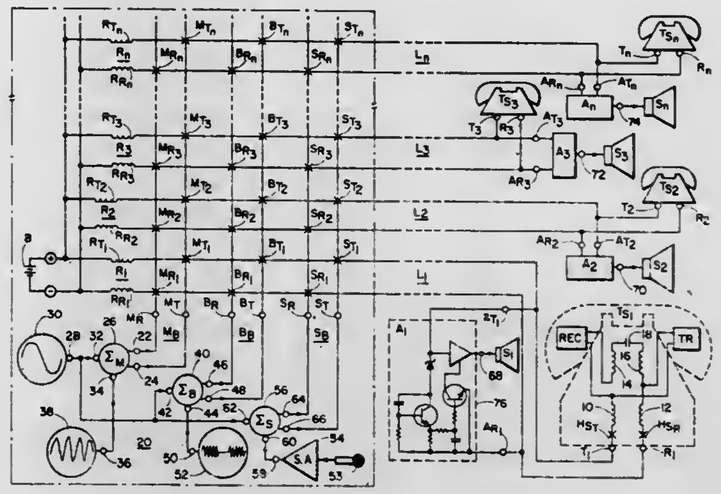


1. A system for binaurally enhancing auditory response in an individual having hearing impairments of comparable character in both ears, which system comprises:
a first electronic hearing aid having a predetermined frequency response characteristic and comprising a microphone, an amplifier, a reproducer, and means for coupling the output of said reproducer to the non-dominant ear of said individual;
a second electronic hearing aid having a similar frequency response characteristic but with emphasized high-frequency response relative to that of said first hearing aid and comprising a microphone, an amplifier, a reproducer, and means for coupling said reproducer to the dominant ear of said individual;
and means for establishing a phase delay in the response of said second hearing aid relative to that of said first hearing aid.

3,894,197
AUDIO FREQUENCY SIGNALLING SYSTEMS FOR TELEPHONE SYSTEMS

Michael C. J. Cowpland, 11 Alderbrook Dr., Ottawa, Ontario, and Terrence H. Matthews, 99 Penfield Dr., Kanata, Ontario, both of Canada

Filed July 9, 1973, Ser. No. 377,831
Claims priority, application Canada, June 26, 1973, 174906
Int. Cl. H04m *1/60*
U.S. Cl. 179—81 **17 Claims**

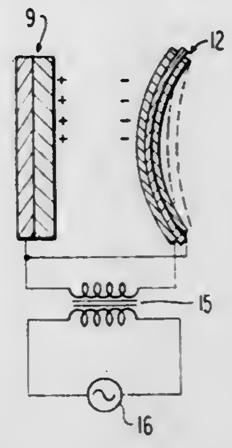


12. In a telephone system having a plurality of telephone lines, each telephone line originating at a central location and terminating at an associated telephone set at a remote location, each telephone line being connected to a direct current voltage supply at the central location and adapted for connection via hook switch contacts to the circuitry of the telephone set terminating said telephone line, a signalling system comprising;
a. a plurality of audio frequency amplifiers coupled to corresponding electro-acoustic transducers, each audio frequency amplifier having a pair of amplifier input terminals for receiving both audio frequency signal voltages and d.c. operating voltage, each audio frequency amplifier being associated with a particular telephone set and connected via corresponding amplifier input terminals across the telephone line of said particular telephone set, each audio frequency amplifier having a d.c. threshold voltage level and an a.c. threshold voltage level, the d.c. threshold voltage level being greater than the d.c. voltage across the telephone line at a telephone set when the hook switch contacts corresponding to said telephone set are closed;
b. means for generating a low frequency a.c. pilot signal;
c. means for adding voice frequency signals to said pilot signal to generate a combined audio frequency signal;
d. means for applying said combined audio frequency signal to a selected telephone line;
whereby when the hook switch contacts of a particular telephone set are open, resulting in the d.c. voltage level at the amplifier input terminals of the amplifier located at said particular telephone set exceeding the d.c. threshold of said amplifier, and when the combined signal appears at said amplifier input terminals to exceed the a.c. threshold voltage level of said amplifier and thereby enable said amplifier, said amplifier is energized by the d.c. voltage supply to amplify the voice frequency signal component of the combined signal appearing at said amplifier input terminals and produce a substantially corresponding audible voice frequency signal at the electro-acoustic transducer coupled to said amplifier.

3,894,198
ELECTROSTATIC-PIEZOELECTRIC TRANSDUCER

Haohiro Murayama; Takao Oikawa, and Kenichi Nakamura, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 6, 1972, Ser. No. 303,894
Claims priority, application Japan, Nov. 4, 1971, 46-87854
Int. Cl. H04r *17/00, 19/00*
U.S. Cl. 179—110 A **4 Claims**

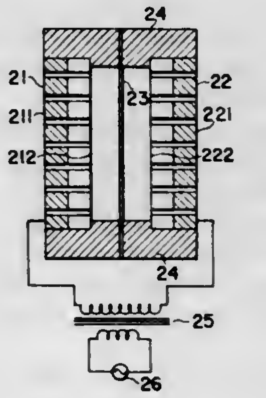


1. An electrostatic type electroacoustic transducer comprising:
a. oscillator means fixed at two portions thereof and including a piezoelectric polymer sheet having stretching-type piezoelectric characteristics and electrodes on both surfaces of said polymer sheet;
b. at least one fixed electrode means facing said oscillator means and spaced therefrom; and
c. means for applying an alternating current electric input signal to both said oscillator and said electrode means, said oscillator means and said fixed electrode means being positioned such that, upon application of the input signal, the oscillating movement of said oscillator means is intensified by the combination of:
the bowing of said oscillator means between the two fixed portions thereof, said bowing being caused by the piezoelectric effect of the piezoelectric polymer sheet; and the attractive and repulsive forces between said oscillator means and said fixed electrode means.

3,894,199
ELECTRET ELECTROSTATIC ELECTROACOUSTIC TRANSDUCER

Masahiko Tamura; Kiyonori Iwama, both of Tokorozawa, and Mitsuo Asahina, Tokyo, all of Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Nov. 18, 1970, Ser. No. 90,771
Claims priority, application Japan, Nov. 19, 1969, 44-92079
Int. Cl. H04r *19/00*
U.S. Cl. 179—111 E **4 Claims**



1. An electrostatic electroacoustic transducer comprising first and second electrets positioned to face each other; said

electrets having identical potentials on their facing surfaces, first and second back electrodes affixed to said first and second electrets, a vibrating film positioned between said electrets, said film being electroconductive on its surface, and a signal source wherein one terminal of said source is connected to said first back electrode and the other terminal is connected to said second back electrode.

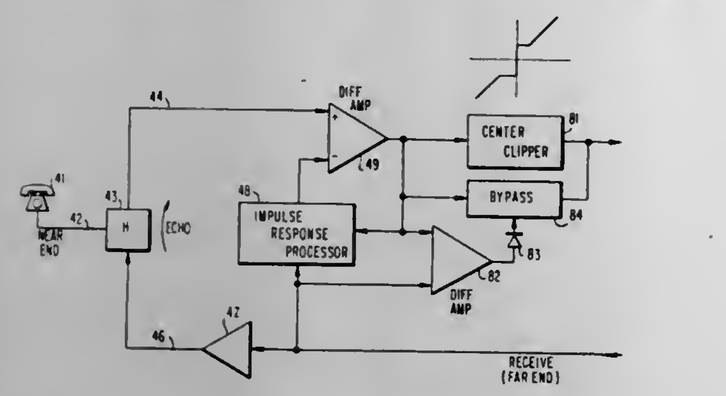
3,894,200
ADAPTIVE ECHO CANCELLER WITH DIGITAL CENTER CLIPPING

Samuel J. Campanella, Gaithersburg; G. Suyderhoud, Potomac; Michael Onufry, Jr., Gaithersburg, and Eric R. Kauffman, Walkersville, all of Md., assignors to Communications Satellite Corporation, Washington, D.C.

Filed Oct. 10, 1973, Ser. No. 405,209

Int. Cl. H04b *3/20*

U.S. Cl. 179—170.2 **4 Claims**



1. In an echo canceller of the type having an impulse response processing means including computation means for performing convolution of an input signal on a receive line and a replica signal of the impulse response of an echo path to generate an approximation of an echo signal for subtraction from a rear echo signal on a send line, means for subtracting said approximated echo signal generated by said computation means from said real echo signal to generate a residual echo signal; and an adaptive control loop responsive to the residual echo signal resulting from said subtraction and to stored samples of said input signal for incrementally varying said replica signal to reduce said residual echo signal, said processing means further including means to store a plurality of samples of said input signal and for replacing the oldest sample with each new sample, and means to store said incremented replica signal, the improvement comprising:

a. low level amplitude clipping means connected to said send line for passing all signals except those having amplitude levels in the range of said residual echo signal,
b. near-speech and double-talk detection means connected to said subtracting means and to said receive line and,
c. by-pass means actuated by said detection means to bypass said clipping means.

3,894,201
SYSTEM FOR DYNAMIC AND STATIC MUTING

Gerald Dee Pyles, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

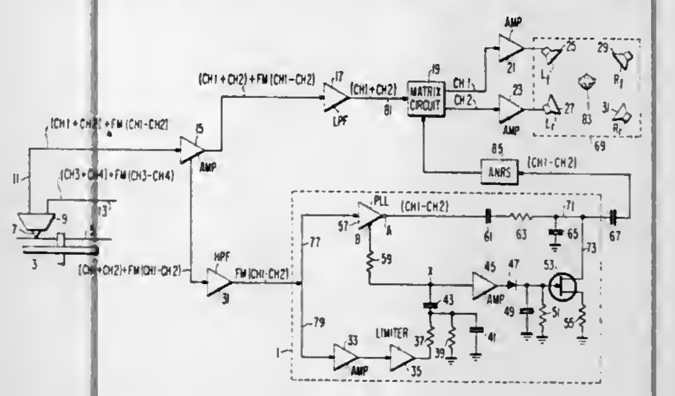
Filed May 31, 1974, Ser. No. 475,139

Int. Cl. G11b *3/00*

U.S. Cl. 179—100.4 ST **13 Claims**

1. In a system for reproducing multichannel sound from a record medium having at least a main audio signal channel and a superaudible modulated subcarrier signal channel, a system for providing muting of the subcarrier signal channel comprising:

1. means for recovering from said medium said main audio frequency signal components and superaudible modulated subcarrier signal components;
2. a sound reproducing system;
3. channel filtering means coupled to said recovering means for separating out said main audio frequency signal components from said superaudible modulated subcarrier signal components;
4. a signal processing channel coupled to said filtering means for demodulation of said separated subcarrier signal components and for coupling resultant demodulated subcarrier signal components to said sound reproducing system; and
5. means for muting said signal processing channel comprising:
   a. a phase-locked loop circuit coupled to said filtering means for generating an output signal representative of the output signal of said filtering means when variations in the output signal of said filtering means are within predetermined limits and for generating an output signal independent of the output signal of said filtering means in a first instance when said variations are not within said predetermined limits, and in a second instance when said output signal of said filtering means is substantially absent;
   b. means coupled between said filtering means and said phase-locked loop circuit for comparing the output signals of said filtering means and phase-locked loop circuit and for generating an error signal when said output signals are different, and for providing a cancellation effect when said output signals are the same;
   c. means responsive to said error signal for decoupling said signal processing channel from said sound reproducing system, thereby muting said demodulated subcarrier signal channel; and
6. signal combining means for coupling said main audio frequency signal components and the resultant demodulated subcarrier signal components of said signal processing channel to said sound reproducing system.



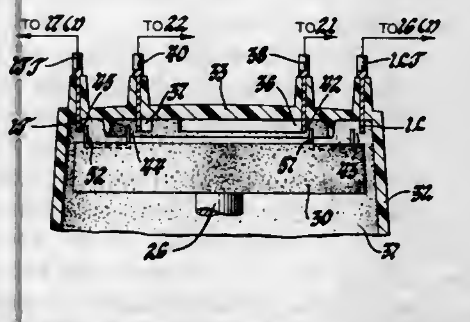
3,894,202
IGNITION DISTRIBUTOR FOR ROTARY INTERNAL COMBUSTION ENGINES

Robert E. Campbell, Anderson, and Richard D. Watson, Chesterfield, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 23, 1973, Ser. No. 418,675

Int. Cl. H01h *19/10*

U.S. Cl. 200—19 R **7 Claims**



1. An ignition distributor including a rotatable shaft for simultaneously directing ignition spark energy to the leading and trailing spark plugs for the same combustion chamber of an internal combustion rotary engine having a leading and a trailing spark plug for each combustion chamber comprising: a leading spark plug output terminal for each leading spark plug; a trailing spark plug output terminal for each trailing spark plug; means for supporting said leading and trailing spark plug output terminals; a leading spark plug ignition spark energy input terminal supported in spaced relationship with each corresponding said leading spark plug output terminal; a trailing spark plug ignition spark energy input terminal supported in spaced relationship with each corresponding said trailing spark plug output terminal; a rotatable member of insulating material mounted upon and rotated by said rotatable shaft; and two electrically conductive members mounted upon and rotated by said rotatable member in arc-gap relationship with each of said ignition spark energy input terminals and each of said outut terminals and so located upon said rotatable member that while either is in arc-gap relationship with one of said ignition spark energy input terminals, the other is in arc-gap relationship with·the other said ignition spark energy input terminal.

3,894,203
CRADLE SWITCH FOR TELEPHONE APPARATUS HAVING SELF-ALIGNING, PIVOTED CONTACT ASSEMBLY

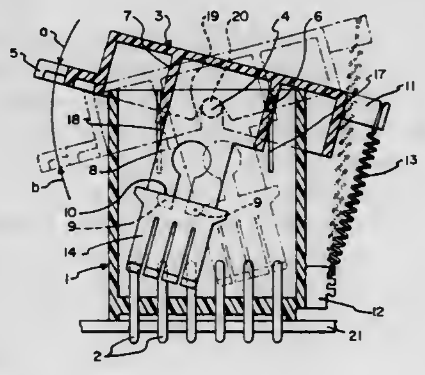
Helmut Heinrich Walter Diehr, Berlin, Germany, assignor to GTE International Incorporated, Stamford, Conn.

Filed Jan. 8, 1974, Ser. No. 431,643

Claims priority, application Germany, Jan. 18, 1973, 2302322

Int. Cl. H01h *21/26, 1/36;* **H04m** *1/00*

U.S. Cl. 200—6 R **6 Claims**



1. An improved cradle switch for a telephone, said switch comprising in combination a cup-shaped lower portion of insulating material including in the bottom thereof at least one row of contact pins which outside of said lower portion serve for connections and within said lower portion serve as contact elements, the side walls of said lower portion including bearing pins with a pair of slits in said side walls adjacent to said bearing pins, with one slit on each side of said bearing pins, and a hood tiltably supported on said bearing pins, said hood including at least one arm of insulating material with a comb-shaped spring contact member secured to the free end of said arm, said spring contacts being adapted to slidably engage said row of contact pins.

3,894,204
38KV LOW CURRENT FUSED SWITCH

William E. May, Feasterville, and Philip C. Netzel, Milmont Park, both of Pa., assignors to I-T-E Imperial Corporation, Spring House, Pa.

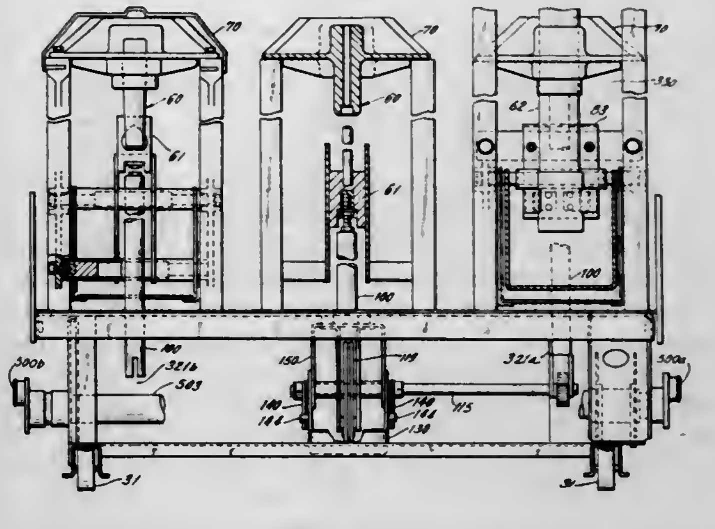
Filed Feb. 19, 1974, Ser. No. 443,461

Int. Cl. H01b *3/46, 9/20;* **H02b** *11/00*

U.S. Cl. 200—50 AA **9 Claims**

1. A low current switch comprising a movable bridging contact structure having an insulating transverse support and a pair of parallel contact probes extending therefrom;

said support having a conductor electrically interconnecting said probes;
a stationary contact structure having an insulating support extending substantially normal to said contact probes;
a pair of stationary contacts carried by said stationary contact structure;
means for connecting each of said stationary contacts in circuit;
said movable bridging contact structure and its contact probes being movable in a direction longitudinally of said probes toward and away from said stationary contacts, each of said probes being engageable with one of said stationary contacts on such longitudinal movement toward said stationary contacts;



said insulating support for said stationary contacts having a pair of insulating bushings,
each bushing extending from a stationary contact toward said movable contact structure;
each of said bushings being aligned with one of said probes;
means for moving said bridging contact structure toward and away from said stationary contact structure,
said movable contact probes entering said bushings and engaging said stationary contacts, when the movable contact structure is moved toward said stationary contact structure,
said bushings acting as arc confining structures when said contacts are open.

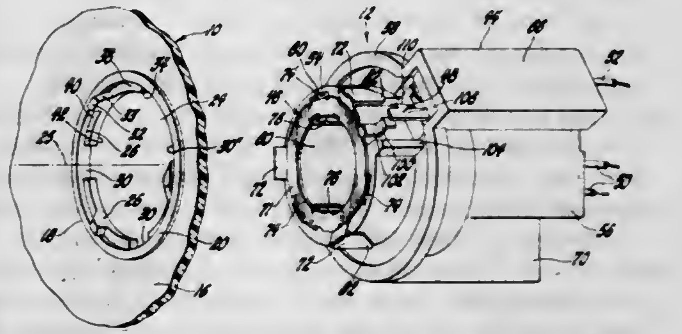
3,894,205
LAMP SOCKET AND PANEL ASSEMBLY WITH GROUNDING SWITCH

Joseph O. List, West Farmington, and Warren Pearce, Jr., Warren, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 21, 1974, Ser. No. 434,892

Int. Cl. H01r *19/50*

U.S. Cl. 200—51.07 **1 Claim**



1. A lamp socket and panel assembly comprising: a nonconductive panel, a central hub on said panel having an opening therein bounded by an outer peripheral surface defined by

alternating lands and grooves; axially projecting stop surfaces on said hub adjacent said grooves; a radial notch in said hub having a camming surface thereon; a lamp socket formed of a nonconductive elastomeric material, said socket having a body with front and rear portions; an annular flange on said body intermediate said front and rear portions; a center longitudinal cavity in said front portion of the body adapted to receive the base of a lamp bulb having lead wires connected to the filaments thereof, said intermediate flange adapted to engage the peripheral surface of said panel; first and second terminal members carried by said socket adapted to be connected in an electrical circuit, one of said terminals being disposed in said cavity and adapted to engage one lead of said lamp bulb; an annular conductive bulb holder carried on the front portion; said holder having a plurality of integral flexible locking ears spaced circumferentially therearound adapted to register with said grooves at an insertion position, said ears having rounded triangular tips spaced from said flange by the thickness of said panel member and including a hypotenuse index surface thereon; a contact prong formed integrally on said holder extending into the cavity and adapted to electrically connect with the other lead of said lamp bulb, said holder having a radially extending cantilevered spring finger integrally formed thereon adapted to contact said other terminal to complete an electrical circuit through the light bulb, said finger registering with said notch at said insertion position, said lamp socket being attachable to said panel by inserting said ears through said grooves and rotating the body with the locking ears passing across the surface of said lands until engagement of said hypotenuse index surface at an indexed position with said stop surface, said spring finger engaging said camming surface at said notch as said socket is rotated to said indexed position to bias said spring finger against said other terminal to complete the electrical circuit through said bulb only when said socket is in an indexed condition on said panel member.

3,894,206
PRESSURE RESPONSIVE SWITCH

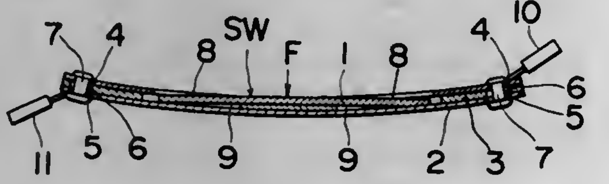
Masaru Suzuki, Chiryu, and Hatuyoshi Yoshida, Nagoya, both of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Japan

Filed Dec. 13, 1972, Ser. No. 314,528

Claims priority, application Japan, Dec. 18, 1971, 46-119892

Int. Cl. H01h *3/14*

U.S. Cl. 200—85 A **20 Claims**



1. A pressure responsive switch comprising
- a first flexible electro-conductive strip means;
- a second flexible electro-conductive strip means;
- a flexible spacer member of electrically insulating material, said spacer member having at least one opening;
- fastening means for connecting said first and second strip means and said spacer member together in a sandwich with said spacer member disposed between said first and second strip means, said fastening means electrically insulating said first and second strip means; and
- at least one contact means having at least a first portion formed integrally with one of said first and second strip means and having at least a second portion freely formed from said one of said first and second strip means for electrically contacting the other of said first and second strip means, said at least one contact means being disposed in the plane of said one of said first and second strip means such that when said first and second strip means are concurrently flexed by a force, said second portion of said at least one contact means remains unflexed and is relatively displaced from a surface of said one of said first and second strip means being concurrently flexed, thereby contacting said other of said first and second strip means through said opening of said flexible spacer member.

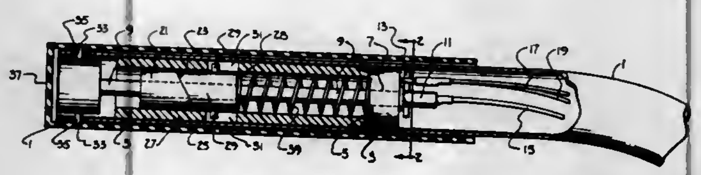
3,894,207
HAND GRIP TYPE VEHICLE DIRECTIONAL SIGNAL CONTROL SWITCH

James E. Jelley, Rt. 4, Box 1224, Gresham, Oreg. 97030

Filed July 5, 1973, Ser. No. 376,823

Int. Cl. H01h *21/24, 9/06*

U.S. Cl. 200—157 **8 Claims**



1. A vehicle directional control mounted within a steering handlebar carried upon a vehicle comprising:
- an elongate hollow body;
- means defining a longitudinal slot within the wall of the body;
- an electrical contact on the body operatively connected to a signal light;
- a rotatable shaft contained at least partly within the body and having an electrical contact pin thereon;
- a source of electrical power upon the vehicle and having a terminal within the handlebar which is operatively connected to the electrical contact pin on the rotatable shaft; a first cam fixed on the rotatable shaft;
- a second cam slideably mounted on the rotatable shaft and having an ear projecting into the longitudinal slot in the body; position defining means including a spring interposed between the slideable cam and one end of the hollow body which defines a signal-off position of the control;
- and a grip attached to the rotatable shaft for applying a torque to the shaft to rotate the shaft within the hollow body thereby coupling the electrical power source to the directional light on the body electrical contact via the shaft mounted contact pin, the positioning means being operable to automatically restore the control to the signal-off position when torque forces applied to the grip are released.

3,894,208
METHOD OF ABRASIVE MACHINING OF MATERIAL BY MEANS OF AN ENERGY BEAM

Wilfried Hellmuth Bergmann, Heimatring 44/II, 6000 Frankfurt am Main, Germany

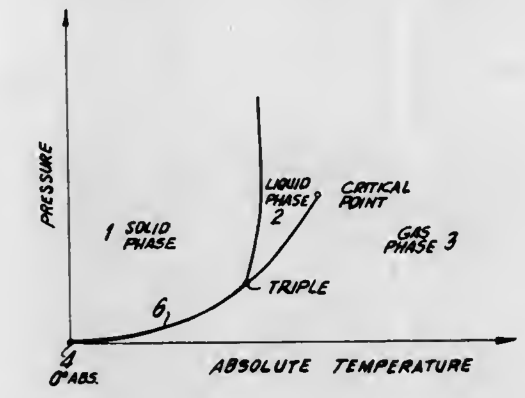
Continuation-in-part of Ser. No. 223,288, Feb. 3, 1972, abandoned. This application Sept. 27, 1973, Ser. No. 401,541

Claims priority, application Germany, Feb. 12, 1971, 2106823

Int. Cl. B23k *15/00*

U.S. Cl. 219—121 EM **7 Claims**

1. In the method of abrasive machining of a workpiece comprising solid material having a vapor pressure curve defining a phase boundary between the solid and gaseous state at a temperature and pressure below its Triple point, the improvement comprising cooling said solid material to a temperature and pressure below its Triple point; subjecting said solid material to an energy beam to thereby transform a portion of said solid material immediately into the gaseous state without passing through a liquid state, and removing said portion of said solid material in the gaseous state.



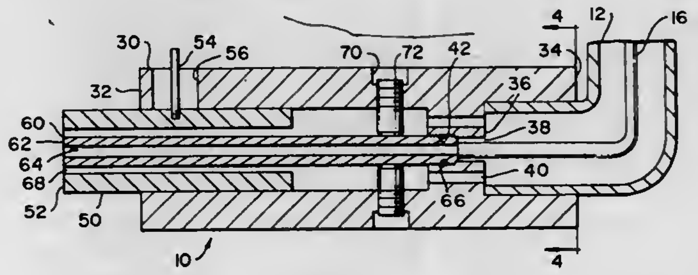
3,894,209
NOZZLE FOR ENERGY BEAM SYSTEM

Thomas E. Fairbairn, Westland, Mich., assignor to Sirius Corporation, Toledo, Ohio

Filed Nov. 23, 1973, Ser. No. 418,721

Int. Cl. B73k *9/00*

U.S. Cl. 219—121 P **7 Claims**



1. In an apparatus for generating an energy beam, said apparatus including a sine wave generator having a tank coil formed of a first hollow electrically conductive tube and a second hollow electrically conductive tube positioned interiorly of said first hollow tube, and a system for supplying gas through each of said tubes, the improvement of a nozzle adapted to be attached at one end of said tubes comprising:
- a first hollow cylindrical sleeve having first and second ends and an integral interior radial plate intermediate said first and second ends, said plate having at least two axial passages therethrough;
- a second hollow cylindrical sleeve;
- a hollow electrode;
- means for mounting said hollow electrode radially interiorly of said first sleeve and in communication with said first axial passage for defining a first continuous flow path through said nozzle from said second tube, through a first axial passage in said plate and through said electrode; and means for mounting said second sleeve radially intermediate said electrode and said first sleeve and in communication with said second axial passage for defining a second continuous flow path through said nozzle from said first tube, through said second axial passage in said plate, and through said second sleeve radially exteriorly of said electrode;
- whereby, upon the application of gas through each of said tubes, a laminar gas flow is produced by said nozzle including an inner column of gas emanating from said hollow electrode and conducting said energy beam and an outer column of gas emanating between said electrode and said second sleeve and surrounding and sheathing said energy beam.

3,894,210
METHODS AND APPARATUS FOR ALTERNATING-CURRENT ARC WELDING

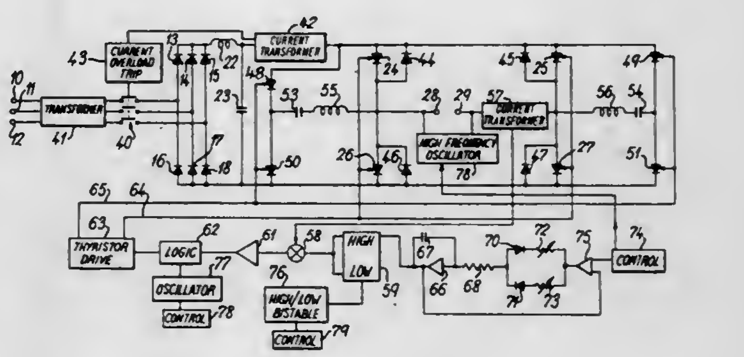
Gordon Arthur Smith, Oadby, and Robert George Stephens, Anstey, both of England, assignors to National Research Development Corporation, London, England

Filed Mar. 20, 1973, Ser. No. 342,981

Claims priority, application United Kingdom, Mar. 21, 1972, 1317272

Int. Cl. B23k *9/10*

U.S. Cl. 219—131 R **25 Claims**



1. A method of electric arc welding using a substantially non-consumable electrode, including applying a voltage between the electrode and a workpiece to strike an arc, the voltage periodically alternating in polarity, and varying the arc current to provide an arc current, the average magnitude of which, for intervals each equal to the period of the polarity alternations varies cyclically at a repetition frequency which has a longer period than the period of the polarity alternations.

3,894,211
METHOD OF SEALING THE END OF A FILLED WELDING ROD

Richard W. Young, Anaheim, and Sidney A. Siebert, Fullerton, both of Calif., assignors to Cabot Corporation, Kokomo, Ind.

Filed May 10, 1974, Ser. No. 468,806

Int. Cl. B23p *17/00*

U.S. Cl. 219—146 **8 Claims**

1. The method of closing filled tube rod ends comprising the steps of reducing the diameter of the ends and sealing with a solid organic film volatilizable at welding temperature to provide a contaminant free weldment.

3,894,212
ANALOG POWER COMPUTER

David R. Figueroa, Pembroke Pines, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed Mar. 11, 1974, Ser. No. 449,910

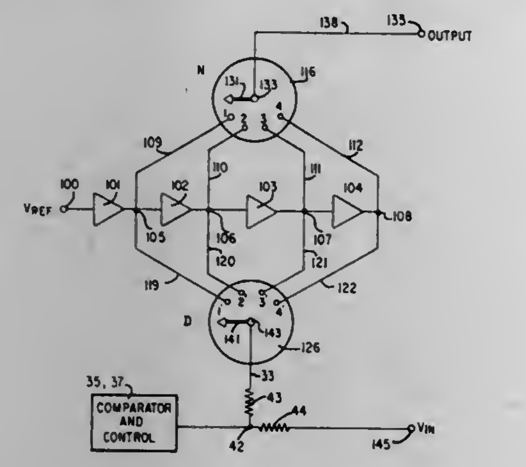
Int. Cl. G06g *7/20*

U.S. Cl. 235—193.5 **7 Claims**

1. Electronic apparatus for automatically producing a desired power value of a mathematic magnitude represented by a voltage input quantum, said apparatus comprising:
- A. a plurality of integrators connected in series to one another,
- B. first selector switch means for selecting a position related to the denominator of said power value,
- C. second selector switch means for selecting a position related to the numerator of said power value,
- D. first terminal means at the input side of the first of said plurality of integrators for receiving a reference voltage, E. second terminal means coupled to the first selector switch means for receiving said input quantum,
- F. third terminal means coupled to the second selector switch means to enable obtaining said power value thereat,

G. the number of integrators equaling the higher of the components of the power value,

H. comparing means coupled to the first selector switch means for
  a. comparing a voltage prevailing at the selected position of the first selector switch means with said input quantum, and
  b. producing a characteristic output when said two compared voltages attain a predetermined relationship,

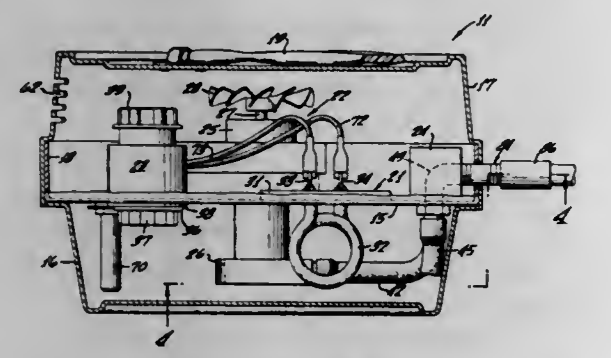


I. control circuit means coupled to said comparing means, said control circuit means constructed to receive said characteristic output and control the operations of the apparatus, including start and reset means,

wherein, upon the selector switch means being in the selected positions, the reference voltage and the input quantum being at said first and second terminal means, said desired power value is obtainable at said third terminal means.

3,894,213
FLUID CIRCULATING HEATING PAD

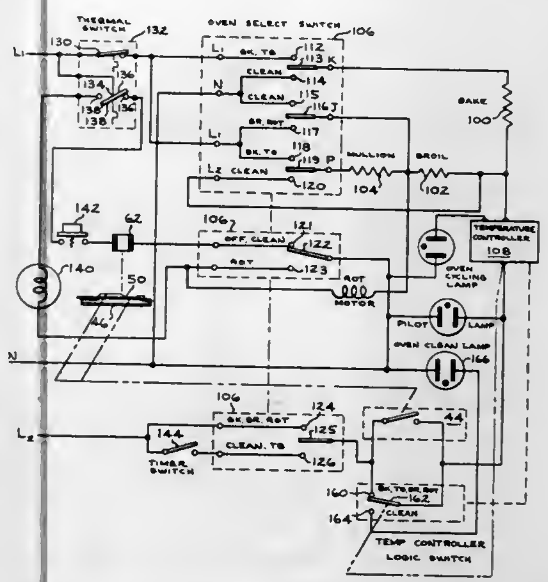
Bhaskar Kumar Agarwala, West Los Angeles, Calif., assignor to Everest & Jennings, Inc., Los Angeles, Calif.
Filed Aug. 23, 1973, Ser. No. 390,753
Int. Cl.² F24H ***1/20***
U.S. Cl. 219—297 **6 Claims**



1. In a controlled-temperature circulating fluid system:
a fluid reservoir having inlet and outlet ports;
fluid heating means connected to said inlet and outlet ports, said fluid heating means comprising a fluid heater with a heating element in said reservoir;
inlet and outlet channels each connected to one of said ports, each of said channels having a passageway into the reservoir;
a temperature control device responsive to temperatures in both of said channels for energizing or deenergizing said heating means as the temperature affecting said temperature control device falls below or rises above predetermined temperature levels; and
fluid circulating means interposed into one of said passageways having an output port connected to the channel connected to the reservoir outlet port.

3,894,214
DOOR-LOCKING APPARATUS FOR A COOKING OVEN

Paul R. Staples, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.
Filed May 17, 1974, Ser. No. 470,724
Int. Cl. F27d ***1/02***
U.S. Cl. 219—394 **7 Claims**

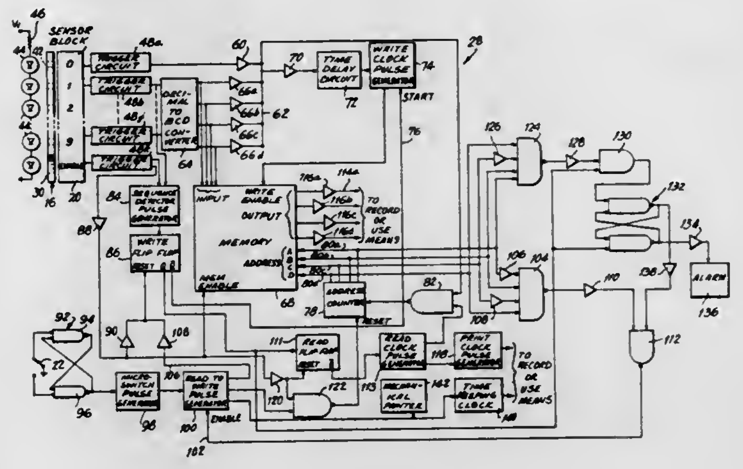


1. A cooking appliance comprising an oven cooking cavity formed by a box-like oven liner and an access door, heating means for supplying heat energy into the oven cooking cavity, means for latching the door in the closed position, safety locking apparatus requiring an intentional and independent operation for locking the door latching means in the latched and unlatched modes, respectively, said safety locking apparatus comprising
a support member secured within the appliance and having the latching means secured thereto;
a high-current electrical switch having a set of contacts, the switch being mounted on the support member and serving as a latch-logic device for preventing predetermined phases of operation of the appliance until the access door is in the latched and locked-closed position;
switch-actuating means associated with the support member and movable in response to operation of the door latching means for actuating the switch;
said switch-actuating means including at least one cam-ramp surface for mechanically engaging the switch to effect operation thereof and for providing mechanical advantage to break possibly welded contacts in the switch; and
a locking member associated with the support member for preventing operation of the switch-actuating means until intentionally and independently operated both when the door is latched and when unlatched and for preventing predetermined phases of operation of the appliance until the locking member is in the locked position.

3,894,215
TIME CLOCK SYSTEM

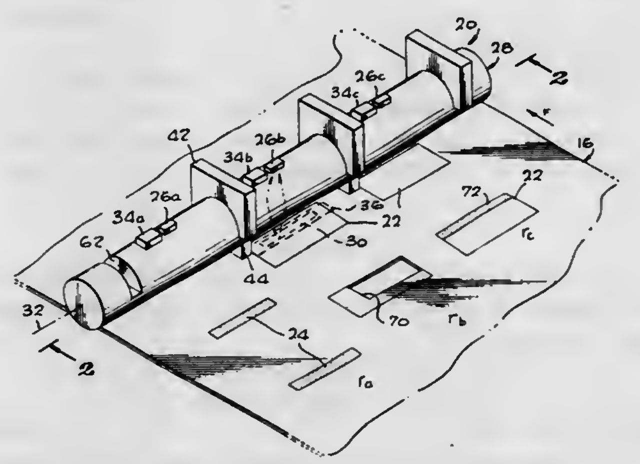
Richard Lotter, Ridgewood, and Bernard Roger Fernau, Malverne, both of N.Y., assignors to Decicom Systems, Inc., Brooklyn, N.Y.
Filed Oct. 17, 1973, Ser. No. 407,334
Int. Cl. G06k ***7/10***
U.S. Cl. 235—61.6 R **13 Claims**

1. A time clock system for use with a time card having identifying indicia on a portion thereof arranged in a plurality of digits spaced in one direction along said card, comprising time card guide means defining a path for the displacement of said time card in a direction substantially parallel to said one direction along said card; sensing means in the path of displacement of said time card for reading of identifying indicia when the indicia-bearing portion of one of said time cards is passed thereby; memory means coupled to said sensing means for temporarily storing data representative of the read indicia; means for detecting the passage of said card along a prescribed path in said guide means past said sensor means, said detecting means including means for counting the number of digits read by said counting means, and card position sensing means for detecting the passage of the card past the sensor means to the end of said prescribed path; and means for enabling the transmitting from said memory means of the temporarily stored data representative of the read indicia in response to an output of said detector means representative of the combined occurrence of the counting of a predetermined number of digits and the actuation of said card position sensing means at the end of said prescribed path, and therefor the passage of said card along said prescribed path.



3,894,216
ILLUMINATION AND SENSOR ARRANGEMENT FOR CARD READER

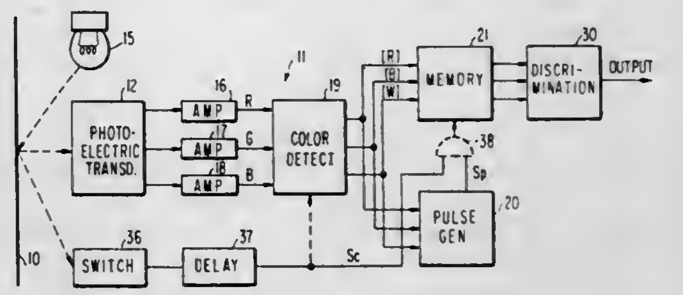
David M. Bottles, Long Beach, Calif., assignor to Compucorp, Los Angeles, Calif.
Filed July 27, 1973, Ser. No. 383,383
Int. Cl. G06k ***7/10;*** **G08c** ***9/06***
U.S. Cl. 235—61.11 E **8 Claims**



4. A card reader for reading marks or other encoding on a card that moves along a predetermined card path, comprising:
a light sensor spaced from said card path;
a light source spaced from said card path; and
light control means including a lens positioned so it lies between the card path and both the sensor and light source, said lens concentrating light from the source onto a predetermined card path location and focusing light from within said location onto said light sensor.

3,894,217
DEVICE FOR DISCRIMINATING COLOR CODED ARTICLES

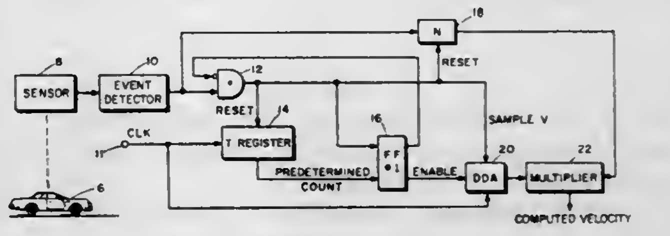
Rinzou Ebukuro, and Tomoyuki Isono, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan
Filed Dec. 27, 1973, Ser. No. 428,973
Int. Cl. G06k ***7/10;*** **G08c** ***9/06***
U.S. Cl. 235—61.11 E **5 Claims**



1. A device for discriminating articles having predetermined color codes from other articles, said codes comprising areas, each colored in one of a predetermined number of colors, with the colored areas arranged in predetermined orders, said device including color sensitive means responsive to rays incident thereon from the colored areas of each article having one of said codes for producing a train of color signals representative of the respective colors of the areas of said one code, wherein the improvement comprises:
a pulse generator responsive to each of said color signals for producing a pulse,
an encoder responsive to each of said color signals for producing a coded signal representative of the color represented by said each color signal,
shift register means responsive to said coded signal and to the pulse produced in response to the color signal responsive to which said coded signal is produced, for producing a set of parallel coded signals,
a plurality of decoders responsive to said parallel coded signals for producing said parallel signals, and
discrimination means responsive to said parallel signals for producing a signal representative of said each article.

3,894,218
VARIABLE INVERSE PERIOD TIMER

Harold E. Weissler, Newport News, Va., assignor to The Bendix Corporation, Southfield, Mich.
Filed Mar. 14, 1974, Ser. No. 451,260
Int. Cl.² G06F ***15/20***
U.S. Cl. 235—150.3 **13 Claims**



1. Means for computing the reciprocal of the period between recurring events comprising:
means for counting the occurrence of each event;
a digital differential analyzer including at least a first register responsive to clock pulses applied thereto for accumulating said clock pulses and including means for generating the locus of a point which is instantaneously proportional to the reciprocal of said period when enabled;
a source of said clock pulses;
latching gates means responsive to the occurrence of an event when said gate is unlatched for resetting to predetermined states said first register and said means for

counting; for sampling said means for generating; and, for latching said gate means, said gate means being nonresponsive to the occurrence of events while latched, said gate means including means for unlatching in response to said first register attaining a predetermined first state and additionally including means for enabling said digital differential analyzer in response to said first register attaining said predetermined first state; and,

means for multiplying the sample obtained from said digital differential analyzer by the number contained in said means for counting, the result of the multiplication comprising said reciprocal.

3,894,219

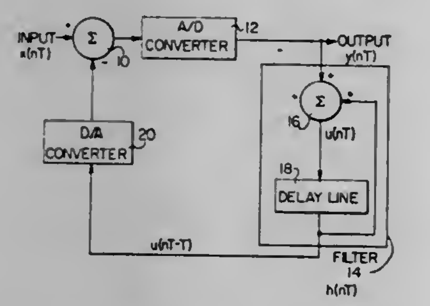
HYBRID ANALOG AND DIGITAL COMB FILTER FOR CLUTTER CANCELLATION

Wayne L. Weigel, Ellicott City, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 16, 1974, Ser. No. 433,958

Int. Cl. G06j *1/00*

U.S. Cl. 235—150.5 **10 Claims**



1. A system for cancelling clutter from an analog input signal and producing a digital output signal, comprising:

a first summer receiving the analog input signal and producing an output,

an analog to digital converter receiving the output of said first summer and producing a corresponding digital output comprising the digital output signal of the system,

a filter receiving the digital output of said analog to digital converter and producing as an output a filtered signal having a predetermined mathematical relationship to the output signal of the analog to digital converter,

a digital to analog converter receiving the output of said filter and producing as an output an equivalent analog signal wherein,

said first summer receives and sums said filtered signal in subtractive relationship with the analog input signal.

3,894,220

VENDING CONTROL SYSTEM

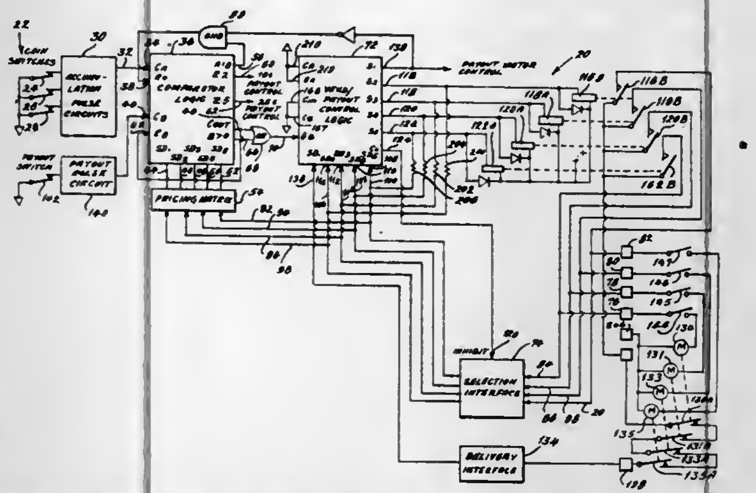
Joseph L. Levasseur, St. Louis, Mo., assignor to H. R. Electronics Company, High Ridge, Mo.

Filed Apr. 25, 1974, Ser. No. 463,887

Int. Cl. G06f *7/50, 15/46*

U.S. Cl. 235—151 **26 Claims**

1. A control circuit comprising an adder network formed by a plurality of bistable adder stages each including first and second inputs and an output, a first source of signals connected to the first adder network inputs, a plurality of second input signal sources and means for individually applying signals from selected ones of said plurality of second signal sources to selected inputs of the second adder network inputs, said adder network including means to combine inputs from the first and second sources to produce outputs at the respective adder outputs, and means for connecting selected outputs of the adder network to selected ones of the second adder inputs whereby output signals appearing on said selected adder circuit outputs produce changes in the adder which further effect the adder outputs, the arrangement of the connections between the selected adder outputs and second inputs determining the operating characteristics thereof.



3,894,221

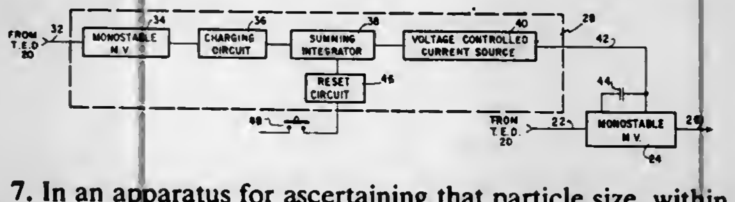
SPEED UP CIRCUIT IN AN APPARATUS FOR MEASURING A DIVIDING PARTICLE SIZE OF A PARTICULATE SYSTEM

David R. Figueroa, Pembroke Pines; Edward Neal Doty, Pompano Beach, and Anthony Marino, Plantation, all of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed Mar. 1, 1974, Ser. No. 447,264

Int. Cl. G06g *7/12;* G01n *27/00*

U.S. Cl. 235—151.3 **26 Claims**



7. In an apparatus for ascertaining that particle size, within a particulate system, above and below which size predetermined fractions of the total mass of the system are respectively included, said particle size being the dividing size between fractions, and which includes a threshold circuit operative to develop a first signal in response to passage through said apparatus of each individual particle in excess of a particular size, a speed-up circuit including in combination,

first circuit means coupled to said threshold circuit means and operative in response to each first signal to develop an output signal of fixed amplitude and predetermined duration, and

second circuit means coupled to said first circuit means and operative in response to one of the number of first signals received and the period during which said first signals are received to vary the duration of said output signal.

3,894,222

APPARATUS FOR SUPPRESSING NOISE SPIKES

Lee E. Siems, Houston, Tex., assignor to Digital Data Systems, Inc., Houston, Tex.

Filed June 3, 1974, Ser. No. 475,471

Int. Cl. G06f *7/00;* G01v *1/36*

U.S. Cl. 235—151.3 **5 Claims**

1. An apparatus for scaling down extreme-valued members of a discrete time series consisting of a set of floating-point numbers, each number including a sign, a true exponent $Ex_{(j)}$, and a mantissa, said apparatus including:

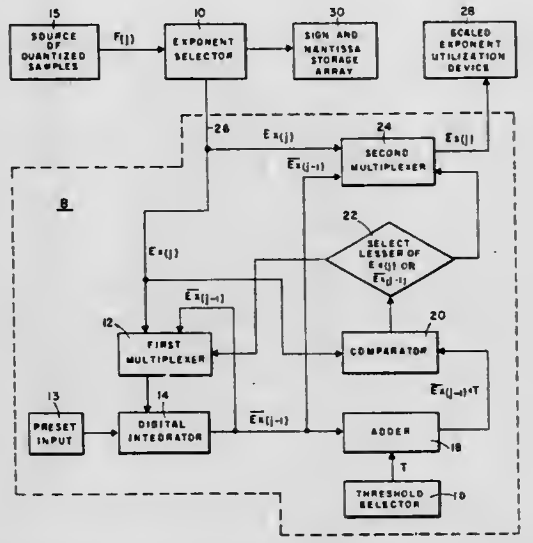
an exponent selector having an input adapted to sequentially receive said numbers and to provide to its output only the true exponents $Ex_{(j)}$ of said numbers;

first and second multiplexers, each multiplexer having a first input, a second input and an output, the first inputs of said multiplexers being connected to the output of said exponent selector;

a digital integrator having an input connected to the output of said first multiplexer and having an output connected to the second input of said second multiplexer, said integrator being adapted to integrate exponents with respect to time and to provide at its output a present value $Ex_{(j-1)}$ of the integrated exponents;

a feedback loop interconnecting the output of said integrator with the second input of said first multiplexer;

an adder having an input connected to the output of said integrator, said adder adding a constant threshold quantity T to said present value $Ex_{(j-1)}$ to form the sum $(Ex_{(j-1)} + T)$; and



a comparator interconnected between the output of said exponent selector and the output of said adder, for determining the lesser of the quantities $Ex_{(j)}$ and $(Ex_{(j-1)} + T)$, said comparator including control logic for activating the first inputs of said first and second multiplexers thereby to receive the true exponents $Ex_{(j)}$ when $Ex_{(j)}$ is the lesser quantity, and for activating the second inputs of said first and second multiplexers thereby to receive $Ex_{(j-1)}$ when $(Ex_{(j-1)} + T)$ is the lesser quantity, whereby the output of said second multiplexer provides a desired scaled exponent $Es_{(j)}$.

3,894,223

MAGNETIC BUBBLE DOMAIN LOGICAL AND ARITHMETIC DEVICES

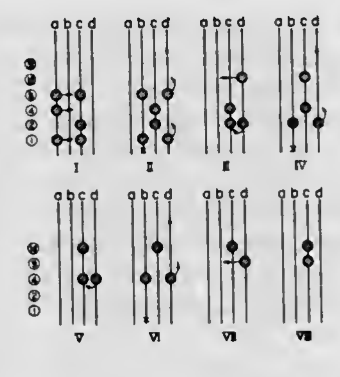
Hideyasu Majima, Higashiyamato; Itsuo Mikami, Kodaira, and Yuzo Kita, Kokbunji, all of Japan, assignors to Hitachi, Ltd., Japan

Continuation of Ser. No. 181,757, Sept. 20, 1971, abandoned. This application Dec. 26, 1973, Ser. No. 428,036

Claims priority, application Japan, Sept. 21, 1970, 45-81972

Int. Cl. G06f *7/50*

U.S. Cl. 235—175 **13 Claims**



1. A magnetic bubble domain logical and arithmetic device comprising:

a sheet of a magnetic material, wherein cylindrical bubble domains are maintained at a predetermined size, when bias magnetic field of a predetermined strength is applied normal to the planar surface;

first means for uniformly applying bias magnetic field of the predetermined strength normal to the entire planar surface of said sheet;

second means for applying locally to respective regions of said sheet a reverse bias magnetic field of a predetermined strength in the reverse direction with respect to the direction of said uniformly applied bias magnetic field thereby establishing in said respective regions a trapping field having a magnetic strength lower than that of the uniformly applied bias magnetic field, so that the cylindrical bubble domains are retained within trapping regions by respective trapping fields,

said second means forming a plurality of said trapping regions arranged adjacent to one another on the planar surface at such a distance that neighboring cylindrical bubble domains, disposed therein, are unstable because of the repulsion forces of neighboring domains to one another, said plurality of trapping regions forming at least one array of trapping regions;

third means for injecting cylindrical bubble domains, representative of information to be processed by logical operations, into said array of trapping regions;

fourth means shifting the cylindrical bubble domains in the array of trapping regions at a predetermined timing, said fourth means being connected to said array; and

fifth means for deriving output binary coded information represented by the presence or absence of cylindrical bubble domains at predetermined positions in the array of trapping regions, whereby various kinds of logical operations are carried out.

3,894,224

CURRENT-DRIVEN FUNCTION GENERATOR

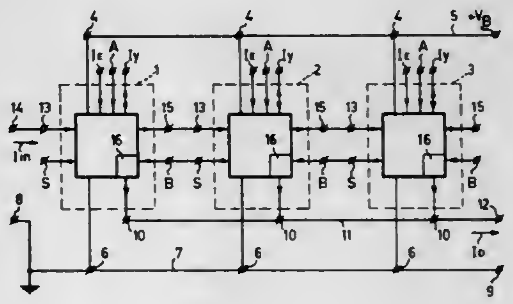
Aart Gerrit Korteling, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 11, 1974, Ser. No. 449,849

Claims priority, application Netherlands, Mar. 30, 1973, 7304430

Int. Cl. G06g *7/26*

U.S. Cl. 235—197 **5 Claims**



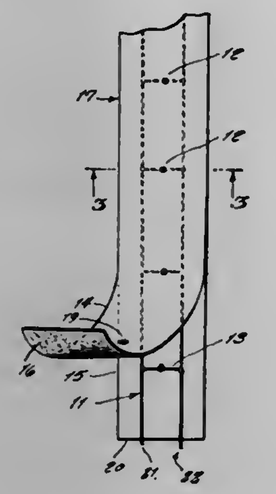
1. A current-controlled function generator having a function current input for the variable input current and a function current output for the output current produced as a function of the input current, consisting of *n* sections, which are substantially identical and are cascaded, each section comprising a section current output which is connected to the function current output, only one section supplying current to the function current output as a function of the input current I_{in}, with a first input for a current of the value I_{in}, with a first output which supplies a current of the value I_{in}, with a second input for a current I_x, which when $I_{in} - I_x$ is greater than zero switches on the section, with a third input for a current I_y, which determines the initial value of the output current, with a switching output which supplies a switching signal when the section is switched on, with a inhibiting input, which switches off the section upon receipt of a switching signal, and with a current converter with a control input, by means of which the gradient A between the input current and the output current can be adjusted, and that each section is connected with its

first input to the first output and with its switching output to the inhibiting input of the preceding section, the first input of the first section being connected to the function current input.

3,894,225
TAPE-LAMPS

Albert L. Chao, 144-24 37th Ave., Apt. LA, Flushing, N.Y. 11354

Filed July 11, 1974, Ser. No. 487,789
Int. Cl.² F21S *1/14;* F21V *21/08*
U.S. Cl. 240—1 R **2 Claims**

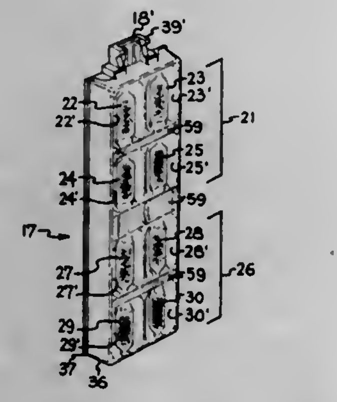


1. In a tape-lamp assembly, the combination of a length of tape, and a row of mini-lamps along said tape, said mini-lamps being in a parallel electrical circuit, said tape comprises a pair of adjacent tape members between which said circuit is contained, said tape members being secured together by suitable adhesive therebetween, said tape members are each made of flexible transparent plastic and at least one said tape members has a row of openings therethrough and in each of which one of said mini-lamps is located.

3,894,226
PHOTOFLASH LAMP ARRAY HAVING MEANS FOR PREVENTING ELECTRICAL SHORTING

James M. Hanson, Euclid, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Sept. 26, 1974, Ser. No. 509,411
Int. Cl. G03b *15/02*
U.S. Cl. 240—1.3 **4 Claims**

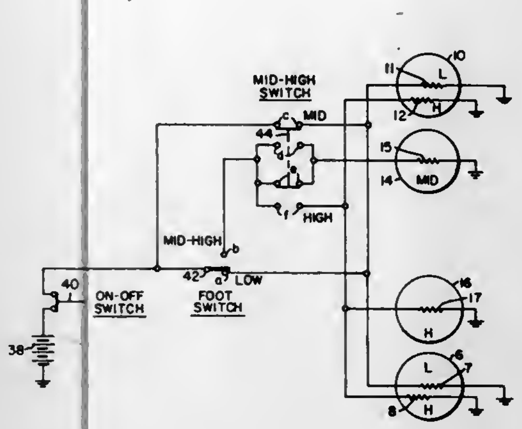


1. A photoflash lamp array comprising a circuit board having lamp-firing circuitry on a surface thereof, a plurality of flash lamps positioned over said surface and having lead-in wires connected to said circuitry, and an electrically conductive reflector unit positioned between said lamps and said circuit board, wherein the improvement comprises a sheet of electrically insulating material interposed between said reflector unit and said circuit board.

3,894,227
TRI-BEAM ROADWAY-LIGHTING SYSTEM FOR MOTOR VEHICLES

Elam Pitkjaan, Cedar Grove, and Leland W. LeSeur, Cedar Knolls, both of N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 445,751, Feb. 25, 1974, abandoned. This application Oct. 10, 1974, Ser. No. 513,917
Int. Cl. B60g *1/00, 3/00*
U.S. Cl. 240—7.1 A **16 Claims**



1. A tri-beam roadway-lighting system for a motor vehicle comprising, in combination;

four headlamps mounted on the front of the motor vehicle with a pair of headlamps disposed on each side of the centerline thereof,

one headlamp in each of said pairs of headlamps comprising a dual-function headlamp having a lens, a reflector with a focal point, and a pair of light sources one of which is disposed in on-focus relationship and the other of which is disposed on off-focus relationship with said reflector, said on-focus light sources when energized producing low-beam illumination and a low-beam lighting mode,

another headlamp in either one of said pairs of headlamps comprising a mid-beam headlamp having a lens, a reflector with a focal point, a single compact light source which is positioned adjacent said focal point, and a shield that is disposed in front of and in masking relationship with said compact light source, said mid-beam headlamp when energized producing a beam of light which supplements the low-beam illumination produced by said on-focus light sources and thereby provides a mid-beam lighting mode,

the remaining headlamp in said pairs of headlamps comprising a high-beam headlamp that has a lens, a reflector with a focal point, and a single on-focus light source which, when energized in conjunction with said mid--beam headlamp and the off-focus light sources in said dual-function headlamps, produces a high-beam mode of illumination, and

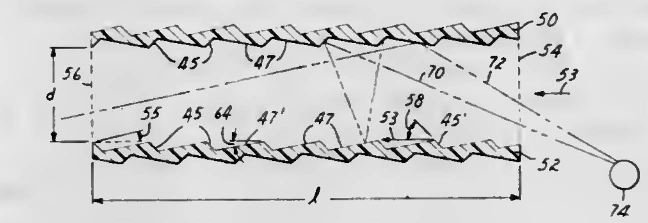
circuit means for energizing said headlamps and light sources in the aforesaid sequence including (a) a main two-position switch operable in one position to connect only the two on-focus light sources in said dual-function headlamps to the electrical power supply of the vehicle and thereby providing said low-beam lighting mode, and (b) an auxiliary two-position switch operable in one position to connect the mid-beam headlamp to the two on-focus light sources in the dual-function headlamps, said auxiliary switch in its other position being operable to connect the two off-focus light sources in said dual-function headlamps to the light sources in said mid-beam and high-beam headlamps,

said main switch in its other position being operable to connect said auxiliary switch to the electrical power supply of the vehicle.

3,894,228
LIGHT CONTROL DEVICE

Sanford Cobb, Jr., St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sept. 24, 1973, Ser. No. 400,253
Int. Cl. F21v *11/02*
U.S. Cl. 240—46.31 **14 Claims**



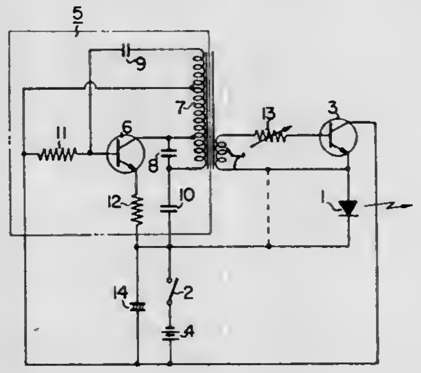
1. A light control device having a light input end and a light output end through which a beam of light may be transmitted in a given direction, which device includes at least one pair of opposing light control elements defining a channel, each of which elements comprise a series of broad specularly reflecting surfaces alternately facing said input and said output ends, the angle formed between any said output facing surface and said direction being less than 20° and greater than an angle whose cotangent is the ratio of the length of said channel over the distance between the elements at the output end and the angle formed between any input facing surface and said direction being greater than 45°, which device obstructs light of said beam which diverges from said given direction by more than a desired angle.

3,894,229
SIGNAL GENERATOR

Hiroshi Mouri, Kyoto, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed July 23, 1973, Ser. No. 381,483

Claims priority, application Japan, July 28, 1972, 47-76166; July 28, 1972, 47-76167; July 28, 1972, 47-76168; July 28, 1972, 47-89455
Int. Cl. H04b *9/00*
U.S. Cl. 250—199 **5 Claims**



1. A signal generator comprising

a. an oscillating circuit for producing a sinusoidal output voltage signal;

b. a transistor having an emitter, a base and a collector;

c. a load element connected in series with the emitter-collector circuit of said transistor;

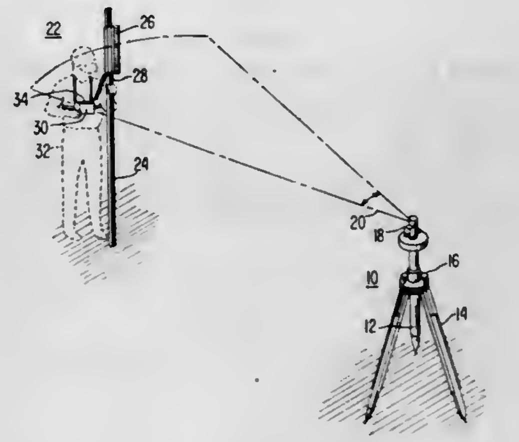
d. a dry element battery connected to said oscillating circuit and across said series-connected load element and transistor, the voltage of said battery characteristically becoming lower with the passage of time; and

e. means for coupling the output of said oscillating circuit between the base and emitter of said transistor, said coupling means including a resistor connected in series with the base of said transistor and the output of said oscillating circuit, the resistance of said resistor being selected to prevent reduction in the current through said load element despite a reduction in the voltage of said battery or in the output voltage signal of said oscillating circuit, the impedance between the base and emitter of said transistor not increasing and the voltage supplied between the base and emitter of said transistor not being reduced even when the output of said generating circuit is reduced and the base current of said transistor is reduced.

3,894,230
APPARATUS FOR DETECTING THE POSITION OF A MOVING OR MODULATED LIGHT BEAM

Robert J. Rorden, Santa Clara, and Gerald Hunter Williams, Sunnyvale, both of Calif., assignors to Coherent Radiation, Palo Alto, Calif.

Filed Oct. 25, 1973, Ser. No. 409,565
Int. Cl. G01j *1/20*
U.S. Cl. 250—203 R **10 Claims**



1. Apparatus for detecting the position of a moving or modulated light beam relative to a reference plane comprising:

a. a linearly aligned array of photo-detecting devices oriented perpendicularly to said reference plane, where said photo-detecting devices are positioned with respect to each other in increments corresponding to the units of position to be measured;

b. a numerical read-out display;

c. means responsive to the temporary energization of a photo-detecting device for providing a numerical read-out on said display of the position of the beam relative to said reference plane whenever one of said photo-detecting devices is energized thereby; and

d. a latching device associated with and responsive to each photo-detecting device which links each photo-detecting device with said read-out providing means, said latching device maintaining a read-out on said display for a sufficiently long period of time for human observation.

3,894,231
IMAGE CONVERTER OR INTENSIFIER DEVICE

Maurice Verat; Lucien Guyot, and Bertrand Driard, all of Paris, France, assignors to Thomson-CSF, Paris, France

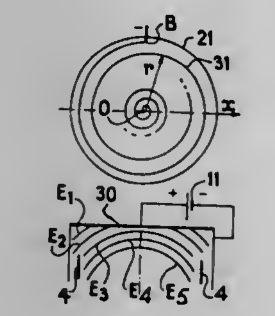
Filed Nov. 21, 1973, Ser. No. 417,921

Claims priority, application France, Nov. 28, 1972, 42260
Int. Cl. H01j *31/50, 39/12, 39/00*
U.S. Cl. 250—213 VT **4 Claims**

1. An image converter or image intensifier device comprising, within an evacuated envelope:

a photocathode comprising an electrically conductive layer and a photoemissive layer, these layers being applied on one another, said photoemissive layer emitting, when operating, photoelectrons under the impact of an incident photon stream, said conductive layer being plane shaped and made of a filiform conductor in the form of a spiral, one of whose ends being located near the center of said

photocathode and the other end at the periphery thereof;
a luminescent screen on which said photoelectrons impact;



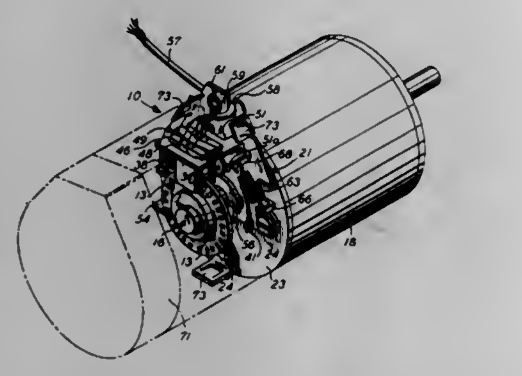
first means for accelerating said photoelectrons towards said screen;
second means for providing potential differences between different points of said spiral.

3,894,232

ROTATIONALLY ADJUSTABLE SUPPORT MECHANISM

Richard E. Laspesa, Chicago, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed May 8, 1974, Ser. No. 468,049
Int. Cl. G01p ***3/36***
U.S. Cl. 250—231 SE **10 Claims**



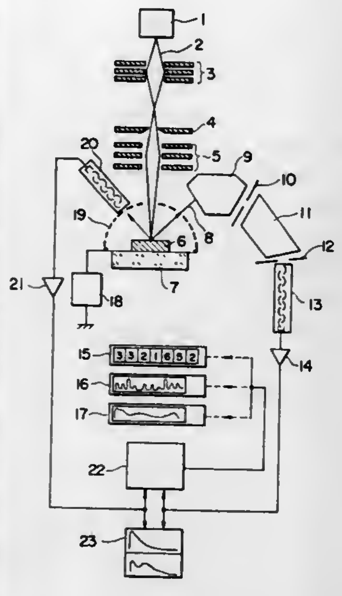
9. In a shaft position sensing assembly wherein an adjustable sensor is positioned adjacent a motor shaft-mounted and driven encoder, the combination further comprising:
a rotationally adjustable support mechanism, said mechanism including:
a base plate securable to a shaft end of the housing of the motor, and having a centrally located semi-circular opening which surmounts two shoulders formed therein, and further having a tab formed therein, said tab being spaced to one side of said opening and extending outwardly from one side surface of said base plate;
an angularly adjustable member having a sensor supporting ledge formed as an integral part thereof, and having a major planar region with a semi-circular opening formed in a central area thereof, the openings in said adjustable member and base plate being dimensioned such that the arcuate edges thereof when aligned and juxtaposed, are substantially coextensive between the shoulders of said base plate, said adjustable member further having a tab formed therein, said tab being spaced to one side of the opening therein and extending outwardly from one side surface thereof so as to be in overlying and spaced relationship with respect to said tab of said base plate; and
means for adjusting the spacing between said tabs, to thereby control the angular displacement of said adjustable member, together with said sensor supported thereon, relative to both said base plate and adjacent shaft driven encoder, said adjusting means including a threaded member extending through a tapped hole formed in one of said tabs, and further including a biasing spring connected between said base plate and adjustable member so as to continuously maintain the inner free end of said threaded member biased against the other of said tabs.

3,894,233

ION MICROPROBE ANALYZER

Hifumi Tamura, Hachioji; Toshio Kondo, Sagamihara, and Kazumitsu Nakamura, Katsuta, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Oct. 29, 1973, Ser. No. 410,504
Claims priority, application Japan, Oct. 27, 1972, 47-107191; Jan. 8, 1973, 48-4701
Int. Cl. H01j ***37/26***
U.S. Cl. 250—307 **18 Claims**



1. An ion microprobe analyzer comprising:
means for generating a primary ion beam;
means for bombarding a specimen with said primary ion beam;
means for detecting a part of the secondary particles emitted from all elements contained in the specimen as a result of the bombardment thereof by said primary ion beam;
means for mass-analyzing a part of the secondary ions in the secondary particles emitted from said specimen;
means for detecting ions of an element to be analyzed derived from the secondary ions in the mass-analyzing means; and
means for measuring the ratio of the output signals from said means for detecting a part of the secondary particles and said means for detecting ions of an element to be analyzed;
whereby the influence of the work function of the bombarded surface of the specimen can be determined so that a measurement of the concentration distribution of an element of the specimen in the direction of the depth of the specimen can be measured precisely.

3,894,234

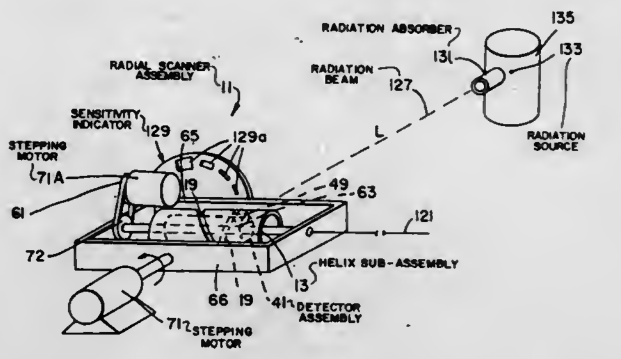
RADIAL SCANNER

John W. Mauch, Danville, and Emil M. Bergh, Walnut Creek, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 28, 1974, Ser. No. 437,441
Int. Cl. G01t ***1/16***
U.S. Cl. 250—358 **5 Claims**

1. A radial scanning device for sampling the interface area integrity of a member and including a radiation source and comprising:
a. a means for scanning said member;
b. said scanning means comprises a detector;

c. said radiation source emitting radiation for passing through said member;
d. said means positioned for scanning radiation passing through said member;
e. said detector of said scanning means comprises a cylinder having a helical slit formed therein;



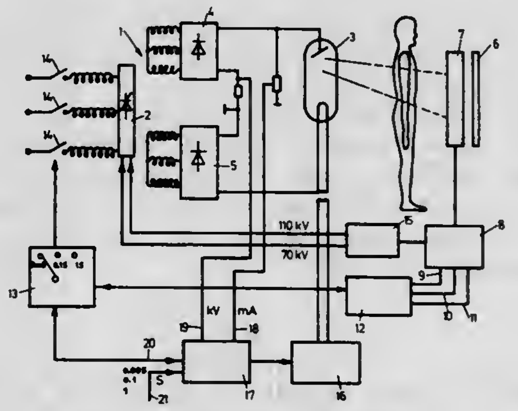
f. said radiation detector positioned within said cylinder;
g. first means for rotating said cylinder about its longitudinal axis; and
h. second means for rotating said detector and said cylinder about an axis perpendicular to said longitudinal axis.

3,894,235

X-RAY DIAGNOSTIC APPARATUS FOR THE PREPARATION OF X-RAY EXPOSURES INCLUDING A TIMER SWITCH FOR DETERMINING THE EXPOSURE TIME

Kurt Franke, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Apr. 26, 1974, Ser. No. 464,655
Claims priority, application Germany, June 8, 1973, 2329414
Int. Cl. G03b ***41/16***
U.S. Cl. 250—402 **3 Claims**



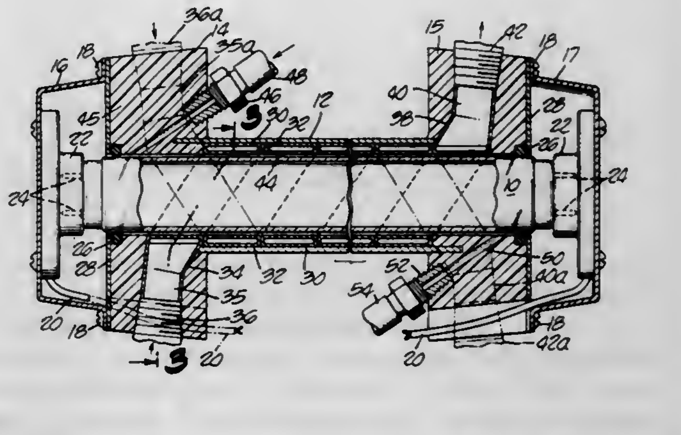
1. In an X-ray diagnostic apparatus for the preparation of X-ray exposures, including timing switch means for determining the exposure time; and a control circuit for providing a predetermined X-ray dosage to a patient, said control circuit having a dosage output measuring arrangement, comparator means connected to said measuring arrangement for comparing the actual value of the dosage output with a reference value so as to effect an optimum X-ray image darkening within the respective exposure time, and setting means for at least one of the operating parameters of an X-ray tube in said apparatus, said setting means being controlled by an output signal from said comparator means for correlating said actual value with said reference value, the improvement comprising; selector switch means for programming an X-ray tube voltage and automatically set exposure time periods suitable for a plurality of varied patient constitutions, said selector switch means selecting a first exposure time for initiating an exposure and transmitting a reference value-forming signal to said comparator means representative of the required dosage output for said exposure time, said selector switch means and setting means for the X-ray tube voltage adapted to be controlled by said comparator means upon initiation of an exposure so as to correlate the actual value of the dosage output with a reference value, so as to effect a reduction in the X-ray tube voltage upon said actual value being higher than the reference value, and to effect a switching-over sequence to a successively longer exposure time and conveyance of a new reference value to said comparator means in conformance with said last-mentioned exposure time upon said actual value being lower than the reference value.

3,894,236

DEVICE FOR IRRADIATING FLUIDS

Wayne K. Hazelrigg, 3624 S. Carolina St., San Pedro, Calif. 90731

Filed Dec. 10, 1973, Ser. No. 423,136
Int. Cl. H01j ***37/00***
U.S. Cl. 250—435 **22 Claims**



1. In a device for radiant treatment of flowing fluid, the combination of:
an elongated lamp providing a source of radiant energy and having an envelope wall; and
passage means for flow therethrough of fluids to be treated by the radiant energy;
said passage means comprising a plurality of tubes of flexible non-metallic material having a unitary wall structure transparent to said radiant energy in side-by-side relationship each being of substantially smaller cross sectional area than the radiant source;
said tubes being positioned to jointly provide an overall configuration of an annulus surrounding and substantially completely encasing the envelope wall of said radiant source.

3,894,237

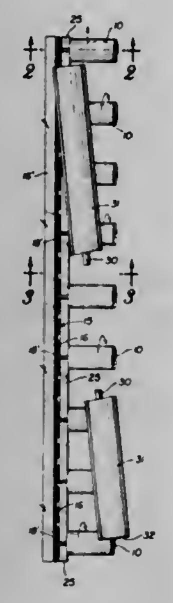
METHOD AND APPARATUS FOR CURING INKS ON METAL CONTAINERS BY ULTRA VIOLET LIGHT

Gary E. Choate, Golden, and Larry Mason Dugan, Boulder, both of Colo., assignors to Coors Container Company, Golden, Colo.

Filed Feb. 19, 1974, Ser. No. 443,367
Int. Cl.^{2} H01J ***37/00***
U.S. Cl. 250—453 **7 Claims**

1. Apparatus for curing inks and decorative coatings on containers comprising
a. a conveyor having container rotating means on which decorated containers are mounted for rotation while being carried by the conveyor,
b. means for rotating said container rotating means, and
c. an ultra violet light assembly including a longitudinally extending lamp tube and reflector, said assembly extending at an oblique angle to the path of travel of the conveyor for beaming a band of concentrated ultra violet light on the rotated containers while the containers move past the light assembly, the angle at which the assembly

extends relatively to the path of travel of the conveyor being determined by the axial length of the containers such that each container receives bands of ultra violet

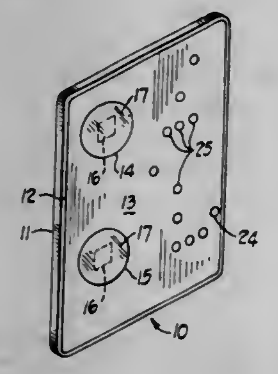


light in helical pattern progressively from end to end of the container body while it is carried by the conveyor past the assembly.

3,894,238
LAMINATED DOSIMETRIC CARD

Francis Morgan Cox, Bedford Heights; James D. Chamberlain, Aurora; Erwin F. Shrader, East Cleveland; Bruce M. Shoffner, Shaker Heights, and Andras Szalanczy, Oakwood Village, all of Ohio, assignors to Kewanee Oil Company, Bryn Mawr, Pa.

Continuation-in-part of Ser. No. 203,281, Nov. 30, 1971. This application Dec. 5, 1973, Ser. No. 422,014
Int. Cl. G01t *1/11*
U.S. Cl. 250—484 **8 Claims**

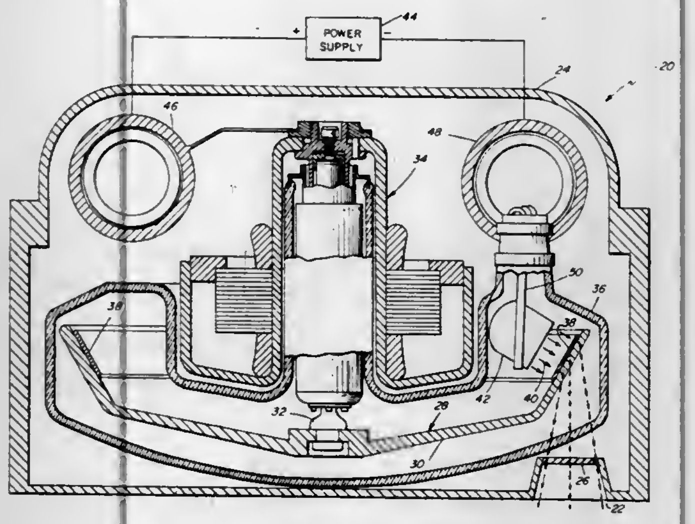


1. A laminated card adapted to be worn by a person susceptible to potentially injurious radiation, comprising a foraminous, code-adaptable rigid substrate of essentially non-luminescent material on which is adhered a non-luminescent sheet of film material light-permeably coded in light-transmitting registry with particular holes of said substrate to enable said card to be uniquely identified in accordance with a preselected code, said substrate having vertical edges confining said film material, and, a depressed portion, said depressed portion providing a rectangular trough or recess along the opposite side of said substrate, said substrate and said non-luminescent sheet having one or more apertures from about 0.2 cm. to about 2 cm. in diameter, each said aperture adapted to have commonly disposed therebetween in said trough or recess a dosimeter encapsulated in an envelope of a heat-sealable essentially non-luminescent synthetic polymeric resin, said envelope being secured between said substrate and said film material, whereby a dosimeter may be heated at a pre-determined location in an automatic evaluation instrument.

3,894,239
MONOCHROMATIC X-RAY GENERATOR

Martin Braun, Stamford, Conn., assignor to Raytheon Company, Lexington, Mass.

Filed Sept. 4, 1973, Ser. No. 393,773
Int. Cl. H01j *35/10*
U.S. Cl. 250—493 **8 Claims**



1. An x-ray generator comprising:

means for generating a beam of electrons having a predetermined energy;

a target comprising a material which emits fluorescent x-radiation when illuminated on a first side thereof with electrons of said predetermined energy, the width of said target being many times greater than its depth, at least a portion of said radiation being emitted from a second side of said target opposite said first side;

a housing opaque to said radiation enclosing said target, said housing having a window transparent to said radiation;

means for moving said target through said beam, said moving means including means for orienting said target such that said second side thereof is angled relative to said window to permit only those rays of said radiation emitted at a glancing angle from said second side to exit said housing.

3,894,240
CONTROL CIRCUIT FOR MAINTAINING A MOVABLE MEDIUM BETWEEN LIMITS

Ronald N. Rose, Lake Worth, Palm Beach, Fla., assignor to Simer Pump Company, Minneapolis, Minn.

Filed Mar. 22, 1974, Ser. No. 454,020
Int. Cl. H01j *39/12*
U.S. Cl. 250—577 **5 Claims**

1. A control circuit for maintaining a movable medium between predetermined limits comprising:

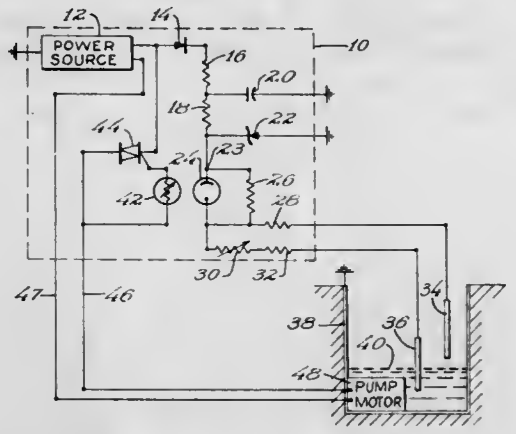
upper and lower limit probes operable to detect the presence of said medium at the upper and lower limits respectively;

a power source;

a light source means requiring a higher ignition current than sustaining current connected to said power source and to said upper and lower limit probes;

voltage means controlled by the current flowing to said probes, said light source means requiring current flow through both probes to ignite but through only one probe to remain on;

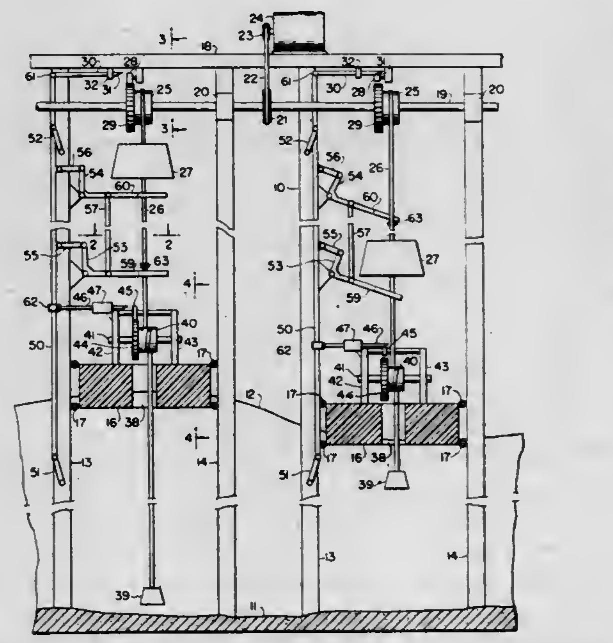
means for detecting if the light source means is burning; and medium control means connected to said detecting means so as to vary said medium responsive to the state of said light source means.



3,894,241
WAVE ACTION POWER SOURCE

Saul Kaplan, 405 Highland Ave., Merion, Pa. 19066

Filed Mar. 8, 1974, Ser. No. 449,248
Int. Cl. F03b *13/12*
U.S. Cl. 290—42 **5 Claims**

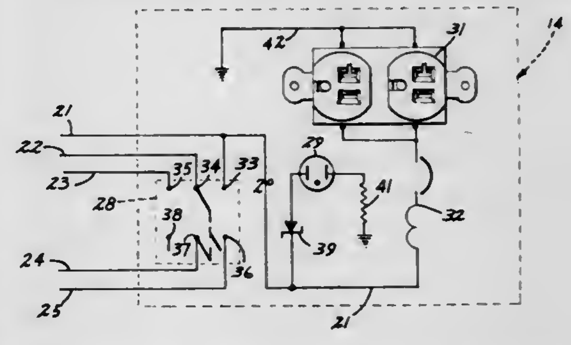


1. A power source powered by waves comprising, in combination, a frame having a plurality of pairs of legs extending into water and having a top member fixed to the upper ends of said legs, a horizontal shaft journalled in said frame above the water, a first pulley rotatably mounted on said shaft between each pair of said legs, a first releasable rachet mechanism preventing rotation of each of said first pulleys in a first direction, a non-releasable rachet in each of said first pulleys driving said shaft when each of said first pulleys is rotated in the other direction, a chain hanging over and engaging each of said first pulleys and having first and second ends, a first heavy weight fixed to the first end of each of said chains urging rotation of said first pulleys in the first direction, a float constrained to rise and fall on waves between each pair of legs, a second pulley rotatably mounted on each of said floats, said second pulleys each engaging the second end of one of said chains, a second releasable rachet mechanism on each of said second pulleys allowing rotation of said second pulleys when said floats on which said second pulleys are mounted rise on waves, a second lighter weight at the second end of each of said chains below said floats so that rising and falling of said floats raises said first weights, and means sumultaneously releasing both of said releasable rachet mechanisms associated with each of said first weights when said first weights are raised to a given height to drop said first weights and rotate said shaft by means of said non-releasable rachets, said means releasing said releasable rachet mechanisms allowing said releasable rachet mechanisms to engage when said first weights fall a given distance.

3,894,242
ELECTRICAL POWER CONVERTING APPARATUS

Oscar D. Helling, Mankato, Minn., assignor to GTO Enterprises, Inc., St. Peter, Minn.

Continuation of Ser. No. 366,327, June 4, 1973, which is a continuation of Ser. No. 232,126, March 6, 1972. This application Jan. 10, 1974, Ser. No. 432,220
Int. Cl.² H02J *3/12, 4/00*
U.S. Cl. 307—10 R **17 Claims**



1. Power converting apparatus for use in an electrical system including an electrical storage battery, variable output voltage generating means having a field winding energizable by an external source to enable the generation of electrical energy thereby, and regulator means for controlling the voltage level applied to the battery from the voltage generating means and for switchably connecting the battery to said winding for energization thereof, the power converting apparatus comprising:

a. power outlet means;
b. first connector means for connecting the power outlet means to the output of the voltage generating means so that the power outlet means is in continuous electrical communication with the voltage generating means to receive its full range of voltage potential;
c. switch means having a common pole and first and second poles selectively connectable with the common pole;
d. the first pole being connected to the first connector means;
e. second connector means for connecting the common pole with the battery and the regulator means;
f. and third connector means for connecting the second pole and the field winding of the voltage generating means;
g. whereby selective connection of the common and first poles of the switch means maintains the battery at a regulated potential and applies said regulated potential to the power outlet means;
h. and selective connection of the common and second poles of the switch means connects the battery directly with said field winding and maintains the power outlet means at the unregulated output potential of the voltage generating means.

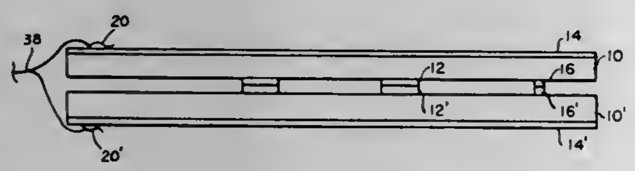
3,894,243
POLYMERIC TRANSDUCER ARRAY

Seymour Edelman, Silver Spring, Md.; Steven C. Roth, Fairfax, Va., and Carol F. Vezzetti, Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 6, 1974, Ser. No. 477,142
Int. Cl.² H04R *19/00*
U.S. Cl. 307—88 ET **10 Claims**

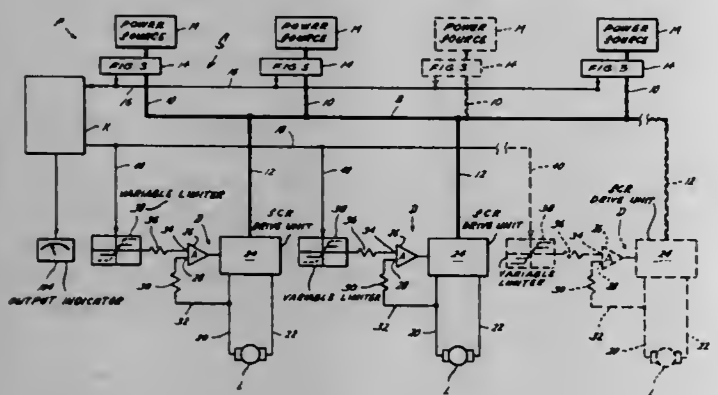
1. An array of polymeric film transducers for sensing dynamic pressure and vibrations comprising:

- a first film sandwich comprising a sheet of permanently polarizable polymeric film coated with a plurality of geometrically shaped areas of electrically conductive material on one surface, said areas being laid down in a desired array configuration, said polymeric film being coated on the other surface with a conductive material which covers at least the same area covered on the first side by the geometrically shaped areas,
- the area of polymeric film under each geometrically shaped area being permanently poled,
- said first surface of said polymeric film further having leads of conductive material laid down thereon, a different lead being connected to and extending from each said geometrically shaped area;
- a second film sandwich which is a mirror image of the first, said second sandwich being placed in geometrical correspondence with the first with respect to the geometrically shaped areas and their leads which form the interface, the two sandwiches being adhered to each other to form a composite sandwich;
- electrical connection means making electrical contact with the leads in the interface area; and
- electrical connection means making electrical contact with both of said outer conductive coatings.



3,894,244
POWER LIMIT AND CONTROL SYSTEM

Ross K. Hill, 7752 Hammerly, Houston, Tex. 77055
Filed Oct. 3, 1973, Ser. No. 403,323
Int. Cl. H02j *3/00*
U.S. Cl. 307—16 **14 Claims**

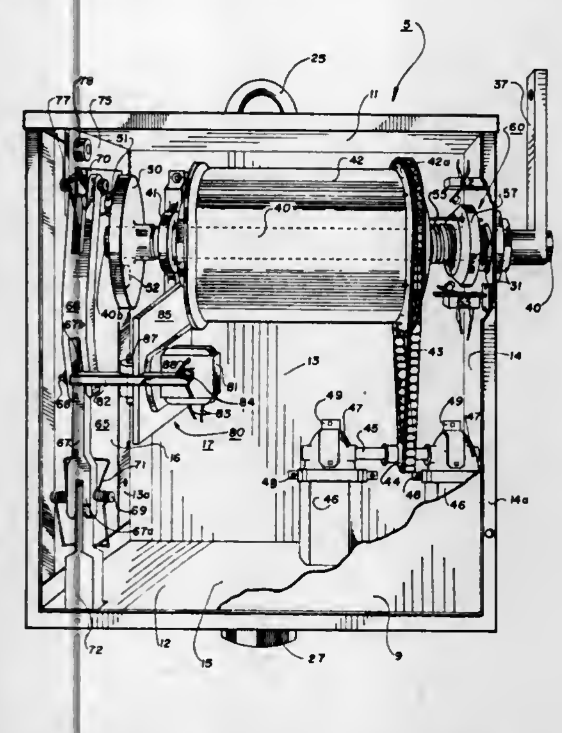


13. A method of monitoring the power capability of a group of power sources having drive control circuits and limiting the power drawn from such sources to a magnitude within the capabilities of such sources, comprising the steps of:

- a. sensing the most heavily loaded of the power sources, said step of sensing comprising the steps of:
  - 1. sensing the current output from the sources;
  - 2. sensing the kilowatt output from the sources;
- b. comparing the power output of the most heavily loaded of the power sources with a reference power level; and
- c. energizing the drive control circuits of the loads to limit the power drawn from the group of power sources to a magnitude within the output capabilities of the power sources when the reference power level is reached.

3,894,245
AUTOMATICALLY RESPONSIVE STORED ENERGY MECHANISM FOR OPENING AND CLOSING AN ELECTRICAL SWITCH

Maurice A. Hogue; James E. McClain, and Howard L. Scott, all of Greenville, Tex., assignors to ESCO Manufacturing Company, Greenville, Tex.
Filed Nov. 23, 1973, Ser. No. 418,384
Int. Cl. H01h *3/16*
U.S. Cl. 307—124 **12 Claims**

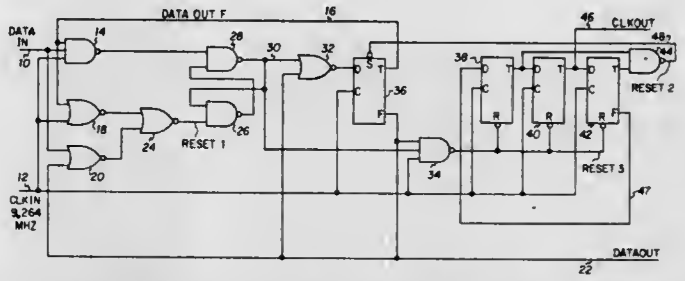


1. A remote controlled switch operator apparatus for responsively and sequentially opening and closing an electrical switch, comprising:

- a. a rotatably mounted main operating shaft adapted for mechanical coupling with said switch;
- b. first means for imparting torque to said main operating shaft to urge said shaft into rotation; said first means comprising:
  - drum means surrounding, and mounted to rotate with respect to, said main operating shaft,
  - a spring assembly operatively coupled with said drum means and said main operating shaft, and
  - drive means, when actuated, for rotating said drum means with respect to said shaft, thereby to cause said spring assembly to impart torque to the said main operating shaft;
- c. second means mounted to rotate with said operating shaft, said second means including a pair of stops circumferentially disposed around said shaft;
- d. latch means releasably and separately engaging each of said stops;
- e. trip release means operatively coupled to said latch means for releasing said latch means from engagement with one of said stops in response to a first electrical signal, and returning said latch means to releasable engagement with the other of said stops; and thereafter releasing said latch means from engagement with the other stop in response to a second electrical signal and returning said latch means to releasable engagement with the one stop, thereby to limit the unrestrained rotation of said shaft to first and second discrete angular positions, the degree of rotation of said shaft between said first and second angular positions being less than a full revolution; and
- f. control means responsive to the extent of torque on said operating shaft for deactuating said drive means when said torque is at a first predetermined amount and for preventing the release of said latch means when said torque is at a second predetermined amount less than said first predetermined amount.

3,894,246
CLOCK RECOVERING APPARATUS AND METHOD

Willard J. Torgrim, Springville, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.
Filed June 24, 1974, Ser. No. 482,395
Int. Cl.^{2} H03K *19/08, 1/17;* **H04K** *7/00*
U.S. Cl. 307—208 **4 Claims**

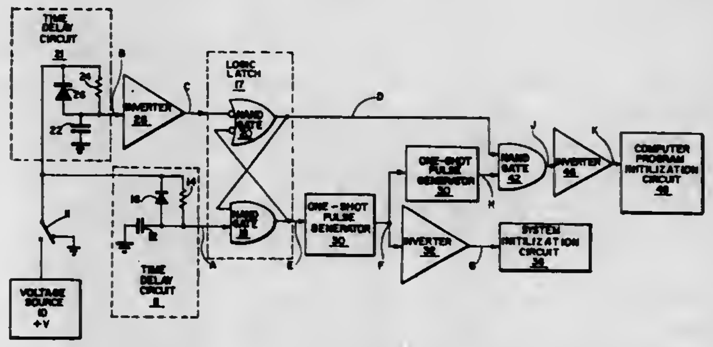


4. Apparatus for producing a clock signal having the proper phase relationship with respect to a received data signal comprising, in combination:

- means for generating a high frequency clock signal;
- means for counting the high frequency clock signal whereby it is divided to a lower frequency clock signal;
- means for generating a logic 1 first signal upon the simultaneous occurrence of a high frequency clock signal of a given first logic value and of an incoming data signal occurring after a minimum period of time of not receiving a data signal value of the second logic value;
- means for generating a logic 1 output data signal upon the next occurrence of the high frequency clock having the given first logic value only if the incoming data signal has remained at the second logic value;
- means for setting the counting means to an initial condition after the generation of an output data signal of the logic 1 value; and
- means for returning the logic 1 value output data signal to a logic zero at a predetermined count of the means for counting the high frequency clock signal.

3,894,247
CIRCUIT FOR INITALIZING LOGIC FOLLOWING POWER TURN ON

Robert De Jong, Placentia, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.
Filed Dec. 26, 1973, Ser. No. 428,481
Int. Cl.^{2} H03K *19/08, 5/13, 1/12*
U.S. Cl. 307—208 **6 Claims**

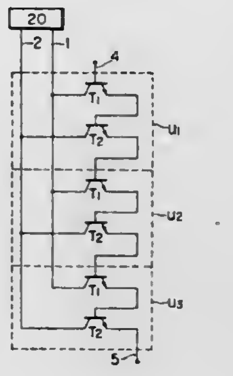


1. A power initialization circuit comprising in combination: first and second charging circuit means each having an input terminal and an output terminal, said first and second charging circuit means producing first and second time delays, respectively, following the application of a predetermined voltage to the input terminals of said charging circuit means; first inverter means having an input terminal and an output terminal, said input terminal of said inverter means connected to said output terminal of said second charging circuit means for inverting the logical value of the signal produced by said second charging circuit means;

latch means having first and second input terminals and at least a first output terminal, said first input terminal connected to the output terminal of said first charging circuit means and the second input terminal of said latch means connected to said output terminal of said first inverter means for providing an output signal at the end of the longer of the first and second time delay periods.

3,894,248
DYNAMIC SHIFT REGISTER UTILIZING MINORITY CARRIER STORAGE EFFECT OF SEMICONDUCTOR DEVICE

Takashi Asaoka, Tokyo, Japan, assignor to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan
Continuation of Ser. No. 198,286, Nov. 12, 1971, abandoned. This application Sept. 17, 1973, Ser. No. 397,839
Claims priority, application Japan, Aug. 11, 1971, 46-60261
Int. Cl. G11c *11/36, 11/40*
U.S. Cl. 307—211 R **11 Claims**



1. A dynamic shift register comprising first and second feeder lines, a source of voltage connected to apply alternating voltages having first and second levels in a complementary manner, to said first and second feeder lines and a plurality of unitcircuits each comprising first and second transistors for storage of minority carriers, the collectors of said first and second transistors being connected to said first and second feeder lines respectively, means connecting the emitter of said first transistor to the base of said second transistor, said connecting means consisting of a direct current path free of direct current connections to said first feeder line external of said source and free of interconnection other than to said transistors with direct current voltage levels that affect the shift of minority carriers from said first to said second transistors, the base of said first transistor being used as an information input terminal and the emitter of said second transistor being used as an output terminal, whereby when said first voltage level is applied to said first feeder line while said second voltage level is applied to said second feeder line, the current flows across the collector junction of said first transistor in response to the signal applied to said input terminal, thereby storing the minority carriers in said collector junction region, when said second voltage level is applied to said first feeder line while said first voltage level is applied to said second feeder line, the current which is controlled depending upon whether the minority carriers are stored in said first transistor or not flows across the collector junction of said second transistor, thereby shifting the storage of minority carriers into the collector junction region of said second transistor, and when said first voltage level is applied to said first feeder line while said second voltage level is applied to said second feeder line, said minority carrier stored in said second transistor is shifted through said output terminal to the next unit circuit thus shifting the information represented by the storage of minority carriers from one unit circuit to the next unit circuit.

3,894,249
DEVICE FOR GENERATING VARIABLE OUTPUT VOLTAGE

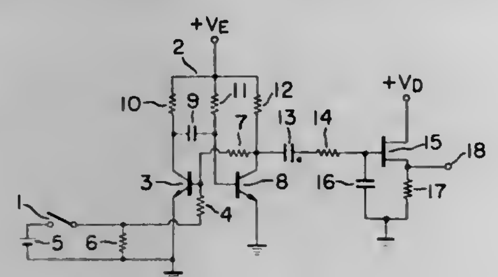
Shunji Minami; Shunzo Oka, and Takehide Takemura, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Dec. 14, 1973, Ser. No. 424,647

Claims priority, application Japan, Dec. 20, 1972, 47-128492; Dec. 20, 1972, 47-147212; Dec. 20, 1972, 47-147213

Int. Cl. H03k *4/02*

U.S. Cl. 307—227 **4 Claims**



1. A device for generating variable output voltage comprising
- a. a MOS field-effect transistor,
- b. a non-polarized capacitor connecting the gate of said MOS field-effect transistor to ground,
- c. a neon bulb,
- d. an input resistor connected in series with the neon bulb,
- e. a monostable multivibrator means connected to the gate of said MOS field-effect transistor through said input resistor and said neon bulb for providing a single square wave output pulse in response to an input signal, said square wave output pulse having a predetermined electrical potential and a duration sufficient only to charge said non-polarized capacitor through said input resistor and said neon bulb to a potential that is less than one-half the predetermined electrical potential.
- f. a switch connected to said monostable multivibrator means for providing said input signal, and
- g. an output resistor connecting the source of said MOS field-effect transistor to ground, whereby when said switch is repeatedly closed, the output voltage derived from the source of said MOS field-effect transistor increases stepwise.

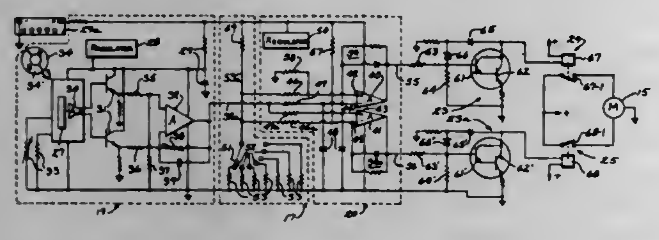
3,894,250
HALL CELL POSITION SENSOR FOR OUTBOARD DRIVE APPARATUS

James R. Hager, Fond du Lac, and Hugh E. Riordan, West Bend, both of Wis., assignors to Brunswick Corporation, Skokie, Ill.

Division of Ser. No. 329,726, Feb. 5, 1973, Pat. No. 3,834,345. This application Mar. 21, 1974, Ser. No. 453,349

Int. Cl. H01r *5/00;* **B63b** *41/00;* **B60q** *1/26*

U.S. Cl. 307—309 **6 Claims**



1. A Hall cell sensor for producing a sine wave signal proportional to tilt positioning of a pivotally mounted outboard drive unit, comprising Hall cell having a tubular housing having attachment means for supporting the housing in fixed relation with respect to the outboard drive unit, an annular magnetic means adjacent to said Hall cell and having attachment means for securing the magnetic means to the outboard drive unit coaxially with the axis of rotation of the drive unit, said magnetic means being diametrically magnetized to produce an operative flux field varying as a sine wave with angular orientation.

3,894,251
ELASTIC SURFACE WAVE TRANSDUCER

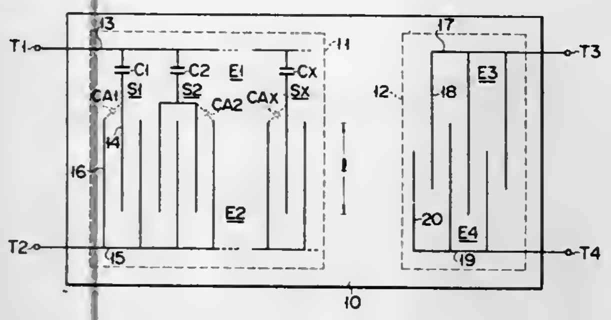
Kimio Shibayama, and Hiroaki Sato, both of Sendai, Japan, assignors to Kimlo Shibayama, Sendai, Japan

Filed Aug. 26, 1974, Ser. No. 500,696

Claims priority, application Japan, Aug. 31, 1973, 48-97887

Int. Cl.² H01V *7/00*

U.S. Cl. 310—9.8 **9 Claims**



1. An electric surface wave interdigital transducer comprising first and second electrodes disposed on a piezoelectric substrate and each having a common electrode connected to an external terminal and a plurality of electrode fingers connected to said common electrode, the overlap lengths of the interdigital electrode fingers of said first and second electrodes being uniform throughout the transducer, characterized in that the electrode fingers of said first electrode are divided into a plurality of sections each including at least one electrode finger; and that capacitors are connected between the finger or fingers of the respective sections and said common electrode.

3,894,252
ELECTRIC MOTOR WITH MEANS FOR MAGNETICALLY PREVENTING AXIAL VIBRATION

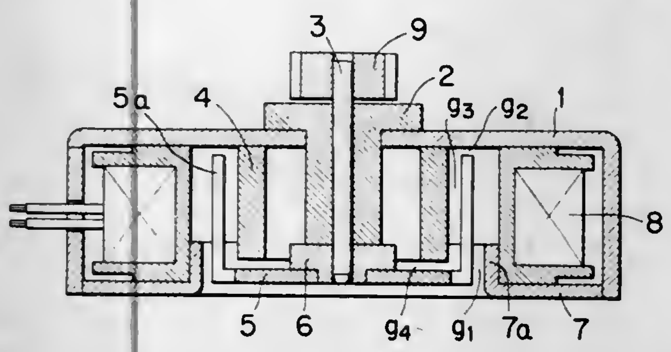
Haruo Miwa, Mino-kamo; Yasushi Hasegawa, Nagoya; Toyoshi Mori, and Yoshitaka Iwase, Nagoya, all of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Japan

Filed Dec. 26, 1973, Ser. No. 427,506

Claims priority, application Japan, Dec. 26, 1972, 47-1009

Int. Cl. H02k *5/24*

U.S. Cl. 310—51 **19 Claims**



1. In an electric motor including a permanent magnet stator magnetized radially to provide north and south poles alternating at equal angular spacing, a rotary shaft disposed coaxially with said permanent magnet stator, a rotor fixed to said rotary shaft and having a circular body portion lying in a radial plane through said shaft and pole teeth of soft teeth of soft magnetic material extending from the periphery of said body portion along the magnetized face of said permanent magnet stator keeping a gap therebetween, the number of said poles of the permanent magnet stator being an even multiple of the number of said pole teeth, an annular exciting coil concentric with said permanent magnet stator and said rotor and spaced from said rotor, and a casing including a yoke which forms a magnetic circuit interlinking said annular exciting coil with said pole teeth; the improvement comprising means relatively axially locating said rotor with respect to said permanent magnet stator and yoke for continuously applying a non-zero total net axial magnetic force to said rotor in only one axial direction during motor rotation, wherein said permanent magnet is spaced in said one axial direction from said rotor body portion such that the net direction of any axial magnetic force on said rotor by said permanent magnet stator is in said one direction and flux paths are providing between said yoke and rotor, rotor magnetic material portions at said flux paths being offset from the opposed yoke portion other than opposite said one axial direction and to urge said rotor in said one direction.

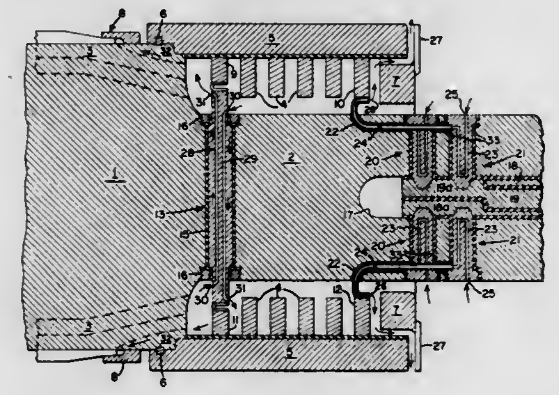
3,894,253
VERY HIGH CURRENT FIELD WINDING FOR DYNAMOELECTRIC MACHINE ROTOR

David M. Willyoung, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 25, 1973, Ser. No. 409,651

Int. Cl.² H02K *1/32*

U.S. Cl. 310—61 **6 Claims**



1. A field winding for a two pole dynamoelectric machine rotor of the type having a body portion formed with axially extending insulated slots and a reduced spindle portion at either end thereof comprising:
- a. at least one electrical conductor bar disposed in each axially extending rotor body insulated slot; each slot defined by a pair of radially extending arms and each arm terminating in an enlarged retaining lip portion; each electrical conductor extending radially outward from within its respective slot approximately to the rotor surface;
- b. an inner coil terminating conductor for each rotor pole;
- c. an outer coil terminating conductor for each rotor pole; said inner and outer coil terminating conductors electrically connected to said rotor body conductor bars;
- d. a pole to pole connector electrically connecting said inner coil terminating conductors;
- e. a plurality of terminal studs connected to a negative and positive source of excitation current; and,
- f. a plurality of electrical leads connecting the terminal studs to outer coil terminations, said terminal studs and said electrical leads each are arranged with communicating internal cooling passages and having a coolant inlet on each terminal stud disposed closer to the rotor spindle than a coolant outlet from said lead.

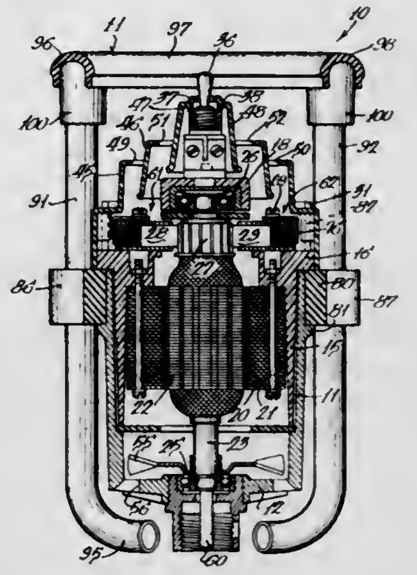
3,894,254
ELECTRIC MOTOR POWER UNIT

Grover P. Holther, Jr., Mt. Prospect, Ill., assignor to Racine Federated, Inc., Racine, Wis.

Filed Mar. 4, 1974, Ser. No. 447,504

Int. Cl. H02k *7/00*

U.S. Cl. 310—66 **10 Claims**



1. An electric motor power unit for driving a concrete vibrator comprising, a casing housing the motor, a handle support of resilient material encircling and secured to said casing and having pats thereof at a distance from the casing, a handle of a quadrilateral shape at a distance from the casing and having a plurality of sides defining four corners therebetween which corners are in alignment with the parts of the handle support, each of said handle sides being of a length to permit engagement thereof by the hand of an operator, a plurality of elongate frame members fitted into said parts and the handle at said corners to define a protective enclosure for the unit and with said handle support provide a mounting for said handle.

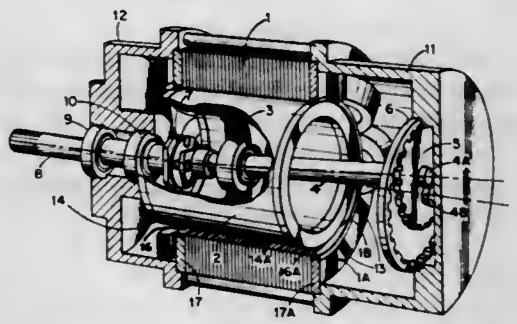
3,894,255
SYNCHRONOUS MACHINE FOR STEPPING MOTOR AND OTHER APPLICATIONS AND METHOD OF OPERATING SAME

George C. Newton, Jr., Concord Rd., Lincoln, Mass. 01773

Filed Jan. 11, 1973, Ser. No. 322,638

Int. Cl. H02k *7/10*

U.S. Cl. 310—80 **29 Claims**



1. A synchronous stepping motor machine, having, in combination, housing means; stator means provided with a plurality of poles, fixed in said housing means; armature means separated by air gaps from said poles; electrical means, comprising windings connected with current sources, for sequentially magnetizing said stator poles, thereby producing magnetic flux in the air gaps associated with the magnetized poles; suspension means for maintaining said armature means properly oriented with respect to said stator means and for suspending said armature means for oscillatory movement thereof in directions to substantially vary the thickness of said air gaps; an output member; bearings supporting said output

member for movement with respect to said housing means; means for mechanically amplifying the oscillatory movements of said armature means; conversion means interconnecting said amplifying means, housing means and output member for converting the amplified oscillatory movement of the armature means into movement of said output member that is unidirectional for at least more than one half cycle of armature means movement; and means for limiting the thickness variations of said air gaps from substantially zero to the order of a few thousandths of an inch such that the said magnetic flux, under conditions of near maximum machine performance, changes substantially less than the corresponding fractional change in the air gap thickness.

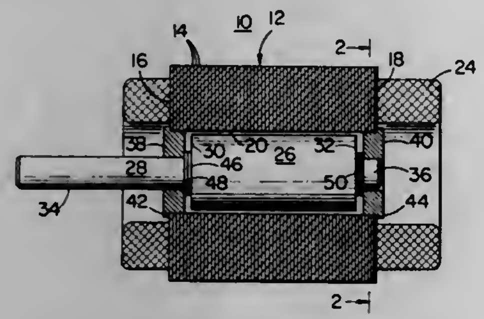
3,894,256
BEARING ASSEMBLY FOR DYNAMOELECTRIC MACHINE

Mitchell D. Sholtz, Fort Wayne, Ind., assignor to Bowmar Instrument Corporation, Fort Wayne, Ind.

Filed July 26, 1973, Ser. No. 382,838

Int. Cl. H02k *5/00*

U.S. Cl. 310—90 **6 Claims**



1. In a dynamoelectric machine having a stator core member formed of magnetic material and having opposite end faces with a bore extending axially therebetween, said stator core member having radially inwardly extending teeth defining winding slots therebetween extending radially outwardly from said bore and axially between said end faces, said teeth having inner ends defining said bore a rotor member in said bore, said rotor member being mounted on a shaft and having opposite ends, and bearing means on said shaft respectively adjacent said opposite ends of said rotor member for rotatably supporting the same, the improvement wherein said bearing means are non-magnetic and are respectively mounted in said bore engaging said inner ends of said teeth.

3,894,257
MAGNETIC INDUCTION COUPLINGS

Jonathan Reed, Cambridge, England, assignor to Pye Limited, Cambridge, England

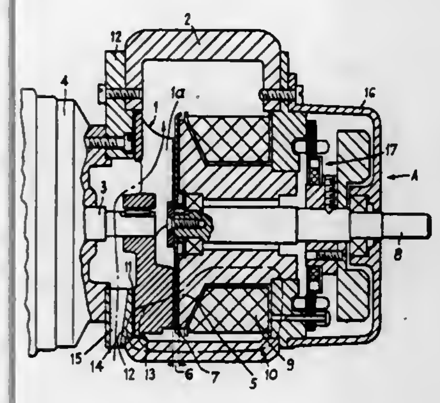
Filed Mar. 14, 1974, Ser. No. 451,149

Claims priority, application United Kingdom, Mar. 23, 1973, 14149/73; Dec. 10, 1973, 57195/73

Int. Cl. H02k *49/04*

U.S. Cl. 310—105 **7 Claims**

1. A magnetic induction coupling comprising a first rotatable part of ferromagnetic material carrying a plurality of axially extending pole pieces, a second rotatable part comprising a disc of non-ferromagnetic material disposed opposite and axially spaced from said pole pieces, a stator of magnetic material having a portion disposd on the opposite side of said disc from said pole pieces and including or connected to a region extending around the opposite side of said first rotatable part to said disc to define an airgap extending axially between said region and said first rotatable part, means associated with said stator for producing a magnetic field which passes through said disc and said pole pieces and through said axial airgap and wherein the proportions of the face area and length of said axial airgap and of the further axial airgap containing said disc are such that any axial pull due to magnetism between the first rotatable part and said stator portion is balanced by axial pull due to magnetism between said first rotatable part and said region.



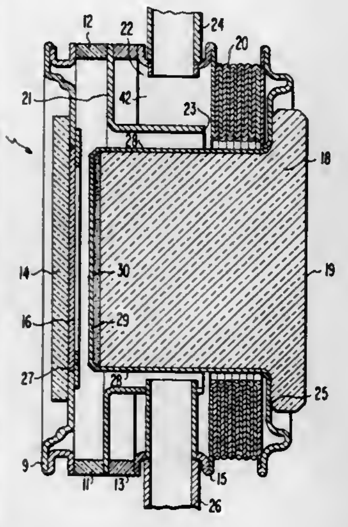
3,894,258
PROXIMITY IMAGE TUBE WITH BELLOWS FOCUSSING STRUCTURE

Gilbert Nason Butterwick, Leola, Pa., assignor to RCA Corporation, New York, N.Y.

Filed June 13, 1973, Ser. No. 369,581

Int. Cl. H01j *39/18, 11/01, 39/02*

U.S. Cl. 313—102 **6 Claims**



1. A proximity focussed image tube comprising:

a. a vacuum containing body including:
   1. a transparent heat conducting input window sealed to one end of said body;
   2. an output screen sealed to another opposed end of said body;
   3. a vacuum containing envelope including at least one tubular portion sealed between the opposed ends of said body which include said input window and output screen; said envelope being sealed to said input window and output screen by flanged portion which extend from opposed ends of said envelope and enclosing therewith an evacuated interior which extends between said opposed ends of said body;

b. a semiconductor photocathode mounted within said evacuated interior; said photocathode having a surface in contact with said input window;

c. a phosphor coating within the evacuated interior of said envelope on a surface of said output screen;

d. a bellows system including an expandable vacuum containing bellows having opposed ends which are sealed to portions of said envelope between said photocathode and said output screen whereby said surface of said output screen having said phosphor coating may be moved from a fixed proximity focussed position adjacent said photocathode to a position further removed from said photocathode by expansion of said bellows system, the expansion of said bellows system providing thermal and stress isolation of said output screen from said photocathode;

e. a chamber forming baffle system within the evacuated interior of said envelope whereby said photocathode may be uniformly exposed to vapors introduced into said system, said system including:
   1. a baffle member extending into the evacuated interior of said envelope from a portion of the envelope; said baffle member forming a baffle chamber within the evacuated interior of said envelope substantially enclosed by surface portions of: said envelope, said output screen, and said baffle member;
   2. an input tube extending from an outer portion of said envelope, and including a vapor passage communicating with and opening into said baffle chamber for introducing vapors into said system;
   3. an exhaust tube extending from an outer wall portion of said envelope and including a vapor passage communicating with and opening into a portion of the evacuated interior, other than said baffle chamber, in which a surface of said photocathode is exposed; and
   4. a vapor passage between said baffle chamber and said portion of said evacuated interior other than said baffle chamber, whereby vapor communication through and between said input and exhaust tubes may be accomplished.

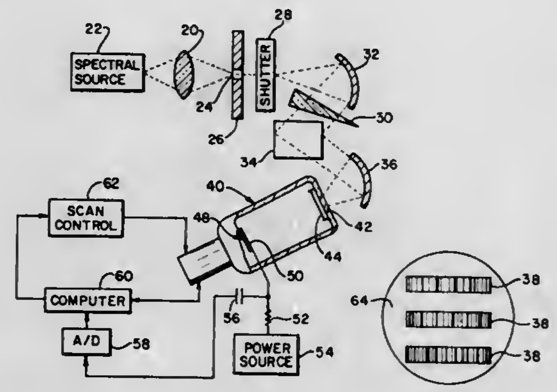
3,894,259
MOSAIC PHOTOELECTRIC TARGET

Robert H. Webb, Lexington, Mass., assignor to Block Engineering, Inc., Cambridge, Mass.

Filed Jan. 8, 1973, Ser. No. 321,748

Int. Cl. H01j *31/26*

U.S. Cl. 313—368 **9 Claims**



1. In an electro-optical image device having a target with an image-receiving surface, and an optical system for imaging onto said surface an image which has a substantially time invariant outline and is substantially spatially fixed with respect to said surface so that said outline will cover only a portion of said surface, the improvement characterized in that substantially only the portion of said surface which receives said image is provided with image-translating material.

3,894,260
COLOR SELECTION ELECTRODE SUSPENSION SYSTEM WITH BIMETAL STRUCTURES HAVING ORTHOGONAL DEFLECTION COMPONENTS

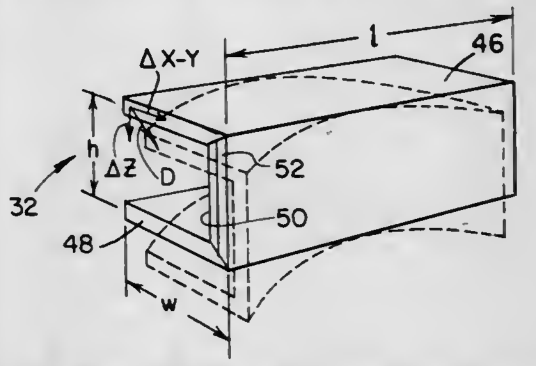
Stanley J. Sedivy, Chicago Ridge, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Dec. 12, 1973, Ser. No. 424,018

Int. Cl. H01j *29/02, 29/08*

U.S. Cl. 313—405 **19 Claims**

1. A suspension system for supporting a color selection electrode adjacent the faceplate portion of a color cathode ray tube envelope, comprising a plurality of suspension devices disposed at spaced points around the periphery of the electrode for supporting the electrode adjacent to said faceplate portion, each device comprising mask-mounted means affixed to said electrode which retentively engages envelopemounted means affixed to said faceplate portion, said mask-mounted means including bimetal means comprising effective first and second orthogonally acting bimetal pairs, said bimetal means reacting, when heated, such that said first bimetal pair produces a deflection of the bimetal means with a primary component of deflection motion to cause the suspended electrode to be displaced toward the faceplate along the central Z axis of the tube for Q compensation, and such that said second bimetal pair produces a deflection of the bimetal means with a primary component of deflection motion in an X-Y plane orthogonal to the Z axis to at least partially compensate for thermal expansion of said X-Y plane and thereby reduce the build-up of expansion-induced stresses in the suspension system and in the electrode.



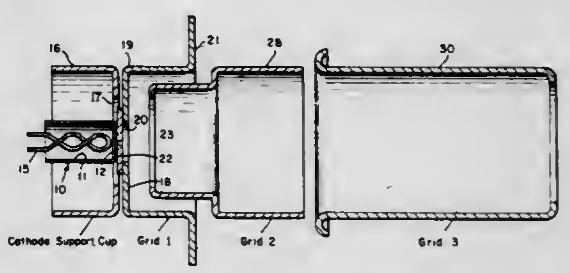
3,894,261
NO-CROSSOVER ELECTRON GUN

Rayard R. Corson, Carlsbad, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed July 9, 1973, Ser. No. 377,366

Int. Cl.^{2} H01J *29/48, 29/62*

U.S. Cl. 313—449 **1 Claim**



1. An electron gun consisting of a cathode assembly including a metallic sleeve having a closed end at one extremity thereof thereby to provide a planar surface, and electron emissive material on said planar surface, and a heating element within said sleeve for heating said electron emissive surface; a cup-shaped electrode disposed concentrically about and substantially coextensive with said sleeve with a centrally disposed aperture surrounding said planar surface means for providing a control electrode having an aperture therein disposed adjacent and parallel to said planar surface for producing an electron beam; and means for providing a plurality of cylindrical accelerating elements about the path of said electron beam.

3,894,262
FLICKER ELIMINATION CIRCUIT

David Lee Funston, and Joseph Edward Thomas, both of Batavia, N.Y., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed May 31, 1974, Ser. No. 474,870

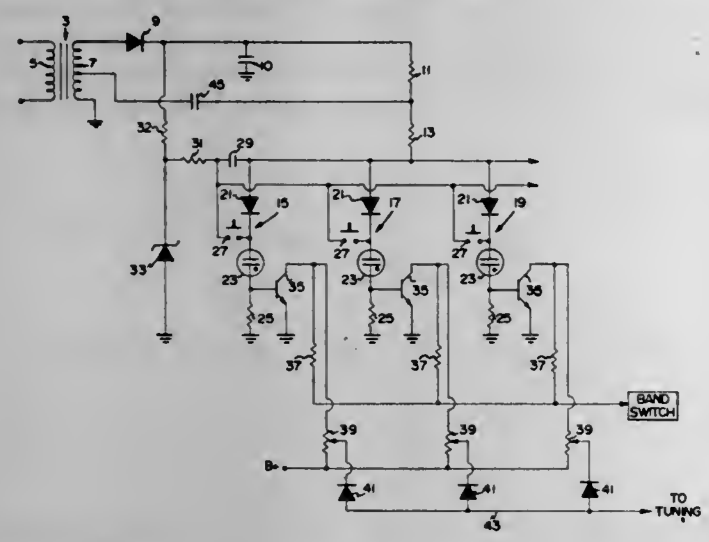
Int. Cl.^{2} H05B *37/00*

U.S. Cl. 315—161 **3 Claims**

1. In an electronic channel address system for a signal receiver having a plurality of parallel-coupled signal channel

circuits each employing a series connected diode and neon lamp, a flicker elimination circuit comprising:

- a DC potential source coupled to each one of said parallel-coupled signal channel circuits; and

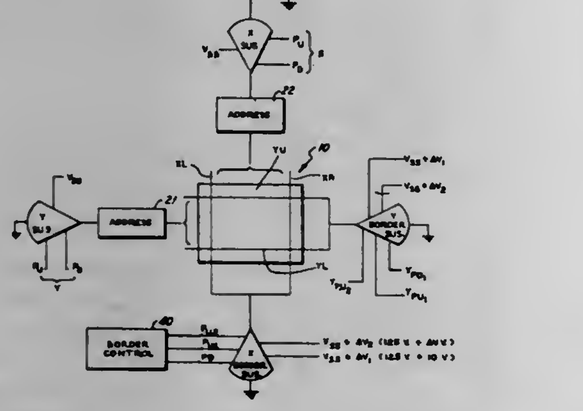


- an AC potential source coupled to each one of said parallel-coupled signal channel circuits, said AC potential superimposed upon the applied DC potential and having a frequency greater than the flicker threshold of the human eye and providing an AC current not greater than the DC current provided by said DC potential source whereby discernible flicker of said neon lamp is eliminated.

3,894,263
BORDER SUSTAINER GENERATOR SYSTEM FOR GAS DISCHARGE DISPLAY PANELS

David S. Wojcik, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Mar. 9, 1972, Ser. No. 233,122
Int. Cl. G08b *5/36*
U.S. Cl. 315—169 TV **2 Claims**



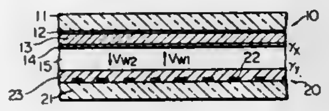
1. In a gaseous discharge display panel having row-column conductor arrays non-conductively coupled to a gas discharge medium in a chamber space between said row and said column conductor arrays, sustaining generator means for supplying sustaining potentials to the row-column conductors locating information display sites in the panel and border row and column conductor arrays cooperating with each other and the ends of the conductors in the row-column conductor arrays to define border sites which, for the purpose of photon conditioning of information display sites in the panel, are on during the entry of information to be displayed on said panel, separate border sustainer generator means for said border row and column conductor arrays, the improvement in said border sustainer which comprises,

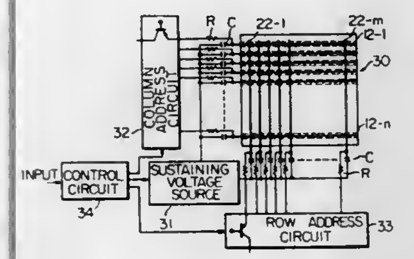
- direct current power supply means supplying at least a pair of separate voltage levels to a pair of output terminals, said pair of output terminals being connected to said power supply means, one of said voltage levels being of an amplitude sufficient to initiate discharges in said panel and the other of said voltage levels being sufficient to maintain a sequence of discharges, once initiated, but of a magnitude insufficient to initiate a discharge,
- each said separate sustainer generator including at least a pair of pull up switch circuits (PU_1 PU_2) and one pull down switch circuit (PD), a point in each said pull up circuits and said pull down circuit being commonly connected to supply an output border sustainer potential to the border conductors respectively of said panel.
- means connecting said power supply output terminals to individual ones of said pull up circuits,
- and control means connected to said pull up and pull down switch circuits for individually activating said pull up and pull down circuits to first initiate a sequence of discharges in said border sites at the higher-one of said voltage levels and then to sustain said sequence of discharges at another of said voltage levels.

3,894,264
METHOD FOR DRIVING A PLASMA DISPLAY PANEL

Shizuo Andoh, Kobe; Kenji Murase; Toshiaki Iemori, both of Kakogawa; Hiroshi Yamamoto, Ashiya, and Norihiko Nakayama, Kobe, all of Japan, assignors to Fujitsu Limited, Japan

Filed Dec. 19, 1973, Ser. No. 426,020
Claims priority, application Japan, Dec. 29, 1972, 48-1117
Int. Cl. H05b *37/00*
U.S. Cl. 315—169 TV **3 Claims**





1. A method of driving a plasma display panel which includes a first member and a second member which are provided facing each other via a gap filled with ionizable gas, said first member providing a plurality of first electrodes which are covered with a first dielectric layer having a first surface contacting said ionizable gas, said second member providing a plurality of second electrodes which are covered with a second dielectric layer having a second surface contacting said ionizable gas, said second surface having secondary electron radiation emissivity higher than that of said first surface, and said first electrodes being provided in a direction which crosses said second electrodes,

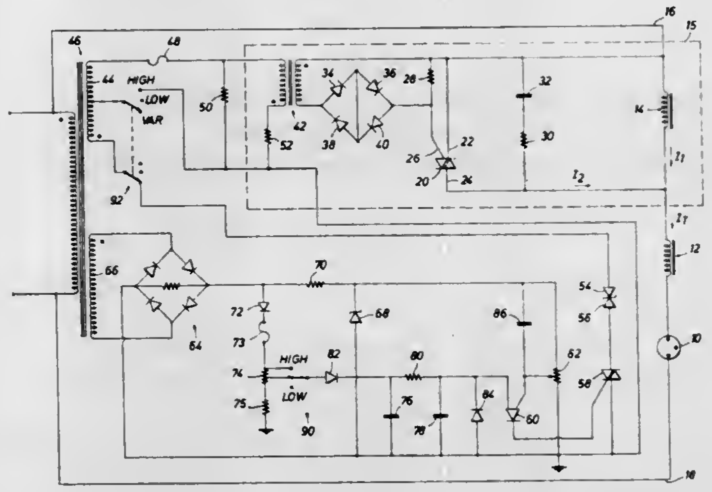
- said method of driving said plasma display panel comprising the steps of
- applying an alternating sustaining voltage between said first electrodes and said second electrodes,
- applying a write voltage between electrodes which are selected from said first electrodes and electrodes which are selected from said second electrodes having a polarity such that said second electrodes covered with said second dielectric layer having a surface of higher secondary electron emissivity have a negative polarity and said first electrodes covered with said first dielectric layer having a surface of lower secondary electron emissivity have a positive polarity,

- thereby producing a discharge at the crosspoint of said first electrodes and said second electrodes across said gap filled with ionizable gas.

3,894,265
HIGH INTENSITY LAMP DIMMING CIRCUIT

Kenneth P. Holmes, Houston, and Carl R. Snyder, Alief, both of Tex., assignors to Esquire, Inc., New York, N.Y.

Filed Feb. 11, 1974, Ser. No. 441,429
Int. Cl. H05b *41/38*
U.S. Cl. 315—194 **29 Claims**



1. In combination with a high intensity gas discharge lamp, a dimmer circuit for controlling the brightness thereof, comprising:

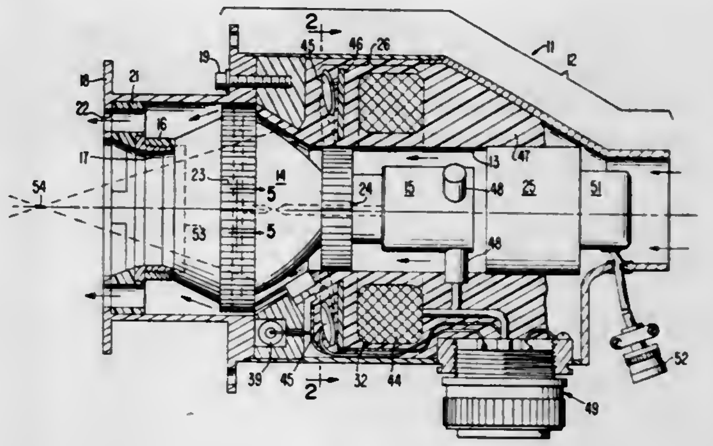
- ballast means connected to the lamp and connectable to an ac power distribution line;
  - said ballast means including a reactor portion,
- gated bypass means for providing at least partial bypass of current around said reactor portion of said ballast means; isolation means connected to said gated bypass means; and
- controllable gas source voltage means operably connected through said isolation means to said gated bypass means for controllably rendering said gated bypass means conductive, and thereby bypassing said reactor portion of said ballast means.

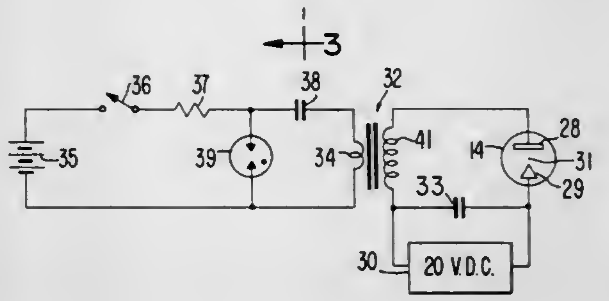
3,894,266
COMPOSITE IGNITOR AND ARC LAMP HOLDER ASSEMBLY

Jesse A. Souza, San Jose, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Mar. 30, 1973, Ser. No. 346,536
Int. Cl.^{2} H01J *7/26;* **H05B** *37/00*
U.S. Cl. 315—227 **17 Claims**

1. An arc lamp housing which comprises generally cylindrical wall means comprising an inner wall surface and an outer wall surface, said inner wall surface forming a duct, electrical socket means being disposed within said duct for receiving a mating portion of an arc lamp, optical window means located within the duct of said housing, said optical window means being positioned so as to transmit light originating within said housing to the outside of said housing, arc lamp igniting means being disposed between said inner and outer wall surfaces, electrically conductive means extending from said igniting means into said duct for electrically connecting said igniting means to said socket, and means for causing a fluid to pass through said duct to cool said arc lamp during operation of said arc lamp.

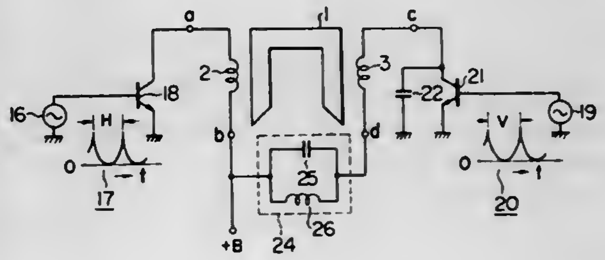




3,894,267
CONVERGENCE CORRECTION DEVICE

Shuzo Matsumoto, and Ryoichi Hirota, both of Yokohama, Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 27, 1973, Ser. No. 391,847
Claims priority, application Japan, Aug. 25, 1972, 47-84598
Int. Cl. H01j *29/70, 29/76*
U.S. Cl. 315—368 **8 Claims**



1. A convergence correction device comprising a horizontal convergence correction coil; a vertical convergence correction coil; a core on which the horizontal and the vertical convergence correction coils are disposed so as to cause substantially the same magnetic flux to link with both the coils; a first current source providing a correcting current having the horizontal scanning period connected to the terminals of the horizontal convergence correction coil; a second current source providing a correcting current having the vertical scanning period connected to the terminals of the vertical convergence correction coil; and a circuit connected in series with one of the series circuit of the horizontal convergence correction coil and the first current source and the series circuit of the vertical convergence correction coil and the second current source, the circuit having a high impedance at the frequency of the correcting current from the current source which is not connected with the circuit but a low im-

pedance at the frequency of the correcting current from the current source which is connected in series with the circuit.

3,894,268
TELEVISION DEFLECTION CIRCUIT HAVING HORIZONTAL PINCUSHION CORRECTION

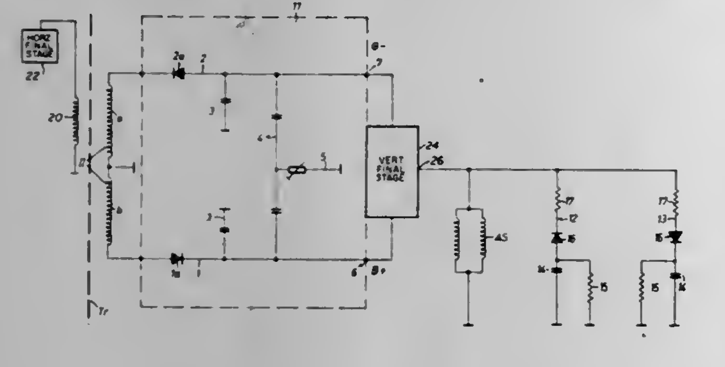
Klaus Reh, Albershausen, and Peter Schulz, Esslingen-Hegensberg, both of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Aug. 29, 1973, Ser. No. 392,603

Claims priority, application Germany, Sept. 9, 1972, 2244277

Int. Cl. H01j *29/56*

U.S. Cl. 315—371 **5 Claims**



1. A deflection circuit for a television receiver, comprising:
a horizontal final stage providing a horizontal-frequency a.c. output;
- a vertical final stage providing a vertical-frequency a.c. output;
- a supply circuit disposed between the horizontal final stage and the vertical final stage for providing power to the vertical final stage from the horizontal final stage, said supply circuit including
  - means for rectifying and filtering the a.c. output from the horizontal final stage so as to remove the horizontal frequency, said filter means being tuned so that the current flowing in the supply circuit oscillates at the vertical frequency, whereby the current flowing in the supply circuit directly modulates the current flowing in the horizontal deflection circuit and provides horizontal pincushion correction.

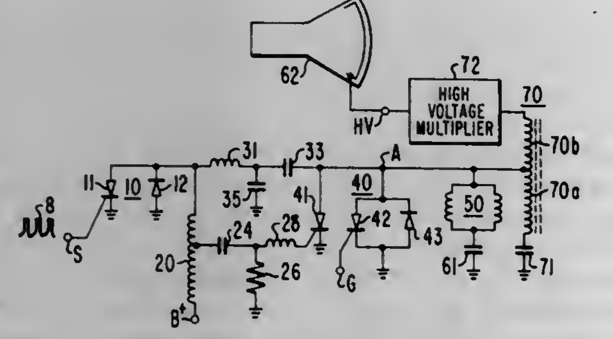
3,894,269
HIGH VOLTAGE PROTECTION CIRCUIT

Paul Raymond Ahrens, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 31, 1974, Ser. No. 438,325

Int. Cl. H01j *29/70*

U.S. Cl. 315—379 **6 Claims**



1. A high voltage protection circuit for reducing a high voltage supplied to a kinescope and rendering the kinescope display unviewable when the high voltage exceeds a predetermined level, comprising:
- a deflection winding;
- a high voltage generator for generating signals in response to current flow therein and for rectifying said signals for producing said high voltage;
- deflection current generating means coupled to said deflection winding and to said high voltage generator for generating deflection current in said deflection winding and said current flow in said high voltage generator, said deflection current generating means, including bidirectionally conductive switching means conducting in a first direction for supplying scanning current to said deflection winding and conducting in an opposite direction when the voltage across said switching means tending to promote said current flow in said opposite direction exceeds a predetermined switching voltage, for altering said current flow in said high voltage generator and reducing said generated signals thereby limiting said high voltage.

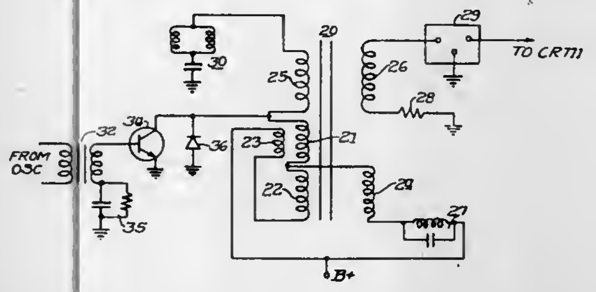
3,894,270
VOLTAGE-LIMITED DEFLECTION SYSTEM FOR A TELEVISION RECEIVER

Hans E. Manske, Addison, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed June 4, 1973, Ser. No. 366,943

Int. Cl. H01j *29/70*

U.S. Cl. 315—379 **6 Claims**



1. A television receiver including: a picture tube and associated deflection apparatus, said tube requiring a high DC potential; a tuned sweep transformer supplying appropriate currents to said deflection apparatus; high voltage amplifying and rectifying means for producing said high DC potential from the output of said tuned sweep transformer, said transformer having an output voltage generating capability, in the event of failure occurring in any of the components associated therewith, which is in excess of a predetermined safe level; a source of B+ potential; and tuning capacitance means having electrodes DC connected between said source and said transformer whereby in the event of failure of said capacitance, the voltage generated by said sweep transformer decreases.

3,894,271
METHOD AND APPARATUS FOR ALIGNING ELECTRON BEAMS

Hans C. Pfeiffer, Ridgefield, Conn., and Ollie C. Woodard, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

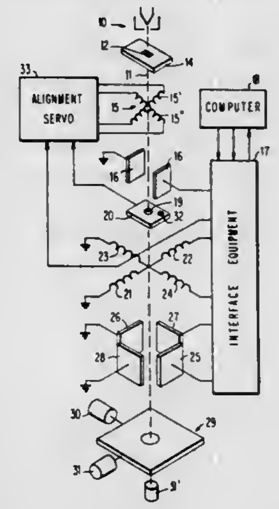
Filed Aug. 31, 1973, Ser. No. 393,365

Int. Cl. H01j *29/52;* **B23k** *9/00*

U.S. Cl. 315—384 **17 Claims**

1. In a method of precisely positioning a beam of charged particles including continuously moving the beam through a predetermined path and periodically blanking the beam by deflecting the beam to intercept a blanking plate at a first predetermined position offset from a central aperture in the blanking plate, the improvement of precisely aligning the beam of charged particles with respect to said central aperture during those times when the beam is blanked to correct for instabilities due to lateral beam drift, comprising:
- deflecting the beam toward a second predetermined position on the blanking plate offset from the central aperture;

- sensing the error in alignment of the beam at the second predetermined offset position; and



- correcting the alignment of the beam at the second predetermined offset position to cause the beam to be aligned with respect to the central aperture in the blanking plate when the beam is unblanked.

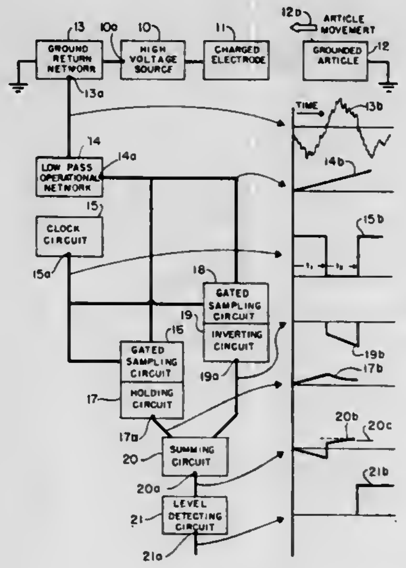
3,894,272
METHOD AND APPARATUS FOR DETERMINING INCIPIENT GROUNDING OF A HIGH VOLTAGE ELECTROSTATIC SYSTEM

Stanley L. Bentley, Indianapolis, Ind., assignor to Ransburg Corporation, Indianapolis, Ind.

Division of Ser. No. 433,265, Jan. 14, 1974, Pat. No. 3,851,618. This application Aug. 16, 1974, Ser. No. 498,088

Int. Cl.² B05B *5/02;* **H02H** *3/16, 7/00*

U.S. Cl. 317—3 **11 Claims**



1. A method of determining incipient grounding of the high voltage electrode in an electrostatic coating system, including a high voltage source, a charged high voltage electrode and a grounded article comprising
- sensing the electrical current returning from ground to the high voltage source and developing a signal with a component related to an incipient grounding condition;
- splitting the developed signal into two channels;
- independently operating on the developed signal in each of the two channels to develop different signal components at the channel outputs;
- combining the different signal components to develop the component relating to an incipient grounding condition, and detecting the level of the signal component relating to incipient grounding.

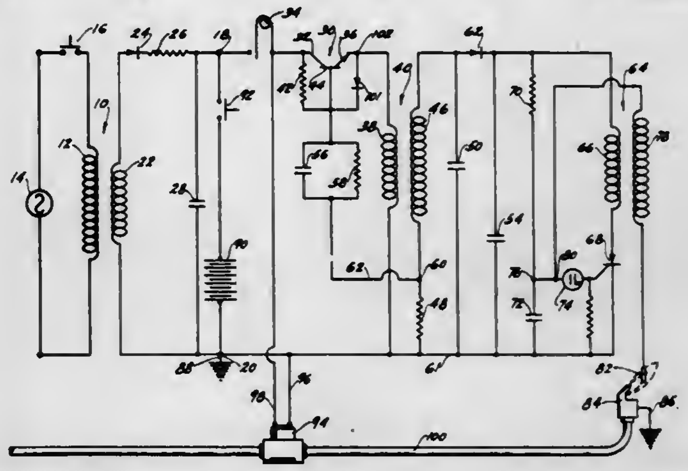
3,894,273
SPARK IGNITION CIRCUIT FOR GAS BURNERS

Harry E. Newport, Jr., 9400 High Hill Ct., St. Louis, Mo. 63126, and Robert L. Baysinger, 9547 Alix Dr., St. Louis, Mo. 63123

Filed May 17, 1974, Ser. No. 470,712

Int. Cl. F23q *3/00*

U.S. Cl. 317—96 **8 Claims**



1. In a spark ignition circuit, a low voltage direct current power source, a storage capacitor, a pulsing oscillator circuit operating on said power source and operative to incrementally charge said storage capacitor to a considerably higher voltage than said power source, said oscillator circuit comprising a transistor having its collector-emitter circuit connected across said power source, starting means, a transformer having a primary winding in the output of said transistor and a secondary winding of considerably greater inductance than said primary winding, parallel resistance-capacitance means connected between one end of said secondary winding and the base of said transistor and operative to drive said transistor to saturation and to abruptly cut off said transistor at saturation, thereby to effect an induced high voltage pulse in said secondary winding, circuit means including impedance means connecting the other end of said secondary winding to a point of fixed potential, and circuit means including a diode connecting said storage capacitor in parallel with said impedance means, an igniter transformer comprising a primary winding, a secondary winding, and a secondary circuit including spaced spark electrodes, circuit means including voltage responsive switching means connecting said igniter transformer primary winding across said storage capacitor, and said switching means being responsive to a predetermined charge on said storage capacitor to effect its discharge through said igniter transformer primary winding.

3,894,274
ELECTRIC MOTOR TRANSIENT VOLTAGE SUPPRESSING CIRCUIT

George Mowry Rosenberry, Jr., Elnora, N.Y., assignor to General Electric Company, Schenectady, N.Y.

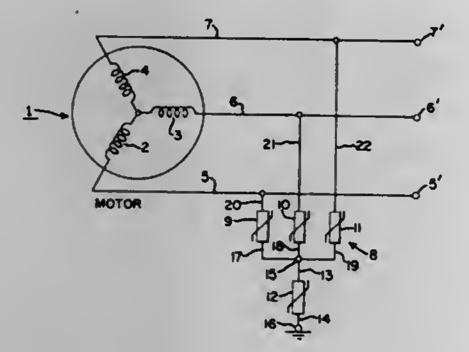
Filed July 1, 1974, Ser. No. 485,056

Int. Cl. H02h *7/09*

U.S. Cl. 317—13 R **7 Claims**

1. An electric distribution system having a plurality of electrical conductors equal in number to N that are to be protected from transient voltages, in combination with a transient voltage suppressing circuit comprising a plurality of metal oxide varistors equal in number to N plus 1, all but one of said varistors being connected in a star configuration with one of the respective terminals of each star-connected varistor being electrically connected in common, electric conductor means connecting each conductor, respectively, of the N conductors of the distribution system to an associated outer varistor ter-

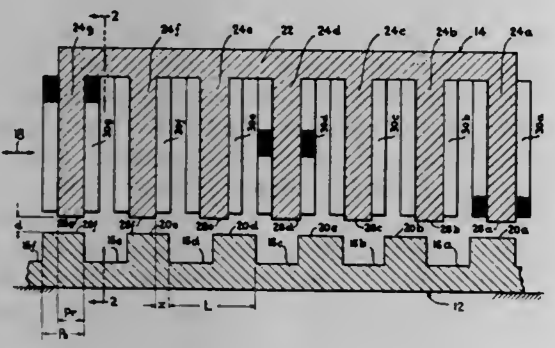
minal of the star configuration of varistors, the remaining varistor being electrically connected in series between the common connection of the star configuration of varistors and an electrical ground terminal, each of said varistors having substantially identical electrical characteristics.



3,894,275
LINEAR STEP MOTOR

Hans Baumans, Montreal; Gerald Turp, Dollard des Ormeaux, and Huy Phan Van, Saint-Leonard, all of Canada, assignors to Centre de Recherche Industrielle du Quebec, Ste-Foy, Canada

Filed Dec. 11, 1973, Ser. No. 423,811
Int. Cl. H02k *41/02*
U.S. Cl. 318—38 **9 Claims**

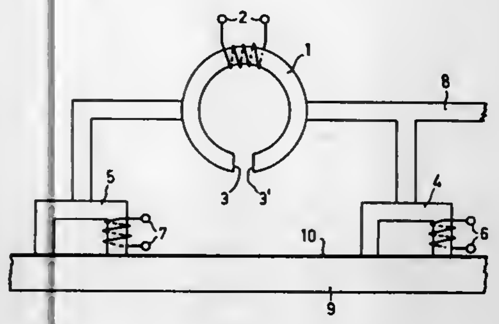


1. In a linear step motor having an active armature and a passive armature in spaced juxtaposition to one another, said passive armature consisting of a plate member of magnetic permeable material including a plurality of equally spaced pole faces of identical width; said active armature consisting of a core of magnetic permeable material including a series of parallel equally spaced pole pieces defining at one end thereof pole faces of identical width; the spacing between the pole faces of said active armature being equal to the spacing between the pole faces of said passive armature; the width of the pole faces of said active armature differing from the width of the pole faces of the passive armature by a step value proportional to the number of pole pieces on the active armature; excitation winding means on each of said pole pieces; and means for selectively energizing said winding means in sequence and in pairs whereby the magnetic field created when a pair of winding means is energized by digital control pulses produces magnetomotive forces between the associated pole faces of said active and passive armatures resulting in the non-continuous displacement of the active armature in a position of maximum magnetic flux, an indexing force being provided between said armatures at standstill during the energization of said winding means and after the step displacement of said active armature.

3,894,276
LINEAR STEPPING MOTOR USING TWO RETAINING ELECTROMAGNETS AND A DEFORMABLE ELECTROMAGNET

Peter Johannes Michiel Janssen, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 14, 1974, Ser. No. 442,502
Claims priority, application Netherlands, Mar. 2, 1973, 7302941
Int. Cl. H02k *41/02*
U.S. Cl. 318—135 **10 Claims**

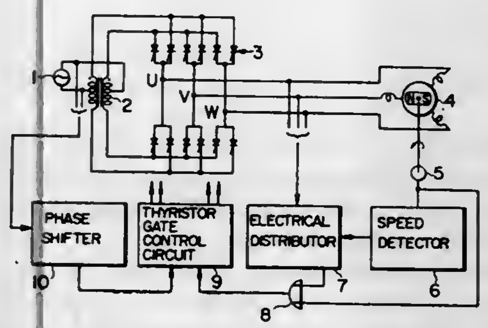


1. A linear motor comprising a first electromagnetic retaining member, a second electromagnetic retaining member, a magnetically permeable surface proximate said first and second electromagnetic retaining members whereby motion of said retaining members is selectively retarded by energizing said electromagnetic retaining members, an electromagnetic sliding element comprising an electromagnet having a pair of oppositely arranged poles separated by a gap on one side of said sliding element, an elastic coupling on another side of said sliding element, said gap being selectively narrowed in response to energization of said sliding element electromagnet, means for mechanically connecting one of said poles to said first electromagnetic retaining member, and means for connecting said second electromagnetic retaining member to another of said poles, whereby successive energization of said first electromagnetic retaining member, said sliding element electromagnet and said second electromagnetic retaining member moves said linear motor in the direction of said gap motion.

3,894,277
CONTROL DEVICE FOR THE COMMUTATORLESS MOTOR

Kyozo Tachibana, and Yoshio Okumura, both of Katsuta, Japan, assignors to Hitachi, Ltd., Japan

Filed Oct. 10, 1973, Ser. No. 404,893
Claims priority, application Japan, Oct. 13, 1972, 47-102486
Int. Cl. H02k *29/00*
U.S. Cl. 318—138 **7 Claims**

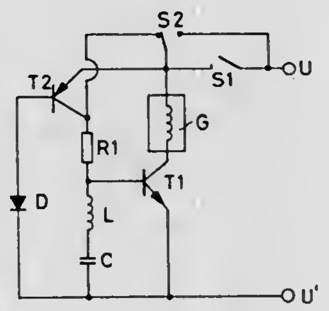


1. A control device for a commutatorless motor comprising: a synchronous motor;
  a thyristor power converter for supplying electric power to said synchronous motor;
  control means for supplying control signals to the gates of said thyristor power converter; and distributing means for providing an advance angle of distribution signal to said control means, said distributing means including distribution signal means for maintaing an advance angle of said distribution signal at a small value during the starting time of the motor, said distribution angle means maintaining the advance angle of said distribution signal at a constant value regardless of the motor speed when the motor speed is higher than a predetermined high speed, and said distribution signal means continuously changing the advance angle of said distribution signal in accordance with the motor speed in an intermediate speed range between the motor speed at the starting time of the motor and the predetermined high speed.

3,894,278
BATTERY CHECKING CIRCUIT

Erich Gerum, Nurnberg, Germany, assignor to Diehl, Nurnberg, Germany

Filed Feb. 6, 1974, Ser. No. 440,266
Claims priority, application Germany, Feb. 10, 1973, 2306545
Int. Cl.^{2} H02J *7/00;* **H01M** *10/38*
U.S. Cl. 320—48 **18 Claims**



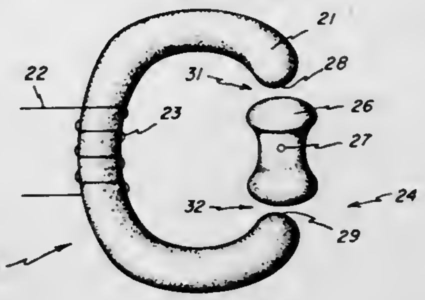
1. A circuit for checking the charge state of a battery of a battery operated device comprising in combination:
  a pair of terminals connectable to the terminals of a battery;
  a signal generator;
  first circuit means, including a control transistor, for connecting said signal generator to said terminals and for controlling the operating state of said signal generator;
  comparison circuit means, including a switching transistor connected to said control transistor and a reference voltage member connected to the base of said switching transistor, for comparing the voltage across said terminals with the reference voltage of said reference voltage member and for controlling the state of said control transistor in accordance with the voltage difference resulting from the comparison; and
  switch means for selectively connecting the base of said control transistor to one of said terminals when in a first position, and for connecting the base of said control transistor to said one terminal via the emitter collector path of said switching transistor when in a second position to effect a battery check.

3,894,279
APPARATUS FOR SYNCHRONOUS SMOOTHING OF CURRENT RIPPLE

Edward P. Priebe, North East, Pa., assignor to General Electric Company, Erie, Pa.

Filed Jan. 4, 1974, Ser. No. 430,716
Int. Cl. H02m *1/14;* **H01f** *29/12*
U.S. Cl. 321—10 **5 Claims**

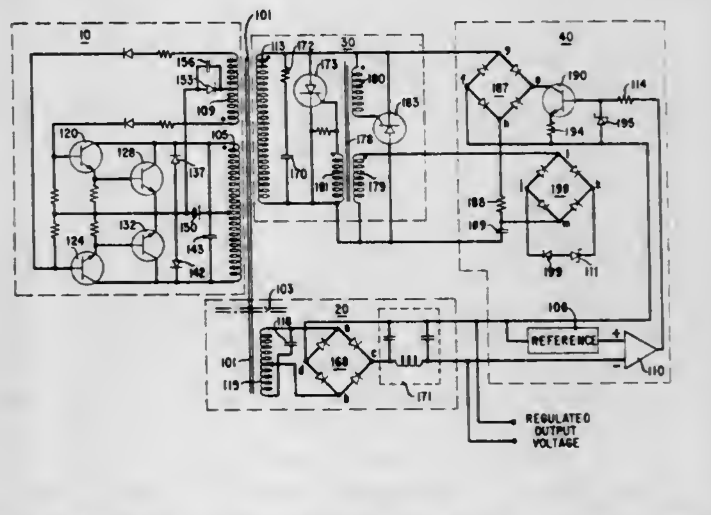
1. An inductor device for minimizing the ripple current component of a rectified a-c power source connectable to energize a load, comprising:
  a magnetic core having a variable air gap;
  b. a coil on said magnetic core adapted to be serially connected intermediate the output of the rectified power source and said load; and
  c. means for cyclically changing the geometry of said air gap and hence the flux linkage of said inductor device in synchronism with the ripple current, thereby cyclically inducing in said coil a voltage tending to be in substantially inverse phase relationship with the ripple voltage of said power source so as significantly to reduce said ripple current component.



3,894,280
FREQUENCY LIMITED FERRORESONANT POWER CONVERTER

John Daniel Bishop, Morris Township, Morris County, N.J., and Ladislas George Kerenyi, Jr., Bronx, N.Y., assignors to Western Electric Company Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Apr. 2, 1974, Ser. No. 457,165
Int. Cl. H02m *3/32;* **G05f** *1/56*
U.S. Cl. 321—18 **6 Claims**

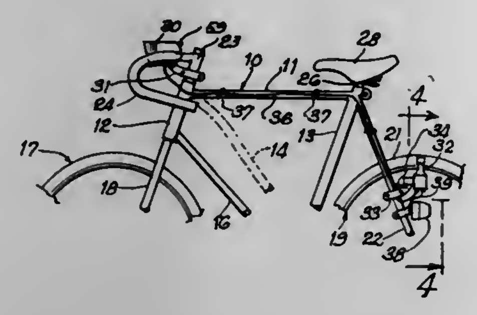


1. A DC to DC converter comprising an inverter circuit having positive and negative half-cycles of oscillation, said inverter circuit including a transformer having a primary winding, a control winding, and a ferroresonant output winding, and a pair of transistor switches connected in push-pull arrangement with said primary winding; and means for controlling the frequency of said inverter comprising a capacitor, feedback means connected from said output winding to said capacitor for charging said capacitor during each inverter half-cycle, switching means connected across said control winding and to said capacitor responsive to the capacitor voltage attaining a predetermined value for terminating said inverter half-cycle and for discharging said capacitor to a predetermined state, said feedback means comprising a controllable current source responsive to the output winding voltage to charge said capacitor in each half-cycle, and means for coupling said current source between said control winding and said capacitor, said controllable current source including means for limiting the charging current applied to said capacitor in each inverter half-cycle whereby the maximum inverter frequency is fixed.

3,894,281
BATTERY AND GENERATOR VEHICLE LIGHTING SYSTEM

Alan M. Bloomfield, Des Plaines, Ill., assignor to Sears, Roebuck and Co., Chicago, Ill.

Filed Jan. 21, 1974, Ser. No. 434,997
Int. Cl. B62j *5/00*
U.S. Cl. 322—1 9 Claims



1. A velocity responsive battery and generator lighting system for a vehicle having a member rotatable at a velocity related to the speed of the vehicle, comprising:

a. generating means for generating electricity mounted on said vehicle adjacent said member and selectively switchable between an operating mode and an inoperable mode with respect to said member, said generating means being operable in said operating mode to generate a first predetermined potential in response to said member rotating at a velocity above a predetermined velocity,
b. first light means mounted on said vehicle and electrically connected with said generating means, said first light means being energized in response to said generating means generating said first predetermined potential,
c. potential dividing means operable with said generating means for generating a potential lower than said first predetermined potential and proportional to the rotational velocity of said member,
d. second light means mounted on said vehicle operable to be energized at a second predetermined potential,
e. battery means for protruding said second predetermined potential mounted on said vehicle, and
f. solid state circuit means being free of moving parts for interconnecting said second light means, said battery means and said potential dividing means and including solid state switching means for controlling said second light means between unenergized and energized conditions and means responsive to the potential generated by said generating means with said potential dividing means for controlling said switching means, whereby said second light means is unenergized upon said member rotating at a velocity above said predetermined velocity and said second light means is energized by said battery means upon said member rotating at a velocity lower than said predetermined velocity.

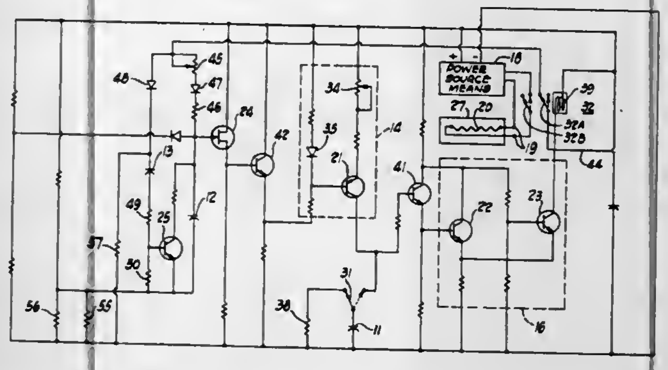
3,894,282
ADAPTIVE TIMING TEMPERATURE CONTROL CIRCUIT

Raymond W. MacFarland, Jr., Novelty, Ohio, assignor to Computron, Inc., Valley View, Ohio

Filed Feb. 2, 1973, Ser. No. 328,944
Int. Cl. G05d *23/01*
U.S. Cl. 323—4 4 Claims

1. An adaptive timing temperature control circuit to control output to output means, comprising in combination,

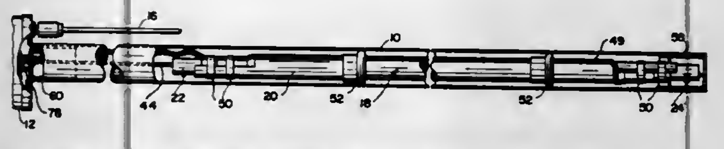
power source means,
constant current generator means adapted to provide a constant current output at various current magnitudes,
means connecting said constant current generator means to said power source means to provide power for said constant current generator means
first switch means having a first and a second state,
first capacitor means,
means connecting said first switch means and said first capacitor means to change the charge on said first capacitor means with a first magnitude of constant current from said constant current generator means when said first switch means is in said first state,
sensor means connected to said first capacitor means to produce an output when said first switch means is in said first state until the change in charge on said first capacitor means exceeds a predetermined value,
means connecting said sensor means to the output means to control output thereto in accordance with the output of said sensor means,
second capacitor means for storing a charge,
means connected to said second capacitor means for discharging said second capacitor means upon termination of the previous output of said sensor means,
means connecting said second capacitor means to said power source means to change the charge on said second capacitor means with said change in charge in said second capacitor means being in relation to the duration since the previous output of said sensor means,
and means connecting said second capacitor means to said constant current generator means to provide a second current magnitude of said constant current generator means to said first capacitor means to vary the time required for said first capacitor means to have a change in charge exceeding said predetermined value whereby the duration of the output to the output means is varied in accordance with the elapsed time since the previous output thereto.



3,894,283
MAGNETIC LOCATOR INCLUDING SENSORS MOUNTED IN LONGITUDINAL GROOVES OF A TUBULAR SUPPORT

Erick O. Schonstedt, Reston, Va., assignor to Schonstedt Instrument Company, Reston, Va.

Filed Nov. 3, 1972, Ser. No. 303,598
Int. Cl. G01v *3/10;* G01r *33/04*
U.S. Cl. 324—3 9 Claims

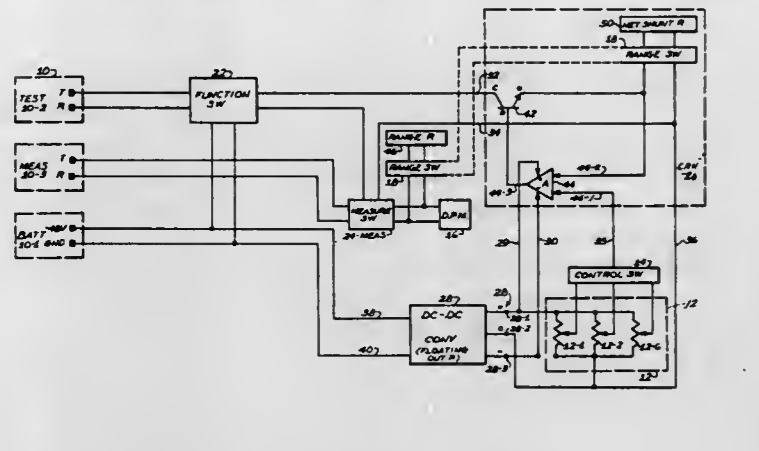


1. Magnetic detecting apparatus comprising a tubular support of substantially circular cross-section having each end cut away along longitudinal and transverse planes at a side thereof, respectively, to form a longitudinal groove of substantially semi-circular cross-section at each end of the support, each groove having substantially parallel longitudinal edges in said longitudinal plane terminating at said transverse plane, and a substantially cylindrical magnetic sensor mounted in each groove, the cross-dimensions of the sensors being correlated with the cross-dimensions of the associated grooves, so that each sensor has a snap-fit in the associated groove and is held snugly therein by the frictional embrace of the groove.

3,894,284
CURRENT FLOW TEST APPARATUS

Ralph Morrison, Pasadena, and Orrin B. O'Dea, Garden Grove, both of Calif., assignors to Communication Mfg. Co., Long Beach, Calif.

Filed Apr. 29, 1974, Ser. No. 465,350
Int. Cl. G01r *31/02*
U.S. Cl. 324—28 R 15 Claims



1. Current flow test apparatus comprising:

a. first and second current input/output circuits for the test apparatus;
b. first and second power input circuits for the test apparatus;
c. an active current regulating circuit comprising a power supply input for receiving power therefor, first and second signal input/output circuits and a reference input, the regulating circuit having a D.C. isolation from the power input circuits and operative for regulating the level of current passing between the input/output circuits of the regulating circuit to a contant level corresponding to the level of the signal applied at said reference input;
d. a power supply having first and second input circuits, respectively, connected to said first and second power input circuits for receiving power and an output circuit coupled to the power supply input of said regulating circuit, said power supply providing electrical power to said regulating circuit and comprising means for providing a D.C. isolation between the output and input circuits of said power supply;
e. manually operable function switching means for selectively coupling the first and second input/output circuits of the regulating circuit, separately, to the first and second power input circuits and the first and second current input/output circuits of the test apparatus, in various combinations;
f. manually adjustable means for setting the signal at the reference input to various levels; and
g. a visual indicator for indicating current passing through said first and second input/output circuits of said current regulating circuit.

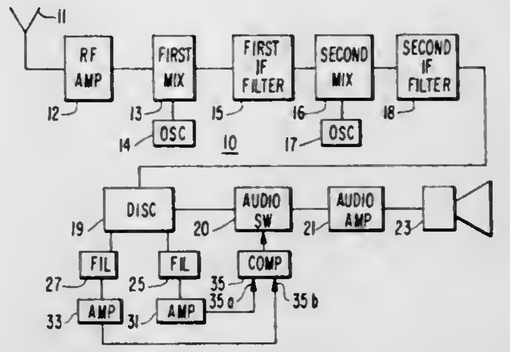
3,894,285
SPECTRUM DIFFERENTIAL NOISE SQUELCH SYSTEM

Louis Carl Schaeperkoetter, McMurray, Pa., assignor to RCA Corporation, New York, N.Y.

Filed June 24, 1974, Ser. No. 482,630
Int. Cl. H04b *1/10*
U.S. Cl. 325—348 5 Claims

1. A noise squelch system for use in a receiver of the type having a discriminator for detecting intelligence signals coupled to the output of a bandpass filter having upper and lower frequency 6 db points defining a frequency bandwidth comprising:

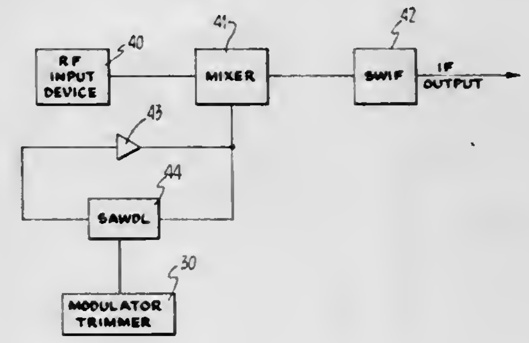
first means coupled to said discriminator output for sensing the noise level over a first band of baseband frequencies centered at a frequency lower than the value of said frequency bandwidth and second means coupled to said discriminator output for sensing the noise level over a second separate band of baseband frequencies centered at a frequency higher than the value of said frequency bandwidth, and
means including comparator means coupled between said first and second sensing means at the output of said discriminator for squelching the output signal from the discriminator when the difference in the noise levels over said first and second bands of baseband frequencies is below a given value, and for passing the output signal from the discriminator when said difference is above said given value.



3,894,286
TEMPERATURE COMPENSATED VOLTAGE TUNABLE CIRCUITS USING SURFACE WAVE DEVICES

Donald B. Armstrong, Belmont, Calif., assignor to Crystal Technology, Inc., Mountain View, Calif.

Filed Jan. 28, 1974, Ser. No. 437,275
Int. Cl.^{2} H04B *1/26*
U.S. Cl. 325—438 5 Claims



1. A temperature compensated receiver, said receiver comprising:

input means for receiving RF signals having a frequency f_{RF};
a mixer having a first input coupled to said input means, and a second input,
a surface wave integratable filter having a temperature coefficient α_{IF}, said filter having an input coupled to said mixer and an output for furnishing intermediate frequency signals to an output terminal; and
a local oscillator coupled to said second input of said mixer, said local oscillator comprising an amplifier and a surface acoustic wave delay line coupled in a closed loop configuration, said surface acoustic wave delay line having a temperature coefficient α_{LO}, said temperature coefficients being selected to satisfy the relation $\alpha_{LO}f_{LO}=\alpha_{IF}f_{IF}$, where F_{LO} f_{IF} are the local oscillator and intermediate frequencies, respectively, when $f_{LO}>f_{FR}$: said temperature coefficients being selected to satisfy the relation $\alpha_{LO}f_{LO}={}^{-}\alpha_{IF}f_{IF}$ when ${}_{LO}f<f_{RF}$.

3,894,287
TIME DELAY CIRCUIT FOR MODEMS

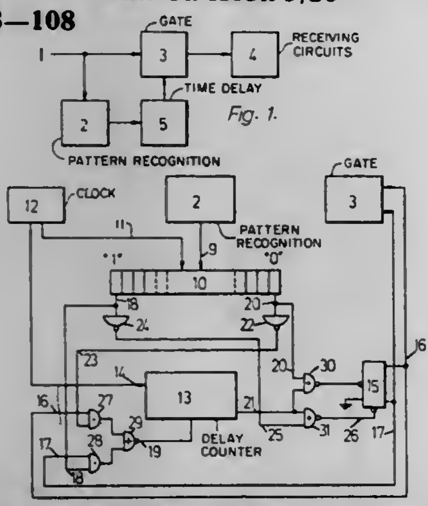
Odd Mathiesen, Oslo, Norway, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Jan. 24, 1974, Ser. No. 436,241

Claims priority, application Norway, Apr. 13, 1973, 1543/73

Int. Cl. H03k *5/20*

U.S. Cl. 328—108 **3 Claims**



1. A time delay circuit for switching on and off a modem designed to handle multiple data transmission speeds comprising:

- a signal pattern recognition circuit;
- an up/down shift register coupled to said pattern recognition circuit for registering signals representative of information signals and signals representative of non-information signals;
- a delay counter responsive to the contents of said shift register for initiating a predetermined delay at the initial occurrence of an information signal or a non-information signal; and
- a gating circuit coupled to said shift register and said delay counter for switching on said modem if only information signals have been received during the delay time and for switching off said modem if only non-information signals have been received during the delay time.

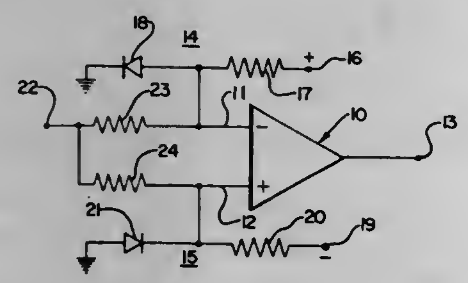
3,894,288
BIPOLAR LEVEL DETECTOR

Claude Edwin Musser, Jr., Binghamton, N.Y., assignor to General Electric Company, Binghamton, N.Y.

Filed Oct. 4, 1973, Ser. No. 403,469

Int. Cl. H03k *5/20*

U.S. Cl. 328—115 **7 Claims**



1. A bipolar level detector comprising:

a. an operational amplifier having inverting and non-inverting input terminals and an output terminal;
b. biasing networks coupled to said inverting and non-inverting inputs, each of said biasing networks includes a source of reference voltage, a resistor and diode connected in series between the source of reference voltage and a point of reference potential, the reference voltages being of opposite polarity so that the diodes in each network are conducting thereby establishing bias voltages of opposite polarity at the junction of the diode and resistor in the respective networks;
c. an input terminal adapted to receive bipolar signals;
d. means coupling said input terminal to said biasing networks for disabling one of said networks and applying a voltage of the proper polarity and amplitude to override the effect of the other network if an input signal of one polarity exceeds a predetermined level, and for disabling the other network and overriding the effect of said one network if an input signal of the opposite polarity exceeds a predetermined level whereby the output of said amplifier is switched to saturation of the opposite polarity whenever the input signal, of either polarity, exceeds its predetermined level.

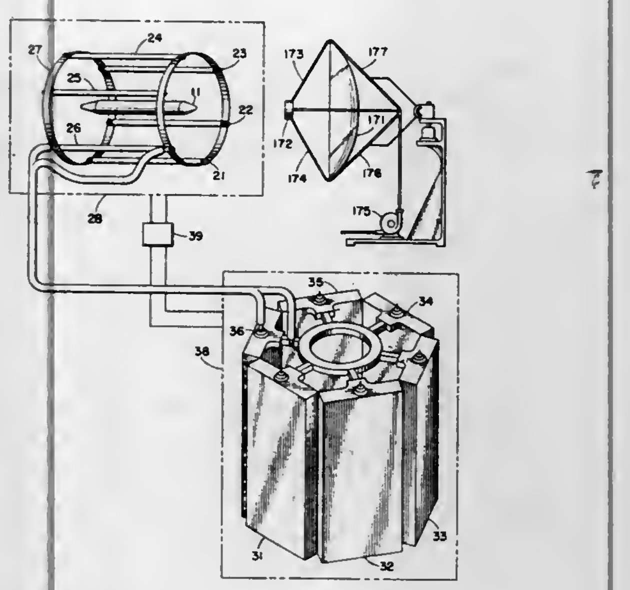
3,894,289
HIGH POWER LASER APPARATUS AND SYSTEM

John C. Evans, Jr., and Henry W. Brandhorst, Jr., both of Berea, Ohio, assignors to The United States of America as represented by the United States National Aeronautics and Space Administration, Office of General Counsel-Code GP, Washington, D.C.

Division of Ser. No. 487,929, Sept. 16, 1965, abandoned. This application July 29, 1968, Ser. No. 848,403

Int. Cl. H01s *3/09*

U.S. Cl. 330—4.3 **1 Claim**



1. A high power transmission system comprising

- a laser for transmitting a beam of coherent light, said laser including
  - a rod of a laser material,
  - a plurality of gaseous discharge lamps for pumping said rod,
  - a capacitor electrically connected to each of said discharge lamps,
  - triggering circuit means for providing a high voltage,
  - first switching means for selectively connecting the triggering means to one of said discharge lamps,
  - power supply means, and
  - second switching means for electrically connecting the power supply means to all but one of said capacitors, said first switching means being mechanically coupled to said second switching means whereby said capacitor not connected to said power supply means is electrically connected to said discharge lamp which is electrically connected to said triggering circuit means,
- a parabolic reflector spaced apart from said laser for collecting the beam of coherent light emitted from the transmitter,
- a photovoltaic device for converting said beam of collected coherent light into electrical energy, and
- means for cooling the laser, parabolic reflector, and the photovoltaic device.

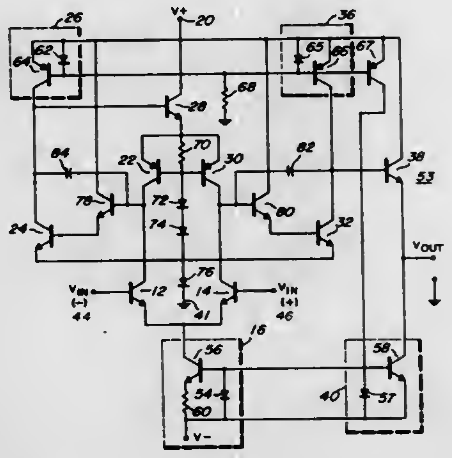
3,894,290
BALANCED DOUBLE-TO-SINGLE-ENDED CONVERTER STAGE FOR USE WITH A DIFFERENTIAL AMPLIFIER

John A. Schoeff, Mesa, assignor to Motorola, Inc., Chicago, Ill.

Filed June 15, 1973, Ser. No. 370,518

Int. Cl. H03f *3/04*

U.S. Cl. 330—14 **19 Claims**



1. In a circuit having a balanced signal source providing a balanced signal between first and second electrodes thereof, a balanced-to-unbalanced converter suitable for transforming the balanced signal into an unbalanced signal at an output terminal thereof and for applying substantially the same active loads to the first and second electrodes of the balanced signal source, the balanced-to-unbalanced converter including in combination:

- power supply connecting means for providing voltage potentials, said power supply connecting means having an output terminal and a reference terminal;
- first active load means for providing an active load to the first electrode of the balanced signal source, said first active load means having a first terminal coupled to the first electrode of the balanced signal source, a second terminal coupled to said output terminal of said power supply connecting means, a third terminal coupled to said reference terminal of said power supply connecting means, and an output terminal, said first active load means being responsive to said voltage potentials to provide an active impedance having first predetermined electrical characteristics to the first electrode of the balanced signal source; and
- second active load means for providing an active load to the second electrode of the balanced signal source, said second active load means having a first terminal coupled to the second electrode of the balanced signal source, a second terminal coupled to said output terminal of said power supply connecting means, a third terminal coupled to said reference terminal of said power supply connecting means, a fourth terminal coupled to said output terminal of said first active load means, and a fifth terminal providing the output terminal of the balanced-to-unbalanced converter, said second active load means being responsive to said voltage potentials to provide an active impedance having second predetermined electrical characteristics to the second electrode of the balanced signal source, said second predetermined electrical characteristics being substantially the same as said first predetermined electrical characteristics of said first active load means to cause substantially equal active impedances to be applied to the first and second electrodes of the balanced signal source.

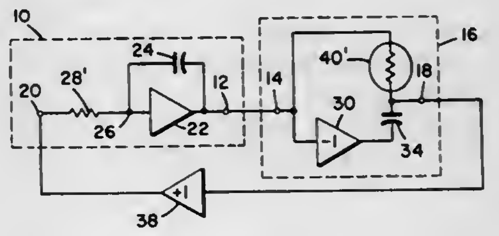
3,894,291
PRECISION TWO-PHASE ELECTRON OSCILLATOR EMPLOYING AN ALL-PASS NETWORK HAVING MEANS FOR ADJUSTING ITS TIME CONSTANT AS A FUNCTION OF THE AMPLITUDE OF THE OSCILLATING VOLTAGE

Arthur Mayer, Kew Gardens, N.Y., assignor to Astrosystems, Inc., Lake Success, N.Y.

Filed Feb. 15, 1973, Ser. No. 332,759

Int. Cl.² H03B *3/02, 5/20, 27/00*

U.S. Cl. 331—45 **4 Claims**



1. An electronic oscillator comprising an integrator having input and output terminals; and an all-pass network having an input terminal coupled to the output terminal of said integrator and an output terminal coupled to the input terminal of said integrator, said all-pass network including means for adjusting the time constant thereof as a function of the amplitude of an oscillating voltage generated by said oscillator, said oscillator generating voltages at said input and output terminals of said integrator which are in precise phase quadrature and precisely matched in amplitude.

3,894,292
DISPLAY APPARATUS

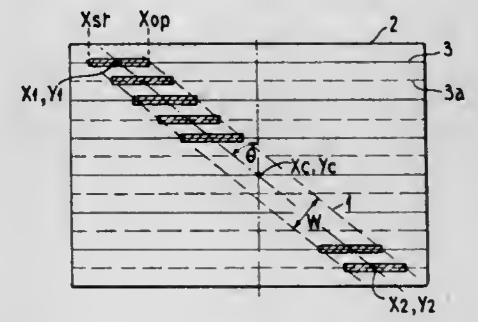
Brian Wilkinson, Rainham; David John Jibb, Chatham, and Martin Neil Smith, Rochester, all of England, assignors to Elliott Brothers (London) Limited, Chelmsford, England

Filed Mar. 7, 1973, Ser. No. 338,842

Claims priority, application United Kingdom, Mar. 10, 1972, 11275/72

Int. Cl. G08b *5/36*

U.S. Cl. 340—324 AD **8 Claims**



1. Display apparatus in which the display comprises a raster of parallel lines and a symbol is displayed by changing a visual parameter of one or more selected portions of the raster lines comprising:

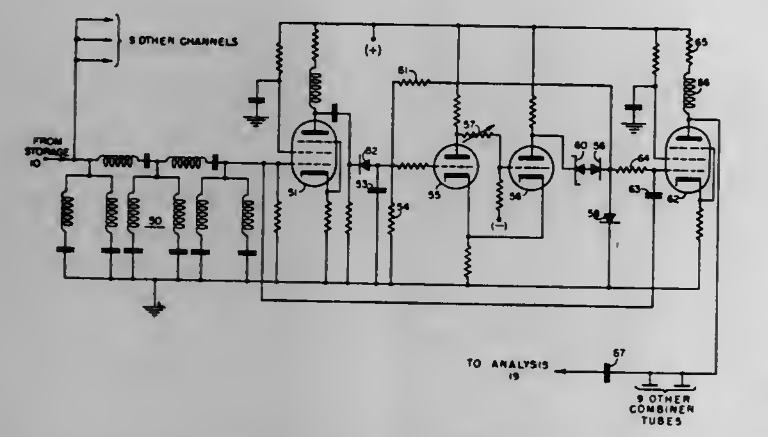
a. cyclic digital counter means operating in synchronism with the raster line scan so that successive counts of the counter correspond to successive sections of each raster line, thereby notionally dividing each raster line into sections respectively corresponding to different counts of the counter;
b. means for producing digital outputs defining the position of each raster line portion required to be selected to display a required symbol, in accordance with the notional numbering of sections of the raster lines effected by the counter means;
c. an output circuit comprising means for comparing said digital output with the output of the counter means to produce an output signal for changing said visual parameter when there is correspondence between said digital outputs and the output of the counter means; and

d. delay means connectable to delay the output of said output circuit by a fraction of the period between successive counts of the counter means when a said digital output fractionally exceeds the corresponding count of the digital counter by a predetermined amount, thereby to effectively increase the number of sections into which each raster line is notionally divided.

3,894,293
OBJECT LOCATOR SYSTEM WITH AUTOMATIC SENSITIVITY REDUCTION FOR LARGE SIGNALS

Garold K. Jensen, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 29, 1963, Ser. No. 255,726
Int. Cl.² G01S *9/42, 9/44*
U.S. Cl. 343—8 **2 Claims**



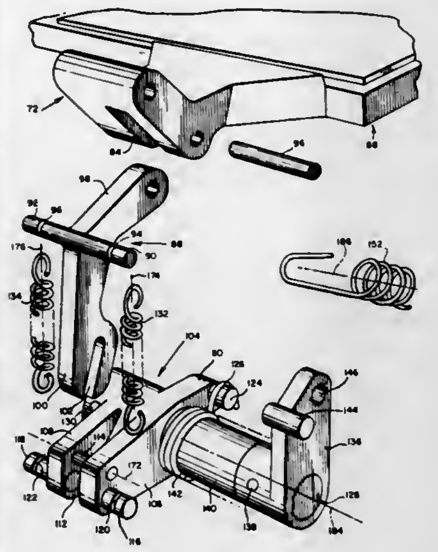
2. In a velocity sensitive type radar system,
a plurality of frequency selective filters for separating on a basis of frequency the radar return signals which are shifted in frequency as a result of motion of objects producing the return signals,
a plurality of variable gain signal transmission means, one for each filter and each individually connected to a filter, each transmission means including a diode network which is conductive only in response to a small amplitude output signal from said connected filter, each transmission means further including variable gain amplification means for providing said transmission means output signal and controlled by said diode network to provide large amplification of the output signal from said connected filter when said diode network is conductive and to provide lesser amplification of the output signal from said connected filter when said diode network is not conductive
and means for combining the outputs of the plurality of transmission means into a single output channel for the radar system indicator.

3,894,294
FLAT TORQUE RATE DRIVE SYSTEM

Igor Blinow, Millis, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 24, 1972, Ser. No. 246,715
Int. Cl. G03b *19/12*
U.S. Cl. 354—158 **5 Claims**

1. In combination with a reflex photographic camera of the type having operator means movable between a viewing position and an exposure position, apparatus including:
erecting means coupled with said operator means and actuable to move said operator means between said viewing and said exposure positions;
drive spring means for providing a rotational output of uniform torque characteristic;
actuator means driveably engageable with said erecting means and operatively connected to and responsive to said drive spring means for actuating said erecting means to move said operator means from one of said positions to the other of said positions; and



means connected in driving relationship with said actuator means for effecting return movement of said operator means to one of said positions by said erecting means whilst storing energy in said drive spring means.

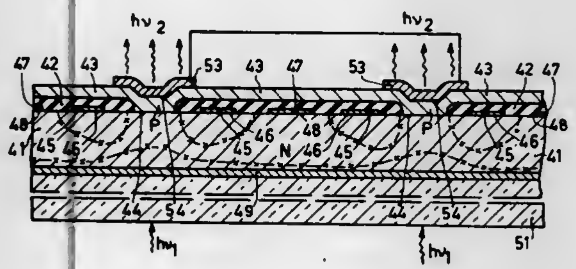
3,894,295
SOLID STATE IMAGE DISPLAY AND/OR CONVERSION DEVICE

John Martin Shannon, and John Ernest Ralph, both of Salfords, near Redhill, England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 18, 1973, Ser. No. 398,480

Claims priority, application United Kingdom, Sept. 22, 1972, 43958/72; Sept. 22, 1972, 43956/72; Aug. 16, 1973, 43957/73

Int. Cl. H01l *15/00*
U.S. Cl. 357—19 **13 Claims**



1. An imaging display or converter device comprising a common semiconductive layer having opposed major surfaces, an array of junction field effect transistors each having source and drain regions spaced apart by a channel region and each having a separate gate spaced by a barrier junction from a channel region and capable when pulsed of establishing a depletion region in the channel, said channel regions all being located in the said common semiconductive layer, an array of display elements each capable when traversed by electrical current of generating radiation capable of exiting from the device, each of said display elements being electrically connected in series with the source and drain regions of one of the transistors, said array of transistors being mounted such that electromagnetic radiation in the form of an image directed fromoutside from outside array can reach the channels and generate charge carriers in or within a diffusion length of said depletion regions thereby causing contraction thereof in accordance with the intensity of the radiation incident thereon, and means for applying a potential across the array of transistors and array of display elements.

DESIGN PATENTS

GRANTED JULY 8, 1975

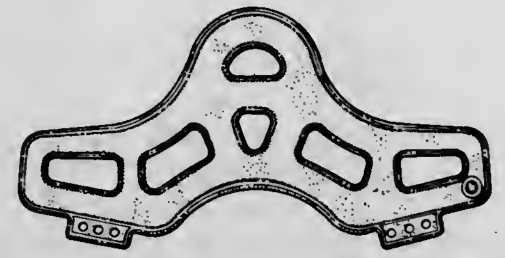
ERRATA

For CLASS	See PATENT NO.
057-001.E	235,800

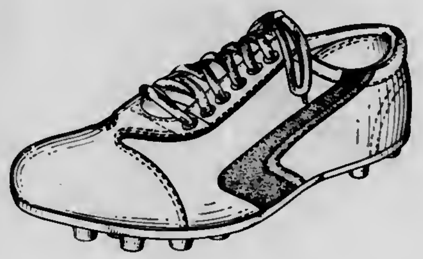
DESIGNS

JULY 8, 1975

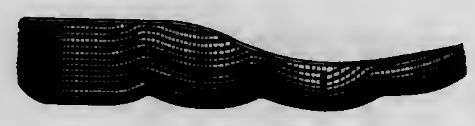
235,699
INFLATABLE FOOTBALL SHOULDER CUSHION
Munro M. Grant, 3 Bluebell Ave., 212 Vanderbuilt
Tower II, Naples, Fla. 33940
Filed Nov. 2, 1973, Ser. No. 412,183
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—27



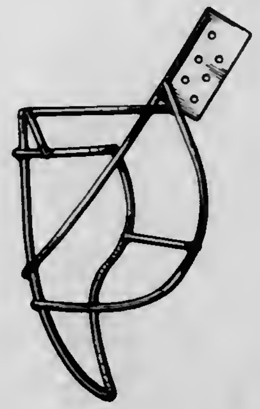
235,700
SPORT SHOE
Jonas Senter, Oakley Lane, Greenwich, Conn. 06830
Filed June 18, 1974, Ser. No. 480,534
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—311



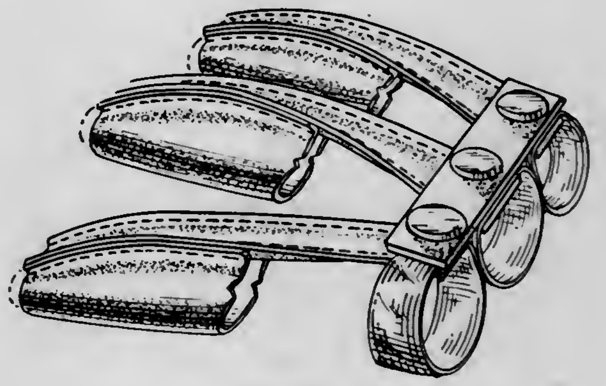
235,701
SHOE SOLE
Joseph P. Famolare, Jr., Florence, Italy, assignor to
Famolare, Inc., New York, N.Y.
Filed May 28, 1974, Ser. No. 473,336
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—319



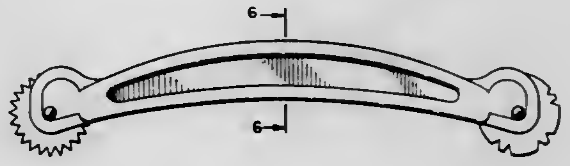
235,702
FACE GUARD FOR A HELMET
Dennis L. Burns, 4044–A NE. 109th St.,
Seattle, Wash. 98125
Filed Feb. 5, 1973, Ser. No. 329,467
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—233



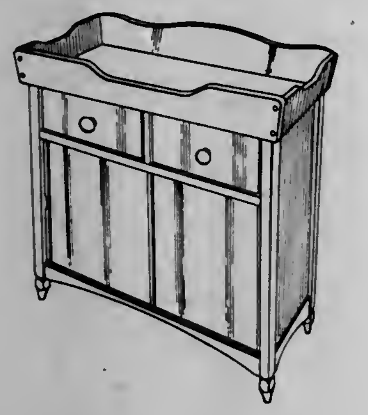
235,703
DISASSEMBLABLE ARCHERY FINGER TAB
George D. Birnie, Pine Bluff, Ark., assignor to
Brunswick Corporation
Filed Feb. 28, 1973, Ser. No. 336,541
Term of patent 14 years
Int. Cl. D2—
U.S. Cl. D2—361



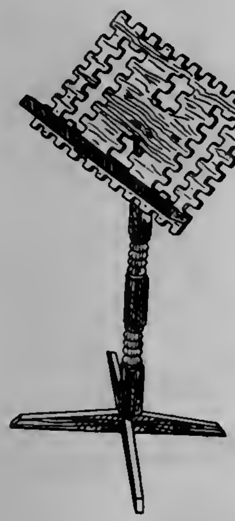
235,704
TRACING WHEEL
Else Tyroler, 1543 S. Robertson,
Los Angeles, Calif. 90048
Filed Oct. 11, 1973, Ser. No. 405,715
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D3—19 A



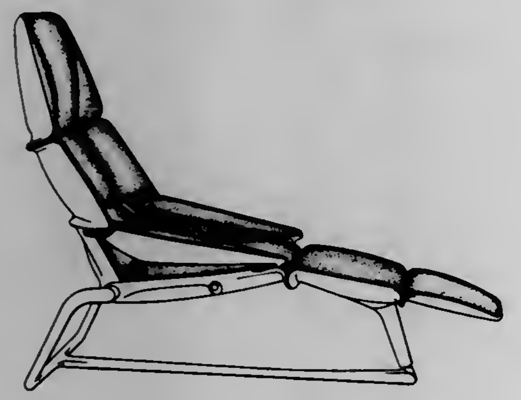
235,705
INFANT'S DRESSING TABLE
Raymond G. Pierson, 120 Simson St.,
Bedford, Pa. 15522
Filed Oct. 29, 1973, Ser. No. 410,518
Term of patent 7 years
Int. Cl. D6—*04*
U.S. Cl. D6—5



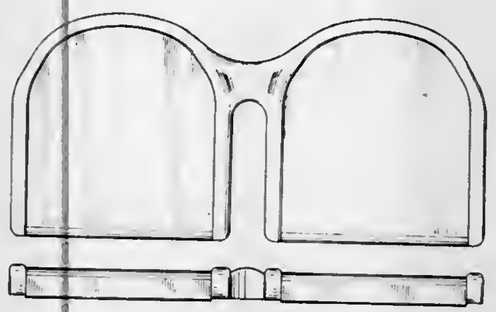
235,706
MUSIC STAND
Neil Douglas Pennington, 622 Braeside Road,
Baltimore, Md. 21229
Filed Jan. 24, 1974, Ser. No. 436,172
Term of patent 3½ years
Int. Cl. D6—*99*
U.S. Cl. D6—18



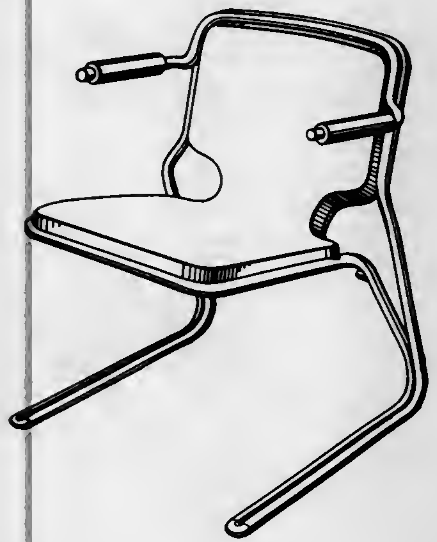
235,707
ADJUSTABLE LOUNGE CHAIR
Warren Platner, Foote's Bridge Road,
Guilford, Conn. 06340
Filed Aug. 27, 1973, Ser. No. 391,762
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—38



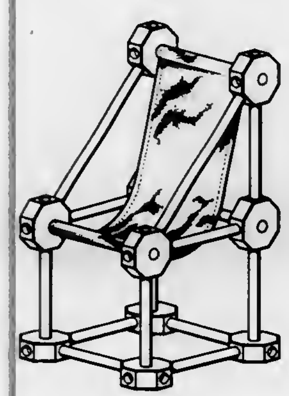
235,708
SKI LIFT SEAT
Scott D. Miller, 1348 SW. Taylors Ferry Road, Portland,
Oreg. 97219, and Charles W. Kellogg, Jr., P.O.
Box 663, Battleground, Wash. 98604
Filed Sept. 21, 1973, Ser. No. 399,429
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—59



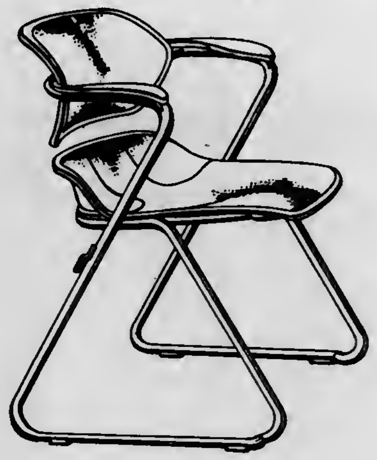
235,709
STACKING CHAIR
Robert W. Schier, Glenview, Ill., assignor to American
Seating Company, Grand Rapids, Mich.
Filed Oct. 1, 1973, Ser. No. 402,118
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—66



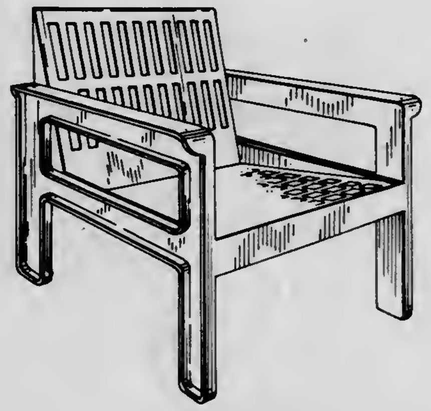
235,710
CHAIR
Allen L. Hall, Provo, Utah
(10338 Larwin Ave., Chatsworth, Calif. 91311)
Filed Oct. 31, 1973, Ser. No. 411,485
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—68



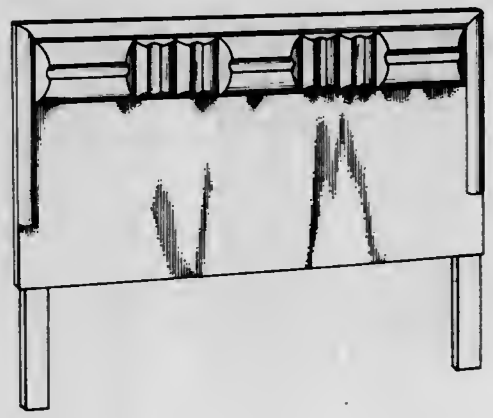
235,711
CHAIR
Hugh C. Acton, Augusta, Mich., assignor to American
Seating Company, Grand Rapids, Mich.
Filed Aug. 20, 1973, Ser. No. 389,686
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—69



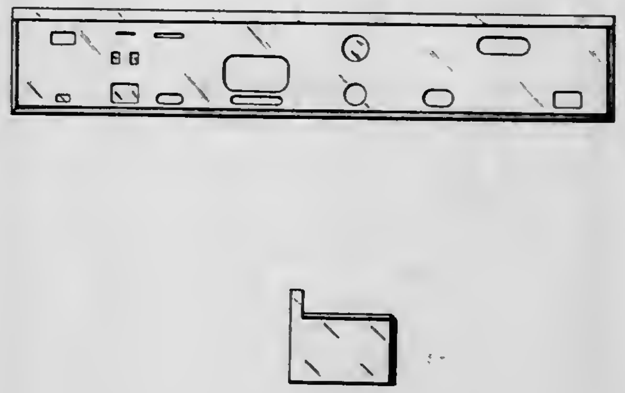
235,712
CHAIR
Harry Laylon, Syracuse, N.Y., assignor to Dart
Industries Inc., Los Angeles, Calif.
Filed Mar. 2, 1973, Ser. No. 337,710
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—70



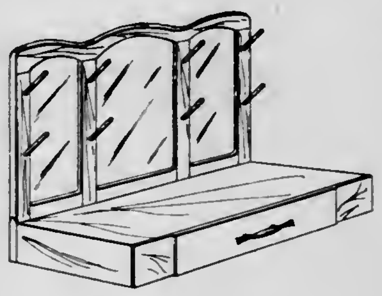
235,713
BED HEADBOARD
Aaron Donner, Weston, Conn., assignor to
The Lane Company, Inc.
Filed July 10, 1974, Ser. No. 487,378
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—79



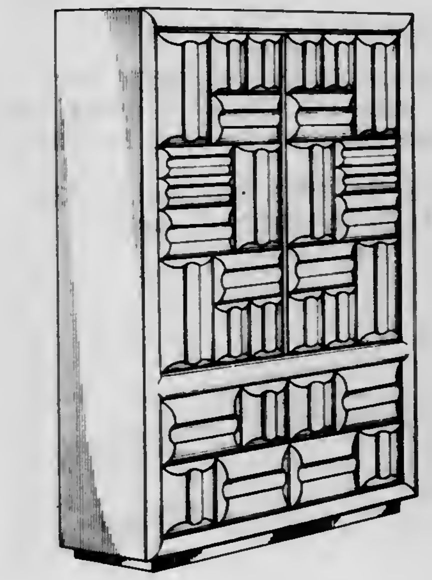
235,714
RACK FOR TOOTHBRUSHES AND TOILETRIES OR THE LIKE
Harry Lesser, Jr., Clayton, Mo., assignor to
Halame Company, St. Louis, Mo.
Filed Nov. 13, 1972, Ser. No. 306,328
Term of patent 7 years
Int. Cl. D6—*06*
U.S. Cl. D6—94



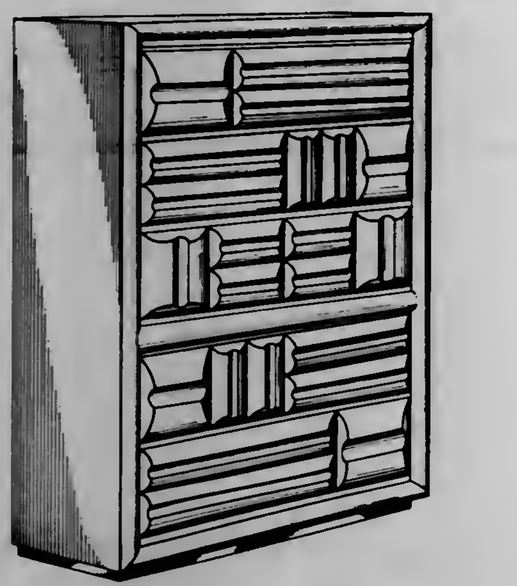
235,715
COFFEE-TEA CUP RACK AND CABINET
James N. Breault, 2212 Ardmore Ave.,
Manhattan Beach, Calif. 90266
Filed Nov. 7, 1973, Ser. No. 413,425
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—129



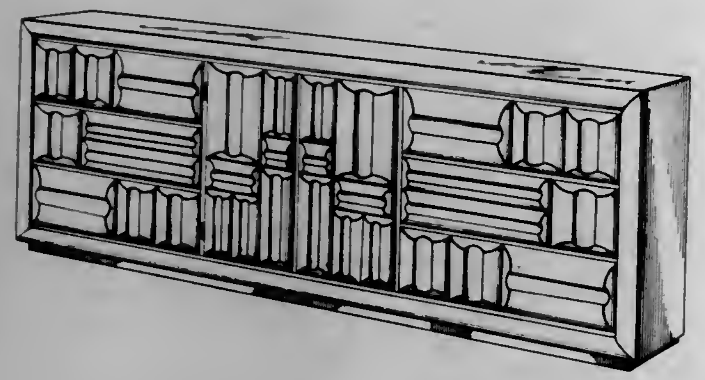
235,716
CHEST
Aaron Donner, Weston, Conn., assignor to
The Lane Company, Inc.
Filed July 10, 1974, Ser. No. 487,376
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—154



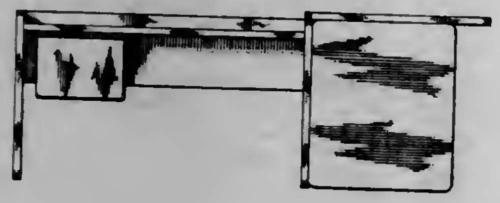
235,717
CHEST OF DRAWERS
Aaron Donner, Weston, Conn., assignor to
The Lane Company, Inc.
Filed July 10, 1974, Ser. No. 487,379
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—154



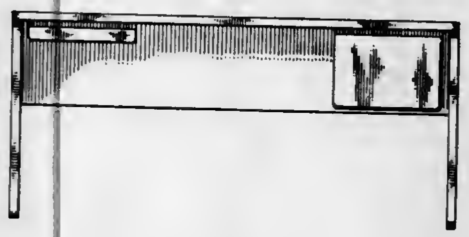
235,718
DRESSER
Aaron Donner, Weston, Conn., assignor to
The Lane Company, Inc.
Filed July 10, 1974, Ser. No. 487,375
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—154



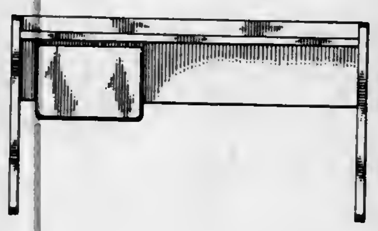
235,719
DESK OR SIMILAR ARTICLE
Douglas C. Ball, Senneville, Quebec, Canada, assignor to Massey-Ferguson Industries Limited, Toronto, Ontario, Canada
Filed Aug. 30, 1973, Ser. No. 393,238
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—162



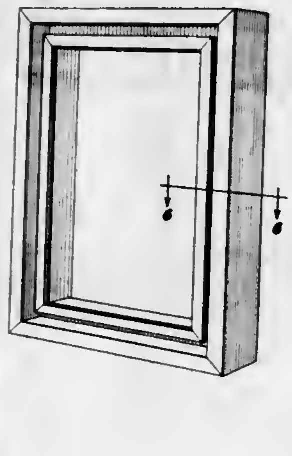
235,720
DESK OR SIMILAR ARTICLE
Douglas C. Ball, Senneville, Quebec, Canada, assignor to Massey-Ferguson Industries Limited, Toronto, Ontario, Canada
Filed Aug. 30, 1973, Ser. No. 393,243
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—162



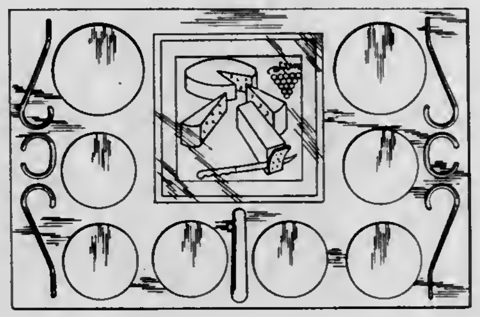
235,721
DESK OR SIMILAR ARTICLE
Douglas C. Ball, Senneville, Quebec, Canada, assignor to Massey-Ferguson Industries Limited, Toronto, Ontario, Canada
Filed Aug. 30, 1973, Ser. No. 393,250
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—162



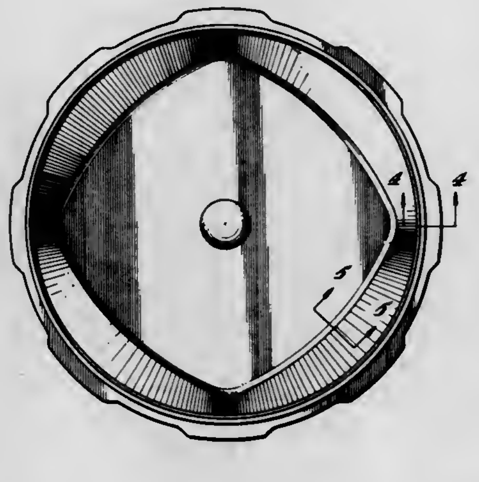
235,722
PICTURE FRAME
Richard Rettick, % Creative Impressions, 914 N. Harrison Ave., Campbell, Calif. 95008
Filed July 19, 1973, Ser. No. 380,894
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—242



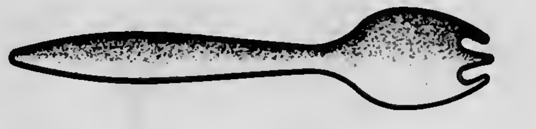
235,723
SERVING TRAY OR SIMILAR ARTICLE
Kurt M. Vorchheimer, 92 Pinehurst Ave.,
New York, N.Y. 10033
Filed July 30, 1973, Ser. No. 383,886
Term of patent 3½ years
Int. Cl. D7—*99*
U.S. Cl. D7—70



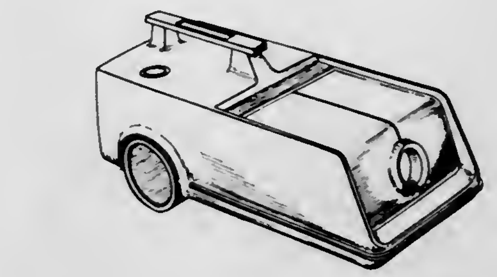
235,724
STORAGE CONTAINER OR THE LIKE
James B. Swett, Barrington, R.I., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed Jan. 9, 1974, Ser. No. 432,023
Term of patent 14 years
Int. Cl. D7—*07*; D9—*02*
U.S. Cl. D7—79



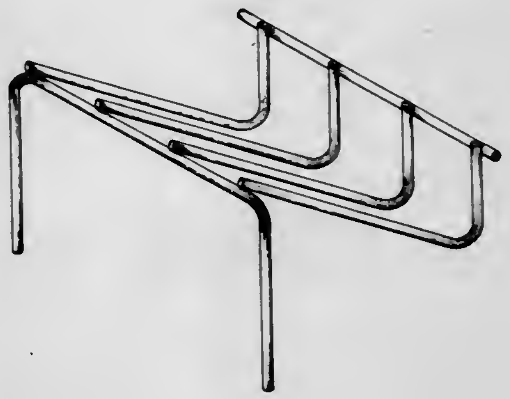
235,725
SALAD FORK OR THE LIKE
Harold P. Ashton, Providence, R.I., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed June 8, 1973, Ser. No. 368,413
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—137



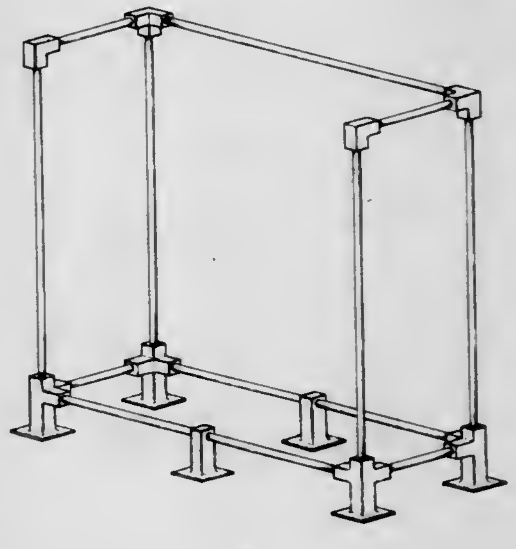
235,726
CANISTER VACUUM CLEANER OR SIMILAR ARTICLE
Clyde H. Williams, Coldwater, Mich., assignor to The Scott & Fetzer Company, Bronson, Mich.
Filed May 28, 1974, Ser. No. 473,754
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—168



235,727
FIREPLACE GRATE
Joseph S. Parziale, 8922 Wilson Mills Road,
Chesterland, Ohio 44026
Filed Aug. 30, 1974, Ser. No. 502,053
Term of patent 7 years
Int. Cl. D7—*08*
U.S. Cl. D7—207

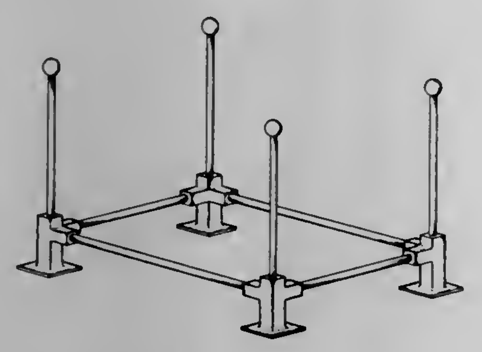


235,728
FIREWOOD STORAGE RACK
Joseph S. Parziale, 8922 Wilson Mills Road,
Chesterland, Ohio 44026
Filed Aug. 30, 1974, Ser. No. 502,055
Term of patent 7 years
Int. Cl. D7—*08*
U.S. Cl. D7—212



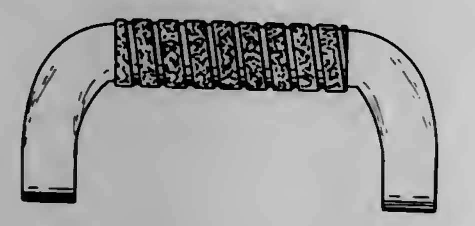
235,729
FIREWOOD STORAGE RACK

Joseph S. Parziale, 8922 Wilson Mills Road,
Chesterland, Ohio 44026
Filed Aug. 30, 1974, Ser. No. 502,056
Term of patent 7 years
Int. Cl. D7—*08*
U.S. Cl. D7—212



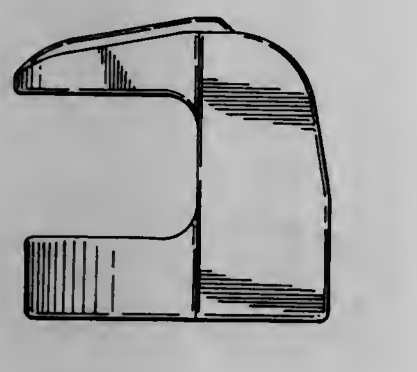
235,730
CARRYING CASE HANDLE

George W. Bush, Haddonfield, N.J., assignor to
P.H.C. Industries, Inc., Camden, N.J.
Filed Jan. 8, 1973, Ser. No. 321,812
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—154



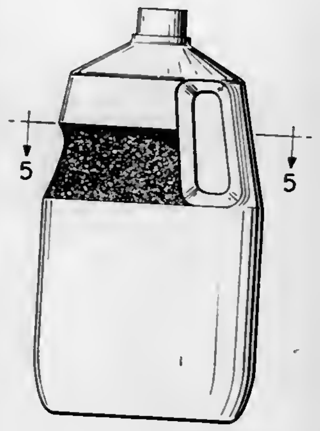
235,731
BEAM CLAMP

Blair A. Hubnda, Sr., 1890 Woodlawn Ave., Youngstown, Ohio 44514, and Anthony Kopatich, 742 Whipple Ave., Campbell, Ohio 44405
Filed Apr. 5, 1972, Ser. No. 241,492
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—235



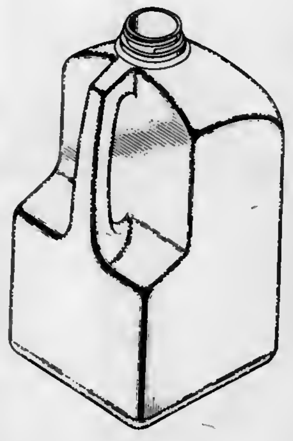
235,732
JUG

James E. Plummer, 2530 Beaufort, Toledo, Ohio 4361
Filed Oct. 1, 1973, Ser. No. 402,282
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—39



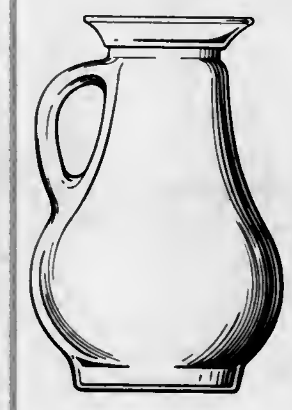
235,733
JUG OR THE LIKE

Richard L. Platte, Saline, Mich., assignor to
Knudsen Corporation
Filed July 13, 1973, Ser. No. 378,925
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—40



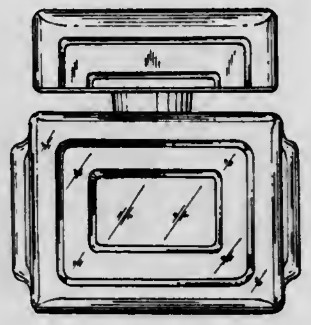
235,734
BOTTLE

Gordon A. Strand, Toledo, Ohio, assignor to
Owens-Illinois, Inc.
Filed Apr. 2, 1973, Ser. No. 346,962
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—48



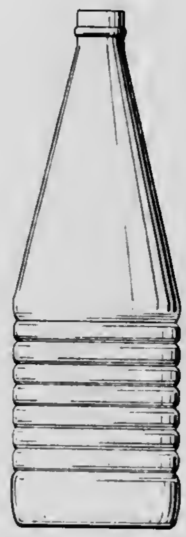
235,735
PERFUME BOTTLE

Pierre Francois Dinand, Levallois, France, assignor to
Balenciaga S.A., Paris, France
Filed Dec. 26, 1973, Ser. No. 427,800
Claims priority, application France July 27, 1973
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—168



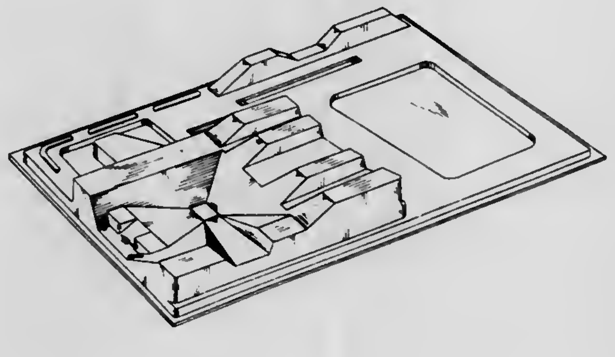
235,736
BOTTLE

Gordon A. Strand, Toledo, Ohio, and Richard L. Drow,
Milwaukee, Wis., assignors to Owens-Illinois, Inc.
Filed July 30, 1973, Ser. No. 384,046
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—111



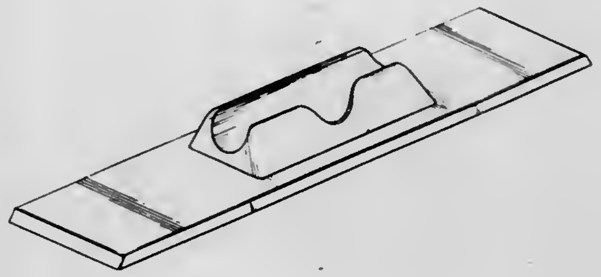
235,737
RIBBON CARTRIDGE SHIPPING TRAY

Anthony N. Paone, Syracuse, and William P. Montgomery and Aaron C. Zeamer, Cortland, N.Y., assignors to SCM Corporation, New York, N.Y.
Filed Dec. 6, 1973, Ser. No. 422,231
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—187



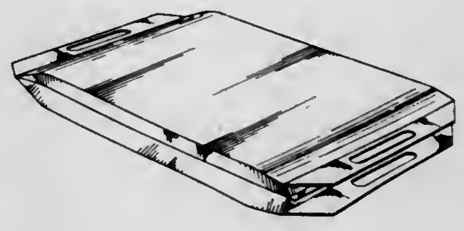
235,738
TRAY FOR PACKAGING TELESCOPIC GUN SIGHT OR THE LIKE

Danny F. Flaherty and Donald R. Payton, El Paso, Tex.,
assignors to W. R. Weaver Company, El Paso, Tex.
Filed May 22, 1973, Ser. No. 362,993
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—240



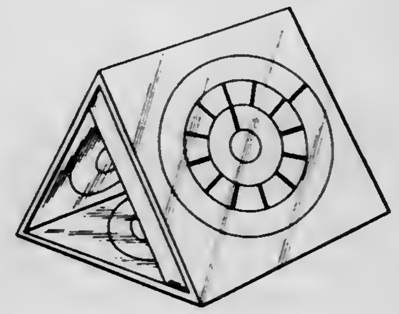
235,739
BAG

Justin D. Christensen, Overland Park, Kans. 66204
Filed Sept. 27, 1973, Ser. No. 401,397
Term of patent 14 years
Int. Cl. D9—*05*
U.S. Cl. D9—249

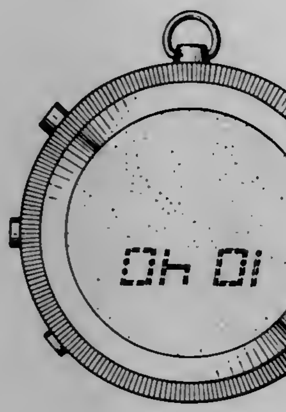


235,740
CLOCK

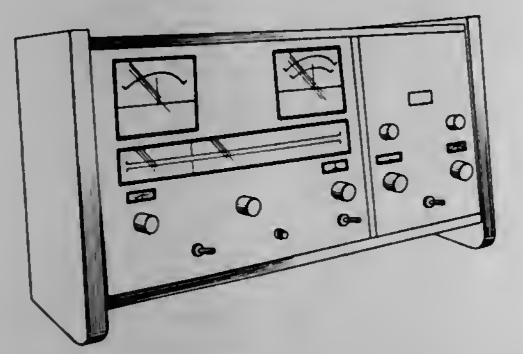
Dario D'Adda, Milan, Italy, assignor to Italora S.p.A.
Filed July 31, 1972, Ser. No. 276,377
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—14



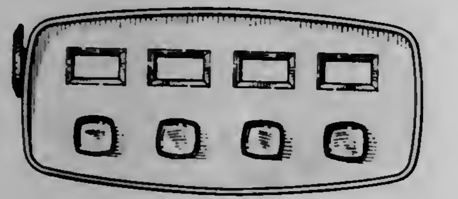
235,741
LOCKET WATCH
Benjamin Friedman, Tappan, N.Y., assignor to Solitron Devices, Inc., Tappan, N.Y.
Filed Apr. 24, 1973, Ser. No. 353,976
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—30



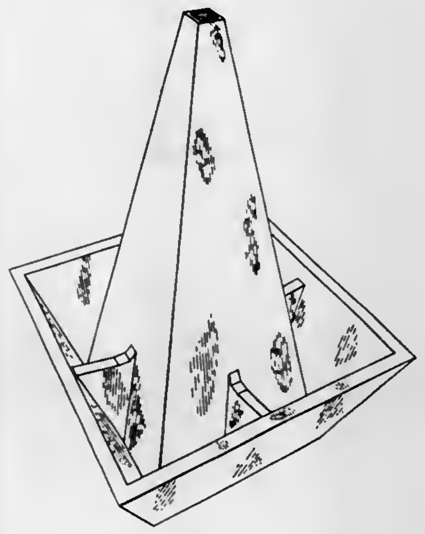
235,742
AUDIOMETER OR SIMILAR ARTICLE
Erwin H. Rock, Beden Ave., Ardsley, N.Y. 10502, and Irwin Klar, 5 Assembly Court, New City, N.Y. 10956
Filed Jan. 22, 1974, Ser. No. 435,532
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—46



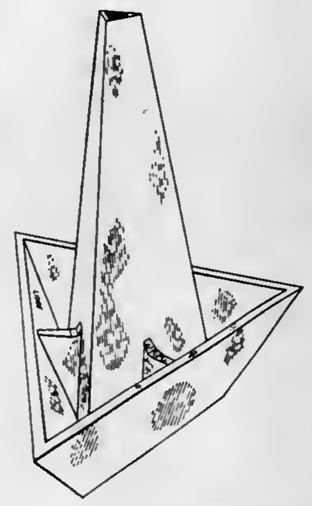
235,743
COUNTER
David Izenzon, 316 E. 3rd St., New York, N.Y. 10009
Filed July 30, 1973, Ser. No. 384,140
Term of patent 3½ years
Int. Cl. D10—*99*
U.S. Cl. D10—97



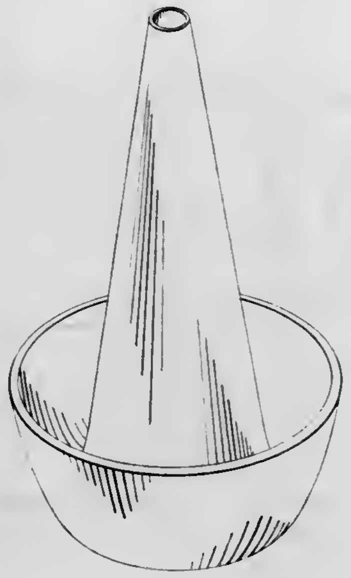
235,744
TRAFFIC HAZARD MARKER
Will Clarke England, 7310 Eastcrest, Austin, Tex. 78752
Filed Jan. 11, 1974, Ser. No. 432,471
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—109



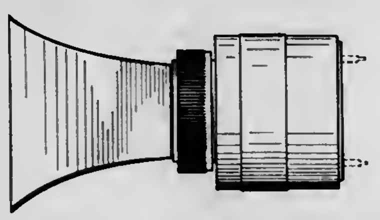
235,745
TRAFFIC HAZARD MARKER
Will Clarke England, 7310 Eastcrest, Austin, Tex. 78752
Filed Jan. 11, 1974, Ser. No. 432,638
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—109



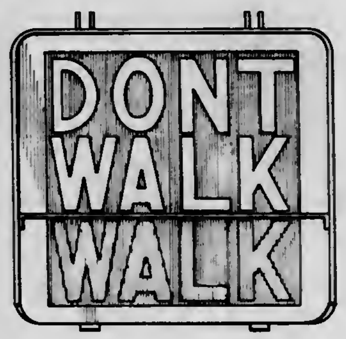
235,746
TRAFFIC HAZARD MARKER
Will Clarke England, 7310 Eastcrest, Austin, Tex. 78752
Filed Jan. 11, 1974, Ser. No. 432,637
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—109



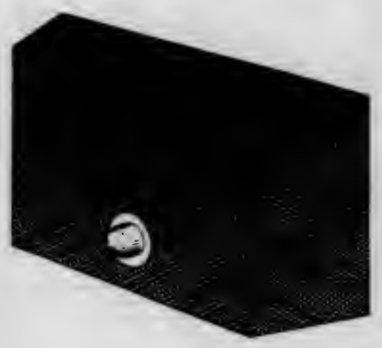
235,747
AUDIBLE ALARM
Louis P. Sweany, Carmel, Ind., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.
Filed Aug. 29, 1973, Ser. No. 392,623
Term of patent 14 years
Int. Cl. D29—*02*
U.S. Cl. D10—120



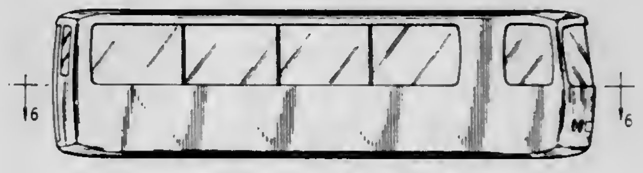
235,748
ILLUMINATED PEDESTRIAN SIGNAL FACE
Henry Dowding, Staten Island, N.Y., assignor to The Marbelite Company, Inc., Brooklyn, N.Y.
Filed Jan. 11, 1974, Ser. No. 432,755
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—121



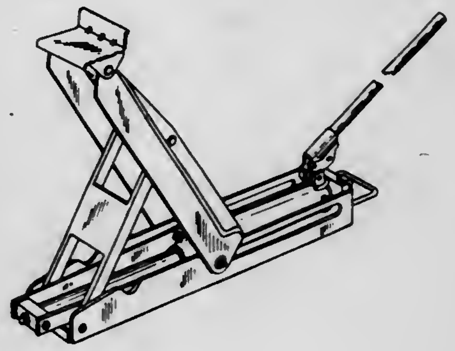
235,749
ALARM CONTAINER
Joseph T. Sullivan, Huntingdon Valley, Pa., assignor to Standard-Farrington Alarm & Signal Corp., Trevose, Pa.
Filed Oct. 12, 1973, Ser. No. 405,779
Term of patent 14 years
Int. Cl. D29—*02*
U.S. Cl. D10—121



235,750
CAR FOR ELEVATED RAILWAY
Lawrence K. Edwards, 565 Arastradero Road, Palo Alto, Calif. 94306
Filed Oct. 2, 1973, Ser. No. 402,840
Term of patent 14 years
Int. Cl. D12—*03*
U.S. Cl. D12—40



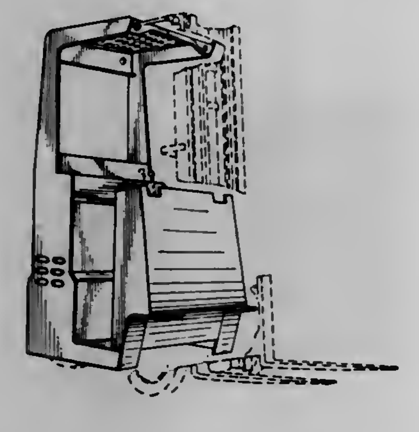
235,751
ROADSIDE SERVICE JACK
John R. Butorac, Hales Corners, Wis., assignor to Applied Power, Inc., Milwaukee, Wis.
Filed Oct. 24, 1973, Ser. No. 409,163
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—55



235,752

LIFT TRUCK BODY

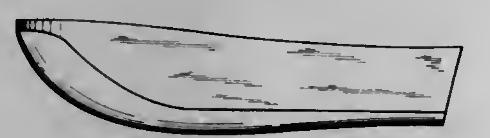
Darrell C. Fuller and William A. Williamson, Niles, Mich., assignors to Clark Equipment Company
Filed Apr. 23, 1973, Ser. No. 353,862
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—61

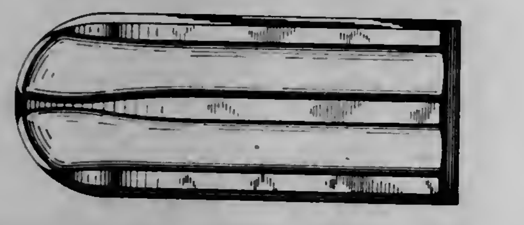


235,753

BOAT HULL

Harry Bremer, Box 488, Elkhart Lake, Wis. 53020
Filed Oct. 31, 1973, Ser. No. 411,478
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—62

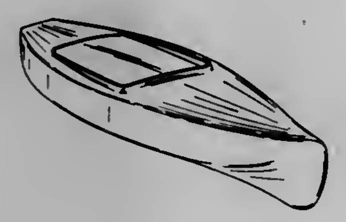




235,754

BOAT

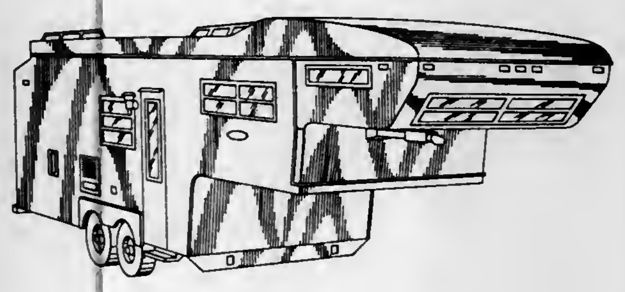
Richard F. Berry, St. Louis County, Mo. (6 Zinzer Court, St. Louis, Mo. 63123)
Filed Feb. 28, 1974, Ser. No. 446,611
Term of patent 7 years
Int. Cl. D12—*06*
U.S. Cl. D12—63



235,755

HOUSE TRAILER

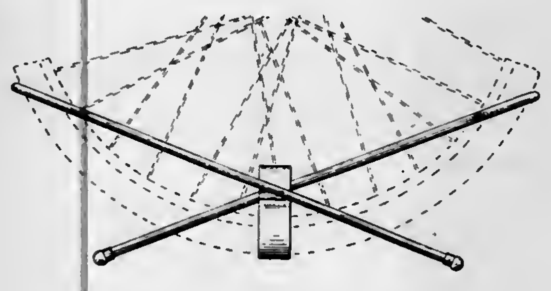
John May, Rte. 2, Concordia, Mo. 64020
Filed Oct. 5, 1972, Ser. No. 295,222
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D12—103



235,756

CYCLE STAND

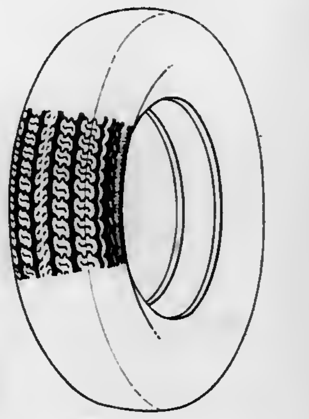
Almon F. Townsend, % Persons-Majestic Mfg. Co., 72 Commercial St., Worcester, Mass. 01608
Filed Sept. 10, 1974, Ser. No. 504,805
Term of patent 7 years
Int. Cl. D8—*99*
U.S. Cl. D12—115



235,757

TIRE

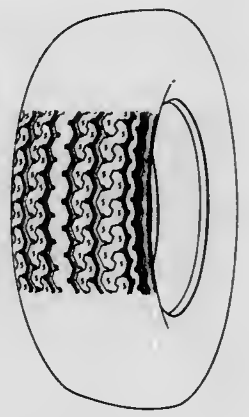
Jean-Pierre Largeteau, Boulogne, France, assignor to Pneumatiques Caoutchouc Manufacture et Plastiques Kleber-Colombes
Filed Apr. 13, 1973, Ser. No. 350,999
Claims priority, application France Feb. 8, 1973
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—143



235,758

TIRE

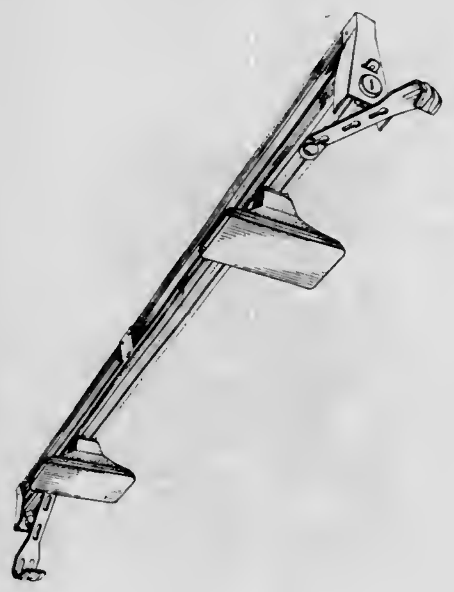
Jean-Pierre Largeteau, Boulogne, France, assignor to Pneumatiques Caoutchouc Manufacture et Plastiques Kleber-Colombes
Filed Apr. 13, 1973, Ser. No. 350,998
Claims priority, application France Oct. 17, 1972
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—143



235,759

SKI CARRIER

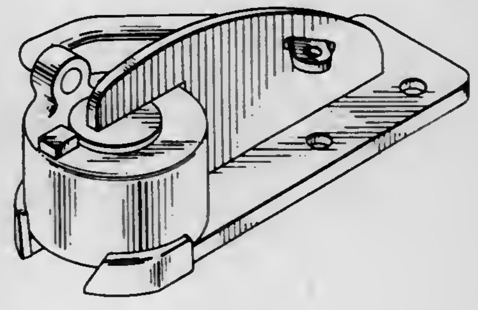
Ronald W. Parsons, Tottenham, Ontario, Canada, assignor to A.L. & W. Limited
Filed Jan. 8, 1974, Ser. No. 431,613
Claims priority, application Canada July 30, 1973
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—157



235,760

UNIVERSAL COUPLING TRAILER HITCH

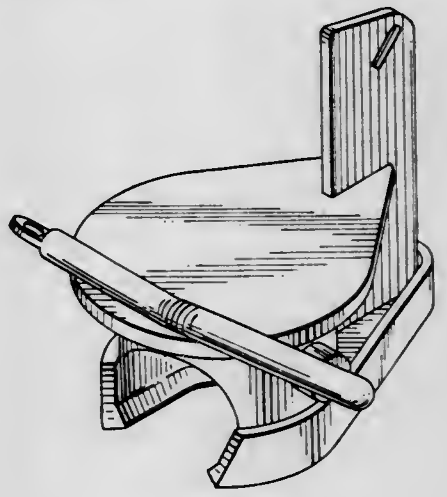
Edward A. Genzel, 1226 Bardfield St., and Brian M. Bernhardt, 1317 Larry Drive, both of Garland, Tex. 75041
Filed Aug. 27, 1973, Ser. No. 391,989
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—162



235,761

UNIVERSAL COUPLING

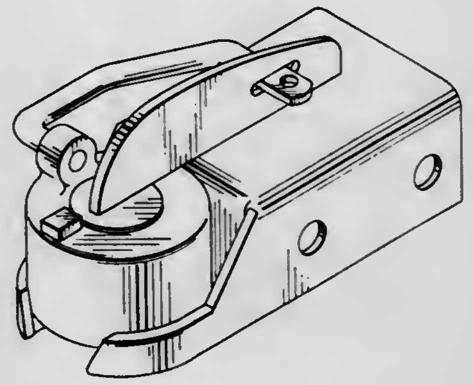
Edward A. Genzel, 1226 Bardfield St., and Brian M. Bernhardt, 1317 Larry Drive, both of Garland, Tex. 75041
Filed Aug. 27, 1973, Ser. No. 391,988
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—162



235,762

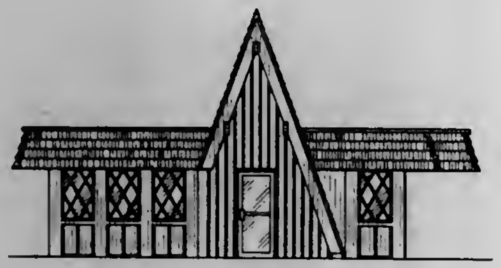
UNIVERSAL COUPLING TRAILER HITCH

Edward A. Genzel, 1226 Bardfield St., and Brian M. Bernhardt, 1317 Larry Drive, both of Garland, Tex. 75041
Filed Aug. 27, 1973, Ser. No. 391,990
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—162



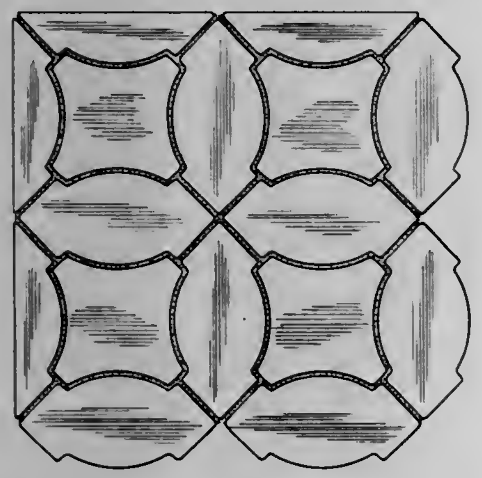
235,763
BUILDING

Wallace B. Roderick and Michael C. Gibson, both of 4th and Fulton, Garden City, Kans. 67846
Filed Sept. 17, 1973, Ser. No. 397,629
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 B



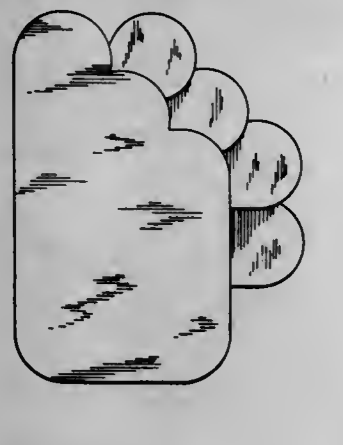
235,764
FLOOR COVERING OR SIMILAR ARTICLE

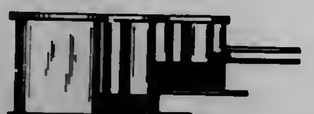
William L. Le Vahn, 4249 Twin Oak Lane, Minneapolis, Minn. 55422
Filed Dec. 21, 1972, Ser. No. 317,175
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D18—2 B



235,765
PERPETUAL CALENDAR OR SIMILAR ARTICLE

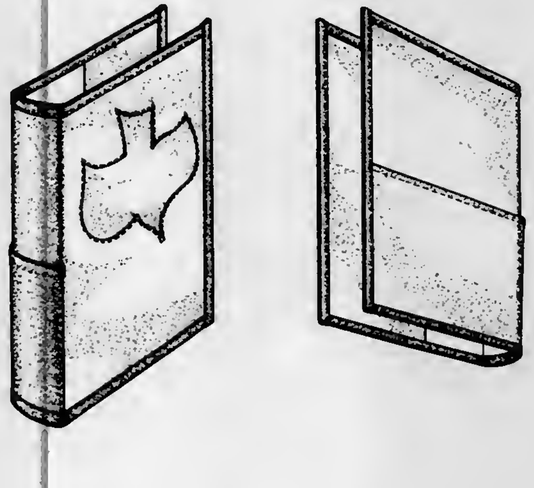
Dennis A. Knaus, Germantown, and Richard E. Wysocky, Grafton, Wis., assignors to Jos. Schlitz Brewing Company, Milwaukee, Wis.
Filed Sept. 4, 1973, Ser. No. 393,795
Term of patent 14 years
Int. Cl. D19—*03*
U.S. Cl. D19—25





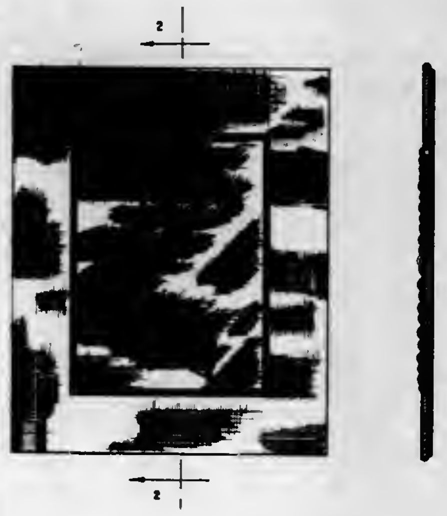
235,766
BOOK COVER

Gregg L. Gray, Laguna Beach, Calif.
(1117 W. Struck, Orange, Calif. 92667)
Filed Aug. 23, 1973, Ser. No. 390,744
Term of patent 14 years
Int. Cl. D19—*04*
U.S. Cl. D19—26



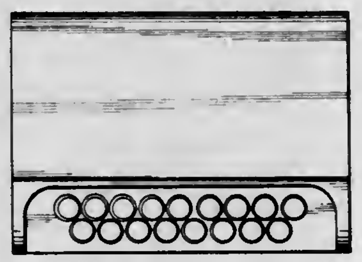
235,767
ALBUM COVER OR THE LIKE

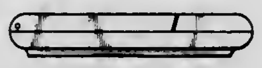
Abraham Bernstein, Forest Hills, N.Y., assignor to Kleer-Vu Industries, Inc., New York, N.Y.
Filed June 29, 1973, Ser. No. 374,885
Term of patent 14 years
Int. Cl. D19—*04*
U.S. Cl. D19—31



235,768
PUSH BUTTON TELEPHONE LIST FINDER

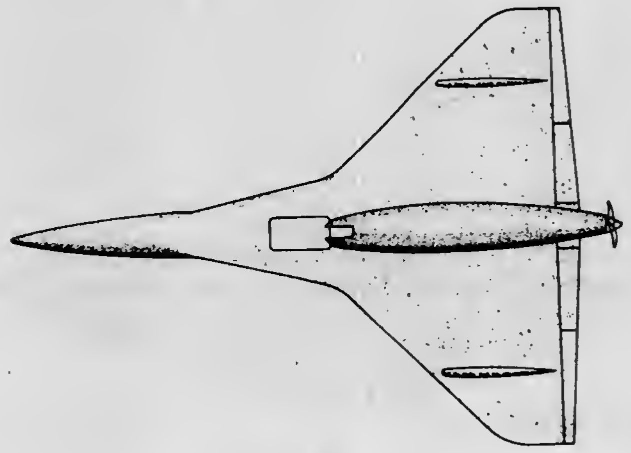
Chuzo Mori, Tokyo, Japan, assignor to Carl Manufacturing Company Ltd., Tokyo, Japan
Filed June 4, 1973, Ser. No. 366,532
Claims priority, application Japan Mar. 3, 1973
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—76

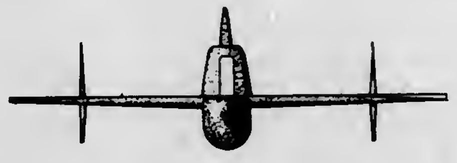




235,769
REMOTELY PILOTED VEHICLE DRIVEN BY A PUSHER PROPELLER

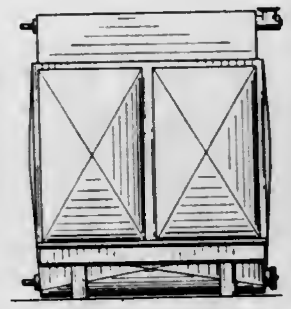
Le Roy I. Sather, 2532 14th W., Seattle, Wash. 98119
Filed Aug. 25, 1971, Ser. No. 175,028
Term of patent 7 years
Int. Cl. D22—*04*
U.S. Cl. D22—11

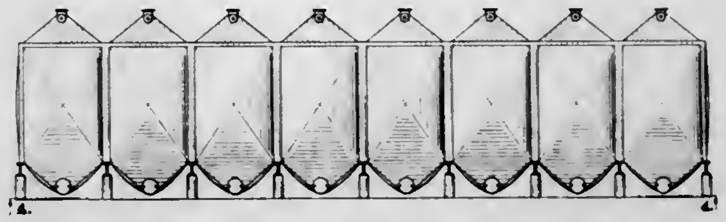




235,770
GRAIN ELEVATOR

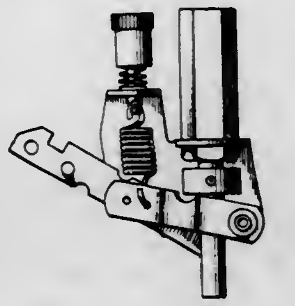
Leo M. Becker, 1833 Swope Parkway, Kansas City, Mo. 64130
Filed Feb. 8, 1974, Ser. No. 440,787
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—2





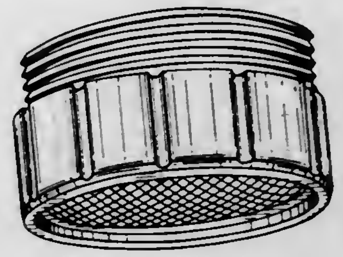
235,771
POULTRY WATERING VALVE

Reuben L. Christophel, Harrisonburg, Va., assignor to Shenandoah Manufacturing Co., Inc., Harrisonburg, Va.
Filed July 9, 1973, Ser. No. 377,284
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—19



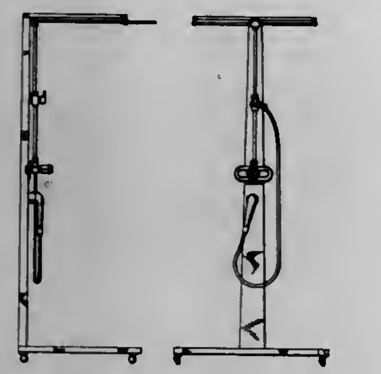
235,772
AERATOR

Dominic Anthony Saporito, Fanwood, N.J., assignor to American Standard Inc., New York, N.Y.
Filed Feb. 20, 1973, Ser. No. 334,161
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—35



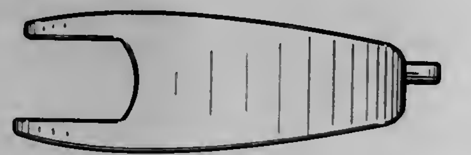
235,773
PORTABLE SHOWER

Arne Ohlson, Skimmelgatan 5, Malmo, Sweden
Filed Sept. 7, 1973, Ser. No. 394,978
Claims priority, application Sweden Mar. 8, 1973
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—57



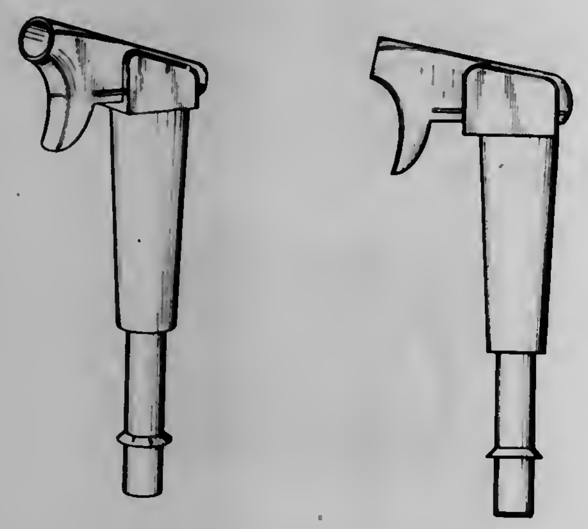
235,774
DENTAL FLOSS HOLDER

Edward Lamar Allen, Sr., and Lillian Christine Allen, both of 2002 Oakwood St., Hillcrest Heights, Md. 20031
Filed Aug. 28, 1973, Ser. No. 392,197
Term of patent 7 years
Int. Cl. D24—*99*
U.S. Cl. D24—1 D



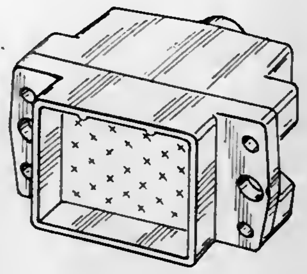
235,775
DENTAL VACUUM HANDPIECE

Donald R. Swatman, Modesto, Calif., assignor to Den-Tal-Ez Mfg. Co., Des Moines, Iowa
Filed Apr. 19, 1974, Ser. No. 462,352
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—1 R



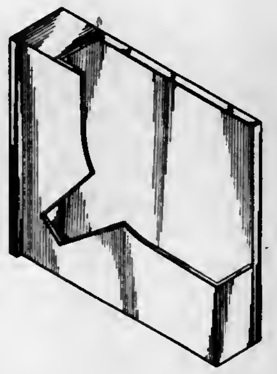
235,776
PLUG HOUSING

Jack L. Bowen, Larry G. Fischer, and James Ryan, Waseca, Minn., assignors to E. F. Johnson Company, Waseca, Minn.
Filed June 20, 1972, Ser. No. 264,424
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1 B



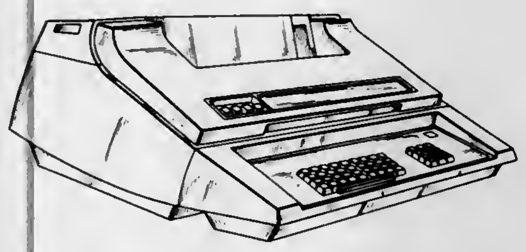
235,777
TANK FOR FAN FOLD TAPE

Gene D. Vedder, Granada Hills, Calif., assignor to Ex-Cell-O Corporation, Detroit, Mich.
Original design application Nov. 6, 1972, Ser. No. 304,236, now Patent No. 230,362. Divided and this application July 27, 1973, Ser. No. 383,333
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 R



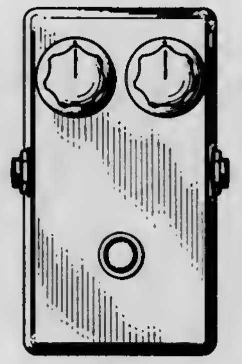
235,778
PRINTER AND KEYBOARD HOUSING

Gregory Fossella, Marshfield, Mass., assignor to Centronics Data Computer Corp., Hudson, N.H.
Filed Jan. 9, 1974, Ser. No. 432,059
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



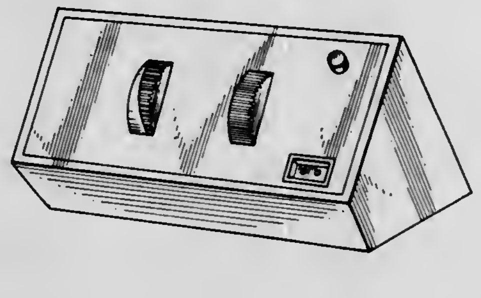
235,779
PHASING SIMULATOR FOR A MUSICAL INSTRUMENT

Keith Barr, 25 Southland Drive,
Rochester, N.Y. 14623
Filed Feb. 6, 1974, Ser. No. 440,149
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13 C



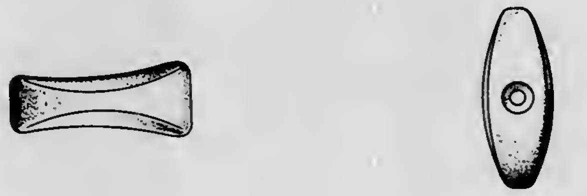
235,780
DICTATION TRANSCRIBE STATION

William Lansing Plumb, New York, N.Y., assignor to Dictaphone Corporation, Rye, N.Y.
Filed Dec. 26, 1972, Ser. No. 317,942
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 B



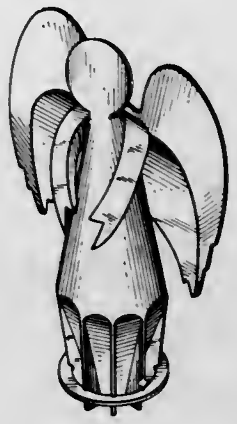
235,781
CIGARETTE HOLDER

Kenneth A. Carleton, Huntington Beach, Calif., assignor to Spaceship Up, Inc., Los Angeles, Calif.
Filed Oct. 5, 1973, Ser. No. 404,028
Term of patent 14 years
Int. Cl. D27—*02*
U.S. Cl. D27—07



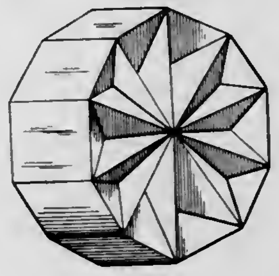
235,782
TREE ORNAMENT

Roger L. Martin, San Jose, Calif., assignor to Container Corporation of America, Chicago, Ill.
Filed Jan. 28, 1974, Ser. No. 436,873
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—1 B



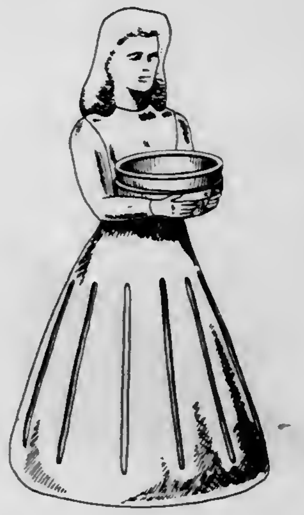
235,783
TREE ORNAMENT

Roger L. Martin, San Jose, Calif., assignor to Container Corporation of America, Chicago, Ill.
Filed Feb. 25, 1974, Ser. No. 445,602
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—1 C



235,784
SLOTTED CENTERPIECE FIGURINE FOR NAPKIN DISPLAY AND HOLDING CANDLES, FLOWERS OR THE LIKE

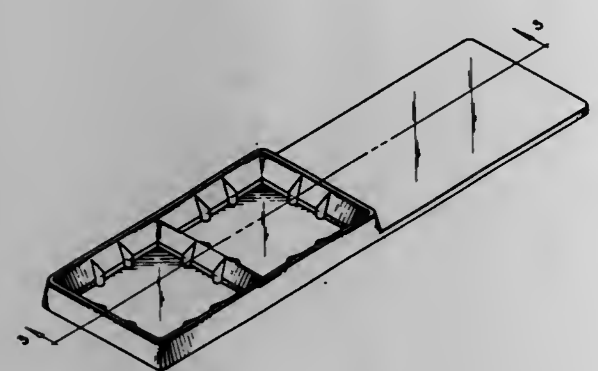
Dorothy E. Maloy, 6250 E. Keim Drive,
Scottsdale, Ariz. 85253
Filed Nov. 9, 1973, Ser. No. 414,399
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—23 E



235,785
MICROBIOLOGICAL NUTRIENT MEDIUM HOLDER

Kenneth Dale Collister, Elkhart, Ind., and Leighton Clifford Johnson, Edwardsburg, Mich., assignors to Miles Laboratories, Inc., Elkhart, Ind.
Filed July 5, 1974, Ser. No. 486,012
Term of patent 14 years
Int. Cl. D24—*02*

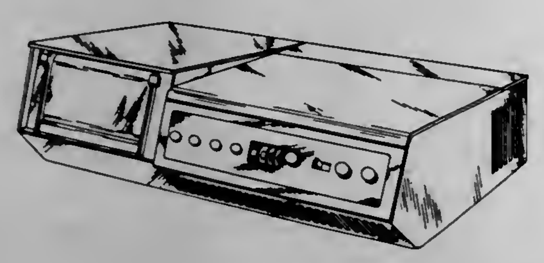
U.S. Cl. D32—1 A



235,786
DENSITOMETER OR SIMILAR ARTICLE

Gianfranco D. Zaccai, Cambridge, Mass., assignor to Instrumentation Laboratory, Inc., Lexington, Mass.
Filed Sept. 25, 1973, Ser. No. 400,559
Term of patent 14 years
Int. Cl. D24—*01*

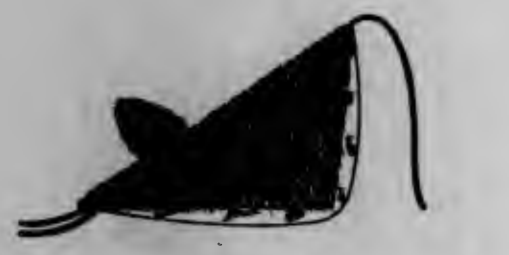
U.S. Cl. D32—2 C



235,787
STUFFED TOY ANIMAL FIGURE

Barbara H. Gorman, Mansfield, Conn. (Willington Oaks, Apt. 101, Daleville Road, Storrs, Conn. 06268)
Filed Nov. 5, 1973, Ser. No. 412,552
Term of patent 14 years
Int. Cl. D21—*01*

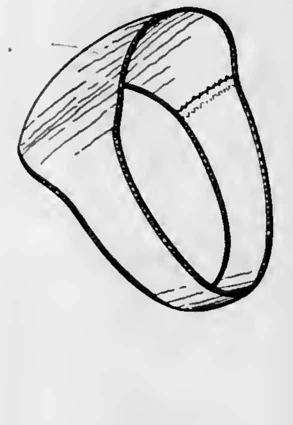
U.S. Cl. D34—2 R



235,788
FACIAL EXERCISER

Agnes J. Eberhardt, 6636 Neosho St., St. Louis, Mo. 63109
Filed July 10, 1972, Ser. No. 270,453
Term of patent 14 years
Int. Cl. D21—*99*

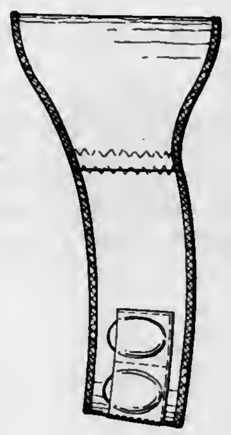
U.S. Cl. D34—5 K



235,789
WEIGHTED FACIAL EXERCISER

Agnes J. Eberhardt, 6636 Neosho St., St. Louis, Mo. 63109
Filed July 10, 1972, Ser. No. 270,454
Term of patent 14 years
Int. Cl. D21—*99*

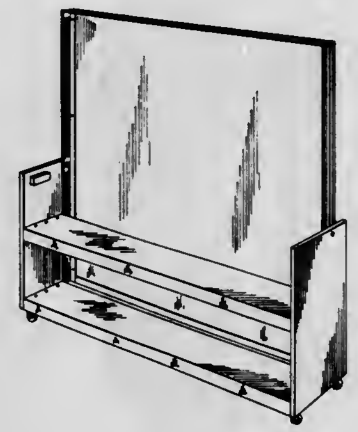
U.S. Cl. D34—5 K

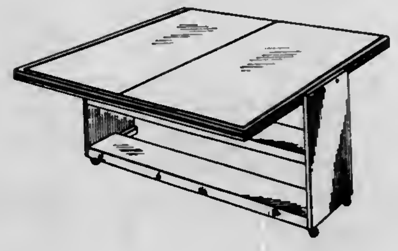


235,790
CONVERTIBLE TABLE TENNIS TABLE AND SHELF UNIT

Melvin Zimmers, Westport, and Gary A. Gerber, Weston, Conn., assignors to Caleco Industries, Inc., Hartford, Conn.
Filed Mar. 16, 1973, Ser. No. 341,885
Term of patent 14 years
Int. Cl. D21—*01*

U.S. Cl. D34—5 J

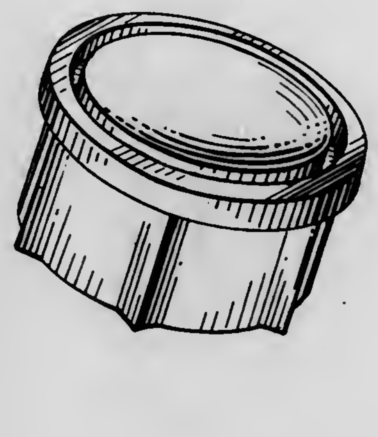




235,791
WEIGHTED INSERTS FOR GOLF CLUBS OR SIMILAR ARTICLES

Ronald A. Kurtz, Englewood, and Henry H. Utzinger, Ridgefield, N.J., assignors to Kulite Tungsten Corporation, Ridgefield, N.J.
Filed Feb. 26, 1973, Ser. No. 335,698
Term of patent 14 years
Int. Cl. D21—*02*

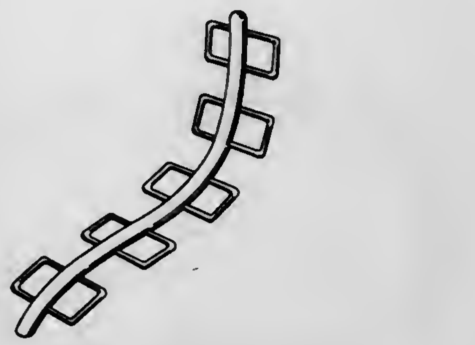
U.S. Cl. D34—5 GC



235,792
SERPENTINE PLAYGROUND CLIMBER

Robert S. Wormser, Ocala, Fla., assignor to Game Time, Inc., Litchfield, Mich.
Original design application Feb. 12, 1973, Ser. No. 331,802. Divided and this application Oct. 16, 1974, Ser. No. 515,177
Term of patent 14 years
Int. Cl. D21—*03*

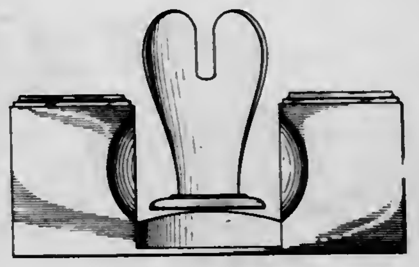
U.S. Cl. D34—5 H



235,793
TOY BEAUTY STATION

Rouben T. Terzian and Marvin I. Glass, Chicago, Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Jan. 29, 1973, Ser. No. 327,416
Term of patent 14 years
Int. Cl. D21—*01*

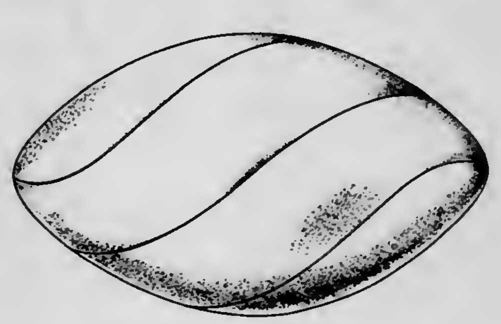
U.S. Cl. D34—15 AC



235,794
FOOTBALL WITH SPIRAL SEAMS

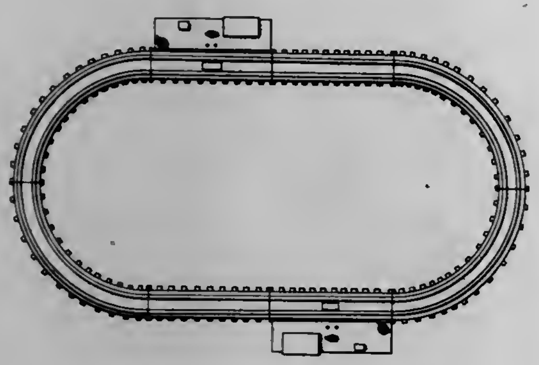
Frank G. Kroener, 1755 E. Ocean Blvd., Newport Beach, Calif. 92661
Filed June 4, 1973, Ser. No. 366,601
Term of patent 14 years
Int. Cl. D21—*01*

U.S. Cl. D34—15 EE



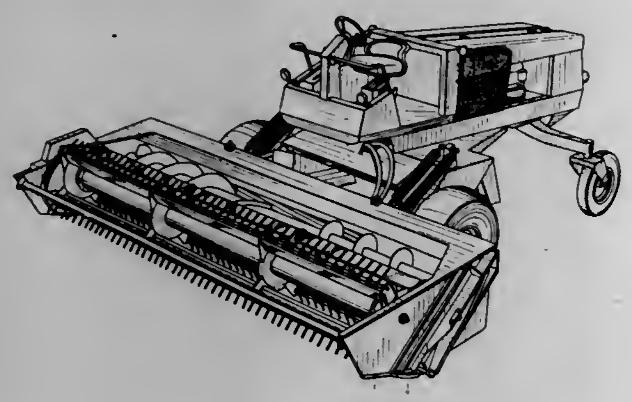
235,795
TOY TRAIN TRACK

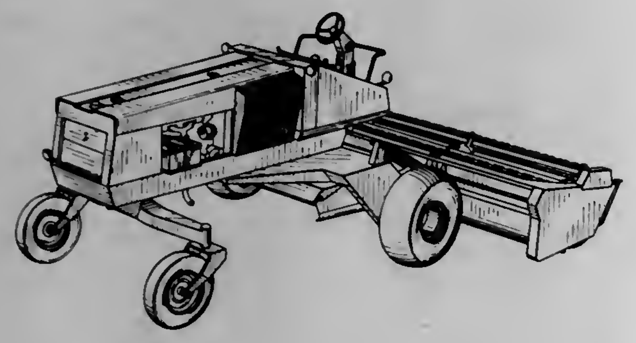
Teruo Matsumoto, Tokyo, Japan, assignor to Epoch Company, Ltd., Tokyo, Japan
Filed May 9, 1973, Ser. No. 358,643
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 MM



235,796
SELF-PROPELLED WINDROWER

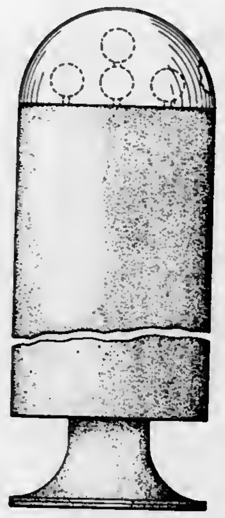
Cecil L. Case, Ferol S. Fell, and William F. Potter, Newton, and Richard Jack Robbins, Derby, Kans., assignors to Hesston Corporation, Hesston, Kans.
Filed July 18, 1973, Ser. No. 380,190
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D40—1 E





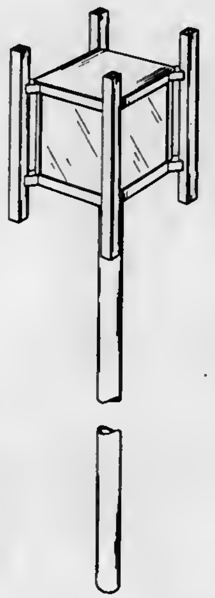
235,797
BOLLARD LIGHT FIXTURE

Marvin Paul Friedberg, New York, N.Y., assignor to Bajer Industries Incorporated, Fairfield, N.J.
Filed June 6, 1974, Ser. No. 476,879
Term of patent 14 years
Int. Cl. D26—*03;* D10—*06*
U.S. Cl. D48—31



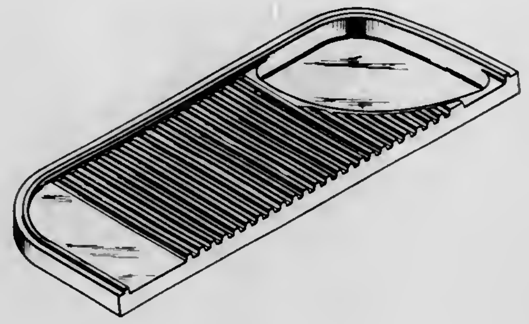
235,798
EXTERIOR LAMP

Francis L. Struben, 3870 Jarrettsville Pike, Jarrettsville, Md. 21084
Filed Aug. 5, 1974, Ser. No. 494,864
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—31



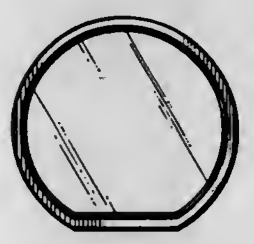
235,799
CLOTHES SCRUBBING DEVICE FOR ATTACHMENT TO A WASHING MACHINE LID

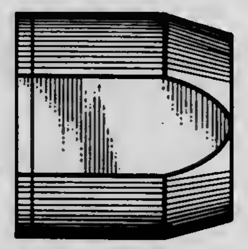
Harrison K. Linger, Louisville, Ky., assignor to General Electric Company
Filed Mar. 1, 1974, Ser. No. 447,132
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D49—1 C



235,800
OCULAR ASSEMBLY FOR A RIFLESCOPE

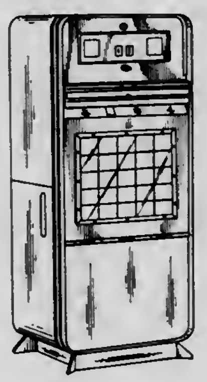
Gerrit A. Van Exel, Fullerton, Calif., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Apr. 25, 1973, Ser. No. 354,212
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 E





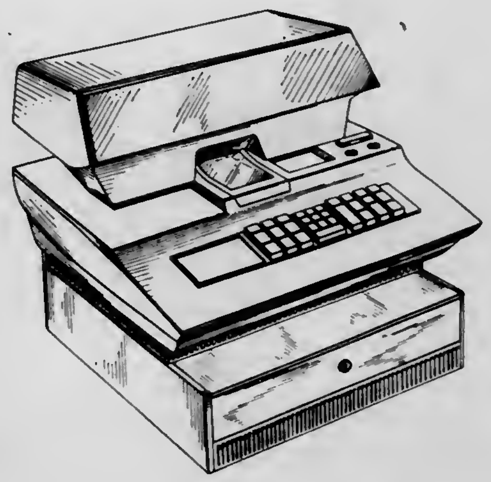
235,801
NEWSPAPER VENDING MACHINE

Fred M. Gore, 2808 Oak Lawn, Dallas, Tex. 75215
Filed June 21, 1973, Ser. No. 372,005
Term of patent 14 years
Int. Cl. D20—*01*
U.S. Cl. D52—3 R



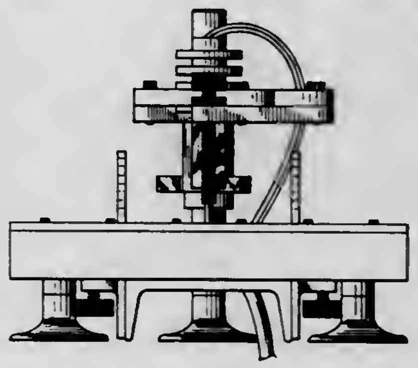
235,802
CASH REGISTER OR SIMILAR ARTICLE

Elmer J. Stoltz, Castro Valley, and Richard A. Nyquist, Menlo Park, Calif., assignors to The Singer Company, New York, N.Y.
Filed Dec. 26, 1973, Ser. No. 427,868
Term of patent 14 years
Int. Cl. D20—*99*
U.S. Cl. D52—4 A

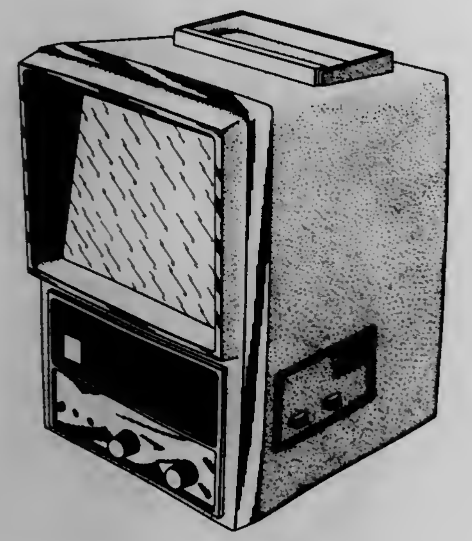


235,803
BRANDER FOR BASEBALL BAT OR THE LIKE

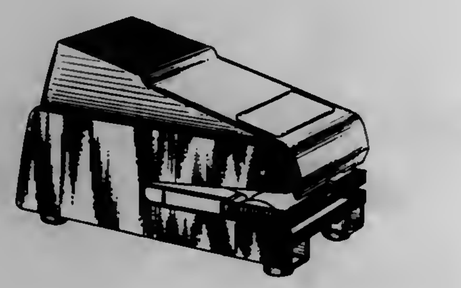
Herbert W. Gourley, Springfield, Mo., assignor to Blue Darter, Inc., Lees Summit, Mo.
Filed Sept. 1, 1972, Ser. No. 285,836
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1 R



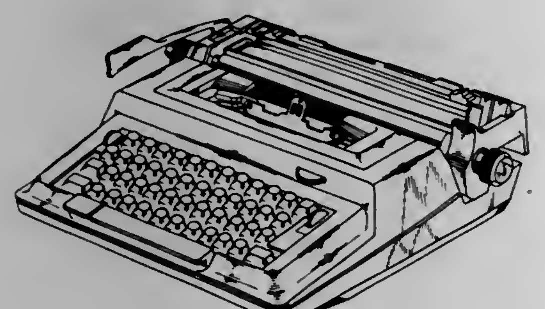
235,804
MOTION PICTURE PROJECTOR-VIEWER
Alex J. Procop, 20731 Prairie St.,
Chatsworth, Calif. 91311
Filed Aug. 22, 1973, Ser. No. 390,391
Term of patent 14 years
Int. Cl. D16—*02*
U.S. Cl. D61—1 N



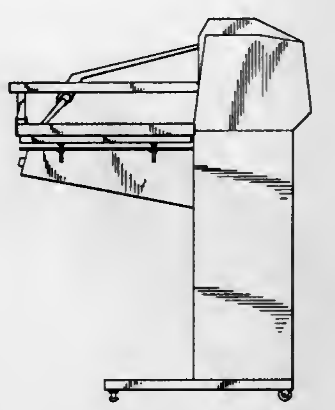
235,805
STATIONERY EMBOSSER
Daniel E. McCue, Santa Barbara, Calif., assignor to M & R Seal Press Co., Inc., Roselle, N.J.
Filed Sept. 14, 1973, Ser. No. 397,773
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D64—10



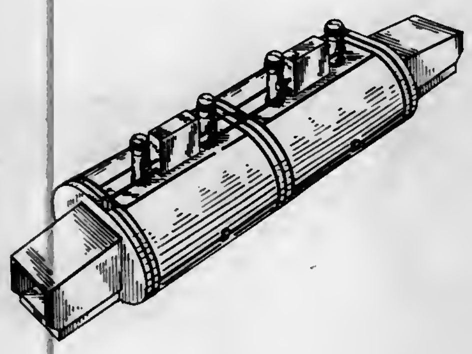
235,806
TYPEWRITER
Chester J. Abend, Camillus, James J. Bienkowski, Cazenovia, and Ellen V. B. Ludwick, Syracuse, N.Y., assignors to SCM Corporation, New York, N.Y.
Filed Nov. 14, 1973, Ser. No. 415,883
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D64—11 A



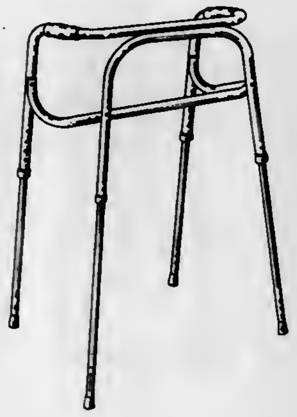
235,807
PRINTING PRESS
John R. Krutsch, Glenview, Ill., assignor to American Screen Printing Equipment Company, Chicago, Ill.
Filed Nov. 19, 1973, Ser. No. 416,924
Term of patent 14 years
Int. Cl. D18—*02*
U.S. Cl. D64—11 R



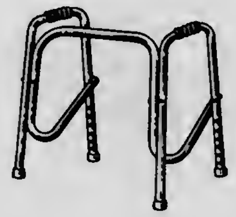
235,808
CRYOGENIC FREEZER OR SIMILAR ARTICLE
Lyle L. Cann, Peotone, Ill., assignor to Chemetron Corporation, Chicago, Ill.
Filed Feb. 9, 1973, Ser. No. 331,122
Term of patent 14 years
Int. Cl. D15—*07*
U.S. Cl. D67—2 R



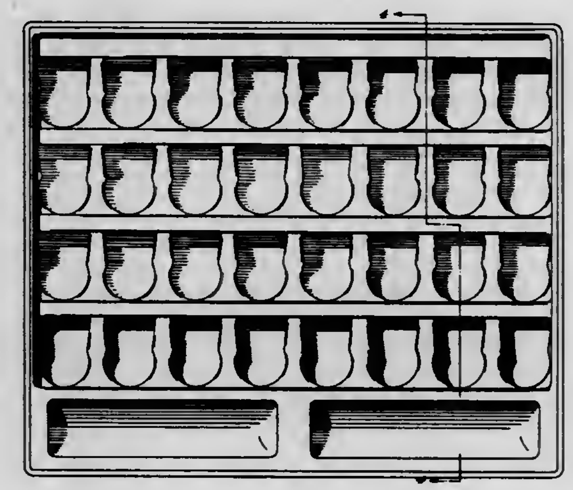
235,809
WALKER
Morton I. Thomas, Bakertown Road, Monroe, N.Y. 10950
Filed Apr. 9, 1973, Ser. No. 349,053
Term of patent 14 years
Int. Cl. D3—*03*
U.S. Cl. D88—1

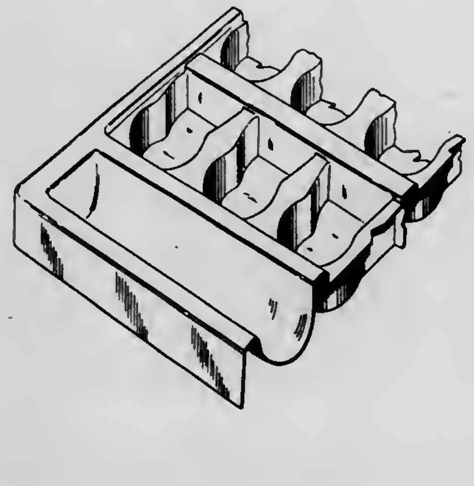


235,810
WALKER
Morton I. Thomas, Bakertown Road, Monroe, N.Y. 10950
Filed May 25, 1973, Ser. No. 364,067
Term of patent 14 years
Int. Cl. D3—*03*
U.S. Cl. D88—1

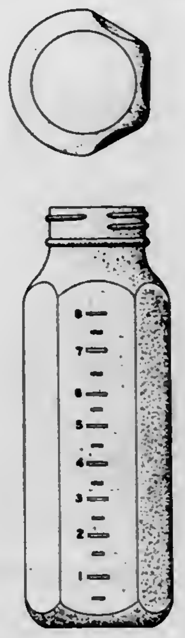


235,811
MEDICINE TRAY
Phillip E. Parsons, Columbus, Ohio, assignor to The Lynn Drug Company, Columbus, Ohio
Filed Oct. 19, 1973, Ser. No. 407,796
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1 U

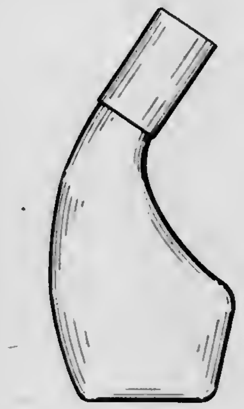




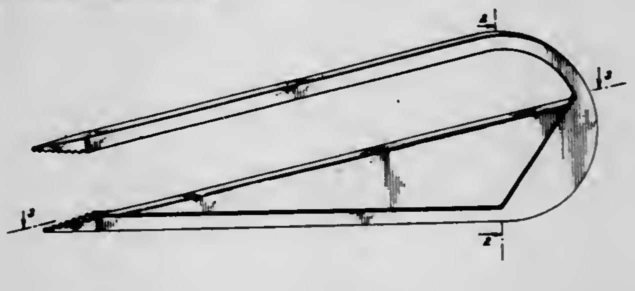
235,812
BABY BOTTLE
Arthur C. Barr, 111 King St., Madison, Wis. 53703
Filed Apr. 2, 1973, Ser. No. 347,198
Term of patent 14 years
Int. Cl. D9—*01*; D28—*01*
U.S. Cl. D83—8 A



235,813
FEMININE DOUCHE SYRINGE
Richard C. Roth, Milltown, N.J., assignor to Block Drug Company Inc., Jersey City, N.J.
Filed Sept. 13, 1973, Ser. No. 397,011
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1 Q

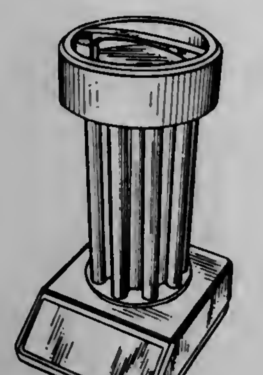


235,814
SURGICAL SUTURE REMOVER
William Glenn Allen, Jr., 1811 Floyd Ave., Richmond, Va. 23220
Filed Nov. 30, 1973, Ser. No. 420,555
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—12 R



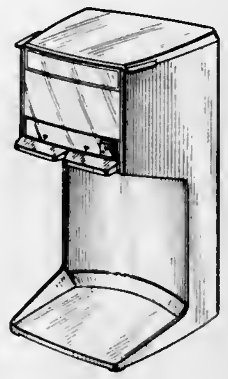
235,815
PERMANENT WAVE HEATING MACHINE

John R. Forsberg, Arlington Heights, Ill., and Edward H. Meisner, Wyckoff, N.J., assignors to Helene Curtis Industries, Inc.
Filed July 25, 1973, Ser. No. 382,360
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 E



235,816
HOT BEVERAGE DISPENSER

Richard B. Hall, Canton, Ohio, assignor to Sunbeam Corporation, Chicago, Ill.
Filed June 22, 1973, Ser. No. 372,890
Term of patent 14 years
Int. Cl. D7—*04;* D15—*08*
U.S. Cl. D94—3 B



LIST OF PATENTEES
TO WHOM
PATENTS WERE ISSUED ON THE 8TH DAY OF JULY, 1975

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. J. Gerrard and Company: *See—*
  Simich, Emil, 3,893,316.
A. O. Smith-Inland, Inc.: *See—*
  Jackman, Robert M.; and McDonald, William N., 3,893,263.
A. Schild S.A.: *See—*
  Fluck, Josef; and Zaugg, Roland, 3,893,290.
Abbott Laboratories: *See—*
  Chu, Daniel Tim-Wo; and Garmaise, David Lyon, 3,894,061.
Abe, Iwao: *See—*
  Sakakibara, Kouzou; Abe, Iwao; and Matsuoka, Kazuyuki, 3,894,091.
Abex Corporation: *See—*
  Frank, Earl E., 3,893,643.
Abu-el-Haj, Marwan J.; and McFarland, James W., to Pfizer Inc. Certain 3-oxo-2(halophenyl)-4,5,6,7-tetrahydro-v-triazolo[1,5a]-pyridines. 3,894,036, Cl. 260-295.00K.
Acda, Petrus Marinus, to Polva Nederland B.V. Apparatus for forming a socket in thermoplastic pipe. 3,893,794, Cl. 425-393.000.
ACF Industries, Incorporated: *See—*
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- Clarke, Robin, to Davy-Loewy Limited (formerly Davy and United Engineering Co.). Eccentricity correction in a rolling mill. 3,893,317, Cl. 72-20.000.
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- Cobarg, Claus Christian; and Kliegel, Walter, to Braun Aktiengesellschaft. Mirror with adjustable focal distance. 3,893,755, Cl. 350-295.000.
- Cobb, Sanford, Jr., to Minnesota Mining and Manufacturing Company. Light control device. 3,894,228, Cl. 240-46.310.
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- Cohen, Yehuda. Kit particularly useful for mounting percussion instruments to a stand. 3,893,363, Cl. 84-402.000.
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- Dellian, Kurt A.; and Lee, Samuel, to Ciba-Geigy Corporation. Process for dyeing synthetic fibers employing naphthyl dye assistants. 3,893,805, Cl. 8-173.000.
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- De Regnaucourt, Robert A., to Dayton-Walther Corporation. Tire carrying rim. 3,893,688, Cl. 301-12.00[illegible].
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- Gasbarro, Luciano, to Pratiga S.r.l. Equipment for welding glass capillary tubes for biological analyses. 3,893,837, Cl. 65-270.000.
- Gassman, Paul G.; and Gruetzmacher, Gordon D., to Ohio State Research Foundation, The. A process for producing azasulfonium salts. 3,894,034, Cl. 260-294.80R.
- Gassmann, Gerhard Gunter, to International Standard Electric Corporation. System for transferring wide-band sound signals. 3,894,190, Cl. 179-15.55R.
- Gay, Shelton M., Jr.; and Belen, Frederick C., Jr., to United States of America, Navy. Ring-shaped hydrofoil. 3,893,403, Cl. 114-235.00B.
- Gayot, Jean, to Engins Matra. Continuous transport system for trains with programmed vehicles. 3,893,397, Cl. 104-18.000.
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- Gloshinski, Leon J.; and Johnson, Donald R., to Cincinnati Milacron-Heald Corp. Magnetic chuck. 3,893,676, Cl. 279-1.00M.
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- Goodwin, Frank E. Pickup truck body and coupler for trailers. 3,893,711, Cl. 280-423.00R.
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Solberg, Bjorn Ragnar, to International Standard Electric Corporation. Failure detecting system for devices employing digital parallel-to-series converters. 3,893,617, Cl. 235-153.00A.
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Stachel, Adolf, deceased; by Stachel, Lydia Katharina, heiress; Beyerle, Rudi; Kunze, Wilhelm; Nitz, Rolf-Eberhard; and Scholtholt, Josef, to Cassella Farbwerke Mainkur Akt. Basically substituted 1(2H)-phthalazinone derivatives. 3,894,015, Cl. 260-247.20A.
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Wiggins, Richard F., to Gyromat Corporation, The. Pumpless recirculating system for flowable materials. 3,893,625, Cl. 239-127.000.

Wijngaarden, Ineke Van: *See—*
Janssen, Paul Adriaan Jan; Wijngaarden, Ineke Van; and Soudijn, Willem, 3,894,030.

Wiley, Daniel E.: *See—*
Raetzsch, Carl W.; and Wiley, Daniel E., 3,893,897.

Wilkes, John B.: *See—*
Bacskai, Robert; and Wilkes, John B., 3,894,115.

Wilkinson, Brian; Jibb, David John; and Smith, Martin Neil, to Elliott Brothers (London) Limited. Display apparatus. 3,894,292, Cl. 340-324.0AD.

Willard, John W., Sr., to CAW Industries, Inc. Novel catalyst and process for preparing the same. 3,893,943, Cl. 252-428.000.

William H. Rorer, Inc.: *See—*
Diamond, Julius; and Santora, Norman Julian, 3,894,080.

Williams, David Joseph, to Australian Paper Manufactures Limited. Estimating the concentration of solid matter suspended in a fluid stream. 3,893,334, Cl. 73-61.00R.

Williams, David R., to Koppers Company, Inc. Method of making reinforced polyester sheets. 3,894,134, Cl. 264-171.000.

Williams, Desmond: *See—*
Khanna, Jitendra; and Williams, Desmond, 3,893,595.

Williams, Fred D., to Hydril Company. Anti-corrosion pipe protector. 3,893,778, Cl. 403-344.000.

Williams, George B., to United States of America, Navy. Single-stroke cartridge actuated device. 3,893,298, Cl. 60-635.000.

Williams, Gerald Hunter: *See—*
Rorden, Robert J.; and Williams, Gerald Hunter, 3,894,230.

Williams, Terrell M., to Medtronic, Inc. Dual channel stimulator. 3,893,463, Cl. 128-421.000.

Willyoung, David M., to General Electric Company. Very high current field winding for dynamoelectric machine rotor. 3,894,253, Cl. 310-61.000.

Wilson, Burton D.; Woodgate, Paul E.; and Henn, Richard W., to Eastman Kodak Company. Photographic elements, compositions and processes. 3,893,863, Cl. 96-95.000.

Wilson, Cranmer W.: *See—*
Snyder, Owen D., Jr.; and Wilson, Cranmer W., 3,893,667.

Wilson, Earl L.: *See—*
Wong, Backman; and Wilson, Earl L., 3,893,618.

Windmoller & Holscher: *See—*
Bosse, Frank; Tetenborg, Konrad; and Mundus, Friedhelm, 3,893,382.

Wingen, Wilhelm, to Telesco Brophey Limited. Umbrella. 3,893,467, Cl. 135-25.00R.

Wingler, Frank, to Bayer Aktiengesellschaft. Pulverulent binders for the electrostatic powder-spraying process. 3,893,977, Cl. 260-77.5TB.

Winslow, Samuel J. Spout construction. 3,893,601, Cl. 222-566.000.

Winterfeldt, Ekkehard; and Korth, Tilmann, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of camptothecin and camptothecin-like compounds. 3,894,029, Cl. 260-287.00R.

Wisconsin Alumni Research Foundation: *See—*
Mistretta, Charles A.; and Ort, Michael G., 3,894,181.

Wise, John J.: *See—*
Garwood, William Everett; and Wise, John J., 3,893,906.

Wise, Walter R.; and Martucci, Nicholas L. A., to Garlock Inc. Tape wrapping method, apparatus, and article. 3,893,636, Cl. 242-55.000.

Wise, William P., to Ohio Baler Corporation. Box baling machine and cart. 3,893,386, Cl. 100-50.000.

Wisotzky, Otto G., to GTE Automatic Electric Laboratories Incorporated. DX signaling circuit. 3,894,192, Cl. 179-18.0AH.

Wixon, Harold Eugene: *See—*
Sundby, Bjorn; and Wixon, Harold Eugene, 3,893,930.

Wojcik, David S., to Owens-Illinois, Inc. Border sustainer generator system for gas discharge display panels. 3,894,263, Cl. 315-169.0TV.

Wojtowicz, Edward A.: *See—*
Carbine, Joseph C.; and Wojtowicz, Edward A., 3,893,594.

Wojtowicz, John A.; and Wolfe, Wade, Jr., to Olin Corporation. Preparation of alkali metal salts of dichloroisocyanuric acid. 3,894,017, Cl. 260-248.00C.

Wojtowicz, John A.; and Herms, William C., to Olin Corporation. Dichloroisocyanuric acid production. 3,894,018, Cl. 260-248.00C.

Wolf, Gerhard Dieter; Engelhard, Helmut; and Bentz, Francis, to Bayer Aktiengesellschaft. Polyetherurethanes which contain hydantoin rings and their use as antistatic agents. 3,893,979, Cl. 260-77.5AQ.

Wolf, Rainer, to Sandoz Ltd. Phosphonitrilic esters. 3,894,121, Cl. 260-926.000.

Wolf, Tobin; and Cain, Ned M., to said Tabin Wolf, by said Ned Cain. Tethered flying toy. 3,893,256, Cl. 46-1.00R.

Wolfe, Wade, Jr.: *See—*
Wojtowicz, John A.; and Wolfe, Wade, Jr., 3,894,017.

Wolgemuth, Larry G. Catalysts for the reaction of cyclic nitrile compounds with hydroxyl groups to produce ureas, urethanes or thiourethanes. 3,893,958, Cl. 260-18.0TN.

Wolk, Ronald H.: *See—*
Rovesti, William C.; and Wolk, Ronald H., 3,893,911.

Wollweber, Hartmund: *See—*
Hiltmann, Rudolf; Wollweber, Hartmund; and Hermann, Gunther, 3,894,039.

Wolters, Tjako Aaldrik. Suction dredger with swell compensation. 3,893,249, Cl. 37-58.000.

Woltersdorf, Otto W., Jr.: *See—*
Cragoe, Edward J., Jr.; Shepard, Kenneth L.; and Woltersdorf, Otto W., Jr., 3,894,065.

Wong, Backman; and Wilson, Earl L., to Standard-Thomson Corporation. Thermostatic valve device having non-linear flow characteristics. 3,893,618, Cl. 236-100.000.

Woo, Jung Woo: *See—*
Hadermann, Albert F.; Waters, Paul F.; and Woo, Jung Woo, 3,893,904.

Wood Industries, Inc.: *See—*
Fusco, Ralph L.; and Polglase, Burton D., 3,893,394.

Woodard, Ollie C.: *See—*
Pfeiffer, Hans C.; and Woodard, Ollie C., 3,894,271.

Woodgate, Paul E.: *See—*
Wilson, Burton D.; Woodgate, Paul E.; and Henn, Richard W., 3,893,863.

Woods, Eric R.: *See—*
Howell, Norman E.; Thompson, Russell G.; and Woods, Eric R., 3,894,177.

Woodward, Melvin H.: *See—*
Buttram, James R.; Woodward, Melvin H.; Hubbard, Charles E.; and Thronson, Howard K., 3,893,286.

Woolley, John Frederick, to International Standard Electric Corporation. Graphite tube furnace. 3,893,769, Cl. 356-85.000.

Wurttembergische Metallwarenfabrik: *See—*
Oberlander, Karl-Oskar; Domscha, Christian; and Schurr, Werner, 3,893,326.

Wurzburg, Otto B.; Szymanski, Chester D.; and Kurger, Leo, to National Starch and Chemical Corporation. Process for inhibiting the action of pepsin. 3,893,890, Cl. 195-104.000.

Wyman, John E., to Itek Corporation. Photographic tin amplification process. 3,893,857, Cl. 96-48.0PD.

Xerox Corporation: *See—*
Ashton, Raymond J.; Reichart, Louis W.; and Oriel, George J., 3,893,415.
Azar, Jack C.; and O'Neill, Marianne C., 3,893,932.
Braun, Robert A.; and Mermelstein, Robert, 3,893,934.
Bresnick, Herbert L., 3,893,419.
Brown, Robert Warren, 3,893,933.
Drummond, Arthur, Jr., 3,893,815.
Eichorn, Roger H., deceased, 3,893,416.
Honjo, Satoru; and Sato, Masamichi, 3,893,854.
Hudson, Frederick W., 3,893,414.
Lamel, Jerome E., 3,893,408.
Liebman, Alan J.; and Chiavaroli, Henry T., II, 3,893,418.
McInally, John A., 3,893,754.
Rote, Everett Arthur, 3,893,409.
Sanchez, Hector J.; and Tates, Donald W., 3,893,663.
Thettu, Raghulinga R., 3,893,760.
Vieri, Bruno J., 3,894,185.
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Yagihara, Hiroshi: *See—*
Horikawa, Takeshi; Yagihara, Hiroshi; and Kubo, Masayoshi, 3,894,077.

Yakovich, Ninel Iosifovna: *See—*
Khcheyan, Khachik Egorovich; Yakovich, Ninel Iosifovna; Kotelnikova, Larisa Borisovna; Pavlichev, Alexei Fedorovich; and Zhilnina, Nina Nikolaevna, 3,893,948.

Yamabe, Masaaki: *See—*
Ukihashi, Hiroshi; Yamabe, Masaaki; Nishimura, Hiromichi; and Miyake, Haruhisa, 3,893,971.

Yamada, Kantaro: *See—*
Kobayashi, Masao; Ikeda, Minoru; Yamada, Kantaro; and Ishii, Hiromichi, 3,893,945.

Yamada, Terutoshi: *See—*
Asai, Koetsu; Imanishi, Nobuyuki; and Yamada, Terutoshi, 3,893,577.

Yamamoto, Hiroshi: *See—*
Andoh, Shizuo; Murase, Kenji; Iemori, Toshiaki; Yamamoto, Hiroshi; and Nakayama, Norihiko, 3,894,264.

Yamamoto, Manabu; Hashimoto, Akira; and Horiuchi, Hideyuki, to Hitachi, Ltd. Picture reproducing apparatus. 3,894,182, Cl. 178-7.600.

Yamamoto, Masachika: *See—*
Sibatani, Juichi; Itou, Sadayoshi; Yamamoto, Masachika; and Nakagawa, Mithuhiko, 3,893,543.

Yamamoto, Michiaki: *See—*
Sakai, Toshiyuki; Miyazaki, Kazuhide; Ushimaru, Yutaka; and Yamamoto, Michiaki, 3,893,949.

Yamamoto, Osamu: *See—*
Kawai, Hirotaka; Takenaka, Hidetsugu; and Yamamoto, Osamu, 3,893,964.

Yamamoto, Shinro, to Eisai Co., Ltd. Method of medical treatment of asthma. 3,894,153, Cl. 424-331.000.

Yamauchi, Katsuyoshi: *See—*
Higuchi, Takashi; and Yamauchi, Katsuyoshi, 3,893,883.

Yamazaki, Mitsuo: *See—*
Sakai, Kiyoshi; Yusa, Takashi; Amemiya, Shigeo; Ito, Masaaki; Katano, Hamako; Yamazaki, Mitsuo; Sugiura, Mitsuko; Kojima, Koichi; and Sasaki, Masaaki, 3,894,009.

Yamazoe, Shigeharu: *See—*
Nishiwaki, Eiji; Yamazoe, Shigeharu; Hoshino, Mitsuyuki; Yoshino, Sadafumi; and Mikuma, Katsunori, 3,894,071.

Yang, Chang-Lee, to Union Carbide Corporation. Isoparaffin alkylation process with periodic catalyst regeneration. 3,893,942, Cl. 252-411.000.

Yano, Takashi; Shibuya, Yoichi; Kanda, Satoshi; and Umeda, Shin, to Ricoh Co., Ltd. Copy strip feed error correcting device. 3,893,360, Cl. 83-203.000.

Yano, Takashi; and Ikesue, Masumi, to Ricoh Co., Ltd. Sheet handling device for photocopying machine. 3,893,765, Cl. 355-73.000.

Yapp, Ronald A., to Federal-Mogul Corporation. Hub cap assembly. 3,893,690, Cl. 301-108.00A.

Yasar, Tugrul, to Bendix Corporation, The. Method of manufacturing face plates with large number of conducting paths from one face to the other. 3,893,215, Cl. 29-25.350.

York, William C., to Eastman Kodak Company. Apparatus for liquid development of electrostatic images. 3,893,417, Cl. 118-637.000.

Yoshida, Hatuyoshi: *See—*
Suzuki, Masaru; and Yoshida, Hatuyoshi, 3,894,206.

Yoshinaga, Fumihiro: *See—*
Tsuchida, Takayasu; and Yoshinaga, Fumihiro, 3,893,888.

Yoshino, Sadafumi: *See—*
Nishiwaki, Eiji; Yamazoe, Shigeharu; Hoshino, Mitsuyuki; Yoshino, Sadafumi; and Mikuma, Katsunori, 3,894,071.

Yoshizaki, Tomozo: *See—*
Ono, Shoji; Kitamura, Ikuo; Kuramoto, Tomoko; Taguchi, Keizaburo; and Yoshizaki, Tomozo, 3,894,155.

Young, Dean Arthur, to Union Oil Company of California. Group VI-B metal catalyst preparation. 3,893,947, Cl. 252-439.000.

Young, Lee. Snow removal apparatus. 3,893,248, Cl. 37-41.000.

Young, Richard W.; and Siebert, Sidney A., to Cabot Corporation. Method of sealing the end of a filled welding rod. 3,894,211, Cl. 219-146.000.

Yuda, Takuo, to Nifco Inc. Plastic device for spacing and holding two or more plates. 3,893,208, Cl. 24-73.00P.

Yusa, Takashi: *See—*
Sakai, Kiyoshi; Yusa, Takashi; Amemiya, Shigeo; Ito, Masaaki; Katano, Hamako; Yamazaki, Mitsuo; Sugiura, Mitsuko; Kojima, Koichi; and Sasaki, Masaaki, 3,894,009.

Zaffignani, Giovanni; and Mannocchi, Oscar, to Ing. C. Olivetti & C., S.p.A. Line control unit for teleprinters. 3,894,175, Cl. 178-2.00R.

Zahlaus, Helmut. Process for cutting reinforcing steel bars for steel concrete and a bar cutting machine for effecting the process. 3,893,357, Cl. 83-80.000.

Zahn, Willy: *See—*
Riggert, Karlheinz;; Zahn, Willy; Jantzen, Bernhard; Sander, Rolf; and Wandel, Dietmar, 3,894,135.

Zaiser, Wolfgang; and Hainmuller, Sigurd, to Daimler-Benz Aktiengesellschaft. Controllable aggregate-drive for internal combustion engines. 3,893,343, Cl. 74-230.17F.

Zaltron, Mario, to Evinger Corporation. Band making apparatus. 3,893,319, Cl. 72-49.000.

Zaugg, Roland: *See—*
    Fluck, Josef; and Zaugg, Roland, 3,893,290.
Zawadzki, Edward A.: *See—*
    Opacic, Donald J.; Lengyel, Arpad L.; Zawadzki, Edward A.; and Jackson, Fred H., 3,893,656.
Zdrok, Edward Z.: *See—*
    Hoffman, Donald O.; and Zdrok, Edward Z., 3,894,129.
Zeffren, Eugene: *See—*
    Tivin, Fred; and Zeffren, Eugene, 3,893,954.
Zeller, Burton S.: *See—*
    Sisson, Ronald L.; Dreves, Philip J.; Shellberg, James E.; and Zeller, Burton S., 3,893,345.
Zemke, Hubert: *See—*
    Manning, Lindley; McKee, Robert B.; Zemke, Hubert; and Douglas, Bruce M., 3,893,681.
Zenith Radio Corporation: *See—*
    Briskey, Robert J., 3,894,196.
    Libman, Philomena C.; and Wainscott, William E., 3,893,877.
    Manske, Hans E., 3,894,270.
    Sedivy, Stanley J., 3,894,260.
Zerlauth, Ferdinand, to Brown Boveri Sulzer-Turbomachinery Ltd. Apparatus for adjusting stator blades. 3,893,784, Cl. 415-149.00R.
Zhilnina, Nina Nikolaevna: *See—*
    Khcheyan, Khachik Egorovich; Yakovich, Ninel Iosifovna; Kotelnikova, Larisa Borisovna; Pavlichev, Alexei Fedorovich; and Zhilnina, Nina Nikolaevna, 3,893,948.
Ziemann, Heinz; Troemel, Gerhard; and Lehmann, Wolfgang, to Bayer Aktiengesellschaft. Auxiliaries for the manufacture of paper. 3,893,885, Cl. 162-164.000.
Ziffer, Garret Francis: *See—*
    Fulwyler, Mack J.; Ziffer, Garret Francis; Paquette, Gerard Adelard; and Gilmore, Michael Thomas, 3,893,767.
Zimmer Aktiengesellschaft: *See—*
    Riggert, Karlheinz;; Zahn, Willy; Jantzen, Bernhard; Sander, Rolf; and Wandel, Dietmar, 3,894,135.
Zimmer, Richard A.: *See—*
    Shute, George A.; and Zimmer, Richard A., 3,893,330.
Zimmerman, Abraham A., to Exxon Research and Engineering Company. Method of removing organometallic compounds from liquid hydrocarbons. 3,893,912, Cl. 208-253.000.
Zimmerman, Abraham A., to Exxon Research and Engineering Company. Method of removing organometallic compounds from liquid hydrocarbons. 3,893,913, Cl. 208-253.000.
Zimmerman, Emil F. Tool connecting apparatus for tractors. 3,893,516, Cl. 172-273.000.
Zimmerman, George V.: *See—*
    Derose, Ralph A.; Rigazio, Anthony W.; and Zimmerman, George V., 3,893,586.
Zin, Gary K.: *See—*
    Korostoff, Edward; and Zin, Gary K., 3,893,796.
Zinner, Hans: *See—*
    Leibach, Heinrich; and Zinner, Hans, 3,893,626.
Zopfi, William L.: *See—*
    Flegel, George J.; and Zopfi, William L., 3,893,919.
Zuckerman, Henryk: *See—*
    Barkay, Joseph; Zuckerman, Henryk; and Pundak, Nachman, 3,893,308.
Zuvanich, Paul J.: *See—*
    Fertl, Walter H.; and Zuvanich, Paul J., 3,893,522.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 8TH DAY OF JULY, 1975

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Anderson, Donald R., and A. J. Frisque, to Nalco Chemical Co. Process for rapidly dissolving water-soluble polymers. Re. 28,474, 7–8–75, Cl. 260—29.6.
Aronberg, Lester, to Lake Chemical Co. Flux for use in soldering of stainless steels Re. 28,472, 7–8–75, Cl. 148—26.
Bahn, John J.: *See—*
    Coggeshall, Almy D., Bahn, Maher, and Waldbillig. Re. 28,478.
Bahn, John J., A. D. Coggeshall, R. T. Maher, and J. B. Waldbillig, to General Electric Co. Winding support system for a dynamoelectric machine. Re. 28,478, 7–8–75, Cl. 310—260.
Baumgartner, Robert G., and H. J. Graff, to Bell Telephone Laboratories, Inc. Cable shield connector. Re. 28,468, 7–8–75, Cl. 339—14.1.
Bell Telephone Laboratories, Inc.: *See—*
    Baumgartner, Robert G., and Graff. Re. 28,468.
Blecke, Ronald G., and R. W. Hill, to Gulf Research & Development Co. Process for copolymerization of maleic anhydride with 1-olefins. Re. 28,475, 7–8–75, Cl. 260—78.5.
Bonnet, Jean-Loup, to Schlumberger Technology Corp. Magnetic suspension flowmeters. Re. 28,464, 7–8–75, Cl. 73—155.
Brunswick Corp.: *See—*
    Webber, Harold H. Re. 28,470.
Bress, Dellason F., to Foster Wheeler Corp. Control for environmental pollution in tall oil fractionation. Re. 28,476, 7–8–75, Cl. 260—97.6.
Brindle, John H.: *See—*
    Eastwood, Fred, Brindle, and Kolb. Re. 28,466.
Carl Mfg. Co., Ltd.: *See—*
    Mori, Chuzo. Re. 28,463.
Chaturvedi, Mahesh C. Co-Nn-Cr base austentic alloys precipitation strengthened by intermetallic compounds and carbides. Re. 28,471, 7–8–75, Cl. 75—134.
Coggeshall, Almy D.: *See—*
    Bahn, John J., Coggeshall, Maher, and Waldbillig. Re. 28,478.
Curtiss, Jack E.: *See—*
    Curtiss, Frank E., and J. E. Re. 28,467.
Curtiss, Frank E., and J. E. Throwing member and pair of multiple-target area post members. Re. 28,467, 7–8–75, Cl. 273—100.
Eastwood, Fred, J. H. Brindle, F. L. Kolb, Jr., by Foseco International Ltd., assignee, to Foseco International Ltd. Hot top for big-end-up ingot molds and method of assembling same. Re. 28,466, 7–8–75. Cl. 249—201.
Foseco International Ltd.: *See—*
    Eastwood, Fred, Brindle, and Kolb. Re. 28,466.
Foster Wheeler Corp.: *See—*
    Bress, Dellason F. Re. 28,476.
Frisque, Alvin J.: *See—*
    Anderson, Donald R., and Frisque. Re. 28,474.
General Electric Co.: *See—*
    Bahn, John J., Coggeshall, Maher, and Waldbillig. Re. 28,478.
Graff, Harry J.: *See—*
    Baumgartner, Robert G., and Graff. Re. 28,468.
Gulf Research & Development Co.: *See—*
    Blecke, Ronald G., and Hill. Re. 28,475.
Hill, Robert W.: *See—*
    Blecke, Ronald G., and Hill. Re. 28,475.
Hyodo, Masayoshi: *See—*
    Suzuki, Masaru, Hyodo, and Kurihara. Re. 28,479.
Impullitti, Ector P., deceased, by Madeline Impullitti, administrator, to F. W. Means, & Co. Dry cleaning process. Re. 28,469, 7–8–75, Cl. 8—142.
Impullitti, Madeline: *See—*
    Impullitti, Ector P., and Madeline. Re. 28,469.
Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See—*
    Suzuki, Masaru, Hyodo, and Kurihara. Re. 28,479.
Kolb, Frederick L.: *See—*
    Eastwood, Fred, Brindle, and Kolb. Re. 28,466.
Lake Chemical Co.: *See—*
    Aronberg, Lester. Re. 28,472.
Maher, Richard T.: *See—*
    Bahn, John J., Coggeshall, Maher, and Waldbillig. Re. 28,478.
Means, F. W., & Co.: *See—*
    Impullitti, Ector P., and Madeline. Re. 28,469.
Mori, Chuzo, to Carl Mfg. Co., Ltd. List finder with insertable information cards. Re. 28,463, 7–8–75, Cl. 40—104.10.
Nalco Chemical Co.: *See—*
    Anderson, Donald R., and Frisque. Re. 28,474.
Nelligan, William B., to Schlumberger Technology Corp. Method and apparatus for measuring neutron characteristics of a material surrounding a well bore. Re. 28,477, 7–8–75, Cl. 250—262.
Reidy, Regina. Sewing aid device for, and method of, setting a sleeve in the armhole of a bodice. Re. 28,564, 7–8–75, Cl. 223—1.
Schlumberger Technology Corp.: *See—*
    Nelligan, William B. Re. 28,477.
    Bonnet, Jean-Loup. Re. 28,464.
Steele, Terri G., to Western Electric Co., Inc. Primary explosive compositions for explosive bonding or forming. Re. 28,473, 7–8–75, Cl. 149—35.
Suzuki, Masaru, M. Hyodo, and Y. Kurihara, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Combination turn-signal and hazard-warning system. Re. 28,479, 7–8–75, Cl. 340—81.
Waldbillig, John B.: *See—*
    Bahn, John J., Coggeshall, Maher, and Waldbillig. Re. 28,478.
Webber, Harold H., to Brunswick Corp. Porous metal structure. Re. 28,470, 7–8–75, Cl. 29—180.
Western Electric Co., Inc.: *See—*
    Steele, Terri G. Re. 28,473.

LIST OF PLANT PATENTEES

Barberet, Alexandre, and H. Blanc, to Laboratoire de Physiologie Vegetale de la Londe Barberet & Blanc. Carnation plant. 3,739, 7–8–75, Cl. 73.
Blanc, Henri: *See—*
    Barberet, Alexandre, and Blanc. 3,739.
Coward,Charles B., W. H. Jessel, Jr., and W. E. Duffett, to said Charles B. Coward. Chrysanthemum plant. 3,741, 7–8–75. Cl. 81.
Duffett, William E.: *See—*
    Jessel, Walter H., Jr., and Duffett. 3,740.
Jessel, Walter H., Jr.: *See—*
    Coward, Charles B., Jessel, and Duffett. 3,741.
Jessel, Walter H., Jr., and W. E. Duffett, to Yoder Brothers, Inc. Chrysanthemum plant. 3,740, 7–8–75, Cl. 74.
Laboratoire de Physiologie Vegetale de la Londe Barberet & Blanc: *See—*
    Barberet, Alexandre, and Blanc. 3,739.
Yoder Brothers, Inc.: *See—*
    Jessel, Walter H., Jr., and Duffett. 3,740.

LIST OF DESIGN PATENTEES

Abend, Chester J., J. J. Bienkowski, and E. V. B. Ludwick, to SCM Corp. Typewriter. 235,806, 7–8–75, Cl. D64—11.
Acton, Hugh C., to American Seating Co. Chair. 235,711, 7–8–75, Cl. D6—69.
Allen, Edward L., Sr., and L. C. Dental floss holder. 235,774, 7–8–75, Cl. D24—1.
Allen, Lillian C.: *See—*
    Allen, Edward L., Sr., and L. C. 235,774.
Allen, William G., Jr. Surgical suture remover. 235,814, 7–8–75, Cl. D83—12.
A. L. & W. Ltd.: *See—*
    Parsons, Ronald W. 235,759.
American Electromedics Corp.: *See—*
    Rock, Erwin H., and Klar. 235,742.
American Screen Printing Equipment Co.: *See—*
    Krutsch, John R. 235,807.
American Seating Co.: *See—*
    Schier, Robert W. 235,709.
    Acton, Hugh C. 235,711.
Applied Power, Inc.: *See—*
    Butorac, John R. 235,751.
Ashton, Harold P., to Dart Industries, Inc. Salad fork or the like. 235,725, 7–8–75, Cl. D7—137.
Bajer Industries Inc.: *See—*
    Friedberg, Marvin P. 235,797.
Balenciaga S.A.: *See—*
    Dinand, Pierre F. 235,735.
Ball, Douglas C., to Massey-Ferguson Industries Ltd. Desk or similar article. 235,719, 7–8–75, Cl. D6—162.
Ball, Douglas C., to Massey-Ferguson Industries Ltd. Desk or similar article. 235,720, 7–8–75. Cl. D6—162.

- Ball, Douglas C., to Massey-Ferguson Industries Ltd. Desk or similar article. 235,721, 7–8–75, Cl. D6—162.
- Barr, Arthur C. Baby bottle. 235,812, 7–8–75, Cl. D83—8.
- Barr, Keith. Phasing simulator for a musical instrument. 235,779, 7–8–75, Cl. D26—13.
- Becker, Leo M., to Schmidt, Johnson, Hovey & William. Grain elevator. 235,770, 7–8–75, Cl. D23—2.
- Bernhardt, Brian A.: *See*—
  - Genzel, Edward A., and Bernhardt. 235,760.
  - Genzel, Edward, and Bernhardt. 235,761.
- Bernstein, Abraham, to Kleer-Vu Industries, Inc. Album cover or the like. 235,767, 7–8–75, Cl. D19—31.
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80	3,893,357
82	3,893,358
154	3,893,359
203	3,893,360
375	3,893,361
763	3,893,362
CLASS 84	
402	3,893,363
422	3,893,364
CLASS 85	
80	3,893,365
CLASS 89	
1.81	3,893,366
27R	3,893,367
36R	3,893,368
182	3,893,369
193	3,893,370
CLASS 90	
11A	3,893,371
12D	3,893,372
CLASS 91	
35	3,893,373
461	3,893,374
486	3,893,375
CLASS 92	
55	3,893,376
60	3,893,377
88	3,893,378
94	3,893,379
CLASS 93	
51HW	3,893,380
61B	3,893,381
93HT	3,893,382
CLASS 96	
1.5C	3,893,853
1.5	3,893,854
3	3,893,855
38.3	3,893,856
48PD	3,893,857
60R	3,893,858
61R	3,893,859
66T	3,893,860
66.3	3,893,862
67	3,893,861
95	3,893,863
CLASS 98	
72	3,893,383
CLASS 99	
485	3,893,384
CLASS 100	
50	3,893,386
53	3,893,385
229A	3,893,387
CLASS 101	
91	3,893,388
93.07	3,893,389
111	3,893,390
141	3,893,391
150	3,893,392
269	3,893,393
415.1	3,893,394
CLASS 102	
27R	3,893,395
35	3,893,396
CLASS 104	
18	3,893,397
CLASS 105	
308R	3,893,398
484	3,893,399
CLASS 106	
1	3,893,864
	3,893,865
38.24	3,893,868
58	3,893,867
272	3,893,839
288B	3,893,840
306	3,893,841
CLASS 108	
63	3,893,400
129	3,893,401
CLASS 112	
105	3,893,402
CLASS 114	
235B	3,893,403
CLASS 115	
7	3,893,404
12R	3,893,405
16	3,893,406
41R	3,893,407
CLASS 118	
7	3,893,408
56	3,893,409
412	3,893,410
420	3,893,411
	3,893,412
637	3,893,413
	3,893,414
	3,893,415
	3,893,416
	3,893,417
	3,893,418
	3,893,419
CLASS 119	
1	3,893,420
5	3,893,421
14.08	3,893,422
52AF	3,893,423
83	3,893,424
91	3,893,425
CLASS 122	
4D	3,893,426
32	3,893,427
CLASS 123	
8.11	3,893,428
8.13	3,893,429
	3,893,430
	3,893,431
32EA	3,893,432
45A	3,893,433
119A	3,893,435
119E	3,893,437
119R	3,893,434
	3,893,436
148E	3,893,438
149R	3,893,439
182	3,893,440
195C	3,893,441
CLASS 126	
198	3,893,442
271	3,893,443
CLASS 127	
29	3,893,842
CLASS 128	
2A	3,893,446
	3,893,447
2B	3,893,445
2E	3,893,444
2G	3,893,448
2V	3,893,449
2.05A	3,893,452
2.05D	3,893,451
2.06G	3.893,453
2.1B	3,893,450
17	3,893,454
79	3,893,455
	3,893,456
132R	3,893,457
145.8	3,893,458
191R	3,893,459
287	3,893,460
419P	3,893,461
421	3,893,462
	3,893,463
CLASS 131	
17R	3,893,464
CLASS 134	
10	3,893,843
86	3,893,869
122	3,893,465
CLASS 135	
5R	3,893,466
25R	3,893,467
CLASS 136	
107	3,893,870
146	3,893,871
CLASS 137	
1	3,893,468
101.27	3,893,470
106	3,893,471
116.3	3,893,472
171	3,893,473
344	3,893,474
414	3,893,475
543.17	3,893,476
584	3,893,469
614.2	3,893,477
	3,893,478
615	3,893,480
625.17	3,893,481
	3,893,482
625.21	3,893,483
625.3	3,893,479
625.65	3,893,484
CLASS 138	
30	3,893,485
31	3,893,486
89	3,893,487
141	3,893,488
CLASS 139	
110	3,893,489
CLASS 140	
92.1	3,893,490
122	3,893,491
CLASS 141	
1	3,893,492
47	3,893,493
244	3,893,494
CLASS 148	
6.14A	3,893,872
12R	3,893,873
12.1	3,893,874
26	Re.28,472
172	3,893,875
175	3,893,876
CLASS 149	
35	Re.28,473
CLASS 150	
52R	3,893,495
CLASS 151	
14.5	3,893,496
CLASS 152	
179	3,893,497
209R	3,893,498
213A	3,893,499
213R	3,893,500
	3,893,501
CLASS 156	
80	3,893,877
161	3,893,878
164	3,893,879
211	3,893,880
250	3,893,881
287	3,893,882
334	3,893,883
498	3,893,884
CLASS 162	
164	3,893,885
CLASS 164	
4	3,893,502
282	3,893,503
CLASS 165	
1	3,893,504
9	3,893,505
18	3,893,506
46	3,893,507
136	3,893,508
166	3,893,509
CLASS 166	
295	3,893,510
305R	3,893,511
315	3,893,512
CLASS 169	
16	3,893,513
46	3,893,514
CLASS 172	
60	3,893,515
273	3,893,516
438	3,893,517
794	3,893,518

803	3,893,519
CLASS 173	
34	3,893,520
80	3,893,521
CLASS 174	
14R	3,894,171
34	3,894,172
74R	3,894,173
99B	3,894,170
159	3,894,174
CLASS 175	
24	3,893,525
50	3,893,522
74	3,893,523
92	3,893,524
CLASS 176	
87	3,893,886
CLASS 178	
2R	3,894,175
5.1	3,894,176
5.6	3,894,177
6	3,894,178
6.6R	3,894,179
	3,894,180
6.8	3,894,181
7.6	3,894,182
18	3,894,183
50	3,894,184
69.5F	3,894,185
CLASS 179	
1HF	3,894,187
1SA	3,894,186
6E	3,894,188
15AT	3,894,189
15.55R	3,894,190
18AH	3,894,192
18FG	3,894,191
27FG	3,894,193
41A	3,894,194
81	3,894,197
100.4ST	3,894,201
107FD	3,894,195
	3,894,196
110A	3,894,198
111E	3,894,199
170.2	3,894,200
CLASS 180	
5R	3,893,526
6A	3,893,527
6.3	3,893,528
6.48	3,893,531
6.5	3,893,529
	3,893,530
19R	3,893,532
31	3,893,533
69C	3,893,207
79.1	3,893,534
82R	3,893,535
98	3,893,536
105E	3,893,537
117	3,893,538
CLASS 181	
115	3,893,539
CLASS 182	
2	3,893,540
73	3,893,541
CLASS 187	
94	3,893,542
CLASS 188	
1A	3,893,543
52	3,893,544
72.6	3,893,545
73.3	3,893,546
73.5	3,893,547
79.5GC	3,893,548
170	3,893,549
322	3,893,550
CLASS 192	
3.33	3,893,551
12C	3,893,552
56C	3,893,554
56R	3,893,553
58B	3,893,555
91A	3,893,556
CLASS 193	
32	3,893,557
CLASS 195	
1.7	3,893,887
29	3,893,888
100	3,893,889
104	3,893,890
127	3,893,891
	3,893,892
CLASS 197	
1R	3,893,558
17	3,893,559
19	3,893,560
91	3,893,561
CLASS 198	
25	3,893,562
45	3,893,563

189	3,893,564
CLASS 200	
6R	3,894,203
19R	3,894,202
50AA	3,894,204
51.07	3,894,205
85A	3,894,206
157	3,894,207
CLASS 202	
154	3,893,893
235	3,893,894
CLASS 203	
59	3,893,895
CLASS 204	
44	3,893,896
95	3,893,902
98	3,893,897
180R	3,893,898
197	3,893,903
244	3,893,899
268	3,893,900
301	3,893,901
	3,893,904
CLASS 206	
183	3,893,565
498	3,893,566
520	3,893,567
CLASS 208	
11	3,893,907
103	3,893,905
111	3,893,906
136	3,893,908
138	3,893,910
211	3,893,909
251H	3,893,911
253	3,893,912
	3,893,913
CLASS 209	
144	3,893,914
166	3,893,915
211	3,893,922
CLASS 210	
54	3,893,916
69	3,893,917
84	3,893,918
161	3,893,923
166	3,893,919
197	3,893,920
206	3,893,921
220	3,893,924
266	3,893,925
321	3,893,926
418	3,893,927
CLASS 211	
49R	3,893,568
74	3,893,569
89	3,893,570
CLASS 212	
49	3,893,572
117	3,893,571
CLASS 214	
1CM	3,893,573
6A	3,893,574
8.5C	3,893,575
75R	3,893,576
152	3,893,577
305	3,893,578
313	3,893,579
672	3,893,580
CLASS 215	
207	3,893,581
221	3,893,582
256	3,893,583
CLASS 219	
121EM	3,894,208
121P	3,894,209
131R	3,894,210
146	3,894,211
297	3,894,213
394	3,894,214
CLASS 220	
4B	3,893,584
22.6	3,893,585
324	3,893,586
356	3,893,587
CLASS 221	
85	3,893,588
123	3,893,589
CLASS 222	
1	3,893,591
14	3,893,592
48	3,893,593
76	3,893,594
103	3,893,590
185	3,893,595
402.19	3,893,596
402.22	3,893,597
473	3,893,598
518	3,893,599
529	3,893,600
566	3,893,601

CLASS 223	
1	Re.28,465
99	3,893,602
104	3,893,603
CLASS 224	
5N	3,893,604
7D	3,893,605
42.1F	3,893,606
45R	3,893,607
CLASS 225	
1	3,893,608
42	3,893,609
CLASS 227	
8	3,893,610
67	3,893,612
CLASS 228	
44.1	3,893,611
107	3,893,222
110	3,893,223
124	3,893,224
170	3,893,226
173	3,893,225
CLASS 229	
51TC	3,893,614
CLASS 232	
43.2	3,893,615
CLASS 235	
61.11E	3,894,216
	3,894,217
61.6R	3,894,215
150.3	3,894,218
150.5	3,894,219
151	3,893,616
	3,894,220
151.3	3,894,221
	3,894,222
153A	3,893,617
175	3,894,223
193.5	3,894,212
197	3,894,224
CLASS 236	
100	3,893,618
CLASS 238	
83	3,893,619
CLASS 239	
3	3,893,620
9	3,893,621
77	3,893,622
102	3,893,623
107	3,893,624
127	3,893,625
265.19	3,893,626
332	3,893,627
521	3,893,628
585	3,893,629
587	3,893,630
CLASS 240	
1R	3,894,225
1.3	3,894,226
7.1A	3,894,227
46.31	3,894,228
CLASS 241	
37	3,893,631
73	3,893,632
101.7	3,893,633
182	3,893,634
243	3,893,635
CLASS 242	
55	3,893,636
206	3,893,637
CLASS 244	
12D	3,893,638
44	3,893,639
54	3,893,640
145	3,893,641
CLASS 245	
2	3,893,642
CLASS 246	
465	3,893,643
CLASS 248	
23	3,893,646
68R	3,893,647
97	3,893,648
99	3,893,649
CLASS 249	
68	3,893,644
201	Re.28,466
202	3,893,645
CLASS 250	
199	3,894,229
203R	3,894,230
213VT	3,894,231
231SE	3,894,232
262	Re.28,477
307	3,894,233
358	3,894,234
402	3,894,235
435	3,894,236
453	3,894,237
484	3,894,238

493	3,894,239
577	3,894,240
CLASS 251	
82	3,893,651
84	3,893,652
353	3,893,653
CLASS 252	
1	3,893,928
8.6	3,893,929
8.8	3,893,930
49.5	3,893,931
62.1	3,893,932
	3,893,933
	3,893,934
	3,893,935
106	3,893,936
156	3,893,937
188.3CL	3,893,938
301.4P	3,893,939
353	3,893,940
358	3,893,941
411	3,893,942
428	3,893,943
431C	3,893,944
435	3,893,945
437	3,893,946
439	3,893,947
440	3,893,948
454	3,893,949
466PT	3,893,950
468	3,893,951
477R	3,893,952
522	3,893,953
548	3,893,954
551	3,893,955
CLASS 254	
93R	3,893,650
CLASS 259	
4	3,893,654
	3,893,655
7	3,893,656
CLASS 260	
2.5HA	3,893,957
18TN	3,893,956
	3,893,958
22D	3,893,959
23AR	3,893,960
23H	3,893,961
28.5A	3,893,962
29.4R	3,893,963
	3,893,964
29.6H	Re.28,474
	3,893,965
30.8R	3,893,966
32.8A	3,893,967
33.6AQ	3,893,968
37EP	3,893,969
45.7R	3,893,971
45.75K	3,893,970
45.75R	3,893,973
45.8N	3,893,972
47CZ	3,893,975
47EN	3,893,974
75A	3,893,976
77.5AQ	3,893,979
77.5TB	3,893,977
	3,893,978
78A	3,893,980
78L	3,893,981
78.4D	3,893,983
78.5R	Re.28,475
	3,893,982
79.7	3,893,984
80.3R	3,893,985
80.7	3,893,986
80.77	3,893,987
86.1E	3,893,988
93.7	3,893,989
97.6	Re.28,476
112B	3,893,990
	3,893,991
112R	3,893,993
112.5	3,893,992
206	3,893,994
209R	3,893,995
	3,893,996
210R	3,893,997
211.5R	3,893,998
	3,893,999
	3,894,000
239B	3,894,002
239D	3,894,001
239.1	3,894,003
239.3T	3,894,011
239.5	3,894,004
239.55R	3,894,006
240A	3,894,008
240G	3,894,005
	3,894,007
240R	3,894,009
243C	3,894,010
	3,894,013
244R	3,894,012
	3,894,014
247.2A	3,894,015

248NS	3,894,016
248C	3,894,017
	3,894,018
249.5	3,894,019
251P	3,894,020
256.4F	3,894,021
	3,894,022
257	3,894,023
268TR	3,894,025
285	3,894,026
286R	3,894,027
287R	3,894,028
	3,894,029
293.56	3,894,031
293.58	3,894,032
293.6	3,894,030
293.69	3,894,033
294.8G	3,894,035
294.8R	3,894,034
295K	3,894,036
309.2	3,894,037
309.5	3,894,038
309.6	3,894,040
309.7	3,894,039
315	3,894,041
319.1	3,894,042
326.12R	3,894,044
326.33	3,894,045
326.5S	3,894,043
327M	3,894,046
	3,894,048
335	3,894,049
338	3,894,047
340.2	3,894,050
340.5	3,894,051
340.9	3,894,052
343.3	3,894,053
346.1R	3,894,054
	3,894,055
	3,894,056
346.2R	3,894,057
	3,894,058
348.6	3,894,059
380	3,894,060
395	3,894,062
397.45	3,894,063
397.7R	3,894,061
401	3,894,064
408	3,894,065
429.7	3,894,066
431	3,894,067
435A	3,894,068
439R	3,894,069
458	3,894,070
465E	3,894,072
465.5R	3,894,071
468E	3,894,074
468H	3,894,073
484A	3,894,075
486R	3,894,076
501.12	3,894,077
501.19	3,894,078
515A	3,894,079
516	3,894,080
535P	3,894,081
539A	3,894,082
559H	3,894,083
561N	3,894,084
566R	3,894,085
576	3,894,086
586C	3,894,088
586R	3,894,087
591	3,894,089
604R	3,894,091
613B	3,894,093
613R	3,894,092
620	3,894,094
	3,894,095
622R	3,894,096
653.3	3,894,097
666M	3,894,098
	3,894,099
	3,894,101
666	3,894,100
668R	3,894,102
	3,894,103
	3,894,104
	3,894,105
	3,894,106
	3,894,107
671R	3,894,090
674SA	3,894,108
	3,894,109
680R	3,894,110
683.48	3,894,111
830R	3,894,112
836	3,894,113
857PA	3,894,114
861	3,894,115
863	3,894,116
876B	3,894,117
884	3,894,118
896	3,894,119
897A	3,894,120
926	3,894,121
928	3,894,122

940	3,894,125
941	3,894,123
949	3,894,124
956	3,894,126
CLASS 261	
111	3,894,127
114VT	3,894,128
153	3,894,133
CLASS 264	
1	3,894,129
25	3,894,130
45.2	3,894,131
138	3,894,132
171	3,894,134
230	3,894,137
245	3,894,136
261	3,894,024
290T	3,894,135
CLASS 266	
22	3,893,659
36P	3,893,658
37	3,893,657
CLASS 267	
1.5	3,893,660
CLASS 269	
97	3,893,661
CLASS 271	
10	3,893,662
21	3,893,663
100	3,893,664
221	3,893,665
CLASS 272	
33B	3,893,666
58	3,893,667
CLASS 273	
1R	3,893,668
29A	3,893,669
80.1	3,893,670
100	Re.28,467
106.5R	3,893,866
136A	3,893,671
167A	3,893,672
183R	3,893,673
CLASS 277	
56	3,893,674
194	3,893,675
CLASS 279	
1M	3,893,676
75	3,893,677
CLASS 280	
5A	3,893,678
5.3	3,893,679
6H	3,893,680
11.13N	3,893,681
11.35N	3,893,682
11.35R	3,893,683
11.35T	3,893,684
	3,893,685
34B	3,893,699
36R	3,893,686
47.27	3,893,687
79.1	3,893,700
124A	3,893,701
124F	3,893,702
150SB	3,893,704
150B	3,893,703
179R	3,893,705
207	3,893,706
208	3,893,707
242WC	3,893,708
292	3,893,709
407	3,893,710
423R	3,893,711
440	3,893,712
511	3,893,713
CLASS 282	
28R	3,893,714
CLASS 283	
1R	3,893,715
CLASS 285	
3	3,893,716
	3,893,717
53	3,893,718
55	3,893,719
187	3,893,720
CLASS 290	
42	3,894,241
CLASS 292	
30	3,893,721
100	3,893,722
140	3,893,723
247	3,893,724
258	3,893,725
CLASS 293	
1	3,893,726
71R	3,893,727
CLASS 296	
65R	3,893,728
CLASS 297	
118	3,893,729

375	3,893,730
456	3,893,731
CLASS 301	
12R	3,893,688
39R	3,893,689
108A	3,893,690
CLASS 302	
2R	3,893,691
CLASS 303	
6.1	3,893,697
7	3,893,692
21F	3,893,693
	3,893,694
	3,893,696
21P	3,893,695
89	3,893,698
CLASS 307	
10R	3,894,242
16	3,894,244
88ET	3,894,243
124	3,894,245
208	3,894,246
	3,894,247
221R	3,894,248
227	3,894,249
309	3,894,250
CLASS 308	
6C	3,893,732
9	3,893,733
23	3,893,734
36.1	3,893,735
72	3,893,736
160	3,893,737
CLASS 310	
9.8	3,894,251
51	3,894,252

53	3,894,138
61	3,894,253
66	3,894,254
80	3,894,255
90	3,894,256
105	3,894,257
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189	3,893,750
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271	3,893,753
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295	3,893,755
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	233	235,702
	311	235,700
	319	235,701
	361	235,703
D3—	19A	235,704
D6—	5	235,705
	18	235,706
	38	235,707
	59	235,708
	66	235,709
	68	235,710
	69	235,711
	70	235,712
	79	235,713
	94	235,714
	129	235,715
	154	235,716
		235,717
		235,718

	162	235,719
		235,720
		235,721
	242	235,722
D7—	70	235,723
	79	235,724
	137	235,725
	168	235,726
	207	235,727
	212	235,728
		235,729
D8—	154	235,730
	235	235,731
D9—	39	235,732
	40	235,733
	48	235,734
	111	235,736
	168	235,735
	187	235,737
	240	235,738

	249	235,739
D10—	14	235,740
	30	235,741
	46	235,742
	97	235,743
	109	235,744
		235,745
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	120	235,747
	121	235,748
		235,749
D12—	40	235,750
	55	235,751
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	62	235,753
	63	235,754
	103	235,755
	115	235,756
	143	235,757
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	157	235,759
	162	235,760
		235,761
		235,762
D13—	1B	235,763
D18—	2	235,764
D19—	25	235,765
	26	235,766
	31	235,767
	76	235,768
D22—	11	235,769
D23—	2	235,770
	19	235,771
	35	235,772
	57	235,773
D24—	1D	235,774
	R	235,775
D26—	B	235,776
	5C	235,778
	R	235,777

	13C	235,779
	14B	235,780
D27—	7	235,781
D29—	1B	235,782
	C	235,783
	23E	235,784
D32—	1A	235,785
	2C	235,786
D34—	R	235,787
	5GC	235,791
	H	235,792
	J	235,790
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	4A	235,802
D55—	1R	235,803
D57—	E	235,800
D61—	N	235,804
D64—	10	235,805
	11A	235,806
	R	235,807
D67—	2	235,808
D83—	1Q	235,813
	U	235,811
	8A	235,812
	12R	235,814
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PLANT PATENTS

12 :	3,741
39 :	3,740

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UNITED STATES PATENT and TRADEMARK OFFICE
July 15, 1975 Volume 936 Number 3

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PATENT AND TRADEMARK OFFICE NOTICES

Priority Papers

Applicants, their attorneys, and agents are reminded of the suggestion found in Section 201.14(a) of the Manual of Patent Examining Procedure that a pencil notation of the Serial Number of the corresponding U.S. application be placed on priority papers filed under 35 USC 119. Such notation should be placed directly on the priority papers themselves even where a cover letter is attached bearing the U.S. application data. Experience indicates that cover letters and priority papers occasionally become separated, and without the suggested pencil notations on the priority papers, correlating them with the corresponding U.S. application becomes exceedingly difficult, frequently resulting in severe problems for both the Office and applicant. Adherence to the foregoing suggestion for making a pencil notation on the priority document of the U.S. application data will result in a substantial lessening of the problem.

WILLIAM FELDMAN,
June 20, 1975. *Deputy Assistant Commissioner.*

NATIONAL BUREAU OF STANDARDS

Office of Energy-Related Inventions

Notice of Establishment

Notice is hereby given of the establishment of the Office of Energy-Related Inventions, Institute for Applied Technology, National Bureau of Standards, to carry out the responsibilities imposed by section 14 of the Federal Nonnuclear Energy Research and Development Act of 1974 (Public Law 93–577, dated December 31, 1974, 88 Stat. 1894). Set out below is a statement which furnishes the reasons for the establishment of that Office, the address to which communications may be sent, a description of its functions, and a set of procedures which are designed to assist persons in submitting energy-related inventions to the National Bureau of Standards for evaluation.

Regulations governing the evaluation of energy-related inventions are being developed. Upon their development the proposed regulations will be published in the Federal Register to allow a reasonable period for public review and comment. After appropriate review and consideration of the comments received, the regulations will be duly promulgated in the Federal Register.

OFFICE OF ENERGY-RELATED INVENTIONS

1. *Purpose.* The Federal Nonnuclear Energy Research and Development Act of 1974 (Public Law 93–577), hereinafter referred to as the Act, establishes a comprehensive national program for research and development of all potentially beneficial energy sources and utilization technologies. The program is to be conducted by the Energy Research and Development Administration (ERDA).

Section 14 of the Act directs the National Bureau of Standards (NBS) to "give particular attention to the evaluation of all promissing energy-related inventions, particularly those submitted by individual inventors and small companies for the purpose of obtaining direct grants from the Administrator" of ERDA. The Office of Energy-Related Inventions (OERI) has been established in the National Bureau of Standards to carry out the duties required under this directive.

2. *Address.* The address of OERI, to which all inquiries and communications pertaining to NBS responsibilities under section 14 of the Act may be sent, is as follows:

Office of Energy-Related Inventions
National Bureau of Standards
Washington, D.C. 20234

3. *Functions.* The functions of OERI in carrying out its responsibilities shall be to:

3.1. Receive and process material and correspondence which describe energy-related inventions, hereinafter referred to as invention(s), and which request the evaluation thereof;

3.2 Conduct analyses to ascertain the technical and commercial feasibility of inventions submitted for evaluation;

3.3. Formulate recommendations to ERDA based on the analyses of submitted inventions;

3.4 Keep ERDA informed on the submission of inventions and results of evaluations;

3.5. Notify each submitter of an invention as to the results of the evaluation;

3.6. Conduct an information program to make the public aware of the invention evaluation service to be provided;

3.7. Correspond with inventors and members of the public as required;

3.8. Develop and promulgate regulations governing the evaluation of inventions; and

3.9 Perform such other functions as may be necessary to fulfill the responsibilities assigned to OERI.

4. *Procedures for submitting inventions for evaluation.* Each person desiring to submit an invention to NBS for evaluation pursuant to section 14 of the Act shall, in accordance with the procedures set forth below,

4.1 Obtain an Energy-Related Inventions Evaluation Request form (NBS–1019), hereinafter referred to as the Request form, by writing to the address set out in section 2 above. The form will provide:

(*a*) Detailed instructions for use in submitting an invention for evaluation;

(*b*) A description of the evaluation program and a statement of policy;

(*c*) A Memorandum of Understanding to be signed by the submitter as a prerequisite to accepting an invention for evaluation; and

(*d*) Space for submission of basic information on the invention and an outline of the complete disclosure information required.

4.2. Complete the Request form as instructed in section 3 of the form.

4.3. Prepare a detailed disclosure of the invention in an appropriate format, including the requirements specified in the Request form.

4.4. Mail the original Request form and a copy of the invention disclosure to the address set out in section 2 above. Receipt will be acknowledged by mail and, if all information is in order, the invention will be evaluated.

JOHN D. HOFFMAN,
June 3, 1975. *Acting Director.*

[FR Doc. 75–14840; Filed 6–5–75; 8:45 am]

Certificates of Correction for the Week of July 15, 1975

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3,882,041
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Disclaimers

3,701,624.—*Richard C. Franklin,* Wilmington, Del. DYEING COTTON AND PAPER WITH BIS(ARYLAZO OR SULFOARYLAZO)-J-ACID UREA REACTION MIXTURE AND COMPOSITION THEREFORE. Patent dated Oct. 31, 1972. Disclaimer filed Feb. 26, 1975, by the assignee, *E. I. du Pont de Nemours and Company.*

Hereby enters this disclaimer to claim 2 of said patent.

3,737,868.—*Leon Tregerman,* Syosset, and *Stanley M. Brindle,* East Setauket, N.Y. APPARATUS FOR PREPARING A BINARY CODED RECORD. Patent dated June 5, 1973. Disclaimer filed Jan. 30, 1975, by the assignee, *Addressograph-Multigraph Corporation.*

Hereby disclaims the remaining term of said patent.

3,767,706.—*Clarence E. Habermann* and *Ben A. Tefertiller,* Midland, Mich. HYDRATION OF ALIPHATIC NITRILES TO AMIDES USING COPPER METAL CATALYSTS. Patent dated Oct. 23, 1973. Disclaimer filed Mar. 21, 1975, by the assignee, *The Dow Chemical Company.*

Hereby enters this disclaimer to claims 1, 2, 3, 5, 6, 7, 8, and 9 of said patent.

3,813,566.—*Harrison F. Edwards,* Norwich, N.Y., and *Louis A. Pannullo,* Waterbury, Conn. ELECTROMAGNETIC MOTIVE DEVICE. Patent dated May 28, 1974. Disclaimer filed Feb. 14, 1975, by the assignee, *The Lewis Engineering Company.*

Hereby enters this disclaimer to claims 1, 4, 5 and 7 of said patent.

3,821,238.—*Shun-Ichi Naito,* Kyoto, Japan. 2-(β-AMINOETHYLSULFONYLAMINO)THIAZOLE. Patent dated June 28, 1974. Disclaimer filed Feb. 6, 1975, by the inventor.

The term of this patent subsequent to Dec. 3, 1991, has been disclaimed.

3,856,493.—*Clifford T. Bulkley,* Glastonbury, Conn. ENERGY RECOVERY SYSTEM FOR OIL INJECTED SCREW COMPRESSORS. Patent dated Dec. 24, 1974. Disclaimer filed Apr. 10, 1975, by the assignee, *Dunham-Bush, Inc.*

Hereby enters this disclaimer to claim 1 of said patent.

Dedication

3,734,680.—*Susumu Maruyama,* Tokyo, Japan, LIGHTER, Patent dated May 22, 1973. Dedication filed Mar. 5, 1975, by the assignee, *Park Lane Associates, Inc.*

Hereby dedicates to the Public the entire term of said patent.

Disclaimer and Dedication

3,742,814.—*Uriah B. Kroh,* Springfield, Va. FRANGIBLE COVER ASSEMBLY FOR MISSILE LAUNCHERS. Patent dated July 3, 1973. Disclaimer and dedication filed Feb. 21, 1975, by the assignee, *The United States of America, as represented by the Secretary of the Navy.*

Hereby disclaims and dedicates to the Public the entire term of said patent.

Patents Available for Licensing or Sale

D. 226,927. GOLF TEE AND TETHERED WEIGHT. Edward G. Roe, 19 Orchard St., Pleasantville, N.Y., 10670.

D. 234,554. SLIDE HOLDER. Jon Wilm, 2621 Grove St., Bellingham, Wash., 98225.

Re. 28,108. GAME OF CHANCE. Henry E. Lippert, 130 SW., 12th St., Miami, Fla., 33130.

3,282,378. SAFETY SCAFFOLD. Mrs. George A. Pierce, 1016 Sonoma Ave., North Sacramento, Calif., 95815.

3,578,209. TIMED FEEDING MECHANISM. James K. Fraser, 1356 Clairmont Road, Decatur, Ga., 30033.

3,709,514. FOLDABLE GOLF CART. Thomas S. Kaczmarek, 203 Bernice, Pittsburgh, Pa., 15237.

3,746,492. APPARATUS FOR MOLDING FOAMED THERMOPLASTIC ARTICLES. William R. De Vita, Matthews, N.C. Correspondence to: Charles B. Elderkin, P.O. Drawer 10337, Charlotte, N.C., 28237.

3,787,678. RECHARGEABLE BATTERY POWERED LIGHT. Robert R. Rainer, 204 Bertley, Moberly, Mo., 65270.

3,858,908. TRAILER HITCH DEVICE. Robert Frank, R.R. #3, Box 182, Shawnee-Mission, Kans., 66209.

3,859,946. UNDER LOAD RELEASABLE CHAIN STOPPERS. Peter G. Hammerschlag, 220 111th Ave., SE., Bellevue, Wash., 98004.

3,861,275. DUPLICATING DEVICE FOR GRINDING OR MILLING MACHINES. Fortuna-Werke, Stuttgart, Germany. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,864,571. METHOD AND APPARATUS FOR AUTOMATICALLY IDENTIFYING AND COUNTING VARIOUS CELLS IN BODY FLUIDS. Irving M. Stillman, Columbia, and Neil M. Trowe and Jules R. Clemens, Potomac, Md. Correspondence to: Cantor and Kraft, 2401 15th St., NW., Washington, D.C., 20009.

3,864,669. CORRECTION ARRANGEMENT FOR ELECTRONIC TYPEWRITERS. Walter Buhmann GmbH, Germany. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,869,595. INSULATED HEATED LUNCH BOX. Walter Collins and Howard Blankumsee, 9543 Achates Circle, Sacramento, Calif., 95826.

3,880,377. WINDING DEVICE FOR KITES. Clark W. Morris II, 3025 Becerra Way, Sacramento, Calif., 95821.

3,893,145. FLASH EXTENDER AND CAMERA SUPPORT. Dwayne L. King, 825 DeLucchi Lane, #311, Reno, Nev., 89502.

The following 6 patents are offered by: The Dow Chemical Company, 2030 Dow Center, Midland, Mich., 48640.

3,512,216.	INJECTION MOLDING NOZZLE SUPPORT.
3,571,856.	APPARATUS FOR SIMULTANEOUSLY OPENING VALVES FOR PLURALITY OF INJECTION NOZZLES.
3,606,171.	INJECTION NOZZLE OF ADJUSTABLE LENGTH.
3,671,168.	LOW HEAT CAPACITY MOLD FOR INJECTION MOLDING.
3,723,585.	METHOD OF ELECTROFORMED MOLDS.
3,843,295.	INJECTION MOLDING MACHINE WITH ADJUSTABLE NOZZLE LENGTH MEANS.

The following 13 patents are offered by: Peter T. Rado, Ide & Haigney, 41 East 42nd St., New York, N.Y., 10017.

3,029,473.	VACUUM POST-CURING OF INFUSIBLE PLASTIC MATERIAL.
3,038,551.	SELF-DAMPING MATERIAL AND SONAR DOME FORMED THEREFROM.
3,095,336.	HIGH STRENGTH CERAMIC COMPOSITIONS AND METHODS FOR PREPARING THE SAME.
3,123,176.	SONAR DOME.
3,136,380.	SONAR DOME AND SELF-DAMPING COMPONENT THEREOF.
3,543,348.	INJECTION MOLD APPARATUS.
3,671,159.	EJECTING GIANT ARTICLES FROM INJECTION MOLD.
3,723,584.	METHOD OF MAKING AN ELECTROFORMED MOLD HAVING HEAT TRANSFER CONDUITS AND FOAM POLYURETHANE FOUNDATION.
3,733,161.	STRUCTURIZER MOLD.
3,734,985.	GLASS FIBER REINFORCED THERMOPLASTIC CELLULAR PLASTICS.
3,744,775.	MIXING OF MOLTEN PLASTIC AND GAS.
3,763,293.	PROCESS OF MOLDING GIANT ARTICLES OF STRUCTURED PLASTIC.
3,796,779.	MIXING OF MOLTEN PLASTIC AND GAS.

Application for license under the following 2 patents may be addressed to: General Electric Co., Division Patent Counsel, Housewares and Audio Business Division, 1285 Boston Ave., Bridgeport, Conn., 06602.

3,867,659.	BRUSH HOLDER ASSEMBLY.
3,784,856.	BRUSH HOLDER ASSEMBLY.

Applications for licenses under the following 4 patents may be addressed to: General Electric Company, Transportation Systems Business Division, 2901 E. Lake Road, Erie, Pa., 16531.

3,461,317.	COMMUTATION SCHEME FOR POWER SEMICONDUCTOR CIRCUITS FOR LIMITING RATE OF REAPPLIED VOLTAGE AND CURRENT.
3,487,278.	AUXILIARY INVERTER FOR GENERATING COMMUTATING PULSES FOR A LOAD INVERTER.
3,733,669.	REACTION RAIL PRETENSION METHOD.
3,847,450.	CONTROL APPARATUS FOR AUTOMATIC AIR BRAKE SYSTEMS.

General Electric Company is prepared to grant non-exclusive licenses under the following 52 patents on reasonable terms to domestic manufacturers.

Applications for licenses under the following 18 patents may be addressed to: Patent Counsel, Aerospace Controls and Electrical Systems Department, General Electric Co., P.O. Box 5000, Binghamton, N.Y., 13902.

2,890,844.	AUTOMATIC AND MANUAL CONTROL APPARATUS FOR AIRCRAFT.
3,098,189.	CRYOGENIC D.C. to A.C. AMPLIFIER.
3,114,884.	ADAPTIVE FILTER.
3,412,375.	DOPPLER SHIFT AIRCRAFT LANDING AID AND METHOD.
3,423,691.	DISK LASER HAVING PUMPING MEANS IN INDIRECT OPTICAL COMMUNICATION WITH THE DISK END FACES.
3,423,693.	DISK LASER HAVING PUMPING MEANS IN INDIRECT OPTICAL COMMUNICATION WITH THE DISK END FACES.
3,423,696.	DISK LASER HAVING PUMPING MEANS IN INDIRECT OPTICAL COMMUNICATION WITH THE DISK END FACES.
3,423,697.	DISK LASER HAVING PUMPING MEANS IN INDIRECT OPTICAL COMMUNICATION WITH THE DISK END FACES.
3,424,991.	SEPARATED MIRROR FACE-PUMPED DISC LASER DEVICES.
3,432,769.	COHERENT LIGHT SOURCE UTILIZING PENTAVALENT MANGANESE ACTIVATED CALCIUM CHLOROPHOSPHATE CRYSTAL.
3,459,942.	HIGH FREQUENCY LIGHT SOURCE.
3,466,569.	LASER DEVICE.
3,473,011.	ELECTRONIC ANALOG RESOLVER.
3,474,440.	DIGITAL TO ANALOG CONVERTER.
3,492,465.	REDUNDANT OFF AXIS SENSORS.
3,500,231.	BREWSTER ANGLE ORIENTED END SURFACE PUMPED MULTIPLE DISC LASER DEVICE.
3,515,859.	DIGITAL FILTERING OF ANALOG SIGNALS.
3,525,053.	TRANSVERSE MODE DISCRIMINATOR FOR LASER APPARATUS.

Applications for licenses under the following 28 patents may be addressed to: Patent Counsel, General Electric Co., Aircraft Engine Group, 1000 Western Ave., Lynn, Mass., 01910.

2,975,864.	FLUID LUBRICATION SYSTEM.
3,004,387.	GAS TURBINE STARTER CONTROL SYSTEM.
3,088,279.	RADIAL FLOW GAS TURBINE POWER PLANT.
3,094,298.	VTO FAN MODULATING STRUCTURE.
3,094,311.	TURBINE ACCELERATION CONTROL SYSTEM.
3,107,896.	ACCELERATION CONTROL FOR FLUID TURBINES.
3,176,959.	TURBINE CONTROL SYSTEM FOR MAINTAINING CONSTANT OUTPUT TORQUE.
3,180,614.	CONTROL SYSTEM FOR FLUID TURBINES.
3,202,397.	SYSTEM FOR CONTROLLING THE MAXIMUM TORQUE DEVELOPED BY FLUID TURBINES.
3,208,217.	TURBINE ENGINE AND GEARBOX MOUNTING ARRANGEMENT.
3,365,126.	COMPRESSOR BLADE.
3,451,792.	BRAZED TITANIUM STRUCTURE.
3,479,205.	PROCESS FOR PRODUCING BORON FILAMENT.
3,589,841.	CONTAMINANT SEPARATION FROM A ROTARY VANE PUMP.
3,699,774.	FLUID SUPPLY SYSTEM.
3,703,369.	CHROMIUM-CONTAINING BODIES OF IMPROVED RESISTANCE TO OXIDATION AND NITRIFICATION.
3,779,007.	FUEL DELIVERY AND CONTROL SYSTEM FOR A GAS TURBINE ENGINE.
3,792,587.	EXHAUST VECTORING MEANS.
3,814,324.	PROPULSION NOZZLE AND ACTUATOR SYSTEM EMPLOYED THEREIN.
3,814,539.	ROTOR SEALING ARRANGEMENT FOR AN AXIAL FLOW FLUID TURBINE.
3,816,086.	ABRADING MIXTURE.
3,831,493.	PROPULSION NOZZLE AND ACTUATOR SYSTEM EMPLOYED THEREIN.
3,832,785.	DEVICE FOR INSPECTION OF CAMBERED AIRFOILS.
3,834,159.	COMBUSTION APPARATUS.
3,834,160.	LIGHT-OFF TRANSIENT CONTROL FOR AN AUGMENTED GAS TURBINE ENGINE.
3,842,597.	GAS TURBINE ENGINE WITH MEANS FOR REDUCING THE FORMATION AND EMISSION BY NITROGEN OXIDES.
3,844,678.	COOLED HIGH STRENGTH TURBINE BUCKET.
3,854,842.	ROTOR BLADE HAVING IMPROVED TIP CAP.

Applications for licenses under the following 27 patents may be addressed to: Patent Counsel, Switchgear Equipment Business Div., General Electric Company, 6901 Elmwood Ave., Philadelphia, Pa., 19142.

3,394,281.	TRIGGERED VACUUM GAP DEVICE HAVING FIELD EMITTING TRIGGER ASSEMBLY.
3,450,922.	TRIGGERABLE VACUUM GAP HAVING OFFSET TRIGGER.
3,465,192.	TRIGGERABLE ARC DISCHARGE DEVICES & TRIGGER ASSEMBLIES THEREFOR.
3,465,205.	VACUUM GAP DEVICES WITH METAL IONIZABLE SPECIES EVOLVING TRIGGER ASSEMBLIES.
3,471,733.	HIGH CURRENT VACUUM GAP DEVICES.
3,471,736.	VACUUM GAP DEVICES WITH HELICODIAL ELECTRODE STRUCTURE.
3,480,821.	STABILIZED VACUUM GAP DEVICE WITH ELEMENTARY ELECTRODE STRUCTURE.
3,489,873.	TRIGGERED VACUUM TYPE CIRCUIT INTERRUPTER.
3,509,404.	VACUUM ARC DEVICES WITH DOUBLY REENTRANT COAXIAL ARC-ELECTRODE STRUCTURE.
3,509,405.	COAXIAL VACUUM GAP DEVICES INCLUDING DOUBLY REENTRANT ELECTRODE ASSEMBLIES.
3,509,406.	VACUUM ARC DEVICES UTILIZING SYMMETRICAL COAXIAL ELECTRODE STRUCTURES.
3,514,636.	TRIGGERING CIRCUIT FOR POWER SWITCHING VACUUM GAP DEVICE.
3,641,251.	SCHEME FOR REDUCING AUDIBLE NOISE DEVELOPED BY AN EXTRA-HIGH VOLTAGE TRANSMISSION LINE.
3,087,092.	GAS GENERATING SWITCHING TUBE PATENTED APRIL 23, 1963 ON AN APPLICATION OF JAMES M. LAFFERTY.
3,093,766.	GAS GENERATING DISCHARGE DEVICE.
3,188,514.	GAS GENERATING ELECTRIC DISCHARGE DEVICE PATENTED JUNE 8, 1965 ON AN APPLICATION OF JAMES D. COBINE.
3,248,603.	MEAN FREE PATH GASEOUS DISCHARGE TUBE & CIRCUIT THEREOF.
3,271,619.	TRIGGERED VACUUM DISCHARGE DEVICE PATENTED SEPTEMBER 6, 1966 ON AN APPLICATION OF JAMES M. LAFFERTY.
3,290,542.	TRIGGERED VACUUM DISCHARGE DEVICE.
3,290,553.	TRIGGERED VACUUM DISCHARGE DEVICE HAVING A LIQUID CATHODE.
3,303,376.	TRIGGERED VACUUM GAP DEVICE EMPLOYING GAS EVOLVING ELECTRODES.
3,323,002.	TRIGGERED VACUUM GAP DEVICE HAVING FIELD EMITTING TRIGGER ASSEMBLY.
3,331,981.	TRIGGERABLE VACUUM DISCHARGE DEVICES WITH A GAS PRODUCING TRIGGER ELECTRODE.
3,331,988.	TRIGGERED VACUUM GAP DEVICE WITH RARE EARTH TRIGGER ELECTRODE GAS STORAGE MEANS & TITANIUM RESERVOIR.
3,366,825.	VACUUM GAP DISCHARGE DEVICE HAVING GROOVED ELECTRODES FOR THERMAL INSULATION.
3,581,142.	TRIGGERED VACUUM GAP DEVICE WITH MEANS FOR REDUCING THE DELAY TIME TO ARC-OVER THE MAIN GAP.
3,719,852.	COAXIAL ELECTRIC ARC DISCHARGE DEVICES.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JUNE 21, 1975

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	9-23-74
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-1-74
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	11-1-74
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	10-7-74
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	10-4-74
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	12-4-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	7-2-74
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	10-4-74
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	11-29-74
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-2-74
DESIGNS, GROUP 290—C. D. QUARFORTH, Director Industrial Arts; Household, Personal and Fine Arts.	5-2-74
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	12-13-74
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	10-18-74
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	1-2-75
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	10-8-74
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	12-10-74

Expiration of patents: The patents within the range of numbers indicated below expire during July 1975, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 2,840,821 to 2,845,624 inclusive
Plant Patents	Numbers 1,722 to 1,739 inclusive

REISSUE PATENTS

GRANTED JULY 15, 1975

ERRATA

For CLASS	See PATENT NO.
029-198	28,485

REISSUES

JULY 15, 1975

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

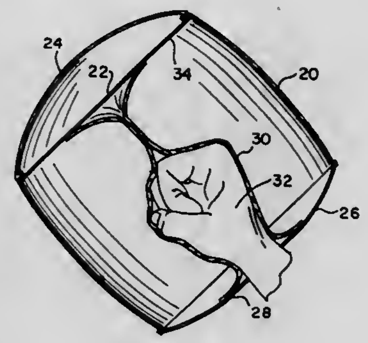
Re. 28,480
INFLATABLE BOXING GLOVE OR PILLOW

Victor Petrusek, 18511 Gottschalk St., Homewood, Ill. 60430

Original No. 3,755,820, dated Sept. 4, 1973, Ser. No. 318,231, Dec. 26, 1972. Continuation-in-part of Ser. No. 229,009, Feb. 24, 1972, abandoned, which is a continuation-in-part of Ser. No. 159,774, July 6, 1971, abandoned. Application for reissue Oct. 4, 1974, Ser. No. 511,984

Int. Cl. A41d *13/08*

U.S. Cl. 2—18 **12 Claims**



1. A boxing glove made from resilient air impervious sheet material comprising an axially disposed open ended tubular sleeve, a spherical casing encompassing said sleeve defining an air chamber about said sleeve, and means attaching said casing to said sleeve so that at least one end of said sleeve remains open to permit insertion of a fist into said sleeve, a partition extending over and closing the other end of said sleeve, and means securing said partition to said casing to divide said casing into two air chambers, one of said air chambers comprising a segmentally shaped end air chamber, and an air inlet valve in said casing for inflating said chambers with air whereby upon inflation said tubular sleeve is collapsed to firmly embrace and restrict movement of a user's fist inserted in said sleeve.

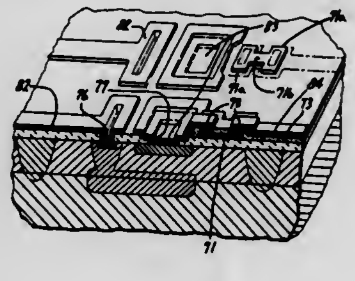
Re. 28,481
SEMICONDUCTOR STRUCTURE WITH FUSIBLE LINK AND METHOD

Michael A. Shields, Sunnyvale, and Robert W. Andrews, Los Gatos, both of Calif., assignors to Signetics Corporation, Sunnyvale, Calif.

Original No. 3,778,886, dated Dec. 18, 1973, Ser. No. 219,579, Jan. 20, 1972. Division of Ser. No. 33,802, May 1, 1970. Application for reissue Dec. 9, 1974, Ser. No. 530,651

Int. Cl.² B01J *17/00*

U.S. Cl. 29—577 **5 Claims**



1. In a method for forming an array in a semiconductor structure, providing a semiconductor body having a planar surface, forming a plurality of semiconductor devices in the semiconductor body having areas extending to said surface, forming a layer of insulating material on said surface, forming a plurality of spaced separate fusible links on planar portions of the layer of insulating material with each of the fusible links having a portion which is relatively precise and uniform in thickness and width throughout its length so that it can be fused with a relatively precise current level flowing through the same, forming additional layer of insulating material over said first named layer of insulating material, said fusible links and said devices, forming contact openings remote from said precise portions and extending through at least said additional layer of insulating material, forming a lead structure on said additional layer of insulating material extending through said contact openings to establish electrical conducting paths between said fusible links and said devices so that said fusible links are in series with said devices, supplying current to said lead structure for selectively blowing certain of said fusible links to provide the desired array, said current being of a level which is insufficient to harm the semiconductor devices connected to the fusing links but being sufficient to cause said fusible links to blow.

Re. 28,482
NOVEL HIGH-BULK YARN

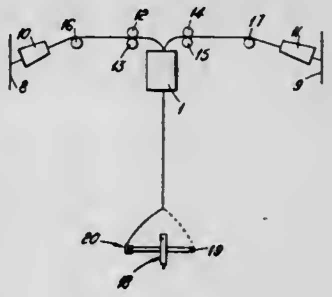
Michel Buzano, Villeurbanne, Rhone, France, assignor to Rhone-Poulenc-Textile S.A., Paris, France

Original No. 3,763,643, dated Oct. 9, 1973, Ser. No. 89,512, Nov. 13, 1970. Division of Ser. No. 807,540, March 17, 1969, Pat. No. 3,678,549. Application for reissue Apr. 22, 1974, Ser. No. 463,139

Claims priority, application France, Mar. 18, 1968, 68.144240

Int. Cl. D02g *3/24, 3/34*

U.S. Cl. 57—140 J **1 Claim**



1. High bulk yarn made of synthetic or artificial material having interlaced filaments which individually are substantially free from loops and other convolutions, the said yarn comprising randomly spaced knops of substantially spherical shape formed by loops in the yarn as a whole.

Re. 28,483
SANITARY GARMENT FOR INCONTINENT PERSONS

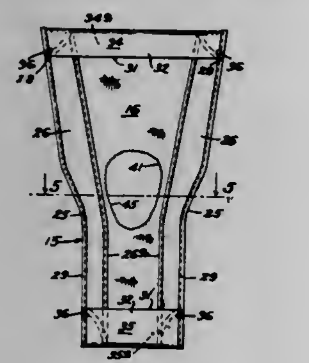
Harold J. Ralph, 2002 E. Santa Clara St., Apt. M-1, Santa Ana, Calif. 92701

Original No. 3,441,025, dated Apr. 29, 1969, Ser. No. 452,056, Apr. 30, 1965. Application for reissue Aug. 14, 1970, Ser. No. 63,958

Int. Cl. A61f *5/44*

U.S. Cl. 128—289 **8 Claims**

8. In a sanitary garment useful for incontinent persons, the combination of a holder member comprising a flexible moisture-impervious elongated back sheet having retrovertible opposite end portions, means for securing said end portions in pocket-forming relation, side-edge flaps imperviously connected along the entire length of the longitudinal side edges of the back sheet, said side edge flaps extending inwardly to freely overlie a substantial area of the back sheet and providing an elongated open *area of the underlying back sheet between the opposed edges of said respective flaps, said holder having a narrow crotch portion between its opposite end portions, and said longitudinal side edges having an accentuated converging taper of the opposite side edges of the holder from one of said end portions into said crotch portion, means for supporting said holder upon the person, and an absorbent pad having a peripheral contour similar to the peripheral contour of the holder when the holder has its opposite end portions retroverted to form end pockets, and fitted snugly and releasably within said holder over the back sheet and under the side flaps and retroverted end portions.*



Re. 28,484

SUPPORT STRUCTURE FOR USE WITH VIBRATORY DEVICES

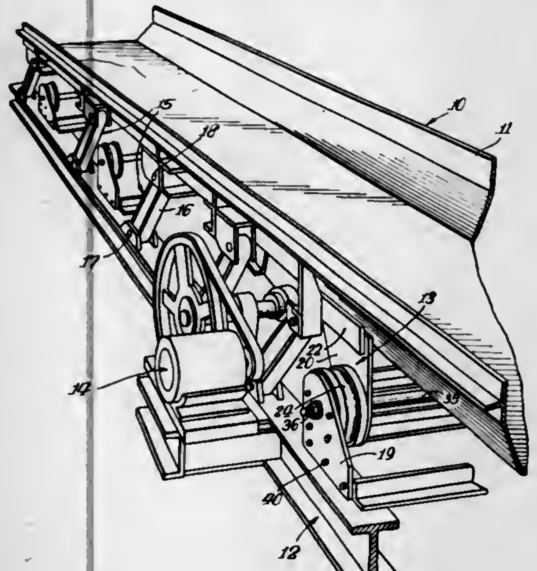
Albert Musschoot, Barrington, Ill., assignor to General Kinematics Corporation, Barrington, Ill.

Original No. 3,706,372, dated Dec. 19, 1972, Ser. No. 103,383, Jan. 4, 1971. Application for reissue Sept. 4, 1973, Ser. No. 394,329

Int. Cl. B65g *27/00*

U.S. Cl. 198—220 CA **1 Claim**

10. In a vibratory device having an elongated material-carrying member, a base, and means for imparting vibratory conveying movement to said member, a plurality of support structures for resiliently supporting said material-carrying member, each support structure comprising: a first pair of rigid support means secured to opposite sides of the base with each member of said pair having a vertically arranged flat face extending parallel to the direction of elongation of said material-carrying member, a second pair of rigid support means secured to opposite sides of said material-carrying member with each member of the second pair of rigid support means having a vertically arranged flat face extending parallel to the direction of elongation of said material-carrying member, each member of the first pair of rigid support means being located to have its face horizontally spaced from and opposing the face of a member of the second pair of rigid support means, an annular resilient rubber support member between each pair of opposing faces said rubber support member having a diameter greater than its thickness and means for clamping said rubber support member between said opposing faces including an elongated element carried by one of said pairs of support means and extending through openings in the other pair of support means and through the central openings in the rubber support members, the openings in said second pair of rigid support members being larger than the diameter of said elongated element to permit said material-carrying member to be supported by said rubber support members substantially solely by the resistance of such rubber support members to shear.



Re. 28,485

METHOD OF PRODUCING COATINGS ON HARD METAL BODIES

Walter Rix, and Grete Dix, both of Essen, Germany, assignors to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Original No. 3,558,445, dated Jan. 26, 1971, Ser. No. 641,474, May 26, 1967. Application for reissue Jan. 24, 1973, Ser. No. 326,276

Int. Cl. C23f *7/00, 17/00;* **C23b** *5/52*

U.S. Cl. 29—198 **10 Claims**

10. A hard metal body containing tungsten carbide and having a surface coated with a [solid solution] layer comprising at least one member selected from the group consisting of titanium carbide, vanadium carbide, tantalum carbide and columbium carbide.

PLANT PATENTS

GRANTED JULY 15, 1975

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,742

PIERIS BUSH

Peter G. Brouwer, 24 Lester St., New London, Conn. 06320

Filed Apr. 5, 1974, Ser. No. 458,215

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—54 **1 Claim**

1. A new and distinctive variety of Pieris plant substantially as herein shown and described, characterized by abundant seedless flowering, its branches of inflorescence tending to the horizontal, the deep purplish red coloration of the rachis, pedicels and calyces in the fall and winter, its easy propagation from cuttings, vigorous growing habits when young and less susceptibility to lacebug than *Pieris japonica.*

3,743

CARNATION PLANT

Alexandre Barberet and Henri Blanc, La Londe, France, assignors to Laboratoire de Physiologie Vegetale de La Londe, Barberet & Blanc, La Londe-les-Maures, France

Filed Apr. 25, 1974, Ser. No. 463,970

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—70 **1 Claim**

1. A new and distinct variety of carnation plant, substantially as herein shown and described, characterized by its high productivity of flowers of deep red color, the petals of which have frilled tip end margins of clear white.

3,744

POINSETTIA PLANT

James C. Mikkelsen, Ashtabula, Ohio, assignor to Mikkelsens Inc., Ashtabula, Ohio

Filed Apr. 29, 1974, Ser. No. 465,242

Int. Cl. A01h *5/03*

U.S. Cl. Plt.—86 **1 Claim**

1. A new and distinct poinsettia plant characterized particularly by its very fast flowering, in 45–48 days with an 11½ hour daylength when grown at 18°–19° C.; its excellent color retention under high light and high temperature conditions; decreased number of cyathias in the infloresence; rippled bract surfaces; strong and rigid stems; excellent branching when the terminal apex is removed, giving the plant a formal appearance; good to excellent keeping qualities, and by its distinctive leaves, which have an oakleaf pattern with deep and well rounded sinuses.

PATENTS

GRANTED JULY 15, 1975

ERRATA

For CLASS	See PATENT NO.
428–425	3,894,306
228–180	3,894,329
228–254	3,894,330
072–217	3,894,422
315–169	3,894,506
426–482	3,894,810
360–128	3,895,002
156–527	3,895,059
428–043	3,895,128
427–388	3,895,167
105–199	3,895,206

PATENTS

GRANTED JULY 15, 1975

GENERAL AND MECHANICAL

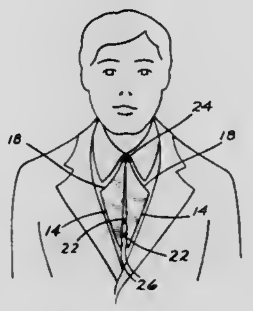
3,894,296
NECKPIECE

John Robert Hirschbeck, 109 Hirschbeck Hgts., Aberdeen, Wash. 98520

Continuation-in-part of Ser. No. 410,189, Oct. 26, 1973, abandoned. This application Sept. 11, 1974, Ser. No. 505,021

Int. Cl. A41d *25/00*

U.S. Cl. 2—144 **4 Claims**



1. A necktie which may be worn by a person wearing a collarfitted shirt and a lapel-fitted coat, the necktie comprising:

- a. a single piece of foldable necktie fabric shaped to form
  - 1. a narrow elongated neckband, and
  - 2. integral therewith a pair of substantially diamond shaped tailpieces positioned one on each end of the neckband and merging therewith, and
- b. necktie retaining means adapted to receive and retain the necktie in its worn position at the merging areas of the neckband and tailpieces,
- c. the necktie being substantially symmetrical along its longitudinal center line and foldable thereon in a single reverse fold,
- d. the neckband in its folded condition being flat and dimensioned to lie beneath the shirt collar,
- e. the tailpieces in their folded condition assuming a triangular configuration and being proportioned and dimensioned to lie with their bases substantially adjacent and parallel to each other, with one side adjacent and substantially following the contour of the shirt collar, and the other side substantially adjacent and substantially following the contour of the coat lapel of the wearer.

3,894,297
HIP JOINT PROSTHESIS

Heinz Mittelmeier, Homburg, Germany; Kurt Karpf, Holderbank, and Heinz Moser, Selzach, both of Switzerland, assignors to Oscobal AG, Chirurgische Instruments und Implantate, Selzach, Switzerland

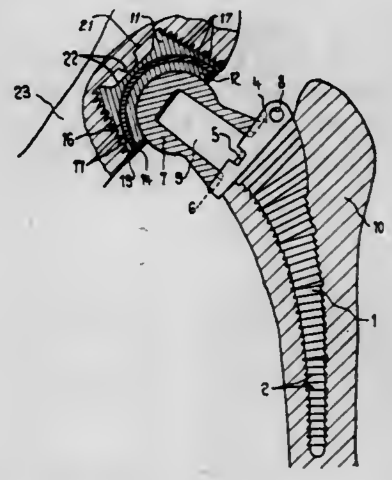
Filed Mar. 11, 1974, Ser. No. 450,163

Claims priority, application Switzerland, Aug. 31, 1973, 12525/73

Int. Cl. A61f *1/24*

U.S. Cl. 3—1 **12 Claims**

1. A hip joint prosthesis, comprising a prosthesis shaft, a ball head on said shaft, and a substantially frusto-conical acetabulum member provided with supporting ribs in the form of a tapering thread about the frusto-conical exterior surface thereof, at least one groove in said exterior surface adapted to cut a thread in the pelvic bone of a patient, such ribs allowing anchorage of said acetabulum member without using cement



or other adhesive, said acetabulum member defining a substantially spherical cavity receiving said ball head.

3,894,298
FLUSHING SYSTEM FOR SANITARY FLUSHING DEVICES

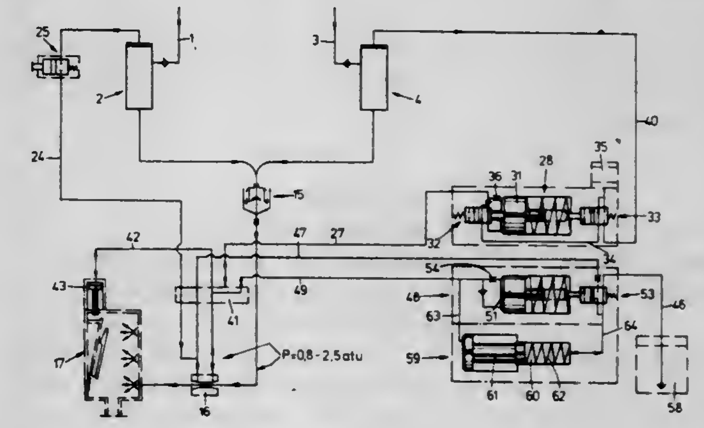
Walter Mones, Haan, and Harri Mones, Grulten, both of Germany, assignors to Zimmer & Kellerman, Dusseldorf, Germany

No Drawing. Filed Dec. 21, 1972, Ser. No. 317,355

Claims priority, application Germany, Dec. 22, 1971, 2163783

Int. Cl. A47k *17/00;* **B08b** *3/04*

U.S. Cl. 4—1 **13 Claims**

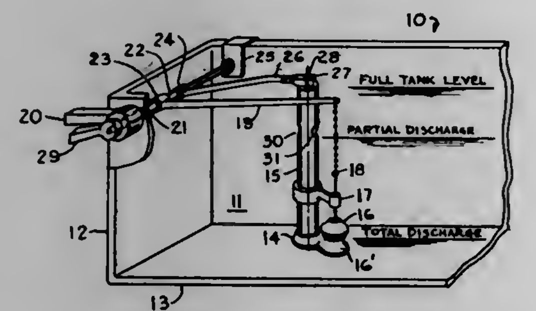


1. A flushing system for sanitary flushing devices, especially for flushing and disinfecting bed pans and urine bottles, which includes in combination: a cold water pressure flusher having an inlet and an outlet for respectively receiving and discharging cold water, a warm water pressure flusher having an inlet and an outlet for respectively receiving and discharging warm water, flushing conduit means common to said cold water pressure flusher and said warm water pressure flusher and connected to the respective outlets thereof, pipe interrupter means and injector nozzle means interposed in said conduit means, said injector nozzle means having an overpressure side and a low pressure side and being located behind said interrupter means when looking in the direction of flow of the water from said pressure flushers through said common conduit means, flushing nozzle means connected to said injector nozzle means for receiving flushing fluid therefrom and dispensing same, cold water relief conduit means interposed

between the cold water pressure flusher and the low pressure side of the injector nozzle, time delaying control valve means, warm water relief conduit means interposed between the warm water pressure flusher and the time delaying control valve means, and control conduit means interposed between the time delaying control valve means, and control conduit means interposed between the time delaying control valve and the over pressure side of the injector nozzle.

3,894,299
DUAL FLUSH FOR TOILETS

William P. Cleary, 160 Riviera Dr., Bricktown, N.J. 08773
Filed May 29, 1974, Ser. No. 474,341
Int. Cl. E03d *1/34, 5/02;* **A61b** *19/00*
U.S. Cl. 4—67 A **5 Claims**

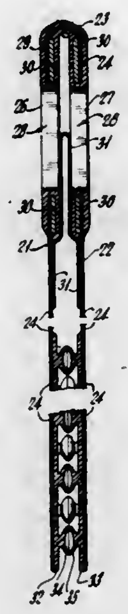


1. A dual flush system for a toilet whereby a regulated partial flush of the flush tank can be obtained comprising, in a conventional toilet, having an over flow pipe, spring-loaded secondary valve means disposed in the overflow pipe at a point intermediate the lower and upper ends thereof and separate flush control means for said spring-loaded secondary valve said spring-loaded secondary valve comprising a valve seat disposed in said overflow pipe, said valve seat being secured to said overflow pipe, a hollow tubular member supporting said valve at a position adjacent its lowermost end and extending through said valve communicating with the space in the overflow pipe below said valve seat when said valve is seated in said valve seat, and at least one hole in said overflow pipe provided in the wall of said overflow pipe above said valve seat whereby actuation of said separate flush control means releases water above the level of said hole into the bowl of said toilet.

3,894,300
SAFETY HANDLE DEVICES

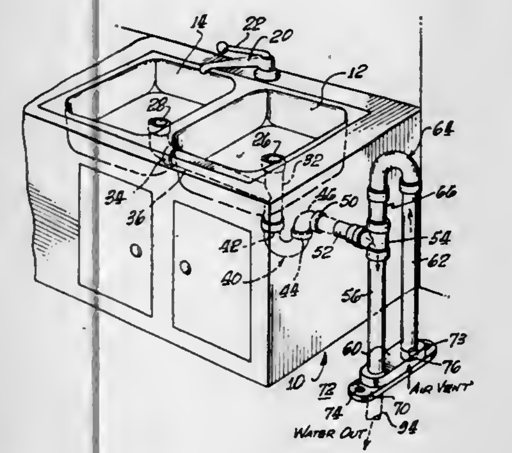
John J. Shively, 515 E. 89th St., New York, N.Y. 10028
Filed Dec. 20, 1973, Ser. No. 426,497
Int. Cl. A47k *17/02*
U.S. Cl. 4—185 H **2 Claims**

1. In a safety handle device for use on a bath tub wall of inverted U-shaped cross sectional configuration presenting flat vertical inner and outer exposed faces, in combination, an inner and an outer panel, each comprising a sheet of flexible and substantially inextensible fabric having sheathings of rubber, said panels having flexible lower portions adapted to be lowered vertically into registry with said respective inner and outer tub wall faces, means forming a hinge connecting the tops of said panels, whereby said panels may normally be folded toward each other into parallel and minimally spaced mutual relationship and may alternatively be spread apart to straddle said tub wall, rigid means to stiffen the upper portions of said panels adjacent and below said hinge, said stiffened portions having central apertures shaped to establish an upper grip handle including said hinge, a cross web of said flexible and substantially inextensible sheathed fabric terminally joined to said panels adjacent the lower ends of said stiffened portions thereof, said cross web being adapted to limit the spread of said stiffened upper portions of said panels and to engage the upper surface of said, straddled wall in conformity with the contour of said upper surface, and an array of small vacuum cups on each of said flexible lower portions of said inner and outer panels, said arrays of cups being adapted to be manually thrust into adherent engagement with said respective inner and outer faces of said straddled wall.



3,894,301
INTEGRATED DRAIN AND VENT SYSTEM FOR SINKS

Robert E. Bunch, 2754 Arrow Hwy., Sp. 22, LaVerne, Calif. 91750
Filed Sept. 17, 1973, Ser. No. 397,704
Int. Cl. E03d *9/04*
U.S. Cl. 4—211 **7 Claims**



1. In combination with a sink installed in a recreational type vehicle, the sink having a drain line containing a gas and vapor trap and communicating at one end through an opening in the floor of the vehicle, the improvement comprising an air vent line communicating at one end with the said drain line beyond the gas and vapor trap and at the other end with an opening in the floor of the vehicle, and said vent line having an elevated portion between said ends thereof located above the level of said gas and vapor trap.

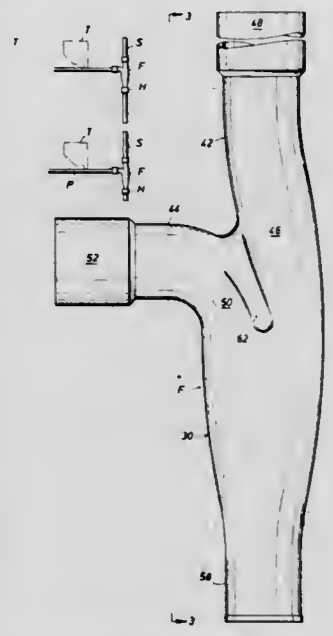
3,894,302
SELF-VENTING FITTING

John A. Lasater, Tyler, Tex., assignor to Tyler Pipe Industries Inc., Tyler, Tex.
Continuation of Ser. No. 232,826, March 8, 1972, abandoned. This application Feb. 14, 1974, Ser. No. 442,452
Int. Cl. E03d *9/04*
U.S. Cl. 4—211 **9 Claims**

1. A fitting for use in a drain stack, said fitting comprising: a main body section having a passageway therethrough, said passageway being defined by an inner surface of a body wall and having upper and lower ends and a central longitudinal axis, said lower end of said passageway providing an outlet for said fitting;

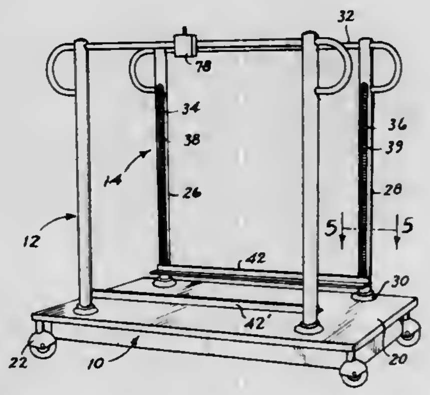
at least two tubular members each having a first end inside said fitting connected to said main body section in open communication with said upper end of said passageway, any two of said first ends being at opposite sides of a common partitioning wall lying in a plane passing through said axis of said passageway; and wherein the internal cross-sectional configuration of said first end of each of said tubular members transverse to said axis of said passageway is elongated in the general direction of said common partitioning wall;

the elongated configuration of said first ends tending to direct fluid flowing therethrough toward said inner surface of said body wall so as to be conducive to a wall-hugging effect in said fluid as it passes through said passageway of said main body section.



3,894,303
INVALID LIFT

William L. Angel, 9511 N.E. Skidmore, Portland, Oreg. 97220
Filed Sept. 26, 1973, Ser. No. 400,797
Int. Cl. A61g *1/02*
U.S. Cl. 5—81 R **5 Claims**



1. An invalid lift comprising

a wheeled undercarriage adapted to rest on the floor,

opposed, spaced-apart, stationary post structures mounted on the undercarriage and projecting upwardly therefrom,

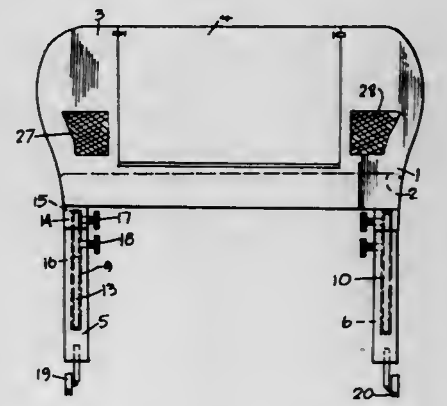
an elongated substantially horizontal body support frame disposed between and below the top extremity of the post structures and overlying said undercarriage, said body support frames comprising an elongated seat panel section and a ramp panel section hinged at one margin to an end margin of the seat panel section, said seat panel section being located above said carriage and said ramp panel section extending beyond the side of said undercarriage to an opposite margin to rest on the floor,

and

power-operated elevator means associated with each post structure supporting said body support frame and operable when actuated to lift the same.

3,894,304
CONVERTIBLE CRIB

Lester J. Burbidge, and Miriam E. Burbidge, both of Aptos, Calif., assignors to The Raymond Lee Organization, New York, N.Y.
Filed Apr. 19, 1974, Ser. No. 462,196
Int. Cl.² A47C *27/08*
U.S. Cl. 5—93 R **4 Claims**



1. A convertible crib, comprising

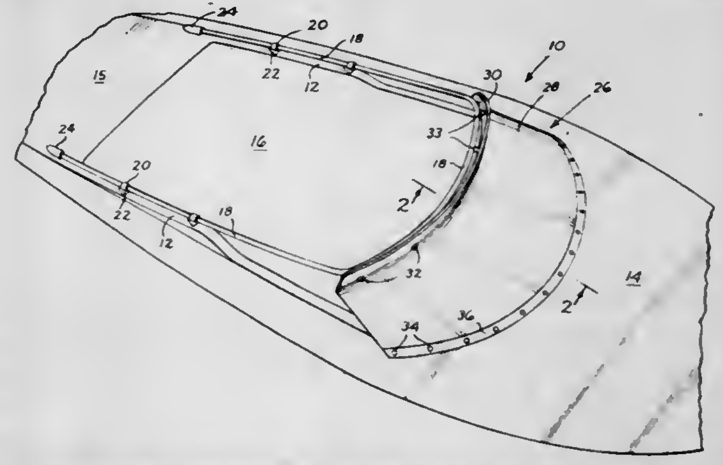
a bed part for accommodating a mattress, said bed part having a protective wall therearound with a clear plastic section hingedly mounted therein for providing a view of an infant in the bed part and for facilitating access thereto;

a plurality of legs; and

a plurality of affixing means each for a corresponding leg for removably affixing the legs to the bed part, each affixing means being removably affixed to the corresponding leg at one end and to the bed part at the other end in a manner whereby the bed part is adjustable in height relative to the leg, the affixing means being spaced a distance beneath the mattress to make them inaccessible to an infant in the crib.

3,894,305
BOAT WINDSHIELD

Leo M. Krenzler, Tacoma, Wash., assignor to American Marine Industries, Tacoma, Wash.
Filed May 11, 1973, Ser. No. 359,478
Int. Cl. B63b *17/00*
U.S. Cl. 9—1 R **1 Claim**



1. In combination with a boat having a hull with a front deck and upstanding side walls defining a cockpit, a windshield assembly comprising:

a. a substantially U-shaped rail disposed with its laterally spaced terminal portion overlying the side walls of the boat and having at least the forward sections of the terminal portions extending freely above the side walls of the boat, the transverse intermediate portion of said rail extending freely across the cockpit adjacent and above the level of the front deck,

b. rail mounting means securing rearward sections of the spaced terminal portions of the rail to the side walls of the boat,

c. a windshield positioned between the front deck and the transverse intermediate portion of the rail and having a lower see-through body portion secured and sealed at its lower forward margin to the front deck by securing and sealing means and extending upward and rearward therefrom at an angle of about 20°–70° from horizontal, and an upper see-through wind-deflecting portion integral with the body portion and extending upward therefrom angularly forward from vertical,

d. windshield mounting means including bolt means securing said upper wind-deflecting portion to, and forwardly spaced apart from, said transverse intermediate portion of said rail,

e. at least a portion of said forward section of each of said terminal portions being spaced above its side wall without any portion of said windshield therebetween, whereby said rail portion serves as a hand rail.

3,894,306
MAGNETIC RECORDING MEDIUM

Frederic J. Sischka, Santa Clara, Calif., assignor to Memorex Corporation, Santa Clara, Calif.

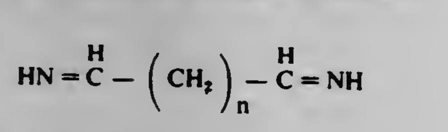
Filed Nov. 7, 1973, Ser. No. 413,579
Int. Cl. H01f *10/02*
U.S. Cl. 428—425 **2 Claims**

1. A magnetic recording medium comprising a plastic base and an adherent coating, said coating comprising an acicular gamma ferric oxide having an appreciable content of ferrous iron dispersed in a resinous binder consisting essentially of:

a. a polyurethane resin prepared by reacting p-p'diphenylmethane diisocyanate, adipic acid and butane diol 1-4 in proportions such that all of the isocyanate groups have reacted to give a substantially unreactive polymer,

b. a copolymer of vinylidene chloride and acrylonitrile and containing in excess of 50 percent by weight of vinylidene chloride

c. a diimide selected from the group consisting of HN = C = NH and diimides having the formula



$$HN=\overset{H}{C}-\left(CH_2\right)_n-\overset{H}{C}=NH$$

in which *n* is 1 to 4

d. a divalent lead salt selected from the group consisting of lead acetate and dibasic lead phosphate

e. benzoquinone and

f. a dispersant

the portions of a, b, c, d, e and f being such that they constitute respectively 3 to 6%, 12 to 20%, 0.03 to 0.05%, 0.05 to 0.15%, 0.05 to 0.05% and 1.5 to 3% by weight of the total adherent coating.

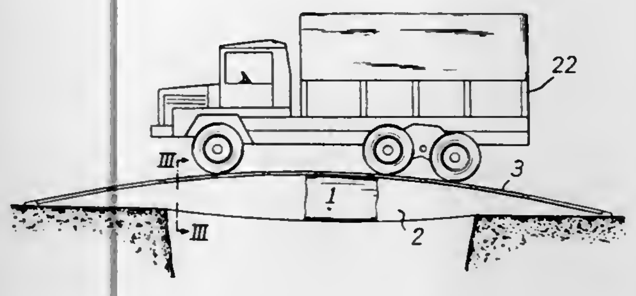
3,894,307
SPANNING MEMBERS FOR BRIDGING PURPOSES

Guy Robert Delamare, Herblay, France, assignor to Societe Superflexit, Courbevoie, France

Filed May 1, 1974, Ser. No. 466,005

Claims priority, application France, May 16, 1973, 73.17761

Int. Cl.² E01D *15/08*
U.S. Cl. 14—27 **8 Claims**



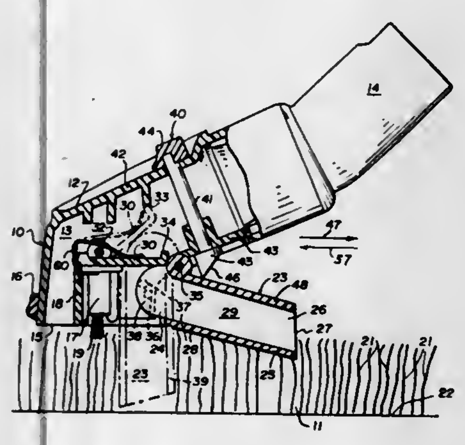
1. In a semi-rigid inflatable spanning member constituted by a plurality of inflatable members housed within an envelope above which are arranged rigid plates which are connected together end to end and which form an arched bearing surface, said envelope being bordered by a cable having ends engaged in lateral channels provided on either side of said rigid plates, and locking means holding said cable in place in the said channel.

3,894,308
VACUUM CLEANER NOZZLE

Keith E. Carr, Stevensville, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Continuation-in-part of Ser. No. 273,023, July 18, 1972, Pat. No. 3,815,171. This application Feb. 14, 1974, Ser. No. 442,316

Int. Cl.² A47L *9/02*
U.S. Cl. 15—369 **33 Claims**



1. A vacuum cleaner nozzle apparatus movable over a deep pile rug and the like during cleaning, comprising:

a body having a suction chamber portion adapted to be subjected to vacuum, and a suction inlet;

a retractable rake having an upper portion at said body and a lower portion comprising a plurality of extended hollow tines for combing said rug, each tine having a lower end, an upper end and a passage therebetween for flow of air into and through said tines into said chamber;

hinged attaching means for attaching the rake to said body for arcuate movement between an extended operative position and a retracted inoperative position; and

retaining means for retaining said rake in said retracted position.

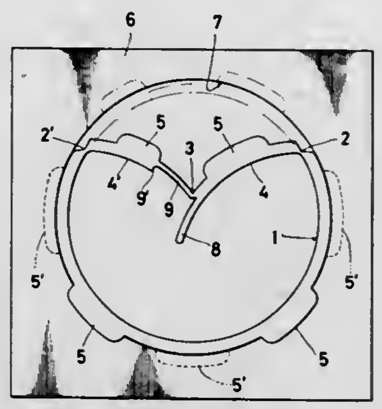
3,894,309
GROMMET FOR PROTECTING A PIPE INSERTED IN AN OPENING OF A PLATE

Takuo Yuda, Yokohama, Japan, assignor to Nifco Inc., Tokyo, Japan

Filed Mar. 7, 1974, Ser. No. 449,123

Claims priority, application Japan, Mar. 13, 1973, 48-30292

Int. Cl.² B65D *7/48*
U.S. Cl. 16—2 **5 Claims**

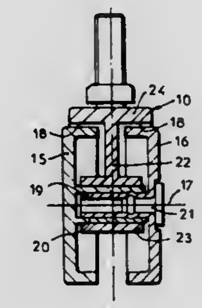


1. A one piece annular grommet having top and bottom protions and defining therebetween a body of predetermined thickness of a synthetic thermoplastic material and comprising an arcuate body of more than 180° of the peripheral measurement of the grommet, two arc portions comprising the remainder of the periphery of said body, each arc portion having an integral hinge at the terminus of said arcuate body and a third hinge connecting said two arc portions and arcuate body capable of being flexed to diminish its diametral dimension to permit its mounting on the margin of an aperture in a complimentary work piece and tab means projecting from the top and bottom portions of said body adapted to engage opposite surfaces of the complimentary work piece with which the grommet is adapted to be associated.

3,894,310
TWIN-WHEELED CASTOR

Stafford Thomas Screen, Stourbridge, England, and British Castors Limited, 03, West Bromwich, England

Filed June 17, 1974, Ser. No. 480,130
Int. Cl. A47f *91/00;* **B60f** *33/00*
U.S. Cl. 16—47 **3 Claims**

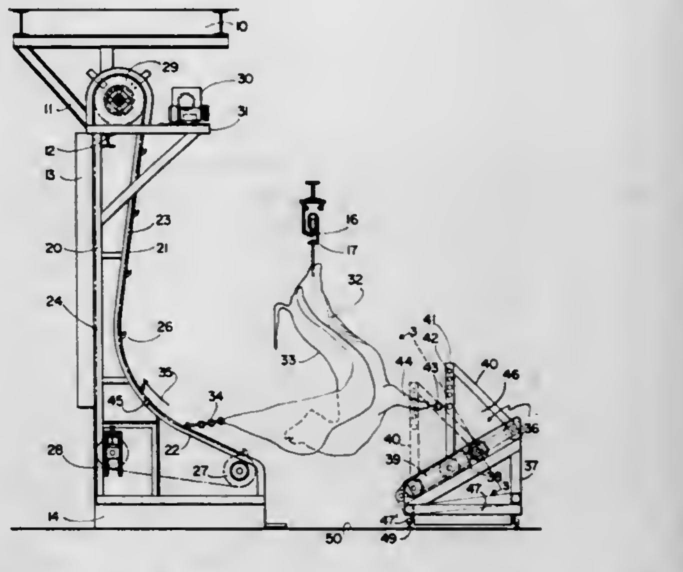


1. A castor comprising an attachment member for mounting the castor on an article of furniture or the like, a body mounted on the attachment member for pivoting movement relative thereto about a swivelling axis which is generally upright in use and two rollers having respective peripheral surfaces and being mounted on the body for rotation relative thereto about a rolling axis transverse to the swivelling axis, wherein the rollers are mounted on a first portion of the body which lies between the rollers, the attachment member is mounted in a second portion of the body which lies outside the peripheries of the rollers and the second portion of the body covers an upper part of the peripheral surfaces of the rollers.

3,894,311
HIDE PULLING DEVICES

Edward Arvid Johnson, Winnipeg, Canada, assignor to Johnson Bros. Manufacturing Ltd., Winnipeg, Canada

Filed July 16, 1973, Ser. No. 361,477
Int. Cl. A22b *5/16*
U.S. Cl. 17—21 **8 Claims**

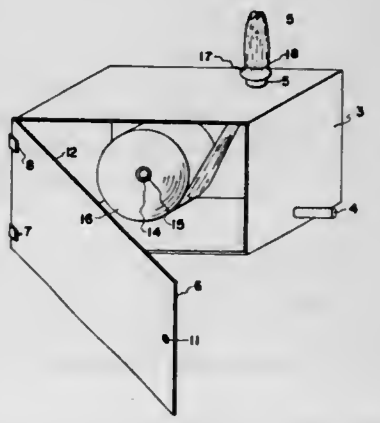


1. In a hide puller which includes an endless chain, the front run of which travels around a compound concave curved path and having a plurality of hooks extending therefrom and a carcass carrying rail positioned spaced from said puller along which carcasses are conveyed by a conveyor chain and supported from said chain by the rear legs thereof with the back of the carcass facing said puller, the improvement comprising a hold down device spaced from said puller whereby said carcass is adapted to pass between said hold down device and said puller, said hold down device including means to maintain relatively constant tension between said hold down device and the hide being stripped by said puller.

3,894,312
APPARATUS AND METHOD FOR INVERTING TUBULAR CASING

Frank M. McNeill, Lombard, Ill., assignor to Tee-Pak, Inc., Chicago, Ill.

Filed Nov. 15, 1973, Ser. No. 416,125
Int. Cl. A22c *17/14*
U.S. Cl. 17—43 **9 Claims**



1. An apparatus for inverting a flexible tubular film which is substantially impervious to gas which comprises:

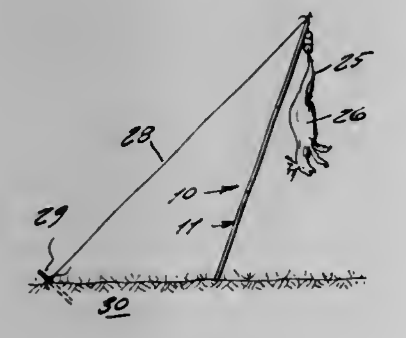
a tubular film wound upon a reel;

a housing carrying a tubular extension for receiving an end of said tubular film and permitting said tubular film to pass through its bore and be coupled to its external surface and carrying a gas passageway for permitting flow of gas into or out of said housing for pressurizing and depressurizing thereof;

a member mounted in said housing for supporting said reel of tubular film and permitting unwinding of said tubular film;
a drive mechanism for feeding said tubular film to said tubular extension, said drive mechanism mounted in said housing; and
means for access to the interior of said housing to permit mounting of said reel of tubular film on said support member.

3,894,313
GAME HANGER

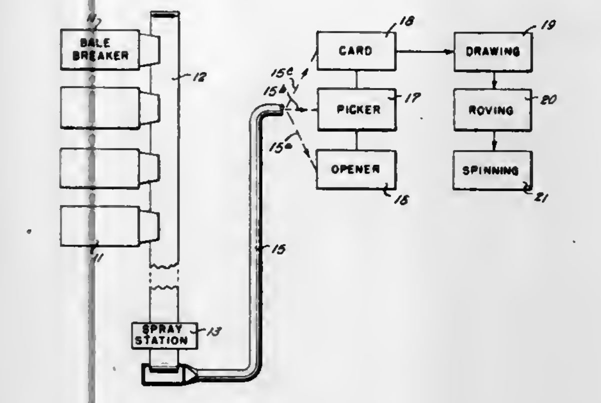
Wayne A. Miller, 303½ Ross Ave., Gillette, Wyo. 82716
Filed Oct. 10, 1973, Ser. No. 405,032
Int. Cl. A22b *1/00*
U.S. Cl. 17—44.2 **1 Claim**



1. A collapsible portable game hanger apparatus the several members of which are readily separable and adapted for easy portage as a knockdown assembly, comprising
a pair of upright legs each constituting a plurality of separable elongate telescopically interconnected leg members and adapted to have the bottom ends thereof in contact with the ground when in use,
a single transverse elongate leg member the respective ends of which are telescopically interconnected with the top ends of said upright legs to connect said legs together and form an inverted U-shaped knockdown frame,
a dual eyelet member mounted on said transverse leg member substantially at the midpoint thereof and providing a lower eyelet depending from said transverse leg member and an upper eyelet extending above said transverse leg member, said eyelets lying in a common substantially vertical plane,
a flexible elongate line member connected at one end to said upper eyelet and secured at the other end to the ground at a point spaced from said bottom ends of said upright legs,
a block-and-tackle apparatus suspended from said lower eyelet,
a hook member suitable for engaging and holding game carcasses and suspended from the lower block of said block-and-tackle apparatus, and
a cleat member mounted on one of said upright legs for securing the end of the line forming the tackle of said block-and-tackle apparatus,
whereby such inverted U-shaped frame is supported in a position at an angle to the vertical by means of said flexible line member, and game carcasses held by said hook member may be raised to and held at a suitable height by means of said block-and-tackle apparatus.

3,894,314
TREATMENT OF SPINNING FIBERS IN A TEXTILE MILL

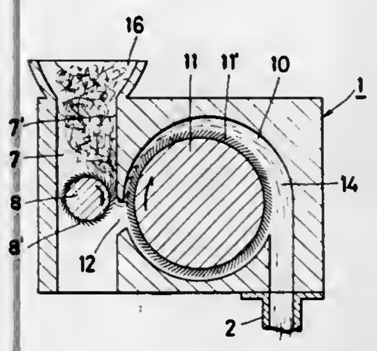
James E. Nayfa, 5015 Sharp St., Dallas, Tex. 75247
Filed Jan. 29, 1973, Ser. No. 327,730The portion of the term of this patent subsequent to Dec. 4, 1990, has been disclaimed.
Int. Cl. D01b *3/04*
U.S. Cl. 19—66 R **2 Claims**



1. A method of treating fibrous material preparatory to spinning in a textile mill comprising the steps:
opening the fibrous material;
distributing the fibrous material onto a movable surface area to form a generally uniform layer of material in an open and exposed condition;
applying uniformly to said open and exposed fibrous material, in the form of a finely diffused spray, an aqueous solution consisting essentially of a 75 percent water base, 12½ percent tallow imidazolinium alkyl (C_{1-5}) sulfate, 7 percent alkyl (C_{2-5}) sulfate and 5½ percent dimethyl distearyl ammonium chloride;
and subsequently processing said fibrous material to form laps preparatory to spinning.

3,894,315
METHOD AND APPARATUS FOR FORMING FIBER ASSEMBLY ORIENTED IN ONE FIXED DIRECTION

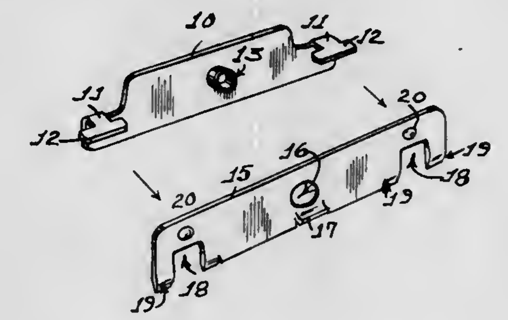
Kenji Fukuta, Yokohama, and Yoshihiro Miura, Yokosuka, both of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan
Continuation-in-part of Ser. No. 198,710, Nov. 15, 1971, abandoned. This application Oct. 23, 1973, Ser. No. 408,552
Claims priority, application Japan, Nov. 16, 1970, 45-100924
Int. Cl. D01g *25/00*
U.S. Cl. 19—150 **4 Claims**



1. An apparatus for forming an assembly of fibers extending in one direction substantially parallel to one another, which comprises
1 a means for dispersing a fiber aggregate and separating the same into individually separated fibers,
2 a duct having an inlet in communication with the dispersing means for receiving the individually separated fibers therefrom,
a the duct having a width smaller than the length of the fibers and a length in excess of the length of the fibers, and
b the duct being arranged to permit the individual fibers to fall freely therethrough and through an outlet slit thereof,
3 a moving collecting means underneath the outlet slit for collecting the parallel fibers falling freely out of the outlet slit in an assembly of substantially parallel fibers and for conveying the assembly of substantially parallel fibers away from the outlet slit of the duct,
a the outlet slit of the duct extending in a direction oblique to the direction of movement of the collecting means,
4 a take-up roller extending in the same direction as the outlet slit and rotating in a direction opposite to the direction of movement of the collecting means for taking up the assembly of substantially parallel fibers, and
5 a drawing means arranged to receive the assembly of substantially parallel fibers in the form of a sliver from the take-up roller.

3,894,316
INTERLOCKING PAIRED PLATE FASTENERS

Arthur F. Johnson, Northbrook, Ill., assignor to National Ceiling Corporation, Morton Grove, Ill.
Filed Sept. 4, 1973, Ser. No. 393,713
Int. Cl. A44b *21/00;* **F16b** *5/00*
U.S. Cl. 24—73 SM **12 Claims**

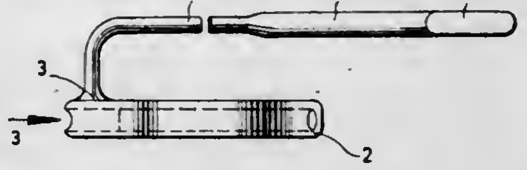


1. Clamping type fastening means comprising a pair of elongated plates having respective lateral tang formations and correspondng slot formations interengaging in an initial side-by-side assembly interfit of the plates which disposes the latter for shifting movement one relative to the other in a particular setting direction into a predetermined fully set assembly condition of side-by-side juxtaposition confronting and converging upon a common clamping plate therebetween to seize relatively flat members therebetween, said plates having wedging means operative responsive to said shifting movement to effect convergence and seizure as aforesaid.

3,894,317
SECURING ELEMENT FOR BUTTONS AND ANALOGOUS FASTENERS, AND METHOD OF USING THE SAME

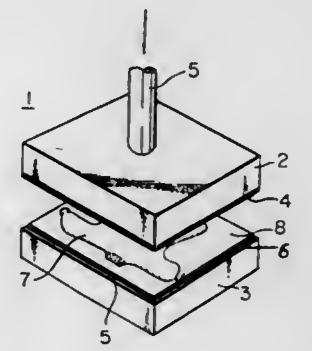
Bernhard Nysten, Aachen, Germany, assignor to William Prym-Werke KG, Stolberg, Germany
Filed Jan. 18, 1974, Ser. No. 434,578
Claims priority, application Germany, Jan. 26, 1973, 2303730
Int. Cl.² A44B *1/18*
U.S. Cl. 24—90 W **11 Claims**

2. A securing element for buttons and analogous fasteners, comprising a plate-shaped member having a major surface which in use is to face an object to which a fastener is to be secured; an elongated filament portion extending from said member adapted to penetrate said object and secure a fastener thereto, said filament portion having a free section remote from said member; said member having a pair of passages each having respective two spaced open ends formed in said meber substantially parallel to the plane of said major surface, said passages being adapted to accommodate respective first and second parts of said free section when such parts are successively inserted into said passages; a recess in said member which connects at least one pair of said open ends; and cooperating engaging portions in said recess and on said filament portion.



3,894,318
PROCESS OF ENHANCING PILLING RESISTANCE OF TEXTILE MATERIALS

Toshio Ito; Tokuhisa Miyamatsu, and Iwao Miyashita, all of Nagoya, Japan, assignors to Mitsubishi Rayon Company Limited, Tokyo, Japan
Filed June 30, 1972, Ser. No. 268,142
Claims priority, application Japan, July 5, 1971, 46-48819; July 8, 1971, 46-50487
Int. Cl. D06c *11/00, 29/00*
U.S. Cl. 26—28 **6 Claims**



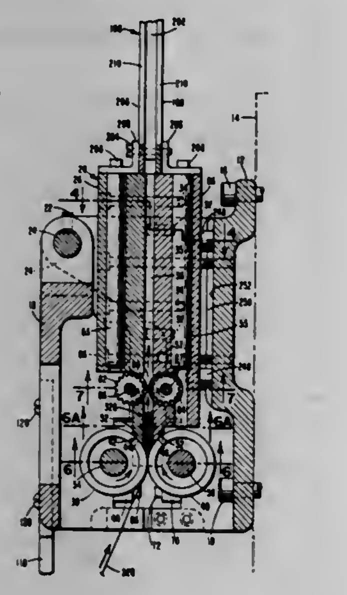
1. A process of enhancing the pilling resistance of textile fabrics, which comprises bringing at least one surface of a textile fabric containing synthetic staple fibers into contact with an abrasive surface formed on the periphery of a rotating abrasive roller, said abrasive surface carrying thereon numerous abrasive grains having sharp edges, rotating a pressing roller in cooperation with said abrasive roller, wherein the peripheral velocity of the faster of the abrasive roller or pressure roller is 1.0 to 1.5 times the peripheral velocity of the slower of the abrasive roller or pressure roller; and simultaneously pressing said textile fabric on said abrasive surface with said pressing roller rotating in cooperation with said abrasive roller at a pressure such that said abrasive roller forms incisions on the surface of the fibers distributed on the textile surface to enhance the pilling resistance without substantially changing the appearance and feel of said textile fabric and while retaining acceptable fabric bursting strength.

3,894,319
APPARATUS FOR TEXTURING CONTINUOUS FILAMENT YARN

Alexander L. Trifunovic, Wilmington, Del.; William H. Hills, Melbourne; Milton H. Borgman, Satellite Beach, both of Fla., and Emory P. Mersereau, Wilmington, Del., assignors to Indian Head Inc., New York, N.Y.
Filed June 1, 1973, Ser. No. 366,164
Int. Cl. D02g *1/12*
U.S. Cl. 28—1.6 **23 Claims**

1. A stuffer crimper for crimping continuous filament yarn

having a denier in the range of approximately 40–150, said crimper comprising:
- a housing;
- a crimping chamber secured to said housing and having a channel extending therethrough, said channel having a generally rectangular transverse cross-section;
- means for heating said chamber;
- a pair of opposed feed rolls rotatably mounted on said housing adjacent one end of said chamber for feeding yarn into said chamber channel, the long cross-sectional dimension of said channel extending parallel to the rotational axes of said feed rolls and the short cross-sectional dimension of said channel extending perpendicular to said axes, the ratio of said short cross-sectional dimension in inches to the denier of said yarn having a minimum value of about 0.000667;
- at least one crimp control roll rotatably mounted on said housing and extending into said chamber channel, the portion of said channel between the feed rolls and the crimp control roll defining a confined crimping zone, whereby continuous filament yarn is fed into said crimping zone by the feed rolls against a core of crimped yarn therein causing the yarn to collapse longitudinally and fold over forming crimps which become part of said core, the crimp control roll being spaced from the feed rolls along said channel a distance no greater than the distance required for the yarn to be plastically deformed and partially set in said crimping zone, the portion of said channel between the crimp control roll and the end of the chamber opposite the feed rolls defining a setting zone, whereby said core is fed into the setting zone by the crimp control roll and the yarn is fully set therein;
- means for rotatably driving said pair of feed rolls at the same rotational velocity; and
- means for rotatably driving said crimp control roll independently of said feed rolls, whereby the pressure on the crimped yarn core in said crimping zone may be controlled by regulating the relative rotational velocities of the feed rolls and the crimp control roll.



3,894,320

METHOD OF PRODUCING TEXTILE PRODUCT

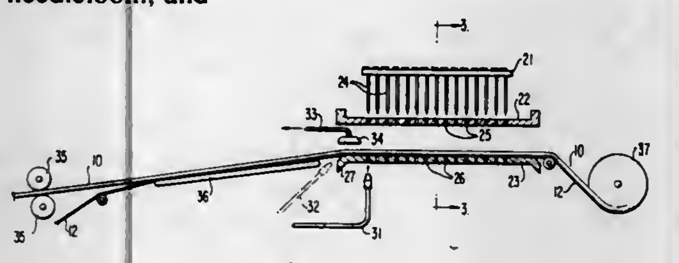
Arthur B. E. Lauman, and John Edward Bentley, both of Environs Lane, P. O. Box 1974, Dalton, Ga. 30720

Filed Nov. 6, 1973, Ser. No. 413,309

Int. Cl.² D04H *18/00*

U.S. Cl. 28—72.2 R **15 Claims**

1. Method of producing a textured textile product from a continuous web of interwoven textile fibers being passed through a needleloom including the steps of:
- creating a pressure differential across the web as it passes into the needleloom to move and suspend the web in said needleloom, and



- needling said web together in specific areas with spaced needles in said needleloom to produce a predetermined high-low pattern.

3,894,321

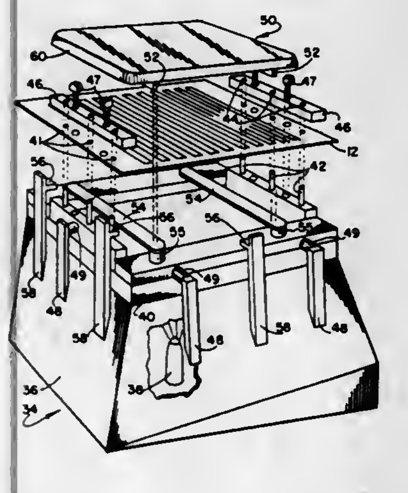
METHOD FOR PROCESSING A COLOR CATHODE RAY TUBE HAVING A THIN FOIL MASK SEALED DIRECTLY TO THE BULB

John H. Moore, Broadview, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Jan. 24, 1974, Ser. No. 436,258

Int. Cl.² H01J *9/18*

U.S. Cl. 29—25.15 **1 Claim**



1. A method of producing a color cathode ray tube (CRT) having a funnel section, a thin foil color selection electrode having a pattern of apertures formed therein, and a front panel which has a screen on which phosphor elements are deposited and which has one or more electrode sealing ledges to which said foil electrode is attached for supporting said electrode in a position parallel to the screen and at a predetermined "Q" distance from it, said method comprising:
- a. stretching said foil electrode across a supporting electrode frame;
- b. aligning the CRT panel, the frame and the electrode on an exposure table for exposing the panel screen to a source of actinic light directed thru the electrode apertures;
- c. positioning the CRT panel on the electrode such that its electrode sealing ledges are facing downwardly and rest upon said electrode, thus positioning the panel screen its proper Q distance from the electrode;
- d. exposing elemental areas of a first photoresist coating on the CRT screen through the electrode apertures;
- e. removing the panel from the exposure table and developing the screen by rinsing it with a solvent to remove unhardened phosphor areas;
- f. twice repeating steps (d) and (e) to expose and develop second and third photoresist coatings;
- g. placing a first cement on the panel's electrode sealing ledges;
- h. repositioning the CRT panel on the electrode such that the relative positions of the panel and the electrode are substantially identical to their relative positions during exposure;

- i. baking the foil electrode and panel while held in said relative positions to cure the frit cement; and
- j. cutting away foil electrode material which extends beyond the edges of the CRT panel to free the mask from the frame.

3,894,322

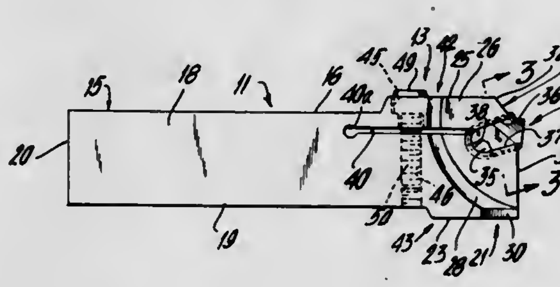
HOLDER WITH INTERCHANGEABLE CUTTING INSERTS FOR MACHINE TOOLS

Joseph Pano, Shavei Zion, Israel, assignor to Iscar Ltd., Nahriya, Israel

Division of Ser. No. 362,861, May 22, 1973, abandoned. This application Nov. 25, 1974, Ser. No. 525,214

Int. Cl. B26d *1/00*

U.S. Cl. 29—96 **10 Claims**



1. A machine tool comprising a holder for a cutter insert, said holder comprising an elongated one piece bar having a forward end and a rear end, said bar being formed at its front end with a recess having opposite ends and being open at one end, and with a slot extending rearwardly of said recess, said slot having a closed rear end, said slot and recess forming upper and lower jaws at the front end of the bar inseparably and integrally formed with the bar, said slot being located at a level between the upper and lower edges of said recess, means located between said recess and the rear end of the slot, to press said jaws relatively together, said recess forming elongated parallel opposed edges on said jaws, a one piece cutter insert within said recess and adapted to be clamped to said holder by said press means, said insert having parallel edges slidably engaging said edges of said jaws at said recess, said edges of said jaws and insert comprising mating rail and track interengaging slidably contacting means to prevent side to side movement of said insert in a direction perpendicular to said insert, said insert having means at one end thereof to abut the other end of said recess, said bar having a vertical thinned integral wall at its forward end, said thinned wall being formed with said recess, and said insert being disposed in the plane of said thinned wall, said bar being thickened rearwardly of said thinned wall, said means to press said jaws together comprising a bolt in openings formed in said thickened portion of said bar rearwardly of said thinned wall, said bolt having an axis offset from the insert, whereby the insert and the clamping force of the bolt are in opposing planes.

3,894,323

CONVEYOR BELT ROLLERS

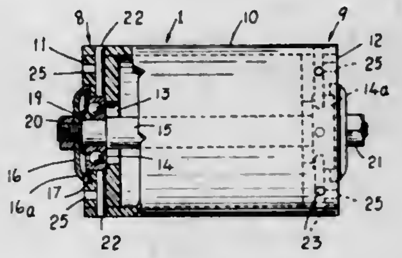
Edmund Lorne Hamlen, 39 Lawrence Ave. East, Toronto, Ontario, Canada

Filed Oct. 24, 1974, Ser. No. 517,517

Int. Cl. B21b *13/02*

U.S. Cl. 29—116 R **4 Claims**

1. In a conveyor roller having a corrosion resistant plastic roller mounted on a rotatable shaft, said shaft being journalled in bearings at each end thereof, means for conducting heat from the bearings comprising heat conducting pins embedded in the plastic, said pins of two or more, being disposed to extend radially from said axle adjacent the said bearings to the outside of said roller, all of said pins being uniformly spaced circumferentially.



3,894,324

ROTOR FOR FLUID FLOW MACHINES

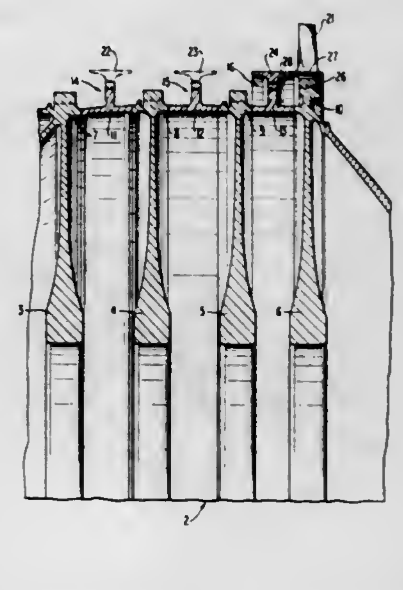
Immanuel Holzapfel, Stuttgart, and Gerhard Zahring, Munich, both of Germany, assignors to Motoren-und Turbinen-Union GmbH, Germany

Filed Aug. 14, 1972, Ser. No. 280,142

Claims priority, application Germany, Aug. 14, 1971, 2140816

Int. Cl. B23p *15/00*

U.S. Cl. 29—156.8 R **11 Claims**

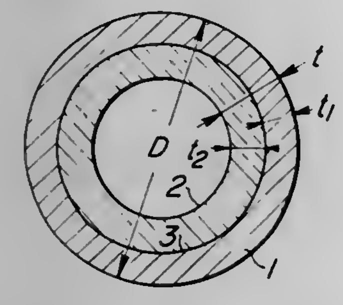


1. A method of making a rotor arrangement comprising:
- placing a plurality of rotor disks spaced from one another along a common axis,
- slidably inserting a plurality of rotor blades in slots provided at the periphery of an endmost disk,
- fixedly attaching an intermediate inner ring member to said endmost disk and to the next adjacent disk, and
- axially slidably positioning a continuous intermediate outer ring member over the circumference of said inner ring member such that the outer surface of said outer ring member forms a continuous smooth surface with platform sections of said rotor blades,
- wherein said outer ring member is a continuous closed ring, and wherein said outer ring member and said inner ring member have corresponding detachably slidable interengageable parts for circumferentially and radially locking said outer and inner ring members to one another, said step of axially slidably positioning including interengaging said interengageable parts.

3,894,325
LARGE-SIZED AND THICK COMPOUND SLEEVES OF HIGH HARDNESS

Kenzi Maruta; Atsushi Yamada, both of Kita-Kyushu, and Tsunemi Tsuji, Fukuoka, all of Japan, assignors to Hitachi Metals, Ltd., Japan

Filed Apr. 30, 1974, Ser. No. 465,587
Claims priority, application Japan, May 11, 1973, 48-51674
Int. Cl. B32b *15/18;* **B22d** *13/00*
U.S. Cl. 29—187.5 3 Claims

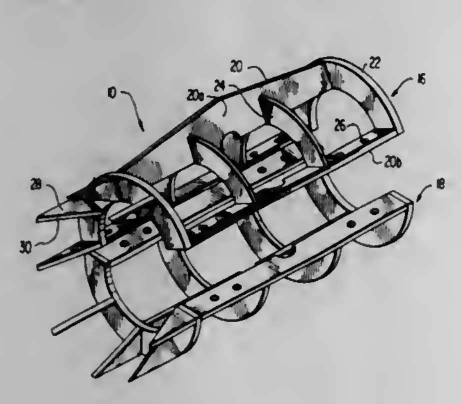


1. Large-sized and thick compound sleeves of high hardness produced by centrifugal casting and each having an outer diameter of over 1,000 millimeters, such composite sleeves each comprising an outer layer of high-alloyed cast steel having a Shore hardness number in a range between 60 and 75 and a carbon content in a range between 0.4 and 0.9 % by weight, and an inner layer of low-alloyed cast steel having a Shore hardness number in a range between 30 and 45.

3,894,326
CLAMP FOR LONGITUDINALLY ALIGNING PIPE SECTIONS

Augustus Lyons Merriman, Vinton, La. 70668

Filed Sept. 25, 1973, Ser. No. 400,496
Int. Cl. B23p *19/00;* **B23k** *37/04*
U.S. Cl. 29—200 P 15 Claims

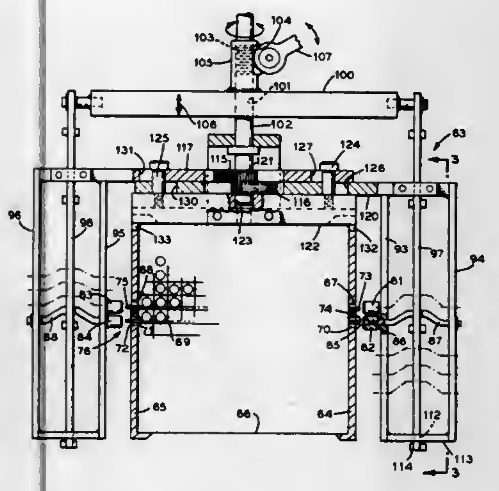


1. A clamp for aligning butted pipe sections comprising:
a pair of clamp sections each having an elongated, generally semi-cylindrical, open framework including a plurality of circumferentially spaced longitudinally extending guide bars connected one to the other by a plurality of circumferentially extending, generally semi-circular, longitudinally spaced stiffening elements, means for connecting said clamp sections one to the other about the end portions of a pair of pipe sections whereby said clamp sections form a generally cylindrical clamp concentrically disposed about the pipe sections, said longitudinally extending guide bars having a length greater than the diameter of the cylindrical clamps formed by said clamp sections, the inner edges of said guide bars defining longitudinally extending substantially continuous smooth surfaces engageable substantially throughout the entire length of said guide bars with the pipe sections for maintaining the same in axial alignment one with the other, each said clamp section having at least four of said stiffeners with a pair of said stiffeners being located on each of the opposite sides of the pipe section joint.

3,894,327
INDUSTRIAL TECHNIQUE

Felix S. Jabsen, Lynchburg, Va., assignor to The Babcock & Wilcox Company, New York, N.Y.

Filed Oct. 23, 1973, Ser. No. 408,767
Int. Cl. B23p *19/00*
U.S. Cl. 29—200 R 1 Claim



1. A fixture for dissasembling and assembling a fuel element that has an array of longitudinally disposed fuel rods that are engaged in transverse grids comprising a fixed member for contacting the margin of one of the grids and aligning the fixture with the grid, a pair of relatively slidable members supported on said fixed member for lateral movement relative to said fixed member, first and second journal plates each attached to a respective one of said pair of relatively slidable members, two arrays of cranks, each of said arrays journaled in a respective one of said first and second journal plates, a plurality of nipples, each of said nipples having means formed therein and coupled to a respective one of said cranks for movement therewith for selectively engaging a respective portion of said fuel element, said nipples with each of said crank arrays being spaced opposite from each other and laterally movable in response to the motion of said slidable members to move said respective fuel element portions, a pair of connecting rods, each of said rods being individual to one of said crank arrays for ganging each array to move together, and yoke means joining said connecting rods for activating said ganged crank arrays and coupled nipples.

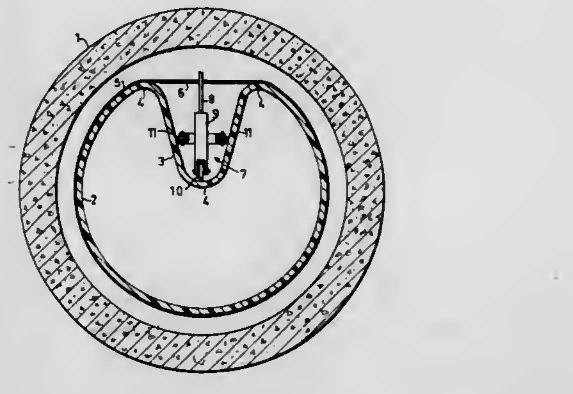
3,894,328
METHOD OF LINING PIPES

Lennart Erik Elof Jansson, Alvsjo, Sweden, assignor to Stabilator AB, Bromma, Sweden

Filed Sept. 4, 1973, Ser. No. 394,000
Claims priority, application Sweden, Sept. 7, 1972, 11555/72
Int. Cl. B23p *11/02*
U.S. Cl. 29—451 5 Claims

1. A method of internally lining a pipe laid in the ground and having an annular interior surface surrounding a hollow pipe interior, a tubular liner of resiliently contractible material including an outer annular surface between its ends, the outer annular surface of the liner having an outside diameter substantially corresponding to the inside diameter of the interior surface of said pipe, said method comprising the steps of
contracting the tubular liner from its normal tubular size to a contracted condition having a diameter substantially less than the inside diameter of said pipe, the contracted liner having a radially inwardly extending V-shaped section interposed between and connected to an outer circumferential section of the contracted liner;

emplacing a plurality of continuous jointless-type flexible circumferential bands about and in engagement with outer surface portions of the circumferential section of the contracted liner, the plurality of emplaced bands being in axially spaced relation to each other along the length of the contracted liner so as to hold the contracted liner in the contracted condition, each one of the plurality of emplaced bands being of substantially uniform thickness about its circumference and of relatively thin construction so as to provide a minimal raised edge above and about the outer surface portions of the circumferential section of the contracted liner;

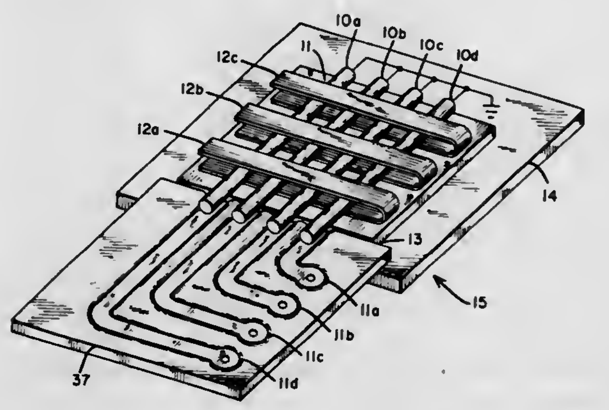


inserting the contracted liner together with the plurality of emplaced bands into the hollow pipe interior at one end of said pipe without the contracted liner and the plurality of emplaced bands becoming frictionally bound against the interior surface of said pipe prior to the expansion of the contracted liner; and
severing by using knife means moveable longitudinally of the liner the plurality of emplaced bands from about the contracted liner inserted in the hollow pipe interior so as to effect expansion of the liner until the outer surface of the liner is disposed in engagement about and along the interior surface of said pipe between its ends.

3,894,329
METHOD OF MAKING HIGH DENSITY ELECTRONIC INTERCONNECTIONS IN A TERMINATION DEVICE

John Niemirovich, Jr., Royersford, Pa., assignor to Sperry Rand Corporation, Blue Bell, Pa.

Continuation of Ser. Nos. 276,215, July 28, 1972, abandoned, which is a division of Ser. No. 42,942, June 3, 1970, Pat. No. 3,707,039. This application Jan. 28, 1974, Ser. No. 437,598
Int. Cl. B23k *31/02;* **H01r** *43/00*
U.S. Cl. 228—180 1 Claim



1. The method of making high density electronic interconnections in a termination device having a plurality of depressed parallel, substantially no resistance metallic lands formed between parallel and contiguous insulating members and having both a terminal end and a receiving end wherein said terminal end of said respective parallel lands provides circuit connecting means and said receiving end is adapted to connect to an electrical wire component comprising:
a. laying a respective end of a wire member having a diameter on the order of 5 mils horizontally in each such depresed land at its receiving end and wherein the insulating members extend in height above said depressed metallic lands,
adjacent insulating members further preventing movement away from said land in order to provide a center-to-center spacing on the order of 30 mils;
b. applying solder in a molten state to the respective ends of said wires,
the excessive solder applied to said ends flowing within each respective depressed land area without bridging into an adjacent land area, the hardening of said solder providing a permanent connection of each said wire to said termination device,
c. connecting the terminal end of each said land with a respective circuit connector whereby ohmic continuity is provided between a respective wire member and a respective circuit connector via said substantially no resistance land.

3,894,330
MANUFACTURE OF CONDUCTIVE ARTICLES

Harold Edward Bellis, Hockessin, Del., assignor to E. I. du Pont de Nemours & Co., Wilmington, Del.

Continuation-in-part of Ser. No. 119,813, March 1, 1971, abandoned. This application July 9, 1973, Ser. No. 377,569
Int. Cl. B44d *1/18, 1/14*
U.S. Cl. 228—254 4 Claims

1. A process for making a laminated and soldered article of manufacture comprising an inner substrate having at least one ply of fibrous sheet material impregnated with a cured polymeric precursor of a polyimide resin, said resin being the reaction product of an anhydride component and an amine component, and a conductive metal bonded to at least a portion of at least one surface of said inner substrate, said process comprising (1) electrolessly depositing an essentially continuous nickel/boron alloy coating on said conductive metal portion of said article, said alloy having a boron content of from about 0.1 to 15 percent by weight, based on the weight of alloy, (2) heating said article of manufacture in an oxidizing atmosphere at a temperature of at least about 215°C. for at least about one minute, and (3) soldering the coated article.

3,894,331
METHOD OF MOUNTING A BUSHING TO A CONTAINER CLOSURE

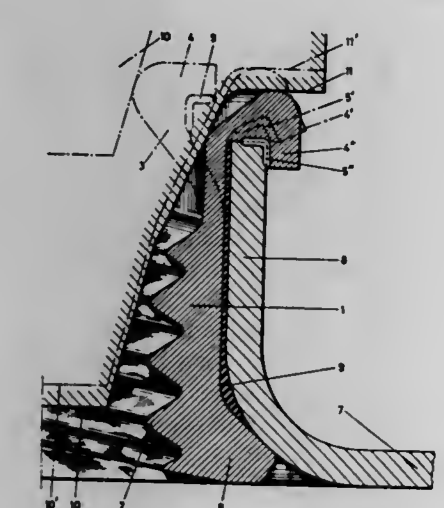
Christian Ragettli, Gockhausen, Switzerland, assignor to Koninklijke Emballage Industrie, Van Leer B. V., Switzerland

Division of Ser. No. 237,266, March 23, 1972, abandoned. This application May 6, 1974, Ser. No. 467,590
Claims priority, application Netherlands, Mar. 23, 1971, 7103882
Int. Cl. B21d *39/00;* **B23p** *11/00*
U.S. Cl. 29—512 3 Claims

1. A method for inserting an internally threaded bushing into a collar, the bushing having a normal wall thickness at its mid-section, an outer portion of a thickness, less than said normal thickness, which is bent inwardly in the shape of a bottle neck with a radially extending outwardly flanged edge and a base having an enlarged thickness relative to said normal thickness;
the collar having a base portion and an outer free edge;
the method comprising pushing the bushing into the collar so that its base engages the interior of the base portion of the collar and the bushing outer portion extends beyond

the collar free edge; and

applying pressure radially outwardly on the inner surface of



the bottle neck portion to bend the outwardly extending bushing flanged edge toward the collar free edge.

3,894,332

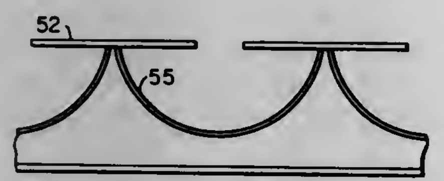
SOLID STATE RADIATION SENSITIVE FIELD ELECTRON EMITTER AND METHODS OF FABRICATION THEREOF

Harvey C. Nathanson, Pittsburgh; Richard N. Thomas, Murrysville, and Jens Guldberg, Penn Hills, all of Pa. assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 225,517, Feb. 11, 1972, Pat. No. 3,814,968. This application Nov. 23, 1973, Ser. No. 418,635

Int. Cl. B01j *17/00*

U.S. Cl. 29—578 **2 Claims**



1. The method of fabricating a large area field electron emitter device comprising the steps of providing a wafer of a semiconductive material of a single crystal material and having a band gap in the range of 0.2 to 3.0 electron volts and a resistivity of 0.10 ohm centimeter or greater, depositing an etch-resistant array pattern of islands over said wafer on one surface thereof, etching said semiconductive wafer in a manner to remove a portion of the semiconductive material from beneath and between the islands of said array to provide a centrally located support projection for each of said islands having a diameter of about 1.5 microns at the upper point of said support adjacent said island, growing an oxide layer on said etched out surface of said wafer to provide an oxide coating having a thickness of about 0.5 microns and providing a remaining central region of semiconductive material at the point supporting said island of about 0.5 microns, removing said resist array to provide a large area of field emitters comprised of a substrate of semiconductive material with a plurality of projecting electron emitters extending from said substrate in a crystallographically continuous manner in which said projecting electron emitters comprise an emitting point having a diameter of about 0.5 microns.

3,894,333

ELECTROMECHANICAL TRANSDUCER AND METHOD OF MAKING SAME

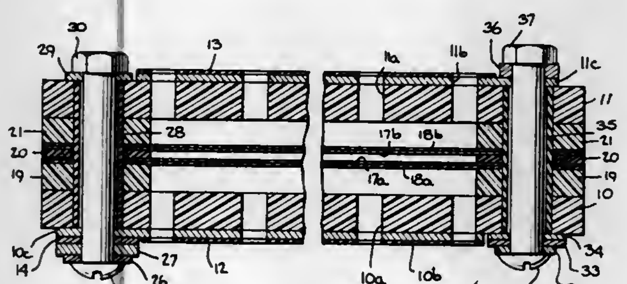
Loh-Yi Chang, Guelph, Ontario, Canada, assignor to Uniroyal Ltd., Montreal, Canada

Filed May 11, 1973, Ser. No. 359,568

Claims priority, application Canada, Sept. 8, 1972, 151244

Int. Cl. H04r *19/02, 31/00*

U.S. Cl. 29—594 **2 Claims**



1. The method of making an electromechanical transducer comprising assembling in spaced relation a pair of electret stator means each having a conductive member thereon and each having apertures therethrough, and thin, vibratory diaphragm means comprising a pair of layers of conductive material individually on a pair of films of plastic material supported between said stator means with each of said plastic films being between the conductive layer thereon and the stator means adjacent thereto, and electrostatically polarizing the assembled stator means by applying a high potential difference from said conductive member of each stator means to said conductive layers of said diaphragm means.

3,894,334

METHOD OF MANUFACTURING CONTACT SPRINGS

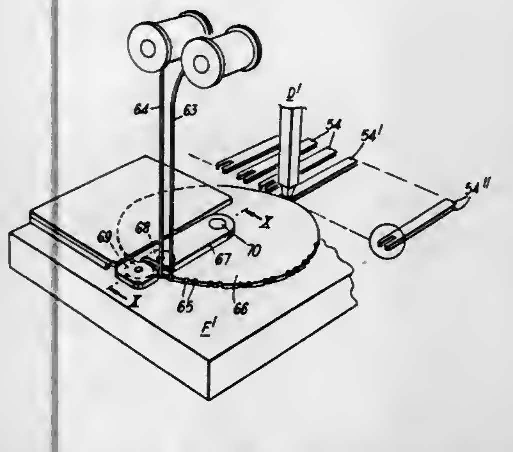
Royston Walter Bannister, and Frank Taylor, both of Kent, England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed May 9, 1974, Ser. No. 468,341

Claims priority, application United Kingdom, May 31, 1973, 26001/73

Int. Cl. H01r *9/00*

U.S. Cl. 29—630 C **2 Claims**



1. A method of manufacturing contact springs comprising the following steps:

a. locating a billet of contact material between two springs;

b. supporting the billet and the springs so that the billet contacts the springs;

c. passing an electric welding current through said contact and springs to weld the billet to both said springs; and

d. forming the billet into two separate portions so that each spring contains a contact made from said billet.

3,894,335

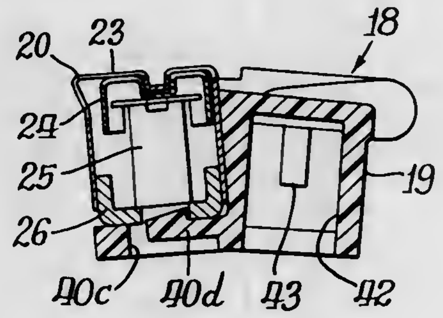
ELECTRIC SHAVER HEAD ASSEMBLY

George P. Gallanis, Centerville, Ohio, assignor to Sunbeam Corporation, Chicago, Ill.

Filed Apr. 24, 1974, Ser. No. 463,657

Int. Cl.^{2} B26B *19/04*

U.S. Cl. 30—43.92 **8 Claims**



1. In an electric shaver, a detachable shaving assembly comprising a supporting frame having a planar portion in which at least one shaving head including a comb and reciprocating cutter is mounted, said frame being a one-piece plastic member having centrally located recesses, resilient latch portions on said member extending into said recesses, inwardly facing and spaced guides which receive said shaving head and restrict movement of said head to a direction parallel to said planar portion, a stop for said shaving head to establish the assembled position of said head on said frame as it is assembled in said direction, said latch portions being deflected entirely into said recesses during assembly of said head to said head frame, recesses formed in the bottom of said shaving head to receive said latch portions and restrict said head against movement away from said stop in said direction parallel to said planar portion.

3,894,336

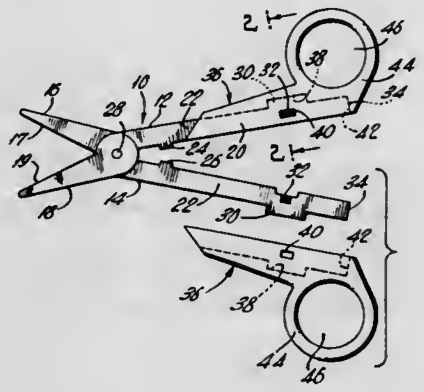
SUTURE REMOVAL SCISSOR

Joseph A. Desimone, Point Pleasant Borough, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed Nov. 14, 1973, Ser. No. 415,705

Int. Cl. B26b *13/20*

U.S. Cl. 30—341 **1 Claim**



1. In a disposable scissor having a pair of elements pivotally attached together at a pivot point, each having at one end thereof a cutting edge and each having at the other end thereof a shank to which is attached a flexible handle having finger openings, the improvement wherein,

said shanks each extend, beyond the pivot point, in a substantially straight line over substantially the entire length of the handle and are positioned over said finger holes to provide leverage for cutting;

horizontal and axial movement limiting means are provided comprising a projection on said shank engaging a depression in said handle; and

vertical movement limiting means are provided comprising a detent on said shank portion engaging an opening in said handle.

3,894,337

ALUMINA RAZOR BLADES

Frederick O. Jones, Bracknell, England, assignor to Wilkinson Sword Limited, London, England

Filed Apr. 6, 1973, Ser. No. 348,648

Claims priority, application United Kingdom, Apr. 8, 1972, 016294/72; Apr. 8, 1972, 016292/72; Apr. 8, 1972, 016293/72

Int. Cl. B26b *21/54*

U.S. Cl. 30—346.54 **8 Claims**

1. A razor blade comprising a single crystal of alumina having a cutting edge thereon, said single crystal having large ions in and/or adjacent the surface of the single crystal in an amount sufficient to strengthen the surface of the crystal at least in the vicinity of the cutting edge.

3,894,338

CONNECTOR FOR CONNECTING A DENTAL INSTRUMENT TO A FLEXIBLE SUPPLY TUBE

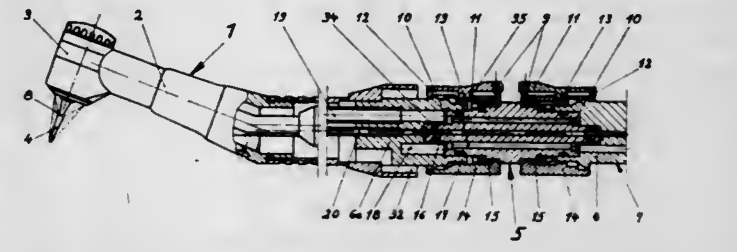
Hans Loge, Biberach au der Riss, and Erich Bareth, Ummendorf, both of Germany, assignors to Kalterbach & Voight, Biberach au der Riss, Germany

Filed Feb. 14, 1973, Ser. No. 332,302

Claims priority, application Germany, Feb. 22, 1972, 72065828; Dec. 22, 1972, 7247029

Int. Cl. A61c *1/10*

U.S. Cl. 32—27 **4 Claims**



1. Connector for the axially rotatable connection of a dental instrument including a compressed-air motor or a turbine to a flexible supply tube, said connector including a rapid-action coupling for detachably connecting the instrument to the connector, which continually connects a pressure medium inlet and a coolant inlet of the instrument to a pressure medium or, respectively, coolant source, said connector including a rapid-action coupling for detachably connecting said flexible supply tube to the connector, each said rapid-action coupling being a snap-action coupling, each said snap-action coupling comprising a coupling hook mounted in the connector, and spring means biasing the hook of one coupling into engagement with annular collar on said instrument and the other hook into engagement with a connection fitting of the flexible supply tube.

3,894,339

DENTAL TOOL

Walter E. Manzi, 206 Pennsylvania Ave., Crestwood, N.Y. 10707

Filed July 3, 1974, Ser. No. 485,328

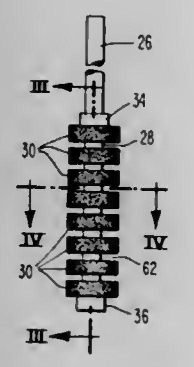
Int. Cl. A61c *3/06*

U.S. Cl. 32—59 **13 Claims**

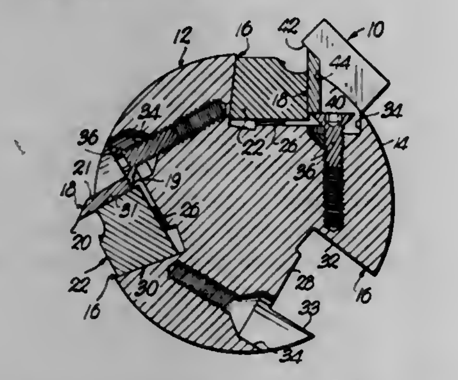
1. A dental tool for use with a dental handpiece and having multiple spaced apart working members comprising:

a. a shank for engaging a chuck of a dental handpiece;
b. a post extending axially of said shank;
c. a plurality of coaxial circular working members sequentially disposed along said post, said working members being in spaced apart relation relative to each other; and
d. an abrasive covering at least a portion of the surfaces of said circular working members,

wherein adjacent ones of said circular working members define annular voids therebetween, with the circular members on opposite sides of the annular voids having surfaces that are undercut between said post and peripheral surfaces of the members such that the axial distance across each said annular void between opposite undercut surfaces decreases from a maximum at the post to a minimum at an associated said peripheral surface, wherein said abrasive appears on all exposed working surfaces of the circular members, wherein there are a sufficient number of said circular members so that there are provided at least three said peripheral surfaces, and wherein said three peripheral surfaces and the undercut surfaces respectively comprise means whereby the tool may be used to first grind into a tooth in at least three spaced apart locations determined by the spaced apart peripheral surfaces of the working members, leaving at least a plurality of intermediate tooth portions, and then be used to chip away the controlled tooth amount comprising the plurality of intermediate tooth portions, by axial movement of the tool in a back-and-forth motion for said undercut surfaces of the working members to engage and undercut the intermediate tooth portions under conditions of controlled chipping.



3,894,340
BLADE SETTER FOR PLANERS AND THE LIKE
Russell Lee Ellis, Jr., 113 O'Brien Rd., Lee's Summit, Mo. 64063
Continuation of Ser. No. 284,948, Aug. 30, 1972, abandoned. This application June 21, 1974, Ser. No. 481,748
Int. Cl.^{2} B27G *23/00*
U.S. Cl. 33—185 R **1 Claim**

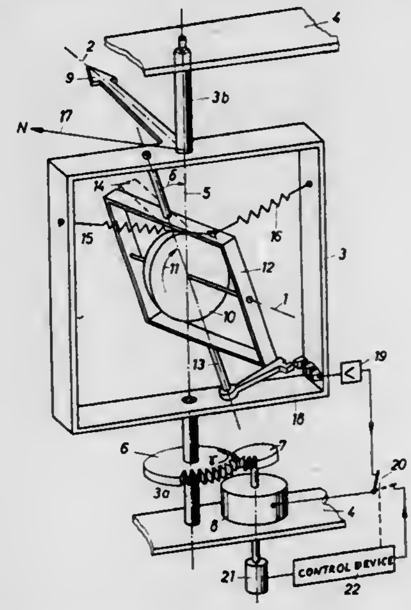


1. A gauge tool for setting an elongated blade in a cutterhead, the latter including an elongated, axially rotatable cylindrical body having an elongated, transversely convex face parallel with the axis of rotation, and a longitudinal groove extending into the head from said face receiving the blade with the longitudinal cutting edge thereof being spaced outwardly from said face, said cutterhead further being provided with means within said groove releasably holding the blade in a clamped condition in the groove and against a sidewall of the same, said tool comprising:
- a unitary, elongated member having a first segment of a length and configuration for continuous, uninterrupted engagement with a major stretch of said convex face adjacent the groove and blade when said first segment is positioned on said convex face proximal to the juncture of said groove sidewall and convex face with the longitudinal axis of said member in parallelism with the longitudinal axis of said body,
- said member also having a second blade-engaging segment extending only partially across the width of said groove in overlying relationship to that length of said blade adjacent said member, said second segment being equal in length to said first segment and configured to permit access to said blade-holding means within said groove along the entire length of the latter,
- the normal underside of said member being defined by a pair of elongated, interconnected, juxtaposed surfaces of a uniform length and disposed in laterally offset relationship relative to one another with their respective longitudinal axes being parallel with that of said body; body,
- one of said surfaces defining the normal underside of said first segment and being transversely arcuate to present a contour concentric with said convex face for said continuous, uninterrupted engagement therewith along the entire length of said one surface,
- the other of said surfaces defining the surface of said second segment adjacent said blade, said other surface being planar and extending only partially over said groove in an outwardly spaced relationship thereto,
- there being a fixed, elongated, planar, angularly disposed blade-side-engaging extension surface of predetermined, uniform transverse width interconnecting said pair of surfaces along the full length of the member and having a longitudinal axis parallel with the longitudinal axes of said pair of surfaces,
- said blade-side-engaging extension surface being configured to define a continuation of said groove sidewall extending outwardly from said convex face in continuous and uninterrupted laterally abutting engagement with the entire surface area of that portion of one side of the blade extending outwardly from said convex face and disposed adjacent said blade-side-engaging surface whereby, upon movement of the blade outwardly of the groove to a position placing the cutting edge thereof in engagement with the outer surface throughout the length of the latter, the full length of the cutting edge is uniformly spaced outwardly a predetermined distance from said convex face and said cutting edge is parallel with said body axis.

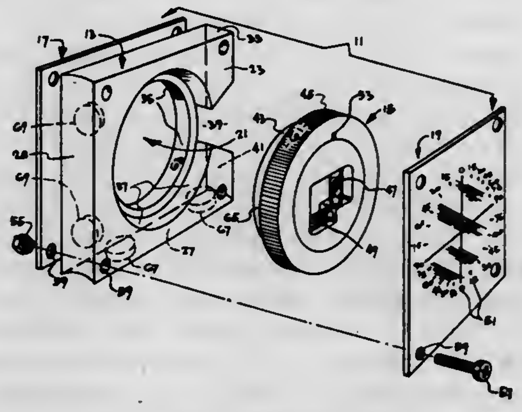
3,894,341
RAPID RESETTING GYROSCOPE
Klaus Kapeller, Edingen, Germany, assignor to Teldix GmbH, Heidelberg, Germany
Filed Dec. 21, 1973, Ser. No. 427,425
Claims priority, application Germany, Dec. 23, 1972, 2263338
Int. Cl.^{2} G01C *19/38*
U.S. Cl. 33—324 **5 Claims**

1. In a north-seeking gyroscope composed of
- a housing;
- a frame member journalled withiin the housing for rotation relative to the housing about a vertical axis;
- a gimbal member arranged within the frame member for rotation relative to the frame member about a substantially vertical axis;
- a gyro rotor journalled within the gimbal member for rotation about an axis substantially perpendicular to the rotation axis of the gimbal member for producing a force tending to align the rotor axis with geographic north; and
- servo means normally connected for rotating the frame with a selected degree of damping in a direction to establish a predetermined angular null position between the gimbal and the frame and a predetermined angular orientation of the frame corresponding to geographical north;

the improvement comprising control means responsive to the value of a parameter indicative of the deviation of the frame from geographical north for temporarily rotating said frame at an increased rate, and with a degree of damping lower than such selected degree, in such direction only upon the occurrence of parameter values indicating that the angular deviation of said frame from geographical north exceeds a selected magnitude, said control means including: measuring means for measuring the value of such parameter; memory means for storing a representation of such measured value; and switching means operatively connected between said measuring means, said memory means and said servo means and switchable between a plurality of states for producing an operating sequence including: storing a representation of a measured value produced by said measuring means in said memory means; applying such stored representation to said servo means for producing such increased rate of frame rotation; and terminating the action of said control means.

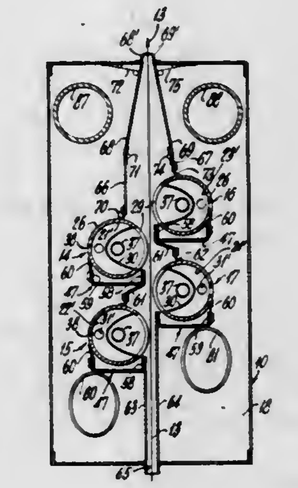


3,894,342
DEVICE FOR OBTAINING ANGULAR DEVIATION FROM AN INCLINED SURFACE
Sterling L. Goode, P.O. Box 108, Newark, Calif. 94560
Continuation-in-part of Ser. No. 318,092, Dec. 26, 1972, abandoned. This application July 22, 1974, Ser. No. 490,911
Int. Cl. G01c *9/28*
U.S. Cl. 33—388 **4 Claims**



1. A compact angle measuring device comprising:
- a generally right rectangular parallelepiped frame including a pair of square bases and four lateral faces, at least one of said faces having a concave contour adapted to fit lengthwise against and parallel to a pipe, at least one other of said faces being adapted to fit flatly against a planar surface, said frame having a circular cylindrical hole generally centrally therethrough from one square base to the other and an opening leading from said hole to one of said faces;
- a circular ring rotatably mounted within said hole, said ring having a peripheral portion exposed in said opening to provide access to said ring of a person's finger for angular adjustment of said ring;
- a pair of spirit levels mounted within the ring in perpendicular and adjacent relation to one another, the levels being substantially parallel to said square bases, the levels being so located within the ring that neither of the levels passes through the center of the ring whereby both of the levels can be read when viewed from either of the bases;
- a pair of transparent plates substantially equal in size to said bases attached matingly to said bases; and
- a plurality of angle indicia adjacent said rings for indicating the angular displacement of said ring relative to said frame.

3,894,343
INK CURING AND DRYING APPARATUS
Robert W. Pray, East Northport, N.Y., and Ralph L. Foster, Darien, Conn., assignors to Thermogenics of New York, Byram, Conn.
Division of Ser. No. 263,250, June 15, 1972, Pat. No. 3,829,982. This application Mar. 25, 1974, Ser. No. 454,402
Int. Cl. F26b *3/30*
U.S. Cl. 34—4 **1 Claim**

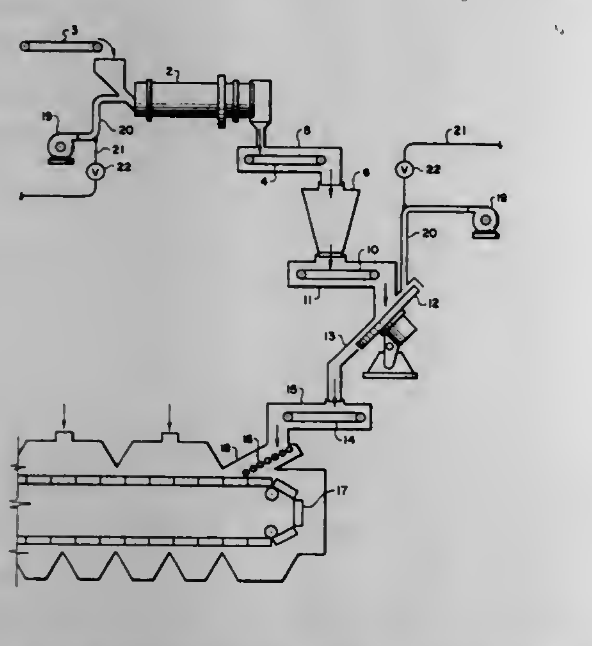


1. Ink curing apparatus comprising a housing having openings for feeding a web therethrough, an ultra-violet lamp assembly rotatably supported within said housing and positioned transversely of said web, said assembly including an elongated shell having an opening extending longitudinally thereof, an elongated reflector and ultra-violet lamp within said shell, said lamp and reflector being positioned within said housing to direct radiation through said opening, said lamp being of cylindrical configuration having neck portions extending therefrom and terminals on said neck portions, sockets carried on each end of said assembly for engaging said terminals, transverse plates within said shell each having an opening therein, said plates being positioned with said necks extending through the plate openings and means carried by said plates and sealing said plate opening about said neck portions whereby said neck portions and sockets can be air cooled without cooling said lamps.

3,894,344
METHOD AND APPARATUS FOR DRYING MATERIALS IN FIXED BEDS

Donald B. Malcolm, Pittsburgh, Pa., assignor to Dravo Corporation, Pittsburgh, Pa.

Filed Jan. 22, 1974, Ser. No. 435,433
Int. Cl.² F26B *7/00*
U.S. Cl. 34—12 **14 Claims**



1. In the process of drying a moist, heated particulate material in a fixed bed for further processing wherein the material becomes heated during the preparation of the material for such drying and processing, the step which comprises conserving the heat and moisture contained in the material, after its preparation until it is deposited in a fixed bed to be then dried by transferring the material from the apparatus in which it is prepared to the fixed bed through an enclosure which conserves heat in the material and also prevents adiabatic cooling resulting from evaporation of moisture therefrom through contact with a drying atmosphere during such transfer.

9. In a mineral processing apparatus for drying heated moist particles wherein there is provided a means for preparing the particles to be processed, the operation of which discharges the particles in a heated moist condition and wherein there is a grate to which the moist particles are to be delivered and on which they are dried in a fixed bed with means for circulating heated air through the material on the grate, the invention comprising:

- a. a transfer system for continuously transferring the particles from said preparing means to the grate having a receiving end positioned to receive the moist heated particles from said preparing means and a discharge end arranged to discharge the material directly onto the grate, a heat-conserving enclosure for the transfer system extending from end to end of said system, and
- b. means for maintaining a controlled moist atmosphere in the enclosure to protect the material against adiabatic cooling during its transfer from the receiving end of the system to the discharge end.

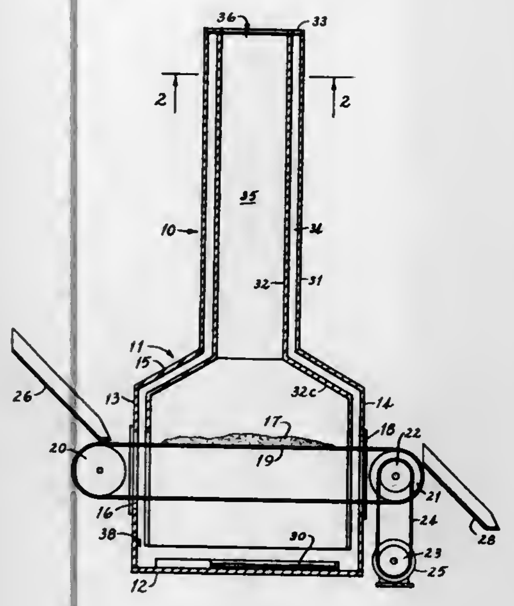
3,894,345
DRYING DEVICE

Walter Zeltmann, 719 Bay Ridge Ave., Brooklyn, N.Y. 11220

Filed Sept. 16, 1974, Ser. No. 506,429
Int. Cl.² F26B *19/00*
U.S. Cl. 34—93 **6 Claims**

1. In a drying device surrounded by an atmosphere containing air through which solar radiation is transmitted, the combination comprising:

- a. a hollow stack having an interior region and a mouth communicating between said interior region and said surrounding atmosphere;
- b. a chamber surmounted by and communicating with the interior region of said hollow stack, and accommodating matter containing evaporable moisture;
- c. said chamber being provided with at least one aperture communicating with the atmosphere surrounding said drying device;
- d. said hollow stack being provided with means for absorbing and retaining solar radiation including:
  - i. an outer wall composed of glass accommodating the transmission of short wave radiation but opposing the transmission of long wave radiation;
  - ii. an inner wall provided with a blackened surface confronting said outer wall and a silvered surface confronting the interior region of said hollow stack, said inner wall accommodating the transmission of heat therethrough and reflecting such heat to the interior region of said hollow stack;
  - iii. an air space between said outer wall and said inner wall;



  - iv. said air space communicating with said chamber;
  - v. air within said air space being heated by said short wave radiation, whereby said air is communicated to said chamber, thereby forming a partial vacuum in said air space;
  - vi. closure means connecting the upper ends of said outer and inner walls;
- e. a column of air disposed within the interior region of said hollow stack and exhaustible through the mouth of said stack when the interior region of said hollow stack is heated;
- f. the exhaust of said column of air from the mouth of said hollow stack thereby creating a draft of air from said aperture with which said chamber is provided through said chamber and said hollow stack;
- g. said matter containing evaporable moisture being exposed to said draft of air;
- h. said evaporable moisture being absorbable in said draft of air.

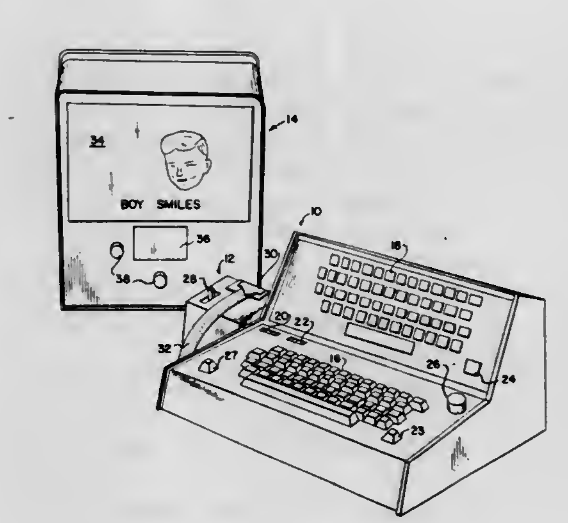
3,894,346
ELECTRONIC KEYBOARD TRAINER

John R. Ward, Alexandria, and Daniel J. Fowley, Jr., Charlottesville, both of Va., assignors to Kee, Inc., Arlington, Va. Continuation of Ser. No. 175,223, Aug. 26, 1971, abandoned. This application Nov. 2, 1973, Ser. No. 412,400
Int. Cl. G09b *13/02*
U.S. Cl. 35—8 **14 Claims**

1. A self-contained desk model electronic keyboard trainer, comprising:

- a. a desk size housing having a substantially horizontal keyboard with a plurality of keys spaced and aligned to match the keyboard of the machine the student is to learn,

- b. a substantially vertical and rearwardly inclined keyboard display panel disposed on the housing above and behind the keyboard and having a plurality of indicator lights with illuminable indicia areas corresponding in position and size to the keys of the keyboard, the indicator lights being connected to an electrical control circuit,
- c. each key of the keyboard connected to an electronic code producing means for generating a distinct and different coded output for each key depressed and which has a plurality of electrical output lines over which the code is transmitted when a given key is depressed,
- d. program means for producing a distinct coded output signal for a given key over the same number of output lines and matching the code produced by the keyboard code producing means, and being controlled by an actuating means which contains successive code markings representing keyboard keys of a predetermined prepared keyboard exercise,
- e. each of the output lines of the program means being connected to a storage register having two output lines, one of the output lines being connected to row and column decoder means which form part of the electrical control circuit for the indicator lights of the keyboard display panel,

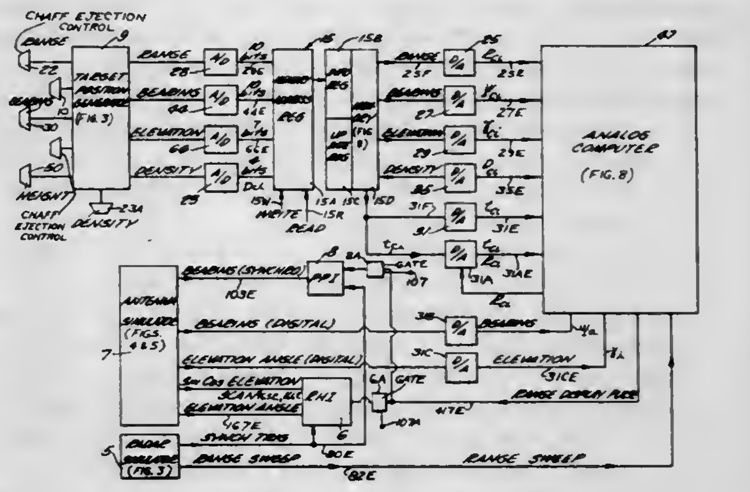


- f. electrical comparator means for comparing code outputs of the keyboard electronic code producing means and the program means, including an array of gates, one for each code output line, which have two input terminals, one terminal connected to an output line from the code producing means, and the other terminal to the matching output line from one of the storage registers, the gate output signals reflecting whether there is a match of signals received,
- g. error circuit means connected to and receiving the gate array output and including an electrical advance signal generating circuit means electrically connected to the program means for giving an advance signal to the control means to advance the actuating means to thereby present the succeeding key code signal when the gate outputs all indicate a match between the two code signals received, and
- h. mode switch means on the housing, connected in circuit with the error circuit means and the indicator lights for permitting the student to determine whether the display panel will visually present the keyboard exercise key by key, or whether the display panel will only light an indicator light after an error has been made to show the correct key of the keyboard which should have been depressed by the student.

3,894,347
THREE DIMENSIONAL CHAFF SIMULATION SYSTEM

Marvin O. Sleven, and Daniel Hobel, both of Los Angeles, Calif., assignors to Whittaker Corporation, Los Angeles, Calif.

Filed Oct. 24, 1965, Ser. No. 505,426
Int. Cl. H04k *3/00*
U.S. Cl. 35—10.4 **3 Claims**

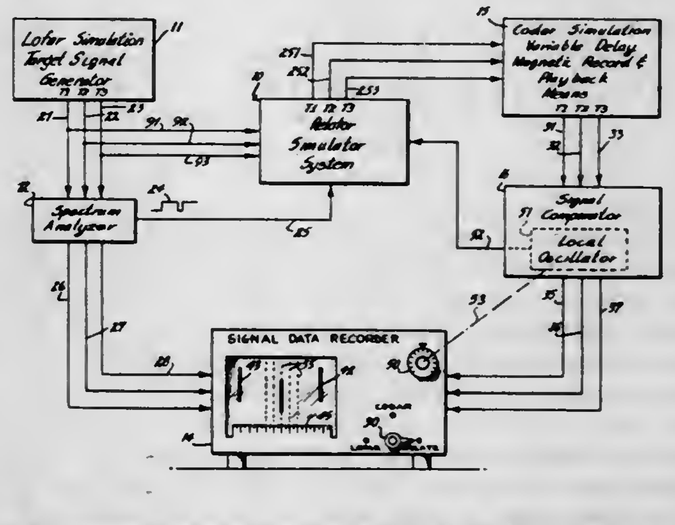


1. In a chaff simulating system, a position generator including means for developing electrical values representative respectively of chaff range, chaff bearing and chaff elevation; means for converting each of said values into a corresponding coded digital representation; a memory system in which a digital representation of each of said values is stored; a plan position indicating system; a range-height radar indicating system; means for producing electrical magnitudes representative of the instantaneous position of a radar beam in said plan position indicating system and the bearing and elevation movements of an antenna in said range-height radar indicating system; encoder means for converting said digital representations to electrical values; and means comparing the last-mentioned electrical values with said magnitudes to obtain a comparison of said values with said magnitudes for altering indications in said plan position indicating system and said range-height indicating system in accordance with said comparison.

3,894,348
RELATOR SIMULATOR SYSTEM

Robert R. Fontaine, Riverdale, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 19, 1966, Ser. No. 603,065
Int. Cl.² G09B *9/00*
U.S. Cl. 35—10.4 **6 Claims**

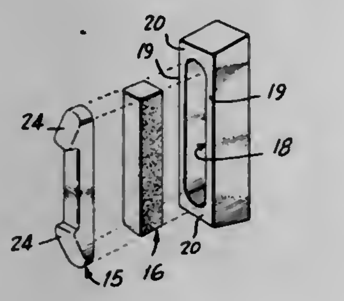

Lofar Simulation Target Signal Generator
Codar Simulation Variable Delay Magnetic Record & Playback Means
Relator Simulator System
Spectrum Analyzer
Signal Comparator
Local Oscillator
SIGNAL DATA RECORDER
CODAR

1. In simulation apparatus including Lofar simulation means for producing pulses characteristic of simulated target signals, Codar simulation means including a pair delay shaft position-

able in response to an input for producing signals simulating outputs of Codar sonobouy pairs, and signal data recorder means connected by spectrum analyzer means to said Lofar simulation means and connected by signal comparator means to said Codar simulation means so that said apparatus can be selectively operated to produce graphic presentations of simulated target signal frequencies, target bearings, relation of target frequency to target bearing, said apparatus further including dial means for manually selecting a target signal frequency from the graphic presentation of frequencies as an input to the apparatus; the improvement comprising:

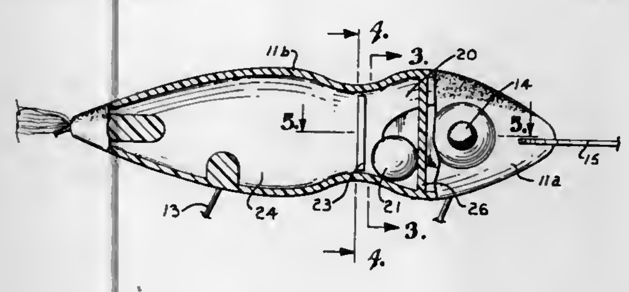
- a relator simulator system connected to receive said Lofar simulation pulses, synchronizing pulses from said spectrum analyzer, and an oscillator signal from local oscillator means tuned by setting of said dial means to provide a local oscillator frequency;
- said relator system being operative to provide audio signals corresponding to said simulated target signal frequencies irrespective of inaccuracies in setting of said dial means, said relator system being connected to said Codar simulation means for providing said audio signals thereto whereby said recorder means can provide graphic presentation of the relation of a selected frequency to the simulated target from which the frequency emanated;
- said relator simulator system comprising a three cycle gate generator for generating gating signals of a width corresponding to three cycles of a dialed frequency;
- audio generator means for producing said dialed frequency; and
- audio gate means;
- said three cycle gate signals being operative to enable said pulses from said Lofar simulation means to control said audio generator means to produce the selected frequency; and
- said audio gate means being responsive to the presence of simulated target signals to pass the audio signals from said generator means to said Codar simulation means.

3,894,349
DETACHABLE TOOTH FOR PUBLIC WORKS MACHINE HAVING A PARTICULAR COTTER
Rene V. Moreau, Ermenonville, France, assignor to Poclain, Le Plessis-Belleville, France
Filed Oct. 5, 1973, Ser. No. 404,126
Claims priority, application France, Oct. 31, 1972, 72.38539
Int. Cl. E02f *9/28*
U.S. Cl. 37—142 A **3 Claims**



1. An improved detachable tooth mounted on a support, such as the leading blade of an excavating bucket in which a first of the two elements, either the tooth or the support, has a cavity with an opening, the second of the two elements has a head insertable into the cavity from the opening in an introduction direction, orifices extend through each of the two elements in register with each other, a main cotter extends into said orifices in a cottering direction perpendicular to the introduction direction, for retaining the tooth on the support and for retaining an auxiliary cotter with at least one lug cooperating with the head to prevent movement in the cottering direction of the auxiliary cotter relative to the head and which receives an elastic compression member inserted between the auxiliary cotter and the main cotter wherein the auxiliary cotter is mounted slidably in the introduction direction relative to the main cotter, said improvement comprising side walls, end walls and a bottom wall on the main cotter adjacent the auxiliary cotter to form a blind cavity wherein the elastic compression member is inserted behind the auxiliary cotter to bias the auxiliary cotter outwardly into engagement with the head and wherein the side walls increase the strength of the main cotter, protect the compression member from the environment, and prevent said elements from crushing the elastic compression member.

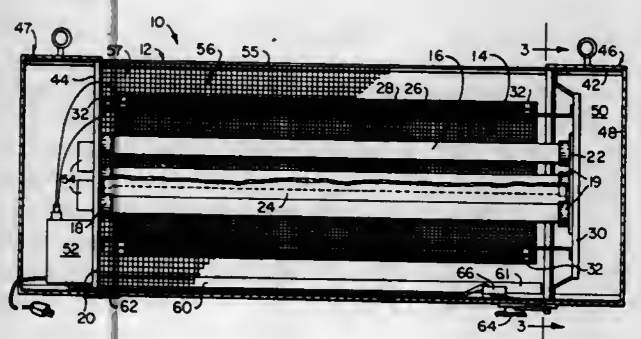
3,894,350
AUDIBLE FISHING LURE
Douglas W. Parker, 615 Rogers Ave., Fort Smith, Ark. 72901
Filed Jan. 28, 1974, Ser. No. 436,971
Int. Cl.² A01K *85/00*
U.S. Cl. 43—42.31 **6 Claims**



1. An audible, artificial fishing lure comprising:

- a substantially hollow lure body;
- a first sealed interior cavity disposed within said lure body; a pellet member disposed within said first cavity to produce audible sounds by random collisions with the interior of said first cavity as said lure vibrates when traveling through water;
- a second sealed interior cavity disposed within said lure body adjacent said first cavity, said second cavity being larger than said first cavity;
- a partition member separating said first and second cavities; and
- an aperture through said partition member for transmitting sounds produced by said pellet within said first cavity to said second cavity, said aperture having at least one dimension thereof smaller than said pellet.

3,894,351
INDOOR, HORIZONTAL INSECT KILLER
Robert E. Iannini, Milford, N.H., assignor to Rid-O-Ray, Inc., Hudson, N.H.
Filed June 20, 1974, Ser. No. 481,113
Int. Cl. A01m *1/22*
U.S. Cl. 43—112 **12 Claims**

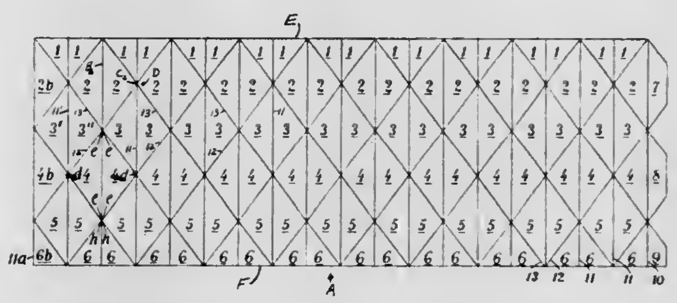


1. An electric insect killer especially for sanitary indoor use, said insect killer comprising:

- a generally polygonal, elongated enclosure adapted to depend horizontally from the ceiling of a room, said enclosure having:

- a horizontally extending bottom collection tray; a pair of vertically extending end caps of substantially imperforate sheet material; and side and top walls of meshed material to emit light and admit insects,
- fluorescent tube means encircled by a pair of concentric spaced-apart meshed electrode means, extending horizontally within said enclosure from mid-height of one said end cap toward mid-height of the other said cap,
- and reflective baffle means extending horizontally alongside said tube means, for radiating light outwardly therefrom, said tube means and baffle means, enclosed within said electrode means, being visible to an insect through the meshed side and top walls of said enclosure to attract the same for electrocution and collection in said tray.

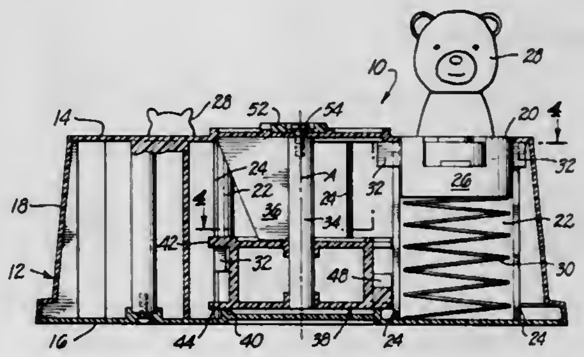
3,894,352
POLYHEDRAL ANNULAR STRUCTURES AND BLANKS FOR FORMING SAME
Rea Ferdinand Hooker, 170 W. 74th St., New York, N.Y. 10023
Filed Apr. 27, 1973, Ser. No. 355,037
Int. Cl. A63h *33/16*
U.S. Cl. 46—1 L **17 Claims**



1. A polyhedral structure which is radially substantially symmetrical about a central axis, said structure comprising a number of planar triangles hinged together at their sides so as to form a continuous multiplanar toroidal web having two edges, which structure can be rotated, about its core, into at least six different stable configurations each of which is radially substantially symmetrical about said central axis, said structure comprising congruent plane triangles arranged in at least four rows of adjacent triangles, each of said rows being a ring of single triangles arranged in alternation so that each triangle has a hinged side in common with one of its two neighbors of its row and has an apical point in common with the other of its neighbors of its row, said rows interfitting so that each triangle of each row has a side in common with a triangle of the adjacent row, the common sides within a row being infold hinges arranged within planes which radiate from and include said axis and the sides which adjacent rows have in common being outfold hinges, said apical points being situated on the intersections of infold and outfold hinges, the apical angles of said triangles being at least about 108°, each of said rows having at least 18 triangles, the structure, when in each of said stable configurations, having two sets of axially spaced apical points situated approximately at said central axis.

15. A flat blank of sheet material, said blank having means, including score lines at which said blank can be folded and edges adapted to be secured together to form a continuous web after said blank is folded at said score lines, for converting said blank to a polyhedral structure which is radially substantially symmetrical about a central axis, said structure comprising a number of planar triangles hinged together at their sides so as to form a continuous multiplanar toroidal web having two edges, which structure can be rotated, about its core, into at least six different stable configurations each of which is radially substantially symmetrical about said central axis, said structure comprising congruent plane triangles arranged in at least four rows of adjacent triangles, each of said rows being a ring of single triangles arranged in alternation so that each triangle has a hinged side in common with one of its two neighbors of its row and has an apical point in common with the other of its neighbors of its row, said rows interfitting so that each triangle of each row has a side in common with a triangle of the adjacent row, the common sides within a row being infold hinges arranged within planes which radiate from and include said axis and the sides which adjacent rows have in common being outfold hinges, said apical points being situated on the intersections of infold and outfold hinges, the apical angles of said triangles being at least 108°, each of said rows having at least 18 triangles, the structure, when in each of said stable configurations, having two sets of axially spaced apical points situated approximately at said central axis, said score lines being situated so that, on folding, they form the boundaries of said triangles.

3,894,353
TOY WHEREIN MOVEMENT OF ONE ELEMENT CAUSES MOVEMENT OF ANOTHER OF A PLURALITY OF ELEMENTS, IN APPARENTLY RANDOM SEQUENCE
Shigeo Oguchi, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed June 24, 1974, Ser. No. 482,440
Int. Cl. A63h *33/00*
U.S. Cl. 46—1 R **8 Claims**



1. A mechanical toy in which movement of one element from a first position to a second position causes any one of a series of other elements selected in an apparently random manner to be moved from a corresponding second position to a corresponding first position, said toy including:

- a housing;
- a rotor, means rotatably mounting said rotor in said housing for rotation relative thereto about an axis;
- a plurality of elements, means mounting said elements in said housing adjacent to and around the periphery of said rotor, whereby each of said elements is capable of being moved between a first and a second position relative to said housing and rotor, one of said elements normally being in its first position while the remainder of said elements are in their second positions, means for moving each said element toward its first position,
- cooperating control means located on said rotor and on each of said elements for holding all but one of said elements against movement from said second positions to said first positions while allowing the remaining one of said elements to move from said second position to said first position, said control means operating to release one of said held elements for movement to its second position and to hold all remaining said elements in said second position in response to an element in a first position being moved to its second position,
- the element moved from a second position to said first position in response to movement of an element from said first position to said second position being determined by said control means so that the element which is so moved from said second position to said first position is apparently chosen at random.

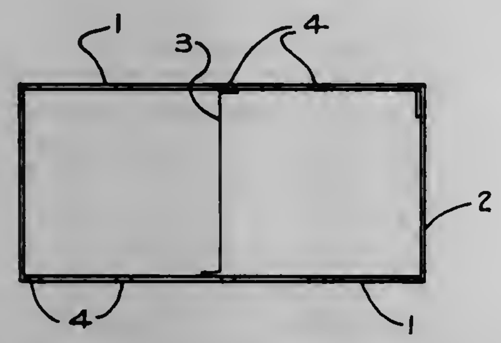
3,894,354
FOLDABLE PLAY BUILDING BLOCKS

Thomas B. Crawley, 252 Sherwood Rd., Beaconsfield, Quebec, Canada

Filed May 17, 1973, Ser. No. 361,286

Int. Cl. A63h *33/08*

U.S. Cl. 46—25 **6 Claims**



1. A play building block comprising a substantially rectangular body portion of a foldable material, said body portion having a pair of opposed side walls and a pair of opposed end walls forming a cavity within, pairs of evenly spaced-apart transversely aligned notches located on a margin of said opposed side walls, a pair of said transversely aligned notches located at each end of said side wall margins, the length of each of said side walls being an arithmetic multiple of the notch spacing and at least one foldable tie member fastened transversely between inner faces of said side walls, said tie member being located parallel to said end walls.

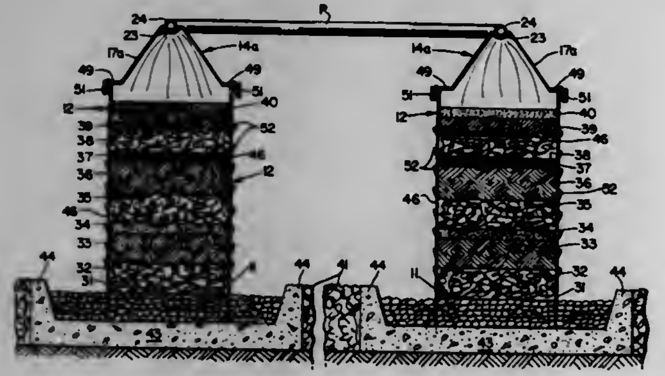
3,894,355
METHOD AND MEANS FOR AUTOMATIC FIELD GROWING OF CROPS USING SOLID AND LIQUID WASTE

Charles H. Carothers, 51 Irving Pl., Red Bank, N.J. 07701

Filed Jan. 28, 1974, Ser. No. 436,853

Int. Cl.^{2} A01G *29/00*

U.S. Cl. 47—48.5 **11 Claims**



1. A method for automatically growing food crops utilizing nitrogenous solid waste matter comprising the steps of applying a thick layer of mulching material to the surface of a field area to control weed growth in said field area; erecting perforated retainer wall elements in spaced linear paired relation in said layered mulching material to define row-like plant growing areas in side-by-side spaced relation throughout the field area; filling the row-like plant growing areas defined by said wall elements in layered relation with successive gradulated layers of loose aggregate, mulching material, top soil, alkaline potash, mulching material, and a topping layer of nitrogenous solid waste matter serving as a seasonal plant food supply; setting the plants to be grown in the aggregate layer in linear spaced relation in the side edge areas adjacently related to the retainer wall elements; and providing a fluid supply line in vertically spaced, generally centered relation above said row-like plant growing areas to supply a regulated mist-like discharge of irrigating liquid downwardly to establish a percolating flow through said layered materials to maintain a constant supply of nutrient rich liquid within the aggregate layer for root feeding the set plants.

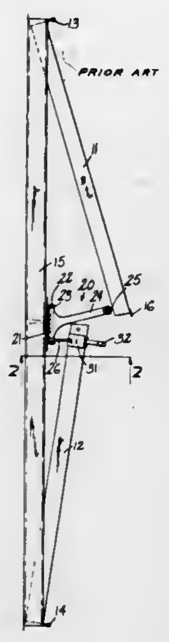
3,894,356
DOOR COORDINATOR

William B. Imhoff, Springdale, Conn., assignor to Leigh Products, Inc., Coopersville, Mich.

Filed Mar. 28, 1974, Ser. No. 455,609

Int. Cl.^{2} E05C *7/05*

U.S. Cl. 49—366 **5 Claims**



1. A door coordinator adapted to control the closing of a pair of swinging doors constituted by an active door and an inactive door hung to swing into and out of closed position beneath a head frame, the coordinator comprising a hub, means mounting the hub on the head frame for rotation about a horizontal axis higher than the top edges of the doors, a pair of arms of unequal length fixed to and projecting from the hub and having their axes in a plane containing the axis of the hub, means limiting the downward swinging movement of said arms, the longer arm being angled with respect to the hub to cause its free end to lie, when below horizontal, in the swinging path of the active door, the shorter arm having a downwardly facing substantially straight elongated cam surface, the cam surface terminating at a bottom edge lying substantially parallel to said plane, and a roller mounted on said shorter arm with its periphery projecting beyond said bottom edge adjacent to the point of termination of the cam surface, said cam surface, in the lower position of the arms, lying in the swinging path of the upper edge of the inactive door.

3,894,357
SECURITY DOOR

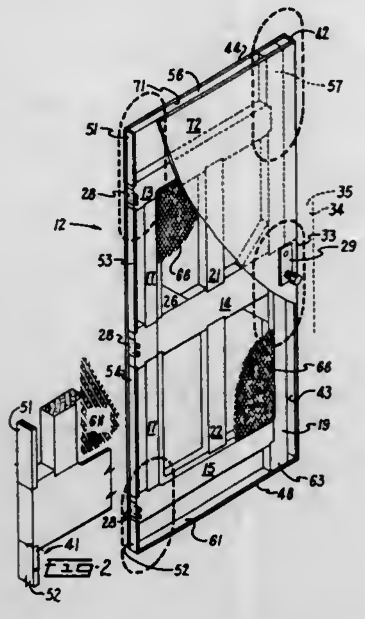
James L. Stanfield, Rancho Cordova, Calif., assignor to California Crime Technological Research Foundation, Sacramento, Calif.

Filed Mar. 28, 1974, Ser. No. 455,787

Int. Cl.^{2} E06B *3/00*

U.S. Cl. 49—503 **12 Claims**

1. A security door comprising:
a. a top rail;
b. a middle rail;
c. a bottom rail;
d. a hinge stile connected to the hinge ends of said rails;
e. a lock stile connected to the lock ends of said rails;
f. a lock mechanism mounted on said middle rail adjacent the lock end thereof;
g. a first falsework portion mounted on the lock end of said door, said first falsework portion including a strip spaced outwardly from and parallel to said lock stile, said strip being yieldable under a predetermined force bearing against said strip in a direction toward said lock stile;
the ends of said lock stile being extended to form an upper horn and a lower horn, and including a pair of second falsework portions comprising a pair of relatively yieldable strips mounted horizontally on the top of said upper horn and the bottom of said lower horn,



said strips extending horizontally the width of said door and being spaced, respectively, above said top rail and below said bottom rail;
h. a pair of planar sheaths covering both sides of said door; and,
i. an expanded metal screen panel on at least one side of said door beneath one of said sheaths.

3,894,358
MOUNTING ARRANGEMENT FOR A GRINDING WHEEL DRESSING DEVICE

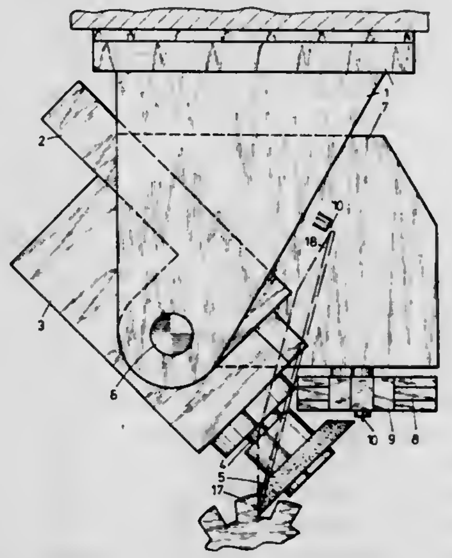
Manfred Lorenz, Coburg-Creidlitz, Germany, assignor to Kapp & Co., Werkzeugmaschinenfabrik, Coburg, Germany

Filed Jan. 29, 1974, Ser. No. 437,520

Claims priority, application Germany, Feb. 10, 1973, 2306696

Int. Cl. B24b *53/04, 53/12, 3/34*

U.S. Cl. 51—5 D **10 Claims**



1. In a milling cutter grinding machine equipped with means for holding and rotationally indexing milling cutters, and adapted especially for the grinding and regrinding of the cutting faces of profile cutters, such as envolute gear cutters and the like, a grinding and grinding wheel dressing device comprising in combination:
a grinder base;
a spindle stock assembly supported by the grinder base, said assembly including a grinder spindle carrying a grinding wheel mounted on one end thereof; the grinding wheel having a frustum-shaped outline, with a tapered peripheral grinding face oriented radially outwardly and axially toward the spindle stock, a tangent plane to said grinding face being the grinding plane;
means for pivotally adjusting the spindle stock assembly in relation to the grinder base about a pivot axis which perpendicularly intersects the spindle axis at a distance from the grinding wheel, and which also extends parallel to said grinding plane;
a grinding wheel dressing head carrying a dressing point;
means for guiding the dressing head for displacement of the dressing point along a path which determines the outline of said grinding face taper at a place on the grinding face that is located diametrically opposite the grinding locus, i.e. that place which is common to the grinding face and the tangential grinding plane; and
means for pivotingly reorienting the dressing head path, by way of pivotally adjusting the dressing head guide means, about the axis of pivotal adjustment of the spindle stock assembly.

3,894,359
DEVICE FOR CLEANING STEELWORKS MOLDS

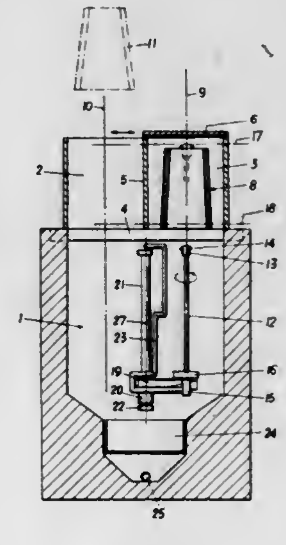
Alfred Linke, Linz, Austria, assignor to Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft, Vienna, Austria

Filed Jan. 8, 1974, Ser. No. 431,724

Claims priority, application Austria, Jan. 18, 1973, 376/73

Int. Cl. B24c *3/18*

U.S. Cl. 51—8 R **10 Claims**



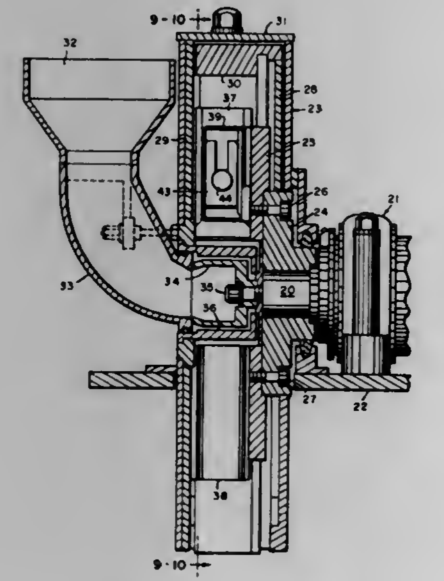
1. Apparatus in combination with a steel works foundation pit for cleaning steel works molds, said apparatus comprising: grate means positioned above an upper open end of said foundation pit;
a plurality of downwardly open chambers positioned side by side on said grate means above said foundation pit, said chambers each being arranged to receive a steel works mold for cleaning;
said chambers including lid means for closing the tops thereof; and
blasting lance assembly means comprising:
lance-carrying means including means projecting outwardly from a substantially vertical mounting axis,
lance means mounted on said lance-carrying means remote from said mounting axis, said lance means being arranged to conduct and eject a flow of pressurized cleaning medium,
means mounting said lance-carrying means for rotation about said mounting axis so as to selectively displace said lance means between

a first position wherein it is located beneath a first of said chambers,
a second position wherein it is located beneath a second of said chambers, and
means mounting said lance means for up-and-down movement and rotary movement about its own substantially vertical longitudinal axis, relative to said chambers, in each of said first and second positions;
said lance means being communicable with a supply of pressurized cleaning medium such that:
with said lance means located in said first position below a first steel works mold disposed in said first chamber, said lance means is arranged to be raised into said first mold and rotated about its own longitudinal axis while ejecting cleaning medium against said first mold, and
with said lance means being rotated about said mounting axis to said second position below a second steel works mold disposed in said second chamber, said lance means is arranged to be raised into said second mold and rotated about its longitudinal axis while ejecting cleaning medium against said second mold, as said first mold is being replaced with another mold to be cleaned.

3,894,360
SUPPORT-SHIELDING BLASTING MACHINE BLADE

John DeGroot, Tequesta, Fla., and Bernard Fuerst, Grand Rapids, Mich., assignors to Benfur Engineering Company, Grand Rapids, Mich.

Filed Apr. 30, 1974, Ser. No. 465,550
Int. Cl. B24c *5/06*
U.S. Cl. 51—9 R **2 Claims**



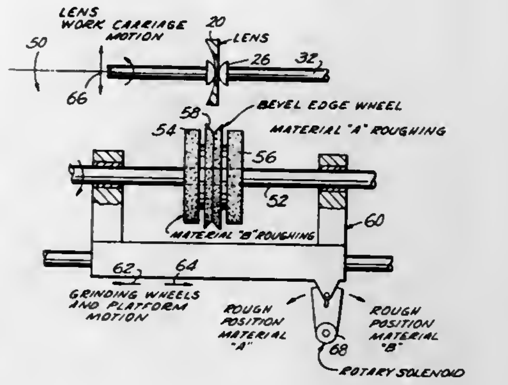
1. A blade for a blasting machine, said blade having means on a portion of the back surface thereof adapted to interengage with supporting means, wherein the improvement comprises:
an offset shielding portion extending transversely to said back surface along the inner portion of said blade normally inward of said support means.

2. A blasting machine having a rotor including at least one blade normally secured at the back thereof in a substantially radial position to bracket means mounted on a rotor frame, said blade terminating at the inner extremity thereof radially outward from the axis of rotation of said rotor, said machine also having feeding means adapted to deposit particulate abrasive material in the space defined by the path of rotary movement of the radially inner end of said blade, wherein the improvement comprises:
an offset shielding portion on said blade normally disposed radially inward from the portion of said bracket means providing a supporting surface for said blade, said shielding portion extending transversely from the back of said blade to form an abutment opposite the inner extremity of the junction of said blade and bracket means.

3,894,361
LENS GRINDING MACHINE

Jean Georgiadis, Flushing, N.Y., and Donald Leibowitz, Trenton, N.J., assignors to Dimelp Optical Co. Inc., New York, N.Y.

Filed Sept. 3, 1974, Ser. No. 502,520
Int. Cl. B24b *9/14, 17/00*
U.S. Cl. 51—101 LG **10 Claims**

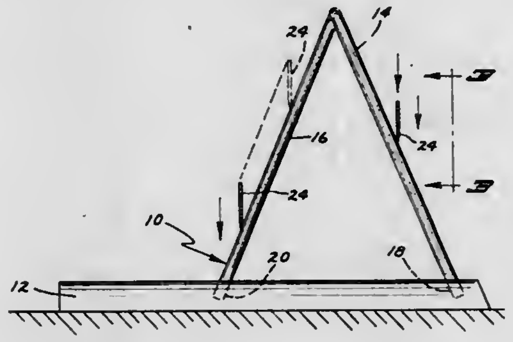

LENS WORK CARRIAGE MOTION
20
LENS
50
26
32
66
58
BEVEL EDGE WHEEL
54
MATERIAL "A" ROUGHING
56
52
60
MATERIAL "B" ROUGHING
62
64
GRINDING WHEELS AND PLATFORM MOTION
ROUGH POSITION MATERIAL "A"
ROUGH POSITION MATERIAL "B"
68
ROTARY SOLENOID

1. A machine for selectively grinding the peripheral edges of both glass lens materials and plastic lens materials to a predetermined size and shape comprising a first axial shiftable shaft means having a first rough grinding wheel for rough grinding a glass lens to a rough size and shape corresponding to a first predetermined size and shape, a second rough grinding wheel for rough grinding a plastic lens to a rough size and shape corresponding to a second predetermined size and shape, and a first common bevel edge grinding wheel for finishing either said rough ground plastic lens or said rough ground glass lens, each of said grinding wheels being mounted on said first shaft for axial movement therewith and rotational movement thereabout, a work carriage having a rotary lens holder capable of holding either said glass lens or said plastic lens, said lens holder being mounted on a frame for movement toward and away from said grinding wheels, said first shaft being axially movable to selectively dispose each of said grinding wheels adjacent said held lens for grinding engagement therewith, movement control means for controlling said movement of the lens holder frame and shifting movement of said first shaft to bring the edge of the held lens into selective engagement first with the appropriate rough grinding wheel dependent on whether said held lens is plastic or glass and thereafter with said common bevel edge grinding wheel, a master template means for controlling the engagement of the held lens with the selected grinding wheel selectively adjacent thereto for controlling the shaping of said held lens, drive means for rotatably driving said rotary lens holder, and switch means operatively connected to said lens holder drive means and said master template means for causing rotation of said held lens and the operation of said movement control means under control of said master template means primarily as a function of the finishing to the associated predetermined size of successive portions of the edge of said held lens by either said glass lens rough grinding wheel or said plastic lens rough grinding wheel and said common bevel edge grinding wheel dependent on the lens material whose peripheral edge is being ground.

3,894,362
BLADE SHARPENER

Louis N. Graves, Anoka, Minn., assignor to Thelma L. Graves, Anoka, Minn.

Filed May 28, 1974, Ser. No. 473,681
Int. Cl. B24d *15/08*
U.S. Cl. 51—211 R **1 Claim**

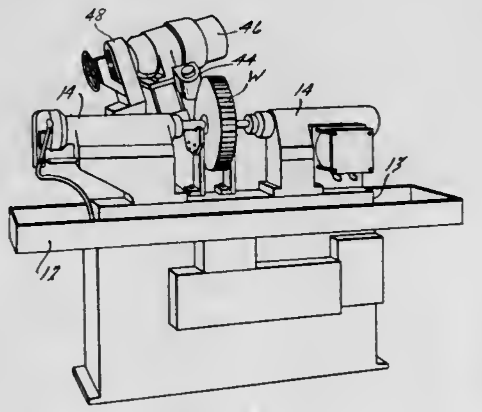


1. A blade sharpener including a base, a pair of relatively thin but elongated sharpening rods mounted in the base to extend upwardly from the base in acute angular relationship to said base, said rods lying in substantially the same plane, and the acute angle between each rod and the base being the same as that of the other rod and the base, each rod leaning in an opposite direction from the base, wherein said rods are mounted in said base in spaced relation to each other and wherein upper portions of said rods terminate in adjacent relation to each other.

3,894,363
METHOD OF HONING GEARS

Russell W. Anthony, Fairhaven; Carl H. Motz, Gaylord, and Richard W. Tersch, Grosse Pointe, all of Mich., assignors to Lear Siegler, Inc., Santa Monica, Calif.

Continuation-in-part of Ser. No. 381,791, July 23, 1973, abandoned, which is a division of Ser. No. 159,734, July 16, 1971, Pat. No. 3,765,129. This application Apr. 29, 1974, Ser. No. 465,093
Int. Cl. B24b *1/00*
U.S. Cl. 51—287 **5 Claims**

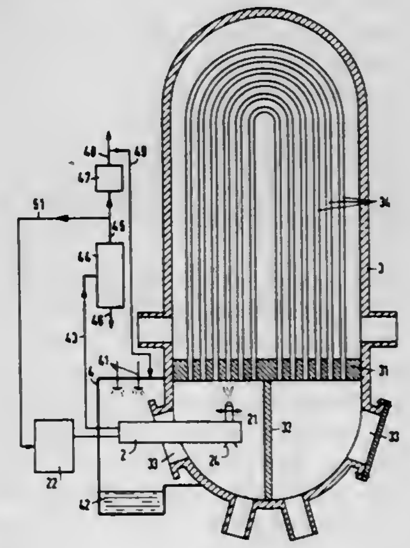


1. The method of honing a succession of gears on an automatically cycled and loaded machine which comprises a gear support and a hone support for carrying a gear and a gear-like hone for rotation in mesh, the machine comprising means mounting one of said supports for periodic adjustments toward and away from the other of said supports and means mounting the other of said supports for free movement toward and away from said one support, which comprises establishing an initial position for said other support in which a work gear and a hone in new condition are in tight mesh with predetermined clearance between the crests of hone teeth and the bottoms of spaces between gear teeth, providing a succession of work gears on said gear support, biasing said other support toward said one support to establish honing pressure between the gears and hone, and driving one of said supports in rotation, thereby honing said gears and as a consequence thereof continually removing material from the hone by wearing away of material from the sides of the hone teeth, providing additional movement of said other support toward said one support to maintain the hone in tight mesh with each of the succession of work gears, sensing the position of said other support, and terminating the honing operation when the said other support is moved by the biasing force as a result of hone wear to a position which corresponds to an amount of hone wear which requires replacement of the hone by one in new condition, thereafter providing a hone in new condition and meshing the hone in tight mesh with a work gear while positioning said other support in said initial position, thereby reestablishing a position for said one support which it will occupy during the honing of a second succession of work gears as determined by the precise size of the replacement hone, maintaining said one support in said re-established position while honing the second succession of work gears until movement of said other support during a honing operation causes said other support to reach a position requiring replacement of the honing tool with a new or reconditioned tool, and thereupon terminating the honing of said second succession of work gears.

3,894,364
METHOD OF CLEANING NUCLEAR POWER PLANTS

Roland Korn, Nurnberg; Gunter Seyd, and Uwe Paulsen, both of Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

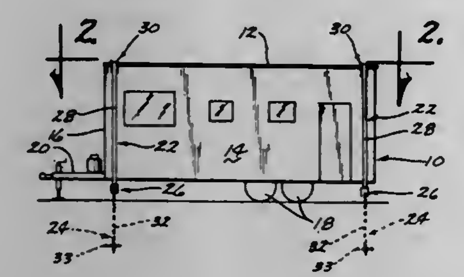
Filed Dec. 3, 1973, Ser. No. 420,793
Claims priority, application Germany, Dec. 4, 1972, 2259345
Int. Cl. B24c *1/00*
U.S. Cl. 51—320 **4 Claims**



1. In a process for cleaning components of nuclear reactor power plants which have been wetted during the operation with H_2O or D_2O, particularly for the decontamination of radio-actively contaminated regions by mechanically abrading the surfaces to be cleaned down to the passivation layer of the base material by means of boron trioxide particles with the aid of compressed gas, producing an atmosphere around said regions of said gas having suspended therein boron trioxide particles and solid particles abraded from said surfaces, the improvement which comprises withdrawing said gas containing suspended boron trioxide particles and abraded solid particles from said regions, passing said gas containing suspended particles through a vortex separator to effect separation of the particles from the gas, discharging the separated particles and discharging the gas from the vortex separator after separation of the particles.

3,894,365
DEVICE AND METHOD FOR HOLDING DOWN MOBILE HOMES

Donald W. Abbott, Des Moines, Iowa, assignor to Windtie Corporation, Des Moines, Iowa
Continuation-in-part of Ser. No. 371,263, June 18, 1973. This application Sept. 16, 1974, Ser. No. 506,753
Int. Cl. E04h *12/20*
U.S. Cl. 52—23 **5 Claims**

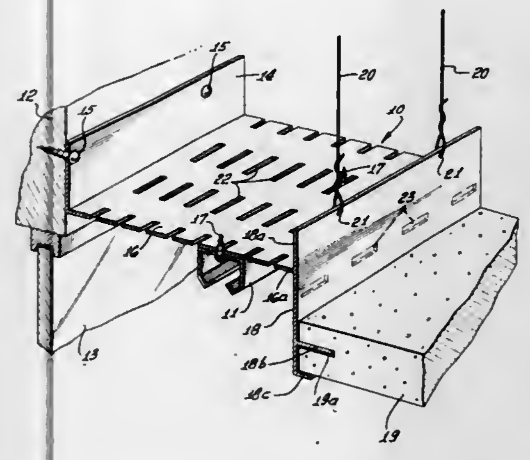


1. A hold-down device for anchoring a mobile home to the ground, said mobile home having a top, opposite walls extending downwardly from the lateral edges of said top, and opposite ends, said hold-down device comprising: an elongated flexible strap of single thickness extending over said top of said mobile home and having opposite ends extending vertically downwardly along said sidewalls of said mobile home;
said strap being of polyester material;
corner brackets being mounted at the corners of said mobile home where said sidewalls meet the edges of said top wall, said corner brackets having rollers thereon, said straps extending over said rollers whereby said rollers facilitate transfer of tension along the length of said straps, said brackets having lateral flanges thereon embracing the opposite edges of said strap so as to maintain said strap in alignment over said bracket;
a pair of anchor elements anchored in the ground adjacent said opposite ends of said straps, said anchor elements comprising an elongated rod having helical blade means on the lower end thereof, said blade means being buried in the ground;
strap gripping means mounted on the upper end of each of said rods for securing said opposite ends of said straps to said rods;
at least one of said gripping means comprising a winch having a tubular frame with at least one open end, a shaft being rotatably mounted within said tubular frame and being connected to said strap, lock means within said frame for selectively locking said shaft against rotation, said shaft means extending outside said frame and having a grasping member positioned outside said frame.

5. A method for anchoring a mobile home to the ground, said mobile home having a top, opposite walls extending downwardly from the lateral edges of said top, and opposite ends, said method comprising:
anchoring anchor elements in the ground on opposite sides of said mobile home;
screwing anchor elements into the ground on opposite sides of said mobile home, said anchor elements each having an auger-like lower end, a shaft extending upwardly therefrom, and an eyelet on the upper end of said shaft;
securing one end of a polyester strap to one of said eyelets of said shaft;
placing a pair of L-shaped brackets each having a roller at the corner thereof over the corners between said top and side walls of said mobile home,
extending said strap over the top of said mobile home and aligning said strap over said L-shaped brackets so that said strap bears on said rollers as it passes over said corners of said mobile home,
wrapping the other end of said strap around a winch;
attaching said winch to the other of said anchor elements by extending a bolt through said eyelet and a bolt hole in the frame of said winch;
tightening said strap by rotation of said winch to bring said strap to a taut condition.

3,894,366
DRAPERY POCKET

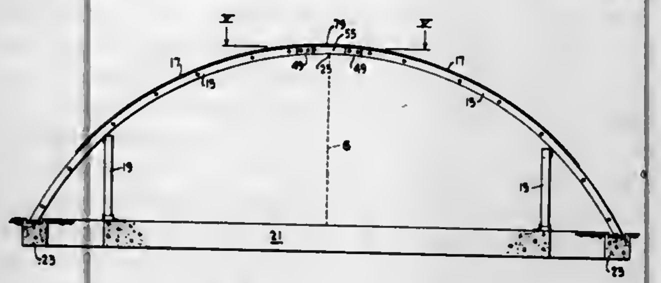
Robert W. Arnett, 1030 Stoneridge Dr., Pasadena, Calif. 91105
Filed Nov. 23, 1970, Ser. No. 92,065
Int. Cl. E04b *1/38*
U.S. Cl. 52—37 **7 Claims**



1. An elongate, extruded, unitary drapery pocket, comprising:
a. a fastening plate vertically attachable to the interior frame of a building,
b. a drapery track support panel extending horizontally from said fastening plate, said support panel being multi-apertured to permit ventilation therethrough, said support panel accommodating the attachment of a drapery track to the underside thereof using fasteners extending through some of said apertures, with sufficient apertures remaining uncovered by said track to permit the flow of ventilating air through said pocket between a drapery supported by said track and said building interior frame and
c. a ceiling tile retaining panel projecting vertically from said support panel to retain ceiling tile at a drapery track concealing level below said support panel, a section of said retaining panel extending upwardly from said support panel for wired attachment to said building frame.

3,894,367
DOME-SHAPED STRUCTURE

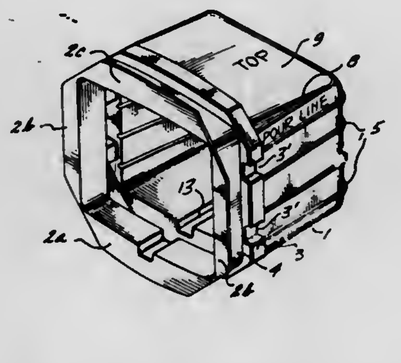
Joseph D. Yacoboni, 740 Olivant Pl., Pittsburgh, Pa. 15206
Continuation of Ser. No. 177,994, Sept. 7, 1971, abandoned. This application July 18, 1973, Ser. No. 380,290
Int. Cl. E04b *1/32*
U.S. Cl. 52—80 **13 Claims**



1. A structure comprising:
a. an annulus adapted to rest on the earth as a foundation;
b. a plurality of load bearing ribs extending from one portion of said annulus to a diametrically opposed portion of said annulus; each of said ribs intersecting at a common locus wherein said ribs constitute portions of great circle planes and lie within the great circle arcs that are formed by said great circle planes intersecting a common sphere; each rib being fixedly secured at said common loucus and said annulus so that all of said ribs are interconnected to provide an integral structure;
c. a base adapted to rest on the earth that is concentric to said annulus;
d. a roof deck fixedly secured to at least a part of said ribs and extending from said common locus to an approximate small circle that is intermediate said common locus and said annulus; and
e. a vertical side covering extending from said base forming an enclosure defining the interior of said structure; said side covering being fixedly secured to said ribs and side base whereby an integral structure is provided.

3,894,368
BEAM END SOCKET CONCRETE FORM BOX

Percy Crofoot, Star Rt. 2, Box 39A, La Pine, Oreg. 97739
Continuation-in-part of Ser. No. 266,562, June 27, 1972, abandoned. This application Feb. 7, 1974, Ser. No. 440,337
Int. Cl. E04c *5/20*
U.S. Cl. 52—105 **2 Claims**

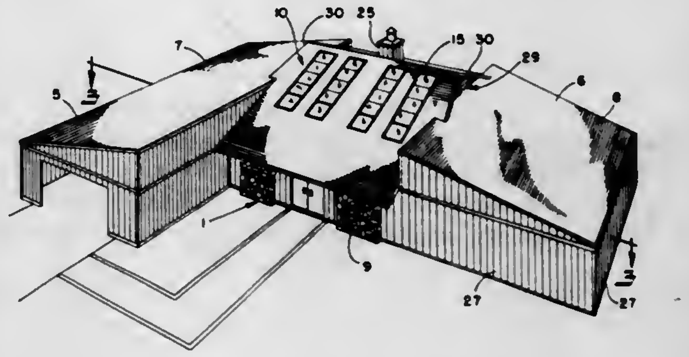


1. A beam end socket concrete form box comprising a box body of generally rectangular cross section having two opposite upright generally parallel sides and an open end, edge flanges projecting outwardly from said two opposite upright sides, respectively, at said box body open end, elongated outward projection means projecting from said two upright sides, respectively, of said box body, each of said projection means being spaced from and having its length extending generally parallel to the flange projecting outwardly from its upright side for embedment in concrete to prevent movement of said box body in a direction perpendicular to said box body open end, the inner side of said projection means being hollow for providing said projection means with a thin wall and said projection means being interrupted at locations for enabling nails to be driven through said flanges at locations in registration with the interruptions in said projection means, said box body having a plurality of elongated parallel generally horizontal ribs on its upright sides at the side of said projection means opposite said edge flanges for stiffening said box body upright sides, and index lines on the upright sides of said box body disposed substantially in a plane perpendicular to the plane of said box body open end for indicating the level to which concrete is to be poured.

3,894,369
BUILDING STRUCTURES

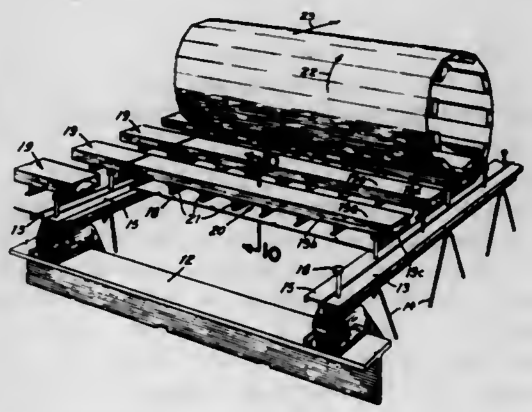
Robert F. Schmitt, 399 Crossbrook Dr., and Edward A. Schmitt, 690 Wyleswood Dr., both of Berea, Ohio 44017
Filed Feb. 8, 1974, Ser. No. 440,720
Int. Cl.² E04H *13/00;* **F03G** *7/02*
U.S. Cl. 52—173 **15 Claims**

1. A building structure having plural exterior walls providing interior space bounded by said exterior walls, and a separate enclosed area exterior of said interior space bounded by at least two of said exterior walls, said enclosed area having a roof at least portions of which are transparent to permit passage of solar energy therethrough for heating said enclosed area, and said exterior walls bounding said enclosed area having substantial glass areas providing natural lighting and outdoor viewing from said enclosed area to said interior space, said solar heated enclosed area minimizing the heat loss from said interior space through said glass areas.



3,894,370
REINFORCED STRUCTURES INCORPORATING STRIP DECK MATERIAL

Stephen Parazader, 44 Oak Ave., Dundas, Ontario, Canada
Continuation-in-part of Ser. No. 295,025, Oct. 4, 1972, abandoned, which is a continuation-in-part of Ser. No. 151,340, June 9, 1971, abandoned. This application Aug. 30, 1974, Ser. No. 502,245
Int. Cl. E04f *17/08*
U.S. Cl. 52—173 **12 Claims**

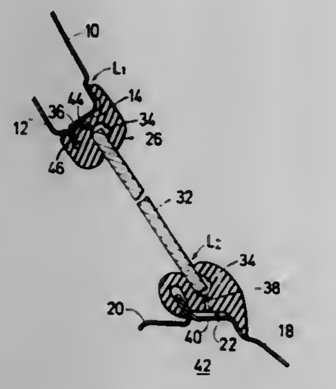


1. A reinforced structure comprising:
a. a support structure providing two spaced support surfaces,
b. a plurality of parallel, spaced, elongated, load-bearing duct members of closed cross-section extending between the said spaced support surfaces and over at least a portion of each of the said surfaces,
c. shear-resisting connecting means disposed between each support surface and the respective portion of each duct member extending thereover, whereby each duct member constitutes a beam member supported by the support surfaces,
d. void-free shear-resisting connecting means connected to the duct members between the said portions which extend over the surfaces,
e. a thin continuous strip extending beneath and spaced from the duct members over the space between the spaced support surfaces, and connected to the last-mentioned connecting means to be supported from the duct member to constitute formwork for a superimposed layer of settable material and reinforcement for the layer when set,

f. and a void-free layer of set, settable material that has been set on the strip as formwork therefor, the layer enclosing the duct members which thereby act as reinforcement for the layer when set, the layer also enclosing the connecting means and filling the spaces between the strip and the undersides of the duct members.

3,894,371
VEHICLE WINDOW ASSEMBLY

Kazuo Yamaha, Tokyo, Japan, assignor to Nissan Motor Company Limited, Yokohama, Japan
Filed Mar. 8, 1974, Ser. No. 449,532
Claims priority, application Japan, Mar. 9, 1973, 48-28649
Int. Cl. E06b *7/14*
U.S. Cl. 52—209 **1 Claim**



1. In a vehicle having a passenger compartment and an engine compartment, a vehicle body having a window frame defining a window opening, an exterior surface exposed outward of the vehicle and terminating in at and merging into said window frame, and flange structure projecting inwardly from said frame with respect to said window opening, said frame having a plurality of air vent apertures formed therethrough at upper portions thereof and opening to the passenger compartment and having a plurality of drain apertures formed therethrough at lower portions thereof and opening to the engine compartment;

a window pane; and

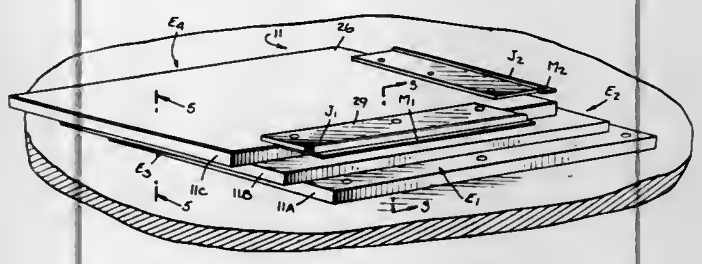
a weatherstrip sealingly mounted to said flange structure and having a lip sealingly engaging said exterior surface, said weatherstrip being formed with oppositely opening channel means for receiving an edge of said window panel sealingly to provide a continuous drain passageway around said window pane, with a plurality of first holes therethrough aligning with said air vent apertures and opening to said drain passageway, and with a plurality of second holes alining with said drain apertures and opening to said drain passageway, said first and second holes being constructed and arranged such that water entering a space between upper portion of said window frame and upper portion of said weatherstrip is drained through said first hole, said drain passageway and said drain apertures and air in the passenger compartment is allowed to enter said drain passageway through said air vent apertures and said first holes.

3,894,372
CRYOGENIC INSULATING PANEL SYSTEM

William Melchior Roberts, Blauvelt, N.Y., and George D. Dohn, Park Ridge, N.J., assignors to Baltek Corporation, Northvale, N.J.
Filed Jan. 8, 1973, Ser. No. 321,835
Int. Cl. B32b *3/10, 3/14*
U.S. Cl. 52—223 R **16 Claims**

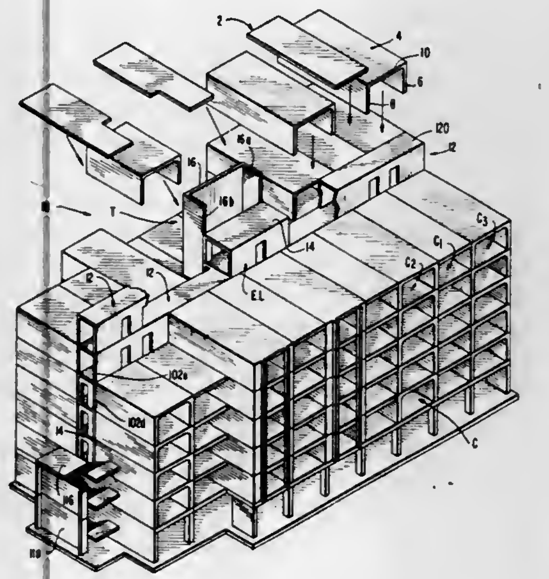
1. A thermal jacket for a cryogenic container, the jacket being formed by a system of interfitting modular panels, all of which are attachable to the container wall, each panel comprising:

a plurality of layers which are laminated together and are offset with respect to each other to define a pair of adjacent stepped edges and a pair of adjacent reversely-stepped edges, the stepped edges of the panels interfitting with complementary reversely-stepped edges of adjoining panels in the system, and the reversely-stepped edges interfitting with complementary stepped edges of adjoining panels in the system; each layer being composed of a main frame within which is fitted a unitary core of rigid foam plastic insulation material, the frame being made of balsa wood material that contracts to a lesser degree than the foam-plastic material at cryogenic temperatures, and a compressed batting formed of thermal insulating material interposed between the core and the frame, which batting expands when the panel is subjected to cryogenic temperatures, thereby avoiding gapping.



3,894,373
INDUSTRIALIZED BUILDING CONSTRUCTION

John H. Willingham, 1280 Estate Drive, Memphis, Tenn. 38117
Continuation of Ser. No. 80,641, Oct. 14, 1970, abandoned, which is a continuation-in-part of Ser. No. 807,217, March 14, 1969, abandoned. This application May 22, 1973, Ser. No. 362,774
Int. Cl. E04h *1/04*
U.S. Cl. 52—236 **3 Claims**



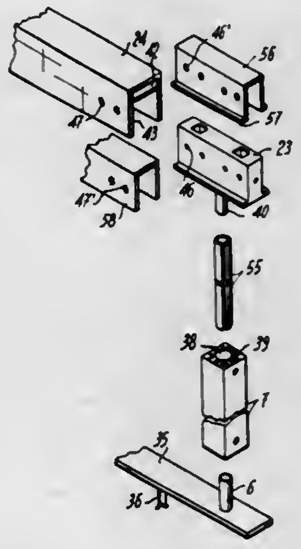
1. A building construction for human occupancy having a plurality of superposed internal cells each including at least a floor, a ceiling, and a pair of oppositely disposed side walls, comprising:

a plurality of discrete enlongated channel-shaped elements forming portions of said cells and including first, second, third, fourth, fifth and sixth elements of said plurality of elements, each of said elements being precast of concrete material and having a web and a pair of legs integral with and extending substantially normal to said web along opposite sides thereof, the legs and web of each said element defining respective opposite wall and ceiling portions of a cell, the legs of each said element extending substantially the entire distance between the floor and ceiling of said cells sufficiently to at least accommodate a human being standing in an erect position on the floor of said cell and for a distance at least 7 feet, each of said elements having a length greater than the width thereof between said legs, said second channel-shaped element being superposed over said first channel-shaped element to form a pair of superposed cells with the legs of said second element lying in substantial vertical alignment with the respective legs of the underlying first element, the web of said first element forming a floor for the second cell defined by said second element, said fourth channel-shaped element being superposed over said third channel-shaped element to form a pair of superposed cells with the legs of said fourth element lying in substantial vertical alignment with the respective legs of the underlying third element, the web of said third element forming a floor for the fourth cell defined by said fourth element, said sixth channel-shaped element being superposed over said fifth channel-shaped element to form a pair of superposed cells with the legs of said sixth element lying in substantial vertical alignment with the respective legs of the underlying fifth element, the web of said fifth element forming a floor for the cell defined by said sixth element, the cells defined by said first, third and fifth elements lying at a common elevation while the cells defined by said second, fourth and sixth elements lie at a common elevation above the first-mentioned elevation, said third and fourth elements being angularly disposed relative to said first and second elements such that the end edges of the legs and webs of said third and fourth elements at like ends thereof lie in respective close juxtaposition with one of the legs of each said first and second elements on like sides thereof, means connecting the end of said fourth element to said second element and connecting the end of said third element to said first element, the one leg of each said first and second elements being superposed one over the other, the one leg of said first element having an opening providing for access between the adjacent cells formed by said first and third elements including through the end of said third element, the one leg of said second element having an opening providing for access between the adjacent cells of said second and fourth elements including through the end of said fourth element, said fifth and sixth elements being angularly disposed relative to said first and second elements such that the end edges of the legs and webs of said fifth and sixth elements to like ends thereof lie in respective close juxtaposition with said one leg of each said first and second elements, means connecting the end of said sixth element to said second element and connecting the end of said fifth element to said first element, said one leg of said first element having an additional opening providing for access between the adjacent cells formed by said first and fifth elements including through the end of said fifth element, and said one leg of said second element having an additional opening providing for access between the adjacent cells of said second and sixth elements including through the end of said sixth element.

3,894,374
SET OF ELEMENTS FOR THE CONSTRUCTION OF BUILDINGS

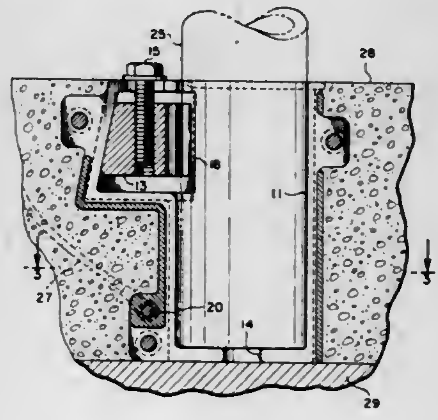
Pierre Faucheux, Paris, France, assignor to Etablissement Fresa, Vaduz, Liechtenstein
Filed Oct. 1, 1973, Ser. No. 402,592
Claims priority, application Switzerland, Sept. 29, 1972, 14315/72; France, Apr. 3, 1973, 73.12007; Mar. 15, 1973, 73.9326; Switzerland, June 25, 1973, 9233/73
Int. Cl. E04b *1/00;* **E04c** *1/04*
U.S. Cl. 52—250 **1 Claim**

1. A building structure framework comprising, a plurality of base plates including anchoring projections depending from the bottom surface thereof and tubular protuberances extending vertically from the upper surface thereof, said base plates embedded in concrete footings with the protuberances projecting through and above said footings, hollow posts fitted over said protuberances, beam supporting members, hollow studs depending from said supporting members and connected to the tops of said posts, said beam supporting members having a plurality of vertically disposed hopper-like openings, hollow beams mounted on said supporting members, said beams having a longitudinally extending slot in their upper wall, a reinforcing bar member fitted in each of said posts and extending into said hollow studs of said beam supporting members to connect said protuberances to said hollow studs, and upon pouring concrete through said slot in the upper surface of said beams, said concrete fills the hollow posts, the hollow studs and the vertically disposed openings in said beam supporting members and said beams providing an integrated structural framework.



3,894,375
POLE BASE

Albert W. Lindberg, Jr., 179 W. Fifth St., Bayonne, N.J. 07002
Filed Jan. 22, 1974, Ser. No. 435,546
Int. Cl. E02d *27/00*
U.S. Cl. 52—298 **5 Claims**



1. A pole base for securing a pole to a surface area comprising:

a two-piece housing having a pole receiving opening defining a cylindrical hole, and a cavity positioned adjacent to the opening and communicative to one side wall of the cylinder, said cavity having an inclined wall sloping toward the opening, said housing having an aperture adjacent to said cylindrical hole and communicative with said cavity;

a wedge having an inclined surface for sliding contact with the inclined wall of the cavity and disposed within said cavity, said wedge having a pole engaging surface communicative with said cylindrical surface and having a threaded bore in one surface; and

a screw bolt disposed through the aperture in said housing and engaging said threaded bore for moving said wedge within said cavity so that the movement of said wedge toward the opening of the pole base against said inclined wall forces said wedge into the cylindrical area.

3,894,376

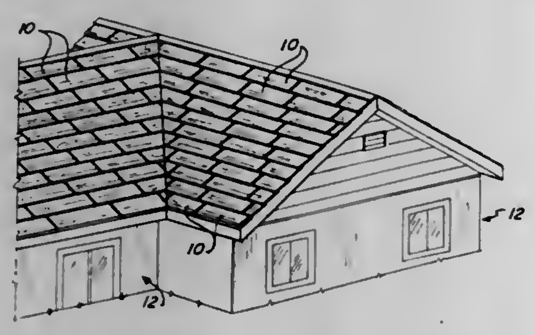
ROOFING MATERIAL AND METHOD OF LAYING SAME

Eugene L. Shearer, Englewood, Colo., assignor to Windarama Shingles System, Inc., Denver, Colo.

Filed Dec. 17, 1973, Ser. No. 425,252

Int. Cl. E04d *1/12*

U.S. Cl. 52—518 **11 Claims**



1. A shingle unit adapted to be laid with other like shingle units in establishing a surface covering system comprising:

a generally rectangular under sheet having a bottom edge; a generally rectangular over sheet selectively positionable in face-to-face relationship with the under sheet and having a bottom edge in substantial alignment with the bottom edge of said under sheet, said over sheet being offset along its length relative to said under sheet to define an overhang portion of the over sheet;

the end of said sheet opposite from the overhang portion thereof having a tab portion extending away therefrom against which the overhang portion of an adjacent shingle can abut to establish an exposed gap between over sheets of adjacent shingle units;.

hinge means formed by a strip of cloth material impregnated with an asphalt tar material bonded to said over and under sheets adjacent the bottom edges thereof connecting said under sheet to said over sheet along said bottom edges thereof whereby a course of said shingle units can be laid in overlapping relationship with a portion of the under sheet of one shingle unit lying beneath the overhang portion of the over sheet of an adjacent shingle unit; and

an elongated spacer strip releasably connected along an edge thereof to the under sheet at a location spaced from the bottom edge of the under sheet and adapted to be removed from the under sheet and secured in a position along and adjacent to the bottom edge of the under sheet between the under sheet and the over sheet to increase the thickness of said hinged connection therebetween.

3,894,377

FASTENER CLIP

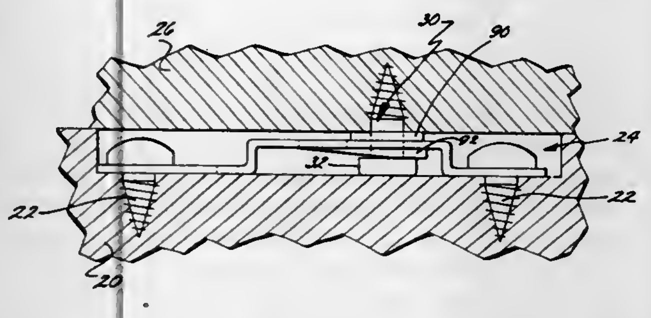
Russell M. Welch, Grand Rapids, Mich., assignor to Modular Systems, Inc., Fruitport, Mich.

Filed Jan. 21, 1974, Ser. No. 434,870

Int. Cl.² F16B *12/22*

U.S. Cl. 52—584 **15 Claims**

1. A fastener clip for use in a joint structure comprising, in combination: a one-piece metal plate having an end flange and a raised portion connected thereto by a wall means, said metal plate being made of a strong resilient material; means defining a slot formed in said raised portion, said slot having an access opening at one end to receive a stud having an enlarged head, said sides of said slot having a first portion extending from said access opening to a transition point intermediate said opening and other slot end and a second portion extending from said other slot end to said transition point, said first side portions being resilient and tapered inwardly toward each other to said transition point, the width of said slot being a minimum at said transition point, said second side portions extending from said transition point and spaced from each other a distance greater than the said minimum slot width, said transition point forming a step acting as a lock whereby a stud having a shaft diameter slightly less than the spacing of said second slot side portions and an enlarged header portion is positioned in said access opening of said slot and moved longitudinally to said other end, the shaft of said stud flexing said tapered portions which portions snap back into their normal position when said shaft is moved beyond said transition point and locked into said second slot portions to prevent unintentional removal of said stud from said fastener.



3,894,378

BOX GIRDER

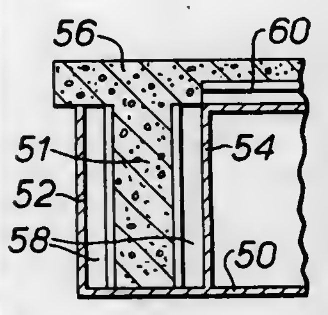
Frederick Harold Needham, Bedford, England, assignor to British Steel Corporation, London, England

Continuation of Ser. No. 310,977, Nov. 30, 1972, abandoned. This application June 25, 1974, Ser. No. 483,019

Claims priority, application United Kingdom, Dec. 3, 1971, 56284/71

Int. Cl. E04b *1/16, 5/18;* **E04c** *3/30*

U.S. Cl. 52—731 **3 Claims**



1. A box girder having an open-topped end box and adapted to have concrete cast over its top surface and into the end box, comprising: a bottom wall, a pair of side walls, an outer end wall fixed to said bottom and side walls, an inner end wall spaced from said outer end wall and forming a side wall of the open-topped end box, a top wall terminating at one end adjacent said inner end wall, at least one flanged stiffening member fixed to and upstanding from the external surface of said top wall, said stiffening member extending along the length of said top wall and being substantially longitudinally aligned with the longitudinal axis of the box girder, at least one stress bearing diaphragm mounted within the box girder and extending transversely thereof, and at least one elongate strengthening member fixed to and extending downwardly upon an internal side surface of said open-topped end box, whereby when concrete is cast onto the external surface of said top wall and into the end box to form a composite structure with the box girder, the stiffening member and the strengthening member transmit shear loads between the concrete and the box girder.

3,894,379

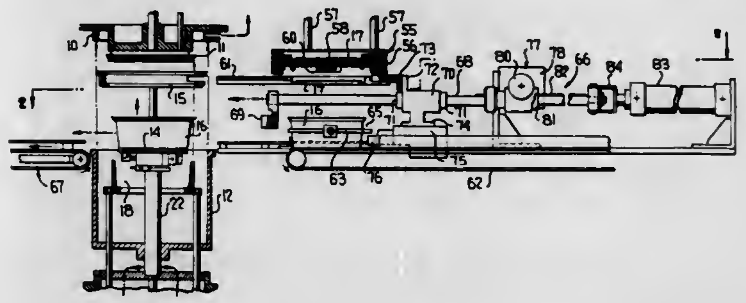
METHOD OF CLOSING A FLEXIBLE CONTAINER

Dietrich K. Naggert, Calumet, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Division of Ser. No. 117,305, Feb. 22, 1971, Pat. No. 3,717,971. This application Oct. 17, 1972, Ser. No. 298,420

Int. Cl. B65b *7/28, 1/24*

U.S. Cl. 53—40 **2 Claims**



1. A method of closing a flexible container comprising the steps of horizontally sliding a container of the type including a body and a seaming flange onto a support beneath a seaming head into vertical alignment therewith, vertically moving a mold first into telescoped relation over the support and then over the container, using said mold to lift the container off of said support, placing a closure element on the container, further using said mold solely by relative vertical forces between the container and the mold to shape the container body and support the container seaming flange while closing the container by securing the closure element thereto utilizing said seaming head; and in a single pushing operation pushing the closed container from said support, moving a stop on said support into a container stopping position, and independently pushing another container onto said support and positioning the same against said stop.

3,894,380

BOX SEALER & CLOSER

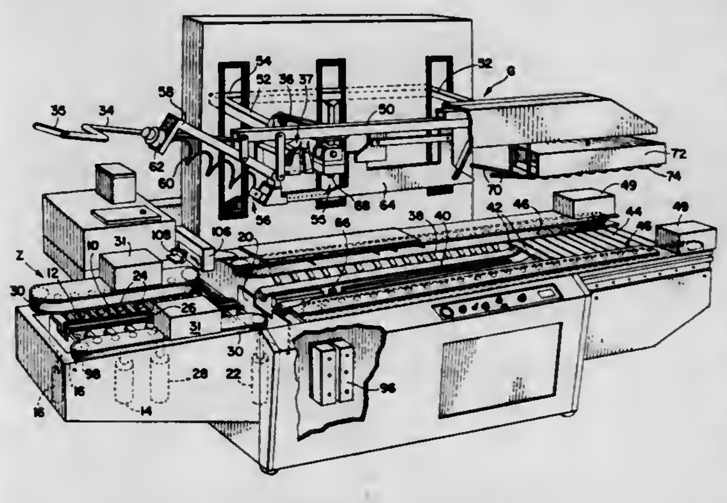
Erland Gunnar Lorantz Poulsen, 776 W. Shore Blvd., Bay Ridges, Ontario, Canada

Filed Mar. 18, 1974, Ser. No. 451,939

Claims priority, application Canada, Apr. 6, 1973, 168629

Int. Cl. B65b *57/02, 7/20*

U.S. Cl. 53—75 **23 Claims**



1. Apparatus for sealing and closing boxes of different sizes, said apparatus having movable sealing closing means, said boxes moving into said movable sealing and closing means in sequence one after the other, wherein the improvement comprises;

means for closing a portion of the top of a box and sensing the height of such closed portion prior to entry into said sealing and closing means;

height signal generating means responsive to said height sensing means, and,

means for adjusting the height of said sealing and closing means, upwardly or downwardly in response to a height signal, said adjustment being completed prior to entry of said box into said sealing and closing means.

3,894,381

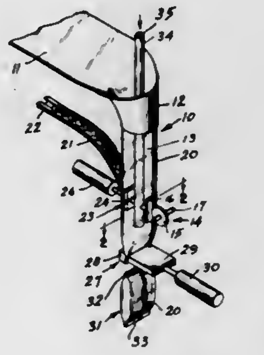
METHOD AND MEANS FOR ATTACHING FITMENTS TO A BAG OR POUCH ON A PACKAGING MACHINE

William C. Christine, and William E. R. Watt, both of Allentown, Pa., assignors to INPACO, Allentown, Pa.

Filed June 21, 1973, Ser. No. 371,966

Int. Cl.² B65B *9/08*

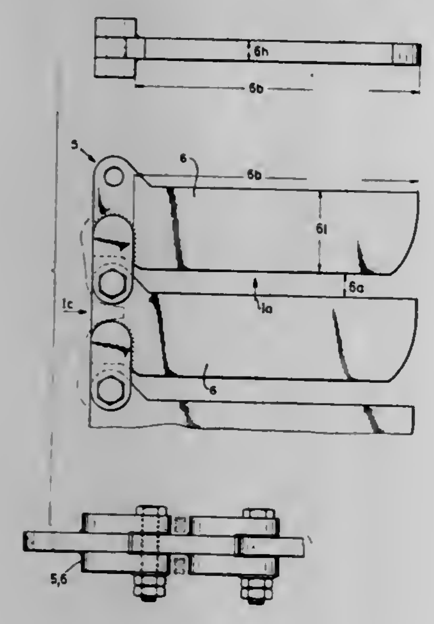
U.S. Cl. 53—128 **1 Claim**



1. Apparatus for forming, filling and sealing a pouch and simultaneously attaching a dispensing fitment thereto comprising a substantially flat strip of heat sealable material of indefinite length, die means for forming a portion of said strip into a hollow tubular member with overlapping edges, filling tube means extending through said die member and having a discharge end located within said tubular member, means for sealing said overlapping edges including a base mounted on said filling tube means adjacent to said discharge, said base being disposed within said tubular member, a rotary sealing unit located exteriorly of said tubular member in a position to cooperate with said base, the overlapping edges of said tubular member passing between said base and said rotary sealing unit so that said overlapping edges are sealed together, first anvil means mounted on said filling tube means diametrically opposite said base and having a surface engaging the inner periphery of said tubular member, means for feeding a hollow fitment means having a heat sealable flange at one end into engagement with said tubular member opposite said first anvil means, an outer heat sealing unit located exteriorly of said tubular member and opposite to said first anvil means, means for moving said outer sealing unit into intimate engagement with the flange of said fitment to urge said flange into sealing engagement with said tubular member against said first anvil means, a cutting and sealing unit located in spaced relationship to the discharge end of said filling tube means, said cutting and sealing unit including a second anvil means on one side of said tubular member and a heating means on the opposite side thereof, means for moving said heating means against said tubular member and said second anvil means to seal the end of said tubular member, said cutting and sealing unit simultaneously sealing the upper end of a completed pouch and the lower end of said tubular member and cutting the pouch from said tubular member, and fluent material being discharged through said filling tube means into said tubular member after the lower end of said member is welded, whereby said strip of heat sealable material is formed into a pouch having fluent material therein and a dispensing fitment mounted thereon.

3,894,382
CORN HARVESTER

Paul Jauss, Oberdiller Str. 48, 8027 Baierbrumm, Germany
Filed Mar. 5, 1973, Ser. No. 338,326
Claims priority, application Germany, Mar. 6, 1972, 2210635
Int. Cl. A01d *45/02*
U.S. Cl. 56—14.3 **27 Claims**



1. A corn harvester for harvesting of several rows of plants, comprising in combination:

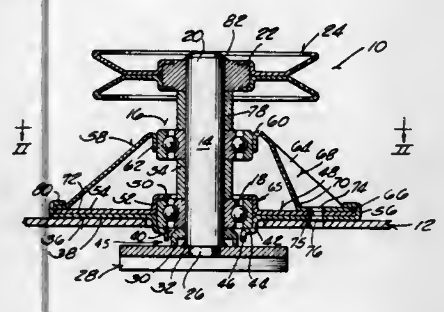
plural row receiving means of adjustable lateral spacing, each said receiving means having an inlet opening toward a corresponding plant row for receiving plants thereof;

only one draw-in chain for each row receiving means, said chain having a straight reach extending and movable along the corresponding row receiving means, said draw-in chain comprising a plurality of adjacent plate-like flanges interconnected at one side of said draw-in chain and normally spaced from each other in said straight reach at a distance less than the diameter of a corn stalk for rendering a corn stalk therebetween longitudinally barely freely movable with respect to said straight reach in the space between said flanges, said chain including transverse means pivotally interconnecting adjacent first ends of adjacent plate-like flanges for permitting pivoting apart of two adjacent flanges in said straight reach by a stalk therebetween;

means tensioning said draw-in chain and cooperative with said pivotal interconnection of adjacent flange ends for resiliently permitting limited pivoting apart of two adjacent flanges against said chain tension due to a corn stalk therebetween in said reach, and wherein the corn stalk is normally lightly gripped between said adjacent flanges while still permitting the stalk to be pulled downwardly therethrough, said draw-in chain also having an arcuate input portion at the plant input end of said row receiving means and an arcuate output portion at the output end of said row receiving means, the space between flanges increasing at said arcuate input and output portions of said chain for free entry and exit of corn stalks between said adjacent flanges.

3,894,383
SPINDLE ASSEMBLY

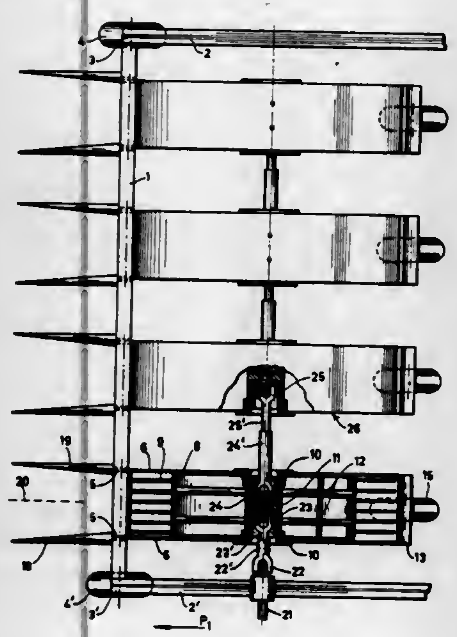
Siegfried K. Weis, Grand Rapids, and Douglas J. Van Der Meulen, Martin, both of Mich., assignors to C. L. Frost & Son, Inc., Grand Rapids, Mich.
Filed Dec. 12, 1973, Ser. No. 426,614
Int. Cl. A01d *55/18*
U.S. Cl. 56—17.5 **16 Claims**



16. A spindle housing comprising, in combination: an upper and lower housing and support means for supporting a rotary mower spindle, said lower housing support means comprising an annular member having a central opening formed therein, bearing means mounted in said central opening, said bearing means including an inner and outer race spaced by an anti-friction means, the outer race of said bearing means being clamped in engagement means formed at said central opening on said annular member, said upper housing and support means comprising an annular member having a central opening spaced above said other central opening, said upper housing and support means including engagement means formed thereon at said central opening for embracing and solely supporting an outer periphery of an outer race of an upper bearing means for allowing a vertical component of movement therebetween, said upper and lower support means extending radially to a common locus and being interconnected to each other to form said pre-assembled spindle housing, one of said upper and lower housing and support means having a surface portion adapted for securement to a mower deck.

3,894,384
PICKING MACHINE

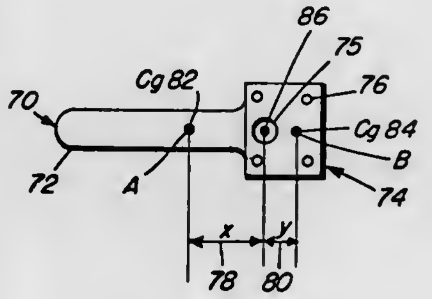
Lolke Lolkema, Delfzijl, Netherlands, assignor to Ter Borg & Mensinga's Machinenfabriek N.V., Appingedam, Netherlands
Filed June 20, 1974, Ser. No. 481,189
Int. Cl. A01d *45/22*
U.S. Cl. 56—130 **7 Claims**



1. A machine for harvesting low growing crops, such as beans, said machine comprising a main frame provided with front wheels and in which are mounted a plurality of units, each having a width adapted to pick one row of plants, and each unit having its own frame being pivotable at the front about a horizontal axis in the main frame and a drum provided with a plurality of picking fingers, said drum having an axis transverse to the direction of travel of the machine and being rotatable in a sense opposite the sense of rotation of the machine wheels, said drum cooperating with the lower edge, substantially at the intended picking height, of a picking plate extending in curved shape at least at the front side partially around the drum, the frame of each of the units being provided at the rear with a traveling wheel arranged centrally with respect to the unit, the drums in the units being mutually connected by means of flexible joints and being provided with a common drive axle.

3,894,385
CUTTING HEAD FOR ROTARY LAWN MOWER

Charles K. Brown, Jr., 8000 Roberts Bruce Dr., Bon Air, Richmond, Va. 23235
Filed Jan. 15, 1974, Ser. No. 433,570
Int. Cl. A01d *55/18*
U.S. Cl. 56—295 **13 Claims**



1. A rotary lawn mower blade assembly operable with a prime mover on a lawn mower, comprising:

shaft means rotatable by the prime mover on said lawn mower;

hub means connected to said shaft means;

a cutting head connected to said hub means and shaft means for rotation therewith;

at least two cutting blades pivotally mounted around the peripheral edge of said cutting head and being disposed between the upper and lower surface thereof and oppositely thereon along a line taken through the center of rotation of said cutting head;

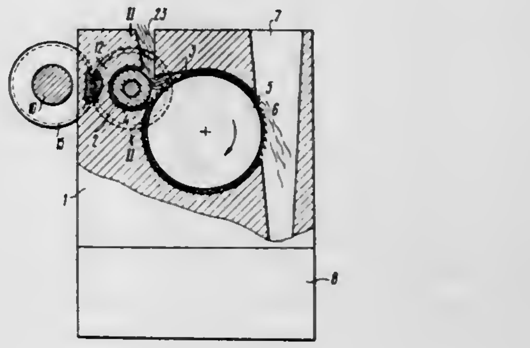
annular journal means formed in said cutting head at each point thereon where a cutting blade is mounted; and,

a pivot hole formed in each cutting blade, said pivot hole being positioned symmetrically about the longitudinal and transverse axes of said blade and receiving the journal means therein whereby the cutting blade is rotatable about said journal means and is radially imbalanced thereabout, rotation of the cutting head causing the cutting blades to extend outwardly therefrom.

3,894,386
ARRANGEMENT FOR FEEDING FIBRES INTO THE TWISTER OF AN OPEN-END SPINNING FRAME

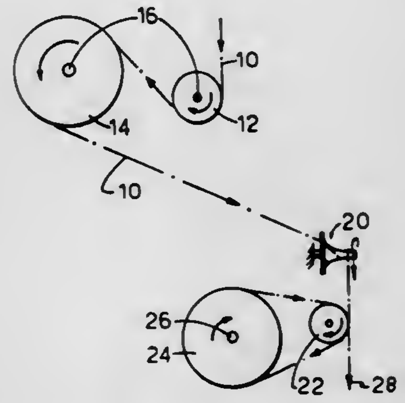
Alexandr Alexeevich Sharychenkov, Ternovka, ulitsa Experimentalnaya, 1, kv. 67, and Ljudmila Nikolaevna Gavrilova, Ternovka, ulitsa Experimentalnaya, 2, kv. 28, both of Penza, U.S.S.R.
Filed June 6, 1974, Ser. No. 477,018
Int. Cl. D01h *1/12, 1/22*
U.S. Cl. 57—58.95 **1 Claim**

1. An arrangement for feeding fibres into the twister of an open-end spinning frame, comprising: a housing; a channel formed in said housing and serving for feeding fibrous material; a cavity formed in said housing and communicating with said channel; another cavity formed in said housing and communicating with said cavity; a feed roller disposed in said cavity and designed for feeding fibres from said channel into said other cavity; a combing roll mounted in said other cavity and designed for separating fibrous material into individual fibres; another channel formed in said housing, communicating with said other cavity and designed for feeding said fibres into the twister; a means for rotating said combing roll; a means for rotating said feed roller; a cavity formed in said feed roller coaxially with the geometrical axis thereof; a shaft extending through said cavity of the feed roller; a means for radial fixation of said shaft in said cavity; a clutch comprising two semiclutches, one semiclutch being secured on said shaft of the feed roller, while the other semiclutch is loosely fitted over said feed roller, coupled with said means for rotating the feed roller and designed for transmitting rotation to the feed roller while in gear with said first semiclutch; a means for spring-urging said shaft into axial abutment against said feed roller, thereby providing for the displacement of said shaft in order that the semiclutches of said clutch may be thrown into gear.



3,894,387
COMPOSITE YARN CONSOLIDATION DEVICE

Jean Boisvert, Ste-Rose, Canada, assignor to The Bobtex Corporation Limited, Montreal, Canada
Filed June 17, 1974, Ser. No. 480,318
Claims priority, application Canada, July 3, 1973, 175433
Int. Cl. D01h *7/92;* **D02g** *1/02*
U.S. Cl. 57—77.4 **14 Claims**



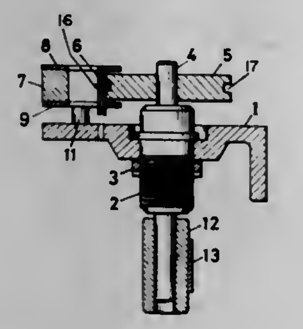
1. A consolidating apparatus comprising a rotatable spindle, said spindle having a surface configuration conforming to the general equation

$$y = e^{kx}$$

wherein x is the axial distance from a point on the spindle axis; wherein y is the circumference location from the axis from a given x value; and wherein k is a constant defining the curve and is smaller than 0.

3,894,388
APPARATUS OF DRIVING SPINDLE FOR FALSE TWISTING YARN

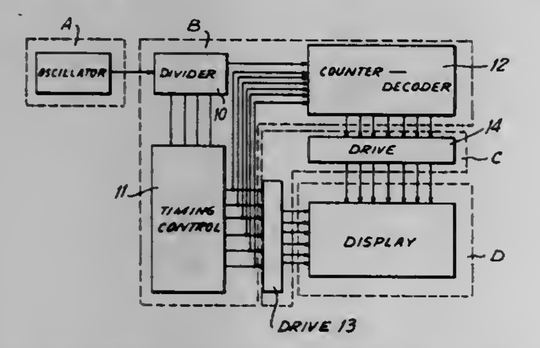
Nobuhisa Kodaira, 1-1-10 Shoan Suginamiku, and Norio Motegi, 1-2-8 Sakura Setagaya-ku, both of Tokyo-to, Japan
Filed Mar. 11, 1974, Ser. No. 449,624
Int. Cl. D01h *7/92*
U.S. Cl. 57—77.45 **7 Claims**



1. Apparatus for driving the spinner for false-twisting yarn, said apparatus having a driven disc-like roller mounted for rotation about a vertical axis and a spinner and a magnet for magnetically holding said spinner against the periphery of said roller, said spinner being an elongated tube with its ends projecting above and below said roller, the improvement in said apparatus comprising: said magnet being mounted adjacent to but spaced from the periphery of said roller and having an upper pole and a lower pole; a pair of arms, one secured to said upper pole and the other to said lower pole, portions of said arms extending over and under said roller, respectively, and each having a projection thereon positioned closely to but spaced from said spinner for holding said spinner in a circumferentially fixed position with respect to said roller whereby rotation of said roller will rotate said spinner; said magnet and said spinner both being on the same side of the axis of said roller and each of said arms being generally curvilinear and passing between said spinner and said axis of said roller and said projections extending toward said spinner.

3,894,389
ELECTRONIC WATCH

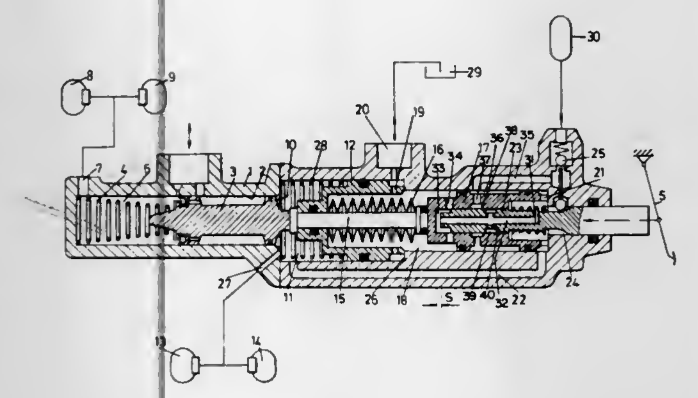
Teiji Miura, and Hiroshi Takeshita, both of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed Dec. 18, 1973, Ser. No. 425,899
Claims priority, application Japan, Dec. 18, 1972, 47-127003
Int. Cl. G04b *19/30;* **H05b** *39/09*
U.S. Cl. 58—50 R **5 Claims**



1. In an electronic timepiece having oscillator means for producing high frequency timekeeping signals; multi-state divider circuit means for producing a low frequency timing signals from said high frequency timekeeping signal, and digital display means for the digital display of time in response to said timing signals, said digital display means including at least two digits of time each digit of time being defined by a plurality of segments, the selective energization of certain segments effecting the display of numerals from 0 to 9, the improvement which comprises timing control circuit means operatively coupled to each of said segments of said digital display means to sequentially and repetitively energize each segment of each digit of time, said timing circuit control means being coupled to said divider means for receiving an intermediate frequency cycle control signal therefrom whereby each segment of each digit is actuated during a separate slot of each cycle of said timing control circuit means.

3,894,390
BRAKE VALVE FOR AN ANCILLARY BRAKE FORCE DEVICE IN MOTOR VEHICLES

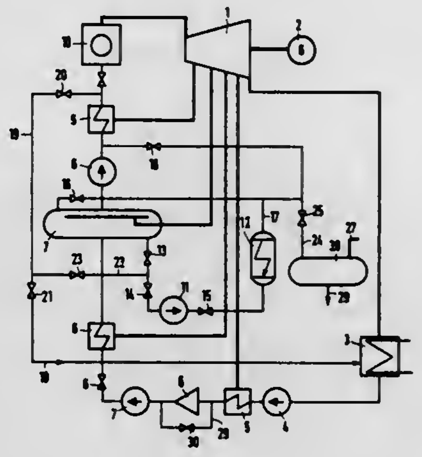
Juan Belart, Walldorf, and Hubertus von Grunberg, Niederhochstadt, both of Germany, assignors to ITT Industries, Inc., New York, N.Y.
Filed Feb. 4, 1974, Ser. No. 439,475
Claims priority, application Germany, Mar. 14, 1973, 2312641; Aug. 31, 1973, 2343882
Int. Cl. F15b *7/08*
U.S. Cl. 60—552 **15 Claims**



1. A brake valve for an ancillary brake force device in motor vehicles comprising:
- a housing having a longitudinal axis and a first bore disposed coaxial of said axis;
- a brake pedal disposed externally of and adjacent one end of said first bore;
- a master cylinder piston disposed within said first bore adjacent the other end thereof coaxial of said axis;
- a control casing disposed coaxial of said axis, slidably sealed to the inner surface of said first bore adjacent said one end of said first bore in a tandem relationship with said master cylinder piston, said control casing having a second bore disposed coaxial of said axis;
- a control valve disposed within said second bore in a coupled relation with said brake pedal;
- a pressure medium accumulator;
- said control casing and said control valve being cooperatively coupled to said accumulator to apply pressure medium from said accumulator to a first end surface of said master cylinder piston closest to said brake pedal when said brake pedal is actuated;
- a travel simulator in a coupled relation to said brake pedal to permit brake pedal travel conducive to a "brake feel"; and
- at least one axially movable component to provide a rigid connection between said brake pedal and said master cylinder piston to provide mechanical axial motion of said master cylinder piston by means of said brake pedal when no pressure medium is supplied from said accumulator, said mechanical motion of said master cylinder piston being accomplished without actuating said travel simulator.

3,894,391
FEEDWATER PURIFICATION SYSTEM FOR A STEAM POWER PLANT WITH BOILING-WATER REACTOR

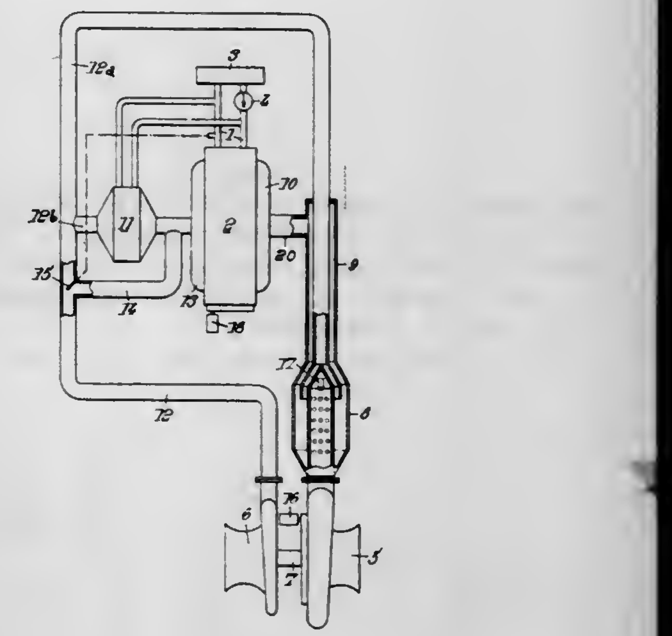
Hans Gunter Heitmann, Erlangen-Buckenhof, and Ruprecht Knorlein, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed Aug. 21, 1973, Ser. No. 390,229
Claims priority, application Germany, Aug. 22, 1972, 22412379
Int. Cl. F22d *7/00*
U.S. Cl. 60—575 **4 Claims**



1. Feedwater purification system for a steam power plant having a boiling-water reactor, comprising a condenser and regenerative preheater means connected in the system, one of which being formed at least partly of ferritic material, a feedwater tank connected in the system with said condenser and said regenerative preheater means, said feedwater tank being of a construction so as to serve simultaneously as a mixing preheater, said regenerative preheater means comprising low-pressure preheater means connected with said feedwater tank upstream thereof, and high-pressure preheater means connected with said feedwater tank downstream thereof, condensate purification equipment and electromagnetic filter means supplementary thereto connected therewith in the system downstream of said condenser in direction of feedwater flow therethrough, a circulation pump serially connected with said electromagnetic filter means the series connection of said circulation pump and said electromagnetic filter means being, in turn, connected in parallel, by lines provided with valve means, to said feedwater tank, to said high-pressure preheater means and to a series connection of said high-pressure preheater means, said condenser, said low-pressure preheater means and said feedwater tank, and a closable bypass line connected in parallel with said condensate purification equipment.

3,894,392
SUPERCHARGED DIESEL ENGINES AND METHODS OF STARTING THEM

Jean Frederic Melchior, Fontenay-aux-Roses, France, assignor to Etat Francais, Paris, France
Continuation of Ser. No. 263,759, June 19, 1972, abandoned. This application Apr. 26, 1974, Ser. No. 464,391
Claims priority, application France, July 19, 1971, 71.26283
Int. Cl. F02b *37/04*
U.S. Cl. 60—599 **10 Claims**



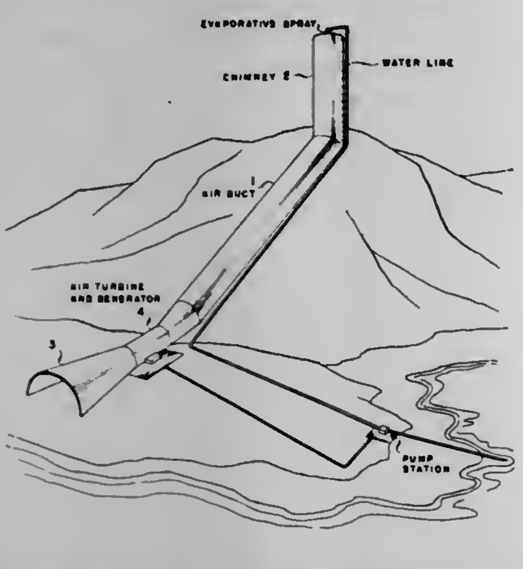
1. A supercharged diesel engine comprising a closed cooling circuit including a cooler traversed by a cooling fluid, a turbine, a compressor driven by the turbine, an external combustion chamber, exhaust conduit means leading the exhaust gases from the engine and from said external combustion chamber to said turbine, air conduit means leading air from said compressor to said turbine in bypass relation to the air intake of said engine, first branch conduit means traversing said cooler and leading air in a direction of normal temperature operation of the engine, which is from the said air conduit means through said cooler to the engine air intake, second branch conduit means connected at one end to said air conduit means upstream of the junction of said air conduit means and said first branch conduit means and at its other end connected with the engine air intake, and air distributing means for controlling the relative flow of air from the compressor on the one hand passing said junction and continuing through the air conduit means to said combustion chamber and on the other hand entering said second branch conduit means, said air distributing means including means for directing at least most of the air from said compressor to pass through said second branch conduit means and for directing a part of said air from said compressor which enters said second branch conduit means but is not directed into the engine to pass through the cooler in said first branch conduit means in reverse direction to the said direction of normal temperature operation of the engine and thence back into said air conduit means downstream of said distributing means during a period of starting up and rise in temperature of the engine thereby heating the cooling fluid and thus shortening said period.

3,894,393
POWER GENERATION THROUGH CONTROLLED CONVECTION (AEROELECTRIC POWER GENERATION)

Phillip R. Carlson, Pasadena, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.
Filed May 2, 1974, Ser. No. 466,178
Int. Cl. F03g *7/00;* **F01k** *23/00*
U.S. Cl. 60—641 **4 Claims**

1. An aeroelectric power generation system comprising: an elongated duct means having one end at a higher altitude than the other end; means for adding water to the air in the duct at the higher altitude for lowering the temperature of the air in

said one end as compared to the temperature outside the duct, thereby causing an air flow in the duct means; and means located in the duct at a low altitude adjacent said other end for extracting energy from the air flow in the duct.

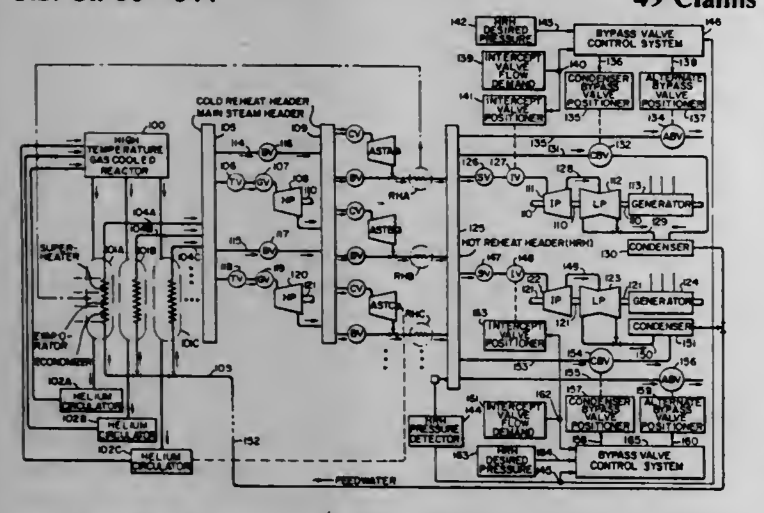


3,894,394
HTGR POWER PLANT HOT REHEAT STEAM PRESSURE CONTROL SYSTEM

Andrew S. Braytenbah, Pennsauken, N.J., and Karl O. Jaegtnes, Chester, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 22, 1974, Ser. No. 463,027
Int. Cl. F01k *7/24*

U.S. Cl. 60—644 **49 Claims**



1. A system for controlling steam pressure in a hot reheat header connected to receive reheated steam from a reheating section of a steam source that is adapted to derive heat from a flow of reactor coolant gas and to supply superheated and reheated steam to a turbine-generator including at least a high pressure and an intermediate-low pressure turbine, said gas being circulated through a high temperature nuclear reactor and said steam source by a circulating means rotated by an auxiliary steam turbine means connected to pass a portion of the steam which flows to the inlet of the reheating section, and said hot reheat header being connected so that steam may flow from the header to a condensing means through a first path comprising the intermediate-low pressure turbine and through a second path comprising a condenser bypass line, said control system comprising,

valve means connected to govern the steam flow through the condenser bypass line,

means to generate a first signal representative of a desired steam flow through the intermediate-low pressure turbine,

pressure detecting means to generate a second signal representative of a detected value of steam pressure in the hot reheat header,

means to generate a third signal representative of a desired value of steam pressure in the hot reheat header, and

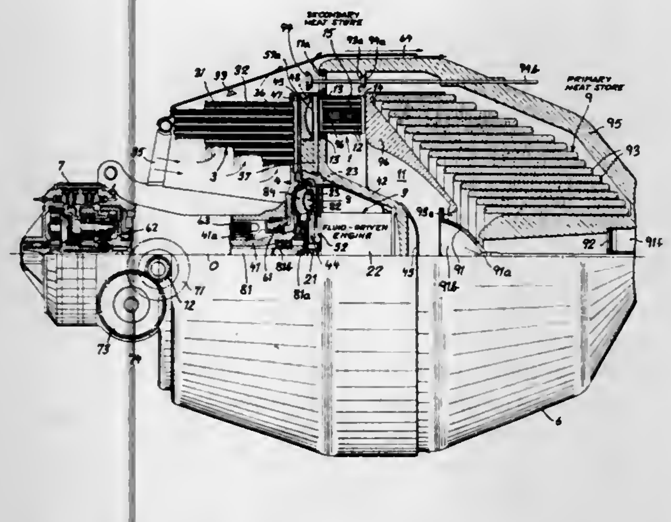
control means responsive to the first signal to position the valve means to govern the steam flow through the condenser bypass line to maintain a steam flow through the reheating section that is equal to a predetermined minimum flow at times when the detected and desired pressure values are equal to a predetermined low load pressure value and the desired steam flow through the intermediate-low pressure turbine is less than the predetermined minimum flow, and responsive to the second and third signals when the second and third signals are different to vary the steam flow through the condenser bypass line in proportion to the difference of the second and third signals to reduce said difference.

3,894,395
THERMAL POWER PLANT

Nikolaus Laing, Hofener Weg 35-37, 7141 Aldingen near Stuttgart, Germany

Continuation-in-part of Ser. No. 383,537, July 30, 1973, which is a continuation of Ser. No. 152,946, June 14, 1971, abandoned. This application Sept. 12, 1973, Ser. No. 396,520
Int. Cl. F01k *13/02, 3/00*

U.S. Cl. 60—652 **49 Claims**



1. A power plant for an automotive vehicle having a traction wheel provided with a drive shaft, comprising:

an engine adapted to be driven by the pressure of an expanding working fluid;

heat-exchanger means fluidically linked with said engine;

first conduit means for conducting said working fluid in a closed circuit through said engine and said heat-exchanger means;

second conduit means for conducting an external heat carrier through said heat-exchanger means in thermally interacting relationship with said working fluid whereby the latter absorbs heat from said carrier upstream of said engine and gives up heat to the environment downstream of said engine;

combustion means outside said closed circuit operable to heat said carrier prior to entry thereof into said heat-exchanger means;

heat-storage means outside said closed circuit for heating said carrier prior to entry thereof into said heat-exchanger means in an inoperative state of said combustion means;

switchover means having a first and a second operating position for alternately making said combustion means and said heat-storage means effective to heat said carrier; and

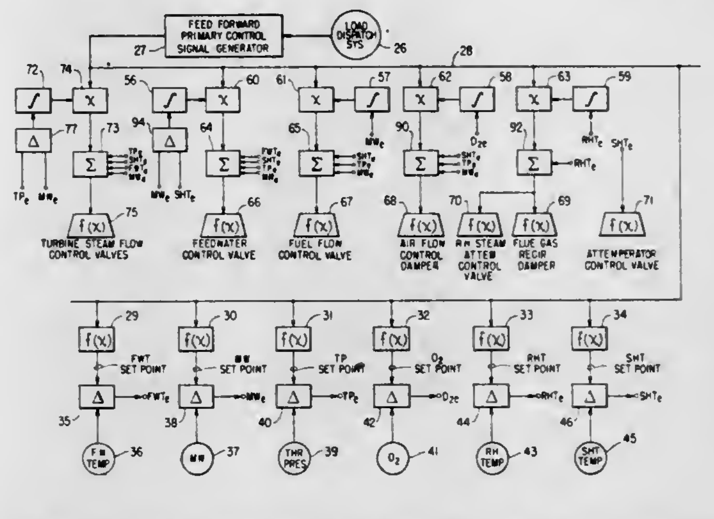
transmission means for operatively coupling said engine to said drive shaft.

3,894,396
CONTROL SYSTEM FOR A POWER PRODUCING UNIT

Oliver W. Durrant, Akron, Ohio, assignor to The Babcock & Wilcox Company, New York, N.Y.

Filed Oct. 10, 1973, Ser. No. 404,922
Int. Cl. F01k *13/02*

U.S. Cl. 60—665 **18 Claims**



1. In a control system for a power producing unit comprising a vapor generator provided with feed fluid and a turbine generator supplied with vapor from said vapor generator, the combination comprising, means generating a feed forward control signal corresponding to the desired power output of the power producing unit, means responsive to said signal maintaining the rate of flow of vapor to said turbine in functional relationship to said signal, means generating a signal proportional to deviations in turbine throttle pressure from set point and means rendering the feed forward control signal inoperative to control the vapor flow to the turbine and said last named signal operative to control the vapor flow to the turbine at a predetermined value of said last named signal.

9. In a control system for a power producing unit comprising a fossil fuel fired steam boiler provided with feed water supply means, air supply means and fuel supply means, and a turbine generator supplied with steam from the steam boiler, the combination comprising means generating a feed forward control signal proportional to the desired power output of the power producing unit which is independent of and unmodified by a feed back signal indicative of the state of operation of the power producing unit or of the value of any parameter thereof, a first means for adjusting the rate of flow of steam from the boiler to the turbine, a second means for adjusting the rate of flow of feed water to the boiler, a third means for adjusting the rate of flow of fuel to the boiler and a fourth means for adjusting the rate of air flow to the boiler, each of said first, second, third and fourth means solely responsive to and operated in parallel from said feed forward control signal whereby the rate of flow of steam to the turbine, the rate of flow of feed water to the boiler, the rate of fuel flow to the boiler and the rate of air flow to the boiler are each maintained in a discreet functional relationship to said feed forward control signal independent of the functional relationship existing between said feed forward control signal and any other of the said rates of flow.

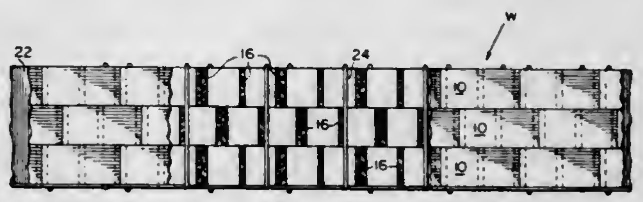
3,894,397
BEACH EROSION CONTROL STRUCTURE

Samuel S. Fair, 3105 Old Kawkawlin Rd., Bay City, Mich. 48706

Filed Aug. 5, 1974, Ser. No. 494,845
Int. Cl. E02b *3/06*

U.S. Cl. 61—4 **15 Claims**

1. A beach erosion control structure comprising a plurality of courses of parallel rows of blocks arranged end-to-end and forming a wall extending along a shoreline and substantially parallel thereto, the blocks of each row abutting the blocks of each adjacent row, each of said blocks having top and bottom panels integrally interconnected by a plurality of transversely extending vertical partitions longitudinally spaced from each other to define openings facing seaward and extending horizontally entirely through the blocks, the openings of the blocks of adjacent rows being in communication with each other but being longitudinally staggered so that water flowing into an opening of an outermost block of said wall is impeded and divided by a partition in a block of the next adjacent row as it flows into an opening in a block of the next adjacent row, said wall being so positioned that it imposes a first throttling action on the water of incoming waves to promote depositing of entrained sand on the landward side of the wall and a second throttling action on the water of ebbing waves to promote depositing of entrained sand.

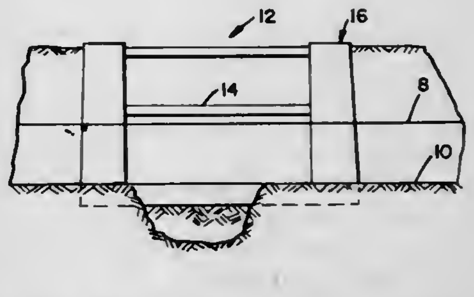


3,894,398
RICE BOX

Clarence M. Fritz, Marysville, and Stephen E. Carnes, Yuba City, both of Calif., assignors to Consolidated Fiberglass Co., Marysville, Calif.

Filed Feb. 27, 1974, Ser. No. 446,255
Int. Cl.^{2} E02B *7/28*

U.S. Cl. 61—28 **4 Claims**



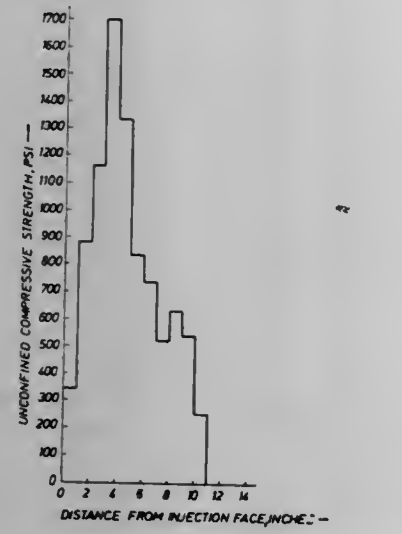
1. In a rice field including a plurality of field sections separated by levees for individually flooding the sections and including rice boxes for flowing water from one section to another section for the flooding of the sections with the same water, the improvement comprising at least one rice box between adjoining sections disposed in a generally U-shaped cutout of the levee, the rice box being defined by a generally U-shaped insert having a floor plate disposed at about the ground level of the sections and upwardly extending sidewalls, the floor plate and the sidewalls extending over the full width of the levee and including a vertically oriented groove communicating a top end of the sidewalls with the floor member, a flow regulating member removably disposed and positioned in the groove, a U-shaped flange disposed on each side of the floor plate and the walls extending perpendicularly away with respect to the adjoining floor plate and the walls, respectively, and having sides of the flanges facing each other in contact with the levee to generate frictional forces between the sides and the levee, the flanges having a width of at least about two inches so that the frictional forces developed between the flanges and the levee exceed a water buoyancy force acting on the insert to retain the insert firmly in place while sides of the flanges facing away from the insert prevent the erosion of portions of the levee adjacent the insert when the member is removed from the groove and water flows through the insert, opposing notches disposed adjacent upper ends of the sidewalls including generally horizontally oriented, opposing lips immediately below the upper ends, and an elongate stiffener having a length about equal to the spacing between bottoms

of the notches and greater than a spacing between ends of the opposing lips, the ends of the stiffener being disposed in the opposing notches for maintaining the spacing between the upper ends of the sidewalls constant.

3,894,399
CHEMICAL GROUTING PROCESS FOR TIGHT SOIL

Earl H. Doyle; David Kauffman, and John A. Herce, all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed May 22, 1974, Ser. No. 472,004
Int. Cl.² E02D *3/12*
U.S. Cl. 61—36 **9 Claims**



1. In a process for strengthening a selected zone within a soil formation in which the pores are too small to be penetrated by a slurry of cement, the improvement which comprises:

arranging fluid injecting means for flowing fluid into and through the selected zone within the soil formation at a rate selected so that it provides a fluid velocity in the pores of the selected zone of at least 0.3 centimeters per minute without fracturing the formation;

determining the extent of time-temperature exposure to which a fluid is subjected when it flows at the selected rate from a fluid-compounding location to the selected zone within the soil formation;

compounding a basic aqueous solution of an amphoteric metal oxide and a pH-reducing reactant that begins precipitating a hydrated metal oxide when it has been subjected to substantially the determined extent of time-temperature exposure; and

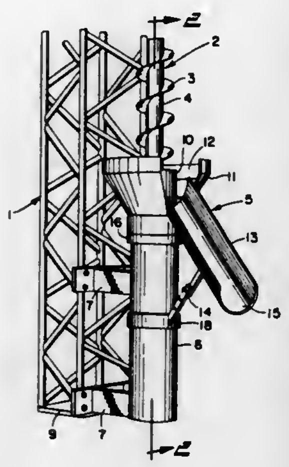
flowing the compounded solution into the selected zone within the soil formation at the selected rate while adjusting the time and temperature conditions of the compounding and storing of the fluid so that substantially all portions are subjected to substantially the determined extent of time-temperature exposure.

3,894,400
MATERIAL REMOVAL DEVICE

Don Stillwell, Cuyahoga Falls, Ohio; Sherrel Strahle, Greenfield, Ind., and Art Hightower, Olmsted Falls, Ohio, assignors to Lee Turzillo Contracting Company, Brecksville, Ohio

Filed Jan. 28, 1974, Ser. No. 437,366
Int. Cl.² E02D *17/144;* **E21B** *3/02*
U.S. Cl. 61—63 **9 Claims**

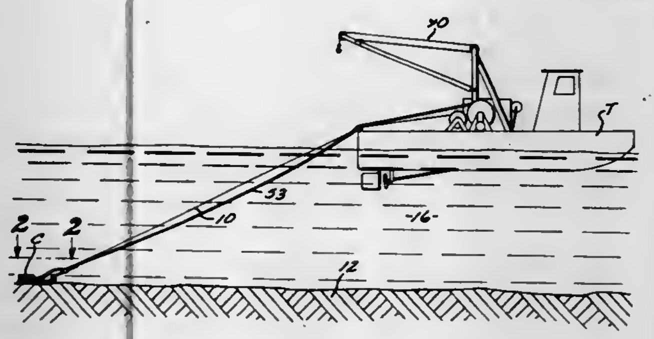
1. A material removal device for use in removing the spoil from the flights of an auger and the like during drilling comprising a pipe having an inner diameter slightly larger than the outer diameter of the auger flights, means for positioning said pipe in axial alignment with the auger with the lower end of said pipe in engagement with an earth situs, said pipe enclosing a portion of the auger during drilling to permit the spoil from the drilling operation to be carried upwardly by the auger flights within said pipe to the upper end thereof, a hopper adjacent the upper end of said pipe for receiving the spoil spilling from the upper end of said pipe, and means for conveying the spoil spilling from the upper end of said pipe comprising a discharge chute attached to said hopper, said hopper having an opening in communication with said discharge chute, and means mounting said hopper and discharge chute for rotation relative to said pipe to permit the spoil to be discharged from said hopper in different directions for deposit at different locations without having to rotate said pipe.



3,894,401
SAND FILL COMPACTION SYSTEM

Cort T. Johnson, Long Beach, Calif., assignor to City of Long Beach, Long Beach, Calif.

Filed July 5, 1974, Ser. No. 486,178
Int. Cl.² F16L *1/00;* **E02F** *5/12*
U.S. Cl. 61—72.4 **11 Claims**



1. Compactor apparatus moveable over a submerged soil bed for effecting underwater compaction of the upper layer of such soil, said apparatus comprising:

a frame attachable to propulsion means that moves said frame forwardly over the soil to be compacted;

vibrator plate means connected to said frame, the underside of said plate means resting upon the soil to be compacted; and

vibrator means operatively connected to said plate means to vibrate said plate means and thereby compact said soil as said plate means is moved forwardly thereover.

3,894,402
APPARATUS AND METHOD FOR EMPLACING A CONDUIT ALONG AN UNDERGROUND ARCUATE PATH

Martin D. Cherrington, P.O. Box 4994, Sacramento, Calif. 95825

Filed July 19, 1974, Ser. No. 489,979
Int. Cl. F16l *1/00;* **E02d** *29/10*
U.S. Cl. 61—72.4 **15 Claims**

1. A method for emplacing a production casing beneath a surface obstacle such as water course, said method comprising the steps of:

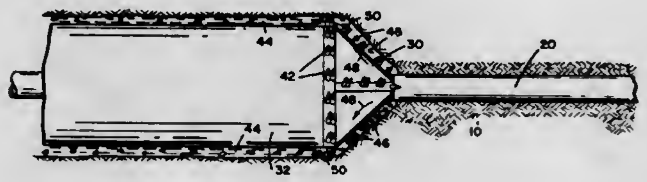
providing a drill having a trailing drill string;

drilling a pilot hole along an inverted arcuate path beneath the surface obstacle from a first side to a second opposite side of the obstacle with said drill so that the drill string occupies the pilot hole with the opposite ends of said drill string being on opposite sides of the obstacle;

providing a reamer having a relatively smaller leading end and a relatively larger trailing end;

attaching the relatively smaller leading end of the reamer to one of the ends of the drill string;

attaching an end of the production casing non-rotatably to the relatively larger trailing end of the reamer;



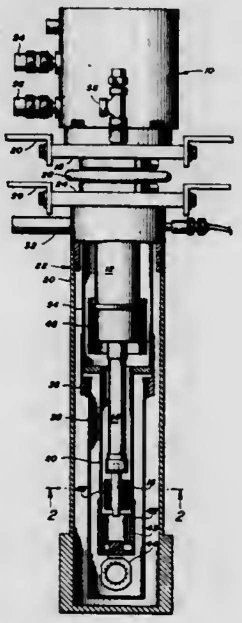
forcing the production casing into the pilot hole at one side of the surface obstacle to project the reamer with said production casing following into said pilot hole, the drill string exiting the pilot hole at the other opposite end of the obstacle; and

rotating the production casing simultaneously with said thrusting step to operate the reamer to scarify and dislodge the earth around the pilot hole to enlarge the pilot hole to a diameter at least equal to the production casing so that said production casing is emplaced along the arcuate path as the pilot hole is being enlarged.

3,894,403
VIBRATION-FREE REFRIGERATION TRANSFER

Ralph C. Longsworth, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed June 8, 1973, Ser. No. 368,351
Int. Cl. F17c *7/02*
U.S. Cl. 62—55 **9 Claims**



1. Apparatus for transferring refrigeration from a cold refrigeration source to an object to be cooled comprising in combination:

a source of cryogenic refrigeration;

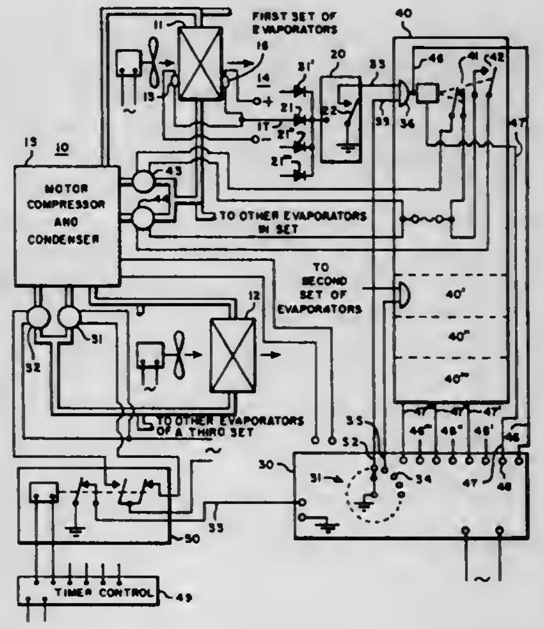
means for confining and circulating a fluid transfer medium in contact with the source of refrigeration; said means including a structural member affixed to the source of refrigeration thereby producing an elongated confined flow path for the fluid transfer medium; and

a support means for holding an object to be cooled in contact with the circulating fluid transfer medium, the support means being mounted in spaced relation to the refrigeration source to prevent forces induced by motion of the refrigeration source from being transmitted directly to the object support means.

3,894,404
HOT GAS DEFROST REFRIGERATION SYSTEM

David J. Stanton, New Brighton, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed July 29, 1974, Ser. No. 492,382
Int. Cl. F25b *47/00*
U.S. Cl. 62—155 **8 Claims**


FIRST SET OF EVAPORATORS
40
11
16
20
33
14
13
10
MOTOR COMPRESSOR AND CONDENSER
43
44
TO OTHER EVAPORATORS IN SET
TO SECOND SET OF EVAPORATORS
40'
40"
40'''
12
32
31
TO OTHER EVAPORATORS OF A THIRD SET
35
52
30
31
34
47
48
50
33
TIMER CONTROL
49

1. In a control system for controlling the individual defrosting of at least one of a plurality of evaporators connected to a compressor system wherein the defrosting is accomplished by the use of hot gas from the compressor system,

frost sensor means adapted to be connected to each of at least two of a plurality of evaporators of the refrigeration system for providing an output signal upon the need of defrosting of one of the evaporators,

sequential control means having a plurality of output circuits for scanning and for individually initiating a defrost cycle of any one of the two evaporators which needs defrosting,

a plurality of relay means each having two input circuits and an output circuit, said relay means is energized when each of said input circuits receive input signals, and

circuit means connecting said output signal of each of said frost sensor means to one input of a respective relay means and one of said output circuits of said sequential control means to a second input of said relay means whereby upon a frost sensor means of one evaporator having an output to demand defrost, said relay means is energized when said sequential control means provides a signal to said relay means,

said output of each of said relay means being adapted to control valve means in the compressor system to provide a hot gas defrosting operation for one of the evaporators at a time depending upon a demand for defrosting operation by said frost sensor means and said signal of said sequential control means while normal operation of the other evaporator is maintained.

3,894,405
REFRIGERATION UNIT

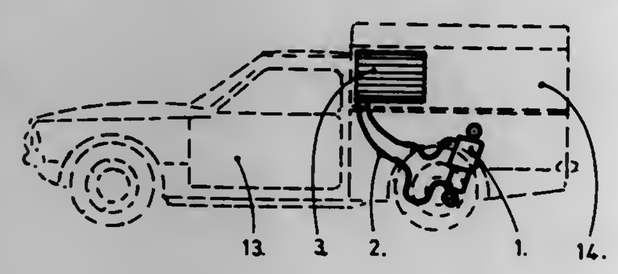
Gustav B. Mielitz, 168 Kennedy St., Johannesburg, South Africa

Filed Feb. 12, 1974, Ser. No. 441,750

Claims priority, application South Africa, Nov. 27, 1973, 73/9006; Nov. 27, 1973, 73/9007; Nov. 27, 1973, 73/9008

Int. Cl.² B60H *3/04*

U.S. Cl. 62—241 **8 Claims**



1. A vapour compressor adapted for mounting between first and second relatively movable vehicle components and to be operated by forces resulting from such movement comprising: an outer cylinder defining an outer vapour chamber, said outer cylinder being connected to said first movable vehicle component, said outer chamber being closed by first end walls,

a hollow floating piston slidably mounted in said outer chamber, the interior of said hollow floating piston defining an inner vapour chamber, said inner chamber being closed by second end walls,

an inner piston slidably mounted in said inner chamber,

a hollow piston rod connected to said inner piston and to said second relatively movable vehicle component, said hollow piston rod having a vapour passage communicating on the one hand with the exterior of said compressor and on the other hand with said inner chamber, said hollow piston rod extending through a piston rod opening in an end wall of each of said outer and said inner chambers,

first valve means for controlling the flow of vapour between said passage and said inner chamber,

second valve means for controlling the flow of vapour between said inner chamber and said outer chamber, and

third valve means for controlling the flow of vapour between said outer chamber and the exterior of said compressor,

whereby relative movement of said first and second vehicle components of a first magnitude causes vapour to be compressed in said inner chamber and relative movement of said first and second vehicle components of a second magnitude greater than said first magnitude causes vapour to be compressed in said outer chamber and said inner chamber.

3,894,406
APPARATUS FOR POSITIONING JACKS IN A PLURALITY OF SLOTTED PATTERN WHEEL RINGS ACCORDING TO A PREDETERMINED PATTERN

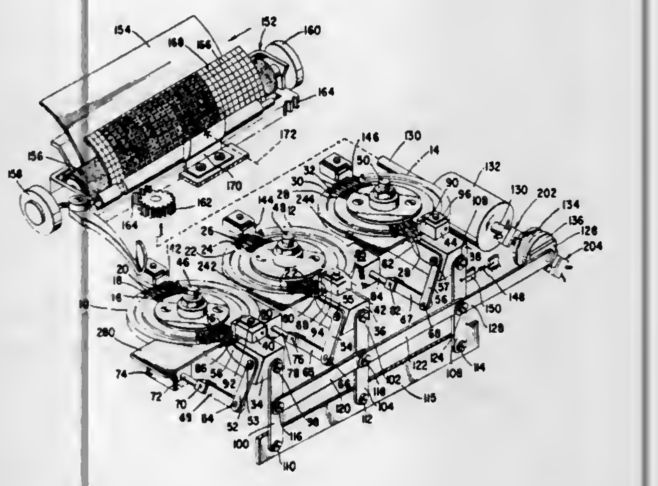
John Christopoulos, Brentwood, N.Y., assignor to The Singer Company, New York, N.Y.

Filed Mar. 27, 1974, Ser. No. 455,439

Int. Cl.² D04B *37/04*

U.S. Cl. 66—1 R **8 Claims**

1. In combination, a plurality of rotatably supported pattern wheel rings, each with slots wherein needle controlling jacks may be positioned, a jack actuator for each pattern wheel ring operable to position jacks therein, a carriage to support a paper, card or the like on which jack positions are indicated, viewing means with which such indications on the paper, card or the like may be aligned, a control instrumentality for each pattern wheel ring, circuit means connected to said control instrumentalities, motive means connected to the circuit means and operable upon actuation of any one of the said control instrumentalities, mechanism operatively connected to the motive means for causing relative movement of the carriage and viewing means upon operation of the motive means for successively aligning the viewing means with the indications on the paper, card or the like defining jack positions, and means operatively connected to the motive means for indexing the pattern wheel rings simultaneously one slot in response to the operation of any one of the said control instrumentalities, said circuit means being connected to the jack actuators to effect an operating pattern among the jack actuators differing according to the particular control instrumentality operated.



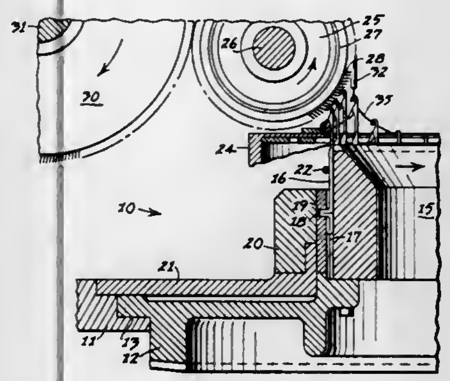
3,894,407
SLIVER-KNIT PROCESS

Larry E. Clingan, Chattanooga, Tenn., and Charles R. Collins, Jr., Newton, N.C., assignors to Fibron, Inc., Chattanooga, Tenn.

Division of Ser. No. 346,403, March 30, 1973. This application Jan. 28, 1974, Ser. No. 436,852

Int. Cl. D04b *9/14*

U.S. Cl. 66—9 B **7 Claims**



1. In said process of making a sliver-knit pile fabric wherein sliver fibers are fed to a knitting station, the improvement comprising:

a. feeding an elongated, stable, fibrillated backing yarn, having a widthwise dimension, of synthetic material and of substantially longitudinally continuously constant denier less than **1000**, and less the denier of a conventional backing yarn for a corresponding sliver-knit pile fabric, to said knitting station;

  1. said backing yarn being substantially flat widthwise and having a substantially rectangular cross-section, the width of said backing yarn being substantially greater than its thickness when flattened,
  2. said backing yarn comprising a network of filaments permitting said backing yarn to be substantially expansible widthwise,
  3. said backing yarn having longitudinal edge portions substantially uninterrupted continuously longitudinally of said backing yarn, said filaments being substantially confined between said longitudinal edge portions,

b. knitting said fibrillated backing yarn at said knitting station to form a base fabric, in which said backing yarn is expansible in the plane of said base fabric, toward and away from other portions of said backing yarn in said base fabric, and

c. substantially simultaneously with said knitting step, locking said sliver fibers between the stitches of said knitted fibrillated yarn, so that said sliver fibers project from one face of said base fabric to form pile.

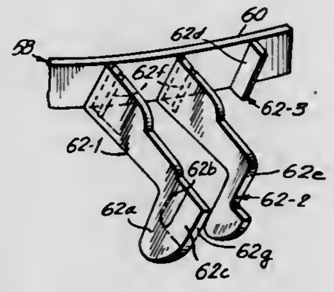
3,894,408
INTEGRAL JACK STRIP FOR PATTERN WHEEL KNITTING MACHINES

Allan Rozner, Fresh Meadow, N.Y., assignor to C. J. I. Industries, Inc., Jersey City, N.J.

Filed Sept. 29, 1972, Ser. No. 293,351

Int. Cl. D04b *15/76*

U.S. Cl. 66—50 A **2 Claims**



1. An integral jack strip for a pattern wheel with peripheral slots, comprising a flexible base adapted to be wrapped around a central hub of the pattern wheel, and a plurality of jack-shaped projections extending outwardly from said base, each of said projections being formed in the shape of a full jack and being adapted to fill a respective one of said slots, wherein each of said projections includes first and second removable sections which can be broken away so that the remaining portion of said projections functions respectively as a half jack or as a missing jack in the pattern wheel.

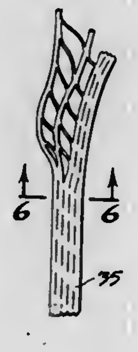
3,894,409
SLIVER-KNIT PRODUCT

Larry E. Clingan, Chattanooga, Tenn., and Charles R. Collins, Jr., Newton, N.C., assignors to Fibron, Inc., Chattanooga, Tenn.

Filed Mar. 30, 1973, Ser. No. 346,403

Int. Cl. D04b *9/14*

U.S. Cl. 66—191 **6 Claims**



1. A sliver-knit pile fabric comprising:

a. a base fabric knitted from an elongated, stable, fibrillated backing yarn of synthetic material having a widthwise dimension, said backing yarn being substantially flat widthwise and having a substantially rectangular cross-section, the width of said backing yarn being substantially greater than its thickness when flattened,

b. said fibrillated backing yarn being of substantially longitudinally continuously constant denier less than **1000**, and less than the denier of a conventional backing yarn for a corresponding sliver-knit pile fabric,

c. said fibrillated backing yarn comprising a network of filaments permitting said backing yarn to be substantially expansible widthwise,

d. said backing yarn being expansible in the plane of said base fabric, toward and away from other portions of said backing yarn in said base fabric,

e. said backing yarn having longitudinal edge portions substantially uninterrupted continuously longitudinally of said backing yarn, said filaments being substantially confined between said longitudinal edge portions, and

f. a pile comprising fibers locked between the stitches of said fibrillated backing yarn and projecting from at least one side of said base fabric.

3,894,410
DEVICE FOR THE FIXATION OF DYESTUFF ON LENGTHS OF MATERIAL BY STEAM

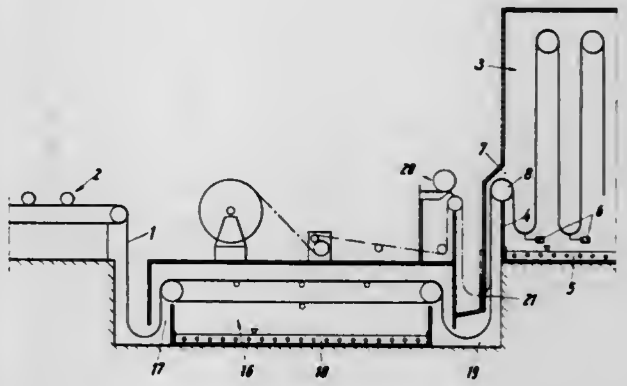
Heinz Fleissner, Egelsbach, Germany, assignor to Vepa AG, Switzerland

Filed Mar. 28, 1973, Ser. No. 345,490

Claims priority, application Germany, Mar. 28, 1972, 2215006

Int. Cl.² D06B *3/02*

U.S. Cl. 68—5 D **9 Claims**



1. A device for the fixation of dyestuff applied onto lengths of a textile material by means of steam, which comprises a dyestuff applicator device for applying dyestuff onto the textile material, a festoon or progressing loop-type steamer for receiving the textile material from said dyestuff applicator device, a pre-steaming device in steam-tight communication with said loop-type steamer, said pre-steaming device comprising a horizontal steamer preceding the loop-type steamer and being arranged between a material intake of the loop steamer and said dyestuff applicator device, said horizontal steamer having means for generating saturated steam therein and having means located therein for conveying the textile material horizontally therethrough, a material discharge of said horizontal steamer being located in the immediate vicinity of the material intake of the loop-type steamer, and a duct connecting the material intake of the loop-type steamer to the material discharge of said horizontal steamer.

3,894,411
APPARATUS FOR DYEING TEXTILE PIECE GOODS IN ROPE OR OPEN WIDTH FORM

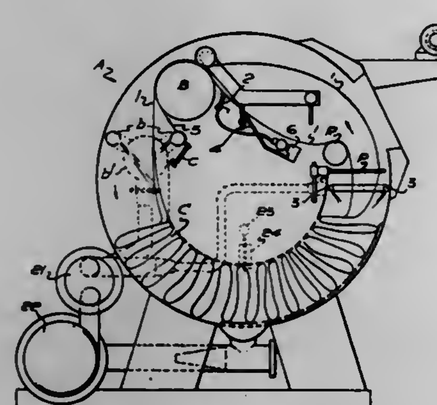
Edward Stanway, Prestbury, England, assignor to Leemetals Limited, Macclesfield, England

Filed June 29, 1973, Ser. No. 375,130

Claims priority, application United Kingdom, July 13, 1972, 32714/72

Int. Cl. B05c *3/172, 11/00*

U.S. Cl. 68—20 **7 Claims**



1. A winch dyeing machine having means for the removal of surplus liquor in the dyeing of tubular fabrics comprising means defining an arcuate passageway upwardly open at opposite ends, a driven metering roller for traversing said fabric through the machine, means comprising controlled jets of dye liquor whereby the fabric leaving said metering rollers is folded in a sinuous manner and directed down into one end of said passageway, means at the other end of said passageway for lifting the fabric from the passageway and directing it toward said metering roller, air jet means effective on the fabric after it has been raised from the passageway and before it passes over said metering roller for ballooning said fabric, a control valve assembly for said jet means, means engaged by the raised fabric connected to said control valve assembly for regulating the size of said ballooning, means for directing jets of said liquor onto the fabric as it is raised out of said passageway to prevent air from the ballooned portion from passing to the fabric in said passageway, and means engaging the fabric at the periphery of said metering roller for preventing air from passing over the roller with the fabric.

3,894,412
DEVICE FOR THE TENSION-FREE WET TREATMENT OF TEXTILE MATERIAL

Heinz Fleissner, Egelsbach, Germany, assignor to VEPA AG, Switzerland

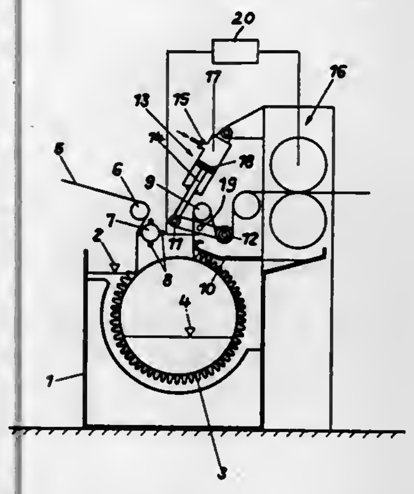
Continuation-in-part of Ser. No. 140,029, May 4, 1971, Pat. No. 3,742,737. This application July 2, 1973, Ser. No. 375,817

Claims priority, application Germany, May 4, 1970, 2021699; Mar. 19, 1971, 2113473

Int. Cl. B05c *3/134*

U.S. Cl. 68—22 R **2 Claims**

1. A device for effecting tension-free wet treatment of textile material lengths which comprises wash bowl means containing a pre-determined level of processing liquor, a rotating perforated drum at least partially immersed in the processing liquor, first guide means for feeding the textile material onto the perforated drum and second guide means for removing the textile material from the drum, especially said first guide means including beating means for forming the textile material into wave-like plaits on the perforated drum, said beating means contacting the textile material above the level of the liquor in the bowl means and above the drum and said second guide means including a material deflecting roller mounted above the liquor level and at the discharge end of the bowl means, a following pressure roll means and control means for regulating the speed of the following pressure roll means, said control means including a dancing roller that bears on the textile material, a lever assembly, and a piston in a fixed pressure cylinder, said dancing roller being positioned after said material deflecting roller and being mounted on said lever assembly which is swivelable around a support axis, the drawing weight applied to the material length by said dancing roller being adjustable by said lever assembly which is engaged by said piston in the fixed pressure cylinder, said piston being acted on by the weight of the dancing roller via a piston rod and by the contact pressure of said material, said control means causing said pressure roll means to rotate at a speed which is equal, lower, or higher than the speed at which the textile material is fed into the bowl means and onto the drum.



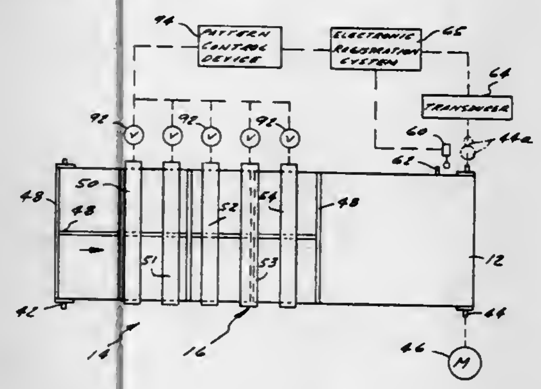
3,894,413
DYEING AND PRINTING OF MATERIALS

Harold L. Johnson, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Jan. 3, 1974, Ser. No. 430,526

Int. Cl. B05c *5/00*

U.S. Cl. 68—205 R **11 Claims**



1. In apparatus for dyeing and printing of textile material to form a pattern thereon including a conveyor for moving the textile material in a path of travel, applicator means positioned along the conveyor for applying plural streams of liquid to the textile material during its passage thereby, and pattern control means for selectively directing individual of the streams of liquid from the applicator means onto the moving textile material to produce a pattern thereon; the improvement therewith comprising means for actuating the pattern control means in response to position of the conveyor to facilitate accuracy of placement of the pattern on the textile material on the conveyor, said actuating means comprising means for emitting a plurality of electrical pulses in response to and during the movement of the conveyor, means for sensing the number of said pulses emitted during movement of the conveyor and for activating said pattern control means in response to the sensing of a predetermined number of said pulses, and means for adjustably selecting said predetermined number of sensed pulses whereby activation of said pattern control means may be initiated at precise positions of the conveyor travel.

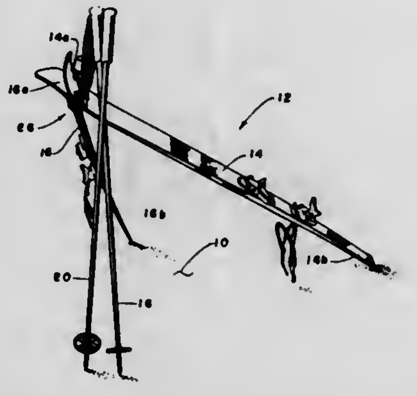
3,894,414
THEFT-DETERRING DEVICE FOR SKIS AND POLES AND METHOD OF USING SAME

Stuart R. Peterson, 790 Southgate Office Plaza, 5001 W. 78th St., Minneapolis, Minn. 55437

Filed Dec. 17, 1973, Ser. No. 425,498

Int. Cl.^{2} E05B *73/00*

U.S. Cl. 70—19 **29 Claims**



1. A theft-deterring device for skis comprising a frame for completely encircling overlapped portions of a pair of skis, said frame having a threaded hole, a threaded member engageable in said hole, a handle for rotating said threaded member in one direction to press one ski against the other ski and in turn press said other ski against a portion of said frame residing generally on the opposite side of said frame from said hole, and means for precluding movement of said handle with respect to said frame to prevent sufficient reverse rotation of said threaded member which would release said skis.

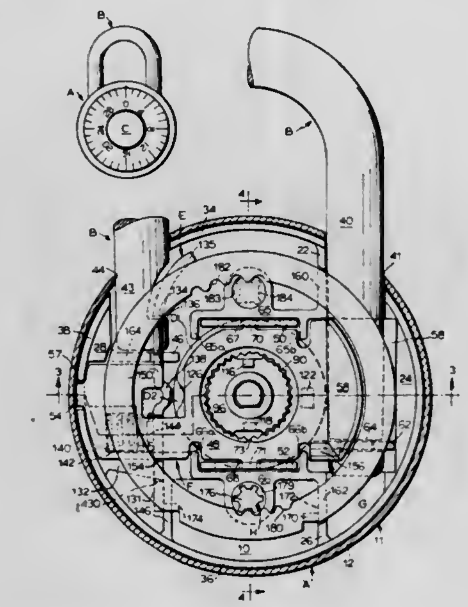
3,894,415
COMBINATION PADLOCK

Lazlo Bako, Woodcliff Lake, N.J., assignor to Presto Lock Company, Division of Walter Kidde & Company, Inc., Elmwood Park, N.J.

Filed Mar. 25, 1974, Ser. No. 454,420

Int. Cl. E05b *37/10*

U.S. Cl. 70—21 **21 Claims**



1. A combination padlock comprising:
a body having an internal cavity;
a shackle having a long leg portion and a short leg portion, the long leg portion extending into the internal cavity and being slidably supported by the body for enabling the shackle to be moved from an open first position to a closed second position and to a combination-changing third position;
a manually rotatable dial supported by the body;
a plurality of tumblers contained in the internal cavity, the tumblers being rotatable by the dial;
locking means cooperable with the tumblers for locking the shackle in the closed second position and for unlocking the shackle when the tumblers are set to the opening combination of the padlock; and
combination-changing means actuated by the long leg portion of the shackle when the shackle is moved to the combination-changing third position for enabling the opening combination of the padlock to be changed.

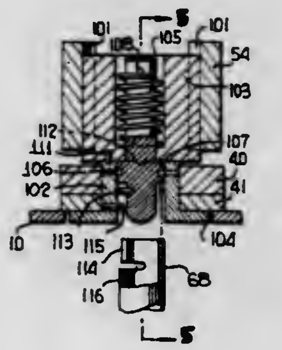
3,894,416
AUXILIARY LOCKING MECHANISM

Alfred B. Castle, 4104 Maryland Ave., Brookmont, Washington, D.C. 20016

Filed Nov. 19, 1973, Ser. No. 417,200

Int. Cl.^{2} E05B *13/00, 65/00*

U.S. Cl. 70—150 **10 Claims**



1. An auxiliary locking mechanism for blocking access to a primary locking mechanism which has a key hole extending through a support wall for the primary locking mechanism, said auxiliary locking mechanism comprising:
a first member adapted to fit tightly in said key hole;
a second member positioned adjacent one end of said first member so as to extend through said key hole when said first member is positioned tightly in said key hole;
said first and second members being positioned along a common axis;
actuable means for rotating said second member about said axis relative to said first member and for securing said first and said second member to one another along said axis, said actuable means comprising an actuator bar extending along said common axis and fixedly secured to said second member for rotation therewith;
wherein the periphery of said second member is contoured to permit removal of said first and second members from said key hole for at least one mutual rotational position of said members and to abut said support wall and thereby block removal of said members from said key hole for at least a second mutual rotational position of said members; and
wherein a bore hole is defined along said common axis through each of said first and second members, said auxiliary locking mechanism further comprising:
means for continuously securing said actuator bar to said first member to prevent axial movement of said actuator bar relative to said first member without inhibiting rotational movement of said actuator bar about a commmon axis relative to said first member;
means for effecting rotation of said actuator bar about said common axis;
bias means for urging adjacent surfaces of said first and second members into abutting relationship; and

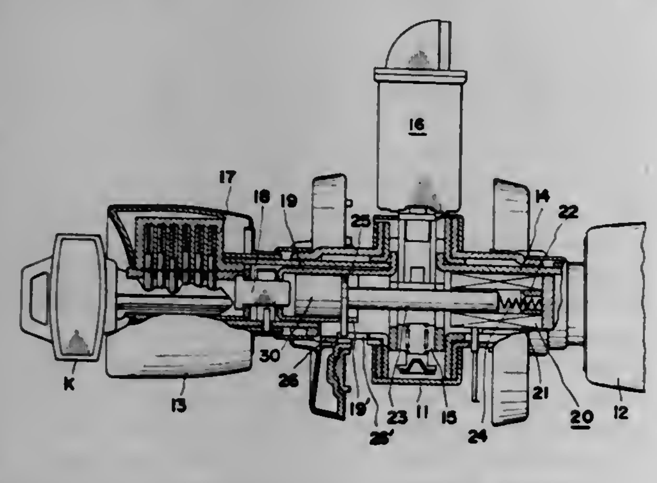
detent means for defining said one and said second mutual rotational positions of said first and second members.

5. An auxiliary locking mechanism for blocking access to a primary locking mechanism which includes a support, a bolt having a latching portion mounted for longitudinal sliding movement with respect to said support, a spring means cooperating with the bolt and the support and normally maintaining the latching portion in a locked position, said bolt being provided with an elongated slot extending therethrough and axially of said bolt, the support having an entrance opening of lesser length than the elongated slot, said entrance opening registering with said slot, the end wall of the elongated slot remote from the latching portion of said bolt being inclined in a direction away from the latching position, the wall of the entrance opening in proximity to the inclined wall of the elongated slot being spaced from said inclined wall in the direction of the latching portion whereby displacement of said bolt from said locked position requires a tool having a curved end section which is inserted through said entrance opening into said elongated slot, said tool being pivoted to force said curved end section to engage said inclined wall and thereby slide said bolt out of said locked position, said auxiliary locking mechanism comprising:

a first member adapted to fit tightly in said entrance opening and flush with the wall of said entrance opening;
a second member positioned adjacent one end of said first member so as to extend through said entrance opening into said elongated slot when said first member is positioned tightly in said entrance opening;
said first and second members being positioned along a common axis;
actuable means for rotating said second member about said axis relative to said first member and for securing said first and second members to one another along said axis; and wherein the periphery of said second member is contoured to permit removal of said first and second members from said entrance opening for at least one mutual rotational position of said members and to abut the wall of said entrance opening and thereby block removal of said second member from entrance opening for at least a second mutual rotational position of said members.

3,894,417
ELECTRIC LOCK

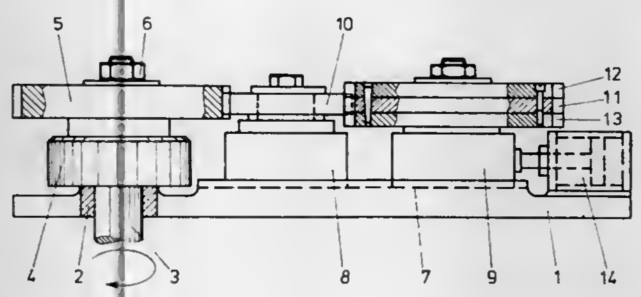
Mitsumasa Taniyama, Osaka, Japan, assignor to Goal Company, Ltd., Osaka, Japan
Filed Jan. 4, 1974, Ser. No. 430,929
Int. Cl. E05b *47/06*
U.S. Cl. 70—156 **4 Claims**



1. A key operated electric door lock comprising:
a lock body mounted through the door;
locking means within said lock body for maintaining said door lock in the locked condition;
a rotatable inside door knob operatively connected to said locking means for unlocking said locking means and unrestricted from unlocking said locking means at all times, whereby turning said inside door knob unlocks said locking means from the inside;
a stationary outside door knob connected to said lock body outside the door;
key operated cylinder lock means within said outside door knob operatively connected to said locking means for unlocking of said locking means from the outside, whereby turning the proper key in the cylinder lock means will unlock said locking means from outside the door; and
movable solenoid means within said door knob extending therefrom toward said locking means, said solenoid means having a first position when energized and a second position when de-energized, for engaging with and blocking said cylinder lock means when in one of said two positions, thereby preventing unlocking of said locking means from outside of the door solely by operation of said cylinder lock means, and for disengaging from and freeing said cylinder lock means when in the other of said two positions, thereby allowing unlocking of said locking means by said cylinder lock means.

3,894,418
APPARATUS FOR FINISHING GEAR TEETH

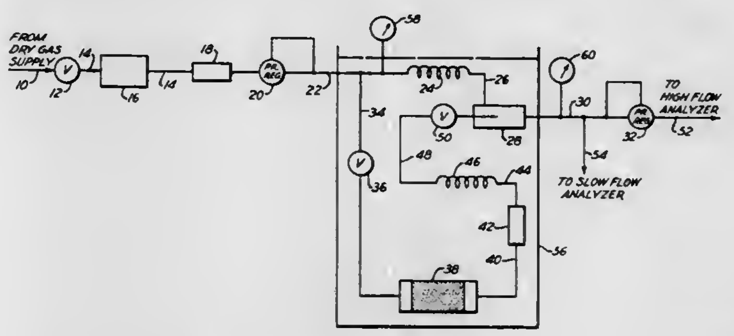
Adolf Horl, Friedrichshafen, Germany, assignor to Zahnradfabrik Friedrichshafen, Aktiengesellschaft, Friedrichshafen, Germany
Filed Mar. 19, 1974, Ser. No. 452,529
Claims priority, application Germany, Mar. 29, 1973, 2315702
Int. Cl. B21h *5/02*
U.S. Cl. 72—108 **2 Claims**



1. An apparatus for chamfering and finishing the teeth of preformed work gears by effecting compression thereof between a chamfering gear device and a finishing gear, comprising in combination:
a support means having a finishing gear on a fixed rotative axis; a chamfering gear device and a first movable mount therefor comprising means for securing said chamfering gear device freely rotative thereon;
a second movable mount disposed intermediate said finishing gear and said first movable mount and having means for supporting a work gear for free rotation thereon;
means for moving said first mount to effect pressure engagement of said chamfering gear device with a work gear on said second mount;
whereby said work gear is forced into engagement with said finishing gear so that rotation of said finishing gear effects rotation of the work gear to transmit the rotation thereof to said chamfering gear device to chamfer the teeth of the work gear whereon any burr resulting is smoothed by said finishing gear.

3,894,419
MOISTURE ANALYZER CALIBRATOR

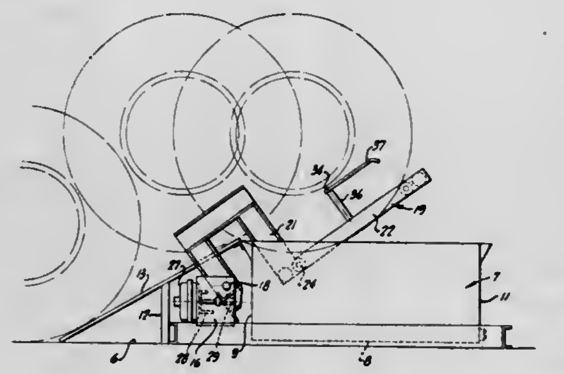
Richard T. Mator, Plum Borough, and Thomas J. Puzniak, Cheswick, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
Filed June 19, 1974, Ser. No. 480,681
Int. Cl. G01c *25/00*
U.S. Cl. 73—1 R **12 Claims**



6. Apparatus for preparing a gas of known moisture content comprising means for supplying a dry gas, pressure regulating means for maintaining a constant inlet pressure on the dry gas, dry gas flow restricting means, gas mixing means, conduit means for delivering dry gas from the pressure regulating means to the flow restricting means and from the flow restricting means to the mixing means, saturating means, means for delivering dry gas from the dry gas pressure regulating means into the saturating means to form a wet gas, wet gas flow restrictor means, wet gas conduit means adapted to deliver wet gas from the saturating means to the wet gas restrictor means and from the wet gas restrictor means to the mixing means, temperature control means adapted to maintain the saturating means at a constant temperature, and second pressure regulating means adapted to maintain a constant pressure on the gas in the mixing means.

3,894,420
TIRE CHECKING MACHINE

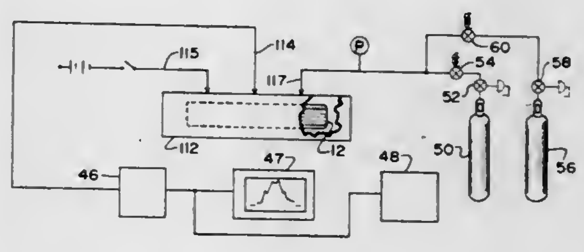
Richard L. Fuchslin, 265 N. Almond St., Dixon, Calif. 95620
Filed Aug. 5, 1974, Ser. No. 494,470
Int. Cl.² G01M *3/06*
U.S. Cl. 73—45.6 **6 Claims**



1. A tire checking machine comprising a water tank having upstanding sides, a ramp leading from the floor substantially to the top of one of said sides, a frame adjacent said tank, an L-shaped carrier having a horizontal arm and a vertical arm, means for pivoting said carrier on said frame to move said horizontal arm between a lower position in said tank and an upper position above said tank and in substantial alignment with said ramp, a pair of rollers on said horizontal arm in position to support a tire thereon, and an operating jack connected to said frame and to said vertical arm for moving said carrier.

3,894,421
METHOD OF MEASURING TIRE DYNAMIC STRENGTH

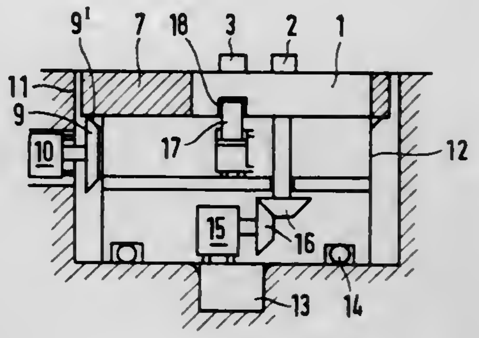
Lawrence R. Sperberg, 6740 Fiesta Dr., El Paso, Tex. 79912
Filed Aug. 17, 1973, Ser. No. 389,434
Int. Cl. G01m *17/02*
U.S. Cl. 73—146 **56 Claims**



1. Method of determining an adequate dynamic strength level of the elements of a pneumatic tire comprising the steps of:
suddenly increasing the pressure within the inflation chamber of the tire to a magnitude which will simultaneously subject the elements of the tire to a force of a duration and magnitude greater than one psi applied to the tire chamber at a rate greater than 0.5 psi per millisecond.

3,894,422
BENDING MACHINE, MORE PARTICULARLY FOR STEEL RODS FOR REINFORCING CONCRETE

Carl Ullrich Peddinghaus, Obere Lichtenplatzerstrasse 276, 56, Wuppertal Barmen, Germany
Filed Mar. 27, 1973, Ser. No. 345,348
Claims priority, application Germany, Mar. 29, 1972, 2215490
Int. Cl. B21d *7/02*
U.S. Cl. 72—217 **10 Claims**

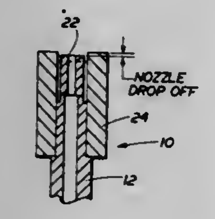


1. A bending machine for steel rods for reinforcing concrete, comprising a first bending plate carrying a central and an eccentric bending tool, said first bending plate being adapted to be selectively rotatable in a clockwise and an anti-clockwise direction about its central bending tool, and having at least one fixed support arranged outside said bending plate, said bending plate also being adapted to be rotatable about its eccentric bending tool, locking means being associated with respective drive means which can hold the axis of the central bending tool, or that of the eccentric bending tool in a fixed position, and a further support being arranged outside to said one fixed support on the same side of the bending machine, a further bending plate surrounding said first bending plate and being constructed as an eccentric disc and being adapted to be driven by means of external teeth, said further bending plate forming a bearing for the first bending plate, said eccentric bending tool of said first bending plate coinciding with the axis of said further bending plate.

3,894,423
AIR GAGE CARTRIDGE

Robert C. Messmer, King of Prussia, Pa., assignor to J. M. Schmidt Precision Tool Co., Inc., West Chester, Pa.

Filed Oct. 15, 1973, Ser. No. 406,150
Int. Cl. G01b *13/00*
U.S. Cl. 73—37.5 **11 Claims**

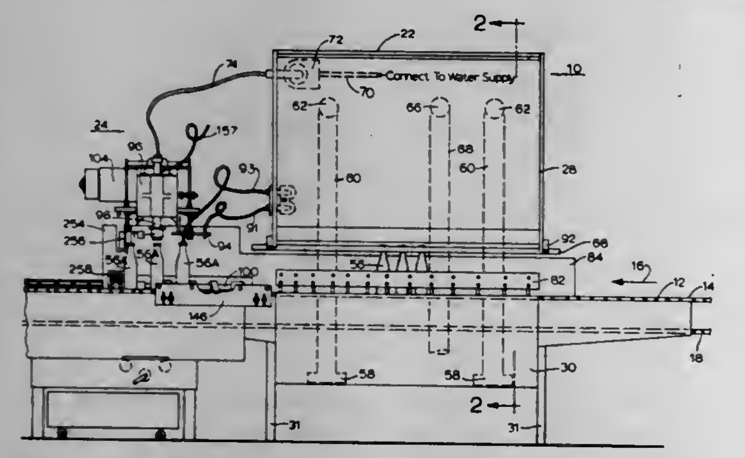


1. An air gage cartridge adapted to be mounted in a gaging fixture comprising a nozzle member defining a nozzle opening at one end thereof and having an air supply passage formed therein for delivering air to said nozzle opening, and a tubular sleeve member having an internal bore, said nozzle member being fixedly mounted within said bore of said sleeve member in a position wherein said sleeve member has a portion projecting beyond said nozzle opening to provide a predetermined nozzle drop off, said projecting portion of said sleeve being made of a material having high wear resistance properties substantially greater than the wear resistance properties of the nozzle member, said wear resistance properties of said projecting portion of said sleeve member being sufficient to provide a wear surface for said cartridge.

3,894,424
ON LINE PRESSURE TESTING SYSTEM

Harvey Carter Taylor, Decatur, Ga., and Whitney S. Powers, Jr., Pine City, N.Y., assignors to The Coca-Cola Company, Atlanta, Ga.

Filed Apr. 16, 1974, Ser. No. 461,463
Int. Cl. G01m *3/32*
U.S. Cl. 73—49.2 **14 Claims**

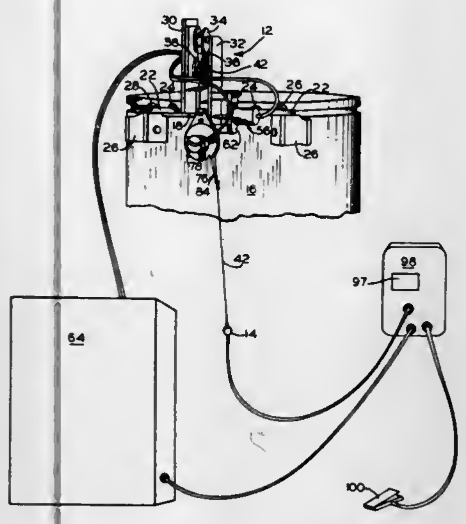


1. A device for testing the strength of containers as they move along a conveying path comprising means for filling the containers to their top capacity with a substantially incompressible liquid, means for subjecting said incompressible liquid in the container to a predetermined hydrostatic pressure, said subjecting means being disposed downstream of said filling means, a conveyor, said conveyor being disposed below said filling means and said subjecting means for supporting and conveying containers thereon past said filling means and said subjecting means, wherein said filling means includes an elongated member that extends along the conveying path, said elongated member having an elongated opening extending along said conveying path through which a downwardly directed sheet of liquid can be simultaneously discharged into a plurality of containers as they are moved by said conveyor past said member so that the containers are substantially filled thereby.

3,894,425
TWO-COORDINATE LOCATING DEVICE FOR A ULTRASONIC SEARCH PROBE

Donald C. Winters, Rensselaer, and James J. Miller, Waterford, both of N.Y., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 27, 1974, Ser. No. 446,556
Int. Cl.² G01N *29/04*
U.S. Cl. 73—67.8 S **13 Claims**



1. In a system for scanning an arcuate surface with an ultrasonic search probe to detect the existence of cracks and other flaws therein, means for continuously locating the polar coordinates of the probe relative to an actual fixed reference point radially spaced outwardly of a theoretical given point on the arcuate surface, comprising,

a reel releasably mounted to the arcuate surface in spaced relation to the fixed reference point for rotation about an axis parallel to the plane tangent to the arcuate surface at the given point thereon,

a flexible cable having one end wound on said reel and the other end thereof connected to the probe,

spring means responsive to the rotation of said reel for imparting a constant torque thereto in opposition to the unwinding of said cable therefrom,

a first incremental encoder rotatably responsive to the winding and unwinding of said cable from said reel for generating electrical counting pulses in direct relation to the length of said cable unwound from said reel during the scanning movement of the search probe,

a second incremental encoder mounted at right angles to said first encoder and rotatably responsive to the angular movement of the probe for generating electrical counting pulses in direct relation to the extent of the angle between the probe and a line through the fixed reference point normal to the axis of rotation of said reel, and

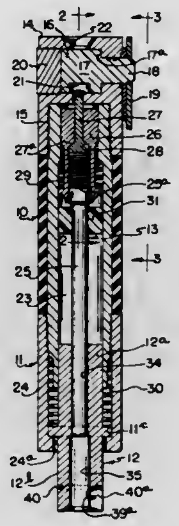
means for visually presenting the output of each of said first and second encoders throughout the scanning movement of the probe.

3,894,426
APPARATUS FOR PENETRATION TEST OF CONCRETE BLOCK, BRICK AND THE LIKE

Rowland J. Kopf, 20 Farmstead Ave., Apt. 20, Southington, Conn. 06489

Filed Oct. 29, 1973, Ser. No. 410,958
Int. Cl. G01n *3/48*
U.S. Cl. 73—82 **1 Claim**

1. Powder actuated apparatus for driving a probe pin for a penetration test of a homogeneous ceramic material comprising an elongated cylindrical barrel, a breach block assembly at one end of said barrel having a firing port concentric with said barrel and a loading port longitudinally spaced from said firing port and concentric with said barrel, said breach assembly including a cartridge loading drum having a cartridge receiving chamber movable by rotation of said drum between a position opposite said loading port and a position opposite said firing port, an operator associated with said drum and having a position corresponding to said firing position and another position corresponding to said loading position, a piston mounted for reciprocation concentric in said barrel and having a head at the breach block end snugly fitting in said barrel and having a rigid rod extending in one direction away from said head, a firing pin rigid with said piston head and extending in the opposite direction to a point registering with said firing port, spring means holding said pin retracted in said firing port, a muzzle bushing at the other end of said barrel, there being a through opening in said muzzle bushing concentric with said barrel, a probe pin assembly, said opening of a size to snugly receive said probe pin assembly, means held by said bushing in position to hold said probe pin assembly temporarily in said opening, said probe pin assembly consisting of a tube of predetermined length and a pin firmly fitting inside said tube having a pointed nose, said pin being of said predetermined length with its end opposite said nose registering with one end of said tube, and the distal end of said piston rod being of a size to enter into said tube and drive said pin relative to said tube.

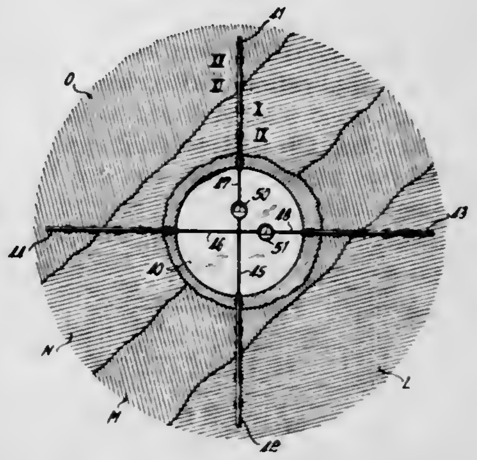


3,894,427
DEVICE FOR MEASURING CHANGES IN CONVERGING ROCK FORMATIONS IN A MINING CAVITY

Fritz Schuermann, Hattingen, Niederwenigern; Herbert Muller, Essen-Werden; Horst Boddicker, Essen-Kray, and Peter-Paul Heusinger, Essen, all of Germany, assignors to Bergwerksverband GmbH, Essen, Germany

Division of Ser. No. 205,576, Dec. 7, 1971. This application Feb. 20, 1974, Ser. No. 439,016
Int. Cl.² G01B *5/30*
U.S. Cl. 73—88 E **1 Claim**

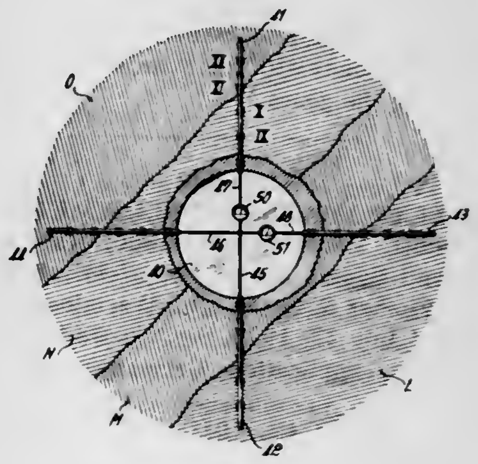
1. Device for measuring changes in converging rock formations in a mining cavity having surrounding walls, comprising an elongate tube constituting a measuring anchor fixed in a bore hole in one wall, a plurality of axially spaced sensors on said anchor, said sensors comprising strain gages arranged in oppositely disposed pairs, leads for said sensors extending to the outside through said tube, a similar measuring anchor fixed in a bore hole in an opposite wall and axially aligned with said first anchor, a plurality of similar sensors axially spaced along said second anchor with similar leads extending through same, an arm fixed to and projecting from the outer end of each anchor, a convergence transmitter for receiving the free end of each arm, and said leads constituting connections from said sensors to said transmitter unit, thereby to determine the condition of the surrounding rock formations.



3,894,428
MEASURING ANCHORS FOR USE IN MINING

Fritz Schuermann, Hattingen, Niederwenigern; Herbert Muller, Essen-Werden; Horst Boddicker, Essen-Kray, and Peter-Paul Heusinger, Essen, all of Germany, assignors to Bergwerksverband GmbH, Essen, Germany

Continuation-in-part of Ser. No. 205,576, Dec. 7, 1971. This application Feb. 20, 1974, Ser. No. 439,017
Int. Cl.² G01B *5/30*
U.S. Cl. 73—88 E **1 Claim**



1. In a measuring anchor for measuring changes in the area surrounding a mining cavity in which the anchor is rigidly embedded in a bore hole of such cavity, the improvement comprising an elongate rod-like member constituting the measuring anchor, said rod-like member comprising a cylindrical rod provided with diametrically opposed external recessed portions, sensors on said rod-like member arranged respectively in axially spaced intervals and on the outer side thereof for measuring changes in the strata surrounding same in several planes distributed over the length of said member, said sensors constituting strain gages arranged in pairs in opposite recessed portions respectively in axially spaced relation over the length of said rod-like member, sheet metal strips covering said strain gages respectively and curved to conform to the shape of said rod-like member, and leads from said sensors contained within the confines of said rod-like member adapted to extend to the outside for enabling detection of dimension and speed of changes in the strata, whereby the exterior surface of the measuring anchor is relatively smooth for enabling free insertion into the bore hole.

3,894,429

NOISE CHECKING INSTALLATION FOR TWO ROTATING AND INTERENGAGING GEARS

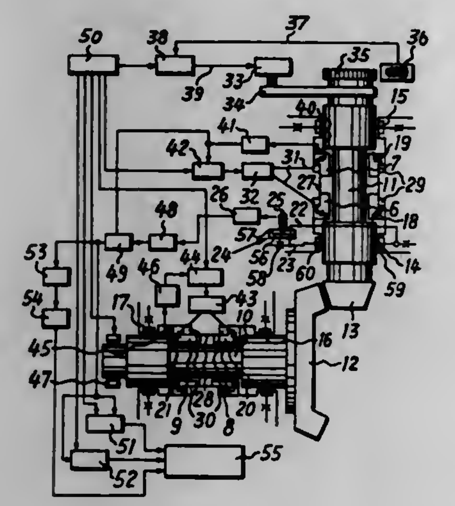
Erhard Konersmann, Zurich, and Rudolf Gruber, Bichelsee, both of Switzerland, assignors to Werkzeugmaschinenfabrik-Oerlikon Buhrle AG, Zurich, Switzerland

Filed July 22, 1974, Ser. No. 491,167

Claims priority, application Switzerland, July 31, 1973, 11127/73

Int. Cl. G01m *13/02*

U.S. Cl. 73—162 **12 Claims**



1. A noise checking installation for two rotating and interengaging gears at a gear testing machine, each of said gears having a shaft, means for mounting said gears to be displaceable relative to one another in the direction of their axes of rotation, said mounting means for the gears including hydrostatic bearings provided for the gear shafts, means for measuring the liquid noise as a function of axial displacement of the gears for a given meshing frequency of the gears and for a given rotational moment, and means for operatively connecting the measuring means with the hydrostatic bearings of said shafts which carry the gears.

3,894,430

ELECTROMAGNETIC FLOWMETER

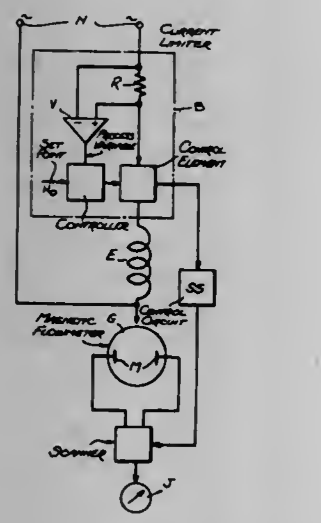
Theodor Rummel, Hannover-Kirchrode; Rainer Hentschel, Hannover, and Eggert Appel, Dransfeld, all of Germany, assignors to Fischer & Porter Co., Warminster, Pa.

Filed July 27, 1973, Ser. No. 383,074

Claims priority, application Germany, Aug. 16, 1972, 2240054

Int. Cl. G01f *1/00*

U.S. Cl. 73—194 EM **3 Claims**



1. In an electromagnetic flowmeter operated from a standard alternating-current power line producing a sinusoidal current, said flowmeter having a flow tube provided with a pair of measuring electrodes and an electromagnetic coil for establishing a field which is intersected by a fluid passing through the tube to produce a signal voltage across said electrodes whose amplitude is a funtion of flow rate, said signal being applied to an indicator; the combination comprising:

A. Means including a limiter having a bipolar control element to supply said current from said alternating-current power line to said coil and a controller operatively coupled to said control element to limit the amplitude of said current during a predetermined interval in the course of each positive and negative half wave to maintain the amplitude substantially constant during said intervals, and

B. Scanner means interposed between said electrodes and said indicator and operatively coupled to said limiter means to transmit the signal voltage from said electrodes to said indicator only during said interval, whereby the effects of quadrature voltages are avoided.

3,894,431

APPARATUS FOR INDICATING FLUID FLOW VELOCITY

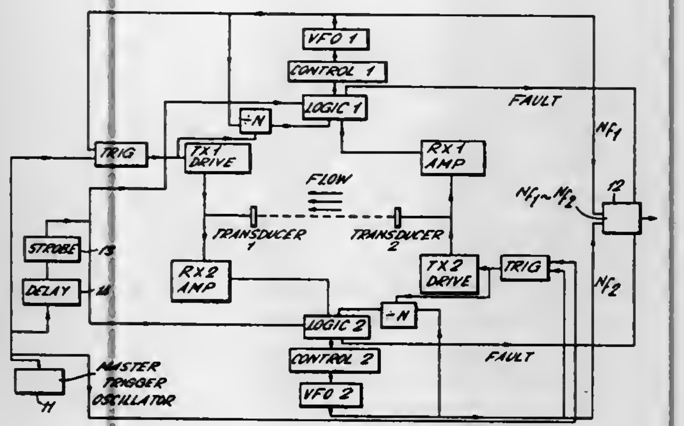
Albert Henry Muston, Newbury, and William Ronald Loosemore, Abingdon, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Continuation-in-part of Ser. No. 347,642, April 4, 1973, abandoned. This application Feb. 6, 1974, Ser. No. 440,163

Claims priority, application United Kingdom, Apr. 4, 1972, 15554/72

Int. Cl.^{2} G01F *1/66*

U.S. Cl. 73—194 A **29 Claims**



1. Apparatus for use in measuring the velocity or a component of velocity of fluid flow, which apparatus comprises first and second units spaced apart and each adapted to transmit and receive pressure wave pulses travelling over a path through the fluid in the direction in which velocity component is to be measured, variable frequency oscillator means, timing control means for defining time intervals of duration independent of the frequency of the variable frequency oscillator means, trigger means under control of the said timing control means for causing a pressure wave pulse to be transmitted from the first unit to the second unit and, separately, from the second unit to the first unit, and control means for adjusting the variable frequency oscillator means to generate a first frequency dependent upon the time taken for a pressure wave pulse to travel from the first unit to the second unit and, separately under control of said timing control means, to generate a second frequency dependent upon the time taken for a pressure wave pulse to travel from the second unit to the first unit, and a difference determining means for determining the difference between said first and second frequencies.

3,894,432

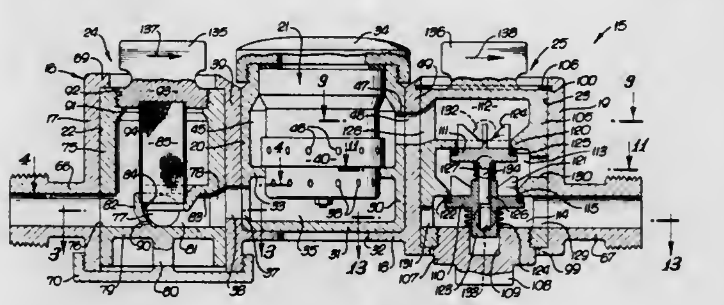
COMBINATION METERED WATER SERVICE INSTALLATION UNIT

Donald W. Coughlin, P.O. Box 2025, San Bernardino, Calif.

Filed Dec. 20, 1973, Ser. No. 426,442

Int. Cl.^{2} G01F *15/10*

U.S. Cl. 73—201 **1 Claim**



1. A combination metered water service installation unit comprising:

a common integral housing providing three contiguously juxtaposed vertical shells, the terminal shells providing primary and secondary valve chambers and the inner shell providing a generally cylindrical meter-enclosing chamber having an internal annular flange spaced upwardly from the bottom of said inner shell;

said inner shell sharing a common wall with each of said terminal shells, one of said common walls having a primary flow passage connecting said meter chamber below said flange with a lower portion of said primary valve chamber, the other of said common walls having a secondary flow passage connecting said meter chamber above said flange with said secondary valve chamber;

a generally cylindrical meter occupying said meter chamber and resting on said internal flange, said meter having openings above and below said flange whereby water delivered to said meter chamber is channeled to flow vertically through said meter to be measured by said meter;

primary and secondary valves rotatably occupying said valve chambers, said valves having open positions for facilitating a measured flow of water through said unit and closed positions for shutting off said flow;

gravity drain means associated with said primary valve and rendered operative to drain to waste residual water occupying said meter when said primary valve is closed, said drain means being automatically shut when said primary valve is open to facilitate said measured flow of water through said unit,

said metered flow of water entering said unit through said primary valve and being discharged therefrom through said secondary valve when both of said valves are in open position,

said valve chambers being approximately cylindrical and said valves comprising hollow plugs rotatably fitting within said valve chambers;

said primary valve shell providing an inlet water connection and a drain to waste connection, both communicating with said primary valve chamber on approximately the same level as said primary flow passage;

said primary valve plug, when in open position, providing a passage connecting said inlet water connection with said primary flow passage, and presenting an imperforate outer surface to said drain to waste connection thereby closing the latter,

said primary valve plug, when in closed position, presenting an imperforate outer surface to said inlet water connection thereby closing the latter, while providing a passage connecting said drain to waste connection with said primary flow passage whereby residual water in said meter will flow by gravity into said drain to waste connection; spring biased check valve means mounted within said secondary hollow plug valve and functioning, while said secondary valve is turned to open position, to prevent a reverse flow of water through said secondary valve and said secondary flow passage into said meter chamber;

the primary valve passage delivering water to the housing primary flow passage, when said primary valve is open, having mounted therein a cylindrical screen through which said water is routed to collect solid particles carried by said water on the outer surface of said screen,

said primary valve also having a back flushing position in which an imperforate area of said valve overlies and closes said primary flow passage and wherein a valve passage is provided connecting said water inlet connection to said drain to waste connection, water being thereby conducted under pressure in a reverse direction through said screen and back flushing to waste solid particles collected by said screen.

3,894,433

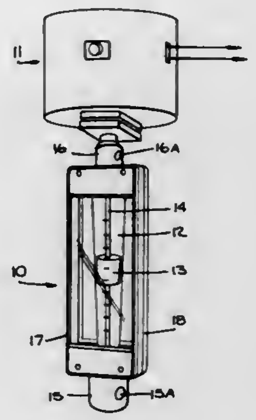
ROTAMETER SYSTEM WITH ELECTRICAL READ-OUT

Hubert A. Riester, Huntingdon Valley, and John S. Yard, Warminster, both of Pa., assignors to Fischer & Porter Co., Warminster, Pa.

Filed Feb. 13, 1974, Ser. No. 441,997

Int. Cl. G01f *1/00*

U.S. Cl. 73—209 **13 Claims**



1. A rotameter system adapted to produce an electrical signal which is proportional to flow rate, said system comprising:

A. a primary element including a variable area flow tube through which flows the fluid whose rate is to be measured, and a float slideable along a vertical guide rod disposed within said tube, said float being raised and lowered to a degree depending on flow rate, and

B. a linear displacement transducer operatively coupled to the upper end of said rod and including means to generate a torsional strain pulse at the position of the float, means at a fixed point coupled to said rod to receive said pulse, means to measure the time interval required for said torsional strain pulse generated at the float position to travel from the float along the rod to said fixed receiving point, and means to convert this interval into an electrical signal representative of the float position.

3,894,434

RELATIVE HUMIDITY MEASUREMENT

Alexander J. Flam, 91 Boulevard de l'Ouest, 93 Le Raincy, France

Filed Mar. 14, 1973, Ser. No. 340,962

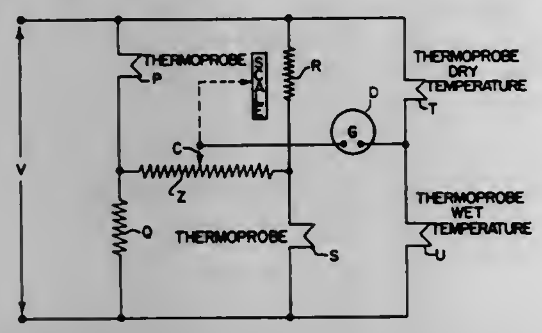
Claims priority, application France, Mar. 14, 1972, 72.0875

Int. Cl. G01n *25/62*

U.S. Cl. 73—336.5 **5 Claims**

1. A system for detecting relative humidity comprising a potentiometer having a movable arm, means to produce a voltage across said potentiometer corresponding to the difference between ambient temperature and a reference temperature, means to produce a voltage corresponding to the de-

crease in temperature caused by evaporation cooling between a circuit point and a predetermined point on said potentiometer independent of the position of said movable arm, and means to indicate whether electrical balance exists between said movable arm of the potentiometer and said circuit point, said means to produce a voltage across said potentiometer comprising a first resistance varying with temperature connected between one end of said potentiometer and one side of a voltage source, a second resistance varying with temperature connected between the other end of said potentiometer and the other side of said voltage source, a fixed resistance connected between said one end of said potentiometer and said other side of said voltage source and a fixed resistance connected between said other end of said potentiometer and said one side of said voltage source.



3,894,435
PRESSURE SENSOR

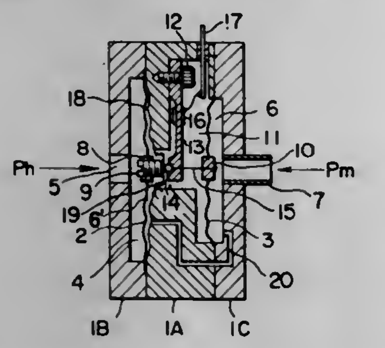
Satoshi Shimada, Hitachi, and Ichiro Kimura, Mito, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Oct. 25, 1973, Ser. No. 409,416

Claims priority, application Japan, Nov. 1, 1972, 47-108832

Int. Cl. G01l *9/04*

U.S. Cl. 73—393 2 Claims



1. A pressure sensor comprising two diaphragms differing from each other in effective diameter, a bellows interposed between said two diaphragms, a vacuum chamber defined by said bellows and the smaller diameter diaphragm, a cantilever disposed in said vacuum chamber and adapted to be moved by said two diaphragms, a semiconductor strain gauge producing an electric signal consistent with the strain produced in the surface of the cantilever, an atmospheric pressure chamber exposing one side of the larger diameter diaphragm to atmosphere, and a chamber exposing the other side of each of said two diaphragms to an engine manifold.

3,894,436
DIFFERENTIAL PRESSURE GAUGE

Albert Yakovlevich Jurovsky, ulitsa Baltiiskaya, 4, kv. 94, Moscow, U.S.S.R.

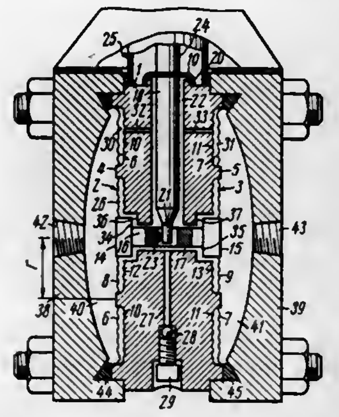
Filed June 11, 1974, Ser. No. 478,335

Claims priority, application U.S.S.R., June 18, 1973, 1933185

Int. Cl. G01l *19/04, 7/08*

U.S. Cl. 73—393 2 Claims

1. A differential pressure gauge comprising a base having an outer contour and opposite sides; two membranes secured along the outer contour to the opposite sides of said base; a circular zone on each of said membranes arranged concentric with its outer contour and serving for additional rigid fastening of each of said membranes to said base; said base having a hole; middle portions of said membranes rigidly interconnected through said hole in the base; a pressure-tight space between said base and said membranes; a liquid contained in said pressure-tight space; circular peripheral spaces separated by said circular zones of the membranes from said pressure-tight space; channels which provide communication between said circular peripheral spaces and said pressure-tight space; a means connected with said middle portions of the membranes and serving to transmit the motion of the membranes caused by the difference of pressures; and a means which transforms the motion of the membranes into an output signal and interacts with said first means.



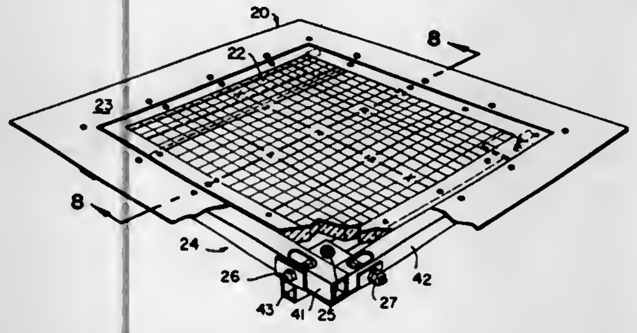
3,894,437
METHOD OF AND MEANS FOR DYNAMIC GAIT ANALYSIS

John L. Hagy, 1462 Gordon St. Apt. No. 2, Redwood City, Calif. 94061; John R. Hawthorn, P.O. Box 62, Crane, Ind. 47522; Cecil W. Keller, 1751 Santa Cruz Ave., Santa Clara, Calif. 95051, and Leonard M. Musil, 7567 Normandy Way, San Jose, Calif. 95129

Filed Jan. 10, 1974, Ser. No. 432,146

Int. Cl. A61b *5/10*

U.S. Cl. 73—432 R 22 Claims



1. In the method of analyzing the gait of a subject walking a prescribed path by sensing the forces applied to a discrete area of said path by a foot of said walking subject, the steps of:

a. converting the varying vertical load forces imposed by said foot of said walking subject on said discrete area of said path during a given interval of time to correspondingly varying electrical signals;
b. converting the varying shear forces imposed by said foot of said walking subject on said discrete area longitudinally of said path during said given interval of time to correspondingly varying electrical signals;
c. converting the varying shear forces imposed by said foot of said walking subject on said discrete area laterally of said path during said given interval of time to correspondingly varying electrical signals;
d. recording all of said varying electrical signals with respect to time;
e. comparing the values of said recorded electrical signals at various instants of said given interval of time to each other;
f. photographing said walking subject at successive instants of said given interval of time in the plane of said prescribed path; and
g. correlating said photographs with said recorded electrical signals with respect to time.

10. Apparatus for use in analyzing the gait of a subject walking a prescribed path by sensing the forces applied to a discrete area of said path by a foot of said walking subject comprising:

a. a force plate of sufficient thickness to be rigid when subjected to the full weight of said walking subject, said plate having parallel opposed major surfaces of substantially larger area than the contact area of said foot of said walking subject and a peripheral edge normal to said major surfaces;
b. means mounting said plate with one of said major surfaces thereof forming said discrete area of said prescribed path, said means including a plurality of piezoelectric load cell assemblies and a plurality of compression spring assemblies in operative contact with said plate, a first one of said plurality of load cell assemblies and a first one of said plurality of compression spring assemblies contacting said edge of said plate on opposite sides of said plate at points lying on a first line, a second one of said plurality of load cell assemblies and a second one of said plurality of compression spring assemblies contacting said edge of said plate on opposite sides of said plate at points lying on a second line transverse to said first line, and a third one of said plurality of load cell assemblies contacting the other one of said major surfaces of said plate; and
c. means for recording the electrical output of said plurality of piezoelectric load cell assemblies with respect to time.

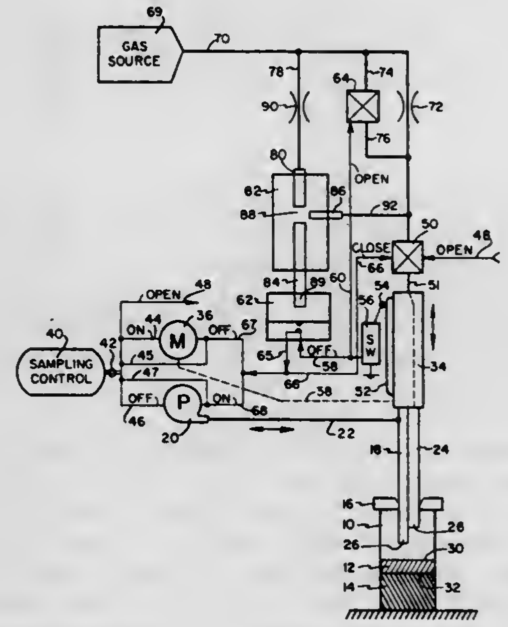
3,894,438
PNEUMATIC FLUID LEVEL SENSING AND SAMPLING SYSTEM

Guenter Ginsberg, Miami, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed July 27, 1973, Ser. No. 383,464

Int. Cl. G01n *1/14*

U.S. Cl. 73—423 A 13 Claims



1. A level sensing and sampling system comprising:
a sampling probe,
means coupled to said sampling probe to control its sampling operation,
a level sensing probe,
probe transport means coupled to provide relative movement to both said probes as if a unit with respect to a sample having an upper surface,
said probes being constructed and arranged relative to one another and oriented with respect to the sample surface such that there is a predetermined difference in distance between the sample surface and the proximate end of each of said probes, with the sampling probe end being disposed closer to the surface than the sensing probe end,
gas source means coupled to said sensing probe for supplying at least one quantum of gas pressure to said sensing probe for discharge from its said end toward the sample surface, and
gas pressure responding means having two input ports, one said port being coupled to said gas source means to receive input gas, and a second of said ports being coupled to receive and react to control gas effectively generated by said sensing probe at the time that and by virtue of said sensing probe end being moved by said transport means toward the sample surface when the gas discharge from said sensing probe end comes significantly under the influence of the presence of the sample surface, said sampling probe control means being responsively coupled to said gas pressure responding means for immobilizing said transport means and effecting sampling initiated by the reaction to the control gas.

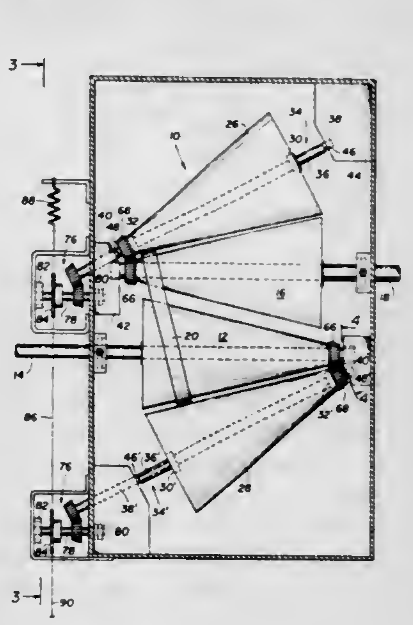
3,894,439
INFINITE SPEED DRIVE

Domenic Borello, 142 Nyach Ave., Pelhem, N.Y. 10803

Filed July 26, 1974, Ser. No. 492,347

Int. Cl.^{2} F16H *15/16, 15/42*

U.S. Cl. 74—192 5 Claims



1. An infinite speed drive including a motor-powered driving cone, a driven cone oriented 180° out of phase with and operatively arranged to be powered in rotation by said driving cone, an endless pulley belt entrained about said cones to provide said powering drive therebetween and to provide a speed of rotation in said driven cone which is a function of the position of said endless pulley belt along the lengths of said cones, and pulley belt-positioning means comprising a first and a second idler cone mounted respectively adjacent said driving and driven cones and movable into an operative position adjacent thereto bounding a clearance therebetween of a progressively increasing extent so as to urge said pulley belt in movement along said driving and driven cones in the direction of increased size of each said clearance, said idler cones being oriented in 180° out of phase relation to each other to correspondingly provide said clearances of progressively increased size in opposing directions for inducing pulley belt movement

relative to said driving and driven cones also in opposing directions therealong, offset shafts respectively rotatably supporting said idler cones, and control means for rotating said offset shafts in coordinated relation such that at any one time only a selected one of said idler cones is providing pulley belt-positioning service, whereby said pulley belt is readily shiftable along said driving and driven cones into an operative position providing any desired output rotational speed in said driven cone.

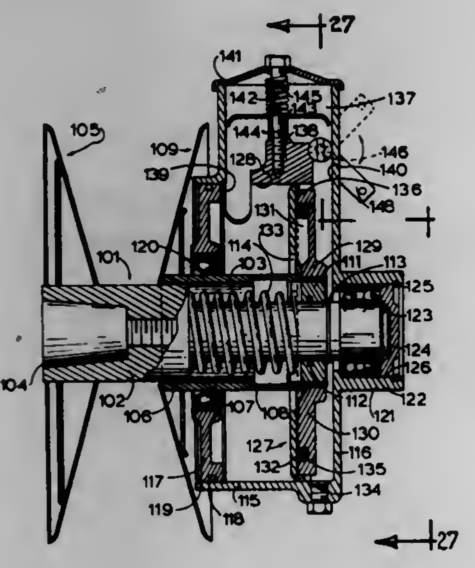
3,894,440
ROTATION RESPONSIVE FLUID PRESSURE ACTUATOR DEVICES

René Marceau, Honfleur, County of Bellechasse, Quebec, Canada

Continuation-in-part of Ser. No. 262,650, June 14, 1972, Pat. No. 3,796,519. This application Feb. 20, 1974, Ser. No. 444,156

Int. Cl. F16h *55/52*

U.S. Cl. 74—230.17 F **14 Claims**



1. A rotation responsive fluid pressure actuator comprising a casing forming a cylindrical chamber, a piston coaxially rotatable and axially displaceable relative to the latter and defining a passage therethrough having opposite ends communicating with the axially opposite sides respectively of the piston, impeller means attached to said piston in communication with said passage, rotatable with said piston, and producing a variable pressure differential against said axially opposite sides upon rotation of said piston, input drive means connected to said piston to transmit rotation thereto, and an actuating device connected to said piston and axially displaceable therewith in response to said pressure differential for corresponding output action by said actuating device.

3,894,441
SUPPORT FOR PULLEY HOLDDOWN

Douglass R. Falkenberg, Rocky River, Ohio, assignor to Douglas Manufacturing Co., Elyria, Ohio

Filed June 8, 1974, Ser. No. 475,386

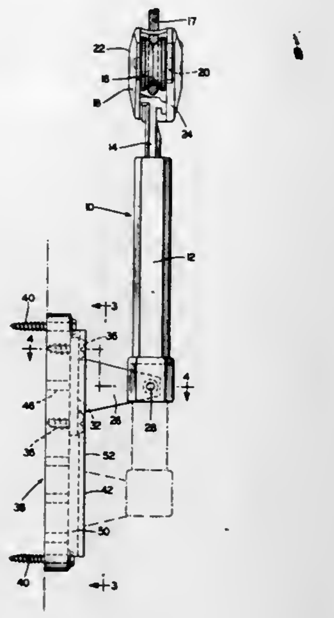
Int. Cl. F16h *7/10;* **F16f** *1/00, 9/00*

U.S. Cl. 74—242.14 R **6 Claims**

1. In combination with a pulley holddown for retaining the operating cord of a traverse rod which carries drapery material adjacent a window or wall opening;

a. a support adapted to be attached to a wall surface and co-operate with the pulley holddown to place the pulley holddown pre-determined distances from the traverse rod to properly position the operating cord; and,

b. the support comprising an elongated member having a track portion with a plurality of positions for receipt of the pulley holddown and placement of the pulley holddown varying distances from the traverse rod to maintain proper positioning of the operating cord.



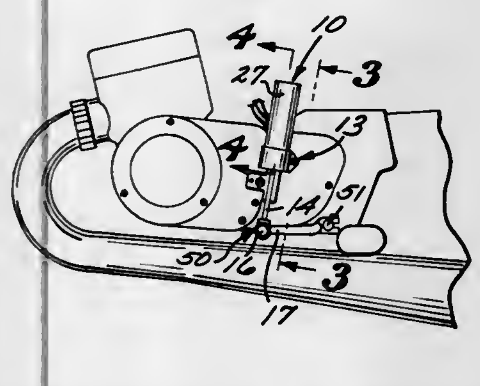
3,894,442
SEMI-AUTOMATIC ELECTRIC GEAR SHIFTING APPARATUS FOR A MOTORCYCLE

Ray Hembree, 5920 Olive Ave., Long Beach, Calif. 90805

Filed Apr. 15, 1974, Ser. No. 461,263

Int. Cl.^{2} B60K *20/10;* **G05G** *9/00;* **H01H** *3/16, 9/06*

U.S. Cl. 74—335 **4 Claims**



1. A semi-automatic electrical gear shifting apparatus for a motorcycle for shifting gears of a ratchet type gear shifting means comprising in combination:

a. an electrical switching means comprising a pair of switches mounted on the handle bar of the motorcycle, said switching means being electrically operably connected to

b. an electrical power source,

c. electrical drive means electrically connected to said power source through said switches, said electrical drive means including a solenoid, an actuating rod operatively connected to said solenoid, said actuating rod in turn being connected to a gear shifting lever arm through a toe pedal of the motorcycle, said lever arm being connected to a gear shifting spindle of the motorcycle gear mechanism, the connection between said lever arm and said spindle being such that when one of said switches is actuated said lever arm is moved by said solenoid to rotate said spindle in a first direction to change gears and when the other of said switches is activated said lever arm is moved by said solenoid to rotate said spindle in a second direction to change gears.

3,894,443
TRANSMISSION GEAR SHIFT CONTROL MECHANISM FOR HEAVY VEHICLES

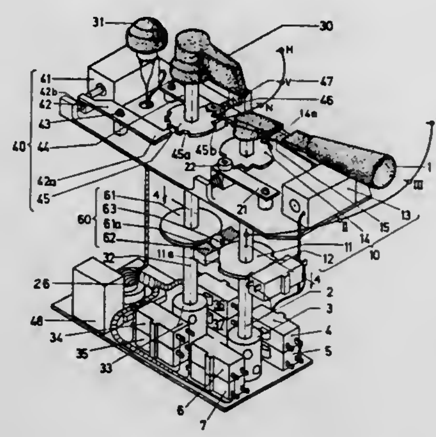
Willi Beig, and Fritz Feller, both of Friedrichsahfen, Germany, assignors to Zahnradfabrik Friedrichshafen, Aktiengesellschaft, Friedrichshafen, Germany

Filed Mar. 22, 1973, Ser. No. 343,698

Claims priority, application Germany, Apr. 1, 1972, 2215994

Int. Cl. F16h *57/06*

U.S. Cl. 74—476 **24 Claims**



1. In a drive ratio control mechanism for a vehicle having a pair of control devices respectively controlling output speed of a gear transmission and direction of movement of the vehicle in response to displacement of the control devices to a plurality of operative positions, first locking means engageable with one of the control devices for preventing continuous displacement thereof through said operative positions, second locking means engageable with the other of the control devices for preventing displacement thereof from one of the operative positions, selectively controlled means for momentarily releasing the second locking means to permit displacement of the other of the control devices from said one of the operative positions, and speed controlled means for preventing release of said second locking means.

3,894,444
CONTROL DEVICE OF THE RECORD PLAYER CYCLIC MECHANISM

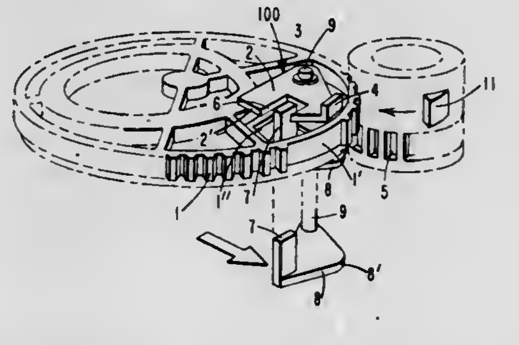
Paul Antonio Vega, Vieytes 1386, Martinez-Pcia, Buenos Aires, Argentina

Filed Jan. 29, 1974, Ser. No. 437,632

Claims priority, application Argentina, Feb. 15, 1973, 246627

Int. Cl. F16h *55/04*

U.S. Cl. 74—435 **3 Claims**



1. A record player cyclic mechanism having a driving gear centered under a record rotatory plate coupled with a bigger gear provided with a perimetral toothless section which causes the stopping of the bigger gear after a full turn, thus determining the cycle of operational movement and including a control device mounted on said bigger gear adjacent to the perimetral toothless section comprising a plate placed in the upper face of said gear in a plane parallel thereto and freely pivoting on said face through a pin, said plate being provided with a vertical nail oriented upwardly and in negative angle with relation to the turn of the driving gear on which it can rest, said plate also being provided with a quadrangular notch in which enters from its lower part a plane spindle projecting through a window provided in said bigger gear, said spindle is fixed perpendicularly to a plane cam, parallelly horizontal to said plate, said cam being pivotable under said bigger gear independently of said plate, said pin being common to both said cam and said plate.

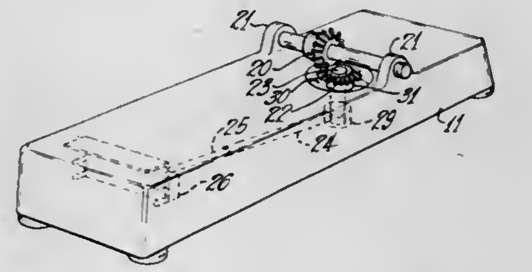
3,894,445
FOOT PEDAL FOR CONTROL OF MUSICAL INSTRUMENTS AND THE LIKE

Horace N. Rowe, Rt. 5, Box 158, Swanton, Ohio 43558

Filed Feb. 8, 1974, Ser. No. 440,851

Int. Cl. G05g *1/14*

U.S. Cl. 74—512 **10 Claims**



1. A foot pedal assembly for adjustment of controls such as electrical instrument controls and the like comprising;

a pedal housing,

a treadle mounted on said housing having a pivot shaft with an axis extending in a direction transverse to the length of said treadle about which the treadle can be moved by movement of a portion thereof in a direction perpendicular to said pivot shaft,

a connecting shaft member extending between the exterior and interior of said housing,

means engaging said connecting shaft member with said treadle effective to angularly move said connecting shaft member about its axis upon motion of said treadle,

a variable control component mounted on the interior of said housing,

an adjustment arm on the interior of said housing extending between said connecting shaft member and said control component, said adjustment arm being angularly movable by said connecting shaft member and engaging an adjustment element for positioning of said element on the adjustment face of said control component whereby said treadle can be selectively moved to adjust the variable control component.

3,894,446
POWER TRANSMISSION HAVING FRICTION CLUTCH BIAS DIFFERENTIAL WITH AUTOMATIC CLUTCH RELEASE

Joseph B. Snoy, and Michael E. Gill, both of Rockford, Ill., assignors to Twin Disc, Incorporated, Racine, Wis.

Filed June 3, 1974, Ser. No. 475,630

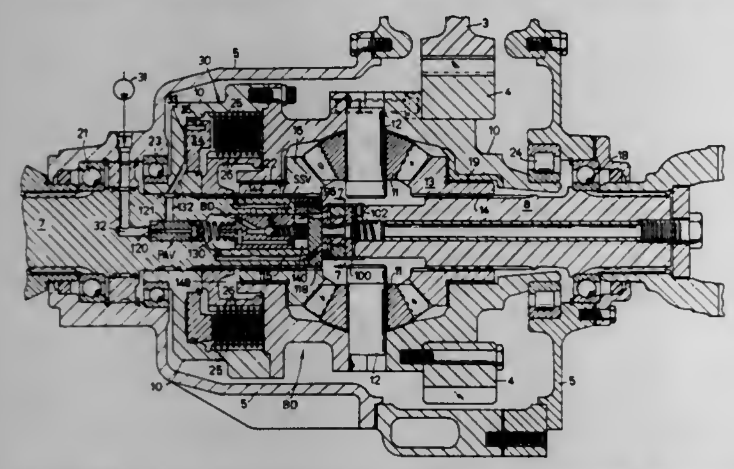
Int. Cl. F16h *1/44;* **F16d** *43/28;* **B60k** *17/34*

U.S. Cl. 74—711 **4 Claims**

1. A power transmission comprising, two co-axially arranged power output shafts, differential gear means between said shafts for drivingly connecting said shafts together, a hydraulically actuated friction clutch connected between said shafts for releasably connecting said shafts together through said differential gear means for driving both of said shafts; a fluid pressure pump located between said shafts and having two portions, one connected to each of said shafts and so

constructed and arranged that said pump acts to pump pressure fluid when said shafts are rotating relative to one another; and fluid pressure control means communicable with the discharge of said pump when said shafts are rotating relative to one another, said pressure fluid control means comprising a pressure apply valve shiftable between positions for admitting pressure fluid to and preventing pressure fluid from actuating said friction clutch and also including a shiftable slip sensing valve movable relative to said pressure apply valve whereby when said shafts are rotating relative to one another, said pump discharges pressure fluid to shift said control valve means and consequently shut off pressure fluid from said clutch, thereby causing the latter to become disengaged.

4. A vehicle having front and rear driving wheels, a power plant, a change speed gear transmission drive by said power plant and having an output which can be varied as to rotative speed and direction, and a friction clutch bias differential mechanism connecting said gear transmission output to both said front and rear wheels, said mechanism comprising: two co-axially arranged power output shafts, differential gear means between said shafts for drivingly connecting said shafts together, a hydraulically actuated friction clutch connected between said shafts for releasably connecting said shafts together through said differential gear means for driving both of said shafts; a fluid pressure pump located between said shafts and having two portions, one connected to each of said shafts and so constructed and arranged that said pump acts to pump pressure fluid when said shafts are rotating relative to one another; and fluid pressure control means communicable with the discharge of said pump when said shafts are rotating relative to one another, said pressure fluid control means comprising a pressure apply valve shiftable between positions for admitting pressure fluid to and preventing pressure fluid from actuating said friction clutch and also including a shiftable slip sensing valve movable relative to said pressure apply valve whereby when said shafts are rotating relative to one another, said pump discharges pressure fluid to shift said control valve means and consequently shut off pressure fluid from said clutch, thereby causing the latter to become disengaged; and power transmitting means for connecting said two power output shafts to their respective front and rear wheels.



3,894,447

FOUR-PINION DIFFERENTIAL

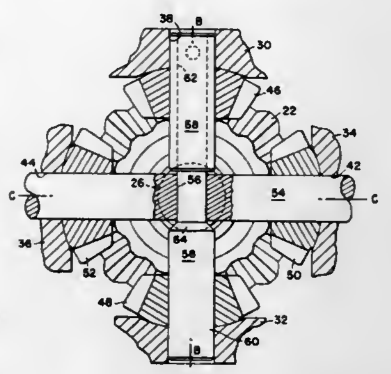
Richard Arlo Michael, Waterloo, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Dec. 20, 1973, Ser. No. 426,915

Int. Cl. F16h *1/40, 1/44*

U.S. Cl. 74—713 **7 Claims**

1. A four-pinion differential having a generally cup-shaped housing adapted to rotate about a drive axis and containing a first pair of diametrically opposed pinions coaxial on a first pinion axis normal to and intersecting the drive axis and a second pair of diametrically opposed pinions coaxial on a second pinion axis normal to and intersecting both the drive and first pinion axes, the housing having pinion-proximate wall portions thereof provided with circular openings respectively on the first and second pinion axes, and means journaling the pinions in the housing, characterized in that said means comprises a first shaft lying on the first pinion axis and passing through the first pair of pinions and into and carried by the proximate pair of circular openings and having a through opening lying on the second pinion axis, said first shaft having substantially a constant diameter, a second integral pinion shaft lying on the second pinion axis and passing through the second pair of pinions and into and carried by the circular openings proximate to the second pair of pinions, said second shaft having a portion of substantially the same diameter as the first shaft and a portion of reduced diameter to pass through the aforesaid through opening, a sleeve passing through one of the second pair of pinions and its proximate circular opening and having inner and outer diameters respectively fitting said reduced portion and of the same diameter as the first shaft, and means securing at least the second pinion shaft to the housing.



3,894,448

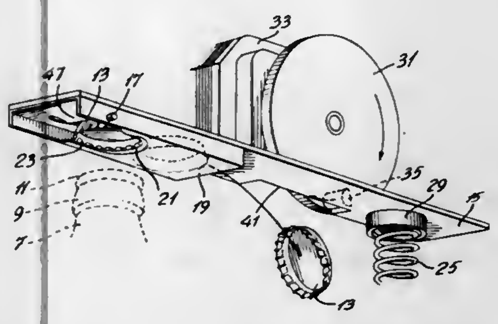
APPARATUS FOR REMOVING BOTTLE CAPS

Jean-Paul Lepage, 1821 rue Delorme, Vimont, Ville de Laval, Quebec, and Jean-Marie Glorieux, 3562 Rivard app. 4, Duvernay, Ville de Laval, Quebec, both of Canada

Filed July 17, 1974, Ser. No. 489,082

Int. Cl. B67b *7/16*

U.S. Cl. 81—3.2 **6 Claims**



1. An apparatus for removing the crown cap of a capped bottle, said apparatus including a housing defining an inner chamber and having a passageway into which said capped bottle is to be inserted, said passageway opening into said chamber, the combination therewith comprising:

- a lever extending from said passageway into said chamber and means mounting one end of said lever directly on said housing solely for pivotal movement about an axis transverse to the said lever, said lever having a cap-removing hook intermediate its other end and its pivotal axis;
- resilient means for pivoting said lever from a reset cap-on position to a release cap-off position;
- electric circuit means for returning said lever to said reset cap-on position against the bias of said resilient means; said circuit means including a motorized rotary cam having a single planetory pin engageable, during planetory movement thereof, with said lever to return it to said reset cap-on position; said circuit means further including a first and a second switch mounted in parallel with said motorized cam; said first switch being responsive to actuation by said bottle, as the crown cap thereof becomes engaged in said hook, to rotate said cam and release said lever from said pin, and said second switch being responsive to actuation by said pin to deenergize said cam when said lever is returned to reset position;
- means in said passageway to guide said bottle as it is inserted therein and hold it against axial displacement as said cap is being removed.

3,894,449

REPAIR OF TUBELESS PNEUMATIC TIRES

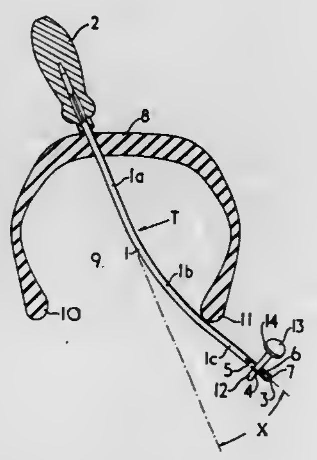
Charles N. Hartley, Sutton Coldfield, England, assignor to The Dunlop Company Limited, England

Division of Ser. No. 12,020, Feb. 17, 1970, abandoned. This application May 20, 1974, Ser. No. 471,721

Claims priority, application United Kingdom, Feb. 26, 1969, 10312

Int. Cl. B60c *25/16*

U.S. Cl. 81—15.7 **6 Claims**



1. A repair tool for a pneumatic tire comprising a curved elongated shank having a hook and terminal rounded point at or adjacent to one end and a handle at the other end, the end of the shank formed with the hook and terminal rounded point being inclined at an angle of 27° to the end of the shank provided with the handle.

3,894,450

COMBINED SCREW DRIVING AND SCREW GRIPPING TOOL

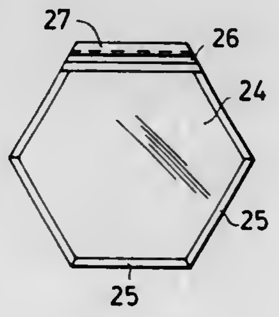
Tore L. Jill, Carl Tunbergs vag 9, Solna, and Robert Mankowitsch, Skondalsbrovagen 21, Farsta, both of Sweden

Division of Ser. No. 236,143, March 20, 1972, Pat. No. 3,831,648. This application Apr. 22, 1974, Ser. No. 462,953

Claims priority, application Sweden, Mar. 25, 1971, 3924/71

Int. Cl. B25b *13/02, 15/02;* **B21k** *5/16*

U.S. Cl. 81—72 **4 Claims**



1. An elongated tool for turning a screw having a recessed head with a plurality of engaging surfaces in said recess, said tool comprising a hexagonal wrench having six lands intended to fit into the complementary recesses in a corresponding screw, all of said lands except one being positioned so that the longitudinal plane of the land is parallel with the longitudinal axis of the tool, said one land being sprung away from parallel relationship with its longitudinal plane at an angle to said longitudinal axis thus forming a resilient tongue which will internally grip the screw head recess in a snugly fitting manner, said one land being defined by a groove cut into the solid portion of the tool from one end thereof, said groove being in the longitudinal direction of the tool and separating the resilient tongue from the remaining portion of the tool, said tongue being bent outwardly from the center of the tool with the end surfaces of the tool including the end surface of the resilient tongue being chamfered to facilitate insertion of the tool into the complementary recess in the screw.

3,894,451

WATER-PUMP PLIERS

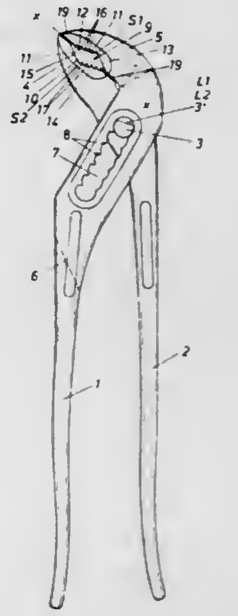
Karl Putsch, Rennbaumer Strasse 70, 56 Wuppertal-Cronenberg, Germany

Filed Feb. 6, 1974, Ser. No. 440,241

Claims priority, application Germany, Feb. 23, 1973, 7306900

Int. Cl. B25b *7/02*

U.S. Cl. 81—425 R **1 Claim**



1. A water-pump pliers comprising:

- a pair of elongated handles having hand-grip portions;
- pivot means pivotally interconnecting said handles at a fulcrum shiftable along one of said handles, said pivot means including an elongated slot with undulating flanks formed in said one of said handles and a pin receivable in said slot and fixed to the other of said handles for selective positioning along said slot;
- respective jaws formed on said handles at ends thereof opposite said portions across said fulcrum and projecting transversely from said handles, said jaws having confronting recesses of triangular configuration with each recess having a vertex, a long side and a short side, the vertices and said recesses being staggered longitudinally along said jaws with respect to one another, the triangles of said recesses defining a parallelogram and having a common base along a diagonal of said parallelogram corresponding to a junction plane of said jaws in a closed position thereof, said jaws having confronting faces lying along said plane on opposite sides of said parallelogram;
- a set of sawtooth-shaped teeth formed on the long side of the recess of an upper one of said jaws and turned in the direction of said fulcrum;
- a set of sawtooth-shaped teeth formed on the long side of the recess of the other jaw and oriented in the opposite direction; and
- respective rows of teeth along each of said faces on opposite sides of said parallelogram.

3,894,452

CONTROL ARRANGEMENT FOR MULTI-SPINDLE AUTOMATIC SCREW MACHINE AND THE LIKE

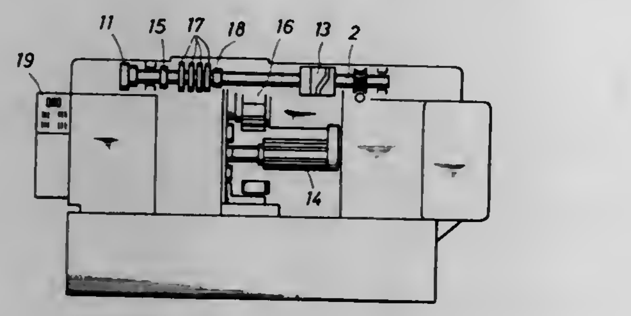
Horst Kazik, Schloss Holte, and Walter Plassmeier, Detmold, both of Germany, assignors to Gildemeister Aktiengesellschaft, Bielefeld, Germany

Filed Dec. 27, 1973, Ser. No. 428,908

Claims priority, application Germany, Jan. 4, 1973, 2300249

Int. Cl. B23b *21/00;* **G08c** *9/00*

U.S. Cl. 82—21 B **4 Claims**



1. In a machine tool of the type comprised of work tool means, workpiece holding means, a plurality of control units activatable for initiating and terminating respective predetermined movements of at least one of said means, and a timing arrangement for timing the activation of said control units, the improvement consisting in that the timing arrangement comprises a rotary timing member; first means for generation of a signal having a value indicative of the angular position of said rotary timing member; second means for detecting when said signal assumes a predetermined value corresponding to a predetermined angular position of said rotary timing member; and third means for activating a predetermined one of said control units in response to such detection, wherein said first means further includes direction-indicating means operative for generating a direction-indicating signal indicative of the direction of rotation of said rotary timing member, and wherein said third means consists of means for activating said predetermined one of said control units when said second signal assumes said predetermined value but only when said direction-indicating signal is indicative of rotation of said rotary timing member in a predetermined one of the two directions of rotation thereof.

3,894,453

METHOD AND APPARATUS FOR GROOVING ROLLERS

Eduard Kusters, Finkenweg 18, 415 Krefeld-Forstwald, Germany

Filed Sept. 24, 1973, Ser. No. 399,847

Claims priority, application Germany, Sept. 26, 1972, 2247094

Int. Cl. B23b *29/00, 5/14;* **B26d** *1/00*

U.S. Cl. 82—36 **9 Claims**

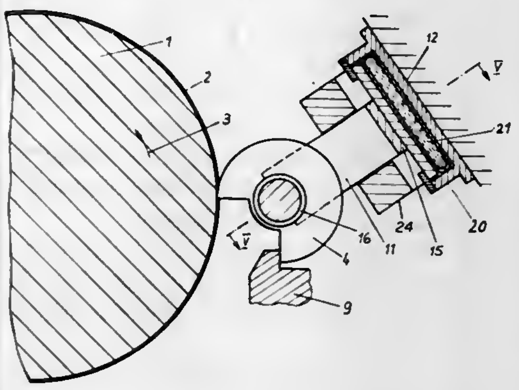
1. In a turning lathe, improved cutting apparatus for cutting closely spaced, narrow slots in the circumferential surface of a metal roller such as rollers used in the production of paper comprising:

a. a plurality of cutting tools in the form of perforated steel discs having a cut-out portion in their circumference;

b. a supporting bar, said plurality of cutting tools being arranged side by side thereon with equal spacing said spacing being an amount which is an integral multiple the desired slot spacing;

c. means clamping said plurality of cutting tools together on said bar;

d. means to support said plurality of cutting tools so as to radially engage a roller supported in said lathe, said means comprising a plurality of intermediate individual supports mounted to a common base and arranged in comblike fashion engaging said bar between said cutting tools which are equally spaced thereon, and a fixed support to which said base is secured, said fixed support being attached to the base of said lathe;



e. means to prevent twisting of said cutting tools on said bar.

3,894,454

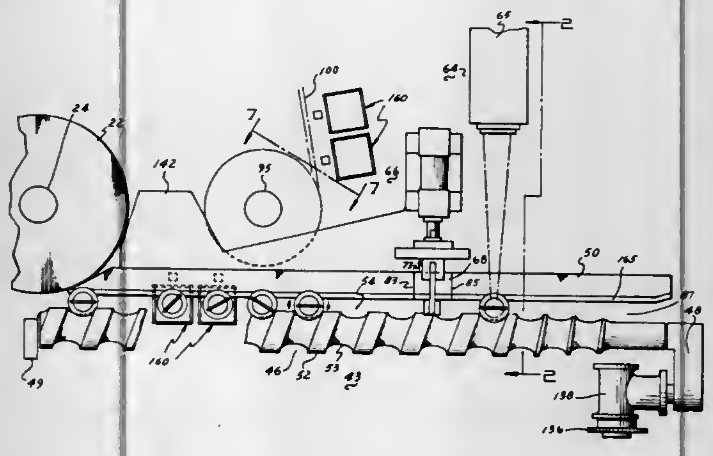
METHOD AND APPARATUS FOR HANDLING AND TRIMMING BLOW MOLDED ARTICLES

Joseph R. Reilly, Naugatuck, and Lars G. Schon, Bloomfield, both of Conn., assignors to Monsanto Company, St. Louis, Mo.

Filed May 6, 1974, Ser. No. 467,378

Int. Cl. B23b *1/00, 7/00, 3/04*

U.S. Cl. 82—47 **25 Claims**



1. In apparatus for deflashing blow molded thermoplastic articles which includes:

A. an edge member for slicing through the flash;

B. guide means for the articles during deflashing by the edge member; and

C. means for delivering the articles to the guide means; the combination therewith of:

D. temperature sensing control means upstream of the edge member for measuring the temperature in the region of the flash and the rest of each article and generating a signal when such temperature is outside a predetermined range;

E. reject means for ejecting articles before reaching the edge member in response to such signal; and

F. deflashed article support means including a series of moving carrier assemblies for the deflashed articles below said edge member.

3,894,455

CAN TRIMMING APPARATUS

Alphonse Stroobants, Rte. 1, Forest, Va. 24502

Filed July 29, 1974, Ser. No. 492,860

Int. Cl. B23b *5/14*

U.S. Cl. 82—58 **20 Claims**

1. A can end trimmer apparatus for trimming the open cylindrical end of a cylindrical can having a closed opposite base end, said apparatus comprising:

a fixed main frame,

main shaft means supported for rotation on said main frame,

at least one self-contained removable cutter unit assembly including:

a cutter unit frame;

a first rotary knife having a circular cutting edge;

a second rotary knife having a circular cutting edge and positioned adjacent said first rotary knife;

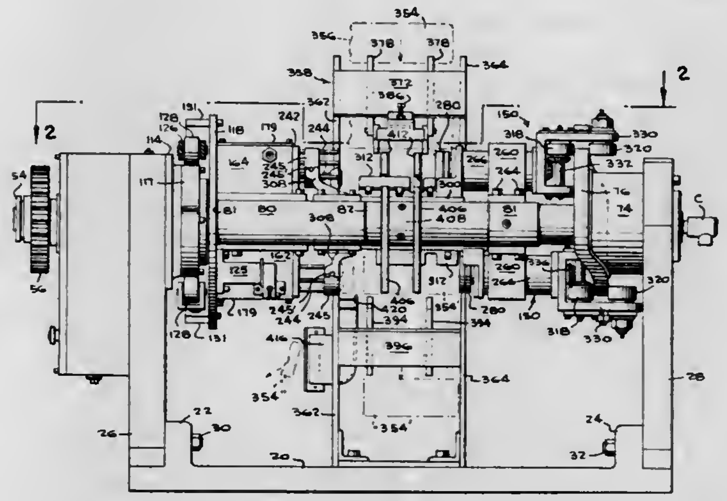
selectively operable knife actuator means for moving said second rotary knife between a first, or cutting, knife position in which said circular cutting edges of said rotary knives overlap and a second, or non-cutting, knife position in which said cutting edges are spaced apart and do not overlap;

power transmission means drivingly connected to said first and second rotary knives for enabling rotation of said knives;

drive means for drivingly rotating said main shaft means;

attachment means enabling unitary mounting of said self-contained removable cutter unit assembly in an operative position on said main shaft;

a source of power drivingly engaged with said power transmission means when said cutter unit assembly is in said operative position for driving said rotary knife members;



can holder means mounted on said main shaft adjacent said cutter unit assembly for movement between a first holder position in which a can supported by its base end on said can holder has its open end spaced from said knife member and a second holder position in which the open end of a can on said holder encloses one of said knife members with a portion of the can wall extending between the rotary knife members when said second knife is in said second or non-cutting position;

cyclically operated knife control means engageable with said knife actuator means for causing said knife actuator means to position said second rotary knife in either said first or second knife positions during desired discrete portions of each revolution of said main shaft; and

cyclically operated can holder positioning means operated in fixed timed relationship with said cyclically operated knife control means for moving said can holder to said second holder position at a time when said second knife is in said second knife position and retaining said holder in said second holder position while said second rotary knife first moves to said first knife position to effect cutting of an end portion of a can in the can holder from the remainder of the can and then moves back to said second knife position and for moving said can holder to said first holder position subsequent to said last-mentioned movement of said second rotary knife to said second knife position.

3,894,456

METHOD OF CUTTING GLASS BY APPLYING HYDROCARBON OIL DISSOLVED IN METHYL CHLOROFORM TO THE CUTTING TOOL

Thomas E. Boller, Southfield, and Salvatore Guerra, Melvindale, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 357,402, May 4, 1973. This application July 2, 1974, Ser. No. 485,691

Int. Cl.² B26D *3/06*

U.S. Cl. 83—7 **1 Claim**

1. A method of cutting glass which comprises the steps of: dissolving a hydrocarbon oil of lubricating viscosity in methyl chloroform to form a mixture, said methyl chloroform being hihgly volatile when exposed to an ambient atmosphere;

applying a continuous but small amount of said mixture to a glass cutting tool as the glass cutting tool moves along the glass surface during a glass cutting operation, said mixture being carried to the area of the score on the glass surface by the glass cutting tool; and

vaporizing said methyl chloroform of said mixture whereby a small residue of said hydrocarbon oil remains behind along the path of the score on the glass surface, said hydrocarbon oil being effective to prevent spalling which is the separation of wing chips from the area adjacent the score.

3,894,457

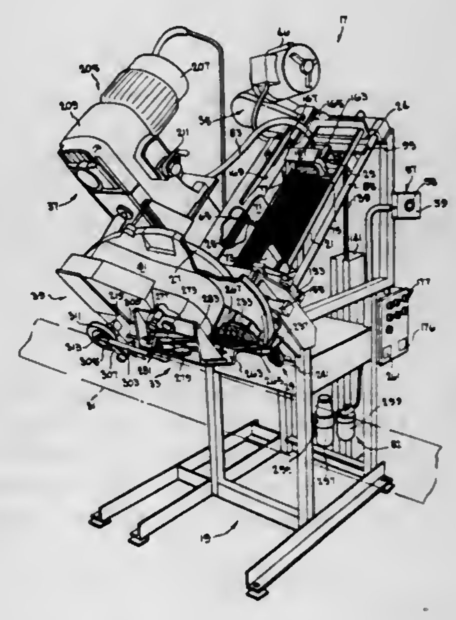
METHOD OF RAPID SLICING

Roland E. Miller, Orangeville, and Clyde D. Wayne, Wilmette, both of Ill., assignors to Kraftco Corporation, Glenview, Ill.

Division of Ser. No. 146,286, May 24, 1971, Pat. No. 3,797,343. This application Aug. 14, 1973, Ser. No. 388,186

Int. Cl. B26d *4/22, 4/56*

U.S. Cl. 83—27 **7 Claims**



1. A method of producing slices of a substantially uniform weight from a plurality of bars of materials having varying densities between bars, comprising the steps of:

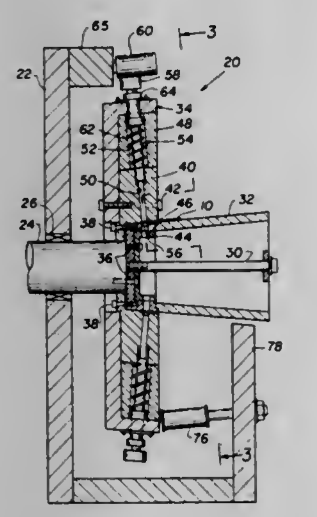
trimming each of said bars to a substantially uniform size, weighing each bar before slicing to determine the density thereof,

feeding each bar forwardly at a constant speed,

slicing each bar as it is fed forwardly at a predetermined slicing speed, and varying one of said speeds for each bar in accordance with the density thereof to provide substantially uniform thickness slices for each bar and to provide substantially uniform weight slices from the varying density bars.

3,894,458
STRIP PERFORATING APPARATUS

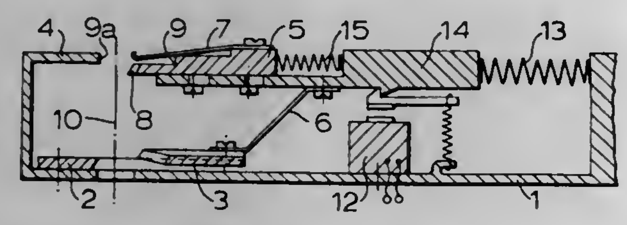
Domenic Borello, 142 Nyack Ave., Pelham, N.Y. 10803
Filed Apr. 4, 1974, Ser. No. 457,782
Int. Cl.² B26F *1/08*
U.S. Cl. 83—322 **1 Claim**



1. A strip perforating apparatus comprising a motor operated conically shaped rotor, an overhanging housing on said rotor bounding a cylindrical punch compartment in surrounding relation about said rotor, plural punch devices circumferentially arranged about said housing and means for mounting each for movement through a punch stroke from a ready position into said punch compartment to a projected position, a cooperating spring for each punch device which normally holds the same in said ready position, a first encountered rotatably mounted cylindrically shaped cam strategically located in the path of rotative movement of said punch devices effective to urge each punch in turn through said punching stroke, means for positioning a length portion of an elongated strip in said punch compartment so as to be perforated by each said punch during its movement into said projected position, and a second encountered rotatably mounted cam adjacent said first cam effective to hold each punch in turn in said projected position in which it extends through a perforation in said strip during rotative movement from said first cam and until past said second cam, whereby each punch in turn causes a perforation in said strip and also pulls the same in feed movement through said punch compartment.

3,894,459
THREAD CUTTERS

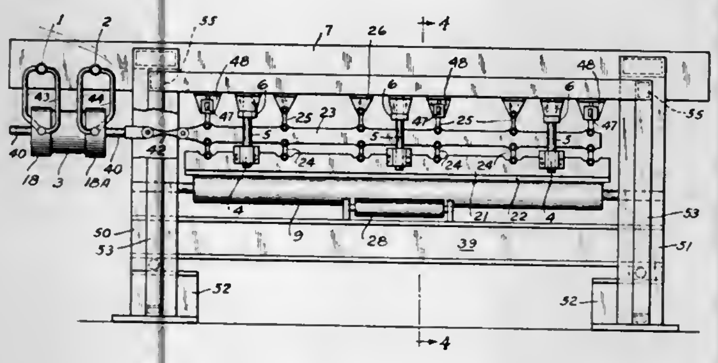
Georg Deppe, Frauenfeld; Gottfried Kurt, Dubendorf, and Kurt Faes, Glattbrugg, all of Switzerland, assignors to APAG Apparatebau AG, Goldach, Switzerland
Filed Aug. 12, 1974, Ser. No. 496,840
Claims priority, application Switzerland, Aug. 14, 1973, 11672/73
Int. Cl. B26d *5/08, 7/02*
U.S. Cl. 83—567 **10 Claims**



1. A thread cutter for automatically severing filaments, particularly for use on texturing machines, including a housing, a first cutting knife having a cutting edge and a first pinching device having an abutment surface mounted in spaced relationship on said housing, said housing, said first cutting knife and said first pinching device being arranged for a filament to travel past said cutting edge and said abutment surface, a carriage mounted for to-and-fro movement with respect to said first cutting knife and said first pinching device on the side of said filament remote therefrom, a second cutting knife having a cutting edge and a second pinching device having an abutment surface both mechanically coupled with said carriage and movable together with said carriage to effect cutting, said second cutting knife and said second pinching device being positioned in the direction of movement of said carriage with said second pinching device leading said second knife, whereby on movement of said carriage a predetermined distance from an initial position the filament is first pinched and kept free of said knife edges by said pinching devices and on further movement of said carriage the filament is cut by said knives and some portion of the filament is gripped by said abutment faces, and guiding means on one of said pinching devices for limiting the transverse movement of the filament throughout the cutting thereof, said cutting edges of said knives being formed so that throughout the cutting movement of said second knife there is only one contact point between said knives.

3,894,460
SUPER SPEED VENEER CLIPPERS

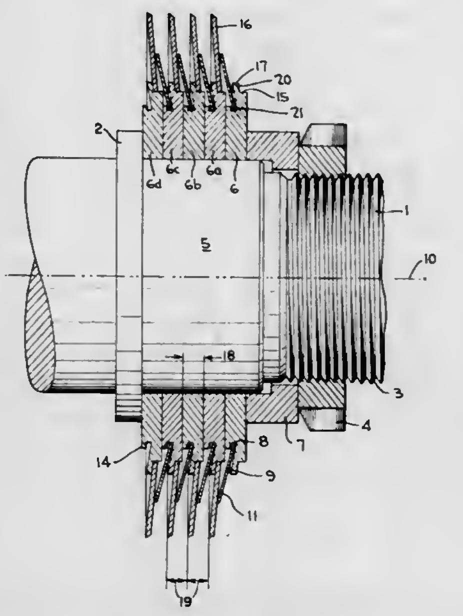
George A. Lumn, Puyallup, Wash., assignor to Globe Machine Manufacturing Co., Inc., Tacoma, Wash.
Division of Ser. No. 299,040, Oct., 1972, Pat. No. 3,837,250. This application July 11, 1974, Ser. No. 487,728
Int. Cl. B26d *5/12, 5/18*
U.S. Cl. 83—639 **6 Claims**



1. The combination with a veneer clipper having a reciprocable blade; of pneumatic blade actuating means connected with said blade, said pneumatic blade actuating means comprising a cylinder; two cylinder head rigid with opposite ends of said cylinder; a piston reciprocable within said cylinder; a piston rod rigid with said piston and extending in opposite directions from said piston through at least one of said cylinder heads; an air inlet and exhaust cavity provided in each cylinder head around said piston rod; an air inlet and exhaust conduit communicatively connected with each air inlet and exhaust cavity; an air passageway extending transversely from each air inlet and exhaust cavity and communicating with the interior of the cylinder; a check valve in each air passageway positioned to check air flow from the cylinder into the cavity; and two air control members each of larger diameter than the piston rod and smaller diameter than the air inlet and exhaust cavity in the adjacent cylinder head rigid with the piston rod close to the respective sides of the piston, said air control members cooperating in regulating air flow through the cavities in the cylinder heads by their movement into and out of said cavities as the piston reciprocates.

3,894,461
APPARATUS FOR THE LONGITUDINAL CUTTING OF NARROW STRIPS

Hans Jakob, Darmstadt-Eberstadt, Germany, assignor to Maschinenfabrik GOEBEL GmbH, Darmstadt, Germany
Filed Jan. 28, 1974, Ser. No. 437,395
Claims priority, application Germany, Jan. 27, 1973, 2304092
Int. Cl. B26d *1/14*
U.S. Cl. 83—665 **1 Claim**

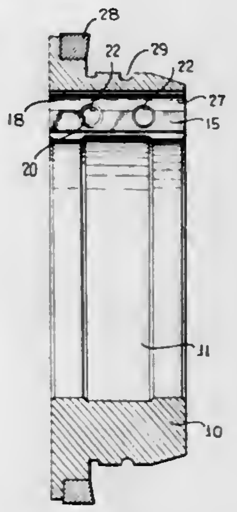


1. Apparatus for the longitudinal slitting of narrow strips of web material such as paper, foil and the like, comprising a rotatable shaft, a plurality of annular adjacent hubs mounted along said shaft for rotation therewith, circular knives and flat annular flexible springs seated on each of said hubs, radially extending shoulder projections on said hubs, said knives lying against one side wall of said projections of said respective hubs, annular outwardly opening grooves on said hubs being located on opposite sides of said projections for the reception of said springs, a wall of each said groove defining an opposite side wall of each said projection, each said opposite side wall sloping slightly toward the longitudinal axis of said shaft in a direction toward said knives on adjacent ones of said hubs, and the diameter of said grooves being slightly greater than the diameter of the inner annular edge of said springs, whereby said springs are made to flex radially when seated within their respective grooves to thereby positively secure said springs in place, and whereby said springs bear against said knives on said adjacent ones of said hubs by reason of said sloping opposite side walls to thereby maintain said knives flatly against said one side wall of each said projection.

3,894,462
CLAMP ELEMENT FOR CLAMPING ON A ROTATABLE SHAFT

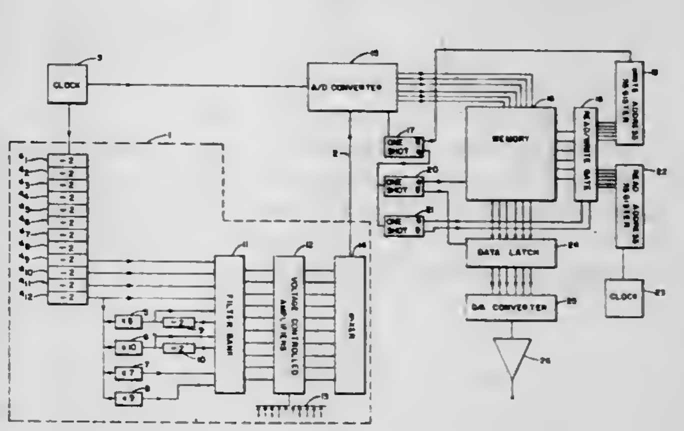
Børge Lundtoft, Fruens Boge, Denmark, assignor to A/S Haustrups Fabriker, Odense, Denmark
Filed July 10, 1974, Ser. No. 487,142
Claims priority, application Denmark, July 10, 1973, 3833/73
Int. Cl. B26d *7/26*
U.S. Cl. 83—665 **9 Claims**

1. A clamp element particularly adapted for adjustable clamping onto a rotatable shaft and having means for supporting an object such as a tool for rotation with the shaft, said clamp element being in the form of a ring having end surfaces and an internal wall extending substantially at right angles to said end surfaces and defining a hole for the reception of a shaft, said ring having an axis, said ring being improved by two internal tongues each separated partially by cuts in said ring, each tongue being primarily defined by a portion of said wall, a cut generally at right angles to said wall, a curved cut extending generally coaxially with said wall portion, and a curved surface formed by generatrices situated parallel to said ring axis, said curved surface having a radius of curvature smaller than that of said wall, said curved surface joining said cuts, said generally right angle cut being common to said tongues, transverse bores in said tongues extending across said common cut and bolt means in said transverse bores for drawing together said tongues.



3,894,463
DIGITAL TONE GENERATOR

David O. Rocheleau, Ottawa, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Canada
Filed Nov. 26, 1973, Ser. No. 419,033
Int. Cl.² G10H *1/06, 5/06*
U.S. Cl. 84—1.01 **7 Claims**



1. A generator for producing a signal (having a varying waveform) at a selectable frequency comprising:

first means adapted to provide a series of digital representations of a (fixed frequency varying waveform) continuous analog signal having a fixed fundamental frequency and a variable harmonic spectrum);

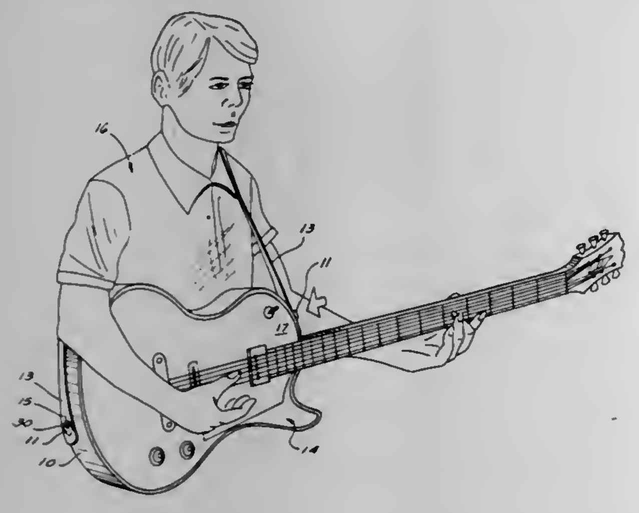
(read/write) random access memory means having the capacity to store the digital representations for one cycle of said analog signal at one time;

second means for continuously writing said digital representations into said memory means to update said memory means for successive cycles of said signal;

third means for simultaneously reading out said stored digital representations at a selectable rate so as to provide an output signal having (said varying waveform at a selected frequency) a selectable fundamental frequency and a correspondingly variable harmonic spectrum.

3,894,464
MUSICAL INSTRUMENT STRAP RETAINING DEVICE

Bobby D. Brooks, 927 Harding St., Lafayette, La. 70501
Filed Jan. 8, 1974, Ser. No. 431,715
Int. Cl. G10d *3/00;* G10g *5/00*
U.S. Cl. 84—327 12 Claims



1. A musical instrument strap attaching, holding, and supporting device for musical instruments, wherein the instrument is to be supported by a slitted strap connected at at least one place on the musical instrument, at least one of any such connections to said musical instrument being by the musical instrument strap attaching, holding, and supporting device of the present invention being inserted within the slit in the strap, said strap usually being held by friction to the shoulder or neck or other part of the player of the musical instrument, comprising the following interconnected mechanical elements:

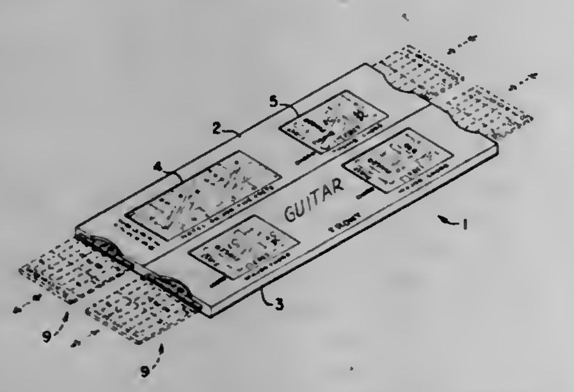
attachment means defining a contacting surface for mating with and contacting the exterior surface of the musical instrument for attaching the device to the instrument;

a central stem portion; and

retaining means for normally retaining the strap on the device when said central portion is placed within the slit in the strap; said central portion being located between said retaining means and said attachment means; said retaining means defining a retaining surface at least generally parallel to said contacting surface, the defined retaining surface being elongated in one lateral dimension and at least generally defining a triangular configuration, forming an elongated, projecting tip.

3,894,465
MOVABLE CHORD FINDER

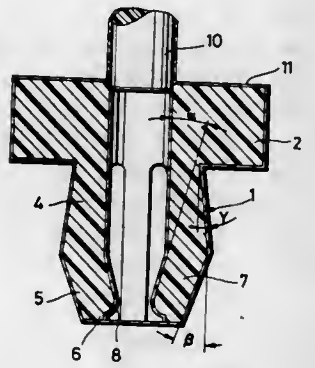
Louis E. Simmons, 14356 Poway Rd., Poway, Calif. 92064
Filed Nov. 8, 1973, Ser. No. 414,161
Int. Cl. G10b *15/00*
U.S. Cl. 84—485 7 Claims



1. Apparatus to teach rhythm chords to be played on stringed instruments having a plurality of frets and strings on a fingerboard, which strings are strummed to produce sound, comprising a body portion having two spaced slots within said body portion extending longitudinally thereof and a flat simulated fingerboard inserted in each slot and slidable therein; a plurality of window means spacedly arranged on the front surface of said body portion and on the back surface of said body portion, said window means being positioned in pairs in the upper and lower halves of said front and back surfaces, said pair of window means in the upper halves of said front and back surfaces communicating with the upper one of said slots, said pair of window means in said lower halves of said front and back surfaces communicating with the lower one of said slots, each fingerboard having on the front and back surfaces thereof a plurality of longitudinal lines simulating the number of strings on a particular stringed instrument and a plurality of lines transverse to the simulated string lines representing the number of frets on said particular instrument, the simulated string lines being identified by the actual notes of the respective strings on the actual instrument, the fret representation lines being identified by the numbers corresponding to the numbers of the respective frets on said instrument, selected window means on one of said surfaces of said body portion bearing indicia varyingly placed on said window means with reference to said simulated strings and said represented frets to indicate two or more positions of the fingers on the fingerboard of said instrument to produce the same rhythm chord.

3,894,466
COATED FASTENING ELEMENT

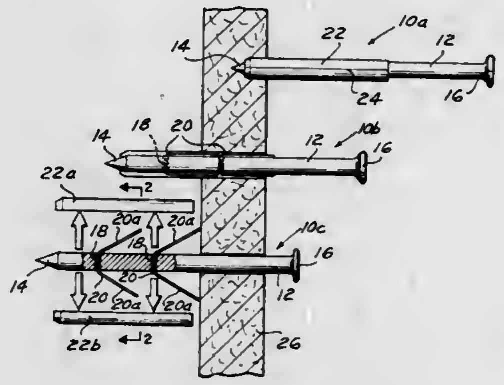
Gunter Wibrow, Norderstedt, Germany, assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed July 8, 1974, Ser. No. 486,534
Claims priority, application Germany, July 10, 1973, 2335023
Int. Cl.^{2} F16B *13/10, 15/04*
U.S. Cl. 85—10 F 10 Claims



1. Thermoplastic fastening means comprising a fastening element fabricated of hygroscopic materials which have a predetermined modulus of elasticity that has been preadjusted by controlling the moisture content of said fastening element and a separate moisture barrier coating provided over the entire outer surface of said preadjusted fastening element which is composed to provide a substantially moisture-proof seal between the fastening surfaces of said fastening element and a part to which said fastening element is secured and which remains on the other outer surfaces of said fastening element after said fastening element is secured to said part in order to maintain said predetermined modulus of elasticity at a substantially constant value, the fastening element including means thereon for securing said fastening element to the part.

3,894,467
EXPANSION NAIL

Carl Brescia, 1713 Williamsbridge Rd., Bronx, N.Y. 10461
Filed Mar. 13, 1974, Ser. No. 450,724
Int. Cl.^{2} F16B *15/00*
U.S. Cl. 85—23 6 Claims



1. A wall board expansion nail for driving through wall board from one side thereof and into space on the other side of the wall board, said nail comprising:

an elongate nail-like stem member having a pointed end and a head end, said stem member having a length greater than the thickness of wall board through which it is to be driven;

a passageway extending transversely through a portion of said stem member adjacent to the pointed end thereof;

a springy anchor member extended through the passageway, said anchor member having arms extending beyond the passageway in the direction toward said head end and being biased to define, when relaxed, an acute angle with the axis of said stem member;

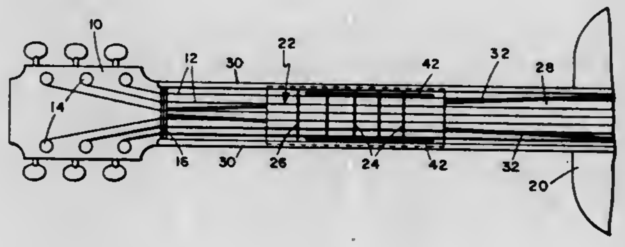
an open-ended sleeve circumferentially covering at least a portion of said stem member and the arms of said anchor member, the inner peripheral outline of said sleeve being such that the arms are held flat to the outside of the stem member, against the bias applied to said arms and the length and location of said sleeve being such that it is fully outside of the wall board when the stem member is driven through the same and protrudes into the space on the other side of the wall board;

said sleeve being separable into at least two axially extending parts; and

shock-sensitive joining means frangibly joining said parts, joining means being fractured by blows applied to said head end when and while the stem member is driven through the wall board and into said space thereby causing separation of said parts and spreading of the anchor members.

3,894,468
STRINGED INSTRUMENT WITH SLIDING VARIABLY SPACED FRETS

Philip A. Dunlap, 202 N. Third, El Cajon, Calif. 92021
Filed Aug. 23, 1974, Ser. No. 500,115
Int. Cl. G10d *3/06*
U.S. Cl. 84—314 8 Claims



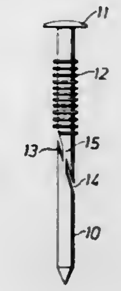
1. A stringed musical instrument having an elongated neck and a plurality of generally parallel strings spaced from said neck and extending along the longitudinal direction of said neck;

a block mounted on said neck to slide in said longitudinal direction along said neck, said block having a plurality of frets mounted thereon transversely of said longitudinal direction and movable relative to said block in longitudinal direction;

means responsive to movement of said block along said neck to vary the spacing between said frets as a function of the position of said block on said neck.

3,894,469
FASTENER

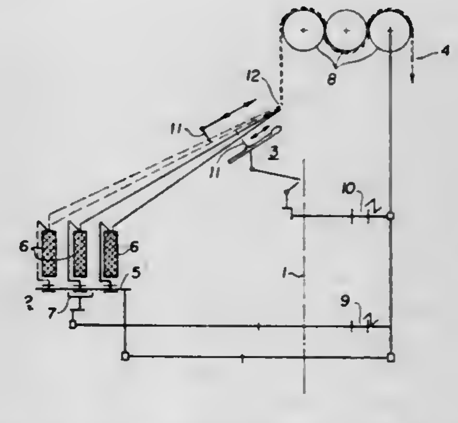
John Edgar Nilsson, Ljungskile, Sweden, assignor to Nordisk Kartro Aktiebolag, Sweden
Filed Jan. 5, 1973, Ser. No. 321,446
Int. Cl. F16b *13/04*
U.S. Cl. 85—79 3 Claims



1. A fastener comprising a shank having a front end adapted to be driven into a holding structure and a rear end having a head, said shank having four flat parallel wedge faces defining two slots extending obliquely from opposite sides of the shank toward the axis of the shank, and a yieldable ligament extending parallel to said axis, interconnecting said wedge faces, and joining said front and rear ends of the shank, one wedge face of each of said slots being disposed in a common plane, and the other wedge face of each of said slots being disposed in a second common plane.

3,894,470
MACHINE FOR BRAIDING KNOTLESS NETTING

Harry Reichel, Rostock, Germany, assignor to Institut fur Hochseefischerei und Fischverarbeitung, Rostock, Germany
Filed Mar. 5, 1973, Ser. No. 338,023
Claims priority, application Germany, Sept. 21, 1972, 165776
Int. Cl. D04c *3/02, 5/00*
U.S. Cl. 87—24 10 Claims



1. Apparatus for knotless braiding leg and leg interconnections of netting, each leg comprising a number of threads, said apparatus comprising: a set of braiding heads, each braiding head having wing wheels only in an integral multiple of three, and each wing wheel having a number of cut-out recesses corresponding to said number of threads; a corresponding number of braiding bobbin needles for the cut-out recesses of

each braiding head; a track unit for said needles; and track switch units between said braiding heads for interchanging said braiding bobbin needles in and between said braiding heads said track switch units being shiftable between leg braiding and leg connecting positions in the leg braiding position of which the bobbin needles are moved between wing wheels of a braiding head and in the leg connecting position of which the bobbins are moved between braiding heads to form a connection of the legs.

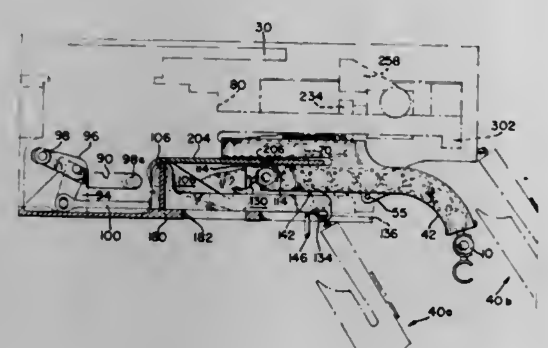
3,894,471
RAPID FIRE WEAPON FOR TURRET INSTALLATION

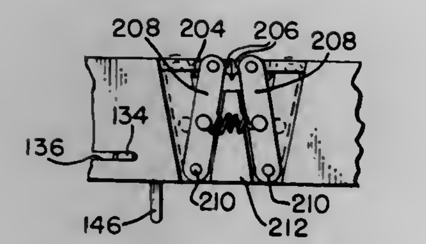
Laurence I. Jayne, Renton, and Roland A. Magnuson, Seattle, both of Wash., assignors to Pacific Car and Foundry Company, Bellevue, Wash.

Division of Ser. No. 185,139, Sept. 30, 1971, abandoned. This application July 9, 1973, Ser. No. 377,322

Int. Cl. F41d *9/02*

U.S. Cl. 89—33 R **5 Claims**





1. In a rapid firing weapon having a firing chamber, a breech port and a link belt cartridge feed system feeding cartridges into the breech port for injection into the firing chamber, the weapon adapted for use within a turret wherein large amounts of link belt cartridges are fed to the weapon from within the turret, the weapon having sealing means preventing escape of gases generated by the weapon during use into the internal atmosphere of the turret, the sealing means comprising:

a pair of slidably mounted gates normally biased in a closed position sealing the breech port region of the weapon from the link belt cartridge feed system of the weapon and the internal atmosphere of the turret in which the weapon is mounted, the gates being forced open by a cartridge when a cartridge is delinked from the link belt and pushed into the breech port region of the weapon, the sealing means further including pivotally mounted links, one secured to each of the gates, and means acting on the links for urging the gates to a closed position until opening pressure is exerted on the gates by the cartridge being forced into the breech port region of the weapon.

3,894,472
BULLET PROOF PROTECTIVE ARMOR

Richard C. Davis, 8611 Whitehorn, Romulus, Mich. 48174

Filed Aug. 8, 1973, Ser. No. 386,638

Int. Cl. B32b *3/18*

U.S. Cl. 189—36 A **4 Claims**

1. A protective armor comprising a flexible support sheet and a plurality of approximately equal size, flat, relatively small metal plates arranged upon the opposite faces of the sheet;

the plates being arranged in a checkerboard pattern upon each of the opposite faces of the sheet, each checkerboard pattern including adjacent metal plates in a corner-to-corner relationship with open spaces between edges of adjacent plates, with the pattern of the plates on one face of the sheet being reversed to the pattern of the plates on the opposite face of the sheet;

said plates on one sheet face filling the spaces on the opposite sheet face with the edges of the plates on one sheet face aligned with the edges of the plates on the opposite sheet face without the plates on one sheet face overlapping onto the plates on said opposite sheet face;

and means for securing each of the plates to the support sheet, wherein the armor may be bent and flexed along the edges of each of the plates and each of the plates is movable relative to the other plates.

3,894,473
MORTAR ADAPTED FOR FIRING FROM A LIGHT VEHICLE

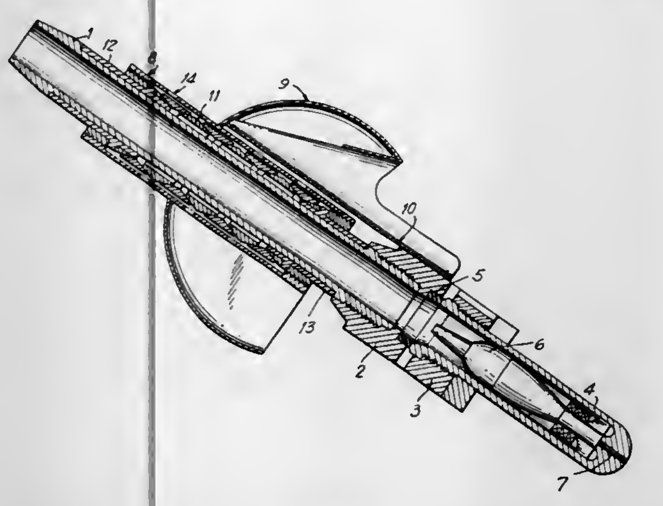
Michel Paul Marest, Paris; Rene Paul Fraymann, Clamart, both of France, and Pierre Marie Biarrote, deceased, late of Clamart, France (by Christiane Andree Germaine Dubois, administrator), assignors to Etat Francais, Paris, France

Filed Dec. 6, 1972, Ser. No. 312,497

Claims priority, application France, Dec. 7, 1971, 71.43875

Int. Cl. F41f *19/06*

U.S. Cl. 89—37 C **6 Claims**



1. A mortar comprising a gun barrel having front and rear ends, support means for said gun barrel, and elastic means connecting the gun barrel and the support means and permitting recoil of the barrel upon firing while absorbing energy to return the barrel to initial position after firing, said elastic means including an assembly of annular eleastic elements surrounding the gun barrel, said annular elements being arranged as alternating overlapped inner and outer rings having inclined surfaces in slidable arrangement on one another, said outer rings having spaces between adjacent rings to enable the outer rings to slide on the inner rings and undergo radial expansion, and means for limiting radial expansion of adjacent outer rings at the ends of the assembly to limit the maximum stress applied to such rings and thereby distribute the stresses to the outer rings over the entire length of the assembly, the latter said means comprising hoops surrounding the inner rings substantially centrally thereof and freely mounted in the spaces between said adjacent outer rings, and spaced therefrom, said hoops having a pre-determined thickness defining the maximum deformation for said outer rings and thereby limiting the maximum stress to which the outer rings are subjected at the ends of the assembly.

3,894,474
AUTOMATIC PISTOL

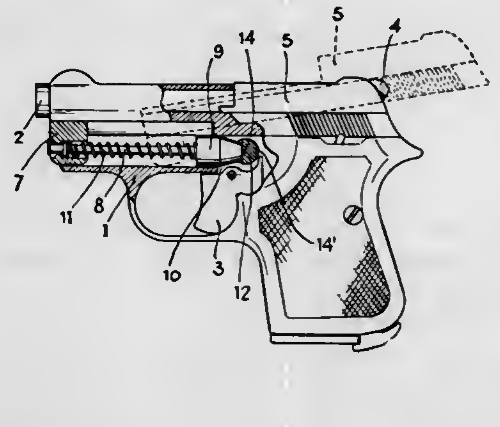
Giuseppe Tanfoglio, Via X Giornate 16/A, Localita' Magno,, Gardone Val Trompia (BS), Italy

Filed June 18, 1973, Ser. No. 371,282

Claims priority, application Italy, June 30, 1972, 5177/72

Int. Cl. F41c *17/08*

U.S. Cl. 89—148 **1 Claim**



1. In an automatic pistol having a body, a barrel, a trigger for actuating a hammer mechanism and a breechblock carrier guided longitudinally on the body and on a rod having a recoil spring and being integrally attached to a latching piston, the improvement which comprises: a safety mechanism comprising an elongated pin transversely mounted on the body and positioned to the rear of the piston, said pin being rotatable about its own longitudinal axis between a first, firing position and a second, non-firing position and a pair of flat, generally diametric surfaces formed on said pin, said surfaces being opposed to each other in order to define two cammed areas for determining two distinct positionings of said pin and for acting on the trigger of the pistol wherein said pin, when in the first of said two positions, determines the displacement of the piston by the positioning of one of said cammed surfaces thereagainst to limit the displacement of the breechblock-carrier and prevent the removal thereof from the pistol and wherein said pin, when in the second of said two positions determines the displacement of the piston toward the rear by the positioning of said other cammed surface thereagainst to allow the removal of the breech-block carrier from the pistol to an axial displacement toward the rear and a concurrent, upwardly angular displacement thereof.

3,894,475
SURFACE ENGRAVER

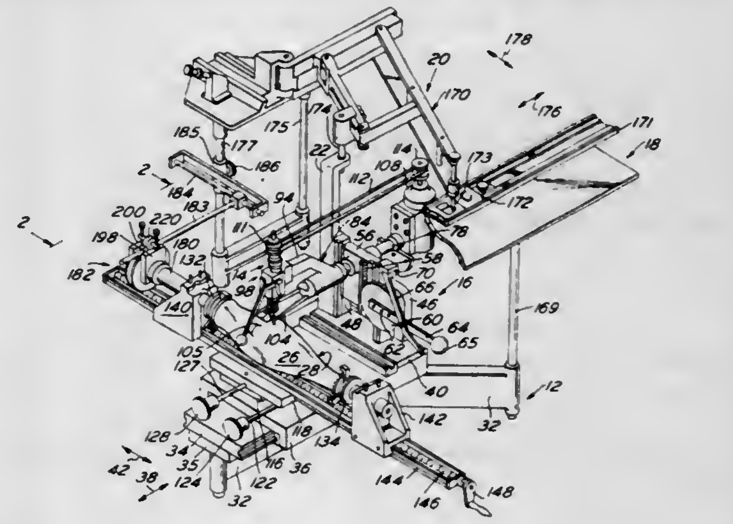
Franz Varga, Murten, Switzerland, assignor to New Hermes Engraving Machine Corporation, New York, N.Y.

Filed June 17, 1974, Ser. No. 479,723

Int. Cl. B23c *1/18*

U.S. Cl. 90—13.1 **12 Claims**

11. In engraving apparatus comprising jaw means for supporting and rotating an article to be engraved about its longitudinal axis, said jaw means including a shaft being coaxial with the axis about which the article is to be rotated, a sheave drivingly coupled to said shaft and said sheave being defined by first and second sheave members, means for adjusting one sheave member toward and away from the other sheave member for changing the location of frictional contact of said rod with said sheave members relative to the axis of rotation of said sheave members, and means for moving said sheave members in a direction parallel to the longitudinal axis of said rod so that frictional contact with said rod drives said sheave members at different rotational speeds as a function of the distance of said rod from the axis of rotation of said sheave members.



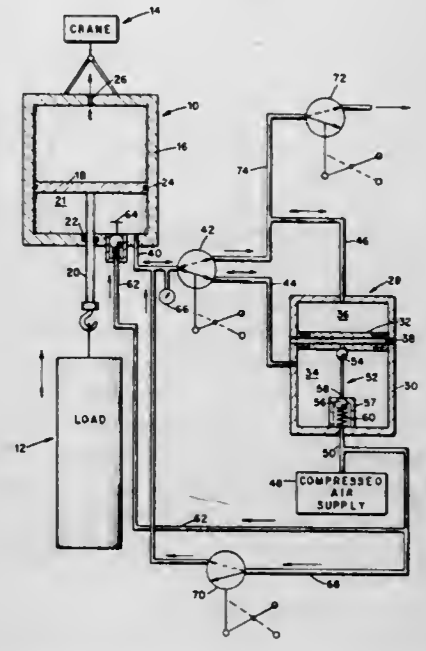
3,894,476
SELF-ADJUSTING LOAD BALANCING PNEUMATIC HOIST

William G. Cobb, Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Apr. 5, 1974, Ser. No. 458,365

Int. Cl. F15b *13/042, 25/04*

U.S. Cl. 91—6 **5 Claims**



1. A pneumatic hoist positionable between a load and load lifting mechanism for automatically maintaining the load in a selected vertical position provided upon displacing the load by exerting an externally applied force thereon and for significantly reducing the force required to effect the displacement of the load, comprising a cylinder and piston assembly with said cylinder connectable to one of said load and said lifting mechanism and said piston connectable to the other of said one of said load and said lifting mechanism, a housing, movable piston means disposed in said housing for dividing the latter into first and second chambers, a passageway in said piston means communicating with said first chamber and atmosphere, conduit means in registry with both of said chambers and further chamber on one side of said piston in said cylinder, valve means in said conduit means for selectively

placing either the first or second chamber in communication with said cylinder, a further conduit means in registry with said first chamber for introducing a flow of pressurized air thereinto from a compressed air supply, and further valve means in said first chamber for regulating the flow of said air through said passageway to atmosphere and into said first chamber from said further conduit means in response to the direction of movement of said piston means with said movement being responsive to the pressure differential in said first chamber and said second chamber.

3,894,477
FOLLOW-UP CONTROL DEVICE

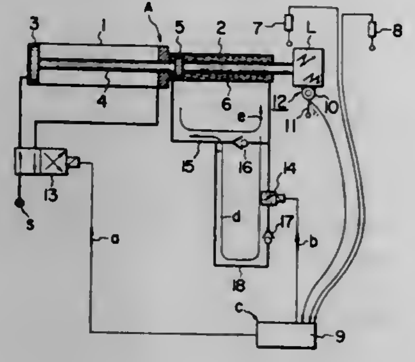
Hisao Tomikawa, Takatsuki, Japan, assignor to Tsubakimoto Chain Co., Ltd., Osaka, Japan

Filed Mar. 21, 1973, Ser. No. 343,396

Claims priority, application Japan, Mar. 22, 1972, 47-28077

Int. Cl. F15b *11/15, 15/22*

U.S. Cl. 91—355 **6 Claims**



1. In combination, a follow-up control device connected to a reciprocating article transfer unit for controlling the operation thereof, comprising:

power means drivingly connected to said transfer unit for moving same;

speed control means coacting with said power means for limiting the rate at which said transfer unit is moved in at least one direction;

said power means including pneumatic cylinder means having a first cylinder housing and first piston means slidably disposed within and movable relative to said cylinder housing, said first piston means including a first piston rod slidably extending outwardly from at least one end of said first cylinder housing;

said speed control means including hydraulic cylinder means having a second cylinder housing and second piston means slidably supported on and movable relative to said second cylinder housing, said second piston means including a second piston rod slidably extending outwardly from at least one end of said second cylinder housing;

means coacting between an operatively connecting said first and second piston rods for causing synchronous movement thereof;

means associated with one of said piston rods for fixedly interconnecting same to said transfer unit;

hydraulic circuitry means associated with said hydraulic cylinder means for providing for flow of hydraulic fluid between the opposite ends of said second cylinder housing in response to movement of said second piston means, said circuitry means including flow control valve means associated therewith and defining a restricted flow passage for controlling the rate at which fluid may flow therethrough from one end of said second cylinder housing to the other end of said second cylinder housing, whereby said flow rate through said flow control valve means restricts the rate of movement of said second piston means, which in turn restricts the rate of movement of said first piston means;

said flow control valve means being shiftable between open and closed positions, said flow control valve means being normally maintained in said closed position wherein flow from said one end of said second cylinder housing to said other end thereof is prevented, movement of said flow control valve means into said open position permitting controlled flow from said one end of said second cylinder housing to said other end thereof;

a control device operatively associated with said flow control valve means for activating same to cause movement thereof from said normally closed position into said open position; and

detecting means mounted on the transfer unit for detecting the presence of an object which is moving relative to said transfer unit, said detecting means when sensing said object activating said control device to cause said valve means to be moved into said open position to unlock the hydraulic cylinder means to permit controlled movement of the transfer unit.

3,894,478
ROLL FORMER

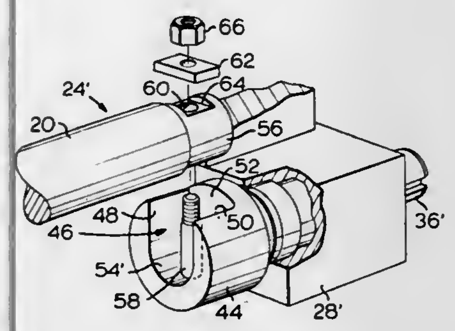
Peter Miskolczi, Weston, and Michael Joseph Ondrus, Rexdale, both of Canada, assignors to Miskolczi Machine Tool Limited, Islington, Canada

Filed May 6, 1974, Ser. No. 467,364

Claims priority, application Canada, Jan. 28, 1974, 191262

Int. Cl. B31b *1/14*

U.S. Cl. 93—58.2 R **5 Claims**



1. Apparatus for use in cutting and creasing, the apparatus comprising:

upper and lower rolls having axially extending cylindrical projections at respective ends thereof;

a pair of end supports;

a pair of upper couplings rotatably connected one to each of the end supports for rotation about an upper axis, said upper couplings including means releasably connecting the cylindrical projections of the upper roll to the upper coupling for rotation of this roll about the upper axis;

a pair of lower couplings rotatably connected one to each of the end supports for rotation about a lower axis which is parallel to the upper axis, said lower couplings including means releasably connecting the cylindrical projections of the lower roll to the lower couplings for rotation of this roll about the lower axis;

each of the upper and lower couplings including a locating member defining a transverse recess for locating a corresponding one of the cylindrical projections whereby the associated one of the rolls is positioned for rotation about a corresponding one of the upper and lower axes;

each of the connecting means comprising fastener means co-operable with corresponding cylindrical projections and locating members to retain the rolls in the coupling; and drive means coupled to at least one each of the upper and lower couplings to rotate the rolls in opposite directions.

3,894,479
METHOD OF ASSEMBLING PILES OF NEWSPAPERS CONTINUOUSLY DELIVERED BY A ROTARY PRESS

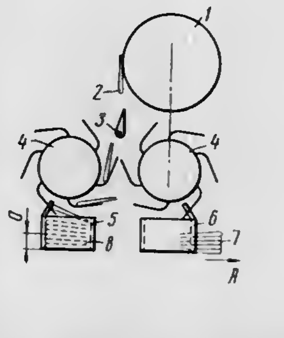
Nikolai Ivanovich Anikanov, Bolshaya Bronnaya ulitsa, 2/6, kv. 6; Leonid Pavlovich Grachev, ulitsa Lva Tolstogo, 7, kv. 32, both of Moscow; Grigory Iosifovich Zaks, ulitsa Mechnikova 14a, kv. 24, Kiev; Grigory Avramovich Radutsky, 16 Parkovaya ulitsa, 49 korpus 2, kv. 68, Moscow, and Rafail Efimovich Kheifets, Brest-Litovsky prospekt, 162, kv. 30, Kiev, all of U.S.S.R.

Filed June 14, 1974, Ser. No. 479,828

Claims priority, application U.S.S.R., Sept. 5, 1973, 1951352

Int. Cl. B65h *33/14*

U.S. Cl. 93—93 M **1 Claim**



1. A method of assembling piles of newspapers being continuously delivered by a rotary press, comprising the operation of: directing the stream of newspapers into a first bin for assembling therein a greater pile of newspapers; assembling in said first bin a portion of said greater pile within a time not shorter than the time of unloading a pile from said bin; interrupting the process of assembling said greater pile in said first bin; directing said stream of newspapers into a second bin for assembling therein a smaller pile of newspapers, re-directing said stream of newspapers after said smaller pile has been assembled into said first bin, and assembling therein the remaining portion of the greater pile of which the assembling has been interrupted, and within a time in excess of said pile unloading time; unloading said smaller pile from said second bin during the period of the assembling of said remaining portion of said greater pile in said first bin; re-directing said stream of newspapers into said second bin for assembling therein the first portion of a greater pile; unloading said first-mentioned greater pile from said first bin, and repeating the aforementioned operations of assembling the greater and smaller piles alternatingly in said bins.

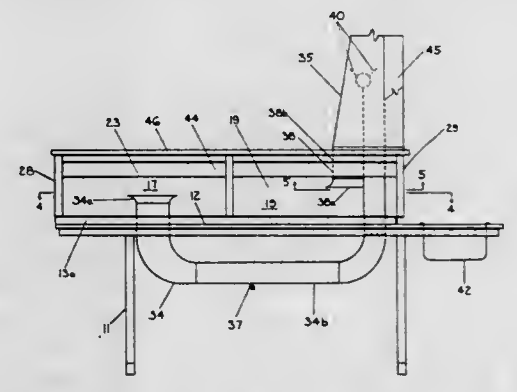
3,894,480
LABORATORY BENCH ASSEMBLY

John J. Birdsall, and Francis B. Coon, both of Madison, Wis., assignors to WARF Institute, Inc., Madison, Wis.

Filed May 22, 1974, Ser. No. 472,484

Int. Cl.^{2} F23J *11/00*

U.S. Cl. 98—115 LH **8 Claims**



1. A laboratory bench assembly comprising:

a. a horizontal elongate bench top having front and rear edges;
b. an upright rear wall extending along the rear edge of said bench top;
c. a substantially enclosed exhaust plenum extending above said upright rear wall, said exhaust plenum having;
   1. bottom, top, front and back walls, and a pair of end walls, and
   2. an elongate inlet vent defined between said upright rear wall and the front wall of said plenum extending along and forwardly of the top of said upright rear wall above said bench top for exhausting ambient fumes from the work area of said bench assembly into said plenum;
d. an exhaust conduit having;
   1. an intake mouth extending into said plenum to an elevation higher than said inlet vent, and
   2. a duct portion connecting to said intake mouth; and
   3. an exhaust chimney connecting to said duct portion.

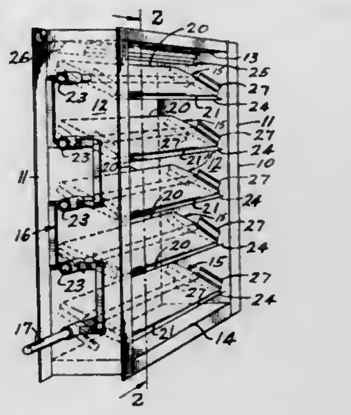
3,894,481
MULTI-BLADE DAMPER

Raymond L. Alley, Toledo, Ohio, assignor to American Warming and Ventilating Inc., Toledo, Ohio

Filed Apr. 3, 1972, Ser. No. 322,603

Int. Cl. F34f *13/08*

U.S. Cl. 98—121 A **12 Claims**



1. In a damper having an open retangular frame, a plurality of rectangular blades mounted on transversely extending parallel shafts, and means for simultaneously swinging said blades between open position parallel to air flow through said frame and closed position across air flow, the improvement comprising

a flexible, thin, metal sealing strip secured to and extending along and laterally beyond the down-wind edge of each of said blades and into flexed engagement with the low pressure side of an adjacent blade near its other edge when said blades are in closed position, the sealing strip on an end one of said blades adjacent a transverse frame member engaging said frame member in closed position, whereby said sealing strips are bent slightly beyond their normal positions when said blades are in closed position.

3,894,482
COOKING OIL FILTERING

John R. Murphy, 47-478 Apau Loop, Honolulu, Hawaii 96744

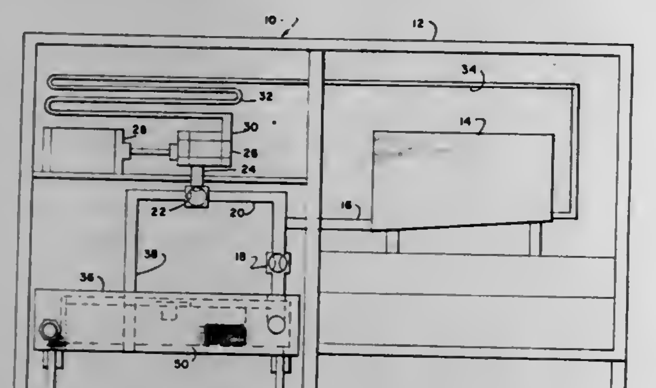
Filed May 15, 1972, Ser. No. 253,109

Int. Cl. A47j *37/12*

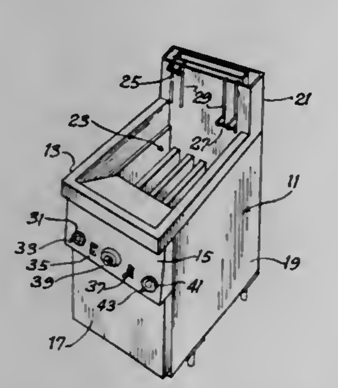
U.S. Cl. 99—330 **5 Claims**

1. Deep fat cooking apparatus comprising a cooking pot, oil heating means connected to the cooking pot for heating cooking oil, drain means connected to the cooking pot for removing oil from the cooking pot, a filter connected to the drain means for filtering oil flowing through the filter from the drain means, a separate tank communicating with the filter for storing filtered oil from the filter, and propulsion means connected to the tank and to the cooking pot for flowing oil from

the tank, whereby oil freely flows from the filter means to the tank and whereby filtered oil freely flows from the tank through the propulsion means, wherein the filter comprises a horizontally elongated housing having an opening near one end for receiving oil from the drain means and having a plurality of lateral openings for flowing oil into the tank.



3,894,483
FOOD PRODUCTION HEAT EXCHANGE CONTROL
John A. Anetsberger, Chicago, and Richard J. Anetsberger, both of Northbrook, Ill., assignors to Anetsberger Brothers, Inc., Northbrook, Ill.
Filed Feb. 7, 1974, Ser. No. 440,488
Int. Cl. A47j *27/62;* **A47d** *37/12*
U.S. Cl. 99—331 **7 Claims**

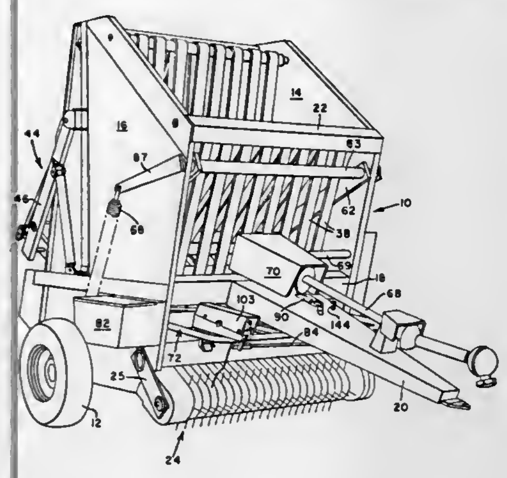


4. In a control system for the maintenance of a desired, pre-selected temperature in food preparation production apparatus having a transfer medium for the conveyance of thermal energy from an energy source to the food, the combination comprising:

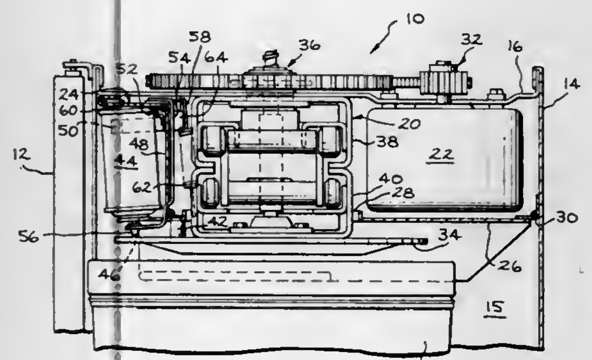
thermostat means ultimately reactive to a temperature variation from said desired temperature for initiating operation of said energy source and maintaining such operation until said desired temperature is re-established; bypass reset timer means for causing immediate initiation and operation of said energy source for a sufficient time period until said thermostat means has reacted to said temperature variation to signal said continued energy source operation; and control means operable upon introduction of food into said transfer medium to initiate operation of said bypass reset timer means.

3,894,484
BALE WRAPPING MECHANISM FOR LARGE CYLINDRICAL BALES
Henry Dennis Anstey, and Gust Soteropulos, both of Ottumwa, Iowa, assignors to Deere & Company, Moline, Ill.
Filed July 17, 1974, Ser. No. 489,332
Int. Cl.² B65B *13/18*
U.S. Cl. 100—5 **7 Claims**

1. In a machine for forming large cylindrical bales of crop material and including a mobile main frame, and crop delivery means operative to deliver a mat of crop material to a baling zone where a bale forming mechanism rolls the mat of material into a bale and is operative to continue rolling the bale after it reaches a selected size while a wrapping element is fed to the baling zone to wind the wrapping element around the bale as it rotates, the combination therewith of an improved dispensing mechanism for selectively feeding the wrapping element from a supply of continuous wrapping element on the machine to the baling zone and comprising: a shiftable dispenser member operatively carrying the wrapping element and shiftable laterally on the machine forwardly of the baling zone to dispense the wrapping element across a substantial portion of the width of the baling zone; a power means operatively connected to the dispenser member for shifting the dispenser member laterally on the machine; and selective control means operatively associated with the power means for selectively controling the rate of shifting of the dispenser members to control the number of turns of the wrapping element wound on the bale as the dispenser moves from one end of its travel to the other.

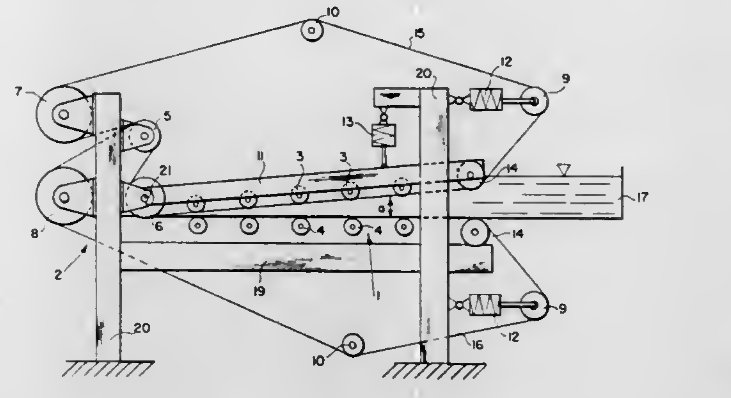


3,894,485
PIVOTAL SHELF CONTROL MEANS FOR REFUSE COMPACTOR
William A. Eckerle, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.
Filed June 5, 1974, Ser. No. 476,526
Int. Cl. B30b *15/14*
U.S. Cl. 100—45 **10 Claims**



1. A domestic refuse compactor comprising: a frame having a bottom, a top wall, first and second spaced sides and an open front defining a refuse compacting chamber; means for providing access to the compacting chamber; a compacting mechanism supported by said frame including a refuse compacting pressure plate and a drive motor, including control circuitry, to effect movement of said compacting mechanism; a pivotal shelf member within said compacting chamber movable between first and second positions and switch means actuated by relative movement of said shelf from said first position to said second position to switch the compactor circuitry.

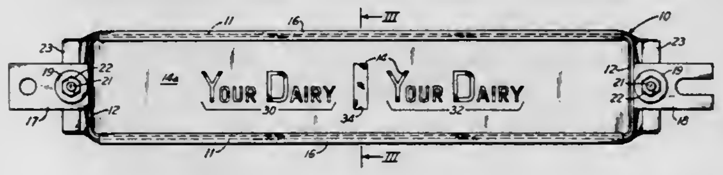
3,894,486
DEVICE FOR OBTAINING A SELECTABLE DEHYDRATING PRESSURE IN DEHYDRATING MACHINES
Richard Sparowitz, and Alois Wohlfarter, both of Graz, Austria, assignors to Maschinenfabrik Andritz Aktiengesellschaft, Austria
Filed Aug. 13, 1973, Ser. No. 387,961
Int. Cl. B30b *9/24, 5/04*
U.S. Cl. 100—118 **3 Claims**



1. In a dehydrating machine for the separation of solids from a suspension including a first group of rolls which in wedge position perform a preliminary dehydration and a second group of rolls which perform the main dehydration, said rolls being enclosed by upper and lower screen bands,

the improvement comprising means whereby the tension of the screen bands may be continuously varied and means whereby the wedge angle may be continuously varied as a function of the specific dehydration properties of the suspension.

3,894,487
METHOD AND APPARATUS FOR SCREEN PRINTING FIXED AND VARIABLE INDICIA
Henry L. Miller, Mars, Pa., assignor to Miller Screen & Design, Inc., Mars, Pa.
Filed Dec. 10, 1973, Ser. No. 423,209
Int. Cl. B41m *1/12;* **B41c** *1/14*
U.S. Cl. 101—129 **10 Claims**



1. A method of printing a design along with preselected indicia such as an image corresponding to a code and/or a date upon the surface of an article by a stencil screen, said method including the steps of:

selecting a stencil screen defining a design and a blank area for the passage of a printing medium from one side of the screen while supported by a frame to the other side of the screen for transfer to said article;

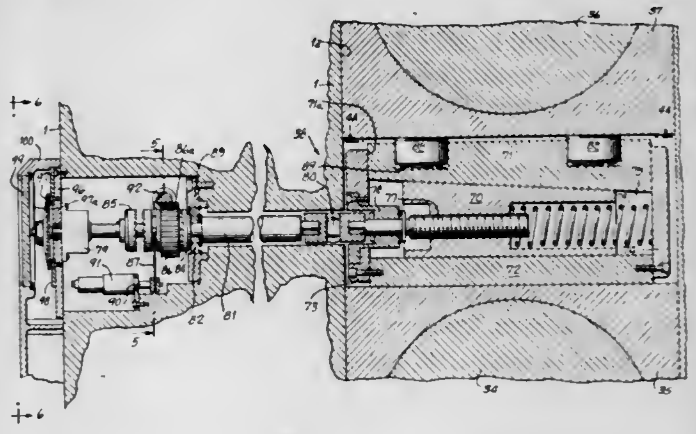
selecting an auxiliary stencil screen defining desired indicia for printing upon the surface of said article;

enclosing said blank area at one side of said stencil screen by releaseably attaching the selected auxiliary stencil screen thereto whereby, desired indicia on said selected auxiliary stencil screen can be changed without changing said stencil screen; and

causing a printing medium to pass through exposed spaces in the stencil screen and through exposed spaces in the auxiliary stencil screen for transfer of the printing medium onto a surface of said article.

7. A stencil screen assembly comprising, in combination:
a frame having side walls defining an opening in said frame:
  a stencil screen extending between the side walls of said frame;
means supported by said frame for securing said stencil screen to said side walls in overlying relation with said opening;
an auxiliary stencil screen;
means for releasably securing said auxiliary stencil screen in a superimposed relation upon said stencil screen at one side thereof, whereby, said auxiliary stencil screen can be changed without changing said stencil screen;
means for defining desired stencil patterns in portions of both of said screens overlying said opening; and
said means for securing said auxiliary stencil screen forming a seal, impervious to a printing medium, between the edge portions of said auxiliary stencil screen and said means for defining desired stencil patterns in said stencil screen.

3,894,488
PRINTING PRESSURE CONTROL APPARATUS FOR INTAGLIO PRESS
Ivaldo Gazzola, deceased, late of Lausanne, Switzerland; by Eles Gazzola; by Langranco Gazzola, heirs, both of Lausanne, Switzerland; Salvatore F. D'Amato, Floral Park, and Chauncey P. Foote, Jr., Katonah, both of N.Y., assignors to American Bank Note Company, New York, N.Y.
Filed Oct. 17, 1972, Ser. No. 298,443
Int. Cl. B41f *9/02, 13/36*
U.S. Cl. 101—153 **14 Claims**



1. An intaglio printing press, comprising:
a. frame means including opposed side frame members having opposed vertically extending slideways open at the top;
b. a plate cylinder fixed on a shaft whose ends project inside said slideways adjacent the lower ends thereof;
c. lower bearing blocks slidably received in said slideways and rotatably receiving the ends of the shaft;
d. an impression cylinder fixed on a shaft whose ends project into the slideways above the ends of the plate cylinder shaft, said impression cylinder being adapted to run in rolling contact with the plate cylinder;
e. upper bearing blocks slidably supported in the slideways and rotatably supporting the ends of the impression cylinder shaft;
f. means for moving one of the cylinders with respect to the other cylinder to apply and relieve pressure at the line of contact between said plate and impression cylinders;
g. means connecting the plate cylinder and the impression cylinder for synchronous rotation including:
  1. first helical gear means fixed on the shaft of the plate cylinder;
  2. second helical gear means engaging said first helical gear means;
  3. third helical gear means engaging said second helical gear means; and

g. fourth helical gear means fixed on the shaft of the impression cylinder and engaging said third helical gear means;

h. one of said second and third helical gear means comprising two gears rotatable about a common axis and splined together for concurrent rotation and relative axial movement, and means holding one of said two gears against axial movement;

i. cam means for moving the other of said two gears axially in response to vertical movement of said one cylinder to introduce a compensating rotation into the gear train, so that the impression cylinder and the plate cylinder do not change their relative angular positions during that vertical movement.

3,894,489

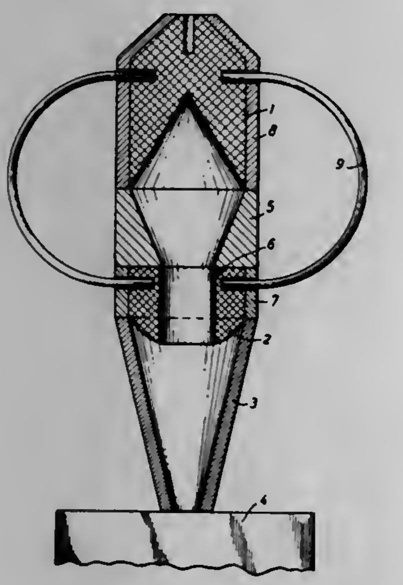
EXPLOSIVE ASSEMBLIES AND METHOD OF UTILIZING THE SAME

Hans-Joachim Riedl, Recklinghausen; Heinz Schluter, Merfeld-Dulmen; Walter Trinks, Rhondorf, all of Germany, and Gerhard Hensel, deceased, late of Geesthacht, Elbe, Germany (by Margarete Hensel, administratrix), assignors to Nitrochemie GmbH, Aschau, near Krainberg am Inn, Germany

Continuation-in-part of Ser. No. 111,112, May 18, 1961, abandoned. This application Jan. 21, 1965, Ser. No. 428,017

Int. Cl. F42b *3/08*

U.S. Cl. 102—24 HC **5 Claims**



1. In an explosive assembly, in combination, primary and secondary explosive charges; directing means common to both of said charges and cooperating therewith for directing the blasts from both of said charges along the same path in the same direction toward a given target; and means operatively connected to both charges for igniting said secondary explosive charge at an interval of 10–150 microseconds subsequent to the ignition of said primary charge, whereby the blast from said secondary charge will enter an area which has previously been entered by the blast of said primary charge to augment the destructive effects of said primary charge.

3,894,490

PROJECTILE FUZE WITH UNITARY DEFORMABLE DETENT

Alexey T. Zacharin, Parsippany, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 6, 1973, Ser. No. 348,816

Int. Cl. F42c *15/40*

U.S. Cl. 102—70.2 R **8 Claims**

1. A fuze for an explosive projectile comprising:

a hollow body;

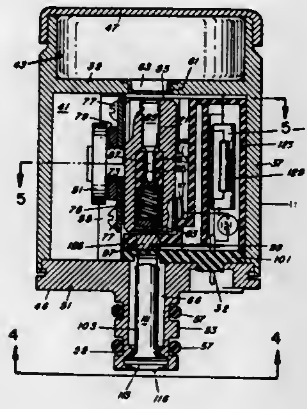
a firing member mounted in said body for movement between unarmed and armed positions;

means normally biasing said firing member toward said armed position; and

means for retaining said firing member in said unarmed position prior to the launching of said projectile and for releasing said firing member during launch, comprising:

a detent shoulder on said firing member; and

an elongated unitary deformable detent member comprising a first end rigidly mounted in said body, a second end engaging said detent shoulder prior to launch, and



fluid pressure means for laterally bending said detent member and withdrawing said second end from said detent shoulder; said detent member comprising a deformable tubular portion, having an open end rigidly mounted in said body and communicating with the exterior thereof and a flattened closed end extending at an acute angle to said open end, and a detent portion having one end essentially integral with said closed end and its other end engaging said detent shoulder; whereby, upon launch, the gas pressure of the propellant causes said closed end to expand and bend toward said axis, thereby withdrawing said detent portion from said detent shoulder.

3,894,491

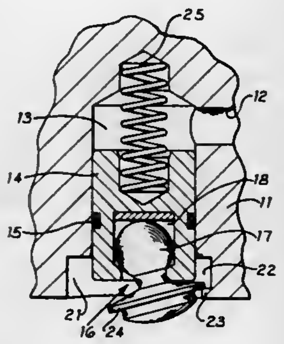
AUTOMATIC PORTING MECHANISM

Ralph A. Tiemann, Arcadia, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 13, 1974, Ser. No. 450,939

Int. Cl.^{2} F42C *15/00*

U.S. Cl. 102—76 R **4 Claims**



1. An automatic porting mechanism for a housing of a device launchable from a launcher having a loading end and a muzzle comprising,

an aperture in the side of said housing,

a plug slidably mounted in said aperture for closing said aperture,

spring means biasing said plug outwardly for ejecting said plug,

a bore rider attached to said plug and engageable with the inside surface of said launcher, and

means for automatically latching said bore rider with said housing when said device moves in said launcher toward said loading end and for automatically unlatching said bore rider from said housing when said device moves in said launcher toward said muzzle.

3,894,492

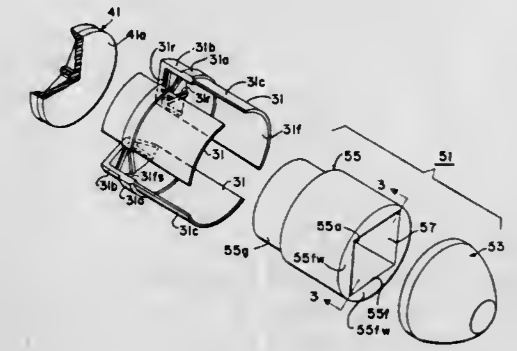
DETERRENT AMMUNITION

Irwin R. Barr, Lutherville; Paul L. Brown, Baltimore, and Robert W. Schneppe, Jr., Upperco, all of Md., assignors to AAI Corporation, Cockeysville, Md.

Filed July 12, 1973, Ser. No. 378,453

Int. Cl. F42b *31/00*

U.S. Cl. 102—93 **44 Claims**



1. Deterrent ammunition, comprising,

a projectile formed by a rupturable first housing section with a cross-sectionally polygonal cavity formed therein and having an annular bounding wall with longitudinally extending polygon corners which are substantially weaker than interconnecting structurally reinforcing side wall sections between said corners,

a nose section closing said cavity at its forward end,

said first housing section being formed of relatively soft elastic, rupturable material,

and a discardable low mass projectile-rotating sabot engageable in substantially complementary fashion about the annular exterior surface of said first housing and along said forward annular wall surface bounding said polygonal cavity.

3,894,493

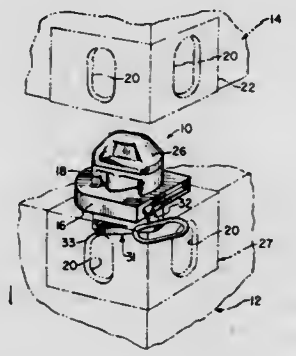
STACKER KEY LOCKING DEVICE

William V. Strecker, Long Island City, N.Y., assignor to Peck & Hale, Inc., West Sayville, N.Y. City

Filed June 13, 1973, Ser. No. 369,477

Int. Cl. B65d *25/20*

U.S. Cl. 105—366 **18 Claims**



1. A selectively operable stacker key locking device adapted to secure a first member to a base support or to secure a first member to a second member in an adjacent stacked relation, at least one member having a web portion defining an opening therein, comprising:

a. a base member;

b. a neck member affixed to said base member and extending upwardly therefrom, said neck member being dimensioned and configured to enter the opening of a web portion of a first member and said neck member defining an inner open portion which extends therethrough;

c. an elongated shank member extending upwardly from the base member and through the open portion of the neck member, said shank member being rotatable within the neck member and having locking means on the outer portion thereof;

d. a cross-head member affixed to the upper end of the shank member, said cross-head member having at least one elongated flange dimensioned and configured to enter the opening defined by a web portion of the first member when aligned therewith in a first position and rotatable to a second locking position such that at least one dimensions of the cross-head member exceeds a corresponding dimension of the web opening to lock the cross-head member within the web;

e. locking means within the opening of the neck member and positioned adjacent said locking means on said shank member to cooperate therewith to securely lock said shank member to the neck member and base member at least when the cross-head member is in a locked position thereby securely locking said shank member against movement out of the neck member;

f. an elongated handle substantially rigidly connected to the shank member and having an inner end portion extending beyond the shank member within the base member, said handle further extending outwardly of the base member such that rotation of the handle from a first position to a second position results in a corresponding rotation of the cross-head from said first position to said corresponding second locking position;

g. resilient means within the base member positioned and configured for resilient compressed engagement with the inner end portion of the handle during rotation of the handle from said first position to said second position, and for resiliently maintaining said handle in one or the other of said positions, said resilient means being relatively stressed in a compressed condition at least during a portion of the rotational movement of the handle between its first and second positions due to the resilient engagement between the inner end portion thereof and the resilient means; and

h. means on the lower portion of the base member for attaching the base member to a second member or to a support means.

3,894,494

LOCATING AND LOCKING DEVICES

Cyril Edward Erith, Deerhurst, and Gordon Charles Elkins, Tewkesbury, both of England, assignors to Multi-Stroke Handbrake Controls Limited, Tewkesbury, England

Filed Dec. 8, 1972, Ser. No. 313,540

Claims priority, application United Kingdom, Dec. 10, 1971, 57487/71; Jan. 15, 1972, 2048/72

Int. Cl.^{2} B61D *17/00*

U.S. Cl. 105—366 B **1 Claim**

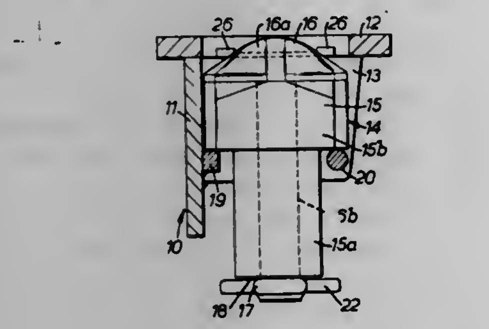
1. A twistlock, comprising:

a mounting body which includes a back plate and two side guide plates having a top plate secured thereon, the top plate having means defining an aperture therethrough which, in an upper portion thereof, is of circular section and which, in an adjoining lower portion thereof, is of non-circular section, having means defining two diametrically opposed, upwardly facing ledges; and

an assembly which includes a container locating body with an enlarged upper end portion effective for container location, and a lower stem portion, a rotary locking bolt having a head mounted on the container locating body and a shank which proceeds downwardly therethrough, an operating lever secured to the locking bolt shank for turning the assembly angularly between locking and unlocking positions

the assembly being of such non-circular configuration in plan, having a greater width in one direction and a lesser width in another, angularly spaced direction, as to have an angular orientation in which the container locating body enlarged upper end portion and rotary locking bolt head may be raised up between the two side guide plates and through the lower portion of the aperture, between the two ledges, whereupon upon turning the operating lever, the container locating body enlarged upper end portion becomes supported upon the two ledges;

the two ledges having corresponding depressed central portions, which are at least as wide as said lesser width of said assembly, but which have upper surfaces located below that of the remainder of the two ledges, whereby, sufficient angular rotation of the assembly, when raised, will permit the container locating body enlarged upper end portion to settle into said depressed central portions, whereupon said assembly must be raised to clear said remainder of the two ledges before said assembly may be angularly rotated back to the first-described orientation, for being lowered back through said aperture.



3,894,495

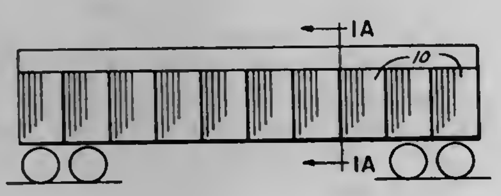
BOX CAR FOR TRANSPORT OF LARGE ELONGATED ARTICLES AND METHOD OF LOADING THE SAME

Roy R. Dare, O'Fallon; James C. Hammonds, St. Charles, and Walter E. O'Leary, Creve Coeur, all of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed May 31, 1974, Ser. No. 474,999

Int. Cl. B61d *17/00*

U.S. Cl. 105—366 R **14 Claims**



1. In a railway box car an improved side plate comprising a channel member located outwardly from the inner surface of the box car side sheet, said channel member having a horizontal surface upon which a box car hoist is adapted to ride; said channel member having a generally vertically extending lower depending flange located inwardly from said horizontal surface and adapted to be engaged by the side sheet of a box car; and an upper flange also located above said horizontal surface at least a portion of which upper flange is adapted to be engaged by the roof of a railway box car.

3,894,496

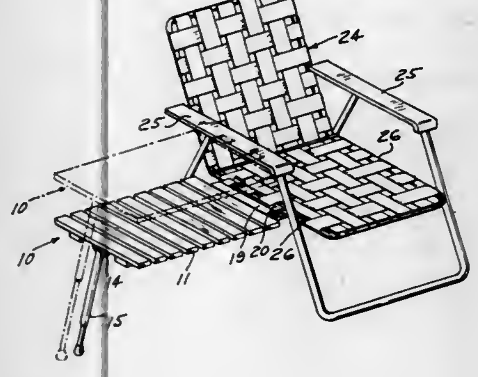
FOLDING LAWN CHAIR TABLE

James F. Phillips, 3610 E. 81st St., and Robert H. Shipley, 3607 E. 81st St., both of Cleveland, Ohio 44105

Filed Sept. 18, 1973, Ser. No. 398,309

Int. Cl.^{2} A47B *39/00*

U.S. Cl. 108—50 **1 Claim**



1. A table assembly for use in association with a chair having a seat and an arm disposed above the seat, said table assembly comprising panel means having a top side for supporting an article, leg means pivotally connected with a bottom side of said panel means adjacent to a first edge portion of said panel means for engaging a support surface at a location spaced apart from the chair to partially support said panel means in a generally horizontal orientation, said leg means being axially extendable between a storage condition in which said leg means has a first length, a first operating condition in which said leg means has a second length which is longer than said first length and corresponds to the distance between the chair seat and the support surface, and a second operating condition in which said leg means has a third length which is longer than said second length and corresponds to the distance between the chair arm and the support surface, first clip means adjacent to a second edge portion of said panel means at a location spaced apart from said leg means for engaging the chair seat when said leg means is in the first operating condition to further support said panel means in a horizontal orientation adjacent to the chair seat and for engaging the chair arm when said leg means is in the second operating condition to further support said panel means in a horizontal orientation adjacent to the chair arm, said first clip means including a longitudinally extending support member disposed adjacent to said second edge portion of said panel means and a pair of spaced apart clip elements connected to said support member for engaging the chair seat at spaced apart locations when said leg means is in the first operating condition and for engaging the chair arm at spaced apart locations when said leg means is in the second operating condition and single pivot means for pivotally connecting said support member to said panel means and for enabling said support member to pivot about a single axis extending perpendicular to said second edge portion of said panel means to enable said clip elements to engage spaced apart portions of the chair seat regardless of the inclination of the chair seat when said leg means is in the first operating condition and to enable said clip elements to engage spaced apart portions of the chair arm regardless of the inclination of the chair arm when said leg means is in the second operating condition to keep the top of the table level when said clip elements are in engagement with an inclined chair seat and alternatively to keep the top of the table level when said clip elements are in engagement with an inclined chair arm.

3,894,497

ARRANGEMENT FOR REGULATING THE SUPPLY OF COMBUSTION AIR AND THE EXCESS OF OXYGEN IN REFUSE BURNING OVENS

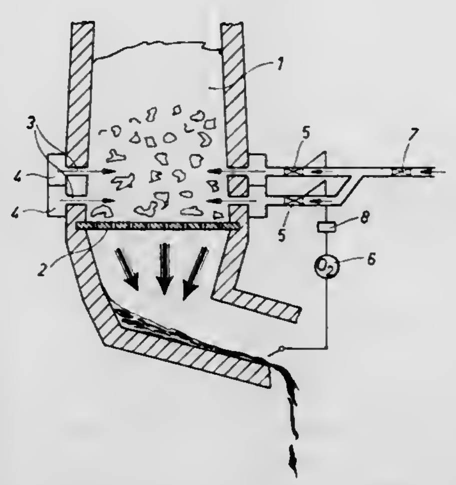
Risto Helke; Jorma Petajisto; Hakan Romantschuk; Tuomo Ruohola, all of Tampere, and Antti Salonen, Forssa, all of Finland, assignors to Oy Tampella AB, Tampere, Finland

Filed Mar. 15, 1974, Ser. No. 451,710

Claims priority, application Finland, Mar. 21, 1973, 886/73

Int. Cl. F23g *5/00*

U.S. Cl. 110—8 R **3 Claims**



1. In a furnace for burning refuse, at least a portion of said refuse comprising combustible components of variable caloric content, said furnace having a vertical combustion shaft, a grate at the bottom of said combustion shaft for retaining said refuse while being burned, and a pit beneath said grate for receiving combustion products,

a. means for supplying primary combustion air to said vertical shaft to burn refuse in said shaft, said means comprising a plurality of successive, vertically stacked, circumferential, annular air inlets in the wall of said combustion shaft for admitting air into a mass of refuse, separate feed boxes surrounding said annular air inlets for supplying combustion air to said inlets, separate conduit means connecting each of said feed boxes to a source of combustion air, and valve means in each of said conduit means for independently controlling the flow of air therein, and

b. means for varying the amount of oxygen supplied to the burning refuse in accordance with the caloric content of said refuse to completely burn the combustible components of said refuse without supplying substantial excess of oxygen, said means comprising oxygen-analyzing means connected to the pit for determining the amount of free oxygen or unburned combustible material in gaseous combustion products flowing through said pit, a valve operating means connected to each of the valves in said conduit means, and control means connecting said oxygen-analyzing means to each of said valve operating means for directing air through a thicker layer of refuse if unused oxygen appears in the gaseous products of combustion in the pit and for directing air through a thinner layer of refuse if unburned combustible material appears in the gaseous products of combustion in the pit.

3,894,498

CULTIVATOR-SPREADER COMBINATION

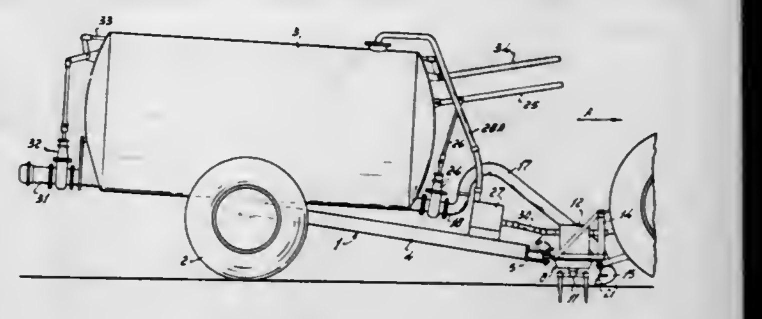
Pieter van den Berg, 1109 Brookside Dr., Wilson, N.C. 27893

Division of Ser. No. 157,467, June 28, 1971, Pat. No. 3,799,367. This application Sept. 13, 1973, Ser. No. 397,109

Int. Cl. A01c *23/02*

U.S. Cl. 111—6 **9 Claims**

1. An implement for introducing plant growing stimulants, such as thick-liquid substances, into the ground comprising a container supported on a wheeled frame movable over the ground, dispensing means in communication with said container and said dispensing means including an outlet means for dispensing material on the ground, a cultivator having a plurality of rotatable soil-working members being interconnected with said frame and said soil-working members being positioned in a row that extends transverse to the direction of travel to work a width of soil, said soil-working members having tines rotatably mounted on upwardly extending axes, said dispensing means extending across substantially the total working width of said cultivator and being located adjacent and in front of said soil-working members relative to the direction of normal travel.



3,894,499

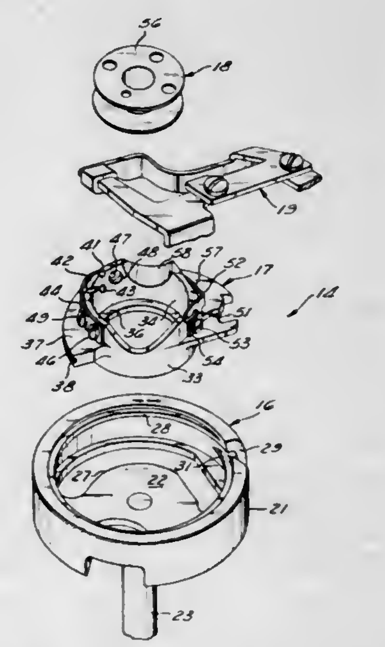
BOBBIN THREAD GUIDE MEANS

Sidney J. Hamlett, Parma, Ohio, assignor to White Sewing Machine Company, Cleveland, Ohio

Filed July 5, 1974, Ser. No. 485,825

Int. Cl.^{2} D05B *3/02*

U.S. Cl. 112—158 R **5 Claims**



1. In a zig-zag sewing machine, a work area including a throat plate, the throat plate having a needle receiving aperture, means for feeding work along the throat plate in a feed direction, a needle adapted to oscillate laterally of the feed direction from one side of the aperture to the other between stitches, a loop taker mounted on the machine for rotation about a generally vertical axis, the loop taker being disposed below the plane of the throat plate and generally forwardly of the needle aperture, a bobbin carrier, means supporting the bobbin carrier within the rotating loop taker, a bobbin rotatably supported within the bobbin carrier, manually selectable bobbin thread guide means having a first mode for feeding the bobbin thread from a point lateral of the feed path whereby during normal sewing the needle descends on one side of the bobbin thread during successive stitches to avoid irregular stitch formation, said guide means having a second mode for feeding the bobbin from a second point substantially centered on the feed path and mid position of the needle whereby the angularity of the bobbin thread between the second mode feed point and either needle side position in zig-zag sewing opera-

tion relative to the feed line is substantially the same and uniform stitch formation is achieved.

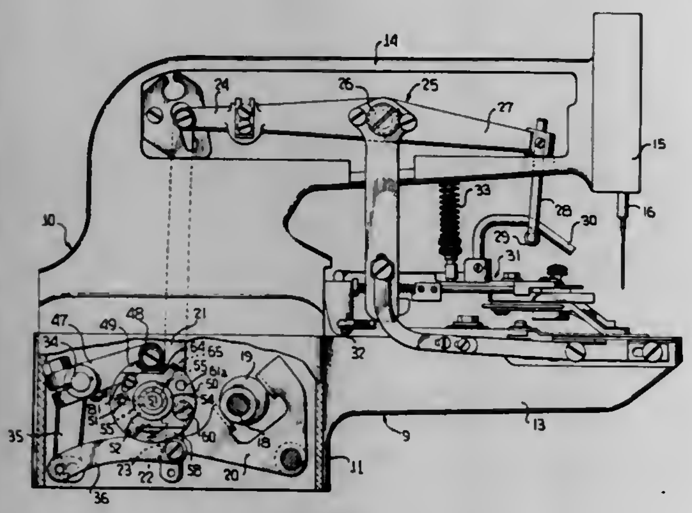
3,894,500
STOP MOTION MECHANISM FOR SEWING MACHINES

James C. Hsiao, Chicago, Ill., assignor to Union Special Corporation, Chicago, Ill.

Filed Sept. 27, 1974, Ser. No. 509,957

Int. Cl. D05b *69/26*

U.S. Cl. 112—219 R **11 Claims**



1. A stop motion mechanism for a sewing machine of the type including a main drive shaft, a drive pulley, a clutch for selectively coupling the main drive shaft to the drive pulley for being driven thereby, a stop motion disc carried by the main drive shaft, first lever means for controlling actuation of the clutch, second lever means for interlocking with the stop motion disc for stopping and preventing rotation of the main drive shaft, the improvement residing in rock means for rocking said first and second lever means in unison, said rock means including a cam shaft driven from said main drive shaft at a reduced ratio, a cam carried by said cam shaft for rotation therewith, said cam having a primary surface and adjacent first and second radial steps, a rock lever connected to said first and second lever means for rocking the same and a cam follower carried by said rock lever for riding on said cam primary surface and for sequential engagement with said steps, and said steps being radially spaced from said primary surface distances wherein when said follower engages said first step said first and second levers are rocked a distance sufficient to disengage the clutch and insufficient to engage the stop motion disc and when said cam follower engages said second step said first and second levers are rocked a distance to stoppingly engage the stop motion disc.

3,894,501
NEEDLE CLAMP FOR SEWING MACHINE

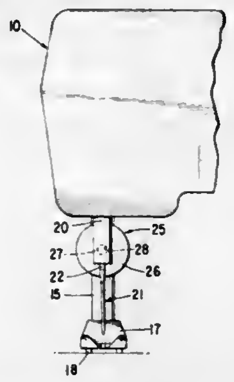
Roy Melvin Cowdrey, Cranford, and Oswald Mead Porter, Livingston, both of N.J., assignors to The Singer Company, New York, N.Y.

Filed Oct. 2, 1974, Ser. No. 511,145

Int. Cl.^{2} D05B *55/02*

U.S. Cl. 112—226 **3 Claims**

1. In a sewing machine having a needle bar with a longitudinal axis and a presser bar having a longitudinal axis parallel to the axis of said needle bar, a needle clamp carried on one extremity of said needle bar and adapted to accommodate a sewing needle therein, said needle clamp comprising means defining a needle accommodating seat at one extremity of said needle bar, means defining an aperture in said needle bar intersecting said needle accommodating seat, said aperture opening towards said presser bar, a screw thread means formed in said aperture, a clamp screw having knob means thereon, said clamp screw being threadedly received in said aperture, said clamp screw and knob means extending a length greater than the distance from said screw threaded aperture opening in said needle bar to said presser bar.



3,894,502
THREAD CUTTING ARRANGEMENT ON LOCK STITCH SEWING MACHINES

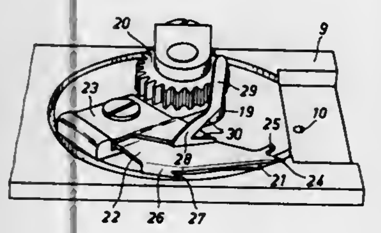
Walter K. Hager, and Willi Klein, both of Kaiserslautern, Germany, assignors to Pfaff Industriemaschinen G.m.b.H., Kaiserslautern, Germany

Filed Apr. 8, 1974, Ser. No. 458,574

Claims priority, application Germany, Apr. 12, 1973, 7313848

Int. Cl.^{2} D05B *65/00*

U.S. Cl. 112—252 **1 Claim**



1. Thread cutting arrangement for lock stitch sewing machine comprising a stationary base and having a needle bar supporting a needle above said base, a shuttle pivotally supported for rocking movements and below said needle bar, a pivotably movable support having a vertical axis, a shuttle thread cutter, and a needle thread cutter disposed on said support and spaced relative to said shuttle thread cutter and having a guide finger for the loop of the needle thread, a drive means connected to said pivotable support for effecting a first rocking movement of said support to place said guide finger against the front of said shuttle and to seize the threads by means of the cutters, said drive means effecting a second rocking step of said pivotable support to cut the threads after the sliding of the needle thread loop onto the guide finger and the needle thread cutter.

3,894,503
METHOD FOR CONVERTING A FLOATABLE BARGE INTO A SEMI-SUBMERSIBLE VESSEL

Alan C. McClure, Houston, Tex., assignor to Brown & Root, Incorporated, Houston, Tex.

Filed Apr. 6, 1973, Ser. No. 348,594

Int. Cl. B63b *35/00*

U.S. Cl. 114—0.5 R **7 Claims**

1. A method of converting a floatable barge having a working deck into a semi-submersible vessel comprising the steps of:

providing an independently floatable cradle unit having

spaced horizontally elongate submersible hull members defining port and starboard submersible hull members, a plurality of columns extending vertically upwardly from each of said hull members to define port and starboard columns,

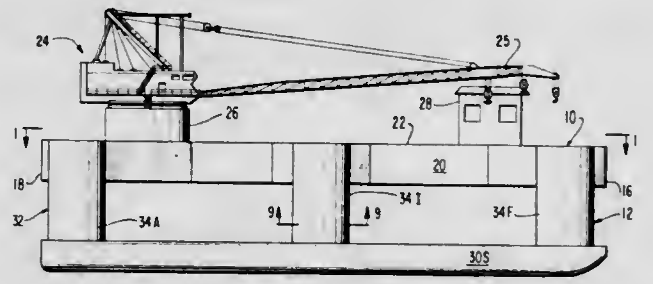
transverse bracing means interconnecting said port columns with said starboard columns, said bracing means comprising lower transverse bracing, upper transverse bracing, and intermediate diagonal bracing, and

buoyancy means for selectively ballasting and de-ballasting said submersible hull members;

actuating said buoyancy means to cause said cradle unit to partially sink within a body of water while maintaining said cradle unit positively buoyant, such that

said submersible hull members are completely submerged,

said upper transverse bracing defines a horizontally disposed support surface means disposed below the surface of the body of water between the port and starboard submersible hull members, and



the upper ends of at least some of the columns of said submersible hull members extend above the water surface to define a barge receiving zone therebetween; floating said barge on the body of water into said barge receiving zone between said port and starboard columns to orient the underside of said barge over said support surface means, while maintaining said cradle unit positively buoyant;

actuating said buoyancy means for de-ballasting said hull members and increasing the postive buoyancy thereof to: raise said cradle unit in a manner bringing said support surface means into supporting contact with the underside of said barge, with said barge being located entirely between said port and starboard columns, and

lift said barge from the surface of the body of water, so that said barge is carried above the water solely by buoyant forces acting on said support surface with said submersible hull members being floatingly disposed in said body of water; and

prior to the termination of said method, rigidly welding a plurality of extension frames between the upper portions of at least some of said port and starboard columns and the port and starboard sides of said barge, respectively, with portions of said extension frames being substantially flush with said working deck of said barge to define an extension of opposite sides of said working deck.

3,894,504
ICE CUTTER FOR MONOPOD DRILLING PLATFORM

Charles H. Smith, Glendale, Calif., assignor to Sea-Log Corporation, Pasadena, Calif.

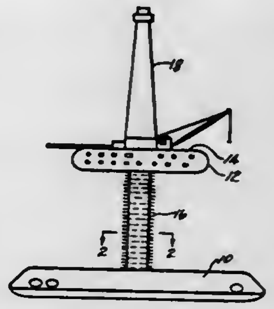
Filed Apr. 8, 1974, Ser. No. 459,029

Int. Cl. B63b *35/12*

U.S. Cl. 114—42 **8 Claims**

1. A drilling platform for operation in arctic waters comprising:

a work platform positioned above the water, sub-surface support means including a vertically extending cylindrical member on which the working platform is supported, and ice cutting means mounted on the cylindrical member, the ice cutting means including a concentric sleeve extending around the cylindrical member, bearing means rotatably supporting the sleeve on the cylindrical member, a plurality of radially projecting cutter arms mounted on the sleeve, drive means for rotating the sleeve about the cylindrical member, the bearing means comprising a plurality of rollers spaced around the outer circumference of the sleeve, and means individually supporting the rollers in fixed relation to the sub-surface support means with the axes of the rollers extending radially of the sleeve at an acute angle to the axis of the rotation of the sleeve, the sleeve having a conical surface extending outwardly of the sleeve at said acute angle and in contact with said rollers.



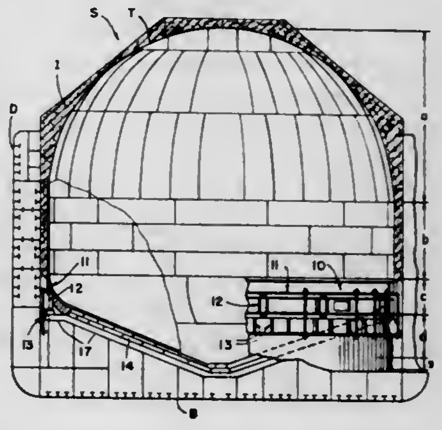
3,894,505
COMBINED TANK SUPPORT AND TIE DOWN MEANS FOR A SHIP OR THE LIKE

John C. Murphy, Pittsburgh, Pa., assignor to Pittsburgh Des Moines Steel Company, Pittsburgh, Pa. and Gaz Transport, Paris, France, part interest to each

Filed Jan. 10, 1974, Ser. No. 432,237

Int. Cl. B63b *25/14, 3/26*

U.S. Cl. 114—74 A **20 Claims**



1. A unique combined tank support and tie down means on a tank in a ship or the like for transporting low temperature liquid comprising, load supporting insulation means at the ship's bottom, said tank supported at its bottom on said load supporting insulation means, rigid, annular, circumferentially extending tie down attaching means fixed to a lower outer surface of said tank adjacent the bottom thereof and extending about the tank, a plurality of substantially vertically oriented, individual, spaced apart, elongate tie down means having upper and lower ends and attached at their upper ends to said attaching means and attached at their bottom ends to a bottom structure of the ship, thus preventing vertical upward movement of the tank relative to the ship's bottom, and a plurality of substantially similar tank support means spaced apart around the circumference of the tank and connected to the attaching means and to the ship's bottom structure, said tank support means comprising substantially horizontal guide means on the attaching means extending radially relative to the tank, and support means disposed between the guide

means and the ship's bottom structure and relatively slidably engaged with the guide means to support the tank and to enable radial movement of the tank and attaching means relative to the ship's bottom due to thermal expansion and contraction of the tank and to prevent bodily movement of the tank in a direction parallel to the ship's bottom.

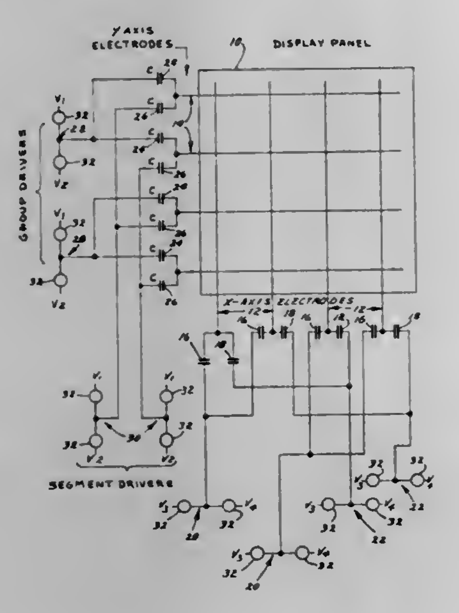
3,894,506
PLASMA DISPLAY PANEL DRIVE APPARATUS

William N. Mayer, White Bear Lake, and Richard A. Strom, Minneapolis, both of Minn., assignors to Control Data Corporation, Minneapolis, Minn.

Filed Feb. 25, 1974, Ser. No. 445,754

Int. Cl.² H05B *37/00*

U.S. Cl. 315—169 TV **3 Claims**



1. Apparatus for driving a plasma display panel of a type having a plurality of drive lines comprising a first group and a second group of drive lines in generally orthogonal relationship in a matrix arrangement and in which orthogonal pairs of said drive lines uniquely specify all display elements in the panel, said apparatus comprising:

a pair of impedance devices connected to each of said drive lines;

a first direct current voltage source having a first output associated with said first group of drive lines and a second output associated with said second group of drive lines;

a second direct current voltage source having a first output associated with said first group of drive lines and a second output associated with said second group of drive lines;

a plurality of first group drivers, each of said drivers comprising electronic switching means for selectively interconnecting said first voltage source, said second voltage source, or no voltage source to one of said impedance devices, each connected with a drive line of said first group and the first outputs of said first and second voltage sources;

a plurality of first segment drivers, each of said drivers comprising electronic switching means for selectively interconnecting said first voltage source, said second voltage source, or no voltage source to the other of said impedance devices, each connected with a drive line of said first group, and the first outputs of said first and second voltage sources; the interconnections of said first group drivers and said first segment drivers being a matrix inter-connection such that the selection of one of said group drivers and one of said segment drivers uniquely identifies a single drive line from said first group;

a plurality of second group drivers, each of said drivers comprising electronic switching means for selectively interconnecting said first voltage source, said second voltage source, or no voltage source to one of said impedance devices, each connected with a drive line of said second group and the second output of said first and second voltage sources;

a plurality of second segment drivers, each of said drivers comprising electronic switching means for selectively interconnecting said first voltage source, said second voltage source, or no voltage source to the other of said impedance devices each connected with a drive line of said second group and the second output of said first and second voltage sources, the interconnections of said second group drivers and said second segment drivers being such that the selection of one of said group drivers and one of said segment drivers uniquely identifies a single drive line from said second group; and

control means for operating all of said drivers to produce a desired display on said panel.

3,894,507
UNWINDING INDICATOR FOR RECORDING CASSETTE USING HYPOCYCLOIDAL GEARS

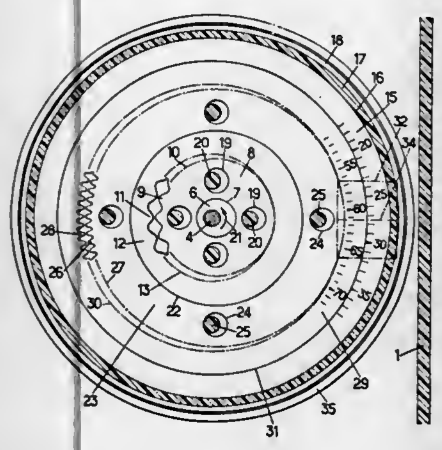
Jean Claude Salomon Koechlin, 2 Place Edmond Rostand, Paris (6 eme.), France

Filed Apr. 2, 1973, Ser. No. 347,045

Claims priority, application France, June 7, 1972, 72.20485

Int. Cl. G01d *21/00*

U.S. Cl. 116—114 R **3 Claims**



1. In a recording cassette comprising a reel housing having opposed sidewalls supporting the shaft of a reel containing a length of wound tape, an unwinding indicator disposed within said housing, the improvement comprising an eccentric hub portion rotatable with said reel, a first hypocycloidal reducing gear set disposed in surrounding relation to said eccentric hub portion to be driven thereby to effect a fractional incremental rotation of the driven gear of said first gear set for each full rotation of said reel, the driven gear of said first gear set having a surface eccentric with respect to said shaft, a second hypocycloidal reducing gear set operatively cooperating with said first gear set and driven by said eccentric surface to effect a fractional rotation of the driven gear of said second gear set for each full rotation of said driven gear of said first gear set, the driven gears of said first and second gear sets having adjacent coplanar annular surfaces, and indicia on said annular surfaces observable from the exterior of the housing relative to a reference mark on said housing to indicate the extent to which said tape has been unwound from said reel.

3,894,508
SUGARING MACHINE FOR BAKERY PRODUCTS

Ralph D. Burgess, Minneapolis, Minn., assignor to The Pillsbury Company, Minneapolis, Minn.

Filed May 21, 1973, Ser. No. 362,035

Int. Cl. A23g *3/00*

U.S. Cl. 118—19 **4 Claims**

1. A sugaring machine for bakery products comprising:

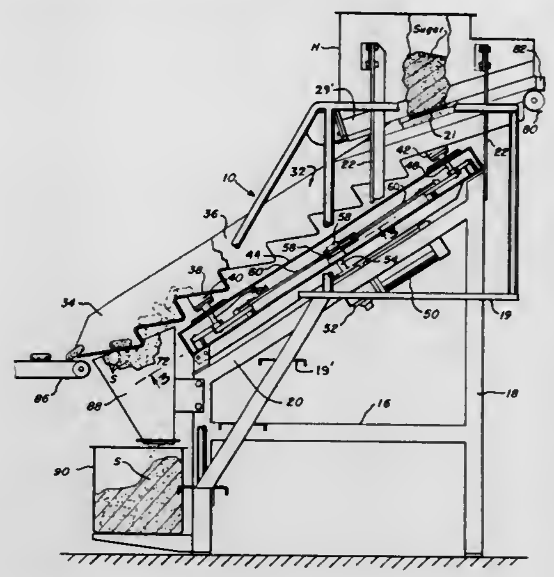
A. a supporting framework,

B. a pair of side-by-side inclined stepped coating chutes adapted to receive uncoated bakery products at their upper ends together with a coating substance,

C. each chute comprising a plurality of stair steps and each step being of an appropriate height to cause each bakery product to become inverted as it falls from each step to the next succeeding lower step,

D. the chutes each being mounted upon the supporting framework for side-to-side reciprocation on a common horizontal axis extending substantially normal to the paths of travel taken by the products as they pass from the inlet end of each chute at the top to the outlet end of each chute at the bottom,

E. drive means operatively associated between the chutes for imparting side-to-side reciprocation to the chutes, the drive means comprising a motor and means operatively connected between the motor and the chutes for reciprocating such chutes on said horizontal axis to move each chute member as a whole along the horizontal axis at the same speed and in opposite directions to cancel vibrations,



F. a coating supply means located above the upper end of the chutes,

G. the lower end of the machine having openings therein of a size that will allow the coating to fall therethrough but not the bakery products and

H. a collection means beneath the openings for receiving excess coating material whereby as the chutes reciprocate with the bakery products traveling from the top of each chute to the bottom thereof, each bakery product is coated with a layer of said coating material.

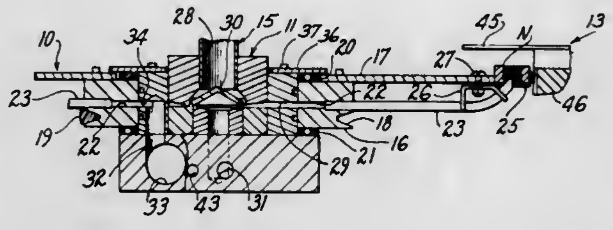
3,894,509
APPARATUS FOR MANUFACTURE OF FASTENERS

Richard J. Duffy, Salem; Richard M. Elliott, and Philip J. Rodden, both of Beverly, all of Mass., assignors to USM Corporation, Boston, Mass.

Filed Sept. 10, 1973, Ser. No. 396,094

Int. Cl. B05b *7/14*

U.S. Cl. 118—50 **22 Claims**



1. Apparatus for applying locking patches of resilient thermoplastic resin to internally threaded articles having openings at both ends of the threaded portion comprising:

support means for receiving an internally threaded article, conduit means connected to said support means and having a first opening formed therein and directed toward that portion of the internal threads of an article supported on said support means, to which the patch is to be applied,

said conduit means having a second opening at the opposite end thereof for receiving a thermoplastic resin to be deposited on the threads of the article,

discharge means for providing thermoplastic material under pressure at said second opening,

vacuum means for applying a negative pressure at said second opening, and

means for moving said support means along a predetermined path wherein said article is received on said support means, and said conduit second opening is moved into registration with said discharge means and subsequently into registration with said vacuum means.

3,894,510
TONER DISTRIBUTOR FOR USE WITH ELECTROPHOTOGRAPHIC COPYING MACHINE

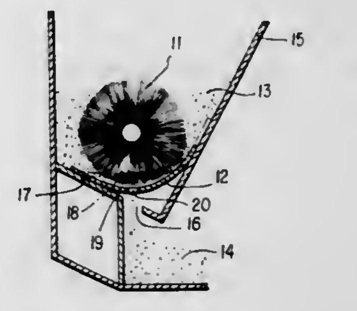
Yoshio Eto, Tokyo, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Mar. 4, 1974, Ser. No. 447,525

Claims priority, application Japan, Mar. 24, 1973, 48-35017

Int. Cl. B05b *7/14*

U.S. Cl. 118—308 **2 Claims**



1. In a toner distributor for use in an electrophotographic copying machine, said distributor comprising (a) a toner storage container having an apertured, plate in the bottom thereof and (b) a rotatable brush rotatably mounted in said container and against said apertured plate so that upon rotation of said brush, toner stored in said container is distributed to a developing station in said electrophotographic copying apparatus through said apertured plate, the improvement comprising, said apertured plate being (a) sufficiently flexible so as to be deformed by said brush and (b) connected at one end thereof to the approximate bottom of said toner storage container so that the ends of said rotatable brush are in intimate contact with the flexible, apertured plate across the entire width thereof.

3,894,511
SURFACE TREATMENT

John George Denholm Armour, and Lancelot Frederick Moore, both of East Molesey, England, assignors to Armour-Moore Marine Service Limited, England

Filed Oct. 19, 1973, Ser. No. 408,079

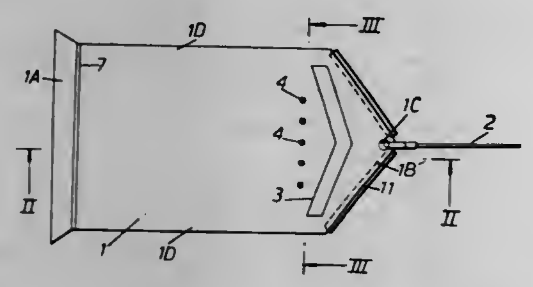
Claims priority, application United Kingdom, Oct. 26, 1972, 49444/72

Int. Cl. B05c *11/04*

U.S. Cl. 118—400 **17 Claims**

1. A paint applicator whereby a coat of paint may be applied to a surface comprising:

a chamber open at a side to be juxtaposed with said surface and having two longitudinally flexible marginal side elements, a third marginal element leading in an intended sense of direction of movement of said chamber over said surface and extending transversely between said side elements, and a fourth marginal element extending transversely between said side elements rearwardly of said leading marginal element and constituting spreading means;



polarized magnetic means arranged to hold at least said side elements close to and slidable over said surface;

means for attaching said chamber in the region of its leading marginal element to towing means effective generally parallel with said surface; and

means to enable paint to be supplied into said chamber.

3,894,512
ELECTROSTATIC DEVELOPING APPARATUS

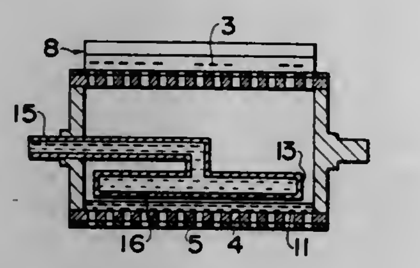
Genji Ohno, Yokohama, Japan, assignor to Research & Development Laboratories of Ohno Co., Ltd., Japan

Filed Feb. 17, 1972, Ser. No. 227,025

Claims priority, application Japan, Feb. 18, 1971, 46-7076

Int. Cl. G03g ***13/00***

U.S. Cl. 118—637 **12 Claims**



1. Apparatus for electrostatically reproducing an original image onto an image bearing medium, said apparatus comprising:

supply means for supplying a liquid developer;

transfer means including a first layer having a first exposed surface, and a second layer disposed upon said first layer to form a composite assembly, said second layer having a liquid repellent, second surface, said composite assembly having a plurality of openings disposed therethrough, each of said openings through said first layer presenting a surface wettable whereby the flow of liquid developer from said supply means is facilitated;

means for receiving an electrostatic latent image theron corresponding to the original image and disposed with respect to said transfer means;

means for forming a surface tension contact angle being more than 90° with said second surface in said openings; and

means for effecting liquid developer flow through selected openings of said composite assembly in response to an electric field emanating from said electrostatic latent image.

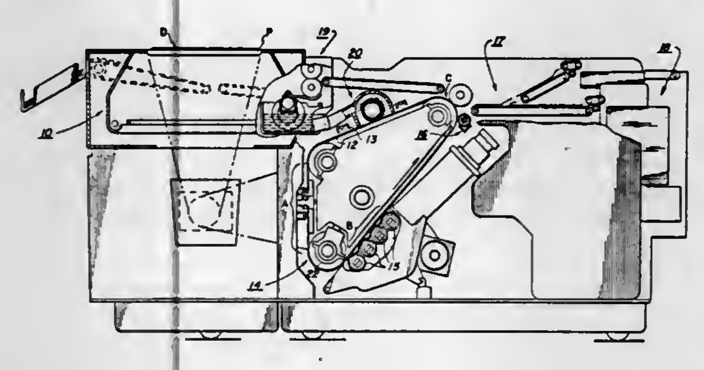
3,894,513
COPYING MACHINE WITH BEAD PICKOFF ROLLER

Michael R. Stanley, Pittsford, and Salvatore Latone, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 6, 1972, Ser. No. 312,554

Int. Cl. G03g ***13/08***

U.S. Cl. 118—637 **2 Claims**



1. The combination of a copying machine having a flexible belt mounted for movement around a closed path and defining a photoconductive surface, means for supporting a portion of said flexible belt as it moves around said closed path, and means including magnetic carrier beads for applying toner to said surface at a first location along said closed path, with means located immediately adjacent to said supported section for removing any of said carrier beads which may have become attached to said surface at said first location, said removing means comprising: a non-magnetic cylindrical pickoff roller mounted for rotation about its axis adjacent said surface, the peripheral surface of said pickoff roller being rough finished, a receptacle disposed beneath said pickoff roller, and means disposed within said pickoff roller for creating a magnetic field to attract said carrier beads from said surface to said pickoff roller and to hold said beads on said pickoff roller so as to be conveyed along a course away from said surface until said beads reach a location where the field decreases sufficiently to permit beads at said location to descend via gravity into said receptacle.

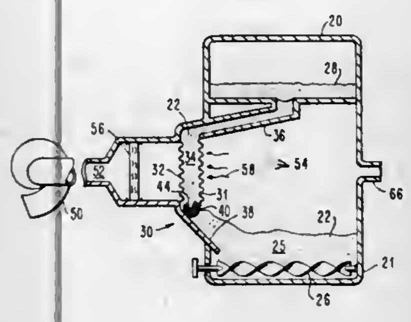
3,894,514
TONER RECOVERY SYSTEM

Allison H. Caudill, Lafayette, Colo.; Ronald J. Hoekzema, and Clement C. Wilson, both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1973, Ser. No. 426,749

Int. Cl. B05b ***5/02***

U.S. Cl. 118—637 **11 Claims**



1. A xerographic printing machine having an imaging surface, and an image development station comprising a developer housing, means within said developer housing for conveying a developer mixture of relatively large carrier particles and relatively small toner particles into operative development relationship with a differential electrostatic charge image at said imaging surface, wherein the improvement comprises:

means supporting a packed body of said developer mixture within said developer housing,

a source of sub-atmospheric air pressure,

conduit means connected between said sub-atmospheric pressure source and said developer housing at a location that establishes a flow of air through said packed body of developer mixture in the direction that air suspended toner particles within said developer housing are drawn into said air flow and through said packed body of developer mixture, said air suspended toner particles in said air flow attaching to the carrier particles in said packed body of developer mixture to become separated from the air.

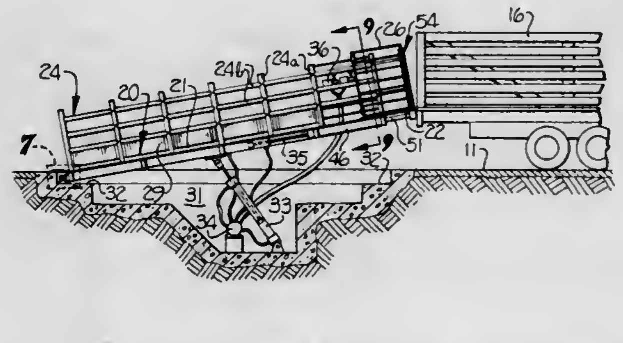
3,894,515
ANIMAL LOADING AND UNLOADING APPARATUS

Isom Franklin Plyler, Rt. 2, Monroe, N.C. 28110

Filed Dec. 14, 1973, Ser. No. 424,868

Int. Cl. A01k ***29/00***

U.S. Cl. 119—82 **16 Claims**



1. Apparatus for facilitating the loading and unloading of animals from wheeled vehicles stopped in a roadway, said apparatus comprising a relatively narrow roadway of a width sufficient to permit large wheeled vehicles, such as cattle trucks, to successively pass forwardly therealong in a common direction for being loaded or unloaded, a pit in said roadway in the path of said vehicles, said pit having inwardly extending horizontal flange portions along the sides thereof recessed from the level of said roadway, a loading platform overlying said pit and being normally horizontally positioned substantially flush with said roadway and supportingly carried by said flange portions for bearing the weight of the heavy wheeled vehicles passing forwardly thereacross, said loading platform comprising a main platform having the end thereof first crossed by the forwardly approaching vehicles being pivotally mounted in said pit for permitting raising the main platform from said normal horizontal position in the roadway after a vehicle has passed forwardly thereacross and stopped on said roadway adjacent the opposite end of said main platform, to an adjustable inclined elevated position adjacent the rear end of the stopped vehicle, said loading platform also comprising an auxiliary platform slideably carried by said opposite end of said main platform and adapted to be adjustably longitudinally extended therefrom to bridge any gap between the main platform and the rear end of the stopped vehicle, means operatively connected to said loading platform for pivotally raising the same a desired amount from a horizontal position in the roadway to an adjustable inclined elevated position corresponding substantially to the height of the cargo bed of the stopped vehicle, means operatively connected to said auxiliary platform for adjustably extending the same longitudinally outwardly beyond the main platform to bridge any gap between the main platform and the stopped vehicle, and fencing provided alongside the roadway both forwardly and rearwardly of said loading platform for guiding the wheeled vehicles forwardly along the roadway and across said loading platform and for guiding the animals onto or away from said loading platform.

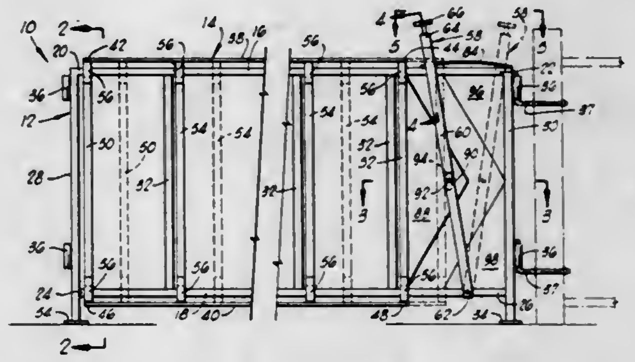
3,894,516
ANIMAL SORTING GATE

Michael J. Schaefer, R.F.D., Okarche, Okla. 73762

Continuation of Ser. No. 356,770, May 3, 1973, abandoned. This application May 17, 1964, Ser. No. 470,843

Int. Cl. A01k ***29/00***

U.S. Cl. 119—155 **19 Claims**



1. An adjustable animal sorting gate for allowing passage of animals of less than a predetermined size therethrough while preventing passage of animals larger than the predetermined size therethrough, comprising:

a rigid support frame assembly including:

- an upper longitudinal frame rail member and a lower longitudinal frame rail member in spaced parallel relation, each of said longitudinal frame rail members having a first end portion and a second end portion;
- a first transverse frame end member and a second transverse frame end member in spaced parallel relation normal to said longitudinal frame rail members, said first transverse frame end member interconnecting the respective first end portions of said upper and lower longitudinal frame rail members and said second transverse frame end member interconnecting the respective second end portions of said upper and lower longitudinal frame rail members; and
- a plurality of spaced parallel transverse intermediate frame members in parallel alignment with said transverse frame end members and interconnecting said upper and lower longitudinal frame rail members, said transverse intermediate frame members being equally longitudinally spaced from said first transverse frame end member;

a rigid sliding gate frame assembly carried by said support frame assembly and longitudinally slidable thereon, including:

- an upper longitudinal gate rail member and a lower longitudinal gate rail member in spaced parallel relation, each of said longitudinal gate rail members having a first end portion and a second end portion;
- a first transverse gate end member and a second transverse gate end member in spaced parallel relation normal to said longitudinal gate rail members, said first transverse gate end member interconnecting the respective first end portions of said upper and lower longitudinal gate rail members and said second transverse gate end member interconnecting the respective second end portions of said upper and lower longitudinal gate rail members; and
- a plurality of spaced parallel transverse gate intermediate members in parallel alignment with said transverse gate end members and interconnecting said upper and lower longitudinal gate rail members, said transverse gate intermediate members being equally longitudinally spaced from said first transverse gate end member, said spacing being substantially equal to the spacing of said plurality of transverse intermediate frame members; and

latch means carried by said support frame assembly for selectively latching said sliding gate frame assembly in a selected one of plural discrete positions relative to said support frame assembly whereby each space between adjacent transverse frame members is divided by a respective transverse gate member to limit the size of animals which may pass through said sorting gate.

3,894,517
STEAM GENERATOR

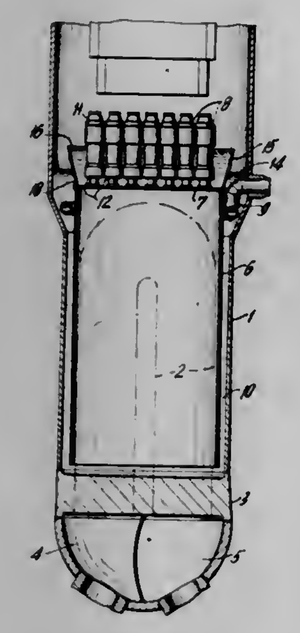
Franz Meier, Oberhausen, Germany, assignor to Gutehoffnungshutte Sterkrade AG, Germany

Filed Nov. 30, 1973, Ser. No. 420,564

Claims priority, application Germany, Dec. 2, 1972, 2259076

Int. Cl. F22b *37/26*

U.S. Cl. 122—34 **5 Claims**



1. A steam generator comprising an upwardly extending shell having an open bottom and a cover plate at the top, a casing laterally enclosing said shell, a bundle of heating elements within said shell for converting water into steam and the space within said shell containing said heating elements forming a steam generation chamber, a plurality of steam separators having water outlets located above said top plate and communicating with the steam generation chamber, an overflow plate mounted on and extending upwardly from said top plate on said top cover plate, said overflow plate laterally encircling all the steam separators and having a brim above the water outlets from said steam separators and said overflow plate having drain holes therethrough, situated at the base of the overflow plate for allowing a certain fraction of the water separated by said separators to flow off.

3,894,518
STRATIFIED CHARGE ROTARY ENGINE WITH DUAL FUEL INJECTION

Michael T. Gavrun, Bayonne, and Robert E. Mount, Mendham, both of N.J., assignors to Curtiss-Wright Corporation, Wood-Ridge, N.J.

Filed Dec. 12, 1973, Ser. No. 424,056

Int. Cl.^{2} F02B *53/10, 53/12*

U.S. Cl. 123—8.09 **8 Claims**

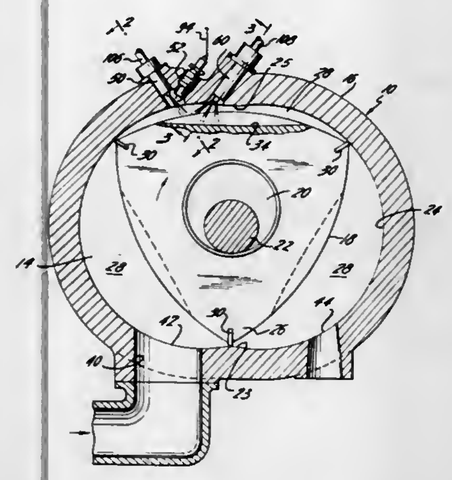
3. A rotary combustion engine comprising:

a. an outer body having an internal cavity, the peripheral surface of which has a multi-lobe profile, said outer body also having an air-intake passage and a combustion gas exhaust passage;

b. an inner body of generally polygonal profile mounted for relative rotation within said inner body, the apex portions of said inner body having sealing cooperation with said peripheral surface to define a plurality of working chambers which vary in volume in response to said relative rotation;

c. a first fuel nozzle mounted on said outer body for discharging fuel into each working chamber after the air charge therein has been substantially compressed;

d. an igniter mounted on said outer body adjacent to said first fuel injection nozzle for igniting fuel discharging from first nozzle; and



e. a second fuel injection nozzle also mounted on said outer body for discharging additional fuel into each working chamber also after the air charge therein has been substantially compressed, said second nozzle being arranged to discharge at least a portion of its fuel into each working chamber in generally the same region as the fuel discharge from the first nozzle so that the burning of the fuel discharged from the first nozzle is effective promptly to cause ignition of the fuel discharging from the second nozzle.

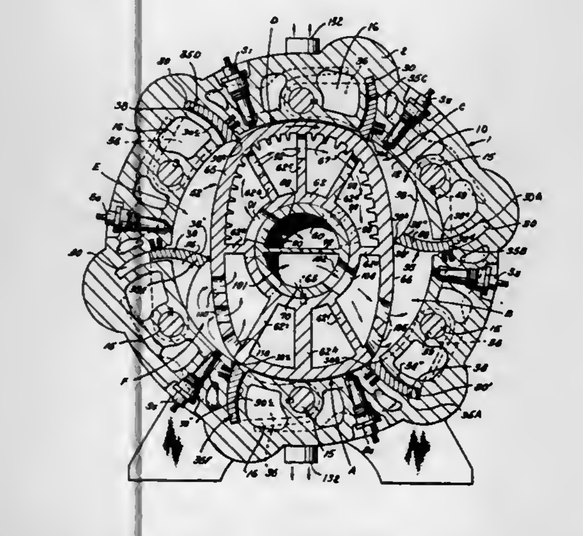
3,894,519
ROTARY INTERNAL COMBUSTION ENGINE

George W. Moran, 9836 Shadydale, Dallas, Tex. 75238

Filed May 31, 1973, Ser. No. 365,413

Int. Cl. F02b *55/16*

U.S. Cl. 123—8.45 **15 Claims**



1. An internal engine comprising: a hollow engine block having a circular bore extending therethrough; end plates adjacent opposite ends of said engine block, each of said end plates having openings extending therethrough; a hollow shaft having a central axis, said hollow shaft being rotatably secured in said openings in the end plates; partitions in the hollow portion of the shaft arranged to divide the interior of the shaft into an air intake compartment, a fuel intake compartment and an exhaust compartment; a hollow substantially oval-shaped rotor secured to the shaft, said rotor being rotatably disposed in the bore in the engine block and having first and second arcuate end portions, the first of said arcuate end portions being spaced from said central axis a distance greater than the distance the second arcuate end portion is spaced from the central axis; partitions in the rotor forming an air chamber, a fuel chamber, and an exhaust chamber, said hollow shaft having air intake openings communicating with the air intake compartment and the air chamber, and having air discharge openings communicating with the air chamber and the exhaust chamber, and having fuel intake openings communicating with said fuel compartment and said fuel chamber; said rotor having fuel intake ports communicating with the fuel chamber and the bore in the engine block, and having exhaust ports communicating with the bore in the engine block and the exhaust chamber; said shaft having openings communicating with the exhaust chamber and the exhaust compartment; sealing vanes; each of said sealing vanes having a concave surface and a convex surface; a sealing bead secured to each of said vanes, said sealing bead being positioned such that a projection of the arc of the convex surface passes through said bead wherein upon rotation of the rotor a line of contact between the rotor and the bead moves from one side of the projected arc to the other side of the projected arc; an arm secured to each of said vanes; means to pivotally secure each of said arms to said engine block such that each vane is pivotal about a center of curvature of said convex surface; means to urge each vane into engagement with the rotor, said vanes being arranged to form a plurality of firing chambers in the bore; means to deliver fuel to the fuel compartment; and means to ignite fuel in each firing chamber.

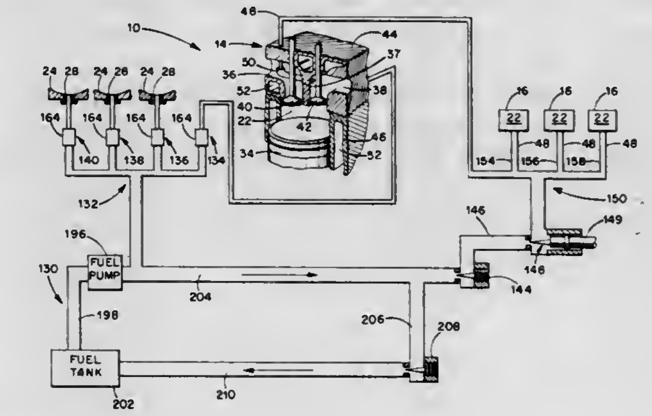
3,894,520
CHARGE FORMING DEVICE WITH FUEL VAPORIZATION

Lawrence G. Clawson, Dover, Mass., assignor to Thermo Electron Corporation, Waltham, Mass.

Filed Mar. 13, 1974, Ser. No. 450,644

Int. Cl. F02b *3/00*

U.S. Cl. 123—32 ST **8 Claims**



1. In an internal combustion engine of the stratified charge type having one or more cylinders, each cylinder including a main chamber, a pre-chamber communicating with the main chamber for igniting a charge in said main chamber, and a fuel supply system having a main chamber fuel means for supplying fuel and air to the main chamber as a function of engine load and a pre-chamber fuel means for feeding fuel to the pre-chamber as an inverse function of engine load, the fuel supply system comprising:

- an intake passage for receiving fuel and air prior to combustion in said main chamber;
- an exhaust passage in close proximity to said intake passage for accepting exhaust gases from said main chamber and characterized by higher pressures than those of said intake passage;
- wall means directly separating said intake passage from said exhaust passage;
- fuel line means communicating with a fuel source means for transporting fuel from said fuel source means;
- a fuel pump for continuously maintaining a fuel supply pressure substantially constant with respect to engine crank angle and above air supply pressure to supply fuel directly from said fuel source means to said fuel line means; and
- a cross-over tube penetrating said wall means and communicating at a first end with said intake passage and communicating at a second end with said exhaust passage for permitting a flow of exhaust gases from said exhaust passage directly to said intake passage, said cross-over tube forming a junction with said fuel line means to thereby form a single conduit means from said fuel source means to said intake passage, whereby said cross-over tube receives fuel from said fuel line means and permits such fuel to mix with said exhaust gases within said cross-over tube for vaporization by heat transferred from said exhaust gases.

3,894,521
OVERHEAT PREVENTING DEVICE FOR MOTOR VEHICLE ENGINE

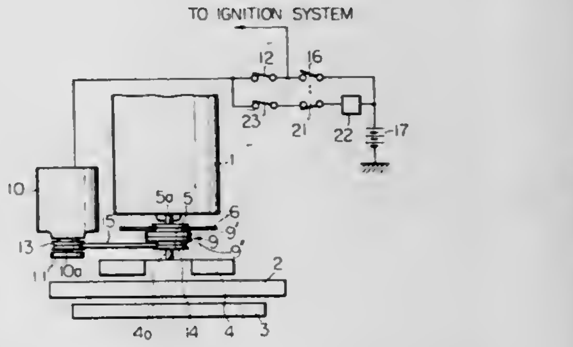
Hiroshi Sakasegawa, and Yoichi Yamamoto, both of Yokohama, Japan, assignors to Nissan Motor Company Limited, Yokohama, Japan

Filed Dec. 4, 1973, Ser. No. 421,618

Claims priority, application Japan, Dec. 5, 1972, 47-139811

Int. Cl. F01p *7/02*

U.S. Cl. 123—41.12 **3 Claims**



1. An overheat preventing device in a motor vehicle having an engine, a radiator through which a pump circulates engine coolant, a condenser for an air conditioner comprising;

- a fan;
- a one-way clutch;
- a first pulley on a shaft supported by the engine and engeable with said fan through said one-way clutch;
- and fan being normally rotated from the engine shaft through said one-way clutch, when engaged, and a first V-velt means to air cool the contents of the radiator and the condenser;
- an electric motor with a motor shaft;
- a second pulley mounted freely rotatably on said motor shaft;
- a third pulley fixedly mounted on said fan;
- a clutch means fixedly mounted on said motor shaft and engageable with said second pulley for said second pulley to be rotatable with said motor shaft;
- said fan being rotatable by said electric motor through said second pulley when engaged by said clutch, a second V-belt and said third pulley;
- an ignition switch and a first control switch means connected in series between said motor and a battery, said first control switch means closing to energize said motor when one of the temperature in said radiator, the temperature and pressure in said condenser reaches a predetermined value and the vehicle speed decreases below a predetermined value;
- a second control switch means, a delay switch and a thermosensitive switch also connected in series between said motor and the battery and in parallel with said ignition

switch and said first control switch means being closed when said ignition switch is opened, and said thermosensitive switch closing only when the ambient temperature is above a predetermined level to energize said motor for a predetermined period through said delay switch and said second control switch means when said ignition switch is open.

3,894,522

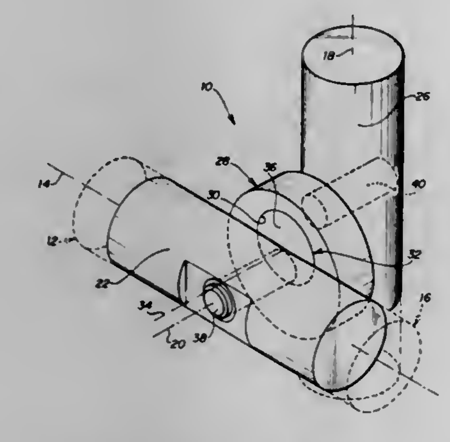
PISTON APPARATUS

Mark H. Bennett, 826 Salmon, Dallas, Tex. 75208

Filed Nov. 26, 1973, Ser. No. 418,978

Int. Cl. F03b *75/24*

U.S. Cl. 123—56 AB **17 Claims**



1. A piston apparatus comprising:

a pair of cylinders each having an axis and each having a slot formed through it facing in the direction of the opposite cylinder, the axis of one cylinder extending perpendicularly to the axis of the other cylinder;

a pair of double-ended pistons each mounted for reciprocation in one of the cylinders;

a power disk positioned between the cylinders for rotation about a third axis extending mutually perpendicularly with respect to the two axes of the cylinder;

a crankshaft including a cylindrical portion received in the power disk for rotation about an axis parallel to and offset from the third axis;

said crankshaft further comprising a pair of crankpins each extending from the cylindrical portion through the slot of one of the cylinders and rotatably connected to the piston mounted therein; and

means for cyclically applying fluid pressure to both ends of both cylinders and thereby effecting reciprocation of the pistons in the cylinders and rotation of the power disk.

3,894,523

FUEL SUPPLY SYSTEM

Gerhard Stumpp, Stuttgart, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany

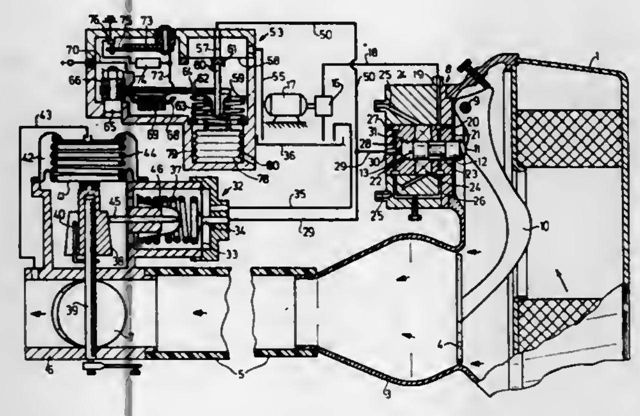
Filed Apr. 30, 1974, Ser. No. 465,504

Claims priority, application Germany, May 29, 1973, 2327295

Int. Cl. F02m *7/20*

U.S. Cl. 123—139 AW **2 Claims**

1. In a fuel supply system for mixture-compressing, externally ignited internal combustion engines, in whose suction tube a measuring member and an arbitrarily actuatable throttle flap are sequentially disposed and wherein the measuring member is moved in proportion to air quantity flowing through the suction tube and against a preferably substantially constant resetting force, which air quantity displaces a movable part of a quantity divider valve which meters an amount of fuel proportional to the air quantity and wherein the resetting force is provided by a pressurized fluid which acts continuously upon a control slide with a preferably constant pressure which is delivered through a pressure line, and wherein the pressure of the fluid is changeable by at least one pressure control valve which can be controlled in dependence on at least one motor operating parameter and which includes a heatable control element operating in a temperature-dependent manner, the control element being embodied as a bimetallic spring connected to a heat conducting arm which is heated by a heating element immediately after motor start-up and which is thermally insulated from the environment, the bimetallic spring acting in opposition to the force of a first control spring of the at least one pressure control valve whenever the temperature is below the motor's operating temperature the improvement comprising pressure sensitive means responsive to atmospheric pressure; and a second control spring installed to act in parallel to said first control spring, the pretension of said second spring being changeable in dependence on atmospheric pressure as sensed by said pressure sensitive means, said second spring being coupled to said pressure sensitive means.



3,894,524

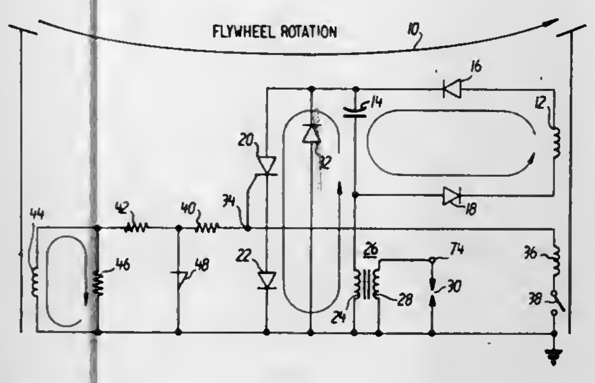
CAPACITOR DISCHARGE IGNITION SYSTEM

Wilford Benson Burkett, Pacific Palisades; Donald Eugene Martin, Costa Mesa, and Richard Harry Sparks, Westminster, all of Calif., assignors to McCulloch Corporation, Los Angeles, Calif.

Filed June 15, 1973, Ser. No. 370,371

Int. Cl. F02p *3/06*

U.S. Cl. 123—148 E **21 Claims**



1. An ignition circuit for an internal combustion engine comprising:

a capacitor;

means for periodically applying a unidirectional current to said capacitor responsively to engine rotation;

a discharge circuit for said capacitor, said discharge circuit including the primary winding of an ignition transformer and an SCR connected in series;

a trigger circuit means for periodically applying a triggering potential to the gate of said SCR responsively to engine rotation; and,

selectively operable means for periodically applying a triggering potential to the gate of said SCR during the application of said unidirectional current to said capacitor.

3,894,525

TRANSISTORIZED MAGNETO IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES

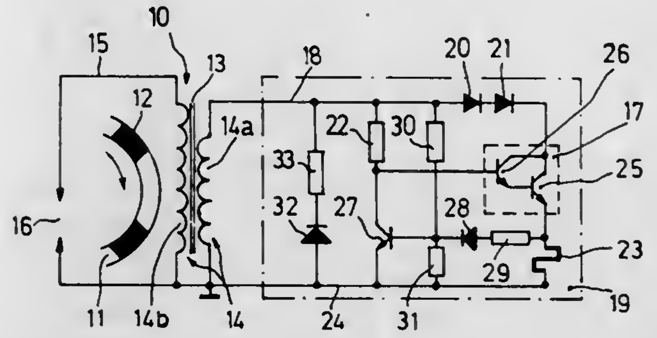
Georg Haubner, Berg; Walter Hofer, Schwabach, and Peter Schmaldienst, Nurnberg, all of Germany, assignors to Robert Bosch G.m.b.H., Gerlingen, Schillerhohe, Germany

Filed Feb. 12, 1974, Ser. No. 441,748

Claims priority, application Germany, Mar. 23, 1973, 2314559

Int. Cl.² F02P *3/02*

U.S. Cl. 123—148 E **18 Claims**



1. Magneto ignition system for internal combustion engine having rotating magnet means and a primary winding coupled thereto to generated electrical ignition energy therein; a secondary winding connected to the primary winding to generate ignition spark energy, for connection to a spark plug of the internal combustion engine; and an ignition control circuit connected to the primary winding comprising

switching semiconductor means (**17**; **25**, **26**) having its main current-carrying path connected in series with the primary windins (**14***a*);

a controlled switching semiconductor (**27**) having its main current-carrying path connected in parallel to the circuit including the control electrode of the switching semiconductor means (**17**) to bypass current therethrough;

and means (**23**) sensing current flow through the primary winding, said current flow sensing means (**23**) being connected to the control electrode of said switching semiconductor means (**17**; **25**, **26**), to control the switching semiconductor means (**17**; **25**, **26**) by said sensing means (**23**) to become conductive when the sensing means senses current flowing at a predetermined level in the primary winding and through the switching semiconductor means.

3,894,526

SPACE HEATER CONSTRUCTION PARTICULARLY FOR MOBILE INSTALLATIONS

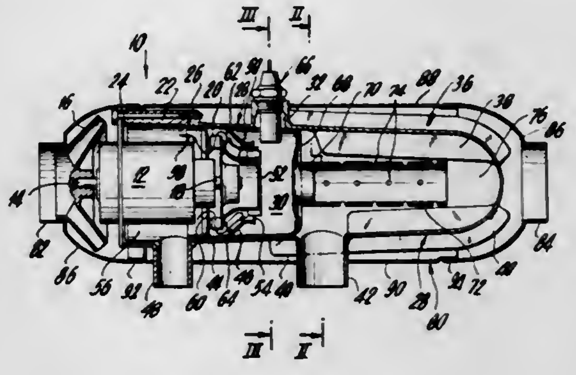
Siegfried Kofink, Zell (Neckar), Germany, assignor to Eberspacher, Germany

Continuation of Ser. No. 297,835, Oct. 16, 1972, abandoned. This application Feb. 7, 1974, Ser. No. 440,393

Int. Cl. F24h *3/06*

U.S. Cl. 126—110 B **13 Claims**

1. A space heater, particularly of the mobile type for motor vehicles, boats, campers, etc., comprising a tubular support part, a drive motor carried by and located in said tubular support part having a rotatable inlet fan for the inflow of space air to be heated around said tubular support part, said tubular support part surrounding most of the length of said motor and spaced radially outwardly therefrom to define an air flow space therebetween and terminating in an inner flanged end, an outer casing surrounding said tubular support part and spaced outwardly therefrom defining an air inlet at one end and extending beyond said support part at its opposite end and terminating at the opposite end in a space heating air discharge, a hollow tubular single integral part having a mounting flange bolted to and axially aligned with said tubular support part flanged end and defining a lateral antechamber having a fuel feed connection with igniter means for igniting the fuel and also defining a central combustion chamber section and an inner and outer ribbed heat exchanger section with a closed outer end and being located within and spaced from said casing and having an exhaust pipe connection spaced inwardly from the enclosed end for exhausting the gases generated in said combustion chamber, said tubular support part having a combustion air inlet to said combustion chamber, the space between said outer casing and said support part, said combustion chamber and said heat exchanger section, defining a flow space for space heating air flow from said space heating inlet to said space heating air outlet, at least one thermostable insert having a radially extending flange connected between said flange end of said support part and said mounting flange of said single integral part and forming an outer guide wall for the combustion air and flame guide means extending from said combustion chamber toward the closed end of said integral part but being spaced axially from said closed end and inwardly from said heat exchanger section to permit exit of the combustion gases therefrom and flow thereof in contact with said heat exchanger section.



3,894,527

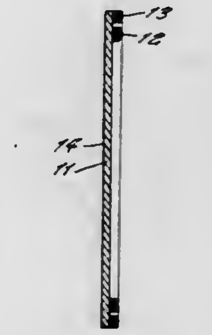
COVER FOR CIRCULATING FIREPLACE REGISTERS

John C. Ickes, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, New York, N.Y. 10007

Filed Sept. 4, 1973, Ser. No. 394,142

Int. Cl. F24b *1/18*

U.S. Cl. 126—140 **4 Claims**

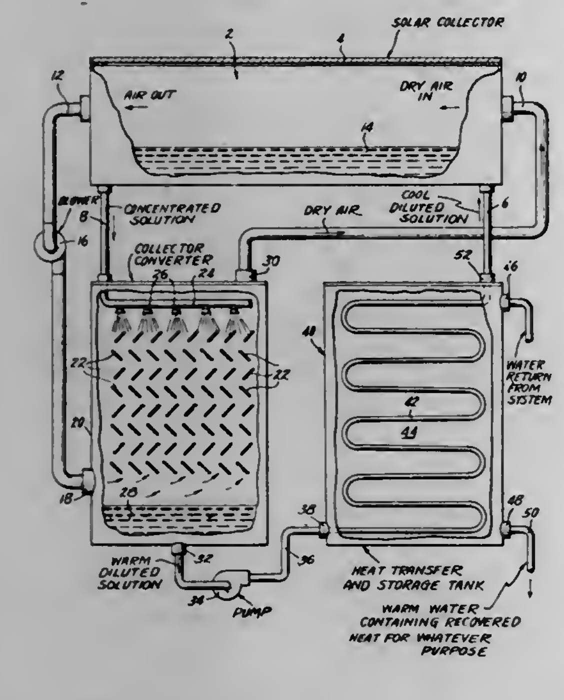


1. A cover for resiliently sealing a fireplace register made of magnetically permeable material, said cover comprising a magnetically permeable plate with a magnetic sealing material mounted at the inside face of said plate, said material comprising magnets formed of homogeneous relatively non-compressible metal and resiliently compressible material, said magnets being positioned further from the register than the compressible material so as to make physical contact with the register after the compressible material makes contact with the register and is compressed into sealing contact.

3,894,528

SOLAR ENERGY COLLECTION METHOD AND APPARATUS

Richard R. Stubblefield, Arnold, Md., assignor to Broyles & Broyles, Inc., Fort Worth, Tex.
Filed June 25, 1974, Ser. No. 483,038
Int. Cl.² F24J *3/02*
U.S. Cl. 126—271 8 Claims



1. The method of collecting solar energy comprising the steps of:

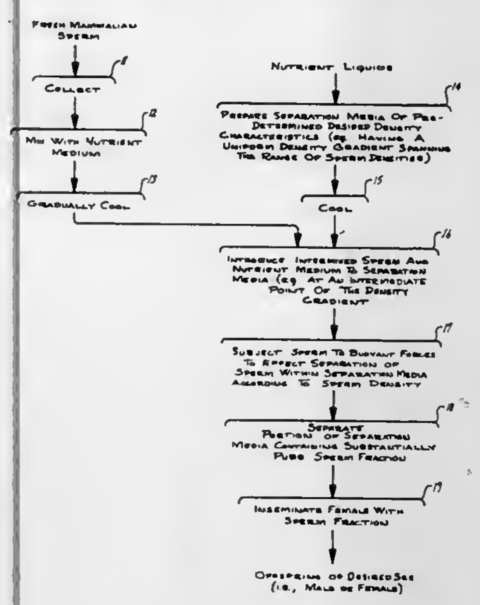
- placing a body of a relatively dilute solution of a salt in a first confined space and exposing the same to solar energy to vaporize solvent therefrom whereupon said solution becomes relatively concentrated;
- passing a stream of relatively dry gas through said space and over said solution to entrain and carry off the vaporized solvent;
- separately directing said vapor carrying gas and said concentrated solution to a second confined space and causing said concentrated solution to condense solvent from said gas and reabsorb the same whereupon the released latent heat of vaporization of said solvent raises the temperature of said solution; and
- thereafter extracting heat, as collected solar energy, from said heated solution.

3,894,529

METHOD AND MEANS FOR CONTROLLING THE SEX OF MAMMALIAN OFFSPRING AND PRODUCT THEREFOR

Wallace Shrimpton, San Francisco, Calif., assignor to Bio-Controls, Inc., San Francisco, Calif.
Filed Apr. 10, 1969, Ser. No. 814,906
Int. Cl. A61b *19/00*
U.S. Cl. 128—1 R 28 Claims

1. In a method of controlling the sex of mammalian offspring, the steps of mixing fresh sperm with a nutrient medium; cooling the mixture of sperm and medium to a low temperature to immobilize the sperm; introducing the cooled mixture of sperm and medium to a separation medium in the form of a separate body of nutrient medium, at least part of said separation medium being substantially equivalent in density to the density of said mixture and having a uniform density gradient extending from a lightest density at the top to a heaviest density at the bottom; applying buoyant forces to the sperm introduced to said separation medium tending to separate the sperm at levels of suspension within the separation medium according to individual sperm density; separating a portion of the separation medium of known density containing a suspended sperm fraction of equivalent density and desired predetermined sex characteristics; and artificially inseminating a female with the separated sperm fraction whereby conception occurs to produce offspring of the desired sex.


FRESH MAMMALIAN SPERM
COLLECT
11
MIX WITH NUTRIENT MEDIUM
12
GRADUALLY COOL
13
NUTRIENT LIQUIDS
PREPARE SEPARATION MEDIA OF PRE-DETERMINED DESIRED DENSITY CHARACTERISTICS (eg. HAVING A UNIFORM DENSITY GRADIENT SPANNING THE RANGE OF SPERM DENSITIES)
14
COOL
15
INTRODUCE INTERMIXED SPERM AND NUTRIENT MEDIUM TO SEPARATION MEDIA (eg. AT AN INTERMEDIATE POINT OF THE DENSITY GRADIENT
16
SUBJECT SPERM TO BUOYANT FORCES TO EFFECT SEPARATION OF SPERM WITHIN SEPARATION MEDIA ACCORDING TO SPERM DENSITY
17
SEPARATE PORTION OF SEPARATION MEDIA CONTAINING SUBSTANTIALLY PURE SPERM FRACTION
18
INSEMINATE FEMALE WITH SPERM FRACTION
19
OFFSPRING OF DESIRED SEX (i.e., MALE OR FEMALE)

3,894,530

METHOD FOR REPAIRING, AUGMENTING, OR REPLACING A BODY CONDUIT OR ORGAN

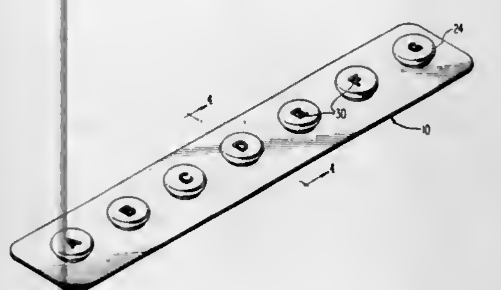
Irving I. Dardik, 130 DeVriese Ct., Tenafly, N.J. 07670, and Herbert Dardik, 806 Washburn St., Teaneck, N.J. 07666
Filed July 6, 1973, Ser. No. 376,948
Int. Cl.² A61B *19/00;* A61F *1/24*
U.S. Cl. 128—1 R 5 Claims

1. A method for repairing, augmenting or replacing a vein or artery of the body of a primate which comprises suturing or otherwise securing a portion of a vein or artery of an umbilical cord of a primate into or onto the wall of such body vein or artery.

3,894,531

SKIN PATCH TEST DEVICE WITH PEELABLE LABEL

Milton A. Saunders, Jr., 287 Pembroke Office Rd., Virginia Beach, Va. 23455
Filed Apr. 12, 1974, Ser. No. 460,496
Int. Cl. A61b *10/00*
U.S. Cl. 128—2 W 6 Claims



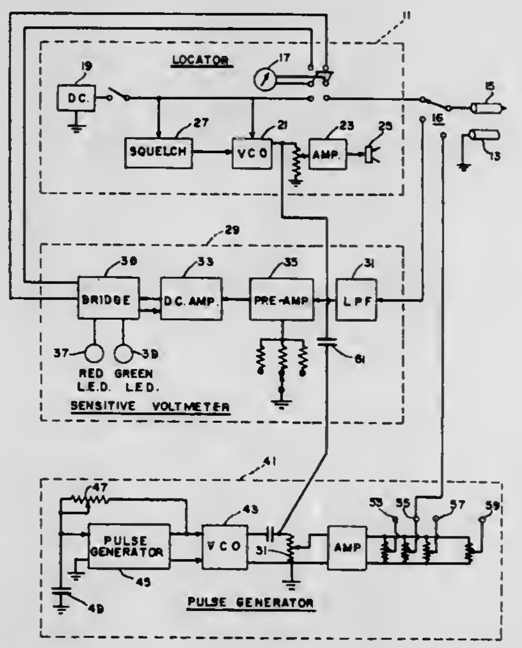
1. In a skin patch test device for simultaneously applying to a subject a plurality of skin patch sensitivity tests to various substances, including at least a first strip of sheet material having a pressure sensitive adhesive layer on one face for attachment to the subject's skin and carrying at spaced locations contactant preparations for contact with the skin of the subject, and a removable imperforate backing strip formed of sheet material overlying said first strip and removably sealed thereto by said pressure sensitive adhesive, whereby removal of the backing strip permits said skin patch test device to be adhesively pressed against the skin of the subject, the improvement comprising:

- a second pressure sensitive adhesive layer on said backing strip on the surface thereof facing said adhesive layer on said first strip and being removably sealed thereto, and
- contactant preparation identification indicia carried by both strips at positions corresponding to the contactant preparations,
- whereby, removal of the backing strip from the contactant preparation carrying strip permits the backing strip to be employed as an adhesively fixable record of test application remote from the subject, while reference to the device on the subject's skin readily identifies the same contactant preparation at each specific location along the first strip.

3,894,532

INSTRUMENTS FOR TRANSCUTANEOUS AND SUBCUTANEOUS INVESTIGATION AND TREATMENT

Robert Earl Morey, Lawrenceville, N.J., assignor to Acupulse, Inc., Lawrenceville, N.J.
Filed Jan. 17, 1974, Ser. No. 433,986
Int. Cl. A61b *5/05*
U.S. Cl. 128—2.1 Z 4 Claims



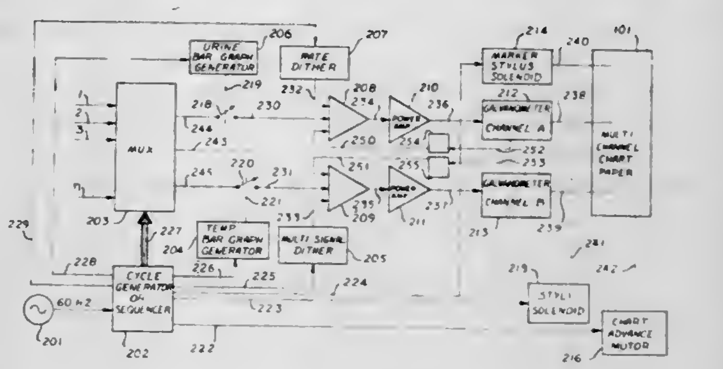
1. Instrument for determining transcutaneous points of minimum impedance comprising a probe electrode and a common body electrode, means for applying a direct voltage between said electrodes to establish a current the amplitude of which is a function of the impedance between said electrodes, means for generating an audio tone the frequency of which varies continuously as a function of the value of the amplitude of said current and thus of the impedance betweeen said electrodes and squelch means operative to disable said tone generator when the value of said impedance exceeds a predetermined value.

3,894,533

VITAL SIGN TREND INTUITIVE DISPLAY SYSTEM

Robert L. Cannon, Waltham, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed Nov. 2, 1973, Ser. No. 412,361
Int. Cl.² A61B *5/00*
U.S. Cl. 128—2.05 R 19 Claims

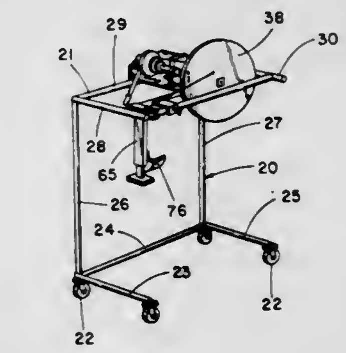
14. A trend recorder for displaying trends of vital signs of a patient, said recorder comprising means for obtaining electrical signals corresponding to said vital signs, circuit means operating upon said signals for providing processed signals, and graphical chart paper recorder means responsive to operation of said circuit means for recording the values of said processed signals in a predetermined graphical sequence that is intuitively representative of typical analog measurements of each of said vital signs, said sequence thereby depicting each of said trends in a manner that is intuitively representative of only one of said vital signs.



3,894,534

PHYSICAL THERAPY MACHINE

Milton W. Graves, P.O. Box 138, and Joseph W. Spivey, Rt. 5, Box 91, both of Lake Wales, Fla. 33853
Filed Nov. 1, 1973, Ser. No. 411,647
Int. Cl. A61h *1/02*
U.S. Cl. 128—25 R 5 Claims



1. A physical therapy machine comprising a frame, a motor having a rotary drive shaft mounted on the frame, a driven shaft rotatably mounted on the frame, crank means mounted on the driven shaft for rotation therewith, clutch means mounted on the frame, a first sprocket mounted on the drive shaft, second and third sprockets mounted on the clutch means, and a fourth sprocket mounted on the driven shaft, a first chain extending around the first and second sprockets and a second chain extending around the third and fourth sprockets, the clutch means being operable to transmit rotation of the rotary drive shaft to the driven shaft through the sprockets and chains, manipulating means adapted to be attached to a portion of a patient's body to receive physical therapy, and cable means connected to the crank means and the manipulating means whereby rotation of the crank means reciprocates the cable means and moves the manipulating means.

3,894,535

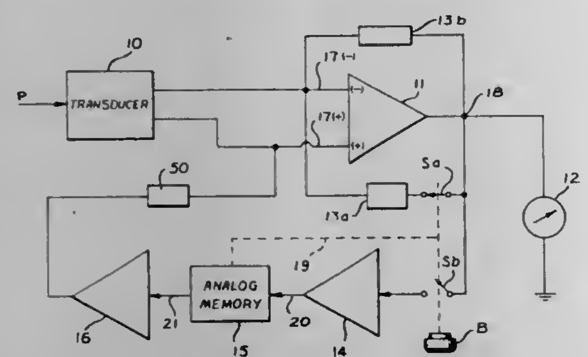
BLOOD PRESSURE MONITOR SYSTEM WITH PUSHBUTTON ZERO-OFFSET COMPENSATION

Robert L. Cannon, Waltham, and Robert A. McEachern, Billerica, both of Mass., assignors to American Optical Corporation, Southbridge, Mass.
Filed Feb. 1, 1974, Ser. No. 438,818
Int. Cl.² A61B *5/02*
U.S. Cl. 128—2.05 A 1 Claim

1. A blood pressure monitor system for monitoring blood pressure of a patient said system comprising:

- transducer means adapted to be operatively connected to said patient for sensing said pressure and for converting said pressure into an analogous electrical signal;

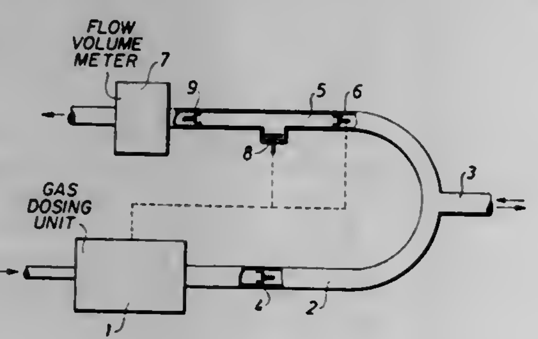
amplifying means;
means for extending said electrical signal to input terminals of said amplifying means;
indicator means responsive to output of said amplifying means for displaying value of said pressure;
means for disconnecting said transducer means from said patient thereby applying zero pressure to said transducer;
a manual control;
feedback means including said manual control;



means responsive to operation of said manual control for simultaneously increasing gain of said amplifying means, generating a transducer-compensating zero-pressure-offset signal during operation of said disconnecting means, and extending said offset signal to said input terminals of said amplifying means to cause said indicator means to display zero pressure; and
means for maintaining said offset signal for an extended period of time after release of said manual control and after termination of operation of said disconnecting means.

3,894,536
LUNG VENTILATOR INCLUDING VOLUME METER FOR MEASURING TOTAL VOLUME

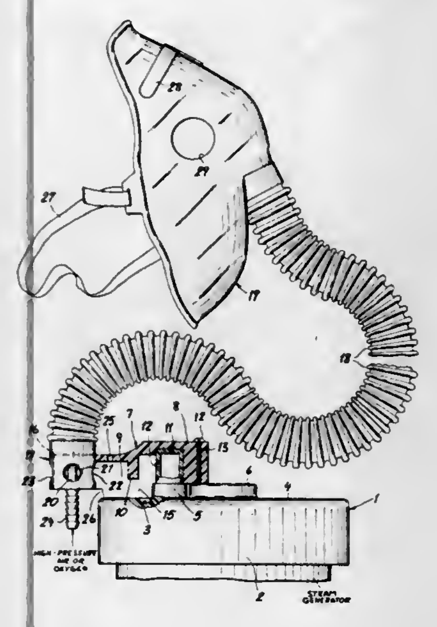
Jan Erik Tysk, Ekero, Sweden, assignor to Jungner Instrument AB, Solna, Sweden
Filed Jan. 24, 1974, Ser. No. 436,379
Claims priority, application Sweden, Sept. 29, 1973, 7301217
Int. Cl.² A61M *16/00*
U.S. Cl. 128—145.8 **6 Claims**



1. A lung ventilator comprising a gas dosing unit for delivering periodically predetermined volumes of breathing gas, a patient conduit means an inspiratory gas conduit connecting said dosing unit with said patient conduit means for conveying breathing gas from said dosing unit to a patient during the inspiratory phase of each respiratory cycle, an expiratory gas conduit connected to said patient conduit means for conveying expirated gas from the patient during the expiratory phase of each respiratory cycle, an inspiratory valve means in said inspiratory gas conduit providing a one-way gas flow from said dosing unit to said patient conduit means an expiration valve means in said expiratory gas conduit operated in synchronism with said dosing unit to be open during the expiratory phase and closed during the inspiratory phase of each respiratory cycle, gas volume measuring means connected to said expiratory gas conduit downstream of said expiration valve means for measuring the gas volume being conveyed through said expiratory gas conduit, additional valve means connected to the portion of said expiratory gas conduit extending between said expiration valve means and said gas volume measuring means for putting said portion of the expiratory gas conduit in communication with the ambient atmosphere when said additional valve means is in its open state, and control means operating in synchronism with said dosing unit for keeping said additional valve means in its open state during the inspiratory phase and in its closed state during the expiratory phase of each respiratory cycle.

3,894,537
STEAM NEBULIZER

Nat Camp, 912 Sunset Ave., Gettysburg, Pa. 17325
Filed Feb. 7, 1974, Ser. No. 440,350
Int. Cl. A61m *16/00*
U.S. Cl. 128—193 **11 Claims**

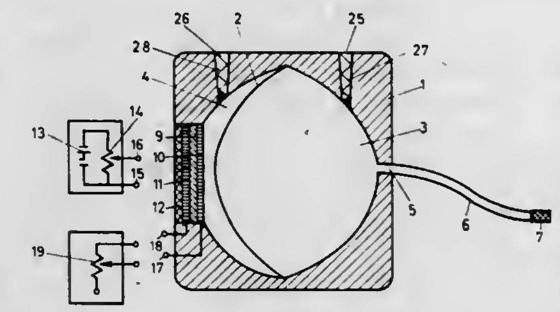


1. A nebulizer comprising a housing provided with an internal channel, a generally transverse baffle partly obstructing said channel, said housing having an entrance for ambient air communicating with said channel in the vicinity of said baffle, inlet means opening into said channel on one side of said baffle for directing a jet of steam thereagainst, a Venturi fitting connectable to a source of pressurized gas communicating with said channel on the opposite side of said baffle for continuously aspirating ambient air through said entrance together with steam particles deflected by said baffle to form a mist, said channel having an outlet at said opposite side for discharging the mist-laden aspirated air, and a vaporizer having a top surface provided with a steam nozzle rising therefrom, said housing being downwardly open and seated on said top surface, said inlet means including a formation on said housing accommodating said nozzle, said top surface forming a bottom for said channel.

3,894,538
DEVICE FOR SUPPLYING MEDICINES

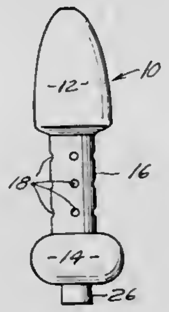
Gerhard Richter, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
Filed Aug. 6, 1973, Ser. No. 386,058
Claims priority, application Germany, Aug. 10, 1972, 2239432
Int. Cl. A61m *31/00*
U.S. Cl. 128—260 **20 Claims**

1. A device for supplying medicines to the body of man or beast, comprising means forming a first container of variable volume for containing a medicine and having an opening for delivery of medicine, means connected with the first-mentioned means and forming a second container of variable volume to vary the volume of the first-mentioned container, and means supplying volume varying means to the second mentioned container said volume varying means for said second container having a diaphragm window for receiving said volume varying means having two electrodes of different potentials and located on opposite sides of said diaphragm window and being embedded between said electrodes to provide a current or voltage supply for producing electrical fields so that fluid particles are transmitted into said second container in an electro-osmotic manner.



3,894,539
MEDICATION APPLICATOR

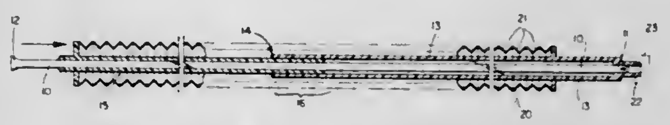
L. Dee Tallent, P.O. Box 136, Cabazon, Calif. 92230
Filed Jan. 3, 1974, Ser. No. 430,597
Int. Cl. A61m *31/00*
U.S. Cl. 128—261 **9 Claims**



1. A means for the automatic dispensing of medications, in the form of a salve at room temperature and liquified form at body temperature, onto the walls of a body cavity by natural internal body fluid pressures comprising a body cavity insertion member having
a tubular intermediate segment having a hollow interior for holding said medicament, said hollow interior being defined by a wall having penetrating holes through which the liquefied medicament can flow laterally outwardly from the applicator;
a bulbous head portion integral with one end of the intermediate segment, said head portion being adapted to pass through the sphincter opening and into the body cavity; and
an enlarged rear portion integral with the opposite end of the intermediate segment, said rear portion being adapted to provide an enclosure for the applicator at the rear;
said bulbous head portion having a body fluid inlet opening spaced forwardly from the intermediate segment and a hollow passageway connecting the hollow interior of said intermediate segment with said inlet opening; and
said intermediate segment being of a length to occupy the area of the sphincter opening in such manner that the applicator can be inserted in said sphincter opening until its bulbous head portion passes completely into said body cavity whereby said inlet opening is disposed within the cavity, and the intermediate segment is then held relatively firmly against longitudinal movement in the opening by the bulbous head and enlarged rear portions of the applicator sandwiching the sphincter at the ends of said intermediate segment;
whereby said medicament can be packed, in salve form, into the hollow interior of said intermediate segment and said bulbous head portion then inserted into said body cavity, and whereby body temperature thereafter causes the medicament to liquefy, after which said medicament is forced through the holes in the wall of said intermediate segment onto the surrounding tissue by the pressures of internal body fluids in said body cavity acting through said inlet opening and said hollow passageway.

3,894,540
CATHETER

Francis J. Bonner, Jr., 1240 Conshohocken State Rd., Gladwyne, Pa. 19035
Filed Oct. 9, 1973, Ser. No. 404,400
Int. Cl. A61m *25/00, 27/00*
U.S. Cl. 128—349 R **30 Claims**



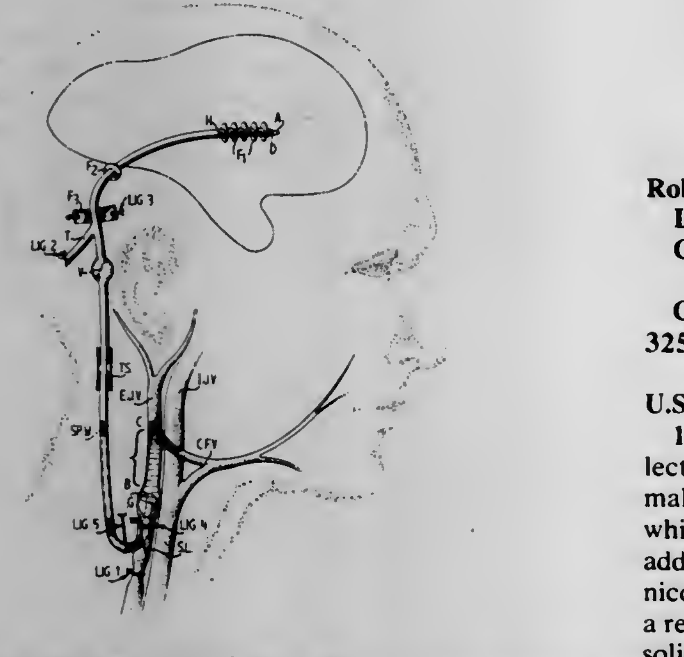
1. A catheter comprising means forming an elongated flexible conduit an operative portion of the length of which is intended to be inserted into the body, said conduit having an insertion end constructed and arranged for insertion through a passage in the body, and for flow of fluid through said conduit, said conduit having a distal end spaced apart from said insertion end, and means forming an extendible and retractable protective sheath extending at least about said operative length from said insertion end toward said distal end and sealed to inhibit invasion of foreign micro-organisms to the entire corresponding surface of said conduit and maintaining a substantially sterile condition on the entire corresponding surface of said conduit, the outer surface of said conduit being sealed with respect to said sheath against invasion of foreign micro-organisms, and said conduit having an opening for the discharge of said fluid beyond said sheath, said conduit being longitudinally slidable relative to said sheath for insertion into the body, and at least a portion of said sheath being retractable without interfering with the integrity of the protective seal to permit such relative sliding of said conduit, said outer surface of said operative length which is to be inserted into the patient's body being protected from bacterial invasion through said sheath during the period of insertion and the period of use.

3,894,541
METHOD OF TREATING HYDROCEPHALUS

Ismail Lotfy El-Shafei, 9(a) Ahmed Heshmat Str., Zamalik, Cairo, Egypt
Filed Feb. 27, 1974, Ser. No. 446,420
Int. Cl. A61m *27/00*
U.S. Cl. 128—350 R **1 Claim**

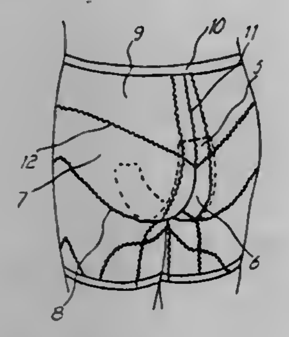
1. A method of treating hydrocephalus comprising the steps of establishing a connection between the lateral ventricle and a ligated neck vein using a catheter having a ventricular end and a venous end, eliminating the syphonage force which develops with conventional valve systems when the patient

assumes the upright position, and preventing contact between the shunting catheter and the circulating blood by inserting the venous end of the catheter into the proximal segment of the ligated neck vein against the direction of blood flow.



3,894,542
PANTY GIRDLE

Andres Sarda Sacristan, Barcelona, Spain, assignor to Eurocorset, S.A., Barcelona, Spain
Filed Feb. 4, 1974, Ser. No. 439,630
Claims priority, application Spain, Feb. 9, 1973, 188538
Int. Cl. A41c *1/00*
U.S. Cl. 128—547 **1 Claim**



1. A panty girdle comprising:

a waist band;

a double-layer cloth strip of limited stretchability extending around and secured to said waist band and recircling the waist and hip regions of a wearer, said strip having front and rear longitudinal seams along a vertical longitudinal plane of symmetry of the panty girdle and respective front and rear downwardly and inwardly converging seams;

a pair of single cloth fabric buttock panels extending over and below the buttock region and secured to said strip by said rear downwardly and inwardly converging seams, said buttock panels terminating short of said rear longitudinal seam and being of greater stretchability than said strip;

a pair of furrow panels adapted to lie in the buttock crevice and conforming to the shape while being secured to them over an extension of said rear longitudinal seam while being connected to said strip and to the ends of said buttock panels along respective seams, siad furrow panels being composed of a fabric elastic only in a transverse direction;

a pair of legs connected to said strip in the front of the panty girdle along said front seams and to said buttock panels along respective seams at the rear of the girdle; and

a crotch strip formed with a longitudinal seam along said rear longitudinal seam and lying in the crotch of the girdle while extending from a sacrolumbar region at which it overlies said double-layer strip around the entire crotch of the panty girdle to overlie the pelvic region of the front thereof, said crotch strip being composed of elastic, porous and absorbent fabrics.

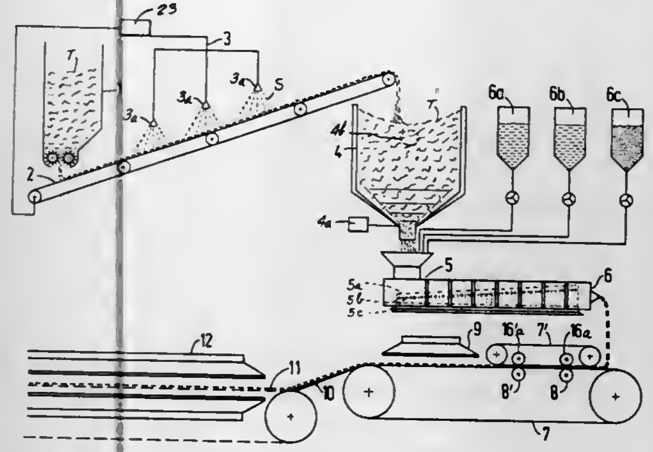
3,894,543
SMOKING MIXTURE

Robert Craig Anderson; Donald Calder, and John Cormack Lovie, all of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England
Filed June 24, 1974, Ser. No. 482,786
Claims priority, application United Kingdom, July 9, 1973, 32504/73
Int. Cl. A24b *15/00, 15/08*
U.S. Cl. 131—2 **14 Claims**

1. A smoking mixture comprising a tobacco substitute selected from the group consisting of cellulose ethers, and thermally degraded carbohydrates in admixture with an additive which enhances the tobacco-like flavor of said substitute, said additive being either a solid residue obtained by removal of nicotine from Nicotiana Rustica or a solvent extract of such a residue from which any toxic solvent is totally removed, said solid residue being obtained by treating Nicotiana with alkali followed by steam distillation or leaching with water to remove the nicotine.

3,894,544
PROCESS FOR PRODUCING TOBACCO STRUCTURES

Laszlo Egri, Basel, Switzerland, assignor to Tamag Basel AG, Birsfelden, Switzerland
Continuation-in-part of Ser. No. 284,677, Aug. 29, 1972, abandoned. This application Dec. 3, 1973, Ser. No. 421,242
Claims priority, application Greece, May 23, 1973, 2003; Germany, June 2, 1972, 2230314
Int. Cl. A24b *03/14*
U.S. Cl. 131—140 C **11 Claims**



1. A process for the production of coherent tobacco structures of coarsely comminuted tobacco materials, in particular ribs and wastes, which are moistened and kneaded to form a dough-like mass which is then shaped to form leaflike structures, wherein the improvement comprises the steps of:

a. comminuting the starting tobacco material to a particulate size of approximately 150 to 200 μm;

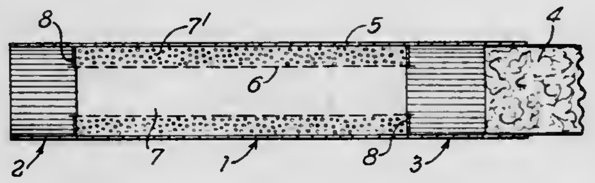
b. moistening the comminuted tobacco by mixing with a liquid in a weight ratio of 1:1.1 to 1:1.5 tobacco to liquid; c. kneading the moistened tobacco material to form a dough-like mass;

d. directly applying the dough-like mass to a transport belt in individual, separate portions to form spaced pieces; and

e. then spreading the portions on the transport belt under relatively low compression pressures up to a maximum of approximately 20 kg/cm^2 to form individual flakes by means of a spreading belt which runs in the same direction as the transport belt and at a speed slightly slower than the transport belt.

3,894,545
FILTERS FOR TOBACCO SMOKE

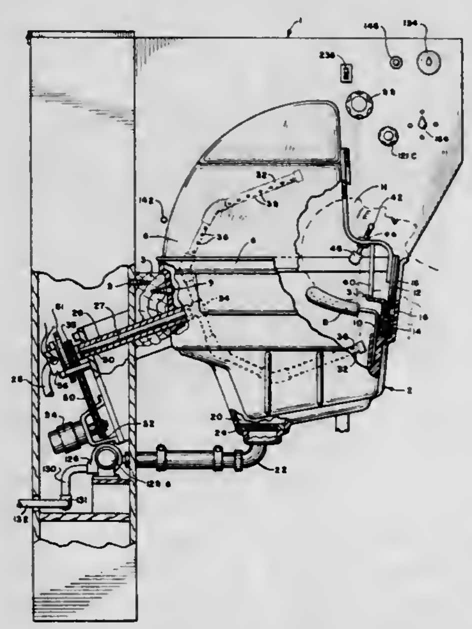
Robin A. Crellin, Romsey, and Henry G. Horewell, Totton, both of England, assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.
Filed Nov. 6, 1973, Ser. No. 413,348
Int. Cl. A24b *15/02*
U.S. Cl. 131—261 B **8 Claims**



1. A filter for a smokeable article intended to be disposed downstream from a smokeable charge, comprising a smoke treating chamber formed by a substantially cylindrical outer wall of the filter element in close proximity to the downstream end of a smokeable charge, a longitudinally oriented vapor porous membrane mounted within said cylinder, said membrane containing a charge of particulate carbon, the upstream and downstream ends of said carbon charged membrane being effectively sealed or blocked against the passage of smoke, the space not occupied by said membrane defining longitudinally extending continuous and uninterrupted passageway or passageways extending for a length at least equal to that of the contained carbon charge, such that the smoke emerging from the downstream end of a smokeable charge preferentially courses through the said continuous and uninterrupted passageways without being forced through said contained carbon charge.

3,894,546
APPARATUS FOR TREATING THE HAIR AND SCALP WITH SOLUTIONS

William D. Nolan, 3102 Grant, Wichita Falls, Tex. 76308
Continuation of Ser. No. 145,735, May 21, 1971, abandoned. This application Oct. 11, 1973, Ser. No. 405,668
Int. Cl. A45d *1/00*
U.S. Cl. 132—9 **6 Claims**



1. Apparatus for applying solutions to the human head comprising:

a cabinet having an upstanding front wall;

a housing including a lower housing part and an upper housing part, said lower housing part having upstanding front and rear walls;

support means securing said lower housing part to said upstanding front wall on said cabinet with said cabinet front wall and said housing rear wall being substantially parallel to each other other for supporting said front wall on said lower housing part at a height convenient for the head of a patron sitting in a semi-reclining position;

a hollow sleeve extending through said front wall of said cabinet and said rear wall of said lower housing part, said hollow sleeve having a first end positioned in said lower housing part and a second end positioned behind said front wall of said cabinet, the major axis of said hollow sleeve intersecting said head of said patron substantially normal thereto;

a first conduit rotatably mounted in said hollow sleeve and having a first end extending into said lower housing part beyond said first end of said hollow sleeve and a second end extending beyond said second end of said hollow sleeve;

at least one arcuate, perforate conduit connected to said first end of said first conduit for spraying solutions on said head of said patron;

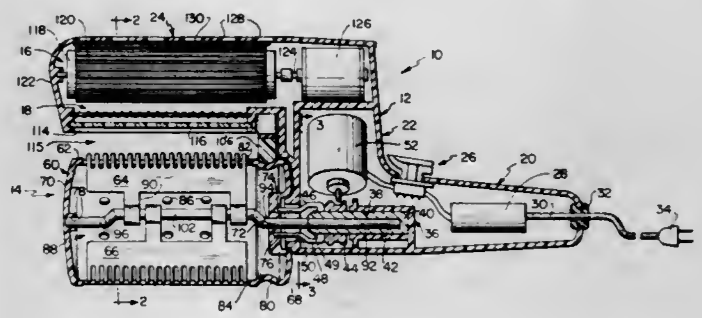
a sleeve seal secured to said second end of said first conduit for imparting rotation thereto;

a flexible hose fitted into said sleeve seal in fluid tight relationship therewith and in fluid communication with said first conduit for conveying solutions to said first conduit and said at least one arcuate, perforate conduit; and

motor means connected to said sleeve seal for imparting rotation thereto.

3,894,547
HAIR STYLING APPARATUS

Joseph P. Scivoletto, Brooklyn, N.Y., assignor to Malibu Personal Beauty Products, Inc., New York, N.Y.
Filed Feb. 1, 1974, Ser. No. 438,604
Int. Cl. A45d *24/00*
U.S. Cl. 132—11 A **12 Claims**



1. A hair styling apparatus comprising the combination of: rotatable comb assembly means, having an axis of rotation and an outer surface, for engaging and tensioning hair;

blower means for producing a stream of air;

heater means for elevating the temperature of said stream of air;

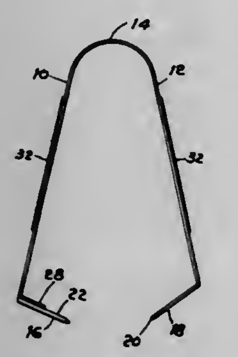
a housing including

- means for rotatably supporting said comb assembly means,
- means for enclosing said blower means and for directing said stream of heated air toward the outer surface of said comb assembly means to dry the hair engaged and tensioned by said comb assembly means, and
- a handle; and

means within said housing for rotating said comb assembly means so that the hair is wrapped thereabout.

3,894,548
HAIR COMB AND CUTTING GUIDE

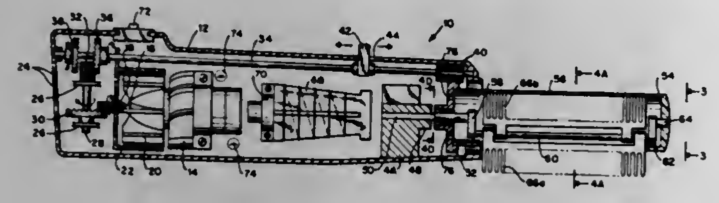
Michael E. Suvino, 580 Bloomfield Ave., West Caldwell, N.J. 07006
Filed Mar. 4, 1974, Ser. No. 447,492
Int. Cl.² A45D *1/00*
U.S. Cl. 132—9 **8 Claims**



1. A hair comb and guide device comprising
a pair of longitudinally extending arms having a common pivotal connection at one end, the opposite ends of said arms being free,
a comb member extending laterally from the free end of one arm and having teeth facing inwardly toward the free end of the other arm, and
a grip member extending laterally from the free end of the other arm and having an outer edge engageable with the upper surface of said comb member to clamp hair therebetween.

3,894,549
ELECTRICALLY DRIVEN AND HEATED HAIR TREATING DEVICE

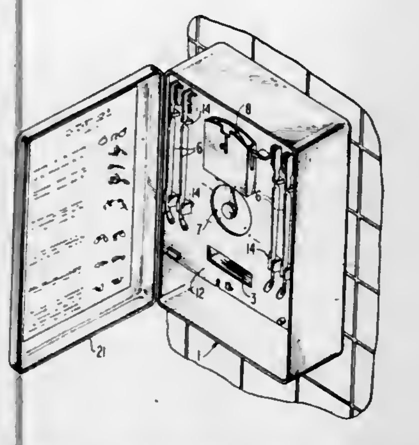
Joseph P. Scivoletto, Brooklyn, N.Y., assignor to Malibu Personal Beauty Products, Inc., New York, N.Y.
Continuation of Ser. No. 323,246, Jan. 12, 1973, abandoned. This application Dec. 28, 1973, Ser. No. 429,630
Int. Cl. A45d *24/00*
U.S. Cl. 132—11 A **8 Claims**



1. An electrically driven hair treating device comprising, in combination:
a first, hollow housing;
a drive motor having an output shaft and an output pinion secured thereto, said drive motor being mounted in said first housing;
a gear train including an input gear in meshing engagement with said drive motor output pinion and an output pinion;
a rotatable second, hollow housing responsive to and driven by said output pinion of said gear train, said second housing including at least one slot extending through the wall thereof;
a non-rotatable shaft mounted in said first housing and journalled in said second housing concentrically with the rotational axis thereof, said shaft having a section positioned eccentrically with respect to the rotational axis of said second housing;
at least one hair treating member loosely mounted on said eccentric section of said shaft and driven by said second housing, said hair treating member being in alignment with and adapted to traverse said slot; and
means for directing heated air out said at least one slot, whereby, when said second housing is driven, said hair treating member is angularly displaced by the rotational movement of said slot in said second housing to thereby cause said hair treating member to rotate about the axis of said eccentric section so that said hair treating member moves in directions towards and away from the outer surface of said second housing and combs hair adjacent thereto and whereby the heated air contacts the hair combed by said hair treating member.

3,894,550
ORAL DISEASE PREVENTION MOTIVATING KIT

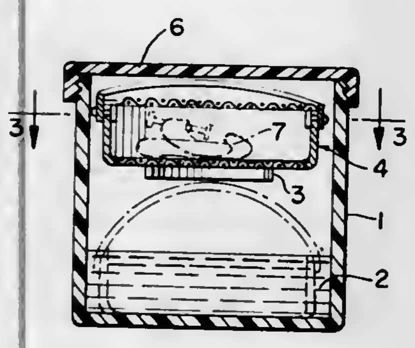
James W. Eaton, 407 N. Broad St., Grove City, Pa. 16127
Filed June 18, 1974, Ser. No. 480,417
Int. Cl. A45d *40/00*
U.S. Cl. 132—79 E **10 Claims**



1. An oral disease prevention motivating kit comprising, a cabinet having a partitioned wall area providing individual compartments for a plurality of oral disease preventive components such as toothpaste, perio-aids, dental floss, and fluoride gel; a timer including a knob and a pointer mounted in said cabinet adapted to be set to an allotted time prescribed for the various oral disease preventive procedures; and a program indicator mounted in said cabinet for recording the daily oral disease prevention procedures for each user of the kit.

3,894,551
CONTAINER FOR USE IN CLEANSING JEWELRY

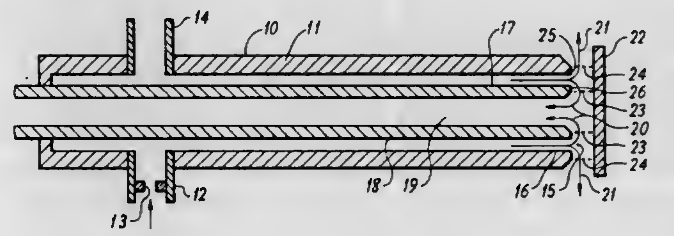
John F. Stohlman, 27507 Mount Radnor Rd., Damascus, Md. 20750
Filed June 29, 1973, Ser. No. 374,971
Int. Cl. B08b *3/04*
U.S. Cl. 134—135 **1 Claim**



1. A container for cleansing jewelry comprising, a receptacle adapted to contain a volume of cleaning fluid, a plurality of circumferentially spaced flanges provided on the inner surface of the receptacle at a location below the upper edge of the receptacle, a basket adapted to contain jewelry to be cleaned, said basket having a cylindrical side wall and a perforated bottom wall, a plurality of circumferentially spaced flanges provided on the basket side wall and adapted to seat on the receptacle flanges, whereby, in one position, the basket is located above the surface of the cleaning fluid but below the upper edge of the receptacle; said basket being removable from said receptacle flanges and lowered into the cleaning fluid; the perforated bottom wall being provided by a mesh connected to the lower edge of the basket cylindrical side wall to form a supporting surface for the jewelry to be cleaned, a bail connected to the basket cylindrical side wall to facilitate moving the basket between the elevated and lowered positions; a mesh cover removably mounted on the upper edge of the basket side wall to prevent the jewelry from becoming dislodged from the basket during the washing of the jewelry while allowing the cleaning fluid to pass therethrough, said mesh cover being provided with depending finger means for frictionally engaging the basket side wall to thereby retain the mesh cover thereon, whereby the basket containing the jewelry to be cleaned is submerged in the cleaning fluid to thereby wash the jewelry, whereupon the basket containing the cleaned jewelry is supported on the receptacle flanges and wholly contained within the receptacle to thereby allow the jewelry to drip dry, and a cover removably mounted on the upper edge of the receptacle to prevent spillage and evaporation of the cleaning fluid during the drying of the jewelry.

3,894,552
TRANSDUCER NOZZLE

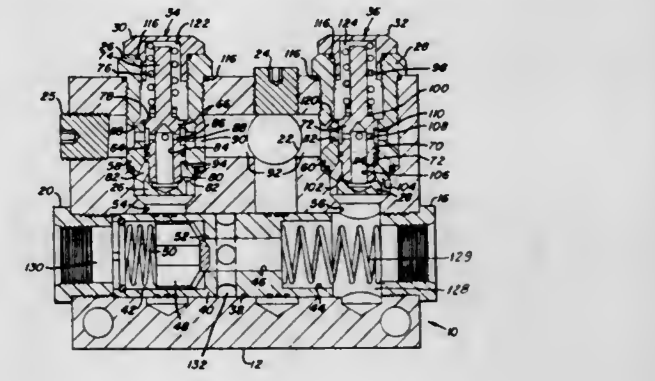
Hoel L., Bowditch, Foxboro, Mass., assignor to The Foxboro Company, Foxboro, Mass.
Filed Jan. 31, 1974, Ser. No. 438,302
Int. Cl.² F15B *5/00;* **G01B** *13/12*
U.S. Cl. 137—82 **6 Claims**



1. A nozzle of the type having an outlet pressure chamber with a restricted inlet passage, an outlet signal passage and an outlet orifice arranged so that when constant pressure fluid is supplied through said restricted inlet passage to said outlet pressure chamber and discharges therefrom through said outlet orifice to ambient pressure, the outlet pressure signal in said inlet pressure chamber and outlet signal passage is a function of the distance the surface of a flapper is positioned from said outlet orifice, the improvement comprising:
said outlet orifice in the form of a continuous slot whereby the fluid discharging from the outlet pressure chamber through said outlet orifice flows in one direction through an outer curtain to ambient pressure, and in the opposite direction through an inner curtain to ambient pressure and the rate of flow through both said curtains is simultaneously responsive to the position of said surface of said flapper from said outlet orifice.

3,894,553
CABLE REEL CONTROL VALVE

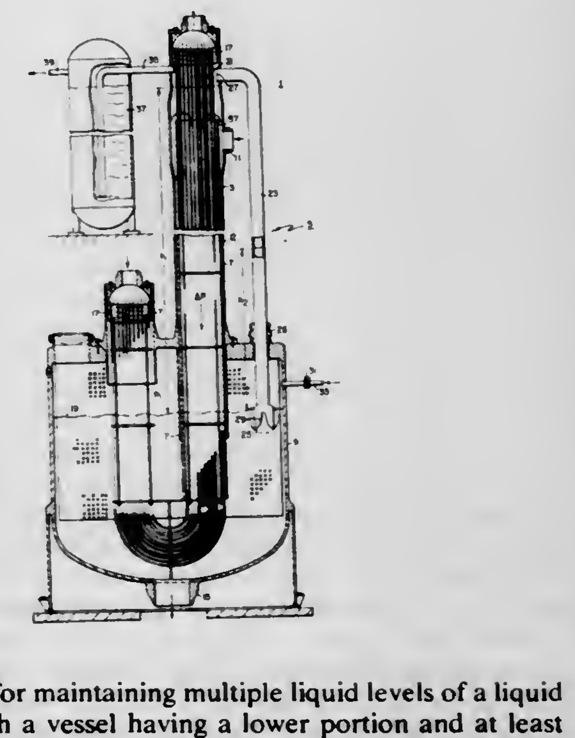
Vern R. Exley, Franklin, Pa., assignor to Joy Manufacturing Company, Pittsburgh, Pa.
Continuation of Ser. No. 267,848, June 30, 1972, abandoned. This application May 20, 1974, Ser. No. 471,423
Int. Cl. F15b *15/18*
U.S. Cl. 137—102 **6 Claims**



1. A control valve comprising: a valve body; a bore in said valve body having one end portion thereof adapted to communicate with a hydraulic supply pump and having an opposite end portion thereof adapted to communicate with a hydraulic pump-motor; first fluid passage means adapted to communicate said one end portion with a sump; second fluid passage means adapted to communicate said opposite end portion with such a sump; a valve assembly slidingly and sealingly received within said bore and operative in a first position to block communication between said opposite end portion and said second passage means and in a second position to block communication between said one end portion and said first passage means; first normally closed relief valve means in said first passage means and operative to open when a first predetermined pressure exists in said one end portion and said valve assembly is in said first position; second normally closed relief valve means in said second passage means and operative to open when a second predetermined pressure, less than said first predetermined pressure, exists in said opposite end portion and said valve assembly is in said second position; said valve assembly having a passageway therethrough and a check valve operative to allow fluid flow through said passageway only in the direction from said one end portion to said opposite end portion; and pressure venting means for communicating said passageway with such a sump only when said valve assembly is in said second position.

3,894,554
LIQUID LEVEL CONTROLLER

James D. Mangus, Greenburg, and Arnold H. Redding, Export, both of Pa., assignors to The United States Energy Research and Development Administration, Washington, D.C.
Filed May 10, 1972, Ser. No. 251,992
Int. Cl. F28d *7/06*
U.S. Cl. 137—206 **13 Claims**



1. A system for maintaining multiple liquid levels of a liquid flowing through a vessel having a lower portion and at least one upper portion, said portions being so disposed that an opening placing said portions in communication is disposed below a first liquid level maintained in said lower portion, said

system comprising means for supplying a pressurized gas to said lower portion at a predetermined rate forming a first gas space above said first liquid level, a standpipe in communication with said first gas space and with said first liquid, said standpipe having opening means disposed above and below said first liquid level, said opening means being disposed to increase and decrease the open area exposed to the first gas space as the first levels move, respectively, downwardly and upwardly, said standpipe also being in communication with a second gas space disposed at an elevation above a second liquid level maintained in said upper portion of said vessel and means for maintaining said second gas space generally at a predetermined pressure.

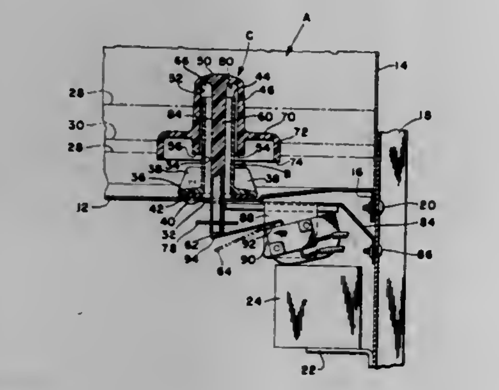
3,894,555
FLOAT SWITCH ASSEMBLY

Richard E. Payne, Mansfield, Ohio, assignor to The Tappan Company, Mansfield, Ohio

Filed Nov. 14, 1973, Ser. No. 415,745

Int. Cl. D06f *39/08;* **G05d** *9/12*

U.S. Cl. 137—412 **7 Claims**



1. A float switch assembly for a tub having a bottom wall, comprising; an opening through said bottom wall, an elongated substantially cylindrical sleeve member having an axial hole therethrough and an outwardly extending bottom flange, said flange being sealingly secured to said bottom wall with said sleeve member positioned substantially vertically above said bottom wall and with said axial hole aligned with said opening, a float member formed from a material having a specific gravity less than unity, said float member including a hollow generally bell-shaped central portion having a closed top, an inner peripheral surface, a downwardly facing open bottom and a bottom peripheral end, said float member including an elongated central stem extending through said central portion from said closed top thereof and terminating at a free stem end spaced a substantial distance downwardly from said bottom peripheral end of said central portion, said stem having an outer peripheral surface spaced inwardly from said inner peripheral surface of said central portion to define an annular space extending from said bottom peripheral end to said closed top and having a substantially uniform cross-sectional area throughout its length, a relatively shallow float flange extending outwardly from said central portion adjacent said bottom peripheral end thereof, said float flange including a downwardly extending terminal float flange portion having a peripheral float flange end spaced downwardly from said bottom peripheral end of said central portion, said sleeve member being freely received in said annular space and said stem extending through said axial hole and said opening in said tub bottom wall, switch means for controlling flow of water to said tub, and switch actuator means engaged with said free stem end for operating said switch means as said float member rises and falls with variations in water level in said tub.

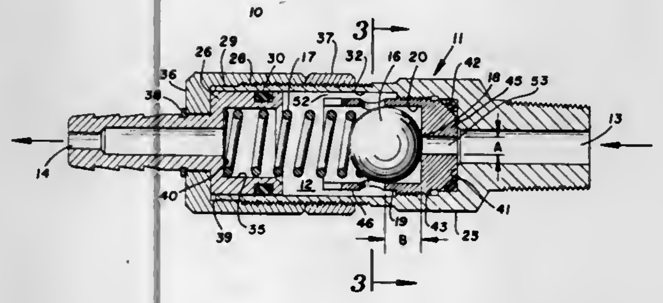
3,894,556
PRESSURE LIMITING VALVE

Ramon Pareja, Minneapolis, Minn., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed Jan. 2, 1974, Ser. No. 429,902

Int. Cl. F16k *15/04*

U.S. Cl. 137—539 **9 Claims**



1. In a pressure limiting valve assembly comprising, in combination, a valve housing defining a chamber, an inlet and an outlet in communication with said chamber, and a ball-check member with spring means biasing said ball-check into contact with a seat adjacent said inlet; cage means disposed within said housing and having a check member confining chamber for operatively retaining said check member therewithin; said housing including:

a. first and second generally cylindrical tubular members, each having opposed inner and outer ends, and with the inner ends thereof being telescopically engaged, one with the other, and with a bore extending through said tubular members;

b. an inlet with a certain diameter formed at the outer end of said first cylindrical tubular member, and a counterbore extending toward said inlet from the opposed inner end thereof and terminating at an annular surface;

c. an outlet formed at the outer end of said second cylindrical tubular member, and with a counterbore extending toward said outlet from the inner end thereof terminating at a step abutment;

d. clamping means for adjustably retaining said first and second tubular members in telescopically engaged relationship for an adjustably selected axial length along the common inner ends thereof;

e. cage means threadedly received within said counterbore of said first cylindrical tubular member and having a generally cup-shaped body comprising a base having side walls extending therefrom and with a generally open top and with a bore extending through the base thereof, said bore having a diameter which does not exceed the diameter of said inlet and terminating in a valve seat at the inner end thereof, at least one metering bore formed in the walls of said cup-shaped body and being disposed at a predetermined distance from said valve seat;

f. a ball-check disposed within said cup-shaped body and having a radius which is less than said predetermined distance; and

g. resilient bias means having one end disposed against said step abutment and normally applying a force urging said check member into contact with said seat with the magnitude of said force being controlled by the axial length of said housing.

3,894,557
CONTROL VALVE FOR A GAS RANGE TIMER

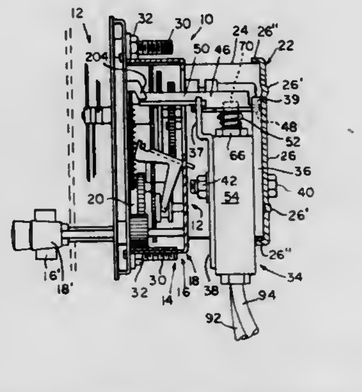
John A. Impett, Chichester, England, assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Nov. 9, 1973, Ser. No. 414,308

Claims priority, application United Kingdom, Dec. 7, 1972, 56551

Int. Cl. F16k *51/00*

U.S. Cl. 137—554 **9 Claims**



1. In a range timer provided with an interval time means, a stop time means, a cooking hours means, a cam controlled by said stop time means and said cooking hours means, and a lug responsive to said cam means to provide a mechanical actuator, a bracket supported by said timer, a fluid control valve carried by said bracket and actuated through a valve actuator blade by said mechanical actuator, said fluid control valve providing an ON-OFF condition to selectively supply a flow of liquid at said range timer to an area remote from said range timer.

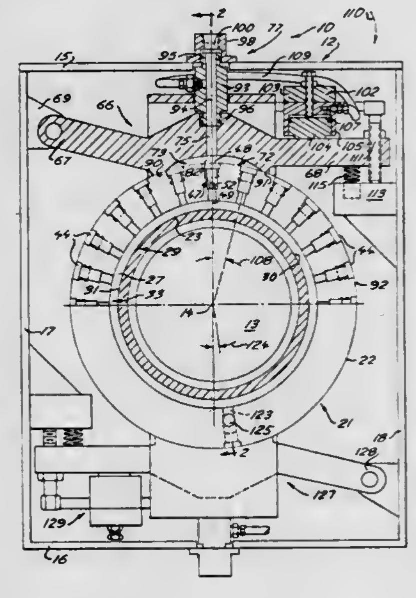
3,894,558
ROTARY SEAL

James Miller Pedersen, 3809 Puget Dr., Vancouver 8, British Columbia, Canada

Filed May 1, 1973, Ser. No. 356,157

Int. Cl. F16l *27/00*

U.S. Cl. 137—580 **17 Claims**



1. A rotary seal for transmitting fluid under pressure from a stationary member to a rotating shaft, the shaft having a longitudinal axis of rotation, the rotary seal including:

a. a shaft sleeve adapted to be secured relative to the shaft, the sleeve having a sealing track extending therearound, the track being a surface of revolution centered on the shaft axis,

b. the shaft sleeve having a plurality of input bores, the bores having outer ends disposed on the sealing track and inner ends communicating with a fluid output from the shaft sleeve,

c. a valve provided in each input bore, the valve being adapted to open to pass fluid into the bore, and to close against a reverse flow of fluid from the bore,

d. a housing secured to the stationary member and enclosing the sleeve,

e. a manifold member within the housing, the member being restricted against rotation with the shaft and having an inner face having a manifold recess defined by peripheral walls having rigid lips complementary to the sealing track of the shaft sleeve, the manifold recess having an input port to receive fluid under pressure, the manifold member being mounted for limited movement relative to the stationary member to move the lips into contact with the sealing track, a first force being generated by the fluid in the manifold recess tending to lift the lips of the manifold member off the sealing track,

f. fluid-actuated extensible means exposed to the fluid under pressure in the manifold recess and cooperating with the manifold member to generate a second force on the manifold member to urge the manifold member into contact with the sleeve when the manifold recess receives fluid under pressure, the second force exceeding the first force so that the extensible means extends and forces the lips of the peripheral wall of the manifold recess against the sealing track of the shaft sleeve to engage the sealing track and to effect an essentially fluid tight seal between the lips and the sealing track,

thus permitting the manifold recess to be brought into register with an input bore of the sleeve, so that fluid under pressure in the manifold recess opens a valve in the bore in register with the recess, thus admitting fluid into the input bore.

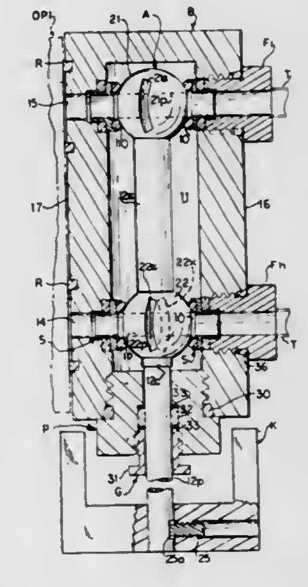
3,894,559
MANIFOLD VALVE

Leland Q. DePuy, 7792 Grendier Ln., Brecksville, Ohio 44141

Filed Mar. 28, 1974, Ser. No. 455,867

Int. Cl. F16k *11/02*

U.S. Cl. 137—595 **14 Claims**



1. An instrumentation manifold valve for connecting two pressure tap points to two respective pressure input inlets of a differential pressure instrument device, comprising

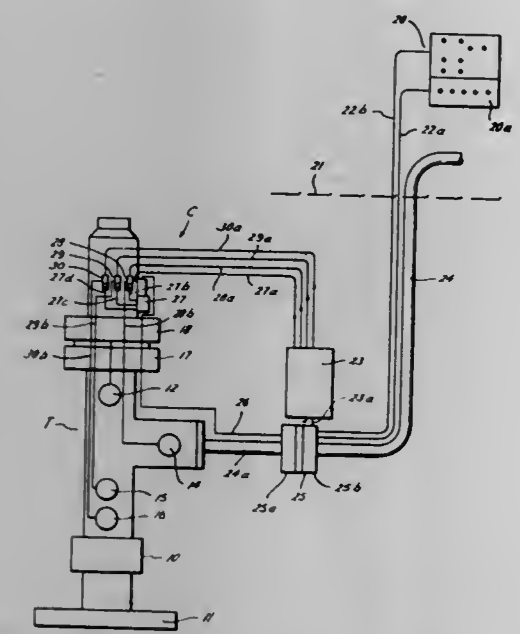
a manifold body block having a central main bore,

a first pressure inlet port and associated first pressure outlet port opening into said bore at locations angularly spaced about the bore, a second pressure inlet port and associated second pressure outlet port opening into said bore at locations angularly spaced about the bore and axially spaced from the first said locations,

the said pressure inlet ports and pressure outlet ports being in communication with respective external connection formations on the block whereby the valve inlet ports are connectable to said pressure tap points

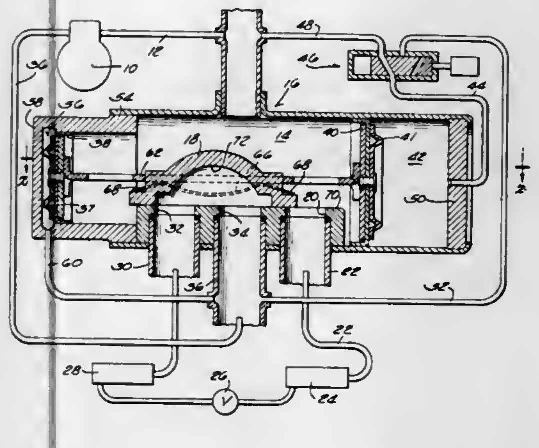
and the outlet ports connectable to said differential pressure instrument device;
two spherical valving members rotationally sealing respectively to the associated first ports and associated second ports for controlling flow through the ports,
said members being smaller in diameter than said main bore; a valve stem structure in coaxially spaced relation to the main bore wall and rigidly secured to said valve members and fixedly securing them to each other in axial alignment and in axially spaced relation,
said stem structure having
at least one stem end projecting from and rotationally sealed to one end of the bore,
the other end of the bore being closed;
the axial spacing of the members and coaxial spacing of the stem structure leaving free bore space about the stem and between said members;
said valving members having therethrough respective first passages for putting the first ports in communication with each other and the second ports in communication with each other at a first rotational stem setting;
said valving members having therein respective second passages angularly offset, about the axis of rotation, from said first passages, and in constant communication with said free space and thereby with each other for putting the valve outlet ports and thereby the differential pressure device input inlets in communication with each other at one rotational setting of the stem for device balancing or zero checking;
and
a valve operating element on the projecting stem end.

3,894,560
SUBSEA CONTROL NETWORK
Benton F. Baugh, Houston, Tex., assignor to Vetco Offshore Industries, Inc.
Filed July 24, 1974, Ser. No. 491,225
Int. Cl. E21b *43/01*
U.S. Cl. 137—606 **9 Claims**



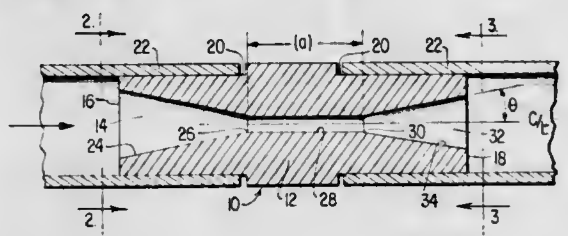
1. A new and improved subsea control system for operating a wellhead valve system at a subsea wellhead installation, comprising:
a wellhead valve system having various valve operators mounted therewith for normally operating and controlling flow through said wellhead valve system, said wellhead valve system including an electro-hydraulic control pod for normally operating said various valve operators;
two-way hydraulic control valves mounted with said wellhead valve system;
said control pod being hydraulically connected to said various valve operators through said two-way valves;
a multiple pressure responsive failsafe valve connected to said two-way hydraulic control valves and to said control pod, said multiple pressure responsive valve providing various distinct fluid output signals in response to a change in pressure of a single fluid input signal;
a surface control means and a single hydraulic control line extending into hydraulic connected with said multiple pressure responsive valve in order to deliver a variable fluid input signal from said surface control means to said multiple pressure responsive valve; and
said multiple pressure responsive valve including means providing an output operating signal to said hydraulic control pod under normal operating conditions and further, providing output signals directly to said two-way valves for operating said valve operators under emergency conditions.

3,894,561
FOUR-WAY REVERSING VALVE WITH DIFFERENTIAL AREA OPERATOR
James M. Thornbery, Milwaukee, Wis., assignor to Controls Company of America, Schiller Park, Ill.
Filed Mar. 14, 1974, Ser. No. 450,984
Int. Cl. F16k *31/363*
U.S. Cl. 137—625.29 **4 Claims**



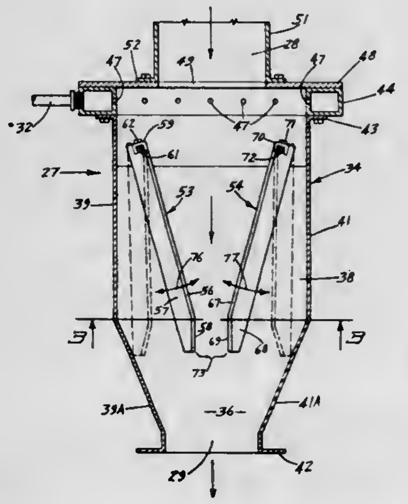
1. A reversing valve comprising,
a body including a valve chamber, a high pressure inlet to the chamber, a low pressure outlet from the chamber, and a pair of ports adjacent the outlet,
a slide valve in the chamber movable between two positions in which it serves to connect either of said ports to said outlet while the other port communicates with the chamber,
said body including a large diameter cylinder and a small diameter cylinder,
a piston in each cylinder, the pistons being interconnected and being connected to the slide valve,
means supplying a constant pressure to the space between the pistons,
one side of the smaller piston being exposed to the chamber pressure and the other side of the smaller piston being exposed to low pressure so there is always a pressure differential acting across the smaller piston,
means supplying high or low pressure to the space between the larger piston and the head of the larger cylinder to cause the pistons and slide valve to move between said positions by reason of the pressure differential acting across the small piston area in one position and by reason of the pressure differential across the difference in piston areas in the other position.

3,894,562
FLUID FLOW CONTROLLER
Charles D. Moseley, Jr., P.O. Box 449, Lynchburg, Va. 24503, and Hal L. Moses, Rt. 1, P.O. Box 78, Newport, Va. 24128
Filed Dec. 20, 1973, Ser. No. 426,570
Int. Cl. F15d *1/02*
U.S. Cl. 138—44 **5 Claims**



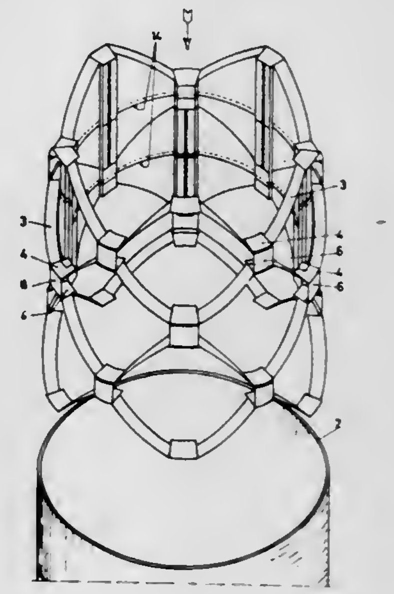
1. A device adapted to be inserted in a pipe line for limiting the flow of a liquid through said pipe line to a predetermined rate, said device comprising:
a. a housing having a bore extending from an inlet opening to an outlet opening, said bore having a convergent chamber, a cavitation chamber, and a diffusing chamber, said convergent chamber tapering from said inlet opening to one end of said cavitation chamber and said diffusing chamber tapering away from said cavitation chamber to said outlet opening, said cavitation chamber being cylindrical in shape and having a length approximately equal to the diameter thereof such that cavitation of said liquid occurs throughout said cavitation chamber when the pressure of said liquid entering said inlet opening reaches a predetermined amount to thereby limit the rate of flow of said fluid through said outlet opening irrespective of an increase in the pressure of said fluid at said inlet opening above said predetermined amount, and
b. the amount of taper of said diffusing chamber away from said cavitation chamber is at most ten degrees with respect to the axis of rotation of said diffusing chamber to thereby insure dissipation of the cavities formed in said fluid before said cavitating fluid exits said outlet opening.

3,894,563
VENTURI APPARATUS
Josef Pausch, Minnetonka, Minn., assignor to General Resource Corporation, Hopkins, Minn.
Filed Nov. 8, 1973, Ser. No. 413,786
Int. Cl. F15d *1/00*
U.S. Cl. 138—45 **15 Claims**



1. A Venturi apparatus for use with a wet collector operable to separate particulates from aerosols comprising: housing means having a chamber, converging side walls and a Venturi throat between said side walls, said throat having a length longer than its width, an inlet and outlet in communication with said chamber whereby gas and particulates can flow through the chamber, adjustment means movably located within said chamber between the inlet and outlet, said adjustment means including a first plate and a second plate, said first plate and said second plate being located in spaced face-to-face relation whereby said first plate and second plate provide adjustable ends of the Venturi throat, said first plate and said second plate each having lip sections at the downstream portions thereof, said lip sections being laterally spaced from each other and located in the Venturi throat, shaft means movably mounting said first plate and second plate on the housing means, and control means cooperating with said means movably mounting the first and second plates to move said first plate and second plate to vary the length of the Venturi throat, said shaft means comprising a first shaft mounted on the housing and secured to the first plate, and a second shaft mounted on the housing and secured to the second plate, said control means including a first arm secured to the first shaft and a second arm secured to the second shaft, said first arm being located in longitudinal alignment with the first plate and the second arm being located in longitudinal alignment with the second plate whereby the relative positions of the first arm and second arm indicate the relative positions of the first plate and second plate.

3,894,564
INSULATION FOR TUBES OR CONDUITS
Flaviano Farfaletti-Casali, Milan, Italy, assignor to European Atomic Energy Community (Euratom), Luxembourg
Filed Mar. 29, 1971, Ser. No. 128,932
Claims priority, application Italy, Apr. 22, 1970, 50152/70
Int. Cl. F16l *59/12*
U.S. Cl. 138—155 **21 Claims**

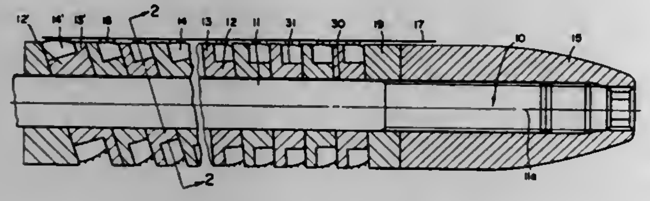


1. A lining for tubes and conduits comprising;
a. a series of integral cylinders having adjoining ends;
b. each cylinder having a crownshaped circular rim on at least one end;
c. an insulating material positioned between the circular rims of adjacent cylinders.

3,894,565
TEMPLE ROLLER DEVICE
Walter Pechstein, Hinwil, Switzerland, assignor to Ruti Machinery Works Ltd., Ruti, Zurich, Switzerland
Filed Oct. 26, 1973, Ser. No. 410,219
Int. Cl. D03j *1/22*
U.S. Cl. 139—296 **6 Claims**

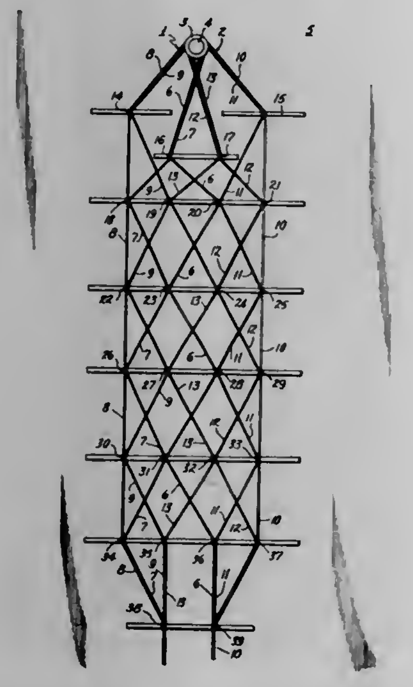
1. A temple roller device for use on a loom for weaving cloth, having a plurality of small wheels each mounted for rotation on a circular-cylindrical bearing face of a bearing,

each bearing being flanged on one side and having a circular aperture extending completely through the bearing and its flange, through which aperture a support rod of circular cross-section is positioned, so that the bearings are aligned juxtaposed along the said support rod, the circular-cylindrical bearing face of each bearing arranged obliquely to the centerline of said aperture in order to arrange each of the bearing faces and the small wheels obliquely relative to the longitudinal axis of said support rod, said support rod having a flattened surface portion extending in its longitudinal direction and said circular aperture in each bearing having a raised portion that fits said flattened portion on said support rod, said flattened portion being aligned with that one of the two locations at which, if the apertures are assumed to be round, in consequence of the oblique position thereof, the thickness of the bearing is a minimum and which is located at the end of the bearing opposite the flange.



3,894,566
METHOD OF MAKING METALLIC NETWORK

Alain Meynard, 133 bis, quai des Chartrons, Bordeaux, France (33300)
Continuation of Ser. No. 332,423, Feb. 14, 1973, abandoned.
This application Aug. 2, 1974, Ser. No. 494,188
Claims priority, application France, Feb. 17, 1972, 72.06180
Int. Cl. B21f *27/06*
U.S. Cl. 140—92.1 **7 Claims**



3. Method of assembling a plurality of wires into a sleeve by guiding the wires through a succession of stations (**14–37**) arranged in a grid of transversely and longitudinally aligned rows in a substantially flat plane, which method comprises the steps of:

A. providing a first set of wires (**6, 7, 11**) equal in number to two less than the number of stations in a transverse row, and guiding each wire of said first set through a succession of stations in said grid along a zig-zag path in which the successive stations lie in successive transverse rows but alternate between two adjacent longitudinal rows, so that alternate stations in each longitudinal row receive at least one wire of said first set, and all of said alternate stations except for the endmost stations in each transverse row receive two wires of said first set,

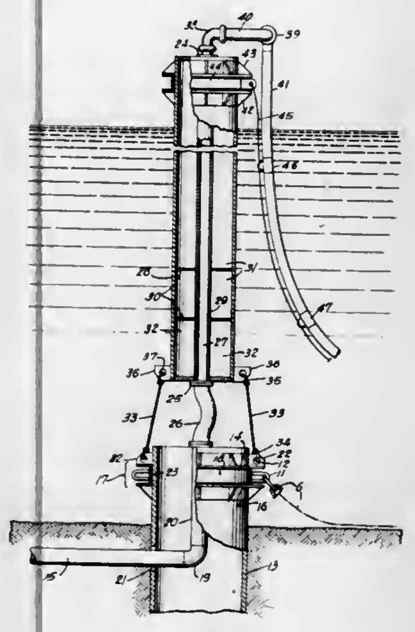
B. providing a second set of wires (**9, 12, 13**) equal in number to the wires of said first set and superimposing said second set of wires on said first set by passing the wires of said second set through a succession of stations in said grid along a similar zig-zag path with two wires of said second set passing through all stations containing no wires of said first set except for those stations at the end of a transverse row, and the wires of said first set crossing the wires of said second set intermediate successive stations,

C. guiding a first edge wire (**8**) through the stations at one end of each transverse row and a second edge wire (**10**) through the stations at the other end of each transverse row, so as to provide a pair of wires passing through each end station, and

D. fastening the pairs of wires at said station together to form a tubular wire network.

3,894,567
OFFSHORE VESSEL MOORING

George E. Mott, Metairie, and Lynn J. Ratcliff, Gretna, both of La., assignors to Texaco Inc., New York, N.Y.
Continuation of Ser. No. 886,140, Dec. 18, 1969, abandoned.
This application Sept. 8, 1971, Ser. No. 178,831
Int. Cl. B65b *3/04*
U.S. Cl. 141—388 **6 Claims**



1. A vessel mooring and liquid transfer apparatus for an offshore body of water being adapted to moor and communicate a floating vessel with a submerged source of liquid cargo, which transfer apparatus includes;

an elongated column disposed normally in a substantially upright disposition with said body of water and having an upper buoyant portion and a lower anchoring section, the latter being embedded into the floor beneath said body of water,

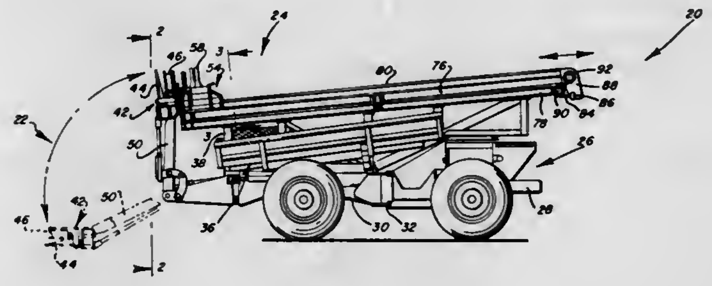
flexible coupling means operably connecting said respective lower section and upper buoyant portions, to permit limited pivotal movement of the latter about said anchoring section,

an articulated conduit disposed within said elongated column having a pivotal segment extending beyond the upper end of said column and having means on said the ends of conduit to engage said floating vessel for transferring liquid cargo between said vessel and said liquid cargo source, said conduit including a flexible connection therein to permit pivotal movement of the conduit in response to pivotal movement of said column buoyant portion,

and vessel mooring means depending from said anchoring section at a point adjacent to the floor of said body of water, and spaced vertically downwardly from said conduit end, being rotatably carried on said anchoring section operable to removably engage a mooring line extending to said vessel whereby to permit limited movement of the latter about said transfer apparatus during a cargo transfer operation.

3,894,568
TREE HARVESTING APPARATUS

Robert H. Windsor, Brisbane, Australia, assignor to Eaton Yale Ltd., Canada
Filed Mar. 7, 1974, Ser. No. 449,044
Int. Cl. B27c *9/00*
U.S. Cl. 144—3 D **9 Claims**



1. An apparatus for use in harvesting trees, said apparatus comprising a base, a longitudinally extending boom connected with said base, a carriage mounted for outward movement along said boom from an initial position to a topping position and from said topping position to an extended position, delimber means mounted on said carriage for delimbing the trunk of a tree during outward movement of said carriage along said boom from said initial position to said topping position, shear means mounted on said carriage for cutting off a top portion of the trunk of a tree when said carriage is stopped in said topping position, drive means for moving said carriage outwardly along said boom from said initial position to said topping position to enable said delimber means to delimb the trunk of a tree and for moving said carriage outwardly from said topping position to said extended position to move said carriage outwardly of the outer end of a delimbed and topped tree trunk, first control means including manually actuatable means for initiating operation of said drive means to move said carriage from said initial position to said topping position, and second control means for automatically reinitiating operation of said drive means independent of said first control means to move said carriage outwardly from said topping position to said extended position in response to operation of said shear means to cut off the top portion of a delimbed tree trunk.

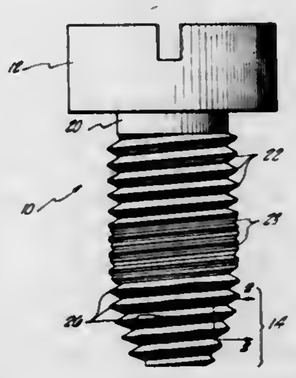
3,894,569
METHOD FOR PLASTICIZING WOOD

Jouko Huttunen, Porvoo, Finland, assignor to Neste Oy, Helsinki, Finland
Division of Ser. No. 44,636, June 8, 1970, Pat. No. 3,788,929.
This application July 26, 1973, Ser. No. 382,990
Int. Cl. B44d *1/26, 1/44*
U.S. Cl. 144—327 **8 Claims**

1. A method of softening wood, comprising impregnating the wood with a medium containing hydrazine.

3,894,570
SELF-TAPPING FASTENER

Richard L. Reynolds, Palos Verdes, Calif., assignor to Dumont Aviation Associates, Lakewood, Calif.
Filed Apr. 23, 1973, Ser. No. 353,449
Int. Cl. F16b *25/00, 33/06, 39/30*
U.S. Cl. 151—22 **12 Claims**



1. A self-tapping threaded fastener comprising:

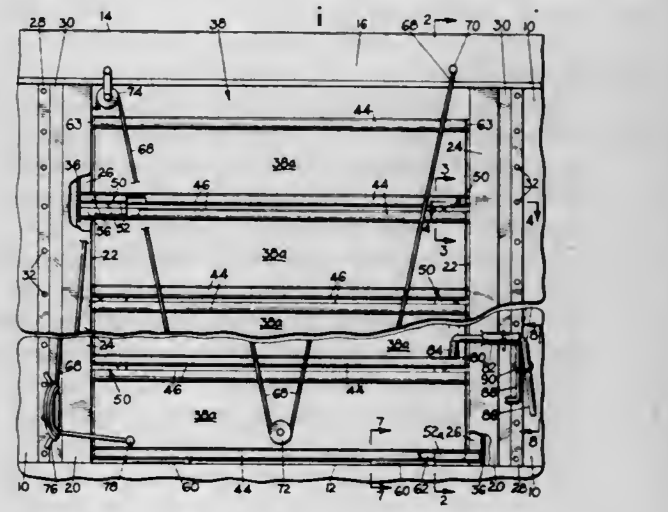
a. a shank including driving means at a first end thereof, and self-tapping means at a second end thereof, said shank being formed of a relatively ductile material;

b. said shank including at least one helically wound thread each having a plurality of helical turns formed about said shank for at least a portion of the length of said shank, said self-tapping means including a continuation of said threads, each said thread including at least one crest; and

c. a substance substantially harder than said relatively ductile material, deposited on and into selected portions of at least said thread crest which defines at least a portion of said self-tapping means, said selected portions located along substantially at least one full helical turn length said substance impregnating the material of said fastener.

3,894,571
ROLL-UP DOOR ASSEMBLY FOR VEHICLES

Richard W. Hinchliff, Portland, Oreg., assignor to Merritt Equipment Co., Portland, Oreg.
Filed May 18, 1973, Ser. No. 361,419
Int. Cl. E05d *15/36*
U.S. Cl. 160—201 **2 Claims**



1. A roll-up door assembly for vehicles comprising

a. a pair of spaced apart track members extending upright through a portion of their length and at their upper ends extending into a curved portion,

b. said track members having opposed channel portions forming trackways,

c. a door having top and bottom ends and side edges,

d. said door comprising a plurality of individual horizontal sections each having top and bottom laterally extending tubular portions,
e. said tubular portions being open at the side edges thereof,
f. said top tubular portions having a top longitudinal slot therein and said bottom tubular portions having a bottom longitudinal slot therein,
g. and a plurality of hinge members,
h. said hinge members comprising a one-piece molded construction having a flat body portion and a pair of parallel cylindrical portions along opposite sides thereof,
i. said cylindrical portions being engaged rotatably in top and bottom tubular portions of adjacent door sections through the side edge openings of said tubular sections with said body portion projecting through said slots whereby to connect said door sections hingedly together for movement in the track members,
j. and a head portion on the other end of each of said cylindrical portions,
k. said head portions projecting beyond the side edges of the door sections in the engaged position of said hinge members in said tubular portions of adjacent door sections and extending freely and slidably into the channel portion of said track members for guiding and supporting said door sections in said track members,
l. the door being of a selected width and said head portions projecting a selected amount relative to the distance between said track members whereby the door is maintained against lateral displacing movement in said track members,
m. the body member of said hinge members having a width such that the interconnected door sections are spaced apart to form a vertical air space therebetween,
n. said hinge members being of a length to extend only part way through the width of the door sections from the sides whereby said air spaces are provided throughout a major portion of the width of said door.

3,894,572

PROCESS FOR FORMING A REFRACTORY LAMINATE BASED ON POSITIVE SOLS AND REFRACTORY MATERIALS CONTAINING CHEMICAL SETTING AGENTS

Earl Phillip Moore, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.

Division of Ser. No. 148,961, June 1, 1971, abandoned, which is a continuation-in-part of Ser. No. 49,909, June 25, 1970, abandoned. This application July 20, 1973, Ser. No. 381,237

Int. Cl. B29c *1/04*

U.S. Cl. 164—26 **10 Claims**

1. A process for forming a refractory laminate on the surface of a support structure which comprises:
a. dipping the structure into a bath comprising a sol of positively charged colloidal particles of an inorganic substance to form a coating on the surface,
b. applying to the surface a particulate refractory material containing a chemical setting agent for the sol of positively charged colloidal particles, said setting agent being selected from the group consisting of (1) organic and inorganic bases, (2) monofunctional organic acids and their salts having an anionic portion containing at least one alkyl group of from 6 to about 24 carbon atoms per acid functional group, (3) polyfunctional organic and inorganic acids and their salts, and (4) negatively charged colloidal particles of an inorganic substance, and
c. repeating steps (a) and (b) in the same order until a refractory laminate of the desired thickness is built up on the surface.

5. A rapid process for forming expendable refractory shell molds for precision investment casting of metals comprising:
a. dipping a disposable pattern of the metal casting in a bath comprising a sol of positively charged colloidal particles of an inorganic substance to form a coating on the pattern,
b. stuccoing the coated pattern with a refractory grain containing a chemical setting agent for the sol of positively charged colloidal particles, said setting agent being selected from the group consisting of (1) organic and inorganic bases, (2) monofunctional organic acids and their salts having an anionic portion containing at least one alkyl group of from 6 to about 24 carbon atoms per acid functional group, (3) polyfunctional organic and inorganic acids and their salts containing up to about 24 carbon atoms per acid functional group and (4) negatively charged colloidal particles of an inorganic substance, and
c. repeating steps (a) and (b) in the same order until a refractory shell mold of the desired thickness is built up on the pattern.

3,894,573

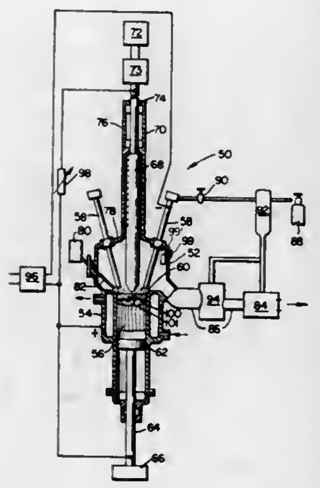
INSTALLATION AND METHOD FOR PLASMA ARC REMELTING OF METAL

Boris Evgenievich Paton, Kotsjubiuskogo, 11/13, kv. 21; Victor Iosifovich Lakomsky, Bastionoja, ul. 10; Anatoli Ivanovich Chvertko, Blvd. Lesiga, Ukrainka 2; Grigori Bogratovich Asovants, Blvd. Lesiga, Ukrainka 2; and Oleg Semenovich Zabarilo, c/o Paton Welding Institute 69 ul. Gorkogo, all of Kiev, U.S.S.R.

Filed June 5, 1972, Ser. No. 259,690

Int. Cl. B22d *27/02, 11/10*

U.S. Cl. 164—52 **37 Claims**



1. A plasma arc remelting installation for producing ingots comprising a hermetically sealable chamber; an ingot-forming mold contained in said chamber; a plurality of plasma arc torch means carried by said chamber and positioned above said mold, and means mounting at least one of said plasma arc torch means in said chamber for adjustable positioning of the torch means along its axis and for selective universally rockable positioning about a given fixed point on its axis to enable movement of the plasma arc therefrom during remelting with respect to said mold; an electric power supply source, said torch means connectable to so as to supply plasma to melt metal; and a metal charge arranged to be melted in the plasma arcs and the molten metal therefrom solidified in said mold to form an ingot.

3,894,574

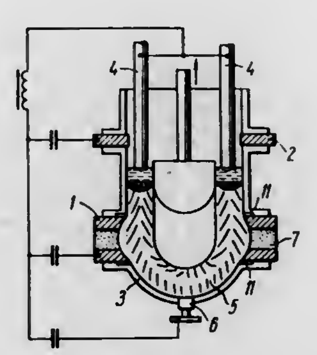
METHOD FOR PRODUCING COMPLEX-SHAPED METAL ARTICLES UTILIZING ELECTROSLAG REMELTING

Boris Evgenievich Paton, ulitsa Kotsjubinskogo, 9; Boris Izrailevich Medovar, Bulvar Lesi ukrainki, 2, kv. 8; Georgy Alexandrovich Boiko, ulitsa Vladimiro-Lybedskaya, 16, kv. 106; Ilya Iosifovich Kumysh, Vozdukhoflotsky prospekt, 42, kv. 51; Leonid Gustavovich Puzrin, ulitsa Vradimirskaya, 71, kv. 48; Vikior Alexandrovich Kovalev, ulitsa Ivana Kudri, 23/21, kv. 30; Georgy Sergeevich Marinsky, ulitsa Tatarskaya, 1"b", kv. 19; Alexandr Petrovich Beloglazov, ulitsa Kotelnava, 1/15, kv. 285, Moscow; Alexandr Ivanoulitsa Katelnaga, 1/15, kv. 285, Moscow; Alexandr Ivanovich Sapozhnikov, ulitsa Mosfilmovskaya, 17/25, kv. 63, Moscow; Valentin Alexandrovich Nosanov, prospekt Bolshevikov, 37/1, kv. 13, Leningrad; Volf Iudovich Rabinovich, ulitsa Gagarina, 74, kv. 27, Chekhof; Lev Vasililvich Popov, ulitsa Kharkovskaya, 2, kv. 21, Bryansk; Sergei Mikhailovich Shelkov, ulitsa Bryanskoi proletarskoi divizii, 9, kv. 33, Bryansk; Vladimir Nikolaevich Strukov, ulitsa Kuibysheva, 13, kv. 17, Bryansk, and Boris Markovich Babich, ulitsa Bryanskoi proletarskoi divizii, 26, kv. 19, Bryansk, all of U.S.S.R.

Continuation of Ser. No. 323,379, Jan. 15, 1973, abandoned, which is a continuation of Ser. No. 120,141, March 2, 1971, abandoned. This application Jan. 10, 1974, Ser. No. 432,154

Int. Cl. B22d *27/02*

U.S. Cl. 164—52 **4 Claims**



1. A method for the fabrication of complex-shaped metal articles from separate components joined through the use of a permanent connection which comprises arranging components of a future article to be bonded by fusion with respect to a mould so that the sections to be fused face the mould working chamber by entering the mould through at least one side surface of the mould and comprise only a part of the side surface of the working chamber, and producing an additional component in said mould by forming a slag bath in the mould, partially submerging a metal blank in said slag bath and passing electric current through the said slag bath, said current generating heat needed for melting of the blank, filling the mould completely with metal and bonding by fusion of the said arranged components of the future article to the other component cast in the mould.

3,894,575

HIGH DENSITY CARBIDE STUD

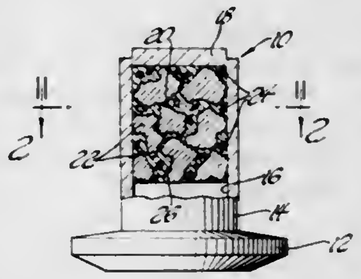
Charles S. Baum, St. Clair Shores, Mich., assignor to Textron Inc., Providence, R.I.

Division of Ser. No. 259,887, June 5, 1972, Pat. No. 3,818,966. This application Apr. 15, 1974, Ser. No. 460,949

Int. Cl. B22d *19/02;* **B23k** *31/02*

U.S. Cl. 164—97 **7 Claims**

1. The method of making tire studs consisting of filling a tubular casing with tungsten carbide grit of a relatively large particle size; compacting said grit; infiltrating the voids between said grit with tungsten carbide grit of a substantially finer average particle size; filling in the voids in the skeleton thus formed with a molten metal at a temperature less than the melting point of the casing or the grit; and allowing the molten metal to harden.



3,894,576

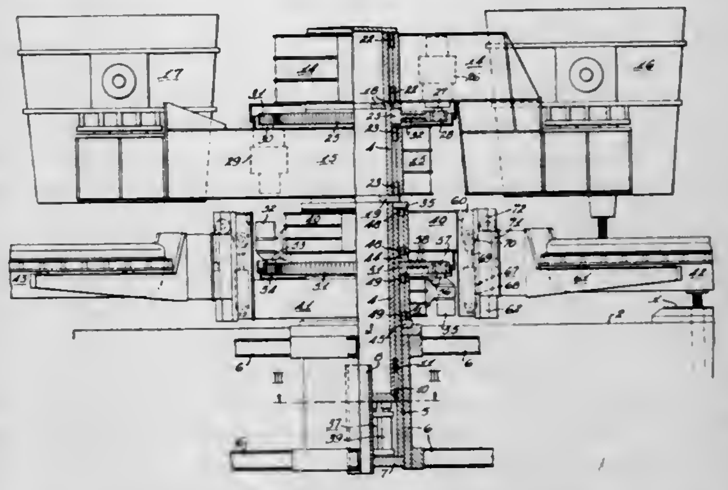
CONTINUOUS CASTING APPARATUS WITH MOVABLE LADLES AND TUNDISHES

Rudolf Schoffmann, Linz, Austria, assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Jan. 2, 1974, Ser. No. 430,195

Int. Cl. B22d *11/10*

U.S. Cl. 164—281 **6 Claims**



1. An apparatus for continuous casting of metal in one or more casting molds, comprising:
a. a central vertical arbor assembly having telescoping upper and lower column members with the lower column adapted to be rigidly attached to support structure and the upper column projecting upwardly from and movable relative to the lower column;
b. two carrier arms mounted in vertically spaced arrangement on the upper column for independent and unrestricted pivotal movement of said arms relative to said upper column in a horizontal plane, and with each of said carrier arms adapted to carry a casting ladle;
  b-1. the carrier arm mounting arrangement comprising a nonrotating ring gear rigidly secured to the upper column between the two ladle carrier arms, a first motor and pinion gear mounted on one of the arms with the first pinion gear engaging with the nonrotating ring gear and a second motor and pinion gear mounted on the other of the arms with the second pinion gear engaging with the nonrotating ring gear, for providing independent pivotal movement of both of the ladle carrier arms relative to the central vertical arbor assembly and relative to each other;
c. a vertically arranged key attached to one of said column members and projecting into an elongated vertical slot defined in the other of said column members to limit movement of the upper column to vertical movement; and
d. a reversible lift mechanism between the telescoping column members for lifting and lowering the upper column and both of the ladle carrier arms relative to the lower column.

3,894,577

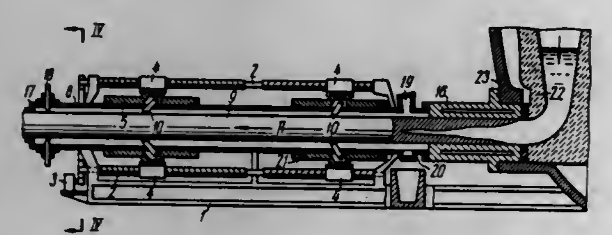
DEVICE FOR WITHDRAWING CASTINGS FROM MOULD OF CONTINUOUS METAL CASTING MACHINE

Boris Fedorovich Milyaev, 9 ultisa Sokolinol gory, 3, kv. 37; Zakhar Alexeevich Ozeshnikov, Otkrvtoe Shosse, 29, korpus 5, kv. 28, and Nikolai Maximovich Tuchkevich, Izmallovskoe shosse, 113, kv. 43, all of Moscow, U.S.S.R.

Continuation of Ser. No. 340,746, March 13, 1973, abandoned. This application May 7, 1974, Ser. No. 467,843

Int. Cl. B22d *11/12*

U.S. Cl. 164—282 **3 Claims**



1. A device for withdrawing a casting from a mold of a continuous metal casting machine comprising: a frame; screws mounted on said frame on opposite sides of the path of said casting, each of said screws having oppositely threaded portions running along its length to provide opposed reciprocating motion of carriages mounted thereon; said carriages being aligned axially with one another and with the longitudinal axis of the casting; an arm mounted on each carriage for gripping the casting, said arm being disposed at an acute angle relative to the longitudinal axis of the casting in the direction of its withdrawal and articulated on said carriages; and a reversing drive system linked mechanically with said screws.

3,894,578

METHOD OF AND APPARATUS FOR CONDENSING VAPORS OF NON-POLAR LIQUIDS

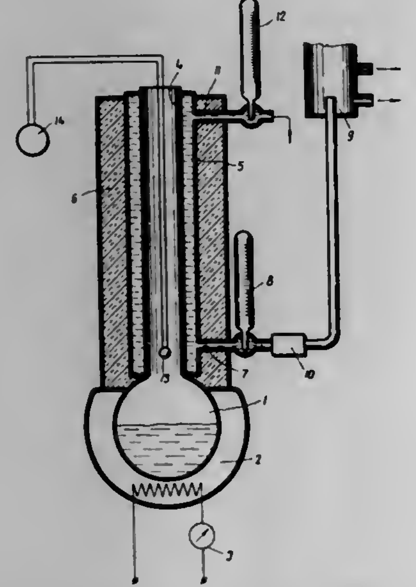
Vladimir Stoy; Miroslav Stol, and Artur Stoy, all of Prague, Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

Filed Mar. 29, 1973, Ser. No. 345,995

Claims priority, application Czechoslovakia, Mar. 30, 1972, 2140-72

Int. Cl. F28f *5/00*

U.S. Cl. 165—1 **5 Claims**



4. A method of condensing vapors of non-polar organic liquids from the group consisting of aliphatic, hydroaromatic, and aromatic hydrocarbons, olefines, halogenated hydrocarbons and others, comprising carrying out the condensation on a cooled condensing surface coated with a film thinner than 0.1 mm, the said film consisting essentially of a polymer compound having an average molecular weight more than **10.000** and containing polar side groups selected from the group consisting of

—OX, —CO.O$^-$X$^+$, —S.SO$_2$.O$^-$X$^+$, —SO$_3$$^-X^+$, —CN, —NH.CO.NHR, NHR, —NR$_1$R$_2$, —NRR$_1$R$_2$$^+Y^-$, —CO.NR$_1R_2$, pyridyl,

and introducing a compound into the said film in the period including before and during the condensation, said compound being chosen from a group consisting of compounds containing polar side groups, organic acids, bases and salts, and inorganic acids, bases, and salts.

3,894,579

HEAT EXCHANGER DEVICES FOR FLUID FLOWS

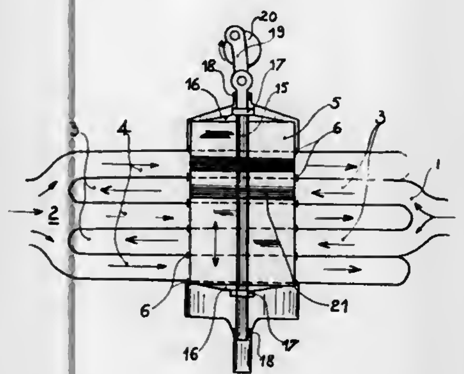
Maurice G. Brille, Suresnes, France, assignor to Societe Anonyme de Vehicules Industriels et d'Equipements Mecaniques Saviem, Suresnes, France

Filed Feb. 8, 1972, Ser. No. 224,580

Claims priority, application France, Feb. 9, 1971, 71.04206; Feb. 1, 1972, 72.03350

Int. Cl. F28d *19/00*

U.S. Cl. 165—6 **12 Claims**



1. A device for producing a heat exchange between gaseous flows in which the heat transfers take place between a hot flow and a cold flow by causing said flows to be directed by turns and successively through sections of a heat exchanger block comprising:

a. a plurality of adjacent flat and parallel passages of equal width into which said gaseous flows are divided, the passages receiving the gas to be cooled alternating with the passages receiving the gas to be heated, said plurality of passages being associated with and interrupted by a cylindrical space disposed thereacross;

b. a cylindrical exchanger block provided within said cylindrical space and being both axially reciprocating and rotatable therein, the amplitude of reciprocation corresponding to the width of one of said passages, said block including stacked pressed plates forming a porous cellular structure in the transverse direction but being fluid-tight in the axial direction of said block so as to provide fluid-tightness between said gaseous flow passages and said enchange block, said gaseous flows passing through said block in planes perpendicular to the block axis;

c. circular seals in frictional contact with the peripheral surface of said block and fitted in the walls of said plurality of passages to provide said fluid-tightness;

d. means for axially reciprocating said exchanger block, said reciprocating means including the flow of at least one of said gases flowing through said block; and

e. means for continously rotating said exchanger block, said rotating means including the flow of at least one of said gases flowing through said block.

3,894,580

TIE FOR CONNECTING TOGETHER LATERAL PLATES END PLATES AND HEADER BOXES OF RADIATORS

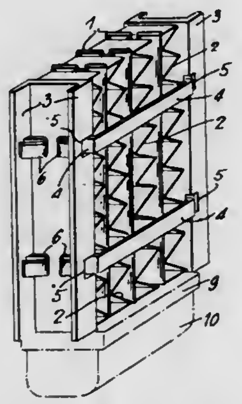
Andre Chartet, 2 bis, Aveneue du Chateau, 92-Meudon, France

Filed July 25, 1973, Ser. No. 382,531

Claims priority, application France, Aug. 4, 1972, 72.28352

Int. Cl. F28f *9/00, 9/12*

U.S. Cl. 165—67 **11 Claims**



1. In a heat exchanger assembly comprising a plurality of heat exchange fluid conducting fins and conduits, end plates for spacing said conduits, and vertical lateral channel plates having flanges facing outwardly for laterally holding said conduits, the improvement comprising:

means for tying said lateral channel plates together, said tying means comprising a plurality of shackle elements and plurality of cooperative apertures in the flange of said lateral channel plates, each said shackle element being in cooperative engagement with said flange and disposed therewithin, and with a said cooperative aperture,

each said shackle element comprising an aperture engaging portion of strip material folded back to define a generally U-shaped retaining clip, the ends of said "U" being spaced apart a distance greater than the width of said aperture.

3,894,581

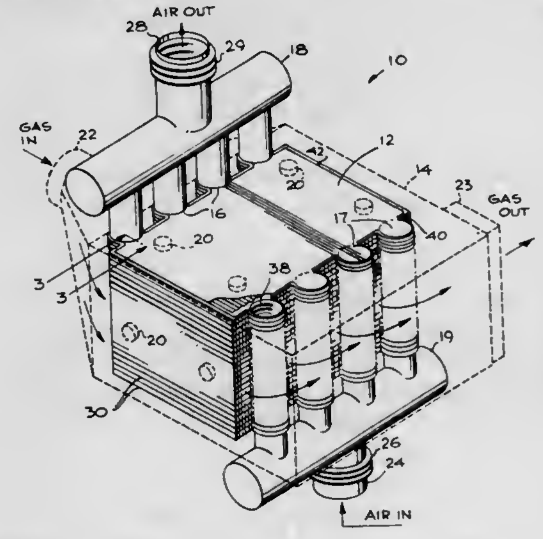
METHOD OF MANIFOLD CONSTRUCTION FOR FORMED TUBE-SHEET HEAT EXCHANGER AND STRUCTURE FORMED THEREBY

Fred W. Jacobsen, Los Angeles; Stanley T. Jakubowski, Carson, and Herman Sam Weiner, Southgate, all of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Apr. 16, 1973, Ser. No. 351,439

Int. Cl. F28f *3/00*

U.S. Cl. 165—166 **10 Claims**



1. Heat exchanger apparatus of the counter-flow type having inlet and outlet manifolds integrally combined with a heat exchanger core comprising:

a plurality of formed plates in stacked array arranged by pairs in back-to-back relationship to define a series of layered passages for a first fluid, each of said plates having a central section between opposed end sections, each of said end sections having at least one manifold opening therein surrounded by a cup-like protrusion in the form of a collar portion extending generally orthogonally of the plate about the periphery of said opening, the collar portions of each plate constituting segments of respective inlet and outlet manifolds extending through the stacked array, each manifold within said stacked array consisting of said segments;

the formed plates in said stacked array comprising a repetitive sequence of first, second and third distinct configuration types, one type being provided in pairs;

the plates of said first type comprising a collar portion of intermediate depth and having a flange extending outwardly along the outer periphery of one edge thereof;

the plates of said second type having a collar portion of depth greater than that of the first type and having a flange extending outwardly along the outer periphery of one edge thereof;

the plates of the third type having a collar portion of lesser depth than that of the first type and having a flange extending outwardly along the outer periphery of one edge thereof;

the collar portions of the plates of said second and third types having like outer diameters which are less than the inside diameter of the collar portion of said first type plate in order to permit the nesting of said second and third type plate collar portions within the collar portions of the first type plates;

the plates of said first type being arrayed back-to-back by pairs in sealing relationship abutting at the collar flanges thereof to define a first passage layer for the first fluid in communication with said manifolds;

the plates of said second and third types being arrayed back-to-back by pairs with the collar portions thereof nesting within corresponding collar portions of said first type plates such that the second type plate collar overlaps the flange juncture of the adjacent first type plate collars, said second and third type plates together defining a second passage layer for the first fluid in communication with said manifolds and also defining with the respective adjacent first type plates successive passage layers for the second fluid, the collar portions of plates defining said second fluid passage layers being configured to seal said second fluid from communication with said manifolds, the second fluid passages being open along the outer periphery of said end sections except at the location of said manifolds; and

a housing for enclosing said stacked array and directing the second fluid to and from the end portions thereof.

3,894,582

SLACK REMOVAL APPARATUS

Archer W. Kammerer, 800 N. Raymond, Fullerton, Calif. 92645

Filed June 8, 1972, Ser. No. 261,090

Int. Cl.^{2} E21B *3/06*

U.S. Cl. 166—.5 **9 Claims**

1. In apparatus for maintaining a predetermined stress in a running-in string disposed in a well bore underlying a body of water and which is supported by a rig including a derrick and a deck mounted on a barge, or the like, floating in the body of water and having a block and tackle, including a crown block and a traveling block with lines therebetween, at least one line extending from the crown block to a support at a lower portion of the rig, means operatively connecting the running-in string to the traveling block, and means for maintaining a predetermined stress in the running-in string, the improvement which comprises means attached to the rig and operatively connected to the line extending from the crown

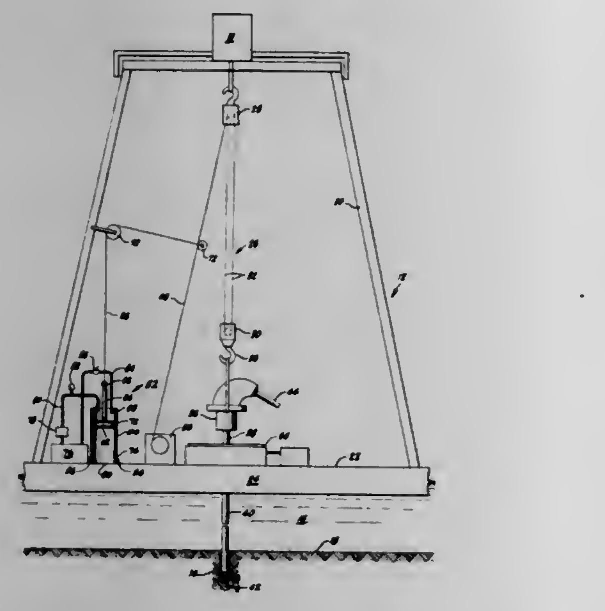
block to the support and separate from the crown block and support for maintaining a substantially constant pull on the line to remove slack from the line as the predetermined stress maintaining means compensates for movement of the barge which comprises:

a. a cylinder;

b. a piston slidable relatively in the cylinder and constituting with the cylinder a piston-cylinder assembly;

c. first means attaching the piston-cylinder assembly to the rig;

d. second means slidably connecting the piston-cylinder assembly to the line, one of the first and second means being attached to the piston and the other to the cylinder so that the piston is moveable longitudinally along the cylinder; and



e. means for maintaining fluid under substantially constant pressure in the cylinder and on the piston as the piston and cylinder move longitudinally relative to each other, and whereby a substantially constant pull is maintained on the line to remove slack from the line as the predetermined stress maintaining means compensates for movement of the barge, and including the following additional elements:

f. means for constantly feeding fluid under pressure to the cylinder;

g. means for constantly conducting the fluid from the cylinder; and

h. a flow restricting instrumentality in the conducting means for creating a back pressure in the fluid in the cylinder.

3,894,583

ARTIFICIAL LIFT FOR OIL WELLS

Thomas H. Morgan, Suite 528; 800 N.W. Loop 410, San Antonio, Tex. 78216

Filed Aug. 9, 1974, Ser. No. 496,173

Int. Cl.^{2} F04F *1/06, 3/00;* **E31B** *33/03;* **E21B** *43/00*

U.S. Cl. 166—68 **4 Claims**

1. An artificial lift apparatus for a liquid producing well having a well head and a well casing therein, said apparatus comprising:

production tubing extending from the well head into the casing to a level below which the liquid from a liquid producing zone will fill through perforations in the casing;

accumulator means in the bottom of the well casing for collecting liquid in the well;

gas tubing means extending from the well head into the accumulator means for communication therewith from the well head;

first check valve means for only allowing flow of liquid into said accumulator means;

standing valve means at essentially the bottom of said production tubing to allow flow of said fluid only into said production tubing, said bottom of said production tubing being near the bottom of said accumulator means;

means for receiving and handling said liquid at said well head; and

control valve for alternately venting and pressurizing said accumulator means via said gas tubing means, liquid being allowed to collect in said accumulator means via said first check valve means during venting, thereafter in response to said pressurizing, said liquid is moved through standing valve means into said production tubing and raised to the well head;

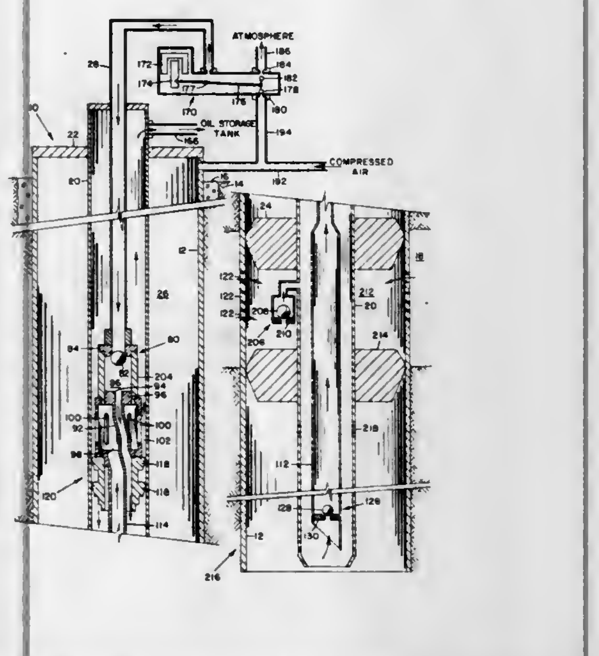


plate means for sealing said well casing at the well head;

first packer means for sealing said well casing to said production tubing above said liquid producing zone, annulus between said plate means and said first packer means being used to store pressurized gas for said pressurizing of said accumulator;

a source of compressed air for pressurizing said annulus, said control valve alternately connecting said gas tubing to said accumulator means.

3,894,584

DETERMINATION OF RESIDUAL OIL IN A FORMATION

Walter H. Fertl, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Nov. 28, 1973, Ser. No. 420,190

Int. Cl. E21b *47/00, 49/00*

U.S. Cl. 166—250 **10 Claims**

1. A method for determining the residual oil in an oil bearing formation penetrated by the bore hole of a well comprising the steps of:

a. Logging said formation with a radioactive detection means to obtain logging data measurements of the natural occuring radioactivity of said formation;

b. Injecting into said formation, through the bore hole of said well, in aqueous solution containing water-soluble radioactive contaminants said water-soluble radioactive contaminants being present in an amount sufficient to provide from about 5×10^{-2} to about 5 microcurries/cc of radioactivity in said aqueous solution;

c. Logging said formation for a second time with said radioactive detection means to obtain second logging data measurements of said formation, such measurements being indicative of the relative quantities of residual oil and formation waters present in said formation;

d. Injecting into said formation through the bore hole of said well, a sufficient amount of an oil miscible solution to displace substantially all of the residual oil in the formation surrounding the bore hole;

e. Injecting into said formation, through the bore hole of said well, a sufficient amount of water to displace substantially all of the oil miscible solution in said formation thereby rendering same substantially 100 percent water saturated;

f. Logging said formation for a third time to obtain logging data measurements, which when compared with said first and second logging data measurements, in combination with the known porosity of said formation and the concentration of radioactive contaminants employed, indicates the amount of residual oil present in said formation; and,

g. Comparing the logging data of (a) the logging date of (c) and the logging data of (f) to determine the amount of said residual oil present in said oil bearing formation.

3,894,585

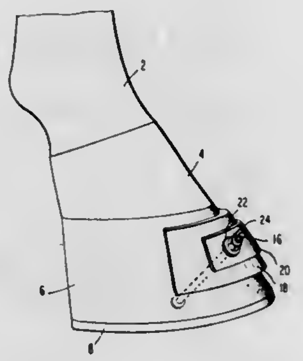
SHOWHORSE WEIGHTS

Leo A. Baum, Rt. 1, Box 250, Ixonia, Wis. 53036

Filed Mar. 6, 1974, Ser. No. 448,553

Int. Cl. A01l *1/00*

U.S. Cl. 168—25 **2 Claims**



2. A weight assembly for a horse hoof pad, comprising,

a lead plate,

a steel cover plate overlying part of said lead plate,

a pair of bolt holes through said plates, the bolt holes in said cover plate registering with those in the lead plate, and

bolt and nut means adapted to extend through said plates and through bolt holes running through the hoof pad from the bottom to the front thereof.

3,894,586

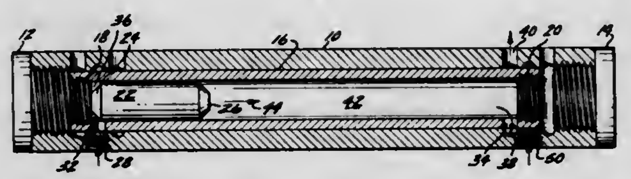
AIR HAMMER

Barry E. Lyon, Long Beach, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed May 3, 1974, Ser. No. 466,685

Int. Cl.^{2} B25D *9/00;* **F01B** *15/02;* **F01L** *17/00*

U.S. Cl. 173—91 **8 Claims**



1. A fluid powered air hammer comprising:

an outer tube having closed ends,

an inner tube having closed ends,

a piston, and a pressurized fluid source,

said piston being within said inner tube and adapted to oscillate between the ends thereof,

said inner tube being within said outer tube and adapted to oscillate between the ends thereof,

said inner tube comprising valve means between said piston and said pressurized fluid source for supplying pressurized fluid behind alternating ends of said piston to cause said piston to oscillate between said ends of said inner tube.

3,894,587

DEVICE FOR DRILLING IN HARD ROCK FORMATION

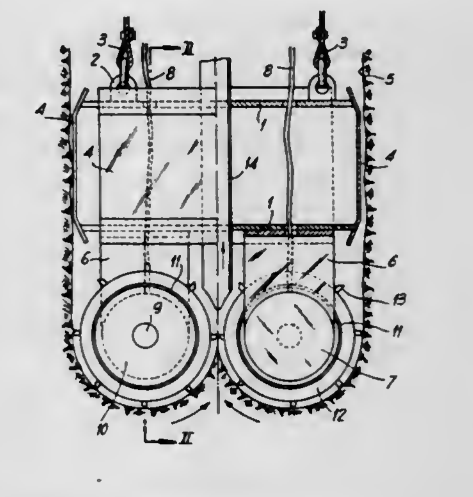
Claude Sourice, La Marlaye, France, assignor to Hydrosol, Paris, France

Filed Dec. 7, 1973, Ser. No. 423,135

Claims priority, application France, Dec. 14, 1972, 72.44542; Nov. 15, 1973, 73.40624

Int. Cl. E21b *3/08*

U.S. Cl. 175—91 **6 Claims**



1. A drilling device comprising:

at least two pairs of rotary drilling members, each pair being arranged to rotate about an axis transverse to the drilling direction;

a plate-like support for each pair of said drilling members, said supports being disposed in a common plane symmetrically on either side of a central transverse plane of said device, each pair of said drilling members being mounted on either side of, and adjacent to a plate-like support;

a motor unit carried by each of said plate-like supports having a single rotatable shaft extending toward each drilling member of said pair, said drilling members being mounted for rotation on said shaft, the direction of rotation of said drilling members being such that excavated material is carried toward said central transverse plane;

means for providing power to each of said motor units passing through each of said plate-like supports; and

means for removing said excavated material from the vicinity of said device.

3,894,588

SOIL TESTING APPARATUS

Murray I. Brill, 383 Ocean Ave., Massapequa Park, N.Y. 11762

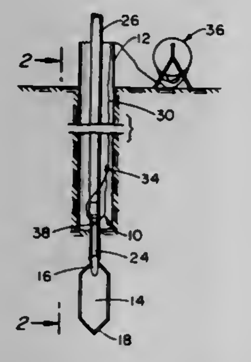
Division of Ser. No. 272,592, July 17, 1972, Pat. No. 3,820,384. This application June 7, 1974, Ser. No. 463,693

Int. Cl.^{2} E21B *11/02*

U.S. Cl. 175—19 **4 Claims**

1. Apparatus for measuring the frictional resistance of soil comprising: a substantially planar test plate; a driving rod for introducing a compressive force to said test plate to embed said test plate into the soil to be tested; an extraction means connected to said test plate for subsequently removing the test plate from the soil; indicator means coupled to said extraction means for displaying the pressure exerted by said extraction means in the removal of the test plate from the soil; connecting means positioned at the upper end of said test plate to hold said test plate in a vertical position on the lower end of said

driving rod, said connecting means providing for the transmission of the compressive embedding force from said driving rod to said test plate while also permitting separation of said driving rod from said test plate in the presence of a tensile separating force; and securing means intercoupling said driving rod and said test plate to prevent disassociation of said test plate from said driving rod in the absence of said tensile separating force, said securing means permitting the removal of said driving rod from said test plate by said tensile separating force after the embedding of said test plate into the soil.



3,894,589
PROCESS FOR POSITIONING VARIOUS POLES AND THE LIKE AND DEVICE FOR EMBODYING THE SAME

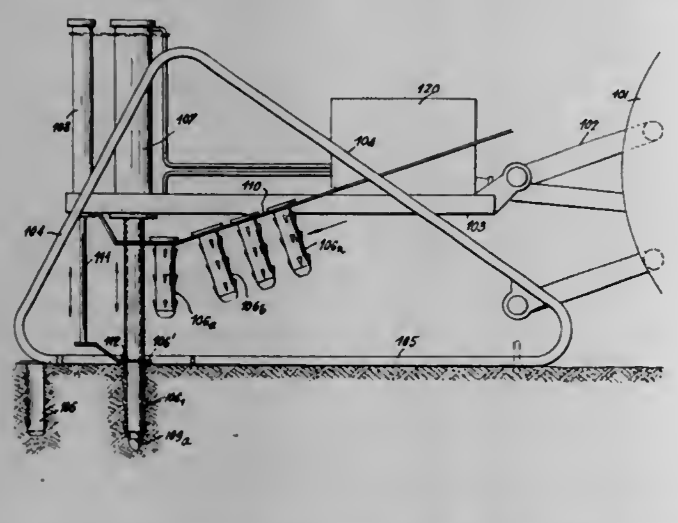
Pierre Alfred Leon Ciraud, Cognac, France, assignor to Leone Isaure Marie Ciraud, Cognac, France

Filed Jan. 3, 1973, Ser. No. 320,743

Claims priority, application France, Jan. 3, 1972, 72.00030; Apr. 13, 1972, 72.13010

Int. Cl. E21b *11/02*

U.S. Cl. 175—23 **33 Claims**



1. A device for placing sleeves into the ground, each sleeve to receive a pole or like member, comprising:
  a frame;
  a sleeve detachably mounted on said frame;
  a penetration pin having an inner diameter slightly smaller than that of said sleeve and a length longer than that of said sleeve;
  inserting means connected to said frame for causing said pin to downwardly pass through said sleeve for inserting said pin into the ground, and for lifting said pin upwardly when said pin and said sleeve are embedded in the ground;
  following means connected to said frame for causing said sleeve to follow the downward movement of said pin;
  reciprocably movable means connected to said frame for retaining said sleeve in the ground when said pin is removed from said sleeve; and
  coordinating means connected to said frame for synchronizing the movements of said inserting means and said reciprocably movable means;
  whereby said sleeve remains in the ground when said pin is extracted and whereby a pole may thereafter be inserted into said sleeve.

3,894,590
DRILLING SYSTEM

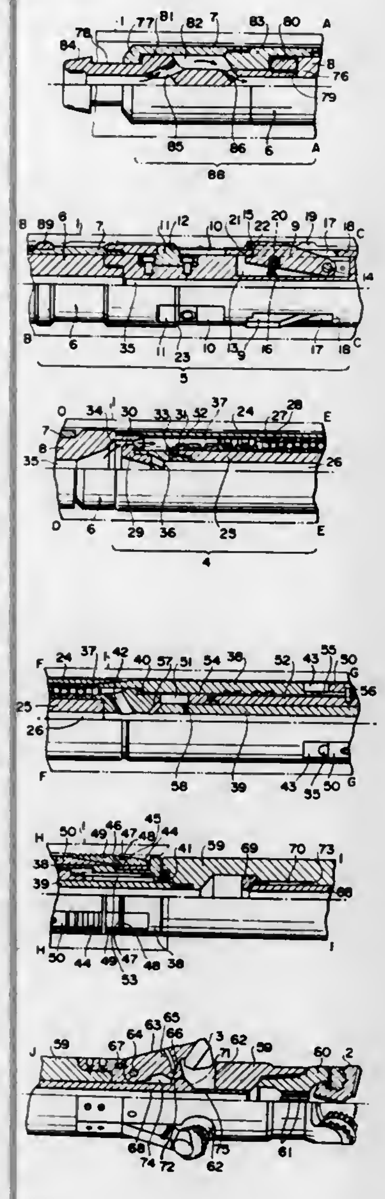
Sho Takano; Yasushi Okuyama; Ryokuya Suzuki, all of Tokyo, and Ikuma Kinoshita, Chigasaki, all of Japan, assignors to Sumitomo Metal Mining Co., Limited, Tokyo, Japan

Filed Oct. 15, 1973, Ser. No. 406,482

Claims priority, application Japan, Oct. 16, 1972, 47-102734; July 28, 1973, 48-84594; Aug. 8, 1973, 48-88520; Nov. 20, 1972, 47-132752; Aug. 10, 1973, 48-93640; Aug. 21, 1973, 48-97233

Int. Cl. E21b *3/12, 9/32*

U.S. Cl. 175—107 **14 Claims**



1. A drilling system, comprising a hollow drill pipe and a cutting means located within said drill pipe, said cutting means including drill bits so formed as to be capable of passing through said drill pipe, said cutting means also including reaming bits capable of opening outwardly of said drill pipe and capable of closing inwardly thereof, said cutting means further including locking means comprising an inner cylinder and an outer cylinder surrounding said inner cylinder, said cylinders being axially interconnected when said cutting means is locked in place within said drill pipe, and said cylinders being slightly movable in an axial direction relative to each other when said cutting means is disengaged from said drill pipe, said outer cylinder having window openings therein and latches being mounted on said inner cylinder for projection out of said window openings from a position inwardly thereof, each said latch being pivotally mounted at one end on a pin at the drill bit side of said cutting means, recesses located within said inner cylinder for the reception of said latches in their inward positions, said latches in their outwardly projected position engaging said outer cylinder and notches provided at the inner surface of said drill pipe for locking said cutting means in place, and said latches being so arranged that, upon movement of said outer cylinder relative to said inner cylinder, said latches are disengaged, hydraulic motor means for rotating said drill bits and said reaming bits, said rotating means comprising a turbine or the like having a rotor with which said drill bits and said reaming bits or said cutting means are connected and a stator integral with said inner cylinder, said hydraulic motor means having a torque-generating water passage located between said rotor and said stator and having also a bypass water passage leading to said bits in communication with said inner cylinder without passing through said torque-generating water passage, a valve means provided for switching water to either of said two passages, said latches of said locking means being engaged with said outer cylinder by the interengagement of an upper end of each said window opening and an end of each said latch opposite said one end thereof, said valve means being so disposed as to prevent water fed at a first predetermined pressure from flowing into said bypass water passage during said interengagement, and a spearhead having means for engaging with a pulling-up machine and further being operatively connected to said locking means in such a manner that, when said spearhead is pulled up by the machine, said outer and inner cylinders are axially moved relative to one another so as to unlock said latches whereby only said cutting means may be pulled up.

3,894,591
BALANCES PARTICULARLY FOR KITCHEN USE

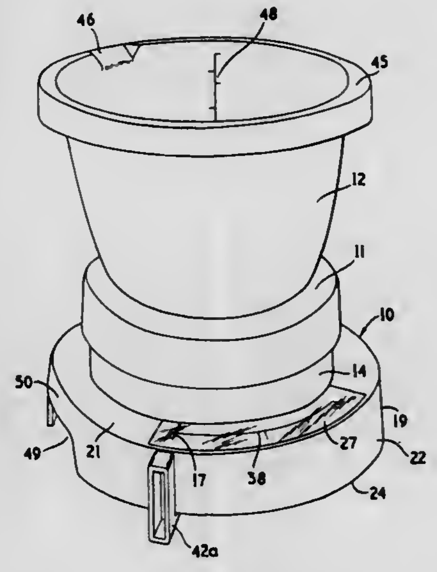
Peter Ackeret, Zurich, Switzerland, assignor to Salter Housewares Limited, West Bromwich, England

Filed Jan. 22, 1973, Ser. No. 325,782

Claims priority, application Switzerland, Jan. 23, 1972, 875/72; Jan. 23, 1972, 966/72

Int. Cl. G01g *21/00*

U.S. Cl. 177—126 **15 Claims**



1. In combination with a balance including a spring weighing device having a base structure and a vertically movable weighing platform, the invention which comprises:
  a. a cup-shaped weighing container (12) having a bottom wall, side wall means diverging from said bottom wall, and an external rim portion bounding the open mouth of said side wall means;
  b. said base structure including
    1. a central upstanding portion (14);
    2. a horizontal annular shelf portion (20) extending radially outwardly from said upstanding portion; and
    3. an annular downwardly depending skirt portion (22) connected with the outer peripheral edge of said horizontal shelf portion, said skirt portion containing at its lower extremity a pair of apertures (49) that define finger gripping means;
  c. said weighing container having a structural configuration which fits over the weighing platform when said container is inverted to substantially cover the weighing device and is seated in stable relationship with said rim portion supported on the seating surface of said shelf portion without load on the weighing platform;
  d. the clearance between said weighing platform and the side walls of the inverted weighing container being such as to restrict lateral displacement of said container sufficiently to prevent dislodgement thereof from said seating surface whereby when the user's fingers of each hand are inserted within said apertures, respectively, the upper surface of said rim portion may be gripped by the user's thumbs to maintain the weighing container and base together as a unit during transport.

3,894,592
WATCH STEM INTERMEDIATE POSITION WAS ACHIEVED BY PUSHING STEM IN OR PULLING STEM OUT

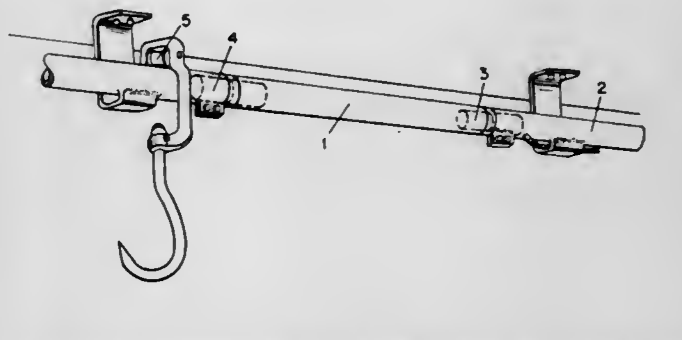
John-Erik Andersson, and Bengt-Åke Karlsson, both of Karlskoga, Sweden, assignors to AB Bofors, Bofors, Sweden

Filed Nov. 5, 1973, Ser. No. 412,921

Claims priority, application Germany, Nov. 14, 1972, 2255737

Int. Cl. G01g *21/22, 3/14*

U.S. Cl. 177—163 **9 Claims**



1. A scale for measuring the weight of articles being transported along the track of a conveyor system which is of the type in which each item to be weighed is supported on the track by means of a hook or the like and in which the hook is guided by a sliding and/or rolling means along a weight measuring member inserted in and axially aligned with the track at a weighing station, the combination comprising:
  a load cell transducer supporting said measuring member at each end thereof,
  means for mounting each said load cell at least in part within a respective opposing end of the track which is of hollow construction,
  and means for operatively connecting one end of said load cell transducer to a respective end of said weight measuring member and for operatively connecting the other end of said transducer to a respective end of the track.

3,894,593
WEIGHING SCALE

Donivan L. Hall, and Walter E. Kupper, both of Toledo, Ohio, assignors to Reliance Electric Company, Toledo, Ohio

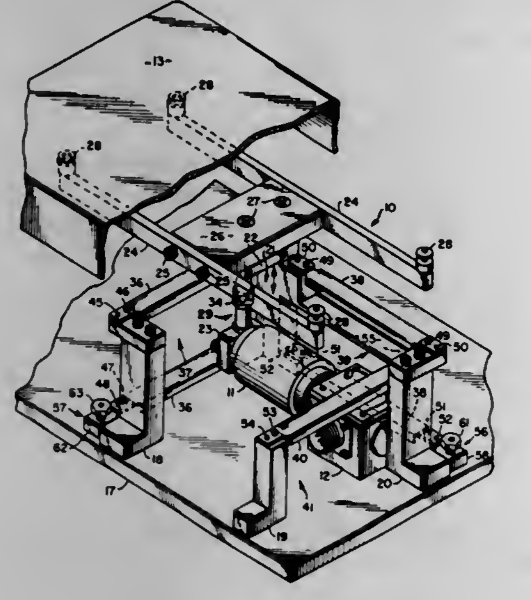
Division of Ser. No. 407,659, Oct. 18, 1973, Pat. No. 3,847,238. This application May 15, 1974, Ser. No. 470,148

Int. Cl. G01g *23/14*

U.S. Cl. 177—164 **4 Claims**

1. A weighing scale comprising, in combination, stationary frame means, movable load receiving means, transducer means for producing weight signals in accordance with movement of the load receiving means, check link means connecting the frame and load receiving means for movement of the load receiving means in a substantially vertical path, the load

receiving means having a load applying portion spaced vertically from the transducer means, and means for varying the vertical distance between the load applying portion and the transducer means for adjusting the linearity of errors caused by shifting loads upon the load receiving means.



3,894,594

WEIGHT INDICATION AND WEIGHT INDICATION STORAGE MECHANISM FOR A SCALE

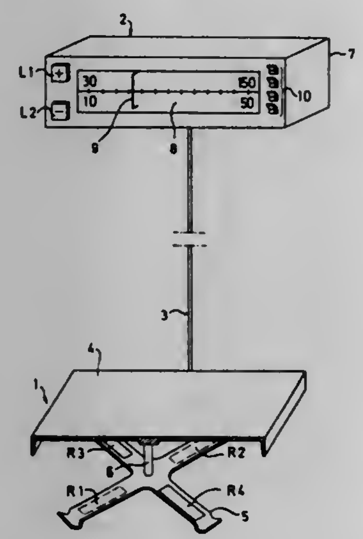
Göran Oejelid, Ulricehamm, Sweden, assignor to Miratron AG, Basel, Switzerland

Filed May 28, 1974, Ser. No. 473,394

Claims priority, application Switzerland, May 25, 1973, 7574/73

Int. Cl. G01g *3/14*

U.S. Cl. 177—211 **1 Claim**



1. A weight indication and weight indication storage mechanism for a scale comprising a platform, a support for the platform and a central column supporting the platform on the support, the support including deformable parts and deformation of the support parts under a payload placed on the platform delivering a measuring signal corresponding to the weight of the payload, the mechanism including

1. a bridge circuit having four branches,
   a. a first bridge circuit branch comprising a plurality of series-connected strain gages responsive to the deformation of a first set of the support parts,
   b. a second bridge circuit branch comprising another plurality of series-connected strain gages responsive to the deformation of a second set of the support parts, and
   c. a third and fourth bridge circuit branch comprised of a plurality of resistances connected in parallel, each of the resistances having a sliding tap, one of the ends of the first and second bridge circuit branches forming a junction and the other end of the first and second bridge circuit branches being connected to respective ends of the third and fourth bridge circuit branches,
2. a signal amplifier having two input terminals and a signal output,
   a. a circuit connection between each of the sliding taps and a first input terminal of the amplifier,
   b. a switch element in each of the circuit connections, and
   c. a circuit connection between the junction of the first and second bridge circuit branches and a second input terminal of the amplifier,
3. a motor connected to the signal output of the amplifier and operated by the output signal therefrom,
4. drive means comprising a threaded spindle connected to the motor and two members mounted for movement on and along the spindle, the two members being alternatively engaged by the threaded spindle, and the drive means being operated by the motor,
5. a dial with an indicator for indicating weight,
   a. the dial indicator being connected to, and operated by, the drive means, and
6. a coupling for connecting a respective one of the sliding tapes to the drive means,
   a. the connected sliding tap being moved by the drive means to a balancing position in respect of the resistance associated therewith wherein the input signal to the amplifier is substantially zero.

3,894,595

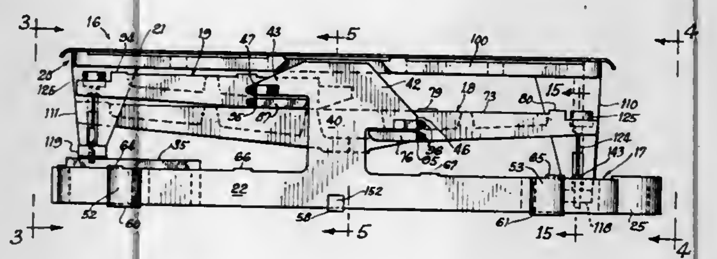
LOW-PROFILE PLATFORM SCALE

Chester S. Czyryk, Silver Lake, Wis., assignor to Mangood Corporation, Chicago, Ill.

Filed Oct. 2, 1974, Ser. No. 511,426

Int. Cl. G01g *21/08, 21/24*

U.S. Cl. 177—256 **11 Claims**



1. A platform scale comprising:
a horizontal base;
a primary U-shaped lever having in a unitary construction an elongated mounting member, a pair of lever arms extending horizontally from the same side of said mounting member adjacent its ends, and an intermediate arm extending horizontally from said mounting member in a direction that is normal to the longitudinal axis of said mounting member and from the side of said mounting member that is opposite to the side from which said pair of lever arms extend;
a secondary U-shaped lever having in a unitary construction an elongated mounting member and a pair of lever arms extending horizontally from the same side of said mounting member adjacent its ends, said mounting member having an intermediate portion extending horizontally and normal to the longitudinal axis from the side of said mounting member that is opposite to the side from which said pair of lever arms of said secondary lever extend;
means connected to said base and to said mounting member of said primary lever to pivotally mount that mounting member at a horizontal axis that is at a lower elevation above the central transverse portion of said base, with the longitudinal axis of that mounting member at a vertical plane transverse to the longitudinal axis of said base and with the distal end portions of said pair of lever arms of

said primary lever above the front and rear corner portions of one end of said base;
means connected to said base and to said mounting member of said secondary lever to pivotally mount that mounting member at a horizontal axis that is at an upper elevation above the central transverse portion of said base, with the longitudinal axis of that mounting member at a vertical plane transverse to the longitudinal axis of said base and passing through said intermediate arm of said primary lever, with the said extension of said intermediate portion of said mounting member of said secondary lever directly above said intermediate arm of said primary lever, and with the distal end portions of said pair of lever arms of said secondary lever above the front and rear corner portions of the other end of said base;
a horizontal platform;
force-transmitting support means connected to the corner portions of said platform and to the distal end portions of said pairs of lever arms of said levers to support said platform above said lever arms;
force-transmitting means connected to said intermediate extension of said mounting arm of said secondary lever and to said intermediate arm of said primary lever;
low cell means mounted on said base adjacent that its said other end and below the distal end portion of said intermediate arm of said primary lever; and
force-transmitting means connected to said distal end portion of said intermediate arm and to said load cell means to provide a stress in said load cell means when said intermediate arm is raised.

3,894,596

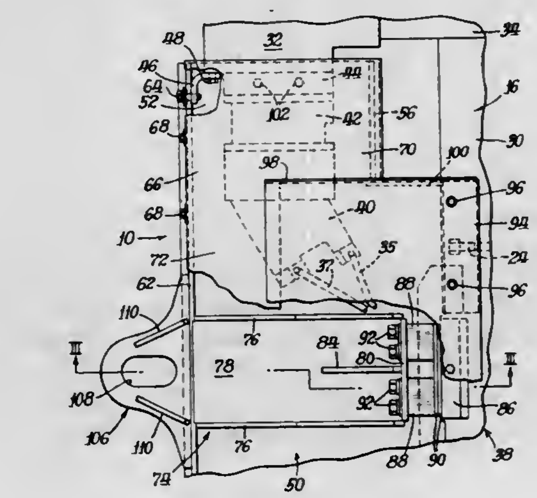
DRIVE MOTOR GUARD ASSEMBLY FOR VEHICLES

Thomas P. Muller, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 13, 1973, Ser. No. 350,679

Int. Cl. B62d *21/18*

U.S. Cl. 180—9.2 **15 Claims**



1. A track-type vehicle disposed for movement along a longitudinal axis thereof comprising:
a pair of laterally spaced and substantially parallel track assemblies extending in the direction of said axis;
a vehicle frame supporting said track assemblies;
a pair of laterally spaced drive motors mounted relative to said frame, each motor being operatively connected to one of said track assemblies;
a guard comprising a pair of outer motor protecting portions, and generally central reinforcing means extending between the motors and fixed relative to the motor protecting portions; and
means for fixing the reinforcing means to the frame of the vehicle, to position the motor protecting portions relative to the motors.

3,894,597

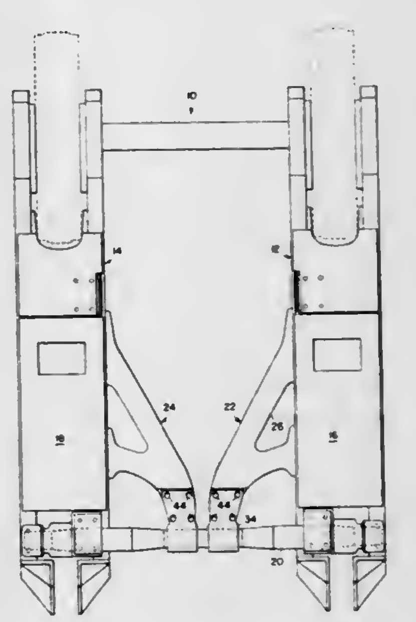
DIAGONAL BRACE FOR TRACTOR FRAME OF TRACK-LAYING TRACTOR

Joseph Francis Wagner, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

Filed May 1, 1974, Ser. No. 465,749

Int. Cl.^{2} B62D *55/00*

U.S. Cl. 180—9.48 **7 Claims**



1. In a track frame assembly of the type including transversely spaced track frames including fore-and-aft extending main frame portions, a transverse horizontal pivot shaft means extending between and connected to the main frame portions at rearward locations thereof, and each frame including an inwardly and rearwardly extending diagonal brace secured to the main frame portion thereof and having a rear end pivotally connected to the pivot shaft means, the improvement comprising: each diagonal brace including separate front and rear sections; said separate front and rear sections having respective opposed surfaces including engaged bearing surfaces defining an interface located in a generally horizontal plane, said opposed surfaces defining opposite recesses cooperating to form a transverse keyway; a piece of key stock tightly received in the keyway; and releasable fastener means securing the front and rear sections together whereby the track frames can be serviced without sliding the pivot shaft means out through the frames or without sliding the diagonal braces along the pivot shaft means.

3,894,598

TELESCOPIC BEAM FORMED OF TWO SLIDABLY MOUNTED LENGTHS AND AN ORGAN FOR CONTROLLING THE RELATIVE POSITIONS OF THESE LENGTHS RELATIVE TO ONE ANOTHER

Victor P. Yeou, Meaux, France, assignor to Societe Anonyme: Poclain, Le Plessis Belleville, France

Filed Sept. 20, 1974, Ser. No. 507,698

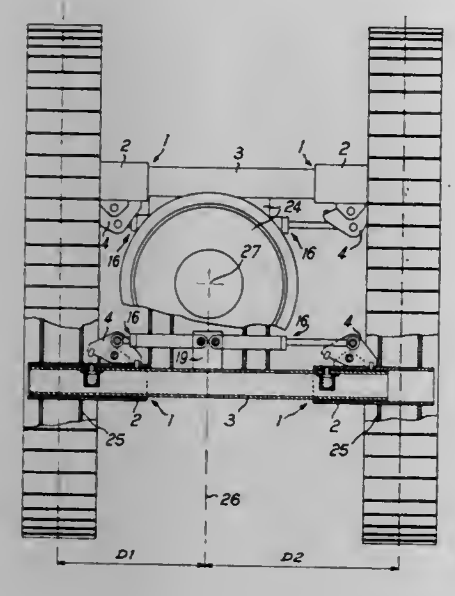
Claims priority, application France, Oct. 25, 1973, 73.38143

Int. Cl. B62d *55/06*

U.S. Cl. 180—9.48 **5 Claims**

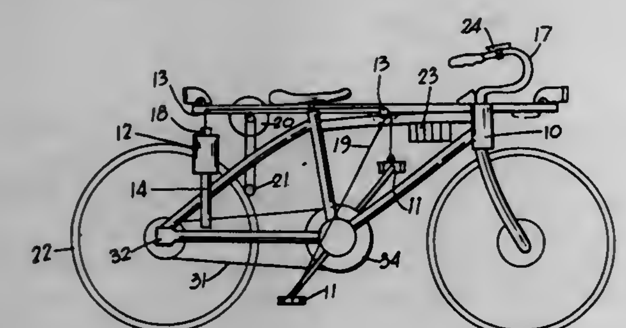
1. Telescopic beam comprising at least two lengths mounted to be relatively slidable, a drive organ which controls the relative positions of these lengths, means linking the drive organ between the said lengths and an apparatus for locking these two lengths in two of their relative positions, the locking apparatus comprising a lug which is mounted on one of the said lengths and two orifices which are formed in the other length, the lug being selectively engageable with and disengageable from these orifices, and the means linking the drive organ to the length provided with two orifices including an

element which is movably mounted on this length and which bears two fingers of which one will enter the orifice engaged by the lug when the drive organ is to move the lengths relative to one another to bring the lug to the other orifice, the finger entering that orifice through the face of the length opposite to the face through which the lug entered that orifice, the controlling drive organ being operable to move the element relative to the length having two orifices when operated to vary the relative positions of the two lengths of the beam.



3,894,599
ELECTRICAL AUXILIARY POWERED BICYCLE

Vincent A. Murray, 353 3rd St., Clifton, N.J. 07011
Filed June 21, 1974, Ser. No. 481,630
Int. Cl. B62m *7/00*
U.S. Cl. 180—33 C **2 Claims**

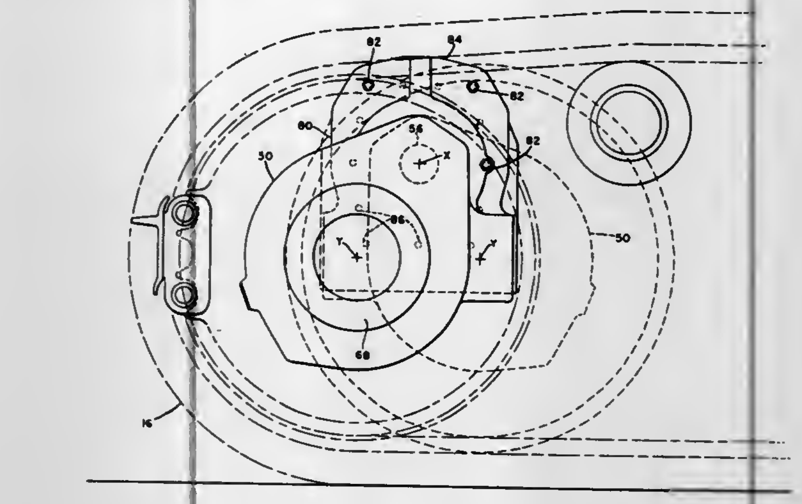


1. A bicycle which may be electrically propelled or operated in conventional fashion comprising a bicycle equipped with a foot pedal drive mechanism together with an electrical solenoid powered system,

said solenoid powered system incorporating a solenoid fixed to the bicycle frame, the armature of which is attached by tension means to a foot pedal, said solenoid being electrically connected by a manually operated switch to a battery, such that closing of said switch energizes the solenoid to exert propulsion force on said foot pedal.

3,894,600
CRAWLER TRACTOR FINAL DRIVE HOUSING STRUCTURE AND MOUNTING THEREFOR

Joseph F. Wagner; William Benjamin Knight, and Dan James Mihal, all of Dubuque, Iowa, assignors to Deere & Company, Moline, Ill.
Filed May 2, 1974, Ser. No. 466,122
Int. Cl.^{2} B62D *55/12*
U.S. Cl. 180—9.2 R **4 Claims**



1. In a track-laying tractor including a chassis extending longitudinally between right and left longitudinally extending drive track assemblies, said chassis including a main transmission housing defining a rear portion thereof and containing transmission means defining right and left transverse drive shafts projecting oppositely and forming respective input drive shafts drivingly coupled to right and left final drive transmission means respectively contained in right and left final drive housings having respective mounting portions fixed to right and left surfaces of the main transmission housing, said right and left final drive transmission means respectively including right and left output drive shafts extending parallel to said input drive shafts and respectively having drive sprockets to the right and left track assemblies secured thereto, the improvement comprising: said respective mounting portions of the right and left final drive housings being secured by fastener means arranged symmetrically relative to a transverse vertical plane passing through said input drive shafts; and said right and left output drive shafts being disposed forwardly of the plane with the drive track assemblies being located in a forward position relative to the chassis when the tractor is to do loader work, whereby the right and left final drive housings may optionally be respectively mounted on the left and right sides of the main transmission housing for disposing the respective output drive shafts thereof rearwardly of said plane with the drive track assemblies being located in a rearward position relative to the chassis when the tractor is to do dozer work.

3,894,601
SURGICAL SUPPORT

Gidon F. Gestring, Maplewood, N.J., assignor to Technibiotics, Inc., Brooklyn, N.Y.
Filed Feb. 12, 1974, Ser. No. 441,847
Int. Cl. B62d *61/06*
U.S. Cl. 180—26 R **9 Claims**

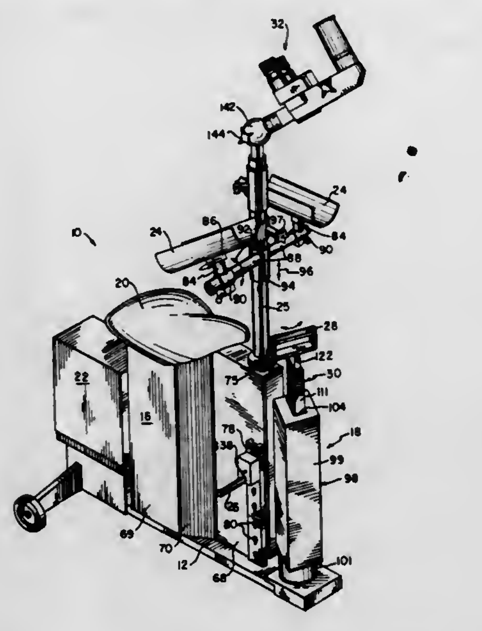
1. A support for use by a surgeon during a surgical operation comprising:

a frame mounted on wheels;

means positioned on said frame for supporting the body and limbs of said surgeon, said supporting means including a mounting assembly located over said frame, a seat fastened to said mounting assembly, a pair of foot supports fixed to said mounting assembly, means for positioning said foot supports at any one of a plurality of desired positions on said mounting assembly, a pair of arm supports fixed to said mounting assembly, means for adjusting the position of said arm supports on said mounting assembly, the positions of said seat, foot supports and arm supports relative to each being adjustable;

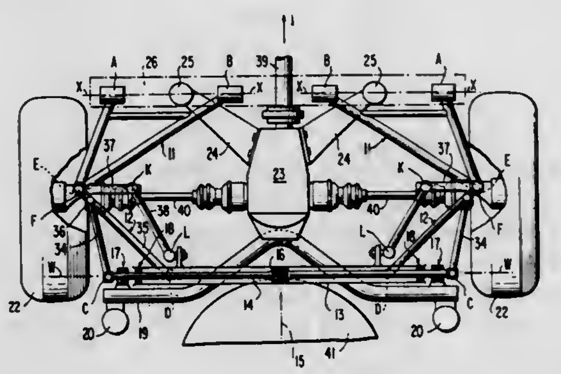
means for moving said mounting assembly in the vertical direction relative to said frame so that said seat, foot supports and arm supports are moved together as a unit; and

a source of power for driving at least one of said wheels, means for controlling the direction of rotation of said at least one of said wheels, and means for steering at least one of said wheels.



3,894,602
WHEEL SUSPENSION

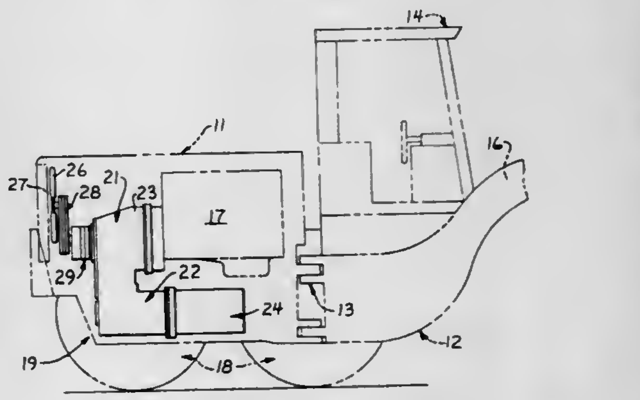
Manfred Von Der Ohe, Stuttgart, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany
Filed Apr. 23, 1973, Ser. No. 353,748
Claims priority, application Germany, Apr. 24, 1972, 2220072
Int. Cl. B60v *11/18*
U.S. Cl. 180—43 R **111 Claims**



1. A wheel suspension for oppositely disposed wheels of a motor vehicle, which includes for each such wheel, guide means and a wheel carrier means guided by said guide means as coupler, said guide means operatively connecting the wheel carrier means with a relatively fixed vehicle frame part, and a cross connection means coupling with each other at least one of the guide means of each such wheel, the mutually coupled guide means coupled with one another by said cross connection means being operable in such a manner that during unidirectional spring movements of the oppositely disposed wheels, the respective guide means have substantially horizontal axis of rotation common to both wheel sides and disposed substantially in a vehicle transverse plane and during oppositely disposed spring movements of the mutually oppositely disposed wheels, one axis of rotation each is effectively formed for each wheel side by the respective guide means which is determined by the points of pivotal connection of the associated guide means at the relatively fixed part, characterized in that the cross connection means includes a cross bearer means rotatable about a substantially horizontal axis fixed with respect to the relatively fixed part and disposed in a vehicle transverse plane, and connecting arm means operatively connected with the mutually coupled guide means, said connecting arm means being adapted to be elastically torsionally stressed with respect to the cross bearer means in relation to the axis of rotation of the latter, said mutually coupled guide means being pivotally connected on the frame-side at the cross connection means by way of points of pivotal connection of which at least the respective inner points of pivotal connection disposed nearer the vehicle longitudinal center plane are provided at the cross bearer means, and the respectively points of pivotal connection for a corresponding one of the coupled guide means being located on a straight line extending, as viewed in rear view, obliquely to the axis of rotation of the cross connection means, and said straight line forming the axis of rotation of the respective guide means for the oppositely disposed spring movements.

3,894,603
VEHICLE DRIVE TRAIN

James E. Winzeler, East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Continuation of Ser. No. 284,488, Aug. 29, 1972, abandoned. This application July 22, 1974, Ser. No. 490,910
Int. Cl. B60k *25/00*
U.S. Cl. 180—53 R **4 Claims**



1. A compact drive train for a vehicle comprising

a prime mover arranged adjacent one end of the vehicle with a multi-speed transmission means disposed below the prime mover,

a transfer gear assembly for coupling a flywheel means of the prime mover with the transmission means and including

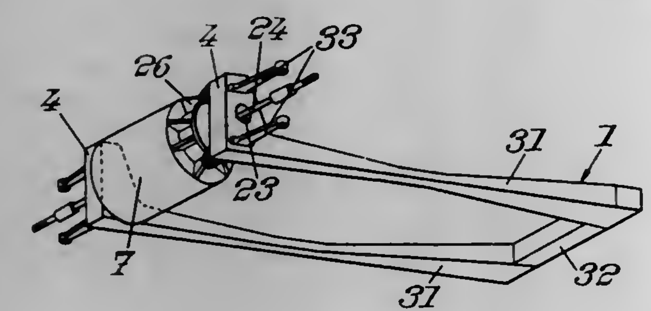
a transfer input gear coaxially coupled with the flywheel means,

transfer gear means meshing with the transfer input gear and coupled with the transmission means, said transfer means comprising a pair of directional input gears in meshing relation with each other, one of the directional input gears being in meshing engagement with the transfer input gear, a transfer output gear providing a power input for the transmission means,

clutch means selectively coupling the respective directional input gears with the transfer output gear, said clutch means including a directional output gear coaxially arranged with each respective directional input gear, and an idler gear arranged in meshing engagement with the two directional output gears and the transfer output gear, and an accessory power output shaft coaxially coupled with the transfer input gear,

the accessory power output shaft, the transfer input gear and the flywheel all being arranged at one end of the prime mover.

3,894,604
AUTOMOBILE VEHICLES
Albert Grosseau, Chaville, France, assignor to Societe Anonyme Automobiles Citroen, Paris Cedex, France
Filed Mar. 5, 1973, Ser. No. 337,842
Claims priority, application France, Mar. 28, 1972, 72.10920
Int. Cl. B60k *5/04*
U.S. Cl. 180—64 R **8 Claims**



1. In a motor vehicle including front and rear axles, the invention which comprises:

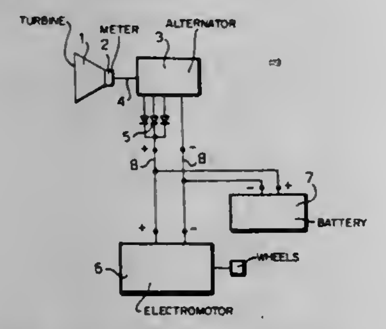
an engine;

a chassis for connecting the front axle with the rear axle, said chassis including a pair of parallel spaced longitudinal members each having at one end a raised portion;

a body connected to the chassis through resilient means enabling deflections between the body and the chassis in the longitudinal direction of the vehicle and substantially preventing other deflections; and

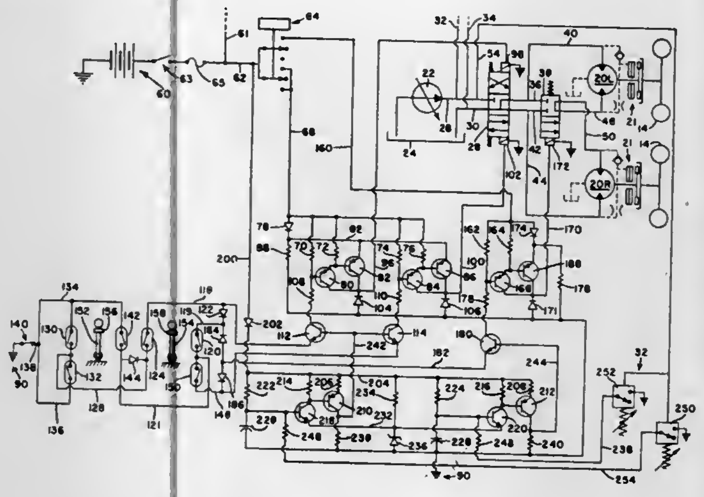
means connecting said engine to and between said raised portions so that the engine extends transversely between said longitudinal members, thereby causing said engine to serve as a cross member for contributing to the rigidity of the chassis by opposing any substantial deflection between the engine and the chassis in longitudinal and transverse directions of the vehicle.

3,894,605
THERMO-ELECTRICALLY PROPELLED MOTOR-VEHICLE
Rolando Salvadorini, Via Ventimiglia 98, Turin, Italy
Filed Mar. 12, 1973, Ser. No. 340,063
Claims Priority, application Italy, Mar. 16, 1972, 67832-A/72
Int. Cl. B60l *11/00*
U.S. Cl. 180—65 R **9 Claims**



1. A motor vehicle with thermoelectrical drive, which comprises driving means including a thermal engine, an electric generator directly coupled through a driving shaft to said thermal engine, at least one D.C. electromotor fed by said electric generator through a set of rectifiers and providing an output for driving the vehicle, a buffer storage battery also connected to feed said D.C. electro-motor and capable of operating as an alternative to said electric generator as well as a supplement to said electric generator, meter means within a sealed housing for automatically measuring the time interval during which said turbine is operative, switch means for selectively preseting the meter means for operation, and means for displaying outside the vehicle an indication that the meter means are preset for operation.

3,894,606
CONTROL SYSTEM FOR HYDROSTATIC DRIVE TRACTORS
Billie Gene Hunck, and Gordon K. Wiegardt, both of Cedar Falls, Iowa, assignors to Deere & Company, Moline, Ill.
Filed Oct. 23, 1974, Ser. No. 517,220
Int. Cl.² B60K *17/34*
U.S. Cl. 180—66 R **25 Claims**

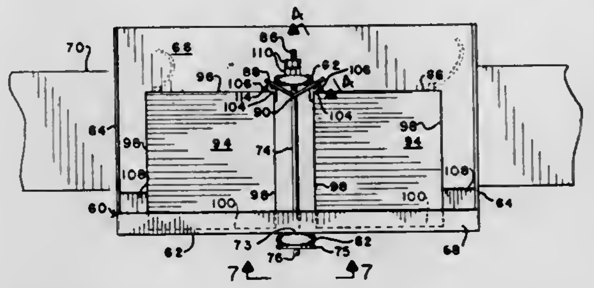


1. A hydrostatic drive control system in a vehicle having an engine; a pair of main drive wheels; a variable ratio transmission adapted to drivingly connect the engine to the drive wheels and having associated transmission controls adapted to change the transmission between forward high, intermediate, and low ratios and reverse ratios; an axle structure having additional wheels journaled at opposite ends thereof; a hydraulic pump driven by the engine to provide pressurized fluid; a pair of hydraulic wheel motors mounted at opposite ends of the axle structure and including output shafts operatively connected to the additional wheels; a hydraulic system interconnecting the pump and the motors to supply pressurized fluid from the pump to the motors; valve means in the hydraulic system shiftable between an off connection wherein it disconnects the motors from the pump, a high torque connection wherein it connects the motors with the pump in parallel relationship with each other, a low torque connection wherein it connects the motors with the pump in series relationship with each other, a forward connection wherein it connects the motors with the pump for forward rotation of the motors, and a reverse connection wherein it connects the motors with the pump for reverse rotation of the motors; switch means for selecting the valve means connections between off, high torque, and low torque; and transmission sensor means operatively associated with the transmission for sensing the forward high, intermediate, and low transmission ratios and the reverse transmission ratios, the improvement comprising: control means operatively associated with the transmission sensor means, the valve means, and the switch means to effect reversible automatic shifting of the valve means from high torque to low torque connections when high torque has been selected with the switch means, and the transmission sensor means senses an intermediate transmission ratio, and to effect reversible automatic shifting of the valve means to the off connection when the transmission sensor means senses a high transmission ratio.

3,894,607
CLAMPING APPARATUS FOR A PLURALITY OF BATTERIES
James E. Brock, P.O. Box 53, Cathlamet, Wash. 98612
Filed Nov. 15, 1972, Ser. No. 306,914
Int. Cl. B60r *18/02*
U.S. Cl. 180—68.5 **2 Claims**

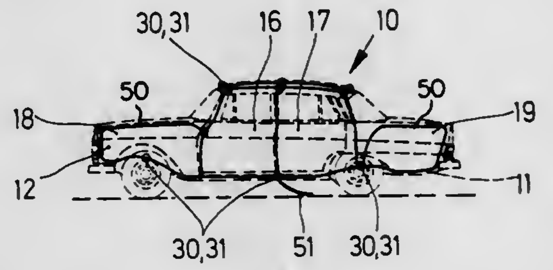
1. A clamping apparatus for units of a generally rectangular parallelopiped configuration and having corners and edges, said apparatus comprising:

a. a first shelf;
b. a first means for bearing against adjacent upper edges of two juxtapositioned units and for forcing said units against said first shelf;
c. a second means to prevent movement of said units substantially parallel to said shelf;
d. a first passageway in said first shelf;
e. a rod operatively connecting with said first means;
f. said rod projecting through said first passageway and connecting with said first shelf;



g. a positioning means on said shelf;
h. the end of said rod projecting through said first passageway forming a hook;
i. said hook connecting with said positioning means to firmly position said rod with respect to said shelf; and,
j. a resilient yielding means between that end of the rod defining said hook and the first shelf to absorb some shock.

3,894,608
LIGHTNING PROTECTION DEVICE FOR AUTOMOBILES
Karl W. Haenle, Munich, Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany
Filed July 1, 1968, Ser. No. 741,742
Claims priority, application Germany, July 21, 1967, 34443
Int. Cl. B60r *18/06*
U.S. Cl. 180—82 **4 Claims**

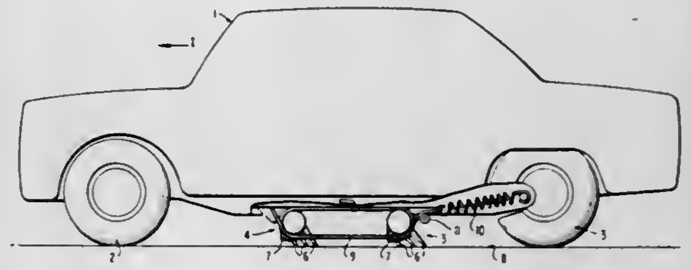


1. A lightning protection apparatus for automobiles having a metallic frame, a non-metallic body attached to said frame, said body comprising a plurality of panels, metallic means connecting said panels to each other and to said metallic frame, at least one electrical conductive element extending through each of said panels said conductive elements in said panels being in electrical communication with each other and with said metallic frame through said connecting means to form a conductive cage about said body.

3,894,609
INSTALLATION FOR INCREASING THE ROAD TRACTION IN A VEHICLE
Helmut Wulf, Nellingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany
Filed Oct. 19, 1973, Ser. No. 408,095
Claims priority, application Germany, Oct. 19, 1972, 2251152
Int. Cl. B60t *1/14*
U.S. Cl. 180—115 **36 Claims**

1. An installation for increasing the road traction between a vehicle and a road surface, the vehicle having a vehicle superstructure and a floor portion, the installation comprising: shielding means between the vehicle and the road surface, means for producing a vacuum below the vehicle for sucking off at least within the area bounded by said shielding means, means for transferring said shielding means from a rest position remote from the road surface into a use position near the road surface, said shielding means comprising an annular cushion means enclosing the bounded area, said transfer means comprising retaining means for connecting the annular cushion means to the vehicle superstructure, said retaining means comprising bands disposed between said annular cushion means and said road surface and means for stressing said bands such that said annular cushion means is biased toward the rest position, one end of each of the bands being secured to the floor portion of the vehicle and the other end of each of the bands being secured to said stressing means.

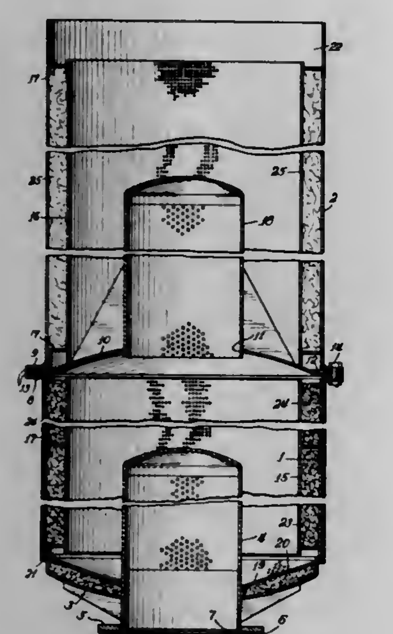
24. An installation for increasing the road traction between a vehicle and a road surface, the vehicle having a vehicle superstructure, the installation comprising: a shielding means disposed below the vehicle between the vehicle and the road surface, means for transferring the shielding means from a rest position remote from the road surface into a use position near the road surface, means for producing a vacuum below the vehicle for sucking off air at least within the area bounded by said shielding means, said shielding means including an elliptical air cushion means enclosing said area, the major axis of said elliptical air cushion means extending substantially transversely to the vehicle longitudinal axis, means for connecting said air cushion means to the vehicle superstructure, means for inflating said air cushion means, control means for controlling the degree of inflation of said air cushion means in dependence on the load-conditioned ground clearance of the vehicle, at least one lip-shaped sealing means provided on a side of said air cushion means facing the road surface, at least one support rib means connected to said side of said air cushion means, said support rib means supporting said sealing strip means and determining a minimum distance between the road surface and said air cushion means, said sealing strip means being arranged in a pulled relation to the driving direction of the vehicle such that a portion of the sealing strip means adjoining said air cushion means lies forwardly of a portion of the sealing strip means abutting the road surface, said sealing strip means extending outwardly approximately tangentially to the small radii of curvature of the ellipse along the major axis of said elliptical air cushion means.



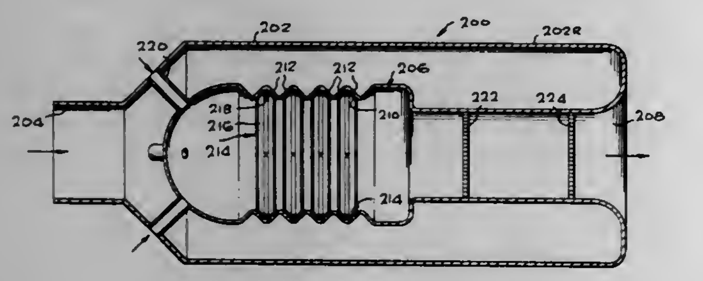
3,894,610
GAS STREAM SILENCER
Edmund John Halter, and John Charles Lanpher, both of Irving, Tex., assignors to Burgess Industries Incorporated, Dallas, Tex.
Filed Aug. 20, 1974, Ser. No. 498,984
Int. Cl. F01n *1/10*
U.S. Cl. 181—50 **10 Claims**

1. In a plural stage gas stream silencer having circular shell means defining a plurality of treatment sections connected in series for the flow of a gas stream therethrough, each section having a central inlet opening therein and at least the side walls of the shell means having their internal surfaces covered with a layer of sound absorbing material held in position by perforated inner shell means; the improvement wherein a diffuser tube is mounted in each inlet opening and extends

downstream therefrom into but not through the associated treatment section; each said tube being open at its upstream end, closed at its downstream end and having its side walls perforated; the distance from said perforated side walls to the perforated inner shell means surrounding the same being greater than four times the diameter of the perforations in said side walls; the sound absorbing material of the layer surrounding said diffuser in the treatment section at the inlet end of the silencer consisting of a durable material such as metal turnings; the layer of sound absorbing material of succeeding treatment sections comprising material having high sound absorption capability such as punched hairfelt or glass fiber.

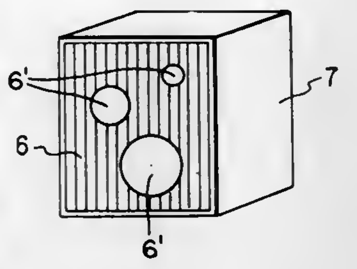


3,894,611
MUFFLER
Charles J. Raudman, Jr., 23350 Agramonte, Newhall, Calif. 91321
Filed Feb. 22, 1974, Ser. No. 444,839
Int. Cl. F01n *1/08*
U.S. Cl. 181—57 **7 Claims**



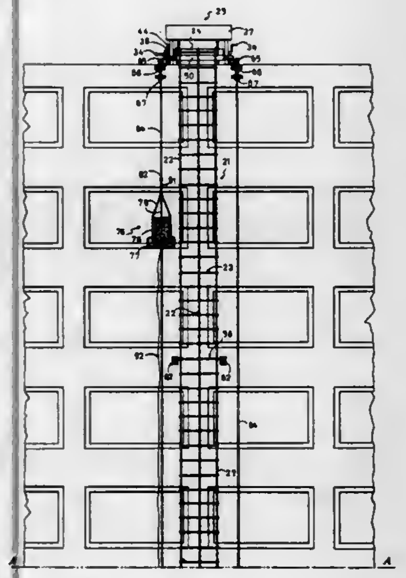
1. An exhaust muffler comprising:
an outer shell having a front end with an entrance opening and having a rear end which is closed;
an inner shell with at least a front portion disposed within said outer shell, said inner shell having a rear end with an exit opening, said inner shell having a plurality of ports; and
valving band means disposed within said inner shell against said ports, said band means tending to expand so it seals the ports closed except when the localized pressure differential at each port is great enough to deflect a portion of the band means away from the port.

3,894,612
SPEAKER ENCLOSURE HAVING IMPROVED WALL PLATES
Yoichi Maeda, and Hideharu Nagahara, both of Tokyo, Japan, assignors to Trio Electronics Inc., Tokyo, Japan
Filed Nov. 19, 1973, Ser. No. 417,197
Claims priority, application Japan, Feb. 9, 1973, 48-17223
Int. Cl. G10k *13/00;* **H04r** *1/28*
U.S. Cl. 181—199 **4 Claims**



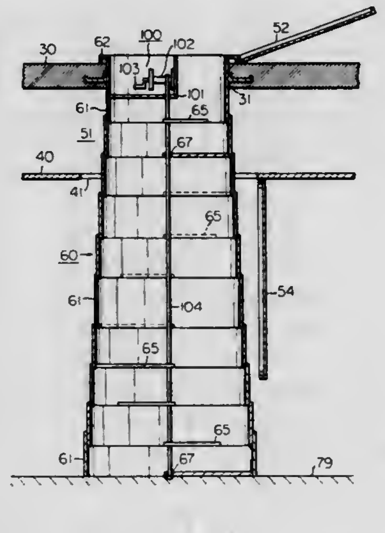
1. A speaker enclosure comprising at least one speaker, said speaker enclosure having at least one aperture for supporting said one speaker and including a plurality of wall plates where at least one plate comprises only a plurality of billets cut along the fibrous direction, the fibrous direction of all billets being substantially parallel to one another, the billets being bound to one another to form a substantially planar wall plate.

3,894,613
EMERGENCY FIRE-ESCAPE EQUIPMENT FOR BUILDINGS
Ruben Contreras Elizondo, Cracovia 67, Mexico City, Mexico
Filed Aug. 30, 1974, Ser. No. 501,901
Int. Cl.^{2} A62B *1/10*
U.S. Cl. 182—43 **35 Claims**



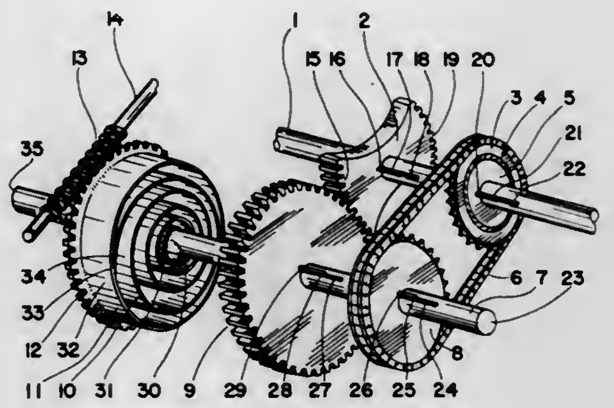
1. An emergency equipment for escaping from buildings in case of fire, comprising a protective house fixed to the highest portion of the building; first rotating means coupled to the protective house which is free turning and which also may be mannually operated; second rotating means coupled to said protective house which is freely revolving; a ladder fixed by one of its ends to said first rotating means, and which is slidingly supported upon said second rotating means; braking means mounted on said first rotating means; releasing means coupled to said first rotating means to free it and permit it to revolve freely; means for actuating the equipment which are connected to the braking and the releasing means, said actuating means being caused to function from the inside of the building on the ground floor of same; speed control means which maintains a steady rate of rotation of said first rotating means, so that said ladder may slide over said second rotating means and descend by gravity down along the length of the building; holding means secured to the other of the ends of said ladder, to secure it to a sidewalk; first sprocket wheels mounted to the exterior of the face of the building; second sprocket wheels secured to the roof of the building inwardly of the front face of said building; third rotating means fixed to the roof of the building lower than said second sprocket wheels, said third rotating means being manually operable and being at the same time free-turning; endless chains which run in said first and second sprocket wheels and which can be rolled up upon said third rotating means; a hoist system of a plurality of speeds, to which said endless chains are connected; housing means for said hoist system built into the building in a portion thereof near the sidewalk and at such a point as to be in a straight line with said second sprocket wheels; locking means for keeping the housing means under lock, which is operable solely from the inside of the building, from that same point where the actuating means are operated; basket means suspendible upon said endless chains; and cord means attached to said basket means, to compel the latter to descend at a certain distance of separation from the face of the building.

3,894,614
EXTENSIBLE PASSAGE APPARATUS
Hiromitsu Naka, 39, Oazo Shinmachi, Yashio, Japan
Filed Nov. 26, 1973, Ser. No. 419,197
Claims priority, application Japan, Dec. 5, 1972, 47-121160; Dec. 13, 1972, 47-124276; Oct. 22, 1973, 48-117857; Aug. 1, 1973, 48-85842; Oct. 22, 1973, 48-121686
Int. Cl. E06c *9/08*
U.S. Cl. 182—78 **9 Claims**



1. A passage apparatus adapted to be contained in a passageway between the floor of one story of a building and the ceiling of the story immediately therebelow for passage between the two stories, said apparatus comprising:
a first cover for covering the opening in the floor of the upper story leading to said passageway;
a second cover for covering the other end of said passageway opening through the ceiling of the lower story in line with said first cover covering the opening in the floor above;
and extensible passage means between said covers comprised of a single set of a plurality of cylindrical elements telescoped one within the other slidably movable relative to each other for telescoping downward from a nested position between said covers to the floor below and plate members attached to and projecting from the wall of each cylindrical element whereby physical movement up and down said passage means is facilitated.

3,894,615
TORQUE DISTRIBUTOR
Hyok Sang Lew, 1620 E. Blacklidge Dr., No. 6, Tucson, Ariz. 85719
Filed Sept. 4, 1973, Ser. No. 394,127
Int. Cl. F03g *1/00*
U.S. Cl. 185—39 **9 Claims**



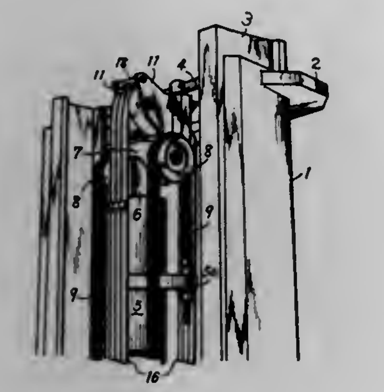
1. A torque distributor for redistributing torque on a shaft transmitting torque, said torque distributor comprising:
- a. a leaved gear including one or more gear leaves affixedly disposed on a first shaft; whereby, revolution of said first shaft rotates said leaved gear;
- b. a first gear engaging gear leaves of said leaved gear affixedly disposed on a second shaft; whereby, rotation of said first shaft in one direction rotates said second shaft in the direction opposite to said direction of rotation of said first shaft whenever one of the gear leaves of said leaved gear engages said first gear;
- c. a means of absorbing, storing and releasing mechanical energy, connected to said second shaft, said means including:
  1. means of absorbing and storing energy when said second shaft is rotated in a first direction; whereby, said means of storing energy absorbs energy from said first shaft when said leaved gear engages and rotates said first gear in said first direction; and
  2. means of releasing said absorbed energy to said second shaft when said second shaft is allowed to rotate in a second direction as said leaved gear disengages said first gear, said second direction of rotation being the reverse of said first direction of rotation; whereby, the released energy generates a torque on said second shaft in said second direction.

3,894,616
FORKLIFT
Kunihisa Kawanishi, Obu; Shuji Ohta, Toyohashi, and Seigo Shimizu, Kagamigahara, all of Japan, assignors to Toyota Automatic Loom Works, Ltd., Kariya, Japan
Filed July 23, 1973, Ser. No. 381,438
Claims priority, application Japan, July 25, 1972, 47-74273
Int. Cl. B66b *9/20*
U.S. Cl. 187—9 **1 Claim**

1. A forklift comprising:
a body adapted to travel along the ground in a normal travel direction;
a mast assembly on said body including a pair of relatively fixed uprights and a pair of movable uprights vertically displaceable on said fixed uprights;
a carriage vertically displaceable on said mast assembly;
a fluid ram operatively connected to said carriage and disposed between said uprights, said fluid ram including an extensible piston rod;
a cross-brace fixedly attached to said pair of movable uprights;
a sprocket-wheel support fixedly mounted on said piston rod;

a pair of spaced apart brackets secured to said cross-brace; a pair of sheaves journaled on said brackets including a forwardly disposed sheave and a rearwardly disposed sheave, at least one of said sheaves lying in the vertical projection of said piston rod and directly over said piston rod while being spaced below said cross-brace;

a pair of fasteners interconnecting said cross-brace and said support;



a fluid operated attachment on said carriage; and

at least two flexible hydraulic conduits connected between said attachment and said body, said conduits being reeved over both of said sheaves and passing through said projection and between said fasteners, said sheaves being positioned to maintain the maximum bend of said conduits over either sheave at about 120°.

3,894,617
DEVICE FOR THE BRAKING OF SHAFT CARRYING SPIRALLY WOUND RAW MATERIAL, PARTICULARLY IN TEXTILE MACHINES

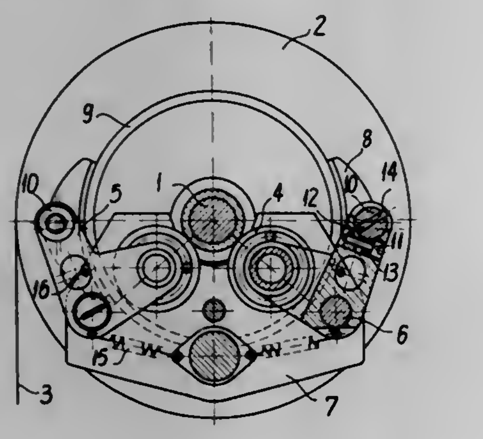
Ryszard Wiecko; Henryk Sabiniak, and Marcin Formanski, all of Lodz, Poland, assignors to Centralno Biuro Techniczne Przemyslu Maszyn Wlokienniczych, Lodz, Poland

Filed Jan. 30, 1974, Ser. No. 437,883

Claims priority, application Poland, Feb. 19, 1973, 160817

Int. Cl. F16d *51/16*

U.S. Cl. 188—75 **2 Claims**



1. A warping shaft assembly or the like comprising:

a shaft adapted to carry a feed and spiral strand of material; a support adjacent said shaft;

a pair of double-arm levers fulcrumed on said support and each having first and second angularly adjoining arms;

antifriction bearing means between said first arms and said shaft for rotatably supporting said shaft on said first arms of both levers at two spaced-apart locations allowing lifting of said shaft away from said support;

a brake drum carried by said shaft;

respective brake shoes carried by the second arms of each of said levers and frictionally engageable with said brake drum when said bearing means is rotatably supporting said shaft; and

excentric means for adjustably mounting each of said brake shoes on the respective second arm.

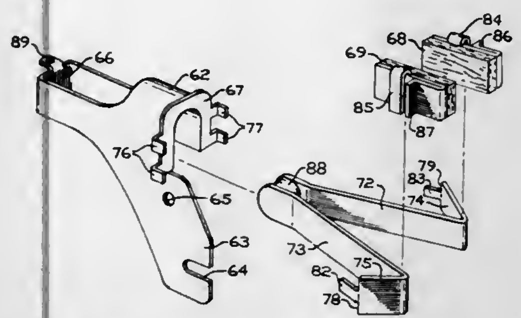
3,894,618
DISC BRAKE

John J. Enright, Troy, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed June 27, 1973, Ser. No. 373,932

Int. Cl. F16d *55/02*

U.S. Cl. 188—72.2 **24 Claims**



1. A disc brake comprising:

a. a rotatable disc for mounting upon a rotating object, said disc having a flat friction surface on at least one side thereof;

b. support means adjacent the disc;

c. an arm member having one part generally parallel to and adjacent the flat friction surface of said disc, with a resilient portion extending at an acute angle relative to said part of the member on the side thereof opposite the disc with the end of said portion pivotally connected to said support;

d. friction means facing the flat friction surface of the disc in spaced relation thereto and attached to the arm member;

e. means for moving the arm member in a direction which increases the angularity of said resilient portion and which is substantially in the direction of rotation of the disc to thereby engage the friction means with the disc whereby the rotation of the disc will increase the pressure of the friction means against the friction surface of the disc.

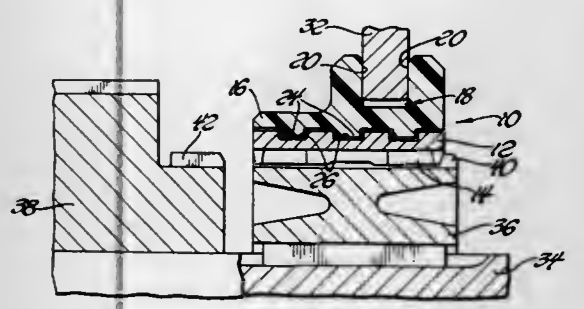
3,894,619
SYNCHRONIZER RING ASSEMBLY

William H. Bibbens, 16500 N. Park Dr., Southfield, Mich. 48075

Filed July 8, 1974, Ser. No. 486,293

Int. Cl.^{2} F16D *11/10, 13/00*

U.S. Cl. 192—53 F **12 Claims**



1. A synchronizer ring assembly comprising: an internally toothed, cylindrical sleeve member of metal material; a shifting collar member of plastic material mounted on the outer surface of said sleeve member in coaxial relationship therewith, said collar member being formed with an annular shifter fork engagement means coaxial with said sleeve and collar members; and interlock means between said collar and sleeve members operable to prevent relative movement between said members at least in an axial direction.

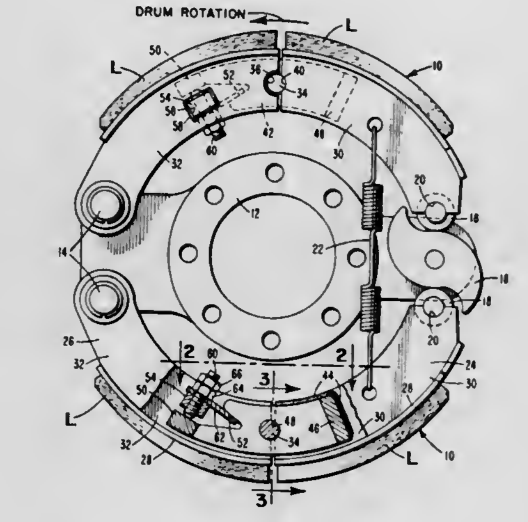
3,894,620
ARTICULATED FRICTION UNIT ASSEMBLY FOR BRAKE OR CLUTCH USE

David N. Goldberg, 415 S. Front St., Wheeling, W. Va. 26003

Filed Mar. 26, 1974, Ser. No. 454,902

Int. Cl. F16d *13/18, 51/22, 65/08*

U.S. Cl. 192—75 **14 Claims**



1. In a brake or clutch structure, a friction unit assembly adapted to be selectively engaged with a drum comprising:

first and second arcuate shoe sections pivotally interconnected in longitudinal end to end alignment and movable as a unit into engagement with a drum surface upon an operating force being applied to said assembly, each of said shoe sections having an arcuately curved face thereof adapted to receive friction material;

lever arm means secured to said first shoe section and extending past the adjoining ends of said shoe sections to said second shoe section with an abutment stop adjacent said second shoe section;

arc diameter limiting means carried by said second shoe section disposed generally radially inwardly of said abutment stop and engageable with said abutment stop to limit the maximum arc to which said shoe sections may pivotally move relative to each other, said second shoe section further having biasing means engaging said lever arm means in a direction to urge said shoe sections to said maximum arc while enabling said shoe sections to conform closely to a lesser arc that the drum distorts to under forces produced in braking.

3,894,621
SPLINED THRUST WASHER

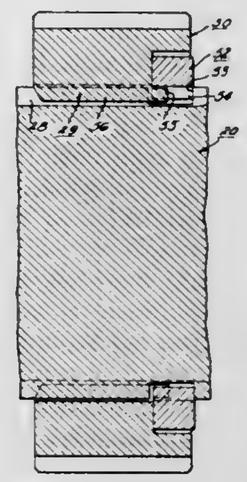
David C. Quick, New Berlin, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 26, 1973, Ser. No. 428,245

Int. Cl. F16d *11/00*

U.S. Cl. 192—109 R **10 Claims**

1. A power transmission having a gear producing an axial thrust responsive to gear drive comprising, a drive shaft having an external spline and defining an annular groove, a gear on said shaft producing an axial thrust, a thrust washer defining axial grooves, a clutch collar defining an annular recess and having a spline received in the spline of said shaft, said clutch collar defining teeth for positioning in the grooves of said washer to align said washer on said shaft, means connecting said gear to said shaft, said thrust washer received in the annular recess of said collar to thereby transmit the axial thrust from said gear to said shaft.



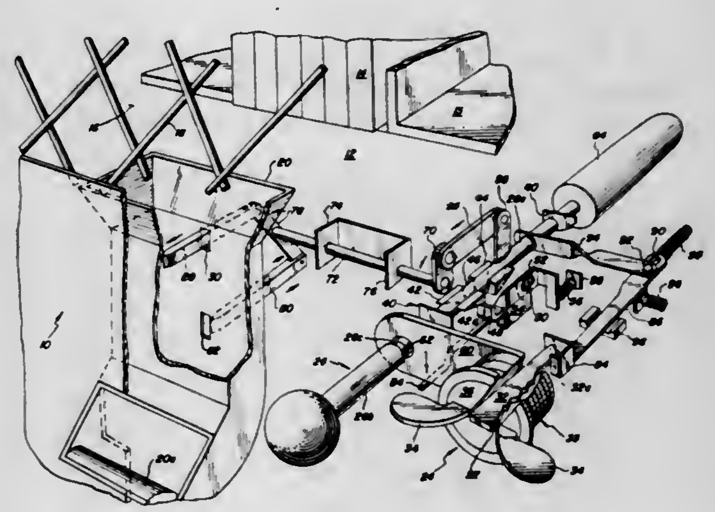
3,894,622
LOCK SYSTEM AND VENDING MACHINES OR THE LIKE USING THE SAME

Lyman D. Dunn, Chicago, Ill., and John T. Shields, Terre Haute, Ind., assignors to Marlan Company, Chicago, Ill.

Continuation-in-part of Ser. No. 377,558, July 9, 1973, abandoned. This application Sept. 17, 1973, Ser. No. 398,181

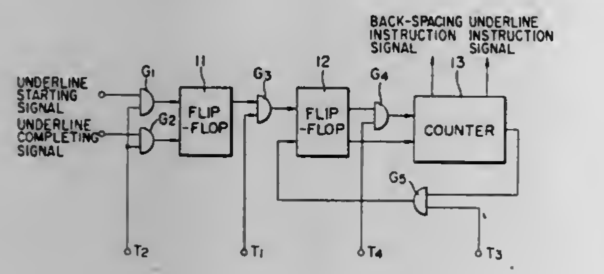
Int. Cl.^{2} G07F *7/02*

U.S. Cl. 194—4 E **9 Claims**



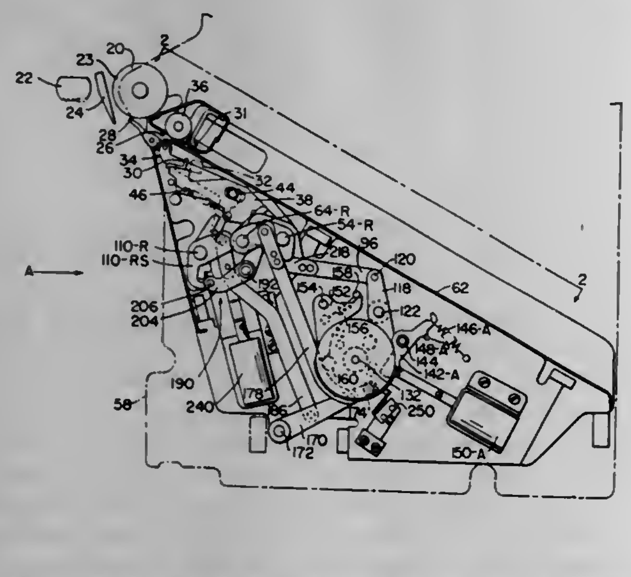
1. For use in vending machines or other lockable storage devices having an article storage area and article delivery means operable to deliver a selected article from said storage area to the exterior of said machine, a lock construction comprising: lock means normally de-activating said article delivery means when said lock means is in a locked condition, said lock means having a keyhole for receiving an operable key means for opening the lock means to activate the delivery means and means operably associated with said delivery means for positively engaging and moving said key means after use from the keyhole and inwardly within the vending machine.

3,894,623
UNDERLINE PRINTING CONTROL SYSTEM FOR USE IN A TYPEWRITER
Syozo Miyawaki, Urawa, and Tetsuro Hirota, Yokohama, both of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan
Filed Aug. 9, 1973, Ser. No. 387,007
Claims priority, application Japan, Aug. 9, 1972, 47-79694
Int. Cl. B41j *29/26*
U.S. Cl. 197—113 **4 Claims**


BACK-SPACING INSTRUCTION SIGNAL
UNDERLINE INSTRUCTION SIGNAL
UNDERLINE STARTING SIGNAL
UNDERLINE COMPLETING SIGNAL
G1
G2
11
FLIP -FLOP
G3
12
FLIP -FLOP
G4
13
COUNTER
G5
T2
T1
T4
T3

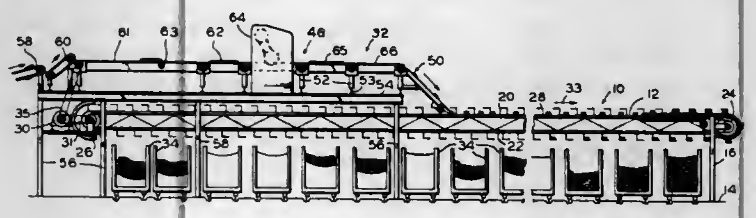
1. An underline printing control system for use in a memory typewriter, comprising:
- a. a memory means for storing a series of character code signals, an underline starting code signal added in the front of said series of character code signals and an underline completing code signal added in the rear of said series of character code signals;
- b. a printing section adapted to successively print the characters corresponding to each character code signal read out from said memory means;
- c. a control unit having a first flip-flop set in response to said underline starting code signal read out from said memory means and reset in response to said underline completing code signal read out from said memory means; and
- d. means within said control unit for feeding to said printing section a back-spacing instruction and an underline instruction for one character, each time the character corresponding to each character code signal read out from the memory means is printed, during the time when said first flip-flop is maintained in a set condition.

3,894,624
LEFT AND RIGHT DOCUMENT ALIGNING APPARATUS FOR OFFICE MACHINES HAVING SPLIT PLATENS
Harold A. Long, Wichita, Kans.; Albert J. Green, Kettering; Richard P. Taylor, Xenia, both of Ohio, and Madhu C. Patel, Wichita, Kans., assignors to NCR Corporation, Dayton, Ohio
Filed Mar. 7, 1973, Ser. No. 338,654
Int. Cl. B41j *13/00*
U.S. Cl. 197—127 R **16 Claims**



1. A document aligning apparatus for an office machine having a platen and a chute means for positioning a document relative to the platen at either one of two laterally opposed sides of the chute means, comprising:
- first aligning means for aligning a document at one of the opposed sides of said chute means so as to position one edge of the document in parallel relationship with a printing line on said platen;
- second aligning means for aligning a document at the remaining one of said opposed sides of said chute means so as to position one edge of the document in parallel relationship with said printing line;
- selection means for selecting one of said aligning means to be actuated; and
- actuating means for actuating the selected one of said aligning means, to thereby position said one edge of the associated document in parallel relationship with said printing line;
- each said first and second aligning means comprising:
- a plurality of aligner bar means spaced along said platen with each said aligner bar means having an aligner bar pivotally mounted thereon and resiliently biased to a skewed position relative to said printing line, and a switch means associated therewith; and compression roll means for gripping a document inserted in the chute means;
- said actuating means comprising, for each said aligning means:
- a first actuating shaft means for moving said aligner bars from a non-blocking to a blocking position in said chute means where one edge of a document being inserted therein abut against said aligner bars;
- each said aligner bar, when moved to a position substantially parallel to said printing line by said edge of said document, being effective to close its associated switch means;
- second actuating shaft means which are energized upon the closing of at least two of said switch means for pushing said aligner bars and said document a short distance in a direction out of said chute means to an aligned position whereby said edge is accurately aligned parallel to said printing line; and
- third actuating shaft means for energizing said compression roll means to grip said aligned document in said aligned position.

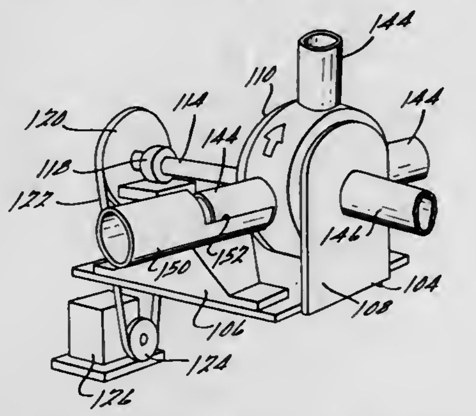
3,894,625
LUMBER SORTING SYSTEM WITH OVERHEAD INFEED
John S. Boyle, Beaverton, and R. Burl Romick, Portland, both of Oreg., assignors to U.S. Natural Resources, Inc., Portland, Oreg.
Filed Aug. 24, 1972, Ser. No. 283,317
Int. Cl. B65g *47/00*
U.S. Cl. 198—20 R **41 Claims**



1. A method of feeding lumber to a lumber sorter having a series of longitudinally spaced-apart and driven lumber-carrying hooks for conveying boards along an endless conveyor path defining upper and lower runs, a downwardly traveling end run and an upwardly traveling end run, said method comprising:
- feeding boards of lumber transversely of their lengths along an infeed path over said upper run toward said upper run while controlling the positions of said boards along the infeed path in relation to the positions of said hooks along said upper run in a manner so as to deliver each board into a space on said upper run between longitudinally adjacent hooks traveling along said upper run,

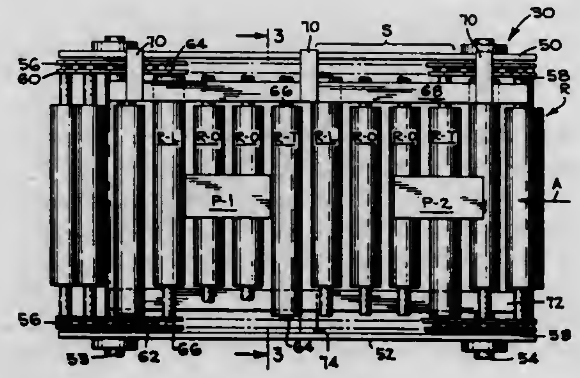
  and moving each board toward a forwardly adjacent hook while traveling along said upper run.

3,894,626
WORKPIECE TRANSFER MECHANISM
John W. Neumann, Birmingham, Mich., assignor to Oxy Metal Finishing Corporation, Warren, Mich.
Division of Ser. No. 136,723, April 23, 1971, Pat. No. 3,760,453. This application May 21, 1973, Ser. No. 362,333
Int. Cl. B41j *9/04*
U.S. Cl. 198—25 **5 Claims**



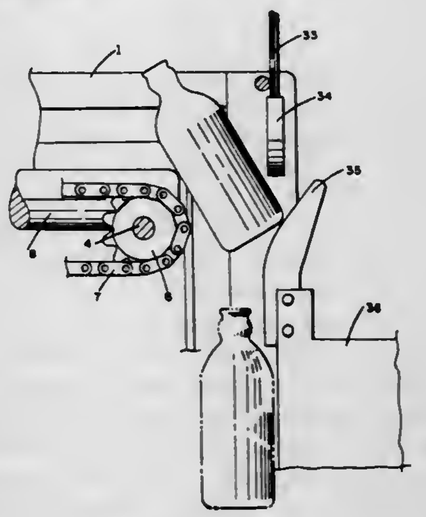
1. A workpiece transfer mechanism comprising guide means defining a path along which workpieces are adapted to travel at spaced intervals, transfer means including a rotatable foraminous drum mounted for rotation about an axis transverse to the path of travel of the workpieces and interposed in said path for intercepting successive workpieces traveling along said path, said rotatable foraminous drum formed with a workpiece receiving face having cushioning means thereon for absorbing the momentum of workpieces impacting thereagainst, suction means for releaseably retaining successively impacted workpieces in transporting engagement with said rotatable foraminous drum including a baffle stationarily disposed within said drum and having an annular slot of decreasing cross sectional area for applying a progressively decreasing suction to workpieces impacted against said receiving face on moving from the point of impact of the workpieces to a point angularly spaced therefrom, and receiving means for receiving workpieces intercepted and transferred by said rotatable foraminous drum.

3,894,627
CONVEYOR FOR INTERSPACING ARTICLES
Robert O. Jabbusch, and Carl J. Gerlach, both of Green Bay, Wis., assignors to FMC Corporation, San Jose, Calif.
Filed June 1, 1973, Ser. No. 365,942
Int. Cl. B65g *47/28*
U.S. Cl. 198—34 **10 Claims**



1. A conveying mechanism comprising an endless conveyor having an article supporting reach for spacing articles predetermined distances apart, means for driving said conveyor to translate said reach,
- said conveyor including a series of article-spacing sections each including a static zone comprising a plurality of transversely extending freely journaled idler rollers, and a dynamic zone on each side of each said static zone, each including at least one driven roller,
- each of said idler rollers and said driven rollers including upper article supporting surfaces which are rollable relative to the article and which cooperate to define a substantially flat surface while in said article supporting reach,
- means for rotating said driven rollers along said reach, at least one of said driven rollers of an article spacing section being arranged to reposition an article engaged therewith onto the idler rollers of said section while an article is conveyed along said reach, said driven roller engaging the article being effective to move the article onto and thereby rotate the rollers of the static zone until the frictional force between the article and engaged driven roller section is insufficient to cause the idler rollers to rotate and move the article any further relative thereto.

3,894,628
BOTTLE UNSCRAMBLING AND ERECTING APPARATUS
Arthur G. Pugh, Vancouver; Fernand G. Fortier, Coquitlam, and Alfred B. Patrick, Burnaby, all of Canada, assignors to The Molsons Companies Limited, Rexdale, Canada
Filed Jan. 23, 1974, Ser. No. 435,740
Claims priority, application Canada, Nov. 9, 1973, 185405/73
Int. Cl. B65g *47/24*
U.S. Cl. 198—255 **6 Claims**

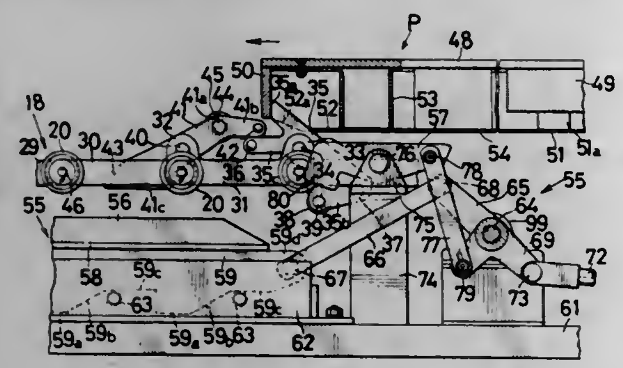


1. Apparatus for unscrambling and erecting a plurality of non-vertical bottles comprising:
- an elongated conveying table which receives the scrambled, non-vertical bottles at one end thereof and transports said bottles in defined and separate paths of travel along the longitudinal axis thereof to the opposite terminal end thereof, said conveyor table having transporting means including a plurality of counter rotating rollers rotatable about axes parallel to the longitudinal axis of the conveyor table, and a plurality of chain drives extending parallel to the longitudinal axis of the conveyor table, with each counter-rotating roller being separated from its neighbor by a chain drive, and with both said rollers and said chain drives extending substantially throughout the length of the conveyor table, and including drive means for driving said chains and the counter rotating rollers;
- a bottle erecting station located adjacent the terminal end of said conveyor table and including a plurality of bottle stalls at a lower level than said terminal end;
- pivotal support means located at said station and struck by the bottoms of non-vertical bottles presented bottom-first to said terminal end and which support means are thereby pivoted out of the path of travel of such bottles; and
- guide means at said station struck by the bottoms of such bottles falling from said terminal end and which thereby guide such bottles, in an erect condition, into said bottle stalls;

said pivotal means also serving to support the necks of non-vertical bottles presented neck-first to said terminal end until said last-mentioned bottles fall from said terminal end, bottoms-first, thereby striking said guide means and being directed, in an erect condition, into said bottle stalls.

3,894,629
CONVEYOR

Takao Wakabayashi, Osaka, Japan, assignor to Nakanishi Metal Works Co., Ltd., Japan
Filed Nov. 1, 1973, Ser. No. 411,767
Claims priority, application Japan, Nov. 4, 1972, 47-110551; Nov. 4, 1972, 47-110552; Nov. 4, 1972, 47-110554
Int. Cl.² B65G *19/00*
U.S. Cl. 198—170 **9 Claims**

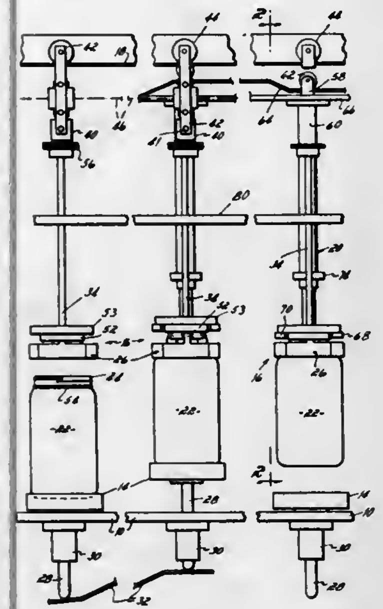


1. A conveyor comprising a number of rotatable supporting members arranged in two rows longitudinally thereof, a drive chain interposed between the two rows of supporting members, pushers tiltably pivoted to the drive chain each at the approximate midportion of its length and spaced apart by a distance at least longer than articles to be conveyed and pusher tilting levers pivoted to the drive chain each at the approximate midportion of its length and positioned in front of the pushers in mating combination therewith, each of the pushers having an upper projection upwardly extending obliquely forwardly of the pivot therefor and engageable with the article, a lower projection serving as a weight and a front projection extending toward the lever, the pusher being prevented from turning rearward when in engagement with the article, each of the levers having an upper projection extending upward from the pivot therefor and contactable with the rear side of the article, a lower projection serving as a weight and a rear projection extending toward the pusher to overlap the front projection thereof, the lever being pushable downward by contact with a stopped article on the conveyor while travelling with the drive chain and to thereby tilt the mating pusher downward.

3,894,630
CHUCK APPARATUS FOR SUPPORTING CONTAINERS BY THE FINISH PORTION THEREOF

Herbert C. Shank, Jr., Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio
Continuation-in-part of Ser. No. 358,864, May 10, 1973, Pat. No. 3,863,753. This application Oct. 12, 1973, Ser. No. 405,778The portion of the term of this patent subsequent to Feb. 4, 1992, has been disclaimed.
Int. Cl.² B65G *17/12, 17/20*
U.S. Cl. 198—179 **21 Claims**

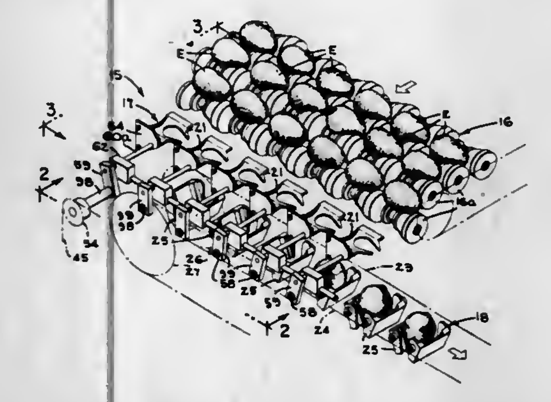
1. Apparatus for supporting a container in a vertical position by a finish portion thereof comprising, in combination:
- a chuck assembly including,
- a spindle,
- means for mounting said spindle vertically,
- a chuck body carried by said spindle,
- a plurality of chuck jaws mounted by said body for pivotal movement about horizontal axes and extending therebelow, said jaws being pivotally movable between a radially outward open position and a radially inward closed position, said jaws being so shaped that when in said closed position in use they form a substantially closed mask about the finish portion of a container supported by the chuck assembly,
- an annular sleeve shiftable along said spindle and operative to engage and hold said jaws in said closed position,



- said jaws each including a lip portion adapted to engage said finish portion when in said closed position so that said jaws support said container thereby, and
- said jaws each being so mounted to said body and of such shape as to be biased by the force of gravity from said open position toward said closed position,
- means for shifting said sleeve along said spindle into and out of closing engagement with said jaws, and
- means for spinning said chuck body so that said jaws pivot outwardly toward said open position when said sleeve is out of engagement therewith.

3,894,631
EGG TRANSFER MECHANISM

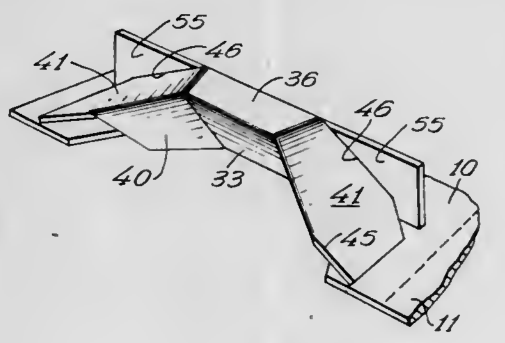
Boyd W. Rose, and George W. Thornton, both of Riverside, Calif., assignors to FMC Corporation, San Jose, Calif.
Filed Dec. 26, 1973, Ser. No. 428,168
Int. Cl. B65g *47/26*
U.S. Cl. 198—237 **14 Claims**



1. In an egg handling system having a continuously moving delivery conveyor for feeding eggs to a discharge end thereof in a plurality of longitudinal lanes defined by longitudinally spaced rows of pockets with the egg axes oriented horizontally and extending transversely of the delivery conveyor; and a continuously moving distribution conveyor having a row of individual egg retaining pockets for receiving eggs near the discharge end of the delivery conveyor and conveying the eggs laterally therefrom in a single file line with the egg axes oriented vertically in the egg retaining pockets; wherein the improvement comprises an egg transfer mechanism including a plurality of transfer cups located adjacent the discharge end of the delivery conveyor and corresponding in number to the longitudinal egg lanes of the delivery conveyor to receive eggs therefrom in horizontal axial orientation; means mounting each of said transfer cups for movement in an orbital path which lies in a generally vertically extending plane directly adjacent to the discharge end of the delivery conveyor, said distribution conveyor being positioned in said plane directly below the lowermost positions of said orbital paths; and means for substantially simultaneously driving each transfer cup in its orbital path so as to cause the cup to dwell in an elevated horizontal position for receiving an egg, to revolve downwardly accelerating to approximately the velocity of the distribution conveyor while moving therewith in the same direction of travel, and to tilt from a horizontal position to a downwardly inclined position for transferring the egg by gravity into an individual egg retaining pocket of the distribution conveyor without damage to the egg.

3,894,632
PROTECTIVE CONTAINER

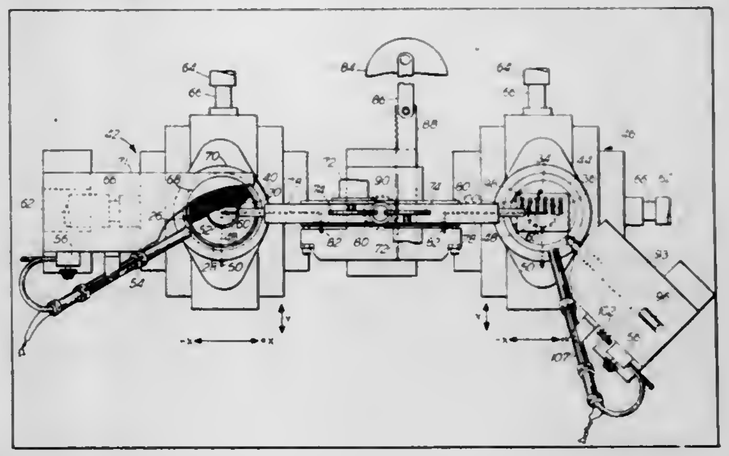
William G. Sieffert, Joliet, Ill., assignor to Hoerner Waldorf Corporation, Saint Paul, Minn.
Filed Aug. 30, 1974, Ser. No. 502,047
Int. Cl.² B65d *5/02, 85/30*
U.S. Cl. 206—424 **2 Claims**



1. In a carton blank adapted to be folded from paperboard or similar material into a book carton having protective cells at each end thereof, said carton including bottom and top panels, side panels arranged with said bottom and top panels adapted to be formed into a generally rectangular tube-like configuration, overlapping end closure flaps attached to the ends of said top panel to enclose said ends and said protective cells, the improvement therein comprising:
- a first extension panel hingedly connected to one end of said bottom panel along a first hinge line spaced inwardly from said end of said panel;
- a second extension panel hingedly connected along a second hinge parallel to said first hinge line;
- first and second side flaps hingedly connected along one side of said first and second extension panels respectively said first and second side flaps also being hingedly connected to one another, said first side flap arranged with a portion thereof inwardly of said end of said bottom panel;
- a protective cell wall flap hingedly attached along a third hinge line parallel to said first and second hinge lines; and a cell wall wing flap hingedly attached to one side of said protective cell wall flap.

3,894,633
METHOD AND APPARATUS FOR SORTING ARTICLES

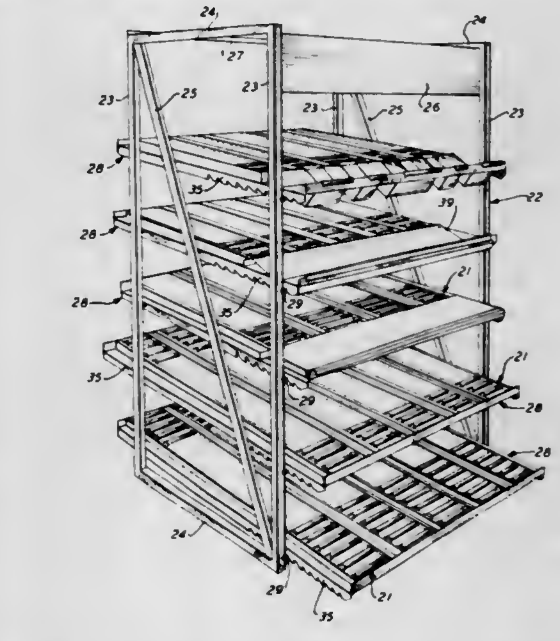
James J. Egan; Joseph S. Kerecz; Samuel Kuba, all of Allentown, and William R. Wanesky, Wescosville, all of Pa., assignors to Western Electric Company, Incorporated, New York, N.Y.
Filed Oct. 24, 1974, Ser. No. 517,698
Int. Cl.² B07C *7/00*
U.S. Cl. 209—123 **15 Claims**



1. An improved method of sorting articles, wherein a certain article is selected from an array of assorted articles mounted on a first carrier with an adhesive and then transferred to a second carrier to form an array of such articles, wherein the improvement comprises the sequential steps of:
- heating the first carrier to a first temperature to soften the adhesive;
- heating the selected article and a small adjacent area of the first carrier further to a second temperature for sufficient time to melt the adhesive, without significantly altering the adhesive composition, to release the selected article from the adhesive; and
- transferring the selected article to the second carrier to form an array of the selected articles.

3,894,634
DISPLAY AND DELIVERY STAND

Robert W. Gotham, Toms River; Robert J. McKnight, Freehold, and Frank J. Neuwirth, Manasquan, all of N.J., assignors to Unex Conveying Systems, Inc., Toms River, N.J.
Division of Ser. No. 126,006, March 19, 1971, Pat. No. 3,726,376. This application Jan. 4, 1973, Ser. No. 320,948
Int. Cl. A47f *5/12*
U.S. Cl. 211—150 **1 Claim**



1. A display and delivery stand assembly comprising a structure formed of at least four braced normally vertical imperforate angular steel members, a series of clamps infinitely verti-

cally adjustably secured to each of the generally vertical members, a series of shelves each supported on at least four of said clamps at desired elevations, one above another, inclined slightly upwardly from front to back, the fronts of said shelves defining discharge ends said shelves including side members each with a depending flange, a portion of said flanges being formed with a series of downwardly-opening notches fitting over opposing clamps allowing for pivoting of said shelves on said clamps and holding said shelves in selected positions and readily removable drop-in trays of selected angular configuration at the discharge ends of the shelves with means securing at least one of their ends in place to prevent front-to-back movement.

3,894,635
ROTARY TOWER CRANE

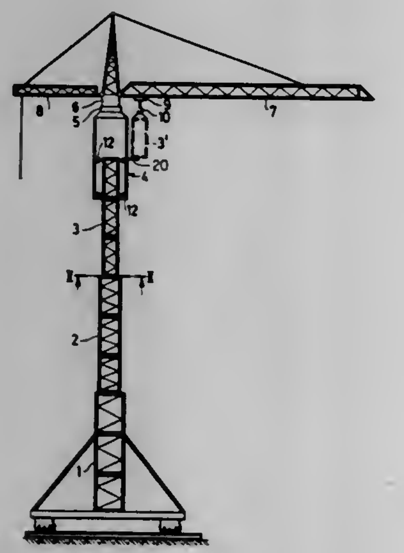
Elmar Reich, Schmelzweg, Germany, assignor to Dr. Ing. E. h. Hans Liebherr, 7950 Biberach an der Riss, Germany

Filed Oct. 26, 1973, Ser. No. 410,011

Claims priority, application Germany, Oct. 27, 1972, 2252836

Int. Cl. B66c *23/62*

U.S. Cl. 212—46 B **9 Claims**



1. A rotary tower crane comprising:
a tower;
a detachable section adapted to be added to and removed from said tower to raise and lower the height of the tower; a sleeve disposed about the tower, having a length greater than the length of said detachable section and movable along the axis of the tower to extend partially above the top of the tower;
said sleeve having means for receiving said detachable tower sections to be added and removed from said tower; guide means disposed on opposing sides of said sleeve and spaced along the length of said sleeve to position said sleeve with respect to said tower and said detachable section with respect to said sleeve to enable said detachable section to be added to and removed from said tower; and
said guide means on said sleeve include means movable transverse the length of said sleeve to enable said sleeve to operatively position said detachable section with respect to said tower when said detachable section has a transverse dimension different from the transverse dimension of said tower, and to enable said sleeve to be operatively positioned with respect to said tower when said sleeve extends over portions of said tower having different transverse dimensions.

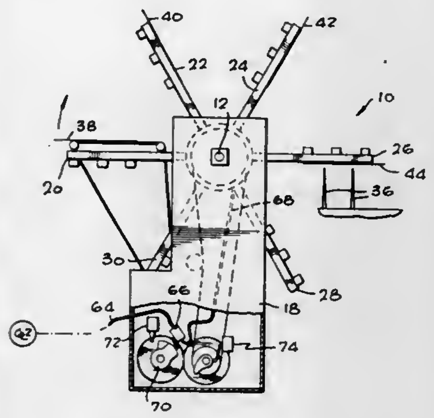
3,894,636
AIR CONTROL FOR BAG-STACKING MACHINE ARMS

Egidio L. Tonus, Castroville, Calif., assignor to Richard Lee Joice, Chatsworth, Calif.

Filed Jan. 2, 1974, Ser. No. 429,894

Int. Cl.² G65G *57/04*

U.S. Cl. 214—1 BV **7 Claims**



1. An air control for a bag-stacking
machine having a continuously rotating hub and having a bag pickup arm on said rotating hub, said bag pickup arm having bag pickup openings therein, said bag pickup openings on said arm being connected to a port on said rotating hub, a relatively stationary manifold, a manifold port connected continuously to a source of vacuum, said hub port being in alignment with said manifold vacuum port in predetermined relative angular position between said rotating hub and said manifold so that said bag pickup openings can carry bags thereon, the improvement comprising:
an air pressure port in said manifold away from said vacuum port so that, as said arm and said hub rotate and said hub port passes away from said manifold vacuum port, said hub port passes into communication with said air pressure port for the delivery of air under pressure into said arm to overcome the previous vacuum in said arm to release a bag carried upon the openings in said arm.

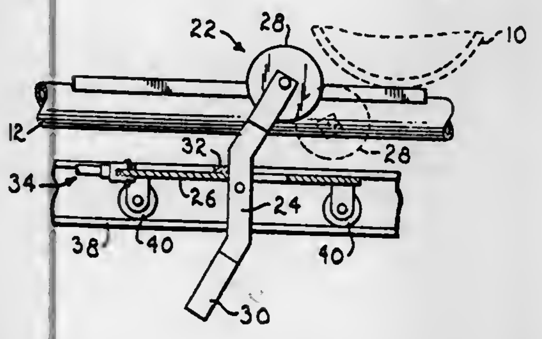
3,894,637
APPARATUS FOR HANDLING PIPE JOINTS COATED WITH MASTIC MATERIAL

Francis L. Bickham, Dickenson, Tex., assignor to H. C. Price Co., Bartlesville, Okla.

Division of Ser. No. 306,887, Nov. 15, 1972, Pat. No. 3,807,588, which is a continuation-in-part of Ser. No. 138,078, April 28, 1971, abandoned. This application Jan. 7, 1974, Ser. No. 431,079

Int. Cl. B66c *23/00*

U.S. Cl. 214—1 P **4 Claims**



1. Apparatus for moving an elongated cylindrical joint of pipe from a pipe rack, said apparatus being adapted to inpart an initial movement to the pipe subsequent to which there is no contact between the pipe and the apparatus, the latter comprising:

a freely rotatable contact wheel normally disposed in a raised position for contact with the pipe at a point beneath a horizontal bisector of the pipe;
means pivotally mounting said wheel in a plane beneath said surface and on the side of the pipe opposite to which it is desired to move the pipe;
said wheel being adapted for movement into a lowered position whereby a joint of pipe on the surface may pass over it;
return means coupled with said wheel for bringing the wheel back to its raised position after the object has passed over it;
power cylinder means coupled with said wheel for moving the wheel in the direction of a joint of pipe having passed over it to thereby inpart a rolling movement to the pipe; and
means for precluding movement of said pivotal mounting means in the direction of rotation of said rolling pipe,
whereby when the wheel contacts the pipe the latter will roll in one direction, the wheel will rotate in the opposite direction and contact between said wheel and said pipe will be broken upon cessation of movement of said power cylinder means.

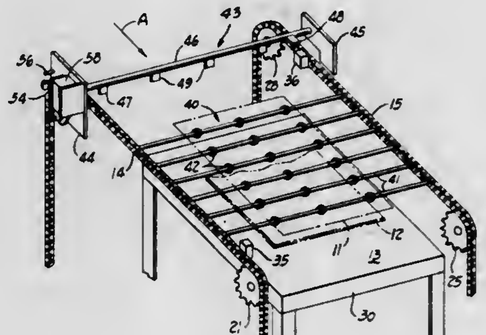
3,894,638
RECIPROCATING STACKER FOR GENERALLY LAMINAR ARTICLES

John C. Hovekamp, Mansfield, Ohio, assignor to Buckler Industries, Inc., Mansfield, Ohio

Filed Sept. 13, 1973, Ser. No. 396,993

Int. Cl. B65g *57/10*

U.S. Cl. 214—6 DK **11 Claims**



1. An apparatus for stacking laminar articles, one article at a time, in a pile, comprising a movable support means for said article supplied to said support means in a generally horizontal attitude, said support means being attached between oppositely disposed endless flexible transport means being operatively supported by a frame, said support means being extensible to, and retractable from, a position overlying a receiving surface for said article, oppositely disposed tripping means mounting on said flexible transport means in front of and behind said support means, shaft assembly means disposed near the in-feed end of said apparatus, said shaft assembly means including a trip bar with trip plate means oppositely disposed near the ends of said trip bar in selective interfering relationship with said tripping means, and stop plate means disposed intermediate said trip plate means in interfering relationship with said articles when said support means is retracted, drive means for said flexible transport means to advance and retract said support means, and toggle means cooperating with said shaft assembly means, to alternately actuate said drive means to advance said support means while transporting said article to a position overlying said receiving surface, and, to retract said support means to fallingly discharge said article.

3,894,639
STACKING OF BRICKS

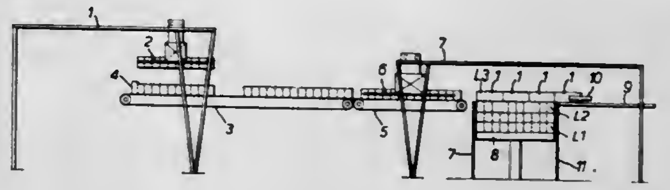
Dieter Keck, Laggenbeck, Westphalia, Germany, and Georg Pfister, Doylestown, Pa., assignors to C. Keller and Co., Westphalia, Germany

Filed Apr. 19, 1974, Ser. No. 462,516

Claims priority, application Germany, Oct. 26, 1973, 2353754

Int. Cl. B65g *57/24*

U.S. Cl. 214—6 A **4 Claims**



1. A device for forming a stack of bricks comprising a plurality of first layers of bricks, a second layer of bricks in which passages are provided to receive the arms of a fork-lift device, and a supporting layer positioned above the second layer and being displaced through 90° with respect to the second layer to support those of said first layers located above the second layer and to prevent collapse thereof into the passages, said device comprising
support means,
first gripper means, operative to deposit rectangular shaped layers of bricks on the support means,
transport means,
means for feeding the layers from the support means such that a said first or said second layer is selectively formed on the transport means,
a lowerable stacking table,
second gripper means operative to carry the layer from the transport means and to deposit the layer on the table, said second gripper means being selectively pivotal through 90° whereby a said first layer can be pivoted through 90° with respect to a preceding second layer whereby to form the supporting layer,
a depositing table downstream of the stacking table to receive at least one superfluous row of said supporting layer, whereby a plurality of superfluous rows from successive stacking operations are accumulated on said depositing table and are used to form a supporting layer for use in a subsequent stacking operation.

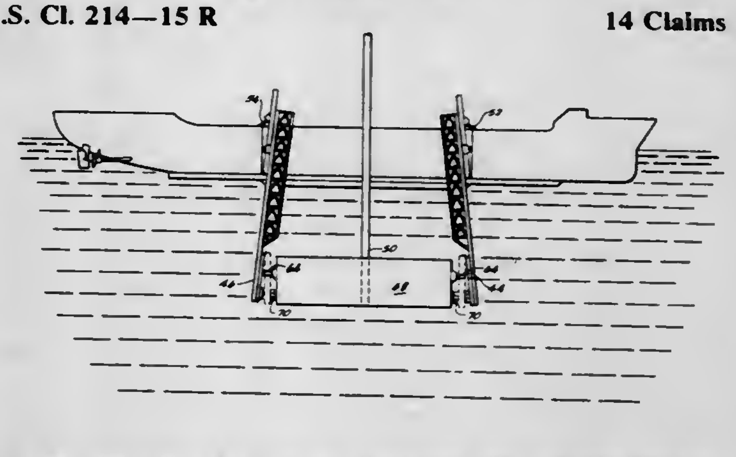
3,894,640
APPARATUS FOR RAISING AND LOWERING LARGE OBJECTS FROM A SURFACE SHIP

R. Curtis Crooke, Corona Del Mar; John R. Graham, Newport Beach, and James F. McNary, Pacific Palisades, all of Calif., assignors to Global Marine, Inc., Los Angeles, Calif.

Filed June 13, 1974, Ser. No. 479,095

Int. Cl. B63b *35/40*

U.S. Cl. 214—15 R **14 Claims**

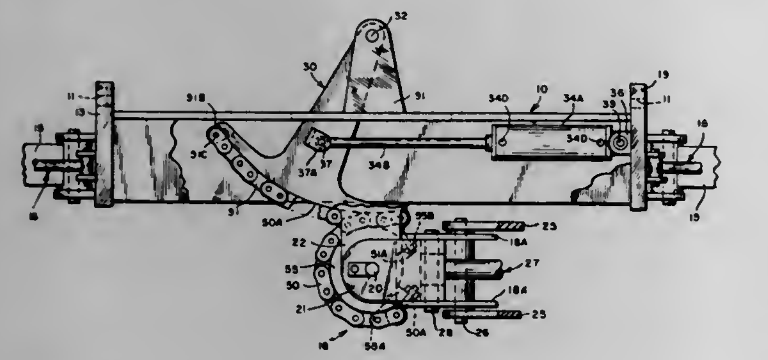


1. An apparatus for raising, lowering, and stowing subsurface mining equipment relative to a floating surface vessel comprising

- a pair of docking legs, each one located at a respective one of opposed sides of a docking well said docking well being located internally of the hull of the vessel and opening through the bottom thereof;
- guide means located at each of said sides of the well for supporting the legs;
- first drive means operatively engaged with each guide means and its associated docking leg for raising and lowering the leg;
- second drive means operatively engaged with each docking leg for tilting the leg in a vertical plane; and
- mining equipment engaging means located at the lower extremity of each docking leg.

3,894,641
SWING MECHANISM FOR EARTH-MOVING APPARATUS

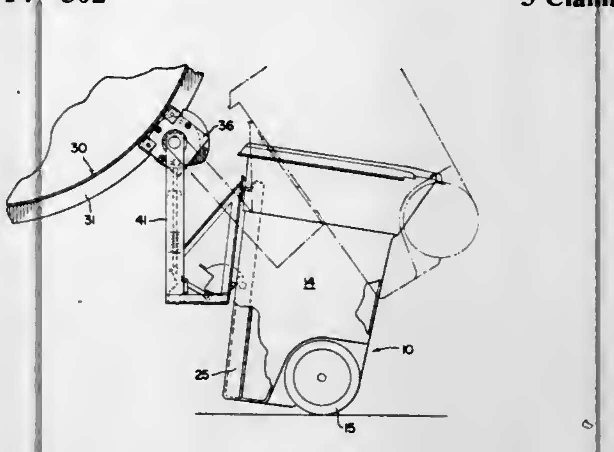
John S. Pilch, Ware, Mass., assignor to Ware Machine Service, Inc., Ware, Mass.
Filed Apr. 11, 1974, Ser. No. 460,219
Int. Cl.² B66F *9/14*
U.S. Cl. 214—132 15 Claims



1. In swing mechanism for an earth-moving apparatus comprising,
- a main frame adapted to be carried by a vehicle,
- swing frame means, and
- first substantially vertical pivot means connecting said main frame and said swing frame means for substantially horizontal movement of said swing frame means relative to said main frame about said substantially vertical pivot means,
- the improvement comprising,
- a pair of elongate flexible means,
- means for carrying said pair of elongate flexible means,
- second substantially vertical pivot means connecting one point of said carrying means with said main frame for substantially horizontal pivotal movement of the carrying means relative to said main frame, said carrying means having an arcuate peripheral portion on one end,
- a single ram-type hydraulic motor means having one end mounted for pivotal movement on the main frame and its other end mounted for pivotal movement on said carrying means at a locality spaced from said second substantially vertical pivot means and said swing frame means,
- one end of each of said pair of flexible means being attached to said swing frame means, the other end of the first of said elongate flexible means being attached to a locality of said arcuate peripheral portion of said carrying means and the other end of the second of said elongate flexible means being attached to a locality of said arcuate peripheral portion of said carrying means which is spaced from the locality where said one end of said first elongate flexible means is attached,
- boom means having one end pivotally attached to said swing frame means permitting movement of said boom in a substantially vertical plane,
- said first substantially vertical pivot means being located at a forward portion of said main frame and said second substantially vertical pivot means being located at a rearward portion of said main frame, and
- said pair of elongate flexible means crossing each other when the mechanism is viewed from the top,
- whereby pivotal movement of said means for carrying about said second substantially vertical pivot means by said hydraulic motor means causes said swing frame means to swing about said first substantially vertical pivot means.

3,894,642
WASTE RECEPTACLE DUMPING MECHANISM

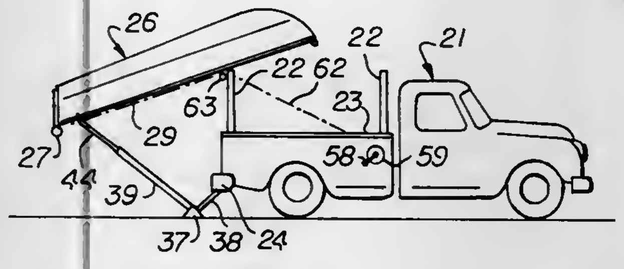
Howard J. Shive, Statesville, N.C., assignor to Rubbermaid Industrial Products Corporation, Statesville, N.C.
Filed Apr. 26, 1974, Ser. No. 464,319
Int. Cl. B65f *3/02*
U.S. Cl. 214—302 3 Claims



1. Dumping mechanism for lifting and dumping a waste receptacle comprising a frame rotatably mounted on a waste collector, a cam fixedly mounted on said waste collector, an upper saddle mounted on said frame, a downwardly facing hook pivotally mounted on said frame below said saddle, means to rotate said frame to lift and tilt a waste receptacle supported thereon by engagement with said saddle, and means on the frame actuated by said cam as the frame rotates to positively pivot the hook downwardly to engage it with an abutment on said waste receptacle, said cam delaying action on the means to positively pivot the hook until after the initial rotation of the frame to lift a waste receptacle supported thereon.

3,894,643
LOADING HOIST FOR BOATS

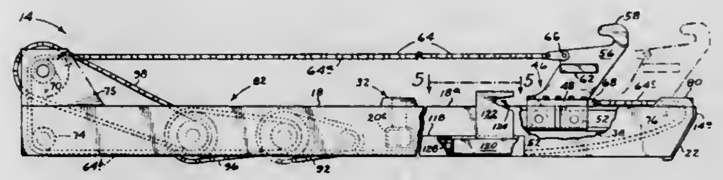
Archie P. Wilson, 1460 Alameda de Los Pulgas, San Mateo, Calif. 94402
Filed June 21, 1974, Ser. No. 481,482
Int. Cl. B60r *9/00*
U.S. Cl. 214—450 5 Claims



1. A hoist for raising a boat from the ground to the top of a vehicle comprising a hoist frame, said hoist frame comprising on each side of said frame a foot resting on the ground, means for securing said feet to a vehicle, a pair of lower telescopic members, means pivotally connecting the lower end of said lower telescopic members to said feet about a transverse horizontal pivot, bracing means to hold said lower telescopic members parallel to each other, an upper telescopic member slidable in the upper end of each of said lower telescopic members, and clamp means on the upper end of each of said upper telescopic members to clamp said hoist frame to the gunwale of a boat; and lifting means for hoisting a boat fixed to said hoist frame with said hoist frame initially extended and resting on the ground and the boat inverted and overlying said hoist frame with said clamp means secured to opposite sides adjacent the stern of the boat, said lifting means including a rope, a pulley-like member at the rear of the top of the vehicle over which said rope runs and thence down to the ground, under the prow of the boat and said rope is attached to said boat at its stern.

3,894,644
TRUCK-MOUNTED LOADER

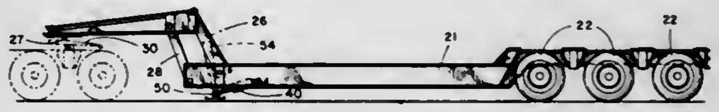
Harold G. Alexander, Rt. 3, Box 3468, Troutdale, Oreg. 97060
Filed Dec. 26, 1973, Ser. No. 428,338
Int. Cl. B60p *1/78*
U.S. Cl. 214—505 7 Claims



1. In the combination of a truck and detachable drop-box container, wherein the truck includes an elongate tiltable container-carrying frame,
- a laterally spaced pair of frame members extending substantially the length of the frame, each including an elongate skid surface which, together with the other member's skid surface, forms an elongate skidway for receiving and supporting the container,
- an elongate track disposed centrally of said frame members and extending substantially the length of the frame,
- a carriage mounted for movement on said track,
- first drive coupler means mounted on said carriage,
- power-operated, reversable chain drive means operatively connected to the carriage for moving it either forward or rearward on the track, said means being operable to shift the carriage from adjacent one end of the track to the other in an uninterrupted movement,
- a pair of shock-absorbing snubbers, each secured adjacent a different one of said frame members and disposed laterally outwardly of the frame, said snubbers each including a catch configured to engage a bottom portion of the container as the container is moved along said frame toward said carrying position, and spring means mounting the catch whereby the same is biased toward the rear of the frame, but yieldable toward the front of the frame upon engagement with said bottom portion,
- a pair of laterally spaced elongate skid bodies disposed along the bottom of the container, said bodies being engageable with and slidable along said skidway during movement of the container along the frame toward and away from a carrying position adjacent the forward end of the frame,
- second drive coupler means mounted on the container and drivingly engageable with said first drive coupler means, and
- means mounted on the container for engaging said snubbers as the container is moved forward along said frame toward said carrying position.

3,894,645
FOLDING GOOSENECK TRAILER

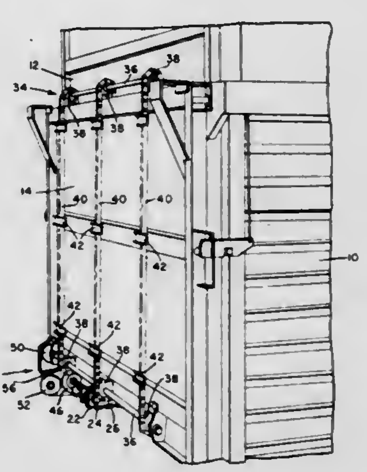
Richard Verschage, Cedar Rapids, Iowa, assignor to Transport Trailers, Inc., Cedar Rapids, Iowa
Filed July 26, 1974, Ser. No. 492,241
Int. Cl. B60p *1/04*
U.S. Cl. 214—506 14 Claims



1. A folding gooseneck trailer comprising:
- a. a main bed supported on a plurality of wheels at one end;
- b. extensible lifting means for raising and lowering the other end of said main bed;
- c. a loading bed;
- d. pivotable links connecting said loading bed to said other end of said main bed to permit folding and unfolding of said loading bed relative to said main bed; and
- e. extensible means for pivoting links to fold and unfold said loading bed, said pivoting means being interconnected to said lifting means thereby to act as stationary bracing elements during operation of said lifting means.

3,894,646
REAR DOOR POWER CONVEYOR

Glenn Dale Head, Des Moines; William Robert Wood, Ankeny, and John Richard Myers, Polk City, all of Iowa, assignors to Deere & Company, Moline, Ill.
Filed Aug. 23, 1974, Ser. No. 500,084
Int. Cl. B60p *1/38*
U.S. Cl. 214—522 9 Claims



1. In a crop harvesting machine comprising: a mobile frame; a crop container carried by the mobile frame and including a rear opening; at least one rear door to the crop container for movement into and out of closing relationship with the crop container; a power-driven floor conveyor in the crop container for moving crop material rearwardly through the rear opening; a conveyor mounted on the rear door for moving crop material rearwardly from the crop container through the rear opening when the rear door is moved out of closing relationship with the crop container; and a crop discharge conveyor engaging means for engaging the floor conveyor with the rear door conveyor whereby the rear door conveyor is operated by the power driven floor conveyor in response to movement of the rear door out of closing relationship with the crop container.

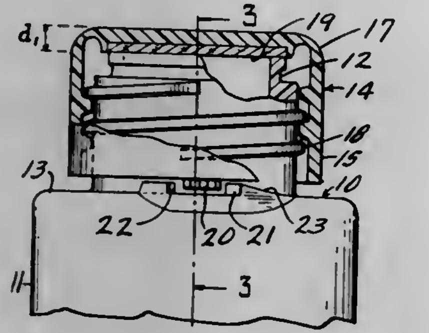
3,894,647
CHILD-RESISTANT CLOSURE

Gary Van Montgomery, Evansville, Ind., assignor to Sunbeam Plastics Corporation, Evansville, Ind.

Filed Sept. 28, 1973, Ser. No. 401,838

Int. Cl. B65d *55/02*

U.S. Cl. 215—9 **2 Claims**



1. A substantially leak-proof and child-resistant closure combination, said combination comprising

- a. a container having a tubular neck, a hollow body and a generally inwardly extending shoulder between the upper portion of said body and the base of said neck,
- b. a one-piece cap for said container, said cap having a tubular skirt, a disc-like top and a resilient annular shoulder portion means connecting said skirt and said top,
- c. a disc-like liner beneath said cap top and engageable with the end of said container neck for sealing said neck,
- d. means comprising mating threads on said neck and said cap skirt for retaining said cap on said neck,
- e. and cooperating locking means on said cap skirt and said container shoulder engageable when said cap is rotated to normal closed position relative to said neck and for preventing rotation beyond normal closed position
- f. said shoulder portion means being stretchable for downward movement of said tubular skirt for compensating for tolerance variations in said threads, and between said threads and said locking means.

3,894,648
MULTIPURPOSE DROPPING CONTAINER

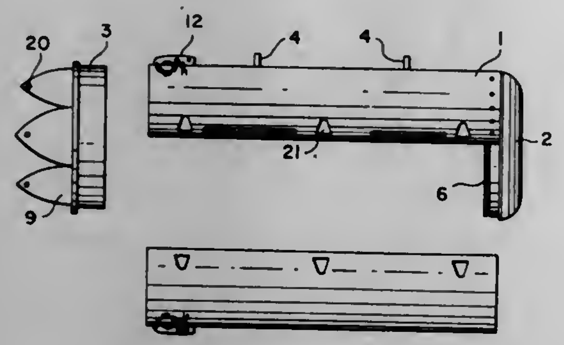
Georges Croullebois, Paris, France, assignor to Etat Francais, France

Filed Nov. 20, 1973, Ser. No. 417,619

Claims priority, application France, Nov. 23, 1972, 72.41586

Int. Cl. B65d *7/32*

U.S. Cl. 220—4 F **1 Claim**



1. A recoverable container for dropping of equipment from an aircraft or ship, comprising a body made of rigid material comprised of two half shells assembled by removable fastening means, a bottom solid with one of said half shells and a hollow cover engaging hermetically inside of said body and connected by connecting means to at least one of said half shells, said connecting means comprising two pins each placed in an orifice extending through the side wall of each of said half shells and said side wall of said cover, each solid with a fork articulated around a shaft going respectively through the end of each pin, the ends of the two arms of each fork being both placed under a stirrup solid with the corresponding half shell and each of the handles of each of said forks being held between the cheeks of a yoke, which is also solid with the corresponding half shell, by a safety pin provided with a pull chain one of whose ends is fastened to the end of said handle and the other end to a U link solid with said corresponding half shell, at least one of said half shells being provided with an opening closed by a plug.

3,894,649
TRAY

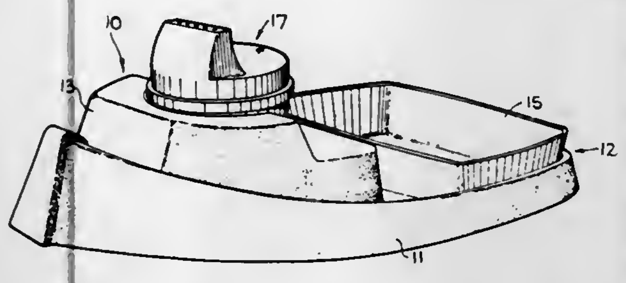
Craig Gordon Nicholl, The Grange, Elmbridge, Droitwich, England

Filed Jan. 10, 1974, Ser. No. 432,410

Claims priority, application United Kingdom, Jan. 18, 1973, 2694/73

Int. Cl. B65d *1/36;* **A47g** *19/00*

U.S. Cl. 220—20 **6 Claims**



1. A tray comprising a base having dimensions in plan such as to enable the tray to stand stably on a surface, and a superstructure, the base and superstructure together being shaped to form or simulate an object having entertainment value to a child, said tray having horizontally spaced open top recesses, one of said recesses being of relatively wide and shallow dimensions and adapted to receive solid food or a receptacle therefor, and another of said recesses being relatively narrow and adapted to receive and provide stable support for a drinking cup, the actual or simulated object being of a character such that it is shaped normally to provide the relatively wide and shallow recess in consequence of its functional character, and the drinking cup simulates a known feature of the object.

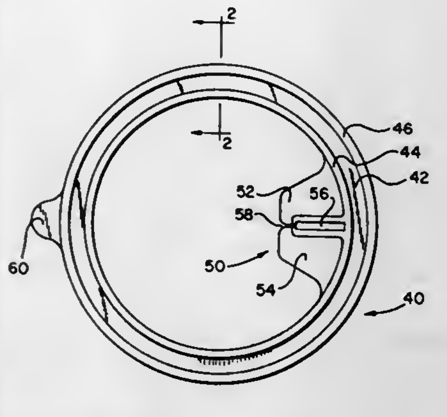
3,894,650
ATTACHMENT FOR GROOVED-RIMMED CONTAINERS

Louis A. Crump, 23 Emerson St., Natick, Mass. 01760

Filed Jan. 15, 1973, Ser. No. 323,753

Int. Cl. B65d *25/00*

U.S. Cl. 220—90 **4 Claims**



1. An attachment capable of being attached to a container having a rim which is formed into a channel, the ends of said channel having at least one bead, said attachment comprising, a flexible resilient integrally-formed annular ring,

at least one annular groove formed in said annular ring adapted to mate with said bead, and;

means integrally-formed with said annular ring for frictionally engaging a conventional stirring stick to be used with said container and comprising a projecting member which includes two projecting parts having a slot formed therebetween for squeegeeing said stick when drawn through said slot, wherein the ends of said two projecting parts remote from said annular ring are spaced to form a slit, said slit being connected to said slot and being adapted to receive said stick to facilitate the insertion of said stick in said slot.

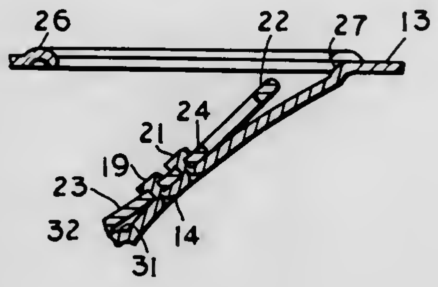
3,894,651
NON-REMOVABLE OPENER

Charles N. Hannon, 27 Sargent Rd., Scarsdale, N.Y. 10583

Continuation-in-part of Ser. No. 324,577, Jan. 18, 1973, abandoned. This application Oct. 18, 1973, Ser. No. 407,480

Int. Cl. B65d *41/32*

U.S. Cl. 220—269 **38 Claims**



1. A metal can cover comprising:

- A. a scored line forming an almost-closed curve in said cover near the perimeter thereof and defining a flap;
- B. a substantially rigid opener comprising:
  - 1. a pressure end; and
  - 2. a handle end; and
- C. means integral with said flap engaging and retaining said opener in an area of said opener removed from said pressure end, whereby upward pressure on said handle end causes said pressure end down to break said secored metal and pivot said flap into said can, said scored line extending on both sides of said opener for at least substantially the full length of said opener.

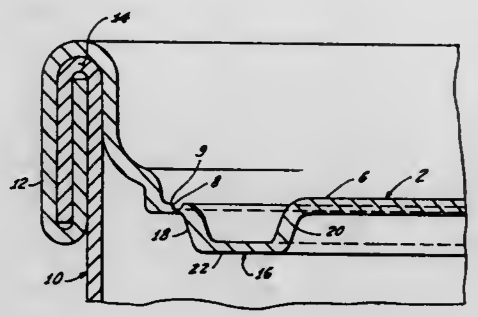
3,894,652
EASY-OPEN CAN END CONSTRUCTION

Omar L. Brown, Kettering, Ohio, assignor to Ermal C. Fraze, Dayton, Ohio

Filed Mar. 21, 1972, Ser. No. 236,654

Int. Cl. B65d *41/32*

U.S. Cl. 220—270 **9 Claims**



1. In an easy-open can end having a tear portion circumscribed by a line of weakness and a pull tab connected to said tear portion, the improvement comprising:

- a rib projecting from the inside surface of said tear portion; said rib having an upstanding sidewall positioned in contiguous relation to said line of weakness; and
- the shape of said sidewall providing shielding of said line of weakness,

whereby the edge of said tear portion is shielded by said sidewall when said tear portion is removed from said can end by severing along said line of weakness.

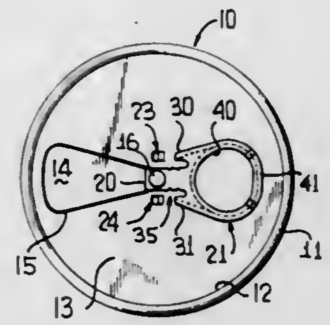
3,894,653
CHILD RESISTANT EASY OPENING END UNIT

Obert M. Ostrem, Westmont, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed June 14, 1974, Ser. No. 479,414

Int. Cl. B65d *41/32*

U.S. Cl. 220—273 **15 Claims**



1. An easy opening end unit of the type including an end panel having a line of weakness defining a tear panel at least partially removable from said end panel, a pull tab including a pair of legs and a web therebetween, means joining said web to said tear panel, means on opposite sides of said web aligned for abutment with said legs, and means of said web for effecting the bending thereof upon the application of force to said pull tab such that said legs engage said abutment means for applying a rupturing force to said line of weakness and thus the subsequent at least partial removal of said tear panel from said end panel.

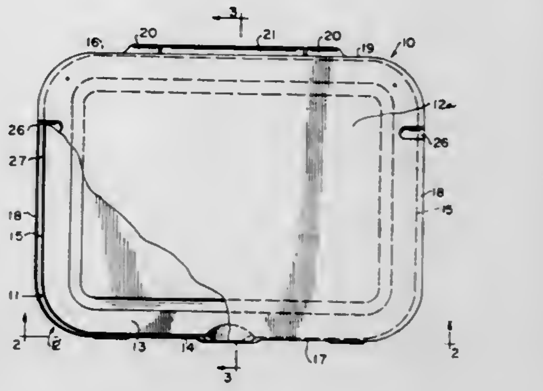
3,894,654
CHILDPROOF ASPIRIN CONTAINER

Henry E. Frankenberg, Boca Raton, Fla., assignor to Continental Can Company, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 264,115, June 19, 1972, abandoned. This application May 24, 1974, Ser. No. 473,101

Int. Cl. B65d *43/16*

U.S. Cl. 220—283 **15 Claims**



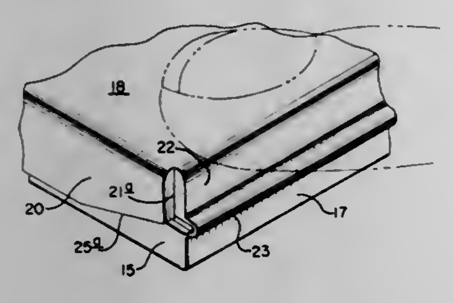
1. A pill box comprising a tray including a base having peripheral upstanding side walls, front and rear walls which terminate in edges substantially parallel to said base, a lid including a top having downwardly depending sides, front and rear walls disposed thereabout and nestingly receiving said upstanding walls of said tray, co-acting frictional latch means on said front wall of said tray and said front walls of said lid, detent means of shallow concave contour on said top along each of said edges and in engagement with the respective edges of each of said side walls of said tray to provide fulcrums about which said lid rocks, said detent means being of a height and located so that pressure forces must be simultaneously

exerted at each of the rear corners of said lid to create a force capable of releasing said frictional latch means.

3,894,655
PLASTIC CONTAINER

Harley H. Mattheis, Verona, N.J., and Edward J. Potter, Geneva on the Lake, Ohio, assignors to Ethyl Development Corporation, Kansas City, Mo.

Filed June 6, 1974, Ser. No. 476,790
Int. Cl. B65d *43/16*
U.S. Cl. 220—283 **9 Claims**



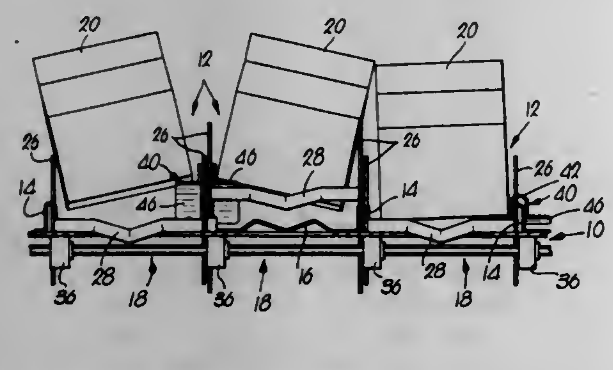
1. In an integrally formed, one-piece plastic container, the combination comprising:

a. a generally rectangular bottom section having a planar bottom wall, two opposed, upturned sidewalls, an upturned back wall, and an upturned front wall, all of which are integrally formed and connected to each other;
b. a generally rectangular top section having a planar top wall, two opposed, downturned sidewalls, and a downturned front wall, all of which are integrally formed and connected to each other, and a downturned back wall integrally formed and connected to said top wall and to the rearmost edges of said downturned sidewalls, said connection of said downturned back wall and said downturned side walls being made by a fracturable web at each point of connection;
c. integrally formed hinge means connecting said back wall of said top section to said back wall of said bottom section; and
d. said top section adapted to overlie said bottom section and to be frictionally engaged therewith when said container is in the closed position.

3,894,656
INCLINED SHELF VENDING APPARATUS HAVING PRODUCT JOSTLING STRUCTURE

Charley Ward Hunter, Raytown, Mo., assignor to The Vendo Company, Kansas City, Mo.

Filed May 28, 1974, Ser. No. 473,694
Int. Cl. B65h *3/62*
U.S. Cl. 221—200 **7 Claims**



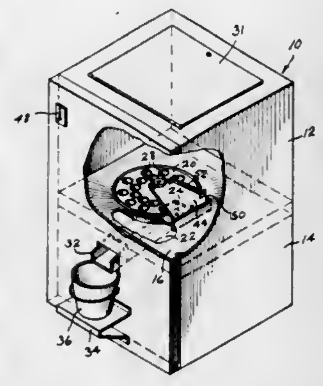
1. In product dispensing apparatus:

an inclined shelf including means defining at least one elongated, downwardly sloping channel for receiving a series of products to be dispensed,
said channel having a lowermost discharge end from which said products are successively released,
said channel-defining means including a pair of laterally spaced-apart sidewalls;
dispensing mechanism adjacent said discharge end operable to release the leading product from said channel during each actuation of said mechanism while retaining the succeeding products in the series against accidental release; and
structure operably coupled with said mechanism for jostling said succeeding products during actuation of said mechanism to prevent lodgment of products within said channel,
said structure being elongated and transversely U-shaped having an inverted bight portion looped over one of said sidewalls and a lifting portion projecting laterally from said bight portion into position for underlying products in the channel,
said mechanism being coupled with said structure for momentarily raising the structure during actuation of the mechanism.

3,894,657
BALL DISPENSING DEVICE

Roland L. Eckmayr, 1231 Woodfield Ave., South Bend, Ind. 46615

Filed Sept. 4, 1973, Ser. No. 394,144
Int. Cl.² G07F *11/24*
U.S. Cl. 221—265 **3 Claims**

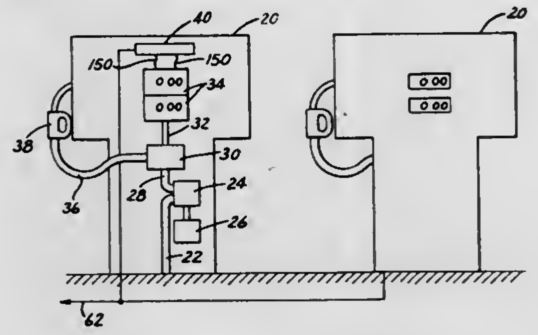


1. A ball dispenser comprising a hopper having sloping walls terminating in a circular lower opening, said hopper adapted to receive a plurality of balls, a circular turntable fitting within said lower opening, a lower horizontal wall located adjacently below said table and under said lower opening, said lower wall having a discharge opening therein, means connecting said discharge opening to a depository through which balls in passing through the discharge opening from said hopper are guided to the depository, means for rotating said table about a vertical axis within said lower opening, said table having a plurality of upright cylindrical openings formed therein, each cylindrical opening having a diametrical dimension sufficient to accommodate a single ball only with clearance and being positionable over and in alignment with said discharge opening during rotation of said table, a rigid cover plate mounted adjacently above said table and overlying said discharge opening, said cover plate covering at all times a part of said table and those cylindrical openings in said table part, the remainder of said openings in said table not covered by said cover plate being exposed within said hopper to receive said balls, said cover plate having a leading edge located adjacent one side of said discharge opening and under which the cylindrical openings in said table pass during rotation of the table, means for actuating said table rotating means to cause the cylindrical openings in said table to pass first under said cover plate leading edge and then over said discharge opening whereby the balls carried within said openings will fall individually through said discharge opening, flexible deflector means mounted adjacently ahead of said cover plate leading edge and over said table for contacting those balls carried upon said table to cause said carried balls to be deflected away from said cover plate leading edge as said table is rotated wherein said deflector means is carried by said cover plate and extends along the leading edge thereof and said deflector means is a helical spring, said spring generally paralleling said leading edge.

3,894,658
DISPENSING CONTROL SYSTEM FOR FLUIDS

John A. Buell, Jr., Solana Beach, Calif., assignor to General Atomic Company, San Diego, Calif.

Filed June 20, 1974, Ser. No. 481,107
Int. Cl. G07f *13/00*
U.S. Cl. 222—26 **30 Claims**



20. A system for providing a remote indication of data relating to the dispensing of fluid from one or more dispensers of a service station or the like, comprising:

dispenser control means associated with each of the dispensers, console control means associated with each of the dispenser control means, and central control means, all of said control means transmitting and receiving electrical signals, including the data relating to the dispensed fluid, the signals between said dispenser control means and said central control means being adapted to be transmitted over electrical conductors between said dispensers and a remote location;
said central control means including means for sequentially interrogating individual dispenser control means associated with each dispenser to gather the data related to the fluid being dispensed, said central control means selectively transmitting identification code signals to all of said dispenser control means, each of said dispenser control means individually transmitting the data to said central control means responsive to receiving an identification code signal that matches an internally generated precoded signal within the dispenser control means;
said console control means receiving said data from the central control means together with an identification code signal corresponding to the identification signal associated with the dispenser control means from which the data originated, each of said console control means providing a visual display of said data.

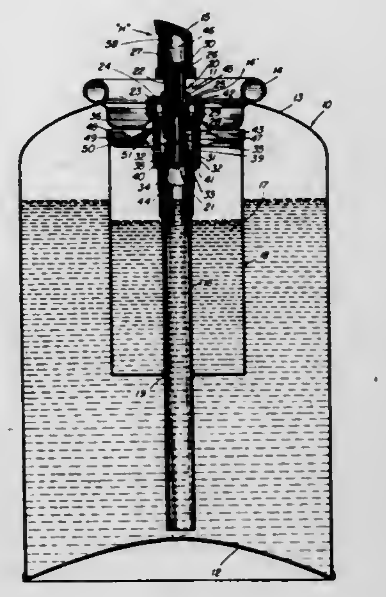
3,894,659
DISPENSER SYSTEM FOR SIMULTANEOUS DISPENSING OF SEPARATELY STORED FLUIDS

John Richard Focht, Yonkers, N.Y., assignor to Precision Valve Corporation, Yonkers, N.Y.

Continuation of Ser. No. 767,653, Oct. 15, 1968, abandoned. This application Jan. 18, 1971, Ser. No. 107,479
Int. Cl. B65d *35/22, 35/28*
U.S. Cl. 222—94 **1 Claim**

1. A dispensing system for simultaneously dispensing separately stored fluids including:

a. a primary container having a top opening and being suitable for storing a first fluid under superatmospheric dispensing pressure;
b. a head structure for closing the top opening in the primary container including a valve assembly having a single stem portion extending through the top opening in the primary container and having primary and secondary valves for controlling flow from primary and secondary containers, respectively, through the valve stem, the valve assembly having separate flow passages extending from the downstream side of each valve longitudinally through the valve stem to the exterior of the primary container;
c. a flexible secondary container disposed within said primary container for storing a second fluid and supported within said primary container by the valve assembly; and
d. a conduit connected at one end to the valve assembly and extending through the flexible secondary container into the primary container, said conduit being in sealed relation with the flexible container at the point where it passes through said container,



the valve assembly comprising a valve housing, a movable member having primary and secondary valve bodies and the valve stem, and resilient sealing gaskets for establishing sealing engagement with the valve bodies, the movable member having separate flow passages extending from the region of sealing engagement of the valve bodies through the valve stem,
the movable member being of separate upper and lower portions, said upper portion having the secondary valve body and a stem extending through a top opening in the primary container and further having a socket in its bottom for receiving the lower portion of the movable member, said lower portion having the primary valve body, and a passage extending through both the upper and lower portions which passage communicates with the primary container through the primary valve body and conduit.

3,894,660
CALIBRATED LIVESTOCK FEEDER

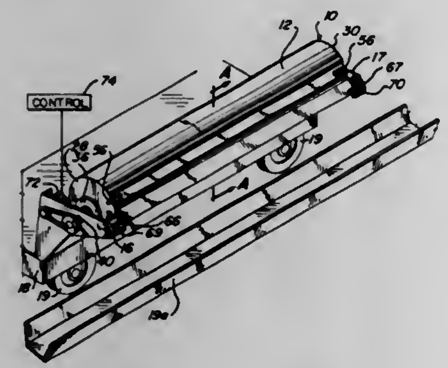
Howard N. Snyder, P.O. Box 42, Pilger, Nebr. 68768

Filed Nov. 13, 1974, Ser. No. 523,437
Int. Cl.² B67D *5/64*
U.S. Cl. 222—170 **12 Claims**

1. A livestock feeder comprising:

a drum having a circumferentially incomplete rigid cylindrical wall and space-opposed rigid end plates affixed across and closing opposite ends of said cylindrical wall, said wall spanning a substantial majority of the circumference of said drum while defining a generally rectangular opening in the remainder of said circumference;
a pair of rigid end frames individually disposed at respective opposite ends of said drum;
means carried by said end frames for supporting said drum to revolve about its longitudinal centerline;

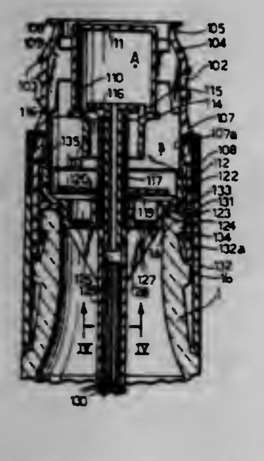
a generally rectangular shelf affixed to and projecting from one longitudinal side of said opening part way into the interior of said drum;
a generally rectangular flap of a length and width sufficient to close said opening and complete said cylindrical wall, said flap being hingedly mounted on the other longitudinal side of said opening to swing outwardly from said drum;
means for rotating said drum about said centerline and in a direction such that said one side of said opening lags the other;



means for resiliently urging said flap into a position closing said opening with a force sufficient to effect such closure of said opening, against the weight of feed contained in said drum, when said opening is on the underside of said drum during rotation thereof;
and cam means carried by at least one of said end frames and effectively disposed in the path of a portion of said flap in a position to cause the latter to swing outwardly from said drum during a limited portion of each one revolution of said drum beginning after the point at which said shelf first slants downwardly toward said opening during rotation of said drum and ending at least by the point at which said shelf then comes into a horizontal position.

3,894,661
LIQUID MEASURING AND DISPENSING BOTTLE CLOSURE DEVICE

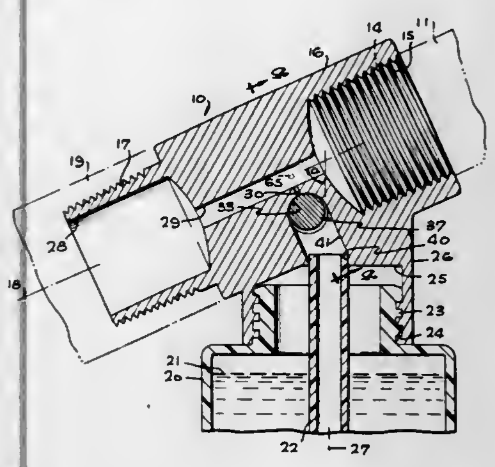
Piergiacomo Guala, Alessandria, Italy, assignor to Angelo Guala S.p.A., Alessandria, Italy
Filed Mar. 22, 1974, Ser. No. 453,906
Claims priority, application Italy, Mar. 27, 1973, 67874/73
Int. Cl. B67d *3/18*
U.S. Cl. 222—188 **11 Claims**



1. In a metering pourer for attachment to the neck of a bottle, of the type comprising:
a substantially cylindrical hollow body engageable on the mouth of a bottle,
a metering control chamber disposed coaxially within the said hollow body and forming therewith an annular pouring passage for the liquid,
an air inlet tube having an air inlet end and an air outlet end, said air inlet end of said air inlet tube being disposed within said metering control chamber, said air outlet end of said tube communicating, when said hollow body is engaged on the neck of a bottle, with the interior of the bottle,
means defining, with said air inlet tube, an annular passage permitting the entry of liquid from the bottle into said metering control chamber when the bottle is tilted for pouring, the flow of air into the bottle through said air inlet tube permitting liquid to flow out therefrom until the level of liquid in said metering control chamber rises to cover said air inlet end of said air inlet tube,
the improvement wherein;
there is a diaphragm separating said annular pouring passage between the inside of said hollow body and the outside of said metering control chamber from the interior of the bottle,
a plurality of openings in said diaphragm permitting liquid to flow therethrough from the interior of said bottle to said annular pouring passage, the dimensions of said openings being such that when wetted by the liquid a film of said liquid forms across each opening due to the surface tension of said liquid, thereby preventing air from traversing said diaphragm whilst the bottle is tilted.

3,894,662
DISPENSER FOR MIXING FLUIDS

Francis Tozer Eddy, 31652 W. Nine Dr., Laguna Niguel, Calif. 92677, and Arthur Harold Hanke, 1332 Fourth Ave., Arcadia, Calif. 91006
Filed Feb. 4, 1974, Ser. No. 439,392
Int. Cl. B67d *5/24*
U.S. Cl. 222—193 **11 Claims**

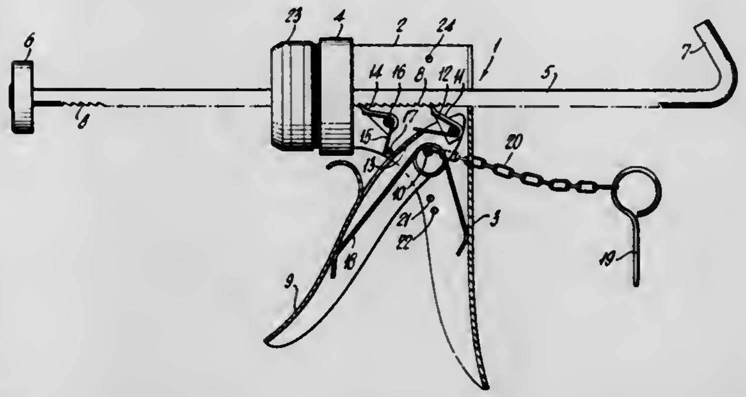


1. A dispenser for mixing an additive liquid into a primary fluid, comprising:
a body structure containing a main passage through which a stream of said primary fluid flows;
means for attaching to said body structure a container of said additive liquid;
said body structure containing a valve chamber offset from but near said main passage and through which said liquid flows in passing from the container to said main passage; said valve chamber having a wall of essentially circular cross-section centered about an axis; and
a rotary valve element in said chamber mounted to turn about said axis;
said body structure containing a restricted second passage extending from said valve chamber to said main passage and communicating with said valve chamber through a first opening in said circular wall of the chamber;
said body structure containing a third passage through which liquid flows from said container to said valve element and communicating with the valve chamber through a second opening in said circular wall;

said second opening having an area several times as great as that of said first opening to offer relatively little restriction to flow of said additive liquid into said valve chamber;
said valve element having a radially outer surface of essentially circular cross-section adjacent said circular wall of said valve chamber and containing a metering groove facing radially outwardly toward said wall of the valve chamber for communication with said openings to pass liquid from said third passage to said second passage for delivery therethrough into said main passage;
said groove being of a circular length great enough to extend between and communicate simultaneously with both of said openings, to deliver liquid therebetween, and having an effective cross-section which increases progressively as the groove advances circularly about the outer surface of the valve element, to thereby progressively increase the rate of liquid delivery to said main passage upon rotation of the valve element in said chamber.

3,894,663
MULTIPLE DOSE PASTE DISPENSER

George R. Carhart, New Brunswick, and Robert J. Nessel, Edison, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.
Continuation-in-part of Ser. No. 279,599, Aug. 10, 1972, abandoned. This application Mar. 20, 1973, Ser. No. 341,665
Int. Cl. G01f *11/00*
U.S. Cl. 222—309 **2 Claims**

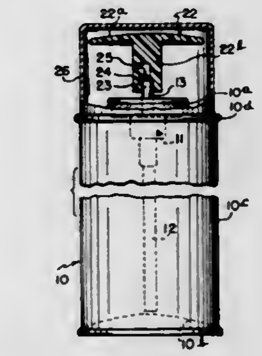


1. A multiple dose paste dispensing gun comprising a frame having a handle affixed thereto, a piston rod having a piston on the front end thereof, means in said frame for guiding said piston rod for longitudinal movement thereon, a clamp on said frame for securing cartridges to extend therefrom in longitudinal alignment with said piston rod, a trigger, pivot means pivoting said trigger in said frame to be squeezed into said handle, rachet means above said pivot means and interconnected between said trigger and said piston rod to advance the rod and piston into a cartridge as said trigger is squeezed into said handle, said handle being formed with a plurality of openings below said pivot means at locations successively encountered by an edge of said trigger as said trigger enters into said handle during squeezing thereof and a stop pin removeably fitted into one of said openings to engage said trigger edge upon a given squeezing movement of said trigger whereby the distance the trigger may be moved from a fully extended condition is easily and accurately controlled to provide accurate dispensing of various paste dosages from said cartridge.

3,894,664
PRESSURE DISPENSER ATTACHMENT

Edwin J. Haas, 18706 Bernice Ave., Cleveland, Ohio 44135
Filed Sept. 4, 1973, Ser. No. 393,747
Int. Cl. B65d *83/14*
U.S. Cl. 222—402.21 **5 Claims**

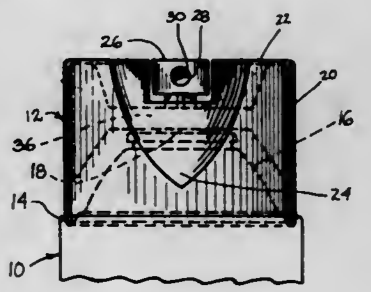
1. An aerosol dispenser attachment for use with a cylindrical pressurized tubular can having a top and a bottom and an elongated body connected between them in an air-tight manner and with a control valve structure in said can fixed below the top of said can and having a liquid inlet tube extending therefrom to a zone adjacent the bottom of said can and having a liquid outlet tube of predetermined diameter extending axially of said can in an air-tight manner through the top of said can, said outlet tube having an operative connection with said control valve structure such that pressure on said outlet tube in any radial direction releases pressurized liquid from said can through said valve and outlet tube; the combination therewith of a unitary attachment comprising a circular disk of lesser diameter than said tubular can and a downwardly extending cylindrical projection concentric with said



disk, there being a larger bore in and concentric with said projection and opening downwardly and of a diameter snugly fitting said outlet tube, said larger bore being of less length than the axial dimension of said projection, and a smaller bore in and concentric with said projection and communicating with the upper end of said larger bore, said smaller bore then turning radially outwardly to a discharge point at the periphery of said projection, said disk being wholly supported by said projection and said bore fitting on said outlet tube, and the diameter of said disk and the distance of said discharge point below said disk being so arranged that said disk limits the upward spray of liquid leaving said discharge point.

3,894,665
SAFETY OVERCAP FOR AEROSOL CONTAINER INCORPORATING CONTINUOUS SPRAY MECHANISM

Roy S. Swenson, Danbury, Conn., assignor to The Risdon Manufacturing Company, Naugatuck, Conn.
Filed June 26, 1974, Ser. No. 483,152
Int. Cl. B65d *55/12*
U.S. Cl. 222—402.11 **9 Claims**



1. A molded plastic overcap and actuator device for a valved aerosol dispensing container having an axially projecting valve stem, comprising in combination:
a cap body in the form of an inverted cup having side and end walls, means on said cap for securing it to the valved end of the container in enclosing relation thereto;
an integral valve actuator formed in said cap end wall by slotting said end wall to define a generally diametrically disposed tab hingedly connected at one end to said cap adjacent said side wall and free at its opposite end for resilient flexing movement toward and away from the plane of said end wall;
said tab having a laterally exposed face at its free end and a discharge orifice opening onto said face, said cap body

being configured to complement said laterally exposed end face to give access for unimpeded spray discharge from said tab face;

a socket formed in the underside of said tab adjacent its free end for fitted reception therein of a valve stem, and internal conduit means in said tab intercommunicating said discharge orifice and socket;

interengagable locking means carried by said cap body and tab, respectively, said locking means comprising a resilient strut extending generally diametrically of the cap internally thereof beneath said tab, said strut being retained in the cap in pre-bowed condition to dispose its central portion under the free end of said tab and engagable thereby to block depression of the tab, said strut being capable of further bowing in the same direction upon application of manual pressure to opposite side walls of the cap at the points of attachment of the strut thereto, said further bowing causing displacement of said central portion of said strut to a non-blocking position relative to said tab to permit depression of said tab free end out of the plane of said cap end wall.

3,894,666
UPHOLSTERY NEEDLE FOR UPHOLSTERING A STUFFED ARTICLE

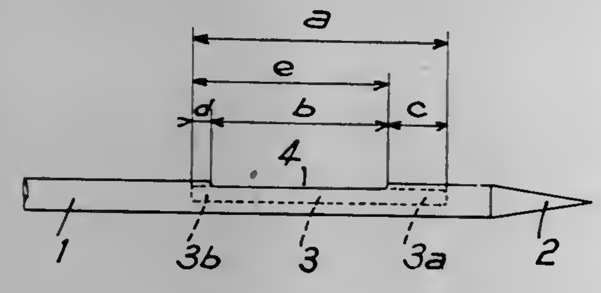
Regis Y. Delahousse, Moze-sur-Louet, and Philippe J. Delahousse, Brissac Quince, both of France, assignors to Etablissements Delahousse & Bruant S.A., Brissac Quince, France

Filed Mar. 28, 1974, Ser. No. 455,563

Claims priority, application France, Apr. 12, 1973, 73.13317

Int. Cl.² D05B *85/00*

U.S. Cl. 223—102 **8 Claims**



1. An upholstery needle for upholstering a stuffed article with an upholstering device having a counterbutton in the form of a bar, said needle comprising a relatively long and narrow body having a point at one end thereof and having a cavity therein of predetermined length less than the length of said body for slidably receiving said bar, said cavity:

extending lengthwise of said body and having one end thereof adjacent said point and the opposite end thereof spaced from the opposite end of said body

having a lateral opening of a length less than said predetermined length of said cavity and of a size permitting the insertion of said bar into said cavity

having a lateral end wall at said opposite end thereof which is spaced from said lateral opening and which is engageable with an end of said bar for limiting longitudinal movement of the latter and

having a peripheral wall intermediate said end wall and said opening which extends in the direction around the portion of the cavity between said end wall and said opening to form a chamber for receiving an end portion of a bar and for engaging said end portion of said bar and preventing movement of said bar out of said cavity in a direction perpendicular to the length thereof but permitting tilting of said bar out of said cavity.

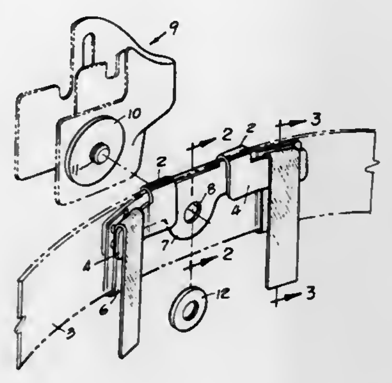
3,894,667
BELT ATTACHMENT

Archie Baldocchi, San Salvador, El Salvador

Filed July 22, 1974, Ser. No. 490,506

Int. Cl.² F41C *33/04*

U.S. Cl. 224—2 C **4 Claims**



1. A belt attachment for an object holder comprising an elongated plate,

a pair of spaced substantially inverted "U" shaped clamping members attached to the top if said plate and being adapated to fit over the top edge of the belt,

a lateral extension from each clamping member extending parallel to and spaced from said plate,

foldable straps attached to said plate and extending therefrom and being adapted to be placed around the lower edge of the belt and over the respective adjacent extensions to be held in place by the belt pressure on the body of the wearer,

and means attaching said object holder to said plate.

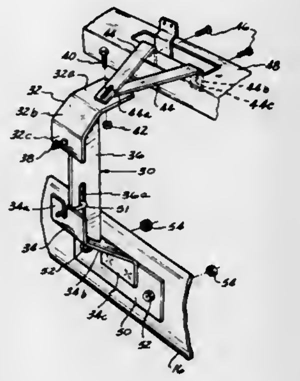
3,894,668
WHEEL MOUNTING STRUCTURE FOR VEHICLES

George P. Chapman, Birmingham, and Lucian L. Chapman, Novi, both of Mich., assignors to George P. Chapman, Birmingham, Mich.

Filed Oct. 18, 1971, Ser. No. 190,253

Int. Cl. B60n *9/06*

U.S. Cl. 224—42.06 **37 Claims**



1. A structure for mounting on a vehicle a spare wheel having a central aperture through which air may flow, said structure comprising spare wheel securing means, a bracket in part extending across said aperture and adapted for supporting connection to the vehicle and to said securing means, and substantially all portions of said bracket which extend across said aperture being formed of one or more elongated planar members disposed substantially normal to the plane of said aperture to offer a minimum resistance to air flow therethrough, wherein the securing means comprises bolt elements adapted for securing opposite ends of said planar member to mounting lug holes on opposite sides of said wheel central aperture, at least one end of said planar member has an aperture therein and at least one of said bolt elements has an L-shaped shank with a head on one end and adapted to fit through said planar member aperture to extend the other end parallel to the plane of said planar member.

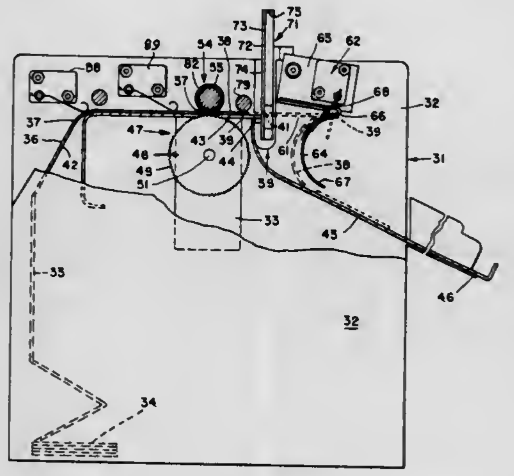
3,894,669
FRICTION FEED TICKET DISPENSER

George F. Wescoat, Manchester, N.H., assignor to Granite State Machine Company, Manchester, N.H.

Filed Nov. 19, 1973, Ser. No. 416,855

Int. Cl. B65h *35/10*

U.S. Cl. 225—103 **8 Claims**



1. In a lottery ticket dispenser of the type having a continuous web of individual lottery tickets, separated by perforated lines, guided from a supply compartment to a platform proximate a delivery chute, the combination of:

powered friction feed mechanism, including a lower knurled roll forming a feed nip with an upper rubber roll for advancing said web across said platform;

stop means, mounted on said dispenser one ticket's length beyond said platform, and including an arcuate element having a recess for receiving the leading edge of each successive endmost ticket advanced therealong and a limit switch in said recess for stopping said feed mechanism when closed by contact with said leading edge;

ticket bowing means, associated with one of said feed rolls and said platform for bowing each successive endmost ticket bridging the gap between said platform and stop means for readying said ticket for severance, while assuring that the ticket travels straight to said stop means; and breaker means including a breaker bar normally poised out of the path of said tickets proximate the edge of said platform, and power means for moving said bar downward to deliver a karate chop blow at the perforated line separating the endmost ticket engaging said stop means to separate said ticket from said web along said perforated line.

3,894,670
SHOE UPPER FASTENING DEVICE

Gerhard Giebel, Neuenhain, Tabus, Germany, assignor to USM Corporation, Boston, Mass.

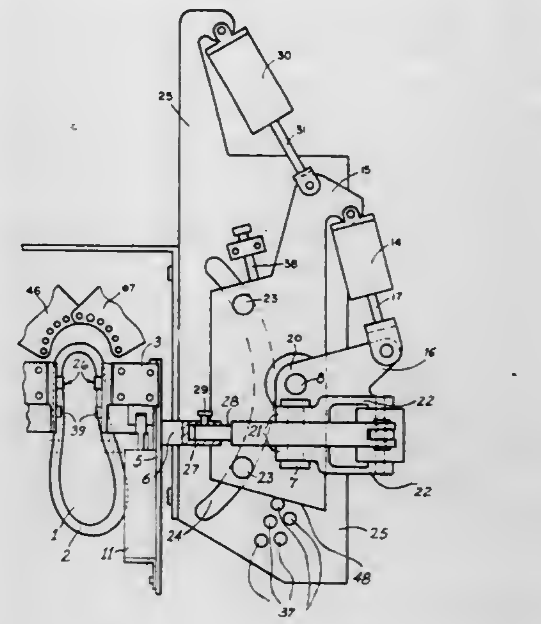
Filed Mar. 25, 1974, Ser. No. 454,385

Claims priority, application Germany, Apr. 2, 1973, 2316335

Int. Cl. B27f *7/02*

U.S. Cl. 227—6 **7 Claims**

1. Apparatus for moving a fastening device automatically along the shank area of a shoe bottom including a device for driving fasteners; first means for swinging the device about an axis extending generally widthwise of the shoe to orient the device in a proper driving relation to the varying slope of the shoe bottom progressing along the heightwise curvature from the heel seat area of the shoe bottom to the shank area; second means for bodily swinging the first means about a heightwise extending axis bodily lengthwise of the shoe along the shank area toward the ball zone while the device is maintained properly oriented; and means mounting the first means for yielding heightwise swinging movement about an axis extending generally lengthwise of the shoe for causing the device to follow the heightwise slope of. the shank area as the device is moved lengthwise.



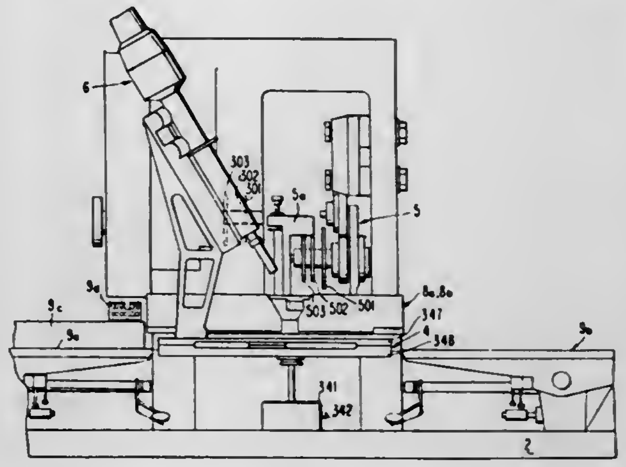
3,894,671
SEMICONDUCTOR WIRE BONDER

Frederick W. Kulicke, Jr., and John J. Lepone, both of Philadelphia, Pa., assignors to Kulicke and Soffa Industries, Inc., Horsham, Pa.

Filed Jan. 6, 1971, Ser. No. 104,221

Int. Cl. B23k *37/04*

U.S. Cl. 228—4.5 **13 Claims**



1. Apparatus for bonding lead wires between semiconductor dice and package leads, which comprises:

means for heating semiconductor dice and the corresponding package leads;

means for moving said semiconductor dice and said package leads along said means for heating so that each semiconductor die and its corresponding package leads are sequentially in the proper location to have lead wires bonded from the die to the package leads;

means for bonding lead wires between said semiconductor dice and said package leads;

means, movable by a person, for adjusting the position of said means for bonding relative to a semiconductor die or one of its corresponding package leads to place said means for bonding in the proper location to attach a lead wire to said semiconductor die or to said package lead, wherein said means for adjusting includes means, responsive to an operator, for changing the position of said means for bonding relative to said semiconductor die or one of its corresponding package leads, and

means for automatically stopping said means for changing when said means for bonding is properly located in relation to any one of the package leads to which said semiconductor die is to be electrically connected;

means for indicating when said means for bonding is in the proper position above a semiconductor die or one of its corresponding package leads for the bonding of wire thereto; and

means for supplying power to said means for bonding and to said means for moving.

3,894,672
WIRE BONDING EQUIPMENT

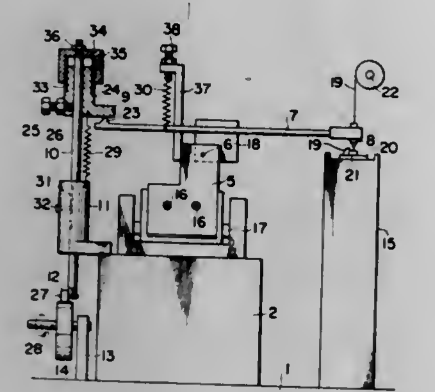
Fumio Arai, and Tetsuya Takagaki, both of Tokyo, Japan, assignors to Hitachi, Ltd., Japan

Filed June 4, 1974, Ser. No. 476,312

Claims priority, application Japan, Sept. 12, 1973, 48-102039

Int. Cl. B23k *21/00*

U.S. Cl. 228—4.5 **21 Claims**



1. A wire bonding arrangement comprising: an axially displaceably mounted actuating rod means having a control portion on one end thereof, cam means for displacing said actuating rod means in a Z direction, said actuating rod means being operatively engageable with the outer periphery of said cam means, arm means, one end of which is in operative contact with said control portion of said actuating rod means, capillary means provided at the other end of said arm means, means for rockably supporting said arm means substantially at the central part thereof, means for adjusting the position of said control portion, and means for mounting said arm means for displacement in the horizontal X and Y directions.

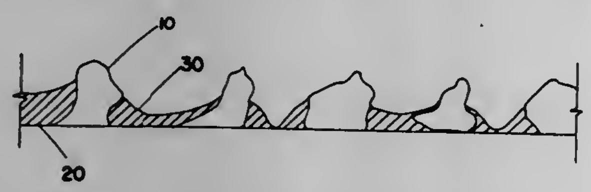
3,894,673
METHOD OF MANUFACTURING DIAMOND ABRASIVE TOOLS

James T. Lowder, and Edwin M. Tausch, both of Worthington, Ohio, assignors to Abrasive Technology, Inc., Columbus, Ohio

Continuation-in-part of Ser. No. 195,705, Nov. 4, 1971, abandoned. This application Aug. 14, 1973, Ser. No. 388,131

Int. Cl. B23k *31/02*

U.S. Cl. 228—122 **12 Claims**



1. A method of bonding a monolayer of diamond crystals to a metal substrate without the use of molds and molding pressure comprising the steps of applying diamond crystals and particles of a self-wetting braze alloy to a metal substrate surface by use of a temporary binder to form an assembly; heating said assembly in a reducing atmosphere or vacuum to a temperature less than about 1,300°C to melt the braze alloy; and cooling said assembly to solidify said braze alloy to bond the diamond to the substrate; wherein said braze alloy includes at least approximately 50 percent nickel and greater than approximately 5 percent chromium and up to a total of approximately 10 percent of one or more elements taken from the group consisting of boron, silicon and phosphorous and is characterized by its ability to readily wet the surface of the diamond crystals to achieve a very secure bond of the diamond to the metal substrate.

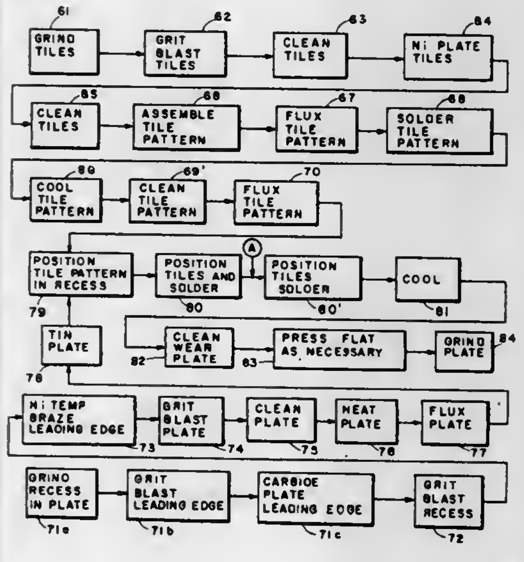
3,894,674
PROCESS FOR APPLYING A PROTECTIVE WEAR SURFACE TO A WEAR PART

Theodore C. Weill, 110 Carol Cir., Tylertown, Miss. 39667

Filed Dec. 7, 1972, Ser. No. 312,860

Int. Cl. B23k *31/10, 35/26*

U.S. Cl. 228—124 **11 Claims**



1. A process for manufacturing a wear part having a relatively large wear surface comprising:

forming a recess having a relatively large planar surface in a steel base of a wear part for receiving tiles or wear-resistant material such as tungsten carbide or the like;

abrading the surface of said recess;

tinning the floor of said recess;

abrading at least one surface of each of a plurality of wear-resistant tiles;

tinning said at least one surface of each of said wear-resistant tiles;

positioning said wear-resistant tiles in a continuous pattern within said recess and with the tinned surfaces thereof adjacent the tinned floor of said recess; and

heating the junction of said tiles and the surface of said recess to less than **800°F** and applying flux and a filler metal thereto to, fill any gap between said tiles and said recess.

3,894,675
METHOD AND APPARATUS FOR MAKING COPPER CLAD STEEL WIRE

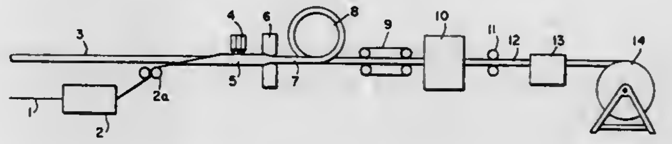
Wolfram Klebl, Isernhagen; Friedrich Schatz; Harry Staschewski, both of Langenhagen, and Gerhard Ziemek, Hannover, all of Germany, assignors to Kabel-und Metallwerke Gutehoffnungshuette AG, Hannover, Germany

Filed Oct. 3, 1974, Ser. No. 511,517

Claims priority, application Germany, Jan. 24, 1974, 2403260

Int. Cl. B21d *39/04*

U.S. Cl. 228—130 **12 Claims**



1. A process for producing copper clad steel wire, comprising:

heating steel wire sheathed with copper to a temperature of at least 850°C, said copper sheath being in contact with the steel wire; and

reducing the cross sectional area of the copper sheathed steel wire by at least 10 percent at a temperature of at least 850°C to produce a tight bond between the copper sheath and steel wire.

11. An apparatus for producing copper clad steel wire, comprising:

a forming station for forming a copper tube around a steel wire;

a welding station for welding the edges of the copper tube to produce a longitudinal seam;

a first reducing station for reducing the diameter of the copper tube to the diameter of the steel wire and produce a composite wire;

a heating station to heat the composite wire to a temperature of at least 850°C;

a second reducing station to reduce the cross sectional area of the composite wire by at least 10 percent and produce a tight bond between the copper and steel wire; and

means for continuously and sequentially passing the copper and steel wire through the forming station, welding station, first reducing station, heating station and second reducing station.

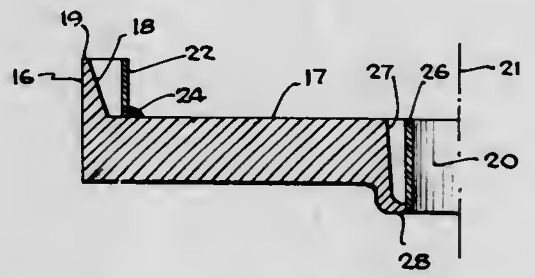
3,894,676
METHOD FOR CONSTRUCTION OF RAILWAY BOLSTER

Carl Emil Oppenheim, West Dundee, Ill., and James McKenna, Atlanta, Ga., assignors to Chemetron Corporation, Chicago, Ill.

Filed Oct. 15, 1973, Ser. No. 406,678

Int. Cl. B23k *31/02*

U.S. Cl. 228—182 **13 Claims**



1. The method of constructing a railway car bolster having an upwardly facing bolster bowl comprising the steps of forming a bowl with a flange having a top with a diameter larger than the diameter of the flange bottom, securing a liner having a generally cylindrical wall within said bowl and depositing filler weld metal to fill the space between the liner and the flange.

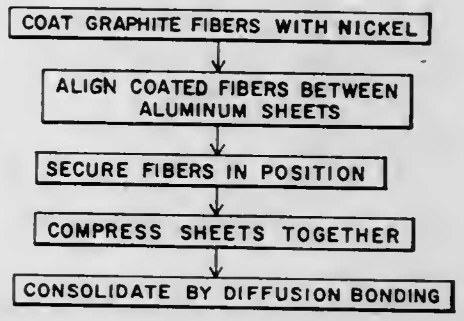
3,894,677
METHOD OF PREPARING GRAPHITE REINFORCED ALUMINUM COMPOSITE

Felix P. La Iacona, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 24, 1971, Ser. No. 127,481

Int. Cl. B23k *31/02*

U.S. Cl. 228—190 **1 Claim**


COAT GRAPHITE FIBERS WITH NICKEL
ALIGN COATED FIBERS BETWEEN ALUMINUM SHEETS
SECURE FIBERS IN POSITION
COMPRESS SHEETS TOGETHER
CONSOLIDATE BY DIFFUSION BONDING

1. The method of preparing a graphite-reinforced aluminum composite material which comprises applying a nickel coating to high strength graphite fiber yarn, disposing said yarn in parallel alinement between sheets of aluminum matrix material and securing said yarn in position, compressing said sheets together and heating the resulting compressed assembly at an elevated temperature below the melting point of the matrix material until said assembly is consolidated by diffusion bonding, said assembly comprising a stack of alternating layers of aluminum sheets and graphite yarn with 3 to 4 layers of graphite yarn in the stack.

3,894,678
METHOD OF BONDING SINTERED IRON ARTICLES

Thomas W. Pietrocini, Jeffersonville, Ind.; Roy S. Goodwin, and Frederick H. Parker, both of St. Thomas, Canada, assignors to Gould Inc., Chicago, Ill.

Filed Mar. 13, 1974, Ser. No. 450,898

Int. Cl. B23k *31/02*

U.S. Cl. 228—207 **12 Claims**

1. A method of bonding together sintered iron articles comprising the steps of

a. treating said articles with dry steam at a temperature within the range of above about 300°C to about 570°C for a time sufficient to convert a substantial portion of the iron forming said articles to Fe_3O_4,

b. removing oxide from the faying surfaces of said articles,

c. interposing brazing filler metal between the faying surfaces,

d. heating said articles to a temperature and for a time sufficient to melt said filler metal, and

e. cooling the workpiece to produce a metallurgical bond.

3,894,679
HIGH STRENGTH OPEN BOTTOM PACKAGING TRAY

Richard F. Reifers, New Canaan, Conn., and Henry A. Lord, Cape Elizabeth, Maine, assignors to Diamond International Corporation, New York, N.Y.

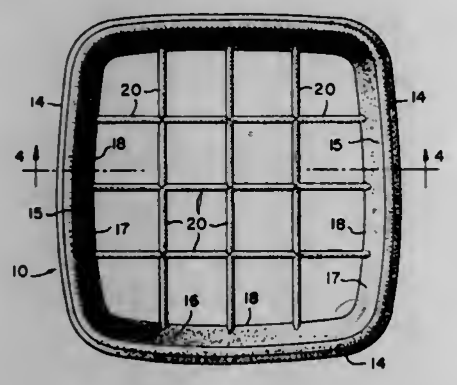
Filed June 21, 1974, Ser. No. 481,850

Int. Cl. B65d *1/00, 65/00*

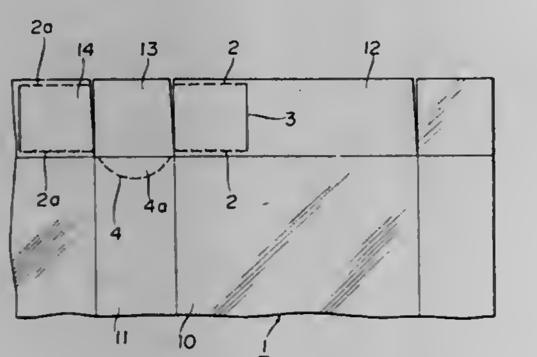
U.S. Cl. 229—2.5 **11 Claims**

1. In a molded tray for the packaging of fresh meat, fish or poultry in conjunction with a transparent overwrap film heat-sealed thereabout, said tray comprising upwardly and outwardly inclined wall means defining a peripheral configuration; a generally rounded corner between each adjacent portion of said wall means; and a peripheral lip extending out-

wardly from said wall means and defining a periphery coaxial to the configuration of said tray, the improvement comprising: means for providing improved oxygen breathing through the bottom of the tray and for providing maximum visibility through the bottom of the tray and for supporting the fresh meat, fish or poultry at the bottom of said tray while maintaining a high humidity thereabout substantially without the formation of liquid pools, and also for protecting meat freshness and improving meat quality maintenance, said breathing and support means comprising a plurality of strong, substantially solid ribs, each having vertically extending side wall portions squeezed together and joined at the top with a rounded apex, some of said ribs extending in one direction, and other of said ribs extending in a different direction, said ribs meeting and defining therebetween a plurality of open windows, said ribs having a section modulus in combination with said wall means such that the total strength is substantially equal to the beam strength of a tray of the same material of equal weight with a flat, imperforate bottom.

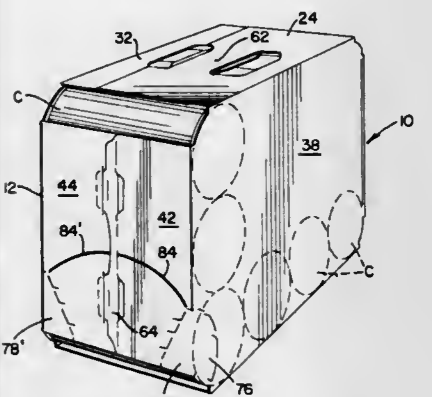


3,894,680
DISPENSING SPOUT BUILT IN A CARTON BOX
Shinichi Araki, Funabashi, Japan, assignor to Lion Fat & Oil Co., Ltd., Tokyo, Japan
Filed Mar. 1, 1973, Ser. No. 337,199
Claims priority, application Japan, Mar. 3, 1972, 47-26804
Int. Cl. B65d *5/72*
U.S. Cl. 229—17 R **2 Claims**



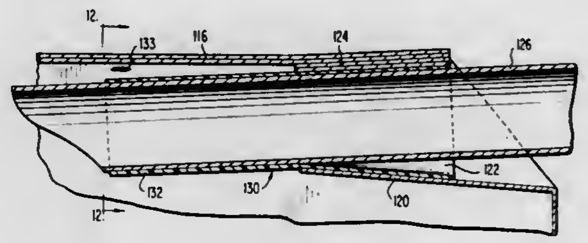
1. A dispensing spout built in a carton box comprising:
a spout portion formed in a first side wall of said carton box and defined by a deeply perforated cutting line extending from a point on a top edge of said first side wall and terminating in another different point on the same edge; a first flap extending integrally from said top edge of said first side wall;
second and third flaps extending integrally from top edges of second and third side walls disposed adjacent said first side wall at opposed sides thereof, and being overlapped with each other;
said first flap having a first portion defined by inwardly folding said first flap at the top edge of said first side wall by a length a little greater than the distance between said top edge of said first side wall and the lowermost point of said cutting line, said first portion overlapping and being adhered to the reverse side of said portion of said first side wall defined by said cutting line, a second portion defined by reversely folding said first flap at the tip of said first portion in a direction opposite to the folding direction of said first portion by a length the same as that of said first portion, said second portion overlapping and being adhered to said first portion, and a third portion extending from said second portion, said third portion being folded into overlapping relation with, and adhered to, said overlapped first and second flaps.

3,894,681
CARTON
Edwin L. Arneson, Hillsdale, N.J., and Guelfo A. Manizza, Blauvelt, N.Y., assignors to Federal Paper Board Company, Inc., Montvale, N.J.
Filed Mar. 26, 1973, Ser. No. 345,126
Int. Cl. B65d *5/72*
U.S. Cl. 229—17 B **8 Claims**



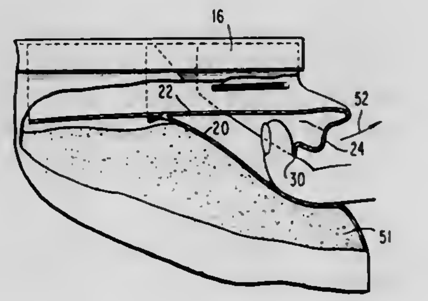
1. A package of articles having the general form of beverage cans which comprises a plurality of the articles assembled in multiple row, side-by-side arrangement and enclosed in a tubular carton formed from a blank of foldable sheet material which is cut and scored so as to provide a bottom wall forming panel, oppositely disposed side wall forming panels hinged to the side edges of the bottom wall panel and lying along the top and bottom faces of the articles and a pair of co-operating top wall forming panels hinged to the top edges of the side wall forming panels which are connected in overlapping relation, said side wall forming panels having hingedly connected end wall closure panels at each end which are swung to end wall forming position, the closure panels at each end having overlapping marginal portions with a hinged locking and latching panel which includes locking tongue elements paired with latching tab elements in one of said marginal portions and co-operating locking apertures in the marginal portion of the associated panel which are adapted to receive said locking tongue and latching tab elements so as to hold said panels in end closure position and said side wall and end wall forming panels having tear out portions disposed at the bottom of said end wall panels and adjacent the bottom wall forming panel for providing a roll out dispensing opening in the one end wall with a hinged article retarding flap at the bottom of said end wall which depends across a portion of said opening and normally obstructs the roll out of articles while permitting ready manual removal of successive articles.

3,894,682
CONTAINER WITH FILLING OPENING AND CLOSURE MEANS THEREFOR
Arnold C. Harmsen, Closter, N.J., assignor to Gilman Paper Company, New York, N.Y.
Continuation-in-part of Ser. No. 269,783, July 7, 1972, abandoned. This application Oct. 26, 1973, Ser. No. 410,261
Int. Cl. B65d *31/14*
U.S. Cl. 229—62.5 **12 Claims**



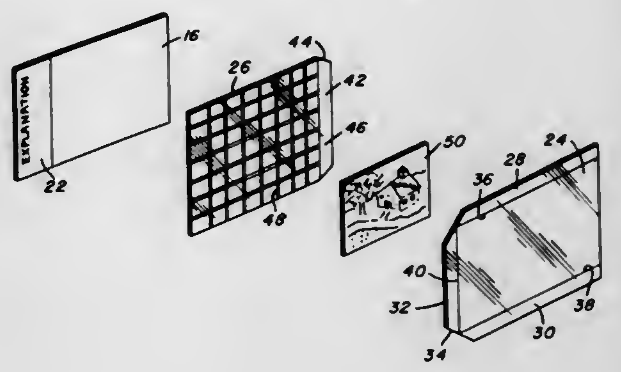
1. Closure means for a container having a filling opening, said closure means comprising:
a first portion disposed within said filling opening and secured to the portion of the container defining said filling opening, and
a second flexible and resilient portion disposed within said container that is so constructed as to normally curl upon itself and engage said container portion to close said filling opening, said second portion being temporarily secured to an adjacent portion of said container so as to be maintained in a flat, uncurled condition before a filling member is inserted in said filling opening.

3,894,683
CORNER VALVE FOR PLASTIC BAGS
Harold E. Henderson, Tyler, Tex., assignor to National Distillers and Chemical Corporation, New York, N.Y.
Filed June 11, 1974, Ser. No. 478,421
Int. Cl. B65d *31/14*
U.S. Cl. 229—62.5 **4 Claims**



1. A corner valve for a bag of the type having two sidewalls joined together along the bottom and two side edges comprising an inwardly folded triangular flap at a top corner of the bag, an insert having a reversely folded flap along one edge thereof, first securing means for holding the reversely folded flap in the folded position with the center portion thereof left free, second securing means for connecting said insert to said triangular flap along a line parallel to and spaced from said reversely folded flap, said reversely folded flap being disposed in face-to-face relation with said triangular flap between said second securing means and the adjacent side edge of said bag, the side edges of said insert perpendicular to the reversely folded flap being disposed flush with the top edges of the bag and third securing means for sealing the top edges of the bag and the side edges of the insert together whereby said insert defines a valve filling sleeve adapted to be closed by pulling out said reversely folded flap and re-folding it over the sealed side edges of the insert after the bag is folded.

3,894,684
PICTURE MAILER
Richard C. Florey, 2367 Chester, North Bend, Oreg. 97459
Filed Oct. 2, 1973, Ser. No. 404,815
Int. Cl. B42d *15/00*
U.S. Cl. 229—92.8 **6 Claims**

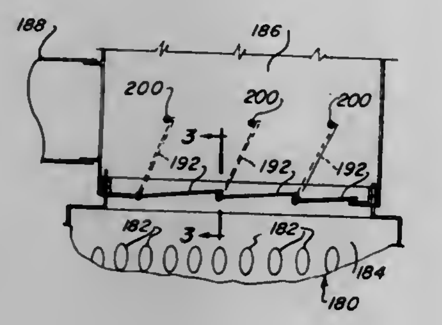


1. A device for mailing a photograph, photographs or similar items comprising a post card defined by a substantially rectangular panel of cardboard, hardboard, heavy paper or the like having substantial rigidity but some degree of flexibility, one surface of the post card having a space for an address and a space for a personal message, and an envelope mounted on the other surface of the post card, said envelope having one edge coinciding with one edge of the post card with said edge of the envelope including an opening enabling access to the interior of the envelope, and a closure flap for the opening in the envelope to close the envelope so that the envelope and post card may be mailed through the postal services, said envelope having substantially the entire surface area thereof engaged with the post card adhesively secured to the post card thereby providing secure attachment between the post card and envelope, said envelope being substantially rectangular and provided with a width substantially the same as the post card but a length less than the post card so that one end edge of the envelope will be disposed in overlying relation to an intermediate portion of the post card with the portion of the post card outwardly of the end edge adapted to receive an explantion of the material in the envelope by suitable indicia positioned thereon, said envelope including an inner panel and an outer panel with at least the outer panel being constructed of transparent material, the outer panel including flaps along the top and bottom edge and along the end edge thereof which overlies the post card with the flaps being folded inwardly and adhesively secured to corresponding edge portions of the inner panel thereby forming an envelope closed at three edges thereof and open at one edge with the open end edge of the envelope coinciding with one end edge of the post card.

3,894,685
SOLAR HEATING SYSTEM
John Harold Keyes; Charles Irvin Strickland, and Robert George Strickland, all of Nederland, Colo., assignors to International Solarthermics Corporation, Nederland, Colo.
Division of Ser. No. 445,473, Feb. 25, 1974. This application Oct. 16, 1974, Ser. No. 515,207
Int. Cl.^{2} F24J *3/02*
U.S. Cl. 237—1 A **4 Claims**

1. In a solar furnace system having a solar furnace adapted to be connected to a forced air furnace system wherein said forced air furnace system includes a forced air furnace with an outlet therefrom in fluid communication with circulating duct work, and wherein the outlet from the solar furnace is connected to the duct work at a location immediately adjacent to the outlet from said forced air furnace, the improvement

comprising at least one valve means normally closing said outlet from the forced air furnace and adapted to open said outlet when air is emitted from the outlet of the forced air furnace.



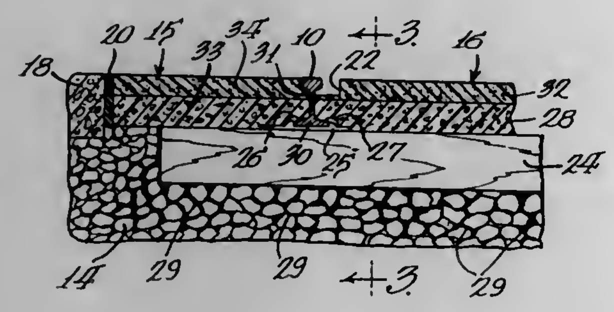
3,894,686
RAILROAD CROSSING CONSTRUCTION

Lewis C. Weinberg, Winnetka; John L. Cabanski, Elmwood Park, and John C. Moerk, Jr., Buffalo Grove, all of Ill., assignors to Felt Products Mfg. Co., Skokie, Ill.

Filed May 17, 1974, Ser. No. 470,819

Int. Cl. E01c *9/04;* **E01b** *1/00*

U.S. Cl. 238—8 **11 Claims**



1. A railroad crossing structure for a paved roadway across at least a pair of spaced rails for guiding railroad vehicles and mounted on cross tie means supported on ballast which comprises

a flexible center pad means extending transversely between each pair of spaced rails, providing a roadway surface therebetween, and being bonded directly to said ballast and being in a sealing engagement with said rails; and

a flexible side pad means extending transversely between each pavement segment and the rail nearest thereto, providing a roadway surface therebetween, and being bonded directly to said ballast and being in a sealing engagement with said nearest rail;

each of said flexible pad means having a base layer comprising a flexible thermoset resin which is a cured glycidyl ether resin, comminuted scrap rubber, and an inorganic bulk filler, and a wear layer of a cured flexible thermoset resin and finely-divided scrap rubber on top of said base layer, scrap rubber-to-cured resin volume ratio in said base layer being about 2:1 to about 6:1 and scrap rubber-to-cured resin volume ratio in said wear layer being about 1:1 to about 4:1; and said cured glycidyl ether resin in said base layer bonding together individual ballast particles below said base layer and bonding said base layer to said ballast.

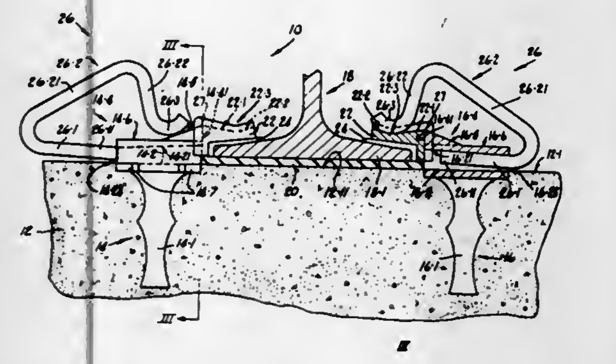
3,894,687
RAIL SLEEPER

Gerald Jacobson, Johannesburg, South Africa

Division of Ser. No. 343,153, March 20, 1973. This application Feb. 15, 1974, Ser. No. 443,123

Int. Cl. E01b *9/30*

U.S. Cl. 238—310 **3 Claims**



1. A rail sleeper which is in the form of a concrete moulding and which includes at least one rail seat, and an anchor member alongside each rail seat, each anchor member forming part of the sleeper and providing on the sleeper a flat downwardly directed seating surface associated with the seat for the lower limb of a resilient rail clip, the whole seating surface being disposed alongside the rail seat and being defined by a socket in the anchor member, the socket extending lengthwise along the sleeper and having a mouth directed away from the associated rail seat, the anchor member having an anchor portion embedded in the interior of the sleeper and a shoulder portion projecting upwardly from the sleeper, the shoulder portion presenting, elevated relative to the seating surface, an upwardly facing ramp which slopes, in a direction lengthwise along the sleeper, upwardly towards the rail seat, the sleeper being adapted for use with a resilient rail clip having a lower limb which bears upwardly against the seating surface and an upper limb which bears downwardly on the foot flange of a rail on the rail seat, to clamp the rail to the sleeper, the ramp and seating surface being adapted to force the limbs of the rail clip apart during insertion of the clip into its operative position.

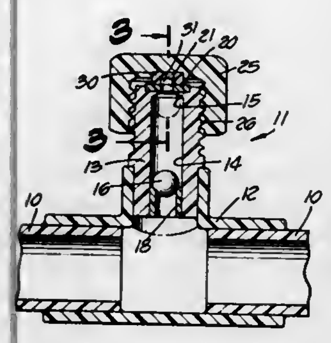
3,894,688
COMBINED WEEPER AND SPRINKLER ASSEMBLY AND METHOD FOR USE IN A SLOW DIFFUSION TYPE IRRIGATION SYSTEM

Wilbur C. Reeder, 1961 Midwick Dr., Altadena, Calif. 91001, and Norman D. Batterson, 3870 Shadow Grove Rd., Pasadena, Calif.

Continuation of Ser. No. 326,581, Jan. 26, 1973, abandoned, which is a division of Ser. No. 131,355, April 5, 1971, Pat. No. 3,746,263. This application July 5, 1974, Ser. No. 485,987

Int. Cl. B05b *1/16, 1/30, 15/00*

U.S. Cl. 239—11 **21 Claims**



1. That method of irrigating plant life from a supply of pressurized water which comprises: utilizing the pressurized water at one time to hold a gravity responsive valve seated against the inlet end of a water outlet to limit the escape of water therefrom so long as said water supply to said valve is pressurized and permitting said valve to open by gravity when said water supply to said valve is not pressurized, at other times detachably mounting rotary sprinkler means over said water outlet and equipped at the inlet end of said water outlet with means to hold said valve unseated from the inlet end of said water outlet, and utilizing the flow of water past said unseated valve to operate said rotary sprinkler means to fling and disperse the water flow over a large area of ground surrounding said rotary sprinkler means.

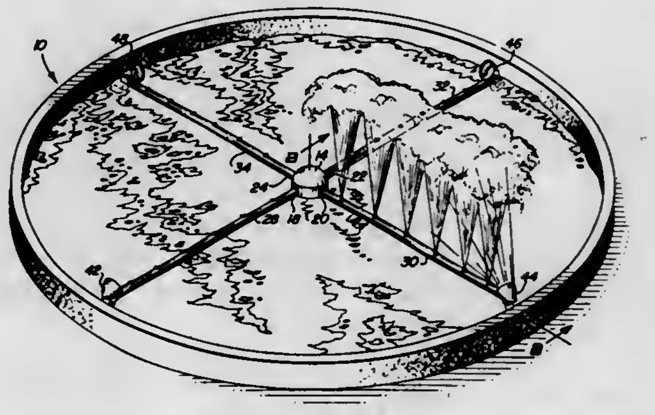
3,894,689
ILLUMINATED FOUNTAIN

Marvin A. Billingsley, 502 E. Pebble Beach Dr., Tempe, Ariz. 85281

Filed July 25, 1974, Ser. No. 491,639

Int. Cl. F21p *7/00;* **B05b** *1/30*

U.S. Cl. 239—18 **6 Claims**



1. An illuminated fountain system comprising:

at least one fluid distribution pipe provided with sprinkler means for discharging fluid therefrom in a predetermined spray pattern;

valve means for selectively controlling fluid flow to said distribution pipe and sprinkler means;

illumination means associated with said sprinkler means adapted to illuminate the spray pattern emitted by said sprinkler means; and

control means operably connected to said illuminating means including sensor means associated with said distribution pipe responsive to the presence of fluid in said pipe and adapted to actuate said illumination means upon predetermined fluid flow conditions whereby said spray is illuminated for a predetermined period of time in response to fluid flow in said pipe.

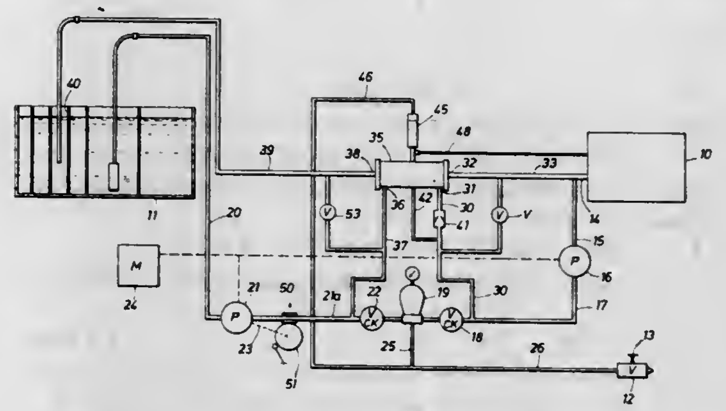
3,894,690
HORTICULTURE SPRAYING SYSTEMS

Raymond G. Hill, P.O. Box 1043, Victoria, Tex. 77901

Filed Aug. 30, 1974, Ser. No. 502,074

Int. Cl. B05b *9/00, 7/26*

U.S. Cl. 239—126 **14 Claims**



1. Apparatus for supplying a liquid mixture consisting of at least two base liquids comprising

first tank means and first pump means for supplying a first liquid,

second tank means and second pump means for supplying a second liquid,

means coupled to said first and second pump means for receiving said first and second liquids, said receiving means including a selectively operable discharge nozzle, bypass valve means having a first inlet and first outlet and a second inlet and second outlet, valve element means in said bypass valve means for selectively opening and closing the communication path between a respective inlet and outlet, said valve element means being responsive to pressure for opening and closing of said communication paths,

pressure responsive control means coupled to said bypass valve means for applying control pressure to said valve elements, and

means coupling said pressure responsive control means to said receiving means whereby the pressure responsive control means is responsive to the operation of said discharge nozzle.

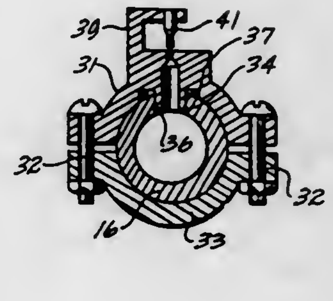
3,894,691
NOZZLE FOR PRODUCING SMALL DROPLETS OF CONTROLLED SIZE

Thomas R. Mee, 1973 Mendocino, Altadena, Calif. 91001

Continuation-in-part of Ser. No. 103,170, Dec. 31, 1970, Pat. No. 3,788,542. This application Jan. 7, 1974, Ser. No. 431,135

Int. Cl. B05b *1/26;* **E01h** *13/00*

U.S. Cl. 239—524 **9 Claims**



1. A nozzle for producing fog wherein a major portion of the water droplets are in the range of from about 5 to 50 microns in diameter and the average diameter is in the range of from about 10 to 30 microns comprising:

a body capable of withstanding an internal water pressure of at least 350 psi;

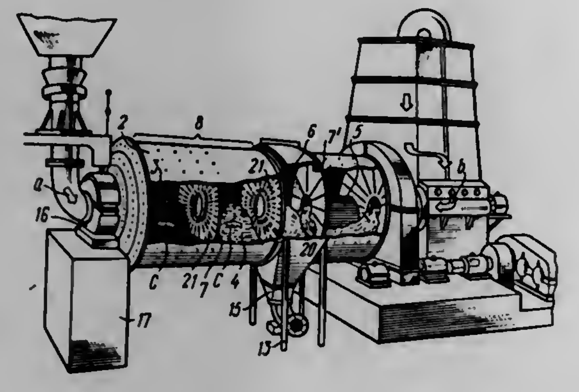
a substantially cylindrical water orifice in the body having a diameter in the range of about 125 to 250 microns;

a member external to the body and having an end portion opposite the orifice, the end portion of the member being in the form of a smooth cone having an included angle of about 120° and a diameter of about 400 microns, the axis of the cone being substantially parallel to the axis of the orifice.

3,894,692
PROCESS AND APPARATUS FOR THE PREPARATION OF ASBESTOS CEMENT SUSPENSION

Leonid Yakovlevich Sanko, ulitsa Fadeeva, 6, kv. 190; Eduard Alexeevich Valjukov, ulitsa, 34, korpus 1, kv. 58; Jury Semenovich Grizak, Dmitrovskoe shosse, 27, kv. 200; Alexandr Grigorievich Naumov, Khoroshevskoe shosse, 76, korpus 5, kv. 31, all of Moscow, and Vasily Denisovich Lysenko, ulitsa Mira, 6, Tolyatti, all of U.S.S.R.

Filed May 23, 1974, Ser. No. 472,912
Int. Cl. B02c *17/06*
U.S. Cl. 241—4 **3 Claims**



1. A process for the preparation of asbestos cement suspensions comprising the steps of: comminuting cement clinkers and gypsum together in an aqueous medium, simultaneously wet fluffing asbestos, and subsequently mixing the prepared components.

3,894,693
PROCESS FOR THE PRODUCTION OF A FLAKY POWDER OR BULKY FORM PARTICLES OF METALLIC ALUMINUM

Masaru Takashima, Tokyo, Japan, assignor to Aikoh Co., Ltd., Tokyo, Japan

Filed July 16, 1973, Ser. No. 379,564
Int. Cl. B02c *19/12*
U.S. Cl. 241—14 **8 Claims**

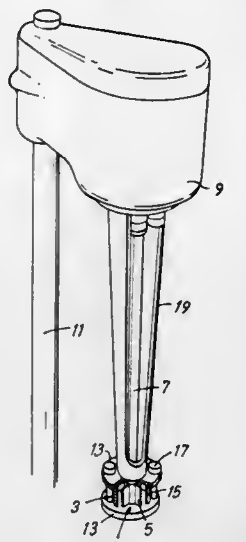
1. A process for the production of aluminum powder in flake form comprising the steps of crushing aluminum foil laminated paper, heating said crushed aluminum foil laminated paper under substantially non-oxidizing conditions with respect to said aluminum foil to char the laminated paper, separating the charred paper from the aluminum foil, and grinding the resultant aluminum foil, whereby the desired aluminum particles are obtained.

3,894,694
MIXING DEVICES

Nathan Rothman, Chesham, England, assignor to Silverson Machines Limited, Chesham, England

Filed July 9, 1973, Ser. No. 377,435
Claims priority, application United Kingdom, July 13, 1972, 32842/72
Int. Cl. B02c *11/08*
U.S. Cl. 241—46.11 **5 Claims**

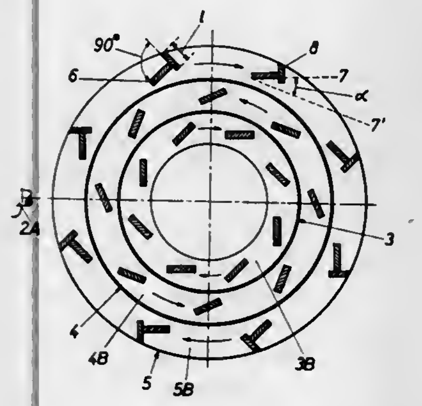
1. A mixing device comprising co-operating rotor and stator elements of which the rotor element comprises a plurality of blades mounted at one end of an elongated shaft adapted at an opposed end thereof for coupling to an output shaft of a motor and the stator element comprises a side wall which is formed with a series of outlet apertures and with one or two further outlet apertures of substantially greater area than the area of each of the apertures in the said series of apertures, the series of outlet apertures extending throughout a section of the side wall, the location of which section, in a direction axially of the device, corresponds to the axial location of the radially outer edges of the rotor blades, and the further outlet aperture or apertures also being disposed within the said section of the side wall.



3,894,695
DISINTEGRATOR

Karl Benedikter, Vienna, Austria, assignor to Patentanstalt fur Neue Baustoffe, Aduz, Liechtenstein

Filed July 3, 1974, Ser. No. 485,494
Claims priority, application Austria, July 5, 1973, 5922/73
Int. Cl. B02c *13/08*
U.S. Cl. 241—55 **9 Claims**



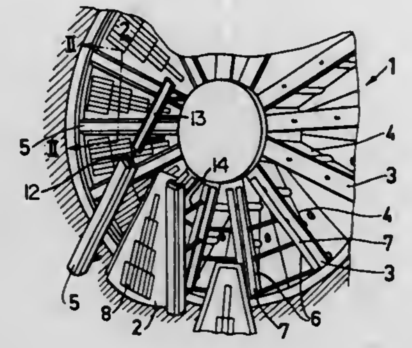
1. A disintegrator comprising two motor-driven rotors which rotate in opposite senses in a housing, each of the two rotors carrying at least one circular series of working tools for treating material, said circular series of working tools of said rotors being concentric, at least one of said circular series of working tools being provided with fan blades, said fan blades extending within the circular series of said working tools, each of said fan blades being disposed between two of said working tools.

3,894,696
DEVICE AT GRATE MEANS MOUNTED IN A MILL OR ANOTHER PROCESSING APPARATUS

Elis Jonsson, Ersmark, Sweden, assignor to Skega Aktiebolag, Ersmark, Sweden

Filed July 20, 1973, Ser. No. 381,201
Claims priority, application Sweden, Aug. 2, 1972, 10063/72
Int. Cl. B02c *17/02*
U.S. Cl. 241—70 **1 Claim**

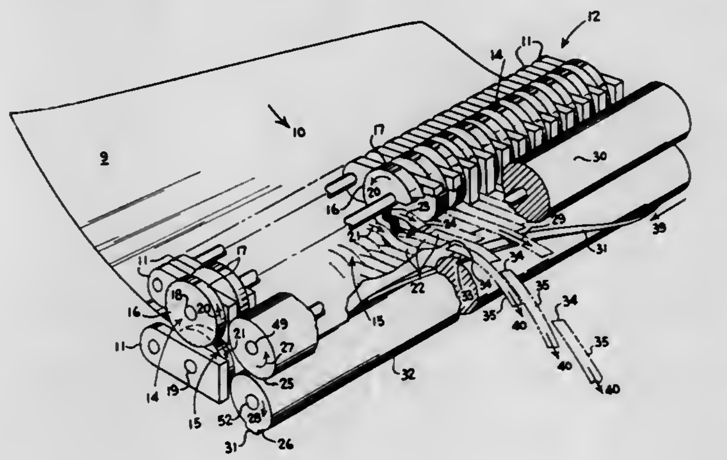
1. In the known type of screening device which is adapted to be disposed transversely across the longitudinal axis of a grinding mill and which screening device comprises a plurality of radially extending elastic polymeric sectors having openings therein for the passage of certain size material together with a plurality of clamping members for clamping the radially extending edges of said sectors to a portion of the grinding mill framework, the improvement in said known combination which includes sector support means disposed between each sector and the portion of the mill framework to which the sector is attached by said clamping means, each sector support means being composed of rigid material and being constructed of a pair of radially extending rigid bars adapted to fit under the radially extending edges of a sector and a plurality of rigid cross bars extending between said pair of radially extending rigid bars, whereby each sector support means will support an elastic polymeric sector across the area between its radially extending edges and thereby decrease the tendency of the sector to bulge.



3,894,697
PAPER SHREDDER

James Gordon Lawson, Stamford, and Walter Joseph Hanson, Old Greenwich, both of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Apr. 19, 1974, Ser. No. 462,322
Int. Cl.² B02C *21/00*
U.S. Cl. 241—159 **5 Claims**



1. A shredding mechanism for shredding sheet material, comprising:

strip forming means for receiving sheet material and causing said sheet material to form into strips of material;

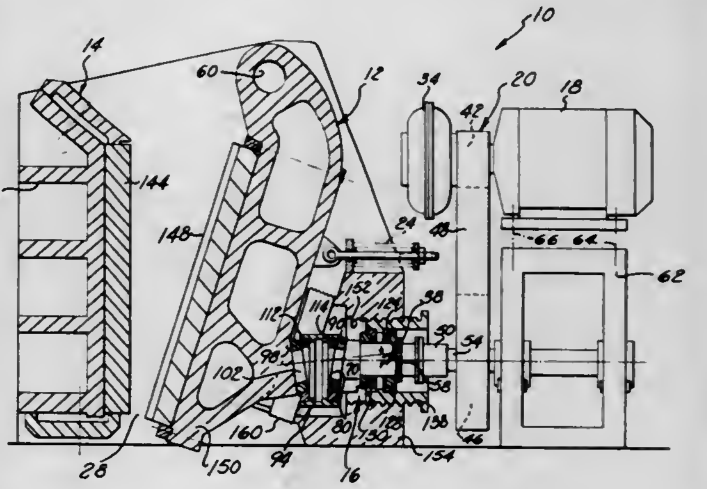
a pair of oppositely rotating shredding rollers located adjacent the strip forming means for receiving therebetween said strips of material from said strip forming means and causing said strips of material to be shredded into smaller pieces of material, one of said shredding rollers of said pair having at least one raised portion disposed upon a circumferential surface thereof, which said raised portion periodically rotates into shredding engagement with the other roller of said pair of shredding rollers so as to shred said strips of material as said rollers oppositely rotate with respect to each other said strip forming means comprising a pair of oppositely rotating strip forming disc sets, and said shredding rollers rotating at a higher surface speed than the strip forming disc sets; and

driving means operatively connected to said shredding rollers for rotating said shredding rollers into shredding engagement with each other.

3,894,698
JAW CRUSHER

Bertil Alfons Falk, Smedjebacken, Sweden, assignor to Morgardshammar Aktiebolag, Smedjebacken, Sweden

Filed Nov. 8, 1973, Ser. No. 413,799
Claims priority, application Sweden, Nov. 10, 1972, 14625/72
Int. Cl. B02c *1/04*
U.S. Cl. 241—264 **9 Claims**



1. An apparatus for crushing materials, said apparatus comprising first and second jaws for engaging the materials, means for supporting said first jaw for movement relative to said second jaw, and drive means for moving said first jaw relative to said second jaw, said drive means including a drive shaft rotatable about its central axis, a first circular thrust surface connected with said drive shaft, a second circular thrust surface connected with said first jaw, a thrust member disposed between said first and second thrust surfaces, a third circular thrust surface connected with said thrust member and disposed in continuous abutting engagement with said first circular thrust surface along at least an annular area of contact which circumscribes a central axis of said first circular thrust surface, a fourth circular thrust surface connected with said thrust member and disposed in continuous abutting engagement with said second circular thrust surface along at least an annular area of contact which circumscribes a central axis of said second circular thrust surface, means for supporting said drive shaft for rotation about its central axis, the central axis of said first thrust surface extending at an acute angle relative to the central axis of said drive shaft and being offset from the central axis of said drive shaft so that said first surface is excentrically disposed relative to said drive shaft and is moved along a circular path having a central axis coincident with the central axis of said drive shaft upon rotation of said drive shaft, and motor means for moving said drive shaft to effect a transmittal of thrust forces between said drive shaft and said first jaw.

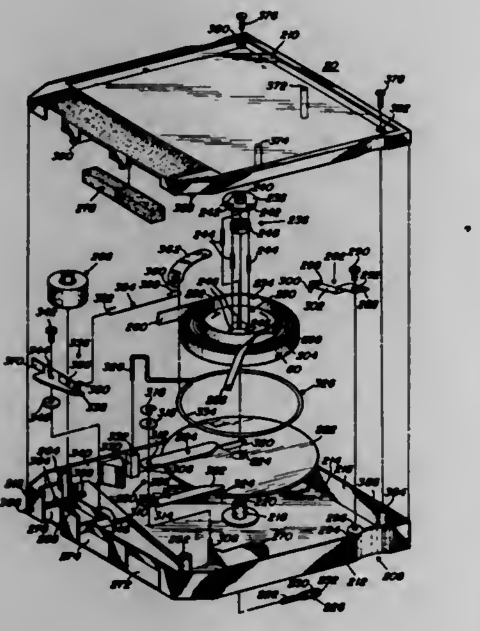
3,894,699
CARTRIDGE TAPE PLAYER SYSTEM HAVING REVERSE AND FAST-FORWARD MODES OF OPERATION

Edwin S. Bara, Chicago, Ill., assignor to Motorola, Inc., Chicago, Ill.

Filed July 16, 1973, Ser. No. 379,293
Int. Cl.² G11B *15/20, 15/44;* **B65H** *17/48*
U.S. Cl. 242—55.19 A **37 Claims**

21. A tape cartridge for use in a cartridge type tape player including a cartridge receiving cavity, tape playing and driving apparatus including a drive motor and a capstan drive shaft mounted in communication with said cavity and being coupled to said drive motor for rotation thereby, said capstan for driving a recording tape in a forward direction at a first speed

through a cartridge inserted into said cavity during playback, auxiliary tape drive means mounted in said player for driving said recording tape through a cartridge inserted into said player in a reverse direction at a second speed and means for actuating said auxiliary tape drive means for operation thereof, said tape cartridge including in combination; an outer housing having a base member, the housing dimensioned for receipt in the cartridge receiving cavity of said player, a rotatable hub mounted in said housing for rotation about an axis substantially perpendicular to the base member, a continuous loop tape wound about said hub, a pressure roller mounted for rotation within said housing adjacent an opening in one wall thereof, said pressure roller being spaced from said hub and said tape extending from the latter along a predetermined path from said hub about said pressure roller and back to said hub, said pressure roller being accessible through the opening in said housing wall for engagement by the capstan drive shaft of said cartridge tape player upon insertion of said cartridge into said player cavity for driving said tape through said cartridge in said forward direction under tension at said first speed, said tape thereby being removed from said hub at the innermost convolution and returned thereto at the outermost convolution, means on the hub engaged by the auxiliary drive means for driving the hub in the reverse direction and tape guide means mounted within said housing for guiding said tape between the innermost convolution thereof and said hub upon driving said hub with said auxiliary drive means in said reverse direction, to remove said tape from the hub at the outermost convolution and to return the tape thereto at the innermost convolution under tension.



3,894,700
FILM MAGAZINE

Hiroshi Ito; Ryozo Miyake, and Fumio Kobayashi, all of Omiya, Japan, assignors to Fuji Shashin Koki Kabushiki Kaisha, Omiya, Japan

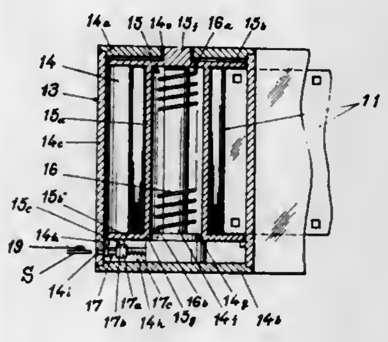
Filed Oct. 17, 1973, Ser. No. 407,155

Int. Cl. G03b *1/04*

U.S. Cl. 242—71.2 **17 Claims**

1. A magazine for housing a film strip and adapted to be inserted into the body of a camera said magazine comprising: a housing defining a hollow supply chamber, a hollow take-up chamber and guide means connecting said supply chamber and said take-up chamber;

- a spool member rotatably mounted in each of said chambers for transferring said strip between said supply chamber and said take-up chamber; and
- drive means supported by said housing and operably connected to the spool member in said take-up chamber for producing energy sufficient to rotate said spool member in said take-up chamber.



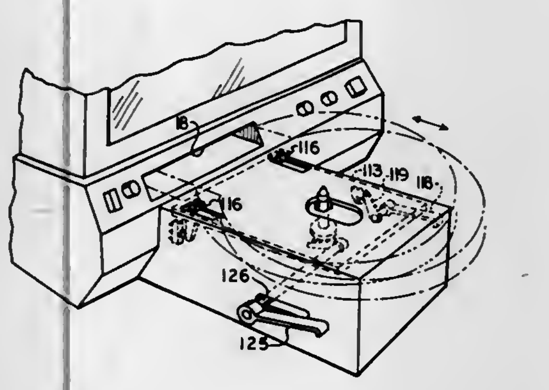
3,894,701
INFORMATION CARRIER MAGAZINE HANDLING APPARATUS

Eugene J. Moscaret, Arcadia, and Thomas C. Soran, West Covina, both of Calif., assignors to Bell & Howell Company, Chicago, Ill.

Filed July 2, 1973, Ser. No. 376,071

Int. Cl. G03b *1/04;* **G11b** *15/32*

U.S. Cl. 242—194 **29 Claims**



8. In apparatus for selectively performing a function at a function-performing station relative to a web-like information carrier having opposite ends, respectively, on two different reels located in an information carrier magazine, the improvement comprising in combination:

- means for mounting said reels in stacked and coaxial relationship inside said magazine;
- means including a rotatable drive spindle engageable with either of said reels for selectively winding said information carrier onto one of said reels and alternatively onto the other of said reels;
- means for mounting said drive spindle for movement in a direction toward said function-performing station for placement of a portion of said information carrier at said function-performing station, and alternatively for movement in a direction away from said function-performing station for placement of all portions of the information carrier in spaced relationship to said function performing station; and
- means for alternatively placing said drive spindle into force-transmitting engagement with one of said reels and into force-transmitting engagement with the other of said reels.

3,894,702
REEL DRIVE DISC DEVICE IN A RECORDING AND/OR REPRODUCING APPARATUS

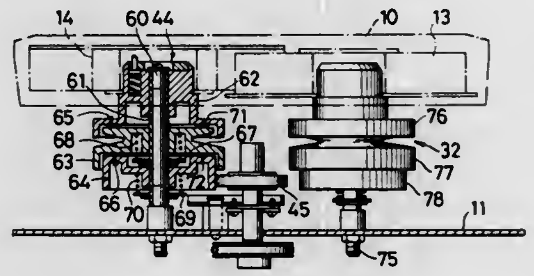
Takeshi Okano, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Dec. 26, 1973, Ser. No. 427,668

Claims priority, application Japan, Dec. 25, 1973, 49-2407; Dec. 25, 1973, 49-2408; Dec. 25, 1973, 49-2409

Int. Cl. G03b *1/04;* **G11b** *15/32*

U.S. Cl. 242—201 **8 Claims**



1. A reel disc device in a recording and/or reproducing apparatus, which device comprises:

- a driven disc engaging a reel and rotating the same in a direction to take up a tape-form recording medium;
- a driving disc disposed on one side of said driven disc and adapted to be rotatable as a structure separate from the driven disc;
- driving means for transmitting rotational driving power to said driving disc; and
- rotational power transmission means operating to transmit rotational power from the driving disc to the driven disc and comprising
  - a first friction member made of felt and adapted to rotate unitarily with either of the driven and driving discs,
  - a second friction member made of a material having a wear resistance superior to those of phenolic resins and properties almost completely unaffected by heat generated by friction and adapted to rotate unitarily with the other of the driven and driving discs, and
  - pressing means for pressing said first and second friction members against each other thereby to produce sliding friction resistance between said friction members whereby rotational power is transmitted from the driving disc to the driven disc.

3,894,703
ARTICULATING ROTOR SYSTEMS FOR HELICOPTERS AND THE LIKE

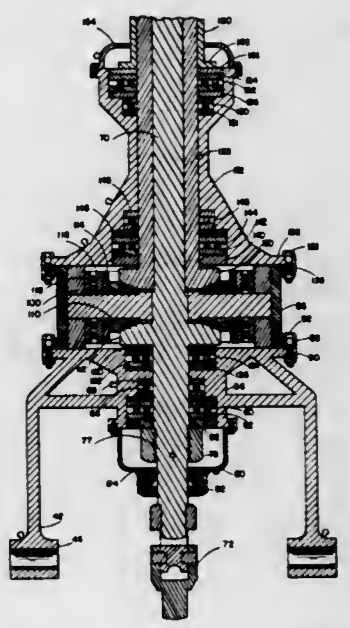
Carmen Jose Velasquez, 12637 S. Grevillea Ave., Hawthorne, Calif. 90250

Filed May 2, 1973, Ser. No. 356,597

Int. Cl. B64c *27/10*

U.S. Cl. 244—17.23 **5 Claims**

1. A helicopter comprising a cab, a source of power operatively mounted with respect to said cab, a first rotor shaft extending generally upwardly with respect to said cab, a second coaxially extending rotor shaft extending generally upwardly with respect to said cab, and being concentric with said first rotor shaft, first and second rotor blades respectively carried at the upper ends of said first and second rotor shafts and powered for rotation through said source of power and said shafts, universal means operatively associated with at least said first rotor shaft to permit angulated movement of said first and second rotor shafts in a vertical plane longitudinally with respect to said cab, retroactive gear containing drive means to permit said first and second rotor shafts to rotate in opposite directions with respect to each other but at the same angular rotational speed, said gear containing drive means comprising a casing mounted with respect to said cab, said casing having an interior chamber formed by an interior side wall, means forming at least one first retaining groove in said interior side wall, means forming at least one second retaining groove in said interior side wall, a mounting plate disposed about said first rotor shaft, a first retaining rod extending from said mounting plate and projecting toward said first retaining groove, a second retaining rod extending from said mounting plate and projecting toward said second retaining groove, a first gear disposed within said casing and being fixed to and rotatable with said first rotor shaft, a second gear located at the lower end of said second rotor shaft and being fixed to and rotatable therewith and being disposed within said casing, and a meshing gear arrangement located within said casing and being interposed between said first and second gears in such manner to cause said first and second rotor shafts to rotate in opposite directions about their respective central axes, a first bearing means in said casing to receive and support said first rotor shaft, a second bearing means in said casing to receive and support said second rotor shaft, third bearing means in said casing to support said meshing gear arrangement, a first retaining plate fixedly secured to the outer end of said first retaining rod and fitting within said first retaining groove, said first retaining plate supporting a portion of said third bearing means, and a second retaining plate fixedly secured to the outer end of said second retaining rod and fitting within said second retaining groove, said second retaining plate also supporting another portion of said third bearing means.



3,894,704
MODULAR KITE

Robert J. Vincent, 1934 Kessler Pky., Dallas, Tex. 75208

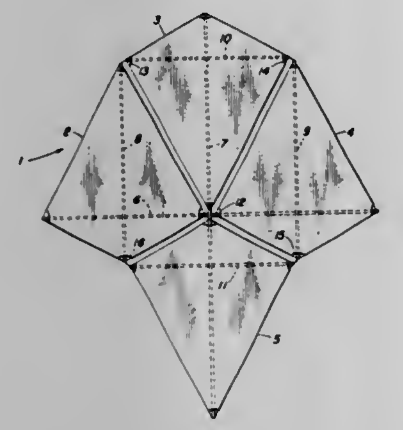
Filed May 28, 1974, Ser. No. 473,736

Int. Cl. B64c *31/06*

U.S. Cl. 244—153 R **3 Claims**

1. A modular kite comprising four conventional kites, including two conventional kites having a common vertical

cross stick and two conventional kites having a common horizontal cross stick the two common cross sticks being arranged perpendicular to each other and being joined together at their midpoints where they intersect.



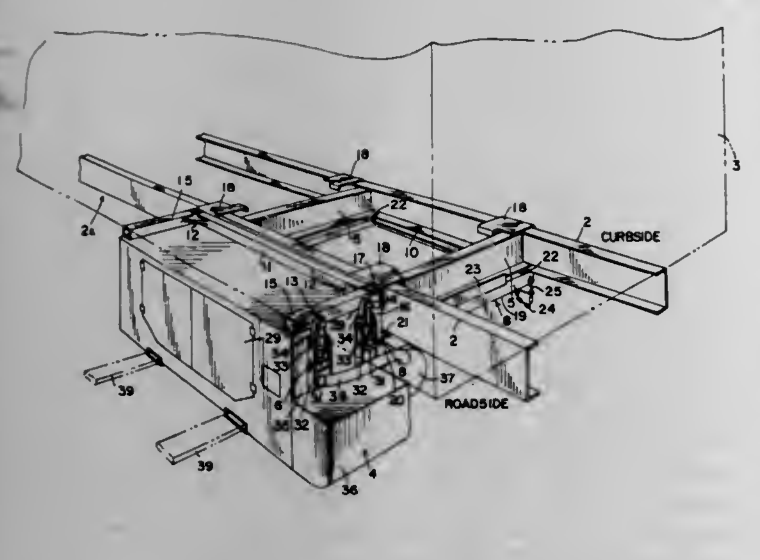
3,894,705
REMOVABLE MOUNTING BRACKET FOR ATTACHING EQUIPMENT TO A CONTAINER CHASSIS

John J. Glassmeyer, Covington, Ky., assignor to Pullman Incorporated, Chicago, Ill.

Filed Feb. 6, 1974, Ser. No. 440,106

Int. Cl.^{2} F16F *15/00;* **F16M** *1/00, 11/00*

U.S. Cl. 248—17 **14 Claims**



1. A removable mounting bracket for attaching a diesel powered generator set to a cargo container chassis associated with the generator set including:

a mounting bracket assembly having a framework provided with a plurality of removable and relatively spaced overhead hooks and said framework including transversely extending frame restraint plates interposed between the plurality of hooks, the plates being adapted to cradle a transverse portion of the associated cargo container chassis with longitudinal restraint being taken at the transverse portion of the associated cargo container chassis, and

said framework having two outrigging overhead crossmembers disposed in relation to the hooks and said frame restraint plates, and releasable clamp assemblies adapted to couple the generator set with the crossmembers.

3,894,706
TUBING CLAMP ASSEMBLY FOR MAINTAINING TUBES IN LOCKED PARALLEL RELATIONSHIP TO SURFACE

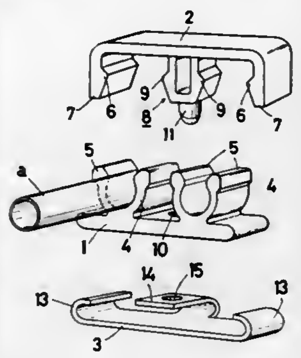
Akira Mizusawa, Amagasaki, Japan, assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Nov. 15, 1972, Ser. No. 306,969

Claims priority, application Japan, Apr. 22. 1972, 47-47919

Int. Cl.^{2} F16L *3/10*

U.S. Cl. 248—68 CB **2 Claims**



1. A clamp assembly for fixing elongated bodies such as tubes to a wall comprising a base member, a cover member to fit said base member and a metal plate for fixing said base member to said wall having two curved bent portions on opposite ends and at least one bent portion along one longitudinal edge, said bent portions providing space to accomodate said base member, said base member including a plate having at least two U-shaped grippers extending upwardly from one side thereof, each of said U-shaped grippers having raised portions provided on the free ends thereof, said cover member comprising a plate co-extensive with said base member and including coupling means, said coupling means including two catch extensions having pawls to engage the associated raised portions of said grippers and resilient leg extensions equal in number to the number of interspaces defined by adjacent grippers, said leg extensions being adapted to fit in said interspaces and to cooperate with said gripper to insure engagement between the gripper and said tube carried therein, said catch and leg extensions being integrally connected to said cover plate, means for preventing transverse movement between said cover member and said plate.

3,894,707
MOUNTING DEVICES

Robert Arthur Henderson Heard, Church Farm Church Ln., Backwell, England

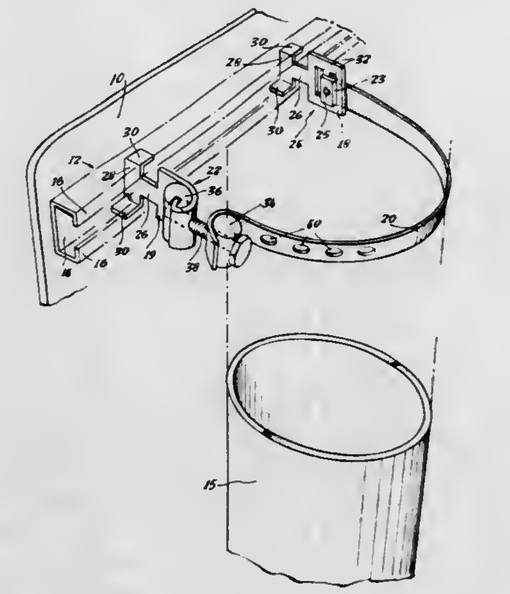
Filed Feb. 26, 1973, Ser. No. 335,507

Claims priority, application United Kingdom, Feb. 29, 1972, 9310/72; Aug. 23, 1972, 39298/72

Int. Cl.^{2} E01F *9/01*

U.S. Cl. 248—231 **8 Claims**

1. A device for mounting a channel-shaped bearing member to a support post, the channel having a mouth restricted by a pair of inturned lips, said device comprising in combination a single strap adapted for passing around a post and terminating at at least one end portion thereof in a permanently cranked section, at least one toggle ended attachment member formed with slot means for receiving within said slot the bend of the crank to thereby provide a firm connection between said one end portion of the strap and said attachment member, the toggle end of the attachment member comprising (a) a flat head joined to a body of the attachment member through a narrower neck and (b) a pair of flat ears rigid with the head and extending parallel to each other in opposite directions out of the plane of the head, the ears and the narrower neck being dimensioned to permit introduction of the head, in a predetermined orientation thereof, through the restricted mouth of the channel and for turning movement of the head for the head to lie in an operative position transversely to the length of the channel with the ears engaging edgewise the inturned lips of the channel and extending longitudinally of the channel whereby to retain said head and said rigid ears within said channel, and a further attachment member carried by an end portion of said single strap opposite said one end portion and adapted for adjustably connecting said opposite end of the strap to said channel at a location longitudinally spaced from the region of effective connection of said one end portion of the strap to said channel, said further attachment member being L-shaped thereby providing two limbs, one limb being adapted for connection to the end of the strap and the other limb which extends from said one limb being apertured to receive a nut and bolt assembly, whereby the head of the bolt may be located within the channel and retained by the inturned lips and the resulting attachment of the strap to the channel adjusted by means of the nut.



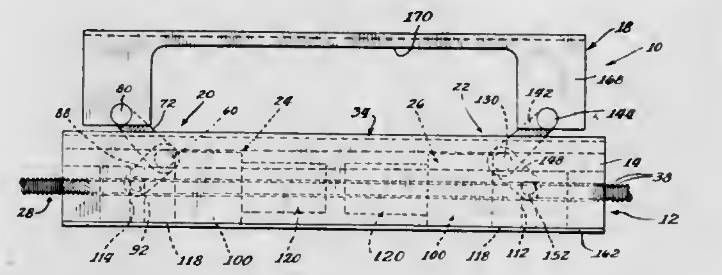
3,894,708
POWER SEAT ARRANGEMENT

Richard B. Stanley, Rolling Meadows, Ill., assignor to World-O-Matic Corporation, Chicago, Ill.

Filed Nov. 29, 1973, Ser. No. 419,979

Int. Cl. F16m *11/10*

U.S. Cl. 248—394 **10 Claims**



1. A power seat arrangement comprising, a fixed base defining a rectilinear operating way, a shaft fixed with respect to said base extending in and longitudinally of said way, a pair of oppositely acting bell crank levers positioned in said way and spaced apart longitudinally of said way, said bell crank levers operating about axes extending crosswise of said way, means mounting said bell crank levers for movement on said base substantially parallel to said way, a seat frame positioned in vertical alignment with said way, with one arm of each bell crank lever being pivotally connected to said seat frame, an actuator mechanism for each bell crank lever disposed in said way, with the other arm of the respective bell crank levers being connected to the actuator mechanism therefor, said actuator mechanisms operatively engaging said shaft for movement thereof longitudinally of said shaft on actuation of the respective mechanisms, and power means for selectively driving said actuator mechanisms to move same longitudinally of said way to swing said levers about their said axes for shifting said seat frame relative to said base.

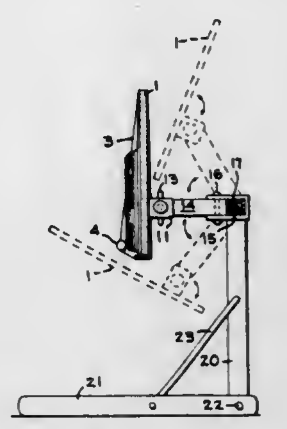
3,894,709
READING TABLES

Stanley M. Weir, Box 365, Santa Clara, Calif. 95052

Filed Aug. 20, 1973, Ser. No. 390,056

Int. Cl.^{2} A47F *5/12;* **A47B** *23/00*

U.S. Cl. 248—445 **3 Claims**



1. A reading table which comprises:

a table top,

a pair of legs each with a foot projecting outwardly from its lower extremity,

a horizontal crosspiece pivotally connected at each of its opposite ends to the upper extremity of a leg,

means for locking said legs in adjusted disposition around the axis of said crosspiece,

an arm projecting outwardly from the crosspiece, said arm free at one end to slide along the length of the crosspiece, means for pivoting the arm in unison with the crosspiece around the axis of the crosspiece,

said arm pivotally connected at its other end to the table top, and

means for reasonably locking said table top in adjusted angles relative to the arm.

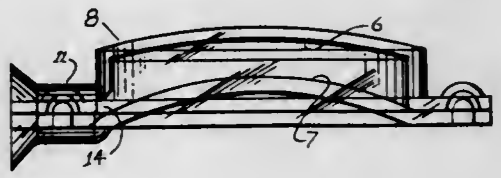
3,894,710
MOLD FORMS COATING SYNTHETIC RESIN LENSES

George M. J. Sarofeen, 107 Hanover Ave., Colonial Heights, Va. 23834

Filed Aug. 29, 1973, Ser. No. 392,796

Int. Cl. B29d *11/00*

U.S. Cl. 249—117 **18 Claims**



8. A mold envelope for casting lenses comprising a mold form of one-piece construction, an included cavity within said mold wherein a lens may be cast by polymerization of monomeric materials, at least a portion of the inner wall area of said included cavity being formed to optical characteristics.

3,894,711
HINGED WALL MOLD FOR ROOM CONSTRUCTION

Cornelis Van der Lely, 7, Bruschenrain, Zug, and Hendricus Jacobus Cornelis Nieuwenhoven, Baar, both of Switzerland

Continuation of Ser. No. 882,650, Dec. 5, 1969. This application Apr. 25, 1972, Ser. No. 247,394

Claims priority, application Netherlands, Dec. 11, 1968, 6817800

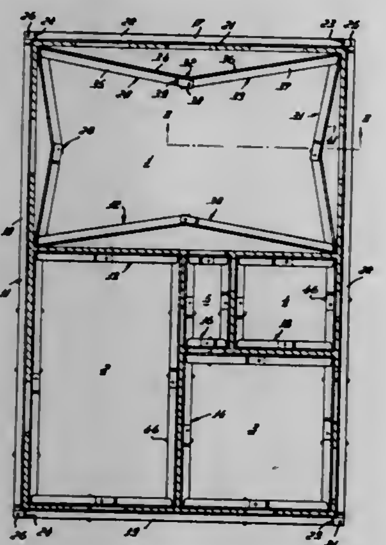
Int. Cl. B28b *7/30*

U.S. Cl. 249—185 **8 Claims**

1. An inner jig of a mold for casting walls for a room in a

building at the building site in cooperation with an outer mold defining means, said inner jig comprising:

at least three vertically standing jig parts for defining the interior of said room, each of said jig parts having at least two portions, said portions of each said part being hinged together by vertically disposed hinge means, the outer vertical edges of each said jig being substantially spaced from said hinge means and forming a relatively sharp angular corner with the adjacent edge of the adjoining jig part including an overlapping area, said vertical edges being in a slideable continuous abutment with each other in their overlapping areas when receiving concrete-like material for casting walls between the inner jig and the outer mold defining means and unconnected by means which limit relative rotation of said adjacent edges about a common axis of rotation, whereby during the initial withdrawal of said jig portions away from the walls as formed therein, said jig portions are rotated about an arc relative to said hinge means and said outer vertical edges are moved away from the walls adjacent thereto without any significent arcuate movement towards said adjacent walls.



3,894,712

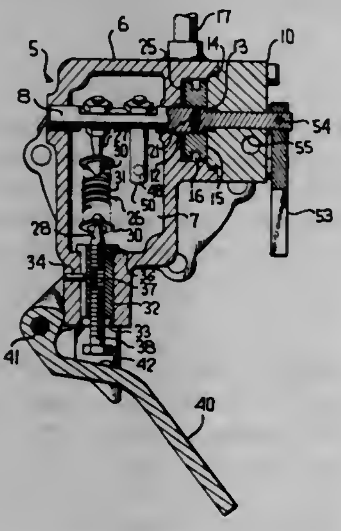
EXCESS FLOW SERVO VALVE

James S. Millar, Fountain Valley, and Douglas R. Garrett, Los Angeles, both of Calif., assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Filed July 6, 1973, Ser. No. 377,032

Int. Cl. F16k *31/165*

U.S. Cl. 251—61 **2 Claims**



1. A servo valve responsive to pressure variations for selectively pressurizing a control line, said valve including a movable means carrying a valve element for movement between a normal position and a control position, actuator means connected to said movable means for moving same in response to controlling pressure variations, and stabilizing means connected to said movable means resisting movement thereof from both said valve element normal position and said valve element control position, said stabilizing means including means for selectively applying high and low stabilizng pressure on said movable means, said stabilizing means being of the resilient over-center toggle type and including a pivot having a normal retracted position for low pressure control of said valve and an advanced position for high pressure control of said valve, said pivot being carried by an axially slidable movable support, and said stabilizing means including a manual actuator engageable with said movable support to manually axially slide said movable support and said pivot between said pivot retracted position and advanced position, said movable support including an adjustable extension engageable by said manual actuator for varying said high stabilizing pressure.

3,894,713

EXHAUST GAS CONTROL VALVE FOR USE WITH AN INTERNAL COMBUSTION ENGINE

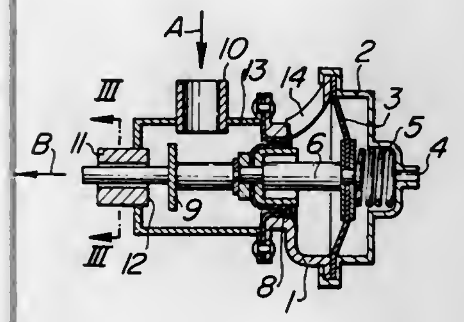
Mikiji Ito, Nagoya; Motohisa Miura, Kariya, and Toshiyuki Ito, Tokonabe, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Sept. 25, 1973, Ser. No. 400,672

Claims priority, application Japan, Sept. 30, 1972, 47-113914

Int. Cl. F16k *31/165*

U.S. Cl. 251—61.5 **6 Claims**



1. In an exhaust gas control valve for use with an internal combustion engine, said control valve comprising a valve casing having first and second ports, a valve disk for opening and closing said first port, said valve disk being fixed to a shaft extending into said casing through an open end of said casing axially opposite to said first port, sealing means provided between said shaft and said casing for air-tightly sealing said open end, and a control diaphragm disposed out of said casing and fixed to said shaft for controlling the opening and closing of said first port by said valve disk in response to the operating condition of the internal combustion engine, an improvement comprising a spline-fitting-like valve seat body fixed to said first port, said valve seat body having a round bore extending coaxially with said shaft and a plurality of spline-like slots radiating from said bore, the free end of said shaft extended beyond said valve disk fixed thereto being slidably fitted into said bore, and the inner end of said valve seat body forming a valve seat for said valve disk and said slots being the substantially exclusive means for passing exhaust gas through said valve seat body.

3,894,714

ROTARY VALVE

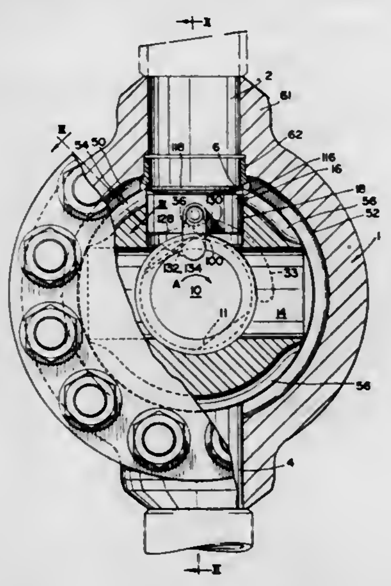
Stanley J. Whittaker, and Cyril J. Astill, both of Deep River, Canada, assignors to Atomic Energy of Canada Limited, Ottawa, Canada

Continuation-in-part of Ser. No. 418,614, Nov. 23, 1973, abandoned. This application Dec. 18, 1974, Ser. No. 533,813

Claims priority, application Canada, Mar. 14, 1973, 166040

Int. Cl.^{2} F16K *25/00*

U.S. Cl. 251—86 **5 Claims**



1. A rotary valve, comprising a rotary valve casing having a fluid inlet, a fluid outlet and an inwardly facing sealing surface around the fluid inlet, an inner plug having an inner fluid passage and rotatably mounted in the casing for aligning the inner fluid passage with the fluid inlet and fluid outlet, an outer plug having an outer fluid passage and rotatably mounted in the casing for rotation about the inner plug, for aligning the outer fluid passage with the inner fluid passage and the fluid inlet and fluid outlet, the inner and outer plugs being mounted for rotation about a common axis, a valve closure assembly slidably located in a radially extending recessed portion of the outer plug with the recessed portion circumferentially spaced around the outer plug from the fluid passage therein, the valve closure assembly being slidably located for movement into sealing engagement with the sealing surface, a pair of link members in the casing with the inner and outer plugs and valve closure assembly between them, pivot means pivotally attaching the link members at their inner ends to the inner plug, for rotation about an axis parallel to the common axis or rotation of the inner and outer plugs, cam track following means pivotally attaching the outer ends of the link members to the valve closure assembly, through radial slots in the outer plug and extending radially along the axis of the recessed portion, for rotation about an axis parallel to the common axis of rotation of the inner and outer plugs, two cam tracks facing one another from the inside of the casing with one of the cam tracks on each side of the outer plug and the cam track following means slidably located at each end in the cam tracks, the cam tracks having corner portions, adjacent the fluid inlet, leading in an axial in line direction away from the sealing surface and then curved portions extending around the common axis of rotation of the inner and outer plugs to a position where the valve is fully open, and valve actuating means for rotating the inner plug, and whereby rotation of the inner plug, by the valve actuating means, from the closed position of the valve, causes the link members first to be guided over top dead centre and inwardly by the cam following means moving inwardly around the cam track corner portions so that the valve closure assembly is released inwardly from sealing engagement with the sealing surface, and moved only in an axially in line direction away from the sealing surface into the recessed portion by relative rotation between the inner and outer plugs with the outer plug stationary, and further rotation of the inner plug rotates the outer plug and causes the link members to move the cam track following means around the cam track curved portions and align the fluid passages in the inner and outer plugs with the fluid inlet and outlet passages, and reverse rotation of the inner plug reverses this sequence until the valve is closed by the valve closure assembly being snapped into sealing engagement with the sealing surface by the link members snapping over top dead centre.

3,894,715

ROTARY VALVES

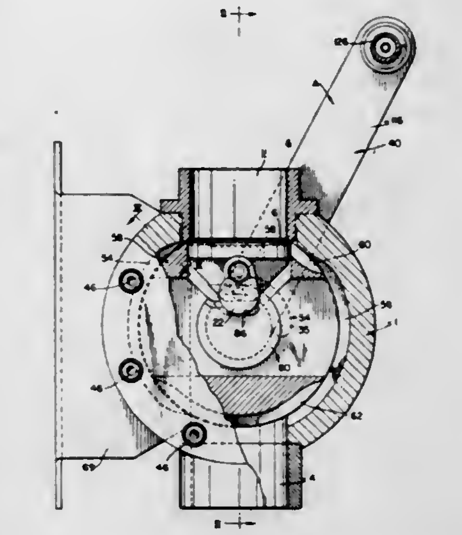
Stanley J. Whittaker, and Cyril J. Astill, both of Deep River, Canada, assignors to Atomic Energy of Canada Limited, Ottawa, Canada

Continuation-in-part of Ser. No. 418,613, Nov. 23, 1973, abandoned. This application Dec. 18, 1974, Ser. No. 533,814

Claims priority, application Canada, Mar. 14, 1973, 166115

Int. Cl.^{2} F16k *25/00*

U.S. Cl. 251—86 **5 Claims**

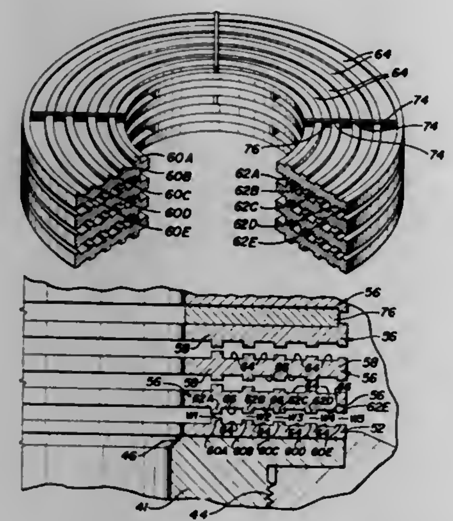


1. A rotary valve, comprising a valve casing having a fluid inlet, a fluid outlet and an inwardly facing sealing surface around the fluid inlet, a plug in the casing and having a fluid passage for alignment with the fluid inlet and fluid outlet, two shafts rotatably mounted in a fluid-tight manner in and extending through the valve casing on each side of the plug, the plug being mounted in the casing by the shafts and rotatable with respect to the shafts, a valve closure assembly slidably located in a radially extending recessed portion of the plug with the recessed portion circumferentially spaced around the plug from the fluid passage therein, the valve closure assembly being slidably located for movement into sealing engagement with the sealing surface, a pair of link members in the casing with the plug and valve closure assembly between them, pivot means pivotally attaching each of the link members at their inner ends to their respective shafts on the same side of the plug as that link member for rotation about an axis parallel to the axis of rotation of the plug, cam track following means pivotally attaching the outer ends of the link members to the valve closure assembly, through slots extending radially along the axis of the recessed portion, for rotation about an axis parallel to the axis of rotation of the plug, two cam tracks facing one another from the inside of the casing with one of the cam tracks on each side of the plug and the cam track following means slidably located at each end in the cam tracks, the cam tracks having corner portions adjacent the fluid inlet, leading in an axially in line direction away from the sealing surface, and then curved portions extending around the axis of rotation of the plug to the position where the valve is fully open, and valve actuating means for rotating the shafts together and whereby rotation of the shafts by the valve actuating means, from the closed position of the valve, causes the link members first to be guided over top dead center and inwardly by the cam following means moving inwardly around the cam track corner portions so that the valve closure assem-

bly is released inwardly from sealing engagement with the sealing surface and moved only in an axially in line direction away from the sealing surface into the recessed portion by relative rotation between the shafts and the plug with the plug stationary, and further rotation of the shafts causes the links to move the cam track following means around the cam track curved portions and align the fluid passage of the plug with the fluid inlet and outlet passages by rotation of plug, and reverse rotation of the shafts reverses this sequence until the valve closure assembly is snapped into sealing engagement with the sealing surface by the link members snapping over top dead center.

3,894,716
FLUID CONTROL MEANS HAVING PLURALITY DISCS

Gayle E. Barb, Houston, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.
Filed Dec. 26, 1973, Ser. No. 427,751
Int. Cl.² F15D *1/04*
U.S. Cl. 251—127 **2 Claims**

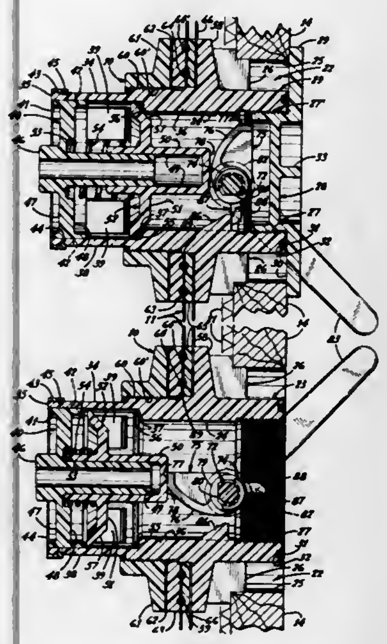


1. A valve structure comprising a valve body having an inlet passageway extending in one direction and an outlet passageway extending in a second direction generally at right angles to said one direction, a valve plug mounted within said body for longitudinal back and forth axial movement to control the flow of fluid from the inlet passageway to the outlet passageway, and a stack of annular disc-like members in said valve body extending about and receiving the valve plug in its closed position with the annular members being spaced from each other to permit a flow of fluid therebetween in an open position of the valve plug, each of said annular members having an imperforate annular body portion of a generally uniform thickness and a plurality of spaced concentric ribs extending from opposite faces of the body portion with each annular body portion having aligned pairs of concentric ribs on said opposite faces, the concentric ribs on adjacent facing annular members being in opposed aligned relation to each other with the spacing between each successive pair of facing ribs progressively increasing in an outward direction, said ribs providing a resistance to flow of fluid between the annular members and resulting in successive pressure drops.

3,894,717
DRAIN PORT VALVE AND IMPROVED SHIPPING CONTAINER

Austin E. Elmore, 8519 E. Pasadena Ave., and Ernest A. Uhlmann, 4533 N. Scottsdale Rd., both of, Scottsdale, Ariz. 85251
Division of Ser. No. 274,805, July 24, 1972, Pat. No. 3,815,772. This application Jan. 2, 1974, Ser. No. 430,093
Int. Cl. F16k *31/52;* **B67c** *3/00*
U.S. Cl. 251—144 **6 Claims**

1. A valve assembly for an opening in a pliable bag comprising:
an elongated hollow casing having a first outward laterally extending flange arranged at a point between its ends,
a second flange threadedly mounted on the exterior of said casing for moving relative to said first flange for grasping the periphery of the opening in the bag between said first and second flanges when moved toward each other,
a valve seat arranged within said casing,
a perforated cap member mounted at one end of said casing and providing a cylindrical surface extending inwardly of the casing along its longitudinal axis a given distance,
a valve stem slidably mounted around said cylindrical surface in said casing and movable relative to said cap member and said valve seat,
a valve disc secured to said stem and providing a surface adapted to fit said valve seat,

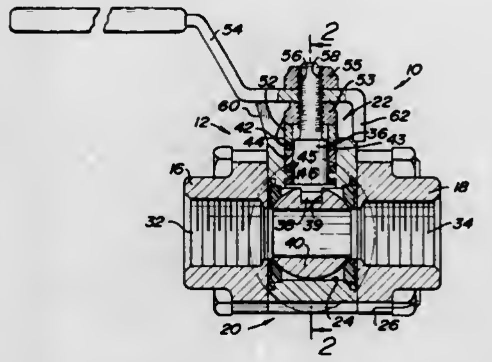


a spring surrounding said stem with one end of said spring engaging said cap member and the other end abutting said disc,
said casing being provided with a pair of transverse apertures for supporting a means for actuating said valve stem,
said means comprising an operating handle having a camming surface operatively engaging said valve stem,
said spring continuously urging said valve stem against said camming surface of said means to urge said surface of valve disc against said valve seat,
said camming surface having a relatively flat portion engaging said valve stem when said means is moved to a given position to move said valve stem to a valve open position and locking said valve assembly in said valve open position.

3,894,718
BALL VALVE

Ulrich H. Koch; Stephen Matousek, both of Moraga; Gary A. Soderlund; Dale N. Drake, both of San Pablo, and Richard S. Digennaro, Berkeley, all of Calif., assignors to Whitey Research Tool Co., Emeryville, Calif.
Filed Oct. 19, 1973, Ser. No. 408,183
Int. Cl. F16k *25/00*
U.S. Cl. 251—148 **8 Claims**

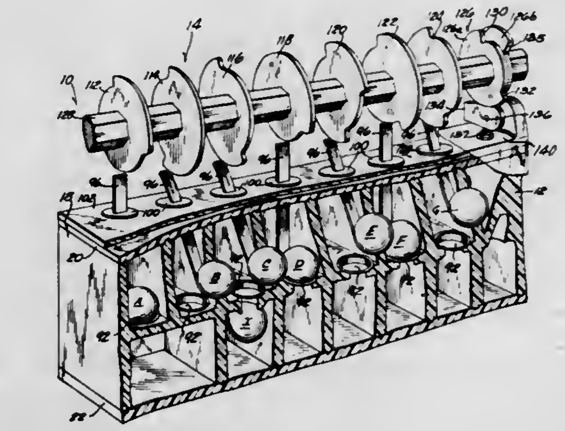
1. A valve comprising:
a body having a central passage of generally cylindrical cross-section;
a ball valve member positioned in said passage and mounted for selective rotation about an axis extending perpendicular to the axis of said passage, said ball mounted for limited movement in directions axially of said passage;
a pair of radially inwardly extending shoulders in said passageway located generally equal distances from said ball on opposite sides thereof, each said shoulder being circumferentially continuous and having a surface facing said ball which is substantially perpendicular to the axis of the passageway;
a pair of resilient seat ring members with one of said ring members positioned between each shoulder and the ball member, each seat ring member having a central opening and a first continuous surface facing said ball and a second continuous surface facing said shoulder, said first surface being of concave spherical configuration of a radius greater than the radius of said ball member and said second surface being generally planar and extending generally parallel to said shoulder;



a disc spring between the second face of each ring and the associated shoulder, each disc spring having a central opening and in its unstressed condition having a truncated conical shape, each disc being positioned with its smaller diameter end pointing toward the ball and sized so that when the ball member, the seat ring members, and the disc springs are assembled between the shoulders, the disc springs are stressed to a flat configuration against the shoulder, and only the radial innermost portion of the first surface of each seat ring is biased against the ball member under a predetermined load, the remaining portion of the first surface being spaced from the ball because of its concave spherical configuration having a radius greater than the radius of the ball member.

3,894,719
WATER SOFTENER VALVE

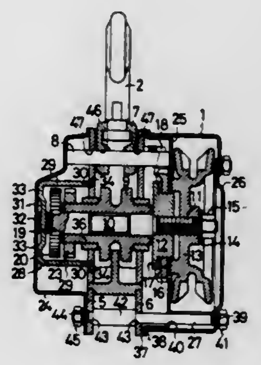
John F. Horvath, Milwaukee, Wis., and Chester R. Nickols, Sycamore, Ill., assignors to Aqua-Chem, Inc., Milwaukee, Wis.
Division of Ser. No. 196,621, Nov. 8, 1971, Pat. No. 3,794,061. This application Dec. 17, 1973, Ser. No. 424,957
Int. Cl. F16k *31/44*
U.S. Cl. 251—231 **6 Claims**



1. A fluid valve comprising in combination,
means defining a housing,
a source inlet and a service outlet each opening into the interior of said housing,
at least one port within said housing, the fluid flow through said fluid valve depending on the selective opening of said port,
a generally spherical valve member freely positioned at said port and positioned on that side of said port so that normal flow through the valve urges said valve member against its respective port, and
deflection means protruding through said housing, said deflection means having an end portion within said housing said end portion being movable from a first position spaced apart from said valve member to a second position, movement of said end portions from said first to said second position causing unseating of said valve member to a position spaced laterally from the axis of said port, movement of said end portions from said second to said first position permitting release of said valve member to the influence of fluid flow through said housing to cause reseating of said valve member, whereby the port sealing surface of said valve member is reoriented relative to said port when said valve member is reseated against its port.

3,894,720
CHAIN BLOCK

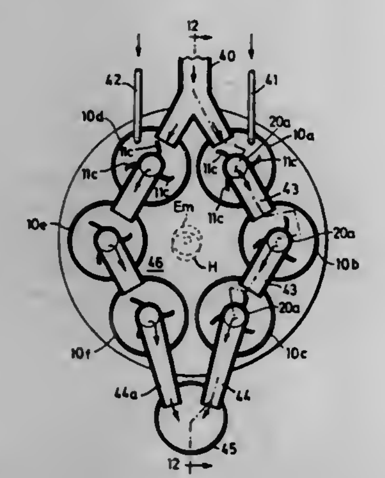
Nishimura Koji, Ritto, Japan, assignor to Kabushiki Kaisha TOA Kikai Seisakusho, Osaka, Japan
Filed Feb. 11, 1974, Ser. No. 441,448
Claims priority, application Japan, May 14, 1973, 48-57139
Int. Cl.² B66D *1/04*
U.S. Cl. 254—171 **8 Claims**



1. A chain block including:
a pair of side plates disposed opposite to each other with a load sprocket clamped therebetween and rotatably supporting the load sprocket;
reduction gears mechanisms mounted on one side plate of said pair of side plates and including intermediate gears adapted to bring a hand sprocket and the load sprocket into cooperative movement at reduced speed by means of mechanisms;
a holding frame formed into a channel shape so as to cover said reduction gears mechanisms from above, below and outside, and having bearings to support those ends of shafts of at least said intermediate gears which are on the side opposite to said side plate, said holding frame having projections formed at the ends of both legs of the frame and being positioned by bringing said projections into meshing engagement with holes formed in said side plate and corresponding to the projection; and
a gear cover covering said holding frame and said reduction gears mechanisms, said cover pressing said holding frame toward said side plate by detachable fastening means and fixing the cover by being fastened to the side plate, whereby the fastening means do not extend through the holding frame.

3,894,721
OSCILLATORY MIXING APPARATUS

Dietmar Boenisch, Morillenhang 45, 51 Aachen, Germany
Continuation-in-part of Ser. No. 274,762, July 24, 1972. This application May 13, 1974, Ser. No. 469,399
Claims priority, application Germany, July 26, 1971, 2137277
Int. Cl. B01f *11/00, 15/02*
U.S. Cl. 259—2 **18 Claims**



1. An orbitally oscillating mixing apparatus unit for fluent soldi material, such as foundry molding materials, comprising: a support mounted for, and driven with, an orbital oscillation in a plane,

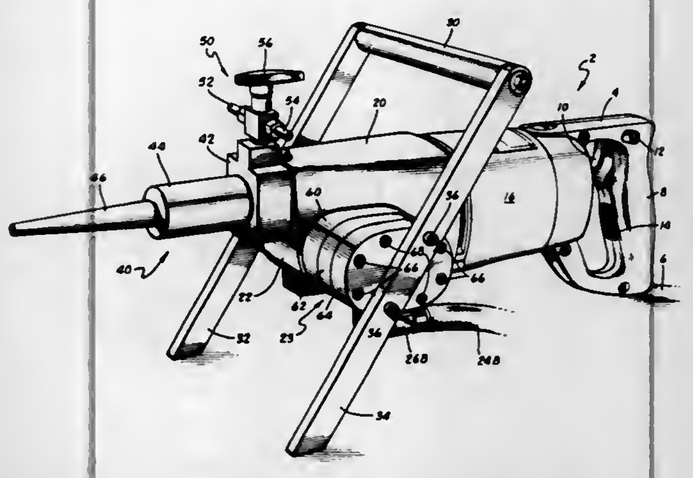
- a vessel secured on the support for oscillation therewith, and providing a mixing space enclosing wall substantially perpendicular to the plane of support oscillation,
- a plurality of blade-like elements
  - secured as a set to the vessel to move therewith, and elongated in direction away from the support, and located and spaced along a closed conic curve the plane of which is parallel to the plane of oscillation, the widths of said blades having similar angular dispositions between radial and tangential to the curve, and slanted outwardly toward the direction of orbital oscillation,
- said blades thereby forming a set of somewhat impeller-like configuration cooperating in action on material as a mixing device, whereby, in addition to a main flow induced in material in the vessel tending to circulate in a path along the enclosing wall oppositely to the orbital oscillation direction, the mixing device acts to set up at least a second flow circulating within the device and having also a component perpendicular to the plane of oscillation, by each blade deflecting material, from a portion circulating in the main flow path, inwardly to a path of recombination within the mixing device and with a constant exchange of material between the two circulating flow paths.

3,894,722
CONTINUOUS DRIVE LIQUID MIXING AMD METERING DEVICE

Richard E. Jones, 780 Broadway, Redwood City, Calif. 94063
Filed Jan. 11, 1973, Ser. No. 322,728
Int. Cl. B01f *15/02, 7/14*
U.S. Cl. 259—22 **14 Claims**

1. A multi-liquid metering and mixing dispenser for volumetrically metering a plurality of separate liquid components introduced into said dispenser through the plurality of separate input ports, then mixing together the metered volumes of said components, then dispensing the resulting mixture of said components, including:

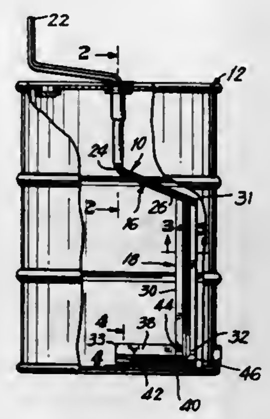
a. a power source disposed for delivering power in a forward mode and a reverse mode;
b. a first metering means disposed for being driven by said power source and operatively associated with a first one of said separate input ports to receive a first said liquid component;
c. a second metering means disposed for being driven by said power source and operatively associated with a second one of said separate input ports to receive a second said liquid component;
d. said first metering means and said second metering means being operatively associated with said power source and with one another in such manner that the volumetric ratio of said first liquid component to said second liquid component remains fixed whenever said power source is driving said metering means;



e. mixing means operatively associated with said first metering means and said second metering means to receive said first liquid component and said second liquid component, said mixing means having the capability of intermixing said first liquid component and said second liquid component to form a substantially homogenous mix; and
f. means connected between said power source and said first and second metering means and said mixing means for driving said first and second metering means only in the forward mode of said power source and for driving said mixing means in both the forward mode and the reverse mode of said power source.

3,894,723
REMOVABLE AGITATOR

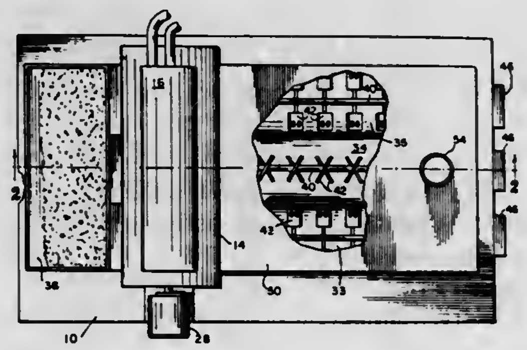
Murray A. Sanders, 146 Wetumpka Ln., Watchung, N.J. 07060, and Albert Sanders, 17 W. 54th St., New York, N.Y.
Filed July 10, 1972, Ser. No. 270,039
Int. Cl. B01f *7/04*
U.S. Cl. 259—122 **7 Claims**



1. A removable agitator adapted to be inserted through a central opening in a fixed top wall of a container comprising
A. a sleeve including means detachably securing the sleeve in a vertical position in said opening,
B. a shaft having a first portion journaled in said sleeve for rotation about a vertical axis,
C. said shaft including a second portion connected at one end to the lower end of the first portion, said second portion extending radially outwardly toward the side wall of the container and being downwardly inclined,
D. an elongated stirring blade of L-shaped configuration with a vertical segment and a horizontal segment, the upper end of the vertical segment being attached to the outermost end of the second portion of the shaft, the vertical segment disposed adjacent the side wall of the container and the horizontal segment being disposed adjacent the bottom wall of the container when the sleeve is secured in the central opening.
E. a substantial portion of the width of said blade over the entire length thereof, including the vertical and the horizontal segments, being flat and in a vertical plane that includes the axis of rotation of the shaft, and
F. rigidifying means extending along the entire length of the blade,
G. the corner between the vertical segment and the horizontal segment of the stirring blade being disposed adjacent the bottom corner of the container between the side wall and bottom wall thereof.

3,894,724
APPARATUS FOR MAKING PAVING COMPOSITION

Kenneth E. McConnaughay, P.O. Box 1457, Lafayette, Ind. 47902
Division of Ser. No. 237,666, March 24, 1972. This application Oct. 25, 1973, Ser. No. 409,621
Int. Cl. B28c *7/04*
U.S. Cl. 259—158 **7 Claims**

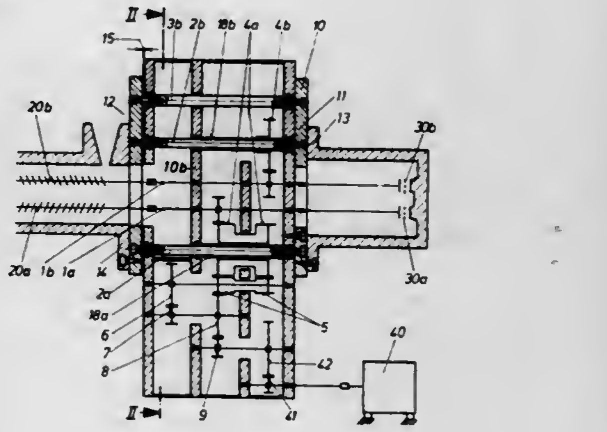


1. An apparatus for making a paving composition comprising a mixer, a chute at one end of said mixer for introducing an aggregate into said mixer, a colloid mill, means for introducing binder-forming materials into said mill, means for driving said mill whereby said binder-forming materials are mechanically milled in said mill to produce a binder in the form of a gel having colloidal size particles, an outlet on said mill in open communication with said mixer adjacent said chute for introducing the gel formed in said mill into said mixer, mixing means in said mixer for mixing said aggregate and gel together, means for driving said mixing means, and a discharge opening on the end of said mixer opposite said chute.

3,894,725
TRANSMISSION FOR TWIN WORM EXTRUDERS

Heinrich Schafer, Vellmar, Germany, assignor to Rheinstahl Aktiengesellschaft, Essen, Germany
Filed Nov. 21, 1973, Ser. No. 418,049
Claims priority, application Germany, Nov. 22, 1972, 2257158
Int. Cl. B01f *7/08*
U.S. Cl. 259—192 **2 Claims**

1. In combination: a worm housing, first and second worm extruders arranged in said worm housing and extending substantially parallel to each other, a transmission housing, first and second shaft extensions respectively arranged in axial alignment with and drivingly connected to said first and second worm extruders, first intermediate plate means arranged at one side of said transmission housing and between said transmission housing and said worm housing while being connected to said worm housing and being slightly spaced from said transmission housing, second intermediate plate means arranged on the other side of said transmission housing which is opposite said one side of said transmission housing, said second intermediate plate means being connected to said other side of said transmission housing, axial bearing housing means connected to said second intermediate plate means, said first and second shaft extensions extending through said transmission housing into said axial bearing housing means, axial bearing means arranged in said axial bearing housing means and respectively rotatably supporting the adjacent ends of said shaft extensions in said axial bearing housing means, a first group of spacer bolt means located below said first and second shaft extending in said transmission housing and while extending through said transmission housing having its ends firmly connected to said first and second intermediate plate means, a second group of spacer bolt means located above said first and second shaft extensions in said transmission housing and while extending through the latter having its ends firmly connected to said first and second intermediate plate means respectively, first and second sleeve means respectively surrounding the spacer bolt means of said first group of spacer bolt means in a contact-free manner while each sleeve means of said first group of sleeve means had the ends thereof supported by said transmission housing, a pair of first gears having the same pitch circle diameter and the same number of teeth and respectively being journaled in said first and second sleeve means while meshing with each other and a pair of second gears having the pitch circle diameter and the same number of teeth and being respectively keyed to said first and second shaft extensions and respectively meshing with the gears of said pair of first gears, drive motor means and transmission gear means drivingly connected to said pair of first gears for driving the same, whereby said first and second worm extruders are rotatable by said motor means at the same speed but in opposite directions with regard to each other.

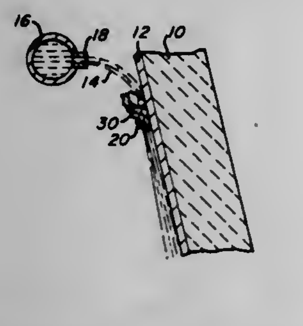


3,894,726
CASCADE WATER COOLER AERATOR-MULTIPLYER

Jay R. Hopkins, Provo, Utah, assignor to United States Steel Corporation, Pittsburgh, Pa.
Filed Oct. 29, 1974, Ser. No. 518,540
Int. Cl. C21b *7/10*
U.S. Cl. 266—32 **11 Claims**

1. In an apparatus for cooling a substantially vertical hot surface wherein at least one jet of water is directed against said hot surface so that the water therefrom will run down said hot surface and cool the same, the improvement comprising, an aerator-multiplyer having a plurality of porous sheet surfaces attached to said hot surface such that the water jet is

directed onto said aerator-multiplyer and the porous sheet surfaces thereof more evenly distributes the water onto said hot surface, and allows a greater flow of water on the hot surface without drop-off.



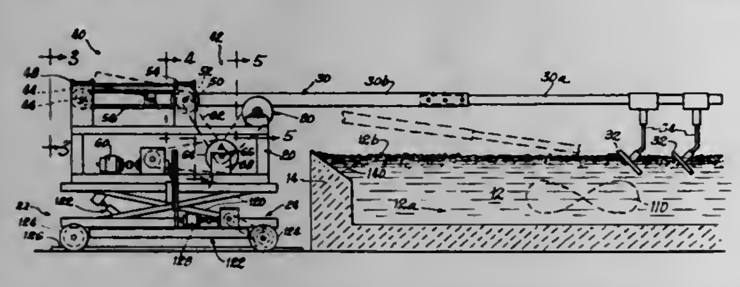
3,894,727
MECHANICAL PUDDLING AND SKIMMING DEVICE

David Salmon, Frankfort; Edward J. Wierzciki, Lansing, both of Ill.; Benny Langston, Crown Point, Ind., and Donald W. Beegle, Russellville, Ala., assignors to U.S. Reduction Co., East Chicago, Ind.

Division of Ser. No. 256,611, May 24, 1972, Pat. No. 3,813,238, which is a division of Ser. No. 79,561, Oct. 9, 1970, Pat. No. 3,703,340. This application Mar. 8, 1974, Ser. No. 449,237

Int. Cl. C21c *7/00*

U.S. Cl. 266—34 A **3 Claims**



1. In combination with a furnace having walls surrounding a molten mass including metallics and non-metallics, a mechanical paddle; a frame; support means supporting said paddle on said frame; drive means on said frame for moving said paddle in a closed loop path to stir said mass allowing said molten metal to separate into an upper non-metallic slag layer and a lower molten metallic layer; a base; lift means supporting said frame on said base; and means on said base for moving said base to move said frame along a path parallel to the upper surface of said mass so that said paddle can be positioned adjacent the upper surface of said mass by raising said frame with said lift means and said means on said base actuated to move said paddle horizontally towards one of said walls for removing said slay layer from said furnace.

3,894,728
SLAG-REMOVING APPARATUS

Leopold Berkens, Herstal, Belgium, assignor to ELPHIAC, Brussels, Belgium

Filed Feb. 21, 1974, Ser. No. 444,648

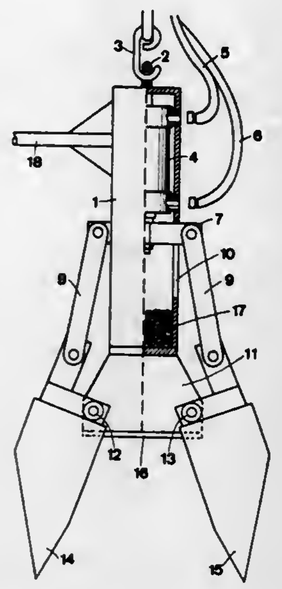
Claims priority, application Belgium, Feb. 21, 1973, 4812

Int. Cl. C21c *7/00*

U.S. Cl. 266—37 **1 Claim**

1. An apparatus for removing slag from a bath of molten metal, said apparatus comprising:

a. a casing having a gripping means at a first end thereof adapted for connection to a hook of a travelling crane;
b. a rigid structure having a first end thereof secured to a second end of said casing;
c. a pair of cooperating scoops pivotally mounted on said rigid structure for removing slag, and a means connected to said scoops for causing pivoting thereof when moved axially with respect to said casing;
d. a pneumatic jack within said casing solidly connected thereto near said first end thereof and means for connecting said jack to a source of pneumatic fluid, said jack having an operating rod mobile in said casing;
e. means connecting said operating rod to said pivoting means whereby actuation of said operating rod causes pivoting of said scoops for slag removal;



f. a metallic shield, for protecting said casing and jack from the heat of said bath of molten metal, fixed at a second end of said structure, and
g. heat insulating material within said casing disposed between the second end thereof and the space wherein said operating rod moves.

3,894,729
CONVERTER OUTLET LINING

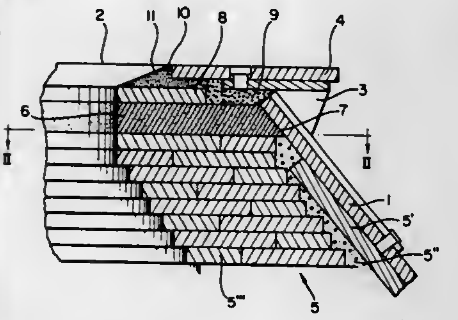
Hans Muller, Wiesbaden, Germany, assignor to Didier Werke AG, Wiesbaden, Germany

Filed Feb. 6, 1974, Ser. No. 439,862

Claims priority, application Germany, Feb. 12, 1973, 2306858

Int. Cl.² C21C *5/44*

U.S. Cl. 266—43 **5 Claims**



1. An outlet lining for the outlet area of a metallurgical vessel, such as a converter, such vessel including a main lining, a metal jacket surrounding said main lining, and an outlet flange defining the outlet opening of said vessel, said outlet lining comprising:

a lower layer of highly heat conductive material, the outer surface of which is in direct contact with said metal jacket of said converter, said lower layer comprising layer of carbon bricks on top of said main lining, the innermost ends of which form a portion of said outlet and the outermost ends of which are in contact with said jacket; and

positioned on top of said lower layer, an upper layer of wear-resistant material, said upper layer comprising a layer of sintered magnesia bricks on top of said layer of carbon bricks, the length of said magnesia bricks being from one-third to two-thirds the length of said carbon bricks, the innermost ends of said magnesia bricks forming a portion of said outlet, there being a space between the outermost ends of said magnesia bricks and said jacket, and a layer of compressed granular magnesite material positioned over a portion of the top of said magnesia bricks, the inner surface of said layer of magnesite material forming a portion of said outlet.

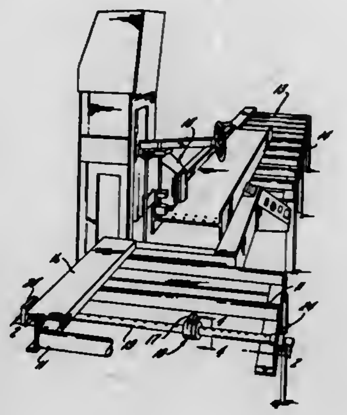
3,894,730
BEAM CLAMP

Robert F. Reiter, Freeport, Ill., assignor to W. A. Whitney Corporation, Rockford, Ill.

Filed Mar. 7, 1974, Ser. No. 448,927

Int. Cl. B25b *1/18*

U.S. Cl. 269—13 **7 Claims**



1. A clamp for positioning an elongated workpiece carried by a roller conveyor against a gage extending along one side of the conveyor to hold the workpiece during the performance of an operation on the workpiece, said clamp including a jaw mounted between the rollers of the conveyor to pivot in a generally longitudinal direction with respect to said conveyor and having a free end portion normally projecting upwardly beyond the tops of the rollers, means for moving said jaw in a generally lateral direction with respect to said conveyor to clamp and release the workpiece with respect to the gage, and a spring connected between said jaw and said means and holding said jaw in an upright position while allowing the jaw to be pivoted beneath the rollers without breaking loose from said means when the jaw is hit by the workpiece as the latter is moved along the conveyor.

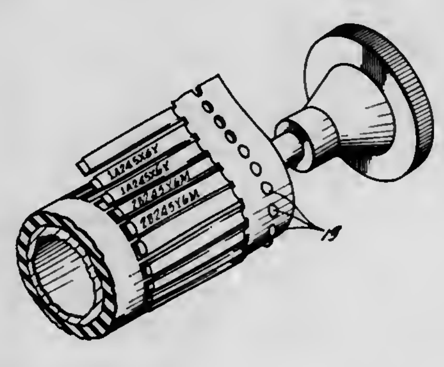
3,894,731
MARKER ASSEMBLY

Joseph H. Evans, Palo Alto, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed June 14, 1973, Ser. No. 369,836

Int. Cl. B23q *3/00*

U.S. Cl. 269—47 **14 Claims**



1. An assembly comprising:

a. a flexible support spine comprised of an elongate spine from at least one side of which transversely projects a train of substantially parallel tines spaced one apart from the other, said support admitting of flexure so as to diminish the distance between opposite ends thereof while retaining said tines in mutually parallel orientation; and
b. a plurality of tubular sleeves;

each of said sleeves being snugly and slidably disposed over one of said tines so as to admit of removal therefrom when drawn past the ends of said tines distant from said spine.

3,894,732
APPARATUS FOR CONVERTING A STACK OF SHEETS INTO A STREAM OF OVERLAPPED SHEETS

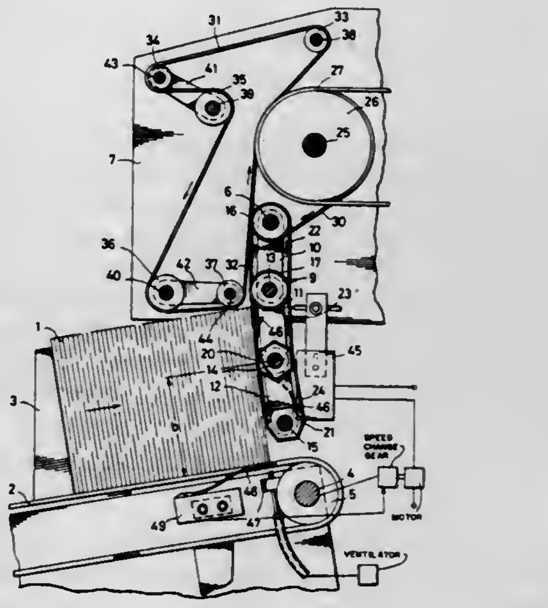
Hans Müller, Zofingen, Switzerland, assignor to Grapha-Holding AG, Hergiswil, Switzerland

Filed Sept. 13, 1973, Ser. No. 397,094

Claims priority, application Switzerland, Sept. 21, 1972, 13784/72

Int. Cl. B65h *3/04, 1/14*

U.S. Cl. 271—10 **9 Claims**



1. In an apparatus for converting a stack of sheets into a stream of overlapped sheets, a combination comprising first conveying means for conveying a stack of sheets which stand on edge in a substantially horizontal path; second conveying means at a level above said path; pick-up means for successively picking up the respectively leading sheets of said stack, said pick-up means comprising a unit which is mounted for tilting movement about a shaft defining a substantially horizontal axis which extends across said path and includes endless rotatable pick-up belt means which is elongated in upright direction and has an upper portion located above said path, and a lower portion which is normally in contact with the respective leading sheet; and transfer means cooperating with said pick-up means for tranferring each picked-up sheet to said second conveying means and depositing it thereon in partially overlapping relationship with a preceding sheet.

3,894,733
DUPLICATING SYSTEMS WITH SHEET HANDLING FEATURES

Lawrence A. Borneman, Lombard, Ill., assignor to A. B. Dick Company, Chicago, Ill.

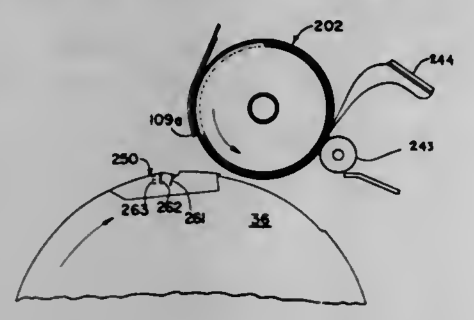
Division of Ser. No. 98,260, Dec. 15, 1970, Pat. No. 3,788,221. This application Oct. 25, 1973, Ser. No. 409,757

Int. Cl. B65h *29/54*

U.S. Cl. 271—172 **6 Claims**

1. A sheet transfer system for transporting a pair of sheet members sandwiched together with a lead edge of the first sheet forward of the lead edge of the second sheet to separate, predetermined locations, respectively, said system including in combination: a member mounted for rotation, said member including an outer porous cylinder and air flow means to provide an attractive force for drawing said sandwiched pair of sheets against the periphery of said cylinder as the latter

rotates, said first sheet comprising the outer sheet of said sandwiched pair, whereby said drawing means acts only on the lead edge of said first sheet for attracting the first sheet to the periphery of said cylinder, said sandwiched sheets being drawn to the periphery of said cylinder at a first, home position and carried thereby in the direction of rotation thereof along a path about the outer periphery of said cylinder, valving means included in said cylinder for releasing said attractive force, and means for controlling said valving means to selectively remove said attractive force only from the lead edge of said outer sheet upon the latter being carried to a first location downstream of said home position, thereby releasing said sheet for travel along a separate path away from said cylinder, said valving means being effective to maintain said attractive force on said second, inner sheet for transporting said lastmentioned sheet on said cylinder to a second location about the periphery thereof, downstream of said first location, whereat said second, inner sheet is removed from said cylinder.



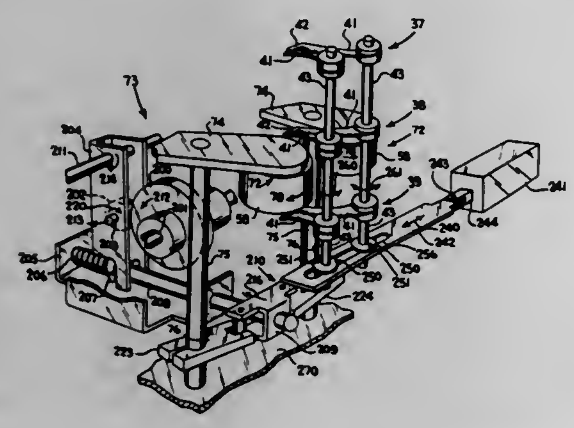
3,894,734
DECELERATING MECHANISM

Paul R. Sette, Hamden, Conn., and Anthony Storace, Tarrytown, N.Y., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed June 5, 1974, Ser. No. 476,704

Int. Cl. B65h *29/68*

U.S. Cl. 271—2 **3 Claims**



1. A decelerating mechanism for stopping moving pieces of of mail being ged through a mail handling system, comprising at least one pair of cooperatively acting, adjacently spaced fingers each having a curved mail contacting surface, said fingers being operative between an open and a closed position, each curved surface sloping inwardly toward the other curved surface when said fingers are in said closed position, in said closed position said curved surfaces converging to provide a progressively restrictive passageway for an incoming piece of mail, each of said mail contacting surfaces further including a plurality of saw-toothed projections for preventing an incoming piece of mail from backing out from between said fingers, biasing means acting upon said fingers for biasing said fingers toward each other so as to provide a spring-like holding resistance to an incoming piece of mail which tends to separate the fingers as said mail enters there between, and means operatively connected to said fingers to move them between said open and said closed positions.

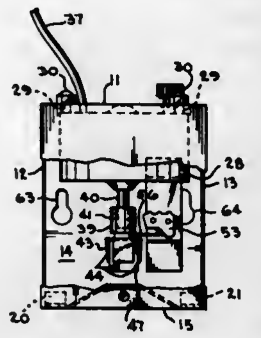
3,894,735
AUTOMATIC CUE CHALKERS

Raymond Dickens, 108 Morrell St., Baytown, Tex. 77520

Filed Oct. 9, 1973, Ser. No. 404,222

Int. Cl. A63d *15/16*

U.S. Cl. 273—19 **4 Claims**



1. Apparatus for chalking the tips of cues, comprising means for holding a chalk block for engagement by the tip of a cue, said holding means being slidably keyed with respect to the shaft of an electric motor to cause rotation of said chalk block with said shaft when said electric motor is operated, said holding means being slidably moved longitudinally of said shaft by the tip of a cue placed against said chalk block to cause operation of said electric motor whereby chalk from said chalk block is frictionally applied to the tip of the cue, said shaft being fixed against longitudinal movement and said holding means being longitudinally slidable thereon as described, an electric switch means for controlling operation of said electric motor, said sliding movement of said holding means longitudinally of said shaft in response to the pressure of the tip of a cue causing closing of said electric switch means to cause operation of said electric motor.

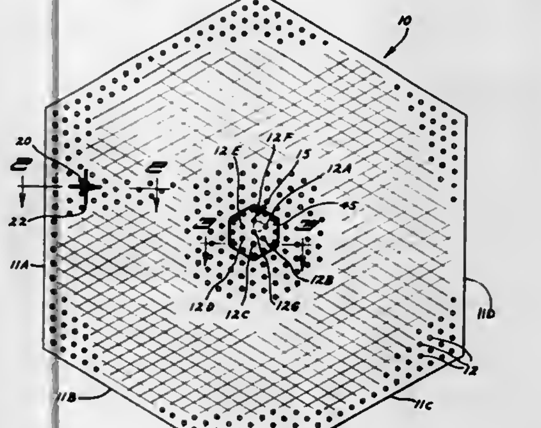
3,894,736
DART BOARD INCLUDING FINGER PROJECTIONS AND DART ENGAGEABLE THEREWITH

Charles F. Foley, Minnetonka, Minn., assignor to Research & Development, Minneapolis, Minn.

Filed May 11, 1973, Ser. No. 359,509

Int. Cl. A63b *71/02*

U.S. Cl. 273—95 R **12 Claims**



1. A game apparatus comprising a projectile having a unitary closed leading end portion when projected, and a target for use in combination with said projectile, said target comprising support means forming a game board, a plurality of spaced finger like projections extending from said support means, said finger like projections having rounded outer ends, said support means positioning said finger like projections in a substantially uniform pattern covering the entire game board whereby any three adjacent finger like projections define an enclosed area comprising an equilateral triangle and have an interference fit with the leading end of a projectile positioned in said enclosed area, and at least one portion of one of said leading end and finger like projections including means which yieldably move when the projectile engages any three adjacent finger like projections to form an interference frictional fit between the leading end of said projectile and any three adjacent finger like projections.

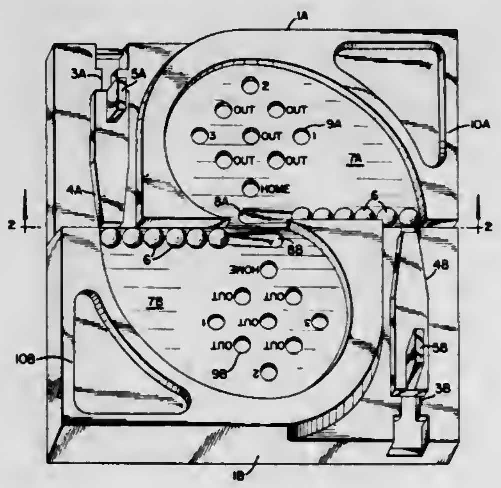
3,894,737
GAME BOARD APPARATUS WITH INTERCHANGEABLE PLAYING BOARD PLATES

John J. Moore, 13172 Benton St., Garden Grove, Calif.

Filed May 30, 1974, Ser. No. 474,800

Int. Cl.² A63F *7/00, 7/10*

U.S. Cl. 273—121 R **1 Claim**



1. In a game board apparatus, two or more identical base structures, each pivotally connected to at least one of the other base structures by at least one hinge, a playing area provided on each base structure, said playing area being defined by a groove along a substantial part of the periphery thereof, said groove being provided with two ends, both of which extend to one side of the base structure bordered by one of said at least one hinge thereof, the ends of said groove being exposed only when the base structure thereof is folded along said one hinge bordering said one side, a plurality of variously apertured interchangeable playing board plates associated with each of said base structures, one of said plates being insertable into its associated base structure only when the ends of the groove of said associated base structure are exposed, the apertures of each plate providing pockets for a ball to be propelled thereinto by a projector, and each pattern of plate representing a different type of game, whereby a different type of game may be played each time a different type of plate is inserted into the groove of its associated base structure.

3,894,738
BOARD GAME APPARATUS

Lee O. Dykes, Jr., and Lillian H. Dykes, both of 9021 Gaylord, No. 91, Houston, Tex. 77024

Filed Sept. 16, 1974, Ser. No. 506,320

Int. Cl. A63f *3/00*

U.S. Cl. 273—134 D **9 Claims**

1. A new and improved game where players thereof evaluate and assess the relative risks and merits of alternative paths of movement to a desired goal during play of the game, comprising:

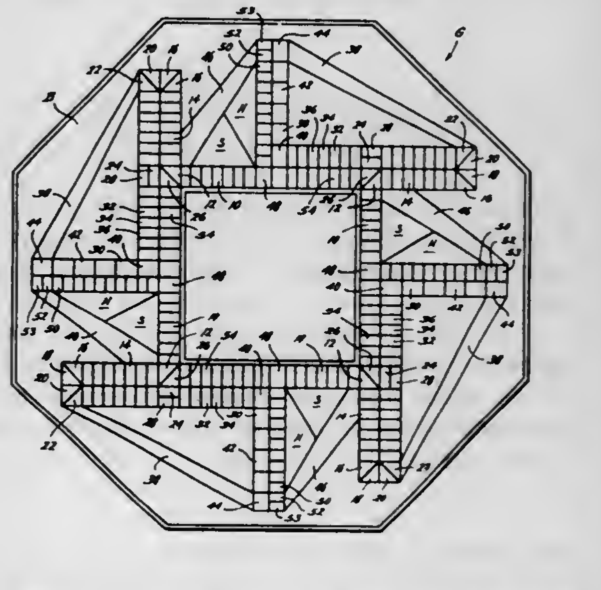
a. playing token means assigned to each player for movement by the assigned thereto player;

b. play determining means for randomly specifying one of a set of numbers of moves permitted each player during his playing turn; and

c. a game board across which said playing token means are moved by the players as play of the game proceeds, said game board having formed thereon:

  1. a starting location in which said playing token means are stored and from which said playing token means begin movement across said game board;
  2. a home base position to which said playing token means are moved by the players to complete play; and
  3. a plurality of alternate travel paths connecting said starting location and said home base position, said alternate travel paths including:

     (i) a first travel path connecting said home base position and said starting location, said first travel path having a first number of movement steps requiring a first number of travel moves of said playing token means to reach said home base position from said starting location; and



     (ii) a second travel path connecting said home base position and said starting location, said second travel path having a second number of movement steps requiring a second number of travel moves of said playing token means to reach said home base position from said starting location, said second number of travel moves in said second travel path being greater in number than the first number of travel moves and movement steps in said first travel path but having a higher probability of occurrence as one of the set of numbers of moves specified by said play determining means, wherein the players of the game must evaluate and assess the relative risks and merits of movement along said first and second travel paths for movement from said starting location to said home base position during play of the game.

3,894,739
GOLF PRACTICE APPARATUS

Raymond Goldstein, 19119 Nordhoff St., Apt. 218, Northridge, Calif. 91324

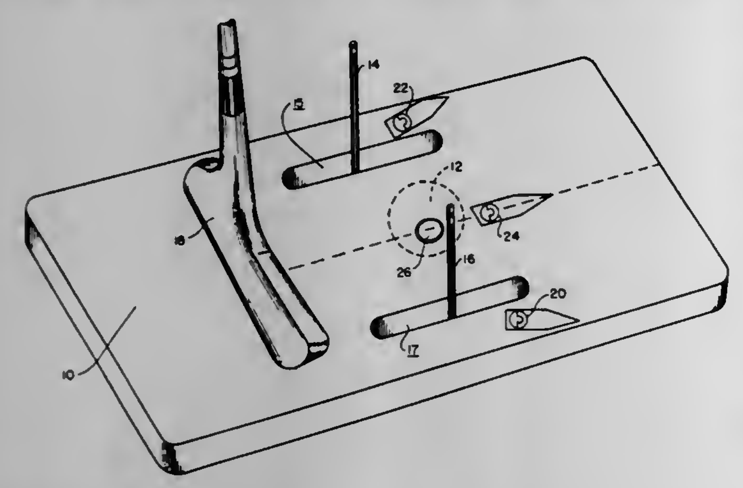
Continuation-in-part of Ser. No. 381,708, July 23, 1973, abandoned. This application June 27, 1974, Ser. No. 483,688

Int. Cl. A63b *69/36*

U.S. Cl. 273—186 R **8 Claims**

1. Golf training apparatus comprising: a housing having a top defining a putting surface along which a golf ball is to be moved by the face of a golf club along a predetermined path; first and second spring-biased elongated sensor arms normally extending upwardly from the aforesaid surface on each side of said predetermined path in position to be engaged by the face of the club as the club is moved along the path to impact the

golf ball, and to be turned down thereby toward the plane of the putting surface, said sensor arms being positioned to be engaged simultaneously by the face of the golf club as it is moved along the predetermined path only if the face of the club has a particular angular relationship with the path and is properly centered with respect to the path; an elongated yoke pivotally mounted to the underside of the top of the housing for angular movement about a vertical axis in a plane parallel to and displaced down from the plane of the putting surface; spring-biased means mounting said sensor arms to the respective ends of said yoke for independent angular movement of said sensor arms about a horizontal axis; first and second electrically energized indicator lights; electric contact means mechanically coupled to said yoke; and electric circuitry connecting said indicator lights to said contact means to cause said indicator lights to be selectively energized upon angular movement of the yoke about said vertical axis in one direction or the other.



3,894,740

SWITCHING DEVICE, PARTICULARLY FOR A RECORD PLAYER OR CHANGER

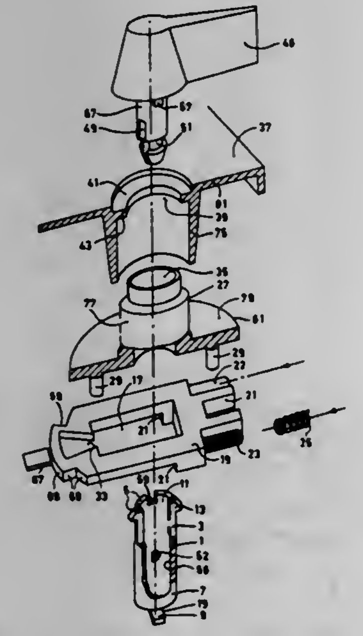
Kurt Eisemann, Berlin, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 28, 1973, Ser. No. 401,717

Claims priority, application Germany, Oct. 13, 1972, 2250178

Int. Cl. G11b *15/00*

U.S. Cl 274—1 R **4 Claims**



1. A device for switching and control operations in a record player, comprising a bearing spindle having an axis, a radially protruding cam at a lower end thereof and a tubular upper end thereof having a plurality of axially extending resilient portions, said axially extending portions having radially protruding latching bars at their upper ends; a first member having an elongated central opening through which said spindle is inserted such that said first member is retained on said spindle by engaging a top surface of said cam and is rotatable about and slidable diametrically with respect to the axis of the spindle; a second member rotatably mounted on said spindle between said first member and said latching barbs; and means connecting said first and second members so as to rotate said first member in response to rotation of said second member, an upper portion of said second member having an outer circular cylindrical surface coaxial with said spindle, said latching barbs extending beyond said outer surface such that upon insertion of said upper portion of said second member into a close fitting opening in a mounting plate said axially extending portions will be sprung inward so that said barbs may pass through the opening, said barbs engaging an upper surface of the mounting plate when insertion is complete.

3,894,741

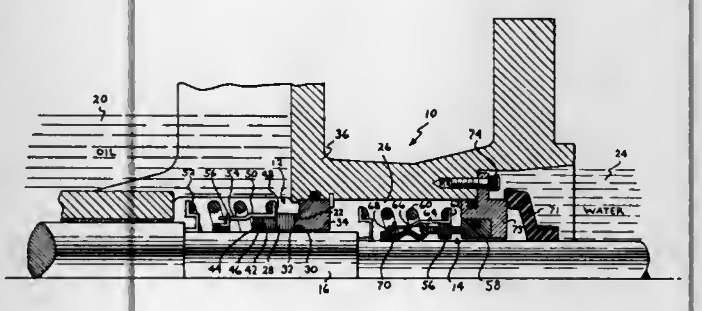
SELF-PRESSURIZING SEAL FOR ROTARY SHAFTS

James Dennis McHugh, Santa Clara, Calif., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 132,485, April 8, 1971, Pat. No. 3,704,019. This application May 16, 1973, Ser. No. 361,368

Int. Cl. F16j *15/16*

U.S. Cl. 277—27 **3 Claims**



1. A shaft seal for a rotatable machine to inhibit ingress of ambient fluid into said machine, said seal comprising a spiral grooved face seal disposed at an inboard location along said shaft for pumping sealing fluid from said machine into a substantially confined zone to increase the sealing fluid pressure within said machine, said spiral grooved face seal comprising coaxial rotary and stationary members juxtaposed in a co-planar attitude, at least one of said members being axially slidable along said shaft to vary the span between said members, mechanical means biasing said axially slidable member toward said stationary member, a shoulder notched within said axially slidable member face remote from said stationary member, said should being in communication with the sealing fluid of said confined zone to bias said axially movable member toward said stationary member of said spiral grooved face seal with increased sealing fluid pressure in said confined zone, face seal means disposed at an axially outboard location upon said rotatable shaft to restrict the flow of sealing fluid from said confined zone, means for monitoring the pressure within said confined zone, a pressure responsive valve means mounted in a bypass port communicating the region between said spiral grooved face seal members to said motor interior, and resilient biasing means operable to actuate said valve means to close the bypass port responsive to a predetermined value of pressure being attained in said confined zone, said valve means being further operable in response to a reduction in the pressure within said confined zone below a predetermined value to open said bypass port.

3,894,742

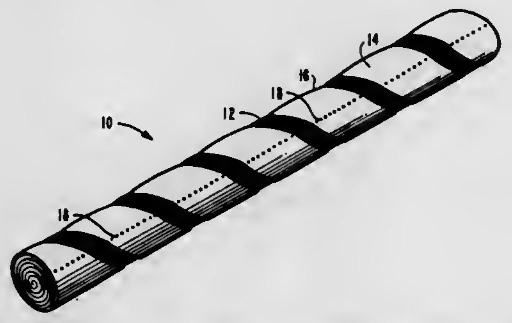
ROPE SEALING MEANS

Robert B. Trelease, Torrance, Calif., assignor to Hitco, Irvine, Calif.

Filed July 20, 1973, Ser. No. 380,965

Int. Cl. F16j *15/00*

U.S. Cl. 277—203 **18 Claims**



1. A flexible sealing device usable in conjunction with fluid flows at elevated temperatures and pressures without deterioration comprising:

resilient core means; and,

a covering element comprising a cover strip impermeable to fluid flow and disposed over at least portions of the core element and fastened thereto at a plurality of spaced-apart, substantially coplanar joinder points.

3,894,743

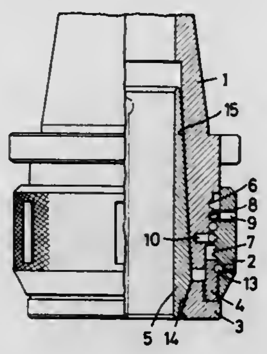
COLLET CHUCK

Shinbe Hiroumi, 7,4 chome, Ohiraki-cho, Osaka, Japan

Continuation-in-part of Ser. No. 387,699, Aug. 13, 1973, abandoned. This application May 30, 1974, Ser. No. 474,772

Int. Cl. B23b *31/20*

U.S. Cl. 279—47 **2 Claims**



1. A collet chuck comprising a chuck body having a conical bore axially formed therein, a collet being longitudinally split and having a conical surface complementary to the conical bore of said chuck body, said collet being received in said conical bore and adapted to be contracted upon axial movement in said bore, a lock nut rotatably mounted on the chuck body, a nose ring rotatably connected to said lock nut and being circumferentially engagable with an end portion of said collet, said nose ring and said end portion of said collet having means for contracting said portion of the collet upon axial movement of the nose ring, a first helical groove formed in the inner periphery of said lock nut, a second helical groove formed around said chuck body correspondingly to said first helical groove, said first and second helical grooves forming a helical channel between the lock nut and the chuck body, a plurality of balls received in said helical channel and being in rolling contact therewith to permit the axial movement of said lock nut upon rotation of the lock nut, first and second stops projecting respectively in said first and second helical grooves so as to prevent removal of said balls out of said helical channel, said stops being spaced apart a sufficient distance to allow the balls therebetween to rotate relative to one another for reducing friction between the channel and the balls received between the stops to facilitate rotation of said lock nut, and means for holding some of said balls in said helical channel in tight frictional contact with one another to provide friction between the channel and said some of the balls to prevent the lock nut from becoming loose with respect to the chuck body when a tool has been gripped by said collet.

3,894,744

PROTECTIVE EDGE FOR SKIS

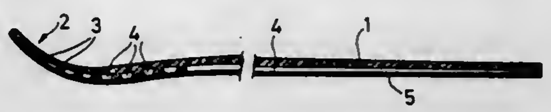
Wolfgang Benner, Landsiedlerstrasse, 7184 Kirchberg, Jagst, Germany

Filed Aug. 28, 1974, Ser. No. 501,361

Claims priority, application Germany, Aug. 30, 1973, 2343725

Int. Cl. A63c *5/04*

U.S. Cl. 280—11.13 E **10 Claims**



1. A ski structure comprising:

a ski body of cast plastic material having a smooth bottom running surface and a shovel portion at its forward end;-/and

a protective edge profile of hard, wear-resistant material having a substantially horizontal leg portion thereof in approximate alignment with the running surface of the ski body and an upright leg portion thereof embedded in the ski body; and wherein:

the upright leg portion of the edge profile is retained in the ski body against disengagement therefrom in the vertical direction, by virtue of an undercut cross-sectional engagement outline between it and the surrounding material of the ski body;

the protective edge profile is longitudinally continuous and smooth in outline so as to create matching continuous and smooth contact surfaces in the cast ski body along which the edge profile is capable of sliding longitudinally while being retained as mentioned; and

the shovel portion of the ski body and the protective edge define between them means for longitudinally retaining the forward end portion of the edge profile against said shovel portion.

3,894,745

SKI BODY MADE OF PLASTICS

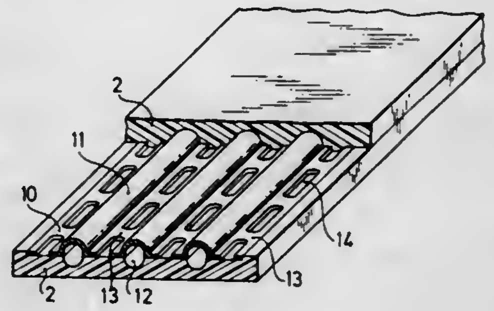
Peter Heim, Ulm, and Dietrich Schleede, Wiesbaden, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of Ser. No. 252,856, May 12, 1972, abandoned. This application Aug. 31, 1973, Ser. No. 393,659

Claims priority, application Germany, May 14, 1971, 2124061

Int. Cl. A63c *5/00, 5/12*

U.S. Cl. 280—11.13 L **4 Claims**

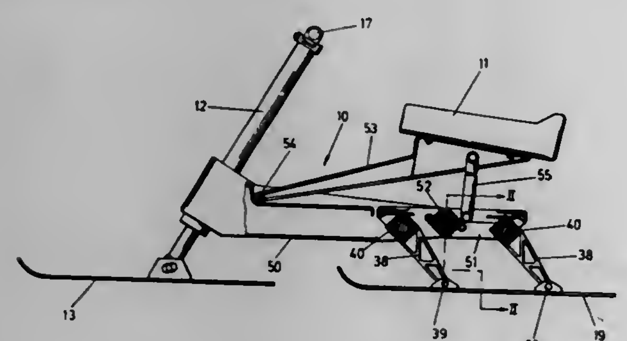


1. A ski body forming substantially the entire ski and adapted to bear all of the mechanical stresses in the ski during use comprising at least two independently formed plastic layers having generally complementary surface portions located adjacent each other and secured in superimposed rela-

tion to one another with one layer being on top of the other; at least one elongated reinforcing element between said layers for absorbing torsional and bending forces in the ski when in use; at least one of said generally complementary surfaces having at least one elongated recess formed therein which receives said reinforcing element; said one generally complementary surface having a plurality of longitudinal recess formed therein having generally semicylindrical configurations opening towards the other of said complementary surfaces and said reinforcing element comprising a plate having generally semicylindrical corrugations formed therein and received in said recesses, said plate having a plurality of apertures formed therein between said corrugations and said layers being joined to each other through said apertures.

3,894,746
SKI-BOB

Jean-Yves Evequoz, 17, route de la Dixence, Sion, Switzerland
Division of Ser. No. 260,027, June 2, 1972, Pat. No. 3,858,896.
This application Feb. 13, 1974, Ser. No. 442,203
Int. Cl. B62b *13/04*
U.S. Cl. 280—16 **3 Claims**



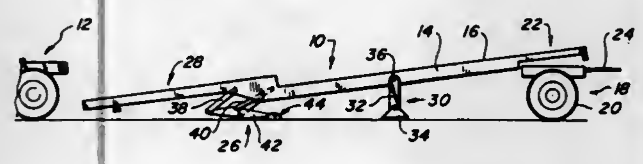
1. A ski-bob comprising:
a. a chassis including a main body and a support arm,
b. a steerable front ski connected to said chassis,
c. two rear skis, each rear ski being independently connected to said chassis by a pair of suspension devices,
d. each suspension device comprising a pair of unitary arms of substantially equal length and being pivotally connected at one end to said chassis about first spaced apart substantially transverse axes and being pivotally connected at the other end to a rear ski about second spaced apart substantially transverse axes,
e. a torsion shock absorbing means connected to each suspension device at one of said axis,
f. said main body supporting said front ski and the forward pair of suspension devices,
g. said support arm supporting the rearward pair of suspension devices, and
h. said main body and said support arm being pivotally connected together.

3,894,747
METHOD AND APPARATUS FOR LOWERING A TRAILER TO THE GROUND

Gerald F. Wisdom, 337 Delaware, and Larry L. Wisdom, Kings Ct., both of Sterling, Colo. 80751
Filed May 20, 1974, Ser. No. 471,241
Int. Cl. B62d *53/06*
U.S. Cl. 280—30 **12 Claims**

1. In a system for lowering a trailer bed to the ground wherein the trailer bed is supported near one end by a removable wheel assembly, the improvement comprising,
a lift mechanism mounted on the underside of said trailer bed near the end thereof opposite said one end, and
support means pivotally and removably connected to said trailer bed intermediate said lift mechanism and the wheel assembly whereby said lift mechanism is operative to pivot said trailer bed about said support means to allow the wheel assembly to be removed from the trailer bed and to allow the trailer bed to be lowered to the ground.

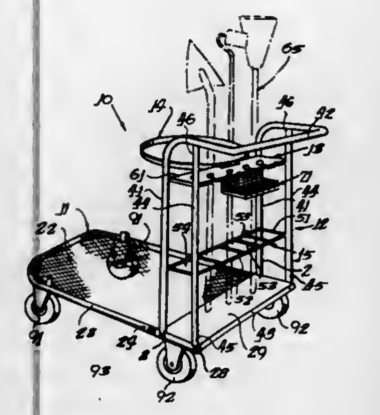
9. A method of lowering a trailer bed from a raised generally horizontal position into flat engagement with the ground wherein said trailer bed is supported near one end by a removable wheel assembly and near its opposite end by a vertical lift mechanism, comprising the steps of:
positioning a fulcrum means at an intermediate location between said wheel assembly and the lift mechanism,



lowering said opposite end with the lift mechanism to raise the said one end due to pivotal movement about said fulcrum means,
removing the wheel assembly at said one end from the trailer bed,
raising said opposite end with the lift mechanism causing one end to pivot about the fulcrum means until it is in engagement with the ground,
further raising said opposite end so that the fulcrum means is free to be removed,
removing the fulcrum means, and
lowering said opposite end into engagement with the ground so that the trailer bed lies flat on the ground.

3,894,748
LAWN AND GARDEN CART

James E. Ratcliff, 1618 Prichard, Dallas, Tex. 75217
Filed Nov. 1, 1973, Ser. No. 411,792
Int. Cl. B62b *3/02*
U.S. Cl. 280—41 **6 Claims**

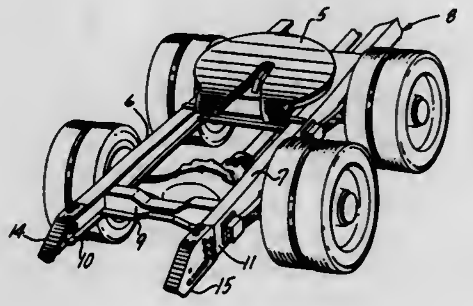


1. A cart intended for the transporting and storing of garden implements and a container for leaves and grass clippings and the like comprising a base having a front section and a back section, the base front section formed of a longitudinally elongated U-shaped tubular frame having the end portions of said front section pivotally connected to the front edge of the frame back section, a mesh platform extending between said U-shaped frame, the frame back section being formed of a substantially flat transversely extending sheet of material having the end portions the frame back section formed of tubular members in substantial axial alignment with the ends of the front section frame, a plurality of wheels for supporting the base for rolling movement on a surface, a pair of transversely spaced elongated tubular members each having one end thereof secured to the front end corner portions of the back base section and projecting vertically upwardly from said back base section with the top portions of said elongated tubular members being bent approximately 90° to extend in parallel horizontal positions rearwardly of the back frame section to terminate in a transversely extending horizontal bar

defining a handle, a second pair of elongated tubular members having their bottom end portions connected to the back corner portion of the back frame section and projecting vertically upwardly from said back frame section.in alignment with the respective associated one of the pair of first mentioned tubular members and terminating at the top ends thereof with the horizontal bent portion of the associated first mentioned tubular member, a substantially flat rectangularly elongated implement holding rack disposed in a horizontal position transversely extending between the spaced apart pairs of first and second mentioned tubular members and spaced vertically upwardly from and in a position vertically disposed over said back frame section, the rack having a front edge and a back edge, a series of transversely spaced apart aligned openings disposed in the rack and extending vertically through said rack of a size to afford free entry of elongated handle members of tools and implements through said openings, a series of semicircular notches extending transversely along the back edge of the rack and adapted to receive the elongated handle portions of tools and implements through said notches, a rack frame disposed horizontally intermediate the rack and the top surface of the back frame section and extending transversely between the opposed pairs of said first and second mentioned tubular members, the rack frame being of an open construction separated into a series of transversely disposed compartments by a plurality of longitudinally extending rod like members interconnecting the opposed front and back sides of the rack frame, a circular bracket of a substantial diameter adapted to hold a container therein, the bracket being pivotally connected at one end to the front edge of the rack and adapted for movement about the pivot point between a horizontal operative position and a substantially vertical inoperative position.

3,894,749
RAMP EXTENSION FOR TRUCK FRAMES

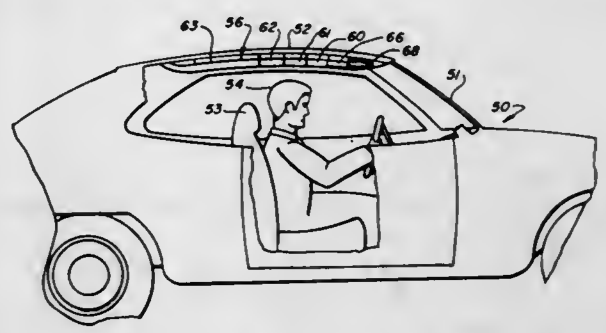
Frank J. Kozuh, Parma, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio
Filed June 10, 1974, Ser. No. 477,909
Int. Cl. B62d *21/00*
U.S. Cl. 280—106 R **10 Claims**



1. A detachable ramp extension for the side rail of a truck frame comprising:
a generally quadrilateral wall having, in operative position, a front vertical edge, top and bottom generally parallel edges of which the bottom edge is substantially longer than the top edge, and a rear edge sloping rearwardly from the rear end of the top edge to the rear end of the bottom edge;
a flange joining continuously with said top and rear edges, and extending in its transverse direction perpendicularly to the general plane of the wall;
a front end portion of said extension formed by said wall and flange having a length substantially that of said top edge, and being of a right-angle configuration adapting said end portion to conform in longitudinal overlapping relation with top and side webs of the rear end portion of a truck frame side rail.

3,894,750
CRASH PROTECTOR FOR PASSENGER VEHICLES

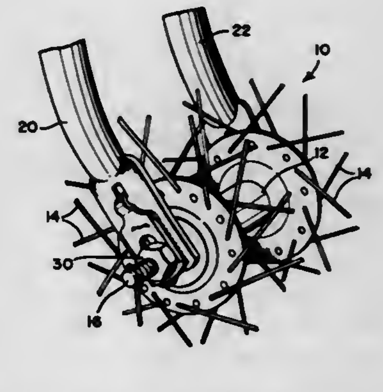
Robert E. Eckels, 2101 Youngfield St., Golden, Colo. 80401
Filed Nov. 19, 1973, Ser. No. 417,279
Int. Cl. B60r *21/06*
U.S. Cl. 280—150 AB **6 Claims**



1. In a crash protector for roofed vehicles in which an articulated, shock attenuating multi-segment panel means is mounted on tracks and is mounted generally flat adjacent the inside roof of the vehicle and is slidable forwardly and downwardly along the tracks to a position between passengers and the vehicle windshield on impact of the vehicle, the improvement of means including a gas bag inflatable on the sliding deployment of said panel means on impact of the vehicle whereby said panel and said inflated bag are positioned between the vehicle windshield and passengers to receive passengers and attenuate their impact energy, and at least one container for inflating gas mounted in said panel means.

3,894,751
BICYCLE WITH RETAINING CLIP FOR FRONT WHEEL

Delmar L. Fuhrman, Kettering, and David L. Zachert, New Lebanon, both of Ohio, assignors to The Huffman Manufacturing Company, Miamisburg, Ohio
Filed Mar. 18, 1974, Ser. No. 451,968
Int. Cl. B62k *25/00*
U.S. Cl. 280—279 **2 Claims**

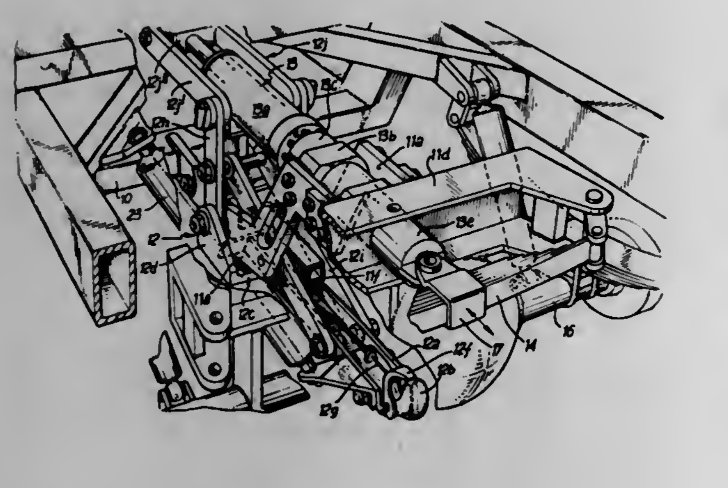


1. A bicycle including a front fork having a pair of depending legs, means defining an open ended slot in each of said legs extending upwardly from lower ends thereof, means defining an elongated aperture of rectangular configuration in each of said legs adjacent to and above the slots formed therein and extending lengthwise of the legs, a pair of retaining clips each including an enlarged head of substantially T-shaped configuration, a substantially planar body portion extending at substantially right angles to said T-shaped head, and a neck portion extending normally from said body portion and interconnecting said enlarged head and said body portion, said enlarged heads being received through said apertures and engaging edge portions of said legs defining said slots to retain said heads therein, said body portions overlying the slots of the legs with which they are associated, said T-shaped heads being of greater lengths than the widths of said apertures and of lesser lengths than the lengths of said apertures, whereby said clips must be rotated approximately 90° from their positions with said body portions overlying said apertures to disengage said T-shaped heads from said apertures, means defining elongated

openings through said body portions extending coextensively with a portion of said slots in said legs, a front wheel having an axle, outer ends of said axle being threaded and received within said slots in said legs and said openings in said clips and thereby preventing rotation of said clips with respect to said legs and consequent disengagement of said heads from said apertures, and nuts threaded onto said threaded outer ends of said axles and securing said axle within both said slots in said legs and said openings in said clips.

3,894,752
SPRUNG SELF LEVELLING PICK UP HITCH

William Stuart Hickie Taylor, High Den, Sheepstreet Ln., Etchingham, England
Filed May 15, 1974, Ser. No. 470,034
Int. Cl. B60d *1/16*
U.S. Cl. 280—405 R **17 Claims**

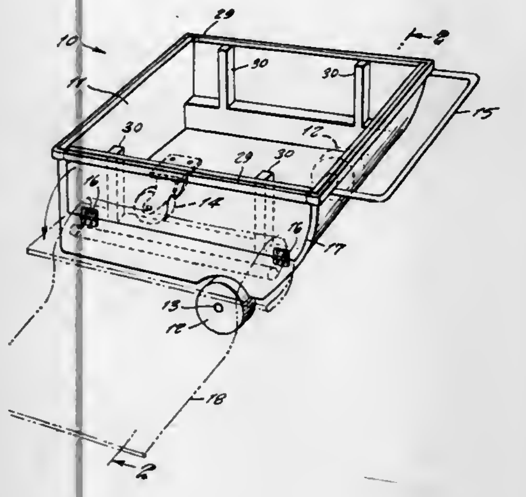


1. A sprung self-levelling pick-up hitch arrangement for a motor vehicle having a suspended driving axle, the arrangement comprising a rigid support framework adapted to be secured to the said axle, a hitch arm pivotally mounted on the support framework for angular motion relative thereto, a linkage assembly operatively connected with the said hitch arm and sensitive to angular motion thereof, a resilient means mounted relative to the said assembly for supporting the hitch arm in a predetermined operative position, and adjustable transmission means interposed between and operatively connected with the resilient means and the linkage assembly, the said transmission means being adapted to tension the resilient means to maintain the hitch arm in a sensibly constant operative position when under load irrespective of that load.

3,894,753
FIREWOOD CART

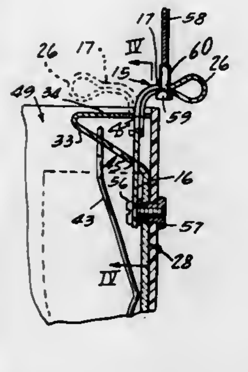
John C. Ickes, 3615 Woolworth Bldg. 233, Everton, Mo. 10007
Filed Feb. 5, 1974, Ser. No. 440,156
Int. Cl. B62b *3/12*
U.S. Cl. 280—47.34 **4 Claims**

1. A firewood cart comprising a container having a floor front, rear and side walls, including a pair of rear wheels rotatably mounted under the container about a common axis normal to the side walls and including a single pivotable castor front wheel mounted under the container between the side walls, including a push handle mounted on said rear wall, one of said side walls having an outwardly opening door with a bottom edge mounted pivotally on the side wall above the container floor, in further combination with fabric mounted in the cart side wall and adapted to be pulled outward through the door when opened to a predetermined exterior location to provide a protective covering for rolling logs from the cart through the open door to said location, said fabric being mounted inside the cart, at the door and disposed whereby said fabric engages the door when opening forming a continuous protective covering from the cart to the said location.



3,894,754
BOOK HANGER

Henry N. Staats, Deerfield, Ill., assignor to General Binding Corporation, Northbrook, Ill.
Filed Mar. 30, 1973, Ser. No. 346,687
Int. Cl. B42d *17/00*
U.S. Cl. 281—47 **10 Claims**

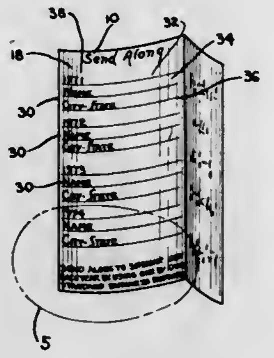


1. In a hanger means adapted for a directory and characterized by having (a) an elongated backing support member with end support means at respective, opposed end regions thereof, (b) wire attachment means integral with each end support means, and (c) wire means which extends between said end support means and engages said wire attachment means, the improvement which comprises

- A. a transversely flattened, longitudinally elongated, rigid bracket plate means having a base leg and an upright leg integral therewith normally extending from an end region of said base leg,
- B. a longitudinally extending slot defined in said bracket over the region where said base leg and said upright leg join, said slot having generally spaced, parallel opposed side walls except at the terminal portion thereof in said base leg, said terminal portion having the spacing between said side walls transversely widened relative to other portions of said slot, and
- C. said base leg extending from one end region of said backing support member with said upright leg projecting outwardly in spaced relationship to the adjacent end support means.

3,894,755
MULTIPLE-USE GREETING CARD

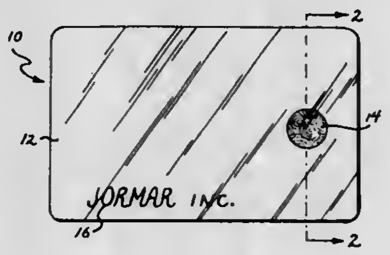
Henry Cieslak, 200 E. 55th Pl., Gary, Ind. 46410, and Mac Nowak, 530 E. 54th Ct., Gary, Ind. 46409
Filed May 6, 1971, Ser. No. 140,754
Int. Cl. B42d *15/00*
U.S. Cl. 283—1 **1 Claim**



1. A multiple-use greeting card comprising a card defining panel means, said panel means bearing a desired greeting message and a plurality of signature locations, said panel means having at least two hingedly interconnected panels defining first, second, third and fourth information bearing surfaces, said greeting message being located on said first and third surfaces and said signature locations being located on said second surface, said signature locations each including a signature line, an address line, and a date line with a preprinted date, said signature locations and said panel means being constructed and arranged with respect to each other as to constitute a permanent recipient record so that each successive recipient of the card may review the prior travels of the card between prior recipients, said signature locations and said greeting message being constructed and arranged with respect to each other that removal of one of said signature locations will result in destruction of at least part of said greeting message to insure permanence of the recipient record, and one of said second and third surfaces further including an instructional message explaining use of the card.

3,894,756
IDENTIFICATION CARD HAVING A REFERENCE BEAM CODED HOLOGRAM

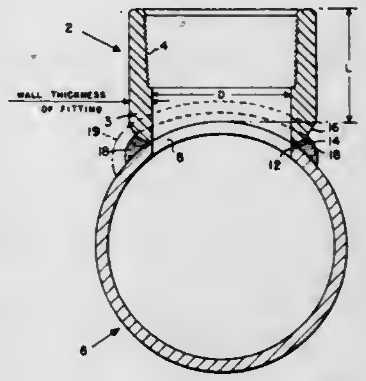
John H. Ward, Andover, Mass., assignor to Optronics International, Inc., Chelmsford, Mass.
Continuation of Ser. No. 190,134, Oct. 18, 1971, abandoned, which is a division of Ser. No. 70,762, Sept. 9, 1970, Pat. No. 3,647,275. This application July 27, 1973, Ser. No. 383,139
Int. Cl. B42d *15/00;* **G02b** *27/00*
U.S. Cl. 283—7 **6 Claims**



1. An identification card comprising:
1. a planar support member; and
2. a two dimensionally coded hologram mounted on the planar support member, said coded hologram comprising a reference beam and an object beam interference pattern containing identifying indicia in holographic form, said interference pattern having phase information of a beam scrambler imaged upon the hologram during the formation thereof.

3,894,757
BRANCH PIPE CONNECTION FITTING

Samuel J. Best, West Chester, Pa., assignor to Allied Piping Products Company, Inc., Norristown, Pa.
Filed June 10, 1974, Ser. No. 477,963
Int. Cl.^{2} F16L *13/02*
U.S. Cl. 285—189 **3 Claims**



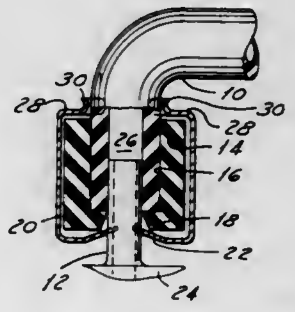
1. A cylindrical branch pipe connection fitting having one end adapted to be welded to a substantially round main pipe at a branch orifice in said main pipe and the other end adapted to be connected to a branch pipe,

said one end of the fitting being contoured with ear portions and crotch portions in different planes to engage the main pipe adjacent the periphery of the branch orifice, and

said one end of the fitting having a first beveled face at an angle of from about 30° to about 50° extending across a thickness of the fitting wall equal to from about 75% to about 125% of the wall thickness of a branch pipe of the same nominal size as the nominal size of the fitting, the width of the first beveled face being substantially uniform throughout, and a second beveled face at an angle of from about 50° to about 75° extending outwardly from the first beveled face, the second beveled face being at an angle at least 15° greater than the first beveled face and the width of the second beveled face being substantially uniform throughout.

3,894,758
VACUUM HOSE RETAINER

Radley M. Smith, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Nov. 26, 1973, Ser. No. 419,176
Int. Cl.^{2} F16L *37/00*
U.S. Cl. 285—305 **6 Claims**



1. In combination with a hollow flexible hose for fluid tight communication with a rigid conduit, the improvement comprising:

an insert member coupled to one end of the flexible hose and having an aperture for receipt of the rigid conduit, the aperture having a conical inner surface convergent toward, and coaxial with, the flexible hose; and

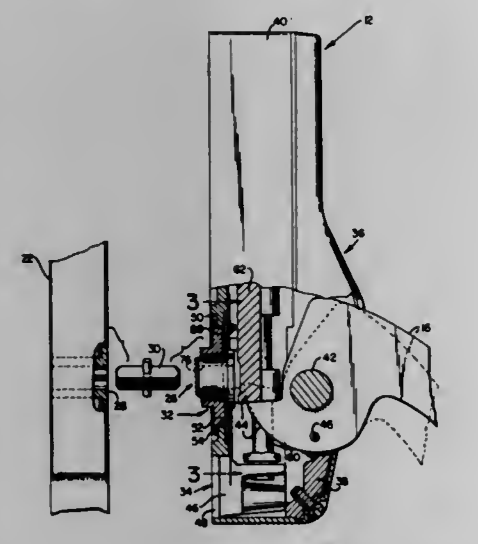
a housing member having a first aperture aligned with said insert member conduit receiving aperture;

said housing member having a pair of inwardly directed guidance ramp members extending generally toward each other and into the region defined by the conical inner surface of said insert member aperture;

said guidance ramp members having V-shaped notches formed at their confronting ends to define said first aperture, the sides of said V-shaped notches being arranged for engagement with the rigid conduit;

said housing member including arm means positioned on the side of said insert member opposite the rigid conduit aperture loosely surrounding and embracing the flexible hose.

3,894,759
ACTIVE CASE FOR EMERGENCY EXIT BOLT
Walter O. Balducci, New Britain, Conn., assignor to Emhart Corporation, Farmington, Conn.
Filed Dec. 13, 1973, Ser. No. 424,194
Int. Cl. E05c *9/00*
U.S. Cl. 292—92 **11 Claims**

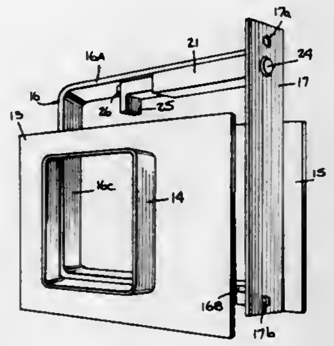


1. In an active case for an emergency exit bolt having a frame assembly including a backplate having a rear wall defining a mounting surface for engaging an associated face of a door when said active case is assembled with the door, a slide, means supporting said slide on said frame assembly for sliding movement in one and an opposite direction, a hub, and means for rotating said hub in response to movement of said slide in at least one direction, the improvement comprising said rear wall having a recess therein opening through said mounting surface, a hub alignment compensator providing a journal for said hub, and means for supporting said alignment compensator within said recess for limited angular movement relative to said backplate about axes extending in directions generally normal to the axis of said hub, said alignment compensator being retained in said recess by cooperation of said backplate and an associated face of the door when said active case is mounted thereon.

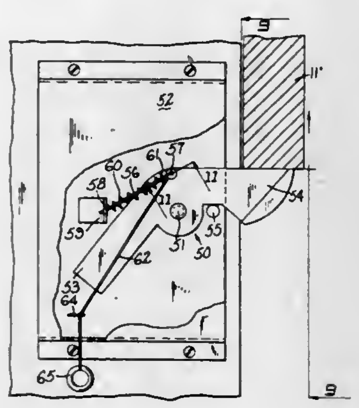
3,894,760
FLUSH DOOR PULL AND DEAD BOLT ASSEMBLY
Lawrence E. Charity, New York, N.Y., assignor to Sewell & Charity Ltd., New York, N.Y.
Filed Nov. 27, 1973, Ser. No. 419,192
Int. Cl. E05c *1/04*
U.S. Cl. 292—145 **7 Claims**

1. A flush door pull and dead bolt assembly installed in a door whose edge has a box-like cavity formed therein having upper, lower, front, read and end walls, said cavity communicating with the interior face of the door through a port cut in said front wall, the door being swingable with respect to a door jamb having a socket formed therein, the edge of the door, when closed, lying against said door jamb, said assembly comprising:

- A. a rectangular cover plate dimensioned to lie against the front wall of the cavity, said plate having a window therein which registers with said port,
- B. a back plate dimensioned to lie against the rear wall of the cavity,
- C. a rectangular frame member interposed between said plates and defined by a U-shaped strap whose horizontal legs lie against the upper and lower walls of the cavity and whose vertical leg lies against the end wall of the cavity, the ends of the horizontal legs being bridged by an edge plate which lies against the edge of the door, and
- D. a bolt sub-assembly constituted by a carrier secured to the underside of the upper horizontal leg of the frame member and a bolt slideable therein, said bolt projecting through an opening in the edge plate into said socket formed in the door jamb.

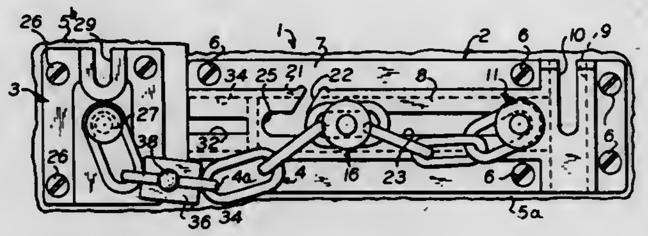


3,894,761
SAFETY DEVICE FOR SLIDING DOORS
William J. Brennan, Jr., 449 Ridgeview Rd., Orange, Conn. 06477
Filed Sept. 7, 1973, Ser. No. 395,268
Int. Cl. E05c *3/16*
U.S. Cl. 292—225 **3 Claims**



1. For use in combination with a vertically movable door to prevent downward movement thereof after opening thereof, a stopping device comprising mounting means adapted to mount the device in operative relation to the door, a lever pivotally mounted to said mounting means and comprising a reset leg and a stop leg, means biasing said lever toward a position to extend into the path of the door when the door is opened beyond a predetermined point, the biasing means being reversible to bias said legs alternatively into the path of movement of the door, said lever arranged to bear against the door when the door is in a closed condition, stopping means carried by said mounting means to limit rotation of said lever and maintain said lever in a door stopping position, and means for resetting said lever to a position to sense opening of the door, the resetting means being operable to move the reset leg into said path of movement.

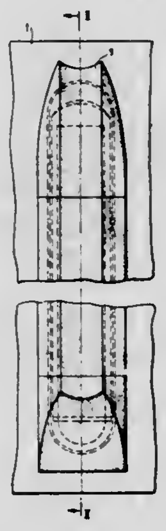
3,894,762
COMBINATION OF INTERLOCKING SECURITY ON CHAIN DOOR GUARDS
Bernard C. Segal, 150-6 J. Dreiser Loop, Bronx, N.Y. 10475
Continuation-in-part of Ser. No. 341,563, March 15, 1973, abandoned, which is a continuation-in-part of Ser. No. 306,180, Dec. 26, 1972, abandoned. This application July 12, 1974, Ser. No. 488,164
Int. Cl.² E05C *19/00*
U.S. Cl. 292—264 **10 Claims**



1. A chain door guard assembly for attachment to a mating door and door jamb, comprising:

- a bracket for attachment to the door jamb;
- a chain rotatably attached to said bracket;
- a guard plate for attachment to the door, said guard plate being formed with a raised main body section which defines a horizontally disposed elongated main slot, a first entry slot providing entry to said elongated main slot and a second entry slot independent of said elongated slot, said second entry slot being substantially vertically disposed and positioned near the end of said guard plate remote from the door jamb; and
- a chain head carried by said chain at the end thereof furthest from the point of attachment of said chain with said bracket, said chain head for insertion into said elongated slot through said first entry slot to provide limited door opening and for insertion into said second entry slot to provide complete restriction to the opening of the door.

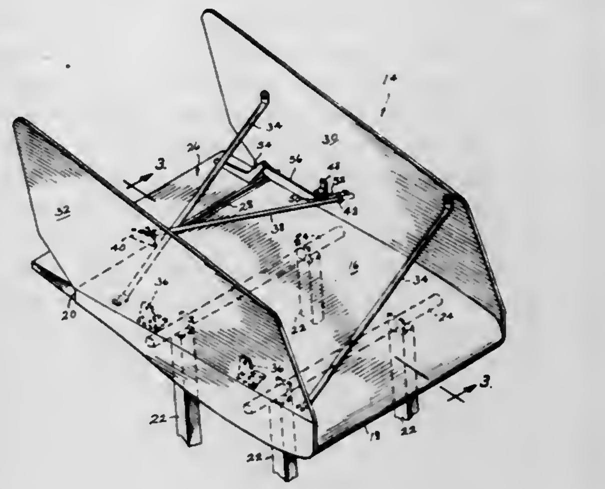
3,894,763
RESILIENT VEHICLE BUMPER STRIP
Bela Barenyi, Maichingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany
Filed Mar. 9, 1973, Ser. No. 339,876
Claims priority, application Germany, Mar. 9, 1972, 2211365
Int. Cl. B60j *11/00;* **B60r** *19/08;* **E04f** *19/02*
U.S. Cl. 293—1 **21 Claims**



1. A protective strip arrangement for motor vehicles having a vehicle body covering provided with a recess having upper and lower walls for accommodating the protective strip, the protective strip arrangement comprising:

- an elastic profile means,
- a longitudinal slot means provided in said profile means substantially along the entire length thereof on its side facing the vehicle body covering,
- a substantially C-shaped cavity provided in said elastic profile means overlapping the recess, said substantially C-shaped cavity being defined by a pair of spaced leg portions, at least a portion of each of said spaced leg portions is disposed substantially parallel to the upper and lower walls of the recess,
- a retaining profile means disposed in and extending substantially along the entire length of said substantially C-shaped cavity, said retaining profile means including projecting means for pressing said portions of said spaced leg portions of said substantially C-shaped cavity against the upper and lower walls of the recess,
- fastening means for fastening the elastic profile means to the body covering, and
- a reinforcing element disposed in and between the leg portions of said substantially C-shaped cavity and extending substantially in the longitudinal direction of said profile means.

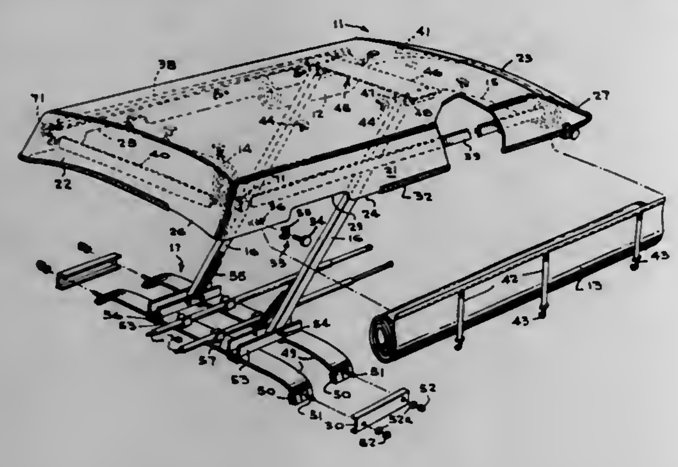
3,894,764
STABILIZER WING FOR A RACING VEHICLE
Jack N. Powell, Rte. 2, Leesburg, Ind. 46580
Filed July 18, 1974, Ser. No. 489,496
Int. Cl. B62d *37/02*
U.S. Cl. 296—1 S **6 Claims**



1. A stabilizer wing for use with a racing vehicle, said wing comprising an airfoil, means securing said airfoil to said vehicle in a position generally horizontal whereby wind in striking said airfoil during travel of said vehicle forces said vehicle downwardly against the road surface, said airfoil having a leading edge and a trailing edge, flap means pivotally connected to said airfoil at its trailing edge, a rudder projecting above and extending generally along the longitudinal dimension of said airfoil, means pivotally connecting said rudder to said airfoil wherein said rudder will be caused to shift about its pivot connection toward the airfoil when subjected to oncoming wind during travel of said vehicle in a turn, said flap means having an upper and a lower position, means interconnecting said rudder and flap means for causing pivotal movement of said flap means relative to the airfoil as said rudder shifts about its pivot connection with said flap means moving from its lower into its upper position as said vehicle is traveling in said turn and also for causing pivotal movement of said rudder relative to the airfoil as said flap means shifts about its pivot connection with said rudder moving away from the airfoil as said vehicle is traveling down a straightaway.

3,894,765
TENT SHELTER FOR AUTOMOTIVE VEHICLES AND THE LIKE

Robert E. Bourke, 145 Goodhill Rd., Weston, and Robert W. Johnson, 29 Danbury Ave., Westport, both of Conn. 06880
Filed Sept. 13, 1973, Ser. No. 396,725
Int. Cl. B60p *3/32*
U.S. Cl. 296—23 R **6 Claims**



1. A tent camper in combination with a vehicle having a roof and comprising:

a rigid shelter roof adapted to be stored immediately above and against the roof of the vehicle and having a generally horizontal top contoured like the vehicle roof, longitudinally downwardly extending side walls with lower edges contoured to fit tightly against the vehicle roof, and transversely downwardly extending front and rear walls with lower edges contoured to also fit tightly against the vehicle roof;

a mounting bar assembly adapted to be releasably mounted on the roof of the vehicle near the rear thereof;

a pair of parallel rigid links of equal length pivotally attached at an upper end to a forward portion of the shelter roof top and pivotally attached at a lower end to the removable mounting bar whereby the shelter roof may be raised above and extended rearwardly of the rear edge of the vehicle roof along an arcuate path by pivoting the links to the desired extended position;

four wall curtains respectively attached to each of the side walls, the front wall, and rear wall of the tent roof adapted to be rolled up and stored under the shelter roof when the latter is stored under the shelter roof when the latter is stored on the vehicle roof and adapted to be rolled down when the shelter roof is in an extended position to form the tent enclosure with the vehicle as a portion of one wall and the ground adjacent the rear of the vehicle as a floor of the tent enclosures;

securing straps attached near the upper edge of each curtain and adpated to hold the curtains in the rolled up position;

ground tie down loops on the lower edge of each curtain for staking the lower edge of the curtains against the ground;

a separable fastener in the rear curtain extending from the tent roof to the lower edge of the rear curtain to provide access to the tent camper and thereby the rear of vehicle;

separable fasteners on the curtains along vertical edges thereof to permit joining the curtains with the separable fasteners to form the tent enclosure;

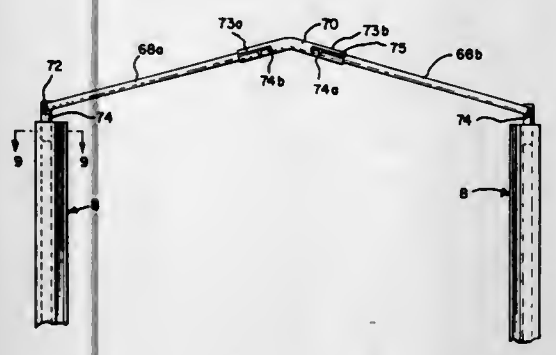
a pair of pole brackets attached to the rear of the inner surface of the shelter roof top; and

a pair of telescoping ground engaging poles adapted to be secured to the pole brackets to provide support for the tent roof; and

the front curtain has an upper portion with a lower edge contoured to fit the roof of the vehicle, said contoured lower edge having straps attached thereto for attachment to the vehicle and the lower portion of the front curtain being contoured to fit the bumper of the vehicle and having attachment means to permit a sealing engagement between said bumper and said lower portion of the front curtain.

3,894,766
CARGO CARRYING VEHICLE

Ernest F. Woodward, 11 Circle Dr., Camp Hill, Pa. 17011
Division of Ser. No. 324,339, Jan. 17, 1973, Pat. No. 3,811,724, which is a continuation-in-part of Ser. No. 186,051, Oct. 14, 1971, Pat. No. 3,794,375, and Ser. No. 210,498, Dec. 21, 1971, Pat. No. 3,764,177. This application Dec. 6, 1973, Ser. No. 422,389
Int. Cl.² B62D *25/06*
U.S. Cl. 296—104 **2 Claims**



1. A collapsible support for a cover for a platform supporting a plurality of laterally spaced upright stakes each having an opening extending vertically from its upper end,

at least one bow for extending between a pair of stakes for supporting the cover thereon,

said bow including a pair of rods, each shaped to be slidably receivable within said opening in one of the stakes,

an elongated hollow connecting member bent at its central portion to form a predetermined included angle of between 90° and 180°,

said hollow member being shaped to removably and slidably receive an end portion of a rod within each end,

a rod supporting member shaped to slidably enter the opening in each stake,

cooperating means at the other end portion of each rod and one end of a rod supporting member for pivotally securing them together for movement in a vertical plane, the cooperating means being dimensioned to be received in the opening,

whereby upon removal of said connecting member, the rod and its supporting member may be pivoted into alignment and slidably moved into the opening in the stake, stop means on each rod and its supporting member for limiting its movement toward each other to include an angle which is supplemental to said predetermined angle.

3,894,767
PIVOTABLE AND RETRACTABLE SLIDING ROOF FOR AUTOMOBILES

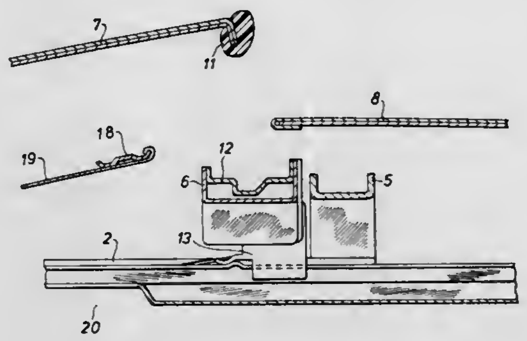
Walter Schatzler, Angerweidestrasse 10a, 813 Starnberg, and Alfons Lutz, Lohfeldstrasse 4, 8033 Krailling, both of Germany
Filed Sept. 14, 1973, Ser. No. 397,224
Claims priority, application Germany, Sept. 14, 1972, 2245084
Int. Cl. B60j *7/02*
U.S. Cl. 296—137 F **12 Claims**

1. A sliding roof assembly for automobiles, where a generally rectangular movable sliding roof panel is operable in a first opening mode in which its rear end is pivoted upwardly out of a roof opening and in a second opening mode in which its rear end is pivoted downwardly out of the roof opening and the downwardly pivoted sliding roof panel is retracted rearwardly underneath a stationary roof portion, while the front

end of the panel and a cross member by which said motions are imparted to the sliding roof panel from a drive means are guided along stationary longitudinal guides, and the pivoting motions of the panel are obtained by pivoting linkages connecting the cross member to the rear portion of the sliding roof panel, and wherein the improvement comprises:

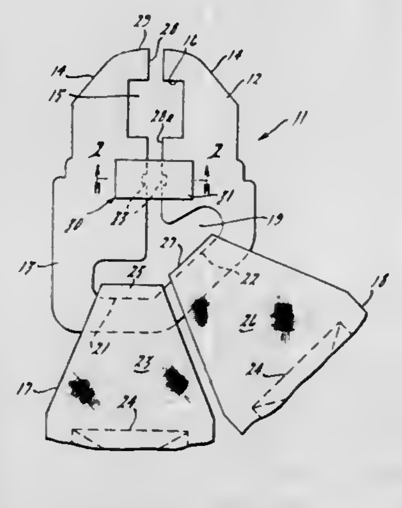
a transversely extending rain channel separate from the roof panel and arranged below the roof level, the rain channel being guided for longitudinal motion between a forward position underneath the rear edge of the roof opening and a retracted position which corresponds to the retraction displacement of the sliding roof panel in said second opening mode, the rain channel being further longitudinally movable relative to said cross member; and

means for retracting and advancing the rain channel in unison with the retracting motion of the sliding roof panel in said second opening mode.



3,894,768
SEAT BELT ASSEMBLY

David G. Connors, Plymouth, and Arild O. Saethre, Troy, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed July 1, 1974, Ser. No. 484,897
Int. Cl.² A44B *11/25;* **A47C** *31/00;* **A44C** *5/18*
U.S. Cl. 297—389 **2 Claims**



1. A seat belt assembly comprising:

a tongue plate having a buckle latch engaging portion and a slotted webbing receiving portion,

a lap belt and a shoulder harness webbing the ends of which, respectively, have been threaded through the slot in the webbing receiving portion,

each webbing end after having been threaded through the slot being folded against and stitched to the webbing into permanent loops assembled to the tongue plate,

wherein the improvement comprises:

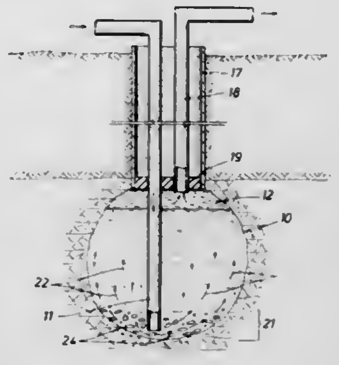
an elongated auxiliary slot extending from the end of the buckle latch engaging portion of the tongue plate toward the other end of the latter and intersecting the slot in the webbing receiving portion,

the elongated slot providing a passageway through which a loop may be passed for disassembly of a webbing from the tongue plate without destroying the integrity of the stitching forming the webbing loop,

a displaceable means fixed to the tongue plate straddles the slot and blocks passage of the loop therethrough.

3,894,769
RECOVERING OIL FROM A SUBTERRANEAN CARBONACEOUS FORMATION

Min Jack Tham, and Philip Joseph Closmann, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.
Filed June 6, 1974, Ser. No. 476,973
Int. Cl.² E21B *43/24;* **E21C** *41/10, 41/14*
U.S. Cl. 299—5 **7 Claims**



7. A process for recovering oil from oil shale which comprises

locating an underground region in a nahcolite-containing oil shale formation wherein said region is of only moderate nahcolite richness;

leaching said region with a nahcolite solvent to form a first permeable zone of relatively large blocks of oil shale rubble which zone is located under an oil shale formation;

forming a rubbled zone above said first permeable zone;

injecting a disaggregating fluid into contact with said rubbled zone under conditions sufficient to form at least a minor amount of finely-divided, unconsolidated, fluid-surrounded, solid particles, and at least some bitumen;

injecting fluid A into said first permeable zone particles;

withdrawing fluids containing at least a minor portion of said bitumen from said rubbled zone at a level higher than that where fluid A is injected;

adjusting the rate of fluids injected and withdrawn so that a circulation current is established within said formation sufficient to suspend at least a minor portion of said solid particles in said fluid; and

recovering hydrocarbon material from the fluids withdrawn.

3,894,770
WELLBORE OXIDATION OF LIXIVIANTS

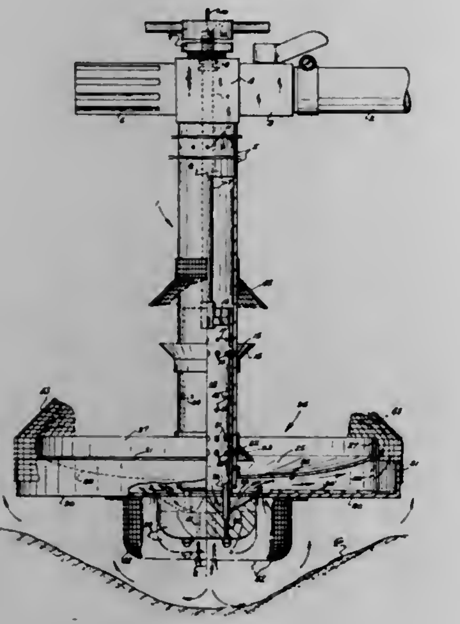
Ray Vincent Huff, and Paul Anthony Huska, both of Acton, Mass., assignors to Kennecott Copper Corporation, New York, N.Y.
Filed June 12, 1974, Ser. No. 478,437
Int. Cl. E21c *41/06*
U.S. Cl. 299—5 **10 Claims**

1. In a process for in-situ mining of minerals containing metal values such as copper values whereby a lixiviant is introduced into at least one wellbore and a pregnant liquor removed therefrom, the combination comprising: introducing in a wellbore a gas-lift comprising from 4 to 11 scf of air per gallon of pregnant liquor lifted per 1000 ft.; maintaining in said gas-lift during said lift oxygen; lifting the pregnant liquor at a rate such that the residence time in the wellbore is about 5 minutes to 2 hours whereby the rate of oxidation of ferrous ions in said pregnant liquor is such that nearly 100% conversion can be assured in a wellbore of at least 500 ft.; separating the pregnant liquor and oxygen for oxidizing the pregnant

liquor; recovering said metal values in said pregnant liquor; and reintroducing a barren liquor in said wellbore.

3,894,771
HYDRAULIC PARTICLE SEPARATOR

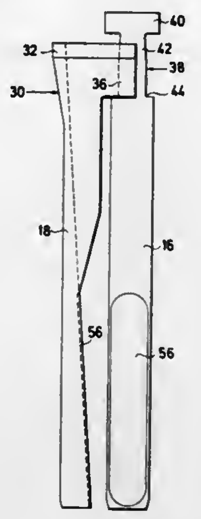
Jerry W. Nezat, Estacada, Oreg., assignor to Necham, Inc., Estacada, Oreg.
Filed Dec. 7, 1973, Ser. No. 422,742
Int. Cl. E02f *7/00*
U.S. Cl. 299—8 **5 Claims**



1. A hydraulic particle separator for the subterranean separation of earthen particles by weight, said separator comprising.
- a conduit adapted to receive a pressurized flow of water at its upper end, said conduit open at its lower end and defining openings adjacent said lower end for the lateral discharge of pressurized water,
- valve means housed within the lower end of said conduit for regulating the flow outwardly through the openings in said conduit,
- operator controlled means for remote positioning of the valve means,
- a pan assembly disposed about the lowermost end of said conduit and comprising upper and lower pans having spaced apart rim portions for discharge therepast of an outwardly directed flow of water, said upper pan having an upwardly curved bottom wall surface whereby the water flow therebelow will have an upwardly inclined path enhancing the formation of a turbulent area inwardly above the upper pan rim to facilitate settling of heavy particles in the upper pan, said lower pan defining a central opening for the upward entry of water and fluidized particles for passage intermediate the pans, and a diffuser body spaced from the lower end of the conduit and defining an upwardly opening annular recess for diffusing the pressurized flow of water discharged from the conduit in an outward and upward direction causing at least some of said flow to pass through the lower pan opening and intermediate the pans, said diffuser body carried in a positionable manner by said valve means to permit the regulation of water flow into the lower pan opening, said pressurized flow serving to draw earthen particles into the area intermediate said pans for subsequent settling of heavy earthen particles into the lowermost pan with subsequent lighter particle precipitation taking place above the upper pan.

3,894,772
HYDRAULICALLY ACTUATED APPARATUS FOR THE MECHANICAL SPLITTING OF ROCK

Helmut Darda, Im Tal, D-7712 Blumberg, Germany
Filed July 15, 1974, Ser. No. 489,032
Claims priority, application Germany, July 16, 1973, 2336063
Int. Cl.² E21C *37/02*
U.S. Cl. 299—22 **15 Claims**



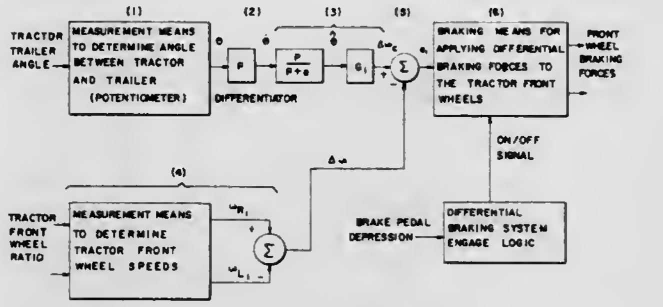
1. Apparatus for mechanically breaking up or splitting rock, comprising a hydraulically actuatable piston-cylinder assembly, a slider wedge having inclined surfaces being connected to a piston rod extending from the piston of the piston-cylinder assembly, first and second presser cheeks having interlocking heads and complementary inclined surfaces, and a hollow member connected to the piston-cylinder assembly and surrounding said axially interlocking heads of said first and second presser cheeks disposed on opposite sides of the slider wedge for insertion in a drill hole and lateral separation as a result of sliding movement of said inclined surfaces of the slider wedge over complementary inclined surfaces of the presser cheeks, the head of the first pressure cheek being supported for lateral movement within the hollow member and having a U-shaped axial cross-section with the arms thereof straddling the slider wedge, and the head of the second pressure cheek having a T-shaped longitudinal cross-section with the cross-bar thereof resting on the head of the first pressure cheek and a reduced neck portion which is straddled by the arms of the U-shaped axial cross-section of the head of the first pressure cheek.

3,894,773
DIFFERENTIAL BRAKING SYSTEM FOR TRACTOR TRAILER TRUCKS

Dixon Cleveland; Roger L. Barron, both of Annandale, Va., and Lewey O. Gilstrap, Jr., Washington, D.C., assignors to Adaptronics, Inc., McLean, Va.
Continuation-in-part of Ser. No. 215,599, Jan. 5, 1972, abandoned. This application Sept. 21, 1973, Ser. No. 399,521
Int. Cl. B60t *8/10*
U.S. Cl. 303—21 A **8 Claims**

1. A method of minimizing the angular rate between a tractor and a trailer, comprising the steps of:
1. measuring a function of the angle between the center lines of the tractor and trailer,
2. obtaining a time derivative of the function of the angle between the center lines of the tractor and trailer,
3. computing one of a differential wheel rotational rate and differential wheel slip command from the result of step (2),
4. measuring one of a function of the wheel rotational rate difference and a function of wheel slip difference between the tractor front wheels,

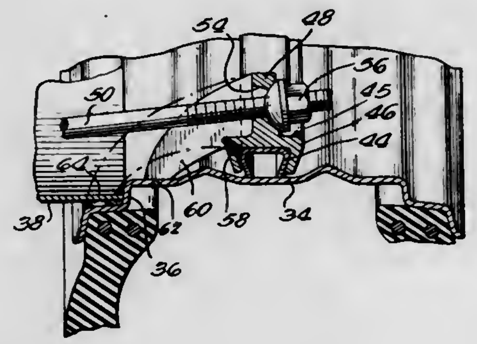
5. computing the error between commanded and measured values of at least one of said function of wheel rotational rate difference and said function of wheel slip difference, and


(1)
(2)
(3)
(5)
(6)
TRACTOR TRAILER ANGLE
MEASUREMENT MEANS TO DETERMINE ANGLE BETWEEN TRACTOR AND TRAILER (POTENTIOMETER)
θ
P
θ̇
P/P+a
G₁
Δω_c
Σ
e₁
DIFFERENTIATOR
BRAKING MEANS FOR APPLYING DIFFERENTIAL BRAKING FORCES TO THE TRACTOR FRONT WHEELS
FRONT WHEEL BRAKING FORCES
ON/OFF SIGNAL
Δω
(4)
TRACTOR FRONT WHEEL RATIO
MEASUREMENT MEANS TO DETERMINE TRACTOR FRONT WHEEL SPEEDS
ω_R1
ω_L1
Σ
BRAKE PEDAL DEPRESSION
DIFFERENTIAL BRAKING SYSTEM ENGAGE LOGIC

6. altering one of the rotational rate and the slip of at least one of said front wheels of the tractor in response to the results of step (5).

3,894,774
WHEEL CONSTRUCTION

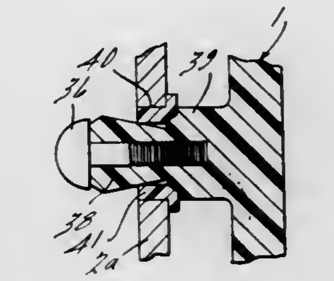
Richard S. Bonomo, Delavan, Ill., assignor to Unverferth Manufacturing Co., Kalida, Ohio
Continuation of Ser. No. 855,494, Sept. 5, 1969, abandoned. This application Apr. 11, 1974, Ser. No. 460,095
Int. Cl. B60b *11/00*
U.S. Cl. 301—36 R **23 Claims**



1. An auxiliary wheel structure for attachment to and rotation with the regular wheel of the vehicle, the regular wheel having a wheel spider, a wheel rim, and arcuately spaced apart wheel lugs joining the rim to the spider, said auxiliary wheel structure comprising;
- a wheel rim,
- a generally, cylindrical annular band having a surface thereof which extends substantially parallel to the inner surface of said rim affixed directly to the inner surface of said auxiliary wheel rim and having at least two lateral edges spaced from the rim inner surface,
- attaching brackets slidably mounted on said annular band for adjustment therealong to positions in alignment with the lugs on the regular wheel, each bracket having flange means engaging said lateral edges of the annular band, and
- means connecting said brackets to the wheel lugs to mount the auxiliary wheel in side-by-side relationship with said regular wheel.

3,894,775
WHEEL COVERS

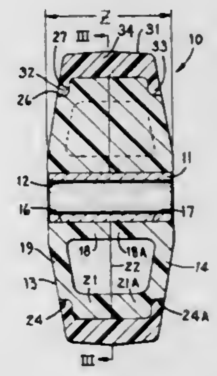
Erich Christoph, Birkenwaldstrasse, 16; K. Dieter Freytag, Birkenwaldstrasse, 18, and Raimond Pell, Birkenwaldstrasse, 16, all of 6055 Hausen, Germany
Filed Feb. 14, 1974, Ser. No. 442,371
Int. Cl. B60b *7/00*
U.S. Cl. 301—37 TP **15 Claims**



1. In a wheel cover secured on the axially outer face of a vehicle wheel, the improvement for mounting the wheel cover on the vehicle wheel comprising: a plurality of projections extending axially inwardly of the wheel cover, said wheel having a plurality of openings registering with said projections, and fastening means disposed on the axially inner side of the wheel and inserted through said openings in the wheel in connection with said projections.

3,894,776
WHEEL CONSTRUCTION

John W. Black, Hickory Corners, Mich., assignor to Pemco-Kalamazoo, Inc., Kalamazoo, Mich.
Filed Apr. 16, 1973, Ser. No. 351,792
Int. Cl. B60b *3/08, 5/02*
U.S. Cl. 301—63 DD **12 Claims**



1. A wheel construction, comprising:
- hollow, moldable hub means made of acrylonitrile-butadienestyrene and having an axially extending cylindrical sleeve portion with a central opening therethrough, cylindrical peripheral wall means concentric with said sleeve portion and spaced radially outwardly therefrom, a pair of axially spaced and generally radially extending side wall means for connecting the corresponding axial ends of said sleeve portion and said peripheral wall means, and means defining annular grooves at the opposite ends of said peripheral wall means, each of said grooves opening both radially and axially; and
- moldable tread means made of polyurethane and defining an endless channel having a pair of flanges and a web portion, said flanges being received into said annular grooves and said web portion engaging said peripheral wall means, said tread means being concentric with said peripheral wall means, said hub means and said tread means having a face-to-face mutually adhering bond therebetween, said bond formed by applying said polyurethane to said hub in a molten state.

3,894,777

BICYCLE WHEEL

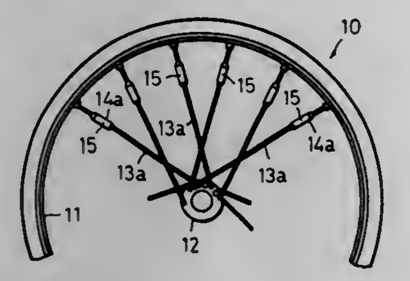
Ryoichi Yamada, 10, 7-chome, Nishikikui-cho, Nagoya, Aichi, Japan

Filed Feb. 15, 1974, Ser. No. 443,001

Claims priority, application Japan, Aug. 31, 1973, 48-102812

Int. Cl. B60b *7/00*

U.S. Cl. 301—104 **7 Claims**



1. A bicycle wheel comprising
a number of spokes radially extending between a wheel rim and a hub,
at least one flattened portion formed with each of said spokes, and
reflecting material applied onto both sides of each of said flattened portions.

3,894,778

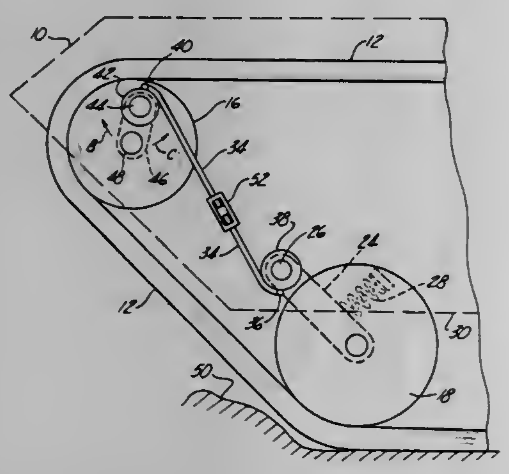
CABLE-ACTUATED TRACK TENSIONER

Richard W. Siorek, Warren, and Ted Kozowyk, Detroit, both of Mich., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 25, 1974, Ser. No. 436,582

Int. Cl. B62d *55/14*

U.S. Cl. 305—22 **4 Claims**



1. In a tracked vehicle comprising a hull, a series of road wheels located at spaced points along each side of the hull, laterally spaced drive wheels at one end of the hull, laterally spaced track-tension adjustment wheels at the other end of the hull, endless tracks trained around said wheels for hull propulsion, the road wheels and track-tension adjustment wheels being connected to the hull via individual suspension levers, whereby the road wheels are individually capable of up-and-down movements that tend to vary track tension: the improvement wherein flexible force-transmitting tension elements are trained between the suspension levers of the track-tension adjustment wheels and the suspension levers of selected road wheels; said flexible tension elements being directed so that upward movements of said selected road wheels move the adjustment wheels in directions to increase the track tension, and downward movements of said selected road wheels move the adjustment wheels in directions to decrease the track tension.

3,894,779

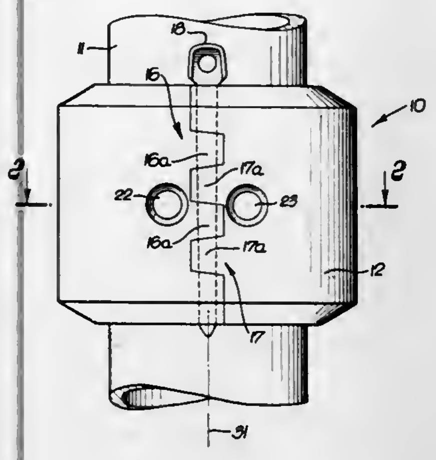
PIPE PROTECTOR WITH PERFORATED METAL SHEET INSERT

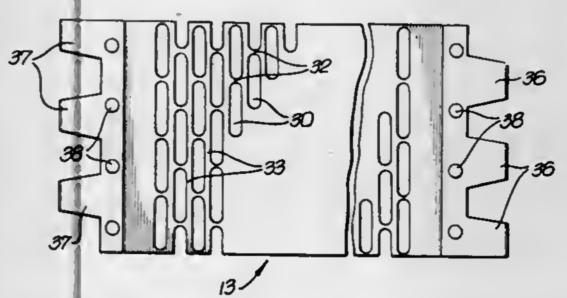
Howard C. Hoon, Santa Monica, and Fernando Murman, Palos Verdes Peninsula, both of Calif., assignors to Hydril Company, Los Angeles, Calif.

Filed Sept. 13, 1973, Ser. No. 396,895

Int. Cl. F16c *17/00*

U.S. Cl. 308—4 A **10 Claims**





1. In a well pipe protector,
a. a C-shaped unit sized to fit laterally about axially elongated well pipe, and including an elastomer body and a core in the form of a metallic sheet embedded in the body,
b. terminals on the unit to be drawn together in interfitting relation for retention after lateral application of the body about a pipe, and
c. the metallic sheet containing rows of through perforations characterized in that the sheet is made resiliently stretchable when the unit is applied about the well pipe, the rows extending in the general direction of said axis, the perforations in each row being spaced apart in said direction, the perforations in all circumferentially adjacent rows being staggered, and
d. the perforations in each row being elongated in the general direction of said axis and defining axially elongated slots, the slot length dimensions exceeding the slot width dimensions, the sheet defining axially elongated flexible metal bars between adjacent rows of slots, the bars having minimum widths less than the slot widths, there being webs formed between slots in each row, the webs interconnecting the bars, the web minimum dimensions in an axial direction being less than the slot widths, whereby the bars will flex and the core sheet will resiliently stretch circumferentially to limited extent as said terminals are forcibly drawn together after said lateral application of the body about a pipe.

3,894,780

DRILL PIPE PROTECTOR HAVING TAPERED LATCH

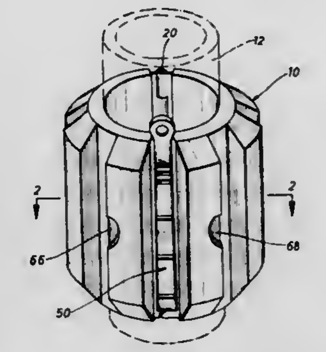
Dallas N. Broussard, 204 Diane St., Houma, La. 70360

Continuation-in-part of Ser. No. 263,878, June 19, 1972, abandoned. This application Oct. 25, 1973, Ser. No. 409,428

Int. Cl. F16c *17/00*

U.S. Cl. 308—4 A **9 Claims**

1. A device for preventing external wear on drill pipe caused by erosive rubbing contact between rotating drill pipe and wall structure defining within which the drill pipe is rotated, said device comprising:
a structural element adapted to be received in encircling relation about the drill pipe, said structural element being defined by opposed generally semicylindrical elements;
hinge means connecting said semicylindrical elements on one side thereof;
the opposite sides of each of said semicylindrical elements being reverse bent and defining opposed tabs, said tabs diverging downwardly and outwardly and defining angularly disposed cam surfaces;
at least one body of yieldable material carried by each of said semicylindrical elements and presenting external surface means extending beyond the outer peripheral surfaces of the drill pipe to prevent contact between said drill pipe and the wall structure defining said bore;



removable latch means engaging said opposed tabs and cooperating with said opposed tabs to lock said device in encircling assembly with said drill pipe with said opposed tabs properly spaced to establish proper frictional engagement between said device and said drill pipe, said latch means comprising an elongated tapered body portion having opposed camming tabs defined thereon, said camming tabs being disposed in angularly oriented spaced relation and engaging said opposed tabs to retain said device in encircling relation with said drill pipe; and locking means comprising locking recess means and locking projection means, said locking means interengaging to positively lock said latch means relative to said opposed tabs.

3,894,781

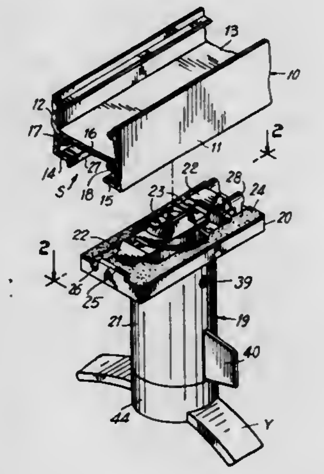
CONNECTOR PLUG FOR POWER DISTRIBUTION TRACK

Anthony C. Donato, Westfield, N.J., assignor to Lightolier Incorporated, Jersey City, N.J.

Filed June 26, 1974, Ser. No. 483,095

Int. Cl. H01r *9/00, 13/60*

U.S. Cl. 339—22 B **5 Claims**



1. As an article of manufacture, a connector plug adapted in a single operation to be mechanically and electrically attached to a power distribution track of the type including spaced parallel conduits disposed within a downwardly open channel having parallel side walls and opposed flanges, comprising a housing including a stop portion adapted to engage the outer face of said flange, key means on said housing for locking said housing against rotation relative to said track, a plug member rotatably mounted in said housing including projecting contact portions adapted to enter into said channel and engage the conduits of said track responsive to rotation of said plug member, a sleeve surrounding said plug member and rotatable relative to said housing and said plug member, lock flange means on said sleeve for engaging behind and locking said housing to said flanges responsive to rotation of said sleeve relative to said housing, torque drive means rotatably mounted on said housing in driving connection with said plug for rotating said plug through an angle corresponding with the angle of rotation of said drive means, and lost motion coupling means on said sleeve adapted to engage said drive means for coupling the sleeve and drive means for conjoint rotation following predetermined relative rotation between said plug and sleeve, whereby rotation of said drive means rotates said locking flanges through a first arc into mechanically coupled relation with said flanges of said track, and said plug through a second and greater arc electrically to connect said contact portions and said conduits.

3,894,782

ELECTRICAL CONNECTOR MOUNTED ON A SUPPORT PLATE

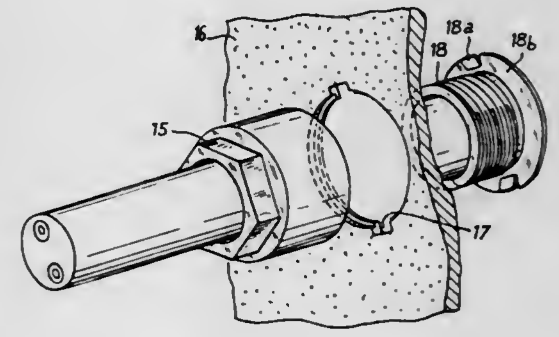
Alfred Jean Theodore Hug, Zurich, Switzerland, assignor to ARFINA fur Continentale und Uebersee-Finanzinteressen, Vaduz, Liechtenstein

Filed May 31, 1973, Ser. No. 365,628

Claims priority, application Switzerland, June 2, 1972, 8238/72

Int. Cl. H01r *13/62*

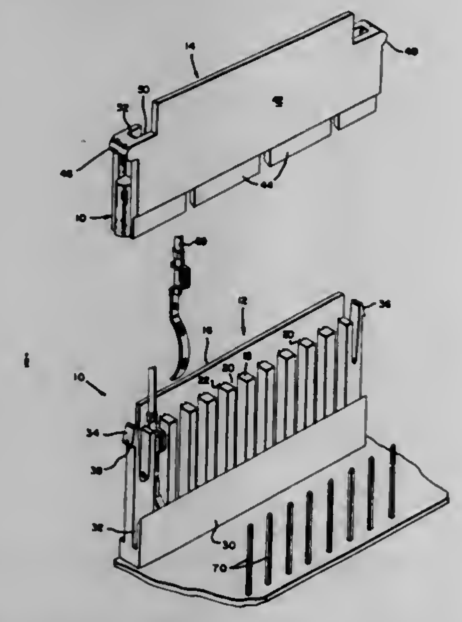
U.S. Cl. 339—64 R **3 Claims**



1. An assembly comprising a supporting plate having an orifice therein and an electrical connector mounted in said orifice, said connector comprising an outer part having an end which abuts the edge of said plate encircling said orifice and an inner part containing at least one electrical conductor extending into said orifice and mounted in said outer part for limited movement therein in a direction parallel to said plate; means preventing any substantial movement of said inner part relative to said outer part in a direction perpendicular to said plate, said means comprising a projection on one of said parts which projects into a recess carried by the other of said parts; and
a threaded sleeve extending through said orifice, said sleeve having an inner end screwed into said outer part and encircling said inner part, and an outer end carrying an abutment which projects radially outward from said sleeve to overlap the edge of said plate encircling said orifice and thereby grip said edge between said abutment and said abutting end of said outer part, said sleeve and plate being provided with cooperating means for preventing rotation of said sleeve relative to said plate, said rotation-preventing means comprising at least one tab projecting from said abutment toward said plate and a recess in said plate which receives said tab.

3,894,783
SPRING GRIP CONTACT ASSEMBLY

John Messner, Camp Hill, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Apr. 8, 1974, Ser. No. 458,603
Int. Cl.^{2} H01R *13/54*
U.S. Cl. 339—91 R **18 Claims**



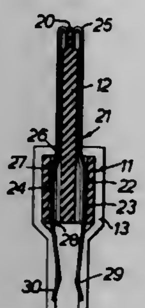
1. A spring grip electrical connector assembly for low force mating with a plurality of closely spaced, fixed, parallel terminal pins, said assembly comprising:

a housing having a contact carrying base portion and a cover portion mating with said base portion, and

a plurality of spring grip contacts mounted in said contact carrying base portion of said housing in parallel spaced relationship, each said contact including a conductor engaging portion and a resilient terminal pin engaging portion of arcuate longitudinal section with an elongated aperture at each end thereof, said contact adapted to receive an associated terminal pin axially through said apertures whereby said cover portion, in the closed position, engages said conductor engaging portion of said contacts and biases said contacts into engagement with said terminal pins.

3,894,784
PLUG CONNECTOR FOR A PRINTED CIRCUIT BOARD

Antony Brasher Clewes, Nottingham, England, assignor to TRW Inc., Cleveland, Ohio
Filed July 11, 1973, Ser. No. 378,101
Claims priority, application United Kingdom, July 14, 1972, 33007/72
Int. Cl. H05k *1/07*
U.S. Cl. 339—156 R **8 Claims**



1. An electrical plug connector for a printed circuit board which has electric circuits and associated edge connection pads on at least one side of the board comprising

an electrical insulating moulding having a spine portion for disposition adjacent an edge of such a printed circuit board, and a plug portion extending from the spine portion on one side thereof for disposition remotely from such an edge of a printed circuit board, and having a transverse thickness substantially equal to that of the edge of the printed circuit board, with which it is adapted to be used,

the spine portion having a greater transverse thickness than the plug portion, and two transversely spaced rows of through-holes, which rows of holes open adjacent the plug portion on opposite sides respectively of the plug portion, the holes in each row being spaced apart along the length of the moulding and the outer wall of each through hole having a recess forming an abutment therein facing away from the plug portion and,

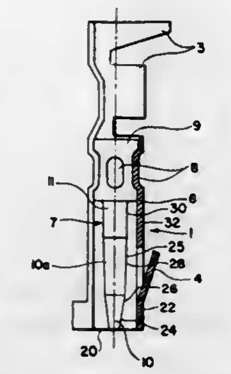
the plug portion having at its free end two transversely spaced rows of slots, the slots in each row being positioned along the length of the moulding in alignment with the respective through-holes which open on the same side of the plug portion, and

a plurality of resilient strip, electrical contact fingers mounted on the plug connector in two parallel rows each comprising a median fastening part, a hooked plug and part extending from the median part at one end thereof, and a printed circuit board contacting free and part extending from the median part at the opposite end thereof, each contact finger having its median part extending through and fixed in one of the said through-holes in the moulding adjacent the outer wall and having an abutment in detent contact with the abutment in the outer wall and the contact having sets therein, proximate to the plug side of the spine portion, to cause the part of the contact finger lying adjacent the plug portion to lie snugly in the appropriate one of shallow grooves in the surface of the plug portion, its hooked plug end part engaged in an associated one of the said slots at the free end of the plug portion of the moulding, and its free end part extending from the spine portion of the moulding and at least one of the rows of contact fingers converging toward the opposite row of contact fingers to provide a reduced space between them for resiliently receiving between them a printed circuit board having a transverse thickness greater than the space between them for guiding a printed circuit board between the rows whereby to make electrical connection with an edge connection pad of a printed circuit board when the connector is presented to an edge part thereof,

the said plug portion of the moulding and the contact fingers together simulating the edge of such a printed circuit board.

3,894,785
CONNECTOR

Oswald Hubner, Neuenstadt, and Horst Wilhelm Benker, Heilbronn, both of Germany, assignors to Bunker Ramo Corporation, Oak Brook, Ill.
Continuation of Ser. No. 351,594, April 16, 1973, abandoned. This application Sept. 20, 1974, Ser. No. 507,718
Claims priority, application Germany, Apr. 18, 1972, 2218751
Int. Cl. H01r *13/12*
U.S. Cl. 339—252 P **8 Claims**



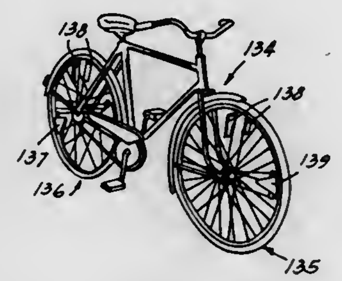
1. An electrical connector assembly comprising:

a socket including a sheet metal sleeve having a longitudinally extending slot therein with a forward portion on said sleeve having an opening at one end and a rear portion; a pin secured within said sleeve rear portion at a position spaced axially from said opening with a tapered free end on said pin extending into the forward portion to a position adjacent said opening and radially inwardly of said sleeve, the tapered free end of said pin including a maximum outer radial dimension spaced rearwardly from said opening to provide a first wiping zone and a longitudinal portion rearwardly of said tapered free end and dimensionally at least equal to said maximum outer dimension to provide a second wiping zone; and

a plug including a forward tubular projection of smaller diameter than the internal diameter of said sleeve for movement within said sleeve of said socket and having a free end on said projection with an opening in the free end of said projection and an outer surface taper on said projection extending longitudinally toward said free end of said projection and toward the axis of said projection, said projection being longitudinally slit from said projection opening rearwardly to form a plurality of resilient contact fingers, said plug projection insertable into said sleeve opening with said projection opening receiving said pin tapered free end for expanding said resilient fingers in said first wiping zone to wipe said plug against said sleeve and further insertion of said plug engaging said fingers with said longitudinal portion in said second wiping zone to increase the wiping action between said plug and sleeve with the slot in said sleeve enabling said sleeve to expand radially in response to engagement between said plug and sleeve to accomodate said plug.

3,894,786
360° VIEWABLE VEHICULAR REFLECTOR FLASHING SYSTEM

Robert I. Nagel, Skokie, Ill., assignor to Beatrice Foods Company, Elgin, Ill.
Filed Jan. 14, 1974, Ser. No. 433,309
Int. Cl.^{2} G02B *5/12*
U.S. Cl. 350—99 **9 Claims**



1. In a wheel supported, reflectorized vehicle which moves by wheel rotation and which has weel mounted reflector means, each such means having one region comprised of transparent solid material which has a region axis normal thereto, said region having formed therein a group of cube corner reflector elements, all such elements in each such group each having a central optical axis, each respective such optical axis being disposed substantially parallel to the respective such optical axes of the other such elements in each such group, each such group being retroreflective of light directed thereon within a zone containing an inner zone of peak retroreflectance linearly extending away from said region, each such zone of retro-reflectance extending angularly and transversely relative to its said inner zone at least about 30°, the improvement which comprises the combination of

A. from four through six such reflector means,

B. such reflector means each being adapted for functional association with selected respective side portions of such vehicles wheel members without interferring with rotational movements of such wheel members on their respective axles for front and side viewability thereof at spatial positions horizontally relatively removed from such vehicle,

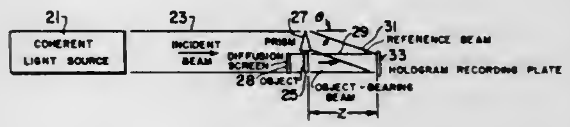
C. mounting means mounting each such reflector means fixedly to such wheel members in such respective associations,

D. the angular relationship between the center plane of each such wheel member having such a reflector means so mounted thereon and the inner zone of peak retroreflectance of each such respective reflector means so mounted thereon being such that

1. when each such reflectorized wheel member is rotated about its axle with the axis of rotation thereof spatially stationary
   a. each such inner zone of peak retro-reflectance traverses a curved path in space,
   b. each such path is generally radially adjacent to other such paths through 360° in a plane containing such axis of rotation, and
2. in such axis containing plane, the radial spacing between adjacent such paths is such that a flashing light signal of retroreflected light is viewable at any spatial position relatively remote from said wheel member.

3,894,787
HOLOGRAMS

Emmett N. Leith, Plymouth, and Juris Upatnieks, Ann Arbor, both of Mich., assignors to Battelle Development Corporation, Columbus, Ohio
Continuation of Ser. No. 825,522, May 19, 1969, abandoned, which is a division of Ser. No. 361,977, April 23, 1964, Pat. No. 3,506,327. This application Dec. 20, 1971, Ser. No. 209,865
Int. Cl.^{2} G03H *1/00, 1/08;* **G02B** *27/22*
U.S. Cl. 350—3.5 **15 Claims**



1. A method of producing an artificial off-axis hologram of a solid diffusely reflecting object made up of a plurality of points comprising:

a. determining a fringe pattern for each point of the diffusely reflecting object and an angularly displaced reference beam at a hologram plane,

b. summing said fringe patterns for a plurality of said points, and

c. recording the summation of fringe patterns of said plurality of points on a photosensitive means capable of being interrogated by coherent light to form diffraction patterns corresponding to said fringe patterns to produce an artificial off-axis hologram of the solid diffusely reflecting object.

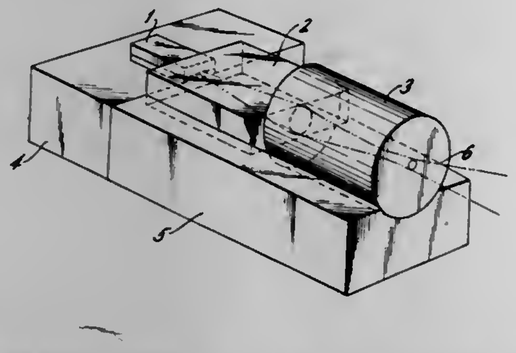
3,894,788
LIQUID-CORE FIBRE-OPTIC WAVEGUIDES

William Alexander Gambling, Chandlers Ford, and David Neil Payne, Southampton, both of England, assignors to National Research Development Corporation, London, England
Filed June 4, 1973, Ser. No. 367,053
Claims priority, application United Kingdom, June 5, 1972, 26054/72
Int. Cl. G02b *5/14*
U.S. Cl. 350—96 WG **9 Claims**

1. A liquid-core fibre-optic waveguide comprising a hollow vitreous fibre filled with a liquid which consists essentially of one or more compounds selected from the classes of aliphatic compounds which contain three or four carbon atoms per molecule and are fully halogenated with at least one of the

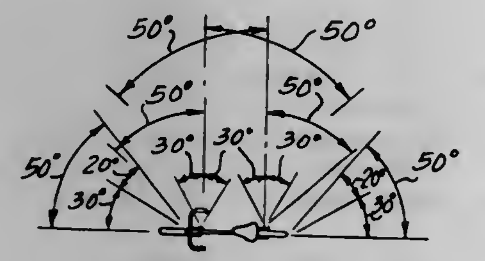
group of fluorine, chlorine and bromine, such that the liquid is liquid at 25°C, has a refractive index greater than that of the vitreous fibre and has optical absorption and scattering less than 40dB/Km within at least a part of the spectral range from 0.5 to 2.0 microns.

3,894,789
LIGHT BEAM COUPLER FOR SEMICONDUCTOR LASERS
Kohroh Kobayashi, and Atsufumi Ueki, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan
Filed July 29, 1974, Ser. No. 492,770
Int. Cl.^{2} G02B *5/14*
U.S. Cl. 350—96 C **6 Claims**



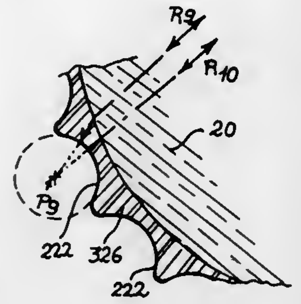
1. A light beam coupler for use in transforming an output beam with a flat cross-section into a light beam with a substantially circular cross-section; said light beam coupler comprising a first light transmission body disposed in the vicinity of a semiconductor laser, and a second light transmission body disposed in an optically coaxial cascade relationship with said first light transmission body wherein, in the plane of cross-section perpendicular to the optical axes of said first and second light transmission bodies, the refractive index distribution decreases substantially proportionally to the square of the distance from said optical axis in at least one direction, and the gradients a_x and a_y for said refractive index distribution meet the condition $a_x > a_y$ (where a_y can be zero) in said first light transmission body, and the condition $a_x \leqq a_y$ (where a_x can be zero) in said second light transmission body, the gradient a_x being taken in the direction perpendicular to the p-n junction plane of the semiconductor laser, and the gradient a_y in the direction parallel thereto.

3,894,790
360° VIEWABLE REFLECTORIZED VEHICLE
Gerald Golden, Franklin Park, and James D. Kennedy, Streamwood, both of Ill., assignors to Beatrice Foods Company, Elgin, Ill.
Continuation-in-part of Ser. No. 355,796, April 30, 1973, abandoned. This application Feb. 19, 1974, Ser. No. 443,508
Int. Cl.^{2} G02B *5/12*
U.S. Cl. 350—99 **4 Claims**



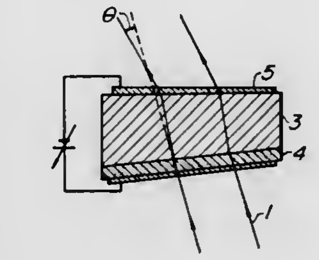
1. A reflectorized two wheel vehicle comprising:
A. a vehicle including frame means supported by, and operated by using two longitudinally spaced spoked wheels,
B. six retroreflective reflector assemblies each characterized by having,
1. a one-piece molded reflective body having a generally smooth, flattened front face with facets molded into spaced, parallelly extending rear face,
2. each body having at least three reflective areas of facets formed integrally into the said rear face,
a. one such area being adapted to retroreflect incident light striking said face up to an angle of 30° on each of a chosen pair of opposed sides of a vertical to said face,
b. a second such area being adapted to retroreflect incident light striking said face within an angle from not less than about 30° up to at least about 50° on one of said chosen sides, and
c. a third such area being adapted to retroreflect incident light striking said face within an angle ranging from not less than about 30° up to at least about 50° on the other,
C. mounting means for each of said reflector assemblies,
D. one said reflector assembly being mounted transversely across a front portion of said vehicle in a stationary position relative to said frame means with said front face thereof forwardly unobstructed,
E. one said reflector assembly being mounted transversely across a rear portion of said vehicle in a stationary position relative to said frame means with said front face thereof rearwardly unobstructed, and
F. two of said reflector assemblies being mounted longitudinally in a spaced, back-to-back relationship upon side portions of each of said wheels with said respective opposed front faces of each two thereof on each wheel being sidewardly substantially unobstructed.

3,894,791
REFLECTIVE MATERIAL FOR ROAD MARKING AND SIGNS
Ludwig Eigenmann, Vacallo, Canton Ticino, Switzerland
Continuation of Ser. No. 323,929, Jan. 15, 1973, abandoned, which is a continuation of Ser. No. 135,945, April 21, 1971, abandoned. This application Nov. 11, 1974, Ser. No. 522,933
Claims priority, application Italy, Apr. 22, 1970, 23676/70
Int. Cl.^{2} G02B *5/128*
U.S. Cl. 350—105 **12 Claims**



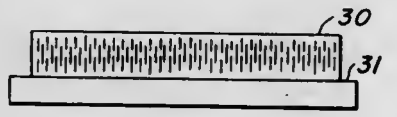
1. A reflecting system, comprising at least one substantially transparent, substantially spherical element having a refractive index such that a beam impinging said element is refracted and at least partially focused regardless of the angle of impingement; a substantially transparent binding medium contacting and partially surrounding said element so that a portion of said element is exposed for impingement by beams and a portion of said element is surrounded by said binding medium; and reflecting means for the reflection of beams which pass through said element, said reflecting means consisting at least almost entirely of reflective, substantially part-spherical surfaces which are convex in relation to said element and which are secured about the periphery of said surrounded portion thereof by said binding medium, said reflective surfaces being spaced from said surrounded portion of said element by said binding medium and having their respective centers of curvature located substantially at the virtual foci of the beams which pass through said exposed portion of said element into the latter and then through said binding medium to said reflective surfaces so that such beams are at least partially focused once more and are reflected back to said element and out through said exposed portion along paths essentially coincident with their respective paths of impingement upon and travel through said element and said binding medium.

3,894,792
METHOD AND DEVICE FOR DEFLECTING LIGHT BEAM
Kiichi Komatsubara, Tokorozawa; Yasuhiro Shiraki, Hachioji, and Eizaburo Yamada, Tokyo, all of Japan, assignors to Hitachi, Ltd., Japan
Filed Sept. 16, 1970, Ser. No. 72,761
Claims priority, application Japan, Sept. 26, 1969, 44-76259
Int. Cl. G02f *1/16*
U.S. Cl. 350—160 R **7 Claims**



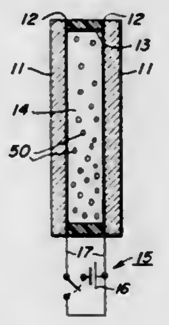
2. A light beam deflecting device comprising:
a semiconductor body having a forbidden band the width of which is greater than the photon energy of light to be deflected, at least one pn junction being arranged in that area of said semiconductor body in which light deflection is desired;
at least one pair of transparent electrodes disposed opposite to each other on respective p and n type regions of said semiconductor body; and
an electric power supply means connected to said transparent electrodes for injecting carriers at a concentration of 10^{18} to 10^{22} cm^{-3} into said pn junction.

3,894,793
LIQUID CRYSTAL IMAGING SYSTEM USING TRIBUTYLTIN OXIDE OR TRIBUTYLTIN CHLORIDE
Werner E. L. Haas, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Oct. 7, 1974, Ser. No. 513,003
Int. Cl. G02f *1/16*
U.S. Cl. 350—160 LC **24 Claims**



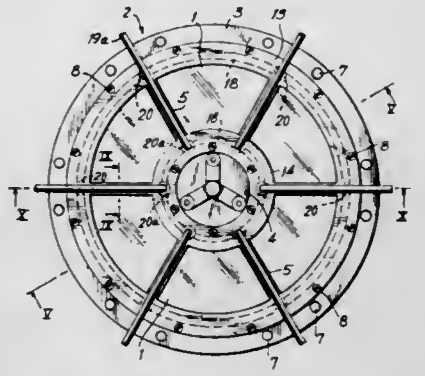
22. A nematic liquid crystalline composition comprising a nematic liquid crystalline material and tributyltin oxide, said oxide present in an amount effective to extend the electro-optical lifetime of said nematic liquid crystalline material.

3,894,794
LIQUID CRYSTAL IMAGING SYSTEM USING TRIBULYLTIN OXIDE
Charles W. Mitchell, Jr., Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Oct. 7, 1974, Ser. No. 513,004
Int. Cl. G02f *1/16*
U.S. Cl. 350—160 LC **19 Claims**



1. A liquid crystalline composition comprising a mixture of nematic liquid crystalline material and an optically active material, and tributyltin oxide, said oxide present in an amount effective to extend the electro-optical lifetime of said mixture of nematic liquid crystalline material and optically active material.

3,894,795
PLURAL ELEMENT WINDOW CONSTRUCTION FOR AN OPENING OF A LASER CAVITY
Albert A. Laurens, Paris, France, assignor to Etat Francais, Paris, France
Filed Jan. 16, 1974, Ser. No. 433,887
Int. Cl.^{2} G02B *5/00, 7/00;* **H01S** *3/00*
U.S. Cl. 350—319 **9 Claims**

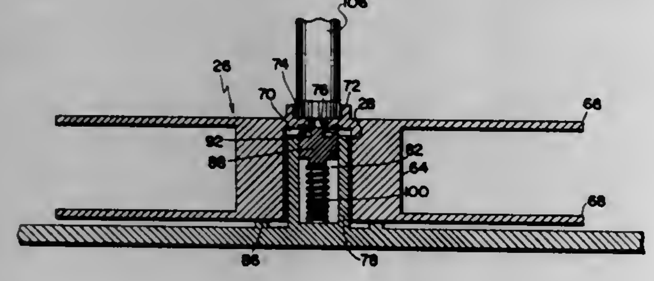


1. A window construction for a laser cavity having an opening, said construction comprising at least two elements transparent to a laser beam, and fixed support means for mounting said elements in a common plane in fixed, sealed relation at the opening of the laser cavity, said transparent elements being monocrystalline and having inner faces which are freely open into the laser cavity and outer faces which are freely open to the exterior.

3,894,796
MOTION PICTURE SYSTEM AND APPARATUS
Gerald H. Cook, Lynnfield, and Melvin Friedman, Sudbury, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Division of Ser. No. 214,735, Jan. 3, 1972, Pat. No. 3,807,840. This application June 29, 1973, Ser. No. 375,014
Int. Cl. G03b *23/04*
U.S. Cl. 352—72 **1 Claim**

1. A film handling system comprising: a film handling cassette including:

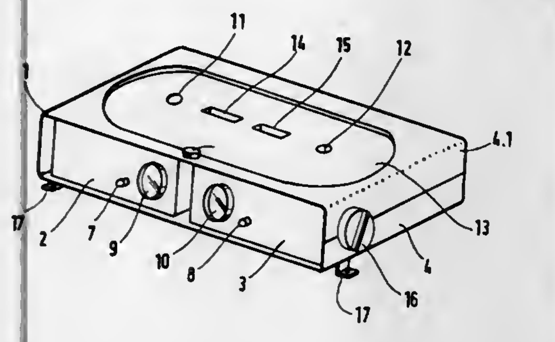
a housing;
supply and take-up reels having a length of photographic film strip coupled therebetween;
means for rotatably mounting said supply and take-up reels within said housing;
an exposure and projection station past which incremental sections of said film strip may be progressively transported for exposure and projection; and
supply and take-up reel locking means mounted for axial displacement between a normal locking position and an unlocking position;
in combination with a motion picture camera and a motion picture projector or viewer, said camera comprising:
a camera housing;
means for supporting said cassette at an operative position within said camera housing;
exposure means adapted to be operatively associated with said exposure station when said cassette is located at its operative position for facilitating film exposure operations;
film transport means for progressively transporting said film strip past said exposure station;
drive means including a drive shaft adapted to be operatively associated with said take-up reel when said cassette is located at its operative position for rotating said take-up reel to collect said film strip after it has been transported past said exposure station; and
actuating means for moving said supply and take-up reel locking means from said locking position to said unlocking position in response to locating said cassette at its operative position within said camera, said actuating means including a take-up reel actuating pin coaxially disposed with and extending outwardly from an end of said take-up reel drive shaft and a supply reel actuating pin mounted in said camera housing;



said motion picture projector or viewer comprising:
a projector housing;
means for supporting said cassette at an operative position within said projector housing;
projection means adapted to be operatively associated with said cassette projection station when said cassette is located at its operative position for facilitating film projection operations;
film transport means for progressively transporting incremental sections of said film strip past said projection station for projection;
drive means including supply and take-up reel drive shafts adapted to be operatively associated, respectively, with said supply and take-up reels when said cassette is located at its operative position for driving said take-up reel to collect said film strip after it has been transported past said projection station and for driving said supply reel during film rewind operations; and
actuating means including supply and take-up reel actuating pins coaxially disposed with and extending outwardly from ends of said supply and take-up reel drive shafts, respectively, for moving said supply and take-up reel locking means from said locking position to said unlocking position in response to operatively associated said cassette with said drive means.

3,894,797
PROJECTION UNIT, PARTICULARLY FOR TRANSPARENCIES

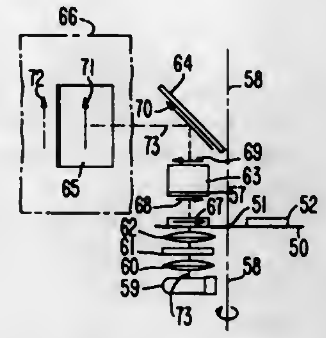
Karlheinz Barowski, Okriftel, Hattersheim; Kurt Schübel, and Hans Welnhofer, both of Munich, all of Germany, assignors to Enna-Werk Optische Anstalt Dr. Appelt KG, Munich and Braun AG, Frankfurt am Main, both of, Germany
Filed Sept. 24, 1973, Ser. No. 399,910
Claims priority, application Germany, Sept. 22, 1972, 2246746
Int. Cl. G03b *21/26*
U.S. Cl. 353—30 **2 Claims**



1. A projection unit for side by side or superimposed projection comprising,
a. an outer housing,
b. at least two projection devices rotatably mounted within said housing, disposed in a side by side relationship, each projection device having optical means for projecting a picture, the axis of each of said optical means being offset from a central axis of its projection device parallel to the optical means axis, in a direction toward the adjacent projection device, and
c. means connected to one of said projection devices to rotate said one projection device; and
d. means interconnecting said one projection device with said other projection device so as to cause said other projection device to rotate through an equal angle, but in an opposite direction from said one projection device.

3,894,798
PROJECTOR AND METHOD FOR PROJECTING 360° PICTURES

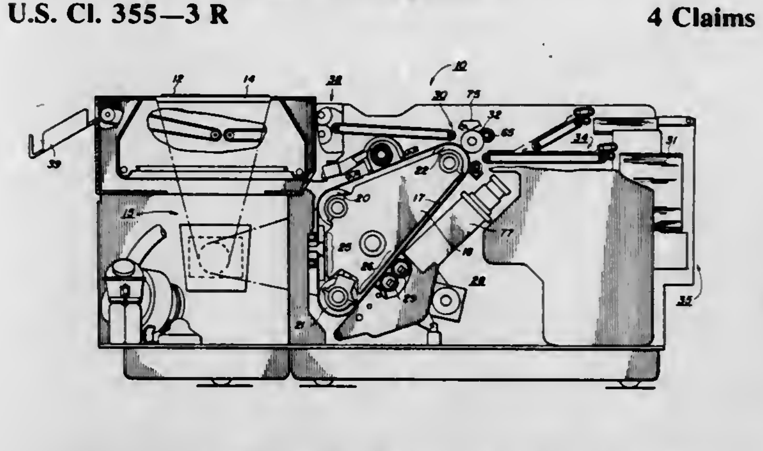
Jesse D. Wolf, 4905 Ward Road, Wheatridge, Colo. 80033
Filed Apr. 13, 1972, Ser. No. 243,584
Int. Cl. G03b *21/00*
U.S. Cl. 353—122 **29 Claims**



1. An optical reproduction apparatus comprising:
objective lens means for projecting a recorded image and having an optical axis,
said optical axis folded and having one axis portion on the recorded image side of the fold substantially normal to another axis portion on the other side of said fold,
means for establishing an annular image to be projected substantially at the focal plane of said objective lens means, and
means for rotating said objective lens means about a rotational axis substantially parallel to said one axis portion of said optical axis and spaced therefrom by a distance substantially equal to the focal length of said objective lens means.

3,894,799
APPARATUS FOR MONITORING COPY QUALITY

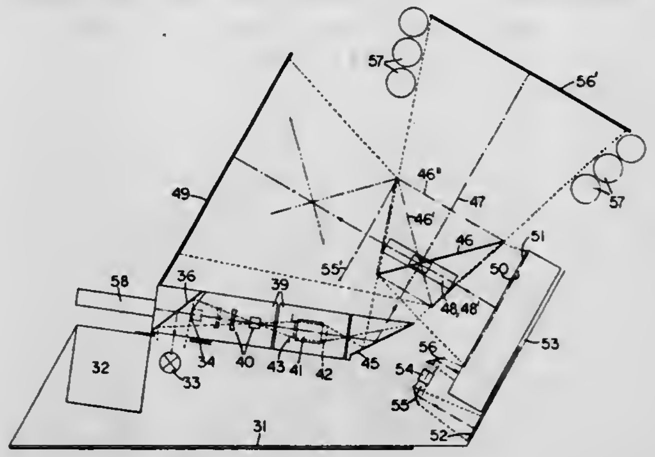
Danny J. Prats, Sodus, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed July 26, 1973, Ser. No. 382,808
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 R **4 Claims**



1. In a copying machine for producing copies of originals of the type having a photoconductive member, means to establish a latent electrostatic image of the original being copied on said member, means to develop the image of said original, and means including a transfer roller to transfer the image of said original to a copy substrate material, the combination of:
means to develop a separate test pattern on said photoconductive member,
means to transfer said test pattern directly to said transfer roller avoiding said copy substrate material whereby to provide a developed test pattern of said transfer roller, and
means to analyze said developed test pattern on said transfer roller for developed image quality.

3,894,800
PROJECTOR

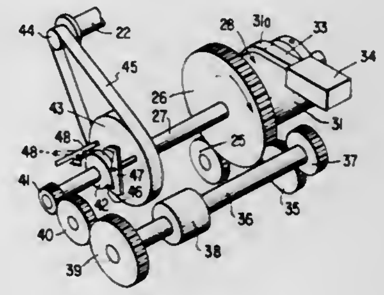
Johann Rotter, Ernst Thunstrasse 6, A 5020 Salzburg, Austria
Filed Apr. 9, 1973, Ser. No. 348,999
Claims priority, application Austria, Apr. 11, 1972, 3115/72
Int. Cl. G03b *35/18*
U.S. Cl. 355—45 **16 Claims**



1. A projector comprising:
a first original plane on which an original may be disposed and a light source for projecting an image of the original; an optical system for receiving the projected image of the original and defining an optical axis; said optical system comprising at least two image-forming optical elements on said optical axis, at least one of which optical elements has a variable focal length; alternately selectable first and second final image planes at which final images of the original are formed by the optical system; said image forming elements lying in series on said optical axis and between the original plane and the selected final image plane; at least two reflecting surfaces, said optical system and said two reflecting surfaces defining a light path between the original plane and the selected final image plane, said two reflecting surfaces following said optical system along said light path, the reflecting surfaces being arranged to deflect the incident beam thereon alternatively to said first and second final image planes, respectively, wherein a marginal ray of the emergent beam from said reflecting surfaces to at least one said final image plane lies at least substantially parallel to the optical axis between the first and second image-forming elements of the optical system.

3,894,801
APPARATUS FOR COPYING DIFFERENT SIZE DOCUMENTS IN A COPYING MACHINE

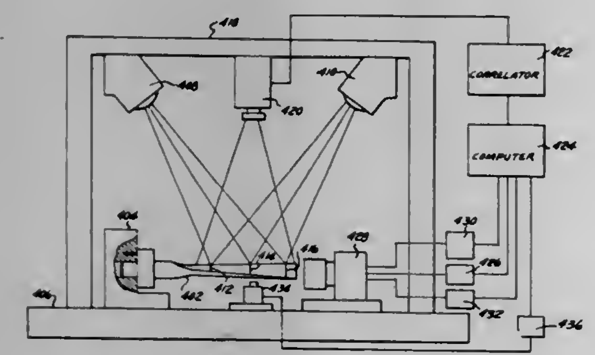
Yoshiharu Namba, Tokyo, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed Jan. 17, 1974, Ser. No. 434,183
Claims priority, application Japan, Jan. 27, 1973, 48-10690
Int. Cl. G03b *27/70*; G03g *15/04*
U.S. Cl. 355—66 **7 Claims**



6. Apparatus for driving the illumination exposure system of a copying machine where the illumination exposure system includes means for scanning a stationary document in a first direction and returning the scanning means in the opposite direction to a start position after scanning has been completed, said apparatus comprising:
a spring clutch, the input side of which is connected to a source of rotative power and the output side of which is connected to a main shaft;
a first control signal source for actuating said spring clutch to connect the input and output sides thereof, said spring clutch including means for disconnecting said input and output sides thereof after said output side has been rotated through a predetermined angle;
a drive pulley rotatably mounted on said main shaft, said pulley being connected to said scanning means;
a notched collar fixedly mounted on said main shaft;
a pawl rotatably mounted on said pulley, said pawl releasably engaging said notched collar so that the rotation of said output side of said spring clutch is transmitted via said main shaft, said collar, said pawl and said pulley to said scanning means for effecting scanning of said stationary document;
a lever which is fixedly positionable in (a) a first lever position so that said lever causes said pawl to be released from the notched collar when a first sized document has been scanned and (b) a second lever position so that said lever causes said pawl to be released from the notched collar when a second sized document has been scanned;
a second clutch, the input side of which is connected to said source to rotative power and the output side of which is connected via a gear train to said main shaft, said gear train causing the rotational speed imparted to said main shaft from the output side of said second clutch to be greater than that imparted thereto by said spring clutch where the difference in speed is absorbed in the spring of

said spring clutch, said second clutch being actuated by a second control signal source which actuates said second clutch in response to said lever releasing said pawl from said notched collar when said second sized document has been scanned to thereby accelerate the rotation of the output said of said spring clutch through its said predetermined angle of rotation while said scanning means is being returned to said start position, said second clutch being de-actuated approximately just before said output side has been rotated through said predetermined angle whereby the number of said second sized documents that may be copied per unit time is greater than that of said larger, first sized documents.

3,894,802
STEREOSCOPIC GAGE AND GAGING SYSTEM
Paul T. Higgins, Orchard Lake, Mich., assignor to The Bendix Corporation, Southfield, Mich.
Division of Ser. No. 351,728, April 16, 1973, Pat. No. 3,837,198. This application Dec. 26, 1973, Ser. No. 428,277
Int. Cl.² G01C *11/12*
U.S. Cl. 356—2 **4 Claims**



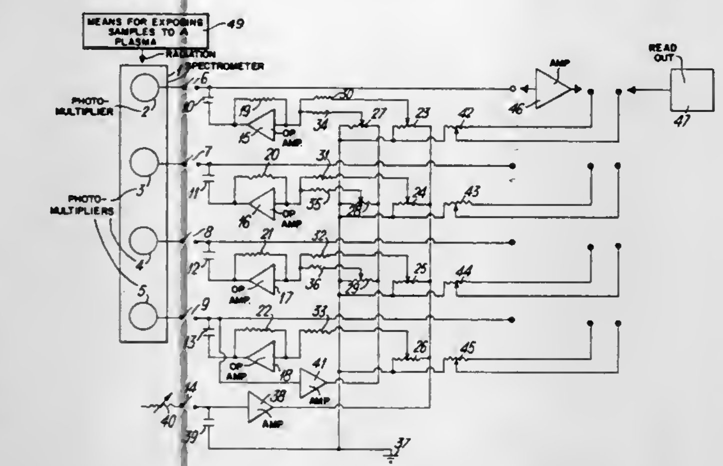
1. A system for gaging the surface of an object comprising: means for supporting the object in a predetermined position; means having a fixed relationship to said supported object for optically imaging from spatially separated vantage points two complementary stereoscopic patterns on the surface of said supported object each stereoscopic pattern having at least one coded image, and each coded image in one of said patterns has a complementary image in the other of said patterns, said complementary image in said other pattern having a code different from the code of the images in said one pattern, and each image in said one pattern and its complementary image in said other pattern form a set, wherein the relationship of the two images in each set is indicative of the conformity of the object's surface to the desired position at the location of the set,

means for generating electrical signals indicative of the location of each coded image on the surface of the object,

means for correlating the electrical signals indicative of the two coded images in each set to generate error signals indicative of the correspondence of the object's surface to the desired position at the location of each set; and

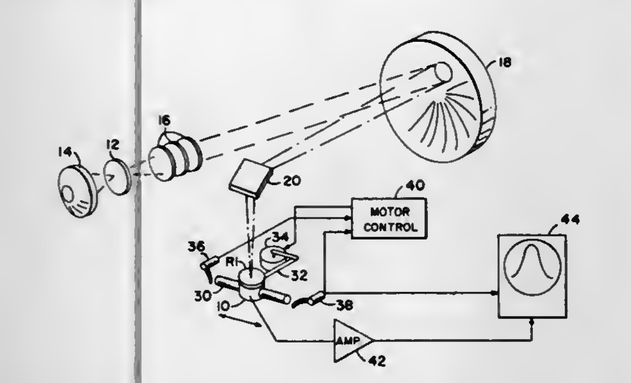
means for generating a visual indication of the departure of the surface being gaged from said desired position at the location of each set in response to said error signals.

3,894,803
PLASMA EMISSION SPECTROSCOPY
William Ronald McLean, and David Leon Stanton, both of Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England
Filed Oct. 23, 1973, Ser. No. 409,004
Claims priority, application United Kingdom, Oct. 26, 1972, 49466/72
Int. Cl. G01j *3/38*
U.S. Cl. 356—82 **6 Claims**



1. Apparatus for determining the elemental analysis of a carbon-containing sample which comprises: means for exposing the sample to a plasma, means for resolving radiation emitted by the plasma according to its frequency, means for detecting the intensity of radiation of frequencies characteristic of one or more individual elements and means for correcting the detected intensity for radiation of frequencies characteristic of one or more individual elements other than carbon to account for an increase in background radiation of that frequency due to carbon, and in which the means for correcting the intensity detected for individual elements other than carbon comprises means for deducting a value related to a carbon analysis from a value detected for that element.

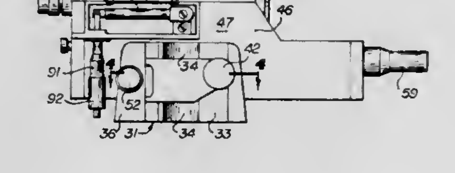
3,894,804
INTENSITY LEVEL DISPLAY APPARATUS FOR RADIATION ANALYSIS
Grant R. Detwiler, Orange, and Ronald E. Chastain, Tustin, both of Calif., assignors to The United States of Amercia as represented by the Secretary of the Army, Washington, D.C.
Filed Apr. 18, 1974, Ser. No. 462,161
Int. Cl. G01j *1/00*
U.S. Cl. 356—121 **5 Claims**

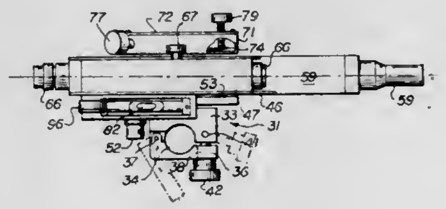


1. Light beam intensity level scanning and display apparatus for alignment of optical elements comprising: first and second optical reflectors, a light source for generating a light beam which impinges on said reflectors, adjustable optical coupling means disposed between said reflectors for adjustable alignment therebetween to obtain a selectable light beam shape and intensity, a radiometer responsive to said light beam and having a proportional electrical output, a reflective surface

disposed for receiving the light beam reflected from said second optical reflector for coupling energy from said second reflector to said radiometer, driving means coupled to said radiometer for sweeping said radiometer back and forth across the path of said beam, and an oscilloscope coupled to said radiometer output for displaying the intensity of radiant energy sampled as the radiometer traverses the beam.

3,894,805
MOUNTING APPARATUS AND SYSTEM FOR LASER SURVEYING INSTRUMENT
Robert O. Middleton, Palo Alto, Calif., assignor to Equipment Guide Book Company, Palo Alto, Calif.
Filed Dec. 26, 1973, Ser. No. 428,620
Int. Cl. G01b *11/26*
U.S. Cl. 356—138 **12 Claims**

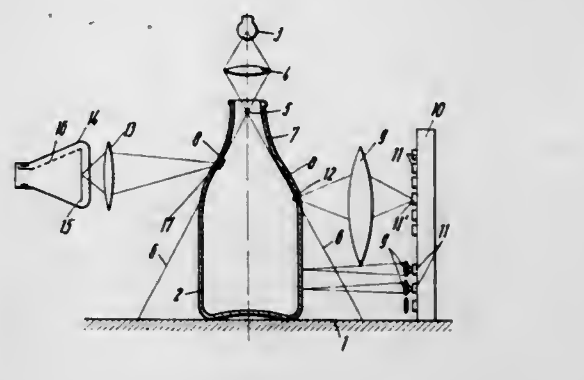




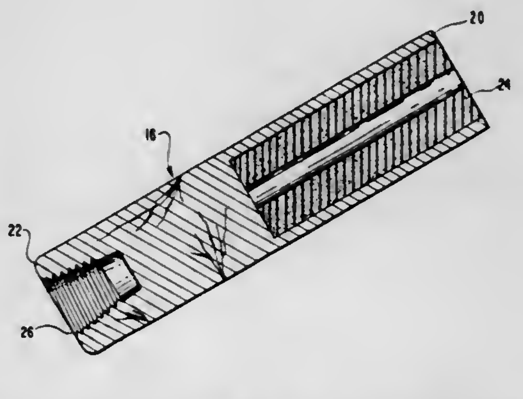
1. A laser surveying instrument comprising a housing, a laser beam generator and collimator for extending a laser beam out of said housing, a clamp formed to clamp about a column or pipe, a plate, means connecting said clamp to said plate for relative movement about a vertical axis, means for adjusting the position of said clamp and said plate relative to said vertical axis, means connecting said housing and plate together for controlled relative movement about a first horizontal axis, a bubble vial, means mounting said vial on said housing for relative movement about a second horizontal axis at a first end of said vial, a micrometer mounted on said housing and connected to said vial at a second end opposite said first end, said micrometer having a barrel marked with percent-of-grade indicia to indicate the slope of said generator relative to the horizontal when said vial is horizontal.

3,894,806
METHOD AND APPARATUS FOR TESTING TRANSPARENT CONTAINERS
Ernst Remy, and Henning Von Siemens, both of Munich, Germany, assignors to Efratom California Inc., Costa Mesa, Calif.
Filed Oct. 31, 1973, Ser. No. 411,236
Claims priority, application Germany, Oct. 31, 1972, 2253445
Int. Cl.² B67C *1/14*
U.S. Cl. 356—240 **22 Claims**

1. A method of examining a transparent container having an opening, such as a bottle, for imperfections and impurities, which method comprises shining into said container through said opening a divergent beam of light, illuminating substantially the entire surface of the container at the same time with said divergent beam, and measuring or viewing the light scattered by the imperfections of impurities when illuminated by said beam.



3,894,807
BRUSH EXTENSION HANDLE COUPLING
John P. Betz, III, 4311 Knowles Ave., Kensington, Md. 20795
Filed June 6, 1974, Ser. No. 476,862
Int. Cl. F16b *9/00*
U.S. Cl. 403—221 **4 Claims**



1. A paint brush extension handle coupling comprising

a block of suitable material having a substantially square cross-section and being of sufficient length to provide for connecting sockets in its opposite ends,

the connecting socket in one end consisting of a bore having a sleeve of resilient sponge material for receiving and frictionally holding the handle of a conventional paint brush, and

the connecting socket in the other end having an internal screw thread for receiving the screw end of a conventional extension rod handle.

3,894,808
MOUNT ADAPTER FOR CUTTING TOOLS AND METHOD OF OPERATING
Vincent Zarlengo, 3530 Chase St., Wheatridge, Colo. 81005
Continuation-in-part of Ser. No. 169,672, Aug. 6, 1971, Pat. No. 3,753,385. This application Aug. 17, 1973, Ser. No. 389,171
Int. Cl. B23b *41/00;* **B23d** *5/00*
U.S. Cl. 408—54 **8 Claims**

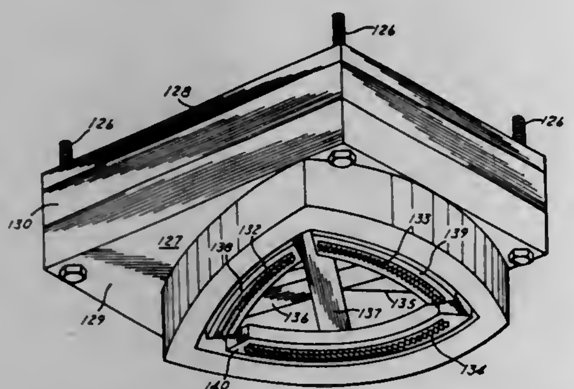
1. In a machine tool including a stationary base having mounted thereon a rotary drive shaft, a tool mounting head and a cutting tool thereon, and means for holding a workpiece in position for engagement by the cutting tool, the method of producing a slot in a workpiece which comprises the steps of:

a. securing a workpiece in position on the holding means;

b. producing reciprocating arcuate movement of said tool and said workpiece holder with respect to one another in opposite directions in forward and return strokes transversely of the workpiece;

c. moving the tool and the holding means relatively toward one another to bring the tool into cutting engagement with the workpiece;

d. utilizing the forward stroke of said reciprocating movement for driving the tool and the holding means relatively with respect to one another along the path of the cut to be made to produce a cut in the workpiece;

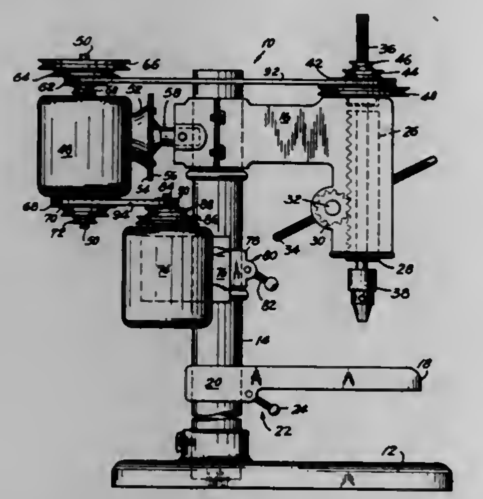


e. moving the tool and the workpiece relatively away from one another and utilizing the return stroke of said reciprocating movement for returning them to their initial position; and,

f. repeating said steps of moving relatively toward and driving and moving relatively away and returning to produce repeated cuts along the same path until the cut in the workpiece attains a predetermined depth.

3,894,809
DRILL PRESS ARRANGEMENT

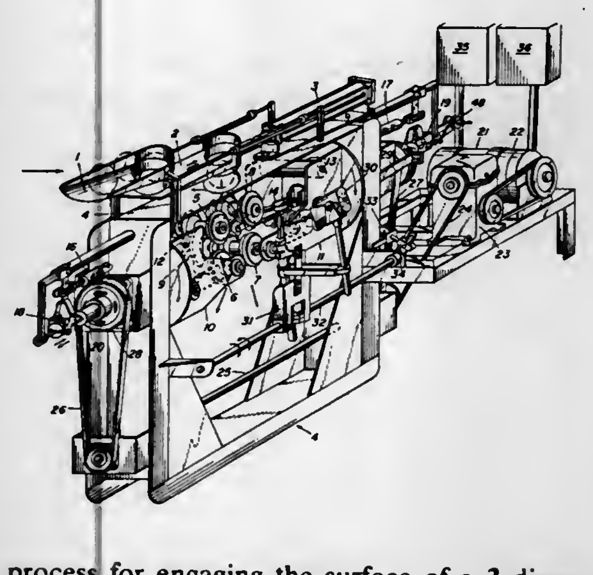
Jesse R. Hollins, 40 Stoner Ave., Great Neck, N.Y. 11021
Filed July 16, 1973, Ser. No. 379,237
Int. Cl.^{2} B23B *47/16*
U.S. Cl. 408—128 **2 Claims**



1. A drill press arrangement comprising a spindle for driving a tool, a plurality of stepped pulleys secured to said drill press spindle, a first motor, said first motor being a double-ended motor and having a drive shaft, said first motor drive shaft including a first end and a second end, a plurality of stepped pulleys being secured to said first end, a first belt trained about one of said plurality of stepped pulleys secured to said first end of said first motor drive shaft and trained about one of said pulleys of said plurality of stepped pulleys secured to said spindle, a plurality of stepped pulleys secured to said second end of said drive shaft of said first motor, a second motor, said second motor including a drive shaft, a plurality of stepped pulleys secured to said drive shaft of said second motor, a second belt trained about one of said plurality of stepped pulleys secured to said drive shaft of said second motor and trained about one of said plurality of stepped pulleys secured to said drive shaft of said second motor.

3,894,810
COCONUT PARING PROCESS

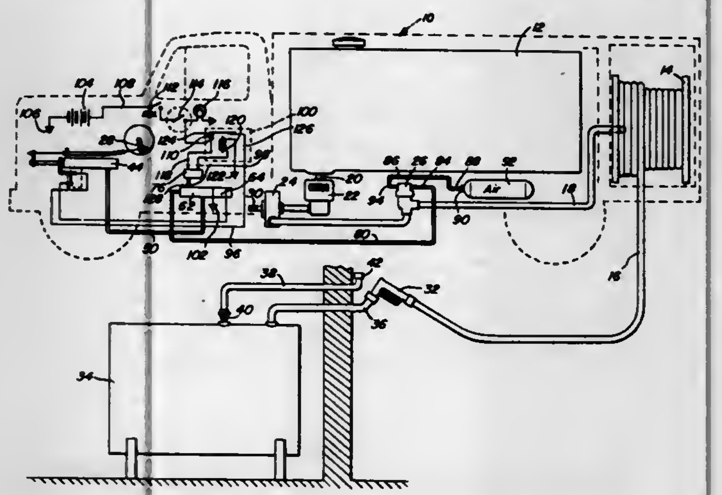
Julian O. Palis, San Pablo, Philippines, assignor to General Foods Corporation, White Plains, N.Y.
Division of Ser. No. 151,408, June 9, 1971, Pat. No. 3,744,408. This application Mar. 23, 1973, Ser. No. 344,394
Int. Cl. A23n *5/04*
U.S. Cl. 426—482 **9 Claims**



1. A process for engaging the surface of a 3 dimensional object having a continuously curved surface with means for operating on the object comprising rotating said object about a first centrally located axis of rotation while simultaneously rotating said object about a second centrally located axis of rotation approximately perpendicular to said first centrally located axis and contacting the surface of said object with said operating means during the rotation of said object about said first and second centrally located axes.

3,894,811
PUMP MOTOR CONTROL

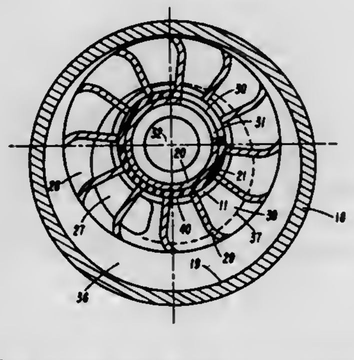
Lester L. Bergey, 3rd & Walnut St., Telford, Pa. 18944, and Earl J. Yocum, P.O. Box 302, Perkasie, both of Pa. 18962
Filed Dec. 10, 1973, Ser. No. 424,921
Int. Cl. F04b *49/00*
U.S. Cl. 417—34 **4 Claims**



1. In combination, a variable speed pump motor, a storage tank for storing liquids and including an outlet, a liquid delivery line including an inlet end communicated with said outlet and an outlet line having an openable and closable discharge valve operatively associated therewith, said motor including a speed control shiftable between slow and high speed positions, a pump driven by said motor and operatively associated with said line for pumping fluid therethrough from said tank outlet to said discharge valve, an automatic speed control system including liquid flow sensing means, speed control shifting means and deactuatable actuator means for said speed control shifting means, said system being operatively associated with said delivery line and said speed control, said liquid flow sensing means including control means, after said motor and pump are initially placed in operation with said speed control in the slow speed position and said discharge valve in the closed position, operating to sense the flow of liquid through said line and to subsequently actuate said actuator means to operate said speed control shifting means for shifting said speed control to the high speed position upon said valve being opened and to thereafter sense the stoppage of liquid flow through said line and to deactivate said actuator means upon said valve being closed, said actuator means also including actuator deactuating means operative in response to initial actuation of said actuator means to render said actuator means inoperative for reactuation to operate said speed control shifting means upon the reopening of said discharge valve.

3,894,812
LIQUID RING VACUUM PUMP-COMPRESSOR

Henry Huse, Darien, Conn., assignor to Atlantic Fluidics, Inc., Stamford, Conn.
Filed Feb. 19, 1974, Ser. No. 443,291
Int. Cl. F04c *19/00*
U.S. Cl. 417—68 **8 Claims**



1. A liquid ring pump including in combination a casing, a rotor shaft supported in said casing, a rotor supported by said rotor shaft, blades of said rotor having first and second opposite blade edges, a suction head, a radially projecting wall of said head with which said first blade edges are in sliding contact, wall ports of said wall, pump inlet means in communication with said wall ports, radially projecting shroud means integral with said second blade edges are in sliding contact, an axially disposed central member mounted radially inward of said rotor and about which said rotor can rotate, central member ports of said central member, pump discharge means in communication with said central member ports, a lobe of said casing, means for rotating said rotor whereby a fluid material is drawn from said pump inlet means, through said wall ports and within said casing and discharged through said central member ports and said pump discharge means and liquid inlet means whereby upon rotation of said rotor liquid is introduced into said casing within said lobe to be contacted by said fluid material upon passage therethrough and in which first angled guide vanes in said pump inlet means are provided in combination with second angled guide vanes in said pump discharge means so that fluid flow is directed at an angle less than 90 degrees from the surface of said wall and said central member respectively and in the direction of the communicating rotor blades.

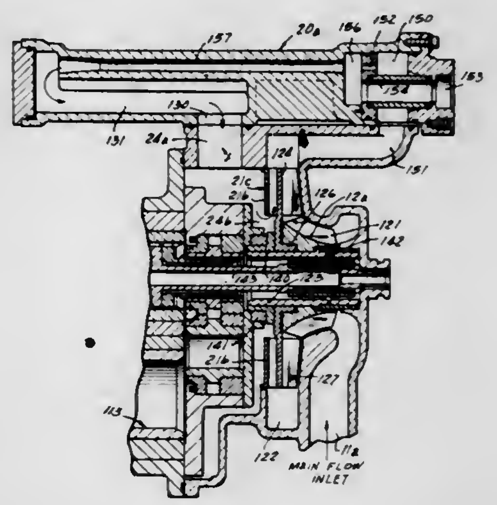
3,894,813
AIRCRAFT FUEL SUPPLY SYSTEM HAVING A DUAL STREAM TOW-PHASE FLUID PUMP

Paul Cooper, Cleveland Heights, Ohio, assignor to TRW Inc., Cleveland, Ohio
Filed Jan. 30, 1974, Ser. No. 437,899
Int. Cl. F04b *23/04*
U.S. Cl. 417—76 **5 Claims**

1. An aircraft fuel supply system comprising,

a two-stage fuel pump having a first centrifugal booster stage receiving a main inlet flow stream from a source of fuel and initially pressurizing said main inlet flow stream, said fuel pumping having a second positive displacement pumping stage receiving the initiallized pressurized flow stream and pressurizing said stream for delivery to a fuel flow control unit,

an eductor pump for evacuating liquid and vapor from high points in the fuel system and for compressing it to a volume capable of being digested,

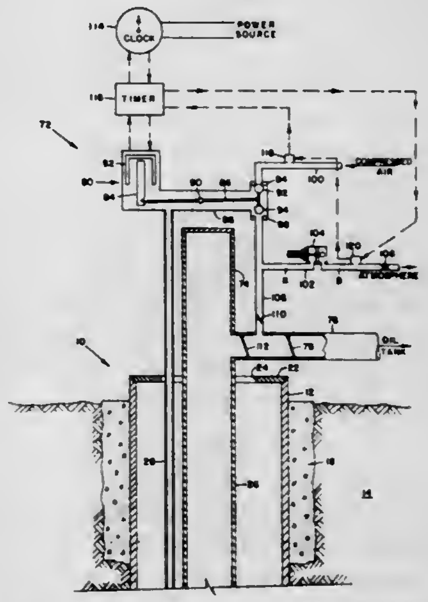


a flow impeller means constituting a third pump,

and means forming a hydraulic circuit extending between an outlet of said eductor pump and an inlet of said flow impeller means for directing the discharge of said eductor pump to the inlet of said flow impeller means independently of said main inlet flow stream, and further including means for directing the fuel acted upon by said flow impeller means into the main stream ahead of the positive displacement stage, but after the centrifugal booster stage of the fuel pump thereby to prevent vapor lock of the positive displacement stage.

3,894,814
ARTIFICIAL LIFT FOR OIL WELLS

Thomas H. Morgan, 800 N.W. Loop 410, San Antonio, Tex. 78216
Filed June 4, 1974, Ser. No. 476,212
Int. Cl.^{2} F04F *1/06, 3/00*
U.S. Cl. 417—121 **4 Claims**



1. An artificial lift apparatus for a liquid producing well having a well head and a well casing therein, said apparatus comprising:

production tubing extending from the well head into the casing to a level below which the liquid will fill through perforations in the casing;

accumulator means surrounding the bottom of the production tubing for collecting liquid in the well;

gas tubing means extending from the well head into the accumulator means for communication therewith from the well head;

first check valve means for only allowing flow of liquid into said accumulator means;

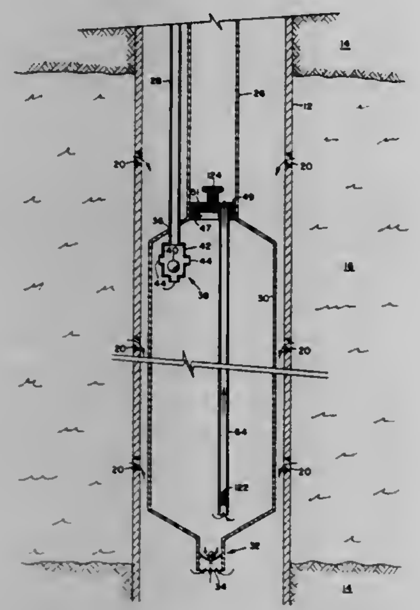
standing valve means at essentially the bottom of said production tubing to allow flow of said fluid only into said production tubing, said bottom of said production tubing being near the bottom of said accumulator means;

means for receiving and handling said liquid at said well head; and

control means for alternatively venting and pressurizing said accumulator means via said gas tubing means, liquid being allowed to collect in said accumulator means via said check valve means during venting, thereafter in response to said pressurizing, said liquid is moved through standing valve means into said production tubing and raising to the well head;

said control means includes a normally open valve connecting said gas tubing means to atmosphere, and a normally closed valve connecting said gas tubing means to a source of pressurized gas, said normally open valve and said normally closed valve both switching in response to a control signal;

said control signal is generated by a first pressure switch in a vent line from said normally open valve to atmosphere, the lower end of said gas tubing means having a float valve for closing upon the filling of said accumulator means with liquid, said control signal being generated upon closing said float valve and subsequent loss of pressure on said first pressure switch.



3,894,815
BOLTED HERMETIC REFRIGERENT GAS COMPRESSOR WITH ELECTRIC MOTOR DRIVE

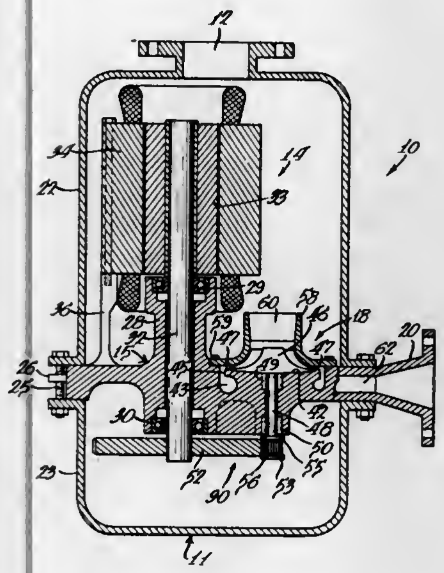
Warren L. Beeton, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Jan. 26, 1973, Ser. No. 326,968

Int. Cl. F04b *17/00*

U.S. Cl. 417—360 **20 Claims**

1. A motor driven centrifugal gas compressor combination, comprising; housing means for surrounding the components of the combination, a support plate extending across said housing, a motor in said housing including a stator and a rotor, said rotor being rotatably mounted in said support plate, said stator being supported on said plate to establish the concentricity between stator and rotor, and a centrifugal compressor supported on said support plate and driven by said rotor.



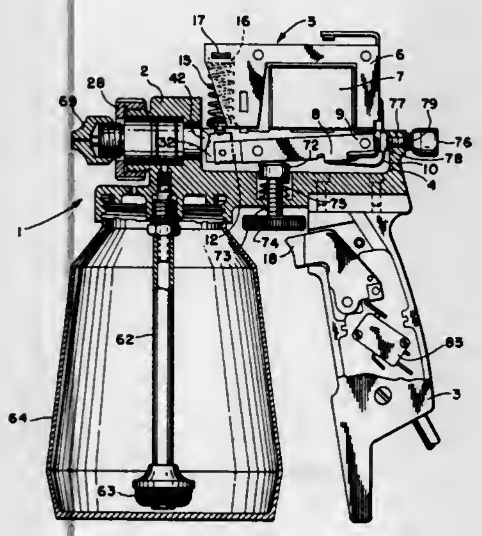
3,894,816
HAND HELD PAINT SPRAYER

Howard C. Davis; Daniel Becker, both of Columbus, Ohio, and Charles A. Burton, St. Paul, Minn., assignors to The Wooster Brush Company, Wooster, Ohio

Filed Aug. 22, 1973, Ser. No. 390,581

Int. Cl. F04b *7/00*

U.S. Cl. 417—413 **16 Claims**



1. A pump comprising a housing containing a pumping chamber and inlet and outlet openings communicating with said pumping chamber, a flexible diaphragm, and means for flexing said diaphragm in opposite directions for respectively increasing and decreasing the volume of said pumping chamber for pumping fluid into and out of said pumping chamber, said last-mentioned means comprising a vibrator-armature, said armature being mounted for movement transversely of the axis of said diaphragm, and means for transmitting motion from said armature to said diaphragm including a plunger mounted for axial movement within said housing toward and away from said diaphragm, and a wedge mounted on the end of said armature nearest said diaphragm, said wedge having a cam surface thereon engaging said plunger to provide a mechanical advantage in moving said plunger axially during the pumping stroke.

3,894,817
OSCILLATORY ARMATURE PISTON PUMP

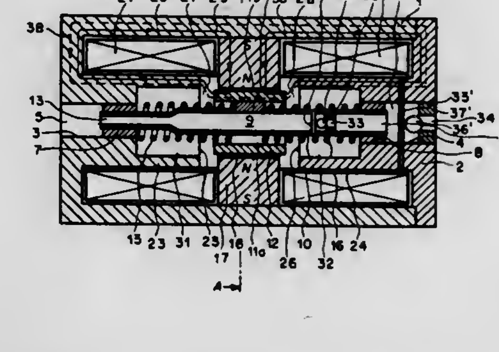
Istvan Majoros, Baar, and Franz Kiss Horvath, Lucerne, both of Switzerland, assignors to Landis & Gyr AG, Zug, Switzerland

Filed Sept. 20, 1973, Ser. No. 398,923

Claims priority, application Switzerland, Sept. 22, 1972, 013836/72

Int. Cl. F04b *35/04*

U.S. Cl. 417—415 **11 Claims**



1. In an oscillatory armature piston pump, the combination of:

an oscillatory armature;

a piston attached to said armature and capable of moving a fluid in accordance with the oscillatory movement thereof;

an energization coil means for generating an alternating magnetic flux passing through said armature;

permanent magnet means for generating a direct magnetic flux passing through said armature; and

a magnetic circuit for so completing the flux paths for said alternating and direct magnetic fluxes that there is no substantial flow of said alternating flux through said permanent magnet, said magnetic circuit including at least one air gap for accommodating movement of said armature wherein said direct magnetic flux opposes said alternating flux during one half-cycle and aids said alternating flux during the other half-cycle.

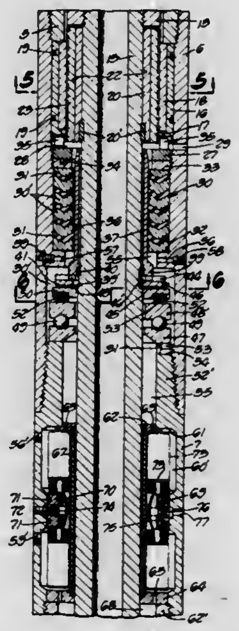
3,894,818
IN-HOLE MOTORS

John E. Tschirky, Long Beach, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Apr. 27, 1973, Ser. No. 354,954

Int. Cl. F01c *1/10*; **E21b** *3/12*; **F16c** *1/24*

U.S. Cl. 418—48 **12 Claims**



1. A fluid motor, comprising a stator, a rotor in said stator, a tubular drive shaft connected to said rotor, a housing for said drive shaft, a port in said tubular drive shaft, a first fluid passageway into the stator, an outlet from said stator connected to the interior of said tubular drive shaft through said port, a discharge opening from said shaft, a lubrication reservoir chamber in said housing between said outlet and said discharge opening, a bearing between said shaft and said housing lubrication passageways in said housing connecting said reservoir chamber and the interior of said housing at said bearing, a seal mounted in sealing relation between said housing and said shaft, said seal positioned in said housing between said stator outlet and said bearing, a second fluid passageway being positioned in said housing, one end of said seal communicating with said stator outlet through said second fluid passageway means to maintain the pressure in said reservoir and at said seal, in the passageway between stator outlet and said seal, and at said discharge opening substantially equal.

3,894,819
EXHAUST PORT OF A ROTARY PISTON ENGINE

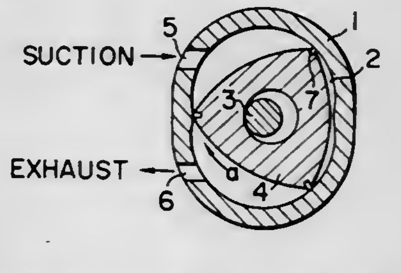
Kenichi Imaizumi, and Masanobu Yoshika, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Dec. 20, 1973, Ser. No. 426,580

Claims priority, application Japan, July 18, 1973, 48-80286

Int. Cl. F01c *1/02;* **F04c** *1/02;* **F02b** *53/00*

U.S. Cl. 418—61 A **6 Claims**



1. An exhaust port of a rotary piston engine, said engine comprising at least two side housings and a center housing interposed therebetween to define a casing, and a polygonal rotor adapted to eccentrically rotate in said housing with its apexes contacting the inner surface of said center housing in a manner to perform respective strokes such as suction, compression, combustion, expansion and exhaust strokes according to the changes of volumes of operating spaces defined by a co-operation of said casing and said rotor, said exhaust port being provided at the wall of said center housing and adapted to be controlled of its opening and closing by being traversed by the apexes of said rotor, characterized in that, expressing the rotational angle of an eccentric shaft carrying said rotor as θ and the opening area of said exhaust port as S, the conditions

$$\left(\frac{d^2s}{d\theta^2}\right)\theta=\theta_1 > 0 > \left(\frac{d^2s}{d\theta^2}\right)\theta=\theta_2$$

$$\frac{d^3s}{d\theta^3} < 0$$

are satisfied in the leading end region ($\theta_1 \leqq \theta \leqq \theta_2$), i.e. an operational region extending from the initiation ($\theta = \theta_1$) of opening of said port to the attainment ($\theta = \theta_2$) of the fully opened condition of said port.

3,894,820
SEALING DEVICES FOR ROTORS OF ROTARY PISTON ENGINES

Michel Durin, Paris, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France

Filed Sept. 28, 1973, Ser. No. 401,606

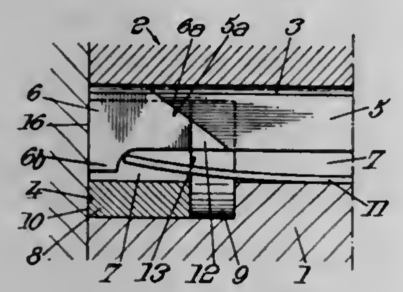
Claims priority, application France, Oct. 2, 1972, 72.34824

Int. Cl. F01c *19/02;* **F04c** *27/00*

U.S. Cl. 418—121 **9 Claims**

1. In a multi-lobed rotor of a rotary piston engine, the improvement comprising:

means defining a housing in each end of an apex of the rotor,
a drum positioned in each housing so as to be slidable axially of but not rotatable relative to the apex of the rotor, each drum having an aubtment surface,
means defining a longitudinally extending groove along the apex of the rotor and the drums,
an elongated central bar, each end of said central bar being bevelled,
a pair of end bars, one end of each of said end bars being bevelled, each end bar having an abutment surface which abuts the abutment surface of a respective one of the drums,



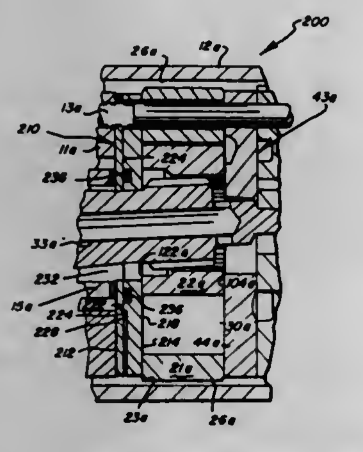
said central bar and said end bars being positioned in said groove with one bevelled end of the central bar lying in facing abutment with the bevelled end of one of the end bars and the other bevelled end of the central bar lying in facing abutment with the bevelled end of the other one of the end bars,
elastic means for biasing the central bar and end bars radially outwardly and for biasing each of the drums axially outwardly in a direction from the central bar to the respective drum, said elastic means exerting a radially outward force on the end bars which is transmitted to the central bar through the facing abutment of the ends of the central bar with the end of end bars and is transmitted to each drum through the abutment of the abutment surface of each end bar with the abutment surface of its respective drum.

3,894,821

HYDRAULIC DEVICE WITH ROTOR SEAL

Hollis N. White, Jr., West Lafayette, Ind., assignor to TRW Inc., Cleveland, Ohio

Filed Mar. 22, 1974, Ser. No. 453,710
Int. Cl. F01c *19/08;* **F03c** *3/00;* **F04c** *15/00*
U.S. Cl. 418—133 **2 Claims**



1. A hydraulic device comprising
a housing
internally toothed stator fixedly connected with said housing and having an internal surface partially defining a chamber,
first and second end plate means connected with axially opposite ends of said stator and cooperating with said stator to further define said chamber,
an externally toothed rotor circumscribed by said stator and disposed in said chamber between said end plate means, said rotor having one tooth less than said stator and being movable in an orbit in said chamber about the central axis of said stator during rotational movement of said rotor about its own central axis, said rotor cooperating with said stator and said end plate means during said rotary and orbital movement to define a plurality of pockets some of which contain fluid at a relatively low pressure and other of which contain fluid at a relatively high pressure,
said first end plate means including first and second plate members having first major sides disposed in a side-by-side relationship, said first plate member having a second major side disposed in abutting engagement with said housing, said second plate member having a second major side disposed in abutting engagement with said stator and with said rotor, said first and second plate members having internal surface means defining coaxial central openings disposed in a coaxial relationship with said stator,
a rotatable member supported in said housing for rotation about an axis which is coincident with the central axis of said stator,
shaft means extending through said central openings in said first and second plate members and having a first portion connected with said rotor for common orbital and rotary movement therewith, said shaft means having a second portion connected with said rotatable member for imparting rotary movement to said rotatable member during rotational movement of said rotor in said chamber,
means defining a first passage continuously connected in fluid communication with said pockets containing fluid at a relatively high pressure during operation of said hydraulic device,
means defining a second passage connected in fluid communication with said pockets containing fluid at a relatively low pressure, said second passage being connected in fluid communication with said central openings in said first and second plate members,
said rotor being effective during its orbital and rotational movement relative to said stator to enable fluid to flow through said pockets between said first and second passages, and
means for providing a continuous fluid pressure force between said plate members for continuously urging said rotor and said second plate member into tight abutting engagement during operation of said hydraulic device to restrict fluid flow along a path disposed between said rotor and said second major side surface of said second plate member, said means for providing said fluid pressure force between said plate members to urge said rotor and said second plate member into tight abutting engagement including,
first surface means defining a first annular recess in said first major side of one of said plate members, said first annular recess opening outwardly toward said first major side surface of the other one of said plate members and circumscribing said shaft means at a location radially outwardly of the central opening in said one plate member,
second surface means defining a second annular recess in the first major side of said one of said plate members at a location radially outwardly of said first annular recess, said second annular recess opening outwardly toward said first major side surface of the other one of said plate members,
third surface means defining a radially extending recess in the first major side of said one of said plate members, said radially extending recess opening outwardly toward said first major side surface of the other one of said plate members and being connected in continuous fluid communication with said first passage and said second annular recess for continuously conducting high pressure fluid

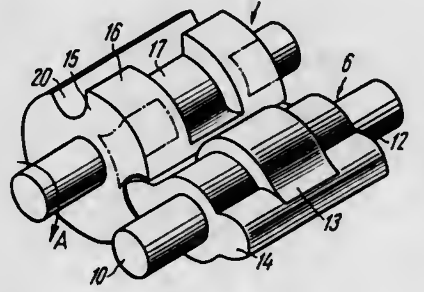
from said first passage to said second annular recess during operation of said hydraulic device to apply a continuous fluid pressure force to said first major side surfaces of said first and second plate members urging said first and second plate members axially apart to thereby press said second major side surface of said second plate member against said rotor, and
seal means disposed in said first annular recess in said one plate member and sealingly engaging the first major side surface of said other plate member for enabling the first major sides of said first and second plate members to be exposed to high pressure fluid radially outwardly of said seal means and for preventing a flow of high pressure fluid across said first annular recess to the central openings in said plate members.

3,894,822

INTERENGAGING ROTOR DISPLACEMENT MACHINE

Alfred Ibragimovich Abaidullin, ulitsa Narimanova, 10, kv. 19; Ibragim Gabdulkhakovich Khisameev, ulitsa Krasnokokshlaskaya, 92, kv. 20; Adolf Leonidovich Verny, ulitsa Latyshskikh Strelkov, 33, kv. 63; Avely Isaevich Shvarts, ulitsa Kosmonavtov, 3, kv. 45; Vladimir Borisovich Shnepp, ulitsa Zarya 4, kv. 4., and Ildus Gabterievich Galiakhmetov, ulitsa Latyshskikh Strelkov, 33, kv. 68, all of Kazan, U.S.S.R.

Filed Apr. 22, 1974, Ser. No. 463,097
Int. Cl. F01c *1/08;* **F04c** *17/04*
U.S. Cl. 418—191 **3 Claims**



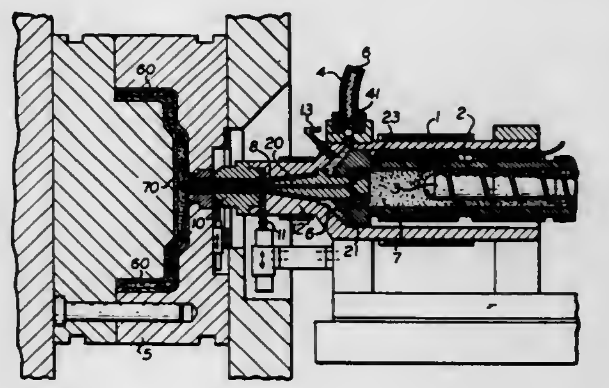
1. A rotary displacement machine comprising: a casing having an internal surface; a pipe connection located on said casing and serving for sucking in the working fluid; a pipe connection located on said casing and serving for discharging the working fluid; a straight-toothed driving rotor installed rotatably in said casing; said driving rotor having a cylindrical surface; lobes located on said cylindrical surface of said rotor, each lobe being positioned between said straight teeth of said rotor; a straight-toothed driven rotor installed inside said casing; a gear train consisting of two meshing gears for transmitting rotation from said driving rotor to said driven rotor and for ensuring a guaranteed clearance between said teeth of said driven and driving rotors; a shaft for said driving rotor which carries one of said meshing gears; a shaft for said driven rotor which carries the other of said meshing gears; an external cylindrical surface for each tooth of said driven rotor; spaces between said teeth of said driving rotor and driven rotor; a cavity for said driven rotor formed by said space between said teeth of said driven rotor and the internal surface of said casing; a cavity for said driving rotor formed by said space between said teeth of said driving rotor and the internal surface of said casing; a depression serving to equalize pressure between said cavity of said driven rotor and said cavity of said driving rotor during compression of the working medium, said depression being located on said cylindrical surface of each tooth of said driven rotor and limited by the body of said tooth at the front edge of said driven rotor tooth, in the direction of rotation of said driven rotor, and by the body of the same tooth at both end faces of said tooth, the dimensions of said depression corresponding to the dimensions of said lobe on said cylindrical surface of said driving rotor so that during rotation of said driving and driven rotors, said lobe covers said depression and separates the zone of equalized pressure from the suction zone.

3,894,823

APPARATUS FOR INJECTION MOLDING OF PARTS OF SYNTHETIC MATERIAL

Robert Hanning, Cavernago Parc 1, Campione d'Italia, Italy Division of Ser. No. 286,733, Sept. 6, 1972, abandoned. This application Oct. 18, 1973, Ser. No. 407,598

Claims priority, application Switzerland, Sept. 7, 1971, 13069/71
Int. Cl. B28b *13/00;* **B29c** *9/00;* **B29f** *1/12*
U.S. Cl. 425—130 **4 Claims**



1. An apparatus for the injection molding of bodies of a synthetic resin with a surface layer of a first material and a core of a second material containing a foaming agent, said apparatus comprising a mold having a mold cavity corresponding to the shape of said body;
an injection nozzle communicating with said mold cavity;
a injection cylinder aligned with and communicating with said nozzle;
a piston cylinder receivable in said injection cylinder and displaceable therein for receiving said second material;
a tubular member slidable in said piston cylinder and extending into said nozzle to define therewith a passage externally of said member for conducting said first material into said mold cavity, said member being provided with channels opening into the interior of said piston cylinder in at least one relative position of said member and said piston cylinder; and
a piston axially movably guided in said piston cylinder for displacing said second material therefrom through said member into said mold cavity.

3,894,824

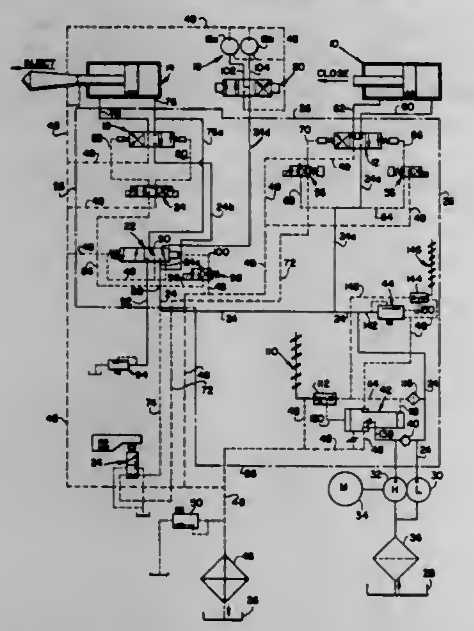
HYDRAULIC CONTROL FOR PLASTIC INJECTION MOLDING MACHINE

John W. Wells, Agawam, Mass., assignor to Package Machinery Company, East Longmeadow, Mass.

Filed Mar. 14, 1973, Ser. No. 341,315
Int. Cl. B29f *1/06*
U.S. Cl. 425—146 **12 Claims**

1. An hydraulic control system for a plastic injection molding machine having mold halves which are opened and closed hydraulically by a reversible fluid motor actuated by a die control valve, said system including a low pressure reservoir and means defining a main line for pressure flow from the reservoir to the die control valve and a drain line from the die control valve to the reservoir, a first driven pump in said main line capable of high pressure but relatively low rate delivery to provide the final closing force on the mold halves, a second driven pump capable of high rate but relatively low pressure delivery to provide the force for most of the relative movement of the mold halves and having its inlet connected with

said reservoir and having an outlet connection to said main line which permits flow only toward said main line, a by-pass valve connected between the outlet of said second pump and said reservoir and including a member hydraulically movable to various positions to vary the flow from said outlet to said reservoir and thereby to vary the flow from said second pump to the die control valve through said main line, a first servo valve connected between said main line and said by-pass valve and having a drain connection to said reservoir whereby to control hydraulic pressure acting upon said movable member, and means for modulating the operation of said servo valve to vary the position of said movable member in said by-pass valve, the said movable member comprising an axially movable spool having one end of reduced area exposed in the by-pass valve to hydraulic fluid at main line pressure, and the other end of the spool being exposed to hydraulic fluid at the pressure controlled by said first servo valve.



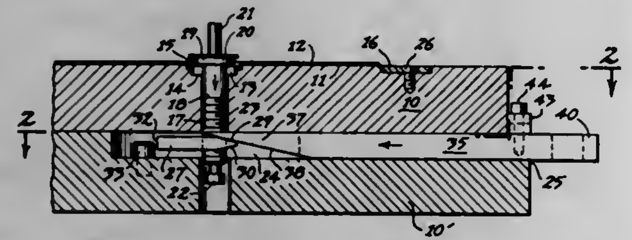
3,894,825
RECORD DIE TOOL

William S. Westermann, 1400 Burton Valley Rd., Nashville, Tenn. 32715

Filed Dec. 26, 1973, Ser. No. 428,083

Int. Cl.² B29C *17/00*

U.S. Cl. 425—195 **6 Claims**



1. In a record pressing die having a face and a vertical center hole therethrough, a center pin holder slidably received in said center hole for vertical reciprocal movement between an upper inoperative position and a lowermost operative position, and a cap on the top portion of the center pin holder for holding a matrix on the die when the pin holder is in its lowermost operative position, the improvement comprising:

a. an elongated, substantially horizontal cavity in said die having an opening through the side of the die and intersecting the center hole below the face of the die a distance less than the length of said center pin holder, so that said pin holder depends into said cavity when inserted into the center hole,

b. a cam member having top and bottom cam surfaces converging toward said opening and projecting laterally from said pin holder within said cavity, the distance between said cam member and said cap being greater than the distance between the top of the cavity and the face, said cam member having a height less than the height of said cavity,

c. an elongated bar member having a wedge-shaped inner end portion, the length of said bar member being greater than the portion of the cavity between the center hole and said opening,

d. said wedge-shaped inner end portion having a vertically sloping, operative wedge surface terminating at the inner end of said bar vertically eccentrically of the longitudinal medial axis of said bar member,

e. said bar member being adapted to be reciprocably moved longitudinally in said cavity in a right-side-up position in which said inner end is above said top cam surface so that said wedge surface engages said top cam surface to positively force the center pin holder down in said center hole to said operative position,

f. said bar member being adapted to be reciprocably moved longitudinally into said cavity in an upside-down position in which said inner end is below said bottom cam surface so that said wedge surface engages said bottom cam surface to positively force said center pin holder up to said inoperative position in which said cap is raised above said face to release a matrix held thereby.

3,894,826
APPARATUS FOR CONTINUOUSLY PRODUCING A SHEET SHAPED PRODUCT

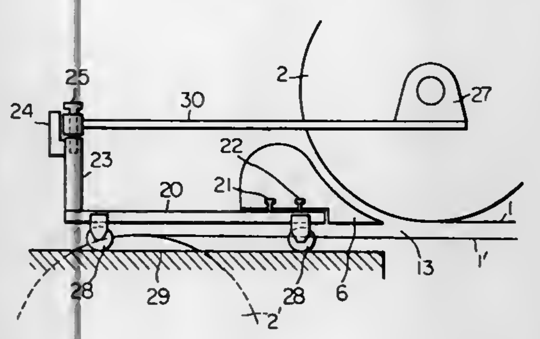
Tetsuji Kato, Otake, Japan, assignor to Mitsubishi Rayon Company Limited, Tokyo, Japan

Filed Jan. 17, 1974, Ser. No. 434,345

Claims priority, application Japan, Jan. 18, 1973, 48-8159; Jan. 18, 1973, 48-8165

Int. Cl. B29d *7/02*

U.S. Cl. 425—224 **10 Claims**



1. An apparatus for continuously producing a sheet-shaped product from polymerizable liquid raw material, said apparatus comprising endless belts each running about pulleys spaced from each other, said belts mutually forming spaced-apart belt working lengths running in the same direction, said lengths defining an extended space therebetween, means running with said lengths for sealing the opposite sides of said space, said pulleys at one end of said space being inlet pulleys which with said belts running thereabout form an inlet for said space, feeding means for feeding said material directly into said inlet, a carrier for said feeding means and which is positioned adjacent to said inlet, and mounting means for mounting said feeding means on said carrier to feed into said inlet said mounting means including a means for holding said feeding means against displacement relative to said carrier in the longitudinal direction of said working lengths while permitting displacement of said feeding means relative to said carrier transversely with respect to said longitudinal direction so that the feeding means may be changed without stopping the apparatus.

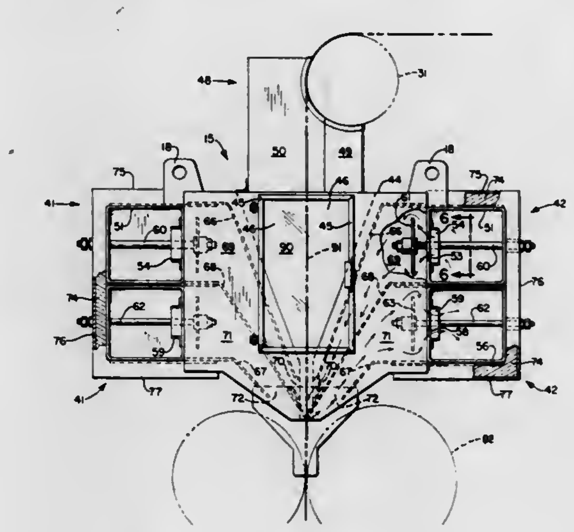
3,894,827
METHOD AND APPARATUS FOR EMBOSSING PLASTIC FILM

Garland E. Raley, and James K. Rutherfoord, both of Terre Haute, Ind., assignors to Ethyl Corporation, Richmond, Va.

Filed Mar. 28, 1973, Ser. No. 345,486

Int. Cl. B29c *15/00;* **B29d** *7/22*

U.S. Cl. 425—363 **14 Claims**



1. In an apparatus for heating thermoplastic film, the combination comprising:

a. a pair of opposed heated air supply ovens defining therebetween a vertically extending, enclosed heating zone adapted to heat said film to its softening point as it passes through said zone, each of said heated air supply ovens including,
   - i. a horizontally extending, elongated, heated air inlet chamber provided with a wall having perforations therein,
   - ii. a horizontally extending, elongated, heated air return chamber provided with a wall having perforations therein mounted below said heated air inlet chamber,
   - iii. a downwardly directed heated air supply duct defined by the space between an upper air deflector structure having its upper end attached to the top of said perforated wall of said heated air inlet chamber, and an intermediate air deflector structure having its upper end attached between the lower end of said heated air supply chamber and the upper end of said heated air return chamber,
   - iv. a downwardly directed return air duct defined by the space between a lower air deflector structure having its upper end attached to the lower end of said perforated wall on said heated air return chamber and said intermediate air deflector structure;

b. a common end wall attached to each end of the two ovens; and

c. a common top wall attached to the tops of both ovens, said top wall having an opening therein to receive said film.

3,894,828
APPARATUS FOR ROLLING DOUGH STRIPS IN THE CROSS MACHINE DIRECTION

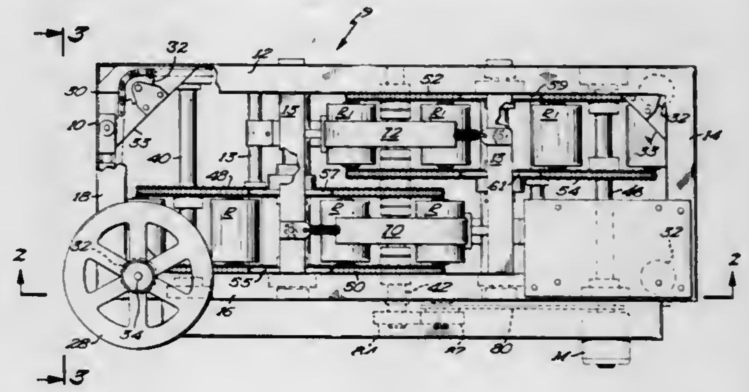
Donald V. Moline, and James A. Larson, both of Duluth, Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Filed Aug. 27, 1973, Ser. No. 391,713

Int. Cl. A21c *3/02*

U.S. Cl. 425—371 **8 Claims**

1. An apparatus for rolling dough strips in the cross machine direction comprising a supporting framework adapted to be suspended over a dough strip, dough spreading rolling means mounted upon the framework for movement while positioned in operative contact with the dough strip from the approximate center of the apparatus to the left side thereof along a lateral path of travel perpendicular to the axis of the rolling means and from the approximate center of the apparatus to the right side thereof to thereby spread the dough strip laterally of its central axis toward each side edge thereof when each rolling means moves outwardly on the lateral axis, elevating means to lift the rolling means away from the dough when they travel from the periphery of the apparatus to the center thereof, thereby holding the rolling means out of contact with the dough and guide means operatively associated with the rolling means to support the rolling means when in contact with the dough against upward or downward deflection and thereby restrict the rolling means to predetermined elevations at all times while moving from the center to the periphery of the dough strip.



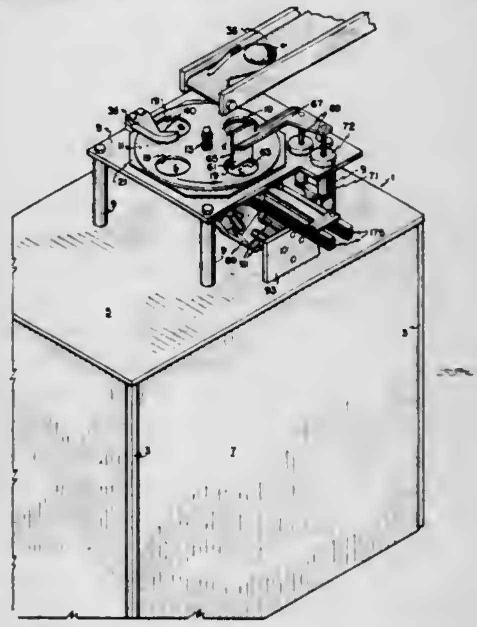
3,894,829
AUTOMATIC FORTUNE COOKIE FOLDING MACHINE

Ronald H. M. Brunner, Salt Lake City; Billy M. Jensen, Sandy, and Lang S. Wong, Salt Lake City, all of Utah, assignors to China Bazaar, Inc., Salt Lake City, Utah

Filed May 13, 1974, Ser. No. 469,617

Int. Cl. A21c *15/02*

U.S. Cl. 425—383 **31 Claims**



1. A machine for folding flat circular wafers into the shape characteristic of fortune cookies comprising;

a. means for folding a wafer once along one of its diameters so that a semicircularly shaped article is formed;

b. two pair of pincer means constructed and arranged to grasp a once-folded wafer at opposite ends of the first fold line;

c. a member having an edge arranged to extend away from the plane of a once-folded wafer which is grasped by said pairs of pincer means; and

d. operating means to move said pairs of pincer means toward one another and toward said edge so that the midpoint of the first fold line is brought against said edge and, followingly, a second fold is made so the twice-folded wafer has the shape characteristic of a fortune cookie, said operating means being further operative to thence move said pincer means to release the twice-folded wafer.

3,894,830

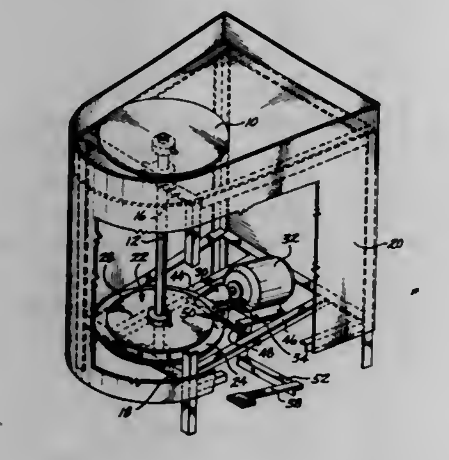
VARIABLE SPEED DRIVE FOR A POTTER'S WHEEL

John A. H. Edwards, Box 23 Elandslaagte, Northern Natal, South Africa

Filed Sept. 27, 1973, Ser. No. 401,259

Int. Cl. B28b *1/02*

U.S. Cl. 425—459 **2 Claims**



1. In a potter's wheel having a generally vertical drive shaft, a rotatable turn table at the upper end of said drive shaft, bearing means supporting the shaft for rotation, an improved variable speed friction drive mechanism comprising:

a drive disc connected to the shaft below said turn table, an electric motor including an output shaft, a drive cone secured to said output shaft, said drive cone having a base portion of a relatively large diameter and reducing in diameter from said base outwardly to a tip at a rate resulting in the drive surface of the drive cone being of circular curvature axially of the drive cone, with the drive surface of the drive cone being contactable with a lower peripheral portion of the drive disc, means mounting said motor for pivotal movement about a horizontal axis which extends transversely of the output shaft axis, said axis being located radially outwardly from the axis of rotation of the vertical drive shaft and below the drive disc, between the drive motor and the drive disc, and substantially at the center of axial curvature of the drive cone, so that the weight of the drive motor tends to rotate the drive cone in a direction placing the tip of said drive cone contiguous the periphery of the drive disc, and control lever means for pivoting the motor about said generally horizontal axis, for moving the drive cone axially, so as to change the diameter of a circle of contact of the drive cone with the drive disc, to in that manner change the drive speed of the drive disc by the drive cone, and wherein the drive cone is made from a relatively hard material and the drive disc comprises a flexible peripheral portion which is deflected some when it is in contact with the drive cone, said flexible peripheral portion having sufficient stiffness so that when deflected it is self-biased into friction contact with the drive cone.

3,894,831

METHODS AND APPARATUS FOR BURNING LIQUID HYDROCARBONS

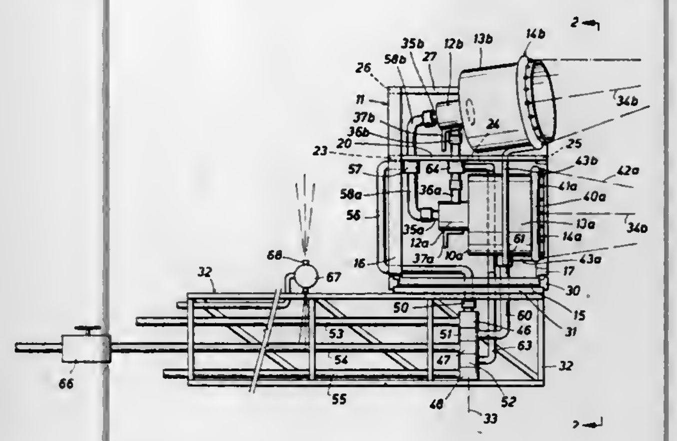
Bernard J. P. Glotin, Saint Maur; Jean Franc, Paris, and Jean P. Ribeyre, Vert Saint-Denis, all of France, assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Apr. 24, 1972, Ser. No. 247,124

Claims priority, application France, Sept. 29, 1971, 71.35002

Int. Cl. F23j *7/00*

U.S. Cl. 431—4 **23 Claims**



1. A method for burning liquid hydrocarbons produced at high flow rates from a well, comprising the steps of: forming an atomized spray of liquid hydrocarbons that burns after ignition along and about the axis of symmetry of said spray; and injecting sprays of water droplets into the flame in such a manner that the water droplets penetrate deeply into the flame but do not pass completely through it, the axis of symmetry for each water spray forming an angle of less than about 15° with the axis of symmetry of the flame, the half-value of the opening angle of each water spray being no greater than the angle between the axis of symmetry of the water spray and the line along which the outermost particles of burning hydrocarbons are traveling so that substantially all of the spray water may converge toward the flame.

3,894,832

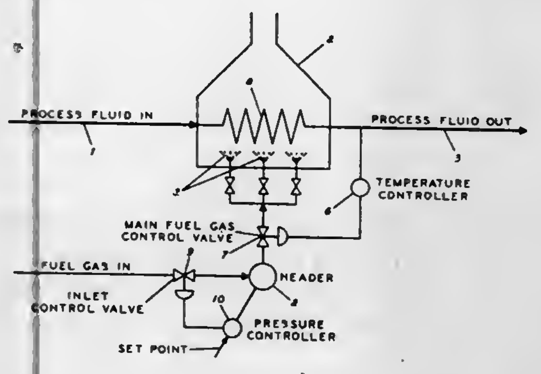
HEAT-INPUT-CONTROLLED GAS-FIRED EQUIPMENT AND METHOD

Thomas G. Chin, El Cerrito, and Ronald C. Sorensen, Berkeley, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 346,214, March 29, 1973, abandoned, which is a continuation-in-part of Ser. No. 256,287, May 24, 1972, abandoned. This application Oct. 1, 1973, Ser. No. 402,227

Int. Cl. F23k *5/00*

U.S. Cl. 431—12 **21 Claims**



1. A method for preventing upsets in heat input rate to fuel gas-fired equipment wherein the fuel gas fluctuates in heating value and said equipment comprises a burner and a fuel gas feed line containing a main fuel gas control valve or orifice wherein critical flow is maintained, which comprises adjusting the value of at least P_1 and as required to maintain substantially constant the quantity q/K in the equation

$q/K = f(P_1,G)$

Wherein

q = heat input rate,

K = main fuel gas control valve or orifice flow capacity coefficient,

P_1 = pressure upstream of the main fuel gas control valve or orifice, and

G = specific gravity of the fuel gas.

3,894,833

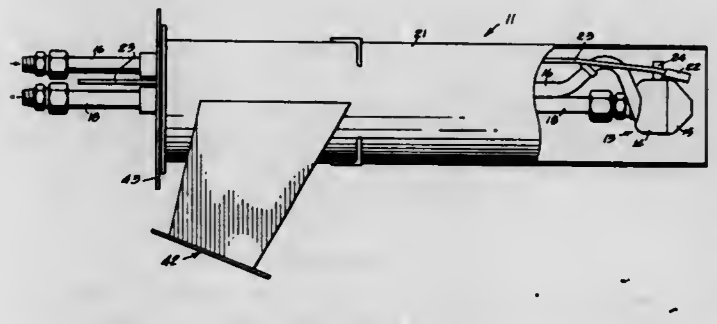
WASTE GREASE-BURNING SYSTEM AND APPARATUS

Ulf F. Rinecker, San Francisco, Calif., assignor to Envirotech Corporation, Menlo Park, Calif.

Filed Apr. 18, 1973, Ser. No. 352,139

Int. Cl.^{2} F23D *11/28*

U.S. Cl. 431—117 **11 Claims**



1. An apparatus for burning combustible liquid-solid mixtures, such as waste-water skimmings or the like comprising: a. a nozzle assembly which includes a swirl chamber and a nozzle which tapers outwardly and convergingly from said chamber to an outlet end having a single opening therein of sufficient size to allow passage of solid particles therethrough; b. means in flow communication with the intertior of said swirl chamber for delivering a feed of a liquid-solid mixture thereinto in a generally tangential direction whereby said entering feed swirls about in said chamber;

- c. an unobstructed return pipe connected in direct and immediate communication with a second opening in said swirl chamber, said second opening being in immediate flow communication with the interior of said chamber for unrestricted recycling through said return pipe of a major fraction of said feed, the remaining fraction of said feed being sprayed from said nozzle;
- d. conduit means spacedly surrounding said nozzle assembly and having an open end surrounding said nozzle; and
- e. inlet means in communication with said conduit means for delivering a flow of oxygen-bearing gas thereinto to flow out said open end of said conduit to mix with the spray from said nozzle and to provide an oxidizing medium therefor.

3,894,834

IGNITION AND FLAME STABILIZATION SYSTEM FOR COAL-AIR FURNACE

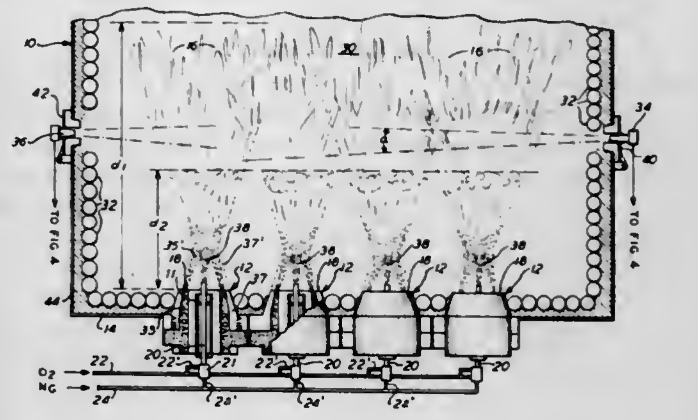
James W. Estes, Piscataway, N.J., assignor to Airco, Inc., Montvale, N.J.

Filed Oct. 17, 1973, Ser. No. 407,386

Int. Cl. F23c *1/10, 1/12*

U.S. Cl. 431—174 **3 Claims**

1. Apparatus for maintaining flames in excess of a predetermined length in a furnace comprising, fuel-air burner means for projecting a fuel-air flame in an annular converging pattern from a furnace wall; oxy-fuel burner means disposed substantially centrally within said fuel-air burner means for projecting oxy-fuel flames into said converging fuel-air flames thereby augmenting the length and stability of said fuel-air flames; radiation responsive detection means, disposed along a side wall of said furnace adjacent to said wall from which said fuel-air and oxy-fuel flames are projected, for producing first and second signals upon said fuel-air flame failing to exceed and exceeding a predetermined length; main O_2 and fuel valve means; auxiliary O_2 and fuel valve means; means responsive to said first signal for closing said auxiliary O_2 and fuel valve means and for opening said main O_2 and fuel valve means to project a hot, intense oxy-fuel flame into said fuel-air flame thereby increasing the length of said fuel-air flame to at least said predetermined length; and means responsive to said second signal for closing said main O_2 and fuel valve means and opening said auxiliary O_2 and fuel valve means to maintain a low intensity, standby oxy-fuel flame as long as said fuel-air flame length exceeds said predetermined length.



3,894,835

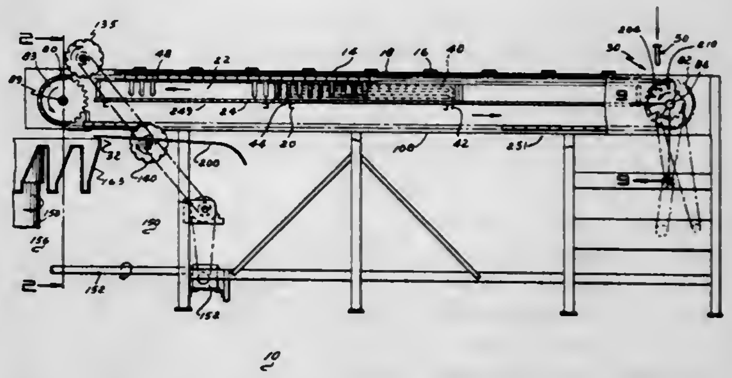
APPARATUS IMPROVEMENTS IN TEMPERATURE-CONDITIONING PARTS

L. John Berggren, Simsbury; Charles L. D. Chin, Avon, and Joseph R. Reilly, Naugatuck, all of Conn., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 21, 1973, Ser. No. 418,075

Int. Cl. F27b *9/14*

U.S. Cl. 432—124 **29 Claims**



1. Apparatus for temperature-conditioning elongated molded parts which comprises:

- a. wall sections defining a horizontally extending chamber;
- b. heat transfer assemblies spaced from each other and extending along said chamber defining generally parallel paths for said parts;
- c. a plurality of bar assemblies having means to hold said parts in said paths with their lengthwise dimensions substantially normal to the direction of extension of said heat transfer assemblies;
- d. means for advancing said bar assemblies through said chamber; and
- e. rotating means operatively interconnected with the advancing means and the bar assemblies for turning the parts about their lengthwise dimensions during travel along said paths.

3,894,836

PAPER DYE

Alfred Frei, Oberwilerstrasse 89, Binningen, Basel-land, Switzerland

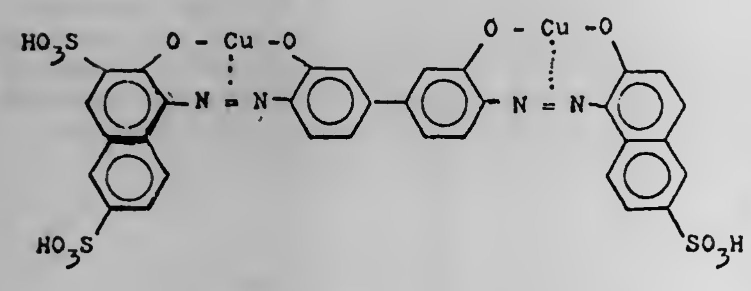
Filed July 23, 1971, Ser. No. 165,579

Claims priority, application Switzerland, Aug. 5, 1970, 11775/70; Apr. 16, 1971, 5562/71

Int. Cl. D21h *1/46*

U.S. Cl. 8—7 **12 Claims**

1. A process for producing colored paper comprising (a) incorporating into paper stock an effective amount of a dye and forming paper from said paper stock or (b) treating paper sheet with an effective amount of a dye, said dye being the compound of the formula



or a salt thereof, and said effective amount being an amount sufficient to impart the desired color to the paper.

3,894,837

DYE COMPOSITION CONTAINING INDOPHENOL FOR KERATINOUS FIBERS AND METHOD USING THE SAME

Gregoire Kalopissis, Paris; Andree Bugaut, Bou Logne-sur-Seine, and Francoise Estradier, Paris, all of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

Continuation-in-part of Ser. No. 100,433, Dec. 21, 1970, abandoned, which is a continuation-in-part of Ser. No. 49,905, June 25, 1970, abandoned. This application July 27, 1972, Ser. No. 275,463

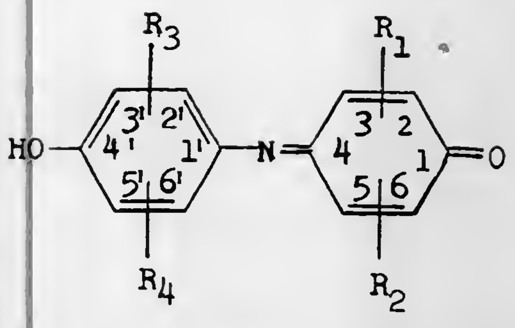
Claims priority, application Luxembourg, June 25, 1969, 58954; July 30, 1971, 63641

Int. Cl. D06p *3/04*

U.S. Cl. 8—10 **7 Claims**

1. A dye composition for human hair comprising a solution in a solvent selected from the group consisting of water and an aqueous solution of a lower alkanol selected from the group consisting of ethanol and isopropanol wherein said lower alkanol is present in amounts of about 20 to 70 percent by weight of said composition of an indophenol selected from the group consisting of

a. an indophenol of the formula



wherein R_1, R_2, R_3 and R_4, each independently, represent a member selected from the group consisting of halogen selected from the group consisting of chlorine and bromine, hydrogen, lower alkoxy having 1–4 carbon atoms and lower alkyl having 1–4 carbon atoms with the proviso that at least one of R_1, R_2, R_3 and R_4 is said halogen; and

b. an alkaline salt of the indophenol in (a) selected from the group consisting of the ammonium, sodium and potassium salt thereof; said indophenol being present in amounts of 0.002 to 2 percent by weight of said composition.

3,894,838

PROCESS FOR DYEING UNMODIFIED POLYOLEFIN FIBERS WITH VAT DYESTUFFS, LEUCO ESTERS OF VAT DYESTUFFS OR SULFUR DYESTUFFS

Hans-Ulrich von der Eltz, Frankfurt am Main; Armand Lehinant, Offenbach, Main, and Hans-Peter Maier, Sulzbach, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Mar. 1, 1973, Ser. No. 336,901

Claims priority, application Germany, Mar. 7, 1972, 2210877

Int. Cl. D06p *1/30*

U.S. Cl. 8—37 **8 Claims**

1. A process for dyeing or printing unmodified polypropylene fibers with vat dyestuffs, leuco esters of vat dyestuffs or sulfur dyestuffs, which comprises: reacting under high-temperature dyeing conditions above 100°C on these textile materials aqueous liquids or printing pastes containing the said dyestuffs, in unvatted or vatted-up state or as vat acid, in the presence of a dispersion system based upon polyglycol ethers or esters and, if required, converting the vatted products applied by reoxidation into their pigment form.

3,894,839

PROCESS FOR ACYLATING FUNCTIONAL GROUPS BEARING ACTIVE HYDROGEN WITH ISOPROPENYL ESTERS OF LONG CHAIN FATTY ACIDS

William N. Marmer; Samuel Serota, both of Philadelphia, and Gerhard Maerker, Oreland, all of Pa., assignors to The United States of Amercia as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 290,933, Sept. 21, 1972. This application Jan. 24, 1974, Ser. No. 436,288

Int. Cl.² C08B *3/02*

U.S. Cl. 8—121 **7 Claims**

1. A low-temperature, short-reaction-time process for imparting water repellency to fibrous cellulosic materials, comprising the steps of:

a. forming an acylating agent by reacting for about from 5 to 10 minutes at a temperature of from about −12° to 30°C, in an organic solvent of low dielectric constant a strong oxy acid that is soluble in the reaction medium and capable of liberating acetone in the formation of the acylating agent and an isopropenyl ester containing from about 9 to 22 carbon atoms, the molar ratio of isopropenyl ester to oxyacid ranging from about 1:1 to about 2:1;

b. immersing for about from 1 to 20 minutes at a temperature of from about 0° to 30°C the fibrous cellulosic material into the solution of acylating agent found in step (a), the molar ratio of acylating agent to the fibrous cellulosic material ranging from about 1:1 to about 40:1;

c. removing the fibrous cellulosic material from the solution of acylating agent;

d. washing the treated fibrous cellulosic material with an organic solvent of low dielectric constant; and

e. air drying the treated fibrous cellulosic material.

3,894,840

PROCESS FOR THE SINGLE-BATH DYEING OF UNMODIFIED POLYOLEFIN FIBERS WITH METAL COMPLEX DYESTUFFS

Hans-Ulrich von der Eltz, Frankfurt am Main; Armand Lehinant, Offenbach am Main, and Hans-Peter Maier, Sulzbach, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Mar. 1, 1973, Ser. No. 336,904

Claims priority, application Germany, Mar. 7, 1972, 2210878

Int. Cl. D06p *1/36*

U.S. Cl. 8—30 **10 Claims**

1. A process for the single-bath dyeing or printing of unmodified polypropylene fibers with metal-complex dyestuffs, which comprises: reacting under high-temperature dyeing conditions above 100°C on these textile materials aqueous liquors or printing pastes containing dispersed metallizable dyestuffs and compounds yielding polyvalent heavy-metal ions capable of forming color lakes in the presence of a dispersion system based upon polyglycol ethers or esters.

3,894,841

PROCESS FOR THE SINGLE-BATH DYEING OF UNMODIFIED POLYOLEFIN FIBERS WITH WATER-INSOLUBLE PIGMENT DYESTUFFS

Hans-Ulrich von der Eltz, Frankfurt am Main; Armand Lehinant, Offenbach, Main, and Hans-Peter Maier, Sulzbach, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Mar. 1, 1973, Ser. No. 336,940

Claims priority, application Germany, Mar. 7, 1972, 2210880

Int. Cl. D06p *5/04*

U.S. Cl. 8—169 **8 Claims**

1. A process for the single-bath dyeing or printing of unmodified polypropylene fibers with water-insoluble pigment dyestuffs, which comprises: treating said fibers, under high temperature dyeing conditions above 120°C, with aqueous liquors or printing pastes containing,

1. a pigment dyestuff which is reversibly solubilized by a cation-active quaternary ammonium compound and strong alkali,
2. a compound which yields acid at temperatures above 100°C, and
3. a dispersion system based upon polyglycol ethers or esters.

3,894,842

PROCESS FOR PREPARING DYEINGS AND PRINTS FAST TO LIGHT ON SYNTHETIC FIBERS

Walter Birke; Hans-Ulrich von der Eltz, both of Frankfurt am Main; Wolfgang Kunze, Hofheim, Taunus, and Franz Schon, Frankfurt am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Mar. 5, 1973, Ser. No. 338,026

Claims priority, application Germany, Mar. 10, 1972, 2211679

Int. Cl. D06p *5/04*

U.S. Cl. 8—173 **5 Claims**

1. In a process for the production of dyeings and prints on linear polyester fibers with disperse dyestuffs applied with the assistance of carriers (dyeing promoters) from an aqueous medium, which dyeings and prints are fast to light and cannot be influenced by the dyeing promoting agents, the improvement of which comprises: aftertreating the carriercontaining dyeings and prints with an organic solvent selected from the group consisting of hydrocarbons, alcohols, esters and ethers, or a mixture of such solvents at a temperature between 20° and 80°C.

3,894,843

DETERMINATION OF SERUM CREATININE

Alvar Jarvis, Miami, Fla., assignor to Coulter Diagnostics, Inc., Hialeah, Fla.

Filed Mar. 4, 1974, Ser. No. 447,864

Int. Cl. G01n *33/16*

U.S. Cl. 23—230 B **21 Claims**

1. A colorimetric process for the determination of creatinine in a biologic fluid sample containing proteins comprising,

A. adding a reagent to the biologic fluid which forms a colored complex having a characteristic wavelength of maximum light absorption with the creatinine in said fluid, while preventing the interference of protein with the desired determination by forming protein complexes which prevent formation of extraneous chromogens of a non-creatinine character;

B. measuring the degree of light absorption at said characteristic wavelength; and

C. determining the creatinine concentration in said fluid by comparing the measured degree of light absorption with values of light absorption obtained from standard aqueous solutions containing the reagent and known creatinine concentrations.

3,894,844

SIMULTANEOUS DETERMINATION OF TRIGLYCERIDES, CHOLESTEROL AND PHOSPHOLIPIDS

Joseph Diago Pinto, Ridgewood, N.J., and Stephen Ian Hilburg, Tucson, Ariz., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jan. 31, 1974, Ser. No. 438,502

Int. Cl. G01n *33/16*

U.S. Cl. 23—230 B **2 Claims**

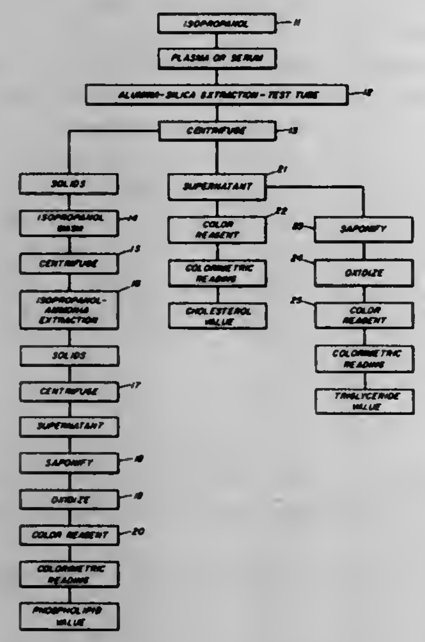
1. A method for the simultaneous determination of triglycerides, cholesterol and phospholipids in a single sample of human plasma or serum which comprises the steps of:

a. adding isopropyl alcohol to said sample to dissociate triglycerides, cholesterol, and phospholipids from lipoproteins contained therein;

b. mixing said sample containing isopropyl alcohol solution with an adsorbent comprising from about 1 gram to about 0.70 gram alumina and about 0.25 gram silicic acid to separate triglycerides and cholesterol from phospholipids, the triglycerides and cholesterol remaining in the isopropyl alcohol solution and the phospholipids being adsorbed on said adsorbent;

c. separating the isopropyl alcohol solution containing the triglycerides and cholesterol from said adsorbent containing the phospholipids;

d. eluting the phospholipids from said adsorbent with isopropyl alcohol-ammonia solution;
e. treating a portion of the isopropyl alcohol solution containing the triglycerides and a portion of the isopropyl alcohol-ammonia eluate containing the phospholipids with the same saponification reagent to hydrolyze the triglyceride and phospholipids to glycerol;
f. adding the same oxidizing agent to each of the saponified solutions to oxidize the glycerol to formaldehyde;

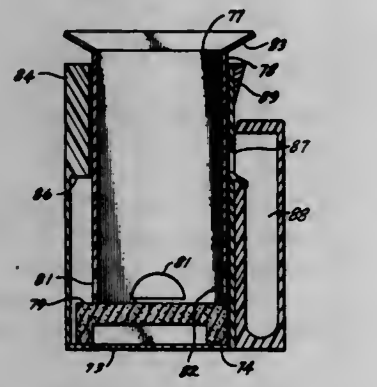


g. adding the same color reagent to each of the oxidized solutions for triglyceride and phospholipid colór development;
h. treating a portion of the isopropyl alcohol solution containing the cholesterol with a different color reagent for cholesterol color development; and
i. performing a colorimetric reading on each of the three solutions for triglyceride, phospholipid and cholesterol, respectively, and determining the triglyceride, phospholipid and cholesterol values therefrom.

3,894,845
URINE COLLECTION AND ANALYSIS DEVICE

Bernard McDonald, 18212 Pacific Coast Hwy., Malibu, Calif. 90265

Filed May 24, 1973, Ser. No. 363,383
Int. Cl. A61b *10/00;* **G01n** *1/10, 33/16*
U.S. Cl. 23—253 R 11 Claims

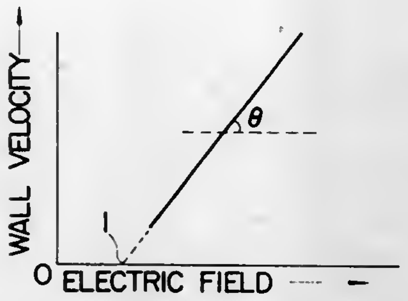


1. A laboratory device for urinalysis comprising:
a housing having an open top;
a plurality of sample compartments in the housing;
means for directing urine through the open top into the sample compartments;
an overflow reservoir;
weir means for overflowing urine from the sample compartments to the reservoir;
a float in the reservoir; and
means on the float for engaging the housing closing the open top of the device and the weir means when the reservoir fills.

3,894,846
METHOD OF PRODUCING SINGLE CRYSTALS OF GADOLINIUM MOLYBDATE FAMILY

Kazuyuki Nagatuma, Hachioji; Seikichi Akiyama, Kokubunji; Hirotugu Kozuka, Nerima, and Masayoshi Kobayashi, Hachioji, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Feb. 7, 1974, Ser. No. 440,359
Claims priority, application Japan, Feb. 7, 1973, 48-14651; Oct. 31, 1973, 48-121671
Int. Cl. B01j *17/18;* **C01g** *39/00*
U.S. Cl. 23—301 SP 9 Claims



1. A method for producing a single crystal of the gadolinium molybdate family selected from the group consisting of gadolinium molybdate, samarium molybdate, europium molybdate, dysprosium molybdate and terbium molybdate and having a transmission to light of wavelength 6,328 A of at least about 70% and a threshold field value of below about 650 V/cm, said process comprising:
growing said single crystal by a Czochralski crystal pulling technique,
cooling the single crystal so formed at a cooling rate less than about 250°C./hr. over the temperature range of about 1,000°C. to the approximate β-α transition temperature of said single crystal,
cooling the single crystal thus cooled at a rate of about 250°C. to 1,000°C./hr. from the approximate β-α transition temperature temperature of said single crystal, and cooling the single crystal thus produced from immediately above the Curie temperature of said single crystal to room temperature at a rate sufficiently low to prevent the introduction of cracks into said single crystal.

3,894,847
STEEL SHEET HAVING A NICKEL COMPOSITE FILM AND A METHOD FOR MANUFACTURING THE SAME

Hidejiro Asano, Takami; Yashichi Ohyagi, and Takatoshi Egawa, both of Kitakyushu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Sept. 10, 1973, Ser. No. 395,841
Claims priority, application Japan, Sept. 19, 1972, 47-93223
Int. Cl. B05d *3/10*
U.S. Cl. 29—196.3 14 Claims

1. A method for the manufacture of a steel sheet having a nickel composite film which comprises subjecting a surface of a steel sheet to a cleaning treatment, coating an aqueous solution on said cleaned surface, said aqueous solution being obtained by adding to an aqueous solution containing a metallic ion of nickel at least one member selected from the group consisting of an aqueous solution containing a metallic ion of molybdenum, an aqueous solution containing a metallic ion of tungsten, an aqueous solution containing a metallic ion of copper and an aqueous solution containing a metallic ion of potassium, heating the same in the atmosphere of a non-oxidizing gas, and thereby forming on said steel sheet a film consisting of nickel and at least one member selected from molybdenum, tungsten, copper and potassium.

3,894,848
FUEL FOR COOKING, HEATING AND LIGHTING

Harold L. Kleiman, and Jean Jacques Martinat, both of New York, N.Y., assignors to Technology Transfer Ltd., New York, N.Y.

Continuation of Ser. No. 207,964, Dec. 14, 1971, abandoned. This application Apr. 12, 1974, Ser. No. 460,488
Int. Cl. C10l *9/00*
U.S. Cl. 44—1 R 3 Claims

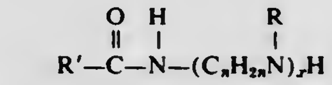
1. A fuel for cooking, heating and lighting which comprises hexamethylenetetramine containing a sufficient quantity of a masking agent comprising trimethylcyclohexanol to substantially mask or diminish the malodorous products produced by said fuel upon the extinguishing thereof.

3,894,849
GASOLINE

Perry Polss, Wilmington, Del., assignor to E. I. du Pont de Nemours & Co., Wilmington, Del.

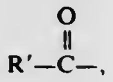
Filed Nov. 29, 1973, Ser. No. 419,972
Int. Cl. C10l *1/22*
U.S. Cl. 44—66 9 Claims

1. Composition exhibiting good antiicing, anti-rust and carburetor and lower engine detergent properties and comprising a hydrocarbon mixture boiling in the gasoline range and 0.002–0.02% by weight, based on the weight of the hydrocarbon mixture, of a generally liquid, acylated polyalkylene polyamine which is substantially free of nitrogen-containing cyclic groups and is of the formula



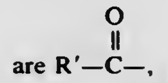
$$R'-\overset{\overset{\displaystyle O}{\|}}{C}-\overset{\overset{\displaystyle H}{|}}{N}-(C_nH_{2n}\overset{\overset{\displaystyle R}{|}}{N})_xH$$

wherein R is selected from H and



$$R'-\overset{\overset{\displaystyle O}{\|}}{C}-,$$

at least two R groups



$$\text{are } R'-\overset{\overset{\displaystyle O}{\|}}{C}-,$$

R' is $C_{9\text{-}21}$ saturated or unsaturated aliphatic hydrocarbyl, *n* is 2 or 3 and *x* is 4 .

3,894,850
SUPERHARD COMPOSITION MATERIAL BASED ON CUBIC BORON NITRIDE AND A METHOD FOR PREPARING SAME

Jury Matveevich Kovalchuk, 2 Selskokhozyaistvennaya ulitsa, 2, kv. 15, Moscow; Vladislav Sergeevich Lysanov, ulitsa Vavilovykh 15/3, kv. 73, Leningrad; Leon Izrailevich Feldgun, Ligovsky prospekt, 3/9, kv. 13, Leningrad; Mikhail Andreevich Varzanov, ulitsa Savushkina 1/2, kv. 23, Leningrad, and Grigory Osipovich Gomon, ulitsa Dubinovskaya, 49, kv. 28, Leningrad, all of U.S.S.R.

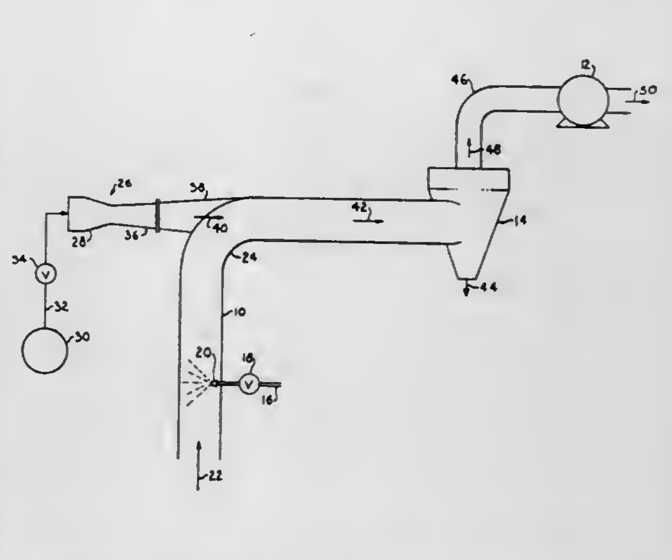
Filed Oct. 19, 1973, Ser. No. 408,002
Int. Cl. B24d *3/04*
U.S. Cl. 51—307 10 Claims

1. A superhard composite, comprising from about 85 to about 97 per cent by weight of cubic boron nitride in the form of a dendritic structure of interpenetrating crystalline grains measuring from 10^{-3} to 10^{-4} cm, from about 1 to about 10 per cent by weight of high-melting materials selected from the group consisting of silicon carbide, diamond, corundum, boron carbide, borosilico-carbide and mixtures thereof and from about 2 to about 5 per cent by weight of a substance selected from the group consisting of magnesium and calcium borides and oxides and mixtures thereof.

3,894,851
REMOVAL OF PARTICULATE MATTER WITH SUPERSONIC DROPLETS

Paul G. Gorman, Prairie Village, Kans., assignor to Midwest Research Institute, Kansas City, Mo.

Filed Feb. 7, 1972, Ser. No. 223,956
Int. Cl. B01d *51/10, 47/06*
U.S. Cl. 55—94 7 Claims



1. A method of removing particulate matter from a gas stream in which said matter is entrained, said method comprising the steps of:
effecting flow of said gas stream through a duct at a relatively low velocity;
introducing steam to the inlet of a converging-diverging nozzle at a pressure sufficient to cause acceleration of the steam to sonic velocity in the throat of the nozzle, and further acceleration in the diverging section to supersonic velocity along with substantially isentropic expansion of the steam to cause partial condensation thereof to thereby form water droplets of a size less than 100 microns;
injecting said water droplets traveling at said velocities into said duct at a mixing region thereof to cause the droplets and the particulate matter to combine, whereby to increase the size of particles carried by the stream downstream from said region; and
downstream from said region, separating said particles of increased size from the gas stream.

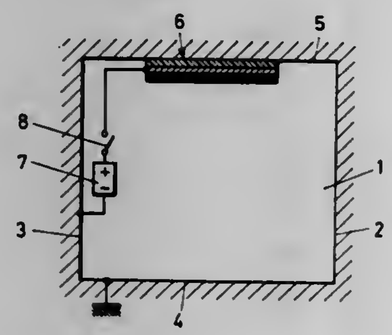
3,894,852
ELECTRODE ARRANGEMENT FOR ESTABLISHING A STEADY OR CONSTANT ELECTRIC FIELD

Constantin Graf von Berckheim, Friedrichstrasse 9, 6940 Weinheim, Germany

Filed June 13, 1974, Ser. No. 479,145
Claims priority, application Germany, June 16, 1973, 2330769
Int. Cl. B03c *3/45*
U.S. Cl. 55—142 9 Claims

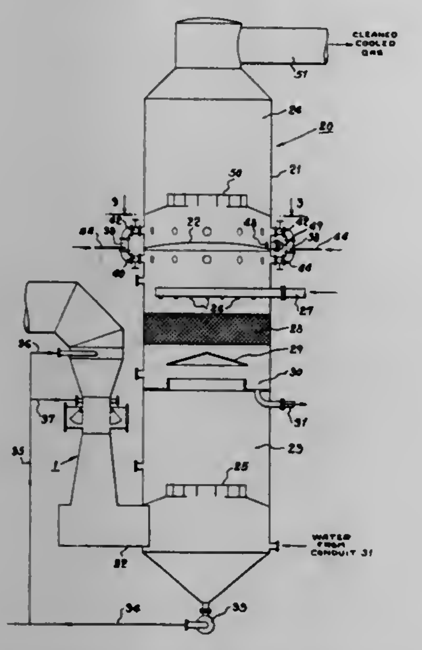
1. In a climate-control arrangement of the type which ionizes the air in an enclosed habitable space, such as the interior of a room in a building or the interior of the passenger compartment of a vehicle, by establishing in said space an electric field, an improved electrode arrangement comprising, in combination, a base structure and a plurality of individually removable cover sheets covering said base structure and pre-

venting the build-up of dust on said base structure, whereby when dust has built up on the exposed one of said cover sheets such sheet can be removed to expose the next and still clean one of said cover sheets.



3,894,853
GAS TREATING APPARATUS

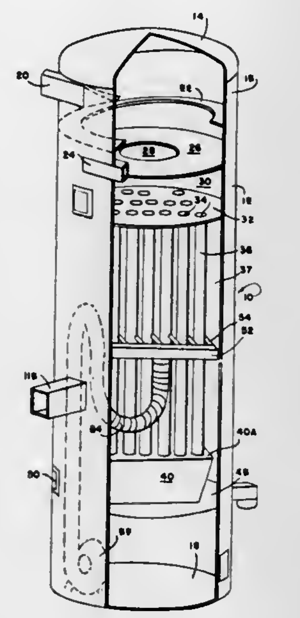
Daniel E. Pike, Harrington Park, N.J., assignor to Air Pollution Industries, Inc., Englewood, N.J.
Filed July 10, 1974, Ser. No. 486,969
Int. Cl.^{2} B01D *47/10*
U.S. Cl. 55—258 **4 Claims**



1. Apparatus to control top pressure in a blast furnace and to clean and cool gases emanating therefrom, said apparatus comprising:
   a. a vessel having a lower first end and an upper second end,
   b. a partition mounted within the vessel between the first and second ends thereof, said partition dividing the vessel into a lower first compartment between the partition and the lower first end of the vessel and an upper second compartment between the partition and the upper second end of the vessel,
   c. first conduit means for receiving gas emanating from a blast furnace and communicating with that end of the lower first compartment adjacent the lower first end of the vessel and adapted to introduce therein said gas,
   d. a plurality of venturi scrubbers mounted externally of the vessel, the inlet ends of the venturi scrubbers communicating with the upper portion of the lower first compartment adjacent said partition and adapted to receive gas from said lower first compartment, the outlet ends of the venturi scrubbers communicating with the lower end of the upper second compartment adjacent said partition,
   e. means adapted to introduce water into said venturi scrubbers,
   f. the outlet ends of said venturi scrubbers being adapted to discharge gas and water into said upper second compartment,
   g. water separator means mounted within said upper second compartment and adapted to separate water and gas therein,
   h. water outlet conduit means communicating with the lower end of said upper second compartment adjacent said partition and adapted to remove water from said upper second compartment,
   i. a plurality of valve means mounted externally of the vessel, each of said valve means being operatively associated with one of said venturi scrubbers, each of said valve means being adapted to close or selectively to open its respective venturi scrubber independently of the other venturi scrubbers whereby to control top pressure in said blast furnace,
   j. second conduit means communicating with that end of said upper second compartment adjacent the upper second end of the vessel and adapted to remove therefrom cleaned and cooled gas.

3,894,854
DUST COLLECTOR APPARATUS

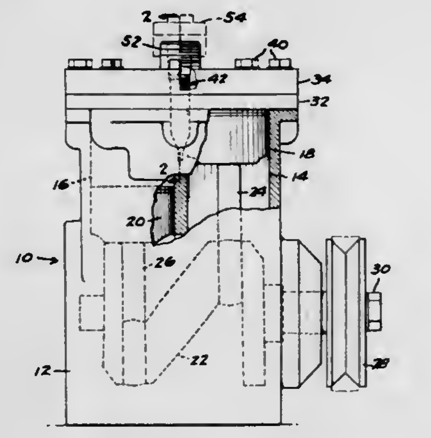
Russell C. Wolfe, Baltimore, Md., assignor to Dixie Mfgr. Co., Baltimore, Md.
Filed Nov. 27, 1973, Ser. No. 419,387
Int. Cl.^{2} B01D *46/04*
U.S. Cl. 55—294 **17 Claims**



1. A dust collector comprising a housing with a first cyclone stage having an inlet opening and a second stage filter with the cyclone stage being at the top of the housing, said stages being in communication with one another, said second stage comprising a tube sheet and a plurality of flexible filter tubes depending from said tube sheet and open at their upper and lower ends, hopper means communicating with the lower open ends of said filter tubes, blow case means disposed to travel substantially the length of said tubes to dislodge contaminant cake from the interior of said tubes, including a manifold having a plurality of uniformly spaced air tubes disposed at substantially right angles to each other forming tube sets with longitudinal rows of orifices therein to emit a row of air jet streams therefrom, with the space formed by adjacent tubes of said tube sets providing an opening for a filter tube, and a filter tube extending through at least one said tube opening and said orifices extending along the sides of said tubes facing said filter tube opening, means for supplying air to said blow case means, guide means for properly centering said blow case means with respect to said filter tubes as it travels, and drive means for moving said blow case means along said filter tubes, and safety brake means operatively connected to said drive means to hold said blow case means in a fixed position if said drive means fails due to breakage.

3,894,855
COMPRESSOR INLET FILTER

Michael K. Bidol, Dearborn Heights, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.
Filed Jan. 28, 1974, Ser. No. 437,375
Int. Cl. F04b *49/00*
U.S. Cl. 55—385 **16 Claims**

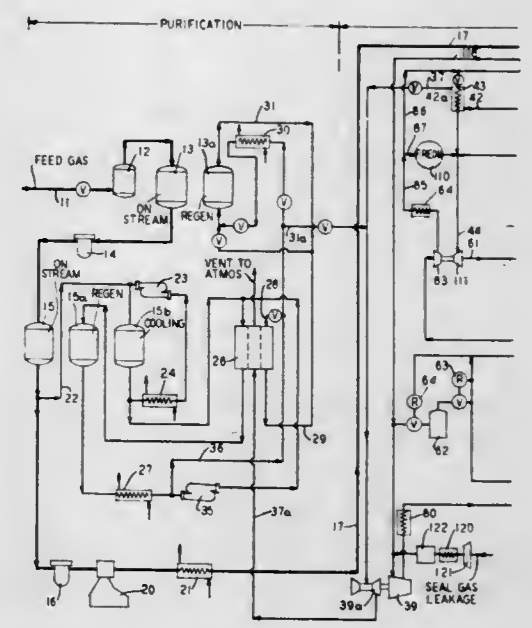


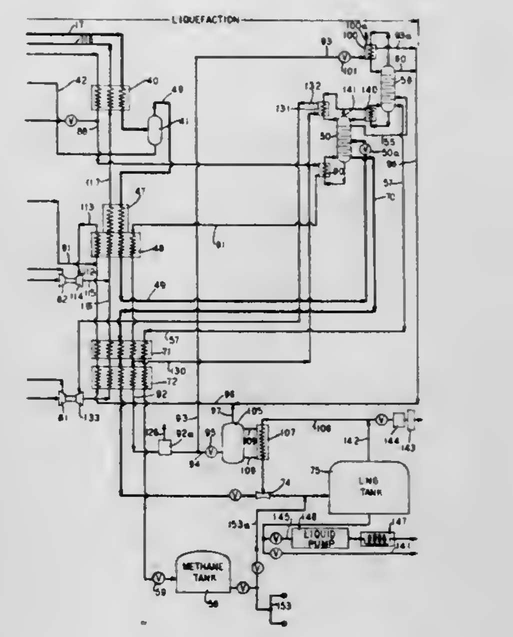
1. In a compressor having a suction inlet passage through which gases flow the combination comprising a tapered conical side wall in said inlet passage and extending between first and second axially spaced portions thereof, an annular carrier disposed in firm frictional engagement with said tapered side wall of said inlet passage to frictionally retain said annular carrier in fixed relation in said inlet passage, said carrier being compressed by said side wall when frictionally retained in said inlet passage and having an outside diameter intermediate the diameter of said first and second portions in both the compressed and uncompressed conditions thereof, and a tubular filter bag open at one end and closed at the axially opposite end, said open end of said bag being fixed to said annular carrier such that said annular carrier positions said bag in said inlet passage with the bag extending from said annular carrier in the direction of convergence of said tapered side wall, whereby gases flowing through said inlet passage will pass through said filter bag.

3,894,856
LIQUEFACTION OF NATURAL GAS WITH PRODUCT USED AS ADSORBER

Antony Lofredo, Springfield, and Domenick R. Biava, Somerset, both of N.J., assignors to Airco, Inc., Montvale, N.J.
Division of Ser. No. 843,427, July 22, 1969, Pat. No. 3,780,534. This application Sept. 25, 1973, Ser. No. 400,589
Int. Cl.^{2} B01D *53/04*
U.S. Cl. 55—62 **3 Claims**

1. A process for purifying a stream of natural gas by passing said stream through an adsorption section having a plurality of adsorption units including an on-stream unit, a regenerating unit and a cooling unit, directing said stream through said on-stream adsorption unit to remove desired amounts of carbon dioxide; bleeding a portion of the natural gas stream purified by said on-stream unit to said cooling unit and maintaining a continuously recirculating cooling flow of purified natural gas through said cooling unit; passing a flow of natural gas from said cooling unit; the improvement comprising the steps of dividing the effluent of said regenerating unit into first and second portions with said second portion equal to the amount of bled purified natural gas; recirculating said first portion by combining said first portion with said flow from said cooling unit to form a regenerating flow; heating said regenerating flow and passing said heated flow to said regenerating unit whereby the regenerating unit is purged; passing said second portion from said adsorption section thereby preventing an excessive buildup of contaminants in said adsorption section; and sequentially directing the natural gas stream to be purified and the cooling and regenerating flows to each of the plurality of adsorption units whereby the incoming natural gas stream may be continuously treated in one of said units while the regenerating and cooling units are being regenerated and cooled, respectively.



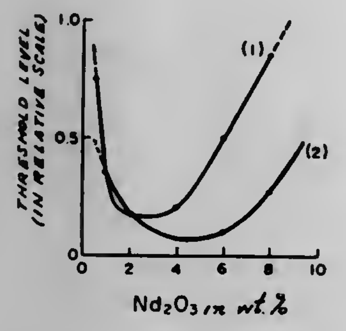


3,894,857
PROCESS FOR EXCHANGING ALKALI IONS FOR THALLIUM IONS IN A GLASS FIBER

Teiji Uchida; Shogo Yoshikawa, both of Tokyo, and Ken Koizumi, Itami, all of Japan, assignors to Nippon Selfoc Company, Limited, c/o Nippon Electric Company, Ltd., Tokyo, Japan
Division of Ser. No. 266,574, June 27, 1972, abandoned, which is a continuation of Ser. No. 839,428, July 7, 1969, abandoned.
This application Jan. 23, 1974, Ser. No. 435,769
Claims priority, application Japan, July 6, 1968, 43-47305; Nov. 18, 1968, 43-84253
Int. Cl. C03c *15/00*
U.S. Cl. 65—3 **3 Claims**

1. A process for fabricating a glass fiber laser element in which the refractive index increases from the surface to the longitudinal axis thereof, said method comprising the steps of providing a glass body including ions of a rare earth metal and ions of thallium uniformly distributed therein, and immersing said glass body into a heated molten salt of an alkali metal to allow ions of said alkali metal to diffuse into said glass body,

whereby said thallium ions are exchanged by ions of said alkali metal and the concentration of said thallium ions decreases

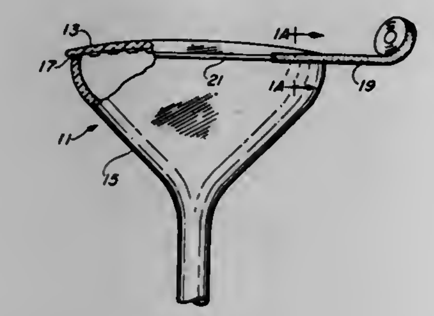


from the axis of said laser element toward its surface, thereby to achieve a gradient in the refractive index of said glass body.

3,894,858
PREVENTING THERMALLY INDUCED FRACTURE OF CATHODE RAY TUBE BULBS BY APPLICATION OF A THERMAL INSULATOR

Melvin F. Rogers, Western Springs, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Jan. 4, 1974, Ser. No. 430,828
Int. Cl. C03c *19/00;* **C03b** *25/00*
U.S. Cl. 65—23 **6 Claims**



1. In a television cathode ray tube manufacturing process of exhausting or frit sealing a cathode ray tube glass bulb of a type comprising a non-skirted glass front panel and a glass funnel, or in a process of annealing or baking out said front panel, wherein in said process said bulb is heated to temperatures above 400℃ and subsequently cooled, said process producing a temperature gradient between the front panel extreme border surface and more remote inner portions of the front panel glass which generates circumferential tension at the front panel extreme border, a method for reducing said circumferential tension to lessen the likelihood of front panel fracture comprising applying prior to or during said cooling a thermal insulator over the front panel extreme border surface and vicinity so as to locally reduce the rate of glass surface cooling.

3,894,859
METHOD OF THERMAL CONDITIONING OF MOLTEN GLASS PRIOR TO FORMING FLAT GLASS

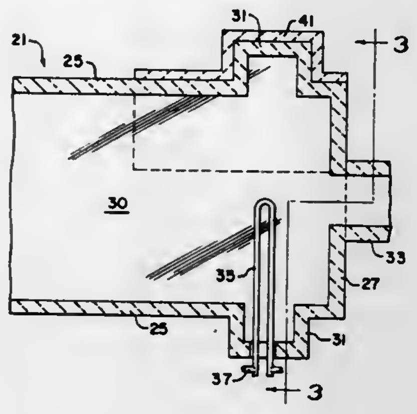
Walter W. Scott, Carlisle, and Leonard A. Knavish, Plum Borough, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 6, 1973, Ser. No. 422,506
Int. Cl. C03b *18/02, 5/22*
U.S. Cl. 65—65 A **9 Claims**

1. In the method of making flat glass by melting raw materials to form molten glass, refining the molten glass by gradually cooling it while flowing it longitudinally through a refiner along an established path, discharging the refined molten glass into a forming chamber and onto a bath of molten metal by causing it to flow through a passage having a narrower cross section than the refiner connecting the refiner with the forming chamber and thereafter cooling and attenuating the glass to form a dimensionally stable ribbon of flat glass having substantial optical distortion in the location of the center of the ribbon, the improvement comprising

a. cooling a first portion of the molten glass in one side of the refiner extending to one side of the connecting passage substantially immediately before discharge from the refiner by removing relatively more heat from said first portion of molten glass from above it than is removed from a second portion of molten glass in the opposite side of the refiner, while cooling both portions of molten glass sufficiently to deliver the molten glass to the forming chamber at a temperature suitable for forming a ribbon of flat glass, and

b. controlling said relatively more heat removal from above said first portion of molten glass to be sufficient to cause a lateral shift of 2° to 15° of glass flow adjacent the surface of the molten glass, such shift being from the established path of longitudinal glass flow, whereby the glass produced is characterized by substantially uniform low optical distortion across a major portion of the width of the ribbon.

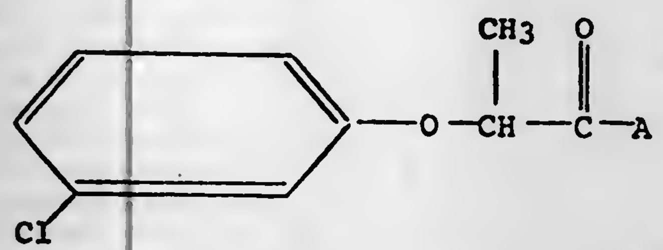


3,894,860
INHIBITING CROWN GROWTH ON PINEAPPLE FRUIT

Anson Richard Cooke, Hatfield, Pa., assignor to Amchem Products, Inc., Ambler, Pa.

Continuation-in-part of Ser. No. 66,604, Aug. 24, 1970, abandoned. This application Nov. 20, 1973, Ser. No. 411,653
Int. Cl.² A01N *9/24*
U.S. Cl. 71—116 **5 Claims**

1. A method for controlling the development of the crown on a growing pineapple fruit and increasing the size and weight of the pineapple fruit which comprises applying to the plant, after flowering and at least 2 months prior to harvesting, an effective amount of a compound of the formula:



wherein A is a member selected from the group consisting of OH, NH_2, NHR_1, NR_1R_2, OR_3 and OX wherein R_1, R_2 and R_3 are each independently alkyl radicals of from 1 to 4 carbon atoms and X is selected from the group consisting of an ammonium and an alkali metal ion.

3,894,861
GRASS GROWTH CONTROL COMPOSITIONS

Frederick Anthony Hartman, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 21, 1973, Ser. No. 361,938
Int. Cl. A01n *9/36*
U.S. Cl. 71—76 **2 Claims**

1. A process for retarding the growth of grasses comprising applying thereto a safe and effective amount of an aminomethylphosphonate compound selected from the group consisting of aminomethylphosphonic acid and the non-phytotoxic salts and esters thereof.

3,894,862
3,5-DICHLORO-2-PYRIDOXYETHYL ETHERS AS HERBICIDES

Reginald L. Whitaker, Tacoma, Wash., and Herbert Q. Smith, Malvern, Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

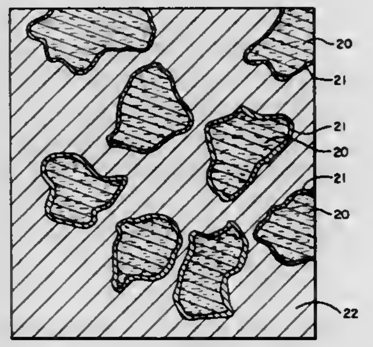
Division of Ser. No. 284,316, Aug. 28, 1972, Pat. No. 3,814,774, which is a continuation-in-part of Ser. No. 115,707, Feb. 16, 1971, abandoned. This application Feb. 13, 1974, Ser. No. 442,018
Int. Cl. A01n *9/22*
U.S. Cl. 71—94 **9 Claims**

7. The method according to claim 1 wherein the amount of the 3,5-dichloro-2-pyridoxyethyl ether applied to the soil is in the range of from about 0.1 to about 10 pounds per acre.

3,894,863
GRAPHITE COMPOSITE

Walter L. Lachman, Concord, Mass.; Robert A. Penty, Kennebunk, Maine, and Apul F. Jahn, Chelmsford, Mass., assignors to Fiber Materials, Inc., Biddeford, Maine

Division of Ser. No. 343,650, March 22, 1973, Pat. No. 3,860,443. This application Oct. 3, 1974, Ser. No. 511,794
Int. Cl. C23c *11/08, 1/00*
U.S. Cl. 75—.5 R **6 Claims**

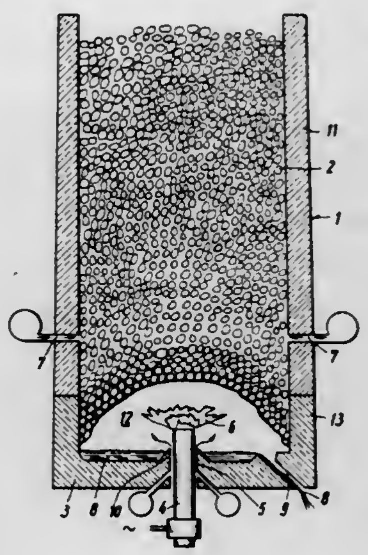


1. A composite product comprising a plurality of carbon fibers each have a coating of a material selected from the group consisting of titanium boride, and a mixture of titanium boride and titanium carbide said fibers being disposed in a substantially solid matrix of metal selected from the group consisting of magnesium, lead, zinc, copper, aluminum, tin and alloys of said metals.

3,894,864
PROCESS FOR THE CONTINUOUS PRODUCTION OF STEEL FROM ORE

Hans-Juergen Langhammer, Bremen, Germany, assignor to Klockner Werke AG, Duisburg, Germany

Filed Mar. 2, 1973, Ser. No. 337,738
Claims priority, application Germany, Mar. 4, 1972, 2210468
Int. Cl. C22d *7/00;* **C21c** *7/00*
U.S. Cl. 75—11 **20 Claims**



19. A process as defined in claim 1, wherein the melting step is performed under substantially non-oxidizing conditions.

3,894,865
PRODUCTION OF METALLURGICAL PELLETS IN ROTARY KILNS

Fritz O. Wienert, 394 Roosevelt Ave., Niagara Falls, N.Y. 14305

Continuation-in-part of Ser. No. 54,004, July 10, 1970, abandoned. This application Apr. 4, 1973, Ser. No. 347,718
Int. Cl. C21b *13/08*
U.S. Cl. 75—21 **18 Claims**

1. In a process for treating pellets formed from a mixture of iron oxide-bearing material containing no more than about 10% silica and particulate carbon to produce metallization by the reduction of the iron oxide in said material while said pellets are passed, without being surrounded by discrete solid carbonaceous particles separate from said pellets, through a rotating tubular kiln, said kiln having an inlet end and a discharge end, in cascading paths and generally countercurrent to the hot products of combustion from a combustion zone in which there is a heating flame from a burner supplied with fluid fuel, the improvements which comprise:

a. using pellets which contain particulate carbon in at least the ratio with respect to the iron oxide present, calculated as FeO, required by the equation:

$$FeO + C = Fe + CO;$$

b. establishing said combustion zone in said kiln adjacent the discharge end of said kiln;

c. heating said pellets continuously to progressively higher temperatures in their passage through said kiln to a temperature in excess of 1,100℃ but below the temperature at which said pellets fuse together, whereby carbon monoxide is formed by said metallization;

d. providing said heating flame with oxygen in an amount exceeding the amount required for complete combustion of said fuel and maintaining in the portion of said combustion zone adjacent the discharge end of said kiln, for contacting said pellets, from 0.1 to 5.0 vol. % of free oxygen.

- e. introducing additional free oxygen into the hot combustion gases leaving at a point between said combustion zone and said inlet end. and
- f. passing said pellets through said kiln in less than 1.5 hours.

3,894,866

PROCESS FOR RECOVERING RHENIUM VALUES FROM DILUTE SOLUTIONS OF SAME

Kenneth Julian Richards, and Craig Nellis Wright, both of Salt Lake City, Utah, assignors to Kennecott Copper Corporation, New York, N.Y.

Filed July 9, 1973, Ser. No. 377,438

Int. Cl. C22b *61/00;* **C01g** *47/00*

U.S. Cl. 75—109 **10 Claims**

1. A process of recovering rhenium values from dilute solutions containing from 0.00001 to 1.0 gram per liter of rhenium, comprising adding particles of a base metal which is more electropositive than copper to such a solution to react with and to precipitate the dissolved rhenium values therein; introducing into the solution, simultaneously with or prior to the addition of said base metal thereto, particles of a collector metal selected from the group consisting of copper and silver to collect the precipitated rhenium values, said particles of the collector metal having sufficient surface area to retain and carry the precipitated rhenium values; separating the solids and the liquids; and treating said solids to recover the rhenium values therefrom.

3,894,867

INCENDIARY ALLOYS EXISTING AS A DISPERSION OF INCENDIARY PARTICLES IN A NON-INCENDIARY ATMOSPHERIC ATTACK-RESISTANT MATRIX

Steven G. Fishman, Fredericksburg, Va., and C. Robert Crowe, La Plata, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 9, 1974, Ser. No. 431,830

Int. Cl.^{2} C22C *9/00, 11/00, 13/00, 18/00, 19/00, 21/00, 22/00, 28/00*

U.S. Cl. 75—134 N **2 Claims**

1. An incendiary alloy consisting essentially of a dispersion of pyrophoric particles in a non-incendiary matrix wherein the matrix material is selected from the group consisting of:

Cu 74–99 wt.%
Mn 50–99 wt.%
Ni 68–99 wt.%
Pb 82–99 wt.%
Sn 72–88 wt.%
Zn 82–99 wt.%
Al 60–90 wt.%
Si 47–99 wt.%

and the pyrophoric material is selected from the group consisting of La, Ce, Pr, Nd, Pm, or Mischmetal, said alloy being characterized by spontaneous ignition upon explosive fragmentation.

3,894,868

ELECTRON TRANSPORT BINDER STRUCTURE

Paul J. Regensburger, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 93,975, Dec. 1, 1970, which is a continuation-in-part of Ser. No. 14,460, Feb. 26, 1970, abandoned. This application Mar. 16, 1973, Ser. No. 341,813

Int. Cl. G03g *5/02*

U.S. Cl. 96—1.5 **17 Claims**

1. An electrophotographic plate having a photoreceptor binder layer comprising photosensitive particles dispersed in an unoriented fashion in an electronically active organic matrix binder in an amount of from about 0.1 to 5 percent by volume of said binder, said photosensitive particles exhibiting the capability of photo-excited electron generation and injection into the surrounding active matrix binder, said active organic matrix binder being capable of supporting the injection of photo-excited electrons from said photoconductive particles and transporting said electrons through said active matrix material, wherein said active matrix comprises at least one material selected from the group consisting of phthalic anhydride, tetrachlorophthalic anhydride, benzil, mellitic anhydride, S-tricyanobenzene, picryl chloride, 2,4-dinitrochlorobenzene, 2,4-dinitrobromobenzene, 4-nitrobiphenyl, 4,4-dinitrobiphenyl, 2,4,5 trinitroanisole, trichlorotrinitrobenzene, trinitro-0-toulene, 4,6 dichloro,-1,2 dinitrobenzene, 4,6-dibromo, -1,3 dinitrobenzene, p-dinitrobenzene, chloranil, bromoanil, 2,4,7 trinitro-9-fluorenone, 2,4,5,7 tetranitrofluorenone, trinitroanthracene, dinitroacridene, tetracyanopyrene and dinitroanthraquinone.

3,894,869

POLYCHROMATIC MIGRATION IMAGING SYSTEM

William L. Goffe, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 47,499, June 18, 1970, abandoned, which is a continuation-in-part of Ser. No. 609,056, Jan. 13, 1967, abandoned. This application May 23, 1973, Ser. No. 363,230The portion of the term of this patent subsequent to July 14, 1987, has been disclaimed.

Int. Cl. G03g *5/04*

U.S. Cl. 96—1.5 **12 Claims**

1. An imaging member comprising an electrically insulating softenable layer substantially devoid of electrically photosensitive particles except having in contact therewith and contiguous one surface, and at least partially embedded therein; a layer of electrically photosensitive migration particles of at least two colors.

3,894,870

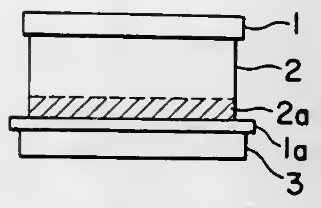
PHOTOSENSITIVE ELEMENTS FOR USE IN ELECTROPHOTOGRAPHY

Koichi Kinoshita, Narashino, and Tadaji Fukuda, Tokyo, both of Japan, assignors to Katsuragawa Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 147,927, May 28, 1971, Pat. No. 3,795,515. This application Oct. 3, 1973, Ser. No. 403,120

Int. Cl. G03g *5/04*

U.S. Cl. 96—1.5 **8 Claims**



7. A method of manufacturing a photosensitive element for use in electrophotography comprising the steps of providing a conductive base as an electrode layer, forming on said electrode layer a low resistivity layer which includes photoconductive materials, forming a photoconductive layer on said low resistivity layer, and applying a transparent highly insulative layer on said photoconductive layer, said low resistivity layer being formed to a thickness less than that of said photoconductive layer and being formed by depositing a series of interdiffused layers of varying resistivity such that the resistivity thereof is a minimum adjacent said electrode layer and increases toward said photoconductive layer to a value approaching that of said photoconductive layer, thereby eliminating any discrete interface between said photoconductive layer and said low resistivity layer.

3,894,871

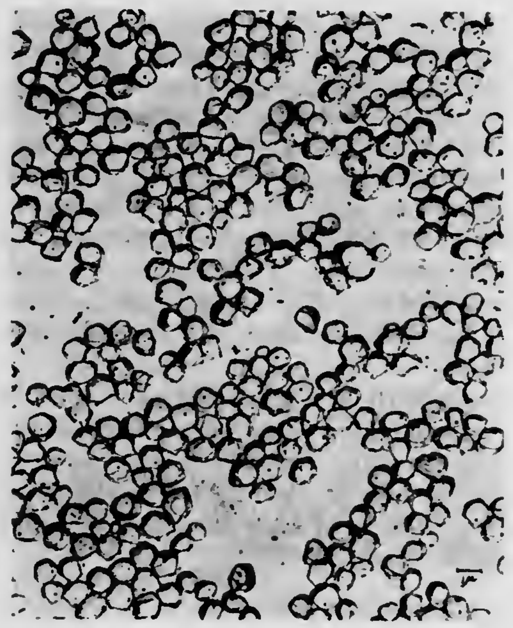
PHOTOGRAPHIC PRODUCTS AND PROCESSES FOR FORMING SILVER AND ADDITIVE COLOR TRANSPARENCIES

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed July 27, 1973, Ser. No. 383,196

Int. Cl. G03c *7/00, 5/54, 7/04, 1/48, 1/84*

U.S. Cl. 96—3 **65 Claims**



1. A photosensitive element for forming a color transparency by diffusion transfer processing to provide a developed negative silver image and a positive silver transfer image, said negative silver image and said positive silver transfer image being viewable as a positive image without separation, said photosensitive element comprising (a) a transparent support carrying a light-transmitting screen composed of minute optical elements, (b) a layer containing a photosensitive silver halide emulsion and (c) a silver receptive layer including a silver precipitating agent, said silver receptive layer being positioned between said light-transmitting screen and said silver halide emulsion layer; the silver halide grains of said silver halide emulsion being predominantly homogeneous in crystal diameter and habit, the sum of the projected areas of said silver halide grains being not more than about 50% of the surface area of said silver halide emulsion layer.

3,894,872

TECHNIQUE FOR FABRICATING HIGH Q MIM CAPACITORS

Joseph Mitchell, Jr., Kinnelon, and Lester Andrew Carr, Jr., Trenton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed July 17, 1974, Ser. No. 489,456

Int. Cl. C23c *11/00;* **H01g** *1/00, 13/00*

U.S. Cl. 96—36 **13 Claims**

1. A method of making a capacitor comprising:
- a. thermally depositing or growing a layer of a dielectric on a silicon substrate;
- b. depositing a first electrode on the surface of said dielectric layer;
- c. removing said silicon substrate, thereby exposing said dielectric layer; and
- d. depositing a second electrode on said exposed dielectric layer.

7. A method according to claim 1 wherein said dielectric is aluminum oxide.

12. A method according to claim 11 wherein said capacitors are completed by the steps of:
- a. separating said dielectric into islands on said first electrode;
- b. depositing a layer of a conductive metal on said dielectric islands and said first electrode;
- c. coating said metal layer with a photoresist;
- d. exposing and developing said photoresist so as to reveal only portions of the surfaces of said metal layer disposed directly on said dielectric islands;
- e. coating said revealed metal layer with a second layer of a conductive metal;
- f. coating said second metal layer with a protective layer of a conductive metal;
- g. removing the remaining photoresist; and
- h. etching away said first metal layer disposed directly beneath said remaining photoresist.

3,894,873

DRY PLANOGRAPHIC PRINTING PLATE

Masaharu Kobayashi, and Masao Iwamoto, both of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Mar. 21, 1973, Ser. No. 343,464

Int. Cl. G03f *7/02*

U.S. Cl. 96—33 **9 Claims**

9. A method of producing a positive acting presensitized dry planographic printing plate, said method comprising the steps of:
- a. providing a base layer having sufficient strength to withstand the stress normally encountered in a printing process;
- b. applying a photoadhesive layer overlying the said base layer, said photoadhesive layer being capable of polymerizing when exposed to actinic light;
- c. applying a silicone rubber layer overlying the said photoadhesive layer;
- d. exposing said photoadhesive layer to actinic light through a positive transparency having image and non-image areas and through said silicone rubber layer to polymerize the non-image areas of said photoadhesive layer and bind same to said overlying silicone rubber layer;
- e. applying a developing liquid to said silicone rubber, said developing liquid being capable of being absorbed by the said silicone rubber layer and causing unique swelling of the image areas of said silicone rubber layer which have not been bound to said photoadhesive layer,
- f. rubbing said silicone rubber layer with developing liquid to remove the image areas of silicone rubber layer not bound to said photoadhesive layer to provide an ink-receptive surface in the image areas while the non-image areas of the silicone rubber layer bound to the said photoadhesive layer provide ink repellent background area.

3,894,874

AZIRIDINE PHOTOREDUCTIVE IMAGING

William R. Schleigh, Brockport, and Roy C. Deselms, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 2, 1973, Ser. No. 412,082

Int. Cl. G03c *5/24, 1/52, 1/72*

U.S. Cl. 96—48 R **25 Claims**

1. In a photographic element comprising an image-recording means for registering an imagewise change in absorption of electromagnetic radiation, when reduced by an activated photoreductant, said means being selected from the group consisting of aminotriarylmethane dyes, azo dyes, xanthane dyes, triazine dyes, nitroso dye complexes, indigo dyes, phthalocyanine dyes, triazolium salts and tetrazolium salts,
a photoreductant in intimate association with said image-recording means, and
means for supporting said image-recording means and said photoreductant,
the improvement comprising employing as said photoreductant, a 1,3-diazabicyclo[3.1.0]hex-3-ene.

21. A process of image-recording which comprises
imagewise exposing to actinic radiation a photographic element incorporating an image-recording means for

registering an absorption change when reduced by an activated photoreductant, said means being selected from the group consisting of aminotriarylmethane dyes, azo dyes, xanthene dyes, triazine dyes, nitroso dye complexes, indigo dyes, phthalocyanine dyes, triazolium salts and tetrazolium salts; and a 1,3-diazabicyclo[3.1.0]hex-3-ene photoreductant; to convert the photoreductant to a thermally activatable reducing agent precursor;

heating the reducing agent precursor to a temperature sufficient to convert it to a reducing agent, and

forming a visible image by selectively reducing the image-recording means within exposed portions of the photographic element.

3,894,875

SILVER HALIDE EMULSIONS CONTAINING YELLOW DYE-FORMING COUPLERS EXHIBITING VERY LOW pH SENSITIVITY

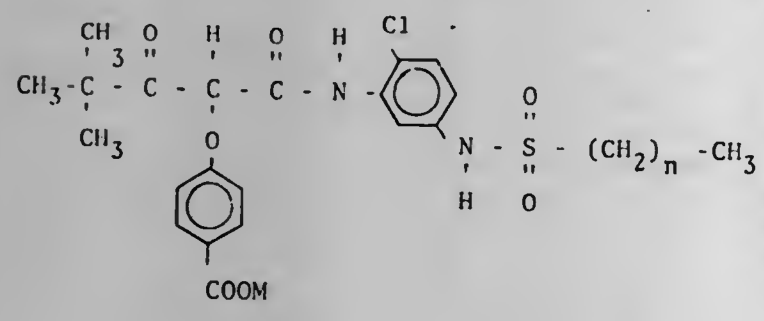
Robert G. Cameron, North Chili, and William J. Gass, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 28, 1973, Ser. No. 419,574

Int. Cl. G03c *1/40*

U.S. Cl. 96—100 **9 Claims**

1. A light-sensitive silver halide emulsion containing a color-forming coupler compound capable of high reactivity over a wide alkaline pH range; said coupler having the structure:



wherein n is an integer from about 9 to about 25 and M is hydrogen or a monovalent cation.

3,894,876

PHOSPHONITRILIC ESTERS

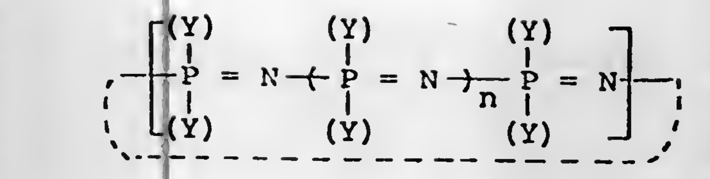
Rainer Wolf, Allschwil, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Continuation-in-part of Ser. No. 98,854, Dec. 16, 1970, abandoned. This application Oct. 11, 1973, Ser. No. 405,477

Int. Cl. C09d *5/18*

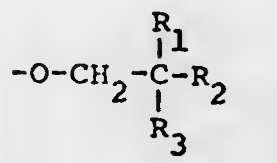
U.S. Cl. 106—15 FP **10 Claims**

1. A method of flameproofing plastics materials and textiles of natural, synthetic or blended natural-synthetic fibres, which comprises coating or incorporating in the material to be flameproofed, a phosphonitrilic ester of the general formula



where n is a whole number from 1 to 10; at least one Y is a radical

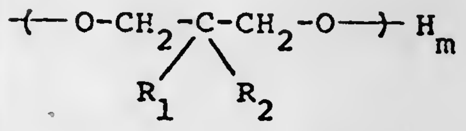
(a)



$$-O-CH_2-\overset{R_1}{\underset{R_3}{C}}-R_2$$

or

(b)



in which radical (b) m is 0 or 1 and when m is 0 the two free valencies are bound to the same phosphorus atom or are bound to two different phosphorus atoms, and each of the other Y's is halo or a radical (a) or (b); and R_1, R_2 and R_3, independently of each other, are monochloromethyl or monobromomethyl.

3,894,877

ROOFING GRANULES WITH ENHANCED ALGICIDAL POST TREATMENT

Arnold S. Nelson, Hagerstown, Md., assignor to GAF Corporation, New York, N.Y.

Filed Oct. 25, 1972, Ser. No. 300,851

Int. Cl. C09k *3/00*

U.S. Cl. 106—18 **25 Claims**

1. Algicidal roofing granules capable of inhibiting or preventing the growth of discoloring algae and fungi organisms upon exposure of roofing surfaces containing such granules to atmospheric weathering for extended periods of time, comprising:

a. base mineral granules;

b. a moisture permeable, durable, water insolubilized, pigmented, fired, inorganic alkali metal silicate-clay coating on said base granules;

c. a processing oil composition present in an amount within the range of from about ¼ gallon to about 1-¼ gallons per ton of base granules, said processing oil forming a thin film on the surface of said coated granules, said processing oil having a viscosity within the range of from about 525 to about 950 SUS, measured at 100°F; and

d. copper silicate in the oil film and adhering to the surface of said granule coating, said copper silicate having a particle size not exceeding about 100 mesh and being present in amounts within the range of from about 0.05% to about 1.0% by weight based on the weight of the base mineral granules, metallic copper ions being leachable from said copper silicate upon exposure thereof to moisture during atmospheric weathering,

whereby the weathering away of said processing oil upon atmospheric exposure of roofing surfaces incorporating said granules does not adversely affect the enhanced adherence of said copper silicate to said granule coating, the presence of moisture during periods of rain and dew causing ionization of said copper silicate with the resulting metallic ions being slowly leached from said granules to retard the growth of algae and fungi, thus enhancing the resistance of roofing surfaces containing such granules to discoloration during extended periods of exposure to atmospheric weathering.

3,894,878

PRODUCTION OF FOAMED POROUS SHAPED STRUCTURES OF LIGNIN SUITED FOR CARBONIZATION

Manfred Mansmann, and Gerhard Winter, both of Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 11, 1972, Ser. No. 243,054

Claims priority, application Germany, Apr. 16, 1971, 2118487

Int. Cl. C08h *15/02*

U.S. Cl. 106—122 **6 Claims**

1. In the production of porous shaped structures suitable for carbonization by foaming an organic material capable of being carbonized, and thereafter consolidating the foamed structure as a preliminary to possible carbonization, the improvement which comprises employing as the organic material to be foamed and capable of being carbonized an aqueous solution of lignin in a concentration of about 20 to 80% by weight, thereafter effecting consolidation of the foam by at least one of acidification and heating, and heating to a high temperature short of carbonization to effect insolubilization of the consolidated foam.

3,894,879

PROCESS OF SUSPENDING SOLUBLE XANTHAN GUM AND PUMPABLE COMPOSITIONS SO PRODUCED

George T. Colegrove, San Diego, Calif., assignor to Kelco Company, San Diego, Calif.

Filed Nov. 4, 1974, Ser. No. 520,334

Int. Cl. C08b *25/00, 27/42*

U.S. Cl. 106—189 **12 Claims**

7. A pumpable suspension of a water soluble xanthan gum comprising a solvent system of alcohol or alcohol-water blend, wherein the water content of the blend is from about 20 to 40%;

said solvent system containing from about 0.5 to 1.0% by weight of hydroxyalkyl cellulose derivative;

and between about 20 to 50% of said xanthan gum.

3,894,880

PROCESS OF SUSPENDING SOLUBLE ALGINATES AND COMPOSITIONS SO PRODUCED

George T. Colegrove, San Diego, Calif., assignor to Kelco Company, San Diego, Calif.

Filed Nov. 4, 1974, Ser. No. 520,335

Int. Cl. C08b *25/00, 27/42*

U.S. Cl. 106—208 **9 Claims**

1. The process of preparing a pumpable suspension of a water soluble alginate which comprises mixing about 20 to 40% of said alginate and about 0.3 to 1.0% xanthan gum in an alcohol-water solvent system containing 15 to 35% alcohol.

5. A pumpable suspension of a water soluble alginate salt comprising a solvent system of alcohol-water, wherein the alcohol content of the solvent system is from about 15 to 35%; said solvent system containing from about 0.3 to 1.0% by weight of xanthan gum;

and between about 20 to 40% of said alginate.

3,894,881

COATING COMPOSITION

Masaharu Suzuki, Kusatsu, and Takashi Taniguchi, Otso, both of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Feb. 14, 1973, Ser. No. 332,513

Claims priority, application Japan, Mar. 21, 1972, 47-27370

Int. Cl. C09k *3/00*

U.S. Cl. 106—287 SB **4 Claims**

1. A coating composition which upon heating produces a cured coating having improved surface properties, said composition containing a mixture of separately hydrolyzed compounds containing silicon comprising,

a. about 10 – 200 parts by weight of a separately hydrolyzed silicon tetraalkoxide, containing alkoxy groups having from 1 – 5 carbon atoms;

b. mixed with 100 parts by weight of a separately hydrolyzed siliceous compound represented by the formula R Si $(OR')_3$, wherein R represents a member selected from the group consisting of alkyl and alkenyl groups each of which contains 1 – 3 carbon atoms, and R′ represents an alkyl group containing 1 – 5 carbon atoms; and

c. about 0.01 – 10 parts by weight, on the basis of 100 parts by weight of the mixture of (a) and (b), of at least one metal salt, said salt being selected from the group consisting of alkali carboxylate (containing 1 – 5 carbon atoms), thiocyanate, nitrite, aluminate and carbonate.

3,894,882

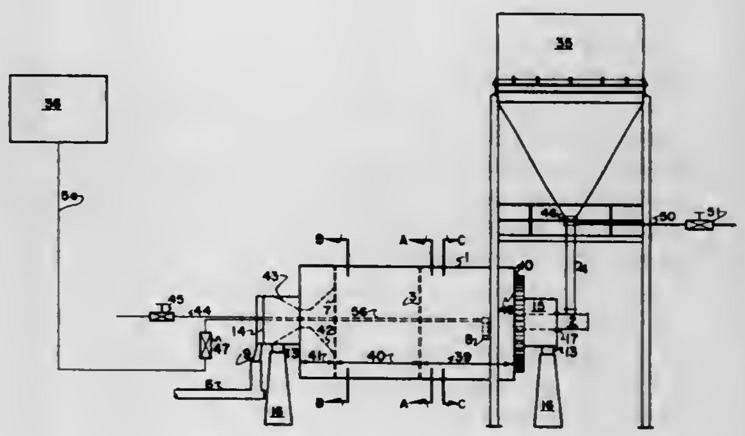
AGGLOMERATING POWDERS

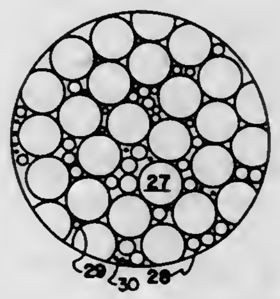
Robert B. Takewell, Borger, Tex.; Paul W. Brandon, Havre de Grace, Md., and Paul R. Odom, Macon, Ga., assignors to J. M. Huber Corporation, Locust, N.J.

Division of Ser. No. 186,113, Oct. 4, 1971. This application Mar. 11, 1974, Ser. No. 450,038

Int. Cl. C08h *17/04*

U.S. Cl. 186—288 B **3 Claims**



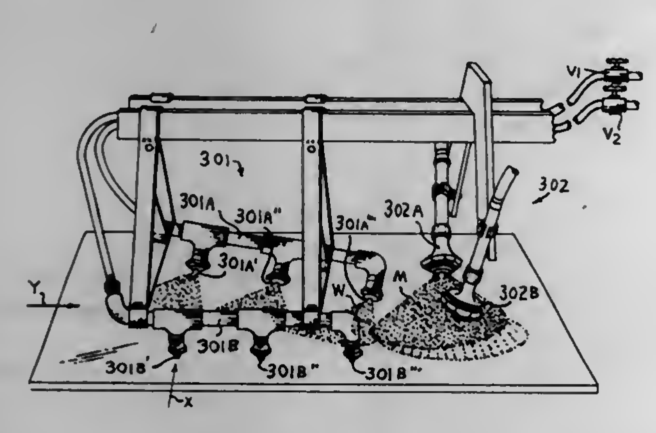


1. A pelletized clay product having a pellet size distribution within the limits of the following table:

Mesh Retained on	Passed by	Percentage Range
No. 5	—	25–55%
No. 10	No. 5	30–55%
No. 20	No. 10	5—25%
No. 40	No. 20	0.5– 5%
—	No. 40	2%

with at least 50% of the pellets passing a number 5 mesh and retained on a number 40 mesh screen.

3,894,883
METHOD AND APPARATUS UTILIZING AN ANGLED CROSSFIRE RINSE SYSTEM
Helmut Franz, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Division of Ser. No. 159,746, July 6, 1971, Pat. No. 3,793,054. This application Aug. 9, 1973, Ser. No. 386,897
Int. Cl. B08b *3/02*
U.S. Cl. 134—15 **4 Claims**



1. A method of rinsing the surface of a glass sheet comprising the steps of:

providing a rinse set having a plurality of fan-shaped sprays of water toward a given substantially horizontal plane wherein each spray has an apex angle S;

moving the sheet of glass in a first direction along an article movement path in the given substantially horizontal plane beneath the rinse set;

directing the fan-shaped sprays (1) at a first oblique angle to a first plane perpendicular to the given horizontal plane and parallel to the article movement path wherein the first oblique angle is between about 35° and about 50° and (2) at a second oblique angle to a second plane perpendicular to the given horizontal plane and the first plane wherein the second oblique angle defines an angle A that is measured from the article movement path and is 90° plus one-half of the apex angle S and between about 105° and about 120° to apply a component of motion to the water in the direction of the trailing edge of the moving glass sheet; and

reciprocating the rinse set along a reciprocating axis that is spaced from and transverse to the article movement path wherein reciprocating the rinse set in a first direction moves the water in a first direction along the surface of the glass sheet and reciprocating the rinse set in a second direction opposite to the first direction moves the water on the surface in a second direction.

3,894,884
PROCESS FOR THE ENHANCEMENT OF LOW MODULUS CARBON FIBERS
Melvin L. Druin, West Orange, and Robert Dix, Wayne, both of N.J., assignors to Celanese Corporation, New York, N.Y.
Filed Aug. 28, 1972, Ser. No. 284,021
Int. Cl. C01b *31/00*
U.S. Cl. 134—25 R **11 Claims**

1. An improved process for enhancing the ability of a carbonaceous fibrous material containing at least about 90 per cent carbon by weight and exhibiting a mean single filament Young's modulus of about 10 to 50 million psi to bond to a resinous matrix material comprising:

a. contacting said fibrous material for about 1 to 60 minutes in the absence of electrolysis with an aqueous solution of sodium hypochlorite provided at about 20° to 35°C. having a pH of about 8 to 12 and an active chlorine concentration of about 3 to 7 per cent by weight,

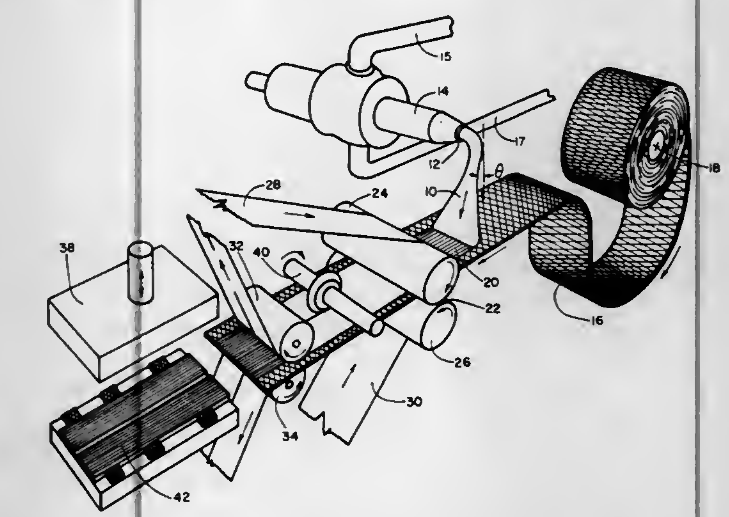
b. washing the resulting carbonaceous fibrous material to remove residual solution adhering the same, and

c. drying the same.

3,894,885
ACTIVATION OF NICKEL BATTERY PLATES
Trevor S. Turner, Kidderminster, and John E. Whittle, Sutton Coldfield, both of England, assignors to The International Nickel Company, Inc., New York, N.Y.
Continuation of Ser. No. 107,422, Jan. 18, 1971. This application Mar. 2, 1973, Ser. No. 337,586
Claims priority, application United Kingdom Jan. 20, 1970, 1240445
Int. Cl. H01m *35/00*
U.S. Cl. 136—29 **2 Claims**

1. A stabilized electrolyte for activating essentially solid nickel surfaces for use as positive electrodes in alkaline batteries comprising an aqueous solution made by combining water, nickel nitrate, ammonium nitrate and ammonia to contain nickel in an amount equivalent to at least 100 grams per liter of nickel nitrate measured as the hexahydrate, the combination of ingredients being such that the ratio of the molar concentration of ammonium nitrate to nickel nitrate is about 0.1 to about 3, the ratio to nickel nitrate is about 0.1 to about 3, the ratio of gram molar of ammonia to gram ions of nickel is about 0.1 to about 3 with the balance of the composition being water.

3,894,886
APPARATUS FOR PASTING BATTERY PLATES
Herbert G. Pankow; Terrance M. Larkin, both of Littleton; Roland L. Young, Denver, and Donald H. McClelland, Littleton, all of Colo., assignors to The Gates Rubber Company, Denver, Colo.
Division of Ser. No. 244,812, April 17, 1972. This application Feb. 7, 1974, Ser. No. 440,605
Int. Cl. H01m *35/26*
U.S. Cl. 136—67 **12 Claims**



1. A battery pasting system for pasting lead-acid battery plates in a continuous manner comprising:

a source capable of supplying a highly viscous thixotropic battery paste comprising a major proportion of oxides of lead suspended in a minor proportion of aqueous vehicle; a substantially closed loop network in which the paste is circulating;

means for supplying an elongated continuous length of substantially horizontally disposed and horizontally movable lead grid porous substrate to said system;

means connected to the loop network for diverting a predetermined volumetric flow rate of paste from the loop network;

nozzle means positioned above the substrate for discharging said paste at said predetermined volumetric flow rate onto said substrate without substantially deforming the substrate to form a pasted substrate, said nozzle means having an outlet portion in close proximity to said substrate and an inlet portion connected to said diverting means; and

a set of opposed driven rolls distinct from said discharging means spaced a predetermined distance apart and adapted to receive within its nip the pasted substrate and to compress the paste within the interstices of the pores of the substrate.

10. A battery pasting system for pasting lead-acid battery plates in a continuous manner comprising:

a source capable of supplying a highly viscous thixotropic battery paste comprising a major proportion of oxides of lead suspended in a closed loop network in which the paste is continuously circulated;

means for supplying an elongated continuous length of substantially horizontally disposed and horizontally movable soft lead grid porous substrate to said system;

positive displacement pump means connected to the loop network for diverting a predetermined volumetric flow rate of paste from the paste circulating within the closed loop network;

nozzle means positioned above the substrate for discharging said paste at said predetermined volumetric flow rate onto said substrate without substantially deforming the soft substrate to form a pasted substrate, said nozzle means having an outlet portion for resting upon the horizontally movable substrate without bearing with an appreciable downward component of force upon the substrate, and an inlet portion which is connected to the output of said positive displacement pump means;

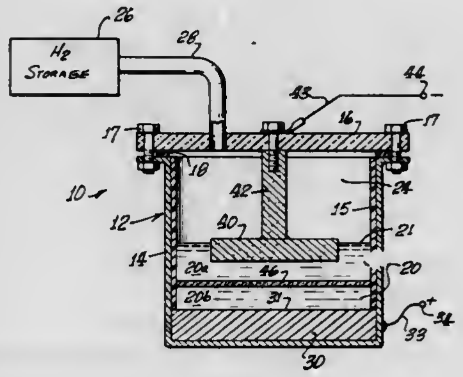
said nozzle means being freely pivoted about its inlet portion and forming an acute angle with the vertical plane transversely intersecting the substrate;

said nozzle means having an outlet face which is essentially parallel to the direction in which the grid substrate is movable;

a set of opposed driven rolls spaced a predetermined distance apart and adapted to receive within its nip the pasted substrate and to compress the paste within the interstices of the pores of the substrate; and

plate cutting means to sever from the continuous length of pasted substrate individual plates of desired configuration.

3,894,887
HYDROGEN-BROMINE SECONDARY BATTERY
Christopher England, Pasadena, Calif., assignor to California Institute of Technology, Pasadena, Calif.
Filed July 11, 1973, Ser. No. 378,127
Int. Cl. H01m *31/00, 33/00*
U.S. Cl. 136—86 S **5 Claims**

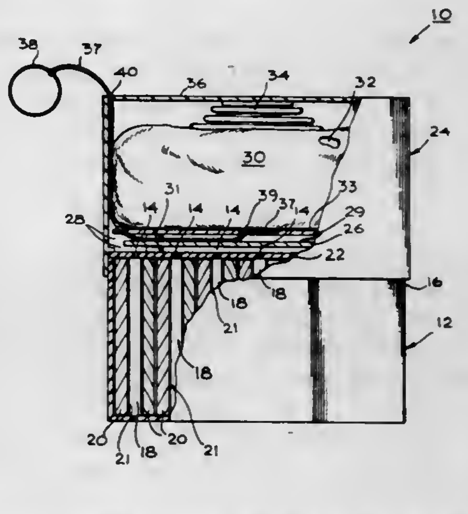


1. A secondary electrical cell comprising

a body of aqueous electrolyte which, in uncharged condition of the cell, consists essentially of acid from the group consisting of phosphoric and sulfuric acids, and alkali metal bromide from the group consisting of lithium, sodium and potassium bromides, the relative acid and bromide concentrations being such that the atomic ratio of hydrogen to bromine is at least about unity,

anode and cathode structures formed of electrically conductive and chemically inert materials contacting the electrolyte with the anode spaced above the cathode, and housing structure for the electrolyte including means for containing hydrogen produced during the charging of the cell.

3,894,888
RESERVE-TYPE ELECTROCHEMICAL BATTERY
Charles Gold, Hallandale, Fla., assignor to Electrochem, Inc., New York, N.Y.
Filed Mar. 25, 1974, Ser. No. 454,356
Int. Cl.^{2} H01M *21/00*
U.S. Cl. 136—114 **2 Claims**



1. An improved reserve-type electrochemical battery, said battery comprising, in combination:

a. a generally closed housing defining at least one fill port;

b. at least one pair of electrodes spaced within said housing to define an electrolyte space therebetween, said space being in communication with said port;

c. a closed, flexible, readily tearable bag containing flowable electrolyte for said battery;

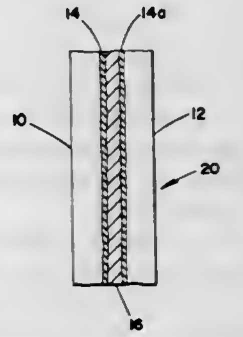
d. an apertured platform disposed over said port and upon which said bag rests external of said housing;

e. a removable transparent top cover disposed over said bag and releasably secured to the exterior of said housing;

f. a coiled spring disposed between said cover and bag and maintaining said bag under compressive force; and,

g. a pull tab and attached line, the latter secured to the bottom of said bag for opening said bag to permit said electrolyte to flow from said bag through said platform and port and into said electrolyte space for activation of said battery, said tab extending external of said cover.

3,894,889
METHOD OF MAKING SEPARATORS FOR ALKALINE BATTERIES
Leland M. Gillman, Denver, and Robert E. Stark, Littleton, both of Colo., assignors to The Gates Rubber Company, Denver, Colo.
Division of Ser. No. 62,224, Aug. 3, 1973, abandoned. This application Sept. 17, 1973, Ser. No. 398,273
Int. Cl. H01m *3/00*
U.S. Cl. 136—148 **5 Claims**



1. A method for the production of a membrane layer-containing laminated separator for use in a rechargeable alkaline

cell subject to dendritic penetrations comprising the steps of:
a. applying in solution form a thin layer of a tacky gelling agent of a high molecular weight hydrophilic polymer to a first bibulous, non-reticulated and microporous layer;

- b. bonding a semi-permeable membranous layer having been pre-wetted with aqueous material to said first bibulous layer while the gelling agent is still tacky and smoothing the semi-permeable membraneous layer in a manner to form an interface between the bibulous layer and membranous layer which is free from discontinuities;
- c. applying in solution form a thin layer of a tacky gelling agent of a high molecular weight hydrophilic polymer to a second bibulous, non-reticulated and microporous layer; and
- d. compressing together under elevated temperature the bonded membranous/filter bibulous layer with said second bibulous layer while the gelling agent is still tacky to form a composite laminated separator of a membranous layer sandwiched between two bibulous layers.

3,894,890
METHOD FOR IMPROVING THE RADIATION RESISTANCE OF SILICON TRANSISTORS

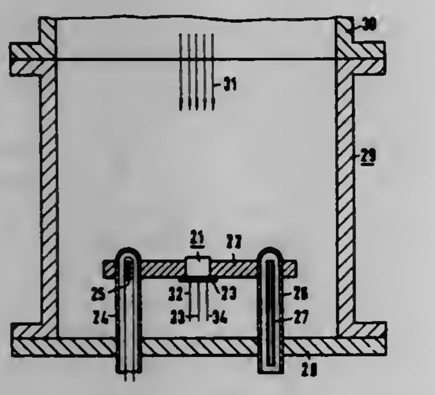
Rudolf Bäuerlein, Erlangen, and Dieter Uhl, Uttenreuth, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed July 6, 1973, Ser. No. 376,937

Claims priority, application Germany, July 17, 1972, 2235069

Int. Cl. H01l *7/54*

U.S. Cl. 148—1.5 **12 Claims**



1. A method of improving the radiation resistance of a silicon transistor having a silicon oxide cover layer comprising the steps of:

- a. subjecting the transistor to electron radiation with an energy below 150 Kev for a dose of between 10^9 and 10^{10} rad at the boundary layer between the silicon and silicon oxide while maintaining the transistor at a temperature between 200°C and 300°C; and
- b. after irradiation, annealing the transistor for at least 10 hours at a temperature between 200°C and 300°C while applying an electrical voltage of at least 0.3 V across the emitter and base of the transistor in a forward direction.

3,894,891
METHOD FOR MAKING A SPACE CHARGE LIMITED TRANSISTOR HAVING RECESSED DIELECTRIC ISOLATION

Ingrid E. Magdo, and Steven Magdo, both of Hopewell Junction, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 428,165, Dec. 26, 1973, Pat. No. 3,855,609. This application May 28, 1974, Ser. No. 473,989

Int. Cl. H01l *7/34*

U.S. Cl. 148—1.5 **9 Claims**

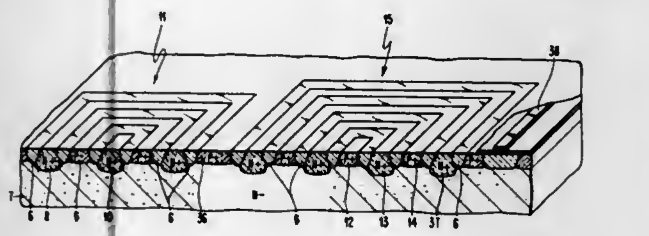
1. A method for simultaneously producing NPN and PNP space charge limited transistors comprising:

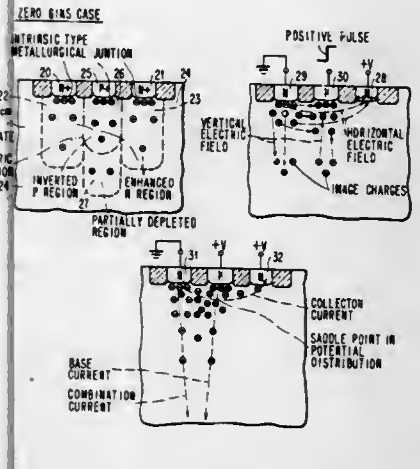
providing a high resistivity substrate of at least 10,000 ohm-centimeter semiconductor material,

forming spaced recessed dielectric regions extending from said one surface of said substrate into the interior thereof, forming in alternate spaces between said regions first impurity zones of one conductivity type extending from one surface of said substrate into the interior thereof,

forming in the intervening alternate spaces between said regions second impurity zones of the other conductivity type extending from said one surface of said substrate to the interior thereof,

providing means for electrically biasing two of said first impurity zones and the second impurity zone between said two first impurity zones for transistor operation and, providing means for electrically biasing two of said second impurity zones and the first impurity zone between said two second impurity zones for complementary transistor operation.





3,894,892
PROCESS FOR HEATING AND SINTERING FERROUS POWDER METAL COMPACTS WITH RADIO FREQUENCY MAGNETIC FIELD

Robert L. Conta, Rochester, N.Y., assignor to The Gleason Works, Rochester, N.Y.

Continuation-in-part of Ser. No. 285,965, Sept. 5, 1972, Pat. No. 3,779,747. This application Oct. 15, 1973, Ser. No. 406,774

Int. Cl. C21d *1/04*

U.S. Cl. 148—108 **7 Claims**

1. A process for heating and sintering ferrous powder metal compacts, comprising the steps of

pretreating a powder metal compact in a magnetic field having a relatively high frequency selected from a radio frequency magnetic field at about 50 kHz or above to induce current in the compact to a depth distance of about one-fourth of the maximum thickness of the compact,

continuing said pretreating for a sufficient time to effect a substantial decrease in electrical resistivity of said compact without significant sintering of the compact, and thereafter

subjecting the compact to a magnetic field having a relatively low frequency of about 10 kHz or less which provides for an efficient heating of said compact to a sintering temperature level in accordance with the changed electrical resistivity of the compact.

3,894,893
METHOD FOR THE PRODUCTION OF MONOCRYSTAL-OLYCRYSTAL SEMICONDUCTOR DEVICES

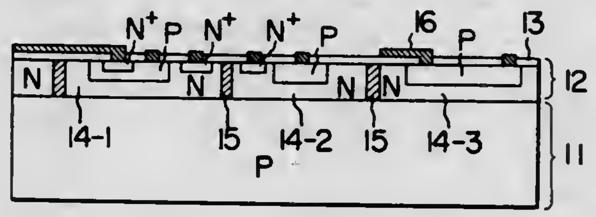
Yoshihiko Kabaya, Zama-machi, and Heishichi Ikeda, Sagamihara, both of Japan, assignors to Kabushiki Kaisha Kyodo Denshi Gijyutsu, Japan

Continuation-in-part of Ser. No. 811,032, March 27, 1969, abandoned. This application July 23, 1971, Ser. No. 165,091

Claims priority, application Japan, June 26, 1968, 43-44300; Mar. 30, 1968, 43-20899

Int. Cl. H01l *7/36, 29/04*

U.S. Cl. 148—175 **1 Claim**



1. A method of manufacturing semiconductor devices, comprising the steps of;

- a. providing an insulator film layer on a first conductivity type silicon substrate by forming a layer for developing a polycrystalline seeding site,
- b. selectively removing areas of said insulator film and allowing a closed path pattern insulator layer to remain on the substrate as a polycrystalline seeding site circumferentially enclosing an exposed area of the surface of the substrate and areas of the exposed surface of the substrate being disposed circumferentially of the closed path pattern of insulator film,
- c. heating the substrate with said closed path pattern defining a polycrystalline seeding site thereon in an atmosphere containing an epitaxial layer-forming substance and an impurity to impart a second conductivity type opposite to said first conductivity type to form on said substrate a layer consisting of low resistivity monocrystalline portions and a high resistivity polycrystalline portion simultaneously grown on the exposed surface areas of the substrate and the polycrystalline seeding site respectively so that the monocrystalline and polycrystalline portions interface and isolation is achieved between the adjacent monocrystalline portions by said polycrystalline portion and the impurity to impart said second conductivity type, at least the monocrystalline portions of said layer having a higher impurity concentration than that of said substrate, and
- d. effecting a diffusion with respect to each of said monocrystalline portions to form circuit elements therein, whereby said circuit elements are insulated from each other by boundaries between said monocrystalline portions and said polycrystalline portions, and said boundaries being substantially in registry with boundaries between the said exposed surface areas of the substrate and said polycrystalline seeding site.

3,894,894
MODIFIED DOUBLE BASE PROPELLANTS WITH DIISOCYANATE CROSSLINKER

Donald E. Elrick, Cumberland, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 8, 1962, Ser. No. 202,355

Int. Cl. C06d *5/06*

U.S. Cl. 149—19.4 **8 Claims**

1. A propellant composition consisting of at least one of a member of nitrocelluloses selected from a group consisting of densified nitrocellulose, fluid ball powder nitrocellulose and plastisol nitrocellulose, at least one of a member of solid oxidizers selected from a group consisting of ammonium perchlorate, cyclotetramethylene tetranitramine, cyclotrimethylene trinitramine and nitroguanide, at least one of a member of explosive plasticizers selected from a group consisting of nitroglycerin, diethylene glycol dinitrate, triethylene glycol dinitrate and metriol trinitrate, at least one of a member of non-explosive plasticizers selected from a group consisting of triacetin, diallyl phthalate, di-n-propyl adipate, dimethyl sebacate, adiponitrile, isophorone (3,5,5-trimethyl-2-cyclohexen-1-one), o-chloronitrobenzene and dinitrotoluene a stabilizer selected from a group consisting of 2-nitrodiphenylamine resorcinol diacetate and symmetrical diethyldiphenylurea, a crosslinking agent selected from a group consisting of 2,4-tolylene diisocyanate, hexamethylene diisocyanate, bitolylene diisocyanate, polyaryl polyisocyanate, 2,6-diisocyanate and 3,3′-dimethyl diphenylmethane 4,4′-diisocyanate, and a crosslinking catalyst selected from a group consisting of ferric acelylacetonate, lead 2-ethylhexoate, and di-n-butyl tin diacetate.

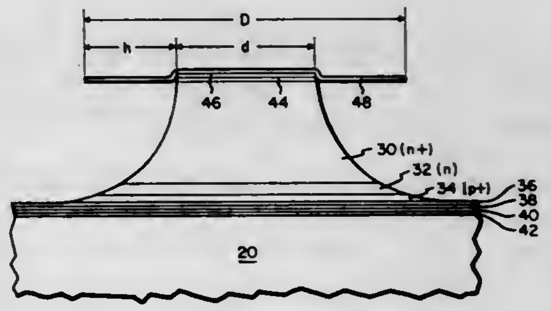
3,894,895
MESA ETCHING WITHOUT OVERHANG FOR SEMICONDUCTOR DEVICES

Deen D. Khandelwal, Torrance, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Oct. 29, 1973, Ser. No. 410,661

Int. Cl. H01l *7/00*

U.S. Cl. 156—8 **5 Claims**



1. A method of fabricating a mesa-type semiconductor device, comprising:

- A. coating a conductive layer on a first surface of a semiconductor wafer of given thickness;
- B. forming a metallic contact of given surface extent and comprising at least one layer of metal on a second surface parallel to said first surface of said wafer;
- C. applying a masking layer over said metallic contact so as to cover said contact completely and also cover the surface of said wafer surrounding said contact with a contiguous annular ring of said masking layer having a width equal to the amount of undercutting of said wafer that results from etching through its thickness;
- D. etching said wafer through the entire thickness thereof with an etchant that does not attack either said masking layer or said metallic contact so as to remove wafer material beneath said annular ring while leaving intact a mesa of wafer material beneath said metallic contact and coextensive therewith; and
- E. chemically removing said masking layer so that said metallic contact remains affixed to said second surface of said semiconductor mesa without causing any undercutting of said wafer beneath said metallic contact and without causing any significant reduction in the original size of said metallic contact.

3,894,896
PROCESS FOR MANUFACTURING A BODY OF MOISTURE-PROOF CONTAINER FOR PACKAGING

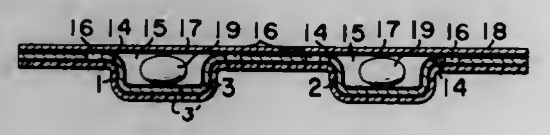
Tetsuo Watanabe, Tokyo, Japan, assignor to Dai Nippon Printing Co., Ltd., Tokyo, Japan

Filed Sept. 28, 1973, Ser. No. 401,608

Claims priority, application Japan, Sept. 29, 1972, 47-97813

Int. Cl. B29c *27/10, 27/12*

U.S. Cl. 156—69 **14 Claims**



1. A process for manufacturing a body of a moisture-proof container having at least two recesses for packaging purposes which comprises adhering a metal foil to a thermoplastic resin film with a hot melt type adhesive to form a laminated sheet, forming at least two closed blank portions in said laminated sheet by cutting only the metal foil, and stretch-forming said closed blank portions of the laminated sheet at a temperature wherein the hot melt type adhesive and the thermoplastic resin film are softened thereby forming said recesses.

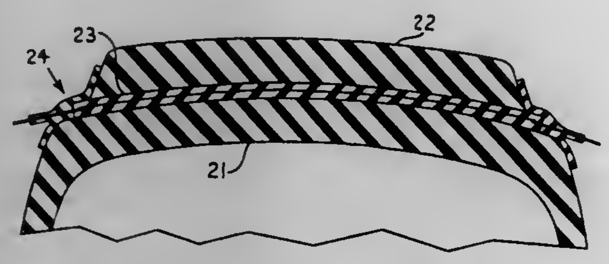
3,894,897
TIRE RECAPPING PROCESS AND APPARATUS

Kenneth W. Batchelor, Pleasanton, and Warren L. Dexter, Orinda, both of Calif., assignors to Electra-Bond, Inc., Livermore, Calif.

Continuation-in-part of Ser. No. 390,388, Aug. 22, 1973. This application June 17, 1974, Ser. No. 479,867

Int. Cl. B29h *17/36*

U.S. Cl. 156—96 **6 Claims**



1. A process for recapping tires comprising the steps of
forming a strip cushion of transverse heating wires embedded in rubber with a thin metal strip along each edge thereof connected to said wires,
wrapping said strip cushion circumferentially about a tire casing,
wrapping new tire tread about said cushion circumferentially of said tire casing,
sealing the edges of said cushion to said tire casing and tread over the entire length thereof and along both sides thereof with sealing means encompassing a part of each of said thin metal strips,
applying air pressure to said tire casing and tread thereabout, and
electrically energizing said thin metal strips to pass an electrical current through said heating wires whereby said tread is bonded by heat and pressure to said tire casing.

3,894,898
PATTERNED COMPOSITE MATERIAL

Louis N. Taylor, 1035 N.E. 176 St., North Miami Beach, Fla. 33162

Division of Ser. No. 148,111, May 28, 1971, Pat. No. 3,728,203. This application Jan. 23, 1973, Ser. No. 326,005

Int. Cl. B32b *3/06*

U.S. Cl. 156—163 **6 Claims**

1. A. method of manufacturing a purse covering for a purse body comprising the steps of positioning a web of base material; stretching a plurality of elastic members in at least one direction; placing said stretched elastic members in an intermittent parallel spaced relation forming a checkerboard pattern to the back of said base material; adhesively attaching said stretched elastic members to said base material; allowing said stretched elastic members to relax causing the base material to gather substantially opposite said elastic members; pressing said gathered composite material to crinkle the gathered composite material into a substantially permanent pattern; and cutting said pressed gathered material having a substantially permanent pattern into a plurality of pieces and securing said pieces to a purse body.

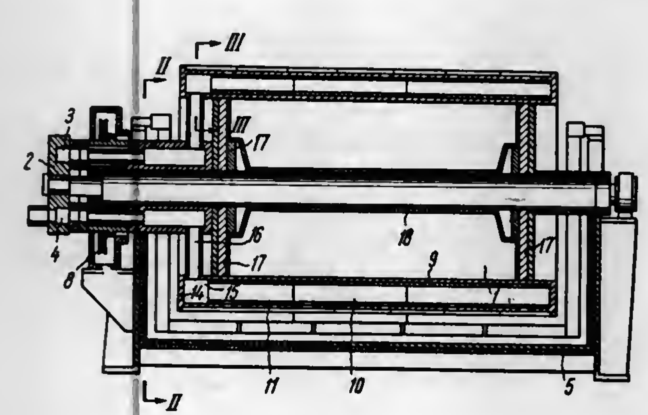
3,894,899
METHOD FOR MAKING A DRUM-TYPE HONEYCOMBLESS VACUUM FILTER

Vladimir Grigorievich Konopatov, Seleznevskaya ulitsa, 25, kv. 7; Izrail Mikhailovich Sorotskin, Srednaya pervomaiskaya ulitsa, 36, kv. 23; Ivan Ivanovich Rumyantsev, ulitsa 8 Marta, 4, korpus 2, kv. 135; Vadim Petrovich Abramov, Yaroslavskaya ulitsa 1/9, kv. 91; Alexandr Sergeevich Kupriyanov, Dmitrovskoe shosse 45, kv. 65; Orest Mikhailovich Mudrenov, ulitsa Dmitrova 19, kv. 74, all of Moscow; Ivan Andreevich Soloviev, Khotkovo, ulitsa Likhacheva 1, kv. 24, Moskovskaya oblast; Vladimir Alexandrovich Shakhov, Khotkovo, ulitsa Mikheenko, 5, kv. 35, Moskovskaya oblast; Anatoly Konstantinovich Mironov, Khotkovo, ulitsa Likhacheva 1, kv. 26, Moskovskaya oblast; Galina Mikhailovna Zhukovskaya, Khotkovo, ulitsa Mikheenko, 19, kv. 36, Moskovskaya oblast, and Arkady Markovich Gleikh, ulitsa Dybenko, 26, korpus 1, kv. 63, Moscow, all of U.S.S.R.

Filed July 26, 1973, Ser. No. 383,306

Int. Cl. B01d *33/06;* **B65h** *81/00*

U.S. Cl. 156—187 **1 Claim**



1. A method for making a reinforced plastic honeycombless vacuum drum filter comprising the steps of: making a rigid open ended plastic shell rotatably mounted on an axis as an internal shell to said drum filter; constructing and arranging rigid plastic vessels communicating with each other and secured on said internal shell parallel to its generating lines in a side-by-side relationship, said vessels defining a plurality of channels forming a space for collecting filtrate from the surface of said drum filter, said vessels having cylindrical external surfaces; wrapping said cylindrical external surfaces of said plastic shells with binder-impregnated glass fabric forming the outer cylindrical shell of said drum filter forming openings in said outer shell; mounting a drainage means on said outer shell of said drum filter communicating through said opening with said space for collecting filtrate from said drum filter; connecting the faces of said inner and said outer shells with a common end face plate; allowing clearance between said end face plate and the end faces of said vessels for defining an annular channel on at least one side of said drum; and arranging said annular channel to communicate with fluid distributor means arranged around the axis of the drum by means of radial pipes.

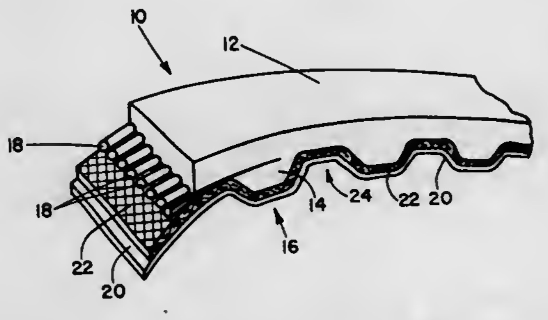
3,894,900
ELASTOMER-FREE FABRIC SURFACE FOR POWER TRANSMISSION BELT TOOTH FACING

John D. Redmond, Jr., Denver, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed Sept. 7, 1973, Ser. No. 395,084

Int. Cl.^{2} B29H *7/22, 3/00*

U.S. Cl. 156—138 **18 Claims**



1. In a method for producing a positive drive castable elastomeric power transmission belt having a plurality of spaced cogs attached to a body section including a tensile section, said cogs having positioned approximately along their surface a layer of wear-resistant fabric, the improvement comprising isolating the cast elastomer from the outer surface of the fabric layer by the steps of:
adhering to one side of the wear-resistant fabric a layer of elastomer impervious material which has been cured or set, the layer of elastomer impervious material penetrating into and sealing said outer surface of the fabric layer, said elastomer impervious material being a material of the same type or different type from the cast elastomer;
forming a mold cavity defined by a mold mandrel and an outer shell, one of said mandrel or shell having a plurality of notches corresponding to the shape of the cog;
wrapping the bonded wear-resistant fabric about the surface of the notched mold portion in a manner such that the layer of elastomer impervious material is adjacent the notched mold portion;
applying a tensile layer about the wear-resistant fabric; and introducing a substantially liquid elastomeric material into the mold cavity and polemerizing the thus formed product, whereby the liquid elastomeric material does not penetrate the outer surface of the fabric layer.

8. A method for the production of positive drive liquid castable elastomeric power transmission belts including a plurality of teeth loaded with the cast elastomer and disposed along the driving surface of the belt, the teeth carrying on their outer surface a wear-resistant fabric layer the outermost driving surface portion of which is substantially free of said cast elastomer, comprising the steps of:
attaching to at least one side of the wear-resistant fabric a layer of material impervious to the liquid castable elastomer, the layer of impervious material penetrating into and sealing said outermost surface of the fabric layer;
forming a mold cavity between a mandrel and an outer shell, one of said mandrel or shell having a plurality of notches;
disposing the wear-resistant fabric with the attached elastomer impervious material within the cavity in a manner such that the layer of elastomer impervious material is adjacent the notches, the side of the wear-resistant fabric opposite the side adjacent the notches having sufficient free area for bonding with the elastomer of the teeth;
applying a tensile layer about the wear-resistant fabric;
introducing a substantially liquid elastomeric material into the mold cavity, whereby the liquid elastomeric material does not penetrate said outermost surface of the fabric layer;
polymerizing the thus formed product; and
removing the elastomer impervious material from the adjacent wear-resistant fabric whereby the outermost driving surface portion of the fabric layer exposed is free of the cast elastomer.

3,894,901
METHOD OF MAKING HOSES AND PROFILED BELTS IN A CONTINUOUS PROCESS

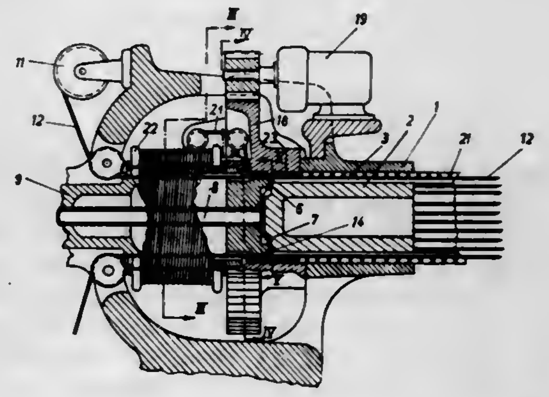
Rudolf Breher, Hausberge, Germany, assignor to Breco Kunststoffverarbeitungs-GmbH & Co. KG, Germany

Filed Apr. 9, 1973, Ser. No. 349,626

Claims priority, application Germany, Apr. 8, 1972, 2216948

Int. Cl. B29d *23/05*

U.S. Cl. 156—143 **3 Claims**



1. A method of making hoses in a continuous process by means of a hollow mold, especially for producing reinforced endless profiled belts of extrudable material with a layer containing reinforcing pull-resistant wire means extending in the circumferential direction of the hose being made, which includes the steps of: passing through said hollow mold and in a continuous manner a longitudinal support for reinforcing wire means, while said support is passing through said mold continuously injecting extrudable material into an annular space between said hollow mold and a stationary mold core within said hollow mold and winding reinforcing wire means upon said support in circumferential direction thereof and embedding said reinforcing wire means in the injected extrudable material, following the solidification of said extrudable material and after the hose thus formed has left said mold removing said support from said hose, employing as support a plurality of longitudinally extending wires and arranging the same on and distributing them around the stationary mold core in substantially parallel arrangement to the axis of said core, and pulling said longitudinally extending wires with said wire means thereon through between said mold core and the mold portion surrounding said wire means.

3,894,902
PHOTOFLASH LAMP AND METHOD OF COATING SAME

Harold L. Hough, Beverly; Emery G. Audesse, Salem, and Thomas J. Sentementes, Wakefield, all of Mass., assignors to GTE Sylvania Incorporated, Danvers, Mass.

Division of Ser. No. 268,576, July 3, 1972. This application Sept. 4, 1973, Ser. No. 394,106

Int. Cl.^{2} B65B *31/00*

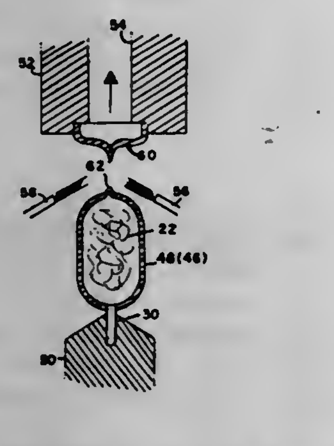
U.S. Cl. 156—286 **25 Claims**

19. A method of coating the glass envelope of a photoflash

lamp with a light-transmitting thermoplastic material, said method comprising:

placing said glass envelope within a preformed sleeve of said thermoplastic material, and

forming said sleeve with a substantially uniform thickness onto the entire exterior surface of said glass envelope by



heating said sleeve and drawing a vacuum in the space between said sleeve and said glass envelope, whereby after cooling, said thermoplastic coating exerts a compressive load on said glass envelope and a stronger envelope structure is obtained for providing improved containment during flashing.

3,894,903
PROCESS OF BONDING RUBBER TO COPPER EMPLOYING A TRIAZINE COMPOUND

John Langshaw Brooks; David Crawford Eaton, and Peter Laithwaite, all of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 346,792, April 2, 1973, abandoned. This application Sept. 23, 1974, Ser. No. 508,711

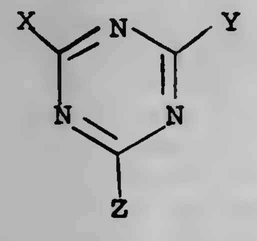
Claims priority, application United Kingdom, Apr. 11, 1972, 16606/72

Int. Cl. B29h *9/00;* **B44d** *1/42*

U.S. Cl. 156—306 **3 Claims**

1. A method of bonding rubber to copper or alloys thereof which comprises

(a) adding to a vulcanisable rubber composition a triazine compound of the formula



wherein X is a 3-hydroxyphenoxy, 3,4-dihydroxyphenoxy, or a 3,5-dihydroxyphenoxy group; Y is a chlorine atom, and Z is an amino group; and

b. bringing the vulcanisable rubber composition into contact with the copper or alloy thereof, and thereafter heating the composite article to vulcanise the rubber.

3,894,904
METHOD OF MANUFACTURING SYNTHETIC PAPER LAMINATES

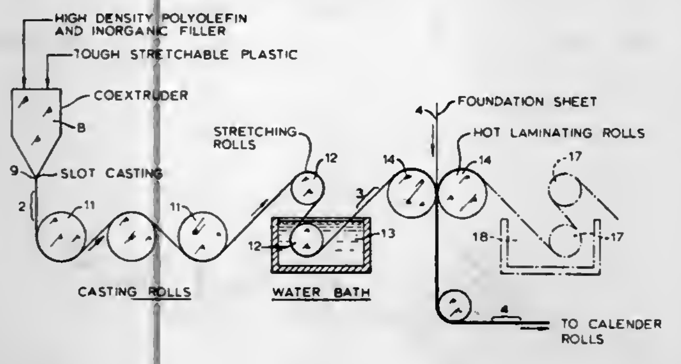
Stephen O. Cook, Mill Valley, Calif., assignor to Crown Zellerbach Corporation, San Francisco, Calif.

Filed June 11, 1973, Ser. No. 368,746

Int. Cl. B32b *31/16*

U.S. Cl. 156—229 **7 Claims**

1. The method of making a synthetic paper laminate composed of at least three layers which comprises forming a bilaminate consisting of a layer of a fracturable film of a thermoplastic resin containing minute particles of an inorganic filler and a carrier layer for said filler-containing layer of a stretchable, non-brittle, plastic, heat sealable film having one face thereof bonded to a face of the filler-containing film, while said layers are bonded together simultaneously stretching both layers of said bilaminate in only one direction while moving said bilaminate in said direction to effect fracturing of said filler-containing film and formation of microvoids between the resin thereof and the filler to thereby provide said fractured film with a printing surface, and after said simultaneous stretching of said bilaminate has been completed and while said filler-containing layer is supported by and bonded to said plastic heat sealable film effecting bonding by heat and pressure of one face of a foundation sheet to the opposite face of said plastic heat sealable film.



7. The method of making a synthetic paper laminate composed of at least three layers which comprises forming a bilaminate by extruding a brittle fracturable high melt index polyolefin film containing minute particles of an inorganic filler, which film is subsequently fractured by stretching, effecting bonding thereof to a heat sealable tough stretchable plastic film to form a bilaminate composed of two layers in which said tough stretchable plastic film provides support for the fracturable film during said subsequent stretching, after said bilaminate is formed simultaneously stretching both layers thereof in only one direction while said bilaminate is continuously moved through a water bath, compensating for heat which may develop during the stretching by providing such water bath at room temperature or lower, and after said stretching has been completed effecting bonding under heat and pressure of a foundation sheet to said heat sealable layer to form at least said three layers wherein said heat sealable plastic layer is an intermediate layer.

3,894,905
MACHINE FOR MAKING ADDRESSED AND FILLED ENVELOPES IN A SINGLE OPERATION

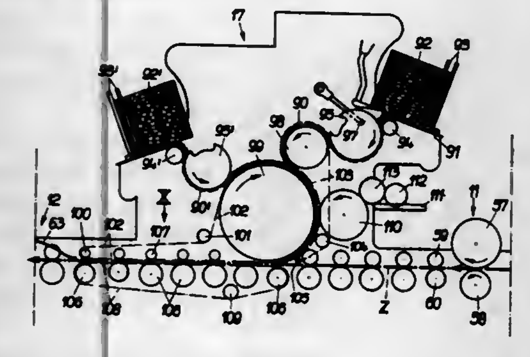
Günther Ehlscheid, Neuwied, Germany, assignor to Winkler Dunnebier Maschinenfabrik und Eisengiesserei K.G., Neuwied am Rhine, Germany

Filed Apr. 7, 1971, Ser. No. 132,121

Claims priority, application Germany, Apr. 18, 1970, 2018772

Int. Cl. B65d *27/02*

U.S. Cl. 156—384 **2 Claims**



1. In a machine for producing envelopes from individual blanks, in combination, means supporting a stack of blanks, means folding said blanks, means removing said blanks individually from said stack and feeding them to said folding means, and a device located between said stack and said folding means for applying inserts to said blanks, said device comprising at least one support for a stack of inserts, rollers, at least one pivoting suction unit removing an insert individually from the last-mentioned stack and transmitting it to said rollers, a gumming unit, and feed belts removing an insert individually from said rollers, applying it to said gumming unit and then applying it to a separate blank moving upon the third-mentioned means toward said folding means.

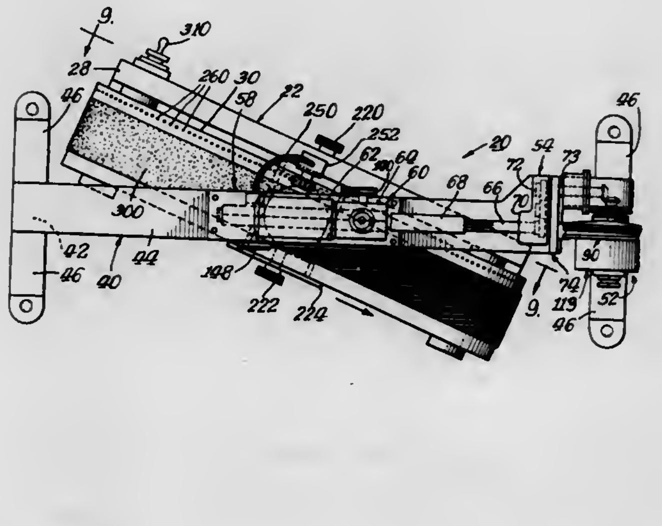
3,894,906
APPARATUS FOR MAKING TIRE BREAKERS

Thomas H. Pearce, Niles, Mich., and Larry C. Frazier, Sun City, Ariz., assignors to National-Standard Company, Niles, Mich.

Filed June 1, 1973, Ser. No. 366,239

Int. Cl.^{2} B29H *9/04, 17/28;* **B65H** *51/00*

U.S. Cl. 156—440 **10 Claims**



1. A machine for forming a tire breaker from a spool of cord comprising an endless work belt, a gum base supported on said work belt, carriage means for supporting and rotating said work belt, single cord feeding means adjacent to the work belt, single cord metering means associated with said single cord feeding means for metering predetermined successive single lengths of cords from the spool, single cord cutting means associated with said single cord metering means for successively severing said successive predetermined lengths of individual cords from said spool, a single cord laying means for receiving successive single cords disposed above and extending diagonally across said work belt, said single cord laying means including means to sequentially lay said individual lengths of single cords in side-by-side relationship on said gum base on said work belt as said work belt is moved in timed relationship under said single cord laying means, said single cord laying means comprising an elongated housing extending diagonally above and across said work belt and having a lengthwise extending cord receiving receptacle above said work belt, a pusher plate slidably mounted above said receiving receptacle and having a nose portion at its lower end, single cord releasing means disposed at the lower end of said receiving receptacle, and drive means for reciprocally moving said pusher plate such that said nose portion actuates said single cord releasing means and places the successive cut lengths of cord onto said gum base supported on said work belt.

3,894,907
APPARATUS FOR MANUFACTURING A FLATTENED CYLINDRICAL FILM CONSISTING OF LAYERS OF THERMOPLASTIC RESIN STRETCHED CROSSWISELY

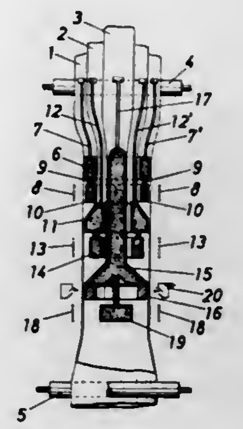
Michio Sudo, c/o Nikko Resin Co. Ltd., Fujikoshi Bldg., No. 23-7, 5-chome, Higashi, Gotanda, Shinagawa-ku, Tokyo, Japan

Filed Feb. 6, 1973, Ser. No. 330,043

Claims priority, application Japan, June 26, 1972, 47-63273

Int. Cl. B29c *27/10*

U.S. Cl. 156—494 **3 Claims**



1. In an apparatus for producing laminate tubing from an outer, intermediate, and an inner cylindrical film of plastic material extruded concentrically and spaced from each other, in which the material of said intermediate film has a lower melting point than that of the other two films, a combination comprising a first pair of nip rolls squeezing said cylindrical films therebetween; a second pair of nip rolls spaced from said first pair and being rotated at a higher speed than the first pair; a mandrel located within said inner cylindrical film between said first and said second pair of nip rolls, said mandrel having a cylindrical portion of a diameter larger than that at which said inner cylindrical film is extruded to laterally expand said inner cylindrical film substantially to the diameter of said outer cylindrical film to thereby assure peripheral contact of the three films; means for anchoring said mandrel at said first pair of nip rolls; heating means in the region of said mandrel for heating said films close to the melting point of said intermediate film so as to fuse said three films to each other; and cooling means downstream of said mandrel for cooling said films as they pass through said second pair of nip rolls.

3,894,908
I-BEAM TYPE TRUSS JOIST FORMING APPARATUS WITH AUTOMATED WEB INFEED

Arthur L. Troutner; John R. Russell, both of Boise; Stanley J. Wilmorth, Eagle, and Alan W. Johnson, Boise, all of Idaho, assignors to Truss Joist Corporation, Boise, Idaho

Filed Apr. 23, 1973, Ser. No. 353,242

Int. Cl. B27d *1/10;* **B32b** *1/10*

U.S. Cl. 156—560 **21 Claims**

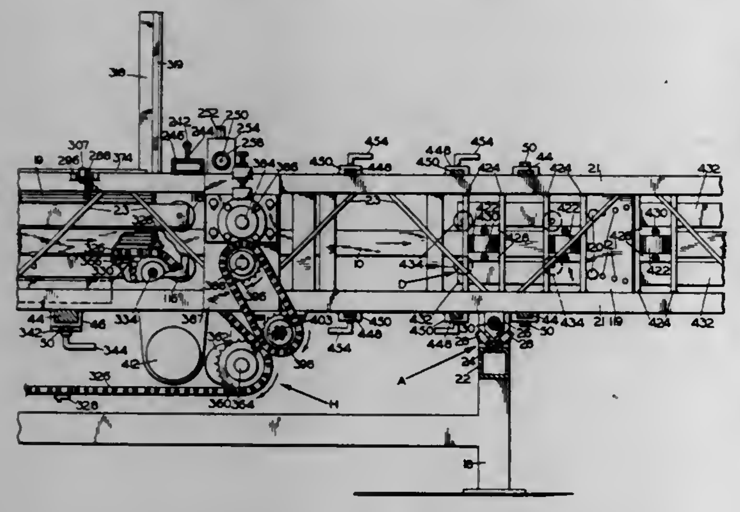
1. In I-beam type truss joist forming apparatus comprising chord feed means arranged to drive longitudinally in laterally spaced relation a pair of chords having longitudinal grooves in their opposed side faces, web member feed means positioned for placing between the chords a plurality of web members arranged end-to-end, web member drive means for driving said web members longitudinally between said chords, and guide means disposed to guide the chords and web members into assembled relation to each other with the side margins of the web members engaged in the grooves of the chords, the improvement wherein said web member feed means comprises:

a. support means positioned to support a first stack of flatwise-oriented web members between and above the chords,

b. conveyor means mounted longitudinally between the chords beneath the stack for engaging at timed intervals the lowermost web member of the first stack and conveying it between the chords to said web member drive means, and

c. stack feed means positioned adjacent the support means and operable to feed a second stack of web members onto the top of a partially depleted first stack supported on the stack support means and including skid plate means supporting a second stack to be fed and stack pusher means positioned for pushing said second stack to be fed onto the stack support means, the stack pusher means comprising:

1. reciprocating carriage means provided with at least one pushing arm and
2. drive means connected to the pushing arm for moving it angularly between an advanced angular position wherein it engages and pushes the stack to be fed along the skid plate means on the advancing pass of the carriage, and a retracted angular position wherein it is separated from the stack to be fed on the retracting pass of the carriage.



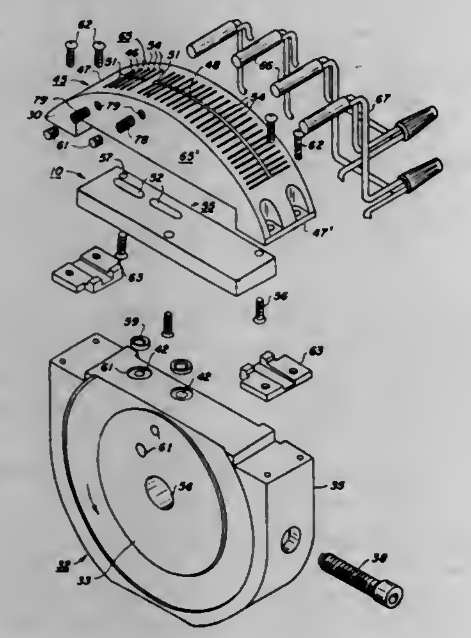
3,894,909
LABEL TRANSFER WHEEL

Trygve R. Rod, Mundelein, Ill., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 5, 1971, Ser. No. 103,969

Int. Cl. B65c *9/08*

U.S. Cl. 156—568 **4 Claims**



1. A label transfer wheel comprising
a disc-like member adapted for rotation,
said member having at least one radially projecting land portion for temporarily supporting individual ones of said labels thereon while said member turns and said land moves from a label receiving position to a label discharge position,
said transfer wheel land having at least one vacuum supply channel in the surface thereof extending along the spine of said transfer wheel; and
a series of closely spaced cross grooves substantially at right angles to said supply channel and in open communication therewith for progressively drawing said labels into vacuum attachment with the surface of said land without buckling thereof.

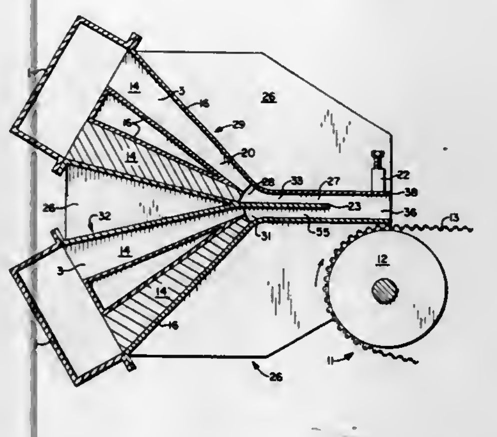
3,894,910
APPARATUS FOR DELIVERING A FLUID SUSPENSION TO A PAPER MACHINE FORMING UNIT

Paul J. Delekto, Franklin, Va.; Karl H. Smith, Rumford, Maine, and William H. Mehaffey, West Vancouver, Canada, assignors to Ethyl Corporation, New York, N.Y.

Division of Ser. No. 244,591, April 17, 1972, Pat. No. 3,802,966, which is a continuation-in-part of Ser. No. 852,214, Aug. 22, 1969, abandoned. This application Feb. 26, 1974, Ser. No. 445,865The portion of the term of this patent subsequent to Apr. 9, 1991, has been disclaimed.

Int. Cl.^{2} D21F *1/06*

U.S. Cl. 162—343 **4 Claims**



1. An apparatus for simultaneously delivering a multilayer of stock to a mat forming unit comprising

a. means defining a discharge passageway having an inlet portion and a discharge portion which discharges to the mat forming unit,
b. baffle means extending the width of the passageway defining a plurality of flow sections formed in the inlet portion of the discharge passageway which flow sections provide substantially parallel flow to and into the discharge portion of the passageway,
c. a plurality of pairs of banks of elongated channels extending across the width of the passageway, each pair of banks discharging a plurality of converging streams of a selected stock into one of the flow sections, and
d. an elongated supply header for supplying stock to each of the pairs of banks,

whereby a plurality of selected stocks are supplied in a layered stream to the forming unit.

3,894,911
MEMBER FOR CONDUCTING EXCESS HEAT AWAY FROM HEAT SOURCES

Edmund Harry Cooke-Yarborough, Abingdon, England, assignor to United Kingdom Atomic Energy Authority, London, England

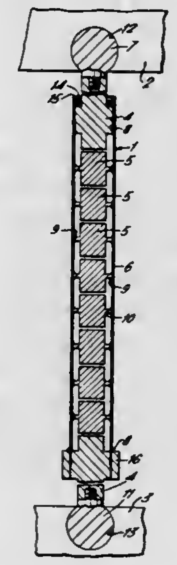
Filed Feb. 26, 1974, Ser. No. 445,933

Claims priority, application United Kingdom, Feb. 28, 1973, 9762/73

Int. Cl. F28d *11/00*

U.S. Cl. 165—86 **9 Claims**

1. A member for conducting heat from a heat source, said member being of elongated form and comprising a stack of heat-conductive slugs disposed in interspaced relationship along the longitudinal axis of the member, slug support means for locating the slugs in axial alignment, means for attaching an end one of the slugs to the heat source and means operable on overheating of said end one of the slugs whereby the slugs are able to move into heat-conducting contact with each other so as to conduct the excess heat away from said heat source.



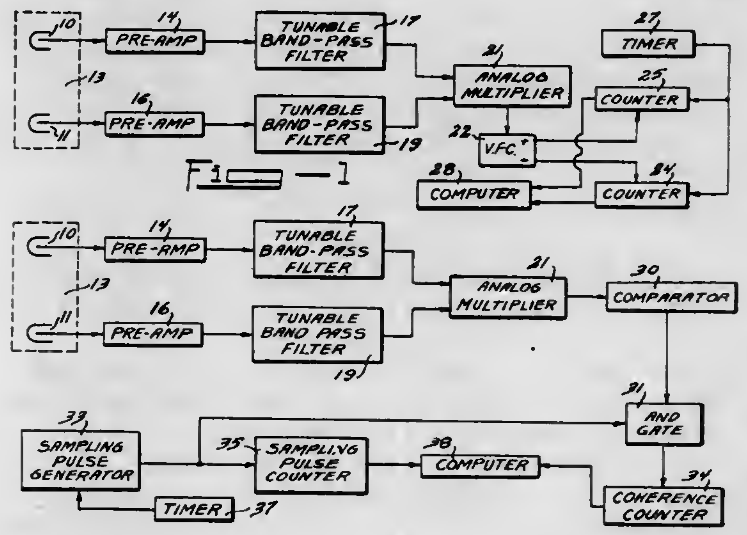
3,894,912
DETERMINATION OF PARAMETERS OF A NUCLEAR REACTOR THROUGH NOISE MEASUREMENTS

Charles E. Cohn, Clarendon Hills, Ill., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Continuation-in-part of Ser. No. 265,060, June 21, 1972, abandoned. This application Dec. 21, 1973, Ser. No. 427,394

Int. Cl.^{2} G21C *17/00*

U.S. Cl. 176—19 R **1 Claim**



1. The method of making reactor measurements to determine reactor parameters A_1, B_1, A_2, B_2 and $\$_1$ from which an unknown subcriticality of a nuclear reactor can be calculated including the steps of:

a. measuring the neutron density fluctuation at two different points in the nuclear reactor to develop first and second noise signals;
b. filtering each of said first and second noise signals in first and second band-pass filters respectively, the band of frequencies passed by each of said band-pass filters being the same and being above the delayed neutron roll-off frequencies and below the prompt neutron roll-off frequency;
c. multiplying said filtered first and second noise signals in an analog multiplier to develop a first product signal with said first and second noise signals having the same polarity and a second product signal with said first and second noise signals having opposite polarities;
d. establishing the reactor at a subcriticality greater than $1\$$ subcritical and less than critical and measuring a reference subcriticality $\$_1$ by a rod drop test;
e. with the reactor at said reference subcriticality integrating said first product signal over a predetermined time period T_1 to develop the reactor parameter A_1, where 30 seconds $< T_1 <$ 10 minutes;
f. with the reactor at said reference subcriticality integrating said second product signal over said time period T_1 to develop the reactor parameter B_1;
g. with the reactor at the unknown subcriticality integrating said first product signal over a time period T_2 to develop an integrated product signal A_2, where 30 seconds $< T_2$ $<$10 minutes; and
h. with the reactor at the unknown subcriticality integrating said second product signal over said time period T_2 to develop an integrated product signal B_2.

3,894,913
METHOD FOR PRODUCTION OF α-GALACTOSIDASE

Masayuki Watanabe; Shigeyoshi Narita; Itiro Kagaya; Minoru Miura; Yasunobu Suzuki; Shuji Tanaka; Masami Sasaki; Shogo Miyatani, and Kenichi Terayama, all of Kitami, Japan, assignors to Hokkaido Sugar Co., Ltd., Tokyo, Japan

Filed Jan. 28, 1974, Ser. No. 437,535

Int. Cl. C12d *13/10*

U.S. Cl. 195—65 **3 Claims**

1. A method for the production of α-galactosidase by the culture of a mold, belonging to the genus of Circinella or Absidia which comprises adding to a basal medium about 0.2 percent to about 1.0 percent, based on said basal medium, of an organic acid selected from the group consisting of citric acid, lactic acid, glycolic acid, fumaric acid, glutaric acid, malic acid, galacturonic acid, tartaric acid, succinic acid and pyruvic acid, and culturing the mold in said prepared medium under conditions enabling the mold to produce α-galactosidase.

3,894,914
DETERMINATION OF MONOAMINE OXIDASE ACTIVITY

Yukihiro Kuzuya; Yoshitsugu Sakata, both of Takatsuki; Masako Takeda, Suita, and Hisahiko Shimada, Ashiya, all of Japan, assignors to Wako Pure Chemical Industries, Ltd., Osaka, Japan

Filed Apr. 16, 1973, Ser. No. 351,642

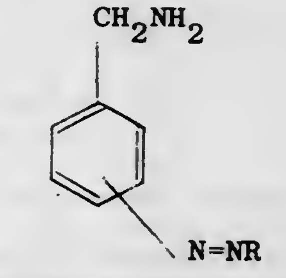
Claims priority, application Japan, Apr. 27, 1973, 48-23521; Apr. 19, 1972, 47-38668

Int. Cl. C12k *1/04*; C07g *7/02*; C12d *13/10*

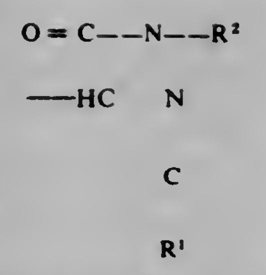
U.S. Cl. 195—103.5 R **34 Claims**

1. A method for determining the enzymatic activity of monoamine oxidase contained in an organism sample through measurement of visible absorption spectrum and which comprises

a. reacting (i) a substrate solution containing a benzylaminoazo compound, or acid addition salt thereof, of the formula:

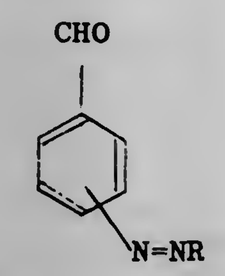


wherein R is phenyl which is unsubstituted or substituted with hydroxy, lower alkyl or di-lower alkyl amino; naphthyl which is unsubstituted or substituted with hydroxy, carboxy, amino or alkyl; or pyrazolone of the formula



$$\begin{array}{l} O=C-\!-N-\!-R^2 \\ -\!-HC \qquad N \\ \qquad\qquad C \\ \qquad\qquad R^1 \end{array}$$

wherein R^1 is lower alkyl, lower cycloalkyl or nitro (lower alkyl) and R^2 is phenyl, lower cycloalkyl, tolyl or styryl with (ii) monoamine oxidase present in said organism sample to form a benzaldehydeazo derivative of the formula:



wherein R is as defined above.

- b. separating said benzaldehydeazo derivative from the reaction mixture;
- c. measuring the optical absorbance of the formed benzaldehydeazo derivative at a wavelength in the visible absorption spectrum and
- d. thereafter comparing this absorbance to the absorbance of a known quantity of benzaldehyde derivative to determine the amount of derivative formed in (a) and relating this amount to the volume of sample and reaction time, to thereby determine the activity of the monoamine oxidase.

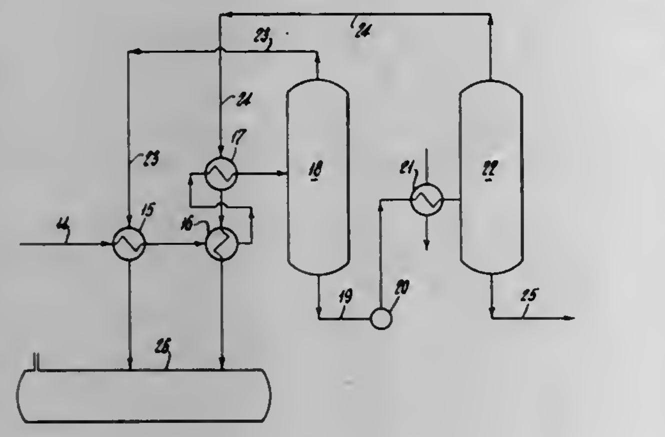
3,894,915
SYSTEM FOR OPTIMAL PRESSURE CONTROL IN A MULTI-STAGE EVAPORATION UNIT

Alfred Hoppe, Frankfurt am Main, and Walter Geistert, Hamburg, both of Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Germany

Continuation of Ser. No. 165,621, July 23, 1971, abandoned. This application Dec. 17, 1973, Ser. No. 425,431

Int. Cl. B01d *3/02*

U.S. Cl. 202—173 **2 Claims**



1. In a system for optimal pressure control in a multistage evaporation unit having at least two series connected first and final evaporators, the improvement comprising:

- a. the first evaporator being preceded by first and second heat exchangers,
- b. said final evaporator being a higher-pressure evaporator relative to said first evaporator,
- c. both said first and second heat exchangers comprise shell-and-tube heat exchangers, for receiving the vapor effluent leaving said higher-pressure evaporator,
- d. supply line means for passing fresh feed solution through said two heat exchangers in which they are heated by the vapor effluent from said final high pressure evaporator
- e. the shell portion of said second heat exchanger receives the vapor effluent first,
- f. the tube portion of said first heat exchanger receiving vapor condensate from said second heat exchanger,
- g. a third shell-and-tube heat exchanger is connected in said fresh feed solution supply line means in series with said first and second heat exchangers.
- h. said fresh feed solution supply line means being connected to the tubes of said third shell-and-tube heat exchanger, and
- i. a vapor effluent line extending from said low pressure evaporator to the shell of said third shell-and-tube heat exchanger for more efficient heating of said fresh feed solution and condensing of the vapors from the low pressure evaporator.

3,894,916
SEPARATION OF 3,3-DIMETHYLACROLEIN AND -METHYL-3-BUTEN-1-OL BY AZEOTROPIC DISTILLATION WITH WATER AND GLYCEROL

Roman Fischer, Mutterstadt; Siegfried Maier, Ludwigshafen, and Wolfgang Koernig, Mannheim, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Aug. 29, 1973, Ser. No. 392,821

Claims priority, application Germany, Sept. 7, 1972, 2243810

Int. Cl. B01d *3/34*

U.S. Cl. 203—55 **7 Claims**

1. A process for separating 3,3-dimethylacrolein from a mixture containing 3-methyl-3-buten-1-ol which comprises: heating said mixture in contact with water and in contact with glycerol whereby azeotropes of both 3,3-dimethylacrolein and 3-methyl-3-buten-1-ol are formed; said heating being continued at least until the said 3,3-dimethylacrolein is distilled off azeotropically with water and thereby separated from said 3-methyl-3-buten-1-ol, the amount of water present in the mixture being from 15 to 100 parts by weight per 100 parts of said mixture and the amount of glycerol present in said mixture being from 5 to 30 parts by weight per 100 parts of said mixture.

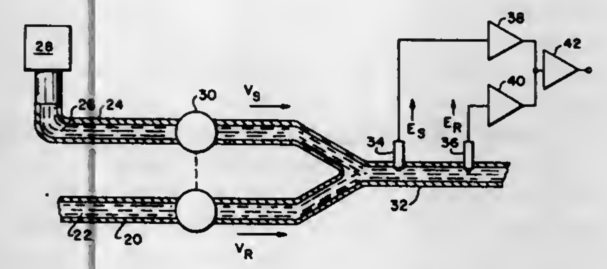
3,894,917
ELECTROCHEMICAL MEASURING SYSTEMS AND METHOD OF MEASURING IONIC STRENGTH IN A FLOW STREAM

John H. Riseman, Cambridge; Martin Frant, Newton, both of Mass., and James W. Ross, Reno, Nev., assignors to Orion Research Incorporated, Cambridge, Mass.

Filed June 16, 1971, Ser. No. 153,667

Int. Cl.^{2} G01N *27/46*

U.S. Cl. 204—1 T **15 Claims**



1. Apparatus for electrochemical monitoring of a first ionic species of interest in a liquid flow stream comprising in combination:

means for mixing said flow stream intimately into a second flow stream containing a second species of ion, at a substantially fixed concentration;

a first electrochemical electrode for providing an electrical signal as a function of the activity of said first ionic species in said liquid; and

a second electrochemical electrode for providing an electrical signal as a function of the activity of said second species of ion;

both of said electrodes being disposed in operative contact with the mixture of said flow streams.

9. In continuous electrochemical monitoring of a first ionic species of interest in a liquid flow stream with an electrochemical electrode which provides an electrical signal responsively to the activity of said first species in said liquids, the method comprising

mixing intimately with said stream at a point upstream from said electrode, a second stream of liquid containing substantially fixed concentration of a second species of ion, and

detecting with a second electrode which provides an electrical signal responsively to said second species, the activity of said second species in the mixed flow stream.

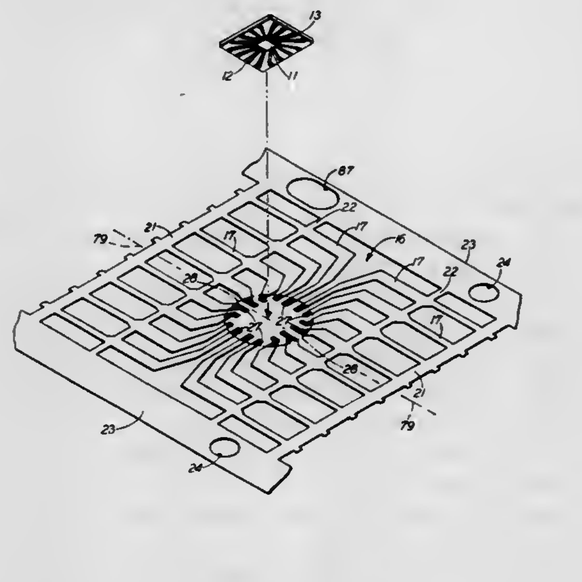
3,894,918
METHODS OF TREATING PORTIONS OF ARTICLES

William Joseph Corby, Allentown; Edward Stephen Figuli, Emmaus, and Earl Dallas Winters, Quakertown, all of Pa., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Dec. 20, 1973, Ser. No. 426,744

Int. Cl.^{2} C25D *5/02*

U.S. Cl. 204—15 **8 Claims**



1. A method of treating a portion of an article, comprising the steps of:

flowing a treating medium out of an orifice of a treating member;

moving continuously the article past a sensing device to produce a control signal and then past and spaced from the orifice and into contact with the treating medium being flowed out of the orifice, the movement of the article past the orifice resulting in relative motion between the article, the orifice and the treating medium, such treating medium contacting the portion of the article to be treated and other portions of the article not to be treated; and

sequentially rendering effective the treating medium in response to the control signal to treat with the medium the portion of the continuously moving article in contact with the medium while the medium is rendered effective, whereby the remainder of the article is not treated.

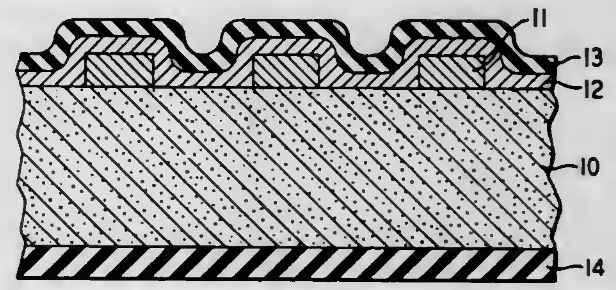
3,894,919
CONTACTING SEMICONDUCTORS DURING ELECTROLYTIC OXIDATION

Bertram Schwartz, Westfield; Stuart Marshall Spitzer, Berkeley Heights, and Gregory Dyett Weigle, Green Brook, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 9, 1974, Ser. No. 468,424

Int. Cl.^{2} C25D *11/00, 5/02*

U.S. Cl. 204—15 **12 Claims**



1. A method of forming an oxide on the surface of a III—V compound semiconductor including contact metallization of a first conducting material on one of the major surfaces of said semiconductor comprising the steps of:

covering said metallization with a layer of second conducting material which is different from said first conducting material and which is oxidizable in an electrolytic system wherein the electrolyte comprises a material selected from the group consisting of H_2O adjusted to a pH in the range 1–5 or 9–13, H_2O in a pH range 5–9 including a material for supplying ions to add conductivity, and an H_2O_2 solution;

making the structure the anode in said electrolytic system; and

passing a current through said system of sufficient magnitude such that only a portion of the thickness of said layer of second conducting material is oxidized while a native oxide grows into the exposed surface of the semiconductor, such that said oxide formed on the second conducting material is sufficiently thick to insulate said first conducting material from the electrolyte and sufficiently thin to be penetrated for contacting said first conducting material.

3,894,920
PROCESS FOR PREPARING ALKYL-SUBSTITUTED 3,6-DIHYDRO-O-DIOXIN DERIVATIVES

Kiyosi Kondo, Yamato; Masakatsu Matsumoto, Sagamihara, and Miyako Hatsutani, Zushi, all of Japan, assignors to Sagami Chemical Research Center, Japan

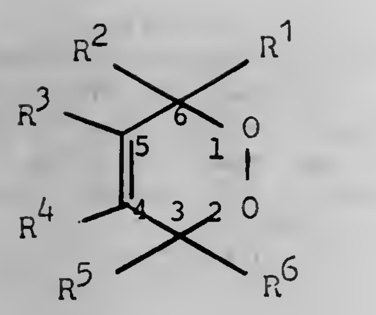
Division of Ser. No. 316,504, Dec. 19, 1972, Pat. No. 3,855,246. This application July 3, 1974, Ser. No. 485,580

Claims priority, application Japan, Dec. 21, 1971, 46-10321; July 21, 1972, 47-72470

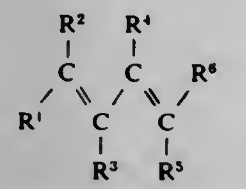
Int. Cl. B01j *1/10*

U.S. Cl. 204—162 R **5 Claims**

1. A process for the preparation of 3,6-dihydro-o-dioxins represented by the formula



wherein R^1, R^2, R^3, R^4, R^5 and R^6 may be the same or different and are each hydrogen, alkyl having 1 to 4 carbon atoms, phenyl, substituted phenyl or benzyl, provided that at least one of R^1 to R^6 is alkyl or benzyl which comprises photo-sensitized oxygenation of an aliphatic conjugated diene represented by the formula:



wherein R^1 to R^6 have the same meanings as defined above, by using a light source of visible rays in a solvent at a temperature of −10° to 70°C. in the presence of a dye photo-sensitizer.

3,894,921
METHOD FOR THE PREPARATION OF ACETYL CHLORIDE

Koji Konno, Iwaki, and Katuhiro Kobayashi, Kitaibaragi, both of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 17, 1973, Ser. No. 389,311
Int. Cl. B01j *1/10*
U.S. Cl. 204—163 R **6 Claims**

1. A method for the preparation of acetyl chloride characterized by interacting 1,1-dichloroethane and chlorine gas and oxygen gas under light irradtiated conditions.

3,894,922
ELECTRODEPOSITION METHOD UTILIZING QUATERNARY PHOSPHONIUM GROUP-CONTAINING RESINS

Joseph F. Bosso, Lower Burrell, and Marco Wismer, Gibsonia, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 217,278, Jan. 12, 1972, abandoned, This application Apr. 3, 1974, Ser. No. 457,335
Int. Cl. B01k *5/02*
U.S. Cl. 204—181 **11 Claims**

1. In a method of coating a conductive substrate serving as a cathode, which method comprises passing electric current between an anode and said cathode in electrical contact with a water-dispersed composition, the improvement wherein the water-dispersed composition is a water-dispersible, quaternary phosphonium salt-containing resin comprising the reaction product of:

A. an epoxy group-containing organic material, and
B. a phosphine-acid mixture,

said phosphine-acid mixture reacted with said organic material in an amount and at a temperature sufficient to provide a quaternary phosphonium salt-containing, water-dispersible resin.

3,894,923
PROCESS FOR PREPARING BENZOYL CHLORIDE

Johannes H. C. M. A. Grégoire, Beek(L), Netherlands, assignor to Stamicarbon, B.V., Geleen, Netherlands

Filed Apr. 30, 1974, Ser. No. 465,626
Claims priority, application Netherlands, May 4, 1973, 7306212
Int. Cl. B01j *1/10;* **C07c** *51/58*
U.S. Cl. 204—158 HA **6 Claims**

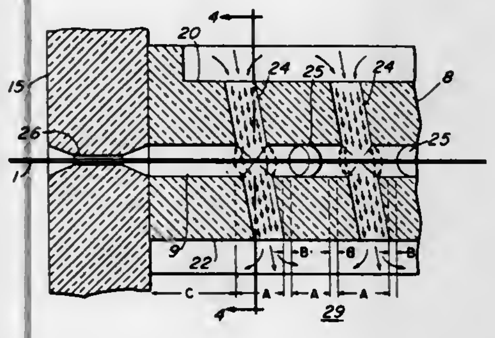
1. In a process for the preparation of benzoyl chloride comprising chlorinating benzaldehyde in the liquid phase, the improvement comprising using as a catalyst for said reaction:

a. a peroxide catalyst;
b. an ultra-violet light catalyst; or
c. the combination of catalysts (a) and (b) at a temperature of the order of about 40° to about 175°C.

3,894,924
APPARATUS FOR PLATING ELONGATED BODIES

Emil Toledo, Natick, Mass., assignor to Raytheon Company, Lexington, Mass.

Division of Ser. No. 304,692, Nov. 8, 1972, Pat. No. 3,847,759, which is a division of Ser. No. 93,333, Nov. 27, 1970, Pat. No. 3,736,576. This application Dec. 6, 1973, Ser. No. 422,442
Int. Cl. B01k *3/00;* **C23b** *5/68, 5/58*
U.S. Cl. 204—206 **3 Claims**



1. A plating cell for plating magnetic memory storage wire comprising:

a nonconducting body having a bore through which the wire is adapted to be passed;
a plurality of passages extending through said body, transverse to said bore and spaced along said bore, the axes of each of said passages each being tilted in the same direction from a perpendicular to the axis of said bore by an angle of between 15° and 30°;
means for introducing a flow of plating electrolyte through said passages; and
means for passing a plating current through said electrolyte to a wire in said bore.

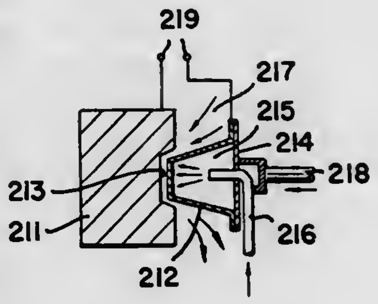
3,894,925
ELECTRODE FOR ELECTRICAL MACHINING

Kiyoshi Inoue, 3-16-8 Kamiyoga, Setagayaku, Tokyo, Japan

Division of Ser. No. 157,575, June 28, 1971, Pat. No. 3,814,892, which is a continuation-in-part of Ser. No. 723,799, April 24, 1968, Pat. No. 3,591,760, which is a continuation-in-part of Ser. Nos. 508,487, Sept. 18, 1965, Pat. No. 3,512,384, and Ser. No. 574,056, Aug. 22, 1960, abandoned. This application Feb. 1, 1974, Ser. No. 438,577
Claims priority, application Japan, Feb. 10, 1967, 42-8521; June 28, 1967, 42-41494; Sept. 2, 1967, 42-56310; Mar. 30, 1970, 45-26715; June 30, 1970, 45-57143; Nov. 11, 1970, 45-99279
Int. Cl. B23p *1/04;* **B01k** *3/00;* **B23k** *9/16*
U.S. Cl. 204—224 M **2 Claims**

2. An electrode system for the electrical machining of a workpiece, comprising an electrode holder; a sheet-metal body mounted on said holder and defining an electrical machining surface; means for passing an electrical-machining

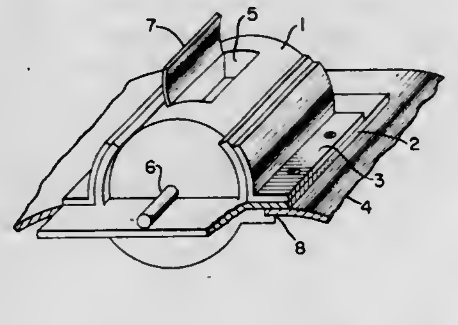
liquid along said surface and between said surface and said workpiece; means including a tube arrangement in heat-exchanging relation with said opposite surface of said sheet-metal body for passing a cooling liquid exclusively along a surface of said sheet-metal body opposite said machining surface and independently of said machining liquid, said opposite surface defining a cavity receiving said tube arrangement with clearance; and a mass of low-melting point metal filling the spaces between tubes of said arrangement and between said arrangement and said opposite surface.



3,894,926
IN-OUT TRANSPORTER FOR AN ENCLOSED CHAMBER

Jau-Yien Lee, No. 4, Lane 1 Hung-Pu 6th Village, Feng-Dang City, Kao-Hsiung Hieng, Taiwan, China

Filed Feb. 9, 1973, Ser. No. 331,223
Int. Cl.² B65G *65/30;* **C23C** *13/08, 15/00*
U.S. Cl. 204—298 **11 Claims**

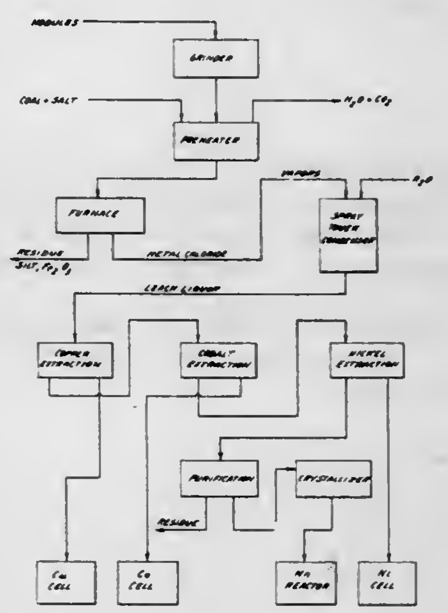


1. An in-out transporting assembly for transporting articles, substance, tools or instruments into and/or out of an enclosed chamber under vacuum condition or subjected to positive pressure without opening the chamber, said assembly comprising gasket means and a rotor element characterized in that said gasket means includes a sleeve portion within which said rotor element is disposed and an additional portion adapted to extend around and to be secured over an opening of an otherwise enclosed chamber in sealing relationship therewith, said rotor element being in both rotating and sealing relationship with said sleeve portion, said sleeve portion having an inner opening and an outer opening for access to said rotor element, and said rotor element having at least one cavity in its periphery which may be rotated into and out of registration with said outer and inner openings, said cavity including therein means for fixedly holding article, substance, tool or instrument placed therein and transported into and/or out of said chamber and vice versa with said article, substance, tool or instrument being subjected to or providing an operation while in said chamber all while maintaining said chamber in sealed condition.

3,894,927
RECOVERY OF METAL VALUES FROM OCEAN FLOOR NODULE ORES BY HALIDATION IN MOLTEN SALT BATH

William S. Kane, Wicomico; Hugh L. McCutchen, Gloucester Point, and Paul H. Cardwell, Zanoni, all of Va., assignors to Deepsea Ventures, Inc., Gloucester Point, Va.

Filed Nov. 27, 1972, Ser. No. 309,738
Int. Cl. C22d *3/00*
U.S. Cl. 204—64 R **28 Claims**



1. A process for the recovery of metal values from ocean floor nodule ore, the ore comprising as primary components compounds of copper, cobalt and nickel; the process comprising the steps of 1) reacting the nodule ore with a halide reactant comprising at least one halide of a metal selected from the group consisting of the alkali metal halides and the alkaline earth metal halides, by dispersing the ore in a molten salt bath of the halide reactant, the weight ratio of halide reactant - to - nodule ore in the bath being at least about one, to form the halides of manganese, copper, cobalt and nickel and a reacted ore residue, including the iron; and 2) separating said halides of manganese, copper, cobalt and nickel from the reacted nodule ore residue.

3,894,928
RADIATION PROCESS FOR THE CROSSLINKING OF POLYETHYLENE WITH THE USE OF ACRYLIC AND ACETYLENIC COMPOUNDS

Tsutomu Kagiya, Kyoto; Miyuki Hagiwara, Maebashi; Tsukasa Kagiya, and Masayoshi Sohara, both of Takasaki, all of Japan, assignors to Kishimoto Sangyo Co., Ltd., Tokyo, Japan

Filed Apr. 26, 1973, Ser. No. 354,810
Claims priority, application Japan, May 1, 1972, 47-42608
Int. Cl. C08d *1/00;* **C08f** *1/16*
U.S. Cl. 204—159.17 **4 Claims**

1. A method for the cross-linking reformation of a polymer of ethylene selected from the group consisting of polyethylene and halogenated polyethylene which comprises subjecting said polymer to ionizing radiation in the presence of

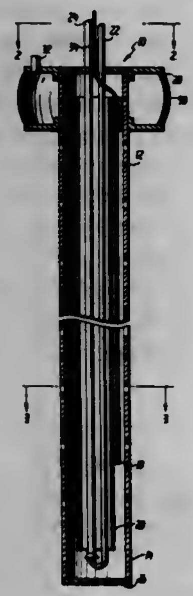
a. 0.1 to 5.0% by weight based upon said polymer of an acrylic monomer capable of being cross-linked with said polymer, said acrylic monomer being a member selected from the group consisting of acrylic acid, methacrylic acid, methyl acrylate, ethyl acrylate, n-propyl acrylate, iso-propyl acrylate, n-butyl acrylate, methyl methacrylate, cyclohexyl acrylate, phenyl acrylate, oxy-, nitro- and halophenyl acrylates, α- or β-halo (lower alkyl)acrylates, dimethylene diacrylate, dimethylene dimethacrylate, tetramethylene diacrylate and hexamethylene diacrylate; and

b. 0.1 to 5.0% by weight based upon said polymer of an acetylenic compound capable of being blended with said polymer at an elevated temperature and being a member of the group consisting of propargyl alcohol, propiolic acid, propargyl acrylate, propargyl methacrylates, propargyl propiolate, dipropargyl amine, dimethylene dipropiolate, tetramethylene dipropiolate, hexamethylene dipropiolate, dipropargyl phthalate, dipropargyl isophthalate, dipropargyl terephthalate, dipropargyl maleate, dipropargyl itaconate, tripropargyl amine and tripropargyl trimellitate.

3,894,929
ELECTROCHEMICAL MINING APPARATUS

William F. Drinkard, Jr., Charlotte; Henry S. Brown, Raleigh, and Hans J. Woerner, Mount Pleasant, all of N.C., assignors to Mineral Research & Development Corporation, Charlotte, N.C.

Filed May 17, 1974, Ser. No. 470,809
Int. Cl. B01k *3/04;* **C22d** *5/00*
U.S. Cl. 204—286 **10 Claims**

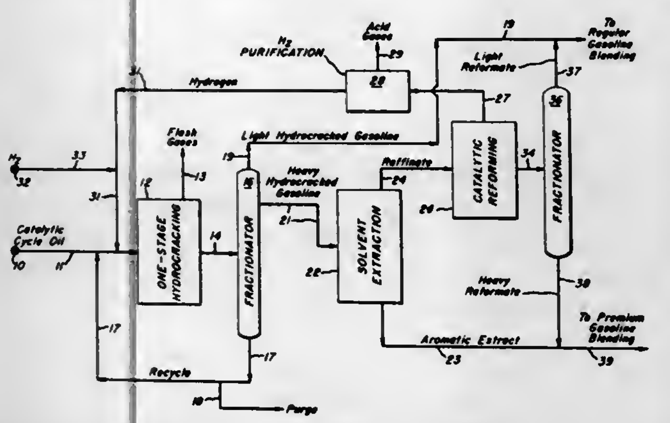


1. An electrode assembly for the extraction of metal values from earth held deposits comprising a shaped structure of titanium having electrical connecting means for the passage of electrical energy to said titanium structure, said structure being enclosed within a perforated, nonconductive housing, said housing having a lower nonperforated enclosure for the collection of sediment, said enclosure having means for withdrawing sediment therefrom on a continuous or intermittent basis.

3,894,930
CATALYST COMPRISING ULTRASTABLE ALUMINOSILICATES AND HYDROCARBON CONVERSION PROCESSES EMPLOYING SAME

Albert L. Hensley, Jr., Munster, Ind., assignor to Standard Oil Company, Chicago, Ill.

Continuation-in-part of Ser. No. 184,005, Sept. 27, 1971, abandoned, which is a continuation of Ser. No. 204, Jan. 2, 1970, abandoned, and a continuation-in-part of Ser. No. 788,832, Jan. 3, 1969, abandoned, which is a continuation-in-part of Ser. No. 753,294, Aug. 16, 1968, abandoned, which is a continuation-in-part of Ser. No. 616,876, Feb. 17, 1967, abandoned, which is a continuation-n-part of Ser. No. 485,069, May 24, 1965, abandoned. This application Sept. 4, 1973, Ser. No. 394,041
Int. Cl. C10g *13/02*
U.S. Cl. 208—60 **16 Claims**



1. A process for converting a petroleum hydrocarbon feedstock having an initial boiling point of at least 350°F. to a lower-boiling product, which process comprises contacting said feedstock with a hydrocracking catalytic composition in a hydrocracking reaction zone in the presence of a hydrogen-affording gas under hydrocracking conditions, said catalytic composition comprising a metallic hydrogenation component on a co-catalytic acidic cracking component support, said metallic hydrogenatic component comprising one or more members selected from the group consisting of (1) a Group VIA metal and a Group VIII metal, (2) their oxides, (3) their sulfides, and (4) mixtures thereof, said cracking component support comprising an ultrastable, large-pore crystalline aluminosilicate material suspended in the porous matrix of a silica-alumina cracking catalyst, a substantial amount of said ultrastable, large-pore crystalline aluminosilicate material being characterized by well-defined hydroxyl infrared bands near 3700 cm^{-1} and near 3625 cm^{-1}, said ultrastable, large-pore crystalline aluminosilicate material being characterized further by a sodium content that is less than 1 weight percent, a maximum cubic unit cell dimension of 24.55 A, and a superior ability to withstand repeated wetting-drying cycles.

3,894,931
METHOD FOR IMPROVING OLEFINIC GASOLINE PRODUCT OF LOW CONVERSION FLUID CATALYTIC CRACKING

Donald M. Nace, Woodbury, and Hartley Owen, Belle Mead, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 2, 1974, Ser. No. 457,312
Int. Cl. C10g *37/04, 37/06;* **C01b** *33/28*
U.S. Cl. 208—73 **9 Claims**

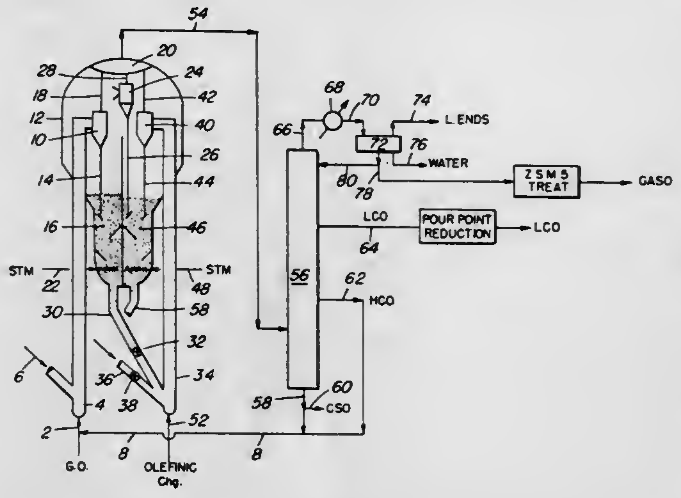
1. A method for improving the yield of light fuel oil and the octane rating of gasoline simultaneously produced in the operation which comprises,

converting a relatively high boiling hydrocarbon charge material to a lower boiling light fuel oil product of relatively high pour point by contacting the hydrocarbon charge with a crystalline zeolite cracking catalyst comprising a faujasite conversion catalyst under temperature, pressure, catalyst/oil ratio and a hydrocarbon residence time selected to obtain conversion of the charge to light fuel oil in an amount exceeding about 50 vol. percent based on fresh feed along with a highly olefinic gasoline product,

reducing the pour point of the light fuel oil product to within the range of −35°F. to +30°F. by contact with a ZSM-5 containing crystalline zeolite conversion catalyst,

contacting an olefin rich gasiform charge with the crystalline zeolite cracking catalyst above identified for producing light fuel oil at a temperature within the range of 800°F. to about 1100°F. and a hydrocarbon feed residence time within the range of 7 to 17 seconds to obtain dimerization and cyclization of olefinic constituents to aromatics and higher boiling material, and

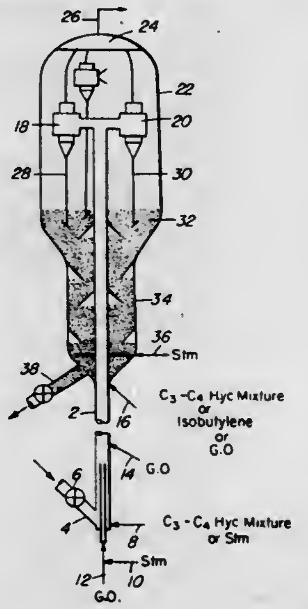
mixing high boiling material in the light fuel oil boiling range produced from said olefin rich charge with the light fuel oil product of said limited conversion cracking operation.



3,894,932
CONVERSION OF HYDROCARBONS WITH "Y" FAUJASITE-TYPE CATALYSTS

Hartley Owen, Belle Mead, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 19, 1973, Ser. No. 417,001
Int. Cl. 760 *673;* **C10g** *37/02, 11/18;* **B01j** *9/20*
U.S. Cl. 208—74 **4 Claims**



1. A method for converting hydrocarbons with faujasite conversion catalyst which comprises,

passing an upflowing suspension of hot regenerated faujasite conversion catalyst in a C_3-C_4 gaseous hydrocarbon fraction at a temperature of about 1250°F. through a lower annular portion of a riser conversion zone for a residence time in the range of 0.1 to 2 seconds,

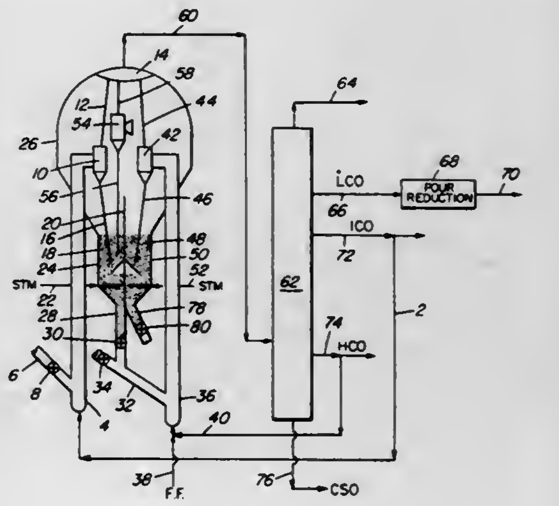
introducing a higher boiling hydrocarbon fraction of at least gas oil boiling range into said upflowing suspension downstream of said annular zone at one or more spaced apart downstream intervals and converting the introduced higher boiling fraction at a temperature in the range of 900°F. to 1000°F. at a hydrocarbon residence time up to about 10 seconds to a product rich in aromatics,

separating the suspension following traverse of said riser conversion zone into a hydrocarbon phase and a catalyst phase, and sequentially stripping and regenerating said separated catalyst phase.

3,894,933
METHOD FOR PRODUCING LIGHT FUEL OIL

Hartley Owen, Belle Mead, and Paul B. Venuto, Cherry Hill, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 2, 1974, Ser. No. 457,311
Int. Cl. C10g *37/06;* **C01b** *33/28*
U.S. Cl. 208—77 **10 Claims**



1. A method for producing light cycle oil from higher boiling hydrocarbon feed materials which comprises,

passing a relatively high boiling hydrocarbon feed material with a cracking catalyst of limited activity through a first conversion zone maintained under conditions to limit conversion of the hydrocarbon feed to gasoline and lower boiling products,

recovering a hydrocarbon phase from said first conversion zone and separating in a fractionation zone said hydrocarbon phase into a desired light fuel oil product, an intermediate cycle oil product and a higher boiling cycle oil product,

passing said higher boiling cycle oil product to said first conversion zone,

passing said intermediate cycle oil product to a second conversion zone for contact with a cracking catalyst of limited activity under limited conversion conditions particularly selected to produce light fuel oil product, and recovering said light fuel oil product in said fractionation zone,

passing catalyst separated from said second conversion zone to said first conversion zone, and

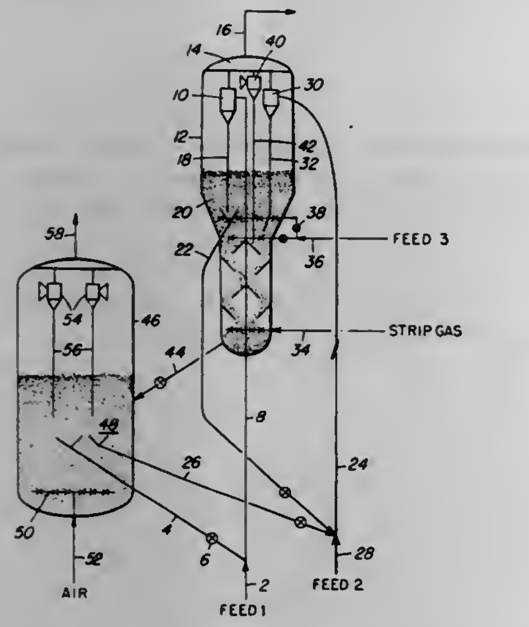
reducing the pour point of said light fuel oil product recovered from said conversion operations by contact with a ZSM-5 type of crystalline zeolite.

3,894,934

CONVERSION OF HYDROCARBONS WITH MIXTURE OF SMALL AND LARGE PORE CRYSTALLINE ZEOLITE CATALYST COMPOSITIONS TO ACCOMPLISH CRACKING CYCLIZATION, AND ALKYLATION REACTIONS

Hartley Owen, Belle Mead, and Edward J. Demmel, Pitman, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 19, 1972, Ser. No. 316,614
Int. Cl. C10g *37/02*; C01b *33/28*
U.S. Cl. 208—78 **10 Claims**



1. A method for converting hydrocarbons with a dual function conversion catalyst comprising a large pore faujasite type crystalline zeolite cracking component and a crystalline aluminosilicate of the ZSM-5 type having a pore size restricted to within the range of 5 to 9 Angstroms which comprises,

cracking a gas oil feed with said dual function catalyst particles in a first dispersed catalyst phase conversion zone at a temperature selected from within the range of 1000°F. to 1200°F. at a catalyst residence time of not more than about 5 seconds,

converting a C_3 containing hydrocarbon feed in a second separate dispersed catalyst phase conversion zone in the presence of said dual function catalyst particles, a portion of which was used in said first conversion zone at a temperature within the range of 500° to 1000°F. relying upon a catalyst residence time in excess of 5 seconds,

recovering catalyst particles separated from each of said first and second conversion zones as a dense fluid bed of catalyst particles, stripping the dense fluid bed of catalyst particles of vaporous hydrocarbons, regenerating the stripped catalyst to remove deposited hydrocarbonaceous material, passing regenerated catalyst to at least said first conversion zone,

and contacting particles of catalyst separated from said first conversion zone in said second conversion zone at a temperature less than 1000°F. with a C_3 containing hydrocarbon material obtained as a portion of the product of said first conversion zone.

3,894,935

CONVERSION OF HYDROCARBONS WITH "Y" FAUJASITE-TYPE CATALYSTS

Hartley Owen, Belle Mead, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 19, 1973, Ser. No. 417,002
Int. Cl. C10g *37/02, 11/18*; B01j *9/20*
U.S. Cl. 208—78 **6 Claims**

1. In a process for converting hydrocarbons in the presence of a faujasite catalyst, the improvement which comprises passing a fluid particle size faujasite conversion catalyst at an elevated conversion temperature to the lower portion of each of two separate riser conversion zones,

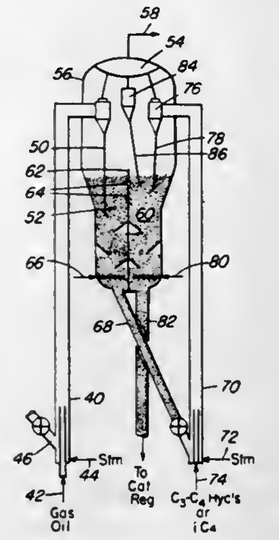
passing a high boiling gas oil hydrocarbon fraction as feed to the lower portion of one of said riser conversion zones under conditions to form a catalyst/oil suspension in the range of 4–20/1 at a temperature of at least 950°F. which is passed through said riser conversion zone,

passing a low boiling hydrocarbon fraction rich in C_3 and C_4 hydrocarbons to the other of said riser conversion zones under conditions to form a catalyst/hydrocarbon suspension at a temperature in the range of 700°F. to 1100°F which is then passed through the second riser conversion zone at a hydrocarbon residence time within the range of 1 to 15 seconds,

discharging a catalyst/hydrocarbon suspension from each riser conversion zone and separating the suspensions into a relatively dense fluid catalyst phase and a hydrocarbon phase,

recovering the hydrocarbon phase separated from each conversion zone as a combined phase of hydrocarbons, and

stripping the dense fluid catalyst phase separated from each conversion zone.



3,894,936

CONVERSION OF HYDROCARBONS WITH "Y" FAUJASITE-TYPE CATALYSTS

Hartley Owen, Belle Meade, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 19, 1973, Ser. No. 417,003
Int. Cl. C10g *37/02, 11/18*; B01j *9/20*
U.S. Cl. 208—78 **7 Claims**

1. A method for upgrading hydrocarbons with a faujasite crystalline zeolite conversion catalyst which comprises,

passing a suspension of faujasite zeolite conversion catalyst dispersed in a high boiling hydrocarbon fraction at a temperature within the range of 950°F. to about 1,100°F. upwardly through a first riser conversion zone at a hydrocarbon residence time within the range of 2 to 10 seconds,

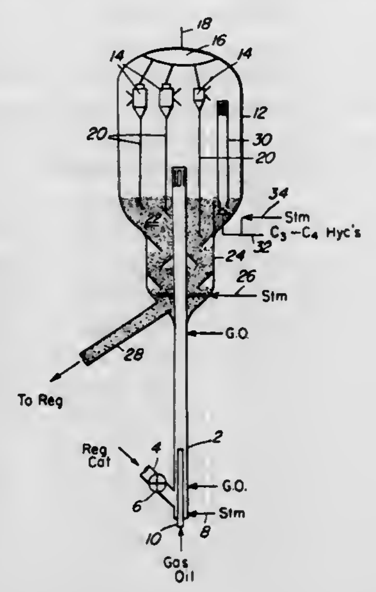
discharging the suspension from said first conversion zone into a separation zone above a fluid bed of catalyst and passing separated catalyst into said fluid bed,

mixing catalyst particles in an upper portion of said fluid bed of catalyst with a hydrocarbon feed rich in C_4 and lower boiling hydrocarbons to form a second suspension at a temperature in the range of 700° to 1,050°F.,

passing the second suspension comprising C_4 hydrocarbons upwardly through a second riser conversion zone extending from an upper portion of said fluid bed of catalyst into the upper portion of a catalyst-hydrocarbon vapor separation zone, said second suspension maintained at a temperature, space velocity and catalyst/hydrocarbon ratio selected to convert the C_4 and lighter hydrocarbons to form aromatics,

separating hydrocarbon conversion products and catalyst upon discharge from said second conversion zone,

recovering hydrocarbon products of said conversion zones, and passing catalyst separated from each conversion zone through a stripping zone before effecting regeneration thereof.

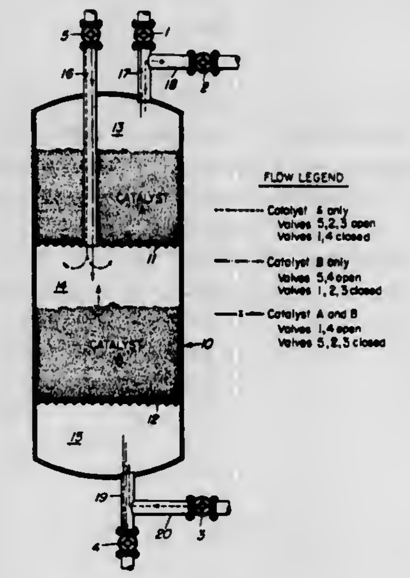


3,894,937

DUAL CATALYST CONVERTER AND PROCESS

John C. Bonacci, Cherry Hill, and Kenneth M. Mitchell, Marlton, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 338,467, March 6, 1973, Pat. No. 3,844,934. This application June 21, 1974, Ser. No. 481,592
Int. Cl. C10g *37/06*
U.S. Cl. 208—89 **1 Claim**



1. A new use for a dual catalyst converter having a bed of shape selective hydrocracking catalyst and a bed of hydrotreating catalyst to afford flexibility in operation to pass reactants selectively through both beds in sequence or through either bed alone which comprises:

- a. arranging the two discrete beds in spaced apart relation and each spaced from the extremity of the converter adjacent thereto thereby providing a common plenum chamber between the beds and a terminal plenum chamber adjacent each bed on the side thereof remote from the other bed;
- b. providing inlet means to the common plenum chamber;
- c. providing both inlet means and outlet means to each of the terminal plenum chambers;
- d. supplying a hydrocarbon charge convertible by both of said catalysts in sequence to the said terminal plenum chamber adjacent one of said beds and withdrawing conversion products from the other of said terminal plenum chambers whereby the conversions characteristic of said two catalysts are accomplished in sequence; and
- e. interrupting the flow recited in (d) and selectively accomplishing conversion by one of said catalyst alone by introducing a hydrocarbon charge convertible by a selected one of said catalyst beds to said common plenum chamber and withdrawing conversion products from the terminal plenum chamber adjacent the said selected catalyst bed.

3,894,938

CATALYTIC DEWAXING OF GAS OILS

Robert L. Gorring, Washington Crossing, Pa., and George F. Shipman, Trenton, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed June 15, 1973, Ser. No. 370,265
Int. Cl.^{2} C10G *37/00*
U.S. Cl. 208—97 **4 Claims**

1. In the process of reducing the pour point of a sulfur and nitrogen containing gas oil boiling in the range of 400° to 900°F by treating such with a ZSM-5 type of zeolite at about 300° to 1000°F; the improvement, whereby reducing the pour point of said gas oil and purifying such to reduce the sulfur and nitrogen content thereof, which comprises subjecting said gas oil first to said zeolite treatment and then subjecting the whole, unresolved zeolite treated, reduced pour point intermediate to desulfurization and denitrogenation.

3,894,939

PRODUCTION OF LOW POUR POINT GAS OIL AND HIGH OCTANE NUMBER GASOLINE

William E. Garwood, Haddonfield, N.J., and John J. Wise, Media, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 24, 1973, Ser. No. 391,380
Int. Cl.^{2} C10G *13/02*; C07C *3/52*
U.S. Cl. 208—111 **9 Claims**

1. A process of upgrading petroleum fractions which comprises contacting an admixture of a gasoline boiling range fraction having a boiling range of at least about C_6 to 239°F which contains at least about 20 weight percent aromatics and a gas oil fraction having an end point up to about 850°F and a pour point of at least about +20°F with a catalyst comprising a zeolite consisting essentially of a synthetic crystalline aluminosilicate zeolite derived in an organic cation containing form and having a silica to alumina ratio of at least about 12 to 1; converting said admixture at a space velocity of about 0.5 to 20 WHSV and at a temperature of about 500° to 1,000°F to a product comprising a gas oil fraction having a lower pour point, a gasoline fraction having a higher octane and a light gas fraction; and resolving said product into said gas oil fraction, said gasoline fraction and said light gas fraction.

3,894,940
HYDROCARBON CRACKING CATALYSTS WITH PROMOTER MIXTURES

Julius Scherzer; David Evan William Vaughan, both of Columbia, and Edwin W. Albers, Annapolis, all of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Nov. 15, 1973, Ser. No. 416,128
Int. Cl. B01j *9/20;* **C01b** *33/28*
U.S. Cl. 208—120 **5 Claims**

1. A process for converting hydrocarbons to a product containing a high percentage of gasoline which comprises contacting a gas oil feedstock under hydrocarbon cracking conditions with a catalyst comprising a rare earth hydrogen exchanged faujasite having a silica to alumina ratio of 3.0 to 6.0 and a hydrogen ferrierite in a ratio of 10 to 1 to 1 to 1 and recovering the products formed thereby.

3,894,941
PROCESS FOR CONVERTING MERCAPTANS TO ALKYL SULFIDES

Paul G. Bercik, Trafford, and Kirk J. Metzger, Pittsburgh, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

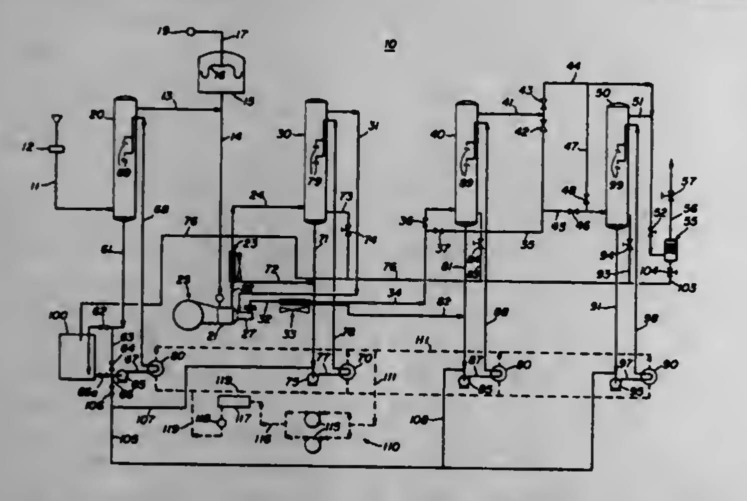
Filed Dec. 14, 1973, Ser. No. 424,728
Int. Cl. C10g *29/20, 29/04*
U.S. Cl. 208—290 **10 Claims**

1. A process for converting mercaptans to alkyl sulfides which comprises contacting in a mercaptan conversion zone a mercaptan-containing hydrocarbon feed having from 3 to 12 carbon atoms per molecule and wherein the concentration of mercaptan sulfur does not exceed 5,000 consisting with a tertiary olefin selected of the group consisitnig of isobutylene, 2-methyl-1-butene, 2-methyl-1-pentene, 2, 3-dimethylbutene-1, and higher molecular weight homologues and with a catalyst composition comprising a metal selected from the group consisting of Group VI-B and Group VIII metals and a support selected from the group consisting of semi-crystalline aluminosilicates and amorphous silica-aluminas, the concentration of said tertiary olefin in said mercaptan zone being in the range of 0.1 to 20 liquid volume percent, and recovering a hydrocarbon product from said conversion zone substantially free of mercaptans.

3,894,942
VOLATILE GASOLINE VAPOR RECOVERY SYSTEM

James Mair, Chicago, Ill., assignor to General American Transportation Corporation, Chicago, Ill.

Filed Mar. 23, 1971, Ser. No. 127,259
Int. Cl. F25j *3/02*
U.S. Cl. 208—308 **8 Claims**

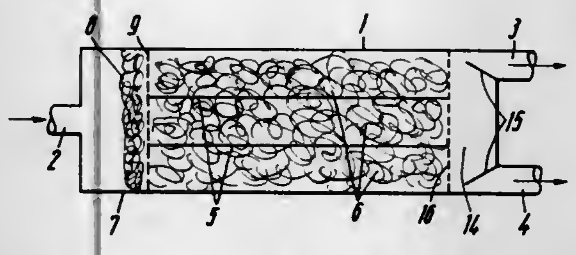


1. Apparatus for recovering volatile liquids from a vapor stream, said apparatus comprising a plurality of introductory stages and a terminal stage of condensing apparatus; each of said introductory stages including a compressor having an inlet and an outlet, vapor cooling means having an inlet connected to the outlet of said compressor and an outlet, a condenser having a vapor inlet and a vapor outlet and a liquid product inlet and first and second liquid product outlets, said vapor inlet being disposed adjacent to the bottom of said condenser and being connected to the outlet of said vapor cooling means for introducing a cooled compressed vapor stream into said condenser, liquid product cooling means having an inlet connected to the first liquid product outlet of said condenser and an outlet and being operative for subcooling recovered liquid product to a temperature below that of the cooled compressed vapor stream, said liquid product inlet being disposed adjacent to the top of said condenser and being connected to the outlet of said liquid product cooling means for introducing subcooled liquid product into said condenser in countercurrent relationship and direct contact with the cooled compressed vapor stream to effect condensation thereof and thereby form liquid product and a residual vapor stream; said terminal stage including a condenser having a vapor outlet and a liquid product liquid product inlet and first and second liquid product outlets, said terminal stage vapor inlet being disposed adjacent to the bottom of said terminal stage condenser for introducing thereinto the residual vapor stream from said last introductory stage, terminal stage liquid product cooling means having an inlet connected to the first liquid product outlet of said terminal stage condenser and an outlet and being operative for subcooling recovered liquid product to a temperature below that of the last residual vapor stream, said terminal stage liquid product inlet being disposed adjacent to the top of said terminal stage condenser and being connected to the outlet of said terminal stage liquid product cooling means for introducing subcooled liquid product into said terminal stage condenser in countercurrent relationship and direct contact with said last residual vapor stream to effect condensation thereof and thereby form liquid product and an output vapor stream; the inlet of said first introductory stage compressor being connected to a vapor source for delivering an input vapor stream to said compressor; the inlet of the compressor of each of said other stages being connected to the vapor outlet of the condenser of the immediately preceding stage for receiving the residual vapor stream therefrom; vent means connected to the vapor outlet of said terminal stage condenser for discharging to the atmosphere the output vapor stream therefrom; and a liquid product reservoir connected to the second liquid product outlet of each of said condensers for receiving and storing recovered liquid product.

3,894,943
METHOD AND APPARATUS OF ACCELERATING THE SEPARATION OF LIQUID DISPERSIONS

Rainer Hartmann, and Otto Kunz, both of Frankfurt am Main, Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed Dec. 21, 1972, Ser. No. 317,443
Claims priority, application Germany, Dec. 24, 1971, 2164476
Int. Cl. B01d *13/00*
U.S. Cl. 210—23 **9 Claims**

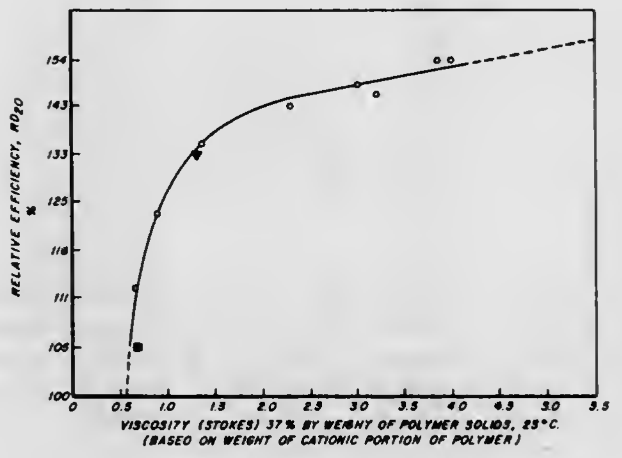


1. Apparatus for accelerating the separation of liquid dispersions, comprising a separating vessel having an inlet for the liquid dispersion to be separated, outlets for the separated phases, the interior of said separating vessel having a plurality of spaced apart parallel partition means extending in the direction of flow and at right angles to the gravitational field and a plurality of layers of packing material filling the space between said partition means, said partition means being corrugated or zigzag-shaped plates, having crests and valleys, said plates being vertically aligned and extending in the direction of flow.

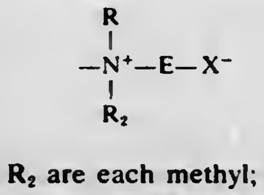
3,894,944
PROCESS FOR RAW WATER CLARIFICATION

Hans Peter Panzer, Stamford, Conn., and Kenneth Wayne Dixon, Ypsilanti, Mich., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 347,274, April 2, 1973, abandoned, which is a division of Ser. No. 233,622, Feb. 4, 1972, Pat. No. 3,738,945, which is a continuation-in-part of Ser. No. 115,556, Feb. 16, 1971, abandoned. This application Feb. 25, 1974, Ser. No. 445,402
Int. Cl.^{2} C02B *1/20*
U.S. Cl. 210—54 **6 Claims**



1. A process for clarifying raw water which comprises treating said water with an effective amount of a water-dispersible polyquaternary polymer of essentially linear structure comprising the difunctional reaction product of dimethylamine and a difunctional epoxy compound selected from the group consisting of epihalohydrins and precursors of epihalohydrins which under alkaline conditions are readily converted into the corresponding epoxy compounds, and mixtures thereof, said polyquaternary compound containing repeating units of



$$-\overset{R}{\underset{R_2}{N^+}}-E-X^-$$

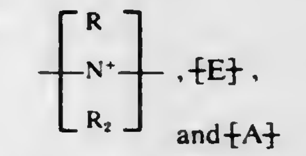
wherein R and R_2 are each methyl; E is a residue obtained from said epoxy compound; the total amounts of reactants being substantially equimolar, the combination of which is such as to provide a polyquaternary compound which as a 37% aqueous solution, by weight, based on the cationic portion of said polyquaternary compound has a viscosity at 25°C. of at least 100 centistokes; and X^- represents an anion forming the anionic portion of said polyquaternary; and thereafter recovering the clarified water.

3,894,945
PROCESS FOR RAW WATER CLARIFICATION

Hans Peter Panzer, Stamford, Conn., and Kenneth Wayne Dixon, Ypsilanti, Mich., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 347,274, April 2, 1973, abandoned, which is a division of Ser. No. 233,622, Feb. 4, 1972, Pat. No. 3,738,945, which is a continuation-in-part of Ser. No. 115,556, Feb. 16, 1971, abandoned. This application Feb. 25, 1974, Ser. No. 445,401
Int. Cl.^{2} C02B *1/20*
U.S. Cl. 210—54 **7 Claims**

1. A process for clarifying raw water by sedimentation of solids by action of a quick-acting flocculant which process comprises treating said water with an effective amount of a water-dispersible polyquaternary comprising the reaction product of dimethylamine, a polyfunctional amine, and a difunctional epoxy compound selected from the group consisting of epihalohydrins and precursors for epihalohydrins which under alkaline conditions are readily converted into the corresponding epoxy compounds, and mixtures thereof, said polyquaternary polymer containing repeating units of the structures



$$\left[-\overset{R}{\underset{R_2}{N^+}}-\right],\ -[E]-,\ \text{and}\ -[A]-$$

as the cationic portion and X^- as the anionic portion wherein R and R_2 are each methyl; E is a residue obtained from said epoxy compound; A is a residue obtained after at least bifunctional epoxy reaction from a polyfunctional amine selected from ethylenediamine and polyethylenepolyamines of the structure

$$H_2N-[CH_2CH_2NH]_y-CH_2CH_2NH_2$$

wherein y represents an integer of about 1 to 5; X^- is an anion forming the anionic portion of said polyquaternary compound; the amount of said polyfunctional amine being up to about 15 mole percent of the total moles of said dimethylamine and said polyfunctional amine, the amount of said E being from at least that amount which is equimolar to the molar quantities of said amines up to the full functional equivalency of said amines, so as to provide a polyquaternary compound which as a 37% aqueous solution based on the cationic portion of said polyquaternary compound has a viscosity at 25°C. of at least 100 centistokes; and the amount of said anion present is such as to satisfy anion requirements of the cationic portion of said polyquaternary compound; and thereafter recovering the clarified water.

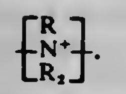
3,894,946
PROCESS FOR TREATING INDUSTRIAL WASTES

Hans Peter Panzer, Stamford, Conn., and Kenneth Wayne Dixon, Ypsilanti, Mich., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 347,274, April 2, 1973, abandoned, which is a division of Ser. No. 233,622, Feb. 4, 1972, Pat. No. 3,738,945, which is a continuation-in-part of Ser. No. 115,556, Feb. 16, 1971, abandoned. This application Feb. 25, 1974, Ser. No. 445,399
Int. Cl.^{2} C02B *1/20*
U.S. Cl. 210—54 **6 Claims**

1. A process for flocculating flocculatable industrial wastes which are in the form of aqueous dispersions having negative charges which process comprises adding to the dispersion an effective amount of a water-dispersible polyquaternary polymer comprising the reaction product of dimethylamine, a polyfunctional amine, and a difunctional epoxy compound selected from the group consisting of epihalohydrins and precursors for epihalohydrins which under alkaline conditions are readily converted into the corresponding epoxy compounds, and mixtures thereof, said polyquaternary polymer

containing repeating units of the structures



$$\left[\begin{matrix}R\\N^{+}\\R_2\end{matrix}\right].$$

$\{E\}$, and $\{A\}$

as the cationic portion, and X^- as the anionic portion wherein R and R_2 are each methyl; E is the residue obtained from said epoxy compound; A is a residue obtained after at least difunctional epoxy reaction from a polyfunctional amine selected from the group consisting of ethylenediamine and polyethylenepolyamines of the structure

$$H_2N\left[CH_2CH_2NH\right]_y CH_2CH_2NH_2$$

wherein *y* represents an integer of about 1 to 5; X^- is an anion forming the anionic portion of said polyquaternary compound; the amount of said polyfunctional amine being up to about 15 mole percent of the total moles of said dimethylamine and said polyfunctional amine, the amount of said E being from at least that amount which is equimolar to the molar quantities of said amines up to the full functional equivalency of said amines, so as to provide a polyquaternary compound which as a 37% aqueous solution based on the cationic portion of said polyquaternary compound has a viscosity of at least 100 centistokes; and the amount of said anion present is such as to satisfy anion requirements of the cationic portion of said polyquaternary compound.

3,894,947
PROCESS FOR TREATING INDUSTRIAL WASTES

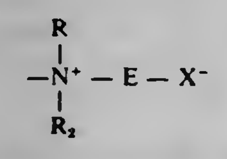
Hans Peter Panzer, Stamford, Conn., and Kenneth Wayne Dixon, Ypsilanti, Mich., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 347,274, April 2, 1973, abandoned, which is a division of Ser. No. 233,622, Feb. 4, 1972, Pat. No. 3,738,945, which is a continuation-in-part of Ser. No. 115,556, Feb. 16, 1971, abandoned. This application Feb. 25, 1974, Ser. No. 445,400

Int. Cl.² C02B *1/20*

U.S. Cl. 210—54 5 Claims

1. A process for flocculating flocculatable industrial wastes which are in the form of aqueous dispersions having negative charges which process comprises adding to the dispersion an effective amount of a water-dispersible polyquaternary polymer of essentially linear structure comprising the difunctional reaction product of dimethylamine and a difunctional epoxy compound selected from the group consisting of epihalohydrins and precursors of epihalohydrins which under alkaline conditions are readily converted into the corresponding epoxy compounds, and mixtures thereof, said polyquaternary polymer containing repeating units of



$$-\underset{R_2}{\overset{R}{N^{+}}}-E-X^{-}$$

wherein R and R_2 are each methyl; E is a residue obtained from said epoxy compound; the total amounts of reactants being substantially equimolar, the combination of which is such as to provide a polyquaternary compound which as a 37 percent aqueous solution, by weight, based on the cationic portion of said polyquaternary compound has a viscosity of at least 100 centistokes; and X^- represents an ion forming the anionic portion of said polyquaternary; and thereafter removing water from the dispersion.

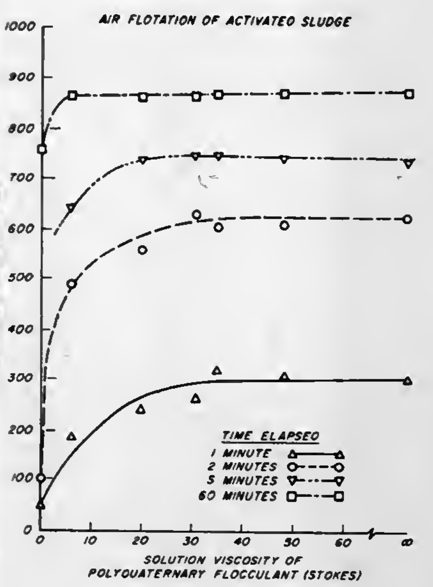
3,894,948
PROCESS FOR TREATING SEWAGE SLUDGE

Hans Peter Panzer, Stamford, Conn., and Kenneth Wayne Dixon, Ypsilanti, Mich., assignors to American Cyanamid Company, Stamford, Conn.

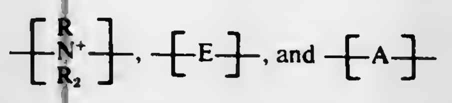
Continuation-in-part of Ser. No. 347,247, April 2, 1973, abandoned, which is a division of Ser. No. 233,622, Feb. 4, 1972, Pat. No. 3,738,945, which is a continuation-in-part of Ser. No. 115,556, Feb. 16, 1971, abandoned. This application Feb. 25, 1974, Ser. No. 445,177

Int. Cl.² C02B *1/20*

U.S. Cl. 210—54 7 Claims



1. A method of treating sewage sludge which comprises adding to said sludge an effective amount of a water-dispersible polyquaternary polymer comprising the reaction product of dimethylamine, a polyfunctional amine, and a difunctional epoxy compound selected from the group consisting of epihalohydrins and precursors for epihalohydrins which under alkaline conditions are readily converted into the corresponding epoxy compounds, and mixtures thereof, said polyquaternary polymer containing repeating units of the structures



$$-\left[\begin{matrix}R\\N^{+}\\R_2\end{matrix}\right]-,\ -\left[E\right]-,\ \text{and}\ -\left[A\right]-$$

as the cationic portion, and X^- as the anionic portion wherein R and R_2 are each methyl; E is a residue obtained from said epoxy compounds; A is a residue obtained after at least bifunctional epoxy reaction from a polyfunctional amine selected from the group consisting of ethylenediamine and polyethylenepolyamines of the structure

$$H_2N-\left[CH_2CH_2NH\right]_y-CH_2CH_2NH_2$$

wherein *y* represents an integer of about 1 to 5; X^- is an anion forming the anionic portion of said polyquaternary compound; the amount of said polyfunctional amine being up to about 15 mole percent of the total moles of said dimethylamine and said polyfunctional amine, the amount of said E being from at least that amount which is equimolar to the molar quantities of said amines up to the full functional equivalency of said amines, so as to provide a polyquaternary compound which as a 37% aqueous solution based on the cationic portion of said polyquaternary compound has a viscosity at 25°C. of at least 800 centistokes; and the amount of said anion present is such as to satisfy anionic requirements of the cationic portion of said polyquaternary compound, and thereafter removing water from said sludge.

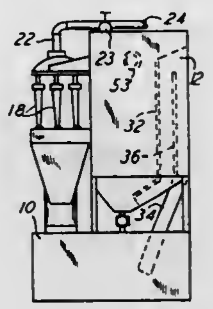
3,894,949
SEPARATOR APPARATUS FOR SEPARATING LIQUIDS FROM A LIQUID MIXTURE

Siegmund J. Enzmann, 5222 Athens Ave., Racine, Wis. 53206

Continuation-in-part of Ser. No. 400,783, Sept. 26, 1973, abandoned. This application Feb. 4, 1974, Ser. No. 439,355

Int. Cl.² B01D *21/26*

U.S. Cl. 210—109 17 Claims



1. Separator apparatus for separately recovering two different liquids and solids from a liquid mixture, comprising two tanks disposed in an upper and lower relationship and with each including a bottom and upright side walls for containing a liquid mixture which includes solids and two liquids of different weights, liquid-flow members extending between said tanks for liquid flow therebetween and with said members terminating in an inlet opening for the entry of said liquid mixture into the upper one of said tanks, a liquid conduit having a liquid entrance disposed adjacent said bottom of said upper tank in liquid-flow communication with said upper tank, said said entrance for flotationally filling said conduit with liquid from the lower portion of said upper tank, said conduit having a liquid outlet disposed at an elevation higher than the elevation of said entrance, for the flow of liquid out of said conduit to establish the upper level of the liquid mixture in said upper tank, said upper tank having a liquid skimmer flow member presenting a tank flow outlet disposed at an elevation higher than the elevation of said entrance for skimming the lighter weight liquid off the upper portion of said liquid mixture, said liquid outlet and said bottom of the lower one of said tanks being at relative elevations such that said liquid outlet is at an elevation higher than said bottom of said lower tank, an additional liquid flow member extending between said tanks and being in liquid-flow communication with said liquid outlet and said lower tank for passing the remainder of said liquid mixture to said lower tank from whence said remainder can be re-cycled through the first-mentioned said liquid-flow members and to said upper tank, a liquid tap-off connection in liquid-flow communication with said first-mentioned liquid-flow members for diverting a selected quantity of said liquid away from flow to said upper tank, and a hydrocyclotron being in fluid-flow connection with said first-mentioned liquid-flow members for directing the liquid mixture toward said inlet opening in said upper tank, and said hydrocyclotron having an outlet opening for directing said solids out of said liquid mixture.

3,894,950
SERUM SEPARATOR IMPROVEMENT WITH STRETCHABLE FILTER DIAPHRAGM

Waldemar A. Ayres, Rutherford, and Donald A. Kay, West Milford, both of N.J., assignors to Becton, Dickinson and Company, East Rutherford, N.J.

Filed Feb. 27, 1974, Ser. No. 446,354

Int. Cl. B01d *21/26*

U.S. Cl. 210—131 2 Claims

1. A self-contained fluid separator assembly, capable of separating blood into its component parts of plasma or serum and cellular portion, comprising:

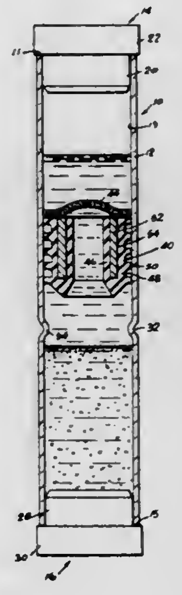
a. a container having open ends at least one of which is adapted to receive blood for subsequent separation into a light phase and a heavy phase;

b. a removable closure sealing each open end of the container, the closures being formed of a self-sealing elastomeric material at least one of which is penetrable by a cannula through which blood to be separated is conducted into the container;

c. a piston having a specific gravity relatively greater than the cellular portion of the blood and slidably mounted in the container and having means on an outer surface for providing sealing engagement with an inner surface of the container said sealing means being further constructed and arranged to maintain the piston substantially stationary when subjected to a moderate centrifugal force and to permit the piston to move when subjected to a substantially greater centrifugal force;

d. pressure responsive stretchable filter diaphragm means having micro pores therein and being associated with said piston, said diaphragm means being constructed and arranged to normally close off all liquid flow through its pores when there is a minimum of pressure differential on each side thereof and which automatically stretches to enlarge its pores in response to a substantial pressure differential so that when said container is subjected to said moderate centrifugal force the blood separates into its light phase and heavy phase but the piston stays in the upper portion of the container, and subsequently when subjected to said substantially greater centrifugal force, the pores of the diaphragm means automatically enlarge to allow only the light phase to pass therethrough while enabling the piston to move down through the light phase while retaining sealing engagement with the inner surfaces of the container; and

e. mechanical stop means on the container whereby the piston when moving through the light phase will stop a predetermined distance from one of the ends of the container followed by termination of the differential pressure which permits the diaphragm means to automatically shift to its initial condition at which it provides a barrier between the separated light phase and heavy phase of the blood.



3,894,951

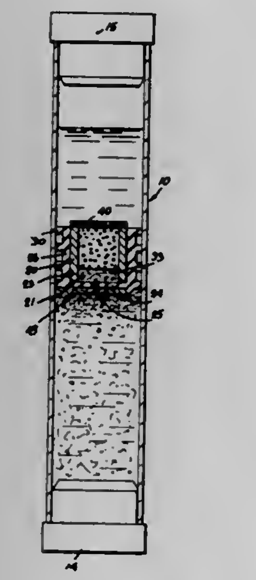
SERUM/PLASMA SEPARATOR; INTERFACE SEEKING PISTON; RESILIENT APERTURES IN LOWER DIAPHRAGM TYPE

Waldemar A. Ayres, Rutherford, N.J., assignor to Becton, Dickinson and Company, East Rutherford, N.J.

Filed Feb. 27, 1974, Ser. No. 446,356. The portion of the term of this patent subsequent to May 6, 1992, has been disclaimed.

Int. Cl. B01d *21/26*

U.S. Cl. 210—136 **6 Claims**



1. A separator assembly capable of separating blood into a plasma/serum or light phase and a cellular or heavy phase comprising:

a container having at least one open end which is adapted to receive blood for subsequent separation into a light phase and a heavy phase;

a closure sealing the open end of the container, the closure being formed of a self-sealing, elastomeric material which is penetrable by a cannula through which blood to be separated is conducted into the container;

an interface-seeking piston assembly having an average specific gravity relatively greater than blood and slidably mounted in the container, adjacent one end thereof and being movable downwardly in said container due to the influence of centrifugal force, said piston having means on an outer surface for providing sealing engagement with an inner surface of the container;

said piston including a resilient diaphragm having apertures formed therein and mounted at the lower end thereof, said apertures being normally closed and adapted to open during the downward movement of the piston

a filter assembly mounted on said piston and being in fluid communication with said diaphragm, said filter assembly including a coarse filter disposed adjacent said diaphragm, said coarse filter having an average pore size greater than the cellular phase of blood, but small enough to remove fibrin strands, and a fine filter having pore openings smaller than said cellular phase, said fine filter disposed in tandem relation with and above said coarse filter so that said coarse filter pre-filters all serum/plasma which passes through the apertures of said diaphragm during operation of the assembly before said plasma/-serum reaches said fine filter, said filter assembly being capable of removing substantially all solid material from the separated plasma/serum phase; and

said fine filter providing piston stop means when said piston is at the plasma/serum-cellular interface whereby the cellular phase clogs the filter to prevent the upward flow of plasma/serum through said filter assembly whereby the piston automatically stops at said interface and the diaphragm apertures automatically close.

3,894,952

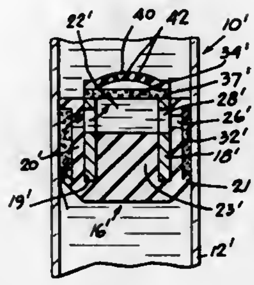
SERUM/PLASMA SEPARATOR ASSEMBLY HAVING INTERFACE-SEEKING PISTON

Waldemar A. Ayres, Rutherford, N.J., assignor to Becton, Dickinson and Company, East Rutherford, N.J.

Filed Feb. 27, 1974, Ser. No. 446,357. The portion of the term of this patent subsequent to June 24, 1992, has been disclaimed.

Int. Cl. B01d *21/26*

U.S. Cl. 210—136 **11 Claims**



1. A separator assembly capable of separating blood into a plasma/serum or light phase and a cellular or heavy phase comprising:

a container having at least one open end which is adapted to receive blood for subsequent separation into a light phase and a heavy phase;

a closure sealing the open end of the container, the closure being formed of a self-sealing, elastomeric material which is penetrable by a cannula through which blood to be separated is conducted into the container;

an interface-seeking piston having a specific gravity greater than blood and slidably mounted in the container adjacent one end thereof and adapted to move downwardly in said container under the influence of centrifugal force;

said piston having at least two spaced sealing rings on an outer surface in sealing engagement with the inner surface of the container;

said piston having a passage for conducting separated serum/plasma;

one of said seal rings being deformable to provide an opening to connect said passage with the container below the piston;

coarse filter means mounted on said piston and being in fluid communication with said passage so that all the separated plasma/serum is filtered as the piston moves downwardly in the container, said coarse filter having pore sizes large enough to pass the cellular phase of the blood but small enough to remove fibrin strands; and

fine filter means having a pore size smaller than said cellular phase, mounted on said piston so as to receive the plasma/serum filtered by the coarse filter means whereby when the piston reaches said interface it will automatically stop.

3,894,953

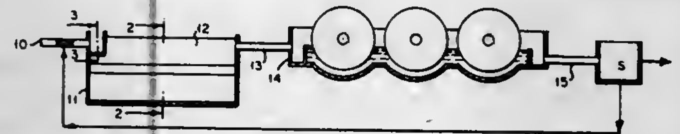
WASTEWATER TREATMENT PLANT

Wilbur N. Torpey, Douglaston, N.Y., assignor to Autotrol Corporation, Milwaukee, Wis.

Filed May 29, 1973, Ser. No. 364,509

Int. Cl. C02c *1/04*

U.S. Cl. 210—151 **10 Claims**



1. A wastewater treatment plant for treating wastewater containing settleable organic solids, comprising a settling tank structure for confining said wastewater at a predetermined depth, said tank structure being defined by a pair of side walls separated by an end wall at each end and a bottom wall, inlet means disposed adjacent one of said end walls for supplying wastewater to said settling tank, outlet means disposed adjacent the other of said end walls for removing wastewater from said settling tank, a biological treatment unit including a plurality of rotatable contactors having surface area for the growth and maintenance of aerobic biological slimes, and conduit means for supplying effluent wastewater from said outlet means of said settling tank to said biological treatment unit, said settling tank structure including a plurality of troughs extending between and communicating with said inlet and outlet means, said troughs being arranged to receive wastewater from said inlet means in parallel, and to discharge wastewater to said outlet means in parallel, each of said troughs being spaced from each other and the side walls of said settling tank structure and including passage means for permitting solids settled therein to pass into the portion of said settling tank beneath said troughs and above said bottom wall wherein settled organic solids are digested anaerobically, said plurality of troughs being adapted to provide said wastewater with a detention time in said settling tank of from about 2 to about 4 hours and supply influent wastewater to said biological treatment unit that is virtually free from significant amounts of hydrogen sulphide.

3,894,954

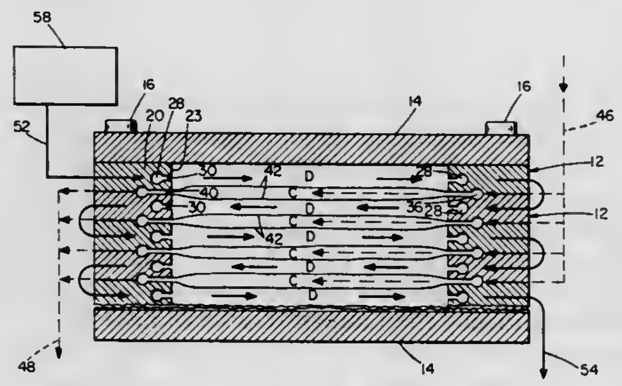
TREATMENT OF BLOOD

Juan Richardo Serur, 34A Harvard Ave., Brookline, Mass.

Filed Dec. 3, 1973, Ser. No. 421,420

Int. Cl. B01d *31/00*

U.S. Cl. 210—321 **7 Claims**



1. A device for treating blood comprising a first set of channels for blood and a second set of channels for a treatment fluid, inlet and outlet means for each channel, each channel of said first set defined by a pair of panels of semi-permeable membrane supported along spaced apart lines by supports, at least a portion of the channels of said second set defined by a pair of panels of semi-permeable membrane and a pair of adjacent supports, each pair of adjacent supports being aligned with a second pair of said supports substantially throughout the length of said channels, each set of channels comprising a plurality of layers of side-by-side channels, the layers alternating between channels of said first and second sets, said inlet and outlet means comprising means for delivering untreated blood to a first end of each channel of said first set, means for removing treated blood from a second end of each channel of said first set, means for delivering fresh treatment fluid to each treatment fluid channel in a first layer of such channels, means for removing spent treatment fluid from each treatment fluid channel in a last layer of such channels, and means interconnecting intermediate layers of such channels with said first and last layers, whereby said treatment fluid flows through said layers successively.

3,894,955

SEDIMENTATION APPARATUS FOR INCREASING THE TRANSPORT CAPACITY OF SEDIMENT

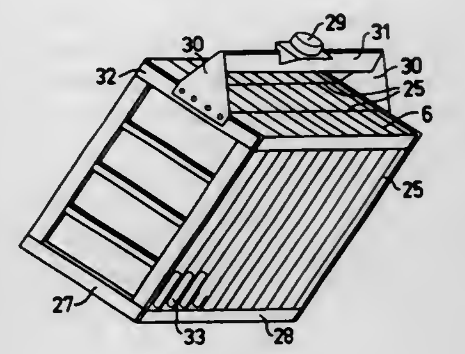
Bo Forsell, Nynashamn, Sweden, assignor to Rederiaktiebolaget Nordstjernan, Stockholm, Sweden

Filed July 9, 1974, Ser. No. 486,798

Claims priority, application Sweden, July 9, 1973, 7309625-7

Int. Cl. B01d *21/10*

U.S. Cl. 210—322 **7 Claims**



1. A sedimentation apparatus for continuously treating a liquid suspension to separate clarified liquid from sediment comprising:

a housing,

a plurality of inclined parallel plate means within said housing providing a plurality of parallel inclined passages for the passage of the liquid suspension therebetween,

inlet means for delivering said liquid suspension to all said passages,

means for mounting said plate means in yieldable connection relative to said housing,

at least one vibrator means,

means for connecting said vibrator means to said plate means for vibrating said plate means with substantially only oscillations in the direction of inclination of said plate means for preventing deposits of sediment on said plate means without disturbing the sedimentation, and

first and second means for receiving, respectively, clarified liquid and sediment discharged from said passages.

3,894,956

LUBRICANT COMPOSITION AND WICKING MATERIAL THEREFOR

James A. Whitt, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Continuation-in-part of Ser. No. 292,664, Sept. 27, 1972, abandoned. This application Oct. 18, 1973, Ser. No. 407,635

Int. Cl. C10m *5/20, 7/34, 7/30*

U.S. Cl. 252—14 **37 Claims**

1. A lubricant retaining and wicking material for releasably retaining a liquid lubricant comprising a mass of discrete, non-fibrous, multi-digited, resilienttype foam particles wherein a major portion of the particles are within a size range between approximately 20-mesh and approximately 80-mesh with the remaining particles of the mass having sizes generally between about 5-mesh and about 200-mesh exclusively of the major portion size range.

12. A lubricant composition as set forth in claim 4, wherein the foam particles have the capacity to release up to about 85 percent of the liquid lubricant retained thereby.

3,894,957

COPPER-LEAD ALLOYS FOR LUBRICANTS AND BEARINGS

Charles E. Lundin, P.O. Box 624, Evergreen, Colo. 80439, and Robert Turkisher, 218 Crystal Hills Blvd., Manitou Springs, Colo. 80829

Continuation-in-part of Ser. No. 53,953, July 10, 1970, Pat. No. 3,719,477, which is a continuation-in-part of Ser. No. 706,640, Feb. 19, 1968, Pat. No. 3,556,779. This application Jan. 4, 1973, Ser. No. 321,030

Int. Cl. C10m *1/54, 3/48, 5/28*

U.S. Cl. 252—26 **16 Claims**

1. A lubricating material comprising an oil or grease which has distributed therein a powdered homogeneous alloy, said alloy containing copper and lead and trace remnants of the products from a homogeneity promoter in molten copper and lead, said homogeneity promoter comprising elemental carbon and a metal compound selected from the group consisting of compounds of an alkali metal and an alkaline earth metal.

3,894,958

MIXED SECONDARY ALKYL AMIDE SYNTHETIC LUBRICANT COMPOSITIONS

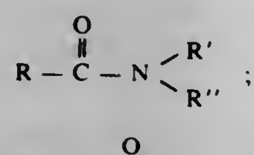
Frederic C. McCoy, Beacon, and Larry D. Grina, Wappingers Falls, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Nov. 5, 1973, Ser. No. 413,093

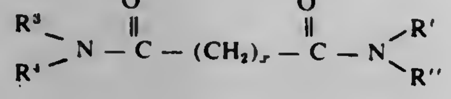
Int. Cl. C10m *1/32, 3/30*

U.S. Cl. 252—51.5 A **24 Claims**

1. A synthetic lubricant oil composition comprising a mixture of amides selected from the formulae:



; and



wherein R is selected from a hydrogen atom and an alkyl radial containing from 1 to 20 carbon atoms; each of R′ and R^3 is a radical selected from a hydrogen atom, a primary alkyl radical containing from about 1 to about 25 carbon atoms and a secondary alkyl radical containing from about 5 to about 25 carbon atoms; each of R″ and R^4 is a secondary alkyl radical of from about 5 to about 25 carbon atoms; and x is a numeral of from about 0 to about 12; and said mixture is further selected from the group of amides of the foregoing formulae wherein the secondary alkyl radicals present contain carbon chain lengths within the range substantially of 5 to 10 carbon atoms; 10 to 14 carbon atoms, 14 to 15 carbon atoms, 16 to 18 carbon atoms, 17 to 20 carbon atoms; 19 to 22 carbon atoms; and 22 to 25 carbon atoms, said amides in said mixture having secondary alkyl substituents of each of said chain lengths present therein.

3,894,959

MIXED CARBOXYLIC ACID ESTERS AS ELECTRICAL INSULATING OILS

J. Brooke Gardiner, Moutainside; Harold Shaub, New Providence, and Keith C. Tessier, Scotch Plains, all of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed Oct. 17, 1972, Ser. No. 298,379

Int. Cl. H01b *3/18*

U.S. Cl. 252—69 **10 Claims**

1. An electrical insulating oil comprising a fully esterified ester of:

a. a mixture of about 1 to 50 mole % of a C_7 to C_{14} aromatic monocarboxylic acid and about 99 to 50 mole % of a C_4 to C_{14} aliphatic monocarboxylic acid, and

b. a polyhydric alcohol selected from the group consisting of a C_3 to C_6 polyol of from 3 to 6 carbon atoms and having 2 to 4 hydroxyl groups, and a polyol ether of from 8 to 40 carbon atoms and having 2 to 12 hydroxyl groups and 1 to 5 ether groups

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3,894,960

ACTIVATED PEROXYGEN DETERGENT

Frederick William Gray, Summit, and Paul Sheldon Grand, South Bound Brook, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed May 22, 1972, Ser. No. 255,359

Int. Cl. C11d *7/18, 7/38*

U.S. Cl. 252—99 **5 Claims**

1. Built laundry detergent composition consisting essentially of (a) water soluble anionic sulfonate or sulfate detergent, (b) sodium silicate as the principal builder salt, (c) a peroxygen compound and (d) an activator for said peroxygen compound, said activator having a carboxylic acyl group, said peroxygen compound being one which reacts with said activator to form the corresponding percarboxylic acid on addition of said composition to the wash water, the ratio of c to d being from about 8:1 to 2:1 of the stoichiometric ratio for said reaction, the ratio $(a + b):c$ being at least 2:1 and the ratio $b:c$ being over 1:1, and wherein said sodium silicate has an $Na_2O:SiO_2$ ratio of about 1:2 to 1:3.

3,894,961

METHOD OF MAKING A SOLUTION OF PHOSPHOR RAW MATERIAL FOR USE IN MANUFACTURING PHOSPHORS CONTAINING TIN AS AN ACTIVATOR

Francis Nathan Shaffer, Towanda, Pa., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Continuation of Ser. No. 317,176, Dec. 21, 1972, abandoned. This application Aug. 12, 1974, Ser. No. 496,656

Int. Cl. C09k *1/36*

U.S. Cl. 252—301.4 P **4 Claims**

1. In a method of making a solution of phosphor raw materials for use in manufacturing phosphors comprised of an alkaline earth phosphate host containing tin as an activator the steps comprising: forming a first aqueous solution of alkaline earth metal ions in amounts sufficient to form said phosphor host; forming a second solution containing said tin by the steps comprising: adding to a container of phosphoric acid a given amount of −20 mesh tin metal; agitating with a magnetic stirrer while raising the temperature to about 160°C in about one-half hour until all of the tin is in solution; cooling said second solution to about 30°C; and adding said second solution to said first solution with agitation.

3,894,962

AGGREGATION OF PARTICLES OF RANEY COPPER CATALYST

Ronald J. Allain, and David G. Braithwaite, both of Brookhaven, Miss., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Apr. 20, 1973, Ser. No. 353,164

Int. Cl. B01j *31/02*

U.S. Cl. 252—430 **5 Claims**

1. A method of aggregating fines of Raney copper alloy particles not greater than 125 mesh which consists of agglomerating said fines in the presence of a non-water soluble resin adhesive selected from the group consisting of styrene adhesives and epoxy adhesives and a halidefree water-soluble inorganic salt channeling agent selected from the group consisting of an inorganic salt in which the cation is alkali metal or ammonium and the anion is selected from a member of the group consisting of sulfate, nitrate, carbonate, and bicarbonate, hardening said adhesive about said particles, crushing the adhesive-bonded particles, and subsequently thoroughly leaching out the inorganic salt with water and converting the adhesive-bonded agglomerated alloy particles with 15–20% alkali metal hydroxide at a temperature less than 30°C to produce catalytically active Raney copper with a particle size of at least 20 mesh.

3,894,963

HIGH SURFACE AREA CATALYST BODIES

William H. Gerdes, Hudson; Joseph R. Kiovsky, and Jeffrey W. Meacham, both of Kent, all of Ohio, assignors to Norton Company, Worcester, Mass.

Continuation-in-part of Ser. No. 142,003, May 10, 1971, abandoned. This application Jan. 16, 1973, Ser. No. 324,105

Int. Cl. B01j *11/08, 11/22*

U.S. Cl. 252—464 **1 Claim**

1. A self-bonded strong monolithic polycrystalline alumina catalyst body having concave surface, having a surface area from 10 to 300 square meters per gram and having a wall thickness of less than 1/16 inch combined with a wall radius of curvature greater than ⅛ inch, said body consisting essentially of alumina and a catalytic material selected from the group consisting of metals and metal oxides of copper, tin, nickel, chromium, cobalt, iron, manganese, vanadium, platinum, palladium, and mixtures thereof, produced by mixing a powder consisting of aggregates of platy micro-crystalline boehmite alumina crystals having an aggregate size of under 100 microns, with a dilute aqueous monobasic acid and a soluble compound of a metal catalyst material selected from the group of water soluble salts of copper, tin, nickel, chromium, cobalt, iron, manganese, vanadium, platinum, palladium and mixtures thereof; continuing mixing until a free-flowing mass of spheroidal catalyst-impregnated spherules of micro-crystalline boehmite is produced; forming said mix by pressure into discrete shaped bodies; and drying and firing said shaped bodies.

3,894,964

PROCESS FOR THE PREPARATION OF MOLECULAR SIEVE-SHAPED BODIES

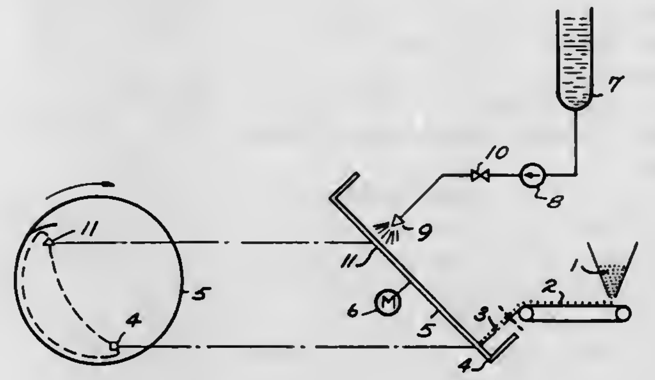
Wolfgang Roebke, Bruchkobel; Eugen Meyer-Simon, Frankfurt; Dieter Kneitel, and Erfried Parr, both of Rodenbach, all of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Germany

Filed July 6, 1973, Ser. No. 377,103

Claims priority, application Germany, July 6, 1972, 2233070

Int. Cl. B01j *11/44, 11/40*

U.S. Cl. 252—448 **3 Claims**



1. A process for producing shaped bodies of zeolitic molecular sieves of improved mechanical resistance having an average compression strength greater than 5 kp, composed of a pulverized zeolitic molecular sieve material having a water content that permits trickling and silicic acid gel as a binder for said sieve material, said process comprising concurrently dispersing an unstable silicic acid sol, having a silicic acid content greater than 10 percent by weight and a silicic acid particle BET surface greater than 150 m^2/g, and said molecular sieve zeolite onto different regions of the rotating plate of a granulation apparatus, while at the same time avoiding the formation of a plastic mass containing silicic acid sol, wherein the zeolite in a powdered form is applied by spraying onto the lower zone of said plate and the unstable silicic acid sol is sprayed in a finely divided form onto said plate in the zone of maximum velocity of the shaped bodies rolling off of the plate, and the thus produced shaped bodies are thereafter dried and activated to have an average compression strength greater than 5 kp.

3,894,965

PROCESS FOR DEPOSITING NOBLE METAL CATALYSTS

Gordon F. Foster, Campbell; Helmuth E. Meissner, Painted Post, and Janice L. Stiles, Corning, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 243,416, April 12, 1972, abandoned. This application Nov. 9, 1973, Ser. No. 414,251

Int. Cl. B01j *11/08, 11/06, 11/22*

U.S. Cl. 252—460 **2 Claims**

1. In a process for the deposition of a noble metal catalyst on a refractory monolithic honeycomb support structure which comprises the steps of providing at least the interior channel walls of the structure with an oxide support coating, applying a solution of a noble metal compound to the oxide-coated structure, drying the structure, and treating the structure with a reducing agent to reduce the noble metal compound to the metallic state, the improvement which comprises:

a. providing in substitution for said oxide support coating a coating consisting of at least one amphoteric hydrous oxide, oxihydrate or hydroxide selected from the group consisting of hydrous Cr_2O_3, MnO_2, Mn_3O_4, Mn_2O_3, TiO_2, ZrO_2, SiO_2, SnO_2, ThO_2 and Al_2O_3 on the interior channel walls of said structure;

b. immersing said structure and coating into a catalyst solution consisting essentially of water, ammonium hydroxide and at least one noble metal compound selected from the group consisting of compounds of platinum, palladium, rhodium, iridium and ruthenium which form complex noble metal amine cations in ammonia alkaline solutions, said catalyst solution containing ammonium hydroxide in an amount sufficient to bring the pH of said catalyst solution within the range of about 10–11.5;

c. removing said structure from said catalyst solution and removing excess catalyst solution from said structure by rinsing;

d. drying said structure; and

e. treating said structure with a reducing agent to reduce the noble metal compounds thereon to the metallic state.

3,894,966

METHOD OF MANUFACTURING AN EXTRUDED CATALYST COMPOSITION

John E. Conway, La Grange, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Oct. 19, 1973, Ser. No. 408,011

Int. Cl. B01j *23/16*

U.S. Cl. 252—465 **7 Claims**

1. A method for preparing an extruded catalyst composition characterized by a particle density of from about 1.12 to about 1.25 grams per cubic centimeter which comprises:

a. dry mixing a finely divided Group VIB metal compound and Group VIII metal compound with a finely divided alpha-alumina monohydrate having an average bulk density of from about 0.4 to about 0.5 grams per cubic centimeter;

b. adding thereto sufficient acidic peptizing agent to produce a dough extrudable through a 1/32 inch–⅛ inch diameter orifice at less than about 500 psig;

c. extruding said dough through a 1/32 inch–⅛ inch diameter orifice at less than about 500 psig; and

d. calcining the extrudate particles in an oxidizing atmosphere at a temperature of from about 700° to about 1200° F.;

e. said metal compounds being utilized in an amount to provide a final catalyst product containing from about 4 to about 30 wt. percent Group VIB metal and from about 1 to about 10 wt. percent Group VIII metal.

3,894,967

CATALYST FOR PURIFYING EXHAUST GASES

Karl Hermann Koepernik, Hannover; Gunter Weidenbach, Anderten, and Gerhard Koch, Nienburg, Weser, all of Germany, assignors to Kali-Chemie Aktiengesellschaft, Hannover, Germany

Filed Jan. 24, 1974, Ser. No. 436,152

Claims priority, application Germany, Jan. 26, 1973, 2303695

Int. Cl. B01j *11/12*

U.S. Cl. 252—466 PT **17 Claims**

1. A process for the preparation of a catalyst suitable for the oxidation of incompletely burned components in exhaust gases, comprising impregnating a carrier consisting essentially of an aluminum oxide having a bulk density between 0.4 and 1 kg./1. and being selected from delta-Al_2O_3, theta-Al_2O_3, alpha-Al_2O_3 and mixtures thereof with an aqueous solution of a manganese carboxylate, calcining said carrier a first time at a temperature between 700° and 1100°C., after cooling saturating the calcined carrier with ammonia, impregnating the ammonia-saturated carrier with a solution of a noble metal compound thermally decomposable to the noble metal, and calcining said carrier at a temperature between 600° and 800°C. to form said noble metal.

3,894,968

METHOD OF MAKING AN ANTIPOLLUTION CATALYST AND PRODUCT OF THE METHOD

Heinz Berger, deceased, late of Hoxter, Weser, Germany, and Heinz-Werner Berger, sole heir, Drenker Str. 26b, 3470 Amelunxen u. Hoxter, Germany

Filed May 15, 1972, Ser. No. 253,565

Int. Cl. B01j *11/40, 11/32*

U.S. Cl. 252—455 R **4 Claims**

1. A method of making a catalyst for decontaminating exhaust emissions of an internal-combustion engine comprising the steps of:

a. comminuting to a submillimetric particle size of about 0.015 mm to about 0.001 mm and intimately mixing a catalyst-support substance consisting essentially of 25 to 35 percent by weight magnesium silicate, 25 to 35 percent by weight aluminum silicate and 5 to 15 percent by weight of coal, charcoal or lignite to form a mass thereof;
b. mixing with the comminuted mass of step (a) a catalytically active metal component consisting of at least one compound from the group which consists of manganese oxide, copper oxide and cobalt oxide and further comminuting the resulting mixture;
c. blending the mixture of step (b) with an aqueous solution of a palladium chloride or platinum chloride salt to for a plastically shapeable paste;
d. shaping said paste;
e. firing the shaped paste of step (d) at a temperature of 800° to 1050° to produce a catalyst body; and
f. mechanically treating said body to remove an activity-limiting film formed thereon during firing, comminution being carried out in step (b) in a colloid mill to a particle size of about 0.015 mm, said catalytically active metal component consisting of substantially 8 to 20 percent by weight cobalt oxide, 6 to 20 percent by weight manganese oxide and 2 to 10 percent by weight copper oxide, said noble metal solution being employed in the form of a platinum chrloride or palladium chloride solution with the platinum or palladium chloride present in an amount of 0.01 to 5 percent by weight, the paste being dried and shaped into tubes having an inner diameter of substantially 1 mm, an outer diameter of substantially 3 mm and a length of substantially 3.5 to 4 mm.

3,894,969

PROCESS FOR PRODUCING GERMANIUM-DOPED IRON OXIDES

Howard Wayne Jacobson, Wilmington, Del., assignor to E. I. du Pont de Nemours & Co., Wilmington, Del.

Filed July 10, 1974, Ser. No. 487,261

Int. Cl. H01b *1/08*

U.S. Cl. 252—519 **10 Claims**

1. A process for producing germanium doped iron oxide, $Fe_{2-x}Ge_xO_3$, where x is in the range 0.0001–0.05, comprising the steps of

1. homogeneously admixing an alkali metal hydroxide with an aqueous solution of a ferrous salt selected from the group consisting of ferrous chloride and ferrous sulfate; germanium tetrachloride; an alkali metal chloride; and an alkali metal sulfate; in relative amounts to produce a gel having a pH in the range 7 to 9, the total weight of alkali metal sulfate and alkali metal chloride being equal to or up to three times the weight of the germanium doped iron oxide formed in said process
2. calcining the product of step (1) for at least one-half hour at a temperature of 550°–900°C., and
3. leaching the calcined product with an aqueous liquid to remove soluble impurities.

3,894,970

METHOD OF PREPARING HIGH TEMPERATURE STABLE GAMMA IRON OXIDE

Genevieve Marie Adams, San Jose; John Irving Crowley, Palo Alto, and Keith Harris Larson, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 26, 1973, Ser. No. 344,803

Int. Cl.^{2} H01F *1/28;* **C01G** *49/06*

U.S. Cl. 252—62.54 **3 Claims**

1. A method of increasing the magnetic and color temperature stability of γ-Fe_2O_3 comprising the steps of

mixing γ-Fe_2O_3 with a solution chosen from the group consisting of hydroxide and phosphate of sodium, potassium and calcium containing between 0.08–5% by weight based on the weight of Fe_2O_3 of sodium, potassium or calcium, and

evaporating the solvent from the solution of the mixture.

3,894,971

OXIDATION CATALYSTS

Peter Reuter, Bad Duerkheim, and Friedrich Wirth, Ludwigshafen, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Mar. 15, 1973, Ser. No. 341,532

Claims priority, application Germany, Mar. 17, 1972, 2212964

Int. Cl. B01j *27/14*

U.S. Cl. 252—437 **9 Claims**

1. A multi-layer catalyst for the oxidation of aromatic or unsaturated aliphatic hydrocarbons consisting of an inert carrier in spherical form having a diameter of from 4 to 12 mm. to which there is applied at least two layers of a catalytically active material of a total thickness of from 0.02 to 2 mm., said active material consisting essentially of

a. from 60 to 99 percent by weight of titanium dioxide and/or zirconium dioxide,
b. from 1 to 40 percent by weight of vanadium pentoxide and
c. based on the total amount of titanium dioxide, zirconium dioxide and vanadium pentoxide, up to 6% by weight of phosphorus in the form of a phosphorus compound, wherein the catalytically active material in the outer layer of the catalyst contains from 0 to 0.3 percent by weight of phosphorus while the remainder of said active material contains more than 0.3 percent up to 6 percent by weight of phosphorus, the amount of the outer layer of the catalytically active material which contains from 0 to 0.3 percent by weight of phosphorus being not more than half of the total amount of said active material.

3,894,972

PROCESS FOR THE PREPARATION OF CARBODIIMIDE-ISOCYANURATE FOAMS

Thirumurti L. Narayan, Riverview, and Moses Cenker, Trenton, both of N.J., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Dec. 21, 1973, Ser. No. 427,035

Int. Cl. C08g *22/44, 33/04*

U.S. Cl. 260—2.5 AW **8 Claims**

1. A process for the preparation of a cellular foam characterized by carbodiimide and isocyanurate linkages which comprises condensing an organic polyisocyanate in the presence of a catalytically sufficient amount of a catalyst system comprising furfuryl alcohol and a tertiary amine trimerization catalyst.

3,894,973

USE OF PNEUMACEL IN REBONDED STRUCTURES COMPRISING POLYURETHANE SCRAP

Malak E. Yunan, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 19, 1974, Ser. No. 452,568

Int. Cl. B32b *5/16*

U.S. Cl. 260—2.5 AK **4 Claims**

1. A cushioning structure of low density and high resistance to bottoming out under compression which comprises a rebond mixture of shredded pneumacel batting and shredded foam particles of resilient organic polymer of the class consisting of polyurethane, natural rubber and synthetic rubber, said mixture being bonded together by an elastomeric binder.

3,894,974

HYDRAZOIDICARBOXYLATES USED AS BLOWING AGENTS TO FORM GAS EXPANDABLE POLYMERIC MATERIALS

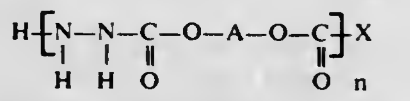
Byron A. Hunter, Woodbridge, and Gerald J. Hollmann, Naugatuck, both of Conn., assignors to Uniroyal, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 354,818, April 26, 1973, abandoned. This application Apr. 1, 1974, Ser. No. 456,994

Int. Cl. C08j *1/20*

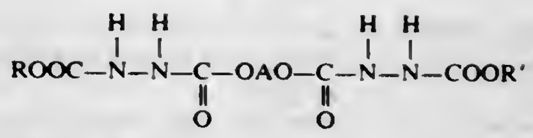
U.S. Cl. 260—2.5 R **5 Claims**

1. A composition comprising at least one gasexpandable polymeric material, and at least one member selected from the group consisting of oligomers of the formula



$$H\left[\underset{\underset{H}{|}}{N}-\underset{\underset{H}{|}}{N}-\underset{\underset{O}{\|}}{C}-O-A-O-\underset{\underset{O}{\|}}{C}\right]_n X$$

where n is a number in the range 1 to 100, X is chlorine, bromine or iodine, and A is a divalent radical selected from the group consisting of alkylene radicals having 2 to 6 carbon atoms, arylene radicals having 6 to 12 carbon atoms, oxydialkylene radicals having 4 to 12 carbon atoms, and oxydiarylene radicals containing 12 to 20 carbon atoms, alkylenediphenylene radicals in which the alkylene group has from 1 to 6 carbon atoms, and alkylidenediphenylene radicals in which the alkylidene group has from 1 to 6 carbon atoms; cyclized forms of such oligomers; and condensates of the formula:



$$ROOC-\overset{\overset{H}{|}}{N}-\overset{\overset{H}{|}}{N}-\underset{\underset{O}{\|}}{C}-OAO-\underset{\underset{O}{\|}}{C}-\overset{\overset{H}{|}}{N}-\overset{\overset{H}{|}}{N}-COOR'$$

where R and R′ are the same or different, and are selected from the group consisting of alkyl radicals having 1 to 8 carbon atoms; cycloalkyl radicals containing 5 to 8 carbon atoms; aryl groups having 6 to 10 carbon atoms; aralkyl and alkaryl radicals containing 7 to 10 carbon atoms; and A has the meaning given above.

3,894,975

ADHESIVE PASTE COMPRISING WOOD FIBERS AND COMPLEX OF STYRENE AND MALEIC ANHYDRIDE

Norman G. Gaylord, New Providence, N.J., assignor to Champion International Corporation, New York, N.Y.

Division of Ser. No. 32,736, April 28, 1970, Pat. No. 3,765,934. This application Mar. 22, 1973, Ser. No. 343,922

Int. Cl. C08g *45/18*

U.S. Cl. 260—17.4 GC **7 Claims**

1. An adhesive paste comprising a minor amount of wood fibers and a major amount of a complex of styrene and maleic anhydride.

3,894,976

PSEUDOPLASTIC WATER BASE PAINT CONTAINING A NOVEL HETEROPOLYSACCHARIDE

Kenneth Suk Kang, and William H. McNeely, both of San Diego, Calif., assignors to Kelco Company, San Diego, Calif.

Continuation-in-part of Ser. No. 275,807, July 27, 1972, abandoned, which is a continuation of Ser. No. 84,165, Oct. 26, 1970, abandoned, which is a continuation of Ser. No. 854,322, Aug. 29, 1969, abandoned. This application Nov. 30, 1973, Ser. No. 420,416

Int. Cl. C08d *9/06*

U.S. Cl. 260—17.4 ST **20 Claims**

1. A water base paint comprising a latex rubber-like water base paint binder, a pigment, an aqueous vehicle for said binder and pigment, and containing a small quantity of Heteropolysaccharide-7 in an effective amount sufficient to give said paint pseudoplastic properties.

3,894,977

SEALANT COMPOSITION

George A. Brown, Casselberry, Fla., and Francis Michael Hinds, Decatur, Ala., assignors to Southern Line Cleaning, Inc., Casselberry, Fla.

Filed Aug. 27, 1973, Ser. No. 391,670

Int. Cl. C08g *51/72*

U.S. Cl. 260—18 EP **6 Claims**

1. A liquid or semiliquid pipe line sealing composition for application in underground pipe lines, said composition comprising about 50–85% of a liquid epoxy resin, 1.5–10% of an amine curing agent, 2–15% of inert filler, at least 5% of a liquid uncured polysulfide polymer and 7–12% of a dimer and/or trimer acid, with the proviso that the total polysulfide polymer and dimer and/or trimer acid content is 35% or less, said composition having a pot life of more than 2 hours and a gellation period of 10–48 hours.

3,894,978

ALKYD RESINS MODIFIED WITH ACRYLIC OR METHACRYLIC ACID FOR USE IN WATER BASED PAINTS

Giorgio Montesissa; Antonio Olivieri, and Giuseppe Scapellato, all of Piacenza, Italy, assignors to Duco S.p.A., Trieste, Italy

Filed Apr. 3, 1974, Ser. No. 456,949

Claims priority, application Italy, Apr. 9, 1973, 22726/73

Int. Cl. C09d *3/68, 5/02*

U.S. Cl. 260—22 CB **8 Claims**

1. Water soluble and water dispersible alkyd resins, comprising the product of the reaction between:

a. the resinous product, substantially free of polyacrylic acid, obtained by reacting glacial acrylic or methacrylic acid with at least one polyunsaturated monocarboxylic fatty acid or esters thereof with a polyvalent alcohol, at a temperature between 250° and 300°C., under conditions such that the weight ratio between the unreacted glacial acrylic or methacrylic acid and the acrylic or methacrylic acid combined with said polyunsaturated fatty acid or esters thereof is between 0.1 and 1, said resinous product having an acidity number between 60 and 280, and a Gardner-Holdt viscosity value between P and Z_6;

b. a polyvalent alcohol having from 2 to 6 primary or secondary hydroxyl groups wherein the weight ratio between said polyvalent alcohol and the resinous product (a) is between 1:9 and 9:1; and optionally

c. at least one compound capable of reacting with a product selected from the group consisting of the product (a) and polyvalent alcohol (b), and being selected from the group consisting of saturated monocarboxylic acids, unsaturated monocarboxylic acids, saturated dicarboxylic acids, unsaturated dicarboxylic acids, siccative oils and non-siccative oils, the amount of said compound (c), if present, not exceeding about 60% by weight of the total weight of components (a) + (b) + (c).

3,894,979

COMPOSITION AND METHOD FOR MAKING UNIFORMLY DISPERSED FRIABLE COMPOUNDING INGREDIENTS

Charles R. Samples, Akron, Ohio, assignor to Akron Rubber Development Laboratory, Inc., Akron, Ohio

Continuation-in-part of Ser. No. 251,226, May 8, 1972, abandoned. This application Aug. 17, 1973, Ser. No. 389,430

Int. Cl. C08c *11/72*

U.S. Cl. 260—23.7 R **34 Claims**

1. A friable compounding composition, comprising:

a compounding agent,

a gel dispersant medium,

said gel dispersant medium containing liquid hydroxyl terminated polymers selected from the class consisting of conjugated dienes, and polyester, coupled by a diisocyanate compound having the formula $R(N{=}C{=}X)_2$ where R is an aliphatic having from 2 to 20 carbon atoms, a cycloaliphatic having from 4 to 20 carbon atoms, and an aromatic having from 6 to 20 carbon atoms and X is an oxygen or sulfur,

said compounding agent dispersed in said gelled dispersant medium in an amount so that a friable compounding composition is formed.

3,894,980

THICKENER

Gabriel L. DeTommaso, Lansdale, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Apr. 30, 1973, Ser. No. 355,386

Int. Cl. C08d *7/14;* **C08f** *45/42*

U.S. Cl. 260—29.6 RW **10 Claims**

1. A stable aqueous dispersion of a water-insoluble emulsion copolymer containing about 15 to 40 percent by weight of acrylic acid or methacrylic acid, 20 to 60 percent by weight of an alkoxyalkyl acrylate of the formula:

$H_2C{=}CHC(0)OCH_2CH_2OR$

wherein R is selected from the group consisting of methyl, ethyl, methoxyethyl, and ethoxyethyl, 10 to 65 percent by weight of a (C_2–C_8) alkyl acrylate, and zero to 0.8 percent by weight of a polyethylenically unsaturated monomer.

3,894,981

METHOD OF PRODUCING PHENOLIC MOULDING MATERIALS

Anatoly Abramovich Kruglikov, ulitsa Vyazovskaya 9, kv. 9; Vadim Anatolievich Iliin, ulitsa Parkhomenko 27, kv. 6; Nelli Vsevolodovna Obraztsova, ulitsa Parkhomenko, 27, kv. 52; Vladimir Aronovich Strupinsky, ulitsa Tsiolkovskogo, 11, kv. 26, and Vladimir Petrovich Potapov, ulitsa Mira, 12, kv. 12, all of Nizhny Tagil Sverdlovskoi oblasti, U.S.S.R.

Filed Feb. 15, 1975, Ser. No. 443,038

Int. Cl. C08g *5/18, 51/4*

U.S. Cl. 260—33.4 R **9 Claims**

1. A method of producing phenolic moulding materials based upon orthoregular-structure phenol-aldehyde resins, consisting in polycondensation reaction between a phenolic component and an anhydrous aldehyde component taken in a molar ratio of 1 to 0.3–1.5, respectively in the presence of a filling agent, conventional additives and an alcohol selected from the group, consisting of mono-and dihydric alcohols having 2 to 8 carbon atoms and taken in a ratio of 1 to 10 parts by weight per 100 parts by weight of the phenolic component, at 130° to 250°C for a period of time required to form a moulding material having a maximum volatile matter content of 7 wt.%.

3,894,982

ADHESIVE COMPOSITIONS

Eugene L. Polaski, Erie, Pa., assignor to Lord Corporation, Erie, Pa.

Filed July 15, 1974, Ser. No. 488,641

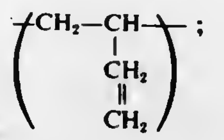
Int. Cl. C08f *45/28, 1/88*

U.S. Cl. 260—33.6 A **23 Claims**

1. A composition of matter consisting essentially of

a. at least one polymeric material selected from the group consisting of polyalkadienes, hydroxyl-functional polyalkadienes, chain-extended hydroxyl-functional polyalkadienes, carboxyl-functional polyalkadienes, chain-extended carboxyl-functional polyalkadienes, amine-functional polyalkadienes, chain-extended amine-functional polyalkadienes, mercaptanfunctional polyalkadienes, and chain-extended mercaptan-functional polyalkadienes;

said polymeric materials having as a characteristic feature an elongated backbone carbon chain having as recurring units pendant nonterminal vinyl groups attached to alternating carbon atoms of said backbone in accordance with the structure

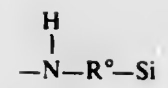


$$\left(\begin{array}{l}\!-CH_2-\underset{\underset{\underset{\displaystyle CH_2}{\|}}{\displaystyle CH_2}}{\overset{|}{CH}}-\!\end{array}\right);$$

said pendant non-terminal vinyl groups constituting at least 50 weight percent of the residual olefinic unsaturation of said polymeric material;

said polymeric material having a molecular weight in the range from about 10,000 to about 100,000; and

b. at least one aminoorganosilane characterized by the grouping



$$-\overset{\overset{\displaystyle H}{|}}{N}-R^{\circ}-Si$$

wherein R° is a divalent organic radical selected from the group consisting of saturated aliphatic acyclic, saturated aliphatic cyclic, unsaturated aliphatic acyclic, unsaturated aliphatic cyclic, or aromatic radicals having a chain of at least three interconnected carbon atoms; wherein the nitrogen atom is attached to at least a third carbon removed from the silicon atom; and wherein the unfilled valence of the nitrogen atom is satisfied by a member selected from the group consisting of hydrogen, a monovalent organic group containing at least one amino group, and a monovalent organic group characterized by the absence of an amino group; and

wherein the silicon atom is bonded to at least one oxygen atom which in turn is bonded to a hydrocarbon group, and wherein each remaining unfilled valence of said silicon atom is satisfied by a monovalent hydrocarbon radical through silicon to carbon linkage,

the amount of said aminoorganosilane being in the range of from about 2 to about 50 parts by weight per 100 parts by weight of said polymeric material.

3,894,983

POLY(ARYLENE SULFIDE) COATING

David E. Higbee, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed June 13, 1973, Ser. No. 369,608

Int. Cl. C08g *51/04*

U.S. Cl. 260—37 R **6 Claims**

1. A composition comprising a normally solid poly(arylene sulfide) and from about 0.3 percent to about 4 percent by weight based on the weight of poly(arylene sulfide) of a finely divided siliceous material having a particle size less than about 10 microns.

3,894,984

MANUFACTURE OF CURABLE POLYESTER MOLDING COMPOSITIONS

Kurt Demmler; Wolfgang Koser, and Anton Hesse, all of Ludwigshafen, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Mar. 4, 1974, Ser. No. 447,917

Claims priority, application Germany, Mar. 8, 1973, 2311395

Int. Cl. C08g *51/04*

U.S. Cl. 260—40 R **17 Claims**

1. In a process for the manufacutre of an unsaturated polyester resin molding composition which is curable in the presence of a polymerization initiator and which comprises a mixture of:

a. at least one unsaturated polyester resin which is a polycondensate consisting essentially of a polybasic carboxylic acid and a polyhydric alcohol as monomeric units, at least a portion of the monomeric units being ethylenically unsaturated;

b. 15 to 50% by weight, based on the total weight of components (a) and (b), of at least one copolymerizable olefinically unsaturated vinyl or allyl compound;

c. 0.05 to 10% by weight, based on the total weight of components (a) and (b), of at least one compound selected from the group consisting of calcium oxide, calcium hydroxide and magnesium oxide; and

d. 0.005 to 0.1% by weight, based on the total weight of components (a) and (b), of at least one polymerization inhibitor,

the improvement of accelerating the thickening of said molding composition by adding thereto 0.005 to 1% by weight, based on the total weight of components (a) and (b), at least one compound (f) of the formula

$$Z\,O_n\,X_m$$

wherein Z is hydrogen, deuterium, phosphorus, boron, aluminum, gallium, silicon, germanium, tin, lead, antimony, bismuth, zinc, titanium, zirconium or sulfur, X is fluorine, chloride, bromine, iodine or a mixture thereof, and *n* is the integer 0, 1 or 2 and *m* is the integer 2, 3, 4, 5 or 6.

3,894,985

NON-COLORING DIATOMITE-FILLED POLYOLEFINS

Garth Coombs, Evergreen, Colo., assignor to Johns-Manville Corporation, Denver, Colo.

Filed Feb. 14, 1974, Ser. No. 442,513

Int. Cl. C08f *45/04*

U.S. Cl. 260—42.14 **9 Claims**

1. Non-coloring transparent polyolefin film having incorporated as an anti-blocking agent therein white diatomite having a pH of not greater than 7.5, said diatomite being in the form of particles of from 0.5 to 7 microns in size and being present in a concentration in said film in the range of 2 to 4 parts by weight per 1,000 parts by weight of polyolefin, said diatomite being produced by chemically calcining white diatomite of high pH or tan or gray diatomite with a strong inorganic acid.

3,894,986

FLAME RESISTANT THERMOPLASTIC POLYESTERS

Werner Racky, Wiesbaden; Walter Herwig, Neuenhain, Taunus, and Hans-Jerg Kleiner, Bad Soden, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

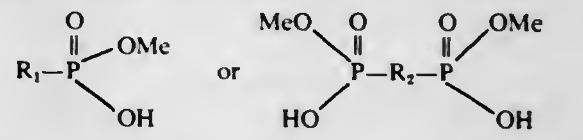
Filed Oct. 23, 1973, Ser. No. 408,646

Claims priority, application Germany, Oct. 25, 1972, 2252210

Int. Cl. C08g *51/62*

U.S. Cl. 260—45.7 P **6 Claims**

1. A flame-resisting thermoplastic polyester composition comprising a mixture of polyalkylene terephthalate which may contain up to 10 mole percent, based on the total dicarboxylic acid and diol units in said polyester, of units derived from a dicarboxylic acid other than terephthalic acid, and up to 10 mole percent of units derived from a diol other than an alkylene diol, and a flame-retarding amount of an alkali salt of phosphonic acids of the general formula



wherein R_1 represents a saturated, open chained, optionally branched or cyclic alkyl radical, aryl radical or arylalkylene radical, having from 1 to 16 carbon atoms, R_2 represents alkylene of 1 to 6 carbon atoms or phenylene, and Me represents an alkali metal.

3,894,987

POLY(PHENYLONE OXIDE) PLASTIC COMPOSITIONS CONTAINING BIS-ANYLOXY FLAME RETARDANTS

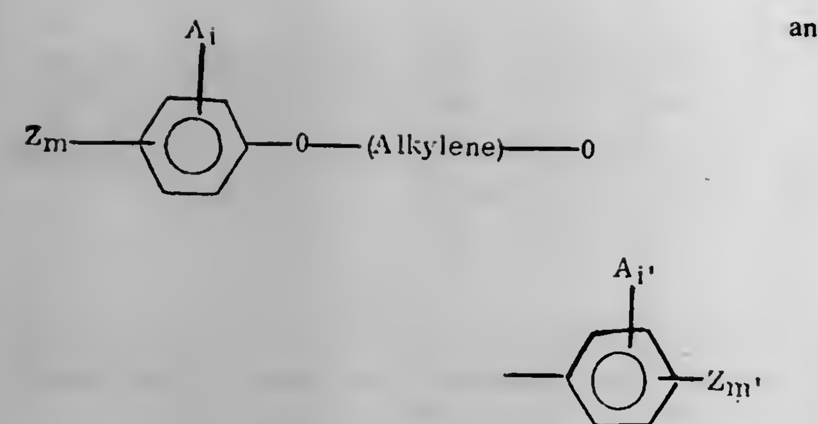
Arnold L. Anderson, Alma, Mich., assignor to Michigan Chemical Corporation, St. Louis, Mich.

Continuation-in-part of Ser. No. 260,240, June 6, 1972, abandoned. This application Feb. 8, 1973, Ser. No. 330,745. The portion of the term of this patent subsequent to Sept. 5, 1989, has been disclaimed.

Int. Cl. C08g *51/60*

U.S. Cl. 260—45.9 R **18 Claims**

1. A plastic composition comprising poly (acrylonitrile) and a flame retardant, said flame retardant consisting of a compound having the formula



wherein Z is bromine; *m* is an integer having a value of 1–5 and *m'* is an integer having a value of 0–4; *i* is an integer having a value of 0–2 and *i'* is an integer having a value of 1–5; alkylene is a straight or branched chain alkylene group leaving from 1 to 6 carbon atoms; and A is chlorine.

3,894,988
ABS PLASTIC COMPOSITIONS CONTAINING BIO-ARYLOXY FLAME RETARDANTS

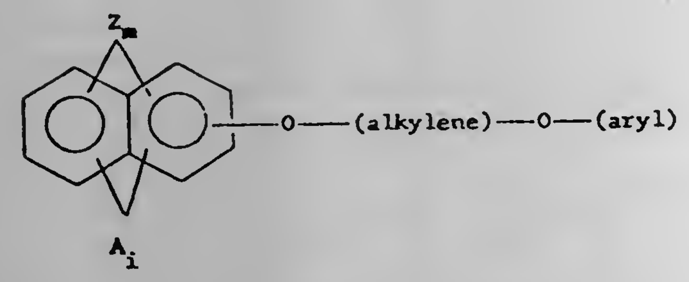
Arnold L. Anderson, and Robert J. Nulph, both of Alma, Mich., assignors to Michigan Chemical Corporation, St. Louis, Mich.

Continuation-in-part of Ser. No. 260,240, June 6, 1972, abandoned. This application Feb. 8, 1973, Ser. No. 330,801

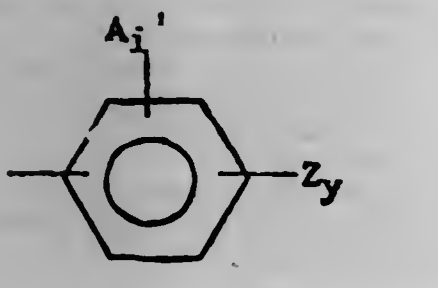
Int. Cl. C08f *45/60*

U.S. Cl. 260—45.9 R **18 Claims**

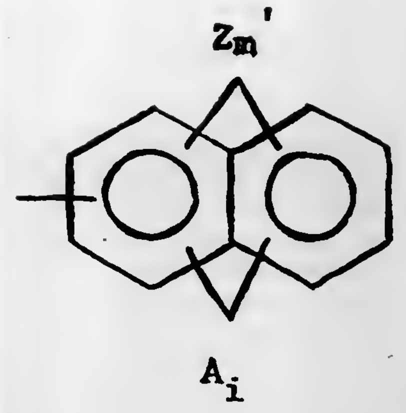
1. A plastic composition containing acrylonitrile-butadiene-styrene polymer having incorporated therein a flame retardant which is a bis-aryloxy compound having the formula:



wherein aryl is from the group



and



Z is selected from the group consisting of bromine or chlorine; *m* and *m'* are integers having a value of 1–7; *y* is an integer having a value of 1–5; *i* and *i'* are integers having a value of 0–2; A is selected from the group consisting of cyano, nitro, lower alkoxy, lower alkyl, fluorine, dialkylamino, phenyl, halophenyl, benzyl or halo- benzyl; and alkylene is a straight or branched chain alkylene group having from 1 to 6 carbon atoms.

3,894,989
ORGANOTIN COMPOUND STABILIZERS FOR HALOGENATED POLYMERS

John Desmond Collins, Albrighton; Harold Coates, Wombourn, and Iftikhar Hussain Siddiqui, Birmingham, all of England, assignors to Albright & Wilson Limited, Oldbury, Warley, West Midlands, England

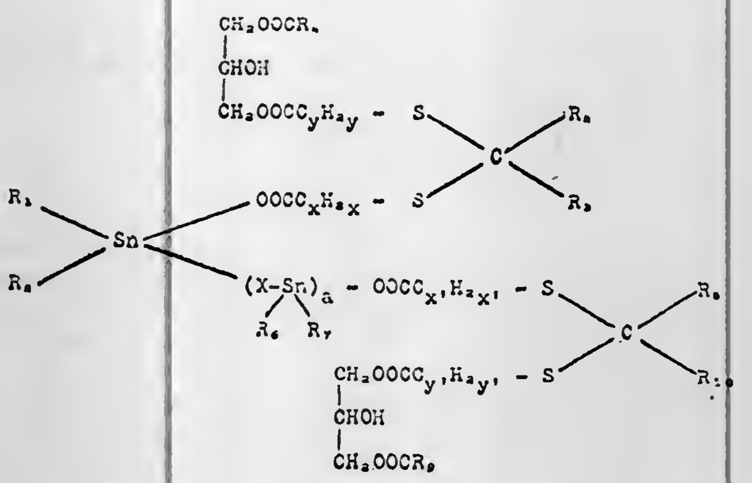
Filed Nov. 23, 1973, Ser. No. 418,591

Claims priority, application United Kingdom, Nov. 29, 1972, 55042/72; Sept. 10, 1973, 42451/73

Int. Cl. C08f *45/62*

U.S. Cl. 260—45.75 S **5 Claims**

1. A polymeric composition comprising a halogen-containing resin and, a stabilizer therefor, 0.01 – 10%, based on the weight of said composition of an organotin compound of the general formula



wherein *a* is 0 or 1,

each of *x*, *x'*, *y* and *y'*, which are the same or different, is an integer of 1 – 6

each of R_1, R_2, R_6 and R_7, which are the same or different is an alkyl group of 1 to 12 carbon atoms, a cycloalkyl group, an aromatic hydrocarbyl group or an aralkyl hydrocarbyl group, each of R_4 and R_9, which are the same or different, is as defined above for R_1, R_2, R_6 and R_7 or is an alkyl group of 13 – 21 carbon atoms, an alkenyl group of 2 to 21 or an inertly substituted aromatic hydrocarbon group, each of R_3, R_5, R_8 and R_{10}, which are the same or different, is as defined above for R_4 and R_9, or is hydrogen or at least one of the pairs R_3 and R_5 and R_8 and R_{10}, together with the carbon atom to which they are attached, forms a cycloalkyl ring, and X is oxygen or sulphur.

3,894,990
STABILIZATION OF HOMO-OR COPOLYMERIC POLYOLEFINS WITH DIACYL DIHYDRAZIDES

Helmut Muller, Binningen, Basel-Land; Siegfrid Rosenberger, Richen, Basel-Stadt, and Heimo Brunetti, Reinach, Basel-Land, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

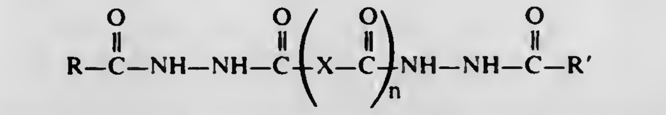
Continuation of Ser. No. 141,027, May 6, 1971, Pat. No. 3,734,885. This application May 11, 1973, Ser. No. 359,587The portion of the term of this patent subsequent to May 22, 1990, has been disclaimed.

Int. Cl. C08f *45/60*

U.S. Cl. 260—45.85 B **11 Claims**

1. A homopolymeric or copolymeric polyolefin composition stabilized in the presence or absence of copper with

a. 0.01 to 5% by weight of the polyolefin of a diacyl hydrazide having the formula



$$R-\overset{O}{\overset{\|}{C}}-NH-NH-\overset{O}{\overset{\|}{C}}\left(X-\overset{O}{\overset{\|}{C}}\right)_n NH-NH-\overset{O}{\overset{\|}{C}}-R'$$

wherein R and R' independently of each other represent alkyl having 1 to 17 carbon atoms; cyclohexyl; aralkyl which can be substituted by one or two alkyl groups, each having from 1 to 4 carbon atoms and/or a hydroxyl group; phenyl; chlorophenyl; dichlorophenyl; phenyl which is substituted by one or two alkyl groups each having from 1 to 4 carbon atoms and/or a hydroxyl group; alkylphenyl having from 7 to 14 carbon atoms; alkoxyphenyl having from 7 to 24 carbon atoms or naphthyl; X represents the direct bond, an alkylene radical having from 2 to 8 carbon atoms, a phenylene radical or a naphthylene radical, and *n* represents 0 or 1; and

b. an antioxidant selected from sterically hindered phenol compounds and aminoaryl compounds, and

c. higher alkyl esters of thiodipropionic acid.

3,894,991
HIGH MOLECULAR POLYCARBONATES CONTAINING S-TRIAZINE RINGS

Dieter Neuray, Rumeln, Kaldenhausen; Hugo Vernaleken, and Hans Rudolph, both of Krefeld-Bockum, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

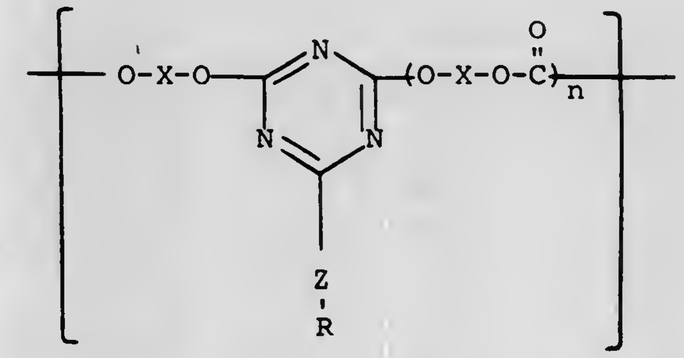
Filed Sept. 14, 1973, Ser. No. 397,502

Claims priority, application Germany, Sept. 20, 1972, 2246106

Int. Cl. C08q *17/13*

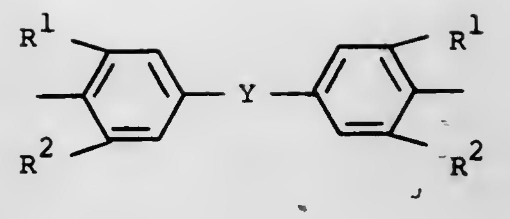
U.S. Cl. 260—47 XA **13 Claims**

1. High molecular weight polycarbonates, based on aromatic bishydroxy compounds, consisting essentially of structural units of the following general formula



in which

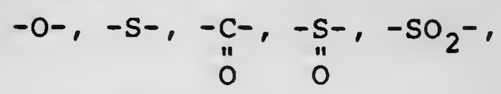
X denotes an o-, m- or p-phenylene radical, an o-, m- or p-phenylene radical with one or more C_1-C_4 lower alkyl or halogen substituents, or a radical of the formula



in which

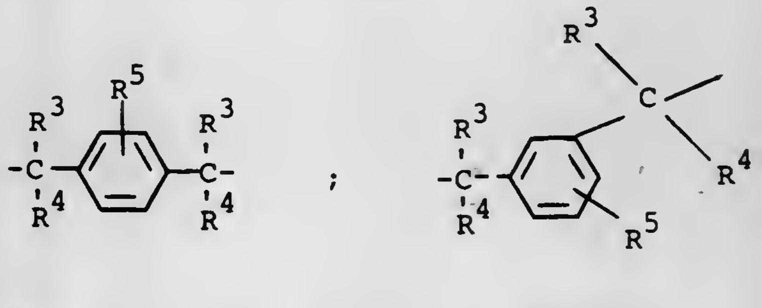
R^1 and R^2 represent hydrogen atoms, alkyl radicals with 1 to 4 carbon atoms or halogen, and have identical or different meanings,

Y denotes a single bond, an alkylene or alkylidene radical with 1 to 7 carbon atoms, a cycloalkylene or cycloalkylidene radical with 5 to 12 carbon atoms,



$$-O-,\ -S-,\ -\underset{O}{\underset{\|}{C}}-,\ -\underset{O}{\underset{\|}{S}}-,\ -SO_2-,$$

or a radical of the formulae:



wherein

R^3 to R^5 denote alkyl radicals with 1 to 5 carbon atoms, but R^5 can also represent halogen atoms,

Z represents a single bond, —O—, —S—, —NH— or —NR^6—,

R^6 denotes hydrogen, n-alkyl radicals with 1 to 30 carbon atoms or their isomers, n-alkenyl radicals with 2 to 30 carbon atoms or their isomers, cycloalkyl radicals with 5 to 12 carbon atoms, alkylsubstituted or alkenyl-substituted cycloalkyl radicals with 5–12 ring carbon atoms and 1 to 5 carbon atoms in the side-chain, mononuclear or polynuclear aryl or heteroaryl radicals with up to 14 carbon atoms, or aralkyl radicals with a total of up to 30 carbon atoms, or the aryl-carbon atom bonded halogen and/or C_1–C_6-alkyl and/or C_1–C_6-alkoxy and/or nitro-substituted derivatives of the aryl, heteroaryl or aralkyl radicals;

R has the same meaning as R^6, and is identical or not identical with R^6, and can be linked to R^6 via alkylene radicals with 2 to 5 carbon atoms which can be interrupted by hetero-atoms, such as O, S and NR^7, that is $R + R^6$ can be alkylene with 2 to 5 carbon atoms which can be interrupted by O, S and NR^7, with the proviso that the rings formed by R, Z and R^6 are from three- to six-membered rings; R^7 is an alkyl radical with 1 to 4 carbon atoms, a phenyl radical or an alkylaryl radical with a total of up to 10 carbon atoms,

or R and R^6 can be aryl linked via a single bond or O or S, and n is an integer between 1 and 20 inclusive.

3,894,992
FLUORINATED OILY SOIL RELEASE AGENTS

Stuart Raynolds, Wilmington, Del., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.

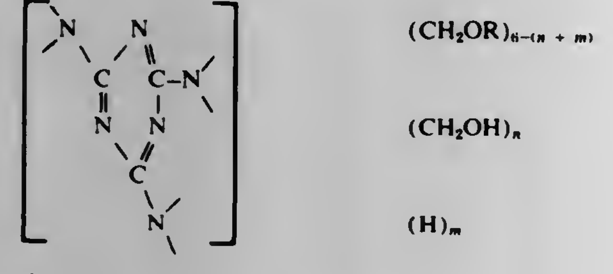
Filed Nov. 24, 1972, Ser. No. 309,449

Int. Cl. C08g *9/36*

U.S. Cl. 260—67.6 R **7 Claims**

1. An adduct prepared by the condensation, in the presence of an acid catalyst and under temperature and pressure conditions that result in the removal of alcohol formed by the condensation, of

A. an alcohol of the formula
  1. $R_f(CH_2)_nOH$ wherein R_f is perfluoroalkyl of from 4 through 16 carbon atoms; and *n* is an integer from 1 through about 16.
B. a polyalkylene glycol of the formula
  2. $HO(CH_2—CHR—O)_mH$
    wherein R is hydrogen or methyl; and
    m is an integer from about 8 through about 450;
  and having a molecular weight between about 400 and about 20,000; and
C. a poly(alkoxymethyl)melamine of the formula

(3)


wherein
R is alkyl of one to 5 carbon atoms;
n has a value of 0 to 2; and
m has a value of 0 to 3 with the limitation that *n* + *m* cannot exceed a value of 3;

wherein the equivalents ratio of A to B is from about 1/20 to 20/1 and the equivalents ratio of A + B to C is from about 0.5/1 to 1.5/1.

3,894,993
AMINOPLAST CROSSLINKING AGENTS

Werner Josef Blank, Wilton, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 302,957, Nov. 1, 1972, abandoned, which is a continuation of Ser. No. 130,531, April 1, 1971, abandoned. This application Nov. 21, 1973, Ser. No. 418,139

Int. Cl. C08g *9/24*

U.S. Cl. 260—67.6 R **3 Claims**

1. The composition of matter comprising the resinous product prepared by reacting at a temperature of at least 100°C in an acidic medium from about 90 to about 30% of a substantially water-insoluble, substantially fully etherified, substantially fully methylolated guanamine or substantially fully etherified, substantially fully methylolated melamine and from about 10 to about 70% of alkylated phenolic compound having the formula:

$$R—O—C_nH_{2n}—O—C_nH_{2n}—_mOH$$

wherein R is an aryl radical, *m* is an integer from 0 to 3, and *n* is an integer from 2 to 4.

3,894,994
CONTINUOUS METHOD OF MAKING POLYURETHANE POWDER

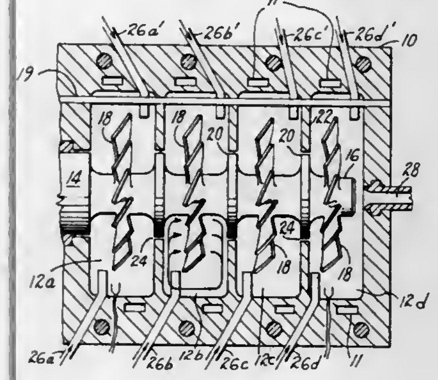
John T. Day, Pasadena, Md., and John G. Hollick, Beverly, Mass., assignors to USM Corporation, Boston, Mass.

Filed Sept. 20, 1973, Ser. No. 399,462

Int. Cl. C08g *22/04*

U.S. Cl. 260—75 NE **11 Claims**

1. Continuous method for preparing polyurethane resin directly in finely divided form from reaction in a mixture of which the components include a first reactant comprising at least one organic polyisocyanate, a second reactant comprising at least one organic compound containing at least two groups having active hydrogen, a catalyst for the polyurethane forming reaction, at least one of said reactants being a liquid under reaction conditions, and an inert organic liquid reaction medium in which one of the reactants and the polyurethane resin are insoluble, in which method said insoluble reactant is continuously dispersed with vigorous agitation in said inert liquid in a mixing zone to form a body of a fine dispersion of said insoluble reactant in a continuous phase of the inert liquid, portions of said dispersion are continuously discharged from said body to a further mixing zone, a further component or further components of the reaction mixture for forming polyurethane is or are supplied continuously to said further mixing zone at a rate correlated with the rate of supply of insoluble reactant to give relative proportions for reaction to form polyurethane and is or are mixed by vigorous agitation with said dispersion, portions of the mixture in said further mixing zone are continuously discharged after a residence time controlled by the rate of supply of said components to said mixing zones to secure thickening by at least partial reaction of the dispersed reactants in said discharged portion to form dispersed particles of polyurethane, reaction of the reactants in said discharged portion is continued under conditions which retard settling of the dispersed material substantially to complete the reaction and the polyurethane resin particles are separated from the inert liquid.



3,894,995
TRANSPARENT POLYAMIDES FROM AN ISOMERIC MIXTURE OF NORBORNANES

Eckart Reske, Hofheim, Taunus; Ludwig Brinkmann, Frankfurt am Main; Hartmut Fischer, Kelkheim, Taunus, and Freimund Rohrscheid, Frankfurt am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

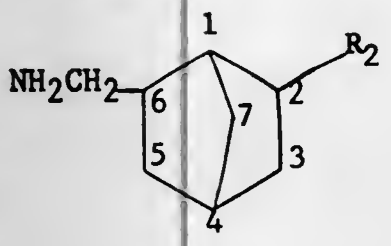
Filed Dec. 26, 1972, Ser. No. 317,943

Int. Cl. C08g *20/20*

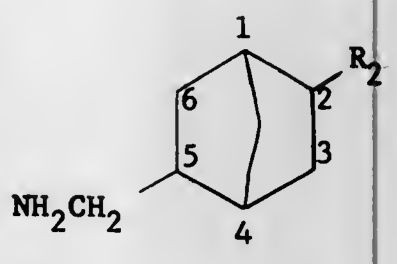
U.S. Cl. 260—78 R **12 Claims**

1. A polyamide consisting essentially of the polymeric condensation product of

a. a mixture of isomeric norbornanes of the formulae



and



in which R_2 is $—CH(CH_3)CH_2NH_2$ or $—CH_2CH_2CH_2NH_2$, and

b. a mixture of terephthalic acid with up to 70% by weight, based on the total weight of reactants, of ε-caprolactam, said polyamide having a reduced specific viscosity of 0.8 dl/g to 3 dl/g measured at a concentration of 1 gram of polyamide in 100 ml of phenol-tetrachloroethane at a 3:2 weight ratio and at 25°C.

3,894,996
THIURAM ACCELERATOR SYSTEMS WITH BLOCKED ISOCYANATES

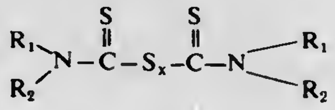
Raymond C. Srail, Parma, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Continuation-in-part of Ser. No. 118,173, Feb. 23, 1971, abandoned. This application June 25, 1973, Ser. No. 373,504

Int. Cl. C08c *11/48;* **C08d** *9/08*

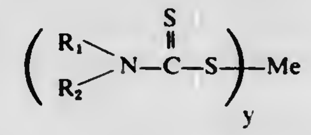
U.S. Cl. 260—79.5 P **8 Claims**

1. A composition comprising (1) a sulfur-vulcanizable rubber having from about 0.5% to 50% by weight of olefinic unsaturation, (2) sulfur or a sulfur donor, (3) a metal vulcanization activator selected from the group consisting of metal oxides, hydroxides, and salts wherein the metal is selected from the group consisting of zinc, cadmium, lead, calcium and iron, and (4) an accelerator system consisting essentially of (a) a thiuram compound selected from the group consisting of thiuram sulfide accelerators of the formula



$$R_1R_2N-\overset{S}{\overset{\|}{C}}-S_x-\overset{S}{\overset{\|}{C}}-NR_1R_2$$

wherein R_1 and R_2 are, independently, an alkyl radical containing 1 to 6 carbon atoms, a cycloalkyl group containing from 5 to 7 carbon atoms, or an aryl, aralkyl, or alkaryl group containing 6 to 10 carbon atoms, or R_1 and R_2 jointly form a bivalent hydrocarbon radical containing 4 to 7 carbon atoms, and dithiocarbamate accelerators of the formula



$$\left(R_1R_2N—\overset{S}{\overset{\|}{C}}—S\right)_y—Me$$

wherein R_1 and R_2 are defined as above, *y* is 1 to 4, and Me is a metal selected from the group consisting of sodium, potassium, zinc, copper, lead, cadmium, bismuth, tellurium, and selenium; and (b) an amine-blocked diisocyanate of (i) a heterocyclic amine having a pK dissociation constant of about 4 or below and (ii) a diisocyanate selected from the group consisting of diphenyl-diisocyanates and aromatic diisothiocyanates.

3,894,997
PROCESS FOR PREPARING AN ALTERNATING COPOLYMER OF A CONJUGATED VINYL COMPOUND AND AN OLEFINIC UNSATURATED COMPOUND

Kohei Nakaguchi, Osaka; Shohachi Kawasumi, Kobe; Masaaki Hirooka, Ibaraki; Hiroshi Yabuuchi, Takatsuki, and Hiroyoshi Takao, Ashiya, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

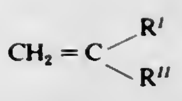
Continuation-in-part of Ser. No. 3,559, Jan. 9, 1970, which is a continuation of Ser. No. 560,857, June 27, 1966, abandoned. This application Jan. 4, 1973, Ser. No. 320,909

Claims priority, application Japan, June 30, 1965, 40-39488; July 10, 1965, 40-41590

Int. Cl. C08f *19/10, 15/18*

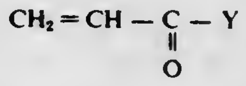
U.S. Cl. 260—79.7 **14 Claims**

1. In a process for preparing an alternating copolymer by copolymerizing an olefinic unsaturated compound having the formula,



$$CH_2=C\begin{matrix}R'\\R''\end{matrix} \qquad \begin{matrix}I\\II\end{matrix}$$

wherein R′ and R″ are independently hydrogen, a halogen atom, a hydrocarbon radical having 1 to 20 carbon atoms, or a halogen-containing hydrocarbon radical having 1 to 20 carbon atoms, and a conjugated vinyl compound selected from the group consisting of acrylonitrile and compounds having the formula,



$$CH_2=CH-\underset{\underset{O}{\|}}{C}-Y$$

wherein Y is a member selected from the group consisting of Z′R, Z′H, -Z′ Me′, NR′R″ and R groups, and halogen and hydrogen atoms; Z′ is an oxygen or sulfur atom; R is a hydrocarbon or halohydrocarbon radical having 1 to 20 carbon atoms; R′ and R″ are the same or different groups selected from the group consisting of hydrogen atom and a hydrocarbon or halodydrocarbon radicals having 1 to 20 carbon atoms, to form a morpholino group, a pyrrolidino group or a piperideno group and Me′ is an element from Groups I to II of the Mendeleev Periodic Table, wherein k is equal to the valency of Me′, or an ammonium group, with a catalyst at a temperature of −150° to +100°C, the improvement which comprises effecting the copolymerization at a pressure up to 100 kg/cm^2 by contacting the monomers with a catalyst selected from the group consisting of (1) at least one organoboron halide having the formula,

$$BR'''_nX_{3-n}$$

wherein R‴ is a hydrocarbon radical having 1 to 20 carbon atoms, X is a halogen atom, and n is 1 or 2 and (2) a combination of at least two members selected from the groups having the following formulas,

a. BR'''_nX_{3-n}

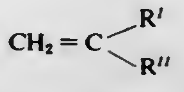
wherein R‴, X and n are as defined above,

b. BR_3^{IV} atoms, and

c. BX'_3

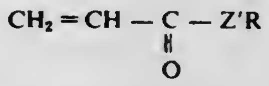
wherein X′ is a halogen atom, said catalyst being used in an amount of from 0.0005 to 10 moles per mole of said conjugated vinyl compound.

4. In a process for preparing an alternating copolymer by copolymerizing an olefinic unsaturated compound having the formula:



$$CH_2=C\begin{matrix}R'\\R''\end{matrix} \qquad \begin{matrix}I\\II\end{matrix}$$

wherein R′ and R″ are independently a hydrogen atom or a hydrocarbon radical having 1 to 20 carbon atoms, and a conjugated vinyl compound having the formula:



$$CH_2=CH-\underset{\underset{O}{\|}}{C}-Z'R$$

wherein Z′ is an oxygen or sulfur atom and R is a hydrocarbon or halohydrocarbon radical having 1 to 20 carbon atoms, with a catalyst at a temperature of −150° to +100°C, the improvement in which the copolymerization is effected at a pressure up to 100 kg/cm^2 by contacting the monomers with a catalyst selected from the group consisting of (1) at least one organo boron halide having the formula:

$$BR'''_nX_{3-n}$$

wherein R‴ is a hydrocarbon radical having 1 to 20 carbon atoms, X is a halogen, and *n* is 1 or 2, and (2) a combination of at least two members selected from the groups having the following formulas:

a. BR'''_nX_{3-n}

wherein R‴, X and n are as defined above,

b. BR^{IV}

wherein R^{n} is a hydrocarbon radical having 1 to 20 carbon atoms and

c. BX'_3

wherein X' is a halogen atom and wherein said catalyst is present in an amount of from 0.0005 to 10 moles per mole of said conjugated vinyl compounds.

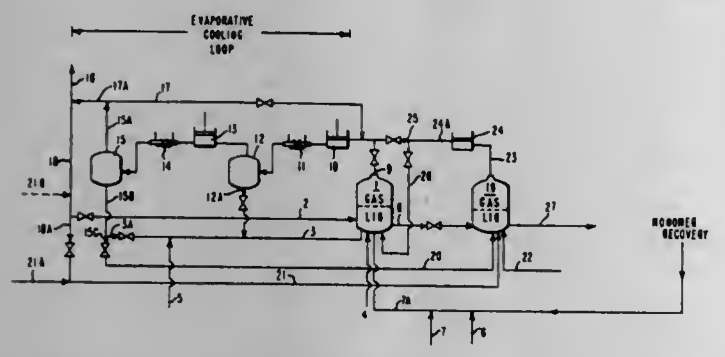
3,894,998
MULTIPLE STAGE REACTOR SYSTEM

Phillip P. Spiegelman, Wilmington, Del., assignor to E. I. du Pont de Nemours & Co., Wilmington, Del.

Filed Jan. 11, 1973, Ser. No. 322,758

Int. Cl. C08f *15/04, 15/40*

U.S. Cl. 260—80.78 **6 Claims**



6. A process of claim 4 wherein the reactants ethylene and propylene are polymerzied.

3,894,999
INTERPOLYMER OF AT LEAST TWO MONOOLEFINS AND CERTAIN 5-ALKYLIDENE-2-NORBORNENES

Charles E. Boozer, and Kenneth H. Wirth, both of Baton Rouge, La., assignors to Copolymer Rubber & Chemical Corporation, Baton Rouge, La.

Continuation of Ser. No. 2,367, Jan. 12, 1970, abandoned, which is a continuation-in-part of Ser. No. 571,175, Aug. 9, 1966, abandoned, which is a continuation-in-part of Ser. No. 551,963, May 23, 1966, abandoned. This application Mar. 29, 1973, Ser. No. 346,078

Int. Cl. C08f *15/40*

U.S. Cl. 260—80.78 **5 Claims**

5. A cured elastomer obtained by curing the interpolymer of claim 1 with a curing agent.

3,895,000
PROCESS FOR THE POLYMERIZATION OR COPOLYMERIZATION OF VINYL CHLORIDE

Alexis Mathieu, Brussels, Belgium, assignor to Solvay & Cie., Brussels, Belgium

Filed Apr. 4, 1973, Ser. No. 348,264

Claims priority, application France, May 25, 1972, 72.18808

Int. Cl. C08f *1/13, 3/30*

U.S. Cl. 260—92.8 W **9 Claims**

1. Process for the polymerisation of vinyl chloride in aqueous emulsion, comprising:
   - starting the polymerisation in the presence of 0.1 to 1.5% by weight, calculated on the monomer charge, of an emulsifying agent selected from the group comprising the ammonium salts of long chain saturated fatty acids having 10 to 18 carbon atoms, and mixtures thereof,
   - gradually introducing during polymerisation, when conversion has reached 5%, 0.3 to 2% by weight, calculated on the monomer charge, of an emulsifying agent selected from the group comprising alkaline alkyl sulphonates having 10 to 18 carbon atoms in the alkyl chain, alkaline alkyl aryl sulphonates having 10 to 18 carbon atoms in its alkyl chain, and mixtures thereof, and
   - converting the ammonium salts into alkaline metal salts at the end of polymerisation.

3,895,001
PROCESS FOR THE POLYMERISATION OF CYCLOALKENES

Manfred Beck, Odenthal-Globusch, and Dieter Theisen, Remscheid, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Germany

Continuation of Ser. No. 244,288, April 14, 1972, abandoned. This application Feb. 14, 1974, Ser. No. 442,643

Claims priority, application Germany, Apr. 17, 1971, 2118772

Int. Cl. C08f *210/00*

U.S. Cl. 260—93.1 **3 Claims**

1. In the process of polymerizing at least one cycloalkene having 4, 5, 7 or more carbon atoms and an olefinic double bond in the ring in which the said cycloalkenes are polymerized in the presence of from 0 to 40 ppm of water and in the presence of a catalyst containing a salt of molybdenum or tungsten and an organo compound or halide of an element of Groups Ia to IIIa of the Periodic System, the improvement wherein said catalyst comprises

a. 0.01 to 10 mmol per 100 g of monomer of a halide, oxyhalide or interhalide of molybdenum or tungsten,

b. a compound of the formula LiR, RMgX, ZnR_2 or $AlR_{3-n}Xn$ wherein R is alkyl having 1 to 20 carbon atoms, cycloalkyl having 3 to 8 carbon atoms, aryl having 6 to 20 carbon atoms or alkylaryl wherein alkyl contains from 1 to 20 carbon atoms and aryl contains from 6 to 20 carbon atoms, X is halogen and n is 0, 1, 2 or 3, and

c. molecular iodine, the molar ratio of b):a) being from 1:1 to 7:1 and the molar ratio of a):c) being from 100:1 to 1:10.

3,895,002
READ AFTER WRITE MAGNETIC TRANSDUCING HEAD HAVING CROSS-TALK SHIELD MEANS

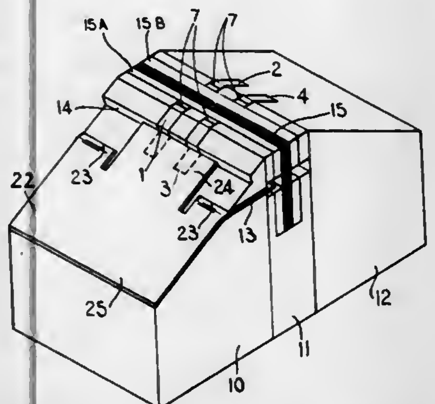
Peter Charles Ridgway, Staines, and Desmond James Mapps, Twickenham, both of England, assignors to International Computers Limited, Hartsfordshire, England

Filed Oct. 11, 1973, Ser. No. 405,367

Claims priority, application United Kingdom, Oct. 19, 1972, 48152/72

Int. Cl. G11b *5/26, 5/28*

U.S. Cl. 360—128 **1 Claim**



1. A magnetic head assembly including a magnetic recording head comprising a first magnetic core having a first non-magnetic gap and a first winding coupled to said first core; a magnetic reproducing head comprising a second magnetic core having a second non-magnetic gap and a second winding coupled to said second core; a body member of electrically conductive material supporting the recording head and the reproducing head in spaced relationship to each other with the first and second non-magnetic gaps lying substantially parallel to one another in a front face of the body member and spaced in a direction of relative movement between the head assembly and a record medium; said body member having a first slot extending transversely of said direction between said recording and reproducing heads and opening in said front face; a first magnetic screen located in said first slot and extending from said front face between the recording and reproducing heads transversely of said direction; said body member having a recess in said front face extending from said second core away from the first screen and exposing an edge of the second core remote from the first screen; said body member having a pair of spaced second slots extending in said direction, with the reproducing head located therebetween, between said first slot and said recess; a second magnetic screen of unitary structure comprising a main portion and a central leg and two side legs extending therefrom, said central portion and central leg being located in said recess with the central leg in abutment with said exposed edge of the second core and said side legs being located one within each of the second slots respectively; an end of each side leg being located adjacent said first screen and spaced from the first screen by third non-magnetic gaps.

3,895,003
PROCESS FOR PRODUCING PROTEIN CONCENTRATE USING AIR CLASSIFICATION

Ronald Bruce Swain, Cincinnati, Ohio, and David Evans O'-Connor, Lake Hiawatha, N.J., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 156,650, June 25, 1971, abandoned. This application June 7, 1973, Ser. No. 368,009

Claims priority, application Canada, June 23, 1972, 145542

Int. Cl. A23j *1/14*

U.S. Cl. 260—123.5 **8 Claims**

1. A process for producing a protein concentrate which comprises the steps of

a. fine grinding an oil seed meal so that about 90% of the particles have a particle size of less than about 100 microns in diameter.

b. air classifying the meal in step (a) to produce a first fines fraction and a first coarse fraction and removing this first fine fraction which is 60 to 90% by weight of the ground meal and of which about 90% are of a size less than 45 microns in diameter,

c. ultra-finely grinding the first fines fraction from step (b) so that 90% of the particles are less than 20 microns in diameter,

d. air-classifying the ground first fines fraction from step (c) to produce a second fines fraction and a second coarse fraction and removing this second coarse fraction which is 50 to 90% by weight of the ground first fines fraction and of which at least about 80% of the particles are less than 20 microns in diameter, and

e. washing the second coarse fraction with a solution selected from the group consisting of water at a pH of 4 to 6, and a 20 to 80% by weight aqueous alcoholic solution and separating a protein-containing residue from a liquid supernatant.

3,895,004
DISAZO DYESTUFFS CONTAINING A HETEROCYCLIC BRIDGING MEMBER

René de Montmollin, Riehen; Gerd Hoelzle, Liestal; Hans-Joerg Angliker, and Richard Peter, both of Basel, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

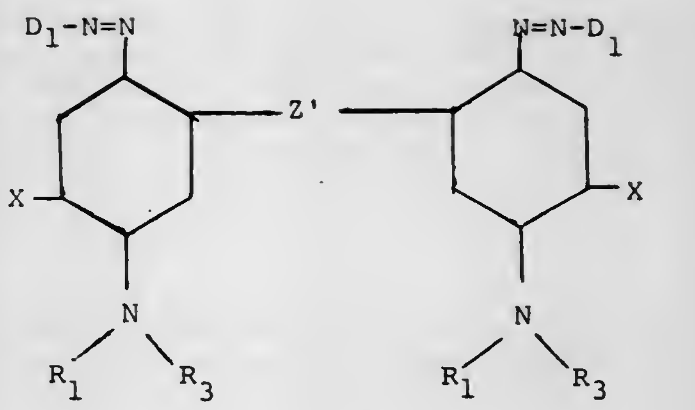
Continuation of Ser. No. 109,664, Jan. 25, 1971, abandoned, which is a continuation-in-part of Ser. No. 753,901, Aug. 20, 1968, Pat. No. 3,642,764. This application Aug. 23, 1973, Ser. No. 391,175

Claims priority, application Switzerland, Aug. 25, 1967, 11938/67; July 17, 1968, 10745/68

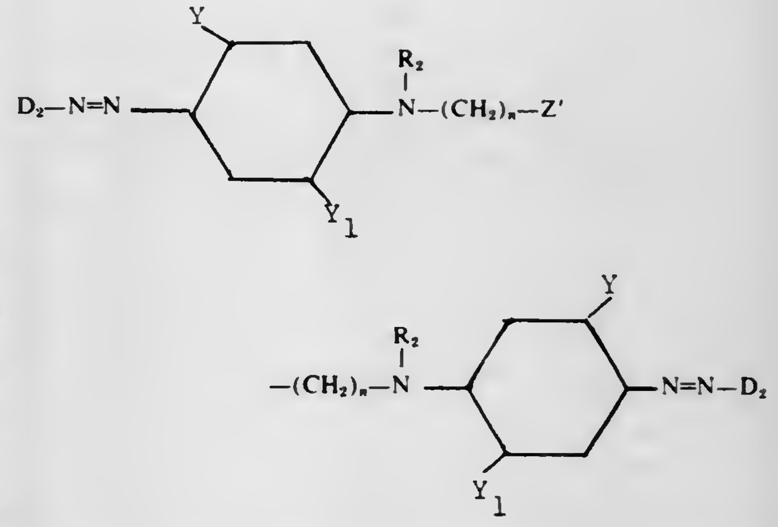
Int. Cl. C09b *33/16*

U.S. Cl. 260—153 **7 Claims**

1. A disazo dyestuff of the formula



or



in which D_1 and D_2 each is phenyl or naphthyl containing at least one and at most three sulfo groups and which may be substituted by phenyl, methyl, chloro, methoxy, carboxy, hydroxy, acetylamino, benzoylamino, sulfophenylazo, (methyl, sulfo)-phenylsulfone, vinylsulfo, β-sulfatoethylsulfone, β-thiosulfatoethylsulphone, β-thiosulfatopropionylamido, β-thiosulfatoethylsulfonylamido, β-sulfatoethylsulfamoyl, chloroacetylamino, β-chloropropionylamino, β-bromopropionylamino, α,β-dichloropropionylamino, α,β-dibromopropionylamino, acryloylamino, α-chloroacryloylamino, α-bromoacryloylamino, trichloroacryloylamino, chlorocrotonylamino, propiolylamino, β-sulfatopropionylamino, 3-nitro, 4-chlorobenzoylamino, 3-nitro, 4-chlorobenzenesulfonylamino,2,2,3,3-tetrafluorocyclobutane-1-carboxylamino, 2-chlorobenzoxazole carboxylamino, 2-chlorobenzthiazole carboxylamino, 2-chlorobenzthiazole sulphonylamino, 2,5-dichloro-1-phenylpyridazone carboxylamino, 2,5-dichloro-1-phenylpyridazone sulphonamino, 4,5-dichloropyridazone propionylamino, 1,4-dichlorophthalazine carboxylamino, 1,4-dichlorophthalazine sulphonamino, 2,3-dichloroquinoxaline carboxylamino, 2,3-dichloroquinoxaline sulphonamino, 2,4-dichloroquinoxaline carboxylamino, 2,4-dichloroquinoxaline sulphonamino, 2-methanesulphonyl-4-chloro-6-methylpyrimidino, tetrachloropyridazino, 2,4-bismethanesulphonyl-6-methylpyrimidino, 2,4,6-tri- or 2,4,5,6-tetrachloropyrimidino, 2,4,6-tri- or 2,4,5,6-tetrabromopyrimidino, 2-methanesulphonyl-4,5-dichloro-6-methylpyrimidino, 2,4-dichloro-5-sulfo-pyrimidino, 5-nitro- or 5-cyano-2,4,6-trichloropyrimidino, 2,6-bis-methanesulphonylpyridine-4-carboxylamino, 5-nitro-6-methyl-2,4-dichloropyrimidino, 2,6-dichloropyrimidine-4-carboxylamino, 2,6-dichloropyrimidine-5-carboxylamino, 2,4-dichloropyrimidine-4-sulfonylamino, 2,4-dichloropyrimidine-5-sulfonylamino, 2,4,6-trichloro-1,3,5-triazino, 2,4,6-tri-(benzenesulphonyl)-1,3,5-triazino or 4,6-dichloro-1,3,5-triazino substituted in the 2- position by phenyl, ethyl, methyl, methoxy, carboxymethylmercapto, ethoxy, isopropoxy, carboxymethoxy, phenoxy, chlorophenoxy, nitrophenoxy, carboxyphenoxy, sulphophenoxy, sulfonaphthoxy, amino, hydroxylamino, hydrazino, phenylhydrazino, methylamino, ethylamino, isopropylamino, methoxyethylamino, methoxypropylamino, dimethylamino, diethylamino, chloroethylamino, benzylamino, cyclohexylamino, morpholino, piperidino, piperazino, ethoxycarbonylmethylamino, sulfoethylamino, N-methyl sulfoethylamino, phenylamino, N-methylphenylamino, toluidino, xylidino, chlorophenylamino, nitrophenylamino, o-acetamidoanilido, p- acetamidoanilido, aminoanilino, aminotoluidino, anisidino, phenetidino, diphenylamino, naphthylamino, hydroxynaphthylamino, aminonaphthylamino, sulfobenzylamino, hydroxyphenylamino, sulfophenylamino, disulfophenylamino, β-sulfotoluidino, N-sulfomethyl anilino, bis(carboxyphenyl) amino, mono, -di-, or tri-sulfo-naphthylamino, 3-carboxy-4-hydroxyanilino, mono-, di-, or tri-sulfonaphtholamino, disulfo-4′-nitrostilbene-(4)-amino, 3′, 4-disulfo-2-nitro-stilbene-4′-aminodiphenylamino, or 2-nitro, 4,3′-disulfo-4′-aminodiphenylamino, nitroanilino, nitrotoluidino, or o- or m- carboxyphenylamino;

X, Y and Y_1 each is hydrogen, trifluoromethyl, lower alkanesulphonyl, lower alkyl, lower alkoxy, phenoxy, chlorine, bromine or lower alkanoylamino;

R_1, R_2 and R_3 each is hydrogen, lower alkyl or lower alkyl substituted by cyano, hydroxyl, acetyloxy, carbomethoxy, carboethoxy, or carbopropoxy;

n = 1, 2 or 3 and Z′ represents the bridge member of the formula

$$-X'-(B-Y')_{p-1}(R')_{q-1}(Y'-B)_{4-1}X'-$$

wherein B represents —CO—, —SO_2—or lower alkylene; X′ and Y′ each represents —O—, —NR_4—where R_4 is hydrogen or lower alkyl or a direct linkage; R′ represents thiophene, furan, benzofuran, pyridine, pyrrole, pyrimidine substituted by chlorine, triazine substituted by chlorine, fluorine, methyl, ethyl, phenyl, N,N-bis-(β-hydroxy-ethyl)-amino or β-ethoxyethoxy or 3,3′-bis(m-tolylene) uretdione; p and r= 1 or 2, q= 2 and the sum of $p+q+r$ must be at least 4.

3,895,005

TRIAZOLO[4,3-D][1,4]BENZODIAZEPINE-3,6-DIONES

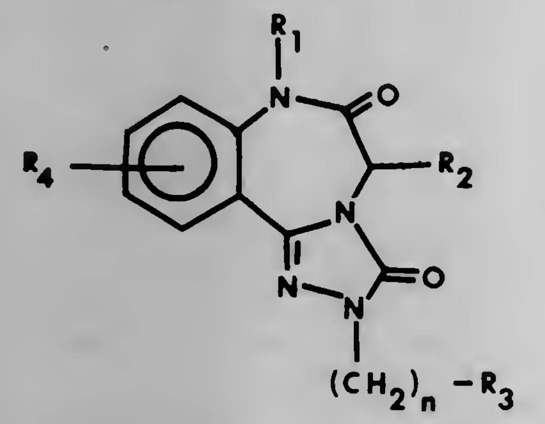
B. Richard Vogt, Yardley, Pa., and Peter C. Wade, Pennington, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Mar. 4, 1974, Ser. No. 447,719

Int. Cl. C07d *57/02*

U.S. Cl. 260—239.3 T **12 Claims**

1. A compound having the formula



or a pharmaceutically acceptable acid-addition salt thereof, wherein R_1 is hydrogen, alkyl, phenyl or benzyl; R_2 is hydrogen or alkyl; R_3 is amino, alkylamino or dialkylamino; R_4 is hydrogen, halogen, nitro, cyano, trifluoromethyl, alkyl, alkoxy or alkylthio; and n is 2, 3 or 4; wherein alkyl is alkyl of 1 to 4 carbon atoms and alkoxy is alkoxy of 1 to 4 carbon atoms.

3,895,006

5-(SUBSTITUTED AMINO)ALKYL)-2-ARYL-3-HALO-1,5-ENZOTHIAZEPIN-4(5H)-ONES

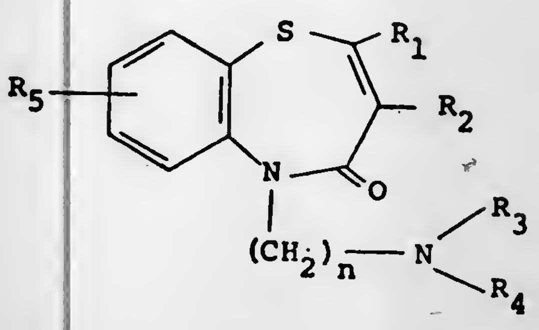
John Krapcho, Somerset, and Chester Frank Turk, Kendall Park, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Apr. 19, 1974, Ser. No. 462,266

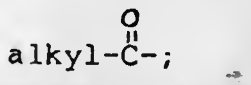
Int. Cl.² C07D *281/02*

U.S. Cl. 260—239.3 B **10 Claims**

1. A compound having the formula



or a pharmaceutically acceptable salt thereof, a quaternary ammonium salt thereof formed with an alkyl halide, a benzyl halide, or a dialkyl sulfate, or a 1-oxide or 1,1-dioxide derivative thereof, wherein R_1 is phenyl or phenyl substituted with alkyl, alkoxy, halogen, trifluoromethyl or



$$\text{alkyl-}\overset{O}{\overset{\|}{C}}\text{-;}$$

R_2 is chlorine or bromine; R_3 is hydrogen, alkyl or phenylalkyl; R_4 is alkyl; R_5 is hydrogen, alkyl, alkoxy, halogen, or trifluoromethyl; and n is 2, 3 or 4; and wherein alkyl and alkoxy refer to groups having one to six carbon atoms.

3,895,007

MANUFACTURE OF MELAMINE

Matthias Schwarzmann, Limburgerhof; Alfred Widmann, Mutterstadt; Ludwig Vogel, Frankenthal, and Dieter Fromm, Gruenstadt, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Apr. 20, 1973, Ser. No. 353,099

Claims priority, application Germany, Apr. 28, 1972, 2220905

Int. Cl. C07d *55/28*

U.S. Cl. 260—249.7 A **4 Claims**

1. A process for the catalytic synthesis of melamine from urea in which urea is passed to a fluidized bed wherein it is cracked at a temperature of from 300° to 450°C to form isocyanic acid and ammonia gases and wherein said gases are reacted in the presence of a catalyst bed at temperature of from 300° to 450°C to form melamine, the improvement which comprises supplying the heat required for said cracking step indirectly by means of heat exchangers located within the fluidized bed and feeding urea to said fluidized bed at a point above said heat exchangers.

3,895,008

DIGOXIGENIN-12-FORMIATE AND PROCESS FOR ITS MANUFACTURE

Ulrich Stache, Hofheim, Taunus; Werner Fritsch, Neuenhain, Taunus, and Werner Haede, Hofheim, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Nov. 16, 1973, Ser. No. 416,427

Claims priority, application Germany, Nov. 20, 1972, 2256911

Int. Cl.² C07C *173/02*

U.S. Cl. 260—239.57 **2 Claims**

1. Digoxigenin-12-formiate.

3,895,009

STILBENE COMPOUNDS

Werner Fringeli, Basel, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

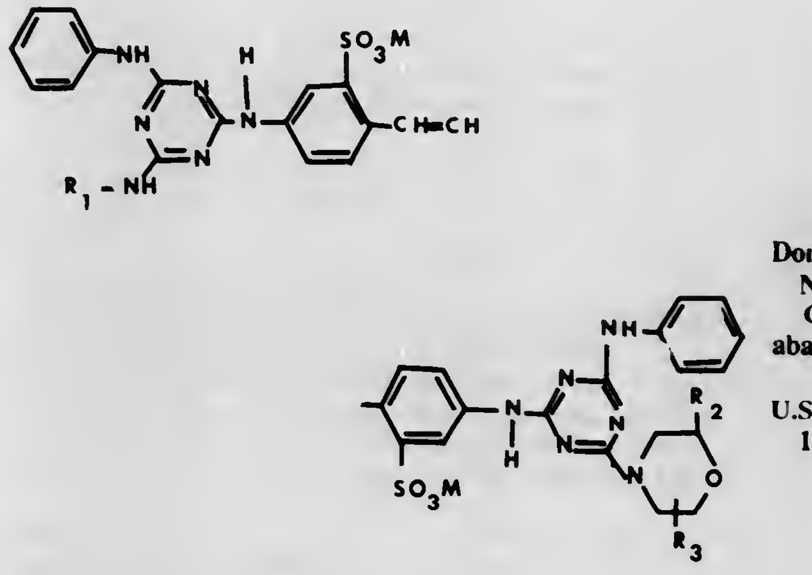
Filed Dec. 18, 1972, Ser. No. 316,154

Claims priority, application Switzerland, Dec. 27, 1971, 18965/71

Int. Cl. C09b *23/00*

U.S. Cl. 260—240.1 **4 Claims**

1. Stilbene derivatives of the formula



wherein R_1 denotes alkyl with 1 to 4 carbon atoms, R_2 and R_3 independently of one another denote hydrogen or methyl and M denotes a hydrogen, alkali metal or optionally substituted ammonium cation.

3,895,010

1-(ARYLTHIO)METHANESULFONAMIDES

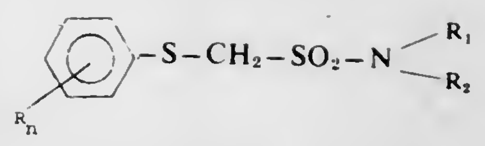
Christian T. Goralski, and Thomas C. Klingler, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 13, 1972, Ser. No. 314,793

Int. Cl. C07d *87/46, 29/36;* **C07c** *149/42*

U.S. Cl. 260—247.1 R **12 Claims**

1. A 1-(arylthio)methanesulfonamide selected from the group consisting of N,N-dimethyl-1-(phenylthio)methanesulfonamide; 1-methyl-4-(((phenylthio)methyl)sulfonyl)piperazine; 1-((p-bromophenyl)thio)methanesulfonamide; 1-((p-methoxyphenyl)thio)-N,N-dimethyl methanesulfonamide; 4-(((phenylthio)methyl)sulfonyl)morpholine; 4-((((p-chlorophenyl)thio)methyl)sulfonyl)morpholine; 1-((((p-t-butylphenyl)thio)methyl)sulfonyl)piperidine; 4-phenyl-1-(((phenylthio)methyl)sulfonyl)piperidine; 1-((3,4-dichlorophenyl)thio)methanesulfonamide; 1-((3-(trifluoromethyl)-phenyl)thio)methanesulfonamide; and 1-((2,4,5-trichlorophenyl)thio)methanesulfonamide.



wherein R represents H, loweralkyl, lower alkoxy, halo or trifluoromethyl, n represents an integer from zero to 3 and

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3,895,011

SUBSTITUTED 2-AMIDO QUINOXALINES

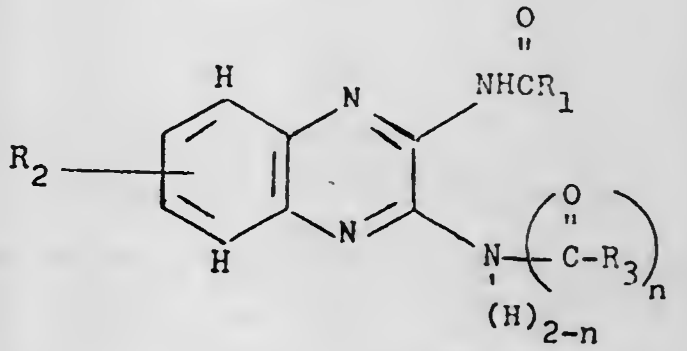
Donnie Joe Sam, Newark, Del., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.

Continuation-in-part of Ser. No. 366,877, June 4, 1973, abandoned. This application Feb. 19, 1974, Ser. No. 443,198

Int. Cl. C07d *51/78*

U.S. Cl. 260—250 Q **6 Claims**

1. A compound of the formula



wherein

- R_1 is alkyl of one to four carbon atoms, cycloalkyl of three to six carbon atoms, alkenyl of two to four carbon atoms, ethynyl, alkoxyalkyl of two to three carbon atoms, chloroalkyl of one to two carbon atoms, bromoalkyl of one to two carbon atoms or cyanoalkyl of two to three carbon atoms;
- R_2 is hydrogen, chlorine, bromine or fluorine;
- R_3 is alkyl of one to seven carbon atoms or alkenyl of two to four carbon atoms; and
- n is 0 or 1; provided that the total number of carbon atoms in R_1 and R_3 is less than or equal to nine.

3,895,012

2-ALKYL-4(3H)-PTERIDINONE COMPOUNDS AND THERAPEUTIC COMPOSITIONS

Volker Liede, Mannheim; Alfred Popelak, Rimbach; Max Thiel, Mannheim; Klaus Hardebeck, Ludwigshafen, and Egon Roesch, Lampertheim, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Germany

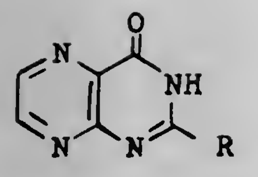
Filed June 18, 1973, Ser. No. 371,210

Claims priority, application Germany, June 30, 1972, 2232098

Int. Cl. C07d *57/28*

U.S. Cl. 260—251.5 **9 Claims**

1. 2-Alkyl-4(3H)-pteridinone compound of the formula



wherein

R is straight-chain, branched or cyclic alkyl of from two to seven carbon atoms;

and the pharmacologically acceptable salts thereof.

3,895,013
HYDROXYQUINOLINE DERIVATIVE

Danyèle Yvette Vilarel, Nee Sabarthez, Chantilly; Roger Lucien Debrie, Brenouille, and Gérard Paul Marie Henri Loiseau, Sceaux, all of France, assignors to Pechiney Ugine Kuhlmann, Paris, France

Filed Oct. 20, 1972, Ser. No. 299,485

Claims priority, application France, Oct. 20, 1971, 71.37631

Int. Cl. C07d *33/44*

U.S. Cl. 260—270 D **1 Claim**

1. 5-fluoro-8-bismutho-hydroxy-quinoline.

3,895,014
PROCESS FOR PREPARING 1-ALKYLTHIO-3,4-DIHYDRO (AROMATIC [c]) PYRIDINES

Maurice Ward Gittos, Slough, England, assignor to Aspro-Nicholas Limited, Slough, England

Filed Apr. 12, 1973, Ser. No. 350,669

Claims priority, application United Kingdom, Apr. 13, 1972, 17033/72

Int. Cl.² C07D *217/22*

U.S. Cl. 260—283 S **17 Claims**

1. A process for preparing a 1-alkylthio-3,4-dihydro (aromatic [c]) pyridine in which the aromatic group is selected from the group consisting of phenyl and thienyl and the alkylthio has from one to six carbon atoms, which comprises the step of contacting a corresponding 2-aromatic-ethyl isothiocyanate having an unsubstituted ring carbon atom adjacent to the ring carbon atom attached to the ethyl isothiocyanate group and in which the aromatic group is selected from the group consisting of phenyl and thienyl with a compound including the corresponding incipient alkyl carbonium ion having from one to six carbon atoms.

3,895,015
CHLOROPYRIDYL THIOALKYLTHIO CYANATES

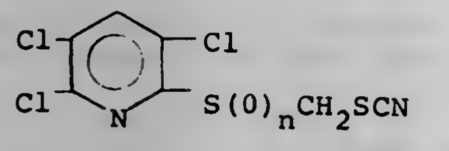
Penelope B. Domenico, Fairfax, Va., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 15, 1974, Ser. No. 460,833

Int. Cl. C07d *48, 31/50*

U.S. Cl. 260—294.8 F **3 Claims**

1. A compound corresponding to the formula



wherein *n* represents an integer of 0, 1 or 2.

3,895,016
HALOPYRIDYL THIOALKYLTHIO CYANATES

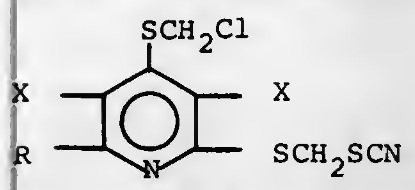
Penelope B. Domenico, Fairfax, Va., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 15, 1974, Ser. No. 460,834

Int. Cl. C07d *31/50*

U.S. Cl. 260—294.8 G **5 Claims**

1. A compound corresponding to the formula



wherein X represents hydrogen, chloro or bromo and R represents X or thioalkylthiocyanato ($-SCH_2SCN$).

3,895,017
3-ACETYL-1-ALKYL-1,4-DIHYDRO-4-OXO-1,8-NAPHTHYRIDINES AND INTERMEDIATES

George Y. Lesher, and Ruth Pauline Brundage, both of Schodack, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 333,541, Feb. 20, 1973, Pat. No. 3,875,172. This application Mar. 22, 1974, Ser. No. 453,928

Int. Cl.² C07D *31/36*

U.S. Cl. 260—295 R **2 Claims**

1. Lower-alkyl α(6-Q-2-pyridylaminomethylene)acetoacetate where Q is lower-alkyl, lower-alkanoyloxymethyl, hydroxymethyl, 4(or 3)-pyridyl or 4(or 3)-pyridyl having one or two lower-alkyl substituents.

3,895,018
PLASTER COMPOSITION

John Adolf, 2084 E. 34th Ave., Vancouver 16, British Columbia, Canada

Filed July 20, 1970, Ser. No. 56,739

Int. Cl. C04b *13/24;* **C08f** *45/24*

U.S. Cl. 260—29.7 S **9 Claims**

1. A flexible plaster composition consisting essentially of:

a. 1–9 parts by volume of a primary filler selected from the group consisting of slaked lime, hardwall plaster, and gypsum wallboard joint filler,

b. 1–5 parts by volume of a latex sealer, said latex sealer being a stabilized aqueous emulsion of a compound selected from the group consisting of vinyl acetate, vinyl acrylic, and styrene-butadiene resins,

c. 4–5 parts by volume of sand having a particle size distribution such that a major portion thereof has a particle size range between one-sixteenth and one-eighth of an inch, and

d. water in sufficient amount to attain a workable consistency.

3,895,019
CYANOISOTHIAZOLYL BIS (THIOBENZOTHIAZOLES)

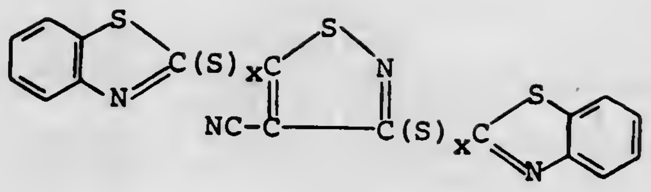
John Joseph D'Amico, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 351,143, April 16, 1973, Pat. No. 3,853,825. This application Aug. 16, 1974, Ser. No. 498,051

Int. Cl. C07d *99/02*

U.S. Cl. 260—306.5 **3 Claims**

1. A compound of the formula



in which *x* is one or two.

3,895,020
PREPARATION OF 4,5-BIS-(TRIFLUOROMETHYLIMINO)-THIAZOLIDINES

Hans-Joachim Scholl, Cologne; Erich Klauke, Odenthal; Ferdinand Grewe, Burscheid, and Ingeborg Hammann, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

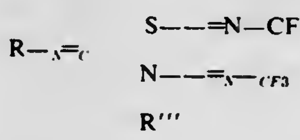
Filed Dec. 8, 1971, Ser. No. 206,158

Claims priority, application Germany, Dec. 18, 1970, 2062348

Int. Cl. C07d *99/10*

U.S. Cl. 260—306.7 T **14 Claims**

1. 4,5-Bis-trifluoromethylimino dervatives of thiazolidines of the general formula:



in which

R and R''' each is hydrogen, alkyl, alkenyl or alkynyl with up to 8 carbon atoms optionally substituted by halogen, cyano, lower alkoxy or alkylmercapto of up to 3 carbon atoms, cyclopentyl or cyclohexyl optionally substituted with alkyl of up to 3 carbon atoms; carbalkoxy having up to 8 carbon atoms in the alkoxy group; phenylalkyl or naphthylalkyl with up to 2 carbon atoms in the alkyl moiety; phenyl or naphthyl radicals optionally being substituted by halogen, cyano, nitro, lower alkyl of up to 3 carbon atoms, haloalkyl of up to 8 carbon atoms, lower alkoxy or alkylmercapto of up to 3 carbon atoms; or together are an ethylene, propylene or o-phenylene radical.

3,895,021
N-HETEROCYCLIC PULVINIC ACID AMIDES

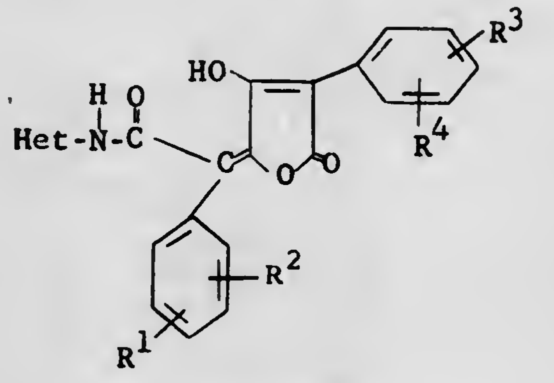
Joseph Weinstock, Phoenixville, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

Filed Sept. 4, 1973, Ser. No. 393,861

Int. Cl. C07d *99/04, 99/10*

U.S. Cl. 260—306.8 R **8 Claims**

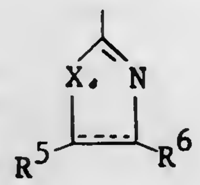
1. A compound of the formula:



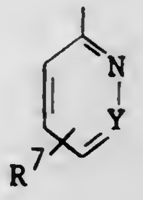
in which:

R¹, R², R³ and R⁴ are each hydrogen, lower alkyl of from one to four carbon atoms, lower alkoxy of from one to four carbon atoms, phenyl, phenoxy, halogen, trifluoromethyl, hydroxy or, taken together in adjacent positions, methylenedioxy; and

Het is a heterocyclic moiety of the formula:



or



in which:

X is S, NH or O;

Y is N or CH;

R^5 and R^6 are hydrogen, methyl or halogen, or together form a 1,2-benzo radical;

R^7 is hydrogen, methyl or halogen; and ---- indicates an optional double bond.

3,895,022
ANTI-INFLAMMATORY AGENTS, COSMETIC PREPARATIONS AND METHOD OF PREVENTING INFLAMMATION

Hinrich Moller, Dusseldorf-Benrath; Christian Gloxhuber, Haan, Rhineland, and Harald Schnegelberger, Leichligen, all of Germany, assignors to Henkel & Cie GmbH, Dusseldorf, Germany

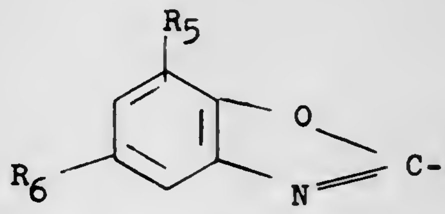
Filed Dec. 27, 1972, Ser. No. 318,757

Claims priority, application Germany, Dec. 27, 1971, 2164851

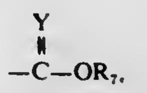
Int. Cl. C07d *85/48*

U.S. Cl. 260—307 D **6 Claims**

1. An anti-inflammatory benzoxazole compound having the formula



wherein X_1 represents a member selected from the group consisting of $-C \equiv N$ and



$$-\overset{\overset{Y}{\|}}{C}-OR_7,$$

Y represents a member selected from the group consisting of =O, =S and =NH, R_7 represents a member selected from the group consisting of alkyl of from 1 to 22 carbon atoms, alkenyl of from 3 to 22 carbon atoms, phenyl, alkylphenyl of from 7 to 18 carbon atoms, phenylalkyl of from 7 to 18 carbon atoms, and, when Y is 0, hydrogen, alkali metal, $-NH_4$, lower alkylammonium and lower alkanolammonium, R_6 represents a member selected from the group consisting of carboxy, alkali metal salts of carboxy, carbamyl, and carbo-lower alkoxy, and R_5 represents hydrogen.

3,895,023
ANTIINFLAMMATORY 1,2,4-OXADIAZOLIDINE-3,5-DIONES

Thomas R. Sharpe, Wilmington, Del., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.
Filed Feb. 6, 1973, Ser. No. 330,015
Int. Cl. C07d *85/52*
U.S. Cl. 260—307 B **2 Claims**

1. A compound selected from the group consisting of 2-(4-trifluoromethoxyphenyl)-1,2,4-oxadiazolidine-3,5-dione, and its sodium, potassium, ammonium, calcium, and magnesium salts.

3,895,024
PROCESS FOR PREPARING 4,5-DIPHENYL-OXAZOL-2-NE

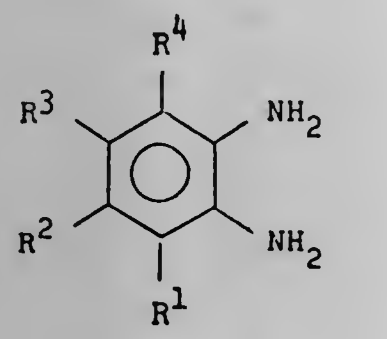
Robert Hafeli, Zurich, Switzerland, assignor to Serna, A.G., Glarus, Switzerland
Filed June 24, 1974, Ser. No. 482,358
Claims priority, application Switzerland, Aug. 9, 1973, 9985/73
Int. Cl. C07d *85/38*
U.S. Cl. 260—307 C **6 Claims**

1. A process for preparing 4,5-diphenyl-oxazol-2-one comprising the step of reacting benzoin with cyanic acid.

3,895,025
2-BENZIMIDAZOLETHIOL PREPARATION

Alan Lawrence Goodman, Wilmington, Del., assignor to E. I. du Pont de Nemours & Co., Wilmington, Del.
Continuation-in-part of Ser. No. 346,161, March 29, 1973, abandoned. This application July 23, 1974, Ser. No. 491,046
Int. Cl. C07d *49/38*
U.S. Cl. 260—309.2 **15 Claims**

1. A process for preparing a 2-benzimidazolethiol which comprises reacting
  a diamine having the formula

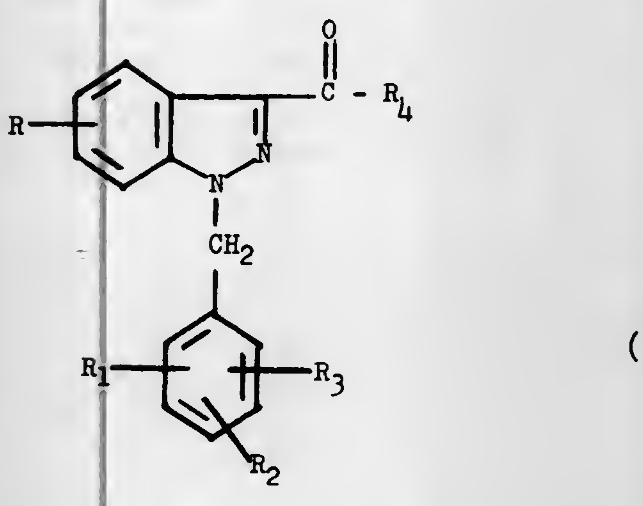


wherein R^1, R^2, R^3 and R^4 are independently selected from the group: hydrogen, nitro, halogen and C_1–C_{12} alkyl or alkoxy
  with carbon disulfide
  in an organic solvent which dissolves said diamine, which has a boiling point of at least 65°C., and which is substantially inert to carbon disulfide,
  in the presence of about 0.25 – 5.0%, based on the weight of said diamine, of a quaternary ammonium hydroxide having the formula $R^{11}R^{12}R^{13}R^{14}N(OH)$ wherein
  a. R^{11}, R^{12}, R^{13} and R^{14} are independently selected from the group: C_1–C_{20} alkyl, C_8–C_{20} alkenyl, and C_7–C_{30} aralkyl and alkyl - substituted aralkyl,
  b. R^{11} and R^{12} are selected as in (a) above, and R^{13} and R^{14} are selected from $(CH_2CH_2O)_nH$ wherein n is 1–15, or
  c. R^{11} and R^{12} are selected as in (a), and R^{13} and R^{14} together with the nitrogen form a saturated 6-member ring which optionally contains an ether oxygen in the 4-position.

3,895,026
SUBSTITUTED 1-BENZYL-1H-INDAZOLE-3-CARBOXYLIC ACIDS AND DERIVATIVES THEREOF

Giuseppe Palazzo, and Bruno Silvestrini, both of Rome, Italy, assignors to Aziende Chimiche Riunite Angelini Francesco A.C.R.A.F. S.p.A., Rome, Italy
Filed Feb. 9, 1973, Ser. No. 330,902
Claims priority, application Italy, Feb. 29, 1972, 48628/72
Int. Cl. C07d *49/02*
U.S. Cl. 260—310 C **13 Claims**

1. A compound of the formula:



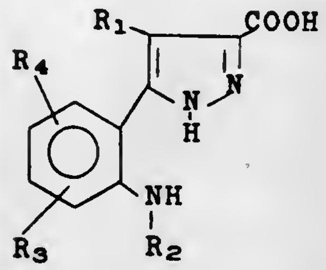
(I)

wherein
  R is hydrogen, methyl, methoxy or halogen;
  R_1 is hydrogen, methyl, halogen or a group forming with the benzene ring to which it is attached a naphthyl ring;
  R_2 is halogen, methyl, methoxy, trifluoromethyl, $—CONH_2$ or methylsulfonyl;
  R_3 is hydrogen or halogen;
  R_4 is hydroxy, $—NH_2$ or $—OR_5$
wherein
  R_5 is an easily hydrolyzable group $—CH_2CH_2OH$, $—CH_2.CHOHCH_2OH$, or $—CH—(CH_2OH)_2$ or a pharmaceutically acceptable salt thereof.

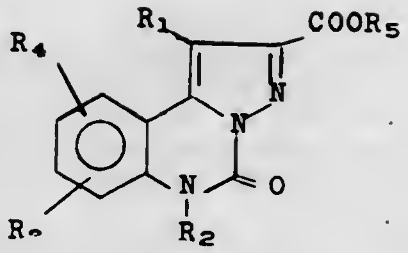
3,895,027
PROCESS FOR PREPARING PYRAZOLE-3-CARBOXYLIC ACIDS

Allen S. Katner, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.
Filed Apr. 12, 1974, Ser. No. 460,645
Int. Cl. C07d *49/18*
U.S. Cl. 260—310 R **6 Claims**

1. A process for preparing pyrazole-3-carboxylic acids of the formula,



from a pyrazolo[1,5-c]quinazolin-5(6H)-one of the formula,

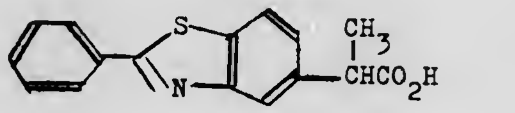


wherein R_1 is a monovalent group selected from the group consisting of hydrogen, C_1–C_4 alkyl, phenyl, and monosubstituted phenyl in which the substituent is C_1–C_3 alkyl, C_1–C_3 alkoxy, fluoro, chloro, or bromo; R_2 is a monovalent group selected from the group consisting of methyl, phenyl, benzyl, and monosubstituted phenyl and benzyl in which the substituent is methyl, trifluoromethyl, methoxy, fluoro, chloro, bromo, or methylsulfonyl; R_3 and R_4 are monovalent groups independently selected from the group consisting of hydrogen, methyl, methoxy, fluoro, chloro, and bromo, with the limitation that R_3 and R_4 must be different unless each of R_3 and R_4 is hydrogen; and R_5 is hydrogen or C_1–C_3 alkyl; which process comprises the steps of:
  A. hydrolyzing the pyrazolo[1,5-c]quinazolin-5(6H)-one in an aqueous medium in the presence of at least two molar equivalents of a strong base and at a temperature of from about 40°C to the reflux temperature of the reaction medium, and
  B. acidifying the hydrolysis reaction medium to obtain the pyrazole-3-carboxylic acid.

3,895,028
ALPHA-(2-PHENYLBENZOTHIAZOL-5-YL)PROPIONIC ACID

Jin Wada, Koshigaya; Tadayuki Suzuki, Soka; Hiroki Miyamatsu, Chofu; Shinji Ueno, Tokyo, and Mitsuhiro Shimizu, Chiba, all of Japan, assignors to Tokyo Tanabe Company, Ltd., Japan
Filed Aug. 16, 1973, Ser. No. 388,781
Claims priority, application Japan, Sept. 12, 1972, 47-90895; Dec. 27, 1972, 47-129836; Apr. 18, 1973, 48-43061
Int. Cl. C07d *91/44*
U.S. Cl. 260—304 **1 Claim**

1. α-Methyl-2-phenyl-5-benzothiazolyl acetic acid represented by the structural formula:

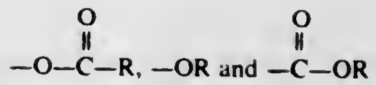


(I)

3,895,029
FLUOROPOLYMER COATING COMPOSITIONS

Richard Bernard Ward, Kennett Square, Pa., assignor to E. I. du Pont de Nemours & Co., Wilmington, Del.
Filed Feb. 13, 1974, Ser. No. 442,169
Int. Cl. C08f *29/22, 45/04, 45/34, 45/42*
U.S. Cl. 260—31.4 R **6 Claims**

1. An optically clear coating composition consisting essentially of
  a. a film-forming fluoropolymer having a molecular weight of about from 3,000 to 1,000,000 and prepared from
    1. at least one polymerizable fluoroolefin of the formula $CH_2{=}CFX$ wherein X is hydrogen or fluorine,
    2. up to 0.5 mole per mole of the fluoroolefin, of tetrafluoroethylene; and
    3. up to 0.3 mole, per mole of the fluoroolefin, of an olefin of the formula $CH_2{=}CAB$ wherein A is hydrogen or alkyl having 1 or 2 carbon atoms, and B is selected from



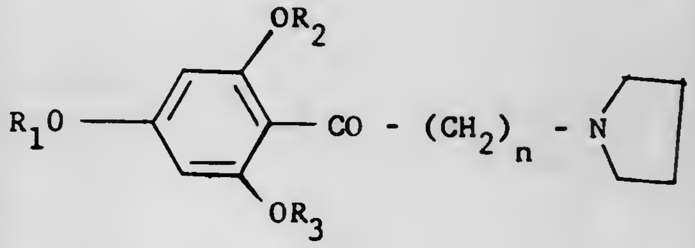
$$—O—\overset{O}{\overset{\|}{C}}—R,\ —OR \text{ and } —\overset{O}{\overset{\|}{C}}—OR$$

where R is alkyl of 1 to 8 carbon atoms,
  b. about from 1 percent to 20 percent by weight of ferric oxide of about from 25 to 100 mμ. particle size and substantially free from surfactant selected from alkyl and alkyl-aryl sulfonates, and
  c. up to 50 percent by weight of the fluoropolymer of a normally solid acrylic polymer selected from polymers and copolymers of alkyl acrylate and alkyl methacrylate.
  5. A liquid coating composition of claim **4** wherein the solvent is selected from at least one of 4-methoxy-4-methylpentanone-2 and 2-ethoxyethyl acetate.

3,895,030
(2,4,6-ALKOXY)(3-PYRROLIDINO PROPYL) KETONES

Louis Lafon, Paris, France, assignor to Orsymonde, France
Filed May 3, 1971, Ser. No. 139,894
Claims priority, application United Kingdom, May 6, 1970, 21865/70
Int. Cl. C07d *27/06*
U.S. Cl. 260—326.5 J **4 Claims**

1. An aminoketone of the formula:

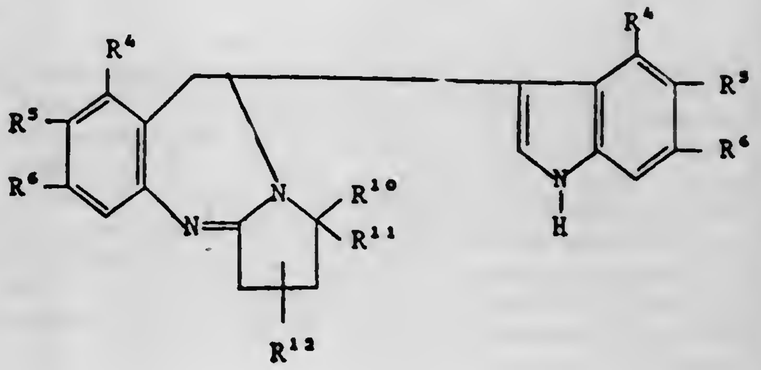


wherein each of R_1, R_2 and R_3, are the same or different, and represent methyl or ethyl, and *n* is 3, or a non-toxic acid addition salt thereof.

3,895,031
2,3,5,6-TETRAHYDRO-5-(INDOL-3-YL)-1H-PYRROLO[2,1-B][1,3]BENZODIAZEPINES AND THEIR PREPARATION

Yao Hua Wu, and Arthur Jacob Mueller, both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.
Division of Ser. No. 251,059, May 8, 1972, Pat. No. 3,829,414, which is a division of Ser. No. 4,108, Jan. 19, 1970, Pat. No. 3,697,553, which is a continuation-in-part of Ser. No. 709,941, March 4, 1968, abandoned. This application May 6, 1974, Ser. No. 467,432
Int. Cl. C07d *27/56*
U.S. Cl. 260—326.15 **5 Claims**

1. A compound selected from the group consisting of of the bases having the formula



and the acid addition salts of said bases wherein

- R^4, R^5, and R^6 are hydrogen, halogen, alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 12 carbon atoms, aralkoxy having 7 to 12 carbon atoms, alkanoyl having 2 to 4 carbon atoms, nitro or cyano, and
- R^{10}, R^{11}, and R^{12} are hydrogen or lower alkyl having from 1 to 4 carbon atoms and R^{12} is located in either the 1- or 2-positions.

3,895,032
2-PHENOXY-ALKANOIC ACIDS

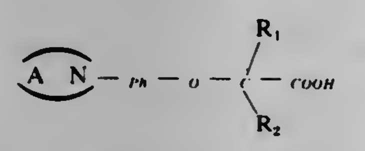
Richard William James Carney, New Providence, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 28, 1973, Ser. No. 336,668

Int. Cl. C07d *27/14*

U.S. Cl. 260—326.41 **4 Claims**

1. A compound of the formula



$$A\ N-Ph-O-\overset{R_1}{\underset{R_2}{C}}-COOH$$

in which each of R_1 and R_2 is hydrogen or lower alkyl, Ph is unsubstituted 1,4-phenylene or 1,4-phenylene substituted by one member of the group consisting of lower alkyl, lower alkoxy, halogeno, trifluoromethyl or nitro and A N is unsubstituted 5 to 7 ring-membered monocyclic lower 2- or 3-alkenyleneimino, or a lower alkyl ester, or a therapeutically useful ammonium, alkali metal, alkaline earth metal, aluminum or acid addition salt thereof.

3,895,033
N-ALKENYLTETRACYCLINE DERIVATIVES

Masuo Murakami, Tokyo; Masaru Iwanami, Yokohama; Tadao Shibanuma, Asaka; Masaharu Fujimoto, Tokyo; Norio Sato; Ryutaro Kawai, both of Saitama, and Kuniichiro Yano, Tokorozawa, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

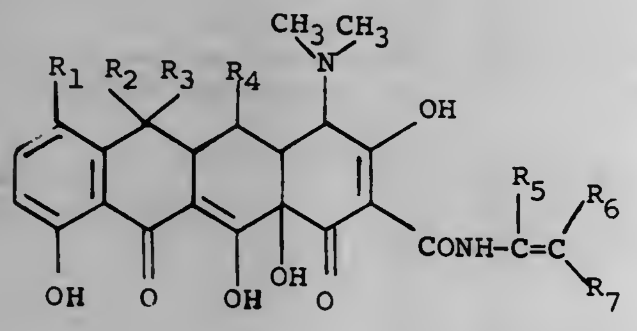
Division of Ser. No. 205,414, Dec. 6, 1971, Pat. No. 3,808,274. This application Nov. 14, 1973, Ser. No. 415,832

Claims priority, application Japan, Dec. 9, 1970, 45-109160; Dec. 26, 1970, 45-128347

Int. Cl. C07d *63/00*

U.S. Cl. 260—332.2 R **7 Claims**

1. An N-alkenyltetracycline derivative represented by the formula



wherein R_1 represents a hydrogen atom or a halogen atom; R_2 represents a hydrogen atom or a methyl group; R_3 represents a hydrogen atom or a hydroxyl group; R_5 represents an alkyl group or a thienyl alkyl group; R_6 represents a hydrogen atom, a thienyl group or a methyl thienyl group or said R_5 and R_6 when combined with each other form a 1-thiapropylene group or 2-thiabutylene group; R_7 represents a hydrogen atom or an alkyl group; with the proviso that at least one group of R_5, R_6 and combination group of R_5 and R_6 is a group including sulfur atom.

3,895,034
1 OR 2-MONO AND DIALKYL SUBSTITUTED THIENOBENZOPYRANS

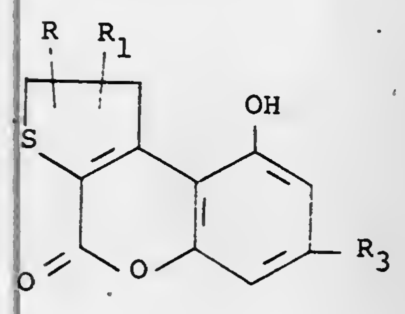
Martin Winn, Deerfield, Ill.; Raj Kumar Razdan, Belmont; Haldean Cloyce Dalzell, Weston, both of Mass., and Joyce Ruth Krei, Glenview, Ill., assignors to Sharps Associates, Cambridge, Mass.

Filed Aug. 29, 1973, Ser. No. 392,636

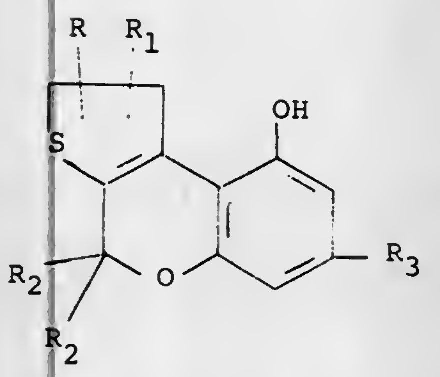
Int. Cl. C07d *333/00*

U.S. Cl. 260—332.2 H **15 Claims**

1. A compound of the formulae



and



wherein R is a lower alkyl group having 1 to 5 carbons, R_1 is hydrogen or a lower alkyl group having 1 to 5 carbons, R_2 is a lower alkyl group and R_3 is an alkyl group having 1 to 20 carbon atoms, a phenyl-lower alkyl group in which the phenyl is unsubstituted or is substituted with a lower-alkyl, lower-alkoxy, halo, nitro or lower-alkylmercapto group, or a cycloalkyl-lower alkyl group in which the cycloalkyl group contains 3 to 8 carbons in the ring.

3,895,035
PROCESS FOR THE PRODUCTION OF POURABLE, POWDERY, FILLER-CONTAINING RUBBER MIXTURES FROM RUBBER SOLUTIONS

Gerhard Berg, and Karl-Heinz Nordsiek, both of Marl, Germany, assignors to Chemische Werke Huls, Marl, Germany

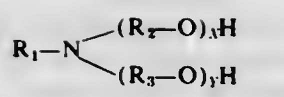
Filed Mar. 21, 1973, Ser. No. 343,433

Claims priority, application Germany, Mar. 23, 1972, 2214121

Int. Cl. C08c *11/08, 11/18, 11/22*

U.S. Cl. 260—33.6 AQ **31 Claims**

1. A process for producing pourable, discrete, finely-divided, tack-free, elastomer particles, said process comprising preparing an emulsion comprising water, a volatile inert water insoluble organic solvent selected from the group consisting of alkanes and cycloalkanes having dissolved therein an elastomer, and an emulsifying amount of a surfactant of the general formula



$$R_1-N\begin{matrix}(R_2-O)_xH\\(R_3-O)_yH\end{matrix}$$

wherein R_1 is alkyl or alkenyl of 1–20 carbon atoms, R_2 and R_3 are ethylene or propylene; and X and Y are integers between 1 and 80, gradually introducing said emulsion into a precipitating aqueous bath while maintaining said bath at a pH between 0.1 and 7 and simultaneously separating said organic solvent from said bath thereby obtaining a precipitate in water, separating said precipitate from the water and thereafter drying said precipitate, thereby obtaining discrete, finely-divided, tack-free particles comprising said elastomer.

3,895,036
9-AMINO-3-(AMINO OR NITRO)-1,5-DIOXASPIRO[5.5]UNDECANE DERIVATIVES

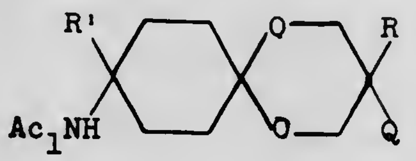
Karl O. Gelotte, Nassau, and Alexander R. Surrey, Albany, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Apr. 19, 1974, Ser. No. 462,389

Int. Cl.² C07D *319/06;* **A61K** *31/335*

U.S. Cl. 260—340.7 **10 Claims**

1. A compound of the formula



wherein

- R′ and R are each hydrogen or lower-alkyl;
- Ac_1 is hydrogen, lower-alkanoyl or polyhalo-acetyl only when Q is $NHAc_2$; and,
- Q is NO_2, NH_2 or $NHAc_2$ where Ac_2 is polyhalo-acetyl.

3,895,037
PROCESS FOR PREPARING A DIPHENYL CARBINOL CARBOXYLIC ANHYDRIDE

Anatoli Onopchenko, and Johann G. D. Schulz, both of Pittsburgh, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed May 1, 1974, Ser. No. 465,763

Int. Cl. C07c *63/48*

U.S. Cl. 260—346.3 **17 Claims**

1. A process for converting a benzophenone carboxylic anhydride to the corresponding diphenyl carbinol carboxylic anhydride which comprises subjecting said benzophenone carboxylic anhydride to hydrogenation with hydrogen in the presence of a hydrogenation catalyst while said benzophenone carboxylic anhydride is dissolved in a liquid carboxylic acid ester having from two to 12 carbon atoms.

3,895,038
PHTHALIC ANHYDRIDE PROCESS

Wilhelm Flesch, Heidelberg, Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Jan. 22, 1973, Ser. No. 325,599

Int. Cl. C07c *63/18*

U.S. Cl. 260—346.7 **3 Claims**

1. In the process for removing phthalic anhydride and maleic anhydride from a waste gas stream from a vapor phase air oxidation in a catalytic bed phthalic anhydride process by passing said gas through a water scrubbing unit to absorb in the water said anhydrides and thereafter incinerate without deleterious effect to the incinerator firebrick said anhydride containing water and discharging the resulting incineration products into the atmosphere, the improvement comprising the addition of ammonia or ammonium hydroxide to the scrub water so as to substantially neutralize only the first acid group of said anhydrides whereby said anhydrides are rendered more water-soluble and plugging of said scrubbing unit by precipitation and/or crystallization of said anhydrides is avoided.

3,895,039
CARBAMALDOXIMES

Jacques Perronnet, and Pierre Girault, both of Paris, France, assignors to Roussel Uclaf, Paris, France

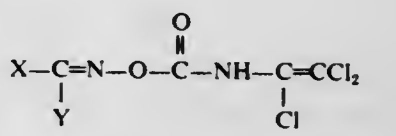
Division of Ser. No. 408,744, Oct. 23, 1973, Pat. No. 3,836,582. This application Apr. 26, 1974, Ser. No. 464,473

Claims priority, application France, Nov. 6, 1972, 72.39141

Int. Cl. C07d *5/30*

U.S. Cl. 260—347.7 **2 Claims**

1. A compound of the formula



$$X-\underset{Y}{C}=N-O-\overset{O}{\overset{\|}{C}}-NH-\underset{Cl}{C}=CCl_2$$

where Y is selected from the group consisting of hydrogen, chlorine and bromine and X is nitrofuryl.

3,895,040
METHOD FOR MANUFACTURE OF FATTY ACIDS AND DIBASIC ACIDS

Shoji Miyazaki, Ohmiya, and Yasuo Suhara, Zama-Machi, both of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Oct. 16, 1972, Ser. No. 297,727

Claims priority, application Japan, Oct. 15, 1971, 46-80902; Nov. 15, 1971, 46-9124

Int. Cl. C08h *17/36*

U.S. Cl. 260—413 **15 Claims**

1. A method for the manufacture of dibasic acid, which method comprises the steps of:

A. dissolving α, ω-glycol in a solvent selected from the group consisting of water, formic acid, acetic acid and propionic acid;
B. bringing the resultant solution of Step (A) into contact with ozone-containing gas at temperatures of 10°C – 70°C;
C. bringing the solution of Step (B) into contact with oxygen-containing gas at temperatures of 70°C – 110°C; and
D. removing the solvent from the resultant reaction solution of Step (C).

3,895,041
METALLISED PIGMENTS

Eric Richard Inman, Bridge of Weir; James McGeachie McCrae, Stewarton, and John Andrew Stirling, Glasgow, all of Scotland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

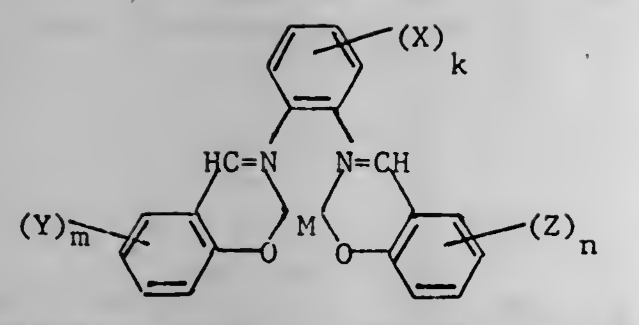
Filed Mar. 15, 1973, Ser. No. 341,415

Claims priority, application United Kingdom, Mar. 20, 1972, 12822/72

Int. Cl. C07f *3/06, 13/00, 15/04*

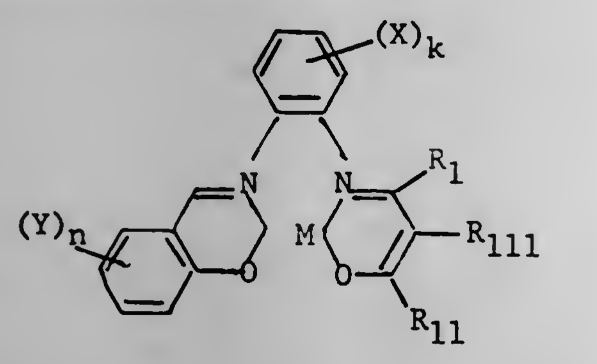
U.S. Cl. 260—429.9 **13 Claims**

1. An unsymmetrical compound having either the formula:



I

wherein M is Cu, Ni or Zn, X and Y are the same or different, and each is hydrogen or each represents a non water solubilising group, selected from the group consisting of halogen, alkyl having from 1 to 4 carbon atoms, alkoxy having from 1 to 4 carbon atoms, nitro, or carboxy, and Z has the same significance as X and Y, or two adjacent X groups or two adjacent Y groups or two adjacent Z groups form a fused naphthalene ring, and *k*, *m* and *n* are the same or different and each is an integer from 1 to 4 with the proviso that when Y, Z are the same, then the positions of Y and Z in their respective benzene nuclei are different relative to the respective oxygen atoms attached to these nuclei; or the formula:



II

wherein M, X, Y, *m* and *k* have their previous significance, R_1 and R_{11} are the same or different and each is an alkyl having from 1 to 4 carbon atoms or an aryl selected from the group consisting of phenyl, α-naphthyl and β-naphthyl, and R_{111} is hydrogen or an arylazo selected from the groups consisting of phenylazo, α-naphthylazo and β-naphthylazo.

3,895,042
CLAY-HEAT REFINING PROCESS

Frederick T. Taylor, Port Credit, Canada, assignor to Canada Packers Limited, Toronto, Canada

Continuation of Ser. No. 877,424, Nov. 17, 1969, abandoned. This application Apr. 11, 1974, Ser. No. 459,958

Int. Cl.² C11B *3/04;* C11C *1/08;* C11B *3/00*

U.S. Cl. 260—424 **8 Claims**

1. A process for refining crude fatty substances selected from the group consisting of unrefined vegetable oils and fatty acids which comprises heating said crude fatty substances under vacuum or inert atmosphere in the presence of about 0.1 to 1.0 percent of phosphoric acid and about 0.1 to 6.0 percent of acid activated clay to a temperature of from about 325° to 500°F and then filtering the resulting product.

3,895,043
SILYL-SUBSTITUTED UREA DERIVATIVES AND A PROCESS FOR THEIR PREPARATION

Kuno Wagner, Leverkusen; Gunter Oertel, Cologne, both of Germany; Hans Dietrich Golitz, deceased, late of Cologne, Germany (by Ingrid Irene Klarchen Golitz, heiress), and Bernd Quiring, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 2, 1972, Ser. No. 303,192

Claims priority, application Germany, Nov. 6, 1971, 2155258

Int. Cl. C07f *7/18*

U.S. Cl. 260—448.8 R **2 Claims**

1. A process for the preparation of silylsubstituted urea derivatives which comprises

a. reacting

1. an organic polyisocyanate of the formula

$$Q'(NCO)_{b+1}$$

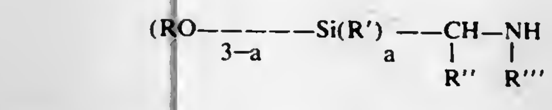
wherein

Q′ represents a(b+1)-valent alkyl radical with 4-12-carbon atoms or a (b+1)-valent C_4-C_{14} cycloalkyl, C_7-C_{15} arylalkyl, C_1-C_{14} aryl or C_8 alkyl aryl radical, and wherein

b = 1 or 2, with

2. a hydroxyl-containing polyester, polyacetal, polyether, polycarbonate or polythioether at an NCO/H ratio of 1.5 to 1.01, optionally in the presence of a diamine-chain lengthening agent, such that an isocyanate group containing compound having a molecular weight of 4000 to 80,000 and having from 2 to 6 isocyanate groups per molecule is obtained, and

b. reacting said isocyanate group containing compound with a compound of the formula



$$(RO\text{———}_{3-a}Si(R')_a\text{——}\underset{\underset{R''}{|}}{CH}-\underset{\underset{R'''}{|}}{NH}$$

wherein

R represents a C_1-C_{18} alkyl or C_4-C_{14} cycloalkyl radical, a phenyl or a benzyl radical,

R′ represents a C_1-C_{10} alkyl, C_4-C_{10} cycloalkyl or C_6-C_{10} aryl radical or halogenated or cyanosubstituted derivatives of each,

R″ represents a hydrogen atom or a methyl or phenyl radical,

R‴ represents a hydrogen atom or a C_1-C_{18} alkyl, C_4-C_{14} cycloalkyl or C_6-C_{14} aryl radical or halogenated or cyano-substituted derivatives of each, and

a = 0, 1 or 2, at a temperature of between −20°C. and 150°C in the presence of 10 to 80 percent by weight based on the total quantity of reactants of a secondary or tertiary alcohol.

3,895,044
HALOGENATED β-SULTONES, HALOGENATED ALKENYL SULFONATES, AND THEIR PREPARATION

John R. Norell, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 11, 1970, Ser. No. 10,596

Int. Cl. C07c *143/68*

U.S. Cl. 260—456 R **2 Claims**

1. A process for preparing 1-trifluoromethylvinyl methanesulfonate comprising: contacting 1,1,1-trifluoroacetone with a sulfonyl halide having the formula R_2CHSO_2X'' and a tertiary amine wherein X″ is chlorine or bromine, and R is hydrogen. 2. As a composition of matter, 1-trifluoromethylvinyl methanesulfonate.

3,895,045
BIS-PHENOL SULFATE ESTERS

William Charles Firth, Jr., Wilton, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 153,862, June 16, 1971, abandoned. This application Feb. 15, 1973, Ser. No. 332,981

Int. Cl.² C07C *141/14*

U.S. Cl. 260—457 **6 Claims**

1. A dihydroxyaromatic sulfate ester having the formula

$$HO-A+OSO_2O\text{-}A+_m OH$$

wherein A in each instance is the same or a different and is a radical defined by abstraction of the hydroxy groups from a compound selected from the group consisting of

1. 2,2-bis-(4-hydroxyphenyl)-propane;
2. bis-(2-hydroxyphenyl)-methane;
3. bis-(4-hydroxyphenyl)-methane;
4. 1,1-bis-(4-hydroxyphenyl)-ethane;
5. 1,2-bis-(4-hydroxyphenyl)-ethane;
6. 1,1-bis-(2-chloro-4-hydroxyphenyl)-ethane;
7. 1,1-bis-(2,5-dimethyl-4-dihydroxyphenyl)-ethane;
8. 2,2-bis-(4-hydroxynaphthyl)-propane;
9. 2,2-bis-(4-hydroxyphenyl)-pentane;
10. 2,2-bis-(4-hydroxyphenyl)-hexane;
11. bis-(4-hydroxyphenyl)-phenylmethane;
12. bis-(4-hydroxyphenyl)-cyclohexylmethane;
13. 1,2-bis-(4-hydroxyphenyl)-1,2-bis-(phenyl)-ethane;
14. 2,2-bis-(4-hydroxyphenyl)-1-phenylpropane;
15. bis-(4-hydroxy-5-nitrophenyl)-methane;
16. bis-(4-hydroxy-2,6-dimethyl-3-methoxyphenyl)-methane;
17. 2,2-bis-(2,6-dichloro-4-hydroxyphenyl)-propane;
18. 2,2-bis-(2-bromo-4-hydroxyphenyl)-propane;
19. tetrabromobisphenol A;
20. dihydroxybenzenes;
21. dihydroxybiphenyls;
22. dihydroxynaphthalenes;
23. dihydroxyaryl sulfones;
24. dihydroxyaryl sulfones further substituted with halogen or nitro groups;
25. dihydroxyaryl ethers;
26. 4,4′-dihydroxy-3,2′-dinitrophenyl ether;
27. 4,4′-dihydroxy-3,3′-dichlorophenyl ether; and
28. 4,4′-dihydroxy-2,6-dimethoxyphenyl ether

and *m* is a whole, positive integer of 1,2, inclusive.

3,895,046
CYANOPHENYL ESTERS OF OXIME-O-CARBONIC ACID

Gerhard Boroschewski; Reinhold Puttner, and Friedrich Arndt, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Germany

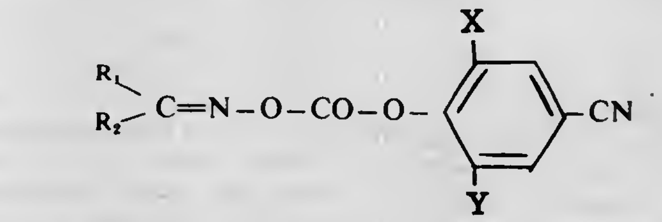
Filed Feb. 26, 1973, Ser. No. 335,662

Claims priority, application Germany, Mar. 2, 1972, 2210540

Int. Cl. C07c *131/00;* A01n *9/20*

U.S. Cl. 260—463 **12 Claims**

1. Compounds having the formula:



wherein R_1 is hydrogen, phenyl, naphthyl, alkyl of 1 to 12 carbons, cycloalkyl of 5 to 8 carbons, benzyl or phenylethyl; R_2 is phenyl, naphthyl, alkyl of 1 to 12 carbons, cycloalkyl of 5 to 8 carbons, benzyl or phenylethyl; and *x* and *y* are the same or different halogen atoms elected from the group consisting of chlorine, bromine or iodine.

3,895,047
CATALYTIC PROCESS FOR THE PRODUCTION OF ACRYLONITRILE

Tatsuo Shiraishi; Susumu Kishiwada; Shinkichi Shimizu; Shigeru Honmaru; Hiroshi Ichihashi, and Yoshihiko Nagaoka, all of Niihama, Japan, assignors to Sumitomo Chemical Co., Ltd., Japan

Division of Ser. No. 148,166, May 28, 1971, Pat. No. 3,741,910. This application Nov. 1, 1972, Ser. No. 302,900

Claims priority, application Japan, Sept. 11, 1970, 45-80175

Int. Cl. C07c *121/02*

U.S. Cl. 260—465.3 **22 Claims**

1. A process for producing acrylonitrile by the vapor phase reaction of propylene, ammonia and free oxygen at a temperature of about 300°C to about 520°C, which comprises contacting propylene, ammonia and gaseous oxygen with a catalyst composition consisting essentially of a catalyst system of the formula: $Tl_aP_bMo_cFe_dBi_eMn_fX_gO_h$ wherein X is Ni, Mg or Co or mixtures thereof and *a*, *b*, *c*, *d*, *e*, *f*, *g* and *h*, represent respectively the number of atoms and *c* is 12, *a* is 2 or less, but not 0; *b* is 0 to 5; *d* is 0.1 to 5; *e* is 0.1 to 5; *f* is greater than 0 but not more than 15; *g* is 0 to 15; *f*+*g* is 2 to 15; and *h* is from 38.3 to 81.5, said catalyst being formed by admixing a slurry of an aqueous solution of a molybdate with a thallium salt, an iron salt, a bismuth salt, a manganese salt, a phosphorous compound and one or more of a magnesium salt, a cobalt salt and a nickel salt with a carrier material, evaporating the composition so formed to dryness to form a cake, calcining the cake at an elevated temperature and cooling the calcined cake.

3,895,048
POLY (PHOSPHINE OXIDE) FLAME-RETARDANTS

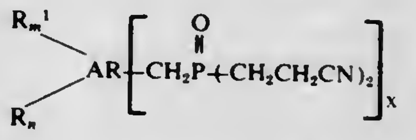
Joseph Adrian Hoffman, Somerville, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed June 28, 1973, Ser. No. 374,709

Int. Cl.² C07C *121/66*

U.S. Cl. 260—465 H **7 Claims**

1. A compound having the formula



$$\begin{matrix} R_m^1 \\ R_n \end{matrix}\!\!>AR\left[-CH_2\overset{\overset{O}{\|}}{P}+CH_2CH_2CN)_2\right]_x$$

wherein R and R¹ are, individually, methyl, ethyl or methoxy radicals, AR is benzene, naphthalene or anthracene and when AR is benzene, *n* and *m* are, individually, whole integers of 0–2, inclusive, *x* is a whole integer of 2–6, inclusive, and R and R¹ can combine to form a saturated, six-membered hydrocarbon ring in conjunction with two adjacent carbon atoms of the benzene ring, when AR is naphthalene, *n* and *m* are, individually, whole integers of 0–3, inclusive, and *x* is a whole integer of 2–4, inclusive, and when AR is anthracene, *n* and *m* are, individually, whole integers of 0–4, inclusive, and *x* is a whole integer of 2–6, inclusive.

3,895,049
CATALYST AND PROCESS FOR OXIDATION OR AMMOXIDATION OF OLEFIN MIXTURE

Sumio Umemura; Kyoji Ohdan; Yasuo Bando, and Terumi Hisayuki, all of Ube, Japan, assignors to Ube Industries, Ltd., Japan

Filed Aug. 16, 1973, Ser. No. 388,918

Claims priority, application Japan, Aug. 25, 1972, 47-84444; Feb. 2, 1973, 48-12885

Int. Cl. C07c *121/02*

U.S. Cl. 260—465.3 **5 Claims**

1. A process for simultaneously manufacturing 1,3-butadiene and methacrylonitrile from a hydrocarbon mixture consisting essentially of n-butene and isobutene, said hydrocarbon

mixture predominantly containing the n-butene and isobutene which process comprises contacting in the vapor phase at an elevated temperature of 300°–550°C, a mixture of said hydrocarbon mixture, oxygen and ammonia with a catalyst consisting of an oxide composition containing the elements according to the formula,

$$BiMo_aII_bW_cX_dO_e$$

wherein II is at least one element selected from metals of Group II of the Periodic Table; X is a metal selected from the group consisting of manganese, chromium, titanium, niobium, tantalum, iron, cobalt and nickel or is a three metal combination of titanium, cobalt and iron; and each of the subscripts a, b, c and d denotes the atomic ratio of the respective metal to bismuth and falling within the following ranges; $a = 0.1$ to 10.0, $b = 0.05$ to 6.0, $c = 0.05$ to 3.0 and $d = 0$ to 5.0, and e is a value corresponding to the oxides formed from the above components by combination and is a number which satisfies the average valency of the metals employed, said catalyst being a mixture of the metal oxides or in bonded state and being produced by intimately mixing at least one compound selected from the group consisting of the salts, the oxides and mixtures thereof of each of respective elements in an aqueous system, heating to dryness, and then subsequently calcining at a considerably higher temperature.

3,895,050

DISPOSAL OF WASTE MATERIALS FROM UNSATURATED NITRILE

Harold R. Sheely, Orleans, Mass., assignor to The Badger Company, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 168,134, Aug. 2, 1971, abandoned. This application Nov. 8, 1973, Ser. No. 414,076

Int. Cl. C07c *121/02*

U.S. Cl. 260—465.3 **11 Claims**

1. A process for treating a gaseous mixture resulting from the catalytic vapor phase ammoxidation reaction of ammonia and oxygen with a member of the class consisting of propylene and isobutylene, said mixture comprising its corresponding unsaturated nitrile from the class consisting of acrylonitrile and methacrylonitrile, ammonia and reaction by-products comprising hydrogen cyanide, acetonitrile, acetone, acrolein, by-product polymers, and methacrolein or propionitrile, said process comprising adiabatically cooling said gaseous mixture in a quenching chamber by evaporation of at least one compatible vaporizable liquid medium supplied to said quenching chamber sufficiently to condense at least some of said polymer by-products of said reaction, said vaporizable liquid medium being a member of the group consisting of water and a hydrocarbon that is a solvent for said unsaturated nitrile, separating condensed by-product polymers from said gaseous mixture, contacting said gaseous mixture in an absorber chamber with a water-immiscible hydrocarbon absorption medium that is a nonreactive solvent for and has a boiling point higher than said unsaturated nitrile, whereby said unsaturated nitrile is absorbed by and forms a solution with said absorption medium, separating and recovering said solution and said gaseous mixture, scrubbing the gaseous mixture recovered from said absorber chamber to remove hydrocarbon absorption medium from said mixture, with a scrubbing agent that has a boiling point higher than that of said hydrocarbon absorption medium and that is non-reactive with said solvent and also with products of said reaction carried over in said gaseous mixture, treating said solution to recover an overhead fraction comprising by-products of said reaction carried over in said solution that have a boiling point lower than said unsaturated nitrile and a bottoms fraction comprising said unsaturated nitrile and said hydrocarbon absorption medium, treating said bottoms fraction to separately recover said unsaturated nitrile and said hydrocarbon absorption medium, and recycling at least a portion of said recovered hydrocarbon absorption medium to said absorber chamber.

3,895,051

CATALYST AND PROCESS FOR OXIDIZING OR AMMOXIDIZING N-BUTENES AND/OR ISOBUTENE

Sumio Umemura; Kyoji Ohdan; Kazuo Fukuda, and Terumi Hisayuki, all of Ube, Japan, assignors to Ube Industries, Ltd., Ube, Japan

Filed Apr. 27, 1973, Ser. No. 355,301

Claims priority, application Japan, June 9, 1972, 47-56859

Int. Cl. C07c *121/02*

U.S. Cl. 260—465.3 **4 Claims**

1. A process for simultaneously producing 1,3-butadiene and methacrylonitrile by ammoxidizing a hydrocarbon mixture consisting essentially of n-butenes and isobutene at 350 to 550°C in a gaseous phase in the presence of a catalyst, said hydrocarbon mixture predominantly containing the n-butenes and isobutene, said catalyst consisting of an oxide composition containing the elements according to the formula:

$$Bi_aMo_bV_cW_dX_eO_f$$

wherein X represents a metal selected from the group consisting of metals in Groups II*a* and II*b* in the Periodic Table and manganese, and each of the subcripts *a*, *b*, *c*, *d*, and *e* denotes the atomic ratio of the respective element falling within the following ranges: *a* is from 0.5 to 10, *b* is from 0.05 to 5, *c* is from 0.05 to 2, *d* is from 0.05 to 3, and *e* is from 0 to 5, and *f* is a value corresponding to the oxides formed from the above components by combination and is a number taken to satisfy the average valences of the metals employed, the metal components of the catalyst being in the form of oxides independent from each other or in the form of compounds containing two or more component metals and being produced by intimately mixing at least one compound selected from the group consisting of the salts, the oxides and mixtures thereof of each of respective elements in an aqueous system, heating to dryness, and then subsequently calcining at a considerably higher temperature.

3,895,052

DIASTEREOMERS OF N-ACYL α-HYDRAZINO-β-(SUBSTITUTED OR UNSUBSTITUTED PHENYL)ALKANOIC ACID DERIVATIVES

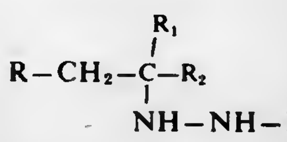
Sandor Karady, Elizabeth; Seemon H. Pines, Murray Hill; Manuel G. Ly, New Brunswick, and Meyer Sletzinger, North Plainfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 9,052, Feb. 5, 1970, Pat. No. 3,715,382. This application June 24, 1971, Ser. No. 156,546

Int. Cl. C07c *109/10*

U.S. Cl. 260—471 A **4 Claims**

1. A compound of the formula



$$R-CH_2-\overset{\overset{\displaystyle R_1}{|}}{\underset{\underset{\displaystyle NH-NH-R_3}{|}}{C}}-R_2$$

wherein

R is an unsubstituted phenyl radical, a 3-substituted phenyl radical, a 4-substituted phenyl radical or a 3,4-disubstituted phenyl radical wherein the substituents are hydroxy or lower alkoxy, phenyloxy or benzyloxy;

R_1 is hydrogen or lower alkyl;

R_2 is -COOlower alkyl; and R_3 is an acyl radical containing less than about 30 carbon atoms and having at least one asymmetric carbon atom, the acyl radical being predominantly in either the *d* or *l* form and being derived from a carboxylic or a sulfonic acid.

3,895,053

SUBSTITUTED CARBANILATES AND DERIVATIVES THEREOF

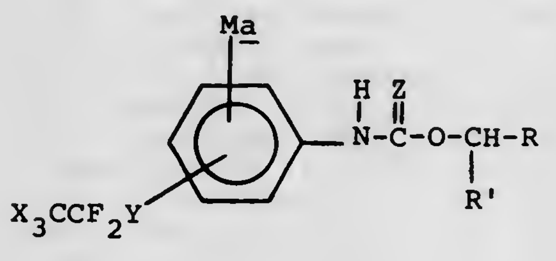
Fred Y. Edamura, and Thomas J. Giacobbe, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 400,474, Sept. 24, 1973, Pat. No. 3,882,319. This application Aug. 9, 1974, Ser. No. 496,435

Int. Cl. C07c *125/06*

U.S. Cl. 260—471 C **7 Claims**

1. Substituted carbanilate compounds corresponding to the formula:



wherein

each X independently represents hydrogen, bromo, chloro or fluoro, with the proviso that at least one X is always bromo, chloro or fluoro;

Y and Z each independently represent oxygen or sulfur;

each M independently represents bromo, chloro, fluoro, iodo, nitro or lower alkyl of from 1 to about 4 carbon atoms;

a represents an integer of from 0 to 3, both inclusive;

R represents hydrogen, lower alkyl of from 1 to 5 carbon atoms substituted with from 1 to 2 bromo, chloro or fluoro atoms or lower alkenyl of from 2 to 4 carbon atoms substituted with from 1 to 2 bromo, chloro or fluoro atoms; and

R′ is hydrogen or methyl.

3,895,054

PROCESS FOR THE MANUFACTURE OF URETHANES

John G. Zajacek, Strafford; John J. McCoy, Media, both of Pa., and Karl E. Fuger, Allschwill, Switzerland, assignors to Atlantic Richfield Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 284,872, Aug. 30, 1972, abandoned. This application June 21, 1973, Ser. No. 372,458

Int. Cl. C07c *125/06*

U.S. Cl. 260—471 C **18 Claims**

1. The process for preparing urethanes which comprises reacting at least one hydroxyl group containing compound having the formula $R(OH)_n$ or $R'(OH)_n$ wherein *n* is from 1 to 3, R is an optionally substituted aliphatic, cycloaliphatic or araliphatic group having from 1 to 20 carbon atoms, and R′ is an aromatic group containing 1 to 3 benzenoid rings with carbon monoxide and a nitrogenous organic compound selected from the group consisting of organic nitro, nitroso, azo, and azoxy compounds containing up to 24 carbon atoms, at an elevated temperature and pressure in the presence of a catalyst selected from the group consisting of selenium, sulfur, selenium compounds, sulfur compounds and mixtures thereof and at least one member selected from the group consisting of base and water.

3,895,055

COUPLING PROCESS OF AROMATIC COMPOUNDS

Hiroshi Itatani, and Hataaki Yoshimoto, both of Chiba, Japan, assignors to Ube Industries, Ltd., Yamaguchi, Japan

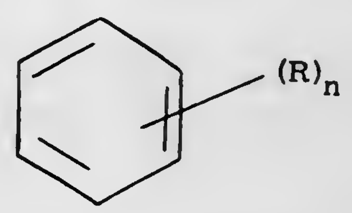
Filed Dec. 10, 1971, Ser. No. 206,950

Claims priority, application Japan, Dec. 22, 1970, 115123/70

Int. Cl. C07c *69/14, 15/14*

U.S. Cl. 260—479 R **7 Claims**

1. A catalytic coupling process which comprises dehydrogenatively coupling a reactive aromatic compound having at least two hydrogen atoms in the aromatic nucleus and represented by the following general formula:



wherein R is selected from the group consisting of a hydrogen atom, alkyls having 1 to 5 carbon atoms, alkanoyloxy having 1 to 5 carbon atoms, alkoxys having 1 to 5 carbon atoms, acetyl or halogen substituted alkyl, nitro and halogen, and *n* is 0 to 4, under the pressure of a gas selected from the group consisting of oxygen and oxygen-containing gas in the presence of an organic palladium compound and a member selected from the group consisting of β-diketone and ethylenediamine-tetraacetic acid in the amount of 0.5 to 4 mols based on the organic palladium compound, and in the absence of a compound selected from the group consisting of sodium acetate, potassium acetate, lithium chloride, potassium nitrate, lithium nitrate, potassium sulfate, acetic acid, sulfuric acid, a polar solvent and water, the partial pressure of the oxygen being at least about 5 kg/cm².

3,895,056

ALPHA-dl-4-ACETOXY-1-METHYL-3,3-DIPHENYLHEXYLAMINE AND SALTS

Ruth E. Billings, Indianapolis; Robert E. McMahon, Greenwood, and Albert Pohland, Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Dec. 26, 1972, Ser. No. 317,970

Int. Cl. C07c *93/00*

U.S. Cl. 260—490 **2 Claims**

1. α-dl-4-acetoxy-1-methyl-3,3-diphenylhexylamine and salts thereof formed with nontoxic, pharmaceutically acceptable acids.

3,895,057

AMINOALKANOLS AND THEIR PHARMACEUTICALLY ACCEPTABLE ACID-ADDITION SALTS, AND PRODUCTION THEREOF

Hidehiko Kaneko, Minoo; Jiro Aritomi, Nara, and Keiji Nakamura, Neyagawa, all of Japan, assignors to Dainippon Pharmaceutical Co. L td., Osaka, Japan

Continuation-in-part of Ser. No. 766,297, Oct. 9, 1968. This application Feb. 11, 1971, Ser. No. 114,710

Claims priority, application Japan, Oct. 13, 1967, 42-65896; Oct. 13, 1967, 42-65897

Int. Cl.² C07C *91/16*

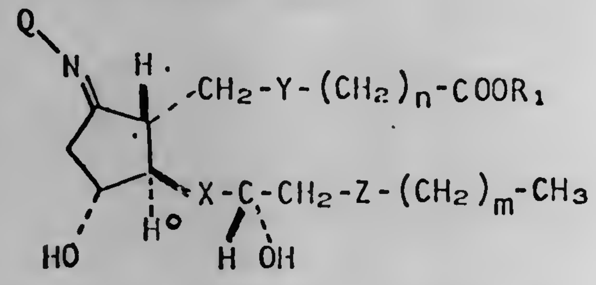
U.S. Cl. 260—501.11 **1 Claim**

1. 3-[N-(3,3-Diphenylpropyl)-N-methylamino]propan-1-ol or a pharmaceutically acceptable acid-addition salt thereof.

3,895,058
PGE OXIMES

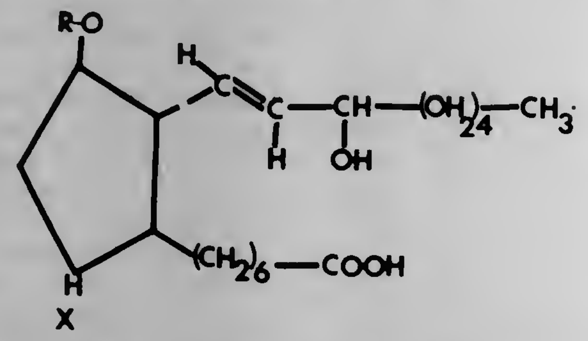
John E. Pike, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
Division of Ser. No. 673,979, Oct. 9, 1967, Pat. No. 3,636,120.
This application Aug. 20, 1971, Ser. No. 173,659
Int. Cl. C07c *131/02, 127/11*
U.S. Cl. 260—514 D **8 Claims**

1. A compound of the formula:



wherein R_1 is hydrogen or alkyl of 1 to 8 carbon atoms, inclusive, wherein Q is $-OH$, $-OR_2$ wherein R_2 is alkyl of 1 to 4 carbon atoms, inclusive, or $-NHCONH_2$, wherein X is $-CH_2CH_2-$ or trans-$CH{=}CH-$ and both Y and Z are $-CH_2CH_2-$, or wherein X is trans-$CH{=}CH-$, Y is cis-$CH{=}CH-$, and Z is $-CH_2CH_2-$ or cis-$CH{=}CH-$, wherein *m* is 0, 1, or 2, and wherein *n* is 2, 3, 4, or 5.

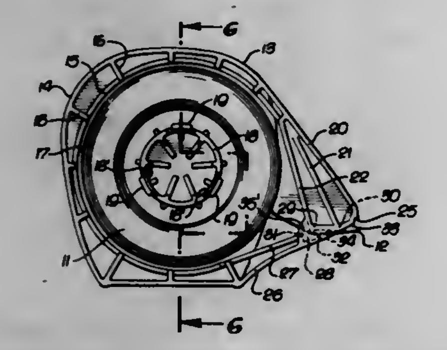
8. A compound of the formula



in which X is hydroxyimino or lower alkoxyimino, and R is hydrogen, or the lower alkyl esters thereof.

3,895,059
TAPE DISPENSER

Charles T. Link, 686 Wellesley Dr., Claremont, Calif. 91711
Filed July 27, 1972, Ser. No. 275,761
Int. Cl. B26f *3/02;* **B65h** *35/04*
U.S. Cl. 156—527 **34 Claims**



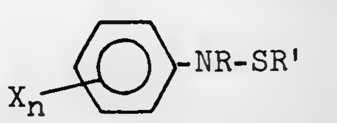
1. A tape dispenser for adhesive tape having an adhesive face and a smooth face, said dispenser comprising a housing having a support for a roll of tape, means forming a tape discharge slot in stationary position on the housing having opposite inwardly facing transverse tape engaging ridge means at stationary locations relative to the housing intermediate inside and outside ends of the slot forming a sinuous passageway therebetween for said tape and for engagement with both faces of said tape, and a transversely extending cut-off knife blade adjacent the outside end of said slot, there being a guide surface on the exterior surface of said housing in stationary position relative to the housing for the smooth face of said tape, said surface being located between the outside end of said slot and the knife blade, said ridge means adjacent the smooth face of the tape and said guide surface being in engagement with the smooth face of the tape when the tape is subject to tension.

32. A tape dispenser for adhesive tape having an adhesive face and a smooth face, said dispenser comprising a housing having support for a roll of tape, means forming a tape discharge slot in stationary position on the housing having opposite inwardly facing transverse tape engaging ridge means at stationary locations relative to the housing intermediate inside and outside ends of the slot forming a sinuous passageway therebetween for said tape and for engagement with both faces of said tape, and a transversely extending cut-off knife blade adjacent the outside end of said slot, there being a guide surface on the exterior surface of said housing in stationary position relative to the housing for the smooth face of said tape, said surface being located between the outside end of said slot and the knife blade, said ridge means adjacent the smooth face of the tape and said guide surface being in engagement with the smooth face of the tape when the tape is subject to tension, said housing having a closed side and an open side and a generally cylindrical rotational support for a roll of tape extending from said closed side toward said open side, and wherein said rotational support comprises rigid longitudinal journal sections adjoining resilient longitudinal retaining sections each integrally joined at one end thereof with said closed side, there being shoulders extending radially outwardly at the ends of said resilient sections remote from said closed side for retaining said roll of tape in alignment with said stationary tape discharge slot, and said resilient sections being adapted to be deflected radially inwardly within the elastic limits of said sections to permit said shoulders to clear the opening in said roll of tape and to return automatically to normal retaining position upon removal of the deflecting force.

3,895,060
CYCLOALKYLTHIO (NITRO SUBSTITUTED) ANILINE COMPOUNDS

Pyong-Nae Son, Akron, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio
Filed June 6, 1973, Ser. No. 367,643
Int. Cl. C07c *145/00*
U.S. Cl. 260—551 S **4 Claims**

1. Cycloalkylthio aniline compounds of the formula

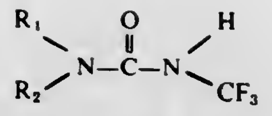


wherein X is $-NO_2$, *n* is an integer from 2 to 4, R is selected from the group consisting of hydrogen, an alkyl radical containing 1 to 8 carbon atoms, a phenyl radical, and $-SR'$; and R' is a cycloalkyl radical containing 4 to 8 carbon atoms in the ring.

3,895,061
TRIFLUOROMETHYL UREAS

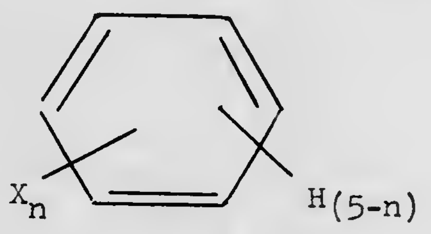
Sidney B. Richter, Chicago, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.
Filed July 17, 1968, Ser. No. 745,384
Int. Cl. C07c *127/00*
U.S. Cl. 260—553 R **6 Claims**

1. A compound of the formula



$$\begin{matrix}R_1\\ \\ R_2\end{matrix}\!\!>N-\overset{\overset{\displaystyle O}{\|}}{C}-\overset{H}{N}-CF_3$$

wherein R_1 is selected from the group consisting of alkyl having up to ten carbon atoms, alkenyl having up to ten carbon atoms, cycloalkyl having from 4 to 8 carbon atoms and

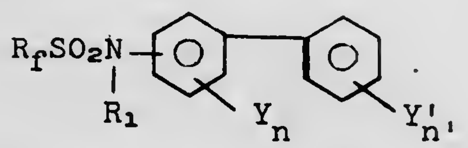


wherein X is selected from the group consisting of lower alkyl, lower alkenyl, halogen, lower alkoxy, lower alkylthio, di(-loweralkyl)amino, nitro, cyano and thiocyano, and *n* is an integer from 0 to 5; and R_2 is selected from the group consisting of hydrogen and R_1.

3,895,062
BIPHENYL DERIVATIVES

Joseph Kenneth Harrington, Edina, and George G. I. Moore, Birchwood, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Apr. 13, 1970, Ser. No. 28,019
Int. Cl. C07c *143/74*
U.S. Cl. 260—556 F **12 Claims**

1. A compound of the formula

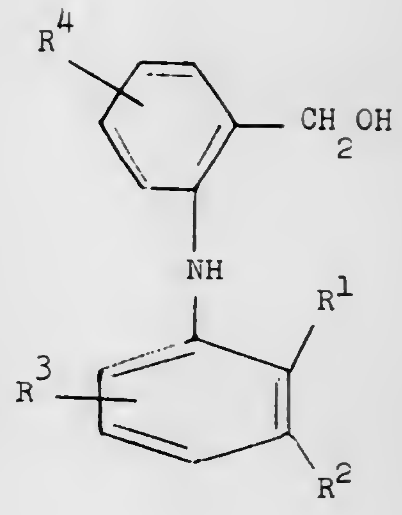


wherein R_f is a lower perfluoroalkyl group, R_1 is hydrogen or a pharmaceutically or agriculturally acceptable cation, and Y and Y' are independently selected from the group consisting of lower alkyl, lower alkoxy, hydroxy, nitro, amino, halogen, lower alkanoyloxy, formamido and phenyl and *n* and *n'* are independently zero, one, two or three.

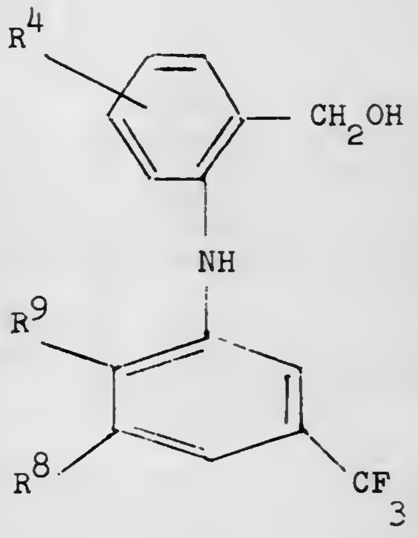
3,895,063
SUBSTITUTED ANILINO BENZYL ALCOHOLS

Alfred Sallman, Bottmingen, and Rudolf Pfister, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Continuation-in-part of Ser. No. 861,571, Sept. 29, 1969, Pat. No. 3,558,690, which is a continuation-in-part of Ser. Nos. 782,206, Dec. 9, 1968, abandoned, Ser. No. 782,473, Dec. 9, 1968, abandoned, and Ser. No. 625,326, March 23, 1967, abandoned, and Ser. No. 539,829, April 4, 1966, abandoned.
This application Oct. 2, 1970, Ser. No. 77,763
Claims priority, application Switzerland, Apr. 8, 1965, 4961/65; Feb. 25, 1966, 2770/66; Mar. 30, 1966, 4626/66; Dec. 20, 1967, 17891/67; Dec. 20, 1967, 17892/67; Dec. 20, 1967, 17893/67
Int. Cl. C07c *91/40*
U.S. Cl. 260—571 **6 Claims**

1. A compound selected from the group consisting of 2-anilinobenzyl alcohols of the formulas:



and

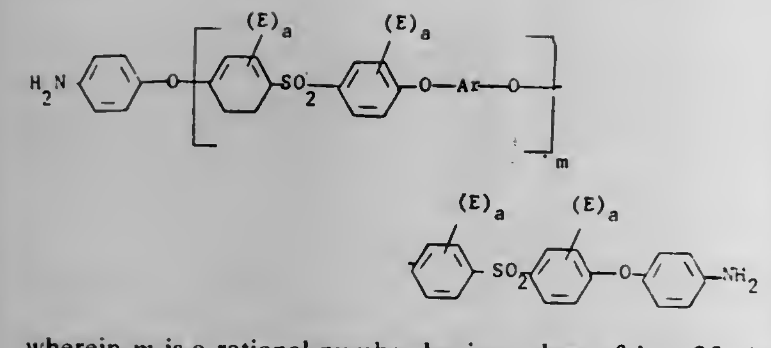


wherein
- R^1 is methoxy or chloro;
- R^2 is hydrogen;
- R^3 is hydrogen, methyl or chloro;
- R^4 is hydrogen or methoxy;
- R^8 is hydrogen; and
- R^9 is hydrogen or chloro, provided that when R^4 is hydrogen R^3 is hydrogen or methyl.

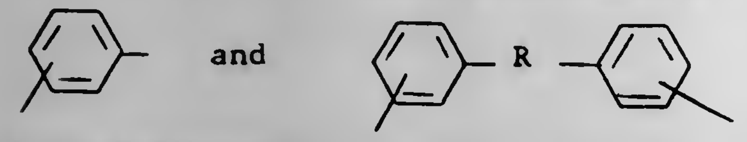
3,895,064
POLYAMIDE-IMIDES

George Lewis Brode, Somerville, and James Hajime Kawakami, Piscataway, both of N.J., assignors to Union Carbide Corporation, New York, N.Y.
Division of Ser. No. 182,526, Sept. 21, 1971, Pat. No. 3,817,921, which is a continuation-in-part of Ser. No. 50,968, June 29, 1970, abandoned. This application Apr. 1, 1974, Ser. No. 456,836
Int. Cl. C07c *93/06*
U.S. Cl. 260—571 **9 Claims**

1. An amine having the formula:



wherein *m* is a rational number having values of 1 to 25, Ar is a divalent radical selected from the group consisting of:



R is an alkylidene moiety containing from 1 to about 10 carbon atoms, E is a halogen selected from the group consisting of F, Cl and Br and *a* is an integer having values of 0 to 4.

3,895,065
PROCESS FOR CARRYING OUT CHEMICAL REACTIONS IN HETEROGENEOUS MEDIUM

Louis Alheritiere; Georges Gobron; Claude Falize; Jean Diet; Bernard Roux, and Roland Bouchet, all of Melle, Deux Sevres, France, assignors to Rhone-Poulenc Industries, Paris, France

Division of Ser. No. 867,037, Oct. 16, 1969, Pat. No. 3,761,521. This application Jan. 19, 1973, Ser. No. 325,195

Claims priority, application France, Oct. 17, 1968, 68.497

Int. Cl.^{2} C07C *85/14*

U.S. Cl. 260—583 R **5 Claims**

1. A continuous process for hydrogenating an imine compound to form an amine in a closed reaction system without pumps and filters, wherein a hydrogen gaseous phase is dispersed in a liquid phase, which liquid phase contains said imine compound and which will dissolve said amine, to suspend a particulate solid hydrogenation catalyst and form a reaction mixture, the reaction mixture being continuously formed in the lower portion of a substantially vertical reaction zone, continuously withdrawing from the upper portion of the reaction mixture a mixture containing at least part of the liquid phase, said withdrawn liquid phase containing reaction product together with at least a part of the suspended solid catalyst, conducting the withdrawn mixture into a decantation zone, separating the withdrawn mixture into an upper fraction which contains reaction products and a lower fraction, collecting a quantity of the upper fraction and returning the lower fraction to the lower part of the reaction mixture, the improvement which comprises rapidly and intimately dispersing the gaseous phase in the reaction mixture so that the specific weight of the mixture in the decantation zone to the specific weight of the mixture in the reaction zone is at least 1.15:1, the height to diameter ratio of the reaction mixture in the reaction zone is about 0.5:1 to 2:1, and the height to diameter ratio of the reaction zone is up to about 3:1.

3,895,066
HYDROGENATION PROCESS

Irving Schwager, Hopewell Junction; Robert J. Leak, Wappingers Falls, and Edward L. Cole, Fishkill, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Division of Ser. No. 228,750, Feb. 23, 1972, Pat. No. 3,793,354, which is a division of Ser. No. 839,082, July 3, 1969, Pat. No. 3,671,591. This application July 27, 1973, Ser. No. 383,360

Int. Cl.^{2} C07C *85/10*

U.S. Cl. 260—583 M **5 Claims**

1. A hydrogenation process which comprises contacting an organic nitro compound having the formula:

$$R^2—NO_2$$

wherein R^2 is a hydrocarbon radical containing from 1 to 30 carbon atoms with a catalytic amount of a catalyst prepared by the process which comprises (1) pyrolyzing in the presence of air a polyacrylonitrile polymer, having a molecular weight of from about 25,000 to about 1,300,000, at a temperature of about 300° to 500°F. under a pressure of about 0.1 to about 2 atmospheres; (2) contacting the pyrolyzed polymer from step 1 with an aqueous solution of a Group VIII metal halide, a Group VIII chloroacid or nickel acetate; removing water from the solution of polymer and Group VIII metal; (3) thermally treating the polymer at a temperature in the range of about 400° to about 700°F; (4) reducing said polymer in a hydrogen atmosphere at a temperature in the range of about 500° to about 1000°F. under a pressure of about 15 psig to 50 psig at a hydrogen gas rate of about 0.5 cu. ft. per hour to about 2.0 cu. ft. per hour (5) isolating a Group VIII metal-containing pyrolyzed polyacrylonitrile polymer containing from 0.2 to 50 weight percent Group VIII metal, under hydrogenation conditions of temperature and hydrogen concentration and recovering an organic primary amine having the formula:

$$R^2—NH_2$$

wherein R^2 is defined as above.

3,895,067
BORIC ACID RECOVERY

George H. Mock, Pensacola, Fla., and Harold N. Simpson, Spartanburg, S.C., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 46,295, June 15, 1970, abandoned, which is a continuation-in-part of Ser. No. 652,060, July 10, 1967, abandoned. This application Jan. 12, 1973, Ser. No. 323,196

Int. Cl.^{2} C07C *45/02*

U.S. Cl. 260—586 AB **8 Claims**

1. In a process which comprises oxidizing a saturated C_4 to C_{20} hydrocarbon in a reaction zone with molecular oxygen in the presence of ortho boric acid, a lower hydrate thereof or an ester or ortho boric acid or said lower hydrate; hydrolyzing at least a portion of the resulting mixture; separating the hydrolyzed mixture into an organic phase containing unreacted hydrocarbon and an alcohol and ketone corresponding to said hydrocarbon and an an aqueous phase containing ortho boric acid and carbonaceous impurities; crystallizing and separating from said aqueous phase between about 35 and about 75 percent by weight of the ortho boric acid in said aqueous phase leaving an aqueous residual liquid containing between about 25 and about 65 percent of the ortho boric acid and at least about 85 percent by weight of the carbonaceous impurities from said aqueous phase; recycling the separated ortho boric acid, a lower hydrate thereof, an ester thereof or an ester of a lower hydrate thereof to said reaction zone; recycling between about 85 and about 99 percent by weight of said aqueous residual liquid to said hydrolysis zone whereby the concentration of said impurities in said aqueous phase during said crystallizing and separating of ortho boric acid from said aqueous phase is at least about 5 percent by weight; evaporating water from the remaining aqueous residual liquid until the concentration of said impurities therein is substantially increased; and then crystallizing and removing additional boric acid from said remaining aqueous residual liquid; the improvement which comprises carrying out the crystallizing and removing of additional boric acid after the concentration of said impurities in the remaining aqueous residual liquid has been increased to between about 30 and about 50 percent by weight.

3,895,068
BICYCLIC METHYLENE KETONES

Irl N. Duling, West Chester, and Gary L. Driscoll, Boothwyn, both of Pa., assignors to Sun Research and Development Company, Marcus Hook, Pa.

Filed Aug. 30, 1968, Ser. No. 756,604

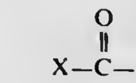
Int. Cl. C07c *49/44*

U.S. Cl. 260—586 G **16 Claims**

1. A process for the production of unsubstituted 5-methylenc-1-ketobicyclo[3.3.1]nonane or alkyl-substituted 5-methylene-1-ketobicyclo[3.3.1]nonane which comprises subjecting a compound of the formula:

HO — A — B

wherein A represents a divalent hydrocarbon moiety consisting of the adamantane nucleus with 0–3 alkyl substituents containing a total of not more than 20 alkyl carbon atoms; wherein B is a bridgehead substituent from the group consisting of hydroxy, chloro, bromo and



$$X—\overset{\overset{O}{\parallel}}{C}—O—$$

in which X is hydrogen, alkyl, aryl or cycloalkyl, each such X having 0–10 carbon atoms; and wherein HO— is a bridgehead substituent; remaining substituents on A being hydrogen; to pyrolysis at a temperature in the range of 150°–750°C. effective to produce the corresponding 5-methylene-1-ketobicyclo-[3.3.1]nonane.

3,895,069
PROCESS FOR THE PREPARATION OF 2,4,6-TRIALKYL-4-ALKYLTHIO OR 4-ALKOXYCYCLOHEXADI-2,5-ENE-1-ONES

John Halstead Atkinson, and Duncan Clark, both of Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

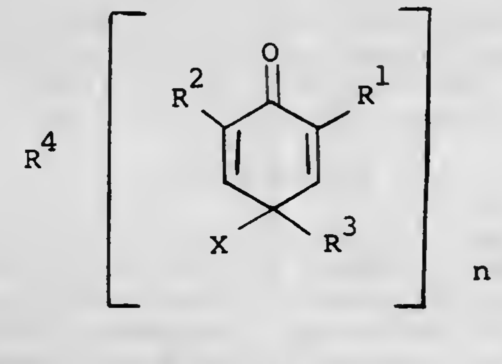
Filed Feb. 20, 1973, Ser. No. 334,191

Claims priority, application United Kingdom, Mar. 6, 1972, 10290/72

Int. Cl. C07c *43/22, 45/16, 149/26*

U.S. Cl. 260—586 R **9 Claims**

1. A process for the production of a compound of the formula



in which:

X is sulphur or oxygen;

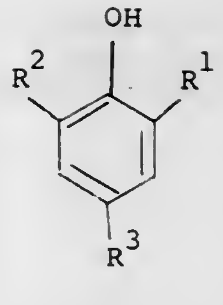
R^1 and R^2 are individually alkyl groups having 4 to 12 carbon atoms;

R^3 is a tertiary alkyl group having 4 to 8 carbon atoms;

R^4 is a hydrocarbon residue derived from a thiol or alcohol having from 1 to 10 carbon atoms; and

n is 1, 2, 3, or 4;

which comprises reacting a phenol of the formula:



at a temperature range of 10° to 200°C and a pressure range of 0.5 to 100 atmospheres with an alcohol or thiol of the formula

$R^4(XH)_n$,

where R^1, R^2, R^3, R^4, X, and n are as defined above, and an alkyl hypochlorite in the presence of a base selected from the group consisting of primary, secondary and tertiary alkylamines having 1 to 6 carbon atoms, alkali metal hydroxides, alkali metal lower alkoxides, alkali metal carbonates, alkaline earth metal carbonates, alkali metal bicarbonates, alkaline earth metal bicarbonates and alkaline earth metal hydroxides.

3,895,070
PROCESS FOR THE PREPARATION OF KETONES

Yutaka Mori, Kawanishi, and Takeo Sakan, Izumisano, both of Japan, assignors to Suntory Ltd. and Shiono Koryo Kaisha, both of Osaka, Japan

Filed July 23, 1973, Ser. No. 381,808

Claims priority, application Japan, Feb. 27, 1973, 48-23505

Int. Cl.^{2} C07C *45/00*

U.S. Cl. 260—586 R **7 Claims**

1. A process for the preparation of a ketone of the formula R^1COR^2 which comprises reacting an 8-acyloxyquinoline of the formula $R^1COOC_9H_6N$ with a Grignard reagent of the formula R^2MgX, in which R^1 is a phenyl group or an aliphatic hydrocarbon group having from 1 to 8 carbon atoms, R_2 is selected from the group consisting of a phenyl group, a cyclohexyl group, a cinnamyl group, an aliphatic hydrocarbon group having from 2 to 8 carbon atoms, and X is halogen, at a temperature from 0°C. to about 25°C. in the presence of a solvent selected from the group consisting of diethyl ether, tetrahydrofuran, benzene, toluene, hexane, cyclohexane, dichloroethane and dichloropropane, to form said ketone.

3,895,071
SEPARATION OF NITROKETONE FROM A CRUDE NITROOXIDATION REACTION PRODUCT

Mahmoud S. Kablaoui, Wappingers Falls, and Richard F. Love, Fishkill, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Continuation-in-part of Ser. No. 244,522, April 17, 1972, abandoned. This application Jan. 30, 1974, Ser. No. 438,134

Int. Cl.^{2} C07C *45/24*

U.S. Cl. 260—586 R **14 Claims**

1. A process for the separation and recovery of a nitroketone from a crude composition obtained from the nitro-oxidation of an alkene or cycloalkene using dinitrogen tetroxide, oxygen and a denitrating agent and containing said nitroketone and nitric acid, denitrating agent, nitronitrate and nitroalcohol which comprises;

a. treating said crude composition with from about 2 to 10 moles of ammonia per mole of nitroketone at a temperature of from about −10° to 30°C. thereby forming an ammonium salt of said nitroketone and ammonium nitrate insoluble in said crude composition,

b. separating the ammonium salt of said nitroketone and ammonium nitrate from (a),

c. contacting the ammonium salt of said nitroketone and ammonium nitrate with a C_6 to C_{12} liquid hydrocarbon at a temperature of from about 35° to 100°C. and separating insoluble ammonium nitrate and ammonia vapors from said liquid hydrocarbon, and

d. separating said nitroketone from said hydrocarbon of (c).

3,895,072

PREPARATION OF NITROCYCLOALKANONES

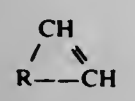
Mahmoud S. Kablaoui, Wappingers Falls, and Donald R. Lachowicz, Fishkill, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Division of Ser. No. 206,195, Dec. 8, 1971, abandoned. This application May 9, 1973, Ser. No. 358,764

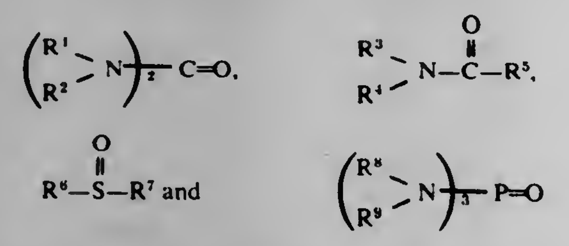
Int. Cl. C07c *45/04*

U.S. Cl. 260—586 P **14 Claims**

1. A method of preparing nitrocycloalkanones which comprises simultaneously contacting a solution containing a cycloalkene of the formula:

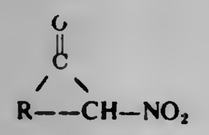


where R is a polymethylene radical of from three to 22 carbons or a substituted polymethylene radical of four to 22 carbons containing one or more substituents selected from the group consisting of alkyl and aryl, a denitrating agent selected from the group consisting of:



$$\left(\begin{matrix}R^1\\R^2\end{matrix}\!>N\right)_2 C{=}O,\qquad \begin{matrix}R^3\\R^4\end{matrix}\!>N{-}\overset{\overset{O}{\|}}{C}{-}R^5,\qquad R^6{-}\overset{\overset{O}{\|}}{S}{-}R^7 \text{ and } \left(\begin{matrix}R^8\\R^9\end{matrix}\!>N\right)_3 P{=}O$$

where R^1, R^2, R^6, R^7, R^8 and R^9 are alkyl of from one to five carbons and R^3, R^4 and R^5 are hydrogen or alkyl of from one to five carbons and an aprotic organic solvent having a boiling point of between about 30° and 100°C. with dinitrogen tetroxide and oxygen at a temperature between about 0° to 40°C., where the mole ratio of said denitrating agent to said cycloalkene is about 0.5:1 to 1:1 and the ratio of aprotic organic solvent to cycloalkene is from 2:1 to 20:1 parts by weight thereby froming a nitrocycloalkanone corresponding to the formula:



where R is as heretofore defined.

3,895,073

ALKYLTHIO-CARANONES

Dietmar Lamparsky, Wangen-Dubendorf, and Peter Schudel, Grut near Wetzikon, both of Switzerland, assignors to Givaudan Corporation, Clifton, N.J.

Division of Ser. No. 69,457, Sept. 3, 1970, Pat. No. 3,819,712. This application Apr. 26, 1974, Ser. No. 464,262

Int. Cl. C07c *49/44*

U.S. Cl. 260—586 F **2 Claims**

1. 4-Methylthio-caran-2-one.
2. 3-methylthio-caran-5-one.

3,895,074

PHOSPHINE OXIDE FLAME RETARDANTS

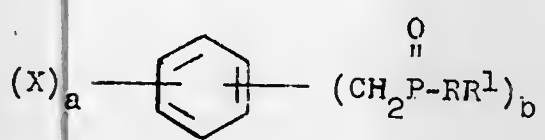
Joseph J. Mrowca, Wilmington, Del., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.

Filed Nov. 16, 1973, Ser. No. 416,597

Int. Cl. C07f *9/28*

U.S. Cl. 260—606.5 P **10 Claims**

1. A flame-retardant compound of the formula



wherein

R and R^1 individually are alkyl, aryl or aralkyl each of up to 10 carbon atoms having up to five chlorine, bromine or fluorine atoms;

X is chlorine, bromine, OR, SR, SOR or SO_2R, R being as defined above;

a is 1 to 4;

b is 2 to 5; and

a plus *b* is 3 to 6.

3,895,075

2,5-DICHLORO-1-(3′-CHLORO-2′-BUTENYLOXY)-BENZENE

Jean Andre Grandadam, Saint-Maur des Fosses, France, assignor to Roussel Uclaf, Paris, France

Filed Apr. 17, 1973, Ser. No. 351,828

Claims priority, application France, Apr. 21, 1972, 72.14117

Int. Cl. C07c *43/14, 43/20*

U.S. Cl. 260—612 R **4 Claims**

1. A compound selected from the group consisting of E isomer, Z isomer and mixtures of E and Z isomers of 2,5-dichloro-1-(3′-chloro-2′-butenyloxy)-benzene.

3,895,076

PROCESS FOR THE PREPARATION OF MONOMETHYLETHERS OF DIHYDROXYBENZENE

Kurt Bauer, Holzminden; Reiner Molleken, Golmbach, and Rudolf Hopp, Holzminden, all of Germany, assignors to Haarmann & Reimer GmbH, Holzminden, Germany

Filed Aug. 2, 1972, Ser. No. 277,205

Claims priority, application Germany, Aug. 13, 1971, 2140738

Int. Cl. C07c *41/00*

U.S. Cl. 260—613 D **18 Claims**

1. Process for the preparation of a monomethylether of unsubstituted or symmetrically lower alkyl-substituted dihydroxybenzene selected from pyrocatechol, resorcinol, hydroquinone and symmetrically alkyl-substituted dihydroxybenzene wherein each lower alkyl substituent contains up to 2 carbon atoms, which process comprises continuously introducing the dihydroxybenzene to be etherified and methanol into a reactor and maintaining them therein in the liquid phase at a temperature in the range of from 200°C to 240°C in the presence of a catalyst consisting essentially of boron phosphate, continuously withdrawing ether, unreacted methanol and unreacted dihydroxybenzene and recycling to the reactor unreacted dihydroxybenzene continuously.

3,895,077

BROMINATED 2,2-BIS(4-ALKENYLOXYPHENYL)PROPANES

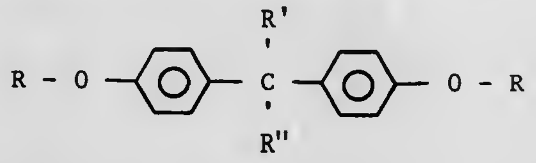
Donnie G. Brady; Ernest A. Zuech, and Roy A. Gray, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 386,576, Aug. 8, 1973, Pat. No. 3,843,033, which is a continuation-in-part of Ser. No. 146,456, May 24, 1971, abandoned. This application May 9, 1974, Ser. No. 468,487

Int. Cl. C07c *43/20*

U.S. Cl. 260—613 R **3 Claims**

1. A compound having the general formula



wherein each R is a 2,3-dibromo alkyl radical containing three to 10 carbon atoms, and wherein R′ and R″ are hydrogen or alkyl radicals having one to six carbon atoms.

3,895,078

BOLL-WEEVIL SEX ATTRACTANT

Richard C. Gueldner, Starkville; James H. Tumlinson, West Point; Dicky D. Hardee, Starkville; Paul A. Hedin, Starkville; Alonzo C. Thompson, Starkville, and James P. Minyard, State College, all of Miss., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

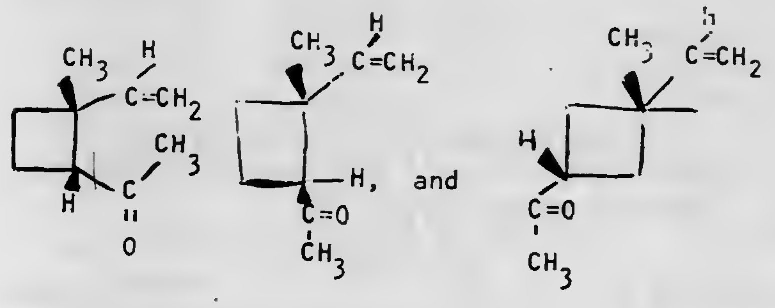
Division of Ser. No. 248,183, April 27, 1972, abandoned, which is a division of Ser. No. 90,794, Nov. 18, 1970, abandoned. This application May 14, 1973, Ser. No. 360,280

Int. Cl. C07c *33/02*

U.S. Cl. 260—617 R **1 Claim**

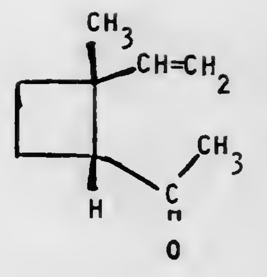
1. A process for producing the cis isomeric form of 2-isopropenyl-1-methylcyclobutane ethanol which process consists of the following steps carried out in sequence:

a. irradiating with ultraviolet light a mixture cooled to about 5°C for about 144 hours, said mixture comprising 7.5 parts by weight of isoprene, about 4 parts by weight of methyl vinyl ketone, and about 1 part by weight of acetophenone to produce a product which comprises an isomeric mixture of ketones represented by the structures



b. distilling the product from (a)

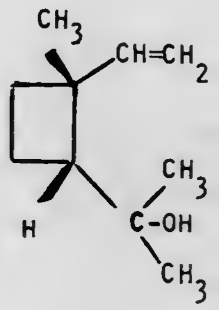
c. separating the distilled product from (b) by gas-liquid chromatography to obtain the cis isomer represented by the structure



d. reacting the cis isomer from (c) with a slight molar excess of methyl magnesium iodide;

e. refluxing the mixture from (d) for about 1 hour;

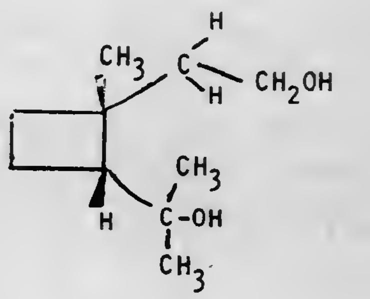
f. cooling the mixture from (e) and saturating with ammonium chloride to give the corresponding alcohol represented by the structure



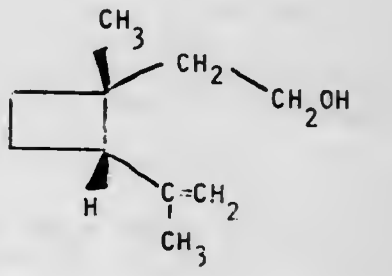
g. reacting the alcohol from (f) with sodium borohydride in diglyme and then BF_3 etherate while maintaining a static pressure with N_2;

h. hydrolyzing the reaction mixture from (g) with H_2O;

i. neutralizing the hydrolyzed mixture from (h) with NaOH and refluxing the neutralized mixture with H_2O_2 to produce the diol represented by the formula



j. dehydrating the diol from step (i) with acetic anhydride in diglyme at reflux to produce the unsaturated alcohol represented by the formula



3,895,079
PROCESS FOR RECOVERY OF DIHYDRIC PHENOLS

John E. Anderson; Ward J. Burkholder, both of Houston, and Loyd W. Fannin, Dickinson, all of Tex., assignors to The Goodyear Tire and Rubber Company, Akron, Ohio
Filed June 28, 1972, Ser. No. 267,093
Int. Cl. C07c *37/22*
U.S. Cl. 260—621 A **5 Claims**

1. In a process for the recovery of hydroquinone from a reaction product comprising a ketone, said hydroquinone and minor amounts of hydroperoxides, aryl tertiary alkenes, and alkenyl phenols, said reaction product resulting from the acid catalyzed rearrangement of a paraditertiary alkyl benzene dihydroperoxide and subsequent neutralization, the improvement comprising

subjecting said reaction product to selective hydrogenation to hydrogenate the olefinic unsaturation in said alkenes and alkenyl phenols and reduce said hydroperoxides and produce a hydrogenated reaction product, said hydrogenation being carried out in the presence of a hydrogenation catalyst and under conditions which effect selective hydrogenation of the olefinic unsaturates and reduction of the hydroperoxides without adversely affecting said ketone or said hydroquinone and at a temperature from about 100° to about 500°F. and a pressure of from about 10 to about 500 psig,

adding water to said hydrogenated reaction product,

separating said ketone from the mixture of said hydrogenated reaction product and water by distillation,

extracting said mixture of said hydrogenated reaction product and water with an aromatic hydrocarbon extractant selected from the class consisting of benzene, a monoalkylbenzene wherein the alkyl group has from 1–4 carbon atoms, a dialkylbenzene wherein the alkyl group has from 1–4 carbon atoms, a trialkylbenzene wherein the alkyl group has from 1–4 carbon atoms and mixtures thereof and separating an aqueous phase containing said hydroquinone,

removing at least a portion of the water from said aqueous phase to produce a water-hydroquinone concentrate, and crystallizing said hydroquinone from said concentrate.

3,895,080
SEPARATION OF CYCLIC COMPOUNDS BY ADSORPTION ON PARTIALLY SORBED METALLIC ZEOLITES

Ronald I. Davis, Wilmington, Del., assignor to Sun Research and Development Company, Marcus Hook, Pa.
Continuation-in-part of Ser. No. 263,370, June 6, 1972, Pat. No. 3,793,386. This application May 1, 1973, Ser. No. 356,265
Int. Cl. C07c *7/12*
U.S. Cl. 260—674 SA **12 Claims**

1. Process for separating structurally similar cyclic hydrocarbons, said process comprising:

A. contacting a fluid feed mixture comprising said cyclic hydrocarbons with a solid adsorbent comprising a partially-solvated, substantially crystalline metallic alumino-silicate zeolite, the solvate consisting essentially of ammonia or of ammonia and water, said zeolite having a critical pore diameter greater than about 6A, the ratio Al/Si of the alumino-silicate framework of the zeolite being in the range of 1.0–0.1, whereby there is obtained a rich adsorbent containing an adsorbate which is richer in one said cyclic hydrocarbon than was said fluid feed mixture, and a raffinate product which contains less of the one said cyclic hydrocarbon than did said fluid feed mixture,

B. separating said raffinate product from said rich adsorbent and,

C. removing the one said cyclic hydrocarbon from said rich adsorbent,

and wherein said partially-solvated zeolite upon ignition analysis at 800°C evolves at least 0.5 weight percent ammonia and wherein from 25–100% of the electronegativity associated with the zeolite framework is satisfied by cations of metals.

3,895,081
TACKIFYING RESIN AND METHOD FOR MANUFACTURE THEREOF

Teiichi Aikawa, Nara-ken, and Isao Shiihara, Osaka, both of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan
Filed Oct. 26, 1972, Ser. No. 300,918
Claims priority, application Japan, Oct. 26, 1971, 46-85339
Int. Cl. C08d *304, 306, 310*
U.S. Cl. 260—82.1 **6 Claims**

1. A tackifying resin having a softening point of from 74°–140°C. and an average molecular weigth of 750–1,300, obtained by catalytically polymerizing a mixture comprising 20 – 40% of 1,4-dimethyl-4-vinyl-1-cyclohexene, 20 – 40% of 2-methyl-4-isopropenyl-1-cyclohexane, 20 – 40% of 1-methyl-4-isopropenyl-1-cyclohexane, 5 – 10% of 1,5-dimethyl-1,5-cyclooctadiene plus 2,5-dimethyl-1,5-cyclooctadiene, and 1 – 3% of trans-1,2-dimethyl-1,2-divinyl-cyclobutane, trans-isopropenyl-2-methyl-2-vinylcyclobutane plus trans-1,2-diisopropenyl-cyclobutane, the catalyst being at least one member selected from the group consisting of aluminum chloride, aluminum chloride complex, aluminum tribromide, boron trifluoride, zirconium chloride, titanium tetrachloride, aluminum chloride-ferric chloride, aluminum chloride-titanium tetrachloride and aluminum chloride-aluminum bromide.

3,895,082
POLYMER COMPOSITION

Seymore Hochberg, Wynnewood, Pa., assignor to E. I. duPont de Nemours & Co., Wilmington, Del.
Continuation of Ser. No. 147,632, May 27, 1971, which is a division of Ser. No. 883,279, Dec. 8, 1969, which is a continuation-in-part of Ser. No. 671,594, Sept. 29, 1967, abandoned. This application Sept. 6, 1973, Ser. No. 394,826
Int. Cl. C08f *15/16, 15/36, 15/38, 19/10*
U.S. Cl. 260—885 **4 Claims**

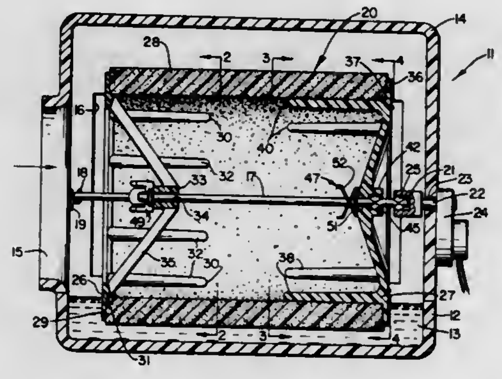
2. A process for preparing a polymeric composition which comprises

A. providing substantially spherical monomolecular particles, having an average diameter of about 60–20,000 millimicrons, a weight average molecular weight of at least 100 million, and which are rubbery at a temperature below 60°C, prepared by polymerizing, in a suitable reaction medium, a mixture of reactive compounds which contains, in each 100 parts of weight thereof
   x. about 75–99 parts of a monoethylenically unsaturated monomer having an alkyl (C_1–C_8) acrylate content of about 75–100% by weight;
   y. up to about 24 parts of allyl methacrylate, and
   z. about 1–15 parts of a crosslinking agent, other than allyl methacrylate, having at least two polymerizable double bonds per molecule, and

B. grafting to the reactive sites in (A) a second portion composed of a polyalkyl methacrylate of 1–8 carbon atoms in the alkyl group having an average molecular weight of about 1,000 to 150,000.

3,895,083
ROTARY ASSEMBLY FOR HUMIDIFIER

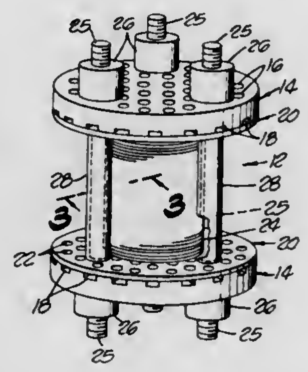
Richard J. Yeagle, Hartland, Mich., assignor to Skuttle Manufacturing Company, Milford, Mich.
Filed May 29, 1973, Ser. No. 364,424
Int. Cl. B01f *3/04*
U.S. Cl. 261—92 **15 Claims**



1. A rotor assembly for a humidifier comprising a housing, a shaft provided at one end with means for axially separable connection to power means for rotating said shaft, bearing means readily releasably supporting said shaft at its other end, separate end members disposed in longitudinally spaced relation along said shaft, each of said end members comprising an annular row of relatively fixed fingers and an annular axially facing flange peripherally outwardly of said fingers, means connecting at least one of said end members non-rotatably to said shaft, means slidably connecting at least one of said end members in axially detachable relation upon said shaft, a water pick-up annulus of flexible porous synthetic plastic material extending between said end members with its opposite ends in substantial abutment with said flanges, said fingers projecting longitudinally part way into the interior of said annulus and terminating in ends therein, there being no connection between said fingers and said shaft at said ends whereby said annulus is independently interiorly supported by said fingers, the outer periphery of each of said rows of fingers having the same effective diameter and defining smooth surface means axially slidably receiving the ends of said annulus and one of said members being apertured for the entrance of air to be humidified by passage through said annulus.

3,895,084
FIBER REINFORCED COMPOSITE PRODUCT

Dieter W. Bauer, Whittier, Calif., assignor to Ducommun Incorporated, Los Angeles, Calif.
Filed Mar. 28, 1972, Ser. No. 238,813
Int. Cl. C01b *31/02, 31/07, 31/30*
U.S. Cl. 264—29 **15 Claims**



1. A method of forming a high strength fiber reinforced composite product comprising the steps of:

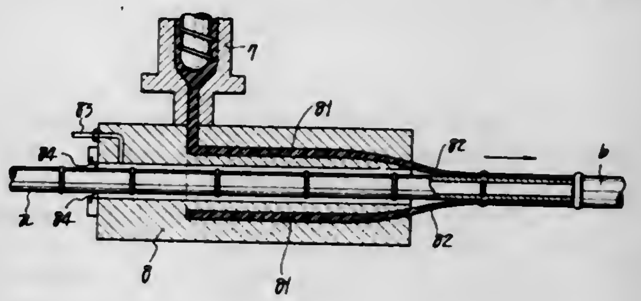
a. constructing a basic substrate from a compressible carbon fibrous material selected from the group consisting of pyrolyzed wool, rayon, polyacrylonitrile and pitch fibers, the fiber volume of said fibrous material being known and the volume of said basic substrate being greater than the volume of the final product;

b. compressing said basic substrate by a pressure compaction means for reducing the volume of said basic substrate into a shaped substrate so that said shaped substrate will have a shape substantially corresponding to the shape of the final product; will have a fiber volume of between 8% and 69%; and will have sufficient internal porosity to permit the passage of gas therethrough; and

c. forming said shaped substrate into a bonded substrate by constraining said shaped substrate within said pressure compaction means to substantially maintain its shape and fiber volume while interstitially depositing pyrolytic material to structurally bond together the compressible fibrous carbon material with pyrolytic material, said pyrolytic material being selected from a group consisting of pyrolytic carbon, pyrolytic graphite, boron nitride, tantalum, tungsten, molybdenum, columbium, tantalum carbide, niobium carbide, zirconium carbide, hafnium carbide and silicon carbide.

3,895,085
PROCESS FOR PREPARING A SYNTHETIC FLOATING PIPE

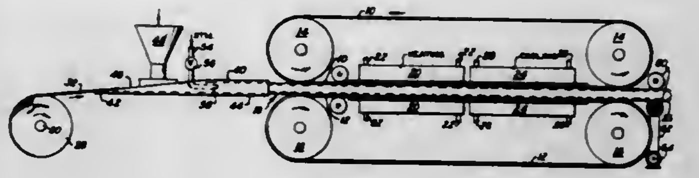
Todao Suzuki, Toyohashi, and Hiroshi Maruyama, Toyakawa, both of Japan, assignors to Maruhachi Kasei Kogyo Kabushiki Kaisha, Japan
Filed Aug. 30, 1973, Ser. No. 393,190
Claims priority, application Japan, Aug. 31, 1972, 47-87673
Int. Cl. B29d *23/04;* **B29f** *3/00*
U.S. Cl. 264—154 **5 Claims**



1. A method of preparing a synthetic pipe for use in a float comprising:
- a. extruding a first pipe
- b. inserting at least two plates into said first pipe at predetermined intervals;
- c. fixing said plates to the inner surface of said first pipe as said first pipe is being extruded;
- d. perforating the wall of said first pipe between said plates while said first pipe is still heated and in a soft state from the extrusion, whereby the space between said plates communicates with the atmosphere;
- e. extruding a second pipe around said first pipe and in contact therewith whereby said second pipe covers said first pipe and covers said perforations thereby forming a closed pipe.

3,895,086
METHOD AND APPARATUS FOR FORMING LAMINATED MOLDED BODIES

Erling Berner, 2890 Cavey Crest Cir., Allison Park, Pa. 15101
Filed Aug. 28, 1972, Ser. No. 284,059
Int. Cl. B29d *27/03*
U.S. Cl. 264—45.4 **31 Claims**



1. The method of producing a laminated foamed plastic body having at least one protective sheet secured to at least one surface thereof, said sheet being foraminous by including numerous perforations with large enough slots to allow easy passage of heating fluid through the surfaces, comprising molding a heat expandable granular material in surface contact with the preformed foraminous sheet and passing a heating fluid at least in part through the foraminous sheet and heat expandable granular plastic to expand and foam said granular plastic and cause the granules to cohere to each other

and to said sheet material, and then cooling the molded product.

3,895,087

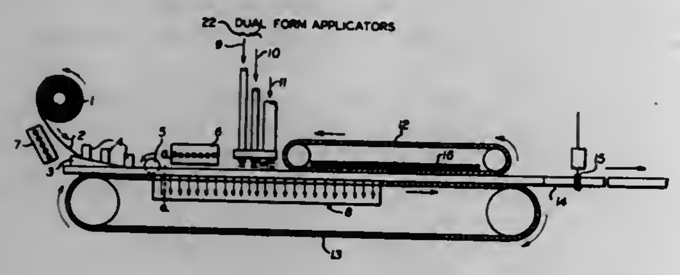
METHOD OF MANUFACTURING A MOLDED COMPOSITE URETHANE FOAM STRUCTURAL PANEL

Lester V. Ottinger, Danbury, Conn., and William A. Matzke, Mahopac, N.Y., assignors to Champion International Corporation, New York, N.Y.

Filed Nov. 26, 1971, Ser. No. 202,180

Int. Cl. B29d *27/04*

U.S. Cl. 264—46.2 **20 Claims**



1. Process for manufacturing a high quality molded urethane foam structural panel which comprises continuously applying a thin plastic film to a belt which continuously moves along a mold, introducing a relatively high density foamable urethane mixture onto said film from a first spray applicator, subsequently continuously introducing additional relatively low density foamable urethane mixture onto said plastic film from a second spray applicator in a manner that the spray from said second applicator slightly overlaps the spray from said first applicator, and in a manner that the foamable urethane mixture from said first applicator completely covers the foamable urethane mixture from said first applicator, conforming said film to the mold configuration by means of a vacuum, and forming a urethane foam substrate on said plastic film, and then separating said belt from said plastic film supported by said urethane foam substrate.

3,895,088

METHOD FOR AGGLOMERATING STEEL PLANT WASTE DUSTS

Mehmet Adnan Goksel, Houghton, Mich., assignor to Board of Control Michigan Technological University, Houghton, Mich.

Continuation-in-part of Ser. No. 105,729, Jan. 14, 1971, abandoned. This application Sept. 8, 1972, Ser. No. 287,346

Int. Cl. B28b *3/00*

U.S. Cl. 264—82 **15 Claims**

1. A method for making hardened agglomerated masses from steel plant waste dust containing a hydrateable material selected from the group consisting of overburned lime, hydrateable slag materials and mixtures thereof, comprising the steps of:

a. preparing a moistened mixture including said steel plant waste dust, about 2 to about 20 weight percent of a bonding agent selected from the group consisting of the oxides, hydroxides and carbonates of calcium and magnesium, and mixtures thereof, and about 0.5 to about 5 weight percent of a siliceous material capable of reacting with said bonding agent to form silicate bonds therewith, said weight percentages being based upon the total weight of the dry solids in said mixture and the particle size of the solids in said mixture being less than about 10 mesh;

b. aging said moistened mixture at an elevated temperature in the presence of a moisturized atmosphere containing water vapor for a sufficient time to hydrate substantially all of said hydrateable material contained therein;

c. forming the aged mixture into discrete compact masses;

d. drying said masses to adjust the mositure content therein to about 5 weight percent or less, based on the total weight of the mass, the rate of said drying being below a level where bursting of said masses occurs;

e. hydrothermally hardening said masses by contacting them with saturated or substantially saturated steam at a temperature of about 100° to about 244°C for a period of time sufficient to form hardened and integrally bonded masses, and

f. cooling said hardened masses.

3,895,089

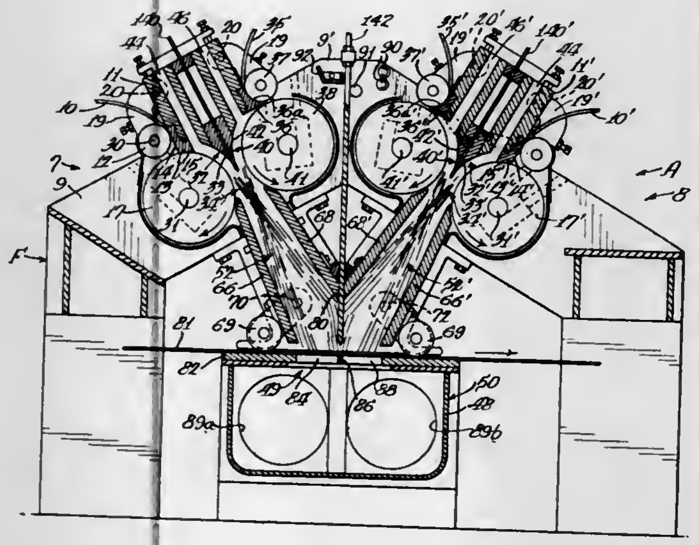
METHOD FOR PREPARING AIR-LAID NONWOVEN WEBS FROM COMBINED STREAMS

Prashant K. Goyal, Bombay, India, assignor to Johnson & Johnson, New Brunswick, N.J.

Filed Apr. 4, 1973, Ser. No. 347,971

Int. Cl. D04h *1/16*

U.S. Cl. 264—89 **11 Claims**



1. The method of forming a web of nonwoven fibers comprising the steps of providing a plurality of sources of fibers, rotating a lickerin for each source of fibers, feeding each source of fibers into contact with its respective lickerin whereby each lickerin individualizes fibers from its respective source, providing separate high speed gaseous streams to doff at least some of the fibers from each lickerin and to entrain the individualized fibers in their respective gaseous stream, impelling a first pair of the gaseous streams carrying entrained fibers toward one another at a first common region, locating a first movably mounted web controlling member at a preselected position relative to said first pair of gaseous streams to control the location of the common region and the manner of combining of the individual streams of the first pair of gaseous streams into a first combined stream, impelling a second pair of the gaseous streams carrying entrained fibers toward one another at a second common region, locating a second movably mounted web controlling member at a preselected position relative to said second pair of gaseous streams to control the location of the second common region and the manner of combining of the individual streams of the second pair of gaseous streams into a second combined stream, impelling said first and second combined streams carrying entrained fibers toward one another at a third common region, locating a third movably mounted web controlling member at a preselected position relative to said first and second combined streams to control the location of the third common region and thus the type of web to be formed, and conveying and depositing said fibers at a depositing zone to form a single web of nonwoven fibers.

3,895,090

METHOD FOR DIRECT SPINNING OF POLYETHYLENE-1,2-DIPHENOXYETHANE-P,P'-DICARBOXYLATE FIBERS

Hidehiko Kobayashi, Tokyo; Masatsugu Yoshino, Saitamaken, and Kazuya Neki, Saitamaken, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

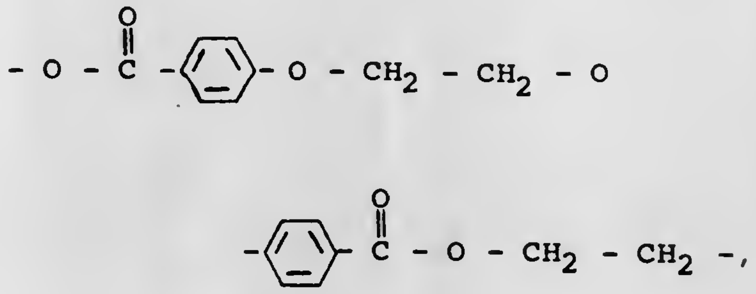
Filed Mar. 26, 1969, Ser. No. 810,775

Claims priority, application Japan, Apr. 9, 1968, 43-23061

Int. Cl.² D01D *5/08*

U.S. Cl. 264—176 F **5 Claims**

1. A process for the direct spinning of commercial useful polyethylene-1,2-diphenoxyethane-p,p'-dicarboxylate fiber without any subsequent stretching operation which comprises extruding a melt of a polymer containing substantially 100 mol % of repetition units of the formula:



said polymer having an intrinsic viscosity of between about 0.4 and 1.3, and containing less than about 20.0 eq./10^6 g. of residual carboxyl group in the polymer, and taking up the resultant extruded fibers at a velocity ranging from about 1800 to 3500 m/min.

3,895,091

PRODUCTION OF FIBERS FROM PHENYLENE SULFIDE POLYMERS

James N. Short, Bartlesville, Okla.; Lee O. Edmonds, deceased, late of Bartlesville, Okla.; by Emmilou Edmonds, executrix, and James T. Edmonds, Jr., both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 355,004, April 27, 1973, abandoned, which is a continuation-in-part of Ser. No. 237,881, March 24, 1972, abandoned. This application Apr. 8, 1974, Ser. No. 458,701

Int. Cl.² D01D *5/12*

U.S. Cl. 264—210 F **7 Claims**

1. A process for the production of strong, high-modulus, high-melting, non-burning poly(phenylene sulfide) fibers having excellent corrosion-resistant properties which comprises the steps of:

a. heating a phenylene sulfide polymer at an elevated temperature and for a period of time sufficient to at least partially cure and lower the melt flow of the polymer to within the range of 75 to 800 grams per 10 minutes as measured by ASTM method D–1238–70 modified to operate at 650°F with a piston load of 5 kilograms,

b. melt spinning the partially cured polymer obtained in step (a) by passing the polymer in the molten state through spinneret orifices at a temperature above the polymer melting point to produce filaments therefrom, and

c. drawing the molten filaments of step (b) by taking them up on rolls at a linear velocity at least 10 times the linear velocity of the polymer passing through the spinneret orifices to form said strong, high-modulus fibers.

3,895,092

CONTINUOUS PROCESS FOR PRODUCING BARIUM AND STRONTIUM HARD FERRITES STARTING FROM IRON OXIDES

Giuseppe Sironi; Giuliano Fagherazzi; Francesco Ferrero, all of Novara, and Gianfranco Parrini, Milan, all of Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Filed Sept. 14, 1972, Ser. No. 289,054

Claims priority, application Italy, Sept. 24, 1971, 29049/71

Int. Cl. C01f *11/00;* **C01g** *49/00*

U.S. Cl. 423—148 **3 Claims**

1. A continuous process for producing a barium or strontium ferrite, starting from an iron oxide source and a barium or strontium carbonate, wherein

a. a slurry consisting essentially of an iron oxide source selected from the group consisting of hematite, magnetite and an iron hydroxide, a barium or strontium carbonate, water and binder is dried and granulated, utilizing the hot gases flowing from step (b), supplemented with hot burnt gases obtained separately;

b. the granules obtained from step (a) are calcined, for 0.5–4 hours at 950°–1150° C, in a fluid bed reactor, heated by combusion inside the bed of a non-sulphurated hydrocarbon liquid or gaseous fuel with air in an oxidizing atmosphere; and

c. the ferrite obtained is cooled and wet-ground;

the iron oxide source and the carbonate being in the form of a submicronic powder; and the drying and granulation being carried out by means of hot gases at 500°–800° C.

3,895,093

CATALYTIC REMOVAL OF CARBON MONOXIDE, UNBURNED HYDROCARBONS AND NITROGEN OXIDES FROM AUTOMOTIVE EXHAUST GAS

Gunter Weidenbach, Anderten, and Karl Hermann Koepernik, Hannover, both of Germany, assignors to Kali-Chemie Aktiengesellschaft, Hannover, Germany

Filed Jan. 31, 1974, Ser. No. 438,247

Claims priority, application Germany, Feb. 1, 1973, 2304831

Int. Cl. B01d *53/34*

U.S. Cl. 423—213.5 **7 Claims**

7. The process as defined by claim 1, wherein said platinum, ruthenium, rhodium and rhenium are each present in an amount between about 0.05 and 0.2% by weight.

3,895,094

PROCESS FOR SELECTIVE REDUCTION OF OXIDES OF NITROGEN

Jimmy L. Carter, Joplin, Mo.; Michael T. Chapman, Baxter Springs, and Bill G. Yoakam, Pittsburg, both of Kans., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Jan. 28, 1974, Ser. No. 437,272

Int. Cl. B01j *8/00;* **C01b** *21/00*

U.S. Cl. 423—239 **2 Claims**

1. A process for selectively reducing oxides of nitrogen to nitrogen in a mixture of gases containing from a trace to 10 percent oxygen, from a trace to 2 percent nitric oxide, from a trace to 2 percent nitrogen dioxide and the remainder an inert gas, which comprises contacting in a reaction zone said mixture of gases and an approximately stoichiometric amount of ammonia based on moles of nitrogen oxides present at a space velocity of less than 60,000 and a temperature within the range of 200°C to 300°C in the presence of a catalyst consisting of an acid resistant aluminosilicate molecular sieve composition having a surface area of at least 350 m^2/g and substantially uniform intercrystalline pores with effective diameters of at least 6 A., whereby selective reduction of the oxides of nitrogen to nitrogen is effected.

3,895,095

RUTHENIUM PHOSPHATES AS NEW COMPOUNDS AND PROCESS OF USING SAME

Thaddeus P. Kobylinski, Cheswick, and Brian W. Taylor, Richland Township, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed July 2, 1973, Ser. No. 375,902

Int. Cl. C01b *25/26*

U.S. Cl. 423—305 **13 Claims**

1. As a new compound a ruthenium phosphate selected from the following formulae:

(I) · $\mathrm{Ru}_m(\mathrm{P}_n\mathrm{O}_{3n+1})$,

wherein n is an integer of at least 2,

$$m=\left[\frac{n}{8}\right]+1 \text{ to } \frac{n+2}{2}$$

when n is an even integer and

$$m=\left[\frac{n-3}{8}\right]+2 \text{ to } \frac{n+1}{2}$$

when n is an odd integer; and

(II) $\mathrm{Ru}_m(\mathrm{P}_n\ \mathrm{O}_{3n})$,

wherein n_1 is an integer of at least 3,

$$m_1=\left[\frac{n_1-2}{8}\right]+1 \text{ to } \frac{n_1}{2}$$

when n_1 is an even integer and

$$m_1=\left[\frac{n_1-5}{8}\right]+2 \text{ to } \frac{n_1-1}{2}$$

when n_1 is an odd integer.

3,895,096

METHOD OF PRODUCING HYDROUS CALCIUM SILICATE PRODUCTS AND THE PRODUCTS THEREOF

Jerry L. Helser, Hebron, and Richard F. Shannon, Lancaster, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Sept. 10, 1973, Ser. No. 395,886

Int. Cl. C04b *33/00*

U.S. Cl. 423—331 **8 Claims**

1. In the process of manufacturing a hydrous calcium silicate insulating product comprising the steps of:

- a. placing a molded aqueous slurry of calcareous and silicate materials stabilized with from 1.0 to 20.0 percent by weight of total solids of organic fibers and with from 0.1 to 10.0 percent by weight of total solids of glass fibers in an autoclave;
- b. indurating the slurry with pressurized, saturated steam;
- c. simultaneously indurating and drying the slurry with superheated steam to convert the slurry to a hydrous calcium silicate product; and
- d. reducing the pressure in the autoclave to atmospheric pressure prior to removal of the product, wherein at least 10 percent by weight of solids of free moisture is retained in the slurry and the product during the four steps of the process until completing step (d) and removing the product from the autoclave; the improvement comprising employing tripoli as one of the siliceous materials wherein 25.0 to 75.0 weight percent of the siliceous materials is tripoli.

3,895,097

PROCESS FOR REACTING CARBON, SILICON OR METAL OXIDES AND CHLORINE

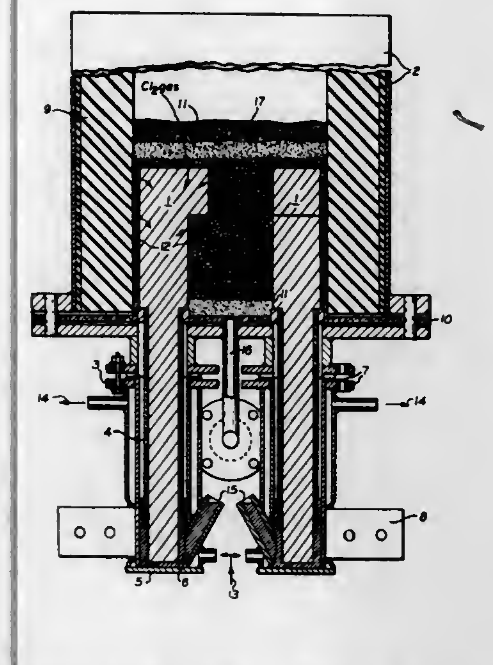
Ferdinand Langenhoff, Ranzel; Erich Termin, Laufenburg; Otto Bleh, Bergheimsieg, and Rico Kolb, Ranzel, all of Germany, assignors to Dynamit Nobel AG, Troisdorf, Germany

Division of Ser. No. 91,408, Nov. 20, 1970, Pat. No. 3,753,660. This application Mar. 21, 1973, Ser. No. 343,579

Claims priority, application Germany, Sept. 16, 1969, 1946718

Int. Cl. C01g *31/00, 23/02, 25/04;* **C01b** *33/08*

U.S. Cl. 423—341 **6 Claims**



1. In the process for producing a metal or silicon chloride by reaction between a solid bed comprising a mixture of an oxide of said metal or silicon plus carbon in a tubular reactor made of refractory chlorine-resistant material and chlorine gas supplied to said reactor by heat generated through passage of an electric current between the ends of spaced carbon electrodes located below said bed, the other ends of said electrodes extending outside said reactor and being connected to metallic conductors which in turn are connected to a supply of electric current, the improvement which comprises effecting an improved flow of current to said electrodes by connecting each of them to its respective metallic conductor through a body of lead, and surrounding each electrode along its entire length from a location inside said reactor towards the outside electrode end with a gas-tight tube of refractory electrically insulated material terminating inside siad body of lead.

3,895,098

METHOD AND COMPOSITION FOR GENERATING NITROGEN GAS

John F. Pietz, Mesa, Ariz., assignor to Talley Industries, Inc., Mesa, Ariz.

Filed May 31, 1972, Ser. No. 258,271

Int. Cl. C01b *21/00*

U.S. Cl. 423—351 **9 Claims**

6. A method for rapidly generating pure nitrogen gas comprising:

- a. providing a homogeneous mixture comprising essentially solid granular alkali metal azide and at least a stoichiometric amount of a metal oxide in solid granular form selected from the group consisting of iron, titanium, and copper oxides and mixtures thereof, said metal oxide being capable of reacting exothermically with the alkali metal azide, the metal of the oxide being lower in the electromotive series than the alkali metal of the azide and the metal of the oxide being other than an alkali metal; and
- b. raising the temperature of the mixture sufficiently to ignite it.

3,895,099

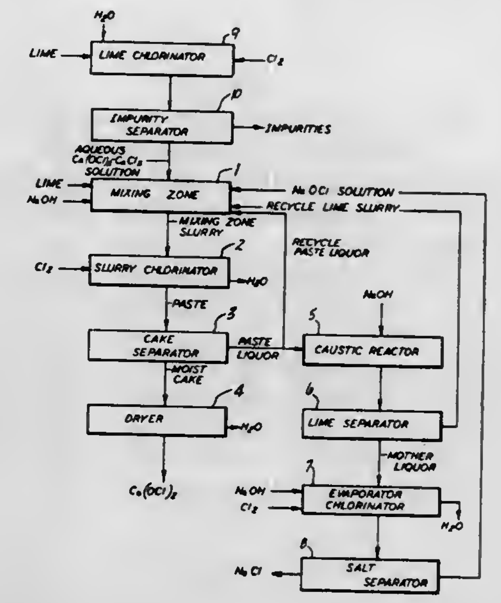
PROCESS FOR MANUFACTURE OF CALCIUM HYDROCHLORITE

Walter J. Sakowski, Cleveland, Tenn., assignor to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 257,768, May 30, 1972, abandoned. This application Mar. 12, 1973, Ser. No. 340,121

Int. Cl. C01b *11/06;* **C01d** *3/04*

U.S. Cl. 423—474 **16 Claims**



1. A continuous process for preparing calcium hypochlorite which comprises:

- a. reacting an aqueous slurry of impure lime with chlorine to form a slurry of insoluble impurities of said lime suspended in an aqueous solution of soluble reaction products comprised of
  - 1. calcium hypochlorite, and
  - 2. calcium chloride,
- b. separating said insoluble impurities from said aqueous solution of said reaction products,
- c. reacting said aqueous solution of said reaction products with an alkali metal hypochlorite in a mixing zone to form a mixing zone slurry,
- d. reacting said mixing zone slurry with chlorine to form a paste comprised of:
  - 1. solid calcium hypochlorite dihydrate particles admixed with
  - 2. a paste liquor comprised of an aqueous solution of
    - *a.* alkali metal chloride, and
    - *b.* dissolved calcium hypochlorite,
- e. continuously withdrawing at least a portion of said paste and separating it into
  - 1. said paste liquor and
  - 2. a moist cake of said solid calcium hypochlorite dihydrate particles,
- f. reacting said paste liquor with a hydroxide of an alkali metal to form a slurry of precipitated lime in a mother liquor predominating in alkali metal hypochlorite and alkali metal chloride,
- g. separating said precipitated lime from at least a portion of said mother liquor, and
- h. recycling said precipitated lime to said mixing zone.

3,895,100

PRODUCTION OF CHLORINE DIOXIDE

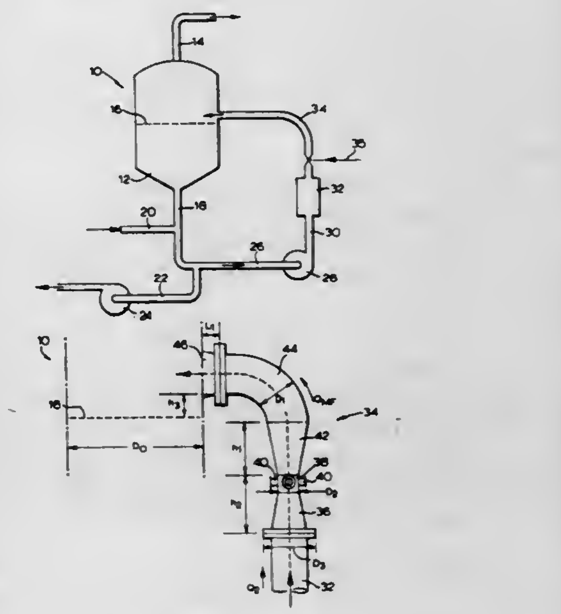
Gerald Cowley, Mississauga, Canada, assignor to Erco Industries Limited, Islington, Canada

Filed July 5, 1973, Ser. No. 376,380

Int. Cl. C01b *11/02, 7/02*

U.S. Cl. 423—478 **6 Claims**

1. A continuous method of producing chlorine dioxide which comprises continuously maintaining a chlorine dioxide-producing reaction medium in a reaction zone, the reaction medium containing an alkali metal chlorate, a reducing agent capable of reducing said alkali metal chlorate to chlorine dioxide and chlorine and a strong mineral acid, continuously generating chlorine dioxide and chlorine from said reaction medium and continuously evaporating water from said reaction medium at substantially the boiling point thereof while the reaction medium is maintained under a reduced pressure continuously removing from said reaction zone a gaseous mixture consisting of said generated chlorine dioxide and chlorine and said evaporated water, continuously recovering chlorine dioxide from said gaseous mixture, continuously depositing in said reaction zone an alkali metal salt of the anion of said strong acid, continuously removing from said reaction zone a slurry containing deposited alkali metal salt and part of said reaction medium, continuously forming a recycle mixture having a reduced alkali metal salt solids content and containing make-up quantities of alkali metal chlorate and reducing agent, heating said recycle mixture substantially to an elevated temperature which is the boiling point of said reaction medium at the prevailing absolute pressure in said reaction zone, accelerating the heated mixture to establish a back pressure to exceed the difference in saturation vapour pressure of the heated mixture and of said reaction medium, adding strong mineral acid to said accelerated heated mixture substantially at the maximum velocity of said mixture resulting from said acceleration to provide a feed material for said reaction zone, allowing gaseous material in said feed material to expand while maintaining a low rate of acceleration feeding said expanded feed mixture to said reaction zone at a level above the liquid level in said reaction zone, and maintaining the level of liquid in said reaction zone substantially constant.



3,895,101

METHOD FOR THE TREATMENT OF WASTE GAS FROM CLAUS PROCESS

Hidemasa Tsuruta, Tokyo, Japan, assignor to Nittetu Chemical Engineering Ltd., Tokyo, Japan

Filed June 7, 1974, Ser. No. 477,511

Int. Cl.² C01B *17/60*

U.S. Cl. 423—574 **5 Claims**

1. A method for the treatment of the tail gas formed in the Claus process, characterized by oxidizing by combustion the tail gas thereby converting the whole sulfur component thereof into sulfurous acid gas (SO_2), thereafter mixing the resulting gas with a reducing combustion gas containing carbon monoxide and hydrogen for thereby lowering the residual oxygen content of said tail gas to substantial absence, subsequently cooling the resulting gas containing substantially no oxygen in a neutral to reductive atmosphere, then introducing the cooled gas into a liquid capable of absorbing SO_2 for thereby causing the sulfurous acid gas present in said tail gas to be absorbed in said liquid, heating the sulfurous acid gas-absorbed liquid for thereby causing the liquid to liberate the sulfurous acid gas, then recovering the liberated sulfurous acid gas and circulating the recovered gas to the aforementioned Claus process.

3,895,102

SOLID FUEL FOR THE GENERATION OF HYDROGEN AND METHOD OF PREPARING SAME

John P. Gallagher, Wilmington, Mass., assignor to Delta F Corporation, Woburn, Mass.

Continuation of Ser. No. 192,948, Oct. 27, 1971, abandoned. This application Sept. 10, 1973, Ser. No. 396,087

Int. Cl. C01b *1/03;* **C09k** *3/00*

U.S. Cl. 423—657 **13 Claims**

1. A fuel composition of a dimensionally stable sintered porous mass capable of generating hydrogen gas by sequential contact with an aqueous hydroxide solution which consists essentially of:

silicon-containing metal particles;

a salt compound in an amount of from 5–50 percent by weight of the composition, the salt compound admixed with and bonded to the silicon-containing metal particles; and

a silicate cement disposed on at least a portion of the silicon-containing metal particles, the silicate cement formed when the composition is wetted with the hydroxide solution the parts by weight of the salt compound sufficient to allow the silicate cement formed to dissolve at a greater rate upon subsequent rewettings with the hydroxide solution then if the salt compound had not been present.

3,895,103

INTRAUTERINE CONTRACEPTIVE DEVICE CONTAINING CERTAIN PHARMACEUTICALLY ACCEPTABLE STEROIDS

Alejandro Zaffaroni, Atherton, Calif., assignor to ALZA Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 201,055, Nov. 22, 1971, abandoned, and Ser. No. 864,174, Oct. 6, 1969, abandoned. This application Oct. 16, 1973, Ser. No. 406,953

Int. Cl. A61m *31/00*

U.S. Cl. 424—22 **8 Claims**

1. An intrauterine device adapted for insertion and placement in a uterus for the release of a pharmaceutically acceptable anti-fertility steroid metabolite comprising, a matrix formed of a nontoxic, biologically inert polymeric release rate controlling material containing a locally, contraceptively active saturated metabolite of progesterone and permeable to the passage of the metabolite by diffusion, and wherein the intrauterine device when placed in the uterus meters the flow of an effective amount of the metabolite up to 1500 micrograms per day for an antifertility effect through the material at a controlled and continuous rate over a prolonged period of time.

3,895,104

SUNSCREENING METHOD AND COMPOSITION CONTAINING FILM FORMING POLYAMIDE MATERIAL

Gerhart Karg, Pompton Lakes, N.J., assignor to Avon Products, Inc., New York, N.Y.

Filed June 13, 1972, Ser. No. 262,375

Int. Cl. A61l *23/00*

U.S. Cl. 424—59 **8 Claims**

5. A substantive composition for protecting skin from erythema-causing radiation comprising from about 0.1 to about 10 percent by weight of an ultraviolet absorbing material having a maximum absorption peak between about 280 millimicrons and 320 millimicrons and from 0.1 to 50 percent based on the total weight of the composition of a polyamide resinous material which is water-insoluble, alcohol soluble and capable of forming a substantive film material, said materials being incorporated in from about 40 to 99.8 percent by weight of a cosmetic carrier selected from the group consisting of C_1–C_5 alcohol, C_1–C_5 alcohol mixtures and C_1–C_5 alcohol-water mixtures, said maximum amount of water present in the alcohol-water mixtures being dependent upon the compatibility of the polyamide used.

3,895,105

CHOCOLATE COATING COMPRISING HYDROXYLATED LECITHIN

Frank P. Colten, Dover, Del., and Morton Kaplan, Battle Creek, Mich., assignors to General Foods Corporation, White Plains, N.Y.

Filed Jan. 4, 1971, Ser. No. 103,876

Int. Cl. A23j *7/00;* **A23g** *1/00*

U.S. Cl. 426—306 **6 Claims**

3. A composition adapted for use as a coating for confections and bakery products comprising a chocolate product and hydroxylated lecithin, said hydroxylated lecithin present in an amount effective to retard moisture loss from confections and bakery products coated with said composition.

3,895,106

NOVEL CSA AND CSC FOR USE IN MAN AND MAMMALS TO INHIBIT ATHEROSCLEROSIS AND THE RECURRENCE OF CARDIOVASCULAR INCIDENTS IN ATHEROSCLEROTIC MAMMALS

Lester M. Morrison, 7012 La Presa Dr., Hollywood, Calif. 90028

Continuation-in-part of Ser. No. 28,928, April 15, 1970, abandoned, which is a continuation-in-part of Ser. No. 606,020, Dec. 30, 1966, abandoned. This application Jan. 17, 1972, Ser. No. 218,549

Int. Cl.^{2} A61K *27/00*

U.S. Cl. 424—180 **9 Claims**

1. A product useful for inhibiting the development of atherosclerotic lesions in animals of the mammalian species including man, promoting the development of collateral circulation in regions of the heart supplied by the branches of coronary arteries, and inhibiting the occurrence of cardiac episodes including myocardial infarctions, acute coronary insufficiency and acute myocardial ischemia in human subjects with ischemic or coronary heart disease, which comprises a biologically and physiologically active chondroitin sulfate A, active chondroitin sulfate C, or mixtures thereof, said activity being manifested by at least an 80 percent prolongation of plasma thrombus-formation time 6 to 12 hours after administration in rabbits as described in the Chandler loop method.

3,895,107

CSA AND CSC IN MAN AND MAMMALS TO INHIBIT ATHEROSCLEROSIS AND THE RECURRENCE OF CARDIOVASCULAR INCIDENTS IN ATHEROSCLEROTIC MAMMALS

Lester M. Morrison, Hollywood, Calif.

Continuation-in-part of Ser. No. 28,928, April 15, 1970, abandoned, which is a continuation-in-part of Ser. No. 606,020, Dec. 30, 1966, abandoned. This application Jan. 17, 1972, Ser. No. 218,550

Int. Cl.^{2} A61K *27/00*

U.S. Cl. 424—180 **9 Claims**

1. The method of treatment for inhibiting the development of atherosclerotic lesions in animals of the mammalian species, promoting the development of collateral circulation in regions of the heart supplied by the branches of coronary arteries, and inhibiting the occurrence of cardiac episodes including myocardial infarctions, acute coronary insufficiency with acute myocardial ischemia in human subjects with ischemic heart disease, which comprises the essentially regular and prolonged oral administration to mammals of an effective amount of a biologically and physiologically "active" chondroitin sulfate A, "active" chondroitin sulfate C, or mixtures thereof, said activity being manifested by at least an 80% prolongation of plasma thrombus-formation time 6 to 12 hours after administration in rabbits as described in the Chandler loop method.

3,895,108

INSECTICIDAL USE OF O-(2-BROMOETHYL)-O-(2,-DICHLORO-VINYL)-PHOSPHORIC ACID ESTERS

Claus Stolzer, Wuppertal-Vohwinkel, and Wolfgang Behrenz, Cologne, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 202,666, Nov. 26, 1971, abandoned, which is a division of Ser. No. 886,773, Dec. 19, 1969, abandoned. This application Nov. 19, 1973, Ser. No. 417,432

Claims priority, application Germany, Dec. 24, 1968, 1816903

Int. Cl.^{2} A01N *9/36*

U.S. Cl. 424—219 **3 Claims**

1. A method of combating the insect Sitophilus granarius, which comprises applying to said insect or its habitat an insecticidally effective amount of 0-(2-bromo-ethyl)-0-(2,2-dichlorovinyl)-0-methyl-phosphoric acid ester.

3,895,109

NEMATOCIDAL COMPOSITIONS COMPRISING 2-CHLORO-6-METHOXY-4-(TRICHLORO-METHYL)-PYRIDINE AND N,N′-DIMETHYL O-PHENYL PHOSPHORODIAMIDATE

Frances C. O'Melia, Pleasant Hill, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed Feb. 11, 1974, Ser. No. 441,618

Int. Cl. A01m *9/22, 9/36*

U.S. Cl. 424—220 **5 Claims**

1. A synergistic nematocidal composition for use in soil which comprises an inert carrier and a mixture of toxicants consisting of about 1 part by weight of N,N′-dimethyl O-phenyl phosphorodimidate and from about 1/10 to about 32 parts by weight of 2-chloro-6-methoxy-4-(trichloromethyl)pyridine, said mixture being present in an amount of from about 0.00001 to 90 percent by weight of the total composition.

3,895,110

METHODS FOR THE TREATMENT OF PSYCHIC DISTURBANCES

Turan M. Itil, Nyack, N.Y., and Werner Martin Herrmann, Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin, Germany

Filed Sept. 6, 1974, Ser. No. 503,733

Claims priority, application Germany, Sept. 6, 1973, 2345377

Int. Cl.^{2} A61K *27/00*

U.S. Cl. 424—242 **5 Claims**

1. A method for the treatment in a affected person of psychic disturbances of the affective or behavioral type which comprises administering systemically to the affected person an amount of cyproterone or a 17-ester thereof with a hydrocarboncarboxylic acid of 1–8 carbon atoms effective to evoke an anxiolytic response.

3,895,111

ASTHMA TREATMENT BY INHALATION OF MICRONIZED N,N-DIETHYL-4-METHYL-1-PIPERAZINECARBOXAMIDE PAMOATE

Howard Seebree Corey, Jr., New City; William Charles Barringer, Pearl River, and Lloyd Frank Hansen, Campbell Hall, all of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed June 27, 1973, Ser. No. 374,174

Int. Cl. A61k *27/00*

U.S. Cl. 424—250 **1 Claim**

1. A method of treating asthma which comprises administering by inhalation to the lungs of an asthamatic individual as a powder predominantly within the particle size range of 0.5 to 10 microns, in a dosage ranging from 1.5 to 90 mg. per day, mono(N,N-diethyl-4-methyl-1-piperazinecarboxamide) pamoate, bis (N,N-diethyl-4-methyl-1-piperazinecarboxamide) pamoate or a mixture thereof.

3,895,112

ARYLPYRIMIDINES IN THE RELAXATION OF SMOOTH MUSCLE

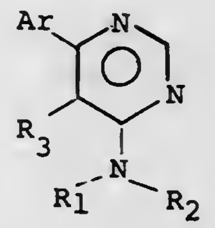
Gerald George DeAngelis, Wilton, and Hans-Jurgen Ernst Hess, Old Lyme, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 182,220, Sept. 20, 1971, Continuation-in-part of Ser. No. 78,216, Oct. 5, 1970, abandoned. This application June 19, 1973, Ser. No. 371,483

Int. Cl.^{2} A61K *27/00*

U.S. Cl. 424—251 **9 Claims**

1. The method of relaxing smooth muscle in a mammal which comprises administering to said mammal an effective amount of a compound of the formula:

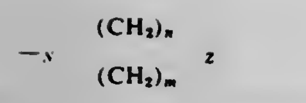


or a pharmaceutically acceptable salt thereof, wherein:

Ar is selected from the group consisting of phenyl; substituted phenyl wherein said substituent is acylamino containing 1 to 4 carbon atoms, nitro or methoxy, pyridyl; thienyl; furyl; monosubstituted pyridyl, thienyl or furyl wherein said substituent is acylamino containing from 1 to 4 carbon atoms, 3-indolyl; 2- and 3-benzofuryl; naphthyl; and 2- and 3-benzothienyl.

R_1 and R_2 when considered separately are each selected from the group consisting of hydrogen; alkyl containing from 1 to 4 carbon atoms; substituted ethyl wherein said substituent is selected from the group consisting of 2-dimethylamino, 2-hydroxy and 2,2,2-trifluoro, alkenyl containing from 3 to 4 carbon atoms; pyridylmethyl; 2-monosubstituted phenyl wherein said substituent is carboxy or sulfamoyl; and cycloalkyl containing from 3 to 7 carbon atoms;

R_1 and R_2 when taken together with the nitrogen atom to which they are attached form a heterocyclic ring of the formula:



$$-N\begin{matrix}(CH_2)_n\\ (CH_2)_m\end{matrix}Z$$

wherein Z is selected from the group consisting of CH_2, O, S and N-alkyl containing from 1 to 3 carbon atoms; and *n* and *m* are integers of from 2 to 3; and

R_3 is selected from the group consisting of hydrogen and alkyl containing from 1 to 3 carbon atoms.

3,895,113

ANTIFERTILITY METHODS EMPLOYING TRIAZOLOISOQUINOLINE DERIVATIVES

Amedeo Omodei- Sale, Voghera; Pietro Consonni, and Leonard Lerner, both of Milan, all of Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

Filed May 24, 1974, Ser. No. 473,261

Claims priority, application United Kingdom, May 25, 1973, 25163/73; Aug. 22, 1973, 39789/73

Int. Cl. A61k *15/12, 27/00*

U.S. Cl. 424—258 2 Claims

1. The method of inducing the termination of a pregnancy in an impregnated female animal which comprises orally or parenterally administering to said animal an abortifacient effective amount of a compound selected from the group consisting of 2-phenyl-5,6-dihydro-s-triazolo [5,1-a]-isoquinoline, 2-phenyl-s-triazolo [5,1-a]-isoquinoline and pharmaceutically acceptable acid addition salts of said compounds.

3,895,114

CYCLIC HYDROXAMIC ACIDS AS ANTIHYPERTENSIVE AGENTS

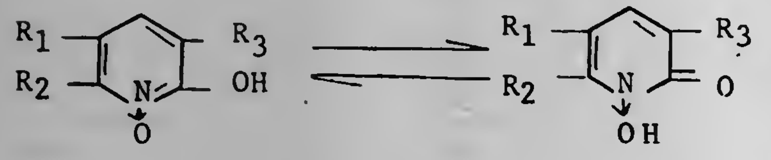
Peter Hadley Jones, Lake Forest, and Yvonne Connolly Martin, Waukegan, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Division of Ser. No. 201,176, Nov. 22, 1971, Pat. No. 3,720,768. This application Feb. 20, 1973, Ser. No. 333,600

Int. Cl. A61k *27/00*

U.S. Cl. 424—263 1 Claim

1. A method of reducing blood pressure in hypertensive patients by administering a therapeutically effective amount of a compound of the formula



wherein R_1, R_2 and R_3 each are hydrogen, alkyl, cycloalkyl or aryl.

3,895,115

METHOD OF INHIBITING PLATELET AGGREGATION

Luciano Caprino, Rome, Italy, assignor to Istituto Farmacologico Serono S.p.A., Rome, Italy

Filed Mar. 1, 1974, Ser. No. 447,275

Int. Cl.^{2} A61K *31/42*

U.S. Cl. 424—272 5 Claims

1. A method of inhibiting platelet aggregation comprising the administration to man or animal in need of such treatment of a therapeutically effective amount of 2-bis(β-hydroxyethyl-)amino-4,5-diphenyloxazole.

3,895,116

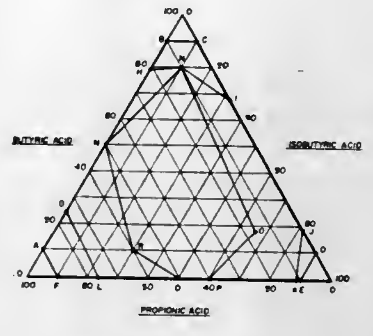
MIXTURES OF VOLATILE FATTY ACIDS HAVING ANTI-FUNGAL AND ANTI-BACTERIAL ACTIVITY

David C. Herting, Spencerport, and Emma-Jane E. Drury, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 202,932, Nov. 29, 1971, abandoned. This application Feb. 5, 1974, Ser. No. 439,775

Int. Cl. A01n *9/00, 9/24*

U.S. Cl. 424—317 24 Claims



A =	90% Propionic	10% Butyric	0% Isobutyric
B =	10% Propionic	90% Butyric	0% Isobutyric
C =	0% Propionic	90% Butyric	10% Isobutyric
D =	0% Propionic	10% Butyric	90% Isobutyric
E =	10% Propionic	0% Butyric	90% Isobutyric
F =	90% Propionic	0% Butyric	10% Isobutyric
G =	74% Propionic	26% Butyric	0% Isobutyric
H =	21% Propionic	79% Butyric	0% Isobutyric
I =	0% Propionic	68% Butyric	32% Isobutyric
J =	0% Propionic	19% Butyric	81% Isobutyric
K =	11% Propionic	0% Butyric	89% Isobutyric
L =	76% Propionic	0% Butyric	24% Isobutyric
M =	50% Propionic	0% Butyric	50% Isobutyric
N =	10% Propionic	80% Butyric	10% Isobutyric
O =	17% Propionic	17% Butyric	66% Isobutyric
P =	40% Propionic	0% Butyric	60% Isobutyric
Q =	70% Propionic	0% Butyric	30% Isobutyric
R =	60% Propionic	10% Butyric	30% Isobutyric

1. A synergistic fungicidal mixture for animal feedstuffs selected from the group consisting of corn, wheat, soybeans and peanuts in shell consisting essentially of at least two of propionic, butyric, and isobutyric acids whose composition lies within the area on the triangular three phase diagram of FIG. 1 defined by:

A. line A, G, M, H, B;
line B, C;
C. line C, I, J, D;
D. line D, E;
E. line E, K, P, Q, L, F; and
F. line F, A.

3,895,117

ANIMAL FEED SUPPLEMENT AND METHOD FOR ITS PREPARATION

Peter Stanley Backlund, Anaheim, Calif., assignor to Union Oil Company of California, Brea, Calif.

Continuation-in-part of Ser. No. 182,267, Sept. 20, 1971, abandoned. This application July 5, 1973, Ser. No. 376,706

Int. Cl. A23k *1/22*

U.S. Cl. 426—69 9 Claims

1. The method of producing a liquid, stable, aqueous emulsion of solid fat and molasses containing at least about 15 weight percent fat including the steps of (1) melting said fat by heating it to a temperature above its melting point and within the range of about 100° to about 200°F., (2) admixing an oil-in-water surface active agent with the resultant molten fat in the absence of water and in an amount sufficient to provide a concentration of from 0.01 to about 0.5 weight percent of said surface active agent in said fat, (3) thereafter blending the resultant mixture of molten fat and surface active agent into molasses having a concentration of from 70 to about 85 Brix, and (4) adding to the resultant combination an amount of water corresponding to 15 weight percent or less of the total weight of said emulsion and sufficient to obtain said liquid emulsion having a viscosity less than about 3000 centipoises at 70°F.

3,895,118

INFUSION BAG

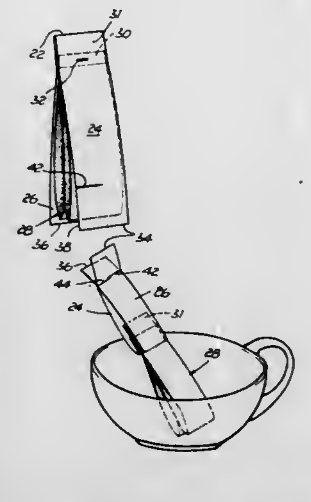
Adolf Rambold, Bachstrasse 8, D-4005 Meerbusch 1, Germany

Filed July 26, 1973, Ser. No. 383,039

Claims priority, application Germany, July 26, 1972, 2236616

Int. Cl. B65b *29/04*

U.S. Cl. 426—83 14 Claims



1. An infusion bag containing an infusible substance comprising a porous-walled container for the infusible substance, said container including an elongated head portion having a top edge, a strip of flexible non-porous sheet material secured to said head portion and folded about said container along a line spaced from said top edge defining a portion projecting therefrom as a handle, said strip including side portions extending from said line on opposite sides of said container, at least one of said side portions extending over the entire length of said bag, and means formed in at least one of said side portions adapted to interengage with the other one of said side portions for securing said at least one of said side portions to the said other one of said side portions when folded back upon itself along a line parallel to said line.

3,895,119

MOISTURE REMOVAL FROM CALCIUM TREATED CUT PLANT SURFACE

Edward J. Grom, 3533 West 78th St., Inglewood, Calif.

Filed Mar. 24, 1971, Ser. No. 127,830

Int. Cl.^{2} A23L *3/34*

U.S. Cl. 426—267 12 Claims

1. A process comprising:

treating the freshly cut surface of a fresh edible plant product at approximately room temperature with an aqueous admixture including an effective amount of dissolved calcium; and

rapidly removing excess moisture from the resultant treated cut surface to the state where the cut surface is damp to the touch and no moisture adheres to the fingertips after touching the surface, and then ceasing said rapid removal of excess moisture.

3,895,120

METHOD OF PREPARING A DRESSED, RAW FOWL CARCASS TO BE COOKED

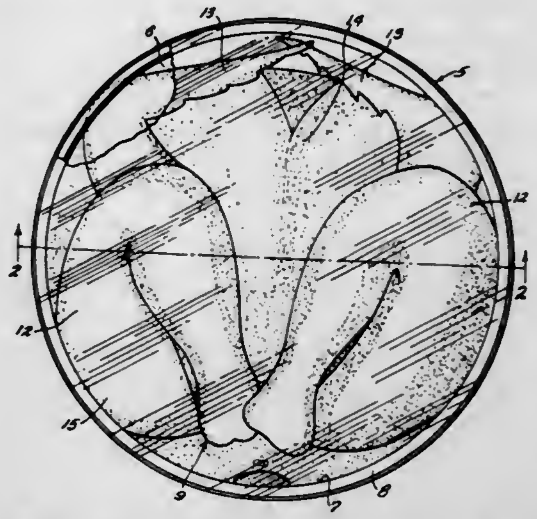
Harry A. Backus, 370 Neeb Rd., Cincinnati, Ohio 45238

Filed May 10, 1974, Ser. No. 469,002

Int. Cl.^{2} B65B *29/08*

U.S. Cl. 426—396 2 Claims

1. The method of preparing a dressed, raw fowl carcass to be baked comprising the steps of laying a bed of stuffing upon the bottom of a pan having an upstanding, continuous side wall around the perimeter of the bottom, severing the fowl carcass lengthwise completely through the backbone area to divide the back into separated portions, spreading apart the back portions to place the carcass in a flattened condition, and laying the flattened carcass, breast side uppermost upon the bed of stuffing and confined within the side wall of the pan with the carcass legs and wings positioned over the breast region of the fowl carcass.



3,895,121

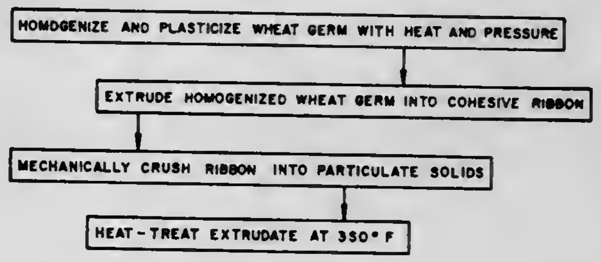
PROCESSING OF WHEAT GERM TO RETARD RANCIDIFICATION

Eric G. Huessy, Eden Prairie, Minn., assignor to Peavey Company, Minneapolis, Minn.

Filed Dec. 10, 1973, Ser. No. 422,982

Int. Cl. A23b *1/04*

U.S. Cl. 426—465 12 Claims


HOMOGENIZE AND PLASTICIZE WHEAT GERM WITH HEAT AND PRESSURE
EXTRUDE HOMOGENIZED WHEAT GERM INTO COHESIVE RIBBON
MECHANICALLY CRUSH RIBBON INTO PARTICULATE SOLIDS
HEAT-TREAT EXTRUDATE AT 350° F

1. The method of stabilizing wheat germ which comprises the steps of:

a. exposing natural wheat germ to a first treating zone maintained at an elevated temperature in the range of from 200° to 295° F. and at an elevated pressure in excess of about 1000 psi until said wheat germ becomes plasticized;
b. subjecting said plasticized wheat germ material to a high pressure, within the range of from 1000 to 29,000 psi and extruding said plasticized material through an orifice to form a generally cohesive extrudate;
c. exposing said extrudate to a second treating zone prior to rancidification, wherein the temperature is maintained at a level of between about 300°–425° F., and retaining said extrudate within said second treating zone for a period of from between about 2 minutes and 30 minutes.

3,895,122

MICROBIALLY STABLE GELANTINIZED POTATO PIECES WITH HIGH WATER ACTIVITY AND ABSORBED SULFUR DIOXIDE

Mounir A. Shatila, Blackfoot, Idaho, assignor to American Potato Company, San Francisco, Calif.

Filed July 2, 1971, Ser. No. 159,571

Int. Cl. A23b *7/00*

U.S. Cl. 426—532 5 Claims

1. Gelatinized potato pieces with water activity above 0.85 containing about 500–700 parts per million of uniformly dispersed absorbed sulfur dioxide derived from a solution of sulfurous acid or gaseous sulfur dioxide to provide prolonged preservation of microbial stability at ambient temperature.

3,895,123
CHEESE FLAVOURING

Michel Moinas, Vevey; Michel John Arthur Groux, Lauperswil, and Ian Horman, Corseaux, all of Switzerland, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Dec. 18, 1973, Ser. No. 425,724

Claims priority, application Switzerland, Dec. 28, 1972, 18994/72

Int. Cl. A23l *1/26*

U.S. Cl. 426—534 **20 Claims**

1. A cheese flavouring composition comprising (i) 0.5 to 15 parts by weight of 2-heptanone, (ii) 7 to 26 parts by weight of 2-nonanone, the total of the amounts of 2-heptanone and 2-nonanone present being between 15 and 27 parts by weight and the amount of 2-nonanone being at least equal to the amount of 2-heptanone, (iii) at least one of 2-heptanol and 2-nonanol, in a total amount of 12 to 22 parts by weight, (iv) 0.2 to 1.5 parts by weight of phenol, (v) 22 to 90 parts by weight of butyric acid, (vi) 1 to 6 parts by weight of 1-octen-3-ol, and (vii) 0.3 to 3.0 parts by weight of methyl cinnamate.

3,895,124
PROCESS FOR CONTROLLING THE COERCIVITY OF A COBALT OR COBALT/NICKEL COATING APPLIED BY AN ELECTROLESS PLATING PROCESS

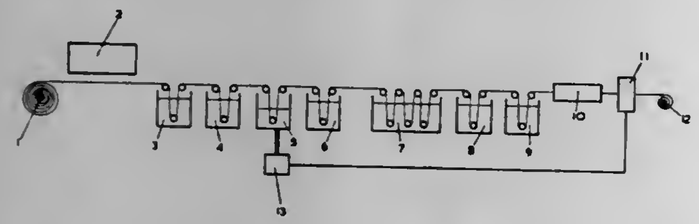
Robert William Louch, Welwyn, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Dec. 11, 1972, Ser. No. 313,633

Claims priority, application United Kingdom, Dec. 22, 1971, 59592/71

Int. Cl. H01f *10/00*

U.S. Cl. 427—8 **11 Claims**



11. A process as claimed in claim 9 wherein the time of immersion in the nickel plating bath is varied by altering the length of substrate immersed in the bath.

3,895,125
PROCESS OF DRY DEVELOPMENT FOR ELECTROPHOTOGRAPHY

Kaichi Tsuchiya, and Hiroyuki Shimamune, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 15, 1972, Ser. No. 315,450

Claims priority, application Japan, Dec. 17, 1971, 46-102423

Int. Cl. G03g *13/08, 9/02*

U.S. Cl. 427—18 **8 Claims**

1. An electrophotographic magnetic brush developing process for developing an electric latent image which comprises using a dry developer composed of a mixture of finely divided colored resinous toner particles and magnetic carrier particles, the ratio of toner to carrier being 1:3 to 1:30, a main particle size of the finely divided colored resinous toner particles ranging from 5 to 20 microns, the magnetic carrier particles being a mixture of magnetic large carrier particles having a main particle size within a range of from 3 times to 10 times the main particle size of the toner particles and at least 70% of the large carrier particles being present within a particle size range of from 3 times to 10 times the main particle size of the toner particles and magnetic small carrier particles having a main particle size within a range of the main particle size of toner particles ± 5 microns and at least 60% of the small carrier particles being present within a particle size range of the main particle size of toner particles ± 5 microns, and the amount of the small carrier particles being 10–85% of the total carrier.

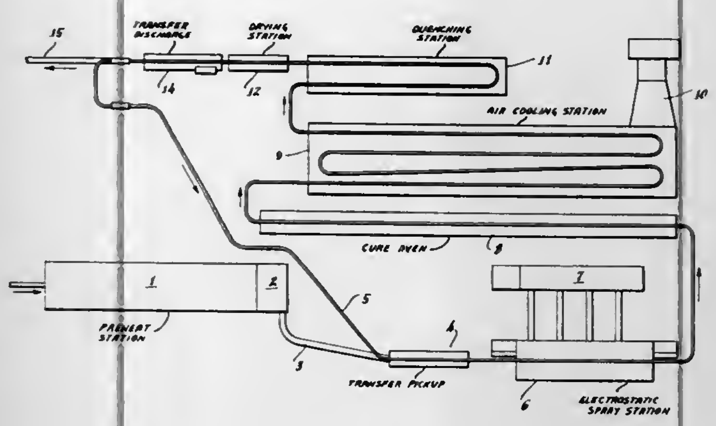
3,895,126
RESIN BOTTLE CLADDING SYSTEM

Leopold Strauss, East Rockaway, N.Y.; Joseph T. Harmuth, Greenwich, and Harry E. Lundberg, Westport, both of Conn., assignors to Indian Head Inc., New York, N.Y.

Filed May 24, 1973, Ser. No. 363,517

Int. Cl. B05b *5/02*

U.S. Cl. 427—29 **6 Claims**



1. A process for cladding glass containers with a resinous plastic coating which comprises the steps of preheating the containers to a temperature of from about 150°F. to about 350°F., electrostatically spraying said preheated containers with a resin powder to deposit a uniformly thin layer of particulate resin on the surfaces thereof, heating the thus coated containers to a temperature of from about 425°F. to about 450°F. to fuse the particulate resin coating into a unitary film, air cooling said hot clad containers to a temperature of from about 225°F. to about 250°F., and quenching said cooled clad containers with a cold water spray to produce a sudden temperature drop of from about 90°F. to about 100°F.

3,895,127
METHOD OF SELECTIVELY DEPOSITING GLASS ON SEMICONDUCTOR DEVICES

Robert Benedict Comizzoli, Belle Mead, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 19, 1974, Ser. No. 462,492

Int. Cl. B44d *1/18;* **B01k** *5/00*

U.S. Cl. 427—39 **14 Claims**

1. A method of selectively forming a layer of glass on either bare semiconductor areas or on areas coated with a layer of insulating material of a semiconductor device having both types of said areas, comprising:

depositing electrical charges of a particular polarity on said insulating material,

immersing the charged device in a liquid composition comprising an insulating carrier liquid and dispersed glass particles carrying a charge of particular polarity such that the glass particles deposit selectively on either said bare exposed areas of semiconductor or on said areas coated with insulating material,

removing the glass-coated device from the liquid composition, drying and firing the coated device at a temperature high enough to fuse said glass.

2. A method according to claim 1 in which said charges on said insulating material have the same sign as said charges on said glass particles so that said glass particles are deposited on said bare exposed areas of semiconductor.

3. A method according to claim 1 in which said semiconductor is silicon and said insulating material is silicon dioxide.

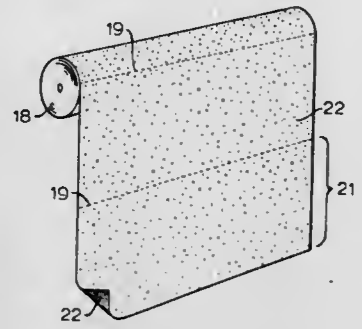
3,895,128
METHOD OF CONDITIONING FABRICS AND PRODUCT THEREFOR

Conrad J. Gaiser, Zephyr Cove, Nev., assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 753,531, Aug. 19, 1968, abandoned, which is a continuation-in-part of Ser. No. 479,590, Aug. 13, 1965, Pat. No. 3,442,692. This application Apr. 9, 1973, Ser. No. 349,412

Int. Cl.² B44D *1/46*

U.S. Cl. 428—43 **14 Claims**



1. A fabric conditioning article including a carrier comprising a web having a discrete surface coating of a normally-solid fabric softening agent; said web being resistant to shredding or tearing failure when tumbled with damp clothes in a laundry dryer; said coating having an irregular thickness ranging from about 0.1 to 10.0 mils., said normally-solid fabric softening agent comprising a material which has a softening temperature below the elevated temperatures of from about 120°F. to 190°F. encountered in a laundry dryer to thereby soften in said dryer and thus enhance transfer of the agent to fabrics contacted therewith; the amount of said fabric softening agent comprising from about 1.0 to 10.0 grams per 105 square inches of said web.

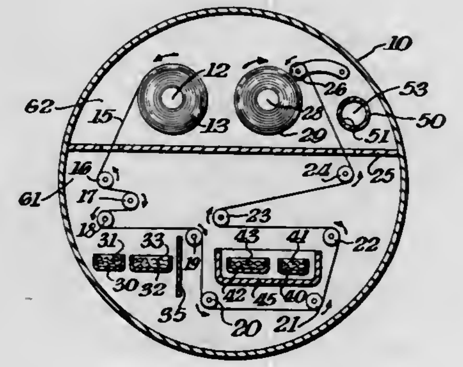
3,895,129
METHOD FOR METALLIZING PLASTIC FILM

Herbert Craig, Yankeetown, Fla.; Andrew Dequasie, Barre; Raynor Linzey, Stamford, both of Vt., and Arthur Webb, Cheshire, Mass., assignors to Sprague Electric Company, North Adams, Mass.

Filed Feb. 20, 1973, Ser. No. 333,925

Int. Cl. C23c *13/02*

U.S. Cl. 427—81 **1 Claim**



1. A method for producing in a continuous vacuum metallizer a roll of double metallized thin polypropylene film for use in capacitors unrolling the film from a supply spindle, depositing silver and a subsequent coating of zinc to both sides of the film, and taking up the double metallized film on a take-up spindle, both spindles being located within the vacuum metallizer, wherein the improvement comprises exposing of only one of the metallized surfaces of the polypropylene to air at a location along the route of the film lying between the region in the metallizer where the metals are being deposited and the wind-up spindle.

3,895,130
METHOD OF MANUFACTURING PRESSURE SENSITIVE IMAGING MATERIALS

Victor Barouh, 935 Plum Tree Rd. West, Westbury, New York 11590; Sylvester Giaccone, 95-05 59th Ave., Flushing, New York 11373, and Robert Glenn, 70-20 108th St., Forest Hills, New York 11375

Division of Ser. No. 266,705, June 27, 1972. This application Nov. 12, 1973, Ser. No. 414,917

Int. Cl. B41c *1/06*

U.S. Cl. 427—152 **10 Claims**

1. A method of making a pressure sensitive, reusable long lasting substantially smudge free imaging material comprising the steps of (1) coating a substrate base with a layer-forming composition of resinous binder containing up to 8 percent of plasticizer and up to 40 percent of pigment to form a priming layer on said base, (2) coating said priming layer with an imaging layer-forming composition comprising (A) resinous binder dissolved in a non-azeotropic mixture of low boiling solvent and high boiling solvent, said low boiling solvent having preferential solvent power for said resinous binder, the amount of said high boiling solvent not exceeding about 25 percent by weight of said low boiling solvent and (B) a color yielding lyophobic dispersion of finely divided pigment and/or dye and (3) heating to evaporate off said low boiling solvent whereby a major portion of the resinous binder is carried toward the outer surface of said imaging layer to form a film thereat, heating to evaporate off said high boiling solvent to form openings in said film.

3,895,131
ELECTROLESS COATING METHOD

William Gerard Herbert, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 21, 1974, Ser. No. 444,584

Int. Cl. B44d *1/12, 1/14*

U.S. Cl. 427—226 **13 Claims**

1. A method of coating a substrate with an oxide of aluminum, gallium, indium or thallium which comprises applying to the substrate in any order or simultaneously:

a. fumes of a metallic polychloride selected from the group of titanium tetrachloride, titanium trichloride, stannic tetrachloride, platinum tetrachloride or a mixture thereof;

b. a metal hydroxide selected from the group of one or more of the hydroxides of aluminum, gallium, indium or thallium to form a layer of the metal hydroxide in contact with the metallic polychloride on the substrate; and

c. following the step or steps of treating the substrate by the step of heating the treated substrate in a water vapor bearing atmosphere to a temperature sufficient to decompose the metal hydroxide and thereby form a layer of the metal oxide or oxides corresponding to the metal or metals of the metal hydroxide or hydroxides on the substrate.

3,895,132
METHOD AND APPARATUS FOR CREATING RANDOM SURFACE PATTERNS ON ARTICLES

James E. Blessinger, and Alan B. Welsh, both of Jasper, Ind., assignors to Kimball International, Inc., Jasper, Ind.

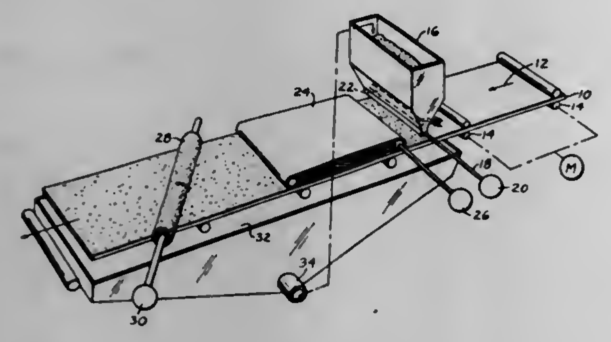
Filed June 12, 1972, Ser. No. 261,967

Int. Cl. B27h *1/00*

U.S. Cl. 427—227 **7 Claims**

1. The method of imparting a pattern of marks to a surface of a heat sensitive article, in which at least the portion of the article which includes said surface softens or chars in the presence of heat which comprises; supplying heated particulate material in randomly distributed and spaced relation to said surface, said particles being heated to a predetermined temperature at which said portion of the article will soften or char thereby to cause heat to transfer from said particulate material into said article vis said surface and form marks in said surface where it is engaged by said particulate material.

removing said particulate material in its entirety from said surface of the article after the said marks are formed in the surface, and again heating said particulate material to said predetermined temperature after removal thereof from the treated surface of the article for use in treating the surface of another article.



3,895,133
METHOD OF FORMING LIQUID RESERVOIRS

David H. Fleisig, Walnut Creek; James D. Anderson, Kensington, and Rune E. Goop, Moraga, all of Calif., assignors to Fibreboard Corporation, San Francisco, Calif.
Filed Apr. 20, 1973, Ser. No. 352,913
Int. Cl. B44d *1/06*
U.S. Cl. 427—244 **5 Claims**

1. A method for making an accurately dimensioned liquid reservoir comprising the steps of

selecting a piece of open celled, porous foam material having from about 4,000 to about 80,000 cells per square inch of surface area thereof,

saturating said foam material with a liquid so that substantially all of the open cells thereof are filled with liquid,

cutting from said saturated foam material a cylindrical liquid reservoir of predetermined size and shape, said liquid providing lubrication during said cutting to inhibit tearing and fusing of the foam material, thereby

forming an accurately dimensioned liquid reservoir having within itself a self-contained supply of liquid and suitable for depositing thin films of said liquid on surfaces brought into contact therewith.

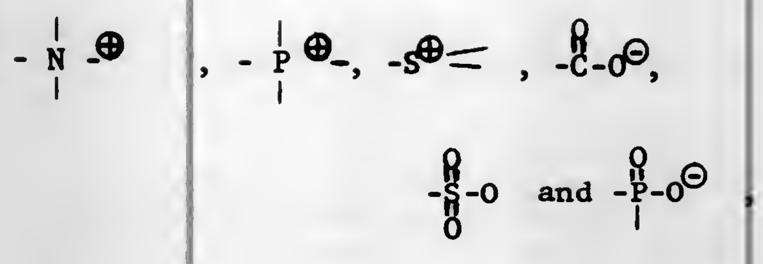
3,895,134
PROCESS FOR PRODUCING MICROPOROUS STRUCTURES

Koji Kigane; Masahisa Mimura, and Nobuo Ohkawa, all of Mihara, Japan, assignors to Teijin Cordley Ltd., Osaka, Japan
Filed May 8, 1973, Ser. No. 358,328
Claims priority, application Japan, May 13, 1972, 47-47504; Dec. 27, 1972, 47-2247
Int. Cl. C09d *5/18*
U.S. Cl. 427—246 **4 Claims**

1. A process for producing a microporous structure, which essentially comprises the steps of:

1. preparing a solution or suspension of a resinous component in an organic solvent having a boiling point lower than 120° C., the solubility at 25° C. of water in said organic solvent being from 1 to 50 g per 10 g of said solvent, said solution or suspension having a solid resin content of 5 to 30% by weight, said resinous component comprising more than 70% by weight of a polyurethane elastomer selected from the group consisting of

A. a polyurethane elastomer free from polyoxyethylene segments which contains an ionic hydrophilic group, in an amount of 10 to 98% by weight of the critical amount of hydrophilic groups in the elastomer, which is selected from the group consisting of



$$-\underset{|}{\overset{|}{N}}-^{\oplus},\quad -\underset{|}{\overset{|}{P}}{}^{\oplus}-,\quad -S^{\oplus}{<},\quad -\overset{O}{\overset{\|}{C}}-O^{\ominus},\quad -\underset{\|}{\overset{\|}{S}}\!\!\!\!\underset{O}{\overset{O}{}}-O \text{ and } -\underset{|}{\overset{O}{\overset{\|}{P}}}-O^{\ominus},$$

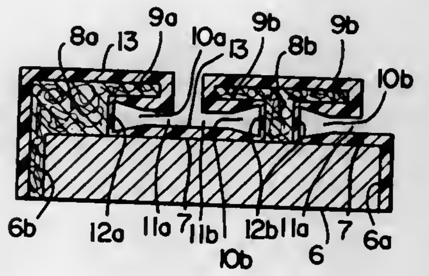
and

B. a mixture of at least 50% by weight of said polyurethane elastomer (A) with not more than 50% by weight of a polyurethane elastomer free from hydrophilic segments;

2. mixing the resulting organic solvent solution or suspension with water in an amount of from 10 to 95% by weight of the critical amount of water to prepare a dispersion;
3. coating or impregnating a substrate with the resulting dispersion;
4. selectively evaporating said organic solvent from the coated or impregnated substrate at a temperature not higher than 80° C. and at least 10° C. lower than the boiling point of the lowest boiling constituent of said organic solvent, thereby to gel said resinous component; and
5. drying the product obtained in step (4).

3,895,135
MASKING PROCESS WITH CONSTRICTED FLOW PATH FOR COATING

Peter H. Hofer, Berkeley Heights, N.J., assignor to Union Carbide Corporation, New York, N.Y.
Filed May 1, 1973, Ser. No. 356,213
Int. Cl. B44d *1/52*
U.S. Cl. 427—248 **18 Claims**



1. A process for masking a defined area on a substrate which is to be coated with a linear para-xylylene polymer coating material during the vapor deposition coating of such substrate with said coating material

which comprises

masking said defined area so as to

provide at the edges of said defined area a constricted flow path for the vaporous precursor of said coating material, said flow path having a first end adjacent the area of said substrate which is to be coated and a second end which edges the area of said substrate which is masked and having a length to height ratio of at least 60:1 and a height of at least 0.0005 inch

applying the vaporous precursor of said coating material to said substrate so that it

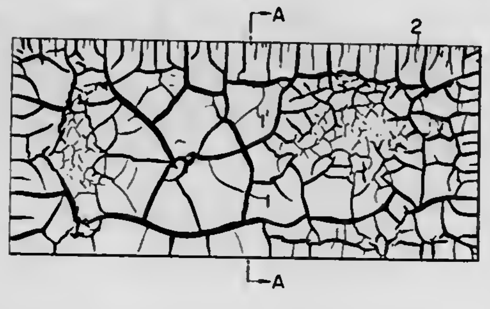
condenses thereon and evenly coats the unmasked area of said substrate, and

permeates said constricted flow path and condenses therein to form a progressively thinner coating from said first end to said second end of said flow path, and

applying shearing force to the coating along the second end of said flow path so as to tear the coating from the defined area of such surface along said edges, thereby rendering said defined area uncoated and the remainder of the surface coated with said coating material.

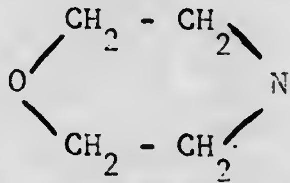
3,895,136
PROCESS FOR PREPARATION OF DECORATIVE ARTICLES HAVING PATTERNED COATING OF INORGANIC PAINT

Hiroshi Makishima, Yokohama; Toshio Shinohara, Fujisawa; Yukio Kawahara, Yokohama; Hiroshi Nii, Kamakura, and Setsuo Ebine, Yokohama, all of Japan, assignors to Dai Nippon Toryo Co., Ltd., Osaka, Japan
Claims priority, application Japan, Dec. 29, 1972, 48-3718
Filed Dec. 28, 1973, Ser. No. 429,176
Int. Cl. B44d *5/00*
U.S. Cl. 427—257 **10 Claims**



1. A process for the preparation of decorative articles having an inorganic paint coating with a rugged pattern including cracks, said process comprising coating on a substrate a water-soluble organic solvent, the solubility of which in water at 20°C is at least 20%, allowing the coated substrate to stand for from 0.5 to 90 minutes, coating on the now coated substrate an inorganic paint comprising (i) is silicate having the formula $M_20{\cdot}xSi0_2$

wherein x is a number of from 0.5 to 10, and M is a member selected from the group consisting of (1) alkali metals belonging to Group IA of the Periodic Table, (2), mono-, di-, tri- and tetra-amines represented by the formula R_4—N— (R is H, $-CH_2OH$,$-C_2H_4OH$, $-CH_3$, $-C_2H_5$ or the like) and (3) groups represented by the formula $-N{=}C(NH_2)_2$ or



ii. a hardening agent in an amount of 4 to 30% by weight based on the silicate,
iii. water, and
iv. a pigment, the inorganic paint being applied in an amount of 50 to 150 g/m² prior to complete evaporation of said solvent on the substrate, and drying and hardening the coated paint.

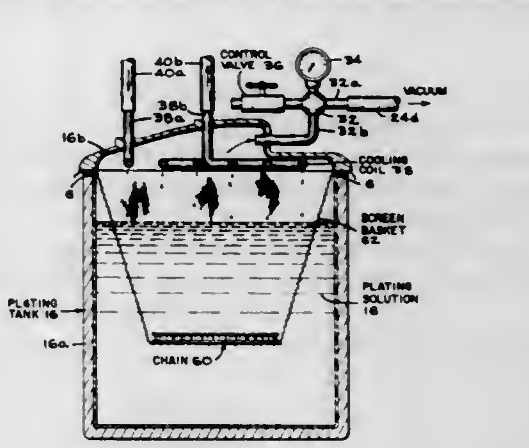
3,895,137
METHOD OF PLATING ARTICLES HAVING SMALL CLEARANCES OR CREVICES

Stellios A. Avramidis, Greenfield, and Ivan E. Rhoden, Plainfield, both of Ind., assignors to FMC Corporation, San Jose, Calif.
Filed Dec. 3, 1973, Ser. No. 420,816
Int. Cl. B32b *15/02;* **C23c** *3/02*
U.S. Cl. 427—295 **4 Claims**

1. A method of plating a chain including joints that have crevices to be plated with metal and simultaneously removing trapped gas from the crevices of the chain to enable the surfaces to be plated; said method comprising the steps of:

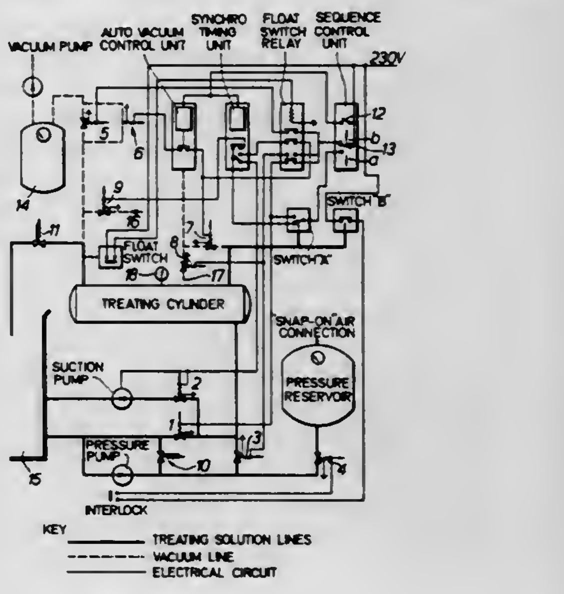
submerging the chain in an electroless plating solution contained in the chamber of a plating tank when the gas pressure in the tank above the solution is at atmospheric level;

heating the plating solution and evacuating gas from the plating tank chamber to establish a condition in which the plating solution reaches an incipient boil under subatmospheric pressure, whereby the pressure of gas trapped within the crevices of the chain is increased relatively above the adjacent liquid pressure and the solution liquid frees gas from entrapment in crevices at the chain joints so that the solution penetrates into the crevices to plate metal onto surfaces of the chain that could not be plated but for the freeing of the entrapped gas.



3,895,138
IMPREGNATION OF WOOD AND THE LIKE

Charles Patrick Blackwood Sewell, and William Morris Sherriff, both of Rotorua, New Zealand, assignors to Boliden Aktiebolag, Helsingborg, Sweden
Continuation of Ser. No. 138,266, April 28, 1971, abandoned, which is a continuation-in-part of Ser. No. 104,150, Jan. 5, 1971, abandoned, which is a continuation of Ser. No. 684,729, Nov. 21, 1967, abandoned. This application June 13, 1973, Ser. No. 369,544
Int. Cl. B44d *1/092, 1/12*
U.S. Cl. 427—298 **1 Claim**



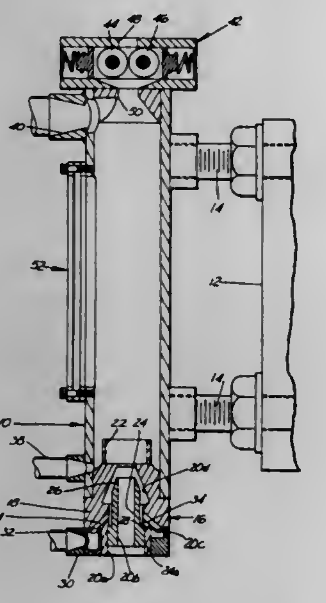
1. In a method for impregnating wood with preservatives in a treating solution in which the wood and treating solution are subjected to a treating schedule including cycles of alternate phases of high pressure and low pressure, the improvement comprising selecting the pressures at commencement as being within the limit imposed by the variables of the wood per se, with the high pressure at the start of treatment being between 50 p.s.i. absolute and 265 p.s.i. absolute and the low pressure at the start of treatment being between 55 p.s.i. absolute and 8 p.s.i. absolute, and then increasing progressively the differential of pressure so that at completion of treatment in terms of the initial absolute pressures, the high limit in the high pressure phase will be at least 40% greater than the initial high pressure and/or the low limit in the low pressure phase will be at least 50% less than the initial low pressure, including during said treatment, sensing the rate of aspiration or absorption of air from within the wood cells and when said rate exceeds a

predetermined value, adjusting at least the intensity of pressure of the low pressure phase so that said rate is reduced and continuing said treatment until the wood is so deeply penetrated and heavily loaded with preservative as is desired.

3,895,139
WATER QUENCH METHOD AND APPARATUS

Ronald D. Brown, Independence, and Marvin L. Stark, Lexington, both of Mo., assignors to Armco Steel Corporation, Middletown, Ohio

Division of Ser. No. 180,803, Dec. 15, 1971, Pat. No. 3,735,967. This application Jan. 30, 1973, Ser. No. 328,130
Int. Cl. C21d *1/62*
U.S. Cl. 427—444 **4 Claims**



1. The method of liquid quench cooling a coated strand moving in a vertical path of travel without mechanically contacting said strand until said coating has completely solidified, comprising the steps of:

a. providing a vertical chamber having a bottom with an opening for the passage of said strand therethrough with clearance and a top and with an opening aligned with said bottom opening for passage of said strand therethrough;
b. supplying cooling liquid to said vertical chamber by inlet means at said bottom end;
c. providing a cooling liquid outlet adjacent said upper end;
d. supplying gas under pressure at said bottom end of said chamber and substantially in the direction of said vertical strand movement;
e. supporting said cooling liquid within said chamber and maintaining said opening in said chamber bottom free of said cooling liquid by said gas under pressure; and
f. passing said strand through said top and bottom openings and said gas and liquid within said chamber.

3,895,140
PRESERVED CUT GREEN FOLIAGE AND PROCESS THEREFOR

Charles P. Sheldon, Georgetown, and Robert T. Sheldon, Deleon Springs, both of Fla., assignors to Floral Greens International, Inc., DeLeon Springs, Fla.

Continuation-in-part of Ser. No. 311,675, Dec. 29, 1972, abandoned. This application Dec. 18, 1973, Ser. No. 425,817
Int. Cl. A01n *3/00*
U.S. Cl. 428—22 **18 Claims**

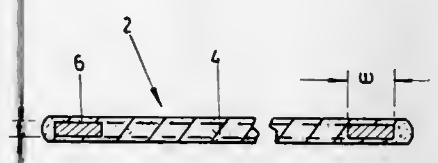
1. A process for preserving cut green foliage comprising:

i. immersing the whole body of said foliage within a preservation solution comprising water and from about 40 to about 60% by volume of a polyol selected from the group consisting of glycerine and mixtures of glycerine with a polyglycerine at a temperature of between about 140°F. and the denaturing temperature of said foliage until the normal plant fluids have been extracted therefrom and said polyol has been substantially completely imbibed therewithin;
ii. removing the foliage from the preservation solution;
iii. removing excess preservation solution from the surface of the foliage; and
iv. selectively drying the foliage to substantially completely remove the water but not the polyol therefrom.

3,895,141
SEATING PLATFORMS COMPRISING A RIGID FRAME EMBEDDED IN ELASTIC MATERIAL

Ralph Steele, and John Peter Goodier, both of Johannesburg, South Africa, assignors to Steele Brothers (Proprietary) Limited, Johannesburg, South Africa

Filed June 21, 1973, Ser. No. 372,291
Int. Cl. B32b *3/02, 15/06;* **A47c** *7/02*
U.S. Cl. 428—33 **7 Claims**



1. A seat capable of resiliently supporting the weight of a person, including a supporting frame surrounding a seating aperture and a platform covering the seating aperture, the platform being of an elastic sheet material and having a closed metal frame embedded in the elastic material substantially along the borders of the platform and wherein the platform lies loosely on the supporting frame and at least part of the metal frame is supported by the supporting frame.

3,895,142
NAILABLE, WEATHER-RESISTANT LAMINATED PLASTIC SHEET

Allan John Spilner, Gladwyne, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

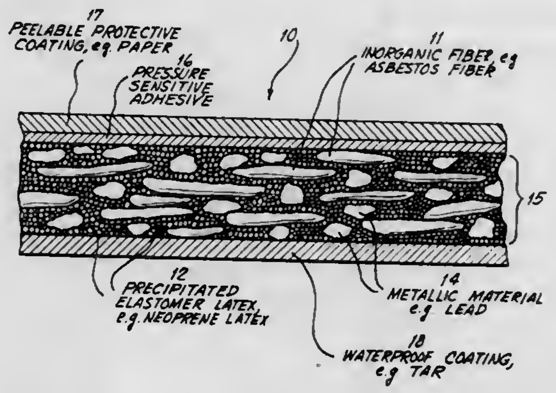
Filed July 18, 1973, Ser. No. 380,425
Int. Cl. B32b *3/24, 27/12, 27/30*
U.S. Cl. 428—38 **2 Claims**

1. A nailable, weather-resistant laminated plastic sheet comprising an inner web of metal strands and a transparent outer matrix of a blend of about 10 to 99 weight percent of a first polymer polymerized from a monomer system containing about 80 to 100 weight percent C_1 to C_4 alkyl methacrylate and 0 to 20 weight percent C_1 to C_4 alkyl acrylate and about 1 to 90 weight percent of a second polymer, said second polymer being a three-stage composite interpolymer having about 10 to 40 percent by weight of a nonelastomeric relatively hard first stage polymerized from a monomer system comprising about 80 to 100 weight percent C_1 to C_4 alkyl methacrylate and about 0 to 20 weight percent C_1 to C_8 alkyl acrylate; having about 20 to 60 percent by weight of an intermediate elastomeric stage polymerized in the presence of a composition containing the first stage from a monomer system comprising about 50 to 99.95 weight percent of a C_1 to C_8 alkyl acrylate, about 0.05 to 5 weight percent copolymerizable graftlinking monomer, and 0 to about 5.0 weight percent copolymerizable cross-linking monomer; and about 10 to 70 percent by weight of a final stage polymerized in the presence of a composition containing the second stage from a monomer system comprising the monomers described herein for the first stage.

3,895,143
METAL-FIBER-LATEX-CONTAINING SHEET MATERIALS

Hilton J. Tarlow, Philadelphia, Pa., assignor to Nicolet Industries, Inc., Ambler, Pa.

Filed Mar. 16, 1973, Ser. No. 342,159
Int. Cl. B32b *19/02*
U.S. Cl. 428—40 **8 Claims**


17
PEELABLE PROTECTIVE COATING, e.g. PAPER
16
PRESSURE SENSITIVE ADHESIVE
10
11
INORGANIC FIBER, e.g ASBESTOS FIBER
15
12
PRECIPITATED ELASTOMER LATEX, e.g. NEOPRENE LATEX
14
METALLIC MATERIAL e.g LEAD
18
WATERPROOF COATING, e.g TAR

1. Sheet material consisting essentially of asbestos fibers, a polymer latex selected from the group consisting of neoprene latex and acrylonitrile-butadiene latex and finely divided lead, said asbestos fibers being present in said sheet material in an amount in the range about 5–30% by weight and being felted together and coated and adhered together by said polymer latex and formed into a sheet, said polymer latex being present in said sheet material in an amount in the range abour 2–20% by weight and said finely divided lead being maintained in the resulting formed sheet material and affixed to said asbestos fibers by said polymer latex, said finely divided lead comprising at least about 50% by weight of said sheet material.

3,895,144
METHOD OF MAKING A HARDCORE PANEL AND PANEL MADE THEREBY

John Kiefer, 713 E. 6th St., New York, N.Y. 10009

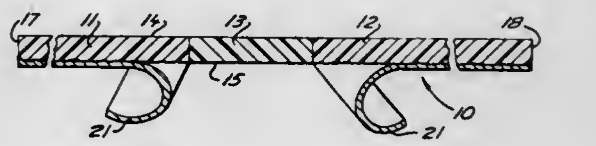
Continuation-in-part of Ser. No. 351,671, April 16, 1973, Continuation of Ser. No. 118,216, Feb. 24, 1971, abandoned. This application Apr. 30, 1974, Ser. No. 465,493
Int. Cl. B32b *3/10*
U.S. Cl. 428—50 **29 Claims**

1. A method of making a hardcore panel comprising the steps of providing a stack comprising a plurality of parallel substantially uniform width planar boards of grained lumber fastened together and arranged in said stack in step-wise fashion, said stack having opposed top and bottom parallel faces, opposed front and rear faces and a pair of opposed parallel side faces, with the top and bottom faces and side faces being substantially planar and the front and rear faces being stepped from said bottom to said top face; initially completely cutting said stepped stack along a first cut line through said side faces from side face to side face at a predetermined acute angle between said first cut line and said bottom face to provide a substantially planar front face normal to said first cut line, said front face being sloped between said parallel planar top and bottom faces at said acute angle with respect to the plane of said bottom face; completely cutting said initially cut stepped stack at a predetermined distance from said first cut line along said side face along a second cut line through said side faces from side face to side face at said predetermined acute angle between said second cut line and said bottom face to provide a first cut portion from said stepped stack having a substantially planar rear face for said first cut portion normal to said second cut line, said first cut portion front and rear faces being parallel; completely cutting said first cut portion through said first cut portion front face from said first cut portion front face to said first cut portion rear face along a third cut line normal to said bottom face to provide a first plurality of substantially identical cut segments each having said first cut portion sloping front and rear faces and whose top, front, bottom and rear faces are rectangular and whose side faces are rhomboidal, each of said first plurality of cut segments comprising said stack between said top and bottom faces with the top and bottom faces of each board in said stack being parallel to said cut segment top and bottom faces; and fastening said cut segments together with said front faces in a common plane with alternate adjacent fastened segments being rotated 180° about a longitudinal axis through the center of said segment parallel to said front face slope to provide a top and bottom surface for said fastened segments comprising alternating inverted sloping surfaces of said segment top and bottom faces whose slope is at an angle supplementary to said acute angle to provide said panel.

3,895,145
CORNER MOLDING

Neil Soden McPherson, 1162 W. 26th Ave., Vancouver, British Columbia, Canada

Filed Mar. 8, 1973, Ser. No. 339,440
Int. Cl.² B32B *3/10, 3/16*
U.S. Cl. 428—53 **1 Claim**



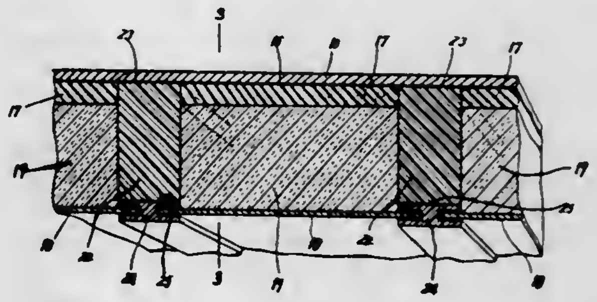
1. Corner moulding for application to angularly connected planar surfaces comprising:

a. a pair of parallel planar strips of semirigid thermoplastic material,
b. a connecting strip of flexible thermoplastic material parallel to, and positioned between, said semirigid strips,
c. the edges of said semi-rigid strips being fused to the adjacent edges of said connecting strips so that said moulding has longitudinally extending rigid areas separated by a coextensive flexible area,
d. a pressure sensitive adhesive coating on one side of said semi-rigid strips,
e. whereby said semi-rigid strips may be adhered to said planar surfaces while said connecting strip conforms generally to the angular connection between said planar surfaces without wrinkling.

3,895,146
METHOD AND STRUCTURE FOR THERMALLY INSULATING LOW TEMPERATURE LIQUID STORAGE TANKS

Ko Nishimaki, and Tomomichi Kurihara, both of Osaka, Japan, assignors to Hitachi Shipbuilding & Engineering Co. Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 86,529, Nov. 3, 1970, abandoned. This application July 6, 1972, Ser. No. 269,488
Int. Cl. B32b *5/20, 3/26, 7/02*
U.S. Cl. 428—56 **7 Claims**



7. A thermal insulation structure for the surface of a low temperature liquid storage tank comprising:

performed spacer members of rigid polyurethane or polystyrene foam material secured to said surface at fixed intervals;

a first layer of soft, low temperature resistant, low density synthetic foam bonded to said surface between adjacent spacer members;

sheathing panels carried by said spacer members in outwardly spaced relation to said first layer; and,

a second layer of hard, high density foam material filling the volumes defined by said first layer, spacer members and sheathing panels.

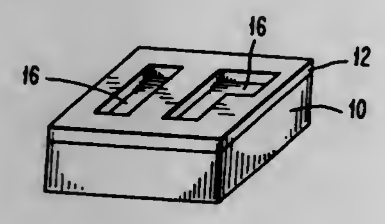
3,895,147
FABRICATION MASK USING DIVALENT RARE EARTH ELEMENT

Kie Y. Ahn, San Jose, Calif., and Frank P. Laming, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 27, 1971, Ser. No. 212,258

Int. Cl. G02b *5/20*

U.S. Cl. 428—63 **6 Claims**



1. A mask suitable for use in the fabrication of components by processes utilizing radiation, comprising:

a supporting medium transparent to said radiation for supporting a masking material thereon,

a masking material located on said supporting medium and having a geometric pattern useful in said fabrication process, said pattern defining first areas of said masking material which are transparent to said radiation and second areas of said mask which are substantially opaque to said radiation wherein said masking layer is substantially comprised of a divalent rare earth element selected from the group consisting of Sm^{2+}, Eu^{2+}, and Yb^{2+} combined with an element selected from the group consisting of O, S, Se and Te.

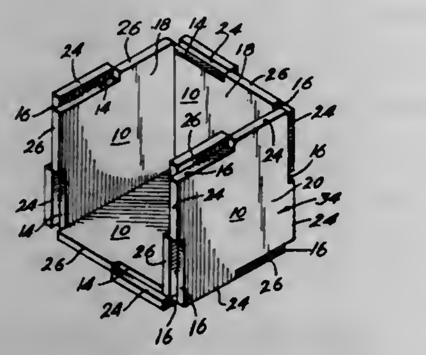
3,895,148
PANEL EDGE CONFIGURATION

Ching-Yu Chang, 344 Audobon Rd., Englewood, N.J. 07631

Filed Oct. 12, 1973, Ser. No. 405,924

Int. Cl.² B32B *3/02, 3/30*

U.S. Cl. 428—81 **5 Claims**



1. A panel having at least one edge adapted for cooperative engagement with an identical edge of another panel, said panel edge comprising a plurality of notches each having a square cross-section, the depth and width of each said notch being equal to one-half the thickness of said panel, said notches extending parallel to the edge in staggered relation along opposite sides of the edge, said notches being of substantially equal length, tongue portions of the panel formed by said notches and having a square cross-section equal to that of said notches, the tongue portions of said edge being adapted to fit into the notches of an identical panel edge and the notches of said edge being adapted to receive the tongue portions of an identical edge in either a planar or perpendicular engagement of the panels.

3,895,149
CARPET BACKED WITH THIXOTROPIC POLYURETHANE ADHESIVE

Robert H. Sheffler, Harleysville, Pa.; Robert Koncos, Moorestown, and Kenyon A. Riches, Cherry Hill, both of N.J., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Filed July 5, 1973, Ser. No. 376,496

Int. Cl. D03d *27/00;* **D04h** *11/00*

U.S. Cl. 428—94 **1 Claim**

1. Carpet including a primary backing material, tufted yarn stitched through the primary fabric backing to provide a pile surface on one side of the primary backing and a loop of yarn on the underside of the primary backing and a layer of thixotropic adhesive composition adhered to the underside of the primary backing and the loop of yarn, said thixotropic composition having a thixotropic ratio based on the viscosity at 1 rpm and at 20 rpm of between 1.3:1 and 10:1, said composition comprising liquid, hydroxyl-terminated diene polymer; high molecular weight polyol having an average equivalent weight between about 500 and 2,200 present in an amount of about 0.1 to 5 times the equivalents of the diene polymer; low molecular weight polyol having an equivalent weight of between about 50 and about 300 present in an amount between about 1.5 and about 8 times the equivalents of diene polymer; isocyanate having a functionality of between 2 and 3 present in an amount to provide a NCO/OH equivalents ratio of between 0.95:1 and 1.5:1; filler present in an amount between about 100 and about 600 parts per 100 parts by weight of diene polymer; oil extending hydrocarbon liquid present in an amount of up to 200 parts per 100 parts by weight of diene polymer; water present in an amount of about 1.0 to 8 parts per 100 parts by weight of diene polymer; and catalyst for said composition present in an amount between about 0.02 and about 4 parts per 100 parts by weight of the diene polymer.

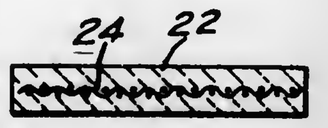
3,895,150
WEAR RESISTANT ALUMINOUS CERAMIC ARTICLES AND PROCESS FOR MAKING THE SAME

Alan G. King, Aurora, Ohio, and John C. Logan, Leicester, Mass., assignors to Norton Company, Worcester, Mass.

Division of Ser. No. 168,461, Aug. 2, 1971, Pat. No. 3,784,388, which is a division of Ser. No. 764,582, Oct. 2, 1968, abandoned. This application Sept. 17, 1973, Ser. No. 398,180

Int. Cl. B32b *15/02*

U.S. Cl. 428—99 **3 Claims**



1. Hot-pressed sintered ceramic articles containing a metallic component permanently and integrally molded therein, said metallic component being composed of a metal melting above 1,100°C and wherein the ceramic portion of said articles is comprised of naturally occuring bauxite of synthetically made bauxite compositions, said ceramic portion of said articles having a density of at least 3.62 grams per cubic centimeter, a numerical average crystal size of 1.8 microns or less, a wear factor of less than 0.31, a minimum transverse strength of 45,000 p.s.i. and a minimum compressive strength of 375,000 p.s.i., and wherein said natural and synthetic bauxites are composed of 78–94% Al_2O_3, less than 9% SiO_2, 2–8% Fe_2O_3, 2–4% TiO_2, and less than 3% total of CaO, MgO, and Na_2O.

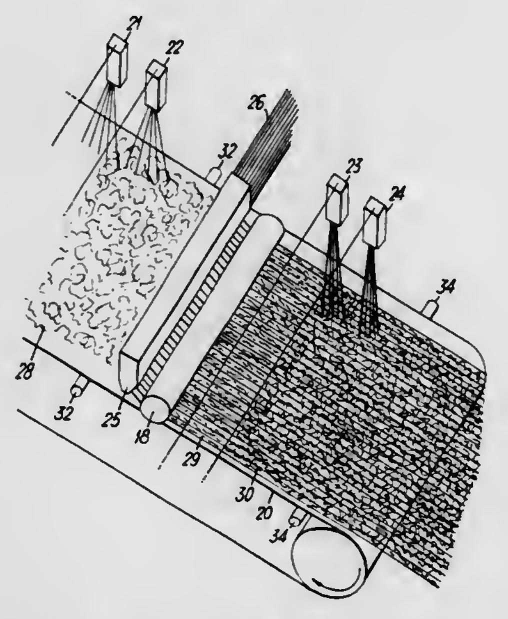
3,895,151
NON-WOVEN MATERIALS

Kenneth Gerald Matthews, and John Richardson, both of Pontypool, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Mar. 2, 1973, Ser. No. 337,465

Int. Cl. B32b *7/08*

U.S. Cl. 428—102 **16 Claims**



1. A bonded non-woven web comprising continuous filaments laid in a random serpentine manner and consisting of a blend of homofilaments and bicomponent filaments, 20 percent–65 percent of the filaments being bicomponent filaments, said homofilaments consisting of at least partly oriented polypropylene and said bicomponent filaments having two components arranged in a core/sheath relationship, the core component being not less than 30 percent by volume and not more than 80 percent by volume and being composed of at least partly oriented polypropylene, and the sheath being a copolyamide which is capable of being rendered adhesive in pressurized saturated steam and which has a melting point higher than that of the core component; the said web containing a plurality of equispaced and parallel yarns laid in the lengthwise direction thereof, which yarns are composed of oriented bicomponent continuous filaments having a core/-sheath relationship, the sheath component being a copolyamide which can be rendered adhesive in pressurised saturated steam at the pressure required to render the sheath component of the bicomponent filaments of the web adhesive, said steam pressure leaving the core component of the filaments comprising the equispaced and parallel yarns unaffected, there being at least 80 such yarns per metre (measured in the crosswise direction); the structure being bonded together at a multiplicity of bicomponent filament cross-over points.

3,895,152
COMPOSITE CELLULAR CONSTRUCTION

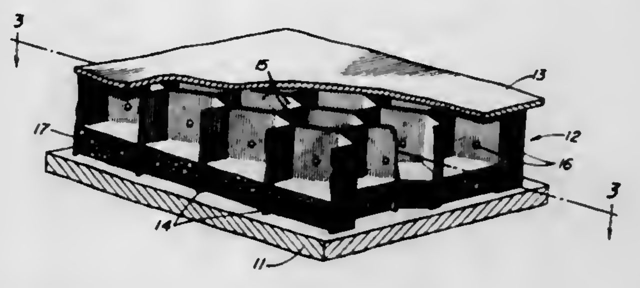
Jon R. Carlson, and Robert G. Jackson, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Dec. 26, 1973, Ser. No. 428,554

Int. Cl. B32b *3/12, 27/40, 3/10;* **E04c** *2/32;* **B32b** *5/18*

U.S. Cl. 428—116 **8 Claims**

1. A composite unitary construction comprising a load-bearing substrate, an outer impermeable liner of polyurethane foam, and disposed therebetween a circulatory system defined by a network of cells having side walls which are generally in lateral orientation to the liner and the load-bearing substrate, said circulatory system being secured to said substrate and said liner, said cells being partially filled with an impermeable polyurethane foam insulation, and at least some of said side walls having apertures therein whereby at least some adjacent cells are in communication with each other.



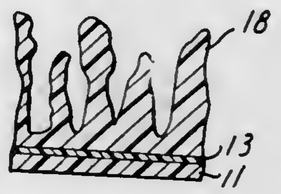
3,895,153
FRICTION-SURFACE SHEET

Manley R. Johnston, St. Paul, and Roger P. Goeppinger, N. St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 5, 1973, Ser. No. 403,827

Int. Cl. B32b *3/26*

U.S. Cl. 428—141 **6 Claims**



1. Friction-surface sheet material especially useful for providing a safe frictional walk-on surface for stairs, in bath tubs and showers, and on other surfaces which may be inherently undesirably slippery, comprising in combination:

a heat-set, biaxially oriented, polyethylene terephthalate backing having a thickness of about 1 to about 5 mils,

an ultraviolet light transmissive ethylene polymer prime layer, adherently bonded to one major surface of said polyethylene terephthalate backing,

adherently bonded to the primed surface of said backing a layer of embossed, textured, tough, scuff-resistant, weather-resistant, flexible ethylenic copolymer material having a Shore A durometer hardness value within the range of about 60–95, said layer being resistant to permanent deformation at temperatures below 90°C, having a tensile strength of at least 700 psi, a dynamic co-efficient of friction greater than 0.45 and an elongation of at least 100%; and

about 2 to about 10 mils of normally tacky and pressure-sensitive adhesive uniformly coated over and adherently bonded to the opposite major surface of said backing.

3,895,154
GAS-RELEASE SHEET

Ales M. Kapral, Winnebago, Wis., assignor to Akrosil Corporation, Menasha, Wis.

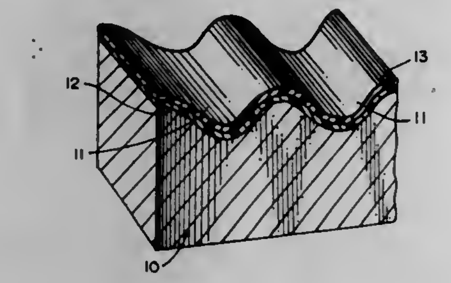
Continuation of Ser. Nos. 236,839, March 28, 1972, abandoned, and Ser. No. 359,474, May 11, 1973, each a continuation-in-part of Ser. No. 156,338, June 24, 1971. This application Aug. 10, 1973, Ser. No. 387,543

Int. Cl. B29c *1/04;* **B29d** *27/04*

U.S. Cl. 428—153 **7 Claims**

1. A gas-release sheet for a hollow, three-dimensional mold, adapted to be positioned inside the cover of said mold to provide means for venting gases to the atmosphere, comprising a sheet of organic material having a creped or ridged formation on one surface thereof, said surface being coated with a release film of silicone resin conforming to the creped or ridged convolutions thereof, which film is coated with a

layer of flexible organic resin conforming to the surface thereof, whereby the creped or ridged formation of the sheet material forms a series of valleys or channels running transversely across the sheet wherein the distance between channels is from 0.3 mm. to 4 mm. and the depth of each channel is from 0.1 mm. to 1.0 mm.



3,895,155
SURFACE PROTECTIVE COATING ON AN ARTICLE AT LEAST SURFACE OF WHICH IS FORMED OF A SYNTHETIC RESIN

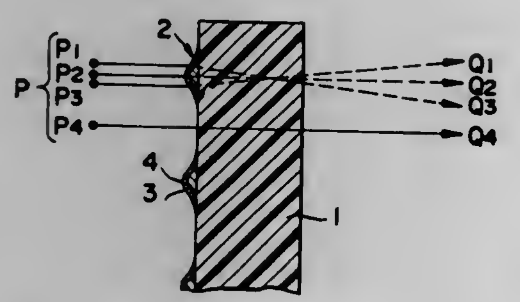
Kyoichi Shukuri, Amagasaki, and Kenzo Sono, Nishinomiya, both of Japan, assignors to Nippon Sheet Glass Co., Ltd. and Nippon Hydron Co. Ltd., both of, Japan

Filed Feb. 28, 1973, Ser. No. 336,805

Claims priority, application Japan, Feb. 28, 1972, 47-19730; Feb. 28, 1972, 47-19731; Apr. 11, 1972, 47-35681; June 26, 1972, 47-63195

Int. Cl. B44d *5/00;* **B32b** *3/10, 7/02*

U.S. Cl. 428—206 **62 Claims**



1. In an article of which at least the surface is formed of a synthetic resin, said article having an abrasion and scaling resistant inorganic film coating of a thickness of from 400A to 5 microns on said surface, the improvement comprising that the inorganic film is a discontinuous film comprising discrete elements of such size and spacing that the article retains the abrasion resistance of a continuous film while avoiding scaling caused by stresses in a continuous film.

37. An article having an abrasion resistant and antifogging surface comprising a substrate of which at least the surface is formed of a hydrophilic synthetic resin and a protective discontinuous inorganic film of a thickness of from 400 A. to 5 microns coated thereon, said film comprising discrete elements of such size and spacing that the article retains the abrasion resistance of a continuous film while presenting a sufficient portion of hydrophilic surface to the surrounding atmosphere to prevent fogging by absorbing moisture from the atmosphere.

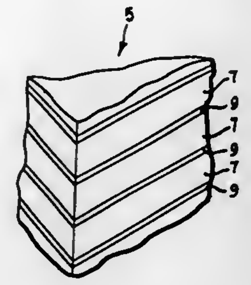
3,895,156
HIGH STRENGTH COMPOSITE

Robert H. Hammond, Berkeley, Calif., assignor to General Atomic Company, San Diego, Calif.

Continuation-in-part of Ser. No. 535,284, Jan. 28, 1966, Pat. No. 3,449,092, and a division of Ser. No. 685,180, Nov. 22, 1967, Pat. No. 3,556,837. This application Dec. 16, 1970, Ser. No. 98,690

Int. Cl. C23c *13/02, 13/04*

U.S. Cl. 428—216 **12 Claims**



1. A high strength composite which comprises at least five pairs of first and second layers arranged in alternating and rectalinear relationship, said first and second layers being condensates of vapor, said first layers being made of material having relatively good tensile strength selected from the group consisting of B, C, Si, Be, B_4C, BN, SiC, SiO_2, Al_2O_3, BeO, Si_3N_4, Nb_3Sn, the refractory metals, and the carbides, borides, nitrides and silicides of the refractory metals, and said second layers being made of material having relatively good ductility selected from the group consisting of Al, Be, Mg, Sc, Fe, Ni, Cu, Y, Ag, Sn, Zr, Ti, and mixtures and alloys thereof, said first and second layers having a good bond between one another as a result of being condensates and said composite having high structural strength.

3,895,157
ALKALI METAL TITANATE REFLECTIVE UNDERLAYER

Lothar Heinrich Brixner, West Chester, and Stanley Hancock Patten, Towanda, both of Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 126,362, Mar. 19, 1971, abandoned. This application Feb. 20, 1973, Ser. No. 333,545

Int. Cl. C09k *1/00*

U.S. Cl. 428—220 **10 Claims**

1. An X-ray intensifying or fluorescent screen comprising a coated sheet support selected from a cardboard, polymeric or metal sheet having on at least one surface a phosphor layer comprised of at least one metal-containing X-ray phosphor and a reflective layer comprised of at least 30% by weight of an alkali metal titanate interposed between said sheet support and said phosphor layer.

3,895,158
COMPOSITE GLASS CLOTH-CELLULOSE FIBER EPOXY RESIN LAMINATE

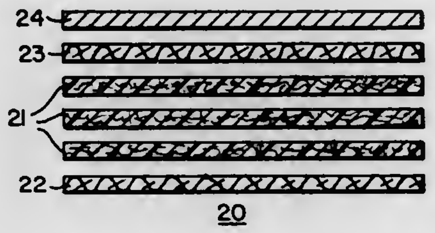
Smith A. Gause; Marion C. Gray, Jr., and Wilbur R. Thomas, all of Hampton, S.C., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 15, 1973, Ser. No. 388,533

Int. Cl. B32b *5/08, 5/12;* **H05k** *1/00*

U.S. Cl. 428—220 **15 Claims**

1. A high pressure laminate comprising the unitary bonded combination of (1) outer surface layers of an epoxy resin impregnated woven glass fabric and (2) a resin impregnated core layer consisting essentially of at least one saturating grade fibrous paper sheet, the sheet consisting essentially of water-laid fibrillated cellulosic fibers, said sheet sandwiched or disposed between said outer surface layers.



3,895,159
CRYOGENIC INSULATING MATERIAL

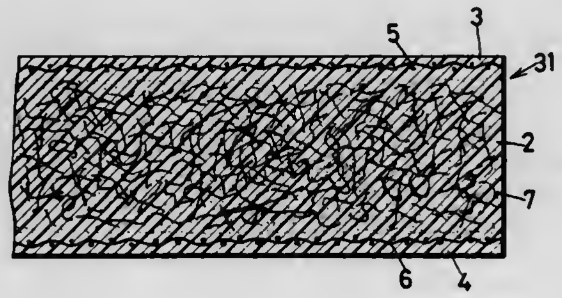
Kunihiko Yoshimura, Osaka, Japan, assignor to Ataka & Company, Ltd., Osaka, Japan

Filed Nov. 8, 1973, Ser. No. 414,069

Claims priority, application Japan, Dec. 29, 1972, 48-2169; Nov. 13, 1972, 47-130988

Int. Cl. B32b *5/18*

U.S. Cl. 428—227 **6 Claims**



1. A molded insulating material adapted for storing cyrogenic liquids comprising:

a. a core layer of rigid polyurethane foam having a cellular structure and including a plurality of intersecting and entangled fibers embedded therein, said fibers being selected from the group consisting of a thermoplastic resin fiber and a glass fiber, and having

b. two surface layers of solid polyurethane located on opposite sides of said core layer and integral therewith, said surface layers being substantially free from cells, the thickness of said surface layers being between about 0.3 and about 1.5 mm.,

c. each surface layer having embedded therein a reinforcement made of woven glass fiber fabric located approximately in the center of said surface layer and extending over the entire area thereof and having a thickness between about 0.2 and about 1 mm., and having a mesh construction of between about 6 × 6 and about 20 × 20 thread elements per square inch.

3,895,160
FABRIC CONSTRUCTIONS

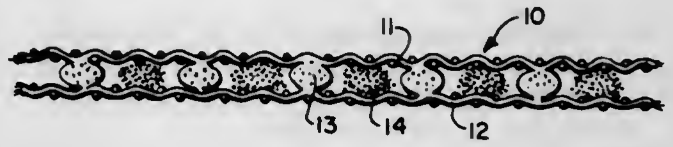
William H. Seeman, II, 4517 S. Johnson St., New Orleans, La. 70125

Continuation-in-part of Ser. No. 829,067, May 29, 1969, Pat. No. 3,668,051. This application May 15, 1972, Ser. No. 253,340

Int. Cl. D03d *17/00*

U.S. Cl. 428—232 **10 Claims**

1. As an article of manufacture, a fabric construction of at least two plies, characterized as outer plies, between which is sandwiched a series of spaced-apart, parallel aligned, springy plastic elements of elongate shape, each element constructed and reinforced with fibers impregnated with resin and cured to form a semi-rigid or rigid material, and each of which is bonded to the outer plies, the voids between adjacent elements containing fibers as yarns or rovings, the plies transverse to the major axes of the springy elements being sufficiently pliable to permit displacement of the springy elements directionally one toward another and into the voids between adjacent elements, and to permit longitudinal displacement of the said elements so that the fabric construction can cover and assume the shape of a compound-curved structure.



3,895,161
FLAME RETARDANT MATERIALS

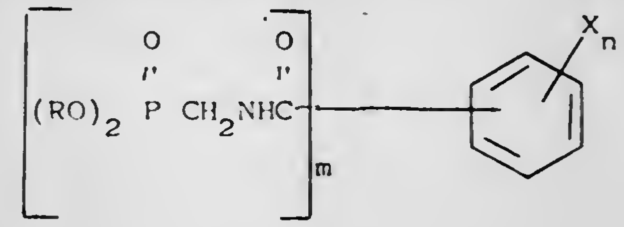
Peter Golborn, Lewiston, and James J. Duffy, Buffalo, both of N.Y., assignors to Hooker Chemical & Plastics Corporation, Niagara Falls, N.Y.

Division of Ser. No. 239,784. This application Sept. 4, 1973, Ser. No. 393,868

Int. Cl. C09d *5/18*

U.S. Cl. 428—289 **19 Claims**

1. A fire retardant textile material comprising a textile selected from the group consisting of cellulosic fibers proteinaceous fibers and blends thereof and a flame retardant amount of a compound of the formula:



wherein R is selected from the group consisting of phenyl, lower alkenyl and halogen substituted and unsubstituted lower alkyl of 1–6 carbon atoms, X is selected from the group consisting of chlorine, bromine and lower alkyl of 1–6 carbon atoms, *m* is an integer from 1–4 and *n* is an integer from 0–5, provided that the sum of *m* and *n* is not greater than 6 and when *m* is 1, X is greater than 0.

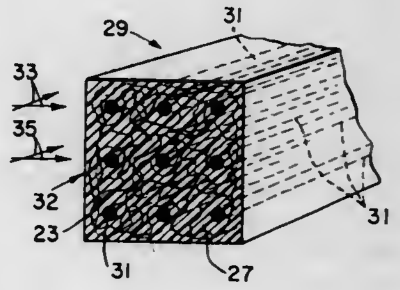
3,895,162
COMPOSITE METAL FIBER WOOL RESIN PRODUCT AND METHOD

Harold E. Lemont, Calabasas, and Robert C. Miller, Encino, both of Calif., assignors to Summa Corporation, Culver City, Calif.

Filed Feb. 16, 1973, Ser. No. 332,999

Int. Cl. B32b *5/08;* **D06m** *15/26*

U.S. Cl. 428—292 **10 Claims**

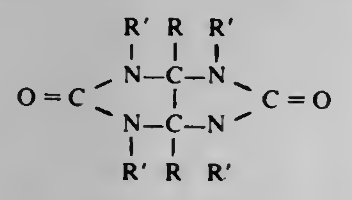


1. A structural material comprising:

a plurality of flexible, randomly oriented and entangled metal filaments which are mechanically interlocked with each other to form a metal wool;
said metal filaments having a substantial length-to-size ratio with an aspect ratio greater than 12,000 to provide said structural material with substantially isotropic strength characteristics;
said metal filaments having a circular cross section, and
a bonding material disposed within the interstices of said metal wool and adherently bonded to said metal filaments,
whereby stresses applied to said structural material are resisted in a relatively uniform manner by said filaments.

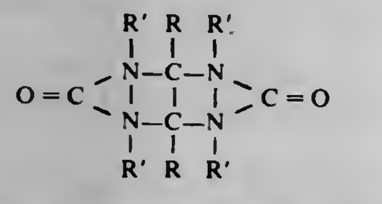
3,895,163
BONDING RUBBER TO GLASS FIBERS
Otto C. Elmer, Akron, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio
Filed Oct. 9, 1973, Ser. No. 404,480
Int. Cl.² B29H *9/06, 9/10*
U.S. Cl. 428—295 **22 Claims**

1. A glass fiber reinforcing element containing from about 10 to 40% by weight (dry) based on the weight of said element of a heat cured adhesive composition useful for adhering said element to a rubber compound and consisting essentially of 100 parts by weight of a rubbery vinyl pyridine copolymer, from about 2 to 32 parts by weight of at least one water soluble polymethylolglycoluril compound having the formula



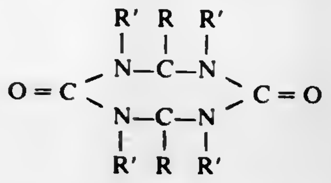
where R is hydrogen, methyl or ethyl and where R′ is hydrogen or methylol, at least two of the R′s being methylol, and from about 2 to 24 parts by weight of at least one water soluble, thermoplastic and non heat hardenable resorcinol-formaldehyde novolak, said composition coating and at least substantially totally impregnating said element.

7. A method for adhering a glass fiber reinforcing element to a rubber compound which comprises treating said element with a composition consisting essentially of an aqueous alkaline dispersion of 100 parts by weight of a rubbery vinyl pyridine copolymer, from about 2 to 32 parts by weight of at least one water soluble polymethylolglycoluril compound having the formula



where R is hydrogen, methyl or ethyl and where R′ is hydrogen or methylol, at least two of the R′s being methylol, from about 2 to 24 parts by weight of at least one water soluble, thermoplastic and non heat hardenable resorcinolformaldehyde novolak, from about 0 to 3 parts by weight of an alkaline material selected from the group consisting of NH_4OH, KOH and NaOH, and from about 150 to 1,100 parts by weight of water, heating said treated element at a temperature and for a time sufficient to remove essentially all of the water from said composition and to provide said element with a heat cured adhesive in an amount of from about 10 to 40% by weight (dry) based on the weight of said reinforcing element, combining said dried and heat cured adhesive containing reinforcing element with an unvulcanized vulcanizable rubber compound, and vulcanizing the same, said composition coating and at least substantially totally impregnating said element.

17. A bonded composite material comprising a glass fiber reinforcing element embedded in a vulcanized rubber, said element containing from about 10 to 40% by weight (dry) based on the weight of said element of a heat cured adhesive composition consisting essentially of 100 parts by weight of a rubbery vinyl pyridine copolymer, from about 2 to 32 parts by weight of at least one water soluble polymethylolglycoluril compound having the formula



where R is hydrogen, methyl or ethyl and where R′ is hydrogen or methylol, at least two of the R′s being methylol, and from about 2 to 24 parts by weight of at least one water soluble thermoplastic and non heat hardenable resorcinol-formaldehyde novolak and said composition forming a bond between said element and said rubber, said composition coating and at least substantially totally inpregnating said element.

3,895,164
'PROCESS FOR IMPARTING FRICTION PROPERTIES TO A BASE MATERIAL AND THE RESULTANT PRODUCT
Ronald A. Carstens, Anacortes, and William J. Butcher, Vancouver, both of Wash., assignors to Key Chemicals, Inc., Anacortes, Wash.
Division of Ser. No. 201,899, Nov. 24, 1971, Pat. No. 3,812,055. This application Dec. 19, 1973, Ser. No. 426,219
Int. Cl. B44d *5/08;* **D21h** *1/16*
U.S. Cl. 428—329 **2 Claims**

1. A process for imparting friction properties to a base material which comprises applying to the surface of said material a positively charged colloidal aqueous dispersion having solid content of 1 to 15% of mixed alumina comprising:
a. 25–75% by weight of the total alumina of a first alumina composition having an ultimate dispersed particle size no more than about one-fifth as great as a second alumina composition; and
b. correspondingly 75–25% by weight of said second alumina composition, said second alumina composition having a particle size of about 10–100 mμ, and drying the coated base.

3,895,165
COMPOSITE FIBRES AND YARNS OF ACRYLONITRILE POLYMERS
Hermann Lohwasser; Alfred Nogaj; Dieter Brokmeier, all of Dormagen, and Helmut Engelhard, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Germany
Filed Sept. 18, 1974, Ser. No. 507,174
Claims priority, application Germany, Sept. 27, 1973, 2348679
Int. Cl. D02g *1/00, 3/00*
U.S. Cl. 428—374 **5 Claims**

1. A spontaneously crimping composite fibre comprising at least two different acrylonitrile polymers which have substantially the same acidic group content, produced in a side-by-side arrangement of the two fibre-forming components in proportions, by weight, of from 40:60 to 60:40, one of the fibre-forming components containing up to 6%, by weight, of at least one copolymerised ester while the quantity of said copolymerised ester in the other fibre-forming component is from 2 to 6%, by weight, higher, said copolymerised ester being methyl acrylate and/or isobutene diacetate (2-methylenepropane-1,3-diacetate), under the condition that at least one of the fibre-forming components contains at least 2%, by weight, isobutene diacetate and the total quantity of said copolymerised esters in one fibre-forming component does not exceed 12%, by weight.

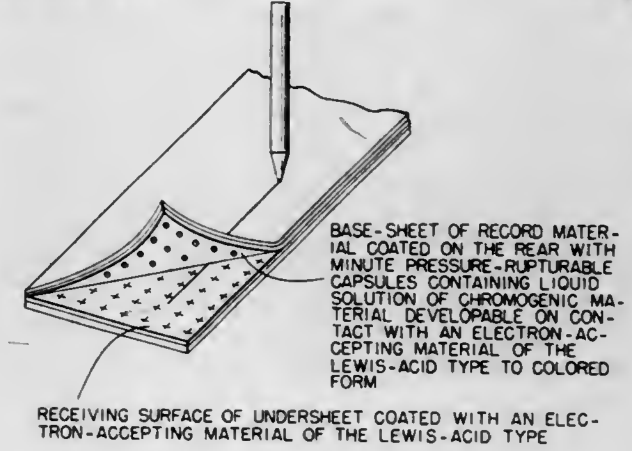
3,895,166
BONDED REINFORCED STRUCTURES USING AMINE RESINS
Louis L. Wood, Rockville, Md., assignor to W. R. Grace & Co., New York, N.Y.
Continuation-in-part of Ser. No. 284,023, Aug. 28, 1972, which is a continuation-in-part of Ser. No. 252,793, May 12, 1972. This application Feb. 13, 1973, Ser. No. 332,054
Int. Cl.² B29H *9/02, 9/04, 9/08;* **B32B** *25/02*
U.S. Cl. 428—383 **4 Claims**

1. In an integral elastomeric composite reinforced structure wherein a filamentary reinforcement assembly is adhesively secured to and within an elastomeric matrix structure by an adhesive, the improvement which consists essentially of an adhesive consisting essentially of the combination of resorcinol - formaldehyde - latex adhesive dip and an aqueous solution of polyamide - polyamine - epichlorohydrin adduct, said polyamide - polyamine being formed by reaction of a polyamine having at least three amino groups per molecule and a saturated aliphatic dicarboxylic acid containing 3 to 10 carbon atoms at a reaction temperature of about 110°C. to about 250°C., the amount of said saturated aliphatic dicarboxylic acid being sufficient to react with at least two amine groups of the polyamine, the polyamide - polyamine being further reacted with epichlorohydrin at a temperature from about 25°C. to about 110°C. in an aqueous solution and at a pH of 7.5 to 9.5, the amount of epichlorohydrin being about 0.5 mole to about 1.8 moles of epichlorohydrin per mole polyamide, the solution of polyamide - polyamine - epichlorohydrin being adjusted to a solid content of less than about 60% to about 10 % and a pH of about 3 to about 8, said adhesive being applied to the filamentary reinforcement prior to bonding within the elastomeric matrix, and wherein the filamentary reinforcement assembly is selected from the group consisting of glass, metal, rayon, polyester and polyamide.

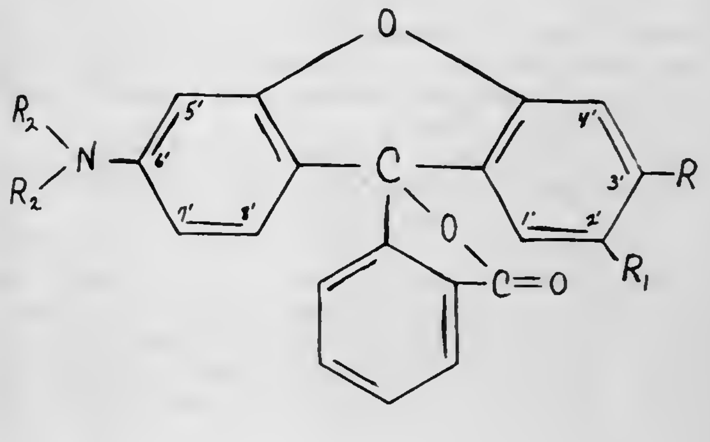
3,895,167
PROCESS FOR COATING METALS WITH COMPOSITIONS PREPARED FROM AQUEOUS DISPERSIONS OF VINYL CHLORIDE/ALKENE COPOLYMERS
Vishnu P. J. Gor, Country Club Hills, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Division of Ser. No. 257,269, May 26, 1972. This application Nov. 19, 1973, Ser. No. 417,004
Int. Cl.² B32B *15/08;* **C09D** *3/76*
U.S. Cl. 427—388 **6 Claims**

1. A method for coating metal substrates which comprises applying to the surface of the metal substrate at a coating thickness of about 0.1 to 1.0 mil a composition dispersed in water, said composition comprising
a. about 70 to 90 percent by weight of a vinyl chloride/alkene copolymer comprised of about 70 to 99 percent by weight vinyl chloride and about 1 to 30 percent by weight of an alkene having 2 to 4 carbon atoms,
b. about 5 to about 20 percent by weight of a methylolated ethyleneurea resin prepared from a reaction mixture comprised of an ethyleneurea and an aldehyde, and
c. about 1 to about 10 percent by weight of an alkylated triazine aldehyde condensate prepared by the reaction of an aminotriazine and an aldehyde in the presence of a monohydroxyl alcohol, and then heating the metal substrate to harden the coating.

3,895,168
PRESSURE-SENSITIVE RECORD SHEETS EMPLOYING AMIDO AND SULFONAMIDO-SUBSTITUTED FLUORANS
Chao-Han Lin, Dayton, Ohio, assignor to NCR Corporation, Dayton, Ohio
Continuation-in-part of Ser. No. 120,359, March 2, 1971, Pat. No. 3,769,057, which is a division of Ser. No. 792,435, Jan. 21, 1969, Pat. No. 3,627,787. This application Apr. 30, 1973, Ser. No. 355,623The portion of the term of this patent subsequent to Oct. 30, 1990, has been disclaimed.
Int. Cl.² B41C *1/06*
U.S. Cl. 428—411 **13 Claims**


BASE-SHEET OF RECORD MATERIAL COATED ON THE REAR WITH MINUTE PRESSURE-RUPTURABLE CAPSULES CONTAINING LIQUID SOLUTION OF CHROMOGENIC MATERIAL DEVELOPABLE ON CONTACT WITH AN ELECTRON-ACCEPTING MATERIAL OF THE LEWIS-ACID TYPE TO COLORED FORM
RECEIVING SURFACE OF UNDERSHEET COATED WITH AN ELECTRON-ACCEPTING MATERIAL OF THE LEWIS-ACID TYPE

1. A pressure sensitive record unit comprising:
a. support web or sheet material,
b. mark-forming components and a releasable liquid solvent for said mark-forming components arranged in contiguous juxtaposition and supported by said sheet material,
c. said mark-forming components comprising at least one chromogenic material of the structure:



wherein R_1 represents a chemical radical selected from the group consisting of radicals having the structural formula —NH—CO—Y and —NH—SO_2—Y wherein Y represents a chemical radical selected from the group consisting of phenyl, methoxyphenyl, naphthyl, quinolyl, benzyl, and amino-, nitro-, and alkyl-substituted phenyl radicals wherein the alkyl groups have less than five carbon atoms;
R represents a chemical radical selected from the group consisting of hydrogen and alkyl groups having less than five carbon atoms; and
R_2 represents a chemical radical selected from the group consisting of alkyl groups having less than five carbon atoms; and
an electron-accepting material of the Lewis acid type reactive with said chromogenic material to produce a mark; which components upon pressure-release of the liquid solvent are brought into reactive contact in the released solvent.

3,895,169

METHOD FOR PRODUCING A HYDROPHILIC LAYER ON THE SURFACE OF NON-HYDROPHILIC ACRYLIC RESINS

Otto Wichterle, Prague, Czechoslovakia, assignor to Ceskoslovenska akademie ved No. 3 Narodni, Prague, Czechoslovakia

Filed Oct. 4, 1972, Ser. No. 294,846

Claims priority, application Czechoslovakia, Oct. 8, 1971, 7115-71

Int. Cl. B44d *1/092*

U.S. Cl. 428—420 **9 Claims**

1. A method for forming a hydrophilic layer on the surfaces of non-hydrophilic acrylic and methacrylic polymer resinous structure having ester, amide or nitrile groups, comprising the steps of contacting said non-hydrophilic acrylic resinous structure with a mixture of a strong acid and a polyhydroxy organic compound at a temperature above at least about 50°C for a period of time sufficient to permit said strong acid to hydrolyticly convert some of the ester, amide or nitrile groups in said resinous structure into carboxylic groups and to permit said polyhydroxy organic compound to partially crosslink, hydrolyze and reesterify said carboxylic groups to swell the surface of said structure and form a hydrophilic surface layer on said structure.

3,895,170

METHOD FOR INHIBITING CORROSION OF FERROUS METALS WITH 1-HYDROXYBENZOTRIAZOLES

Tadashi Tanaka, Yokohama; Keiichi Tanikawa, and Kiichi Arakawa, both of Tokyo, all of Japan, assignors to Nippon Steel Corporation and Otsuka Kagaku Yakuhin Kabushiki Kaisha, both of, Japan

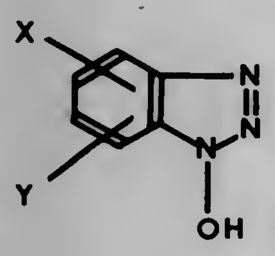
Filed Feb. 2, 1973, Ser. No. 329,081

Claims priority, application Japan, Feb. 5, 1972, 47-013046

Int. Cl. C23f *11/14*

U.S. Cl. 428—457 **7 Claims**

1. A method for inhibiting corrosion of a ferrous metal which comprises contacting a ferrous metal with a composition containing an effective amount of at least one of water-soluble 1-hydroxybenzotriazole compounds and water-soluble salts thereof, said water-soluble 1-hydroxybenzotriazole compound having the formula:



wherein X and Y are each respectively one member selected from the group consisting of hydrogen atom, a lower alkyl group having 1 to 3 carbon atoms, nitro group, halogen atom, sulfo group, methody group, carboxy group and cyano group.

3,895,171

METHOD OF COATING A SUBSTRATE WITH AN ELECTRON BEAM CURABLE PAINT COMPOSITION CONTAINING THERMOPLASTIC VINYL RESIN AND ARTICLE FORMED THEREFROM

James R. Deamud, Novi, and Charles L. Hickson, Sterling Heights, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed July 2, 1973, Ser. No. 375,992

Int. Cl.² B05D *3/06;* **C08F** *265/06, 267/06*

U.S. Cl. 428—461 **12 Claims**

1. In a method of providing a substrate with an adherent coating of a paint which, exclusive of non-polymerizable solvents, pigments and particulate mineral filler consists essentially of a film-forming binder solution of vinyl monomers and an alpha-beta olefinically unsaturated organic resin containing between about 0.5 and about 5 units of olefinic unsaturation per 1,000 units of molecular weight, said vinyl monomers being a solvent for said resin and being polymerizable with said resin upon exposure to ionizing radiation, wherein said paint is applied to said substrate and the components of said binder solution cross-linked by ionizing radiation, the improvement comprising including in said paint from about 2 to about 7 weight percent based on the total formula weight of the paint of a saturated, thermoplastic, vinyl polymer selected from the group consisting of homopolymers and copolymers of vinyl hydrocarbon monomers and acrylic monomers and having a molecular weight within the range of from about 10,000 to about 50,000.

3,895,172

METHOD OF WATERPROOFING WITH ASPHALTS CONTAINING POLYAMINES

Thornton K. Jones, Greenbrae, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 723,297, April 22, 1968, abandoned, which is a continuation-in-part of Ser. No. 354,792, March 25, 1974, abandoned. This application Oct. 19, 1972, Ser. No. 298,899

Int. Cl. C09d *3/46*

U.S. Cl. 428—489 **7 Claims**

1. The method of waterproofing a surface which comprises coating said surface with a composition consisting essentially of from 90-99.9 percent by weight of a molten, non-catalytically oxidized asphalt having a ring and ball softening point in the range of 130°F.–250°F., and from 0.1–10 percent by weight of a polyamine of the general formula:

$$A\text{-}NH\text{-}(R\text{-}NH)_n\text{-}B$$

in which A and B are selected from the group consisting of hydrogen and hydrocarbon radicals to from 2 to 24 carbon atoms, R is lower alkylene of 2 to 4 carbon atoms and n is a whole number of from 1 to 5.

3,895,173

DICHROMATIC THERMO-SENSITIVE RECORDING PAPER

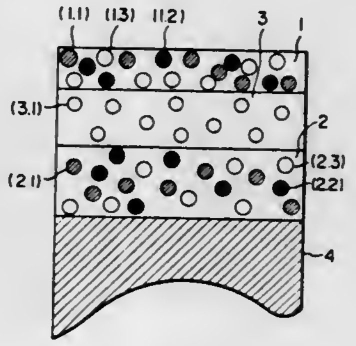
Kinichi Adachi, Takarazuka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Feb. 15, 1973, Ser. No. 332,881

Claims priority, application Japan, Feb. 17, 1972, 47-17063; July 31, 1972, 47-77219; Oct. 20, 1972, 47-105440; Oct. 20, 1972, 47-105441; Oct. 20, 1972, 47-105442

Int. Cl. B41m *5/18*

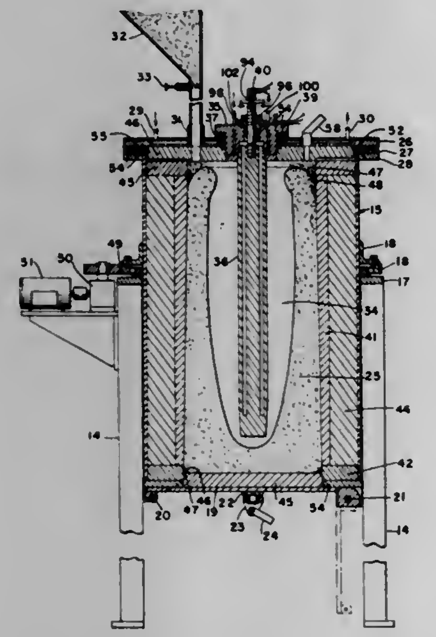
U.S. Cl. 428—537 **8 Claims**



1. A dichromatic thermo-sensitive recording paper comprising: a first layer formed from a dispersion in a film-forming binder of discontinuous particles of a leuco base of triphenylmethane or fluoran type dye and a phenolic substance or an organic acid, said first layer capable of forming a first color upon application of heat; a second layer formed from a dispersion in a film-forming binder of discontinuous particles of a leuco base of triphenylmethane or fluoran type dye and a phenolic substance or an organic acid, said second layer capable of forming a second color upon application of heat, said second color distinguishable from the first color formed in the first layer; and, disposed between the first and second layers, an inter layer capable of being thermally fused to dilute as well as to exclude the first color formed in the first layer from the second color formed in the second layer.

3,895,174
METHOD AND APPARATUS FOR CONVERSION OF CRYSTALLINE SILICA RAW MATERIALS INTO AMORPHOUS SILICA

Lothar Jung, 31 Lurline Dr., Millington, N.J. 07946
Filed June 4, 1974, Ser. No. 476,220
Int. Cl. C03b *5/02;* **H05b** *3/00*
U.S. Cl. 13—21 **5 Claims**



1. An apparatus for the fusing of a particulate material comprising:

a furnace housing comprising a generally cylindrical body portion, said body portion having an interior surface defining an interior space of a configuration approximating a truncated cone, said body portion further provided with at least two openings for access to said space, one of said openings forming the base of said truncated cone;

means for charging the particulate crystalline silica through one of said openings into said space;

resistance heating means secured to said furnace housing and extending into said space;

means for rotating said body portion about the longitudinal axis of said cone;

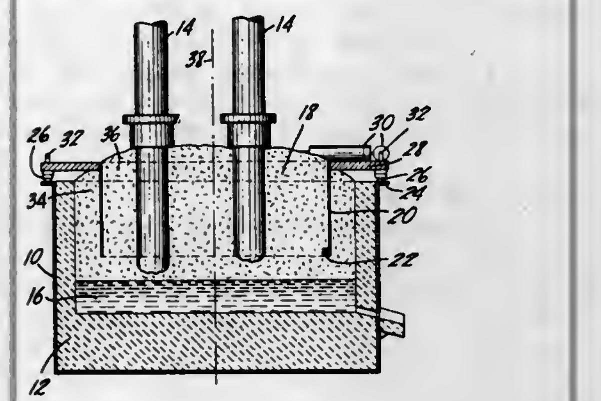
cover means for closing said opening at said base; and

mounting means for attaching said cover means to furnace housing and for movement of said cover means between open and closed positions.

3,895,175
APPARATUS FOR MOVEMENT OF CHARGE WITHIN AN ELECTRIC SMELTING FURNACE

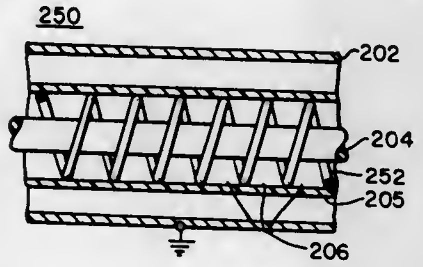
Harald Krogsrud, Gjettum, Norway, assignor to Elkem-Spigerverket A/S, Oslo, Norway
Filed Oct. 22, 1974, Ser. No. 516,952
Claims priority, application Norway, Oct. 23, 1973, 4093/73
Int. Cl. F27d *3/00*
U.S. Cl. 13—33 **7 Claims**

1. In an electric smelting furnace having a furnace pot for containing a charge, the improvement comprising at least one annular member within the confines of the furnace pot, each said annular member being movable in annular direction and including means on the annular member effective to move the charge towards the center of the furnace pot when the annular member is moved in annular direction.



3,895,176
COAXIAL CONDUCTOR WITH TRAP FOR REMOVING PARTICLES FROM FLUID INSULATION

Alan H. Cookson, Pittsburgh; Owen Farish, Monroeville, and John M. Gauntz, Trafford, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Division of Ser. No. 122,453, March 9, 1971, Pat. No. 3,814,879. This application Aug. 1, 1973, Ser. No. 384,526
Int. Cl. H01b *9/04*
U.S. Cl. 174—28 **3 Claims**



1. An electrically conducting system comprising:

a first hollow tubular electrical conductor;

a second electrical conductor disposed within said first electrical conductor and spaced therefrom, said first and second electrical conductors having an electrical field present therebetween when one of said electrical conductors is energized at a different electrical potential than the other of said electrodes;

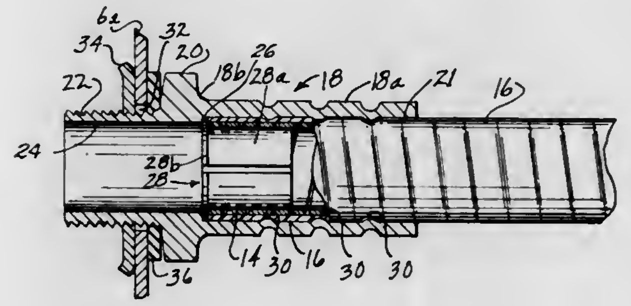
electrically insulating fluid enclosed within said first conductor between said first and second spaced conductors;

an electrically conducting barrier member disposed between said first and said second spaced conductors for deterring electrical flashover between said first and said second electrical conductors, unconnected electrically to said first conductor, unconnected electrically to said second conductor and unconnected electrically to any energy source; and

an electrically conducting particle trap structure disposed proximate to said barrier and relatively closer to said barrier than to either said first or said second conductors, said particle trap structure distorting said electric field in such a manner as to provide a generally electric field free region near said electrically conducting barrier member, particles entering said generally electric field free region being generally immobilized because of the reduced accelerating forces in said generally electric field free region.

3,895,177
FLEXIBLE METAL CONDUIT WITH END CONNECTORS AND METHOD OF MAKING THE SAME

Bernard J. Muslin, Chicago, Ill., assignor to Specialty Connector Corporation, Chicago, Ill.
Filed Mar. 12, 1973, Ser. No. 339,633
Int. Cl. H02g *3/06*
U.S. Cl. 174—48 **5 Claims**

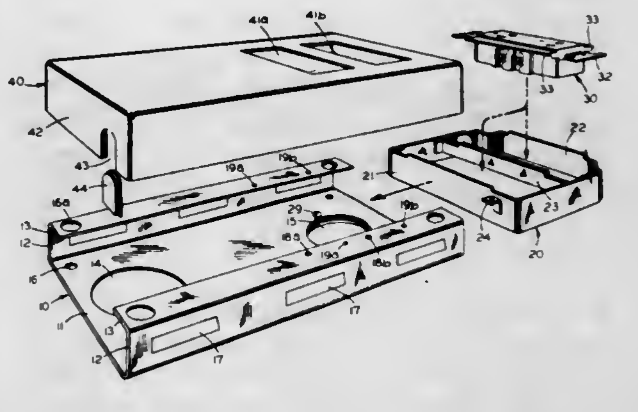


1. In combination with a flexible metal conduit having a covering of an air impervious compressible resilient material extending adjacent the ends thereof, connectors secured to the ends of said conduit, each of said connectors comprising an air impervious sleeve portion enveloping the compressible resilient material adjacent the end of the conduit and having at least one continuous annular indented portion projecting into said compressible resilient material to anchor the sleeve portion in place thereon and to form at least one continuous air tight seal around the conduit between said sleeve portion of each connector and the compressible resilient material, each of said connectors having a head portion extending from the outer end of said sleeve portion thereof and adapted to extend through and be anchored and sealed about the margins of a wall opening, and the head portion of each connector forming a passageway for electrical wiring communicating with the interior of the conduit, and means forming an electrical connection between the sleeve portion of each connector and said conduit comprising a hollow resilient contact-forming member having an open ended split shank portion extending into and making a friction fit contact with the inner surface of the adjacent end of the conduit, said shank portion terminating in a radially outwardly extending flange portion sandwiched in contacting relation between an axially inwardly facing shoulder of said connector and the outer edge of the conduit said flange portion being split in longitudinal alignment with the split in the shank portion.

3,895,178
SERVICE FITTING FOR WIRING SYSTEMS

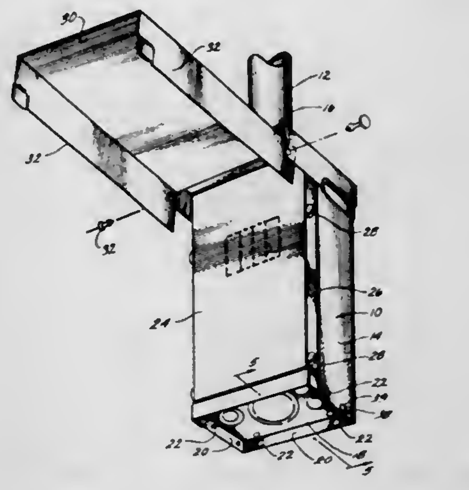
Cornelis Huibrechtse, Weston, Canada, assignor to General Electric Company, New York, N.Y.
Filed Dec. 10, 1973, Ser. No. 423,076
Claims priority, application Canada, Dec. 15, 1972, 159007
Int. Cl. H02g *3/10*
U.S. Cl. 174—48 **11 Claims**

1. An electrical fitting for mounting over embedded conduit ducting comprising a base having two ends, means for passing high tension wires through said base adjacent a first end, separate means for passing low tension wires through said base adjacent a second end, walls defining an open compartment surrounding said means for passing high tension wires, said walls being fixedly connected relative to said base, a high tension outlet mounted within said compartment to substantially enclose said compartment, and a cover mounted on said base, said cover being provided with a window matching said high tension outlet and a means for the outlet of low tension wires remote from the window.



3,895,179
ALL WEATHER ELECTRICAL POWER SERVICE BOX

Robert W. Wyatt, Monrovia, Calif., assignor to Unicorn Industries, Anaheim, Calif.
Filed July 1, 1974, Ser. No. 484,663
Int. Cl. H05k *5/04*
U.S. Cl. 174—50 **5 Claims**



1. An electrical junction box comprising a sheet metal housing having integral back and sidewalls, means forming a top wall, and a movable bottom wall including a flat portion, hinge means rotatably securing the bottom wall to the sidewalls adjacent the back wall, the flat portion of the bottom wall rotating between a normal position perpendicular to the back wall to a folded position parallel to and against the back wall, and a removable front panel mounted between the sidewalls.

3,895,180
GREASE FILLED CABLE SPLICE ASSEMBLY

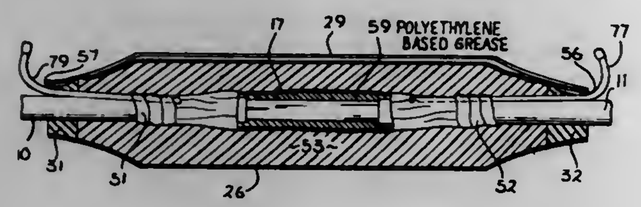
Walter A. Plummer, 3546 Crownridge Dr., Sherman Oaks, Calif. 91403
Continuation-in-part of Ser. No. 347,435, April 3, 1973, Pat. No. 3,836,702. This application Sept. 16, 1974, Ser. No. 506,598
Int. Cl. H02g *15/08*
U.S. Cl. 174—92 **16 Claims**

1. An electrical cable splice assembly protecting a plurality of spliced conductors in a cable comprising:

a. an inner cover disposed about said spliced conductors in said cable;

b. a protective grease material disposed within said inner cover;

c. an outer jacket disposed about said spliced conductors and said inner cover, said conductors passing through corresponding apertures in first and second ends of said outer jacket;



d. means sealing said apertures; and

e. an insulative foam material disposed within the space between said outer jacket and said inner cover;

whereby said splice assembly protects said conductors from the elements.

3,895,181

ARRANGEMENT FOR CONNECTING ELECTRICAL CIRCUITS

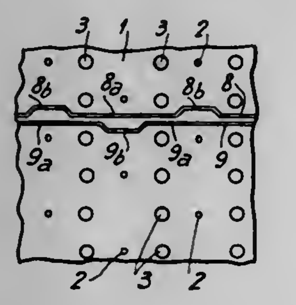
Jean-Paul LaGrange, Paris; Gerald Davy, Noisy-Le-Roi; Jean-Claude Prouin, Neuilly-Marne; Bernard Le Govic, Sarcelles, and Jean Sandoz, Paris, all of France, assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Aug. 21, 1974, Ser. No. 499,384

Claims priority, application France, Sept. 12, 1973, 73.32827

Int. Cl.² H05K *1/02*

U.S. Cl. 174—68.5 **3 Claims**



1. A device connecting electrical circuits, said device including a plurality of superimposed insulating sheets joined together, at least one face of each of said sheets carrying networks of conductive strips comprising:

a plurality of linking members electrically connecting conductive strips situated at different ones of said sheets;

a plurality of connecting members connecting the conductive strips to electrical circuits;

said linking and said connecting members being arranged in rows and columns defining corridors wherein

the connecting members arranged in rows and in columns form a gird having rectangular lattices with the distance between two columns being greater than that between two rows,

the linking members arranged in a row with each linking member being disposed between two connecting members and the linking members being situated at every other interval between said connecting members in a row;

two of said conductive strips passing substantially parallel to each other through each of the corridors which are parallel to the rows, each of the two strips having offsets therein with each of said strips being disposed further away from the other strip in the region adjacent to an interval between connecting members which does not contain a linking member in that row,

such that the average distance between two adjacent strips along their substantially parallel paths is greater than the distance which would separate them if they were straight.

3,895,182

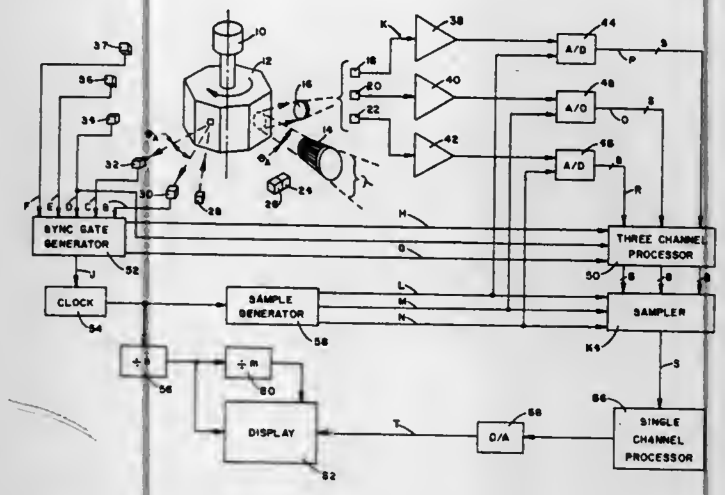
MULTI-CHANNEL SENSOR SYSTEM

Ted R. Trilling, R.D. No. 4, Berkshire Rd., Doylestown, Pa. 18901

Filed Dec. 20, 1973, Ser. No. 426,870

Int. Cl.² H04N *7/18*

U.S. Cl. 178—6.8 **10 Claims**



1. A plural channel infrared sensor system for directly interfacing with a television display comprising, in combination:

scanning means for sequentially scanning an external source of an unknown level of radiation, first and second internal sources of known levels of radiation, within predetermined sectors of a complete scan, and providing a scanning output;

detection means optically connected to receive the scanning output and having a plurality of detector elements positioned transverse to the direction of scanning for providing analog outputs indicative of the radiation;

position indicating means operatively connected to said scanning means for providing a first output during the external source scan, a second output during the internal sources scans, a plurality of third outputs of a series of pulses indicative of corresponding segments within the sectors, the pulses in each of said series being sequential with the pulses of the other series and the plurality being equal to the number of said detector elements, fourth and fifth outputs each synchronous with the plurality of said third outputs for respectively providing line and frame synchronization pulses for the television display, and a sixth output during the first internal source scan;

first conversion means connected to receive the analog outputs and the position indicating means third outputs for sampling and converting the analog outputs and producing digital outputs representative of the sampled analog outputs;

processing means having a plurality of channels for normalizing the gains and levels of each of the digital outputs to one another, each channel including first normalizing means connected to receive the first and second position indicating means outputs and a respective one of said first conversion means outputs for producing a gain normalized output, and second normalizing means connected to receive the sixth position indicating means output, the respective one of said first conversion means outputs, and said first normalizing means output for producing a gain and level normalized digital output;

multiplexing means receiving the position indicating means third outputs and the processing means digital outputs for multiplexing said processing means outputs into a digital output having a single channel representative of said processing means digital outputs; and

second conversion means operatively connected to receive said multiplexing means digital output for converting said multiplexing means output to an analog video output for the television display.

3,895,183

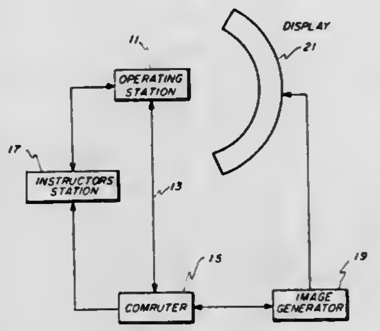
WATERBORNE VEHICLE TRAINER VISUAL SYSTEM

Albert F. Collier, Harpursville, N.Y., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 192,532, Oct. 26, 1971. This application Oct. 29, 1973, Ser. No. 410,936

Int. Cl.² H04N *7/18*

U.S. Cl. 178—6.8 **12 Claims**



1. Display apparatus for creating a simulated view of shore line and sea water with waves, said apparatus comprising:

a. a first model of a shore line having a representation of land on one side of said line and a representation of the sea water on the other side of said line;

b. a first probe including a color sensitive scanning camera having a first blue video channel and additional video channels or red and green and mounted for movement over and viewing of said model;

c. said sea water representation being colored in part with the color black representing deep water and which produces no signal output from said color camera, and in part with a blue color of increasingly light shades with decrease in simulated water depth to shallow water which color produces a signal output from said blue color channel of said color camera;

d. a display device comprising a scannable surface upon which the simulated view appears, and sweep generator means providing vertical scanning of said surface at a higher rate than the horizontal scanning of said surface;

e. second model means color coded to store an elevation profile of waves;

f. a second probe means including a monochromatic camera mounted to scan said second model to obtain from said stored profile a wave signal representative of instantaneous wave elevation as said display device is scanned;

g. sweep modification means connected to receive said wave signals for modifying the vertical scanning of said display surface in accordance with said wave signal to produce a display of simulated waves;

h. means for adding to the output of said color camera, signals representative of water color when said blue color is the only color output from said color camera;

i. switch means having a first condition connecting said blue channel video only and said modifying vertical scanning signals to said display to simulate waves and a second condition connecting all three video channels to said display with no modifying signal, said states relating respectively to sea scan and land scan; and

j. sensor means connected to monitor the output of the red and green channels of said color camera to obtain a signal for actuating said switch means to said first and second conditions alternately, depending respectively upon the absence or presence of output signals from said red and green channels.

3,895,184

FACSIMILE SYSTEM WITH BUFFERED TRANSMISSION AND RECEPTION

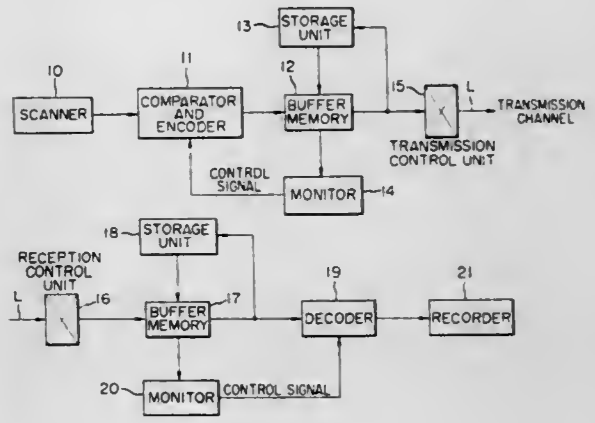
Yasuyuki Komura, Kawasaki, and Takashi Fukushima, Yokohama, both of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Aug. 6, 1973, Ser. No. 385,862

Claims priority, application Japan, Aug. 5, 1972, 47-78609

Int. Cl. H04n *7/12*

U.S. Cl. 178—6 **11 Claims**



1. A facsimile system including a facsimile transmitter having transmitting means and comprising:

means scanning a subject copy in a succession of scanlines and deriving a corresponding succession of video signals;

encoding means combining successive video signals and deriving an encoded digital signal whose rate varies with the degree of difference between the successive combined scanlines;

transmitter storage means for retrievably storing a digital signal applied thereto;

transmitter buffer memory means for storing an input digital signal applied thereto and providing an output signal whose bit sequence is the same as that of the input signal but whose rate is substantially independent of that of the input signal;

means applying the encoded digital signal to the transmitter buffer memory means and applying the output signal of the transmitter buffer memory means to the transmitter storage means;

means subsequently retrieving the encoded signal from the transmitter storage means and applying the retrieved encoded signal to the transmitter buffer memory means and applying the output signal of the transmitter buffer memory means to the transmitting means;

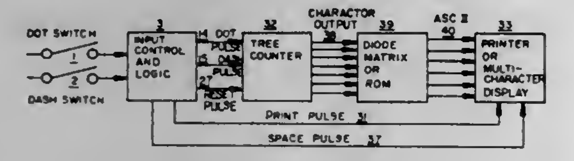
means operable when the encoded signal is being applied to the transmitter buffer memory means and generating a first control signal when more than a predetermined amount of said encoded signal is present in the transmitter buffer memory means; and

means operative in response to the first control signal and decreasing the rate of the encoded signal applied to the transmitter buffer memory means by causing the encoding means to derive an encoded signal corresponding to combining at least one video signal with itself rather than with another video signal;

whereby the rate of the encoded signal provided by the encoding means can be selectively decreased to prevent overflow of the transmitter buffer memory means by, in effect, disregarding the information content of at least one scanline, and whereby the scanning rate can be maintained at a selected steady level independent of the operation of the remainder of the transmitter and independent of the information content of the scanned subject copy.

3,895,185
TREE COUNTER CODE SIMULATOR
Robert W. Ramsey, 2626 Edge-O-Lake, Nashville, Tenn. 37217

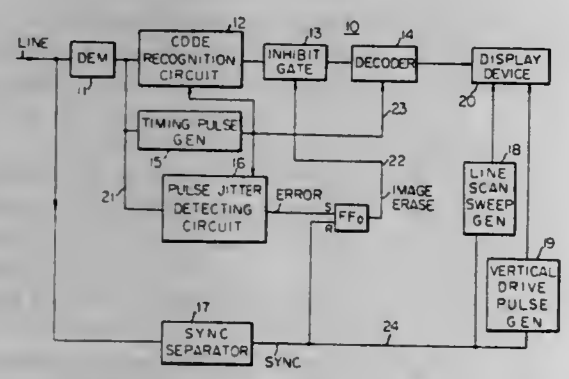
Filed Dec. 3, 1973, Ser. No. 420,856
Int. Cl. H03r *13/00;* **H04l** *3/00*
U.S. Cl. 178—26 R **19 Claims**



1. A system for converting no more than three different signals into a stored representation of at least seven characters comprising sensing means responsive to said signals for discriminating between said signals and storing characters indicated by said discriminating between said signals, storing means responsive to said sensing means for holding a character represented by one of said signals if the same signal or a second different signal is not sensed within a predetermined time following said sensing of said one signal, further storing means responsive to said sensing means for holding a character represented by a second of said signals or a character represented by sensing said one and then said second, signal following said sensing of said one if another signal is not sensed within the same or a different predetermined time, a plurality of additional storing means responsive to said sensing means for holding additional characters represented by one or more of said signals in any particular order of said one or more of said signals after said predetermined time has elapsed, correction means associated with said plurality of sensing and storing means for erasing the holding of one or more or all of said characters and additional correction means associated with said plurality of sensing and storing means for resetting to blank by erasing all characters held prior to said erasing, said system permitting storage of at least 7 characters by said sensing and discriminating between said no more than three different signals.

3,895,186
APPARATUS FOR RECEIVING ENCODED FACSIMILE SIGNALS WITH MINIMIZED EFFECT OF PULSE JITTER INTRODUCED DURING TRANSMISSION
Kunio Yoshida; Hiroyoshi Tsuchiya; Yukifumi Tsuda, and Heijiro Hayami, all of Kawasaki, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Jan. 24, 1974, Ser. No. 436,357
Claims priority, application Japan, Jan. 25, 1973, 48-10449
Int. Cl. H04l *7/00;* **H04b** *1/10*
U.S. Cl. 178—69.5 F **13 Claims**



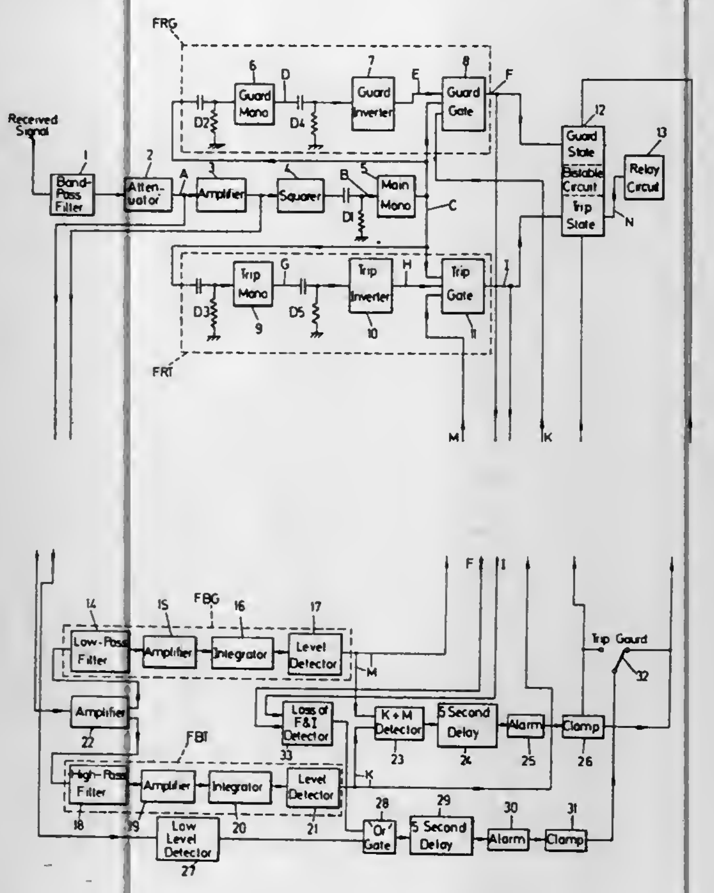
1. Apparatus for a facsimile communication system receiving station receptive in operation of digital image signals comprising a sequence of synchronization signals and line scan signals synchronized with said synchronization signals, each line scan signal comprising pulses jointly representative of the brightness of an image along one dimension thereof at a given point along another dimension of said image, wherein said apparatus comprises:

- means receptive of said digital image signals for detecting pulse jitter of said pulses comprising said line scan signals; means receptive of said digital image signals for detecting said synchronization signals; and
- means having an output, and receptive of said digital image signals and cooperative with said pulse jitter detecting and synchronization signal detecting means for gating said image signals to said output in the absence of pulse jitter and for inhibiting all the remaining pulses in a given line scan signal from appearing at said output upon detection of pulse jitter in said given line scan signal.

3,895,187
RECEIVERS FOR PLURAL FREQUENCY SIGNALLING SYSTEMS
Eugenius Antoszewski, Stafford, England, assignor to The General Electric Company Limited, London, England

Continuation-in-part of Ser. No. 320,935, Jan. 4, 1973, abandoned. This application July 30, 1974, Ser. No. 493,165
Claims priority, application United Kingdom, Jan. 6, 1972, 713/72

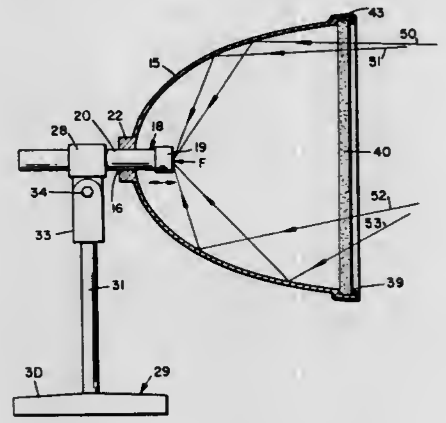
Int. Cl. H04b *1/16*
U.S. Cl. 178—88 **7 Claims**



1. A receiver for use in a signalling system of the kind wherein data is conveyed by transmitting in sequence signal of a first frequency and signals of a second higher frequency comprising:

- first and second frequency recognition circuits which respectively produce outputs in response to received signals in first and second discrete frequency bands in which said first and second frequencies lie respectively;
- third and fourth frequency recognition circuits which respectively produce outputs in response to received signals in said first and second frequency bands;
- a connection between the output of said third frequency recognition circuit and an input to said second frequency recognition circuit whereby the output of said second frequency circuit is inhibited in the presence of an output signal from said third frequency recognition circuit;
- a connection between the output of said fourth frequency recognition circuit and an input to said first frequency recognition circuit whereby the output of said first frequency recognition circuit is inhibited in the presence of an output signal from said fourth frequency recognition circuit; and
- bistable output means connected with the outputs of the first and second frequency recognition circuits so as to assume a first condition in response to an output from the first frequency recognition circuit and to assume a second condition in response to an output from the second frequency recognition circuit.

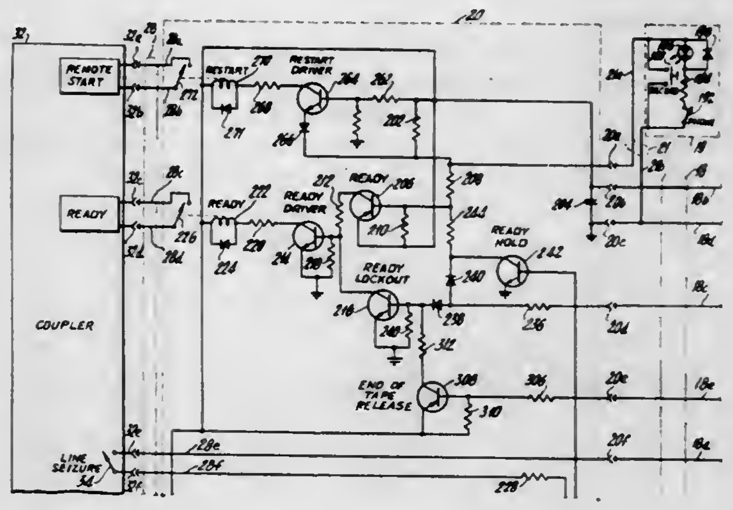
3,895,188
SOUND COLLECTING DEVICE
Everett L. Ingraham, P.O. Box 532, Chico, Calif. 95926
Continuation of Ser. No. 265,052, June 21, 1972. This application Mar. 29, 1974, Ser. No. 456,417
Int. Cl. G10k *10/00*
U.S. Cl. 179—1 MF **2 Claims**



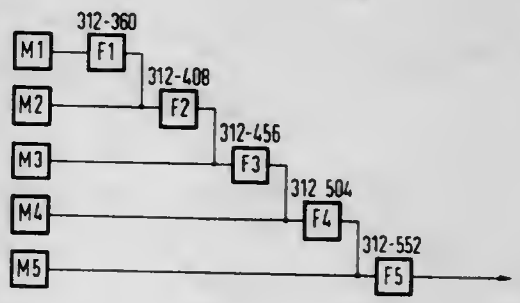
1. A sound collecting device for accumulating sound at a focus while substantially eliminating wind noise having an elongate parabola with an open mouth having side walls coaxial with the axis of the parabola and a closed base, said parabola formed with a focus located near the base of the parabola along its longitudinal axis and distant from the open mouth of the parabola, a microphone including a sound entry face adjacent the focus of the parabola so that the sound entry face of the microphone is distant from the open mouth of the parabola, said sound entry face oriented towards said open mouth for the direct reception of sound from its source, and a membrane of sound permeable material mounted at said mouth overlying the entire opening to the interior of said parabola, the combination of the closed base of the parabola and the membrane substantially preventing air currents from reaching the sound entry face of the microphone to substantially eliminate wind generated noises.

3,895,189
TELEPHONE COUPLER CONTROL MODULE FOR A DICTATING SYSTEM
Bjorn J. Matz, Forest Hills, N.Y., assignor to Dictaphone Corporation, Rye, N.Y.
Continuation-in-part of Ser. No. 322,530, Jan. 10, 1973, Pat. No. 3,835,261, and Ser. No. 322,373, Jan. 10, 1973, Pat. No. 3,823,274, and Ser. No. 327,643, Jan. 29, 1973, Pat. No. 3,839,600. This application June 29, 1973, Ser. No. 374,862
Int. Cl. G11b *19/00;* **H04m** *11/10*
U.S. Cl. 179—6 R **14 Claims**

1. A control circuit for interconnecting an external telephone system through an automatic answering coupler with a central record/playback unit of a dictating system of the type having an endless recording loop and a seizure control, the interconnecting control circuit comprising a pre-amplifier for receiving audio signals from the answering coupler and first means connected to said pre-amplifier for supplying the amplified signals received from said pre-amplifier to the input of the central record/playback unit for recording, said first means including a D.C. current path over which said amplified signals are supplied to said central record/playback unit and which also carries D.C. current signals from the central record/playback unit so as to activate the seizure control of the central record/playback unit.



3,895,190
CHANNEL FILTER ARRANGEMENT FOR A CARRIER FREQUENCY TRANSMISSION SYSTEM
Ernst Koob, Deisenhofen; Wilhelm Volejnik, and Helmut Matthes, both of Munich, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany
Filed Mar. 22, 1973, Ser. No. 343,875
Claims priority, application Germany, Mar. 24, 1972, 2214583
Int. Cl. H04j *1/08*
U.S. Cl. 179—15 FS **13 Claims**

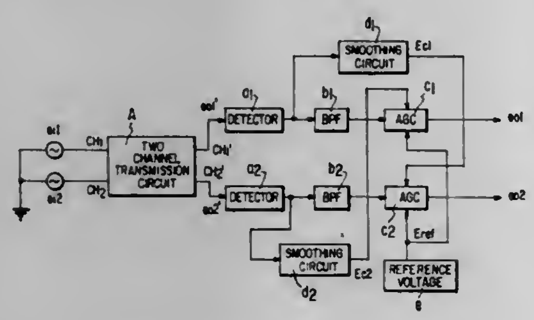


9. A carrier frequency transmission system having *n* channels for transmitting signals, a plurality of *n* modulators for producing signals to be simultaneously transmitted in said channels, and a filter network interconnected between said modulators and transmission line comprising a plurality of filters each having an attenuation band, said filters having partially overlapping attenuation bands, each filter of said filter network being connected to a modulator for each channel to be transmitted, the last of said filters being a band-pass filter having two spaced cutoff frequencies, means for connecting said band-pass filter directly to one of said modulators, and all other filters being composed of simple filters having a single cutoff frequency, the number of said other filters not exceeding $n-1$, each of said other filters being effective to cooperate with one of the cutoff frequencies of said band-pass filter to limit the passband of frequencies supplied to the transmission line by its modulator.

3,895,191
METHOD AND APPARATUS FOR MEASUREMENT OF CHANNEL SEPARATION IN AMPLIFIER OR THE LIKE

Tadayoshi Koganezawa; Ryoji Shiozawa, and Katsumi Takai, all of Tokyo, Japan, assignors to Trio Electronics Inc., Tokyo, Japan

Filed June 18, 1974, Ser. No. 480,418
Claims priority, application Japan, June 18, 1973, 48-68440
Int. Cl. H04h *5/00*
U.S. Cl. 179—15 BT **14 Claims**



1. Apparatus for measuring channel separation in a transmission circuit having at least first and second transmission channels, said apparatus comprising:

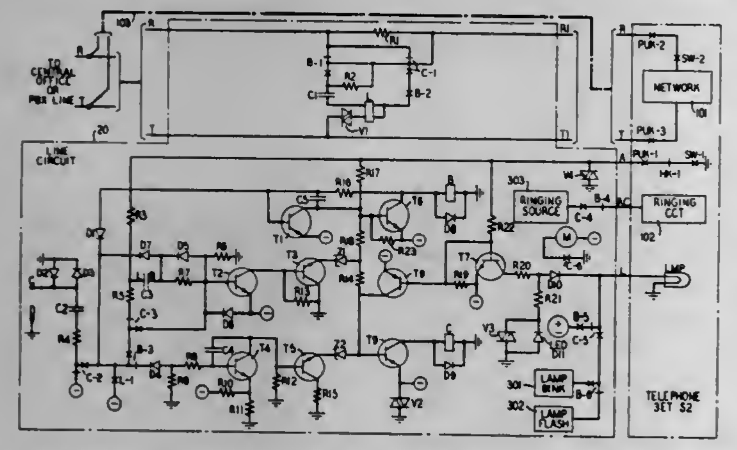
applying means for respectively applying to said first and second transmission channels first and second test signals of different frequency;

first detecting means responsive to said first transmission channel for producing a first beat frequency signal, the amplitude of which is a function of the cross-talk from said second transmission channel to said first transmission channel and the frequency of which is the difference in frequency between said first and second test signals; and first measuring means responsive to the amplitude of said first beat frequency signal to obtain a measurement of said cross-talk from said second transmission channel to said first transmission channel.

3,895,192
TELEPHONE LINE CIRCUIT HOLD CONTROL ARRANGEMENT

Ronald Joseph Angner, Freehold, and Alexander Feiner, Rumson, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 25, 1974, Ser. No. 491,822
Int. Cl.² H04M *1/00*
U.S. Cl. 179—99 **5 Claims**



1. A hold control circuit for use in a key telephone line circuit for controlling the hold function between a switching machine and at least one telephone station, said line circuit adapted for A lead control between said line circuit and said station, said hold control circuit comprising

means for providing a momentary station transition signal whenever any of said telephone stations makes a transition from an on-hook to off-hook condition or from an off-hook to on-hook condition,

means for detecting the presence or absence of a signal on said A lead,

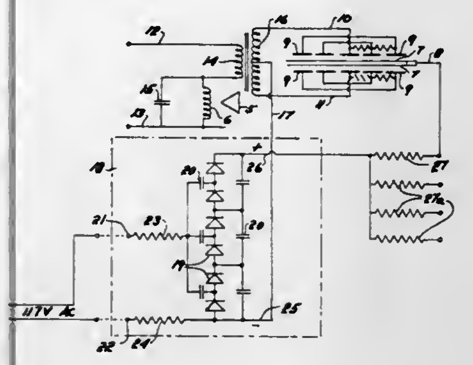
means for providing a hold bridge enable signal upon a detected transition from the presence of a said signal on said A lead to an absence of said A lead signal and a concurrent absence of a said momentary station transition signal, and

means for inhibiting said hold bridge enable signal and for providing a station disconnect signal upon a detected transition from a signal on said A lead to an absence of said A lead signal and a concurrent momentary station transition signal.

3,895,193
CROSS-OVER NETWORK AND BIAS VOLTAGE SUPPLY FOR DYNAMIC-ELECTROSTATIC SPEAKER SYSTEM

Lloyd J. Bobb, Glenside, Pa., assignor to Chester C. Pond, Doylestown, Pa., a part interest

Continuation of Ser. No. 826,972, May 22, 1969, and a continuation-in-part of Ser. No. 820,888, May 1, 1969, Pat. No. 3,654,403, and Ser. No. 104,741, Jan. 7, 1971, which is a continuation of Ser. No. 724,805, April 29, 1968, abandoned. This application Sept. 13, 1971, Ser. No. 180,131
Int. Cl. H04r *19/02*
U.S. Cl. 179—111 R **5 Claims**



1. For use in combination with a signal circuit, a dynamic speaker having a voice coil, an electrostatic speaker having a conductive membrane and having a conductive backing plate cooperating with said membrane, and further with a standard 117 v. alternating current source adapted to be used in providing a bias voltage for the electrostatic speaker: a step-up signal transformer having a primary winding connected in the signal circuit in series with said voice coil, a solid state voltage multiplier rectifier having a pair of input connections line connected with said current source each through a separate current isolating resistor and having one output terminal connected with the membrane, the signal transformer having a secondary winding connected between the backing plate of the electrostatic speaker and the other output terminal of the voltage multiplier rectifier.

3,895,194
DIRECTIONAL CONDENSER ELECTRET MICROPHONE

Freeman W. Fraim, Lexington, Mass., assignor to Thermo Electron Corporation, Waltham, Mass.

Filed May 29, 1973, Ser. No. 364,984
Int. Cl. H04r *1/38, 19/04*
U.S. Cl. 179—121 R **4 Claims**

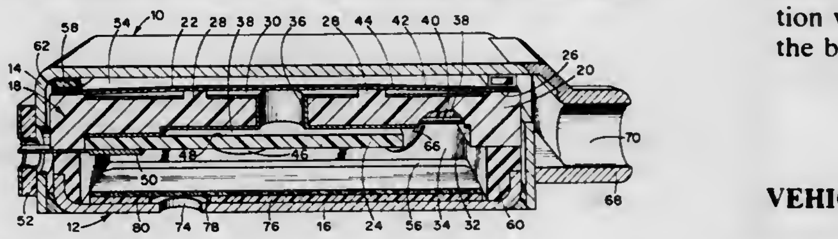
1. A miniature condenser microphone including a housing enclosing an electret diaphragm and a miniature electrical circuit to electrically connect the diaphragm with means external of said housing, said microphone comprising:

a perforate electrically conductive backplate having obverse and reverse sides,

said obverse side having said diaphragm mounted thereover and spaced therefrom to form a working gap between said diaphragm and the obverse side of said backplate, said backplate including at least one air passageway means

therethrough to permit fluid communication between the obverse and reverse sides of said backplate;

an imperforate electrical circuit board supporting said miniature electrical circuit, said board being mounted on the reverse side of said backplate confronting all said air passageway means along the reverse side of said backplate and partially exposing the reverse side of said backplate, said backplate mating with said board to form a constrictive passageway along the confronting surfaces thereof, said constrictive passageway having an open end at an edge of said board confronting said backplate;



said backplate, diaphragm and circuit board forming an assembly;

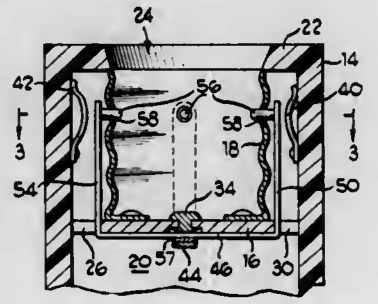
means mounting said assembly in said housing for dividing the interior thereof into a first air space adjacent said diaphragm along the surface thereof facing away from said working gap and a second air space adjacent said circuit board, said second air space communicating with said working gap through said open end, said constrictive channel and said air passageway means; and

means forming in said housing a sound inlet port to said first air space.

3,895,195
SHOCK PROOF LIGHTBULB SOCKET

Howard J. Morrison, Deerfield, and Donald F. Nix, Hanover Park, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Sept. 4, 1973, Ser. No. 393,893
Int. Cl. H01r *33/30*
U.S. Cl. 200—51.09 **10 Claims**



1. A shock proof electrical lightbulb socket comprising:

a body forming the outside of the socket and made of electrical insulation material, and being threaded on the interior thereof;

a positive terminal and a negative terminal mounted on said body and connected to an electrical power line;

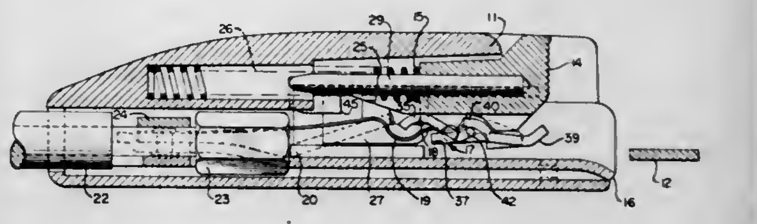
generally cylindrical lightbulb receiving means mounted within the body and having an open top and a generally closed bottom for receiving the base of a lightbulb therein, said lightbulb receiving means including threads formed on the outside surface thereof for engaging mating threads formed on the interior of said body, an internally threaded open-ended electrically conductive shell contact adapted to contact the side of the base of a lightbulb and the negative terminal, and a base contact in the bottom of the receiving means which is adapted to contact the bottom of the lightbulb base and the positive terminal, said receiving means being reciprocally movable relative to the body when rotated between a non-contacting position wherein said shell and base contacts do not touch their respective terminals and a contacting position wherein said shell and base contacts do touch their respective terminals thereby completing the electrical circuit, whereby said receiving means is moved between said positions by rotatingly inserting or withdrawing a lightbulb into or out of said receiving means; and

means to prevent the receiving means from wedging against the interior of the body when in a contacting position so that the receiving means will rotate before the lightbulb from the contacting position to its non-contacting position when the lightbulb is rotated in an effort to remove the bulb.

3,895,196
VEHICLE SAFETY BELTS AND HARNESSES AND BUCKLES FOR THEM

John Christopher Lewis, Sevenoaks, England, assignor to Howard Wall Limited, London, England

Filed Nov. 20, 1973, Ser. No. 417,482
Claims priority, application United Kingdom, Nov. 30, 1972, 55317/72
Int. Cl.² A44B *11/25*
U.S. Cl. 200—61.58 B **6 Claims**



1. A quick release buckle for use with a safety belt or harness on a vehicle, comprising two separable parts held together by cooperating aperture and latch means, one of said parts including a casing having a top, bottom and sides and an entrance slot in one end thereof, means on the other end of the casing for attachment therefore to a raod vehicle or aircraft and the like, a channel member mounted in the casing having upstanding sides, a slide member slidably mounted in the casing, said slide member having one end portion extended axially outwardly of said one end of said casing and having a sloping cam surface on a lower surface portion thereof in the casing, first spring means engaged with the slide member urging it outwardly of the casing, a lever pivotally mounted in the casing, said lever having a cam engaging bridge spaced on one side of the pivot axis of the lever and latch engaging means spaced on the other side of the pivot axis, a latch pivotally mounted in the casing, said latch including a latching projection on one end thereof spaced from the pivot axis of the latch and lever engaging means spaced from the latching projection, second spring means in the casing engaged with the latch urging the latch into latching position, a plate having at least one aperture therethrough and having means on one end thereof for attachment thereto of at least one safety belt and the like, said plate having a size such as to be capable of insertion into the slot in the casing and into a position with the latching projection of the latch engaged in the aperture of the plate to prevent withdrawal of the plate from the casing, said slide member movable inwardly of the casing against the urging of the first spring means into a position with the cam surface thereon engaged with the bridge of the lever to pivot the lever whereby the lever engages and pivots the latch out of latching engagement with the plate, and ejection spring means in the casing engageable with the plate to eject the plate outwardly of the casing when the plate is unlatched.

3,895,197

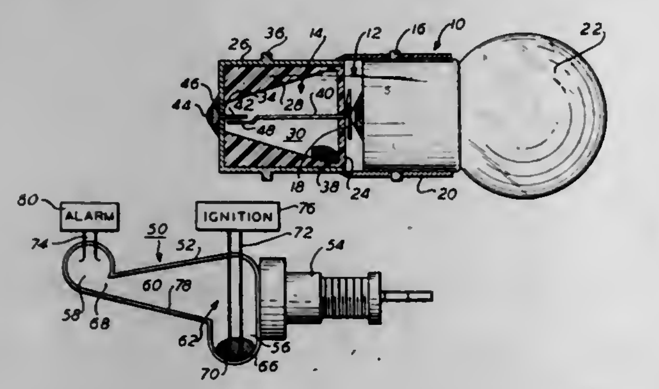
CONDUCTING FLUID TYPE INERTIA SWITCH

Sam Mizrahi, 7 Irion Dr., New City, N.Y. 10956

Filed Feb. 19, 1974, Ser. No. 443,607

Int. Cl. H01h *35/02*

U.S. Cl. 200—61.47 **18 Claims**



1. A combination inertia switch, lamp socket, and lamp base for use in connection with horizontally mounted lamp sockets of the type found in vehicle stop lights of such vehicles as automobiles, bicycles and the like, in combination:

a. a lamp base housing intended to be secured in the vehicle lamp socket, and having a switch compartment and a bulb socket;

b. said switch compartment having a generally frusto-conically shaped cavity with the principal axis thereof parallel the horizontal plane;

c. at least one electrical contact extending within said cavity and secured to the apex end thereof and communicating with the exterior of and insulated from said housing;

d. a second electrical contact in said cavity proximate to said first electrical contact and spaced therefrom and in electrical contact with the centrally disposed bulb contact of said bulb receiving socket; and

e. a quantity of electrically conductive liquid within said cavity such that upon acceleration of the vehicle with a predetermined magnitude and direction, said liquid conductor moves upwardly along said conical cavity and electrically closes said contacts, thereby completing connection between said housing and said bulb socket.

3,895,198

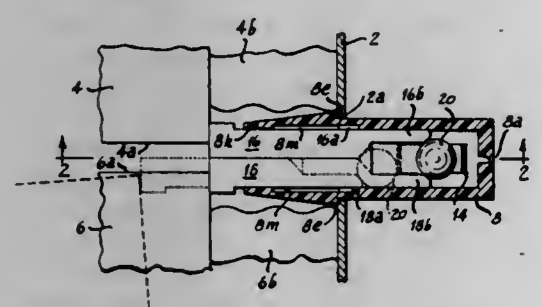
DOUBLE-DOOR REFRIGERATOR SPLIT ACTUATOR SWITCH ASSEMBLY

Earl T. Piber, Oconomowoc, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Apr. 11, 1974, Ser. No. 460,072

Int. Cl. H01h *3/16, 13/00*

U.S. Cl. 200—61.62 **10 Claims**



1. A unitary switch operable by the doors of a double-door cabinet comprising:

a housing arranged for mounting on the cabinet between the doors;

a split actuator having two side-by-side relatively movable plungers extending from said housing for depression by the respective doors of the cabinet when said doors are closed and each said plunger being extendable upon release when the associated door is opened;

switch means in said housing having first and second operating positions and biasing means normally biasing said switch means into said first operating position;

and actuating means at the inner ends of said plungers operable to actuate said switch means to its second operating position when both said plungers are depressed and to allow said biasing means to actuate said switch means to said first operating position when one or both plungers are released.

3,895,199

MULTI-POLE VACUUM SWITCHING APPARATUS

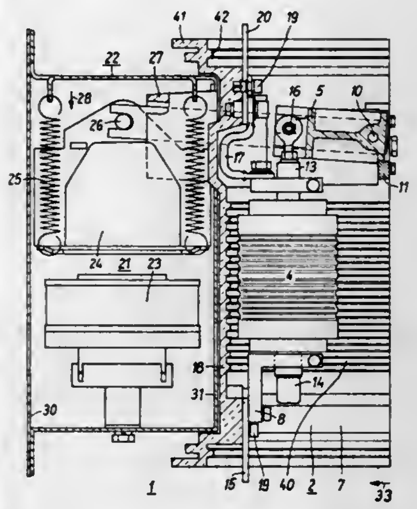
Wolfgang Frewe, and Hans-Jurgen Lendt, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 1, 1973, Ser. No. 337,177

Claims priority, application Germany, Mar. 6, 1972, 2211413

Int. Cl. H01h *33/66*

U.S. Cl. 200—144 B **4 Claims**



1. In a multi-pole vacuum switching apparatus including at least two vacuum switching vessels which are arranged side by side; an actuator device for operating the vacuum switching vessels; and, wherein the improvement comprises providing at least two insulator members corresponding to and enclosing respective ones of said switching vessels, said insulator members being completely independent of each other and disposed one adjacent the other so as to conjointly define an insulating space therebetween, said insulator members being of approximately U-shaped configuration and being fastened at the mid-wall thereof to the actuator device of the switching apparatus, said actuator device including a box-like housing, and an actuator disposed in said housing for actuating the vacuum switching vessels, each of said U-shaped insulator members being mounted to said housing at said mid-wall, each of said U-shaped insulator members having an extension formed thereon at said mid-wall thereof, said actuator having actuator levers made of insulating material for corresponding ones of the switching vessels, each of said levers being brought through said extension of the associated insulator member so as to protrude into the space between the side walls of the associated insulator member, the inner wall surface of each of said insulator members having ribs formed thereon, the upper and lower portions of each insulator member each defining an inwardly facing surface and an outwardly facing surface, each of said surfaces having ribs formed thereon, said ribbed upper and lower portions extending over said box-like housing, and conductor bars for each of the switching vessels for respectively conducting current to and current away from the switching vessel, said conductor bars being mounted respectively on the upper and lower portions of the associated insulator member.

3,895,200

GASTIGHT FEEDTHROUGH

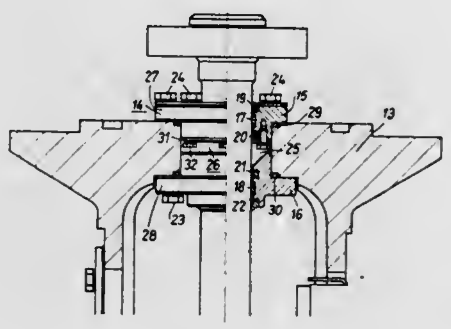
Gerhard Thurk, and Reinhard Lekar, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 13, 1974, Ser. No. 450,881

Claims priority, application Germany, Mar. 27, 1973, 2315732

Int. Cl. H01h *33/02*

U.S. Cl. 200—148 R **5 Claims**



1. In a switchgear assembly operable with compressed gas, the assembly being equipped with a gas vessel having a wall and a device such as for announcing the switch position or the like, the device being actuable by a plunger movable with respect to the wall of the gas vessel, a gastight feedthrough arrangement for accommodating the passage of the plunger through the wall, the gastight feedthrough arrangement comprising: two annular members mounted on the wall in surrounding relation to the plunger; at least two rubber-elastic sealing rings arranged in each one of said annular members for sealably engaging the plunger; and a glide bearing also mounted in each of said annular members for slidably holding the plunger, said annular members being arranged in the wall so as to be axially spaced with respect to each other for defining a space therebetween in surrounding relation to the plunger for receiving a grease cushion therein.

3,895,201

CONTACT ARRANGEMENT FOR A HIGH-VOLTAGE CIRCUIT BREAKER

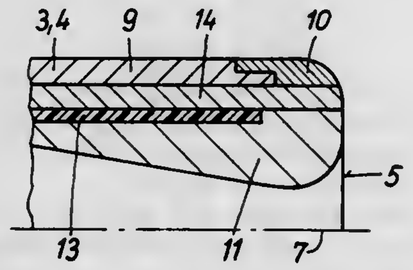
Heinz-H. Schramm, and Ernst Slamecka, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed July 6, 1973, Ser. No. 376,942

Claims priority, application Germany, July 7, 1972, 2234067

Int. Cl. H01h *33/82*

U.S. Cl. 200—148 R **7 Claims**



1. A contact arrangement for a high-voltage switching apparatus of the compressed-gas type such as a power circuit breaker or the like having a switching member movable between open and closed positions, the contact arrangement comprising: two hollow contact pieces across which the switching member is movable to electrically join the contact pieces in the closed position and to electrically separate the contact pieces in the open position, said contact pieces having respective end-faces and being mutually adjacent so as to cause said end-faces to define a gap when the switching member is moved to the open position, at least one of said contact pieces including a contact member having an end-portion at the region of said end-face of said one contact piece, a metallic annular member made of arc-resistant material supportably mounted on said contact member at said end-portion thereof, and a nozzle-shaped graphite electrode electrically joined to said contact member, said contact member and said annular metal member conjointly surrounding and embracing said graphite electrode.

3,895,202

MULTIBREAK METAL-CLAD PUFFER TYPE CIRCUIT INTERRUPTER HAVING STAGGERED ARC-EXTINGUISHING UNITS

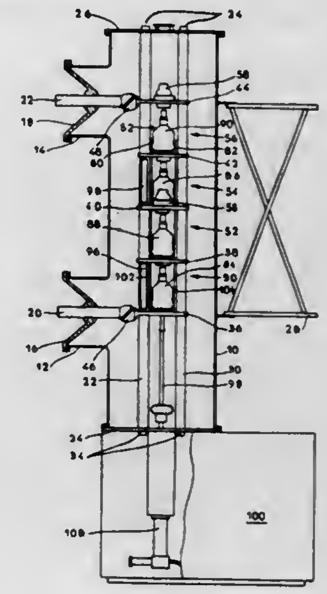
Jean-Claude Okerman, Montbonnot; Georges Henry, St. Martin Le Vinoux, and Claude Mounier, Grenoble, all of France, assignors to Societe Anonyme of Merlin Gerin, Grenoble, France

Filed June 14, 1974, Ser. No. 479,511

Claims priority, application France, June 28, 1973, 73.23817

Int. Cl. H01h *33/88*

U.S. Cl. 200—148 A **3 Claims**



1. A multibreak arc-extinguishing pole unit for a high-voltage metal-clad puffer type circuit interrupter, comprising:

a grounded metal enclosure of substantially cylindrical shape adapted to contain a compressed arc-extinguishing gas of high dielectric strength;

a plurality of electrically series-connected arc-extinguishing units spaced apart in said enclosure in the longitudinal direction thereof, each unit having a pair of elongated separable contact means extending parallelly to said longitudinal direction to draw an arc therebetween, and a puffer mechanism coaxial with said contact means and adapted to draw gas from the inside of said enclosure to direct a blast of compressed gas on said arc, said contact means comprising a relatively stationary contact and a movable contact; said puffer mechanism including relatively movable piston and cylinder means arranged at one end of the corresponding arc-extinguishing unit adjacent said movable contact and vent opening means arranged at the opposite end of the unit adjacent said relatively stationary contact to exhaust said blast of gas into said enclosure,

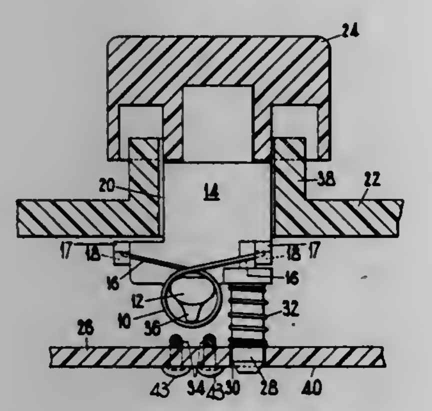
support beam means extending in said longitudinal direction within said enclosure,

a plurality of transverse partition plates extending perpendicularly to said longitudinal direction and secured to said support beam means at regular intervals to define a num-

ber of sections therebetween corresponding to the number of arc-extinguishing units,
control rod means extending in said enclosure parallelly to said longitudinal direction to actuate said movable contact and said piston and cylinder means;
said contact means and said puffer mechanisms of the arc-extinguishing units of odd rank being aligned along a first axis and said contact means and said puffer mechanisms of the arc-extinguishing units of even rank being aligned along a second axis, said axes extending parallelly to said longitudinal direction symmetrically with respect to the axis of said cylindrical enclosure,
said transverse plates supporting said units in such a manner that in all sections but the first said vent opening means of the corresponding arc-extinguishing unit is juxtaposed to said piston and cylinder means of the unit of next-higher rank so that said units overlap each other laterally thereby reducing the overall length of the assembled units of the pole.

3,895,203
MANUALLY OPERABLE ELECTRIC SWITCH WITH MOVABLE COIL SPRING CONTACT

John Harwood Leworthy, Newton Aycliffe, England, assignor to The General Electric Company Limited, London, England
Filed Jan. 22, 1974, Ser. No. 435,599
Claims priority, application United Kingdom, Jan. 24, 1973, 3636/73
Int. Cl. H01h *1/18, 1/20, 13/52*
U.S. Cl. 200—276 **11 Claims**

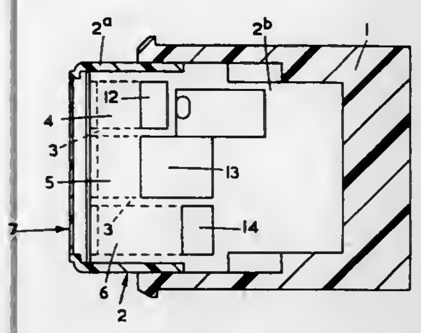


1. An electric switch comprising an electrically insulating member, a pair of fixed contacts mounted on said member, a metal wire spring which has a plurality of turns disposed in generally helical form, means to mount said spring for movement between a position in which individual turns of the spring electrically bridge said fixed contacts and a position in which there is no bridging of the fixed contacts, and spring tensioning means operable upon movement of said spring to the position in which it bridges the fixed contacts to cause relative movement of adjacent turns of the spring and thereby provide a wiping action between the spring and the fixed contacts.

3,895,204
ELECTRICAL SWITCHES

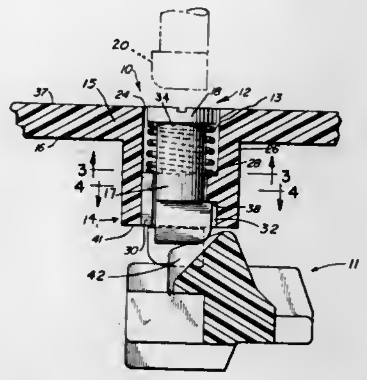
Keith Lewis, Burnley, England, assignor to The Lucas Electrical Company Limited, Birmingham, England
Filed Apr. 30, 1973, Ser. No. 356,057
Claims priority, application United Kingdom, May 6, 1972, 21233/72
Int. Cl. H01h *9/16*
U.S. Cl. 200—314 **3 Claims**

1. A position indicating electrical switch comprising a housing, a single hollow switch operating member mounted in the housing for slidable movement relative thereto to effect selective switching operations, said operating member having an end wall which is viewable externally of the housing and having a plurality of separate translucent portions therein, one or more opaque partitions dividing the hollow interior of the operating member into a plurality of compartments to form the translucent portions in the end wall of the operating member, apertured mask means formed by a side wall of said operating member relative to said housing and defining separate light paths respectively to said translucent portions, said mask means including an aperture associated with each of said compartments, and disposed transversely of the direction of movement of the switch operating member.



3,895,205
PUSH-TO-TRIP BUTTON STRUCTURE FOR A MOLDED CASE CIRCUIT BREAKER

James A. Tharp, Cedar Rapids, Iowa, assignor to Square D Company, Park Ridge, Ill.
Filed May 20, 1974, Ser. No. 471,399
Int. Cl. H01h *3/12, 3/42*
U.S. Cl. 200—340 **5 Claims**



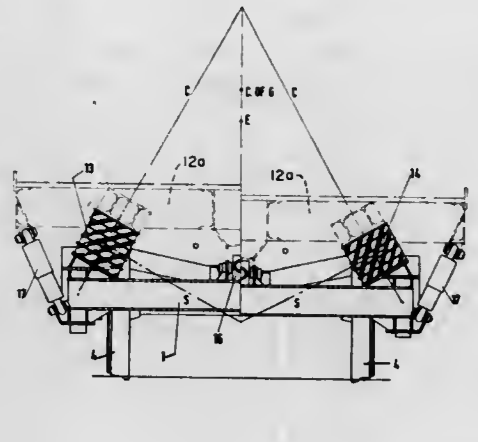
1. A circuit breaker and push-to-trip button combination comprising a molded case for the circuit breaker having a wall provided with an opening, an elongated push-to-trip button insertable into the opening from the outer side of the wall and rotatable and reciprocative in the opening, resilient means urging the button outwardly of the opening, and interlocking means on the button and the wall rendered operative upon rotation of the button for retaining the button in the opening against the bias of the resilient means.

3,895,206
RAILWAY VEHICLE SUSPENSION

Michael John Smedley, Coalville; Reginald Harrison, Oadby, both of England, assignors to Hitachi, Ltd., Kawasaki Steel Corporation, both of Japan
Filed Feb. 12, 1974, Ser. No. 441,893
Claims priority, application United Kingdom, Feb. 20, 1973, 8166/73
Int. Cl. B61f *5/02*
U.S. Cl. 105—199 F **10 Claims**

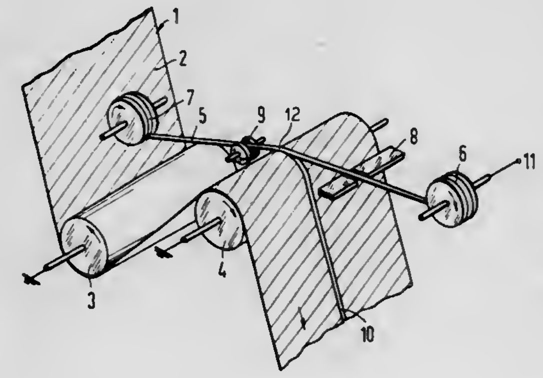
1. A freight vehicle comprising a vehicle body and two bogie suspensions, each bogie suspension including a pair of sole bars, a transom, at least two axle sets each connected to the sole bars by a primary suspension, the primary suspension having in a vertical direction substantially perpendicular to a plane containing axles of the axle sets a stiffness which increases with applied load such that when the vehicle is un-

laden the primary suspension provides a substantial proportion of the total vertical suspension stiffness, and means to support and locate the vehicle body relative to the bogie and to permit torsional movement, with minimal torsional stiffness, of the vehicle body relative to the bogies about an axis extending in the longitudinal direction of the vehicle comprising a secondary suspension of lower stiffness than the primary suspension having a pair of spring units, one spring unit adjacent either end of the transom and each being inclined inwardly with their ends furthest from the transom more closely spaced than their ends at the transom.



3,895,207
METHOD AND DEVICE FOR THE PRODUCTION OF METAL-FREE PATHS ON METALIZED INSULATOR FOILS

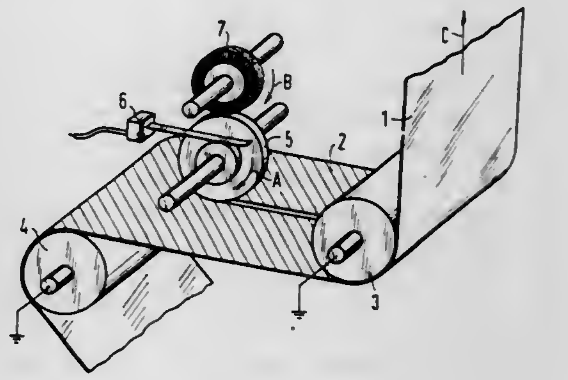
Hermann Heywang, Munich; Manfred Kobale, Faistenhaar, and Gerhard Seebacher, Munich, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany
Filed Apr. 10, 1974, Ser. No. 459,621
Claims priority, application Germany, Apr. 13, 1973, 2318754
Int. Cl. B23p *1/20*
U.S. Cl. 219—68 **13 Claims**



1. Method of producing free paths in metalizations upon insulator foils, comprising the steps of
applying a relatively low voltage of a high frequency between a guide roller and a burning electrode and pressing a metalized foil against the guide roller to form a capacitive coupling between the guide roller and the metalized foil;
pressing the burning electrode against the metalization of the metalized foil; and
moving the burning electrode with respect to the metalized foil, thereby continuously renewing the contact portion of the electrode.

3,895,208
METHOD AND DEVICE FOR THE PRODUCTION OF METAL-FREE PATHS ON METALIZED INSULATOR FOILS

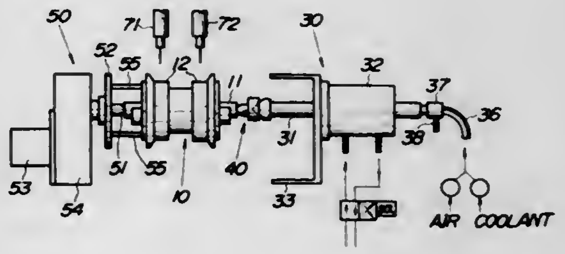
Hubert Kraus, Regensburg, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany
Filed Apr. 15, 1974, Ser. No. 460,893
Claims priority, application Germany, Sept. 28, 1973, 2348904
Int. Cl. B23p *1/20*
U.S. Cl. 219—68 **7 Claims**

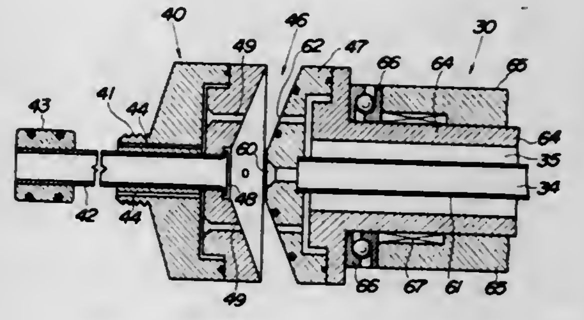


1. Method for producing free paths in metal layers upon insulator foils, comprising the steps of
applying a relatively low voltage of a high frequency to at least one circular-disk electrode to form a capacitive coupling between the electrode and the metal layer, pressing the electrode elastically against the metal layer, between two guide rollers, and
moving the electrode with respect to the metal layer thereby continuously renewing the contact portion of the electrode.

3,895,209
METAL BUILD-UP APPARATUS

Yasumitsu Moriki, and Hidehiro Shimizu, both of Tokyo, Japan, assignors to Maruma Jyusharyo Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 6, 1974, Ser. No. 440,046
Int. Cl. B23k *9/04*
U.S. Cl. 219—76 **8 Claims**





1. An apparatus for depositing metal by welding on a rotary machine element for rebuilding the same, comprising:

means for supporting said rotary machine element being in axial alignment with an axle thereof and for rotating said rotary machine element as metal is deposited upon a worn surface of said rotary machine element;

a coupling coupled to a port of a central lubricant passage of said rotary machine element having an inlet tube axially extending into said central lubricant passage for providing coolant to a plurality of lubricant passages interconnected to said central lubricant passage, said coupling including a discharge passage for exhausting said coolant from said lubricant passages and provided with a conical shaped end surface;

plunger means reciprocal within a cylinder and being rotatable with said rotary machine element during a re-building operation having a head mating tightly with said end surface of said coupling for supporting said rotary machine element with said axle thereof being axially aligned with said plunger, said plunger having axially extending passages being connectable to said inlet tube of said coupling and said discharge passage of said coupling for supplying said coolant from an intake line through said inlet tube to said lubricant passages of said rotary machine element and exhausting said coolant through said discharge passage to an exhaust line; and

a welding apparatus for depositing metal on said worn surface of said rotary machine element.

3,895,210

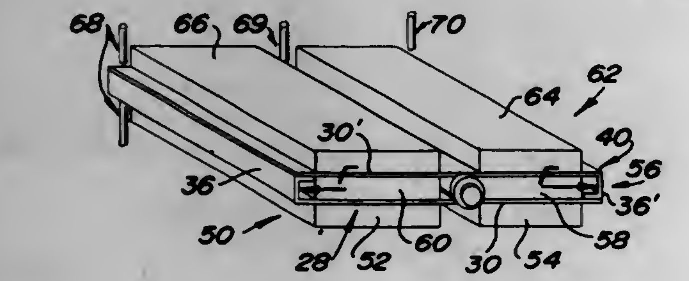
APPARATUS FOR FORMING A DIMENSIONALLY STABLE ANODE

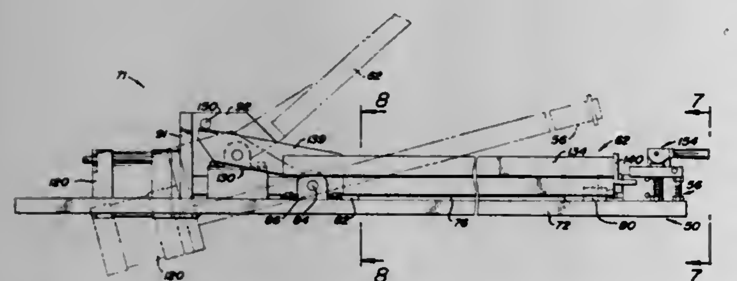
Richard O. Olson, Parma, and Gerald R. Pohto, Mentor, both of Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

Filed June 11, 1973, Ser. No. 368,843

Int. Cl. B23k *11/00*

U.S. Cl. 219—80 **6 Claims**





1. A clamping platen assembly for use in assembling dimensionally stable anode assemblies of the type comprising a generally cylindrical anode riser member and a pair of planar sheet members joined in parallel on opposite sides of said riser member, said apparatus comprising:

first, second and third platen units, each platen unit comprising two platen members spaced by a longitudinally-extending gap which extends completely through the respective unit;

means for mounting said three units in juxtaposed, stacked relationship with their longitudinal gaps in alignment, said mounting means including means for permitting the platen units to be moved between a first clamping position and a second spaced apart position;

the gap in said second platen unit being sized to closely receive an anode riser member to extend longitudinally thereof and the thickness of said second platen unit being substantially equal to the diameter of the riser; and,

clamp bar members carried by said second platen unit and actuating means within said platen for moving said clamp bar members radially outwardly.

3,895,211

ELECTROSTATIC WELDING APPARATUS

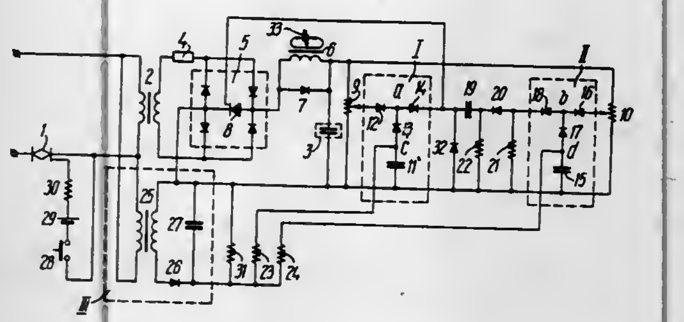
Igor Vladimirovich Pentegov, Zadorozhny pereulok, 6, kv. 14; Evgeny Petrovich Stemkovsky, ulitsa Brigadirskaya, 27, kv. 1; Sergei Nikolaevich Mescheryak, ulitsa Yanvarskogo Vosstania, 17a, kv. 6; Dmitry Alexeevich Sheikovsky, ulitsa Apri Barbjusa 5a, kv. 22, and David Solomonovich Vorona, ulitsa Scherbakova, 51, kv. 21, all of Kiev, U.S.S.R.

Continuation of Ser. No. 312,968, Dec. 7, 1972, abandoned, which is a continuation of Ser. No. 104,232, Jan. 6, 1971, abandoned. This application Dec. 20, 1973, Ser. No. 426,463

Claims priority, application U.S.S.R., Mar. 21, 1967, 1205113; Mar. 14, 1968, 1225332; May 27, 1970, 1434122

Int. Cl. B23k *11/26*

U.S. Cl. 219—113 **3 Claims**



1. An electrostatic welding apparatus comprising a transformer, a triac, a current limiter and a rectifier; the primary winding of said transformer connected through the triac to an A.C. mains, and the secondary winding of said transformer connected through said current limiter to said rectifier; a controllable discharge switch having a control electrode, a welding transformer, a battery of capacitors and a diode; the anode of said discharge switch connected to the positive terminal of said rectifier and to the anode of said diode and to one of the outputs of the primary winding of the welding transformer, the secondary winding of said welding transformer connected to the workpieces being welded, the cathode of said controllable discharge switch connected to the negative terminal of said rectifier and to one of the outputs of said battery of capacitors, the other output thereof connected to the cathode of said diode and to the other end of the primary winding of the welding transformer; a control unit and a supply source, the control electrode of said controllable discharge switch connected to the output of the control unit which includes at least two trigger circuits comprising dinistor means for stepwise increasing the voltage in the battery of capactiors.

3,895,212

FUSION WELDING

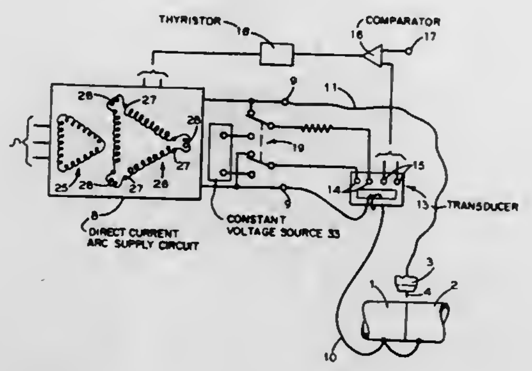
Ian Stuart Maxwell, Johnstone, and Ernest Thomas Marr, Beith, both of Scotland, assignors to The Babcock & Wilcox Company, New York, N.Y.

Continuation of Ser. No. 251,960, May 10, 1972. This application Feb. 19, 1974, Ser. No. 443,665

Int. Cl.² B23K *9/10*

U.S. Cl. 219—135 **1 Claim**

1. A fusion arc welding apparatus adaptable for use with rotating and stationary work pieces and comprising a welding head including non-consumable electrode means disposed for weldably uniting adjoining regions of the workpieces, said welding head being rotatable along an orbital path about the workpieces, the improvement comprising a constant voltage source and a direct current arc supply circuit, a transducer, transfer means connected with the transducer, said transfer means being operable for selecting between having the transducer connected to receive an input current from the constant voltage source thereby influencing the arc supply circuit to operate in constant-current mode and having the transducer connected to receive an input current from the arc supply circuit thereby influencing the circuit to operate in constant-power mode, said transducer having a semi-conductor with the input current passing therethrough; separate electric cable means connecting the arc supply circuit to said workpieces and electrode means, said workpieces' related cable means having an intermediate portion thereof wound about the semiconductor to produce a magnetic field there-across, said magnetic field interacting with the current passing through the semi-conductor to generate an output voltage proportional to the product of the magnitude of the magnetic field and the level of semi-conductor current, a comparator connected to the transducer to receive said generated voltage and to means providing a predetermined voltage input, said comparator producing an output voltage representative of the resultant difference between said generated and predetermined voltages, a thyristor connected to the comparator to receive the output voltage therefrom, said thyristor producing a current output representative of the comparator voltage output, and said arc supply circuit being connected to the thyristor and responsive to said current output to regulate the level of current flowing to said electrode means and work pieces.



3,895,213

ELECTRICAL DEFROSTING CIRCUIT FOR VEHICLE GLASS

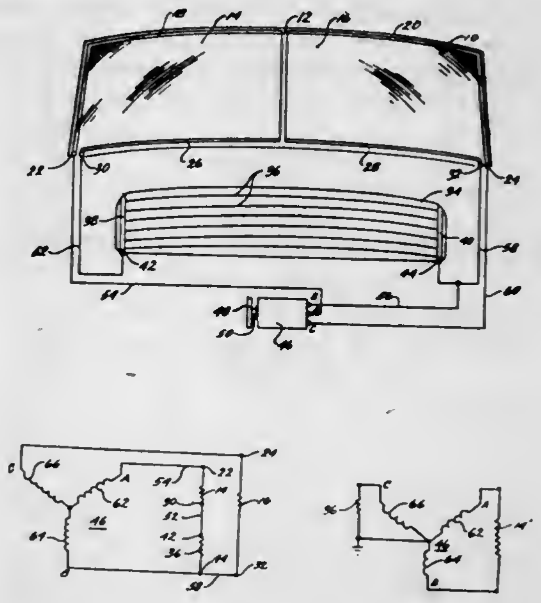
Berton P. Levin, Santa Monica, Calif., assignor to The Sierracin Corporation, Sylmar, Calif.

Continuation-in-part of Ser. No. 325,514, Jan. 22, 1973, abandoned. This application May 10, 1974, Ser. No. 468,671

Int. Cl. H05b *1/02, 3/26;* **E06b** *7/12*

U.S. Cl. 219—203 **15 Claims**

1. An automobile defrosting system for the windshield and backlite, comprising a windshield including a transparent electrically conductive layer embedded in the windshield, the layer being interrupted along a vertical line dividing the layer into two electrically isolated sections, and bus means electrically separately connecting each section respectively across first and second pairs of terminals; a backlite including a plurality of parallel resistance heater elements extending across the backlite, and bus means connecting the heater elements in parallel across a third pair of terminals, a three-phase alternator, first conductive means connecting the set of terminals of one of said sections of the windshield conductive layer in series circuit with terminals of said backlite heating elements across one phase of the three-phase alternator, and second conducting means connecting the set of terminals of the other of said sections of the windshield conductive layer across another phase of the three-phase alternator.



3,895,214

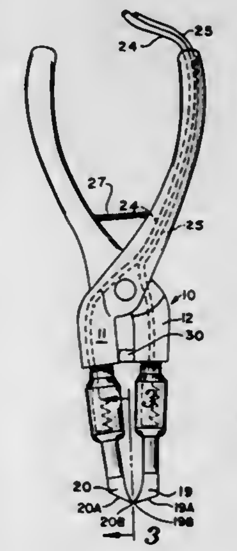
COMPONENT REMOVAL TOOL

Robin L. Winter, Conn Rapids, Minn.

Continuation of Ser. No. 226,493, Feb. 15, 1972. This application July 5, 1973, Ser. No. 376,329

Int. Cl. H05b *1/00;* **B23k** *3/00;* **B25b** *7/00*

U.S. Cl. 219—230 **3 Claims**



1. Means for removing solder-mounted components from substrate surfaces comprising:

a. plier means having a pair of relatively movable arm members pivotally mounted together and forming a pair of oppositely disposed gripping handles and a pair of oppositely disposed working legs;

b. each of said working legs having a head secured thereto adjacent the free tip thereof and heating means for each of said heads;

c. said heads being characterized in that each includes a forward exposed surface terminating in a generally sharpened linear tip edge mutually opposed to the generally sharpened tip edge of the other head said sharpened tip edges being disposed along a line generally transverse to and generally intermediate the longitudinal axes of said legs, and in that the forward exposed surface of each of said heads is generally planar and arranged at an acute angle with respect to the longitudinal axis of the leg, the forward and inward exposed surfaces of each of said heads being disposed in mutually converging relationship and at an acute angle relative to the longitudinal axis of the working leg with which the leg is secured, and with said mutually converging relationship being in a forward direction away from said working legs and toward said sharpened tip edge to define a wedge-shaped configuration.

3,895,215

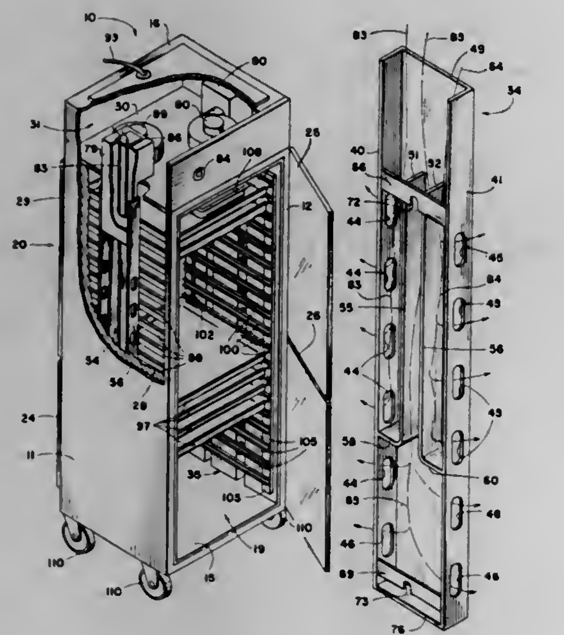
CABINET FOR HOLDING FOOD AT A CONTROLLABLE TEMPERATURE

Jerry Dale Gordon, 10765 E. 11th St., Tulsa, Okla. 74128

Filed Nov. 23, 1973, Ser. No. 418,454

Int. Cl. F27d *11/02*

U.S. Cl. 219—400 **4 Claims**



1. A cabinet for holding food at a controllable temperature, comprising:

a box open on one side for receiving the food to be held including three sides, a bottom, and a top,

a door hinged to one of said sides in closeable relation to the open side,

said sides, bottom, top and door forming thermally insulated walls for said cabinet,

means carried by said box for blowing and controllably heating air,

said means carried by said box for blowing and controllably heating air including electrical heating means for heating the air, a motor means for the blowing means and an electrical circuit for powering said electrical heating means and said motor means,

at least one air distributing plenum carried within said box along one side in air receiving relation to said heating and blowing means, and having a plurality of holes spaced apart vertically along its length through a wall thereof through which air from said blowing and heating means is free to exit, and

air division means along a portion of the length of said at least one plenum to direct portions of the air from said heating and blowing means to at least first and second vertically spaced groups of said plurality of holes.

3,895,216

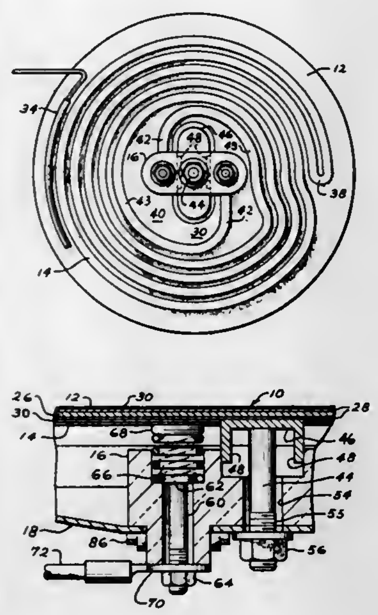
LOW THERMAL MASS SOLID PLATE SURFACE HEATING UNIT

Bohdan Hurko, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Sept. 30, 1974, Ser. No. 510,211

Int. Cl. H05b *3/68*

U.S. Cl. 219—462 **10 Claims**



1. A low thermal mass solid plate surface heating unit comprising a thin plate of composite sheet material with a core of high thermal conductivity selected from a group comprising copper, silver and aluminum, and top and bottom layers selected from a group comprising stainless steel, nickel and chromium, and low carbon steel, said top and bottom layers serving to reinforce the core and restrict its oxidation and corrosion, an insulating layer of high electrical resistivity substantially covering the bottom layer of the composite plate, and a film heater of double spiral form bonded to the insulating layer and serving as an electrical resistance heating element, and electrical terminal means cooperating with the composite plate and electrically connected to the film heater and adapted to connect the surface heating unit in a power circuit to provide a low energy unit of highest thermal efficiency, said electrical terminal means being located adjacent the center of the double spiral film heater pattern to create a generally uniform circular heating pattern beneath the composite plate.

3,895,217

THERMOSTATICALLY CONTROLLED SAFETY HEATER FOR AQUARIUMS

Frank Kenneth Hall, and Ronald D. Moore, both of Saginaw, Mich., assignors to O'Dell Manufacturing, Inc., Saginaw, Mich.

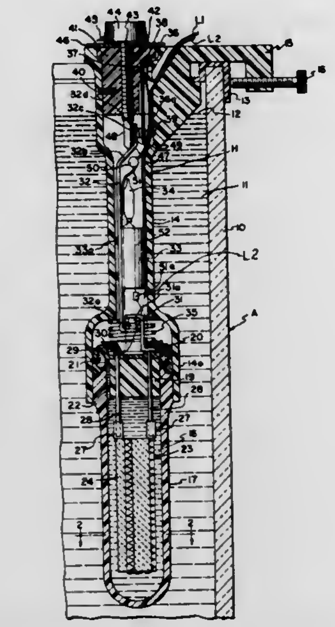
Filed Jan. 14, 1974, Ser. No. 433,291

Int. Cl. H05b *3/80, 1/02*

U.S. Cl. 219—523 **10 Claims**

1. In a safety heating device for immersion in liquid filled aquariums: a housing including an axially extending heat transmitting synthetic plastic tube with imperforate side walls and an imperforate end wall forming a chamber sealed except at its upper end and having linearly heat expansible, heat conducting liquid therein; an electrical circuit; an electrically operated heater connected in said circuit and extending axially in said tube immersed in said liquid; an actuator assembly for said tube and closing the top thereof in operative contact with said liquid to be reactive to thermal expansion of the liquid while the liquid is in a liquid state, said assembly having a part movable axially and linearly, responsive to temperature change in the liquid, to various positions dependent on the temperature of said liquid to tend to maintain a constant liquid

temperature; a switch connected in said circuit with said heater, supported by said housing and comprising first and second electrical contacts insulated electrically from said heater; said linearly movable part being movable to activate and deactivate the switch with expansion and contraction of said liquid to control the temperature of said liquid via enablement and disablement of said heater.



3,895,218

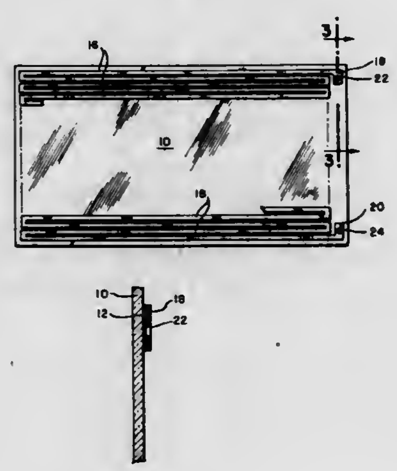
ELECTRIC HEATER PLATE AND TERMINAL THEREOF

William C. Cooke, Kingsport, Tenn., assignor to ASG Industries, Inc., Kingsport, Tenn.

Filed May 2, 1974, Ser. No. 466,466

Int. Cl. H05b *3/16*

U.S. Cl. 219—543 **9 Claims**



1. An electric heater plate comprising a sheet of tempered glass, at least a pair of terminal areas on one face of said glass sheet and a terminal member formed of a layer of silver bonded to said glass sheet within each terminal area, an electrically conductive heating circuit of aluminum extending in a pattern over said one face and including a terminal disposed over each terminal area to cover completely said terminal member, said heating circuit bonded both to said one face of said glass sheet and to each terminal member and in electrical contact with the latter, and an opening in each terminal of said heating circuit at said terminal areas through to each terminal member for exposing a portion of each underlying terminal member whereby said electric heater plate is adapted for electrical connection in an external circuit.

3,895,219

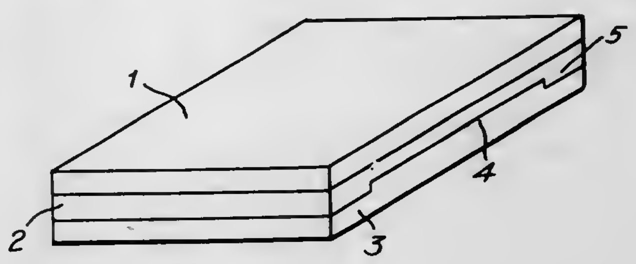
A COMPOSITE CERAMIC HEATING ELEMENT

David W. Richerson, Tempe, Ariz., and Gerald Q. Weaver, Worcester, Mass., assignors to Norton Company, Worcester, Mass.

Filed Nov. 23, 1973, Ser. No. 418,375

Int. Cl. B32b *5/16, 3/02;* **C04b** *35/70, 35/64*

U.S. Cl. 219—553 **9 Claims**



1. A ceramic heating element which is comprised of a sintered mixture of from 10 to 60% by weight of silicon carbide and 40 to 0% by weight of a material selected from the group consisting of silicon nitride, silicon oxynitride, silicon aluminum oxynitride, and mixtures thereof, said sintered mixture having a density at least 90% of its theoretical density, a resistivity of from 0.1 to 10^7 ohm centimeters, and having a resistance differential between the terminal connecting ends of said heating element and the intermediate zone thereof, the resistance at said terminal connecting ends being substantially lower than that of said intermediate zone.

3,895,220

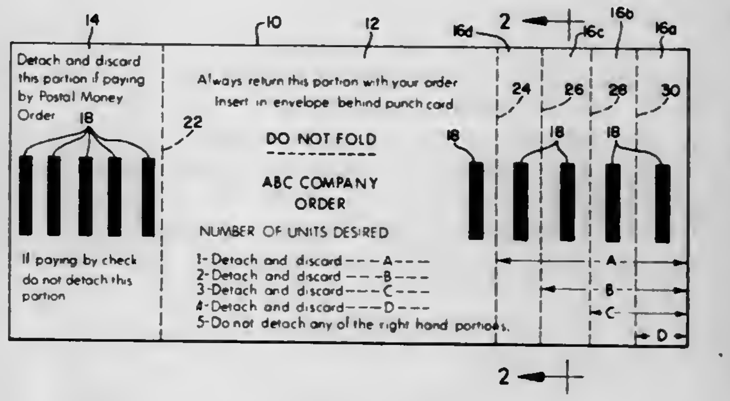
SELECTIVELY ENCODABLE ENVELOPE INSERT AND RELATED APPARATUS

Larry L. Nelson, Homestead; John R. Dehart, Coral Gables, and William H. Krehl, Homestead, all of Fla., assignors to Docutronix, Inc., Homestead, Fla.

Filed Sept. 7, 1973, Ser. No. 395,007

Int. Cl. B07C *5/34;* **G06k** *1/12, 7/08, 19/00, 19/06*

U.S. Cl. 235—61.12 N **9 Claims**


14
10
12
16d
2
16c
16b
16a
Detach and discard this portion if paying by Postal Money Order
18
Always return this portion with your order
Insert in envelope behind punch card
22
DO NOT FOLD
ABC COMPANY ORDER
NUMBER OF UNITS DESIRED
1-Detach and discard---A---
2-Detach and discard---B---
3-Detach and discard---C---
4-Detach and discard---D---
5-Do not detach any of the right hand portions.
If paying by check do not detach this portion
24
26
28
30
A
B
C
D

1. A flat, rectangular encodable envelope insert of sheet material, said insert including:

a. a central portion having non-magnetized printed instructions of use thereon,

b. end portions connected to opposite ends of said central portion,

c. lines of weakening connecting said end portions to said central portion, and

d. code means in the form of a plurality of printed bars of magnetizable ink spaced from one another along a line extending longitudinally of said insert and the sum of which bars is the code of said insert, at least some of said bars being located on said end portions so that said bars convey selected information when both of said end portions are connected to said central portion and so that the information conveyed by said bars changes as either of said end portions is severed from said central portion.

3,895,221
MEASURING APPARATUS FOR TWO-VARIABLE FUNCTION SIGNAL SYSTEM

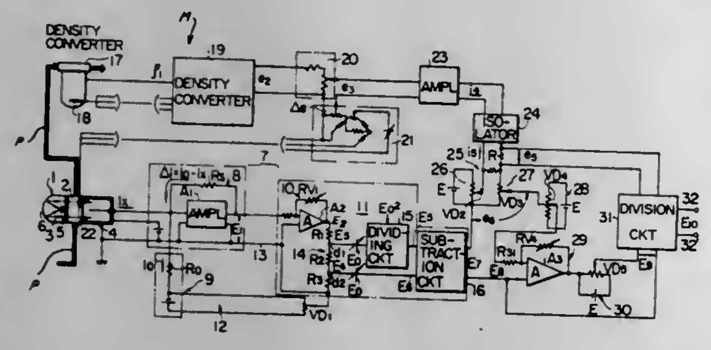
Shuichi Ohata; Yoji Takeuchi; Takeshi Ishiguro, and Shiro Yauchi, all of Musahino, Japan, assignors to Yokogawa Electric Works, Ltd., Tokyo, Japan

Filed Sept. 19, 1973, Ser. No. 398,639

Claims priority, application Japan, Sept. 22, 1972, 47-95557

Int. Cl. G06g *7/24*

U.S. Cl. 235—151.3 **6 Claims**



1. A measuring apparatus for a two-variable function signal system comprising: a linearizing circuit for linearizing the difference between a reference input signal and an input exponential function signal having two independent variables as its exponents; a signal compensation circuit for producing a compensation signal corresponding to the product of the reference value of the desired one of the independent variables and the difference between the reference value of the other independent variable and the other independent variable; said signal compensation circuit having an adjusting circuit for adjusting the span of the compensation signal; a subtraction circuit for subtracting the compensation signal from the output of the linearizing circuit; and a division circuit with its dividend input being a signal corresponding to the output of the subtraction circuit, and its divisor input being a signal corresponding to the difference between the reference value of the other independent variable and the other independent variable.

3,895,222
DIGITAL COMPUTER TO DETERMINE THE IGNITION ANGLE IN A PISTON ENGINE

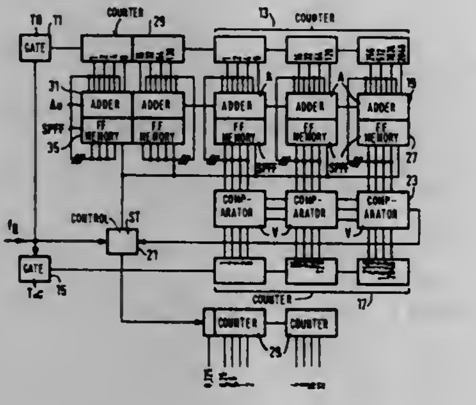
Albert Maringer, and Wolfgang Drotziger, both of Karlsruhe, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed May 9, 1974, Ser. No. 468,573

Claims priority, application Germany, May 10, 1973, 2323661

Int. Cl. G06f *15/20*

U.S. Cl. 235—151.3 **12 Claims**



1. Digital computing apparatus to determine the ignition angle in a piston engine using a division circuit for finding the ratio of two pulse counts which division circuit comprises a divisor counter for storing a first pulse count, an adder and sum memory connected in parallel therewith with the outputs of the sum memory coupled as second inputs to the adder, a dividend counter for storing a second pulse count a comparator having as inputs the outputs of the sum memory and the dividend counter, a clock, a result counter, and a control circuit enabled by a start command to couple said clock to said adder and sum memory to cause successive additions to be carried out, said control circuit being disabled by an output from said comparator, said control circuit also coupling said clock to said result counter when enabled to cause said result counter to count the number of successive additions carried out, wherein the improvement comprises:

a. a step down counter in series with said divisor counter having its most significant bit output couled to the least significant bit input of said divisor counter to carry out a division by an additional factor of the ratio;

b. a further adder and sum memory connected in parallel with said step down counter, with the carry pulses from the last stage of said further adder provided as carry inputs to the least significant bit of the adder associated with said divisor counter.

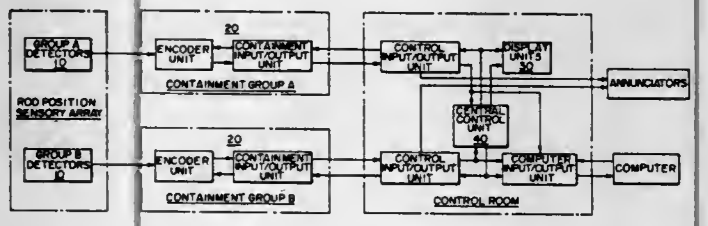
3,895,223
CIRCUIT ARRANGEMENT FOR ENHANCING THE RELIABILITY OF COMMON BUS OUTPUTS OF PLURAL REDUNDANT SYSTEMS

James A. Neuner, Gibsonia, Pa., and Maurizio Traversi, Turin, Italy, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 3, 1973, Ser. No. 320,775

Int. Cl. G06f *11/00, 15/16*

U.S. Cl. 235—153 AE **8 Claims**



1. A circuit arrangement for enhancing the reliability of common bus outputs in redundant systems generating a plurality of at least three substantially similar outputs to a common bus signal train comprising:

means for comparing the plurality of output signals and responsive to a difference in the outputs to disconnect the respective output signals exhibiting the difference from the common bus and pass the remaining outputs to the common bus, and

means responsive to a difference in more than one of the outputs to control the comparing means to disconnect the outputs exhibiting the difference from the common bus in a predetermined order of priority.

3,895,224
MULTI-VARIATE NON-LINEAR TRANSFER FUNCTION GENERATOR

Brendan J. Spratt, Boca Raton, and James C. Lumsden, Plantation, both of Fla., assignors to The Bendix Corporation, Southfield, Mich.

Filed Mar. 25, 1974, Ser. No. 454,359

Int. Cl.^{2} G06G *7/28*

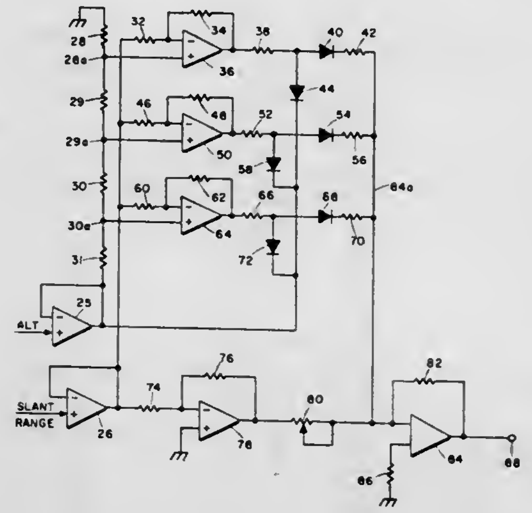
U.S. Cl. 235—197 **13 Claims**

1. Means for generating a family of generic curves which are functions of two independent variables represented by first and second signals, respectively, and wherein each of the curves is approximated by N straight line segments which connect at break points, comprising:

N differential operational elements, one associated with each of said line segments and having an amplification related to the slope of its associated line segment, each of said elements having two inputs;

means for applying said first signal to one of said inputs of each of said elements;

means responsive to said second signal for generating N signals, each related to said second signal and each corresponding to a break point and for applying a separate one of said N signals to each of the other inputs;



means for preventing the output signal of each of said elements from exceeding a value related to said second signal; and,

means for summing the output signals of said elements, the resultant sum comprising a signal related to said functions.

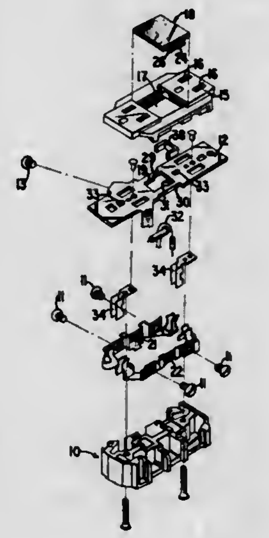
3,895,225
ILLUMINATED RECEPTACLE WITH REMOVABLE LENS

James C. Prior, Gardena, Calif., assignor to Sola Basic Industries, Inc., Milwaukee, Wis.

Filed Mar. 29, 1974, Ser. No. 456,160

Int. Cl. F21v *33/00*

U.S. Cl. 240—2 SP **5 Claims**



1. In an illuminated electrical receptacle device, the combination including a nonconductive body means having electrical receptor means, a nonconductive cover means having apertures corresponding to said receptor means and through which connector blade means can be removably inserted, said cover means having an open area for receiving lens means, grounding strap means insertable between said body means and cover means, said grounding strap means having apertures corresponding to the apertures in said cover means and said open area, illuminating means locatable under said cover means, and lens means insertable in said open area of said cover means, said lens means having gripping means for engaging said cover means and grounding strap means for removably holding said cover means, grounding strap and lens means in assembled relation.

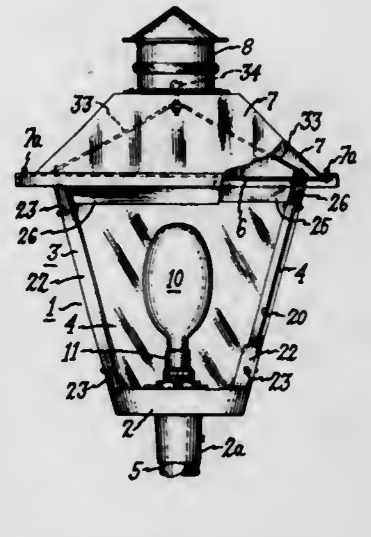
3,895,226
LUMINAIRE

Omer E. Murray, and Robert G. Kilpatrick, both of Hendersonville, N.C., assignors to General Electric Company, Pittsfield, Mass.

Filed Oct. 2, 1972, Ser. No. 294,243

Int. Cl. F21s *13/10*

U.S. Cl. 240—11.2 R **1 Claim**



1. A luminaire comprising, in combination, a base member having mounting means for attaching the luminaire to a support, lampholder means on said base member adapted to hold a lamp, housing means on said base member defining an enclosure for said lampholder means and lamp, said housing means comprising frame means defining window openings on a plurality of sides and light transmitting panels closing said openings, said frame means comprising pairs of juxtaposed inner corner members and outer corner members, said inner corner members being secured to said base member, said light transmitting panels being arranged in said openings with their edges slidably held between said juxtaposed inner and outer corner members, and means removably securing said outer corner members to said respective inner corner members in spaced relation thereto for holding said light transmitting panels in assembly therebetween, said frame means being open at its top, and cover means secured to said frame means covering the open top thereof, each said panel being laterally slidable out of said frame means upon removal of an adjacent outer corner member without removal of said cover means, said cover means comprising a canopy having an opening at its top, and lifting means in said canopy secured to said inner corner members and accessible through said canopy opening for lifting the luminaire.

3,895,227
FLOODLIGHT

Omer E. Murray, Hendersonville, and Jerry R. Plemmons, Asheville, both of N.C., assignors to General Electric Company, Pittsfield, Mass.

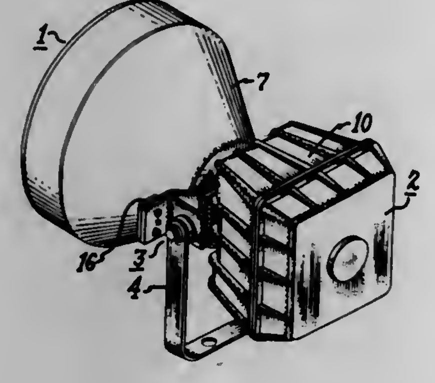
Filed Nov. 9, 1973, Ser. No. 414,191

Int. Cl.^{2} F21S *5/00*

U.S. Cl. 240—73 R **11 Claims**

1. A floodlight comprising, in combination, an optical assembly comprising optical housing means having an open front end and a rear end defining a longitudinal axis, means for mounting a light source within said optical housing means for emitting light rays through said open front end, an electrical ballast housing arranged at the rear end of said optical housing

means, and connecting means for detachably electrically and mechanically interconnecting said optical assembly and said ballast housing, said connecting means comprising an elongated front bracket at the rear end of said optical housing means extending transversely across said axis and secured intermediate its ends to said optical assembly, an elongated rear bracket secured intermediate its ends to said ballast housing and extending across said axis along the length of said front bracket, said brackets each having laterally spaced opposite end portions in mating relation with one another, fastening means removably securing said brackets together at said mating end portions thereof, and co-acting separable electrical plug means and electrical receptacle means mounted respectively on said brackets for automatically making electrical connection therebetween when said brackets are moved together in mating relation, and for automatically breaking electrical connection therebetween when said brackets are separated from one another.

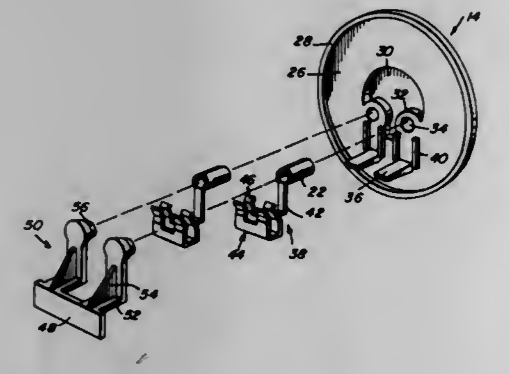


3,895,228

SEALED, SIDEMARKER LAMP ASSEMBLY

Philip C. Roller, Ashville, N.Y., and Gordon F. Anderson, Cheshire, Mass., assignors to Truck-Lite Company, Inc., Jamestown, N.Y.

Filed May 9, 1974, Ser. No. 468,580
Int. Cl. B60q *1/32*
U.S. Cl. 240—8.2 15 Claims



1. In a lamp assembly, a mounting reflector, a contact terminal extending through the reflector and having internal and external ends, a bulb holder supported on the reflector, an electrically conductive connector interconnecting the bulb holder and the contact terminal, and electrically non-conductive means secured to the reflector in enclosing relation to the internal end of the contact terminal and projecting thereinto for sealing and positioning the terminal with respect to the reflector.

3,895,229

HOLLOW SHELL-LIKE BODIES AND ELEMENT FOR USE IN CONSTRUCTION OF SAME

Holger Strom, Tower Rd., Jenkinstown, County Kilkenny, Ireland

Filed Nov. 13, 1973, Ser. No. 415,412
Claims priority, application Ireland, Nov. 14, 1972, 1564/72
Int. Cl. A44c *21/00*
U.S. Cl. 240—108 B 8 Claims

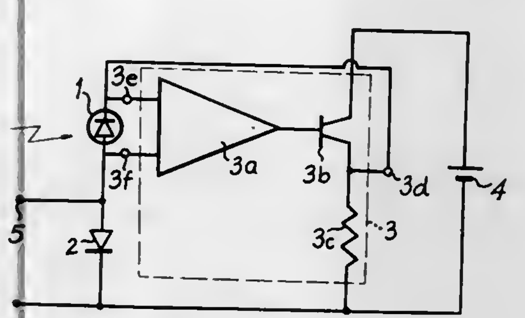
1. An element for use in the construction of hollow shell-like bodies comprising a sheet of flexible material having at least three corners and having two laterally extended portions which are shaped as hooks each defining an open mouth each of which hooks is located at a corner of the sheet with the mouths of the hooks facing towards each other, and a third hook is provided at a third corner of the sheet, and said hooks being the sole means for joining said elements with similar elements.

3,895,230

PHOTOMETRIC CIRCUIT WITH PHOTO-VOLTAIC ELEMENT

Takuo Itagaki, Wako, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 4, 1973, Ser. No. 347,796
Claims priority, application Japan, Apr. 10, 1972, 47-42332
Int. Cl. H01j *39/12*
U.S. Cl. 250—214 P 20 Claims



1. A photometric circuit comprising:
- an operational amplifier having inversion and non-inversion signal input terminals and an output terminal;
- means providing a photo-voltaic effect coupled between the inversion input and non-inversion input terminals;
- a feedback circuit coupled between the output terminal and the inversion input terminal causing the voltage of the signal across the photo-voltaic means to be maintained at substantially 0; and
- means serially coupled between an end of the photo-voltaic means which is coupled to the non-inversion input terminal and a reference potential and characterized in that a signal is formed thereacross corresponding to the logarithm of current received from the photo-voltaic means.

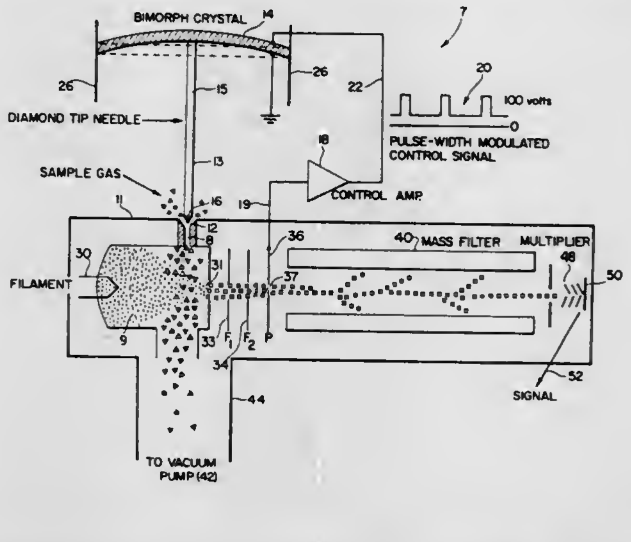
3,895,231

METHOD AND INLET CONTROL SYSTEM FOR CONTROLLING A GAS FLOW SAMPLE TO AN EVACUATED CHAMBER

Ingvar E. Sodal; Lars Hoivik, both of Boulder; Alexander J. Micco; John V. Weil, both of Denver, and Norman W. Baer, Boulder, all of Colo., assignors to University of Colorado, Boulder, Colo.

Filed Apr. 30, 1973, Ser. No. 355,792
Int. Cl. H01j *39/34*
U.S. Cl. 250—288 12 Claims

1. A servo-controlled inlet system for a mass spectrometer, said system comprising: an inlet passage opening into the interior of said mass spectrometer and through which gas may be introduced into said mass spectrometer; valve means at said inlet passage for controlling the effective opening through which gas may be introduced into said passage; valve positioning means including a piezoelectric crystal connected with said valve means whereby said valve means is positionally controlled by the flexing of said crystal; sensing means for sensing the pressure within said spectrometer and developing an electrical signal indicative thereof; and signal processing means for receiving said signal from said sensing means and responsive thereto controlling said valve positioning means whereby said valve means is automatically adjusted in position dependent upon sensed pressure.

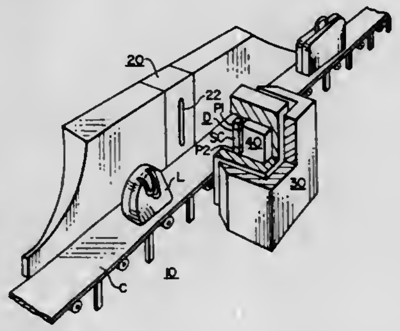


3,895,232

X-RAY CONTRAST DETECTION SYSTEM

Robert J. Schneeberger, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 13, 1973, Ser. No. 424,531
Int. Cl. G01t *1/20*
U.S. Cl. 250—366 3 Claims



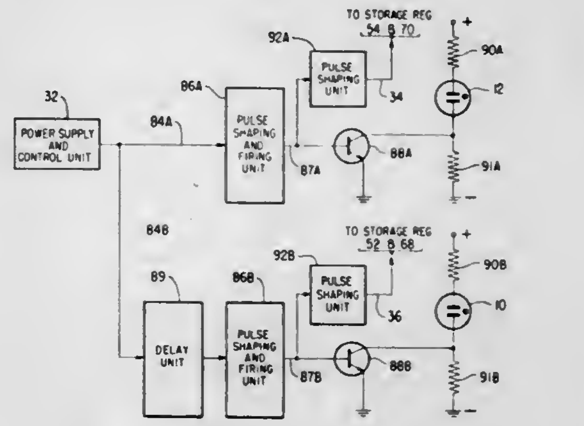
1. A baggage and parcel inspection apparatus comprising, an elongated scintillation crystal adapted to respond to radiation energy emanating from baggage or parcels exposed to a source of radiation, the length of said scintillation crystal being sufficient to view the vertical dimension of said baggage or parcels,
- a first photoresponsive device having a viewing surface optically coupled to an end surface of said elongated scintillation crystal and a second photoresponsive device having a viewing surface optically coupled to the opposite end surface of said elongated scintillation crystal, said viewing surfaces being substantially perpendicular to the longitudinal axes of said elongated scintillation crystal, said first and second photoresponsive devices producing output signals in response to radiation impinging on said elongated scintillation crystal,
- a radiation source spaced apart from said elongated scintillation crystal to expose baggage and parcels positioned therebetween to radiation energy, and
- circuit means connected to said first and second photoresponsive devices to monitor the signals developed by said photoresponsive devices in response to radiation transmitted by said baggage and parcels and impinging on said elongated scintillation crystal.

3,895,233

GAS ANALYZER

Richard H. Boll, Alliance, and John E. Tozier, Solon, both of Ohio, assignors to Bailey Meter Company, Wickliffe, Ohio

Continuation-in-part of Ser. No. 301,209, Oct. 26, 1972, abandoned. This application Feb. 25, 1974, Ser. No. 445,588
Int. Cl. G01n *21/26, 23/12*
U.S. Cl. 250—373 8 Claims



1. A gas analyzer for determining the concentration of a constituent gas in a mixture of gases containing interfering material comprising, a first and a second radiation source which emit radiation of different wave lengths having different absorption coefficients for the constituent gas and virtually identical absorption coefficients for said interfering material, means generating electric control pulses having a predetermined time period, a first means responsive to said control pulses generating a first pulse burst having a time duration substantially less than said time period, means responsive to the pulses in said first burst energizing one of said radiation sources to produce radiation pulses, a second means responsive to said control pulses for sequentially generating a second pulse burst having a time duration substantially the same as said first burst, means responsive to the pulses in said second burst energizing the other of said radiation sources to produce radiation pulses, means passing said radiation pulses through said mixture of gases to a first phototransducer producing signals proportional to the radiation received from said first and second sources, and a computing circuit responsive to said signals generating an output signal corresponding to the concentration of the constituent gas.

3,895,234

METHOD AND APPARATUS FOR ELECTRON BEAM ALIGNMENT WITH A MEMBER

Terence W. O'Keeffe, and Paul R. Malmberg, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

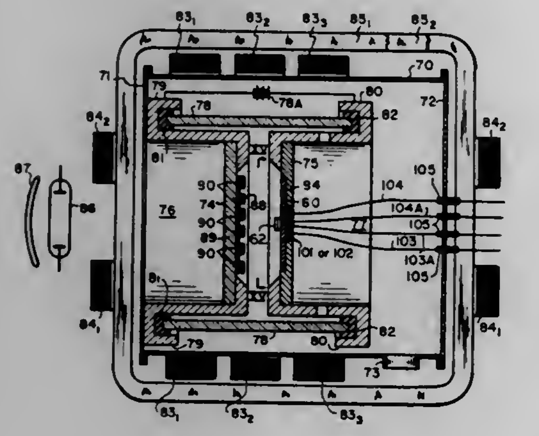
Continuation-in-part of Ser. No. 370,558, June 15, 1973, abandoned. This application Oct. 1, 1973, Ser. No. 402,248
Int. Cl. H01j *29/50, 31/49*
U.S. Cl. 250—492 A 18 Claims

16. Apparatus for selectively irradiating precisely located areas of a major surface of a substrate member for electronic components comprising:
- A. a photocathode source for generating a patterned beam of electrons including at least one alignment beam portion of predetermined cross-sectional shape;
- B. at least one mark corresponding to each alignment beam portion and capable of generating cathodoluminescent radiation on irradiation with an electron beam corresponding to the area of the mark irradiated with the electron beam, each said mark being supported adjacent a major surface of a member to be aligned with the patterned beam of electrons and having a predetermined shape;

C. means for positioning the member in a spaced relation to the photocathode source for the patterned beam;

D. means for applying a potential between the member and the photocathode source whereby electrons from the photocathode source are directed to and selectively irradiate selected areas of the major surface of the member;

E. electromagnetic means for directing the patterned beam of electrons from the photocathode source to irradiate selected portions of the major surface of the member close to the selected areas wherein each alignment beam portion irradiates selected portions of the surface portions of the major surface of the member close to a corresponding mark;



F. detector means for detecting the cathodoluminescent radiation projected by the corresponding mark and producing an electrical signal corresponding to the area thereof irradiated by the alignment beam portion; and

G. electrical means for moving the patterned beam of electrons relative to the member responsive to said electrical signal from the detector means to cause the alignment beam portions to align with corresponding marks, whereby the patterned beam of electrons from the photocathode source is located relative to the member so that precisely located areas of the major surface of the member can be selectively irradiated with the patterned electron beam.

3,895,235

LIQUID LEVEL AND SPECIFIC GRAVITY INDICATOR

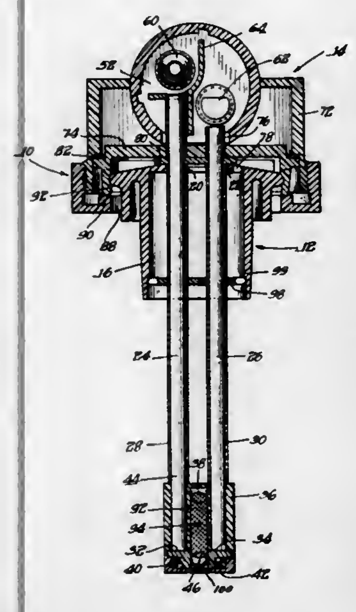
Robert Richard Melone, Des Plaines, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Mar. 18, 1974, Ser. No. 452,297

Int. Cl.² G01N *21/26*

U.S. Cl. 250—577 **8 Claims**

1. A liquid indicator comprising a housing member which is partially open, a light transmitting means, a light receiving means, a float means retained in said housing member so that said float means acts as a shutter between said light transmitting means and said light receiving means in accordance with the level or the specific gravity of the liquid being monitored and porous filter material secured over the open portions of said housing member to preclude gas bubbles that could otherwise effect the position of the float means.



3,895,236

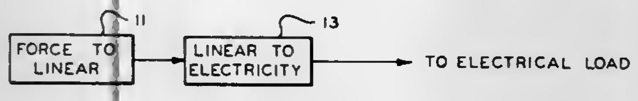
ENERGY CONVERSION APPARATUS

Robert C. Herron, New York, N.Y., assignor to RCH Energy Corporation, New York, N.Y.

Filed Aug. 9, 1973, Ser. No. 387,001

Int. Cl. F03d *9/00*

U.S. Cl. 290—55 **9 Claims**



1. Apparatus for developing electrical energy from a periodic natural force comprising:

a. a shaft supported for linear motion;

b. a sail rigidly coupled with one end of said shaft, said sail having a plurality of flaps arranged therein, each of said flaps being preloaded so as to open at a different wind velocity;

c. means to bias said shaft in a direction essentially perpendicular to said sail; and

d. means for converting the linear motion of said shaft into electricity.

3,895,237

PEAK DETECTOR

Jerome Danforth Harr, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed July 5, 1973, Ser. No. 376,368

Int. Cl. H03k *5/20*

U.S. Cl. 307—235 A **16 Claims**

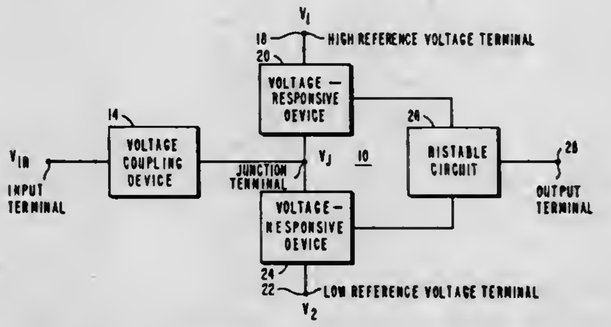
1. A circuit for detecting peaks of an input signal waveform comprising:

means defining two different signal levels;

common junction means having a signal thereat;

means coupled to the common junction means and responsive to the input waveform for varying the level of the signal at the junction means between the two different signal levels in direct relation with the input signal waveform, the level of the signal at the junction means being varied in response to each reversal in the slope of the input waveform;

first means coupled to the common junction means and responsive to one of the two different signal levels for generating a first peak signal when the level of the signal at the junction means is substantially equal to said one of the two different signal levels, said first means including means for conducting whenever the level of the signal at the junction means substantially equals said one of the two different levels to maintain the level of the signal at the junction means substantially equal to said one of the two different signal levels; and


V₁
18
HIGH REFERENCE VOLTAGE TERMINAL
20
VOLTAGE — RESPONSIVE DEVICE
14
VOLTAGE COUPLING DEVICE
V_IN
INPUT TERMINAL
JUNCTION TERMINAL
V_J
10
26
BISTABLE CIRCUIT
28
OUTPUT TERMINAL
VOLTAGE-RESPONSIVE DEVICE
24
22
LOW REFERENCE VOLTAGE TERMINAL
V₂

second means coupled to the common junction means and responsive to the other one of the two different signal levels for generating a second peak signal when the level of the signal at the junction means is substantially equal to said other one of the two different signal levels, said second means including means for conducting whenever the level of the signal at the junction means substantially equals said other one of the two different signal levels to maintain the level of the signal at the junction means substantially equal to said other one of the two different signal levels.

3,895,238

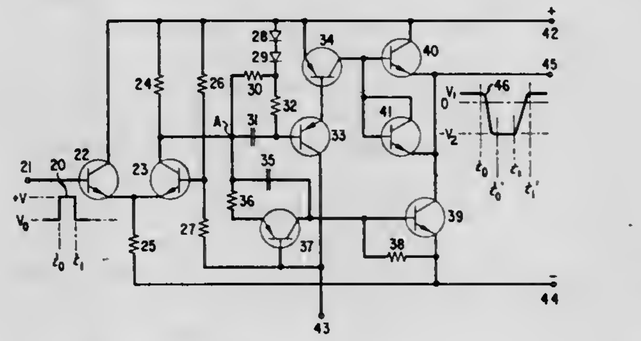
DRIVER CIRCUIT FOR HIGH SPEED GATING OF A FIELD EFFECT TRANSISTOR

Veikko Reynold Saari, Spring Lake Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 25, 1974, Ser. No. 445,492

Int. Cl.² H03K *17/00*

U.S. Cl. 307—255 **10 Claims**



1. A switching circuit comprising:

a first transistor, the collector of said first transistor connected to the output terminal of said switching circuit, the emitter of said first transistor connected to a first terminal of fixed potential;

a first capacitor connected between the base of said first transistor and a circuit node;

first bias means connected in parallel with said first capacitor, said first bias means responsive to the signal applied to the input terminal of said switching circuit for supplying bias to said first transistor during a first predetermined portion of said signal applied to said input terminal;

a second transistor, the emitter of said second transistor connected to said switching circuit output terminal and the collector of said second transistor connected to a second terminal of fixed potential;

a third transistor, the collector of said third transistor connected to the base of said second transistor and the emitter of said third transistor connected to said second terminal of fixed potential;

a fourth transistor, the emitter of said fourth transistor connected to the base electrode of said third transistor and the collector of said fourth transistor connected to a third terminal of fixed potential;

a second capacitor connected between the base of said fourth transistor and said circuit node;

second bias means connected between said base of said fourth transistor and said second terminal of fixed potential, said second bias means responsive to the signal applied to the input terminal of said switching circuit for supplying bias to said fourth transistor during a second predetermined portion of said signal applied to said input terminal; and

circuit means connected between said switching circuit input terminal and said circuit node.

3,895,239

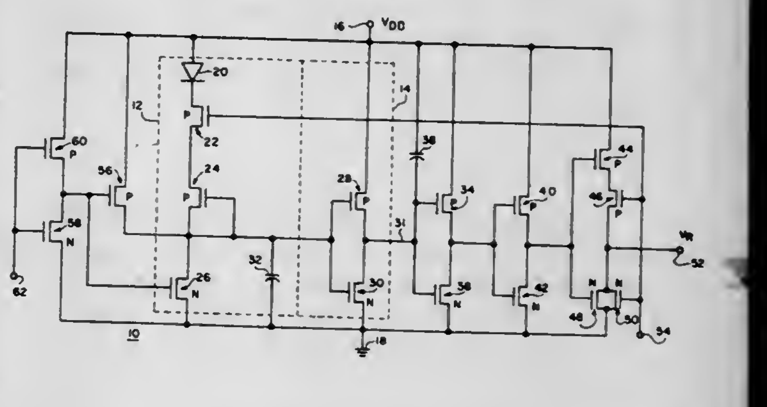
MOS POWER-ON RESET CIRCUIT

Allan A. Alaspa, Tempe, Ariz., assignor to Motorola, Inc., Chicago, Ill.

Filed Dec. 26, 1973, Ser. No. 428,531

Int. Cl. H03k *17/20, 17/22, 21/32*

U.S. Cl. 307—268 **10 Claims**



1. An MOS automatic reset circuit coupled between first and second voltage conductors for producing a reset signal when a voltage applied between said first and second voltage conductors exceeds a particular magnitude comprising:

a voltage reference circuit including a diode, a first MOSFET and a second MOSFET coupled in series between said first and second voltage conductors, said voltage reference circuit being for providing a reference voltage approximately equal in magnitude to the sum of the voltage drops across said diode and said second MOSFET:

a complementary MOS inverter circuit coupled between said first and second voltage conductors having an input coupled to the gate electrode and drain electrode of said second MOSFET.

3,895,240

SET PREFERRING R-S FLIP-FLOP CIRCUIT

Hiroto Kawagoe, Tokyo, Japan, assignor to Hitachi, Ltd., Japan

Filed Jan. 22, 1974, Ser. No. 435,443

Claims priority, application Japan, Jan. 22, 1973, 48-8685

Int. Cl. H03k *3/286, 3/33*

U.S. Cl. 307—279 **11 Claims**

5. A set preferring R-S flip-flop circuit comprising:

a first inverter circuit having first and second transistors connected in series with a first load across a D.C. power source;

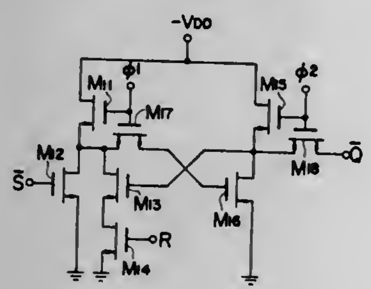
a second inverter circuit having a third transistor connected in series with a second load across said D.C. power source;

first means to transfer an output signal of said first inverter circuit to an input electrode of said third transistor;

second means to feed an output signal of said second inverter circuit back to the input electrode of said first transistor;

a fourth transistor connected between the output of said first inverter circuit and one side of said D.C. power source in parallel with said first and second transistors; and

third means for applying a reset input signal to an input electrode of said second transistor and a set input signal to an input electrode of said fourth transistor, so as to make said flip-flop circuit have a function that when said fourth transistor is conductive said flip-flop circuit is in the set state irrespective of the reset input signal, and when said fourth transistor is non-conductive said flip-flop circuit remains in the previous state thereof or is in the reset state in accordance with the conductive or non-conductive state of said second transistor, respectively.

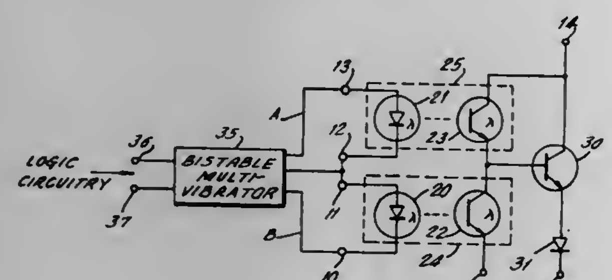


3,895,241
LED COUPLED SWITCHING CIRCUITS
David Cooper, Rancho Palos Verdes, Calif., assignor to International Rectifier Corporation, Los Angeles, Calif.

Filed May 6, 1974, Ser. No. 466,962

Int. Cl. H03k *3/42, 19/14*

U.S. Cl. 307—311 **8 Claims**



1. A switching circuit comprising, in combination: first and second light-emitting devices having first and second sets of terminals; first and second photoresponsive semiconductor devices optically coupled to said first and second light-emitting devices respectively; said first and second photoresponsive semiconductor devices being operable between conductive and nonconductive conditions in response to light output variations from their said respective first and second light-emitting devices; said first photoresponsive semiconductor device comprising a first phototransistor having emitter and collector electrodes; and a power transistor having emitter, collector and base electrodes; said first phototransistor and said power transistor connected in a Darlington configuration, whereby their said collector electrodes are connected to one another, and whereby the emitter electrode of said first phototransistor is connected to the base of said power transistor; said second photoresponsive semiconductor device having first and second electrodes connected in series with said collector and emitter electrodes of said first phototransistor; said first electrode of said second photoresponsive semiconductor device connected to said base electrode of said power transistor.

3,895,242
NON-LINEAR OPTICAL ELEMENTS
Satoshi Yoshida, Saitama, Japan, assignor to Fuji Photo Film Co., Ltd., Minami Ashigara, Japan

Filed Dec. 4, 1973, Ser. No. 421,562

Claims priority, application Japan, Dec. 4, 1972, 47-12176

Int. Cl. H02m *5/04*

U.S. Cl. 307—88.3 **9 Claims**

1. A process for converting the wave length coherent laser light into a second wave length which comprises passing said laser light through a non-linear optical element comprising a crystal of a compound represented by the general formula

$$CX_nY_{3-n}(NZ)_pCONX_mY_{2-m}$$

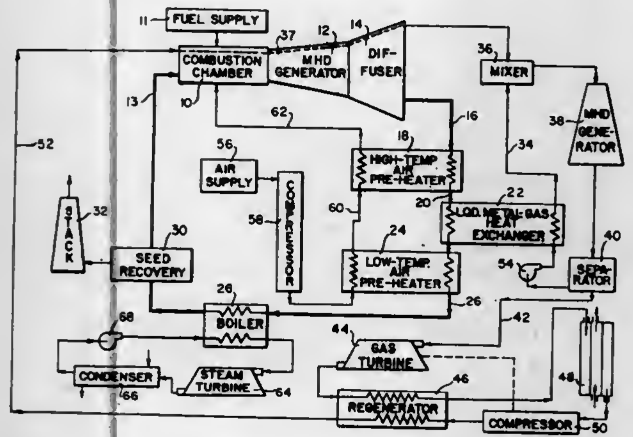
wherein X, Y and Z each represents a hydrogen atom or a deuterium atom, n is 1, 2 or 3, m is 1 or 2 and p is 0 or 1.

3,895,243
METHOD AND MEANS OF GENERATING POWER FROM FOSSIL FUELS WITH A COMBINED PLASMA AND LIQUID-METAL MHD CYCLE
William E. Amend, Hinsdale, and John C. Cutting, Downers Grove, both of Ill., assignors to The United States Energy Research and Development Administration, Washington, D.C.

Filed Mar. 12, 1974, Ser. No. 450,519

Int. Cl.^{2} G21D *7/02*

U.S. Cl. 310—11 **2 Claims**



1. A method of converting the chemical energy of fossil fuel to electrical energy comprising burning the fossil fuel in a combustion chamber to form a gaseous combustion product, adding an electrically conducting seed material, passing the seeded combustion product through a first MHD generator electrical energy, heating a liquid metal by heat exchange with said combustion product, passing an inert gas in heat-exchange contact with said combustion products in said combustion chamber and in said first MHD generator to heat said inert gas and cool the walls of said combustion chamber and first MHD generator, mixing the heated inert gas and liquid metal to form a heated mixture, passing the heated mixture through a second MHD generator to generate electrical energy, separating the heated mixture into spent liquid metal and spent inert gas, and recycling said spent liquid metal and spent inert gas through the aforementioned heat exchange and mixing steps to the second MHD generator.

3,895,244
ENCAPSULATED ELECTROMAGNETIC GENERATOR
William T. Link, Berkeley, Calif., assignor to Norse Systems, Incorporated, Hayward, Calif.

Filed Dec. 28, 1973, Ser. No. 429,641

Int. Cl. H02k *35/00*

U.S. Cl. 310—15 **7 Claims**

1. A generator adapted for short armature stroke short magnetic flux path operation, comprising:

a stator having opposed spaced apart contact surfaces, said stator including a cylindrical wall and a pair of annular plates one at each end of said wall, said plates having opposed faces thereon comprising said opposed contact surfaces;

means for inducing a magnetic field in said stator substantially completely surrounded thereby generally centrally therewithin, said field inducing means comprising a magnet magnetically coupled to said wall generally centrally between said plates and magnetically coupleable to said other portion of said armature, the poles of said magnet being aligned parallel to said plates;

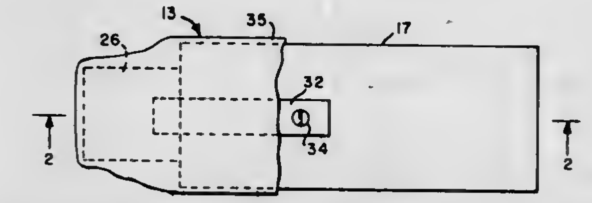
an armature having one portion thereof adapted to contact one or the other of said opposed contact surfaces and having another portion thereof magnetically coupleable with said stator to present a complete ferromagnetic path therethrough, said other portion thereof being substantially surrounded by said stator;

means for effecting relative motion between said armature and said stator such that said one portion of said armature travels substantially linearly to contact one and then the other of said opposed contact surfaces; and

a coil about said armature to extract current therefrom when flux is generated therein;

said armature including a pair of flanges spaced from one another and extending outwards latitudinally therefrom, said flanges each alternately corresponding to said one portion and said other portion thereof as said armature alternately travels from one to another of its two magnetically stable postions,

the flux due to said magnet proceeding when said armature is in one of its magnetically stable positions through that part of said wall intermediate said magnet and the one plate serving as said contact surface, through said contact surface serving plate and through that part of the armature intermediate said magnet and the flange contacting said contact surface serving plate, the direction of flux through said armature reversing as the armature alternately contacts each of the pair of plates thereby generating a pulsed current in the coil.

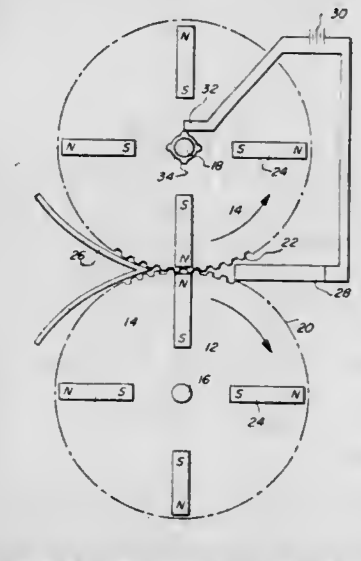


3,895,245
ELECTRIC MOTOR UTILIZING PERMANENT MAGNETS
George Fred Bode, Rt. No. 1, Middletown, Md. 21769

Filed May 23, 1974, Ser. No. 472,909

Int. Cl. H02k *37/00*

U.S. Cl. 310—46 **5 Claims**



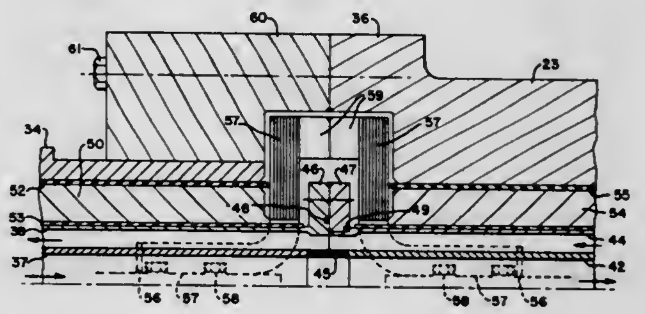
1. An electric motor comprising a pair of rotors, means for causing the rotors to rotate in opposite directions at the same speed, a plurality of permanent magnets carried by each rotor and angularly spaced therearound, the permanent magnets extending radially and being angularly positioned so that a pair of magnets, one of each rotor come opposite each other at the bite of the rotors, the outer poles of the magnets opposing each other being of the same polarity, a magnetic shield of ferromagnetic material having its edge adjacent the bite of the rotors and extending away from the bite of the rotors for a substantial distance, and electromagnet means having one pole adjacent the periphery of at least one of the rotors, and means responsive to the rotation of the rotors for energizing the electromagnet means temporarily as a permanent magnet approaches said electromagnet means, with the end of the electromagnet adjacent the periphery of the rotor having a polarity such as to produce movement of the outer ends of the permanent magnets at the bite in the direction away from the electromagnetic shield.

3,895,246
LIQUID COOLED ROTOR FOR DYNAMOELECTRIC MACHINES
Frank P. Fidei, Pittsburgh; Warren W. Jones, Jr., Acme, and George F. Dailey, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 21, 1974, Ser. No. 444,582

Int. Cl. H02k *1/32*

U.S. Cl. 310—61 **8 Claims**



1. In combination. a main generator and an exciter therefore, the generator and exciter each having a rotor member including a shaft portion, said shaft portions being positioned in axial alignment and having central bores therethrough, two concentric tubes disposed in the bore of the exciter shaft substantially on the axis thereof to form two passages extending axially through the exciter shaft, said tubes being adapted to receive and discharge coolant liquid at their ends remote from the generator for flow through said passages, two semi-tubular insulated conductors disposed in the bore of the exciter shaft, said conductors enclosing the tubes and extending axially to the end of the shaft adjacent to generator shaft, two concentric tubes disposed in the bore of said generator shaft in alignment with the first-mentioned tubes, two semi-tubular insulated conductors disposed in the bore of the generator shaft and enclosing the last-mentioned tubes, means for joining together the corresponding tubes and the corresponding conductors in the exciter and generator shafts and for mechanically coupling together the exciter and generator shafts, said generator rotor having windings thereon, and means for circulating coolant liquid from one of said tubes in the generator shaft through said windings and for discharging said liquid from the windings to the other of said tubes.

3,895,247
REACTIFIER UNIT FOR VEHICLE ALTERNATOR

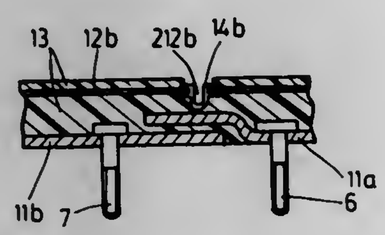
Yoriaki Iwata, Toyoake, and Noboru Ikoma, Okazaki, both of Japan, assignors to Nippondenso Co., Ltd., Japan

Filed Oct. 5, 1973, Ser. No. 404,112

Claims priority, application Japan, Oct. 6, 1972, 47-116554; Oct. 24, 1972, 47-123360

Int. Cl. H02k *11/00*

U.S. Cl. 310—68 D **3 Claims**



1. A rectifier unit for built-in installation in an alternating current generator of a vehicle, said unit having a plurality of positive pole diodes and a plurality of negative pole diodes, and comprising:
- a first heat-sink plate on which said positive pole diodes are mounted in electrical contact therewith;
- a second heat-sink plate on which said negative pole diodes are mounted in electrical contact therewith, said second heat-sink plate being electrically insulated from said first heat-sink plate and adjacent thereto;
- socket contact means for connections to the stator winding of said generator;
- conductor means for connecting said socket contact means respectively to said diodes,
- said positive pole diodes (10*a*), said negative pole diodes (10*b*), said socket contact means (14*a*, 14*b*, 14*c*) and said conductor means (12*a*, 12*b*, 12*d*) being embedded in a resin (13) so as to form a single integral component such that the embedding resin exposes no conducting parts other than said heat-sink plates, at least one stud mounted on a heat-sink plate, and said socket contact means to external electrical contacts.

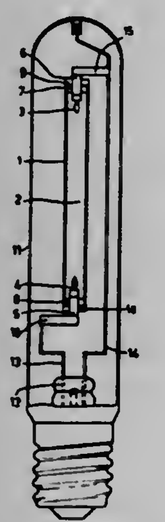
3,895,248
GAS DISCHARGE DEVICE WITH GLOW DISCHARGE IGNITING STRUCTURE

Bertus de Vrijer, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 806,060, March 11, 1969, abandoned. This application Oct. 25, 1972, Ser. No. 300,746

Int. Cl. H01j *61/54*

U.S. Cl. 313—25 **6 Claims**



1. A gas discharge device comprising a main discharge tube having a tubular wall of a material that is a poor conductor of electricity and a pair of electrodes sealed at opposite ends of said wall, an outer envelope surrounding said main discharge tube, two outer contacts embedded in said envelope, a gas present in the interspace between said envelope and said main discharge tube, insulated conductors disposed in said interspace for electrically connecting the electrodes of said main discharge tube to said outer contacts, and two bare conductive surfaces disposed opposite each other in said interspace to provide a discharge path which is substantially parallel to that of said electrodes, said surfaces being connected to said outer contacts by said insulated conductors, the gas in said interspace having a pressure adjusted so as to produce a glow discharge between said surfaces when a voltage which is lower than the ignition voltage normally required for said main discharge tube prior to said glow discharge, but sufficient for igniting said main discharge tube during said glow discharge, is applied to said outer contacts.

3,895,249
INSTANT WARM-UP HEATER CATHODE

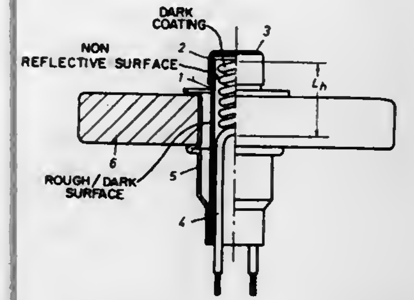
Wolfram Andre, Krummhardt; Eberhard Nill, Esslingen, and Peter Schmidt, Denkendorf, all of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 23, 1973, Ser. No. 418,644

Claims priority, application Germany, Mar. 20, 1973, 2313911

Int. Cl. H01j *61/52, 1/24*

U.S. Cl. 313—37 **2 Claims**



1. A fast warm-up cathode for an electron tube comprising a hollow tubular enclosure having a closed end, an electron emissive layer on the outer surface of said end, a coiled heater element extending within said enclosure adjacent said end so that the ratio of the length of the tubular enclosure to the effective length of the coiled portion of the heater is at least 2:1, a supporting disc, a holding element securing said tubular enclosure to said disc, said tubular enclosure being mounted within said holding element and disc and an insulating coating of a layer of dark colored material on said heater, the inner and outer surfaces adjacent said end of said tubular enclosure around said heating element being substantially non-reflective and the entire said outer surface of said tubular enclosure being roughened.

3,895,250
ELECTRONIC HIGH VACUUM TUBE AND METHOD OF PROVIDING A COATING THEREFOR

Hermann Christgau; Karl Franz, and Jürgen Niepel, all of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

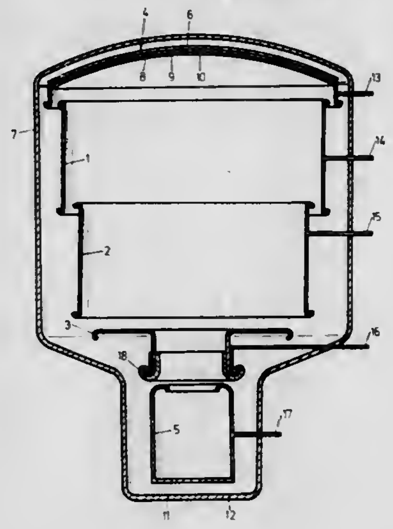
Filed Mar. 14, 1973, Ser. No. 341,244

Claims priority, application Germany, Mar. 20, 1972, 2213493

Int. Cl. H01j *31/50*

U.S. Cl. 313—94 **3 Claims**

1. An electronic high vacuum tube, comprising a high vacuum container, two conducting members located within said container, means connected with said members and providing them with different electrical potentials which produce high electrical field strength between said members, and an electrically insulating coating carried by at least the member having a higher potential, said coating binding alkali metals and consisting of a compound selected from the group consisting of polytetrafluorethylene, polysulfon, polyarylsulfon and silicon resin.



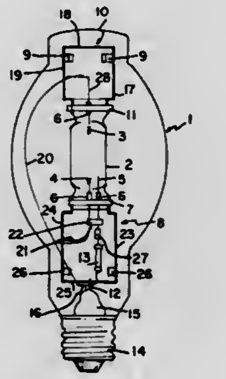
3,895,251
ARC DISCHARGE LAMP HAVING REDUCED STARTING VOLTAGE

W. Calvin Gungle, Danvers, Mass., and Frederic Koury, Alexandria, N.H., assignors to GTE Sylvania Incorporated, Danvers, Mass.

Filed Feb. 19, 1974, Ser. No. 443,347

Int. Cl. H01j *61/16*

U.S. Cl. 313—226 **1 Claim**



1. A high intensity metal halide arc discharge lamp comprising a sealed arc tube having electrodes at each end thereof and containing a fill including mercury, metal halide and a starting gas filling, said filling comprising a mixture of about 60% argon-40% neon.

3,895,252
VERTICAL CONVERGENCE CIRCUIT

Katsuo Funakawa; Shuzo Matsumoto, and Ryoichi Hirota, all of Yokohama, Japan, assignors to Hitachi, Ltd., Japan

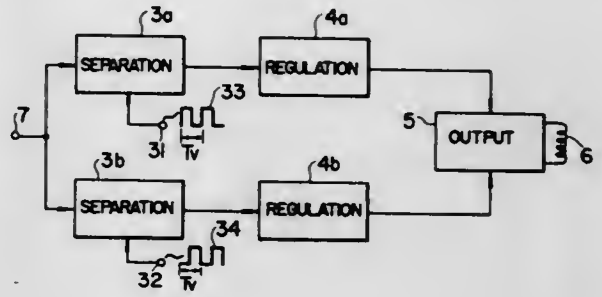
Filed Apr. 20, 1973, Ser. No. 352,992

Claims priority, application Japan, Apr. 28, 1972, 47-42221

Int. Cl. H01j *29/70*

U.S. Cl. 315—13 C **1 Claim**

1. A dynamic vertical convergence circuit comprising means for producing a signal for correcting misconvergence, said signal being synchronous with the vertical scanning and having the same repetition period as the vertical scanning period; means for separating said correcting signal into a first half signal having a wave-form corresponding solely to the former half of the vertical scanning period and a second half signal having a waveform corresponding solely to the latter half of the vertical scanning period; a first transistor having a base supplied with said first half signal, a collector connected to a power supply source, and an emitter; a second transistor having a base supplied with said second half signal, a collector connected to said power supply source, and an emitter; a first variable resistor having a sliding terminal; a second variable resistor having a sliding terminal and connected in parallel with said first variable resistor; a first fixed resistor connected between a point of a reference potential and one of the connecting points of said first and second variable resistors; a second fixed resistor connected between a point of a reference potential and the other connecting point of said first and second variable resistors; a convergence coil connected in parallel with said first and second variable resistors; means for connecting the emitter of said first transistor directly to said sliding terminal of said first variable resistor so that said second half signal does not cause conduction between said emitter of said first transistor and said reference potential; and means for connecting the emitter of said second transistor directly to said sliding terminal of said second variable resistor so that said first half signal does not cause conduction between said emitter of said second transistor and said reference potential; whereby the amplitude and polarity of said first and second half signals supplied from the respective sliding terminals of said first and second variable resistors to said convergence coil can be regulated independently of each other by suitably sliding the sliding terminals of said first and second variable resistors.



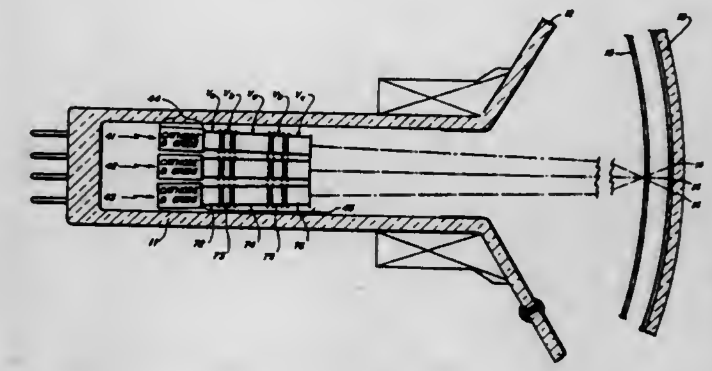
3,895,253
ELECTRON GUN HAVING EXTENDED FIELD ELECTROSTATIC FOCUS LENS

James W. Schwartz, Glenview; Wayne R. Chiodi, Northbrook; William A. Rowe, Palatine, and Iva M. Wilson, Glenview, all of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Filed Oct. 23, 1973, Ser. No. 408,720

Int. Cl. H01j *29/48*

U.S. Cl. 315—13 CG **19 Claims**



14. For use in a television cathode ray tube having associated therewith a power supply for developing discrete supply voltages, an electron gun for receiving supply voltages from the power supply to produce a focused beam of electrons, comprising:
- electron source means comprising cathode means and grid means; and
- focus lens means for receiving electrons from said electron source means and a predetermined pattern of supply

voltages from the power supply to form an electron spot at a distance from said electron source, comprising:

initial and final tubular end electrodes for receiving relatively high supply voltages,

a low voltage tubular electrode located between said initial and final electrodes for receiving a relatively low supply voltage, and

intermediate voltage electrode means between said low voltage electrode and at least one of said end electrodes for receiving a relatively intermediate supply voltage, said lens establishing an extended, axially continuously active focusing field which is substantially shielded from external field disturbances and establishing an axial potential distribution which decreases steadily in value from said initial end electrode to said low voltage electrode and increases steadily in value from said low voltage electrode to said final end electrode.

3,895,254
CHARGED PARTICLE ACCELERATOR WITH INTEGRAL TRANSFORMER AND SHIELDING MEANS

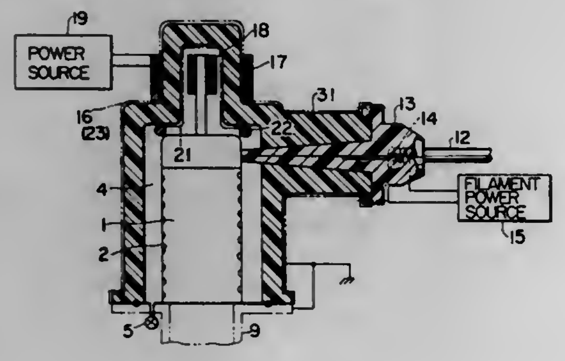
Yoshihisa Minamikawa; Susumu Ozasa; Shoji Kamimura, all of Katsuta, and Yasushi Saito, Mito, all of Japan, assignors to Hitachi, Ltd., Japan

Filed June 28, 1974, Ser. No. 484,339

Claims priority, application Japan, July 2, 1973, 48-73699

Int. Cl. H01j *29/96*

U.S. Cl. 315—57 **8 Claims**



1. In a charged particle accelerator including electron ray generating means having a Wehnelt cylinder provided in the vicinity of a filament in an accelerating tube and means for applying a bias voltage to said Wehnelt cylinder to adjust the amount of electron rays emitted from the filament,

the improvement comprising a receptacle surrounding said acclerating tube and made of an insulator, an outer grounded conductor layer provided on an outside surface of said receptacle, at least one transformer formed by a primary coil arranged on the outside of said receptacle and connected to said bias voltage means and a secondary coil arranged on the inside of the receptacle opposite said primary coil with the receptacle wall therebetween, and means connecting said secondary winding to said Wehnelt cylinder for rectifying the induced voltage of said secondary coil and applying said rectified voltage to said Wehnelt cylinder as said bias voltage, whereby a continuously variable bias voltage can be applied to said Wehnelt cylinder by regulating the voltage applied to said primary winding.

3,895,255
LIGHT SOURCE DEVICE FOR PHOTOELECTRIC EQUIPMENTS

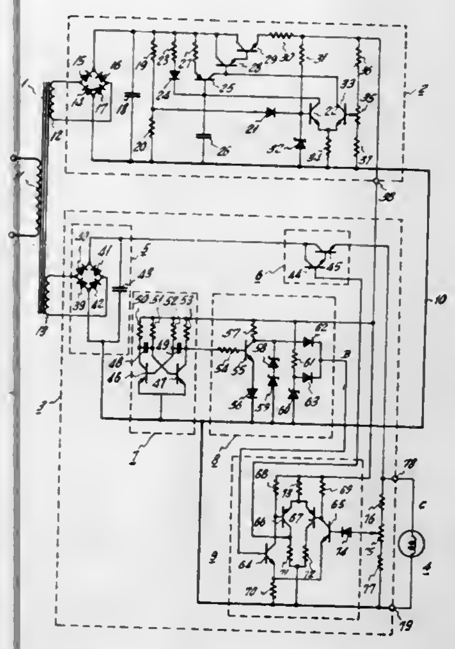
Shinichiro Shimizu, Kumamoto, Japan, assignor to Nippon Shoji Kaisha, Limited, Osaka, Japan

Filed Sept. 6, 1973, Ser. No. 394,654

Claims priority, application Japan, Jan. 27, 1972, 47-10114

Int. Cl. H05b *37/00*

U.S. Cl. 315—174 **1 Claim**



1. A light source device comprising an incandescent lamp having a thermal time constant, a voltage source for supplying a pulsating lighting voltage to said lamp, said voltage source including a d. c. voltage source having a voltage control interconnected therewith, said d. c. source being connected with said lamp for energization thereof, a reference frequency generator having a frequency not exceeding the reciprocal of said thermal time constant, a reference voltage generator connected with said reference frequency generator and producing an output voltage alternating between two voltage levels at a rate determined by the reference frequency generator, a comparator interconnected with said lamp to sense the voltage applied thereto and interconnected with said output reference voltage, said comparator producing an output control signal related to the difference between the lamp voltage and said output reference voltage and a connection between said comparator and said voltage control for applying a controlled voltage to said lamp varying between two voltage levels at a rate determined by said reference frequency whereby said lamp will produce a pulsating light output that may be sensed by a photoelectric element.

3,895,256
HORIZONTAL DEFLECTION CIRCUIT FOR TELEVISION RECEIVERS

Klaus Reh, Albershausen, and Peter Schulz, Esslingen-Hegensberg, both of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Aug. 31, 1973, Ser. No. 393,369

Int. Cl. H01j *29/56*

U.S. Cl. 315—371 **2 Claims**

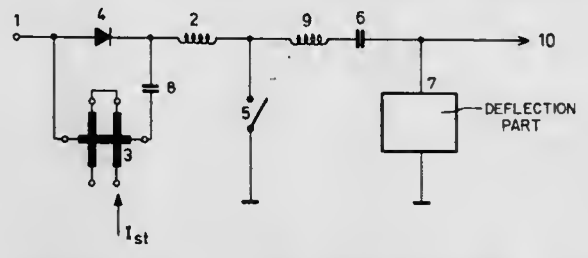
1. A horizontal deflection circuit for a television receiver having a horizontal final stage including means for controlling line sweep and commutation, the energy required by said horizontal final stage being provided by a controllable supply circuit comprising:

a source of DC energy;

a storage inductance;

a variable inductance connected in series with said storage inductance, said series connection being disposed between said source of DC energy and said horizontal final stage; and

a rectifier connected in parallel with said variable inductance to allow current from said source of DC energy to bypass said variable inductance and flow directly to said storage inductance, whereby current returning to said DC source from said storage inductance must flow through the variable inductance and be controlled thereby.



3,895,257
PHOTOGRAPHIC ENLARGER WITH ELECTRONIC LIGHT CONTROL

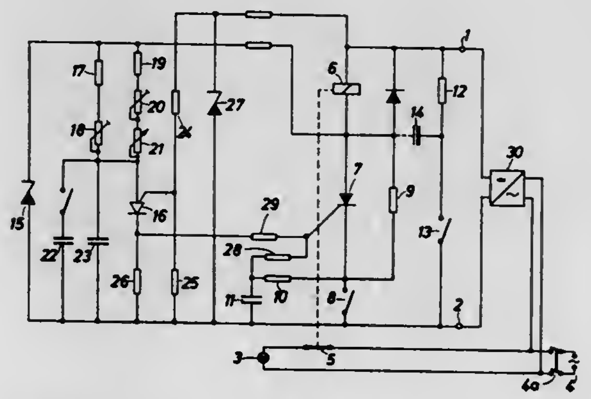
Armin Stiller, Braunschweig, Germany, assignor to Rollei-Werke Franke & Heidecke, Braunschweig, Germany

Filed Feb. 11, 1974, Ser. No. 441,484

Claims priority, application Germany, Feb. 14, 1973, 2307200

Int. Cl. G03b *27/76;* **H01h** *47/32*

U.S. Cl. 315—360 **2 Claims**



1. A photographic enlarger comprising a lamp circuit, a lamp in said circuit, a first switch in said lamp circuit in series with said lamp, said first switch being normally closed, means for supplying current of one voltage to said lamp circuit to cause said lamp to be lit while said first switch is closed, and an electronic control circuit for controlling the respective lit and unlit conditions of said lamp by operation of said first switch from a location remote from said first switch, said control circuit comprising a source of direct current at a voltage less than the voltage supplied to said lamp circuit, a relay coil (6) for operating said first switch, said first switch being closed while no current is flowing in said relay coil and being open while current is flowing therein, a thyristor (7) in series with said relay coil, a second switch (8) in series with said relay coil and thyristor, said relay coil, thyristor, and second switch being connected in series across said source of direct current, means responsive to the closing of said second switch for rendering said thyristor conductive so that current will flow in said relay coil to open said first switch and extinguish said lamp to darken the enlarger while sensitized paper is placed in exposure position therein, a third switch (13), means responsive to the closing of said third switch for causing a commutation current to flow through said thyristor to render said thyristor non-conductive so that current ceases to flow through said relay coil and said first switch closes to light said lamp and start an exposure interval, exposure timing means for determining the length of an exposure interval, and means responsive to said exposure timing means for causing an impulse to be delivered to a control gate of said thyristor at the end of an interval determined by said timing means, to render said thyristor again conductive, so that current again flows through said thyristor and relay coil to open said first switch and extinguish said lamp.

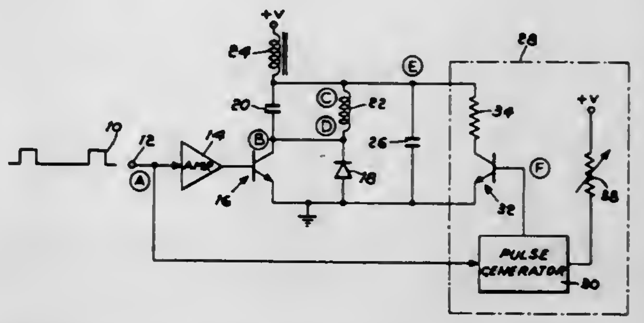
3,895,258
DEFLECTION LINEARITY CORRECTION CIRCUIT

Weldon W. Gruetman, Hicksville, Ohio, assignor to International Telephone & Telegraph Corporation, Nutley, N.J.

Filed Feb. 4, 1974, Ser. No. 439,458

Int. Cl. H01j *29/70*

U.S. Cl. 315—371 **6 Claims**



1. An electron beam deflection linearity correction circuit comprising:

means for providing a pulse input signal having a period between successive pulses equal to the electron beam scanning period and a pulse duration equal to the retrace period,

first switching circuit means controlled by said input signal to conduct during said scanning period and cut off during said retrace period,

a source of direct voltage having one terminal connected to a common reference point,

deflection coil means connected between said first switching circuit means and the other terminal of said source, a ringing capacitor connected between said first switching circuit means and one of said terminals to provide a half-wave sinusoidal pulse signal to said deflection coil means during said retrace period,

a shaping capacitor connected between said other terminal and said common reference to provide an S-shaping current waveform to said deflection coil means during said scanning period, and

a second switching circuit means connected across said shaping capacitor to apply a saw-tooth voltage waveform pulse to reduce the charge on said shaping capacitor during said retrace period and cause a relatively constant charging rate during the following scanning period.

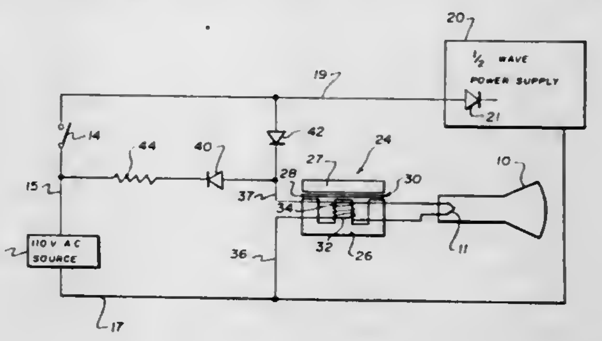
3,895,259
INSTANT-ON FILAMENT CIRCUIT

Frederick Ernest Worster, Highland Park, Ill., assignor to Warwick Electronics Inc., Chicago, Ill.

Filed Nov. 23, 1973, Ser. No. 418,576

Int. Cl. H01j *29/70*

U.S. Cl. 315—380 **12 Claims**



1. A power supply for passing one-half wave power from an AC source to a filament during a stand-by mode and for pass-

ing full-wave power to the filament during an operating mode, comprising:

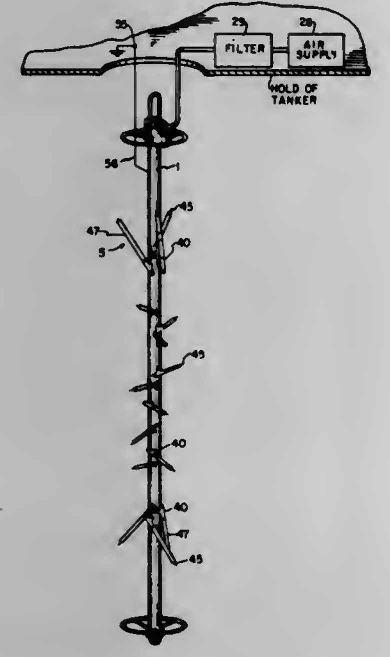
- a filament transformer having a primary winding, and a secondary winding coupled to the filament, each winding being wound on a magnetic core having a gap,
- a diode,
- a first circuit connecting said diode and the primary winding of the filament transformer to the AC source for passing one-half wave power from the AC source to the primary winding in order to partially energize the filament during the stand-by mode,
- a switch, and
- a second circuit enabled by the switch for passing full-wave power from the AC source to the primary winding in order to fully energize the filament during the operating mode.

3,895,260

APPARATUS AND METHOD FOR REDUCING THE STRENGTH OF AN ELECTROSTATIC FIELD IN AN OIL TANKER USING IONIZED GAS

Julian H. Dancy, Richmond, Va., assignor to Texaco Inc., New York, N.Y.

Filed Aug. 23, 1973, Ser. No. 390,804
Int. Cl. H05f *3/00*
U.S. Cl. 317—2 R **8 Claims**



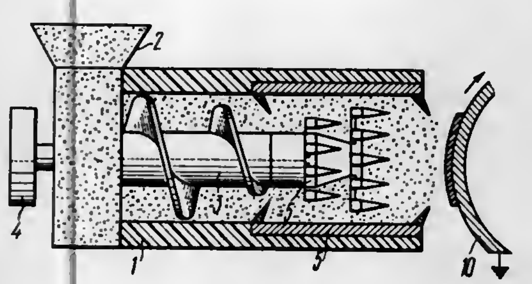
1. Apparatus for reducing the strength of an electrostatic field of a charged mist in a substantially enclosed volume, comprising means for providing a supply of a non-explosive gas at a predetermined location in the volume, means connected to the supply means for discharging the gas into the volume in a predetermined manner, and means connected to the discharging means for utilizing the electrostatic field of the charged mist to ionize the gas, so that the ionized gas has a polarity opposite the polarity of the charged mist as the gas is discharged so that as the ionized gas mingles with the charged mist the net electrostatic field strength of the combined charged mist and ionized gas is substantially less than the electrostatic field strength of the mist prior to mingling with the ionized gas.

3,895,261

APPARATUS FOR APPLICATION OF POWDERED MATERIALS IN ELECTROSTATIC FIELD

Zalman Isaakovich Merkind, ulitsa Elkina, 84 "V", kv. 27, and Evgeny Mikhailovich Mosolov, ulitsa Vagnera, 71, kv. 117, both of Chelyabinsk, U.S.S.R.

Filed June 3, 1974, Ser. No. 476,046
Int. Cl. H05b *3/00*
U.S. Cl. 317—3 **2 Claims**



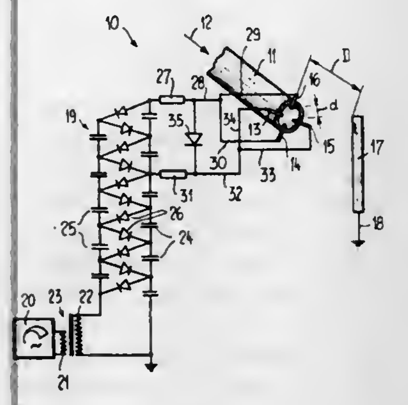
1. An apparatus for the application of powdered materials onto an article in an electrostatic field, comprising: a housing made of a dielectric material; a bin communicating with said housing and intended for supplying powdered materials to said housing; a screw conveyor made of a dielectric material, adapted for rotation in said housing and arranged coaxially with the latter; said screw conveyor and said housing making up a channel for the transfer of powdered materials from said bin; a pulverizer electrode made in the form of two coaxial cylindrical sleeves, said sleeves also being coaxial with said screw conveyor; one of said sleeves being rigidly secured on the inner surface of said housing and having on its inner surface acicular pins arranged radially and pointing with their sharp ends to an article to be coated; the second of said sleeves being secured at the end of said screw conveyor and having acicular pins arranged along the entire perimeter of the end face, parallel to the axis of said screw conveyor, their sharp ends pointing toward the article to be coated; said cylindrical sleeves being under an equal electric potential.

3,895,262

APPARATUS FOR COATING ARTICLES BY MEANS OF ELECTROSTATICALLY CHARGED ARTICLES

Peter Ribnitz, St. Gall, Switzerland, assignor to GEMA AG, St. Gall, Switzerland

Filed Aug. 29, 1974, Ser. No. 501,707
Claims priority, application Switzerland, Sept. 13, 1973, 13191/73
Int. Cl. B05b *5/02*
U.S. Cl. 317—3 **5 Claims**



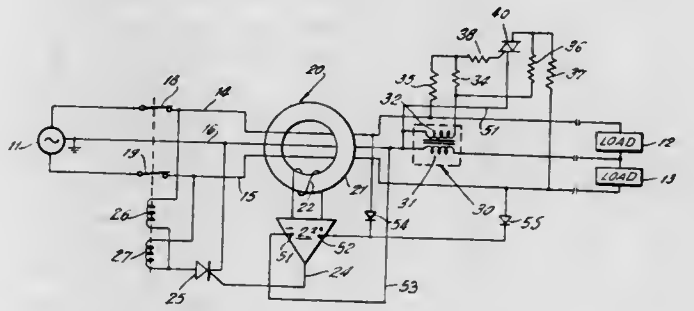
1. An apparatus for coating articles by means of electrostatically charged particles, comprising at least two electrodes operatively associated with an atomizer nozzle for the particles, a regulatable high-voltage generator for delivering to both electrodes a respective potential of different magnitude but the same sign, the improvement comprising a stabilizing stage provided between the high-voltage generator and the electrodes, said stabilizing stage maintaining substantially constant at a predetermined value the potential difference between the electrodes over the entire regulation range of the operating voltage of the high-voltage generator with regard to the articles.

3,895,263

GROUNDED NEUTRAL DETECTOR DRIVE CIRCUIT FOR TWO POLE GROUND FAULT INTERRUPTER

William R. Clark, Bedford, Mass., assignor to I-T-E Imperial Corporation, Spring House, Pa.

Filed Aug. 27, 1974, Ser. No. 501,192
Int. Cl. H02h *3/28*
U.S. Cl. 317—18 D **4 Claims**



1. Ground fault detector-interrupter means for a single phase three-wire system having first and second hot conductors at opposite potential with respect to a common neutral conductor grounded at the source energizing said system; said detector-interrupter means including a differential transformer having first, second, and third primaries connected in series with the first, second, and said ground conductors, respectively, and a secondary wherein net flux generated by unbalanced currents in said primaries induce a fault signal interrupter means in series with said first and second conductors, amplifier means connected between said secondary and said interrupter means to actuate the latter for opening at least one of said hot conductors when said fault signal is of a predetermined characteristic; protector means to maintain performance of said differential transformer in the event the neutral conductor becomes grounded near a load energized by said system; circuit means providing energizing connections between said protector means and both of said hot conductors; said circuit means normally connecting said protector means for energization from said first hot conductor, and additional means to automatically switch energization of said protector means to said second hot wire in the event said first hot wire becomes deenergized.

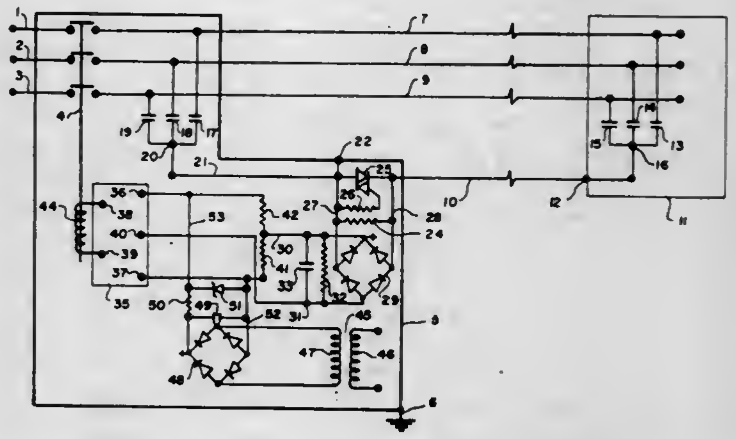
3,895,264

GROUND CONNECTION MONITORING APPARATUS FOR MOBILE MACHINES

Victor V. Kirilloff, Murrysville, Pa., assignor to Mosebach Manufacturing Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 366,761, June 4, 1973, abandoned. This application Jan. 8, 1974, Ser. No. 431,774
Int. Cl. H02h *3/08, 3/24, 3/28*
U.S. Cl. 317—18 C **6 Claims**

1. Apparatus for monitoring the ground connection between a mobile electrically driven machine supplied with multi-phase current through a multi-conductor trailing cable including a ground conductor attached at one end to the frame of the machine from a grounded power source, comprising a triggered solid-state breakdown device connecting the other end of the ground conductor with ground, a monitoring impedance in parallel with the triggered solid-state breakdown device, means deriving from the phase conductors a monitoring current flowing through the monitoring impedance and ground conductor, phase conductor interrupting means at the power source, and monitoring means connected across the monitoring impedance adapted to operate the phase conductor interrupting means when the current through the monitoring impedance increases above a value corresponding to the firing voltage of the triggered solid-state breakdown device.

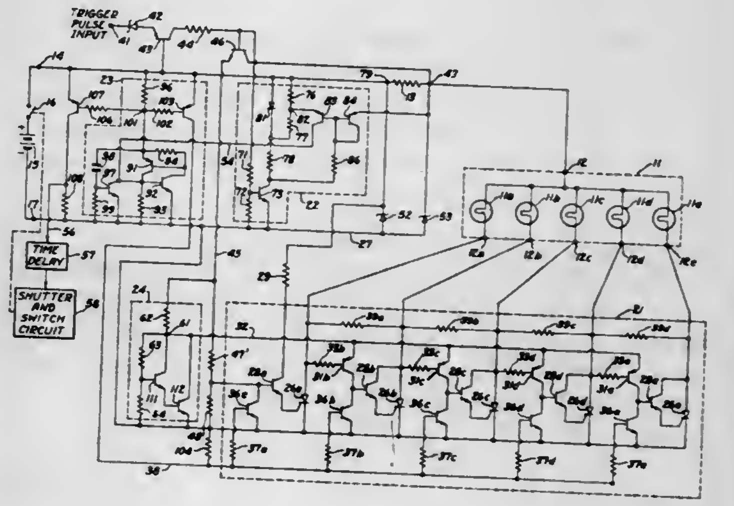


3,895,265

SEQUENCING CIRCUIT FOR FIRING PHOTOFLASH LAMPS IN PREDETERMINED ORDER

Donald L. Watrous, Liverpool, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 24, 1972, Ser. No. 299,654
Int. Cl. F23q *7/02*
U.S. Cl. 317—80 **5 Claims**



1. A sequencing circuit for sequentially flashing a plurality of photoflash lamps which normally become open-circuited upon flashing, said circuit comprising a plurality of semiconductor switch devices respectively adapted to be connected in series with the lamp circuits of said plurality of flash lamps, and sequencing circuitry stages successively connected between said semiconductor switch devices, said switch devices having the characteristic of drawing leakage current when said circuit is sequencing, said leakage current for each said switch device being drawn through its series-connected lamp if the lamp is unflashed and has a relatively low resistance and being drawn through the succeeding sequencing stage if its series-connected lamp has a relatively high resistance, wherein the improvement comprises a plurality of resistors successively connected between said switch devices so as to be successively connected between the junctions of the series-connected circuits of the switch devices and lamp circuits when the lamp circuits are connected to said sequencing circuit, said resistors having resistance values to provide said leakage current to any of said switch devices having in series therewith a defectively high resistance lamp, thereby assuring that the lamps will flash in a predetermined order.

3,895,266

MODULAR PRINTED ASSEMBLIES FOR COMMUNICATION RECEIVERS

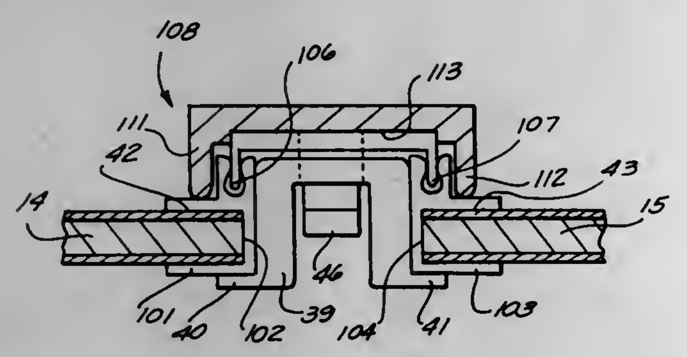
Erich Geiger, Friesen, Germany, assignor to Loewe-Opta GmbH., Kronach, Germany

Filed Dec. 14, 1973, Ser. No. 424,751

Claims priority, application Germany, Dec. 14, 1972, 2261130

Int. Cl. H02b *1/02*

U.S. Cl. 317—101 DH **2 Claims**



1. In an electrical construction for a communication receiver, a circuit module arranged for interconnection with similar modules to form a rigid assembly, which comprises, in combination, first and second printed circuit boards each having a terminal region at a first end thereof and a conductively clad first side, each terminal region including a receptacle surrounding and secured to the associated first end and having a socketed surface extending upwardly from the first side of the associated circuit board; bridging contact means having projecting opposite ends; an insulating member carrying the bridging contact means and straddling the receptacles of the respective circuit boards for effecting removable engagement of the projecting opposite ends of the bridging contact means with the socketed surfaces of the respective receptacles; a U-shaped strap having facilities for supporting the lower surfaces of the respective receptacles; and means for removably securing the insulating member to the strap.

3,895,267

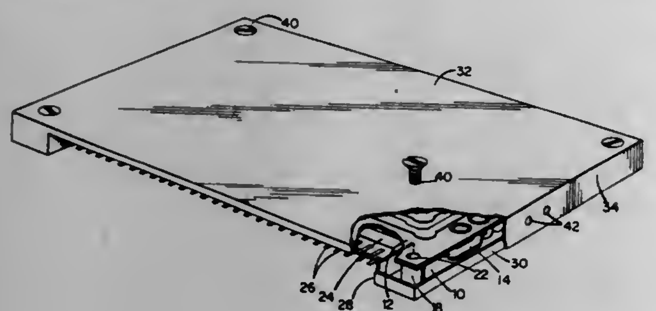
ELECTRONIC CIRCUIT MODULE WITH PRINTED CIRCUIT BOARD AND GROUNDING MEANS

Bernard M. Gordon, Magnolia; Brant W. Becker, Sudbury, and Charles R. Prescott, Wilmington, all of Mass., assignors to Analogic Corporation, Wakefield, Mass.

Filed Mar. 11, 1974, Ser. No. 449,905

Int. Cl.^{2} H05K *5/03*

U.S. Cl. 317—120 **5 Claims**



1. An electronic circuit module for providing an electrical and mechanical housing for a circuit board, said module comprising:

an electrical circuit board having a conductive surface thereon and a plurality of openings therethrough each at a respective corner of said circuit board and at least one being through said conductive surface.

a conductive plate adapted to support said circuit board and having a plurality of integral studs, a respective one of said studs being disposed at each respective corner of said plate in alignment with a respective one of said openings in said circuit board and extending from a common surface thereof;

said studs being operative for support of said circuit board thereon in spaced disposition from said common surface of said plate, each of said studs having a threaded opening completely therethrough along axes perpendicular to said common surface;

a conductive cover member of substantially the same dimensions and configuration as said common surface to form a substantially closed housing for said circuit board contained therein and having holes therethrough at each of its corners aligned with said openings in said studs, said conductive cover including:

- a lip portion integral with said cover and having a height greater than that of said studs and dimensioned to be in closely fitting engagement with said plate;
- a plurality of dimpled projections integral with said cover and each disposed around the periphery of said holes at a respective corner of said cover member in alignment with said studs, said projections having a height substantially equal to the difference in height between said lip and said studs and providing clearance between the top of said circuit board and said cover, at least one of said projections aligned with a conductive surface of said circuit board opposite the surface supported by said studs; and

a plurality of threaded fasteners each disposed through a respective hole in said cover and opening in said circuit board and each threadably cooperative with the respective threads in said stud openings to secure said plate circuit board and cover member together to form a grounded protective housing for said circuit board thereby securing at least one dimpled projection of said cover against said conductive surface at a corner of said circuit board to maintain said board in engagement with said stud and to ground said circuit board to said housing.

3,895,268

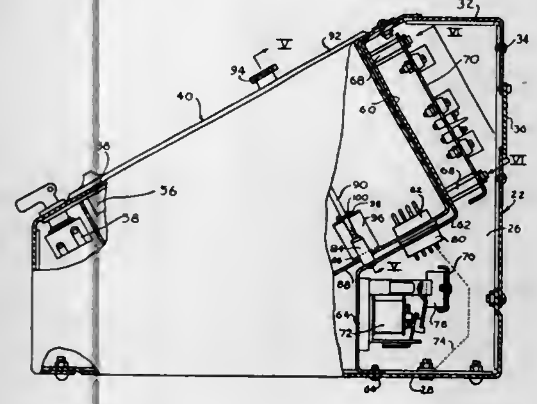
FUEL DISPENSING SYSTEM REMOTE CONTROL CONSOLE REMOVABLE CONTROL ASSEMBLY

Larry A. May, Jonesboro, and Edwin T. Hayes, Greeneville, both of Tenn., assignors to Keene Corporation, New York, N.Y.

Filed Dec. 14, 1973, Ser. No. 424,851

Int. Cl. H05k *5/02;* **H02b** *1/10*

U.S. Cl. 317—120 **8 Claims**



1. A control console arrangement for a remote controlled dispensing system, especially a fuel dispensing system, in which at least one dispensing unit is provided which is electrically connected to a control console remote therefrom, said console comprising a housing having walls, at least one aperture formed in one wall of the housing, a control assembly comprising a frame and a front panel received in said aperture, said frame of said control assembly being inserted into said aperture with said panel in the plane of said one wall of the housing, a first screw threaded element stationarily mounted in the housing, and a second screw threaded element

extending through said panel and having an inner end engaged with said first element mechanically connecting said control assembly to said housing; and wherein said one wall of said housing is an upper wall and inclines upwardly toward the rear, said housing having wall means therein with a first portion near the upper end of said aperture and perpendicular to said one wall, a second portion parallel to said one wall and extending from the lower end of said first portion toward the lower end of said aperture and a third portion extending vertically downwardly from the lower end of said second portion to the bottom of said housing, terminal blocks carried by said first portion of said wall means on the side facing the rear of said housing, relay means mounted on said third portion of said wall means on the side facing the rear of the housing, holes in the rear part of the housing near the bottom to receive wires for connection to said terminal blocks, and a barrier strip extending transversely in said housing at about the level of said third portion of said wall means and interposed between said relay means and wires leading from said holes to said terminal blocks.

3. A control console arrangement according to claim 1 in which said control assembly comprises electrical components for the control of the dispensing unit and for maintaining the operation thereof, electric wiring leading into said housing for connection to said components to complete control and maintaining circuits to the dispensing unit, a first element of a separable electrical connector on the back wall of said frame electrically connected to said components, and a second element of the separable electrical connector stationary in said housing and connected to said wiring.

3,895,269

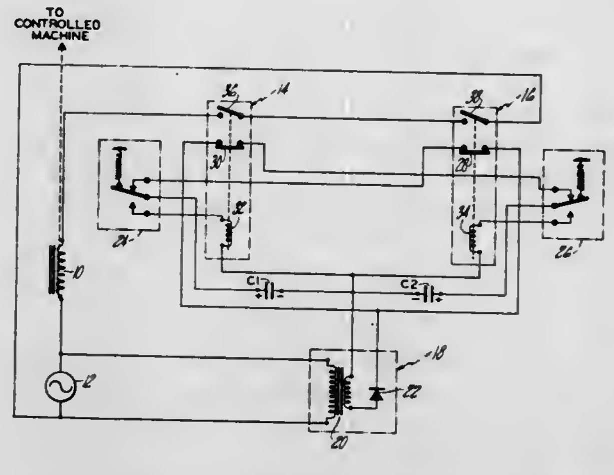
SAFETY CONTROL CIRCUIT

Leo F. Geremia, 451 Barnes Rd., Wallingford, Conn. 06492

Filed June 27, 1974, Ser. No. 483,900

Int. Cl. H01h *47/00*

U.S. Cl. 317—135 R **8 Claims**



1. A safety control circuit for a power operated machine comprising:

a machine enabling solenoid;

first hand operated control switch means, said first switch means establishing a normally closed electrical circuit and at least a first normally open electrical circuit;

second hand operated control switch means, said second switch means establishing a normally closed electrical circuit and at least a first normally open electrical circuit, said first and second switch means in part forming a two-hand tripping control for single operating cycles of the machine;

a pair of capacitors;

a source of direct charging current for said capacitors;

means connecting a first terminal of each of said capacitors to a first polarity terminal of said current source;

a first control relay, said first relay having a solenoid and at least first pairs of normally open and normally closed contacts;

a second control relay, said second relay having a solenoid and at least first pairs of normally open and normally closed contacts;

first conductor means connecting the second terminal of a first of said capacitors to the second polarity terminal of said current source, said first conductor means connecting the normally closed circuit of said first switch means and the normally closed contacts of said second relay in series whereby said first capacitor is normally charged;

second conductor means connecting the second terminal of the second of said capacitors to the second polarity terminal of said current source, said second conductor means connecting the normally closed circuit of said second switch means and the normally closed contacts of said first relay in series whereby said second capacitor is normally charged;

third conductor means connecting the normally open circuit of said first switch means and the solenoid of said first relay in series between said first capacitor second terminal and said current source first polarity terminal whereby operation of said first switch means will establish a path for the discharge of said first capacitor through said first relay solenoid;

fourth conductor means connecting the normally open circuit of said second switch means and the solenoid of said second relay in series between said second capacitor second terminal and said current source first polarity terminal whereby operation of said second switch means will establish a path for the discharge of said second capacitor through said second relay solenoid; and

fifth conductor means for connecting first pairs of normally open contacts of said first and second relays in series between a source of energizing current and said machine enabling solenoid whereby simultaneous operation of said first and second switches will cause discharge of said first and second capacitors respectively through said first and second relay solenoids to thereby cause simultaneous momentary closing of the normally open contacts of said relays to complete a current path through said machine enabling solenoid.

3,895,270

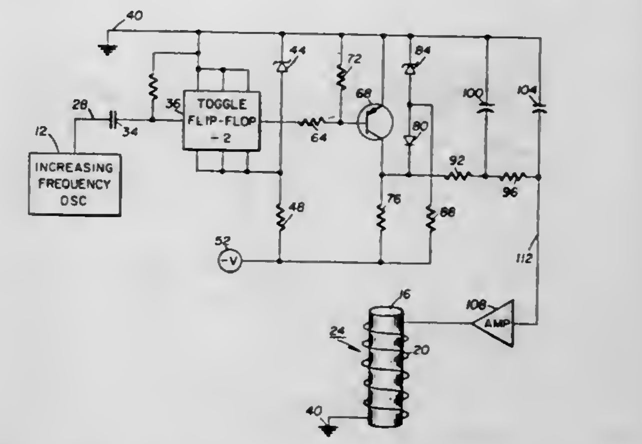
METHOD OF AND APPARATUS FOR DEMAGNETIZING A MAGNETIC MATERIAL

Harry L. Maddox, Reynoldsburg, Ohio, assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Apr. 29, 1974, Ser. No. 465,211

Int. Cl.^{2} H01F *13/00*

U.S. Cl. 317—157.5 **11 Claims**



1. In an apparatus for demagnetizing a magnetic material core of an electromagnetic coil:

means for generating a constant amplitude voltage wave, having half cycles which alternate in polarity and successively and incrementally increase in frequency from a first frequency value to a second and higher frequency value, to be applied across the electromagnetic coil to generate in the magnetic material core thereof an alternating magnetic flux having a polarity in accordance with the polarity of the voltage wave and having a magnitude inversely in accordance with the frequency of the voltage wave,.the second frequency being of sufficient value to reduce the magnitude of the magnetic flux within the core to essentially zero, and the frequencies between the first and the second values incrementally increasing in frequency in a relation to successively and incrementally decrease the magnitude of the magnetic flux within the core, to demagnetize the core, and

means for applying the voltage wave across the electromagnetic coil while the frequency thereof increases from the first to the second frequency value to demagnetize the core.

3,895,271

MOISTURE SENSORS

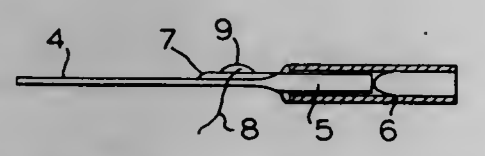
Tibor Dudas, Leeds, England, assignor to Molecular Controls Limited, Leeds, England

Filed May 24, 1972, Ser. No. 256,532

Claims priority, application United Kingdom, May 24, 1971, 16643/71

Int. Cl. H01g *7/00*

U.S. Cl. 317—246 **7 Claims**



7. A moisture sensor comprising a strip of aluminium having at least one smooth, flat surface, a layer of aluminium oxide on said surface, said layer being formed by treating said surface in an alkaline solution, and a layer of a second metal over part of the oxide layer, wherein the alkaline solution is selected from the group consisting of sodium hydroxide solution and potassium hydroxide solution.

3,895,272

THIN-FILM MICROCIRCUIT

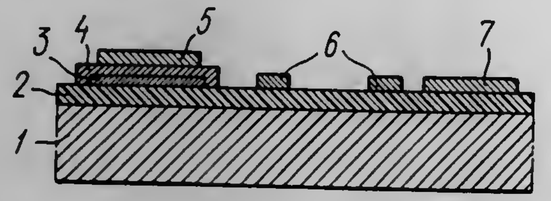
Gennady Grigorievich Smolko, K-482, Korpus 501, kv. 19, Moscow, and Nodari Mikhailovich Chikovani, ulitsa Krylova 10, Tbilisi, both of U.S.S.R.

Filed Dec. 20, 1973, Ser. No. 426,464

Claims priority, application U.S.S.R., Dec. 20, 1972, 1855795

Int. Cl. H01g *1/08*

U.S. Cl. 317—256 **1 Claim**



1. A thin-film microcircuit comprising: a metal substrate having two surfaces; an anode oxide film formed on at least one of said surfaces; resistor films on said oxide film; and a capacitor provided with two electrodes separated by said oxide film, said film defining a dielectric, with one of said electrodes being formed on said oxide film and being of a surface area substantially less than the surface area of the substrate and the other of said electrodes being defined by said substrate; interconnections between said resistor films and said electrode on said oxide film; said metal substrate being used simultaneously as said other electrode, as ground, and as a heat sink; said surface of said metal substrate with said oxide film having a mirror finish; and said oxide film having a sufficient thickness that said film serves as said dielectric.

3,895,273

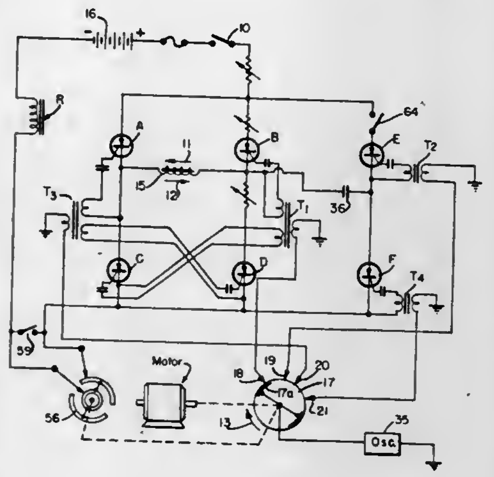
DIRECT CURRENT ENERGIZED SYNCHRONOUS MOTOR SYSTEM

Louis W. Parker, 2408 Sunrise Key Blvd., Ft. Lauderdale, Fla. 33304

Continuation of Ser. No. 365,944, June 1, 1973, abandoned. This application Mar. 6, 1974, Ser. No. 448,777

Int. Cl.² H02K *29/00*

U.S. Cl. 318—138 **23 Claims**



1. A synchronous motor system comprising a motor having a rotor mounted for rotation on a motor shaft, said motor including a stator disposed adjacent said rotor and having a plurality of separate windings of different phases, a direct current power source, and an inverter between said source and said windings for energizing said different phases in sequence from said direct current source, said inverter comprising a plurality of silicon controlled rectifiers connected to said plurality of different phase windings respectively, cyclically operable means comprising a rotary commutator coupled to said motor shaft and driven thereby, said commutator including means for providing electrical pulses operative to activate different ones of said rectifiers in sequence during the running of said motor to effect current flow from said direct current source through different ones of said windings in sequence, said stator defining a plurality of poles for each phase each of which poles includes a plurality of adjacent stator segments, the segments defining each pole for a given phase carrying windings of different phases thereon disposed in asymmetrical relation to one another whereby, when current is flowing through a winding of given phase via a given activated rectifier, subsequent activation of a different one of said rectifiers produces a current flow through the winding of a different phase which current flow in said different phase in turn induces a potential having a magnitude and polarity operative to turn off the conducting silicon controlled rectifier connected to said winding of given phase.

3,895,274

INVERTER CIRCUIT FOR ENERGIZING STAR CONNECTED POLYPHASE COILS FOR INDUCING A TRAVELLING MAGNETIC FIELD

Tunghai Chin, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 17, 1973, Ser. No. 425,141

Claims priority, application Japan, Dec. 22, 1972, 47/128149

Int. Cl. H02p *5/28*

U.S. Cl. 318—227 **6 Claims**

1. A travelling magnetic field inducing inverter circuit comprising:

a source of direct current,

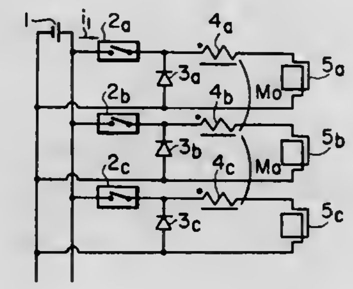
polyphase magnetic field inducing coils connected in star;
  a plurality of controlled rectifier elements connected to the free terminals of said coils in a full wave rectifier configuration;

a first branch circuit including a first switch means and a first reactor which are connected in series between one pole of said source and the anode electrodes of one group of said rectifier elements;

a second branch circuit including a second switch means and a second reactor which are connected in series between the other pole of said source and the cathode electrodes of the other group of said rectifier elements;

said first and second reactors being magnetically coupled with each other;

a first diode connected between the juncture between said first switch means and said first reactor and said other pole of said source;



a second diode connected between the juncture between said second switch means and said second reactor and said one pole of said source;

a pair of unidirectional current conducting elements serially connected across said first and second branch circuits;

said unidirectional current conducting elements being poled not to pass current from said source;

means to connect the neutral point of said star connected coils to the juncture between said unidirectional current conducting elements;

and means for rendering ON and OFF said first and second switch means and for rendering conductive said rectifier elements in a predetermined sequence to cause said coils to create travelling magnetic field.

3,895,275

ELECTRONIC CONTROL SYSTEM FOR MOTORS AND THE LIKE

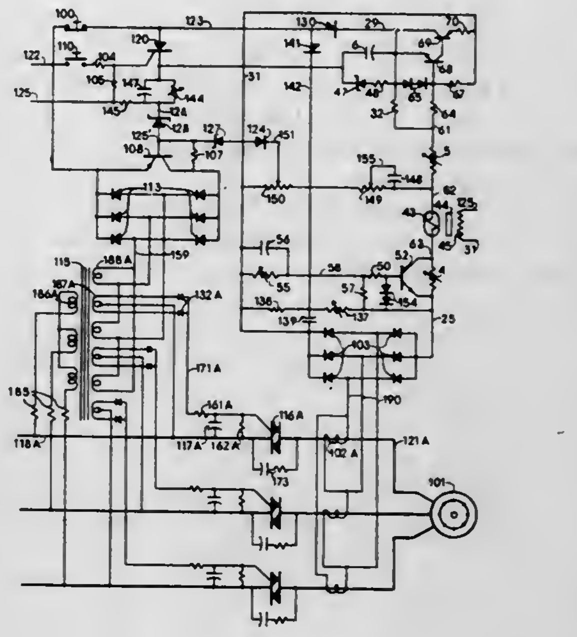
Rolf A. Rostad, P.O. Box 72, McCloud, Calif. 96057

Continuation of Ser. No. 357,863, May 7, 1973. This application July 29, 1974, Ser. No. 492,491

Int. Cl. H02p *5/40*

U.S. Cl. 318—227 **14 Claims**

1. Apparatus for controlling a piece of electrical equipment of the type having at least first and second power input connections comprising a bidirectional thyristor in series with said first power input connection, said thyristor having a gate terminal for controlling the current flow therethrough in response to an electric signal applied to said gate terminal, a transformer having a secondary winding connected to said gate terminal, said transformer having a primary winding and a core for flux linking said primary and secondary windings, means including a series resistor for connecting said primary winding across said first and second power input connections so as to cause a variable alternating voltage across said primary winding, an auxiliary winding on said core in flux linking relation to said primary and secondary windings, variable resistance means in series with said auxiliary winding for limiting current flow through said auxiliary winding, and means for controlling said variable resistance means in accordance with the load demands of said equipment, said series resistor affording development of a voltage across said primary winding that corresponds to said variable resistance to avoid saturation of said core.



3,895,276

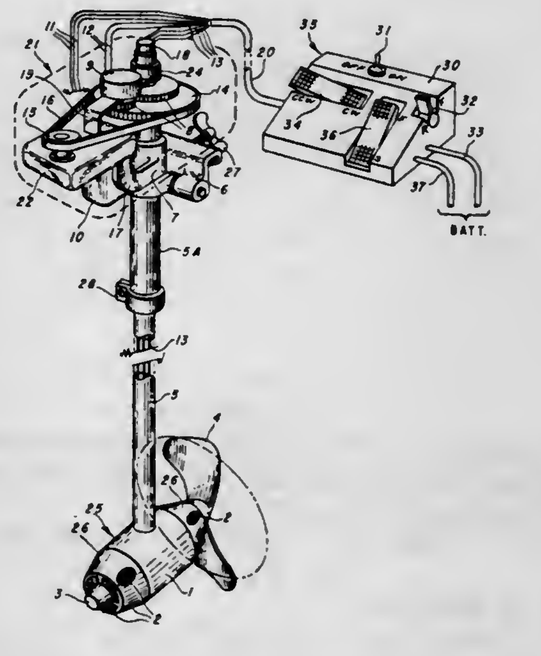
A.C. ELECTRIC MOTOR AND INVERTER CONTROL SYSTEM

Buck F. Brown, and James S. Tarbutton, both of Ruston, La. 71270

Filed Oct. 23, 1970, Ser. No. 83,333

Int. Cl. H02p *5/34*

U.S. Cl. 318—231 **10 Claims**



1. An electric motor system comprising:

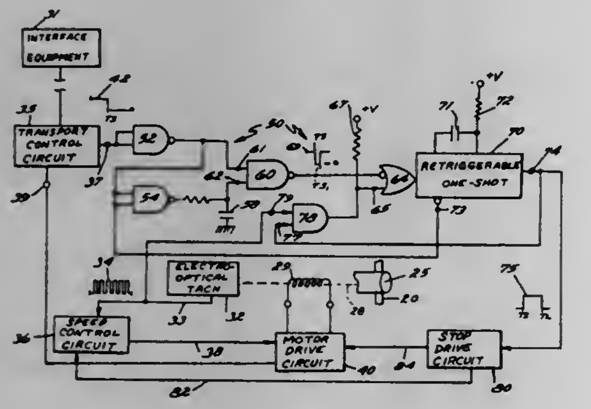
a. An electric motor, the speed of which is a function of the frequency applied thereto,

b. A source of electrical pulses having a controllable frequency to drive said motor, and

c. A gate interconnecting said motor and said source of electrical pulses to invert the half cycle polarity of said controllable frequency during a predetermined gating period, inversely proportional to said controllable frequency, to be applied to said motor to control its speed and the power applied thereto, said gate passing an increased number of adjacent pulses of the same half cycle polarity, each pulse having a decreased period, when said gating period is increased, thereby decreasing the effective voltage applied to said motor.

3,895,277
ELECTRONIC DYNAMIC BRAKING FOR TAPE RECORDER DEVICES

Marlin K. Klumpp, Ann Arbor, Mich., assignor to Sycor, Inc., Ann Arbor, Mich.
Filed May 24, 1973, Ser. No. 363,476
Int. Cl. H02p *3/20*
U.S. Cl. 318—269 14 Claims

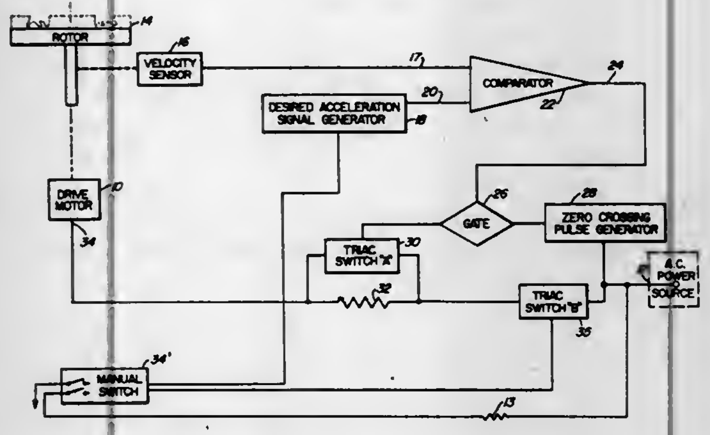


1. A tape transport including a playback head, comprising: means, including a drive motor, for transporting tape across the head; tachometer means for generating pulse-type signals continuously representative of actual tape speeds during the operation of the transporting means; a motor drive circuit means coupled to said drive motor for selectively applying first or second drive signals to said motor, said first signals causing a forward running mode of operation of the transporting means; means for providing a stop signal; and circuit means coupled to said stop-signal providing means, to said tachometer means and to said motor drive circuit means for initiating a controlled stop signal in response to said stop signal from said providing means and terminating said controlled stop signal at a particular reduced tape speed greater than zero in response to signals from said tachometer means representative of such reduced speed, and for applying said controlled stop signal to said drive circuit means; said drive circuit means being responsive to said controlled stop signal by applying said second drive signals to said drive motor, said second drive signals being of a reverse character which tends to move said motor in an opposite direction from that caused by said drive signals.

3,895,278
ROTOR ACCELERATION CONTROL CIRCUIT

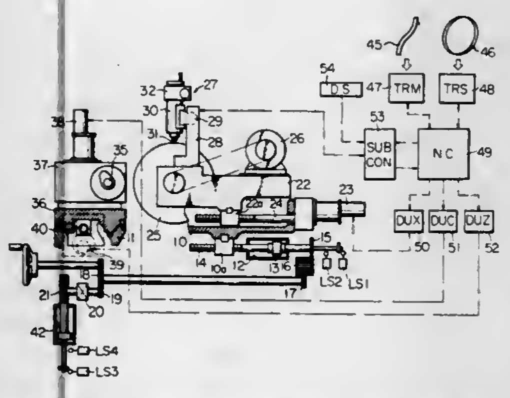
Thomas Picunko, Bronxville, N.Y., assignor to Union Carbide Corporation, New York, N.Y.
Filed Oct. 3, 1973, Ser. No. 403,274
Int. Cl. H02p *1/04*
U.S. Cl. 318—421 1 Claim

1. A circuit for controlling the acceleration of a rotor coupled to an electrical motor adapted to be energized by a.c. voltage power source said circuit comprising
- i. means for providing a first electrical signal corresponding to the actual acceleration of said rotor
- ii. means for providing a second electrical signal corresponding to the desired acceleration of said rotor
- iii. means responsive to the aforesaid signals to maintain a third electrical signal while there is a difference between said first and second signals due to said first electrical signal being less than said second electrical signal
- iv. resistance means in circuit with said a.c. voltage power source and said electrical motor
- v. means responsive to said third electrical signal and to said a.c. voltage power source to cause said resistance means to be short circuited when said a.c. voltage power source first goes to zero volts level and to thereafter remain short circuited while said third electrical signal is maintained.



3,895,279
NUMERICALLY CONTROLLED MACHINE TOOL

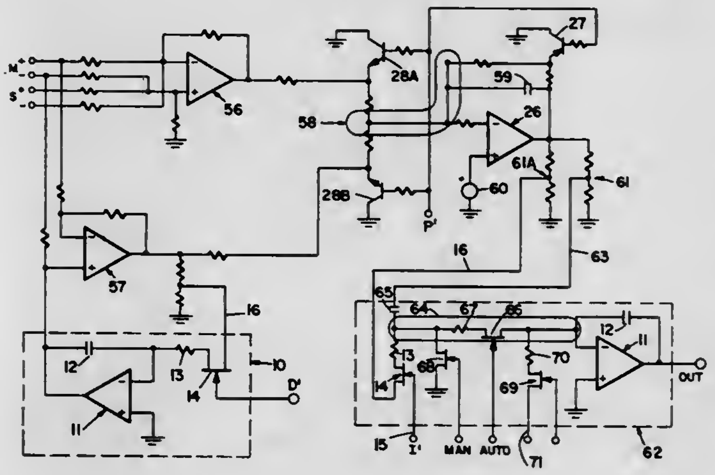
Isao Suzuki, Okazaki, and Hiroshi Okada, Chiryu, both of Japan, assignors to Toyoda Machine Works, Limited, Japan
Filed Nov. 8, 1973, Ser. No. 413,989
Claims priority, application Japan, Nov. 17, 1972, 47-115930
Int. Cl. G05b *19/24*
U.S. Cl. 318—571 5 Claims



1. A numerically controlled machine tool having a grinding wheel head, a grinding wheel, a truing head and a numerical controller for controlling feeding motions of movable members of the machine tool in response to command data including command programmed on a command tape, comprising: reading means for reading said series of command data from said tape;
- relay circuit means for effecting change of mode of the numerical controller from an automatic operation to a step operation for the dressing of said grinding wheel in response to the reading of said dressing command by said reading means;
- setting means operable upon the change of mode of said numerical controller from automatic to step operation for setting a desired dressing feed amount;
- a feed device responsive to said setting means for feeding said truing head toward said grinding wheel in the desired dressing feed amount in order to dress said grinding wheel;
- a pulse generating circuit for supplying said numerical controller with a drive pulse train responsive to said desired dressing feed amount;
- a pulse motor for moving said wheel head toward and away from a workpiece;
- a control circuit for controlling said pulse motor in response to said drive pulse train in order to compensate for the position of said wheel head, and for producing a signal indicative of completion of the compensating operation of said wheel head, and;
- a mode restoration circuit for stopping the pulse generation of said pulse generating circuit in response to the completion signal of said control circuit and for restoring said numerical controller to automatic operation so as to operate in response to said series of command data.

3,895,280
ELECTRONIC CONTROLLER WITH REMOTE TUNING

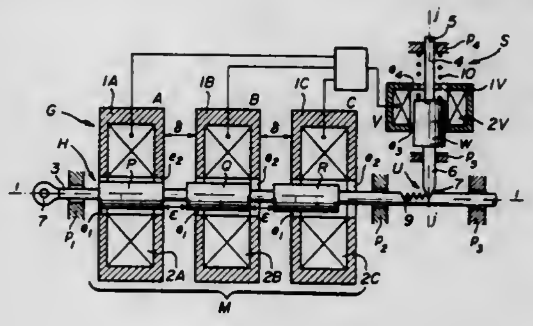
Neal D. Peterson, North Easton, Mass., assignor to The Foxboro Company, Foxboro, Mass.
Continuation of Ser. No. 234,581, March 14, 1972, abandoned. This application June 19, 1974, Ser. No. 480,603
Int. Cl. G05b *11/42*
U.S. Cl. 318—610 3 Claims



1. An electronic process controller responsive to an electrical measurement signal representing the magnitude of a condition of an industrial process and having an output circuit which produces an electrical control signal for operating a device associated with the process under control so as to maintain said condition at a desired set point value, said controller comprising in combination:
- adjustable means to develop a set signal representing the desired value of the controlled condition;
- comparison means for comparing said set signal and said measurement signal to produce a deviation signal indicating the amount by which said condition differs from said desired set point value;
- signal processing means having an input coupled to said comparison means and responsive to the deviation signal produced thereby, said signal processing means including proportional-band amplifier means and integral means interconnected with said signal processing means input to produce on the controller output circuit a composite output signal having both proportional and integral components;
- means for selectively setting the gain of said proportional-band amplifier means;
- said integral means comprising an electronic amplifier having an input and an output;
- a negative feedback circuit including integrating capacitor means coupling the output of said electronic amplifier to its input;
- an integrating resistor connected to said electric amplifier input;
- circuit means forming part of said signal processing means and connected to said integrating resistor to supply to the end thereof which is remote from said amplifier input a signal responsive to said deviation signal and thereby to direct to said integrating capacitor a current corresponding to the current developed through said integrating resistor in response to said deviation signal;
- said integrating resistor and feedback capacitor means cooperating to develop at said amplifier output a signal representing the time-integral of the signal supplied to said resistor;
- means to couple said electronic amplifier output to said controller output circuit to provide thereto a signal including said integral component;
- electronic switch means connected to said integrating resistor and operable when actuated to interrupt said flow of current through said resistor;
- pulse-generating means coupled to said switch means for actuating said switch means so as to interrupt said current flow during the time of each pulse; and
- adjustable means coupled to said pulse-generating means to vary the frequency of said pulse without correspondingly altering the pulse duration, thereby to alter the effective time-constant of said integral means and change the amount of said integral component in said composite output signal directed to said control device.

3,895,281
LINEAR MOTOR POSITIONING DEVICE WITH POSITION DETENT MEANS

Andre Corbaz, Veyrier, GE, Switzerland, assignor to G. Billi & C. S.p.A., Florence, Italy
Continuation of Ser. No. 178,155, Sept. 7, 1971, abandoned. This application Aug. 24, 1973, Ser. No. 391,242
Claims priority, application Switzerland, Sept. 16, 1970, 13717/70
Int. Cl. G05b *11/00*
U.S. Cl. 318—687 6 Claims



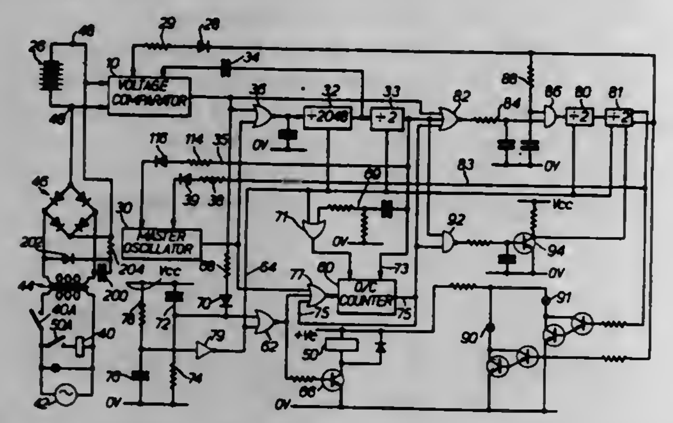
1. A positioning device for the shifting of a load into any one of a series of predetermined positions, comprising:
- a plurality of coaxial annular electromagnets;
- an armature mechanically coupled with the load, said armature being provided with core means attractable by said electromagnets upon selective energization thereof into any one of several operating positions corresponding to a desired load position;
- bidirectionally effective electromagnetic detent means for positively retaining said armature in any selected operating position against displacement in either direction; and electronic control means for said electromagnets and said detent means including switch means for selectively energizing said electromagnets and timing means in circuit with said switch means for temporarily deactivating said detent means just prior to energization of any electromagnet, the deactivation period of said detent means starting prior to the energization period of the electromagnet and continuing for a portion of the latter period sufficient to enable a displacement of the armature and the load to a new operating position prior to reactivation of said detent means.

3,895,282
ELECTRIC CIRCUITS PARTICULARLY FOR AUTOMATIC BATTERY CHARGING APPARATUS
George William Foster, Bolton, and Dennis Albert Clayton, Gawsworth, both of England, assignors to Electric Power Storage Limited, London, England

Filed Dec. 26, 1973, Ser. No. 427,551

Int. Cl.² H02J *7/10*

U.S. Cl. 320—20 **14 Claims**



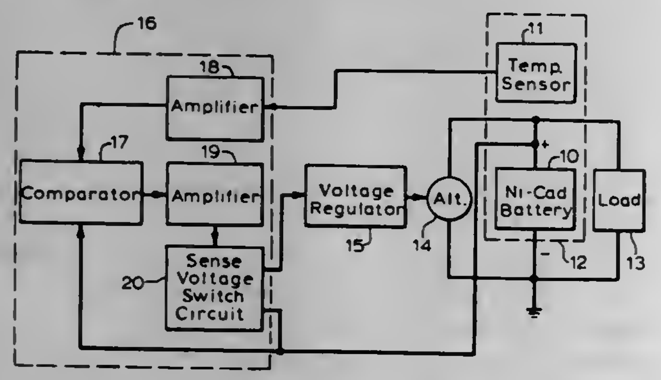
1. Automatic electric battery charging apparatus comprising: means for temporarily interrupting the charging current during open-circuit intervals, the duration of each open-circuit interval depending on the fall of battery voltage during such interval, and means for terminating at least a phase of the charge of the charging circuit when the ratio of the duration of an open-circuit interval to that of a preceding open-circuit interval is below a predetermined value for more than one pair of successive open-circuit intervals.

3,895,283
TEMPERATURE RESPONSIVE BATTERY CHARGING CIRCUIT
Bruce E. Peterson, Northbrook, Ill., assignor to Vapor Corporation, Chicago, Ill.

Filed Nov. 26, 1973, Ser. No. 419,116

Int. Cl. H02j *7/14*

U.S. Cl. 320—35 **10 Claims**



1. In an electrical system of the type having a nickel cadmium battery, a source of unidirectional charging current, and a voltage regulator for controlling the output voltage of said source of unidirectional current in accordance with an applied sensing voltage related to the voltage level of said system, said voltage regulator causing said current source to operate at a predetermined maximum voltage level in the absense of said applied sensing voltage and at lesser voltage levels in the presence of said applied sensing voltage, a battery charge control and thermal runaway protection circuit comprising, in combination:
- temperature sensing means including a sensor in thermal communication with said battery for generating a temperature-dependent reference signal; and
- battery charge control means responsive to said reference signal and to the terminal voltage of said battery for terminating the application of sensing voltage to said voltage regulator for maximum charging effort when the terminal voltage of said battery falls below a predetermined level dependent on the temperature of said battery, and for applying sensing voltage to said regulator for reduced charging effort when the terminal voltage of said battery exceeds said predetermined level.

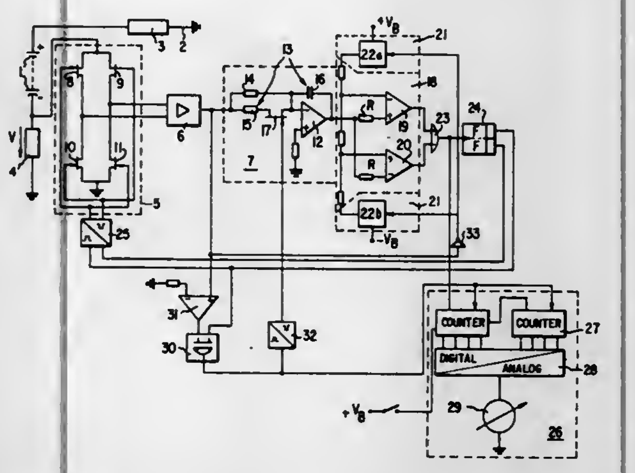
3,895,284
APPARATUS FOR DETERMINING THE STATE OF CHARGE OF STORAGE BATTERIES
Walter Schweizer, Berlin, and Martin-Ulrich Reissland, Gummersbach, both of Germany, assignors to VDO Adolf Schindling AG, Germany

Filed July 2, 1974, Ser. No. 485,141

Claims priority, application Germany, July 4, 1973, 2333932

Int. Cl. H01m *45/06*

U.S. Cl. 320—48 **10 Claims**



1. In a measuring apparatus for use in connection with the charging and discharging circuit of a storage battery to provide an accurate estimate of the state of charge of the battery, comprising:

A. a precision resistance means situated in the charging and discharging circuit for measuring the current flowing in the circuit and for producing a measured voltage proportional to the current at an output,

B. an integrator means responsive at an input to the measured voltage for generating an output voltage which is a function of the time-integral of the measured voltage, and

C. an indicator means connected to receive the output voltage and to provide an indication of its value,

the improvement comprising:

D. polarity-inverting switch means connected between the output of the precision resistance means and the input of the integrator means for repetitively switching the polarity of the measured voltage to which the integrator means is responsive,

E. comparator means responsive to the output voltage from the integrator means for determining when the output voltage reaches a predetermined positive value and for then operating the switch means to apply the measured voltage to the integrator means in a polarity which will cause the output voltage to become more negative, and for determining when the output voltage reaches a predetermined negative value and for then operating the switch means to apply the measured voltage to the integrator means in a polarity which will cause the output voltage to become more positive, and for generating a pulse signal cumulatively indicative of the number of times the switch has been operated to change the polarity, and

F. counter means responsive to one polarity of the measured voltage for counting forward and to the other polarity of the measured voltage for counting backward, and for thus selectively counting forward or backward said pulse signal, whereby the cumulative count in the counter is indicative of the level of charge in the storage battery.

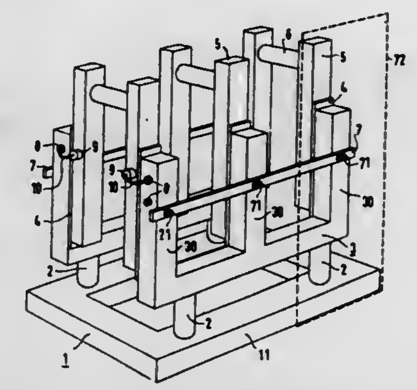
3,895,285
BUS BAR ARRANGEMENT FOR A HIGH-POWERED CONVERTER
Nils Bardahl, Uttenreuth; Hans Dorn, Erlangen; Friedrich Scherbaum, Erlangen, and Hans-Werner Walter, Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Apr. 5, 1974, Ser. No. 458,408

Claims priority, application Germany, Apr. 5, 1973, 2317117

Int. Cl. H02m *7/06*

U.S. Cl. 321—8 C **12 Claims**



1. A high power converter of the type wherein converter elements and fuses are mounted on bus bars comprising:

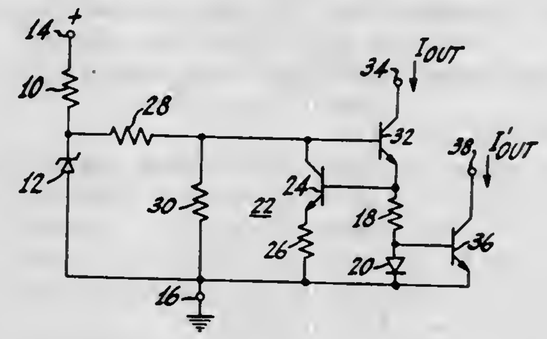
a. a rectangular base frame;
b. a positive DC bus bar;
c. a negative DC bus bar;
e. first means for insulating attaching said positive DC bus bar in a self supporting manner to one of the long sides of said base frame;
f. second means for insulating attaching said negative DC bus bar in a self supporting manner to the other long side of said base frame, said DC bus bars forming a supporting frame work for the complete converter structure including enclosures;
g. a plurality of AC bus bars fastened only to said DC bus bars;
h. insulating layers separating each of said AC bus bars from said DC bus bars to which they are attached.

3,895,286
ELECTRIC CIRCUIT FOR PROVIDING TEMPERATURE COMPENSATED CURRENT
Steven Alan Steckler, Clark, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 7, 1971, Ser. No. 104,627

Int. Cl. G05f *1/58*

U.S. Cl. 323—4 **10 Claims**



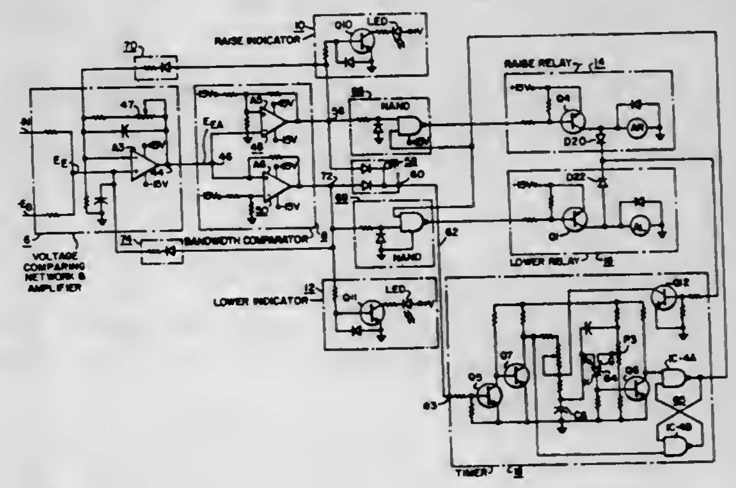
1. An electrical circuit comprising:
- a first resistance exhibiting a predetermined relative change in resistance value as a function of temperature,
- a source of operating voltage having supply and reference terminals,
- coupling means exhibiting, between first and second terminals adapted for connection to said first resistance, a predetermined relative change of voltage as a function of temperature selected with respect to said resistance change, for producing a temperature compensated current through said first resistance, said coupling means comprising:
  - a voltage divider including at least first and second transistors, each having base, emitter and collector electrodes,
  - a second resistance direct current coupled between said supply terminal and said collector of said first transistor,
  - a third resistance proportionally related to said second resistance direct current coupled between said reference terminal and said emitter of said first transistor,
  - means for direct current coupling said base and emitter electrodes of said second transistor, respectively, to said collector and base electrodes of said first transistor, and
  - means comprising at least one semiconductor junction exhibiting a negative temperature coefficient of voltage for direct current coupling said first resistance between said emitter of said second transistor and said reference terminal.

3,895,287
LOW COST VOLTAGE REGULATING RELAY
Shan C. Sun, Pittsburgh, and Leonard C. Vercellotti, Verona, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 30, 1974, Ser. No. 475,334

Int. Cl. G05f *1/00*

U.S. Cl. 323—20 **15 Claims**



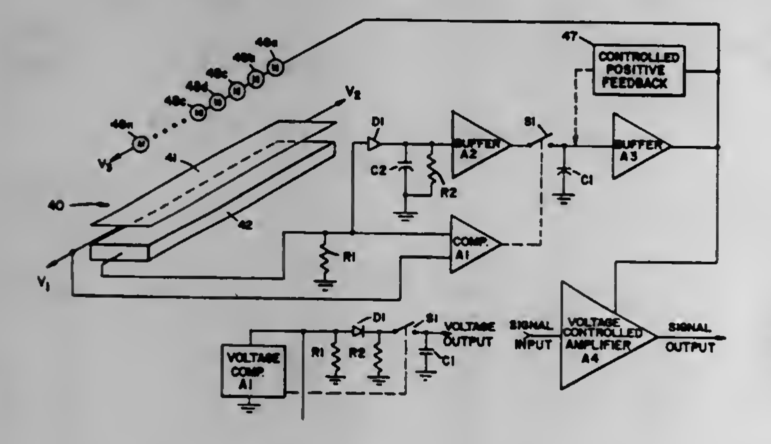
9. A voltage regulating relay assembly, said assembly comprising a voltage comparing network, a comparator, a unidirectional potential power supply, said comparing network including a first operational amplifier, said comparator having a second and a third operational amplifier, each said amplifier having an inverting and a non-inverting input terminal and an output terminal, said power supply including first and second and third power supply terminals, the potential of said first power supply terminal being positive with respect to that of said second power supply terminal and the potential of said third power supply terminal being negative with respect to that of said second power supply terminal, circuit means connecting said power supply to said amplifiers, a first impedance connecting a first of said input terminals of said first amplifier to said second power supply terminal, a second impedance connecting said output terminal of said first amplifier to said inverting terminal of said first amplifier, said comparing network having first and second input voltage supply terminals and an output voltage supplying terminal, a third impedance connecting one of said input terminals of said first

amplifier to said first input voltage supply terminal, a fourth impedance connecting said second input voltage supply terminal to a selected said input terminal of said first amplifier, a first voltage divider connected between a first pair of said power supply terminals and having an intermediate point connected to a first of said input terminals of said second amplifier, a fifth impedance connecting said output terminal of said second amplifier to said non-inverting input terminal of said second amplifier, means including a sixth impedance connecting said output terminal of said first amplifier to a selected said input terminal of said second amplifier, a second voltage divider connected between one pair of said power supply terminals and having an intermediate point connected to a first of said input terminals of said third amplifier, a seventh impedance connected between said output terminal of said third amplifier and one of said input terminals of said third amplifier, means including an eighth impedance connecting said output terminal of said first amplifier to a selected said input terminal of said third amplifier.

3,895,288
TOUCH CONTROLLED VOLTAGE-DIVIDER DEVICE

Stephen H. Lampen, San Francisco, and William E. Hearn, Berkeley, both of Calif., assignors to Stephen H. Lampen, San Francisco, Calif.

Filed Sept. 4, 1973, Ser. No. 394,161
Int. Cl. H01c *9/00*
U.S. Cl. 323—94 R **10 Claims**

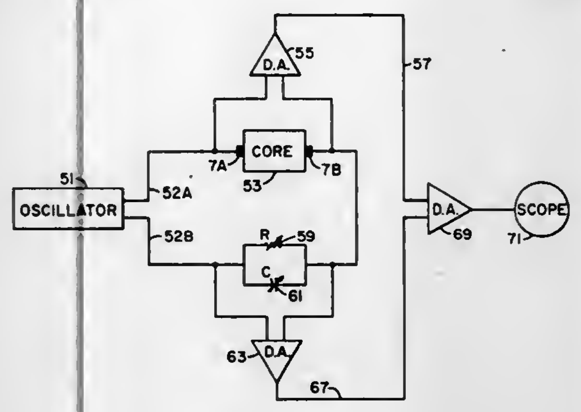


1. A voltage-divider device comprising:
a. an elongated resistive surface;
b. an elongated conductive surface arranged in close spaced, substantially coextensive relationship with said resistive surface;
c. means for selectively establishing galvanic contact between each of a plurality of points along the length of said resistive surface and the point corresponding thereto along the length of said conductive surface by a touch of the finger;
d. a voltage source connected to opposite ends of said elongated resistive surface for establishing a voltage gradient along said resistive surface with respect to ground;
e. a voltage storage means;
f. means for detecting the presence of a voltage on said conductive surface with respect to ground including a first resistance connected between said conductive surface and ground and a voltage comparator circuit adapted to produce an electrical output when any voltage with respect to ground is present on said conductive surface; and
g. means for changing the voltage stored with respect to ground by said voltage storage means including a normally open electrical switch means connected between said conductive surface and said voltage storage means, said switch means being closed by said electrical output of said voltage comparator circuit to establish electrical connection between said conductive surface and said voltage storage means.

3,895,289
DETERMINATION OF ELECTRICAL RESISTIVITY DUE TO SHALINESS OF EARTH FORMATIONS UTILIZING DIELECTRIC CONSTANT MEASUREMENTS

Wynn P. Rickey, Algiers, La.; Robert C. Rumble, Forsyth, Ga., and Wilmer A. Hoyer, Houston, Tex., assignors to Exxon Production Research Company, Houston, Tex.

Continuation-in-part of Ser. No. 210,096, Dec. 20, 1971, abandoned, which is a continuation-in-part of Ser. No. 4,969, Jan. 22, 1970, abandoned. This application July 12, 1974, Ser. No. 488,113
Int. Cl. G01v *3/18, 3/06*
U.S. Cl. 324—1 **15 Claims**



1. A method of determining an electrical conductivity parameter reflecting the shaliness of a portion of an earth formation, which comprises:
measuring the dielectric constant of said portion of an earth formation at frequencies predominantly lower than about 50 KHz; and
determining the value of said electrical conductivity parameter by comparing the measured dielectric constant with a correlation relating dielectric constant to said electrical conductivity parameter.

13. A method of measuring the cation exchange capacity per unit pore volume of a portion of an earth formation comprising:
measuring the dielectric constant of said portion of the formation at at least one frequency less than 50 KHz;
obtaining the variation in cation exchange capacity as a function of dielectric constant for clay-containing earth materials; and
correlating the measured dielectric constant of said portion of the formation with the variation in cation exchange capacity as a function of dielectric constant so obtained to obtain the cation exchange capacity per unit pore volume of said portion of the formation.

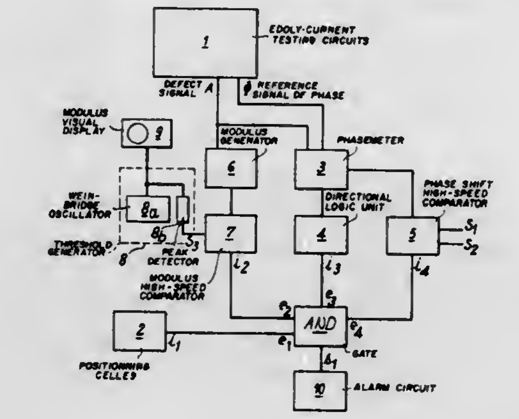
3,895,290
DEFECT DETECTION SYSTEM USING AN AND GATE TO DISTINGUISH SPECIFIC FLAW PARAMETERS

Bernard Audenard, Seclin; Michel Pigeon, Bures-sur-Yvette, and Claude Stach, Faches-Thomesnil, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed July 23, 1973, Ser. No. 382,052
Claims priority, application France, Aug. 3, 1972, 72.28119
Int. Cl. G01r *33/12*
U.S. Cl. 324—37 **5 Claims**

1. A system for the non-destructive testing of materials wherein an alarm is provided indicative of the type and extent of a defect in the materials, said system comprising:
a. means for generating a defect signal indicative of the presence of a defect in the material under investigation and a phase reference signal;
b. means responsive to the defect signal and the phase reference signal for measuring the relative phase difference between the defect signal and the reference phase signal and for providing a signal indicative of the phase difference;

c. first comparison means responsive to the phase difference signal for providing a first logic signal indicative that the phase difference signal lies within a range between first and second threshold levels;
d. means for detecting the peak amplitude of the defect signal for providing a signal indicative of the amplitude of the detected peak;
e. second comparison means responsive to the peak amplitude signal for providing a second logic signal indicating that the detected peak amplitude signal exceeds a third threshold level;

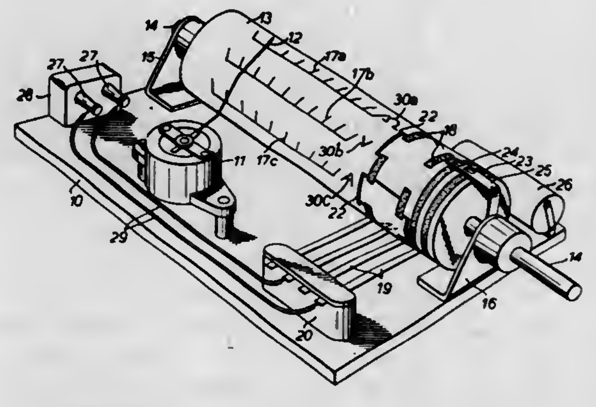


f. position indicating means responsive to the presence of a material to be tested by said system for providing a third logic signal indicative thereof;
g. detecting means responsive to the phase difference signal for providing a fourth logic circuit indicative that the polarity thereof corresponds to that of the first and second threshold levels; and
h. coincidence means responsive to the presence of all of the first, second, third and fourth logic signals to provide an alarm manifestation indicative of the extent and type of defect within the material under test.

3,895,291
INDICATING OR MEASURING INSTRUMENTS

Terence Friend, Dover, England, assignor to Taylor Electrical Instruments Limited, Kent, England

Filed Feb. 19, 1974, Ser. No. 443,323
Int. Cl. G01r *27/02, 15/08*
U.S. Cl. 324—62 **4 Claims**

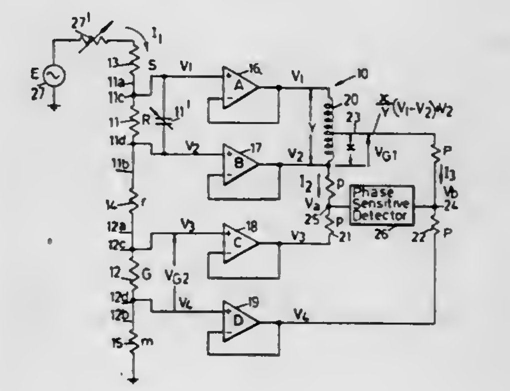


1. A multi-range electrical measuring instrument, comprising
a. a base;
b. an electrical measuring instrument mounted on said base;
c. a movable cylindrical ceramic support body rotatably connected with said base for movement between a plurality of different range-establishing positions;
d. printed circuit means mounted on said support body, portions of said printed circuit means containing at least one electrical component, respectively, said printed circuit portions having different impedance values;
e. means responsive to the position of said support member relative to said base for selectively connecting said printed circuit portions with said measuring instrument to establish different operating ranges thereof, respectively, said connecting means including
  1. stationary contact means mounted on said base member and electrically connected with said measuring means, said stationary contact means including a plurality of electrically conductive elongate spring members mounted on said base; and
  2. a plurality of movable contact means mounted on said movable support body and electrically connected with said printed circuit portions, respectively, said movable contact means being arranged for selective engagement with said stationary contact means in accordance with the instantaneous position of said movable support relative to the base;
f. input terminal means for connecting some of said elongate spring members with a voltage source;
g. means for displacing said support body between said range-establishing positions relative to said base; and
h. varible resistor means connected with said ceramic support body for providing resistance measurements by said instrument, said variable resistor means including
  1. a pair of parallel spaced annular tracks printed on said support body, one of said tracks being formed of resistive material and the other of said tracks being formed of a conductive material; and
  2. electrically conductive bridge means connected for movement relative to said base and to said support member, said bridge means being in electrical contact with said tracks.

3,895,292
BRIDGE CIRCUIT FOR MEASURING RESISTANCES

Eliezer Zair, Tel Aviv, and Arthur J. Greenfield, Bnei Braq, both of Israel, assignors to Bar-Ilan University, Ramat Gan, Israel

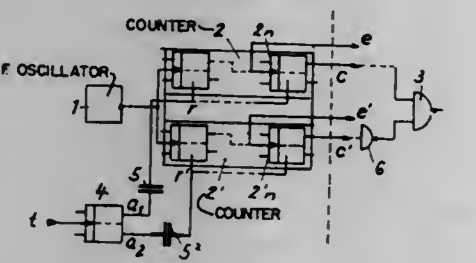
Filed Apr. 29, 1974, Ser. No. 464,895
Claims priority, application Israel, May 4, 1973, 42203
Int. Cl. G01r *27/02*
U.S. Cl. 324—62 **5 Claims**



1. A bridge circuit for measuring resistance of a pair of four-terminal resistances having their current terminals serially connected to an ac source comprising: a voltage follower connectable to each voltage terminal of the pair of resistances; a ratio transformer coupled across the output of the first and second of the voltage followers; a first pair of series resistances connected between the outputs of the second and third voltage followers; and a second pair of series resistances connected across the output of the fourth voltage follower; phase matching means across either of the four-terminal resistors and an adjustable tap on the transformer; the centre points of the first and second pairs of series resistances adapted to be connected across a null detector for indicating when the voltage across the input to the third and fourth voltage followers is equal to the voltage between the tap and the output of the second voltage follower.

3,895,293
METHOD AND SYSTEM FOR FURNISHING AN INDICATION OF THE DEVIATION OF THE ACTUAL FREQUENCY OF A LOW FREQUENCY SIGNAL FROM A NOMINAL FREQUENCY

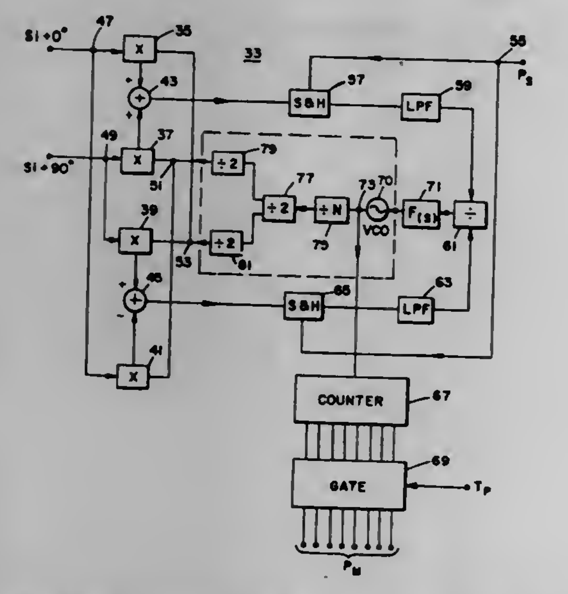
Siegfried Munz, Pforzheim, Germany, assignor to Elma, Hans Schmidbauer, Singen am Hohentwiel, Germany
Filed Mar. 4, 1974, Ser. No. 447,517
Claims priority, application Germany, July 14, 1973, 2335847
Int. Cl. G01r *23/02*
U.S. Cl. 324—78 Z **18 Claims**



17. A system as set forth in claim 16, further comprising synchronizing circuit means connected to said second frequency divider means for synchronizing said normalized test signal to said test signal.

3,895,294
PHASE CHANGE MEASURING CIRCUIT

Jorgen P. Vinding, Monte Sereno, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Feb. 14, 1974, Ser. No. 442,538
Int. Cl. G01r *25/00*
U.S. Cl. 324—83 D **1 Claim**

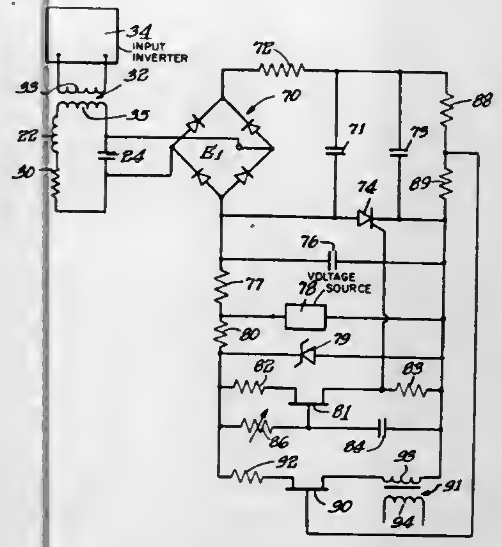


1. A device for measuring first and second input signals, one at 0° and the other at 90° over a specified time duration comprising:

- a. a phase detecting circuit consisting of first and second adders and first, second, third and fourth mixers wherein the output of which provides first and second error signals;
- b. said first error signal being applied to a first sample and hold circuit, said second error signal being applied to a second sample and hold circuit;
- c. the outputs of said first and second sample and hold circuits being applied to the respective inputs of a divide circuit;
- d. the output of said divide circuit being applied to the input of a filter circuit the output of which is applied to the control input of a voltage controlled oscillator;
- e. frequency dividing means connected to the output of said voltage controlled oscillator for generating first and second reference signals having a 90° phase difference for mixing with said first and second input signals;
- f. a counting device connected to the output of said voltage controlled oscillator;
- g. a gating circuit connected to the output of said counting device;
- h. a source of timing pulses connected to said gating circuit for actuating said gating circuit to sample the output of said counting device at the occurrence of each of said timing pulses; whereby
- i. the difference between the counts sampled at successive timing pulses is a measure of the phase change of said input signals during the interval between said successive timing pulses.

3,895,295
WATTSECOND SENSING CIRCUIT

Eugene Mittelmann, Chicago, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Division of Ser. No. 290,227, Sept. 18, 1972, Pat. No. 3,816,690. This application Mar. 29, 1974, Ser. No. 456,345
Int. Cl.² G01R *07/00, 11/32*
U.S. Cl. 324—142 **3 Claims**

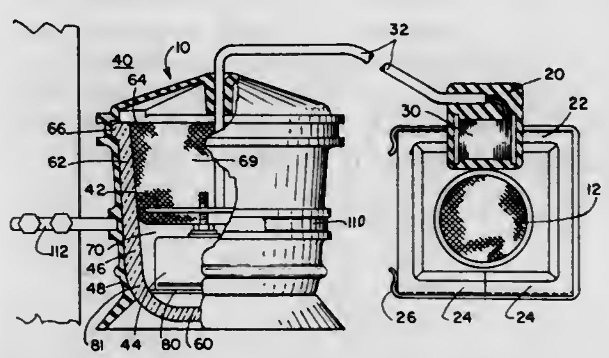


1. A wattsecond sensing means including a rectifier circuit coupled to an impedance element, a first capacitor coupled to said rectifier means, a second capacitor coupled to said first capacitor, a silicon controlled rectifier switch means coupled between said first and second capacitors control means coupled to said silicon controlled rectifier for periodically energizing and de-energizing said silicon controlled rectifier for transferring electric charge from said first capacitor to said second capacitor, and pulse means coupled to said second capacitor to develop a signal pulse indicating the accumulation of a predetermined wattsecond magnitude.

3,895,296
FAULT INDICATOR

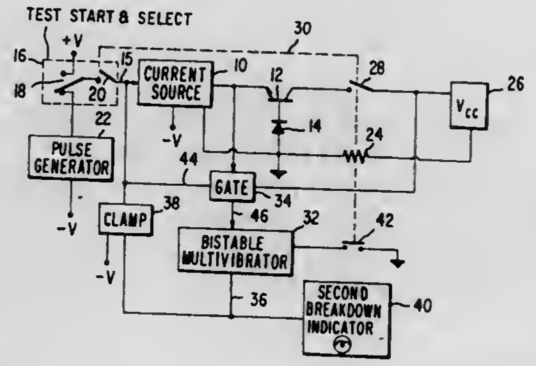
Robert Kent Boyd, Florissant, and Allan Walter Lindberg, St. Louis, both of Mo., assignors to International Telephone & Telegraph Corporation, New York, N.Y.
Filed Sept. 19, 1973, Ser. No. 399,080
Int. Cl. G01r *1/04*
U.S. Cl. 324—156 **8 Claims**

1. A submersible fault indicator structure comprising: a meter having a viewing face therein; a onepiece rigid housing with a transparent base at one end, an open mouth at the other end and a continuous sidewall therebetween, said meter mounted in said housing with the meter face viewable through the transparent base of the housing; a unitary elastomeric boot including a base end, an open mouth and a continuous wall therebetween, said boot sized to stretchably cover and engage said housing in a tight sealing fit between the sidewall of said housing and the wall of said boot, to waterproofingly seal the open mouth of said housing and to render the base of said housing visible through the mouth of said boot, and waterproofing sealing means on the interior wall of said boot for mating with the sidewall of said housing, further means in the base end of said boot for receiving and sealing the entry of a cable into said housing open mouth, and wherein said boot flares from said sealing means and extends radially outwardly beyond said housing base to comprise an open shielding hood for said base to cushion said base against shock.



3,895,297
APPARATUS FOR NON-DESTRUCTIVELY TESTING A FORWARDLY BIASED TRANSISTOR FOR SECOND BREAKDOWN

Ronald Burnett Jarl, Belle Mead, N.J., assignor to RCA Corporation, New York, N.Y.
Filed June 2, 1972, Ser. No. 259,036
Int. Cl. G01r *31/22, 1/36*
U.S. Cl. 324—158 T **9 Claims**

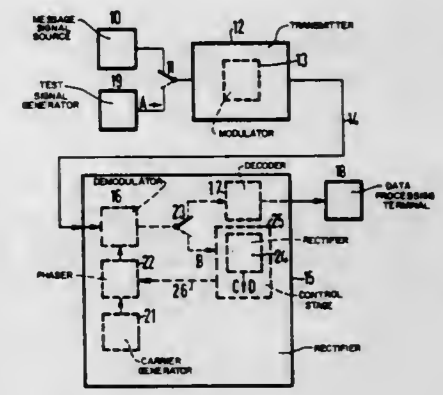


1. An apparatus for non-destructively testing a transistor having a control electrode and a pair of main electrodes, comprising:

- first means for applying forward bias between said control electrode and one of said main electrodes,
- second means enabled during said testing for applying a test current through each of said main electrodes whereby upon the occurrence of forward bias second breakdown of said transistor a voltage transient signal of increasing value appears at one of said main electrodes, and
- third means coupled to said second means and said transistor and responsive to the occurrence of said transient signal at said main electrode for removing said test current from said main electrodes prior to the destructive failure of said transistor,
- said third means including fourth means coupled to said transistor and said second means and responsive to said transient signal applied thereto for disabling said second means upon receipt of said transient signal by said fourth means, said test current tending to continue to flow through one of said main electrodes and said control electrode when said second means is disabled, said third means further including fifth means coupled between said control electrode and said last-mentioned one main electrode for blocking the continuing test current through said last-mentioned one main electrode and said control electrode when said test current is disabled.

3,895,298
METHOD AND APPARATUS FOR TRANSMITTING AMPLITUDE MODULATED SIGNALS

Gero Schollmeier, Gauting, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany
Filed Aug. 27, 1973, Ser. No. 391,805
Claims priority, application Germany, Sept. 26, 1972, 2247190
Int. Cl. H04b *1/62*
U.S. Cl. 325—49 **17 Claims**



1. A method for adjusting the phase of the demodulating carrier signal in a receiver of a transmission system for information-bearing amplitude modulated carrier signals, comprising the steps of:

- generating a test signal having two amplitude extremes of equal values with repetitions of the test signal wave form being spaced in time from each other,
- coupling said test signal to a modulator and transmitter for the system for modulating the carrier for transmission, during the period when no information-bearing signals are present at the modulator,
- demodulating said test signal using a carrier,
- producing a control signal having a value dependent on the values of the amplitude extremes of said demodulated test signal and
- changing, responsive to said control signal, the phase of said demodulating carrier signal when the amplitude extreme of said demodulated test signal are unequal in value.

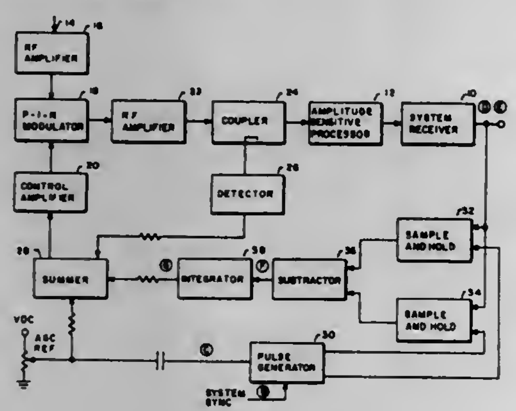
3,895,299
APPARATUS FOR AUTOMATIC ADJUSTMENT OF AGC REFERENCE VOLTAGE

Irvin Bruce Tiedeman, Jr., Nashua, N.H., assignor to Sanders Associates, Inc., South Nashua, N.H.
Filed Apr. 8, 1974, Ser. No. 459,153
Int. Cl.² H04B *1/16*
U.S. Cl. 325—400 **4 Claims**

1. In a system including an AGC circuit having an AGC reference voltage, broadband amplitude sensitive signal processing means coupled to said AGC circuit and a narrow-band receiver coupled to said signal processing means, apparatus for providing adjustment of the AGC reference voltage to maintain the input signal in a particular incremental frequency band constant as the spectrum of the input signal changes, comprising:

- means for generating a signal to increase and decrease the AGC reference level;
- means for applying said generated signal to the AGC circuit;
  - means for monitoring the residual output from the receiver whereby if the level of the AGC reference voltage is correct the residue monitored at the receiver output

will increase equally during the increased and decreased AGC reference level; and

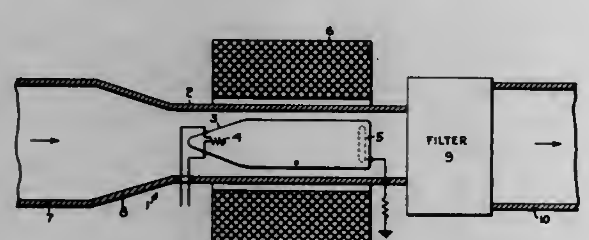


means for adjusting the AGC circuit in accordance with the monitored output of the receiver.

3,895,300
ELECTRONIC MIXER AND CONVERTER

Ladislas Goldstein, Urbana, Ill.; Murray A. Lampert, New York, N.Y., and John F. Heney, Clifton, N.J., assignors to International Telephone & Telegraph Corporation, Nutley, N.J.

Filed Mar. 11, 1952, Ser. No. 276,011
Int. Cl. H03b *21/00*
U.S. Cl. 325—445 **15 Claims**



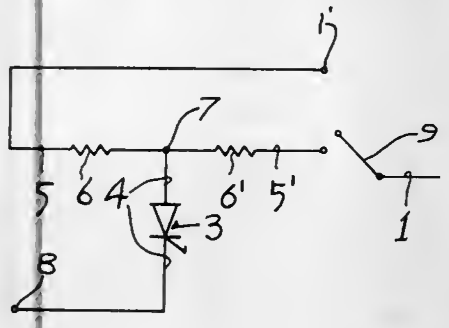
1. An electromagnetic device comprising a nonlinear element including a section of an electromagnetic energy transmission system, means, to contain an electron gaseous medium within said section and means to produce a magnetic field within said electron gaseous medium to produce an electron gyromagnetic frequency therein, said magnetic field being substantially parallel to the longitudinal axis of said section, means to couple at least one radio frequency signal to said nonlinear element for interaction with said gyromagnetic frequency, said interaction resulting in energies having frequencies absent from the signal applied to said nonlinear element, and output coupling means having a predetermined filtering action for extracting from said nonlinear element energy of a frequency resulting from said interaction.

3,895,301
SINGLE INDICATION SYSTEM FOR RADIO SET

Kawasaki Kazuo, No. 8-3, 2-chome, Magarimatsu, Hatano-shi, Kanagawa-ken, and Arai Kazuo, No. 436, Arai, Kitahonouo, Kita-adachi-gun, Saitama-ken, both of Japan

Filed June 12, 1973, Ser. No. 369,137
Claims priority, application Japan, Nov. 21, 1972, 47-133446
Int. Cl. H04b *1/26*
U.S. Cl. 325—455 **7 Claims**

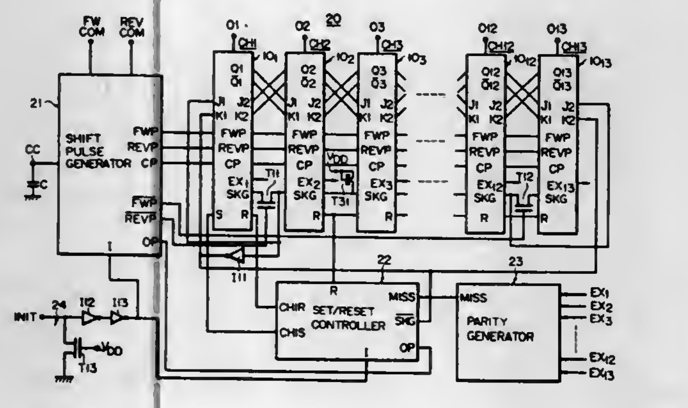
1. A single indication system for a receiver having an FM multiplex circuit for receiving FM multiplex signals, in addition to the usual radio set circuitry for receiving other signals including FM signals, said indication system comprising, in conbination, a common circuit having a first end connected to one terminal of a source of electric potential and having a second end; a single variable intensity illumination device mounted in said receiver connected in series in said common circuit between said first and second ends thereof; a pair of branch circuits having first ends commonly connected to said second end of said common circuit; respective resistances connected in series in said branch circuits, one resistance having a very high ohmic value and the other resistance having a very low ohmic value; one branch circuit having a second end selectively connectable to the other terminal of said source of potential through said usual radio set circuitry, whereby said single illuminating device is energized at a first intensity through said one branch circuit, responsive to switching on of said receiver and connection of said radio set, to receive signals other than FM multiplex signals; the other branch circuit having a second end selectively connectable to the other terminal of said source through said FM multiplex circuit; and switch means selectively operable to connect either the second end of said one branch circuit to said other terminal of said source of potential through said radio set or to connect the second end of said other branch circuit through said FM multiplex circuit to said other terminal of said source; whereby, when said second end of said other branch circuit is connected to said other terminal of said source through said FM multiplex circuit to receive FM multiplex signals, said single illumination device is energized at a second intensity through said other branch circuit.



3,895,302
CHANNEL SELECTION DEVICE FOR A MULTI-CHANNEL RECEIVER

Shinichi Makino, Fujisawa, Japan, assignor to Tokyo Shibaura Electric Co. Ltd., Kawasaki, Japan

Filed Mar. 21, 1973, Ser. No. 343,531
Claims priority, application Japan, Mar. 25, 1972, 47-29384
Int. Cl. H04b *1/16*
U.S. Cl. 325—464 **8 Claims**



1. A channel selection device for a multi-channel receiver comprising:

a shift register means including a plurality of cascade connected shift register stages for sequentially shifting a binary coded signal from one of said stages to another under control of a shift pulse, each of said stages having two outputs and the number of stages being the same as the number of channels of said multi-channel receiver which are adapted to be selected;

channel selection switches, each coupled with a respective one of said two outputs of each of said shift register stages for bringing a selected shift register stage to a channel selecting position;

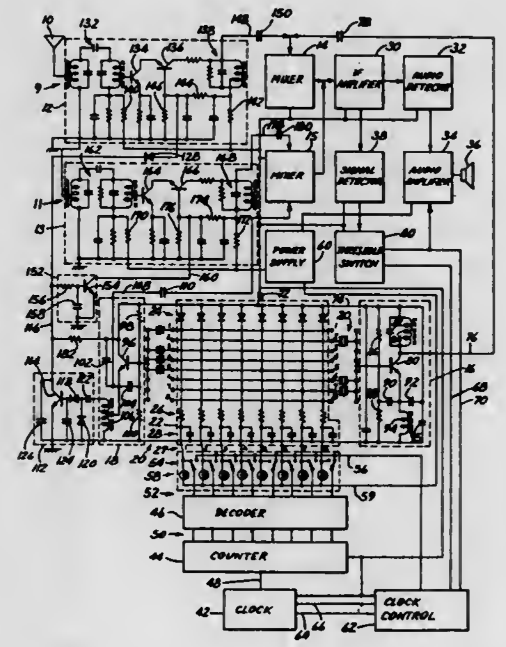
a tuner including a variable capacitance diode coupled through respective potentiometers with said respective ones of said two outputs of each of said shift register stages for tuning a selected channel; and

a simultaneous channel selection protecting means coupled to said shift register stages for causing only a single stage of said shift register stages to be brought to the channel selecting position whenever at least two of all the channels of the channel selection device are simultaneously selected by an erroneous operation.

3,895,303
OSCILLATOR-ACTUATED BANDSWITCH

Kazuyoshi Imazeki, and Masao Nakano, both of Tokyo, Japan, assignors to General Research of Electronics, Inc., Chicago, Ill.

Filed Sept. 4, 1973, Ser. No. 394,164
Int. Cl. H04b *1/32*
U.S. Cl. 325—470 **8 Claims**

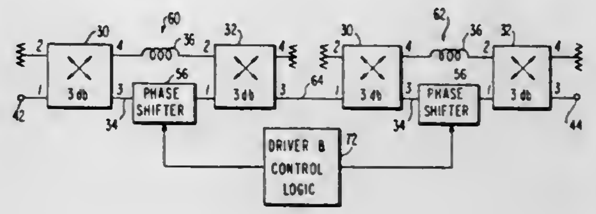


1. A signal-seeking receiver which automatically scans a plurality of channels of respective predetermined radio frequencies lying in a plurality of different bands of frequencies and tunes to a received signal having a frequency corresponding to one of said channels, said receiver including an RF section for each of said bands, each such RF section having a mixer, a plurality of local oscillators each for applying beating signals to the mixer of a respective one of said RF sections, a plurality of frequency-determining crystals each corresponding to one of said predetermined frequencies, sequential switching means for automatically coupling successive ones of said frequency-determining crystals sequentially to selected ones of said local oscillators to produce beating signals at respective frequencies beating with said predetermined frequencies to tune in the respective channels, means for selecting to which of said local oscillators a particular one of said crystals is coupled whereby only one of said local oscillators is operable at a time, means coupled to said mixers for producing information signals when a channel is being received, inhibiting means responsive to said information signals for inhibiting said sequential switching means when a channel is being received and stopping the scanning on a receiving channel, and band-switching means for enabling respective RF sections, said band-switching means comprising detector means coupled to one of said local oscillators and responsive to the signals generated thereby to produce a control signal indicative of the presence of signals generated by the local oscillator to which said detector means is coupled, and means responsive to said control signal for enabling the RF section corresponding to the respective local oscillator.

3,895,304
TUNABLE MICROWAVE NOTCH FILTER

Gerald I. Klein, Baltimore, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 20, 1974, Ser. No. 452,863
Int. Cl. H01p *1/20;* **H03k** *5/12;* **H03h** *7/14*
U.S. Cl. 328—167 **4 Claims**



1. A microwave notch filter, comprising at least one filter section including:

a first and second microwave four port signal power splitter each having a pair of input ports and a pair of output ports;

means coupled to one input port of said first power splitter for coupling a microwave signal thereto;

a first transmission line having a selected signal path length coupled between one output port of said first power splitter and one input port of said second power splitter; a second transmission line, having a signal path length of a predetermined length longer than said first transmission line, coupled between the other output port of said first power splitter and the other input port of said second power splitter whereby an output signal is provided at one output port of said second power splitter, said output signal having a waveform which includes a step in the time domain and a recursive frequency attenuation notch in the frequency domain;

termination means respectively coupled to the other input port of said first power splitter and the other output port of said second power splitter;

means coupled to said other output port of said second power splitter for coupling said output therefrom,

additionally including a second filter section coupled in series to said at least one filter section wherein said second section comprises:

third and fourth microwave signal power splitters each having a pair of input ports and a pair of output ports;

said one input port of said third power splitter being coupled to said means coupled to said other output port of said second power splitter;

a third transmission line having a selected signal path length coupled between one output port of said third power splitter and one input port of said fourth power splitter; a fourth transmission line having a single path length relatively longer than the signal path length of said third transmission line, coupled between the other output port of said third power splitter and the other input port of said fourth power splitter;

termination means respectively coupled to the other input port of said third power splitter and

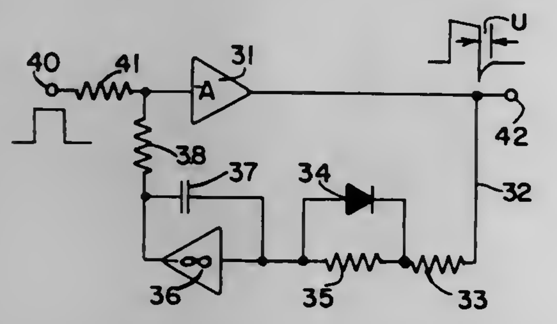
one output port of fourth power splitter;

output signal means coupled to the other output port of said fourth power splitter; and

additionally including a power amplifier operated in the saturation region of its power transfer characteristic and having an input coupled to said output signal means whereby the gain compression of said amplifier provided by the operation thereof in said saturation region effectively removes one step in the time domain and reduces the recursive frequency attenuation notch to that of a single filter section at the output of said amplifier.

3,895,305
CLAMP CIRCUITS

Millard D. Longman, Jr., North Miami Beach, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.
Filed Aug. 20, 1973, Ser. No. 389,712
Int. Cl. H03k *5/08;* **H03b** *3/02*
U.S. Cl. 328—171 5 Claims

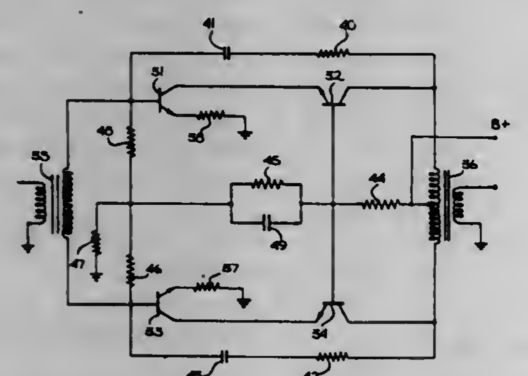


1. Apparatus for clamping electric pulse signals which are superimposed upon low noise frequencies, the signals having duty cycle pulses of greater than 50 percent, said apparatus having input and output terminals comprising:

- A. means adjacent the input terminal for receiving the pulse signals,
- B. means connected to said receiving means for amplifying the signals,
- C. means at the output terminal providing a feedback path for the amplified signals,
- D. means associated with the feedback path for inverting and integrating the feedback signals,
- E. means at said amplifying means for combining the input signals with the inverted feedback signals,
- F. means connected with said integrating means for modifying the time constant of the feedback path such as to produce unequal time constants for positive and negative portions of the pulses, said modifying means constructed to act in response to change of state of the input signals, and
- G. wherein said modifying means comprise a first diode and a first resistor.

3,895,306
SELF-BALANCING PUSH-PULL AMPLIFIER

Paul L. Rebeles, Hermosa Beach, Calif., assignor to TRW Inc., Los Angeles, Calif.
Filed May 29, 1973, Ser. No. 364,556
Int. Cl. H03f *3/26*
U.S. Cl. 330—15 11 Claims



1. A push-pull amplifier which comprises:

a. a pair of amplifiers;

b. input signal coupling means for coupling an input signal to the input of each of said amplifiers, the input signal as coupled to one of said amplifiers being of opposite polarity with respect to the input signal as coupled to the other of said amplifiers;

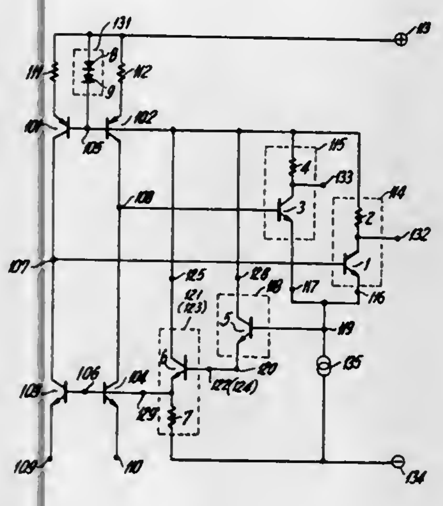
c. output signal coupling means coupled to the outputs of said amplifiers whereby an output signal which is a function of the difference in outputs of said amplifiers is obtained;

d. summing means coupled to both of said amplifiers, said summing means providing a signal which is a function of the sum of the outputs of said amplifiers; and

e. feedback means coupled to said summing means and coupling a feedback signal from said summing means to the input of each of said amplifiers.

3,895,307
ELECTRONIC CIRCUIT HAVING BIAS STABILIZING MEANS

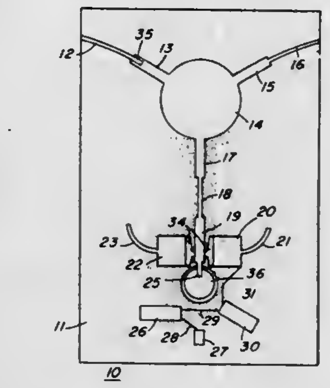
Tokio Furuhashi, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan
Filed Mar. 28, 1974, Ser. No. 455,932
Int. Cl. H03f *3/04*
U.S. Cl. 330—22 9 Claims



1. An electronic circuit comprising: first and second PNP transistors having their base terminals connected in common at a first junction; first and second PNP transistors having their bases connected in common at a second junction; a first buffer amplifier having an input terminal connected to a third junction comprising the common connection of the collectors of said first PNP transistor and said first NPN transistor; a second buffer amplifier having an input terminal connected to a fourth junction comprising the common connection of the collectors of said second PNP transistor and said second NPN transistor; a first amplifier having an input terminal connected to a fifth junction comprising the common connection of the output terminals of said first and second buffer amplifiers, said first amplifier having a constant current output terminal connected to said first junction and a low impedance output terminal; a second amplifier having an input terminal connected to said low impedance output terminal of said first amplifier and a constant current output terminal connected to said first junction; current transmission means having an input terminal connected to said low impedance output terminal of said first amplifier and an output terminal connected to said second junction; a first impedance element connected between the emitter of said first PNP transistor and a power source; a second impedance element connected between the emitter of said second PNP transistor and said power source; and variable impedance means connected between said first junction and said power source.

3,895,308
MICROWAVE FREQUENCY AMPLIFIER CONSTRUCTED UPON A SINGLE FERRITE SUBSTRATE

Chong Won Lee, and Wei Ching Tsai, both of Lexington, Mass., assignors to Raytheon Company, Lexington, Mass.
Filed May 17, 1973, Ser. No. 361,098
Int. Cl. H03f *3/14*
U.S. Cl. 330—38 M 6 Claims



1. In combination:

a sheet of ferrite material, said sheet having coupled to a surface thereto a plurality of stripline conductors and a microwave circulator, said sheet having an aperture therein, negative resistance amplifying means being positioned in said aperture;

said stripline conductors;

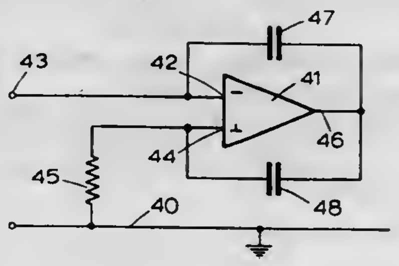
said negative resistance amplifying means;

said microwave circulator, said microwave circulator comprising a substantially circular conductor, first and second ones of said stripline conductors being coupled to said circular conductor and a third one of said stripline conductors being coupled to said circular conductor and to said negative resistance amplifying means; and

means for providing a magnetic field through said sheet in the region of said circular conductor.

3,895,309
SUB NETWORKS FOR FILTER LADDER NETWORKS

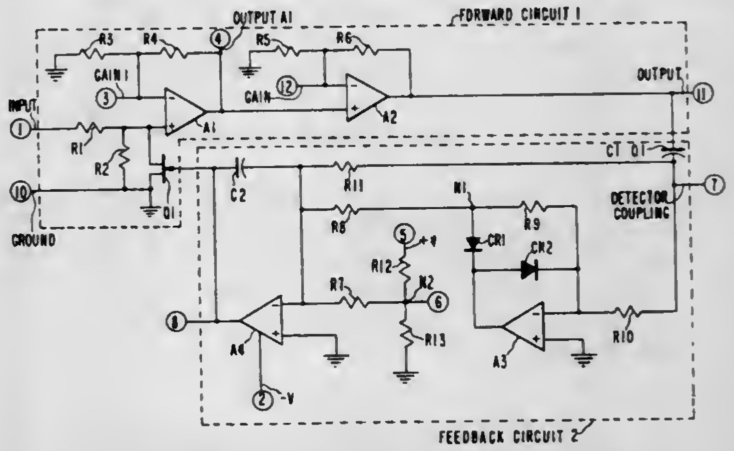
John Mortimer Rollett, and David Richard Wise, both of London, England, assignors to The Post Office, London, England
Filed Jan. 10, 1974, Ser. No. 432,176
Claims priority, application United Kingdom, Jan. 17, 1973, 2482/73
Int. Cl. H03f *1/36*
U.S. Cl. 330—107 5 Claims



1. A subnetwork having a input/output terminal and a reference terminal and comprising a differential input amplifier having an inverting signal input and a non-inverting signal input, and having substantially unity gain between the signal input and an output and having a high impedance input and low impedance output; said inverting signal input of said amplifier being connected directly to the subnetwork input/output terminal; which said inverting signal input is also connected by way of a first capacitor to the amplifier output, said output of the amplifier being also connected by way of a second capacitor to said non-inverting signal input of the amplifier, said non-inverting signal input of the amplifier being connected to the reference terminal by way of a first resistor, so that in operation the subnetwork is arranged to be equivalent to a $1/s$ element in series with a $1/s^2$ element, effective between the input/output terminal and the reference terminal.

3,895,310
AUTOMATIC GAIN CONTRGL CIRCUIT

George H. Warren, San Jose, Calif., assignor to Kinetic Technology Inc., Santa Clara, Calif.
Filed Jan. 31, 1974, Ser. No. 438,184
Int. Cl.^{2} H03G *3/20*
U.S. Cl. 330—145 6 Claims



1. An automatic gain control circuit comprising:

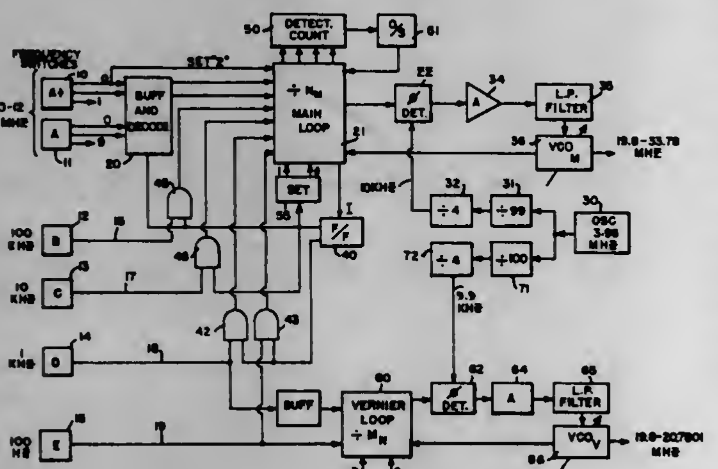
means for amplifying an AC input signal to produce an AC output signal with an amplitude substantially independent of the amplitude of said AC input signal when the amplitude of said AC input signal is within a selected range of amplitudes;

means for developing from said AC output signal a control signal, said means for developing said control signal comprising

- means for half wave rectifying and inverting said AC output signal to produce a first intermediate signal, comprising
  - a first operational amplifier means possessing a negative input lead, a positive input lead and an output lead;
  - means coupling said negative input lead to said means for amplifying thereby to transmit said AC output signal from said means for amplifying to said negative input lead;
  - means connecting said positive input lead to ground;
  - a first diode connecting said output lead to said negative input lead, said first diode being arranged to conduct current during the time the signal on said output lead is of positive polarity relative to the signal on said negative input lead;
  - a first resistor connecting said negative input lead to a first node; and
  - a second diode connecting said first node to said output lead, said second diode being arranged to conduct current during the time the signal on said first node is of positive polarity relative to the signal on said output lead;
  - thereby to produce on said first node said first intermediate signal;
- means for combining said AC output signal and said first intermediate signal to produce a second intermediate signal of opposite polarity to the polarity of said AC output signal during the time said AC output signal has a first selected polarity and of the same polarity as said AC output signal during the time said AC output signal is of said opposite polarity and means for producing said control signal from said second intermediate signal, comprising
  - means, including a second resistor, coupled to said means for amplifying, for transmitting said AC output signal to a second node;

a third resistor coupling said first node to said second node;
second operational amplifier means possessing a negative input lead, a positive input lead, and an output lead, said negative input lead of said second operational amplifier means being connected to said second node;
voltage divider means connected between a voltage source and ground;
a fourth resistor connecting a selected point on said voltage divider means to said second node;
means connecting the positive input lead of said second operational amplifier means to ground;
capacitive means coupling said output lead of said second operational amplifier means to the negative input lead of said second operational amplifier means;
thereby to produce on said output lead said control signal; and
means, responsive to said control signal, for varying the gain of said means of amplifying to insure that said AC output signal has a substantially constant amplitude independent of the amplitude of said AC input signal when the amplitude of said AC input signal is within a selected range of amplitudes.

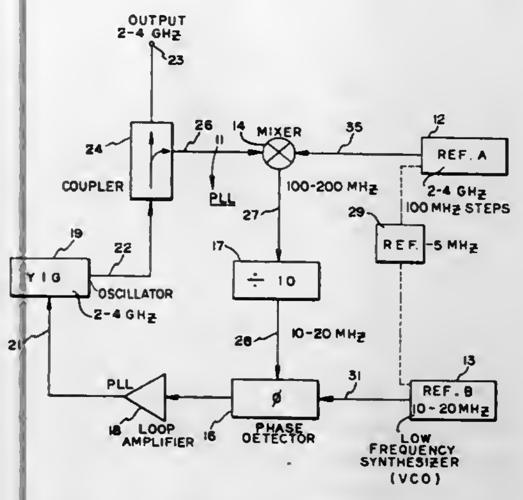
3,895,311
DIRECT PROGRAMMED DIFFERENTIAL SYNTHESIZERS
Philip Basse, and Ronald J. Juels, both of Freeport, N.Y., assignors to Comstron Corporation, Richmond Hill, N.Y.
Filed June 14, 1974, Ser. No. 479,311
Int. Cl.^{2} H03B *3/04*
U.S. Cl. 331—1 A **10 Claims**



1. In a frequency synthesizer of the type employing a main phase locked loop and a vernier phase locked loop, each loop containing a voltage controlled oscillator (VCO) whose frequency is varied according to an error voltage provided by a phase detector in each of said loops to compare said VCO with a predetermined reference frequency, the improvement therewith of apparatus for controlling one of said loops in a dual mode, comprising:

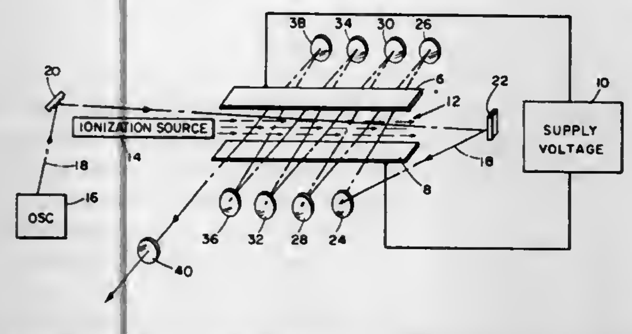
a. a plurality of switches, each capable of selecting one digit of a desired output frequency, said switches including a first one and a last one,
b. a programmable frequency divider included in said main loop and having an input responsive to the frequency output of said main VCO and an output coupled to an input of said phase detector, said divider including a series of control input terminals operative upon application of a signal thereto to cause said divider to divide said VCO frequency by a selected integer, and
c. means coupling said switches to said control inputs of said divider during a first mode to cause said divider to divide said VCO frequency by a first integer during said first mode and operative during a second mode to cause said divider to divide said VCO frequency by a second integer during a second mode whereby an effective division ratio of said divider is the sum of said first and second integers.

3,895,312
LOW NOISE HIGH SPECTRAL PURITY MICROWAVE FREQUENCY SYNTHESIZER
Paul G. Tipon, San Ramon, Calif., assignor to Systron Donner Corporation, Concord, Calif.
Filed Aug. 6, 1973, Ser. No. 385,989
Int. Cl. H03b *3/04*
U.S. Cl. 331—18 **4 Claims**



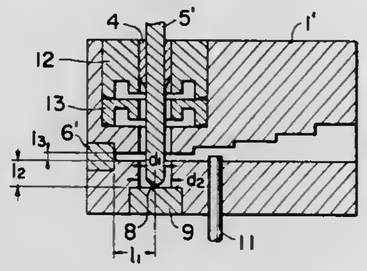
1. A low noise, high spectral purity microwave frequency synthesizer comprising: a tunable microwave oscillator; a phase locked loop (PLL) including said oscillator and a series coupled mixer and phase detector, said phase detector having an output coupled to and driving said tunable oscillator, the output of said oscillator being coupled to said mixer, and the output of said mixer being coupled to said phase detector, said mixer and phase detector being respectively coupled to and responsive to first and second reference sources, said first reference source providing an output frequency of the same order of magnitude as the output of said frequency synthesizer and being of the crystal controlled type and where said output frequency is variable in discrete steps, said second reference source being continuously variable over a frequency range equivalent to the range of said step and at least an order of magnitude below said output frequency of said first reference source.

3,895,313
LASER SYSTEMS WITH DIAMOND OPTICAL ELEMENTS
J. Russell Seitz, Cambridge, Mass., assignor to Entropy Conversion, Inc., Burlington, Mass.
Filed Sept. 17, 1973, Ser. No. 397,970
Int. Cl. H01s *3/02*
U.S. Cl. 331—94.5 D **38 Claims**



1. A laser system including a laser generator for generating a beam having a long term heating effect on diamond equivalent to that of a continuously generated beam having a power density of at least 10,000 watts/cm.^{2} over an area of at least one square mm., and a wavelength within the set consisting of the wavelengths from about 0.2 to about 2 microns, about 3.6 to about 3.8 microns, and above about 6.8 microns, enclosure means for said generator, a diamond laser window for transmitting said beam out of said enclosure means, said diamond having a thermal conductivity of at least 10 watts/cm.°K. at 300°K. and an optical absorption at the beam wavelength of no more than 10–20% and means for cooling said diamond laser window.

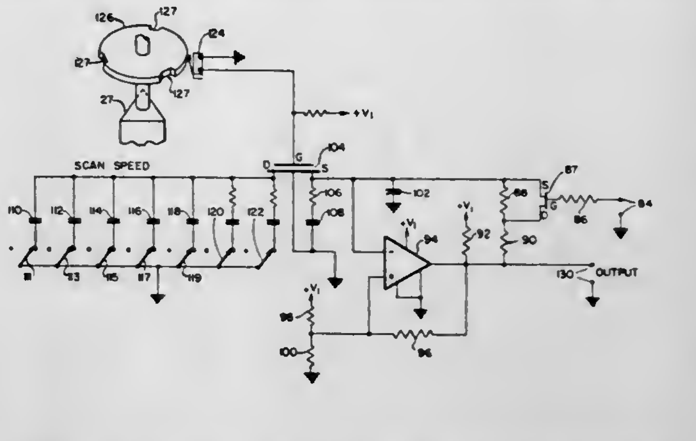
3,895,314
SOLID-STATE ACTIVE DEVICE
Kenji Sekine, Tokorozawa, and Yoichi Kaneko, Hachioji, both of Japan, assignors to Hitachi, Ltd., Japan
Filed Mar. 19, 1973, Ser. No. 342,444
Claims priority, application Japan, Mar. 17, 1972, 47-26568
Int. Cl. H03b *7/14*
U.S. Cl. 331—107 R **9 Claims**



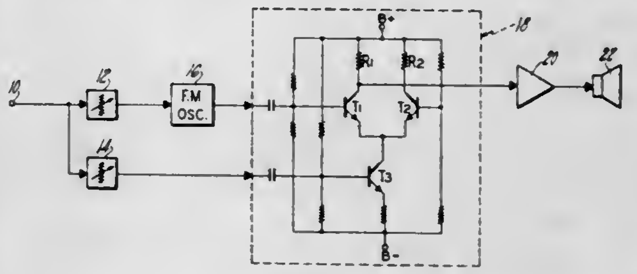
3. A solid-state active device comprising:
a solid-state oscillator element disposed on a heat sink;
a coaxial cylindrical cavity wall surrounding said element the diameter of the cavity bounded by said wall having a first prescribed dimension;
a cylindrical conductor rod coaxial with the wall of said cavity and contacting said element at one end thereof, the diameter of said rod being a second prescribed dimension and being less than said first prescribed dimension;
a waveguide, the open terminal end of which is of a minimum height and is electromagnetically coupled to said cavity, so that the oscillation output from said element within said cavity may be electromagnetically coupled therefrom;
a short-circuiting piston element spaced from the axis of said rod a predetermined distance and closing the open terminal end of said waveguide; and
an output tuning stub provided in said waveguide.

3,895,315
VOLTAGE VARIABLE OPERATIONAL AMPLIFIER RELAXATION OSCILLATOR
Allan S. Way, Irvine, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.
Filed Jan. 14, 1974, Ser. No. 433,397
Int. Cl. H03k *3/28*
U.S. Cl. 331—111 **5 Claims**

1. In a clock circuit providing a pulse train output at a frequency proportional to an input signal received at a signal input terminal, the combination comprising:
an operational amplifier relaxation oscillator having inverting and noninverting input terminals, an output terminal for supplying the pulse train output, a resistive frequency determining arm connected between the output terminal and one of the inverting and noninverting input terminals, a capacitive frequency determining arm connected between said one of the input terminals and a source of reference voltage, the resistive and capacitive values of the respective circuit arms establishing the frequency of the pulse train output;
one or more capacitors manually selectable for selective connection in parallel as part of the capacitive frequency determining circuit arm for establishing the capacitive value of the arm; and
a controllable semiconductor means having first and second electrodes and a conductive path therebetween and a voltage responsive control electrode for controlling the conductance of said path, the first and second electrodes of the semiconductor means being connected across at least a portion of the resistive frequency determining circuit arm, the control electrode of the semiconductor means being connected to said signal input terminal to receive the input signal supplied thereto for varying the conductance of the conductive path of the semiconductor means and thus the resistance of the resistive frequency determining arm in response to the input signal, whereby the manual selection of the one or more capacitors determines a frequency range for the clock circuit and the conductance of the semiconductor means conductive path, established in response to the input signal, determines the output frequency of the clock circuit within the frequency range.



3,895,316
COMPLEX TONE MODULATION
Harry Fein, New Haven, Conn., assignor to W-P Instruments, Inc., New Haven, Conn.
Filed Aug. 29, 1973, Ser. No. 392,430
Int. Cl. H03c *3/38;* **A61b** *5/02, 5/04*
U.S. Cl. 332—17 **4 Claims**



1. A method for the production of audible signals which vary in both tone and magnitude in accordance with the amplitude of a monitored parameter, the amplitude of the monitored parameter varying at a sub-audible frequency, said method comprising the steps of:
transducing a monitored parameter which varies in amplitude at a sub-audible frequency into an electrical information bearing signal;
frequency modulating a carrier signal in the audible frequency range in accordance with the amplitude of the information bearing signal;
directly amplitude modulating the frequency modulated carrier signal with the information bearing signal while simultaneously suppressing the carrier signal in the absence of an information bearing signal; and
transducing the amplitude modulated signal into an audible signal.

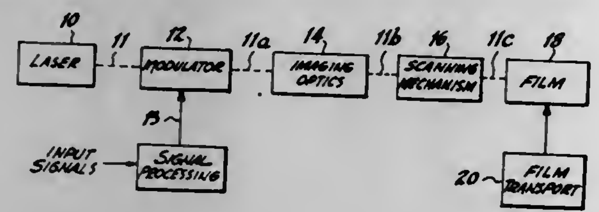
3,895,317
CONTROL CIRCUITS

Gardner Thomas Burton, Runnemede, N.J., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 138,768, April 29, 1971, Pat. No. 3,787,887, which is a continuation of Ser. No. 769,292, Oct. 21, 1968, abandoned. This application Apr. 6, 1973, Ser. No. 348,722

Int. Cl. H01s *3/10*

U.S. Cl. 332—7.51 **3 Claims**



1. A control circuit for establishing a reference level at the output of an optical modulator used to modulate the intensity of a linearly polarized laser beam comprising:

- a. a partially reflecting mirror disposed to transmit a portion of the linearly polarized laser beam appearing at the output of said modulator;
- b. a quarter wave plate disposed in the path of the transmitted portion, said plate serving to transform the transmitted portion of said linearly polarized beam into an elliptically or circularly polarized beam;
- c. a Wollaston prism disposed in the path of said elliptically or circularly polarizing beam, said prism serving to split said beam into first and second components,

said components bearing a known relationship to each other in the presence of a predetermined signal applied to said modulator;

- d. first and second photodiodes disposed in the path of said first and second components, said photodiodes serving to transform said components into first and second electrical signals;
- e. first circuit means, including an operational amplifier and a differential amplifier, for monitoring the relationship between said electrical signals to detect a change from said known relationship and produce an error signal in response to said change; and
- f. second circuit means for applying said error signal to said modulator in the presence of said predetermined signal in a manner causing the transmitted portion of said laser beam to re-establish said known relationship at the output of said prism.

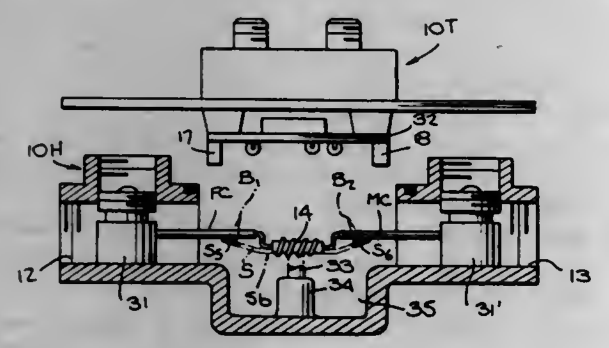
3,895,318
CATV MULTI-TAP DISTRIBUTION BOX WITH SWITCH

Joseph I. Ross, 5 Ridge Rock Ln., East Norwich, N.Y. 11732

Continuation-in-part of Ser. No. 471,659, May 20, 1974. This application July 17, 1974, Ser. No. 489,096

Int. Cl. H03h *7/48*

U.S. Cl. 333—6 **5 Claims**



1. A multi-tap distribution box for a community antenna system, said box being interposable in a primary line carrying high-frequency signals and power currents to subscribers who are linked to the primary line by secondary lines coupled to taps on the box, said box comprising:

- A. a housing having an input port and an output port for interposing said box in the primary line, a radio-frequency blocking inductor disposed in said housing to interconnect said ports, and a normally-closed switch shunting said inductor and short-circuiting same, and
- B. a tap plate removably secured to said housing, said tap plate having a group of external taps, means engaging said switch to break open same, a distribution network coupled between said ports when said plate is secured to said housing to supply said signals to said taps, said network being rendered operative only when said switch is open.

3,895,319
HIGH-POWER Y-JUNCTION H-PLANE CIRCULATOR FOR MICROWAVE TRANSMISSION

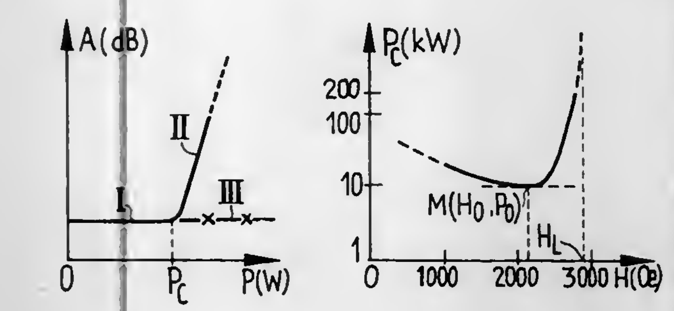
Henri Lahmi, and Alain LaGrange, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Nov. 14, 1973, Ser. No. 415,751

Claims priority, application France, Nov. 17, 1972, 40897

Int. Cl.² H01P *1/38*

U.S. Cl. 333—1.1 **8 Claims**



1. A circulator for the transmission of microwave energy, comprising:

- a metallic structure including three coplanar waveguides of rectangular cross-section forming a Y-junction in their magnetic plane;
- a pair of ferromagnetic elements with faces parallel to said plane spacedly confronting each other within said Y-junction; and
- a source of unidirectional magnetic flux generating between said faces a constant magnetic biasing field perpendicular to said plane saturating said ferromagnetic elements, said field having a magnitude below the gyromagnetic-resonance point but above the minimum-critical-power point of the circulator and approaching a limiting value beyond which first-order non-linear effects are negligible.

3,895,320
BROAD-BAND LUMPED-ELEMENT CIRCULATOR

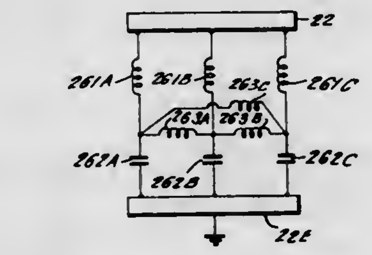
Hidehiko Katoh, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

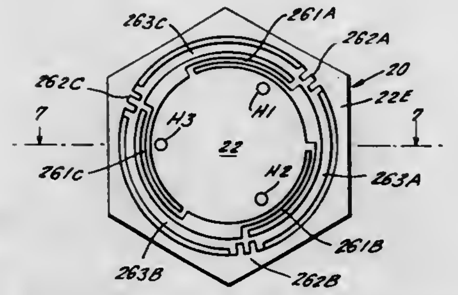
Filed Mar. 6, 1974, Ser. No. 448,556

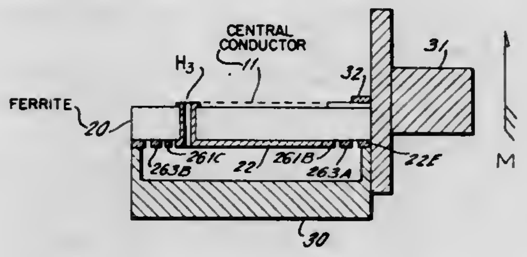
Int. Cl. H01p *1/32*

U.S. Cl. 333—1.1 **7 Claims**

1. A broad-band thin-film circulator having a plate of ferromagnetic material, means creating a D.C. magnetic field transverse to said plate, at least three arms of mutually insulated thin conductor films formed on one major surface of said plate, terminal members connected respectively to one end of each of said arms; a centrally located conductive film formed on the opposite surface of said plate; means connected respectively to said conductor films for electrically connecting the other ends of said conductor film arms to said central conductive film and including resonant means including LC circuit elements and connected at one end to said central film and electrostatically coupled at the opposite end with the other ends of said conductive film arms, wherein said resonant means comprises three LC series circuit paths each comprising an inductor and capacitor; conductive elements connecting each junction between an inductor and capacitor to every other junction.







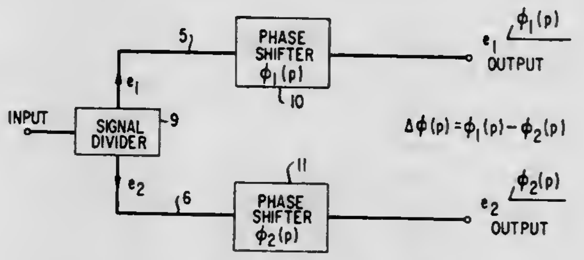
3,895,321
MINIMUM PHASE DIFFERENTIAL PHASE SHIFTER

Harold Seidel, Warren, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 9, 1974, Ser. No. 496,151

Int. Cl.² H03H *7/18*

U.S. Cl. 333—11 **4 Claims**


5
PHASE SHIFTER $\phi_1(p)$
10
e_1
$\phi_1(p)$
OUTPUT
INPUT
SIGNAL DIVIDER
9
$\Delta\phi(p)=\phi_1(p)-\phi_2(p)$
11
e_2
6
PHASE SHIFTER $\phi_2(p)$
$\phi_2(p)$
OUTPUT

1. A minimum phase network for introducing a differential phase shift $\Delta\Phi(p)$ between two signals propagating along two different wavepaths including:

- a first phase shifter located in one of said wavepaths for producing a phase shift $\Phi_1(p)$ in one of said signals;
- a second phase shifter, different from said first, located in the other of said wavepaths for producing a phase shift $\Phi_2(p)$ in the other of said signals, where $\Delta\Phi(p) = \Phi_1(p) - \Phi_2(p)$, and $p = i\omega$;

characterized in that:

said first and second phase shifters comprise solely passive lumped element circuit components;

$$\Delta\Phi(p) = 2 \arctan \operatorname{Im} \Gamma(p),$$

where

$\Gamma(p)$ is given as the ratio of an even order polynomial $E(p)$ and an odd order polynomial $0(p)$;

$$\Phi_1(p) = 2 \arctan \operatorname{Im} \Gamma_1(p),$$

where

$\Gamma_1(p)$ is given as the ratio of an even order polynomial $E_1(p)$ and an odd order polynomial $0_1(p)$;

$$\Phi_2(p) = 2 \arctan \operatorname{Im} \Gamma_2(p),$$

where

$\Gamma_2(p)$ is given as the ratio of an even order polynomial $E_2(p)$ and an odd order polynomial $0_2(p)$;

and in that all the roots of the equation $E_1(p) + 0_1(p) = 0$, and the negative of all of the roots of the equation $E_2(p) + 0_2(p) = 0$ are also the roots of the equation $E(p) + 0(p) = 0$.

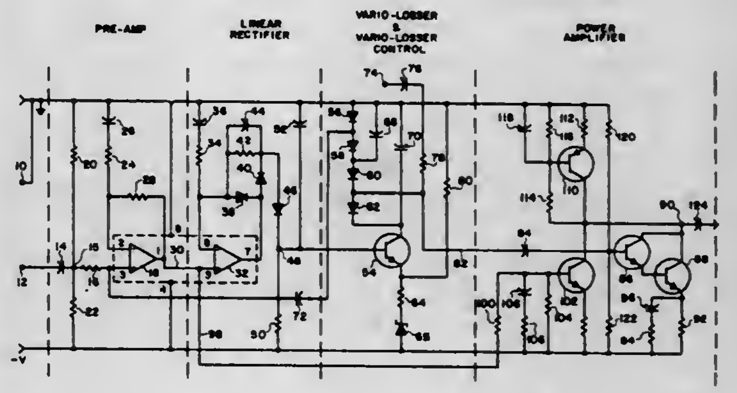
3,895,322
TONE CONTROLLED COMPANDORED SYSTEM

James A. Stewart, Menlo Park, and Neale A. Zellmer, Belmont, both of Calif., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Mar. 14, 1974, Ser. No. 450,956

Int. Cl. H04b *1/64*

U.S. Cl. 333—14 **11 Claims**



1. In a telephone transmission system for communicating voice signals having frequencies within a passband that is more narrow than the bandwidth of an associated voice channel and having a transmitting terminal and a receiving terminal interconnected by a transmission medium, the combination:

wherein the transmitting terminal comprises

- means responsive to the voice signals for generating a direct current control signal;
- means for generating a pilot tone of a fixed power level at a predetermined audio frequency outside the voice signal passband and within the channel bandwidth,
- means responsive to the direct current control signal for simultaneously compressing the volume range of the voice signals and adjusting the level of the pilot tone such that the relative output levels thereof are the same as the relative input levels thereto;

and

- means for combining the compressed voice signals and adjusted pilot tone and applying the combined output to the transmission medium; and

wherein the receiving terminal comprises means responsive to the adjusted pilot tone in a received signal for compensating for losses caused by the transmission medium while expanding the compressed voice signals so transmitted to a predetermined volume range.

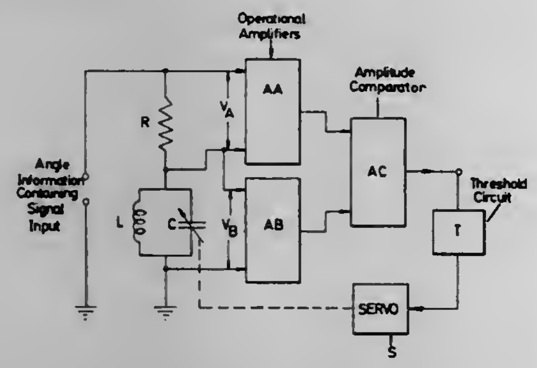
3,895,323
TRACKING FILTER WITH LOCK-ON ASSURANCE FOR DOPPLER NAVIGATION SYSTEM

Francis G. Overbury, Cuffley, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Oct. 7, 1974, Ser. No. 512,439

Int. Cl.^{2} H03H *7/10*

U.S. Cl. 333—17 **7 Claims**



1. A frequency tracking filter arrangement for acquiring within a multi-frequency component input signal, the major component thereof, comprising:
- a parallel resonant filter circuit;
- comparison means for comparing a first voltage across the filter and representative of the acquired component with a second voltage proportional to the current fed to the filter and representative of the frequency components outside the acquisition range;
- and means responsive to the output of said comparison means for causing further searching of the filter when said comparison indicates that said second voltage is greater than said first voltage.

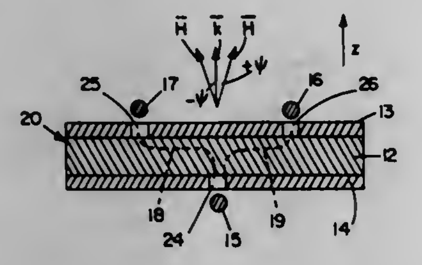
3,895,324
APPARATUS FOR PROCESSING ELECTROMAGNETIC WAVE ENERGY

Frederic R. Morgenthaler, Wellesley Hills, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Division of Ser. No. 173,884, Aug. 23, 1971, Pat. No. 3,811,941, which is a continuation of Ser. Nos. 740,751, June 27, 1968, Pat. No. 3,609,596, and Ser. No. 645,947, June 14, 1967, Pat. No. 3,540,302. This application Feb. 7, 1974, Ser. No. 440,317

Int. Cl. H03h *9/22, 9/30, 9/34*

U.S. Cl. 333—30 M **2 Claims**



1. Apparatus for processing electromagnetic wave energy, that comprises, a magnetic material adapted to receive the electromagnetic wave energy, the material being one that will support propagating spin wave energy and propagating elastic wave energy and allow interchange of energy therebetween, the material being one in which the electromagnetic wave energy can be converted to propagating spin wave energy and propagating elastic wave energy, the material being further adapted to receive an applied magnetic field which in combination with the susceptibility of the material provides a graded internal magnetic bias field to effect spatial conversion from electromagnetic wave energy to either propagating spin wave energy or propagating elastic wave energy, the material being treated to provide a predetermined grading of said susceptibility thereby to present a predetermined profile of internal magnetic bias field to the wave energy, means for introducing said applied magnetic field to the material, input means for introducing electromagnetic wave energy to the material, and means for removing electromagnetic wave energy from the material.

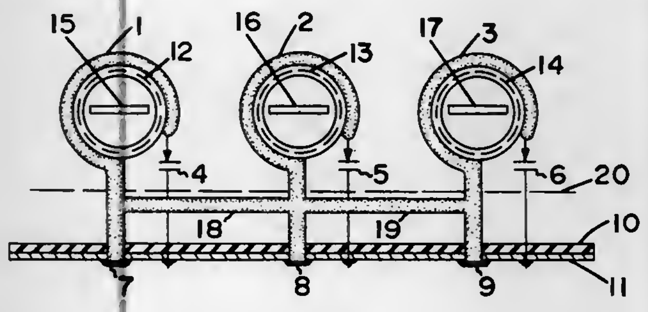
3,895,325
VARIABLE OSCILLATING CIRCUIT ARRANGEMENT FOR UHF RANGE

Bertram Fischer, Deisslingen, and Gerhard Maier, Schwenningen, both of Germany, assignors to GTE International Incorporated, Stamford, Conn.

Filed Apr. 30, 1974, Ser. No. 465,706

Int. Cl.^{2} H03H *13/00, 5/12*

U.S. Cl. 333—70 S **1 Claim**



1. A variable oscillating circuit arrangement for the UHF range of a transistorized UHF television tuner comprising:
- an electrically conductive base plate;
- at least two circular self-supporting inductors, each of one piece and less than one complete turn and having a "hot" end and a "cold" end;
- an alterable slug of diamagnetic material disposed within each one of said circular self-supporting inductors;
- strip means electrically and mechanically coupling said "cold" end of each one of said inductors to said base plate;
- capacitive diode means coupling said "hot" end of each one of said inductors to said base plate; and
- connector strip means electrically and mechanically interconnecting said two inductors to provide mechanical support and mutual inductance therebetween.

3,895,326
TRANSIT TIME TUBE WITH A COIL-LIKE DELAY LINE

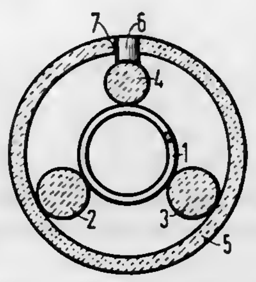
Arno Hinckeldey, and Helmut Katz, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed June 3, 1974, Ser. No. 475,782

Claims priority, application Germany, June 7, 1973, 2329153

Int. Cl. H01p *9/02;* **H01j** *25/42*

U.S. Cl. 333—31 A **8 Claims**



1. A transit time tube comprising a coil-like delay line, a vacuum sleeve, a plurality of support rods spaced about said delay line and supporting said delay line within said sleeve, at least one opening in said sleeve adjacent one of said support rods, and at least one ram extending through said openings in a sealed relationship with said sleeve and bearing against said one support rod.

3,895,327
CAR RADIO TUNING DEVICE WITH PUSH-BUTTON STATION SELECTOR

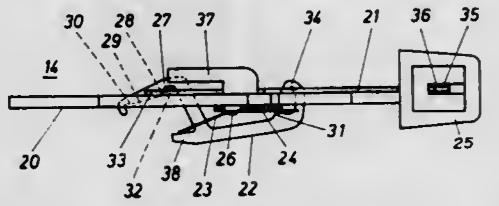
Theodor Hulsebusch, and Hans Prolss, both of Hildesheim, Germany, assignors to Blaupunkt-Werke GmbH, Hildesheim, Germany

Filed Sept. 30, 1974, Ser. No. 510,709

Claims priority, application Germany, Feb. 14, 1974, 2406903; Oct. 25, 1973, 2353423; Oct. 25, 1973, 38297

Int. Cl.^{2} H03V *5/32;* **F16H** *35/18*

U.S. Cl. 334—7 **5 Claims**



1. A tuning device for a car radio comprising, in combination:
- a radio tuning element having a rotable shaft and a frame-like portion (12) affixed thereto for movement with the rotation thereof;
- a tuning knob and a rotary drive for adjustment of said tuning element;
- coupling means (13) for engaging and disengaging said rotary drive for thereby coupling and uncoupling said tuning knob with and from said tuning element; and
- at least one push-button station selector comprising:
  - a. a spring-restorable elongated tuning slide (20), mounted slidably for longitudinal motion back and forth and provided with pivot mounting means (26) and with first and second central apertures;
  - b. a strip-shaped member (21) mounted for longitudinal slidable motion on and parallel to said tuning slide and having first and second apertures and an offset actuating arm (37) for actuating said coupling means,
  - c. a substantially semicircular half disc (24) rotably mounted on said tuning slide (20) by said pivot mounting means (26) thereof;
  - d. a push-button (25) mounted on an extremity of said strip-shaped member extending beyond the end of said tuning slide;
  - e. a clamping lever (22) passing through said apertures of said tuning slide (20) and of said strip-shaped member (21) and mounted so that actuation of said push-button (25) from its extreme withdrawn position towards said tuning slide (20) first preclamps said half disc (24) against said tuning slide (20) while allowing it to accomodate its position to that of said frame-like portion (12) of said tuning element against a pre-clamping frictional force, and thereafter locks said half disc against said tuning slide,
  - f. said offset actuating arm (37) being so located on said strip-shaped member (21) and so dimensional that it does not operate said coupling means (13) to uncouple said tuning knob from said tuning element until the preclamping of said half disc (24) has been substantially completed by said clamping lever (22), but does so actuate said coupling means at the beginning of the operation of locking said half disc.

3,895,328
THERMO-MAGNETICALLY OPERATED SWITCHES

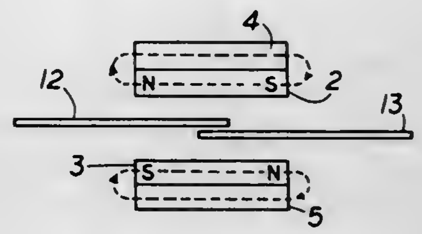
Umaki Kato; Masanori Endo, both of Yokohama; Hiroyasu Satoh, and Kentaro Horiuchi, both of Sendai, all of Japan, assignors to Tohoku Metal Industries Limited, Sendai, Japan

Filed Nov. 29, 1973, Ser. No. 420,086

Claims priority, application Japan, Nov. 30, 1972, 47-137063

Int. Cl.^{2} H01H *36/00*

U.S. Cl. 335—208 **20 Claims**



1. A thermo-magnetically operated switch comprising:
- an elongated reed switch including: an envelope,
- a pair of ferromagnetic reeds hermetically sealed in said envelope with the free ends thereof overlapped for opening and closing movements relative to one another, and two lead wires which are connected with respective reeds, the lead wires being secured and sealed to opposite ends of the envelope and extending therefrom in opposite directions,
- two elongated permanent magnets having Curie points higher than an operating temperature range of the switch and being disposed alongside said reed switch at different angular positions about the circumference of said reed switch and in reverse polarity with respect to each other, the respective magnetic poles of each permanent magnet being disposed over the respective reeds,
- two elongated ferromagnetic bodies having different predetermined Curie points within the operating temperature range of the switch and overlying respective permanent magnets, the permanent magnets being interposed between the reed switch and the respective ferromagnetic bodies,
- and an enclosure means containing the reed switch, the two permanent magnets and the two ferromagnetic bodies, opposite end portions of the enclosure means being made of non-conductive and non-magnetic material and securing and supporting the respective lead wires, and the intermediate portion of the enclosure means between the opposite end portions thereof being made of heat-conductive material.

3,895,329
TOROIDAL-LIKE SADDLE YOKE

James H. Logan; Bennie A. Findeisen, both of Baldwinsville, and Wilfred Rublack, Liverpool, all of N.Y., assignors to General Electric Company, Syracuse, N.Y.

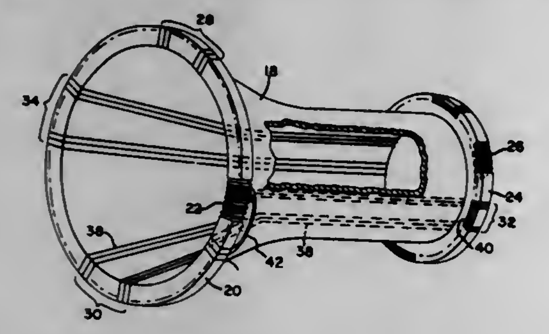
Continuation-in-part of Ser. No. 426,328, Dec. 19, 1973, abandoned. This application Dec. 6, 1974, Ser. No. 530,189

Int. Cl. H01f *7/00*

U.S. Cl. 335—210 **7 Claims**

1. A magnetic deflection yoke comprising:
- a yoke core adapted to fit about a portion of a cathode ray tube; and
- a saddle-type winding wound directly on said core, said winding including a plurality of turns of a conductor having first segments positioned adjacent the inside surface coaxially of said core and having second segments extending outward from each end of said core and cir-

cumferentially around the outside surface of said core, each of said first segments having at least a portion thereof directly positioned by both opposite walls of a respective slot in said core.



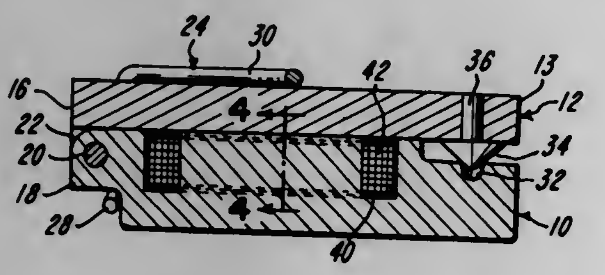
3,895,330
BI-LEVEL SOLENOID HOLDING DEVICE

Betty Jane Yost, Dayton, Ohio, assignor to Ledex Incorporated, Dayton, Ohio

Filed Mar. 15, 1974, Ser. No. 451,542

Int. Cl.^{2} H01F *7/08*

U.S. Cl. 335—253 **6 Claims**



1. An electromagnetic holding device comprising a pair of ferromagnetic plate members, each having a face portion, said plate members adapted for assembly in face confronting relation, one of said plate members having an annular channel in the face portion thereof, the face portion of the other of said members being uninterruptedly planar, means including a solenoid coil disposed in and substantially filling said channel, one of said plate members having trough means communicating to said channel from an exterior surface thereof, electrical lead means extending through said trough means having electrical connection to said coil, said ferromagnetic plate members cooperating to substantially fully immerse said coil and said lead means, and hinge means for hingedly joining said plate members adjacent one margin of each, said hinge means comprising interdigitating lug means integral with said plate members, and a hinge pin, said lug means having coaxially disposed bores receiving said hing pin.

3,895,331
LATCHING SOLENOID

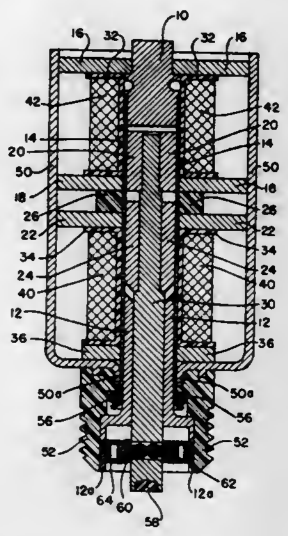
Myrl J. Saarem, Carson City, Nev., assignor to Richdel, Inc., Carson City, Nev.

Filed May 20, 1974, Ser. No. 471,219

Int. Cl. H01f·*7/08*

U.S. Cl. 335—253 **9 Claims**

1. A solenoid assembly including: a first elongated central core section formed of magnetizable material positioned on the central longitudinal axis of the assembly; a second elongated central core section of tubular configuration coaxial with said first core section and axially spaced therefrom; an elongated central axially movable armature coaxial with said first core section; a third elongated core section of tubular configuration coaxially mounted on said armature between said first and second core sections and in axially displaced relationship with said second core section; a fourth elongated core section of tubular configuration coaxially mounted on said armature between said first and third core sections and in axially displaced relationship with said first core section; a pair of axially spaced electrical energizing coils mounted in coaxial relationship with said core sections, said first coil surrounding and bridging said first and fourth core sections, and said second coil surrounding and bridging said second and third core sections; mounting means for said first and second core sections and for said first and second coils, said armature being movable in said mounting means along said central longitudinal axis; and means including mechanical toggle means intercoupling said armature to said mounting means, so that an electrical pulse energizing the first coil causes the armature to move along the central longitudinal axis to a first position, and an electrical pulse energizing the second coil causes the armature to move along the central longitudinal axis to a second position.



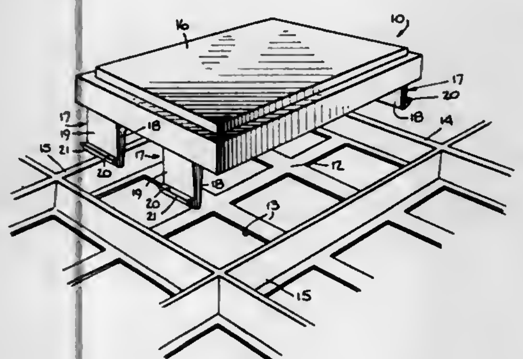
3,895,332
MAGNETIC LIFTING ELEMENT

Theodor M. Box, 1108 Aileen Rd., Brielle, N.J. 08730

Filed Oct. 7, 1974, Ser. No. 512,880

Int. Cl.^{2} B23Q *3/154*

U.S. Cl. 335—286 **8 Claims**



1. A magnetic lifting element for mounting on top of a shipping cage to permit lifting the cage by means of an electromagnetic pickup boom, the cage having at least one opening through the top thereof, wherein the lifting element comprises:

- a flat pad, the major portion of which is composed of magnetic material;
- at least one attachment member extending approximately perpendicularly from one face of the flat pad for loosefitting insertion through the opening in the top of the cage; and
- a transverse stop means located near the outer end of the attachment member for engaging the under surface of the cage top to prevent withdrawal of the attachment member after it has been inserted through said opening, the transverse stop means being spaced from the one face of the pad by a distance substantially greater than the thickness of the cage top to allow vertical movement of the flat pad away from the upper surface of the cage before the stop member engages the under surface for accommodating possible vertical misalignment between the pickup boom and the top of the cage.

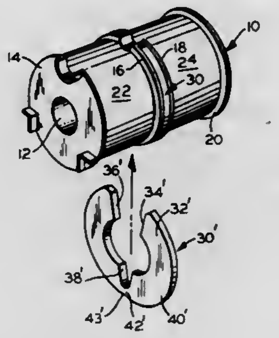
3,895,333
RELAY COIL WITH OPEN WASHER

Robert C. Cressman, East Greenwich, R.I., assignor to General Electric Company, New York, N.Y.

Filed Oct. 23, 1974, Ser. No. 517,579

Int. Cl. H01f *3/00*

U.S. Cl. 335—297 **5 Claims**



1. A coil comprising:

a. a spool of insulating and non-magnetic material,

b. said spool having a hollow center shaft in which a magnetic plunger may be operatively associated and magnetically moved,

c. said spool having two aligned relay coil bays one at each end of said spool,

d. said bays being defined by an end flange at each end of said hollow center shaft and by a parallel pair of center flanges,

e. said center flanges being spaced to receive an annular piece of magnetic material therebetween,

f. and a ring of magnetic material at the center of said spool disposed between said center flanges,

g. said ring having a radial slot through one side thereof and a diametrically opposite weakened section opposite said radial slot whereby said ring may be closed on said spool by hinging at said weakened section from an open ring configuration in which it is formed.

3,895,334
ELECTRICAL CHOKE COIL OF THE AIR CORE TYPE

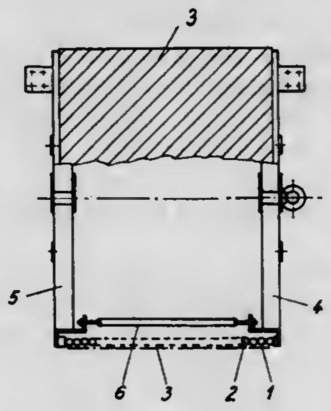
Manfred Baier, Birr, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Mar. 13, 1973, Ser. No. 340,755

Claims priority, application Switzerland, Mar. 17, 1972, 4010/72

Int. Cl. H01f *27/30*

U.S. Cl. 336—65 **2 Claims**



1. An electrical choke coil of the air-core type comprising a helically wound insulated electrical conductor, the insulation on said conductor comprising an inner layer of glass-mica material applied to the conductor and an outer layer of glass-fibre material, the individual turns of said helical coil being in touch with each other and bonded together into an integral whole by application of an electrically insulating adhering agent thereto, a binding layer of electrical insulating tape applied only to the outer surface of said coil for reinforcing the coil structure against radial expansion when subjected to currents of short-circuit magnitude, support spiders engaging each end of said coil, and tensioning straps of electrical insulating material extending between said support spiders inside of said coil for holding said support spiders against the coil ends under tension.

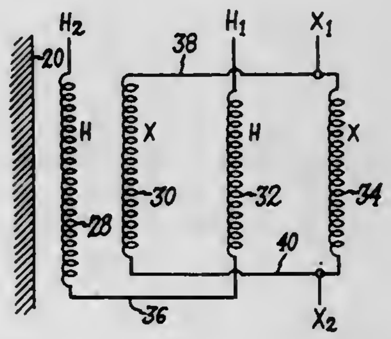
3,895,335
SERIES/PARALLEL CONNECTED SINGLE PHASE POWER TRANSFORMER

Abraham I. Manimalethu, Peru, Mass., assignor to General Electric Company, New York, N.Y.

Filed June 3, 1974, Ser. No. 475,564

Int. Cl.^{2} H01F *27/28*

U.S. Cl. 336—183 **6 Claims**



1. In a single phase electrical power transformer of the type having a magnetizable three-legged stacked core, said core having a central leg and spaced-apart outer legs parallel to said central leg, the cross-sectional area of each of said outer legs being approximately one-half the cross-sectional area of said central leg, the improvement comprising:

a. a coil, including a plurality of hollow and generally cylindrical shaped alternating interleaved high voltage and low voltage windings, the longitudinal axes of said windings being generally concentric with each other and with the longitudinal axes of said central leg of said transformer core, having one of said high voltage windings immediately adjacent said central leg;

b. means connecting said low voltage windings in parallel; and

c. means connecting said high voltage windings in series, sequentially from the innermost to the outermost high voltage windings.

3,895,336
TRANSFORMER CORE WITH COMPOSITE OFFSET V-ITER AND STEP JOINT

Frank A. Pitman, Rome, Ga., assignor to General Electric Company, Pittsfield, Mass.

Filed June 24, 1974, Ser. No. 482,053

Int. Cl.^{2} H01F *27/24*

U.S. Cl. 336—217 **4 Claims**

1. In a transformer core of the stacked flat-layer type having a plurality of flat, laminated, layered members of equal width, each of said members including;

- two generally rectangular shaped, parallel, spaced-apart, outside leg members beveled at each end;
- two generally rectangular shaped, single piece yoke members beveled at each end,
  - each yoke member having its longitudinal axis perpendicular to the longitudinal axis of said legs forming a rectangular shaped structure, a partially beveled end portion of a yoke member engaging a partially beveled end

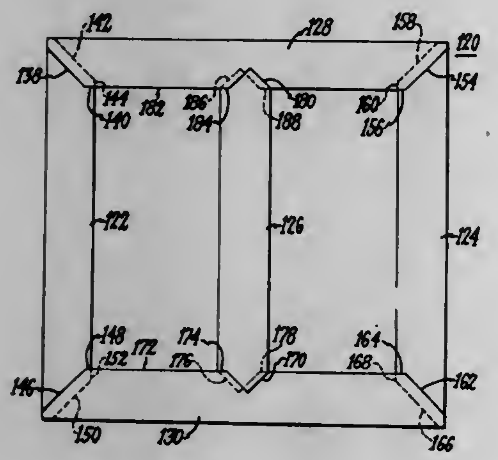
portion of a leg member forming a miter joint between a yoke member and a leg member, adjacent miter joints in adjacent layers being offset in the plane of a layer such that a miter joint in one layer is bridged by a portion of an adjacent layer;

a generally rectangular shaped inner leg member, parallel to and intermediate of said outer leg members,

an end of said inner leg member engaging a side portion of a yoke member forming an inner leg member to yoke member joint;

wherein the improvement comprises said inner leg member to said yoke member joint, said joint comprising:

a. a generally rectangular shaped yoke member having an outward opening V-shaped cut at an internal side thereof; and

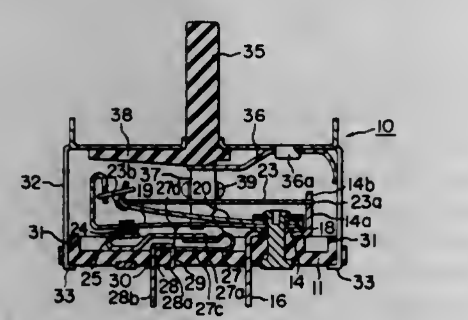


b. a generally rectangular shaped inner leg member having V-shaped end portions, the central axis of said V-shaped end portions being parallel to and offset in the same direction from the longitudinal axis of said inner leg member and having a step portion extending laterally from said V-shaped end in a direction that is perpendicular to the longitudinal axis of said inner leg member, whereby a V-shaped end of said inner leg member is cooperatively engageable with a V-shaped cut in said yoke, and said step portion is engageable with a side of said yoke member in a butting relationship such that no substantial voids exist between a yoke member and an inner leg member, adjacent joints in immediately adjacent layers being offset in opposite directions in the plane of a layer, in the direction of the longitudinal axis of a yoke member such that a joint in one layer is bridged by a portion of an adjacent layer.

3,895,337
OVERCURRENT PROTECTIVE DEVICE

Kazuo Osawa, Yokohama, Japan, assignor to Micron Electric Co., Ltd., Japan

Filed Nov. 21, 1973, Ser. No. 418,028
Int. Cl. H01h *61/00*
U.S. Cl. 337—126 **3 Claims**



1. An overcurrent preventive device comprising

a. a first stationary terminal fixed to a base,

b. a jumping plate one end of which is securely fixed to said first stationary terminal,

c. an operating plate one end of which is securely fixed to said first stationary terminal,

d. a thermal expansion wire extending between an upright portion of said first stationary terminal and the other end of said operating plate,

e. an actuating plate fitted into a hole formed through the other end of said operating plate and into a hole formed through the other end of said jumping plate which is folded back in the form of an inverted U-shape,

f. a movable contact securely fixed to the undersurface of said jumping plate,

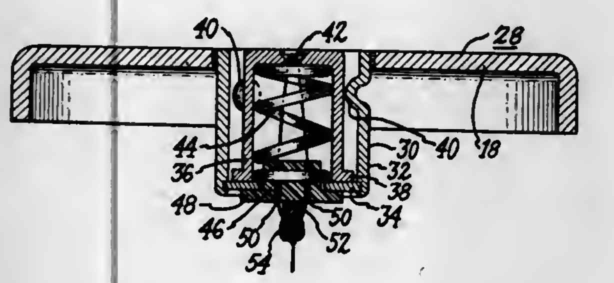
g. a main contact of a stationary plate made into contact with said movable contact,

h. a second stationary terminal electrically connected to said stationary plate fixed to said base, and whereby when excessive current flows through said thermal expansion wire said jumping plate instantaneously jumps upward to make said movable contact out of contact with said main contact of said stationary plate thereby interrupting overcurrent.

3,895,338
ELECTRIC FUSE WITH INDICATING MECHANISM

Willard F. M. Gray, Hancock, and Raymond Cuzzone, Pittsfield, both of Mass., assignors to General Electric Company, Pittsfield, Mass.

Filed July 22, 1974, Ser. No. 490,797
Int. Cl. H01h *85/30*
U.S. Cl. 337—244 **4 Claims**



1. An electric fuse of the type having an insulating housing, electrically conductive terminal caps at opposite ends of the housing, at least one main fusible element inside the housing connecting together electrically the terminal caps, and an indicating mechanism at one of said terminal caps for indicating fusing of the main element, wherein the improvement comprises said indicating mechanism comprising:

an electrically conductive support cup having its rim aligned with, and adjacent, an opening in one of said terminal caps and rigidly fastened in position to said cap in electrical connection thereto;

an apertured insulating bushing plug fitted into an opening in the bottom of said support cup;

a cup-shaped electrically conductive indicator button telescopingly disposed inside said support cup with its bottom remote from the bottom of said support cup;

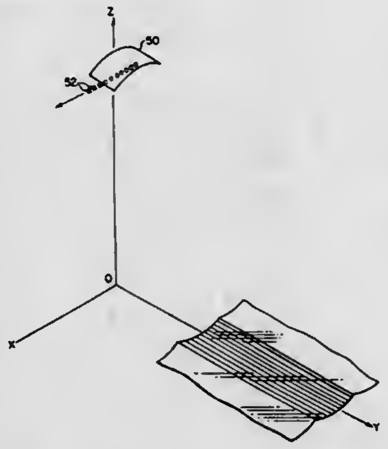
a spring inside said button and support cup exerting between said button and said support cup a biasing force for moving said button away from the bottom of said support cup, and

an electrical resistance restraining wire passing through said aperture in said bushing plug to the inside of said support cup and being secured to the bottom of said button, said wire being also secured under tension at said bushing plug, so that said button is held by said wire against the biasing force of said spring, the portion of said wire on the outside of said support cup passing through the interior of said insulating housing of said fuse and being electrically connected to the other of said terminal caps.

3,895,339
ACOUSTIC CAMERA APPARATUS

Charles H. Jones, Murrysville, Pa., and George A. Gilmour, Severna Park, MD, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 29, 1974, Ser. No. 456,420
Int. Cl. G01s *9/66*
U.S. Cl. 340—3 R **13 Claims**



1. An acoustic camera for imaging a target area comprising:
A. receiver means for forming a plurality of adjacent receiver beams each for receiving acoustic returns from respective adjacent receiver strips of said target area, said receiver strips being relatively long in the target range direction and relatively narrow in a direction perpendicular thereto;

B. transmitter means for insonifying said target area to be viewed and operable to provide a short time pulse of acoustic energy to insonify a strip relatively narrow in said range direction and at least equal to the width of said target area to be viewed;

C. said transmitter means being arranged that said insonifying strip sweeps out said target area from a minimum range R_m to a maximum range of interest R_M in a predetermined time period, the intersection of said insonifying strip with said receiver strips defining a plurality of elemental areas;

D. said receiver means including a plurality of receiver transducers and an acoustic focusing element positioned relative to said plurality of receiver transducers and having at least one cylindrical surface arranged to focus, from said minimum range R_m out to said maximum range R_M, acoustic returns from respective ones of said elemental areas onto respective ones of said receiver transducers;

E. said receiver transducers being operable to provide respective output signals in response to impingement of focused acoustic returns; and

F. means for processing and displaying said output signals.

3,895,340
ACOUSTIC CAMERA APPARATUS

George A. Gilmour, Severna Park, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 29, 1974, Ser. No. 456,421
Int. Cl. G01s *9/66*
U.S. Cl. 340—3 R **8 Claims**

1. An acoustic camera for imaging a target area comprising:
A. receiver means for forming a plurality of adjacent receiver beams each for receiving acoustic returns from respective adjacent receiver strips of said target area, said receiver strips being relatively long in the target range direction and relatively narrow in a direction perpendicular thereto;

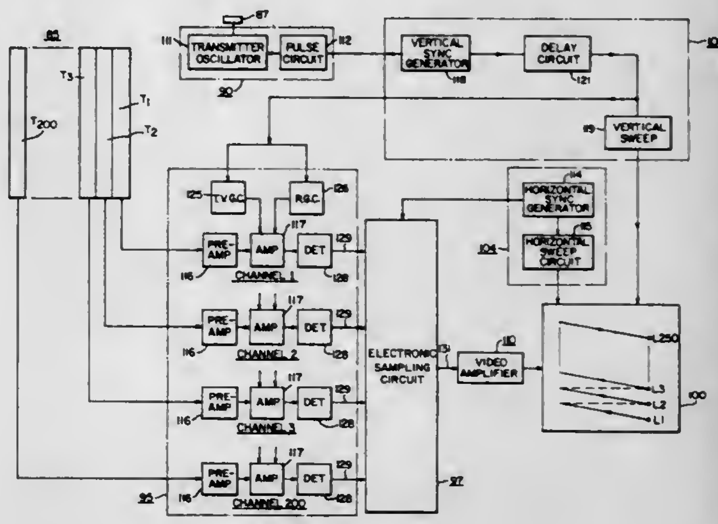
B. transmitter means for insonifying said target area to be viewed and operable to provide a short time pulse of acoustic energy to insonify a strip relatively narrow in said range direction and at least equal to the width of said target area to be viewed;

C. said transmitter means being arranged that said insonifying strip sweeps out said target area from a minimum range R_m to a maximum range of interest R_M in a predetermined time period, the intersection of said insonifying strip with said receiver strips defining a plurality of elemental areas;

D. said receiver means including a plurality of receiver transducers and an acoustic focusing element positioned relative to said plurality of receiver transducers and being constructed and arranged to focus, from said minimum range R_m out to said maximum range R_M, acoustic returns from respective ones of said elemental areas onto respective ones of said receiver transducers;

E. said receiver transducers being operable to provide respective output signals in response to impingement of focused acoustic returns; and

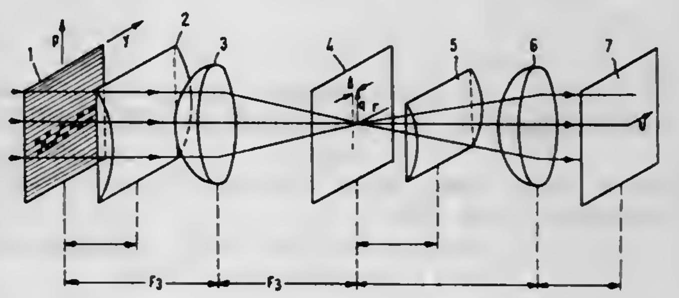
F. means for processing and displaying said output signals.



3,895,341
METHOD FOR ABERRATION-FREE CPTICAL REPRODUCTION OF HIGHLY RESOLVED SONAR OR RADAR MAPS

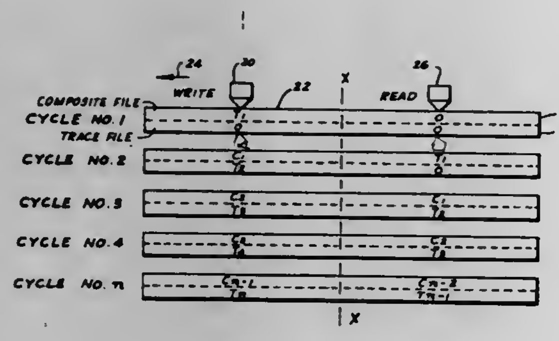
Dietlind Pekau, Krailling, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Mar. 12, 1973, Ser. No. 342,302
Claims priority, application Germany, Mar. 23, 1972, 2214005
Int. Cl. G01s *9/00, 9/02*
U.S. Cl. 343—5 H **7 Claims**



1. A method of coherently reconstructing one-dimensional holograms with pulse sonar, or radar, the holograms being individual portions of a map, comprising the steps of illuminating a one-dimensional hologram with a plane coherent wave to produce hologram transmission along a beam path, filtering the hologram transmission to effect a one-dimensional cross correlation of the transmission function thereof within the beam path and simultaneously reconstructing the entire map from the one-dimensional holograms whereby image distance and image enlargement are independent of distance.

3,895,342
DIGITAL FIELD COMPOSITING SYSTEM
A. J. Mallett, and Jerrell F. Moffitt, both of Houston, Tex., assignors to Geo Space Corporation, Houston, Tex.
Filed Oct. 16, 1968, Ser. No. 767,951
Int. Cl. G01v *1/28*
U.S. Cl. 340—15.5 CP **2 Claims**



1. In a method for digitally compositing seismic data derived from a plurality of analog channels, each channel containing a binary-gain-ranging amplifier for amplifying the individual trace data in each channel, the trace data including (a) an indication of the amplitude of the trace data at the output of said amplifier and (b) an exponent corresponding to the gain of the amplifier for said amplitude indication, the steps of:
- providing a plurality of recording tracks on a continuous-loop movable magnetic tape;
- grouping a number of said tracks to form a composite data file for periodically recording thereon composited data including (a) an indication of the amplitude of the composited data and (b) an initial exponent corresponding to an initial gain value of the trace data;
- grouping another number of said tracks to form a trace data file for periodically recording thereon the output trace data from said analog channel;
- periodically and simultaneously reading out from said tape both said recorded composited data and said trace data; determining the magnitude of the difference between the readout trace gain exponent and said initial exponent;
- normalizing said readout trace data so that the gain exponent of said readout trace data corresponds to said initial exponent, only when said magnitude is within predetermined acceptable limits;
- combining the normalized trace data with the readout composited data to form new composited data; and
- recording said new composited data in said composite file on said tape.

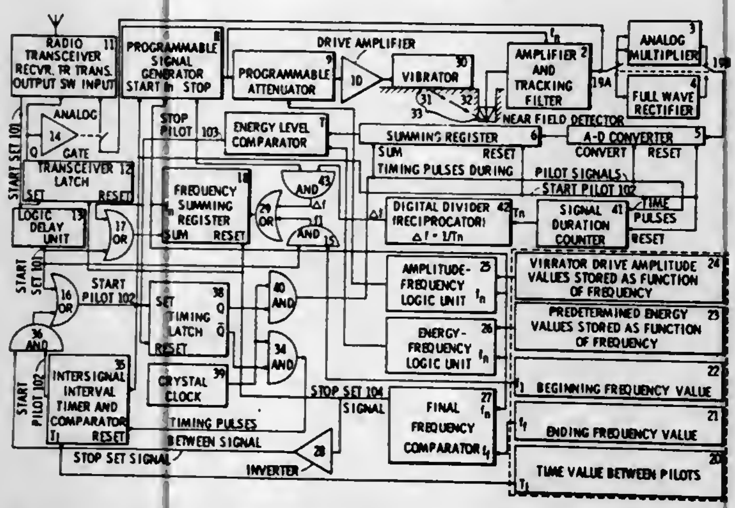
3,895,343
APPARATUS FOR PRODUCING ADAPTIVE PILOT SIGNALS
John B. Farr, Tulsa, Okla., assignor to Amoco Production Company, Tulsa, Okla.
Division of Ser. No. 358,187, May 7, 1973. This application June 17, 1974, Ser. No. 479,968
Int. Cl. G01v *1/14*
U.S. Cl. 340—17 **7 Claims**

1. In a seismic prospecting apparatus of the type having a controllable source which radiates a seismic signal into the earth in accordance with an electrical drive signal, a plurality of seismometers spaced along the surface of the earth at a distance from said source for the purpose of generating electrical signals corresponding to the seismic waves impinging on the surface from subterranean reflecting interfaces, and an apparatus for amplifying and reproducibly recording said electrical seismometer signals, the improvement which comprises:

a. an adjustable signal generation means connected to said controllable source for producing said electrical drive signal whose characteristics may be changed in response to an external electrical control signal;

b. a detecting means located near said source for producing a near-field electrical signal corresponding to said radiated seismic signal after it has been distorted by the earth material adjacent to said source;

c. means for producing a first value proportional to the energy of said near-field electrical signal which is electrically connected to said detecting means;

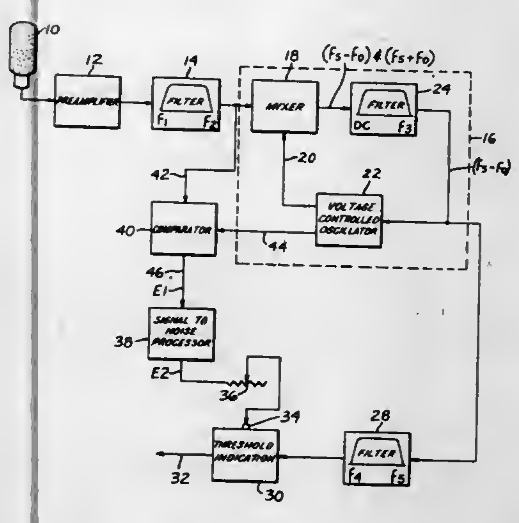

RADIO TRANSCEIVER RECVR. TR TRANS. OUTPUT SW INPUT
11
PROGRAMMABLE SIGNAL GENERATOR START fn STOP
8
DRIVE AMPLIFIER
PROGRAMMABLE ATTENUATOR
9
10
VIBRATOR
30
31
32
33
AMPLIFIER AND TRACKING FILTER
2
19A
ANALOG MULTIPLIER
3
FULL WAVE RECTIFIER
4
NEAR FIELD DETECTOR
ANALOG
14
GATE
TRANSCEIVER LATCH
STOP PILOT
103
ENERGY LEVEL COMPARATOR
7
SUMMING REGISTER
6
SUM
RESET
A-D CONVERTER
5
CONVERT
RESET
TIMING PULSES DURING PILOT SIGNALS
START PILOT 102
START SET 101
LOGIC DELAY UNIT
FREQUENCY SUMMING REGISTER
SUM
RESET
AND
OR
DIGITAL DIVIDER (RECIPROCATOR) Δf = 1/Tn
SIGNAL DURATION COUNTER
TIME PULSES
RESET
AMPLITUDE-FREQUENCY LOGIC UNIT
25
ENERGY-FREQUENCY LOGIC UNIT
26
VIBRATOR DRIVE AMPLITUDE VALUES STORED AS FUNCTION OF FREQUENCY
24
PREDETERMINED ENERGY VALUES STORED AS FUNCTION OF FREQUENCY
23
SET TIMING LATCH
38
RESET
34 AND
36 AND
START PILOT 102
INTERSIGNAL INTERVAL TIMER AND COMPARATOR
35
RESET
CRYSTAL CLOCK
39
STOP SET 104 SIGNAL
FINAL FREQUENCY COMPARATOR
27
BEGINNING FREQUENCY VALUE
22
ENDING FREQUENCY VALUE
21
TIME VALUE BETWEEN PILOTS
20
TIMING PULSES BETWEEN SIGNAL
STOP SET SIGNAL
28
INVERTER

d. means for storing a predetermined second value proportional to the energy desired in said radiated seismic signal;

e. means electrically connected to said first energy value producing means and said second value storage means for the purpose of producing a comparison signal; and

f. means in circuit relationship with said comparison means and said adjustable signal generator means for producing said external electrical control signal for the purpose of modifying a characteristic of said electrical drive signal in accordance with said comparison signal.

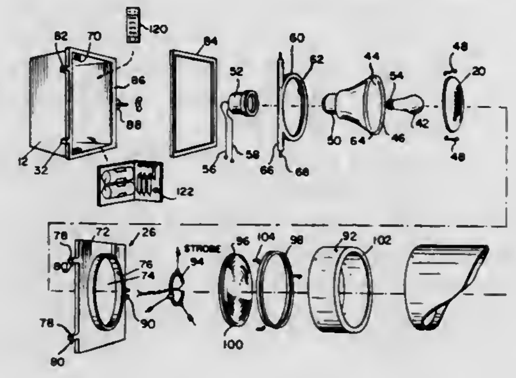
3,895,344
VEHICLE DETECTION SYSTEM AND METHOD OF OPERATION
Homer R. Gill, Jr., Champaign, and Hans M. Ortlepp, Urbans, both of Ill., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Feb. 12, 1970, Ser. No. 10,943
Int. Cl. G08g *1/00*
U.S. Cl. 340—38 S **9 Claims**



1. A method of detecting a land vehicle which comprises: detecting the acoustic emanations from the vehicle, selecting a higher energy band from the acoustic spectrum of the said emanations, tracking a given spectral line of said selected band, mixing the first signal provided by the selected line with a second signal of substantially the same frequency to provide a zero beat third signal, varying the frequency of said second

signal in conformity with variations in the voltage of said third signal, removing high frequency and direct current components from said third signal to form a fourth signal, developing an output signal at a predetermined frequency and amplitude of said fourth signal, measuring the signal-to-noise ratio in at least said selected band, and adjusting the level of at least the amplitude of said fourth signal at which an output signal will be developed in conformity with said ratio.

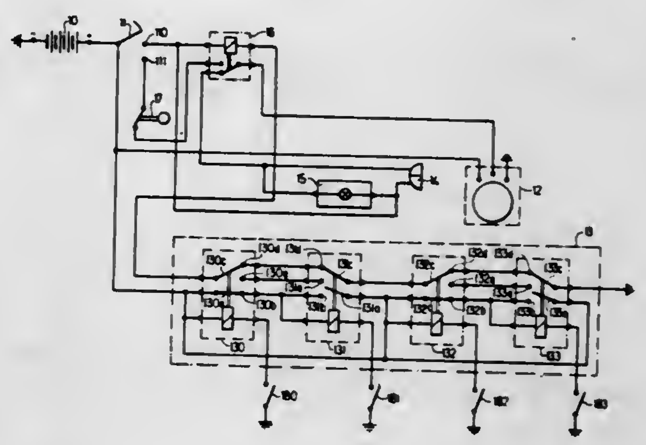
3,895,345
TRAFFIC SIGNAL APPARATUS
Carl L. Elvers, and Ralph A. Elvers, both of Indianapolis, Ind., assignors to Belmar Electronics Corporation, Tampa, Fla.
Filed Aug. 2, 1973, Ser. No. 384,810
Int. Cl. G08g *1/07*
U.S. Cl. 340—41 R **2 Claims**



1. An apparatus for controlling vehicular traffic, which comprises a signal light housing, a signal light having a reflector, a signalling bulb and a lens mounted in said signal light housing, said signalling bulb being interposed between said reflector and said lens, a strobe light housing secured to said signal light housing, a strobe light mounted in said strobe light housing and disposed on the viewing side of said lens, timing means for energizing said signalling bulb, and electronic control circuit means operable by said timing means for operably pulsing said strobe light off and on at a preselected rate when said signalling bulb is energized, said strobe light being generally circular in shape and suspended by a plurality of filaments in a substantially concentric position with respect to the light emitted by said signalling bulb and reflected by said reflector.

3,895,346
VEHICLE SEAT BELT SAFETY SYSTEM
Hassan Assfour; Klaus Lindner, both of Altenberg; Walter Bernhardt, Fellbach, and Wolfgang Bremer, Oberweier, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany
Filed June 28, 1973, Ser. No. 374,516
Claims priority, application Germany, Dec. 13, 1972, 2260927
Int. Cl. B60r *21/10*
U.S. Cl. 340—52 E **17 Claims**

1. In a vehicle safety system for the protection of the occupants of the vehicle having seats for the occupants with at least one vehicle seat being provided with a safety seat belt, said vehicle safety system having a single pole, single throw seat switch which is associated with said one vehicle seat and which selectively assumes a first or a second position in response to the unoccupied or occupied state, respectively, of said one vehicle seat; a single pole, single throw belt switch which is associated with said safety seat belt and which selectively assumes a first or a second position in response to the unfastened or fastened state, respectively, of said safety seat belt; a starter circuit for the starter of the engine of the vehicle, said starter circuit having first and second states in which starting of the engine is respectively prevented and permitted; said starter circuit having a vehicle ignition switch provided with a movable contact, a starter contact and a switch-on contact; and a warning circuit having a first state in which it produces a warning signal for the occupants of the vehicle and a second state in which no warning signal is produced, the improvement comprising in combination:
- activating relay means for setting said starter and warning circuits in their respective said first states when said activating relay means is in a first state and for setting said starter and warning circuits in their respective said second states when said activating relay means is in a second state; said activating relay means including a solenoid having first and second terminals; said first terminal being connected to said switch-on contact; said relay further including contacts in said starter and warning circuits; and

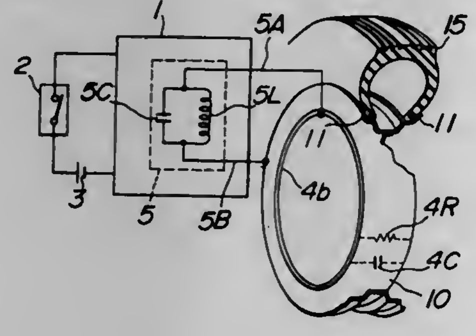


- logic circuit means connected to said second terminal of said solenoid and being responsive to the respective positions of said seat and belt switches for controlling the energization and de-energization of said solenoid to set said activating relay means in said first state whenever said seat switch is in its said second position and said belt switch is in its said first position and whenever said seat belt switch and said seat switch are in their respective said second positions but said belt switch is placed in its said second position prior to placing said seat switch in its said second position, whereby the starting of the engine of the vehicle is prevented and a warning signal is emitted whenever said one vehicle seat is occupied and the associated seat belt is either not fastened or had been fastened prior to occupying said seat.

3,895,347
SYSTEM FOR TRANSMITTING INFORMATION OF REDUCED PNEUMATIC PRESSURE OF TIRE
Takashi Takusagawa; Akira Fujikawa; Akira Matsuda; George Matsuura, all of Tokyo; Kenzo Nakanishi, Kyoto; Hideo Togawa, Kyoto, and Yasuaki Hanasaka, Kyoto, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan
Filed July 25, 1974, Ser. No. 491,902
Claims priority, application Japan, Sept. 10, 1973, 48-101962; Jan. 10, 1974, 49-6287
Int. Cl. B60c *23/02*
U.S. Cl. 340—58 **15 Claims**

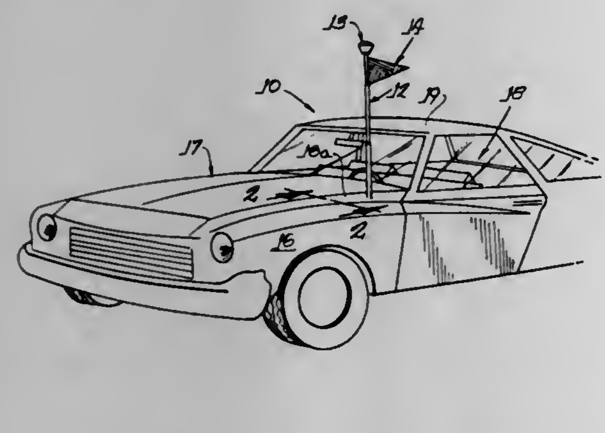
1. A system for transmitting information of reduced pneumatic pressure of tires, comprising an electromagnetic wave radiation mechanism of an electric field excitation system having an electromagnetic wave radiation member consisting of a substantially concentric metal body opposedly and substantially concentrically provided on each axle of a plurality of tire wheels for actuating as an electric dipole together with the wheels and having an oscillator electrically coupled to said radiation member and energized in response to reduced pneumatic pressure of tires; and at least one receiver antenna of an electromagnetic field sensing type provided in the space be-

tween the surface of the ground and the lower surface of the bottom plate of the car body for sensing a polarized wave of



an electromagnetic field radiated from said radiation mechanism in order to screen external noise waves.

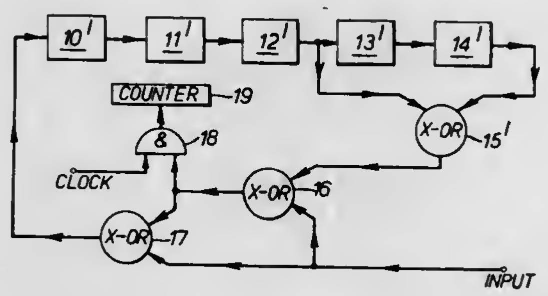
3,895,348
VEHICLE MOUNTED WARNING DEVICE
Ambrose Palermo, 1853 N.E. 161st St., North Miami Beach, Fla. 33162
Filed Sept. 17, 1973, Ser. No. 397,808
Int. Cl. B60q *1/00*
U.S. Cl. 340—87 **2 Claims**



1. A warning device intended for permanent mounting on the body of a vehicle, such as an automobile, in a substantially concealed inoperative position and adapted for utilization in an operable position disposed at an elevation substantially higher than the top of the passenger compartment of the vehicle, comprising:

- an upright longitudinally elongated hollow open ended cylindrical support tube having an open top end and an open bottom end, the top end adapted to be mounted to the body of the automobile below an exterior portion thereof and axially aligned with an opening provided therefor in the automobile body with the support tube positioned in a substantially vertical manner, the support tube having an elongated cylindrical compartment extending axially completely therethrough between the resepctive ends thereof;
- mounting means associated with said support tube top end for affixing said tube to said vehicle body, said mounting means including a flat washer affixed to the tube top end concentric with the tube to define an annular shoulder thereabout for engaging the interior of the vehicle body to secure the tube thereto;
- a telescopic mast axially positioned within the support tube and telescopic relative thereto between a retracted inoperative position in which it is completely concealed from sight within the support tube, and an operative display position in which it is extended telescopically from the support tube with the top end thereof projecting a substantial height above the automobile passenger compartment roof surface, the telescoping mast consisting of at least three longitudinally elongated hollow cylindrical mast sections each having a different interior and exterior diameter, the lower section having an exterior diameter of a size to be slidably telescopically received for reciprocal movement within the support tube compartment through the top end thereof, the intermediate section being of a diameter to be telescopically received within the lower section through its top end, and the upper section being of a diameter to be telescopically received within the intermediate section through its top end, the collapsed telescoped position of the sections all being completely contained within the support tube compartment in the inoperative position;
- a disc shaped base mounted to the top end of the mast upper section normal to the axis of the mast, the base completely covering the vehicle body opening when resting on the vehicle body when the mast is in the collapsed inoperative position;
- an electric lamp socket mounted centrally of the base and extending upwardly therefrom;
- an electric lamp removably received in the socket for energization thereby to provide a visible warning light signal; a light transmitting dome shaped transparent protective cover surrounding the lamp and socket and removably secured to the top surface of the base about the periphery thereof;
- a pair of suitably insulated electrical wires attached to the socket and passing downwardly therefrom through all of the mast section and through the supporting tube to be connected to the electrical circuit of the vehicle to permit selective energization and de-energization of the lamp;
- a rigid triangularly shaped pennant signaling member having a base edge and an apex and forming a visible signal to be detachably attached along its base edge to the side wall of the upper mast section and extend laterally outwardly therefrom for visibility to oncoming traffic approaching the vehicle;
- a pair of longitudinally spaced apart parallelly aligned radially disposed openings extending through the side wall of the upper mast section and opening into the hollow interior thereof; and
- a pair of identical members affixed to the opposite ends of the pennant base edge and projecting outwardly therefrom in the plane of the pennant and normal to the base edge, the spacing between the members being equal to the spacing between the upper mast section openings and adapted to be detachably received therein to retain the pennant removably secured to the mast, the members being formed of a resilient material, the members being of an elongated cylindrical shape, each member having one end thereof permanently mounted to the pennant base edge with the opposite end terminating in an enlarged diameter greater than the diameter of the openings in the upper mast section, the members being provided intermediate their respective ends with a diameter of reduced cross-section less than the diameter of the upper mast section openings, the members each having a diametric disposed slot extending longitudinally along their axis through the enlarged diameter end portion and the intermediate central portion, the slot being of a thickness permitting the opposite ends of the end portions of each member to be resiliently deflected inwardly toward each other for insertion axially into the associated upper mast section opening after which the opposite ends again separate to retain the intermediate reduced area central portion in contact with the edges of the opening and the enlarged opposite end removably retained within the interior of the upper mast section whereby the pennant is thus detachably attached to the upper mast section for signaling purposes.

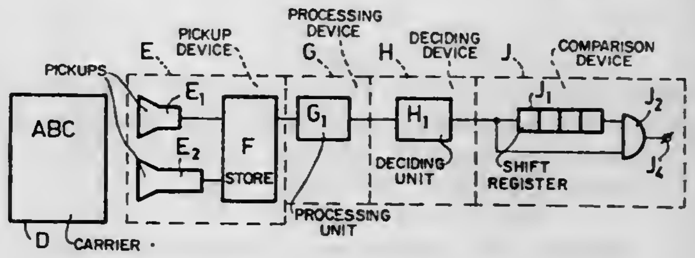
3,895,349
PSEUDO-RANDOM BINARY SEQUENCE ERROR COUNTERS
Stephen Ronald Robson, Wickham Bishops, England, assignor to The Marconi Company Limited, Chelmsford, England
Filed Apr. 29, 1974, Ser. No. 464,907
Claims priority, application United Kingdom, June 15, 1973, 28506/73
Int. Cl.^{2} H03K *5/18;* **H04B** *3/46*
U.S. Cl. 340—146.1 AL **8 Claims**



3. A circuit for latching on to a primary binary sequence which is an error-free section of a pseudo-random binary input signal and thereafter monitoring the pseudo-random binary input signal, said circuit comprising in combination:

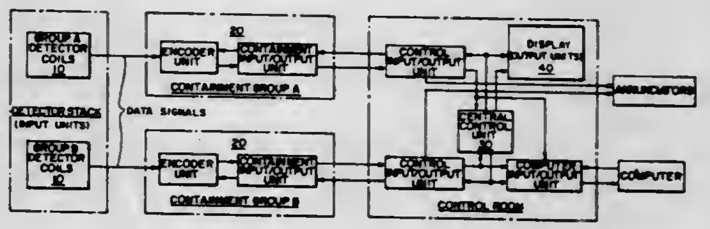
- a pseudo-random binary input signal terminal;
- shift register means connected to said input terminal, and having a plurality of stages equal to the number of bits in said primary binary sequence, for shifting the pseudo-random binary input signal through said stages, and including first logic means connected to different stages of said shift register means for generating the correct pseudo-random binary input signal in response to the presence initially of said primary binary sequence in said stages as said pseudo-random binary input signal continues to be shifted into said shift register means;
- comparator means connected to said first logic means and to said input signal terminal for producing a first signal when the output of said first logic means and the pseudo-random binary input signal are identical and for producing a second signal when the output of said first logic means and said pseudo-random binary input signal are not identical; second logic means in the connection between said input terminal and said shift register means and having an initially conditioned input for passing the pseudo-random input signal unimpeded to said shift register means; and
- switching means connected between the output of said comparator means and initially conditioned input of the second logic means for imposing the first and second signals from said comparator means on the initially conditioned input of said second logic means in response to a predetermined number of consecutive first signals from said comparator means whereby said second logic means passes the bits of the pseudo-random binary input signal in response to the presence of said first signal at the initially conditioned input of the second logic means and inverts incorrect bits of the pseudo-random input signal to preserve the integrity of the contents of said shift register means in response to the presence of said second signal at the initially conditioned input of the second logic means.

3,895,350
METHOD OF AND DEVICE FOR RECOGNITION OF CHARACTERS
Willem Cecil De Vries, Hague, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Continuation of Ser. No. 299,146, Oct. 19, 1972, abandoned, which is a continuation of Ser. No. 127,673, March 24, 1971, abandoned. This application Mar. 8, 1974, Ser. No. 449,356
Claims priority, application Netherlands, Mar. 26, 1970, 7004381
Int. Cl. G06k *9/00*
U.S. Cl. 340—146.3 D **6 Claims**



1. A device for recognizing characters accommodated on a carrier comprising a pick-up device deriving information from the characters, a processing device coupled to and receiving signals from the pick-up device, a deciding device coupled to said processing device and to which output signals of said processing device are supplied and in which a character is recognizable, the output of said deciding device providing a recognition signal, said pick-up device comprising at least one first pick-up element and one second pick-up element, each of said pick-up elements providing a character signal in accordance with operating principles which are completely different geometrically, physically and logically from each other, the signals thereof being separately supplyable to said processing device, the output signals of said processing device generated on the basis thereof being separately and simultaneously supplyable to said deciding device, so that a respective recognition signal appears on an output thereof, each recognition being based upon loosely defined recognition criteria, and a comparison device to which said recognition signals can be supplied for comparison, said comparison device being responsive to a correspondence of said recognition signals whereby a final recognition signal can be generated.

3,895,351
AUTOMATIC PROGRAMMING SYSTEM FOR STANDARDIZING MULTIPLEX TRANSMISSION SYSTEMS
James A. Neuner, Gibsonia, Pa., and Maurizio Traversi, Turin, Italy, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Jan. 3, 1973, Ser. No. 320,774
Int. Cl. G08b *19/00;* **G06f** *15/00;* **G04q** *3/00*
U.S. Cl. 340—151 **5 Claims**


GROUP A DETECTOR COILS 10
ENCODER UNIT
CONTAINMENT INPUT/OUTPUT UNIT
20
CONTAINMENT GROUP A
CONTROL INPUT/OUTPUT UNIT
DISPLAY OUTPUT UNITS 40
ANNUNCIATORS
DETECTOR STACK (INPUT UNITS)
DATA SIGNALS
CENTRAL CONTROL UNIT 30
GROUP B DETECTOR COILS 10
ENCODER UNIT
CONTAINMENT INPUT/OUTPUT UNIT
20
CONTAINMENT GROUP B
CONTROL INPUT/OUTPUT UNIT
COMPUTER INPUT/OUTPUT UNIT
COMPUTER
CONTROL ROOM

1. An automatic programming system for standardizing multiplexed transmission systems comprising:

- a plurality of input units respectively providing a corresponding data signal output;
- a central control unit electrically coupled to the output of each of said input units and operable to generate, sequence and transmit a plurality of first and second corresponding addresses; and

a plurality of output units, each output unit corresponding to at least one input unit and responsive to a corresponding one of said second addresses to communicate a corresponding enable signal to said control unit, each input unit receiving a corresponding first address and responsive thereto to communicate said data signal to said control unit, said control unit being responsive to said enable signal corresponding to said input unit addressed, to process said data signal and communicate an output signal representative thereof to said corresponding output unit.

3,895,352

SIGNALLING SYSTEM FOR LOCATING ERROR SOURCE

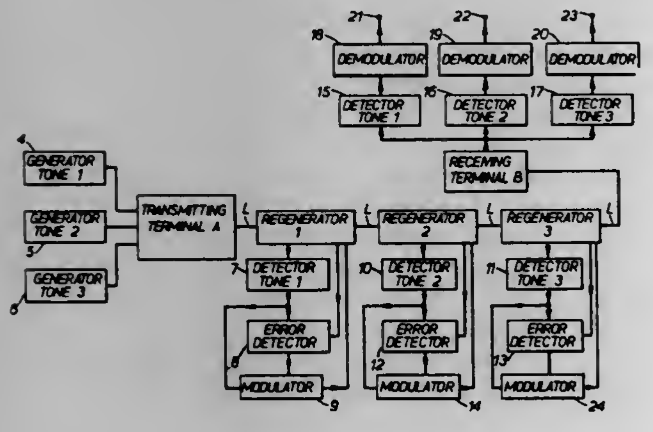
Iain Gordon Chisholm, and Peter John Wakeling, both of Chelmsford, England, assignors to The Marconi Company Limited, Chelmsford, England

Filed Jan. 29, 1973, Ser. No. 327,667

Claims priority, application United Kingdom, Feb. 2, 1972, 7355/72

Int. Cl. H04b *3/46*

U.S. Cl. 340—171 R **2 Claims**



1. In a line transmission system comprising a transmitting terminal, a receiving terminal, and a plurality of signal handling arrangements between the transmitting terminal and the receiving terminal, the combination of:

a plurality of tone generator means connected to said transmitting terminal for producing a set of tones less than all of which are transmitted to said receiving terminal at one time in which the tones of said set are different so as uniquely to identify each of said signal handling arrangements;

a plurality of tone transmitting loops, one associated with each signal handling arrangement, each loop including modulator means for modulating that tone unique to its associated signal handling arrangement, error detector means for causing said modulator means to modulate said unique tone in accord with the presence of a transmission error at the associated signal handling arrangement, and tone detector means for energizing said error detector means only in response to the presence of said unique tone; and

means connected to said receiving terminal for determining the presence and location of an error source in response to the presence, if any, of said modulated unique tones.

3,895,353

DATA PROCESSING SYSTEMS

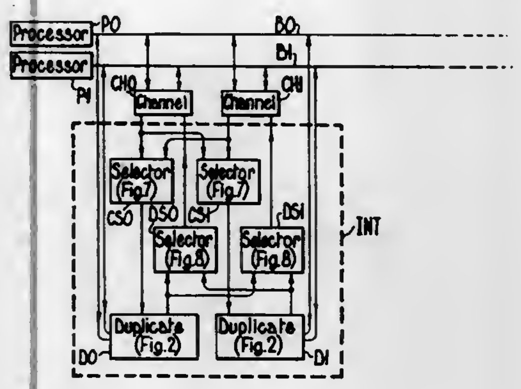
Robin Edward Dalton, 20 Constable Rd., Hillmorton, Rugby, Warwickshire, England

Filed May 2, 1973, Ser. No. 356,621

Claims priority, application United Kingdom, May 3, 1972, 20596/72

Int. Cl. G06f *15/16*

U.S. Cl. 340—172.5 **8 Claims**



1. For a data processing system including at least one data processor, a plurality of peripheral equipments and a plurality of input/output channels connecting said peripheral equipments to said data processor,

A. an interrupt arrangement connected to an associated one of said input/output channels for connection to said data processor;

B. each of said peripheral equipments being connected to said interrupt arrangement for transmitting interrupt requests to said interrupt arrangement, said interrupt arrangement comprising two duplicate units, each duplicate unit comprising:

i. a plurality of storage elements for storing interrupt requests from said peripherals, each interrupt request being stored in corresponding said storage elements in both of said duplicate units;

ii. means responsive to instruction signals from said data processor to read out contents of selected ones of said storage elements for transmission to said processor via said associated channel;

iii. means for comparing the contents read out of the storage elements in the two duplicate units and for preventing said contents from being transmitted to the processor in the event of any disparity between said contents in respect of said two duplicate units; and

iv. means responsive to further instructions from said processor transmitted over said associated input/output channel in response to the failure of transmission of said contents of said storage elements, said means responsive to said further instructions causing predetermined test operations on said storage elements to locate any faulty elements and to lock out any said faulty elements from normal operation.

3,895,354

PROGRAM EDITOR FOR MACHINE CONTROL

Steven Charles Kish, Mayfield Village, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio

Filed Aug. 31, 1973, Ser. No. 393,295

Int. Cl. G06f *7/14, 15/00*

U.S. Cl. 340—172.5 **13 Claims**

1. An editing apparatus for modifying programmed information for use in controlling machine operations and comprising:

display storage means for receiving and storing a selected data word of a plurality of possible different said data words to be displayed;

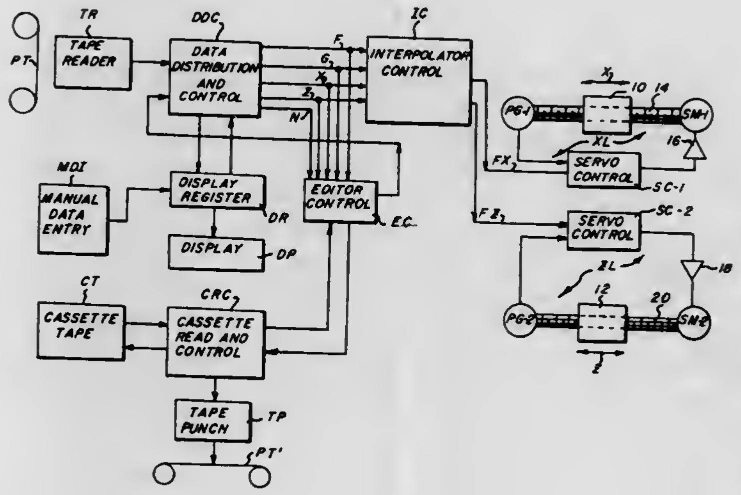
display means for displaying a visual representation of the data word stored by said display storage means;

a plurality of data word storage means separate from said display storage means for respectively storing an associated one of a like plurality of different said data words;

means for receiving programmed information from a program data source including at least one block of information having at least one data word for storage in an associated one of said data storage means,

means for selectively entering a stored data word from a selected one of said data word storage means into said display storage means so as to be displayed by said display means,

manual data entry means for entering a new data word for storage in said display storage means;



an auxiliary recording medium,

editor control means including means for recording on said recording medium the data words in each block of information provided by said program data source;

said means for receiving said programmed information including means for receiving the recorded information from said recording medium and supplying each said data word in each block for storage in its associated word storage means,

said editor control means including means responsive to said data entry means for modifying the data stored on said recording medium in accordance with a new data word entered for storage in said display storage means.

3,895,355

PATTERN CONTROL SYSTEM

Stanley Shorrock, Blackburn, England, assignor to Shorell Limited, Blackburn, England

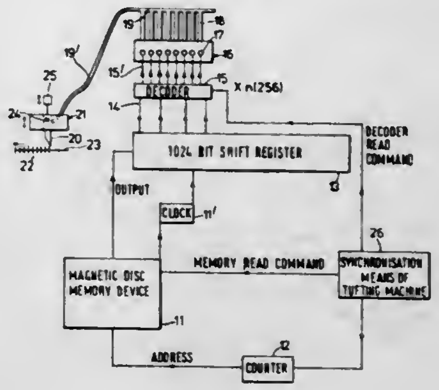
Filed June 4, 1973, Ser. No. 366,484

Claims priority, application United Kingdom, June 5, 1972, 26207/72; Mar. 7, 1973, 11056/73

Int. Cl. G06f *9/00;* **D05c** *15/00*

U.S. Cl. 340—172.5 **17 Claims**

1. A pattern control system for use with a textile machine requiring discrete control of each of a number of yarn supply means for the needles of said machine, said system comprising a pattern memory device, an address circuit for said memory device, said circuit including a counter actuable by synchronisation means of said machine, read command means actuating said memory device to extract information therefrom; and



means for feeding said information in parallel form to effect individual control of said yarn supply means.

3,895,356

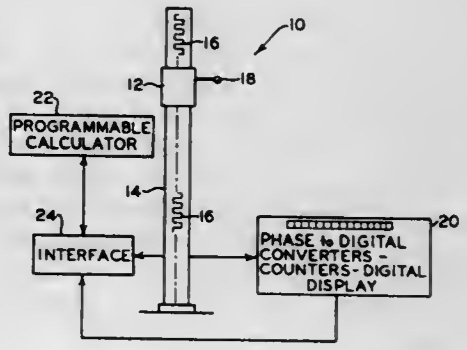
AUTOMATIC DIGITAL HEIGHT GAUGE

Ronald G. Kraus, Akron, Ohio, assignor to Kraus Instruments, Inc., Stow, Ohio

Filed Oct. 10, 1973, Ser. No. 405,158

Int. Cl. G06f *15/02, 15/20;* **G01b** *7/02*

U.S. Cl. 340—172.5 **9 Claims**



1. a digital height gauge for measuring, calculating and recording the measurements between various points on an object to be gauged, comprising:

probe assembly means for making contact with the various points producing sinusoidal signals indicative of the positional relationships therebetween;

conversion means connected to the probe assembly means for receiving and converting the sinusoidal signals into binary signals;

calculator means for performing preprogrammed operations for determining particular dimensions of the object from the binary signals; and

interface means comprising a plurality of parallel/serial shift registers, interconnecting the conversion and calculator means for transferring binary data therebetween, said interface means further including a plurality of operator-actuatable switches, the actuation of any such switch creating signals to the calculator means, conversion means and parallel/serial shift registers to achieve the transfer of data from the conversion means to the calculator means.

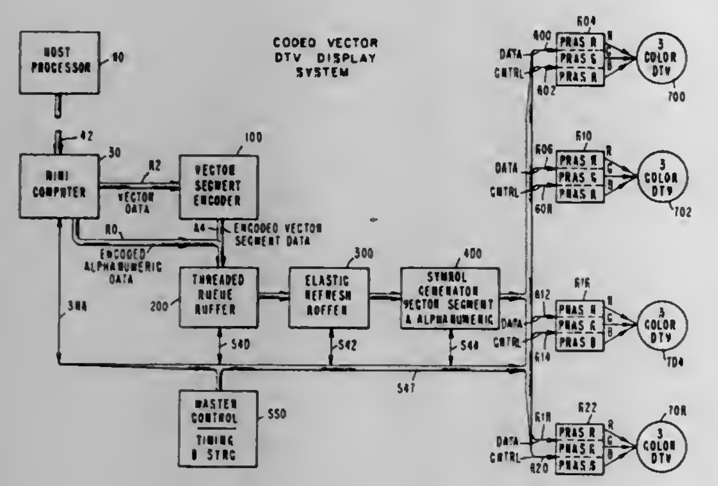
3,895,357
BUFFER MEMORY ARRANGEMENT FOR A DIGITAL TELEVISION DISPLAY SYSTEM

Alfred A. Schwartz, Gaithersburg, Md., and Joseph R. Stewart, Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 335,388, Feb. 23, 1973. This application Nov. 15, 1973, Ser. No. 416,317

Int. Cl. G06f *7/24*

U.S. Cl. 340—172.5 **4 Claims**



1. In a display system a threaded queue buffer for accepting vector words having a random sequence of raster line locations, which sorts and stores said words in groups of threaded queues each group having equal raster line locations, comprising:

an index address register (IAR) connected to an address input line, for storing the inputted raster line address of the display data;

an index memory connected to the output of said IAR, for storing queue pointer addresses in locations corresponding to the raster line address outputted from said IAR;

an index data register (IDR) connected to the output of said index memory, for storing a queue pointer address outputted from said index memory;

a queue address register (QAR) connected to the output of said index data register, for storing the queue address pointer to the head of a thread of display data stored in a queue memory, threaded by said raster address;

a queue memory connected to the output of said QAR, for storing display data threaded by said raster address, with the head of the thread addressable by the queue pointer address stored in the index;

said IDR having an empty/not empty (E/NE) portion and a pointer portion, each portion corresponding to a category of data stored at each raster address location in the index memory;

said E/NE portion of the IDR signaling whether display data is stored in the queue memory at the queue pointer address and initiating the accessing of the queue memory when a not empty signal is present;

a queue data register (ADR) connected to the output of the queue memory, for storing the display data accessed from a single location in said queue memory;

said QDR having an end of thread (EOT) portion, a next address portion, and a display data portion, each portion corresponding to a category of data stored at each location in said queue memory;

an output line connected to the display data portion of said queue data register, for outputting one word of display data stored in the queue memory corresponding to the inputted raster location;

said EOT portion of said QDR signaling whether the queue memory location accessed was the end of a thread of data corresponding to the inputted raster line address;

said next address portion of said QDR containing the queue memory location for the next data in the thread corresponding to the inputted raster line address;

a temporary address register (TAR) connected to the output of the EOT and next address portions of the QDR, for temporarily storing the address of the queue memory location for the next display data in the thread corresponding to the inputted raster line address;

a next empty register (NER) whose output is connected to the input of the EOT and next address portions of the QDR, for storing the queue memory location for the head of the thread of empty locations in the queue memory and outputting that location to the QDR;

said QDR having its output connected to the input of said queue memory, for returning to the accessed queue memory location whose address is stored in the QAR, the address of the next empty location, the accessed queue memory location now constituting the head of the thread of empty locations;

said NER input connected to the output of said QAR for transferring the accessed location in the queue memory so as to store in the NER the address of the present location of the head of the thread of empty queue memory locations;

said TAR having an EOT portion signaling whether the queue memory location accessed was the end of a thread of data corresponding to the inputted raster line address; said TAR having an address portion whose output is connected to the input of the QAR for transferring to the QAR the queue memory location containing the next data in the thread corresponding to the inputted raster line address, if the EOT portion of the TAR signals that the end of the data thread has not been reached;

said data portion of said QDR having its input connected to a data input line, for receiving one word of display data to be loaded into the queue memory corresponding to an inputted raster location on said address input line;

said TDR input connected to the output of said index memory for storing the contents of the location accessed in the index memory by the raster location inputted on said address input line, as the present queue memory location of the head of the thread of data corresponding to said raster location;

said NER having its output connected to the input of said QDR for transferring the present location of the head of the thread of empty locations in the queue memory, as the new queue pointer address for the head of the thread of display data corresponding to the input raster location, to be stored in the index memory;

means for setting said E/NE portion of said IDR to signal that display data is stored in the queue memory at the new queue pointer address;

said IDR having its output connected to the input of said index memory for transferring the new E/NE and pointer address information from the IDR to the index memory location corresponding to the inputted raster location;

said NER having its output connected to the input of said QAR for accessing the present location of the head of the thread of empty locations in the queue memory;

said EOT and next address portions of said QDR having an output connected to the input of said NER for transferring to the NER the address of the next empty register as the new head of the thread of empty registers in the queue memory;

means for setting the EOT portion of the QDR to signal the end of the data thread if the E/NE portion of the TAR signals that no data is presently stored in the queue memory corresponding to the inputted raster location;

said TAR having an output connected to the input of the next address portion of said QDR, for transferring to the QDR the previous location in the queue memory of the head of the thread of data corresponding to the inputted raster location;

said new QDR contents being transferred to the queue memory by said connection between the output of said QDR to the input of said queue memory, at the location which is stored in said QAR as the new head of the thread of data corresponding to the inputted raster location.

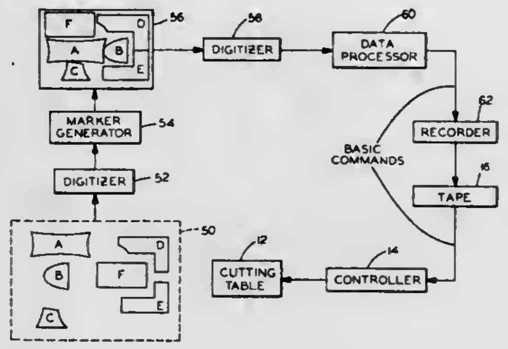
3,895,358
METHOD OF REPRODUCING A MARKER

David R. Pearl, Hartford, Conn., assignor to Gerber Garment Technology, Inc., East Hartford, Conn.

Filed Oct. 17, 1973, Ser. No. 407,303

Int. Cl. G06f *7/38;* **B26d** *5/30*

U.S. Cl. 340—172.5 **7 Claims**



1. A method of reproducing a marker on an automatically controlled cutting machine including a cutting tool translated by a moveable carriage relative to the support surface of a penetrable bed of a cutting table, the penetrable bed being capable of withstanding multiple penetrations by the cutting tool without destruction when the tool cuts through a layup of sheet material and the support surface of the bed, comprising the steps of:

generating a marker program defining the positional relationship of the pattern pieces with respect to one another as the pieces are to be cut from a layup of sheet material spread on the support surface of the cutting table;

spreading a plotting material over the support surface of the penetrable bed;

attaching a writing instrument to the moveable carriage for writing upon the plotting material on the support surface of the table;

driving the moveable carriage and the attached writing instrument relative to the plotting material on the support surface of the table in accordance with the marker program;

deactivating the cutting tool on the moveable carriage during the step of driving with the tool out of engagement with the penetrable support bed and material spread thereon; and

engaging the writing instrument periodically in writing relationship with the plotting material in response to the marker program during the step of driving without penetrating the instrument through the plotting material and the support surface into the penetrable bed to plot the marker on the material.

3,895,359
STORAGE MATRIX CONSTRUCTION

Rudolf Knoll, Allmannshausen, and Ludwig Harrer, Munich, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Continuation of Ser. No. 184,554, Sept. 21, 1971, abandoned. This application Apr. 15, 1974, Ser. No. 461,145

Int. Cl. G11c *5/06, 11/06*

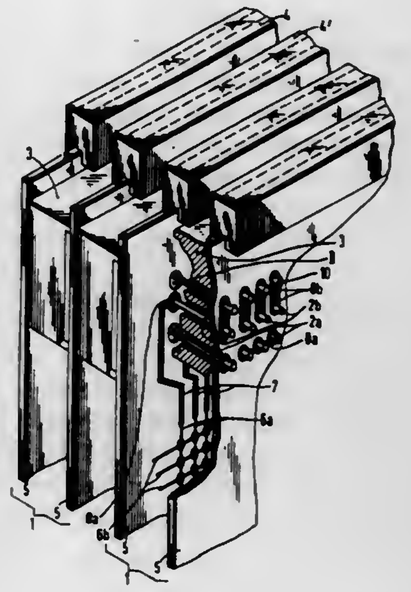
U.S. Cl. 340—173 R **7 Claims**

1. A storage matrix construction, comprising:

a plurality of matrices formed of crossed rows and columns of electrical conductors,

a plurality of carrier plates having said matrices, respectively, attached to the surface thereof, said carrier plates being formed into a storage block,

connection zones formed on and spaced from the periphery of said carrier plates as to be entirely within the interiors of said carrier plates, said connection zones including wiring points and means defining openings through said carrier plates, said openings on said carrier plates being aligned,



printed circuit conductors extending said electrical conductors and forming said wiring points on said carrier plates, a wiring point being formed for each said electrical conductors on the carrier plate associated therewith and

wire conductors connecting predetermined ones of said wiring points on different carrier plates through said openings.

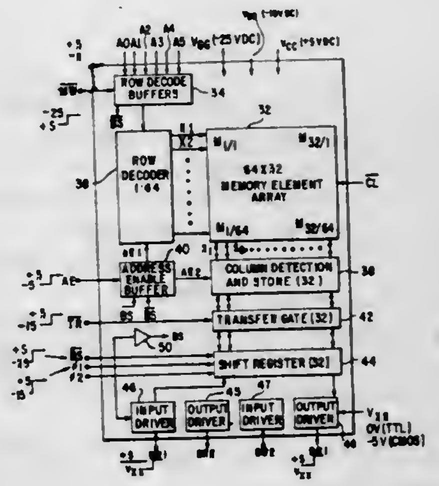
3,895,360
BLOCK ORIENTED RANDOM ACCESS MEMORY

James Ronald Cricchi, Baltimore, and Franklyn C. Blaha, Glen Burnie, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 29, 1974, Ser. No. 437,649

Int. Cl. G11c *11/40*

U.S. Cl. 340—173 R **17 Claims**



1. A memory system for storing an input signal comprising a plurality of bits comprising:

a. a matrix of memory elements disposed in a matrix of rows and columns, each of said memory elements capable of being disposed to at least first and second states corresponding to the input signal;

b. address means responsive to an address signal designating at least one of the matrix rows, for actuating the designated row of said memory matrix to facilitate reading and writing of data onto the memory elements of the designated row;

c. sequential storage means comprising a plurality of stages, each stage corresponding to a column of said memory matrix, said sequential storage means disposed to receive the input signal in a sequential fashion and for storing a portion of the input signal in each of said stages, said sequential storage means upon the completion of the entry of the portions of the input signal in a given number of its stages effecting a transfer of the signal portions along corresponding columns of said memory matrix, whereby the portions of the input signal are written onto said memory elements of the addressed row; and

d. intermediate storage and detection means interconnected between said sequential storage means and said memory matrix for temporarily storing the portions of the input signal, and for detecting whether said memory elements of the designated row are in their first and second stages and for providing corresponding first and second outputs to said corresponding stages of said shift register, after entry of the outputs from said memory matrix said sequential storage means sequentially transferring the outputs from said sequential storage means to provide a composite output comprised of the first and second outputs as derived in parallel from said memory elements of said matrix columns.

3,895,361

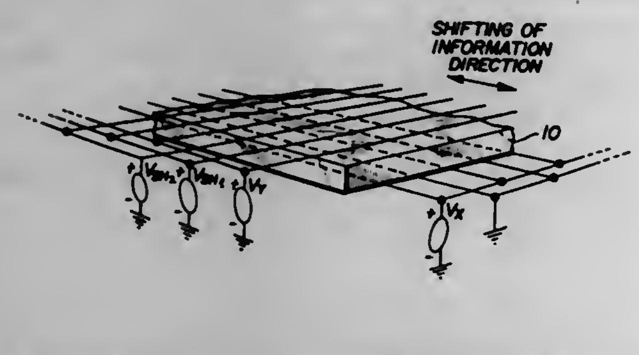
METHOD AND APPARATUS FOR RELIABLY PARALLEL SELF SHIFTING INFORMATION IN A PLASMA DISPLAY/MEMORY PANEL

Larry M. Jones, Matawan, N.J., and Roger L. Johnson, Monticello, Ill., assignors to University of Illinois Foundation, Urbana, Ill.

Filed May 30, 1974, Ser. No. 474,396

Int. Cl. G11c *11/28*

U.S. Cl. 340—173 PL **12 Claims**



4. A method for reliably parallel self shifting of information in a plasma panel comprising the steps of:

providing at least two lines of information cells;

providing first and second lines of transfer cells intermediate said two lines of information cells;

maintaining said lines of transfer cells in the OFF state by coupling an erase signal thereto;

removing said erase signal from said first line of transfer cells and activating same to transfer information from one of said lines of information cells to said first line of transfer cells;

removing said erase signal from said second line of transfer cells and activating same to transfer information from said first line of transfer cells to said second line of transfer cells;

recoupling said erase signal to said first line of transfer cells to erase said information and maintain said transfer cells in the OFF state;

transferring information from said second line of transfer cells to the other of said lines of information cells; and

recoupling said erase signal to said second line of transfer cells to erase said information and maintain said transfer cells in the OFF state.

3,895,362

INTEGRATED MAGNETIC WIRE MEMORY

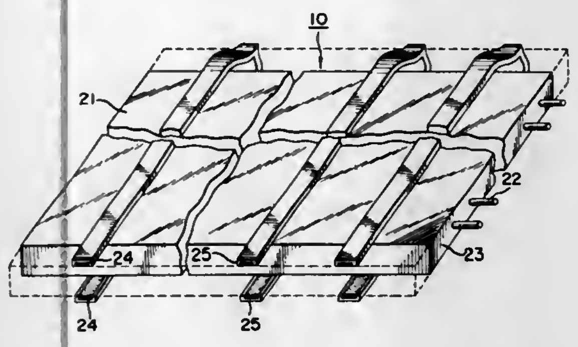
Masaaki Yamakawa, Tokyo; Isamu Kashiwagi, Kawasaki, and Akio Tomono, Tokyo, all of Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed May 18, 1973, Ser. No. 361,588

Claims priority, application Japan, June 2, 1972, 47-54365; Oct. 12, 1972, 47-101577

Int. Cl. G11c *11/14*

U.S. Cl. 340—174 PW **2 Claims**



1. An integrated magnetic wire memory comprising:

a plurality of coplanar magnetic wires parallelly arranged, an insulating film disposed about and enclosing said magnetic wires,

a plurality of U-shaped conductive non-magnetic wires disposed adjacent to and in contact with said insulating film,

said U-shaped non-magnetic wires being further disposed in a plane parallel to the plane of said magnetic wires and in a direction perpendicular to the projected direction of said magnetic wires,

the projected intersection of a U-shaped non-magnetic wire and a magnetic wire forming a memory cell,

the end portions of each of said U-shaped non-magnetic wires being disposed beyond said insulating film in such a manner that the total peripheral surface of said end portions is disposed beyond and in non-contact with said insulating film,

a plurality of keeper members with one keeper member for each of said U-shaped non-magnetic wires,

each keeper member being formed of magnetic material of high permeability,

each keeper member being disposed to form a partial peripheral layer about the entire length of its U-shaped non-magnetic wire so that each U-shaped non-magnetic wire is shielded from adjacent U-shaped non-magnetic wires along its entire length by its keeper member.

3,895,363

MAGNETIC DOMAIN COUNTER

Aleksander I. Braginski, Pittsburgh, and Paul G. Kennedy, Monroeville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

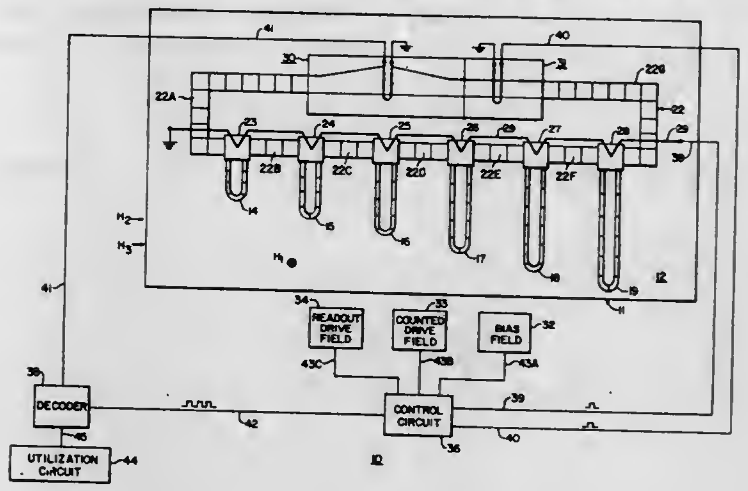
Filed Jan. 18, 1974, Ser. No. 434,757

Int. Cl. G11c *11/14, 19/00*

U.S. Cl. 340—174 TF **9 Claims**

1. A magnetic domain counter comprising:

a wafer of magnetic domain propagating material; a closed-end readout loop in said wafer formed by a predetermined number of serially formed pattern cells, means for producing a readout drive magnetic field rotating in the plane of said wafer to propagate magnetic domains in said readout loop; a magnetic domain detector coupled to said readout loop for generating a signal in response to the presence of a magnetic domain; a magnetic domain generator coupled to said readout loop for establishing any desired number of magnetic domains in said readout loop; a plurality of closed-end counting loops formed in said wafer by a predetermined number of propagating pattern cells with each of said counting loops including a different number of pattern cells relative to the other counting loops, each pattern cell of a loop defining a separate count location of the loop, and each of said counting loops being coupled to said readout loop at predetermined pattern cell positions of said readout loop so as to form domain entrance and exit junctions; a plurality of magnetic domain transfer gates, each of said transfer gates being formed on said wafer adjacent a different one of said junctions between said readout loop and said counting loop, said transfer gate being responsive to a transfer control signal to direct magnetic domains into and out of each of said counting loops at first and end counting pattern cell positions, respectively; and means for producing a counted drive magnetic field rotating in the plane of said wafer to simultaneously propagating magnetic domains in each of said counting loops such that the positions of said magnetic domains in said counting loops are representative of a corresponding number of revolutions of said counted drive field and whereby the maximum count of said magnetic domain counter is equal to the product of the sums of the pattern cells in said counting loops having a magnetic domain propagated therein by said counted drive magnetic field.



3,895,364

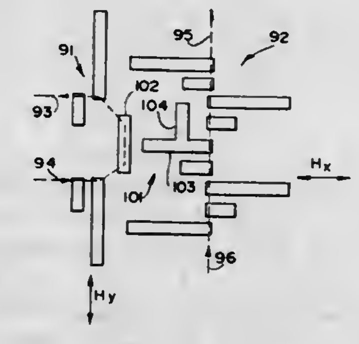
BUBBLE DOMAIN PROPAGATION CIRCUIT

Edward Della Torre, Toronto, and Witold Kinsner, Hamilton, both of Canada, assignors to Canadian Patents and Development Limited, Ottawa, Canada

Filed May 6, 1974, Ser. No. 467,237

Int. Cl.^{2} G11C *11/14*

U.S. Cl. 340—174 TF **17 Claims**



14. In a magnetic bubble domain memory having a parallel bar assembly loop and a number of parallel bar storage loops positioned perpendicular to the assembly loop, each of the storage loops having a first and second track, the assembly loop having at least one track and each of the storage loops being connected to the assembly loop by a transfer circuit means, each of the transfer circuit means comprising:

first means substantially perpendicular to said storage loop and adapted to transfer bubbles from the first track to the second track, said first means having a first bar positioned at the end of said first and second track slightly offset from the centerline between said first and second track; and

second means substantially perpendicular to said assembly loop and adapted to transfer bubbles between said storage loop and said one track.

3,895,365

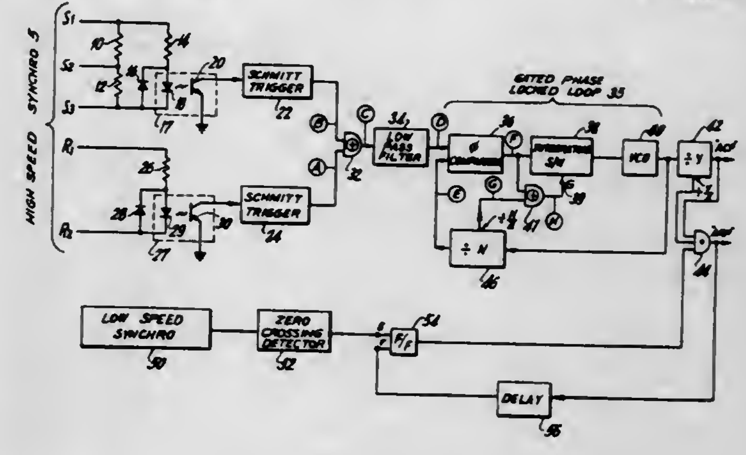
SHAFT POSITION ENCODER APPARATUS

Gerald Lewis Freed, Highland Park, N.J., assignor to Lockheed Electronics Company, Inc., Plainfield, N.J.

Filed June 14, 1974, Ser. No. 479,561

Int. Cl. G08c *19/38*

U.S. Cl. 340—198 **6 Claims**



1. In combination in shaft position characterizing apparatus, means for supplying a pulse wave representative of a measure of the rotational position of the shaft being monitored, and a gated phase locked loop, said gated phase locked loop comprising a forward gain path comprising a cascaded phase comparator, integrating sample and hold circuit means, and a controlled oscillator regulated by the output of said integrating sample and hold means, and a feedback frequency divider connected between the output of said controlled oscillator and a first input to said phase comparator, said pulse wave supplying means being connected to a second input of said phase comparator, said feedback frequency divider comprising more than one stage, and modulo-2 logic means having inputs connected to the output of said phase comparator and to the output of the next-to-last one of said feedback divider stages for controlling the mode of operation of said integrating sample and hold circuit.

3,895,366

GOLF SWING SENSING DEVICE

Francis E. Morris, 3436 Elliott, San Diego, Calif. 92106

Filed Mar. 18, 1974, Ser. No. 452,335

Int. Cl. G08c *19/16*

U.S. Cl. 340—207 R **17 Claims**

1. A device for sensing the swinging path and striking velocity of the head of a golf club comprising:

a golf club,

a battery-powered radio frequency transmitter secured to the head of said golf club,

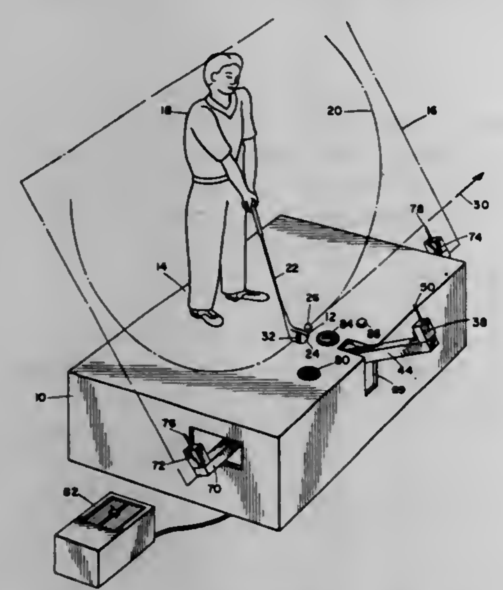
a golfer supporting platform having a ball tee positioned along the nominal horizontal flight path and a golfer supporting position spaced from said ball tee,

a first pair of antennas mounted in association with said platform substantially equidistant from said ball tee,

a vertical plane passing through said first antennas is substantially transverse to said nominal horizontal flight path,

a plane defined by all points equidistant from said first antennas is inclined from the vertical toward said golfer supporting position,

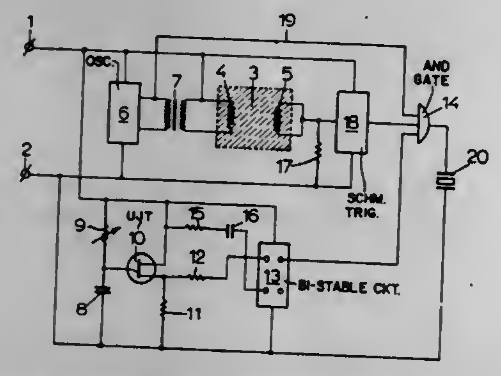
- a second pair of spaced antennas positioned along a substantially horizontal line parallel to said nominal horizontal flight path,
- swing path indicating means for comparing the phase of the detected signals from said first antennas, converting the phase difference into a voltage analogue of phase, and indicating the magnitude of said voltage analogue, and



- swing velocity indicating means for comparing the detected apparant frequencies at said second pair of antennas, converting the difference frequency into a voltage analogue of said difference frequency, and indicating the maximum value of said voltage analogue.

3,895,367
GAS INDICATOR WITH SEMICONDUCTIVE GAS SENSOR

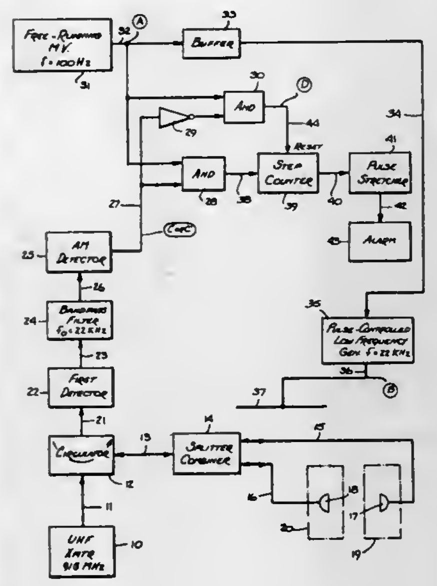
Robertus Gerardus Visser, Amsterdam, Netherlands, assignor to Johan Willem Visser, Amsterdam and Frans Verlinden, Amstelveen, Breukeleveen, both of, Netherlands
Filed Jan. 28, 1974, Ser. No. 437,351
Claims priority, application Netherlands, Oct. 10, 1973, 7313897; Belgium, Nov. 30, 1973, 138387
Int. Cl. G08b *17/10*
U.S. Cl. 340—237 R **8 Claims**



1. A gas indicator, comprising a semiconductive body serving as a gas sensor adapted to be thermally activated and having in activated condition the property that the resistivity thereof is substantially reduced upon exposure to a gas, a first electrode incorporated in said body and shaped as a filament for activating the same, an alternating current source, means for connecting said alternating current source across said first electrode, a second electrode incorporated in said body and spaced with respect to said first electrode, a circuit interconnecting the said electrodes and including a direct current source, a current change occurring in the said circuit when the resistivity of said body is reduced, a delay circuit coupled to said direct current source and actuated when the indicator is energized, a first trigger controlled by said delay circuit to change state at the end of a determinable activating time, a second trigger controlled by said current change so as to change state when the resistivity of said body is reduced, a coincidence gate controlled by output signals of the said triggers occurring after their changes of state, and an alarm circuit actuated by the output signal of said coincidence gate, the alternating current source being an oscillator coupled to and energized by said direct-current source.

3,895,368
SURVEILLANCE SYSTEM AND METHOD UTILIZING BOTH ELECTROSTATIC AND ELECTROMAGNETIC FIELDS

Lloyd L. Gordon, Miami, and Robert D. Williamson, Pembroke Pines, both of Fla., assignors to Sensormatic Electronics Corporation, Hollywood, Fla.
Filed Aug. 9, 1972, Ser. No. 279,097
Int. Cl. G08b *13/18*
U.S. Cl. 340—258 C **13 Claims**



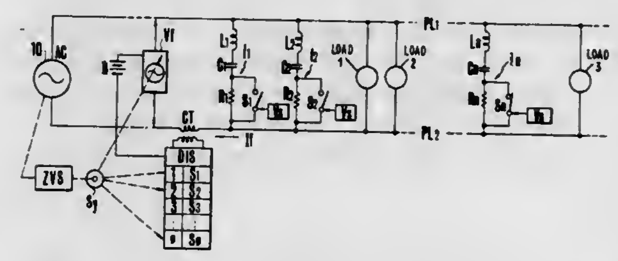
1. The method of maintaining surveillance within a confined space to detect the presence in said space of an electric signal receptor-reradiator with signal mixing capability, said method comprising the steps of simulataneously establishing in said space first and second energy fields, said first field being electromagnetic in nature and produced by a continuous microwave signal for causing said receptor-reradiator to return a signal therefrom, said second field being electrostatic in nature established by applying a signal voltage to a discontinuous conductor relative to a point of reference potential and having a sufficiently low frequency to enable it to be confined substantially to said space, and detecting the presence in said space of a signal consisting of a carrier and modulation components where said components are due respectively to said first and second fields.

3,895,369
SUPERVISORY SYSTEM FOR ABNORMAL CONDITIONS

Toshiharu Ono, 2-11, Takara-Cho, Chuo-ku, and Akira Tazaki, 2-38-8, Hanegi, Setagaya-ku, both of, Tokyo, Japan
Filed Dec. 26, 1973, Ser. No. 427,712
Claims priority, application Japan, Dec. 27, 1972, 47-2844
Int. Cl. G08b *21/00*
U.S. Cl. 340—310 R **12 Claims**

1. A supervisory system for detecting abnormal conditions affecting environmental security comprising electric power supply lines connected to a source of alternating current, high frequency oscillator means for transmitting high frequency currents of variable frequency over said power supply lines, a plurality of resonance elements having different resonance

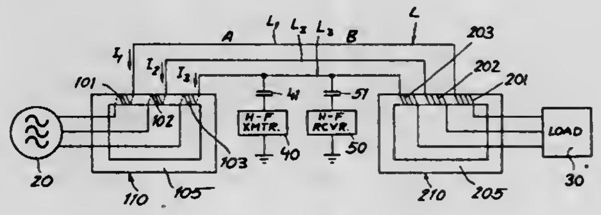
frequencies and connected across said power supply lines, a plurality of detectors responsive to the abnormal conditions affecting environmental security, said detectors being associated with respective resonance elements so as to vary their resonance impedances in accordance with said abnormal conditions, a receiver connected to said power supply lines for



receiving said high frequency currents after flowing through said resonance elements, means for causing said receiver to be operative only in the regions about the zero points of the AC voltage of said source, and display means responsive to the output of said receiver for selectively displaying said abnormal conditions.

3,895,370
HIGH-FREQUENCY COMMUNICATION SYSTEM USING A-C UTILITY LINES

Nicola Valentini, Rome, Italy, assignor to Societe Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy
Filed July 2, 1973, Ser. No. 375,432
Claims priority, application Italy, July 4, 1972, 26558-A/72
Int. Cl. H04m *11/04*
U.S. Cl. 340—310 A **10 Claims**

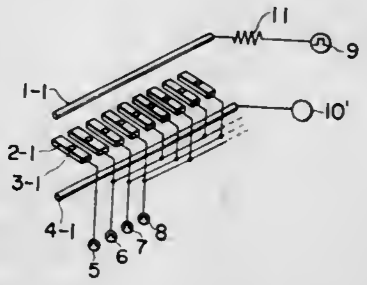


1. In a power-supply system comprising a utility line with a plurality of parallel conductors normally carrying a substantially balanced low-frequency current between a source and a load, the combination therewith of:

- a pair of terminal coils at opposite ends of a transmission path including at least one of said conductors, each of said terminal coils comprising a plurality of windings on a common ferromagnetic core, said windings having the same number of turns and lying respectively in series with all conductors of said line whereby the vector sum of the magnetomotive forces normally induced by said windings in said core is substantially zero;
- transmitting means and receiving means for high-frequency signals; and
- first and second coupling means respectively connecting said transmission means and receiving means at spaced-apart points of said transmission path to said one of said conductors for communication with each other, said transmitting means and said receiving means being linked with each other by a return connection independent of said line, said first and second coupling means being separated from said source and said load by at least one winding on each coil for attenuating said high-frequency signals beyond said spaced-apart points.

3,895,371
DISPLAY DEVICE

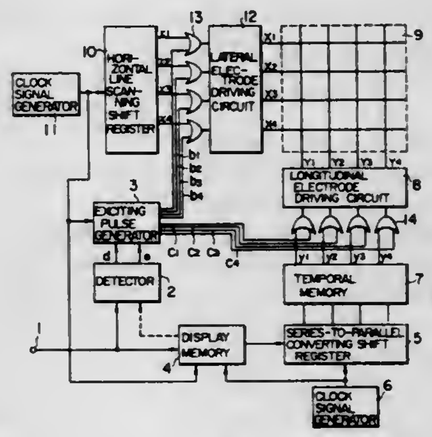
Tetsunori Kaji; Seiichi Murayama, and Masakazu Fukushima, all of Kokubunji, Japan, assignors to Hitachi, Ltd., Japan
Filed Oct. 29, 1973, Ser. No. 410,568
Claims priority, application Japan, Oct. 27, 1972, 47-107197
Int. Cl. G08b *55/36*
U.S. Cl. 340—324 M **7 Claims**



1. A display device providing discharges in a gas, comprising a plurality of first electrodes for main discharges, a plurality of second electrodes for subsidiary discharges, a plurality of third electrodes disposed so as to intersect said first and second electrodes to produce said main and subsidiary discharges at the points of intersection in cooperation with said first and second electrodes, a gas-filled enclosure containing said first, second and third electrodes, a first electric energy source to supply a pulse wave to said third electrodes with a predetermined period to thereby transfer said discharges between third electrodes, a second electric energy source connected to supply a pulse wave having a predetermined period to said second electrodes to thereby produce said subsidiary discharge, and a third source connected to apply a signal to be displayed to said first electrodes to thereby produce said main discharges simultaneously with said subsidiary discharges.

3,895,372
QUICK RESPONSE LIQUID CRYSTAL DISPLAY DEVICE

Tetsunori Kaji; Masakazu Fukushima, both of Kokubunji; Isamu Mitomo, Hachioji, and Shigehiro Kamejima, Ome, all of Japan, assignors to Hitachi, Ltd., Japan
Filed Jan. 23, 1974, Ser. No. 435,951
Claims priority, application Japan, Jan. 24, 1973, 48-9510
Int. Cl. G09f *9/32;* **G02f** *1/18*
U.S. Cl. 340—324 M **10 Claims**


13
12
9
10
CLOCK SIGNAL GENERATOR
11
HORIZONTAL LINE SCANNING SHIFT REGISTER
LATERAL ELECTRODE DRIVING CIRCUIT
X1
X2
X3
X4
b1
b2
b3
b4
3
EXCITING PULSE GENERATOR
LONGITUDINAL ELECTRODE DRIVING CIRCUIT
8
14
C1
C2
C3
C4
DETECTOR
2
TEMPORAL MEMORY
7
1
DISPLAY MEMORY
4
SERIES-TO-PARALLEL CONVERTING SHIFT REGISTER
5
6
CLOCK SIGNAL GENERATOR

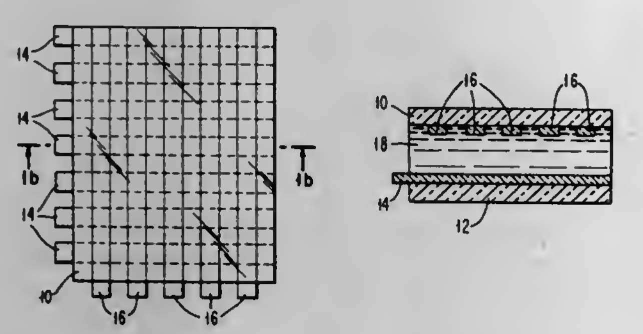
1. A liquid crystal display panel driving device comprising a display panel having thereon a plurality of liquid crystal cells to which exciting time-division signals are applied respectively, means for detecting the variation of display information to be displayed on said display panel, and means for applying, at least to the liquid crystal cell corresponding to the variation position of said display information, a signal for sufficiently

exciting said liquid crystal cell when the variation of said display information is detected by said detecting means.

3,895,373
METHOD AND APPARATUS FOR SELECTIVELY EXCITING A MATRIX OF VOLTAGE RESPONSIVE DEVICES

Marvin J. Freiser, Scarborough, and Dale T. Teaney, Croton-on-Hudson, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 7, 1974, Ser. No. 477,204
Int. Cl. G08b *5/36*
U.S. Cl. 340—324 M **16 Claims**



1. Apparatus for selectively controlling a matrix of voltage responsive devices in which each device is associated with and driven by a different pair of a plurality of row and column drive lines, each said device responding to a difference in voltage between its associated column and row drive line, the improvement comprising drive means for normally providing a voltage to each said device equal in amplitude to a voltage supplied to each other device and for selectively reducing the voltage at a selected device to zero without varying the voltage amplitude supplied to each other device, said drive means including,

means providing three alternating current voltages of the form $V \sin(wt + m2\pi/3)$ wherein each of said voltages has a different value of m selected from the group comprising −1, 0, +1, and wherein $V =$ 3 times said voltage and,

switching means normally connecting one of said voltages to said column drive lines, and another of said voltages to said row drive lines and for selectively connecting said third voltage only to a row and column drive line associated with said selected device,

whereby a voltage normally exists across each of said devices equal in amplitude to the voltage across each other said device and, at times, a zero voltage exists across a selected device while said equal voltage amplitude is maintained across all said other devices.

3,895,374
DISPLAY APPARATUS WITH SELECTIVE TEXT FORMATING

Robert C. Williams, Churchville, Pa., assignor to GTE Information Systems Incorporated, Stamford, Conn.

Filed Sept. 3, 1974, Ser. No. 502,978
Int. Cl.^{2} G06F *3/14*
U.S. Cl. 340—324 AD **8 Claims**

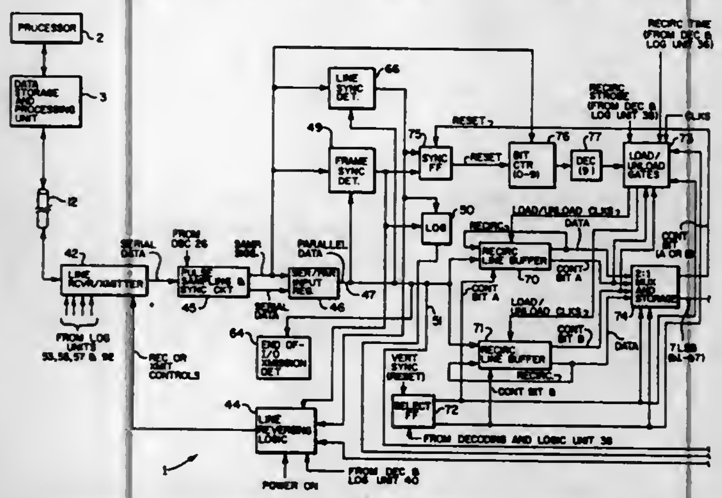
1. Data processing and display apparatus, comprising:

display means having a plurality of character rows in which images of data characters may be displayed, each of the character rows having a plurality of display lines associated therewith;

data source means operative to produce a plurality of characters each for a predetermined number of times equal to the number of display lines associated with each character row of the display means, said characters including a plurality of data characters the images of which are to be displayed in at least two successive character rows of the display means and an accompanying attribute character including attribute data specifying particular display attributes which the images of the data characters are to have when displayed in the character rows of the display means;

first buffer circuit means coupled to the data source means and operative to receive and store therein, for the predetermined number of times, the attribute data of the attribute character included in the characters produced by the data source means;

display signal generator means coupled to the data source means and having an input for receiving each data character produced for the predetermined number of times by the data source means, said display signal generator means being operative in response to receiving each data character at its input for the predetermined number of times to produce a corresponding set of display data signals, the number of display data signals in each set of display data signals being equal to the number of display lines associated with each character row of the display means;



first circuit means coupled to the display signal generator means, to the first buffer circuit means and to the display means, said first circuit means being operative in response to the storage of the attribute data in the first buffer circuit means for the predetermined number of times and in response to display data signals produced by the display signal generator means to cause images of the data characters corresponding to the display data signals to be displayed in a character row of the display means during the associated display lines with the images having the particular display attributes specified by the attribute data stored in the first buffer circuit means;

second circuit means associated with the display means and operative to produce an output signal between the termination of each of the display lines of the display means and the beginning of the next display line of the display means;

third circuit means associated with the display means and operative to produce an output signal during the last display line associated with each character row of the display means;

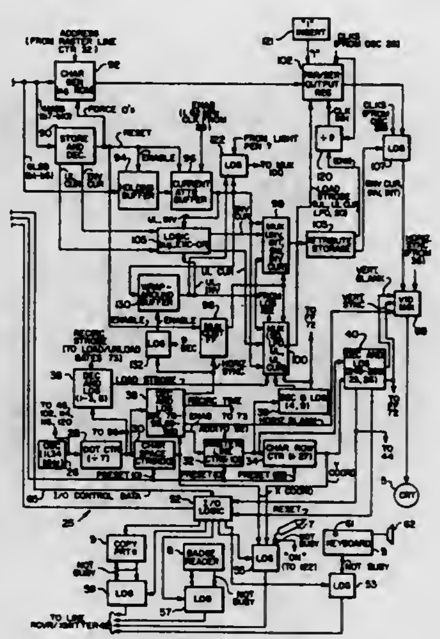
wrap-around buffer circuit means coupled to the first buffer circuit means and to the second and third circuit means, said wrap-around buffer circuit means being operative in response to an output signal produced by the second circuit means and a concurrent output signal produced by the third circuit means to receive and store therein the attribute data stored in the first buffer circuit means.

said first circuit means also being coupled to the wrap-around buffer circuit means and to the second circuit means, said first circuit means being operative in response to each output signal produced by the second circuit means and in response to display data signals produced by the display signal generator means to cause images of the data characters corresponding to the display data signals to be displayed in a new character row of the display means during the associated display lines with the images having the particular display attributes specified by the attribute data stored in the wrap-around buffer circuit means, said new character row following the character row in which images of data characters were caused to be displayed in response to the attribute data stored in the wrap-around buffer circuit means being previously stored in the first buffer circuit means.

3,895,375
DISPLAY APPARATUS WITH FACILITY FOR UNDERLINING AND STRIKING OUT CHARACTERS

Robert C. Williams, Churchville, Pa., assignor to GTE Information Systems Incorporated, Stamford, Conn.

Filed Sept. 3, 1974, Ser. No. 502,987
Int. Cl.^{2} G06F *3/14*
U.S. Cl. 340—324 AD **8 Claims**



1. Display apparatus for displaying an image of a data character with a line associated therewith, comprising:

data source means for producing a set of data for a predetermined number of times, said set of data including a data character and an attribute character accompanying the data character and including line data specifying that an image of the data character is to be displayed with an associated line;

display signal generator means for receiving the data character in the set of data for the predetermined number of times, said display signal generator means being operative in response to receiving the data character for the predetermined number of times to produce a set of display data signals corresponding to the data character, the number of display data signals in the set being equal to the predetermined number of times that the set of data is produced by the data source means, each of said display data signals comprising a series of a predetermined number of bits;

first circuit means having a set of storage locations equal in number to the number of bits in each display data signal produced by the display signal generator means, an additional storage location following the aforesaid set of storage locations and an output, said first circuit operative to receive and store in the set of storage locations therein the bits of display data signals produced by the display signal generator means;

second circuit means coupled to the first circuit means and operative when the bits of each display data signal are stored in the set of storage locations of the first circuit means to cause a special bit to be applied to and stored in the additional storage location of the first circuit means;

third circuit means coupled to the first circuit means and operative to produce clock signals for clocking the bits of display data signals stored in the set of storage locations of the first circuit means to the output of the first circuit means and, as the bits of each display data signal stored in the set of storage locations of the first circuit means are clocked to the output of the first circuit means, to clock the special bit in the additional storage location along the set of storage locations of the first circuit means thereby to establish a series of said special bits in the set of storage locations;

display means coupled to the output of the first circuit means and having a character display area defined by a plurality of display lines equal in number to the number of display signals in a set of display data signals;

fourth circuit means associated with the display means and operative to produce a signal corresponding to a predetermined one of the display lines of the display means;

fifth circuit means coupled to the data source means and operative to receive and store therein, for the predetermined number of times that the set of data is produced by the data source means, the line data of the attribute character;

sixth circuit means coupled to the first, fourth and fifth circuit means and operative in response to the storage in the fifth circuit means of the line data of the attribute character and in response to a signal produced by the fourth circuit means corresponding to the predetermined one of the display lines of the display means to prevent the first circuit means from receiving a display data signal from the display signal generator means and, instead, to enable the first circuit means to be clocked by the third circuit means thereby to permit the series of special bits established in the set of storage locations of the first circuit means to be clocked to the output of the first circuit means, said series of special bits thereby replacing a display data signal produced by the display signal generating means;

said display means being operative to receive the bits of each of the display data signals and the bits of the series of special bits clocked to the output of the first circuit means, and in response to the bits of each of the display data signals to produce in the character display area thereof a portion of an image of the corresponding data character during a corresponding one of the display lines and in response to the series of special bits to produce in the character display area thereof an image of a line during the aforesaid predetermined one of the diaplay lines, the composite image thereby being that of the data character with a line associated therewith.

3,895,376
DUAL SLOPE INTEGRATING ANALOG TO DIGITAL CONVERTER

Kozo Uchida, Tokyo, Japan, assignor to Iwatsu Electric Co., Ltd., Tokyo, Japan

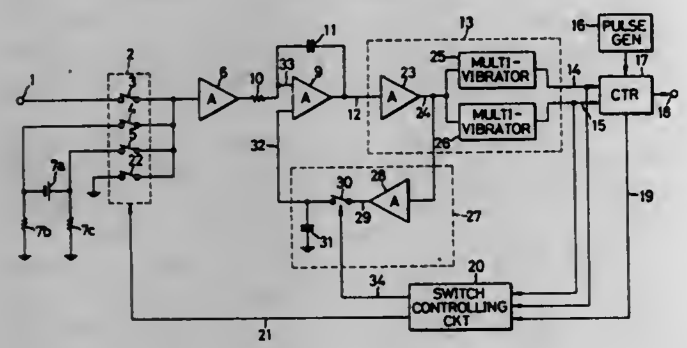
Filed Oct. 19, 1972, Ser. No. 298,854

Claims priority, application Japan, Oct. 26, 1971, 46-84839; Oct. 26, 1971, 46-84840; Oct. 26, 1971, 46-84842; Oct. 26, 1971, 46-84843; Oct. 26, 1971, 46-84844

Int. Cl. H03k *13/20*
U.S. Cl. 340—347 NT **15 Claims**

1. A dual slope integrating analog to digital converter comprising an integrating circuit, a voltage source having first and second terminals connected to ground through a first unknown resistor and a second reference resistor, said voltage source supplying a direct current simultaneously to said first and second terminals, first and second switches connecting the first and second terminals to the input of said integrating circuit, a switch controlling circuit for closing one of the switches at a predetermined instant, a comparator circuit responsive to the output of said integrating circuit and controlling said switch controlling circuit to open said one switch when the output of said integrating circuit reaches a predeter-

mined threshold, and means for counting clock pulses while said one switch is closed, said counting means closing the first switch for a predetermined interval of time terminating at said predetermined instant and then closing the second switch.



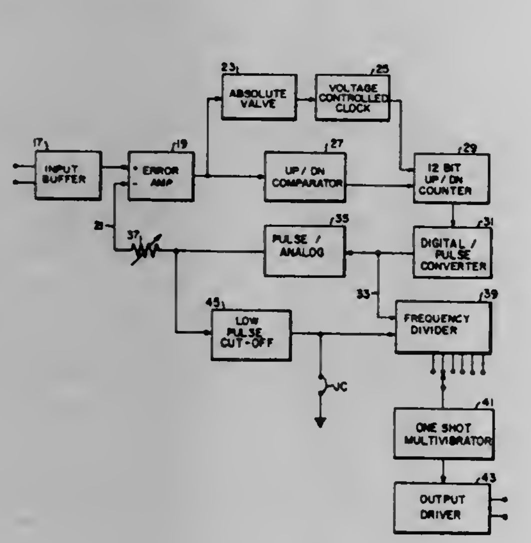
3,895,377
VOLTAGE-TO-PULSE CONVERSION APPARATUS AND METHOD

Thomas H. Schwalenstocker, Glenshaw, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 5, 1972, Ser. No. 268,949

Int. Cl. H03k *13/20;* **G21c** *17/02*

U.S. Cl. 340—347 AD **20 Claims**



1. A voltage to pulse converter comprising:

an error signal generator for generating an error signal as a function of the difference between an applied signal and a feedback signal,

a clock for generating pulses in response to the presence of an error signal,

a counter for accumulating a count of the clock pulses,

a digital-to-pulse converter for generating output pulses at a rate proportional to the accumulated count in the counter, and

a pulse-to-analog converter for generating the feedback signal as a function of the output pulses.

11. Apparatus for monitoring the boric acid concentration in the coolant of a nuclear reactor, said combination including:

means for generating a voltage signal proportional in magnitude to the flow of boric acid added to the coolant,

an error signal generator for generating an error signal as a function of the difference between said voltage signal and a feedback signal,

a clock for generating pulses in response to the presence of an error signal,

a counter for accumulating a count of the clock pulses,

a digital-to-pulse converter for generating output pulses at a rate proportional to the accumulated count in the counter,

a pulse-to-analog converter for generating the feedback signal as a function of the output pulses, and

an additional counter for accumulating a count of output pulses generated by the digital-to-pulse converter.

3,895,378
DECODER FOR TELEPHONIC TRANSMISSIONS

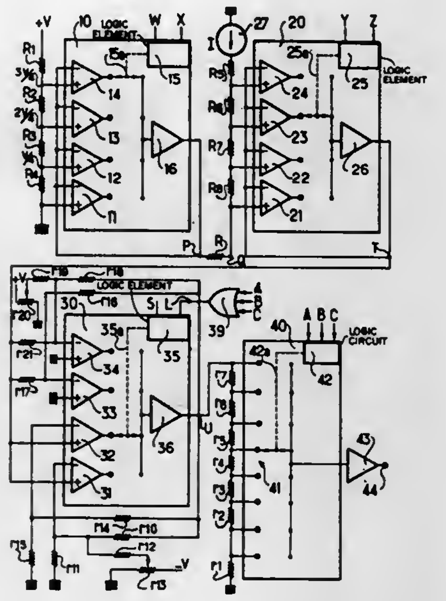
Francois Marcel, Orsay; Jean-Louis Lagarde, Arpajon, and Alain Manoury, Viry Chatillon, all of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, France

Filed Dec. 18, 1973, Ser. No. 425,780

Claims priority, application France, Dec. 18, 1972, 72.45037

Int. Cl. H03k *13/04*

U.S. Cl. 340—347 DA **6 Claims**



1. A decoder for a transmission of coded pulses defining 4^n linearly staged positions, comprising n interconnected modules of identical construction each including four operational amplifiers, an output amplifier, switching means for selectively connecting the output of one of said operational amplifiers to the input of said output amplifier and control means responsive to received coding bits for actuating said switching means according to the sum of the coding stages in decreasing ratios of units of four.

3,895,379
TWO-WAY TOGGLE ACTUATED MECHANISM

Grover K. Houpt, Wayne, and Peter J. Bergman, Norristown, both of Pa., assignors to American Manufacturing Company, Inc., King of Prussia, Pa.

Filed June 19, 1974, Ser. No. 480,732

Int. Cl. G08b *5/00*

U.S. Cl. 340—366 R **11 Claims**

1. A mechanism for moving a wheel or the like step-wise in either of two opposed rotary directions comprising:

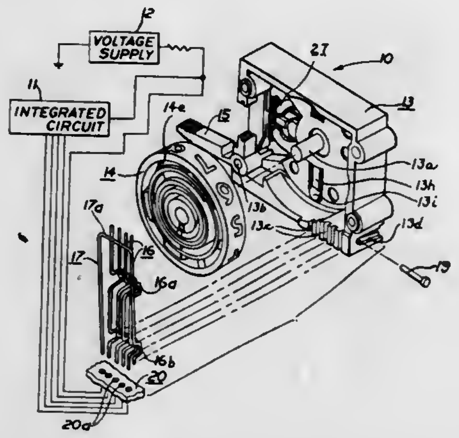
a. mounting means,

b. a wheel mounted for rotary movement on said mounting means,

c. manually operable means pivotally mounted on said mounting means for movement in either of two opposed directions,

d. an escapement pivotally mounted on said mounting means and engaging one lateral surface of said wheel,

e. linkage means connected between said escapement and said manually operable means for transmitting movement of said manually operable means in one direction to said escapement and transmitting movement of said manually operable means in a second and opposite direction to a corresponding opposite movement of said escapement, said escapement movements also causing corresponding movements of said wheel.



3,895,380
DIGIT DISPLAY APPARATUS

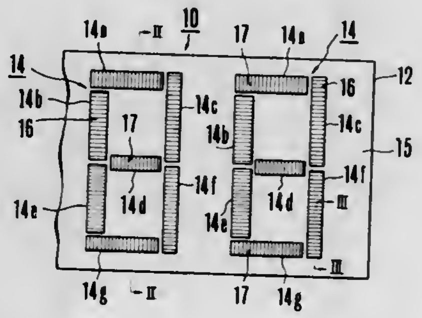
Rintaro Nishina, Yonezawa, and Tomokazu Suzuki, Tokyo, both of Japan, assignors to Tamura Electric Works, Ltd., Tokyo, Japan

Filed Feb. 25, 1974, Ser. No. 445,104

Claims priority, application Japan, Mar. 14, 1973, 48-31674; Mar. 14, 1973, 48-31675

Int. Cl. G08b *5/36*

U.S. Cl. 340—378 R **6 Claims**



1. In a digit display apparatus of the type wherein a plurality of elongated digit elements are arranged in a basic digit form, the display portion of each digit element being made of a transparent material and each digit element containing a source of light whereby any desired digit can be displayed by lighting the light sources of selected digit elements, the improvement which comprises transverse grid lines formed on the rear surface of each digit element parallel to the short axis of each elongated digit element.

3,895,381
SYNTHETIC APERTURE IMAGING SYSTEMS

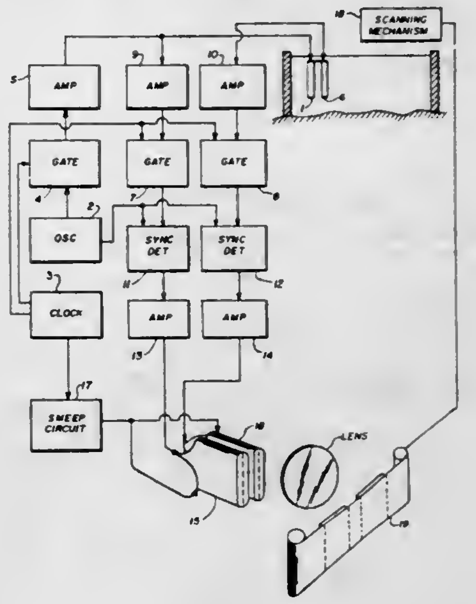
Winston E. Kock, 903 Oakdale Rd., Ann Arbor, Mich. 48105

Filed Feb. 21, 1973, Ser. No. 265,705

Int. Cl. G01s *9/02*

U.S. Cl. 343—5 CM **2 Claims**

1. A wave imaging system, in which pulses of energy are radiated at definite intervals from a transmit-receive transducer which moves relative to the irradiated area at constant speed along a straight line, comprising one or more receive-only transducers, positioned along the line of motion of the transmit receive transducer, and moving at the same constant speed and along the same straight line as the transmit-receive transducer, the echoes of said pulses of energy being received by all of said transducers, means for synchronous detection of the received signals, and storage and processing means connected to the synchronous detection means for forming an image of the irradiated area.



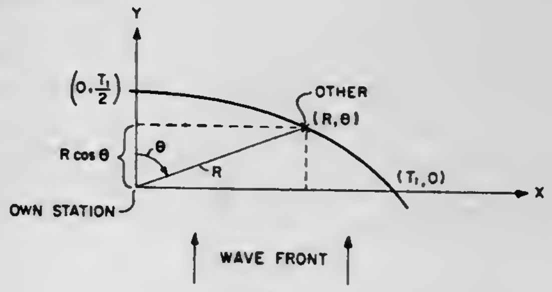
3,895,382
METHOD AND APPARATUS FOR MEASURING PASSIVELY RANGE AND BEARING

George B. Litchford, Northport, N.Y., assignor to Litchstreet Co., Northport, N.Y.

Filed Jan. 31, 1974, Ser. No. 438,297

Int. Cl. G01s *5/02, 9/02*

U.S. Cl. 343—6.5 LC **19 Claims**



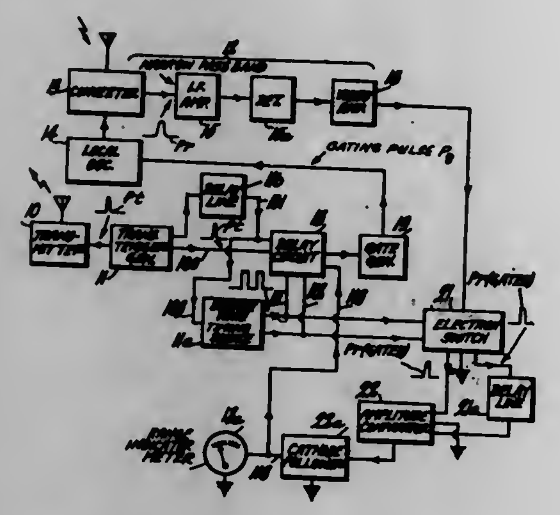
1. In a system for collision avoidance and/or proximity warning indication at an own location utilizing the signals transmitted by scanning beam secondary surveillance radar (SSR) stations and reply messages transmitted by a nearby transponder replying to said SSR signals, apparatus for passively determining the bearing angle from said own location to said transponder comprising:

a. means responsive to said SSR ground station signals for generating signals representative of the azimuthal lines of position from selected radar stations to the own location and to the location of said transponder;

b. means responsive to selected reply messages transmitted by said transponder and responsive to the SSR ground station signals for providing signals representative of the time of arrival of each of said selected reply messages at said own location; and

c. means responsive to signals representative of selected azimuthal lines of position and to the corresponding signals representative of selected times of arrival for providing a signal indicative of the bearing angle from the own location measured from said lines of position to the location in space from which the transponder replies originate.

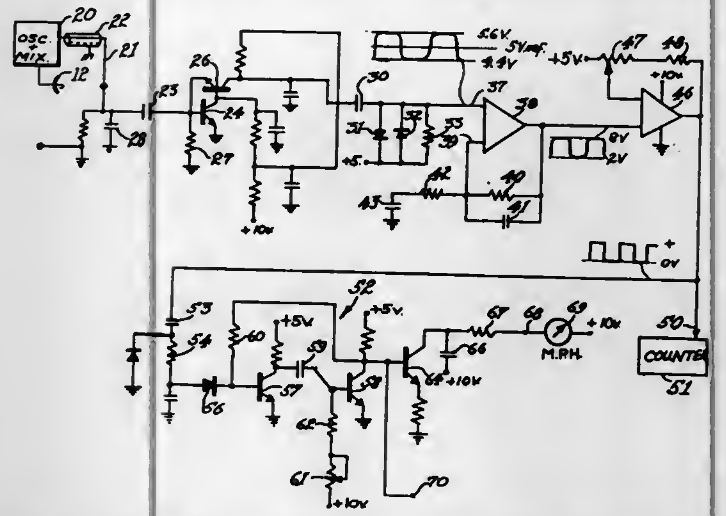
3,895,383
RADAR SYSTEM WITH A VERY SHORT PULSE LENGTH
Nathaniel I. Korman, Merchantville, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Jan. 25, 1950, Ser. No. 140,482
Int. Cl. G01s *9/14*
U.S. Cl. 343—7.3 **8 Claims**



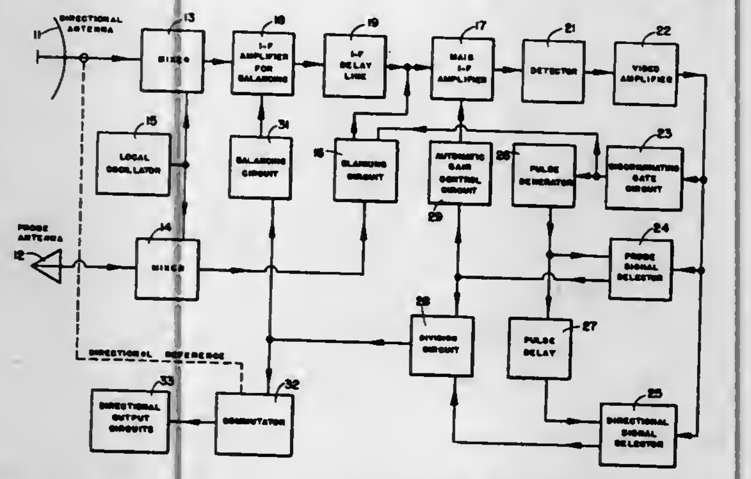
1. A pulse-echo system comprising a transmitter for transmitting a narrow pulse of radio frequency energy, a receiver for receiving said pulse after reflection from a reflecting object, said receiver being of the superheterodyne type and comprising an intermediate frequency amplifier consisting of a plurality of amplifier stages and having a narrow frequency pass band, means for producing a gating pulse adjustable in timing and having a width sufficiently narrow to provide the desired definition or resolution, said gating pulse and said transmitted pulse having substantially the same width, said narrow frequency pass band being so narrow as to seriously distort or widen a pulse as narrow as said gating pulse if passed through the intermediate frequency amplifier, means for applying said gating pulse to said receiver at a point preceding the narrow pass band stages of said intermediate frequency amplifier to make said receiver effective to pass signal to said narrow pass band stages only during the application of said gating pulse, and means for obtaining distance information that is a function of the phasing or timing of said gating pulse whereby the distance to the reflecting object is obtained.

3,895,384
DISTANCE MEASURING APPARATUS
George H. Fathauer, Decatur, and Wesley J. Bachman, Mount Zion, both of Ill., assignors to Dickey-john Corporation, Auburn, Ill.
Filed Apr. 23, 1973, Ser. No. 353,571
Int. Cl. G01s *9/46*
U.S. Cl. 343—9 **8 Claims**

1. A distance measuring apparatus for vehicles, comprising: antenna means to be mounted to a vehicle for directing RF energy towards the surface over which the vehicle is moving and for receiving reflected signals of said RF energy from the surface, oscillator-mixer means for generating said RF energy and for mixing therewith the reflected portions of said RF energy to produce a Doppler signal which has a component proportional to the rate of travel of the vehicle over the surface, said Doppler signal so generated representing predetermined increments of distances traveled, a low input impedance amplifier circuit having the input thereof connected to said oscillator-mixer means to receive said Doppler signal, said low input impedance amplifier circuit comprising a pair of transistors, one of said transistors having a grounded emitter with its base coupled to said oscillator-mixer means, the other transistor having the base thereof connected to the collector of said one transistor and the emitter thereof connected to the base of said one transistor, circuit means for developing said amplifier Doppler signal and translating the same to output terminal means, and indicator readout means connected to said output terminal means for receiving said Doppler signal to produce a visual reading of the distance traveled.



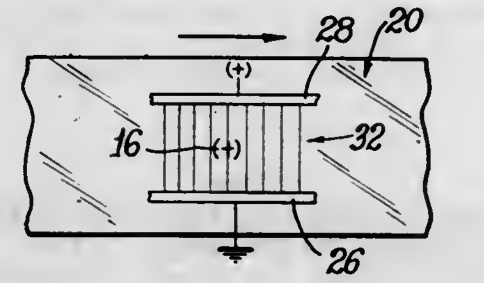
3,895,385
DELAY TYPE PROBE ANTENNA NOISE CANCELLATION SYSTEM
Frederick C. Alpers, Riverside, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed June 29, 1956, Ser. No. 595,020
Int. Cl. G01s *3/06*
U.S. Cl. 343—113 R **12 Claims**



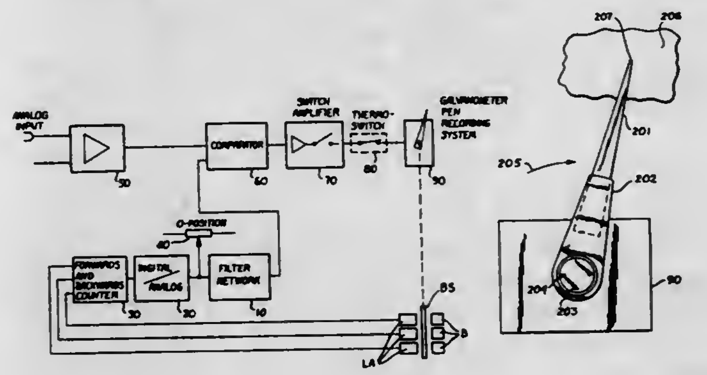
1. A system for obtaining accurate directional information with regard to the relative position of a pulsed radar source comprising means for receiving signals from said source through a directional antenna and a probe antenna, and means for dividing the signal from said directional antenna by the signal from said probe antenna over a wide dynamic range of modulation.

3,895,386
CONTROL OF DROP PRINTING
Robert Keur, Niles, and Joseph James Stone, Northbrook, both of Ill., assignors to A. B. Dick Company, Chicago, Ill.
Filed July 29, 1974, Ser. No. 492,440
Int. Cl. G01d *15/18*
U.S. Cl. 346—1 **6 Claims**

1. The method of high speed printing with ink drops on a record medium moving along a path in a first direction, comprising the steps of: generating and projecting ink drops along a path toward said record medium whereat said drops are to be received at predetermined locations to print predetermined characters, charging selectively said ink drops generated and projected toward said record medium in accordance with said predetermined locations to be occupied by said drops on said record medium and providing an electric deflection field in the path of said ink drops for deflection thereof to said predetermined locations on said record medium as determined by the charges on said drops, said field being curved in the direction of movement of said record medium whereby drops passing therethrough for deflection tend to be deflected along the curved electric field lines of said electric field and accelerated toward said record medium in the direction of movement thereof.

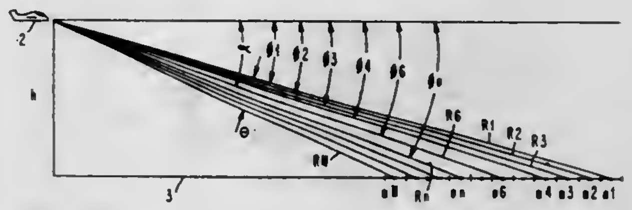


3,895,387
VIBRATION DE-COUPLER FOR USE WITH RECORDING SYSTEMS
Wolfgang Atzinger, Munich, Germany, assignor to Fritz Schwarzer GmbH, Munich, Germany
Filed Mar. 22, 1974, Ser. No. 453,611
Int. Cl. G01d *3/06, 11/10*
U.S. Cl. 346—32 **2 Claims**



1. A system for recording at least one electrical signal said system comprising means for amplifying said signal thereby generating an amplified signal, means for applying said electrical signal to an input of said amplifying means, electromechanical means for registering the output of said amplifying means, said electro-mechanical means including chart paper means and galvanometer pen means for scribing a representation of said electrical signal on said chart paper means, optical feedback means mechanically connected to said galvanometer pen means and responsive to operation of said electromechanical means for generating a feedback light signal related to amplitude of said electrical signal, means for detecting said light signal and for converting said feedback light signal to a feedback electrical signal, said amplifying means including means for comparing said feedback electrical signal and said amplified signal for generating said output of said amplifying means, said galvanometer pen means including a galvanometer stylus assembly having a scribing tip, a rotatably mounted end, vibration-absorbing sleeve means connecting said tip and said end said tip being fixedly mounted within said sleeve for inhibiting transmission of extraneous vibrational motion of said scribing tip to said optical feedback means, and means for rotatably supporting said stylus assembly at said rotatably mounted end.

3,895,388
ADAPTIVE ILLUMINATOR
Van Winkle Todd Townsend, Olney, Md., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 25, 1973, Ser. No. 409,525
Int. Cl. G03b *29/00, 15/02*
U.S. Cl. 354—132 **8 Claims**



1. A range gated illuminator with compensation for variations in slant range within the field of illumination, comprising:

an airborne illuminator head having a sequence of *n* laser diodes capable of independent energization, each diode oriented so as to illuminate one of a sequence of adjacent ground range incremental areas along a sequence of adjacent predetermined slant angle increments about a central direction of illumination;

a mounting means suspending said illuminator head from the aircraft and orienting the head so that said central direction of ilumination can assume selected slant angles; an angle transducer means coupled to said mounting means for converting to an angle signal, the slant angle at which said central direction of illumination for said head is oriented;

a range gated camera mounted on board said aircraft and oriented with its field of view to coincide with said n illuminated ground range incremental areas;

a variable delay means with an input connected to said transducer means for converting said angle signal into n sequentially delayed power pulses in response to an input trigger pulse whose duration is shorter than the time of flight of light from said aircraft to the ground along said central axis of illumination;

said variable delay means having n outputs, each connected respectively to one of said n laser diodes, for transmitting said power pulses to sequentially energize each laser diode in the order of increasing slant angle;

said power pulses each being delayed respectively by a time duration approximately equal to twice the time of flight of light over a distance approximately equal to the difference in slant range between a given illuminated ground incremental area and the illuminated ground incremental area having the smallest slant angle;

said variable delay means having a camera trigger output connected to said range gated camera for transmitting said input trigger pulse, to trigger said camera after a delay whose duration is approximately equal to twice the time of flight of light from said aircraft to said illuminated ground range incremental area having the smallest slant angle;

whereby said range gated camera can record the image of a uniformly illuminated field of view at a small slant angle.

3,895,389

MECHANISM AND NETWORK FOR EFFECTING THE SEQUENCING OF AN ELECTRIC MOTOR DRIVEN FILM ADVANCING SHUTTER COCKING AND RELEASE MECHANISM

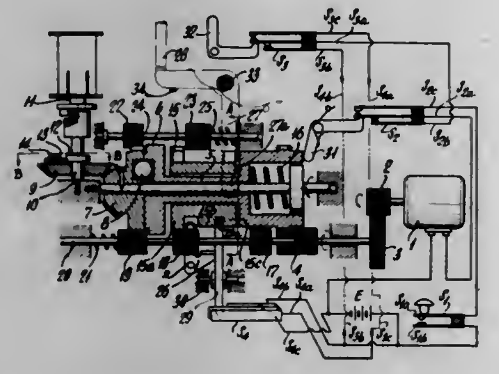
Akihiro Arai, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed July 17, 1973, Ser. No. 380,047

Claims priority, application Japan, July 27, 1972, 47-74610

Int. Cl. G03b *19/04*

U.S. Cl. 354—173 **2 Claims**



1. A successively photographing camera of the automatic film transport type comprising

- a. a film transport member;
- b. a shutter release member;
- c. an electric motor;
- d. a transmission driven by said motor and effecting film transport, shutter charge and release;
- e. a power source;
- f. a motor control network for connecting said power source to said motor and including a manual energization circuit for actuating said shutter release member, first and second automatic energization circuits for actuating said film transport member and for stopping said motor;
- g. a normally opened switch selectively closable to establish said manual energization circuit and thereby effect the operation of the motor and said shutter release member, during film take-up said motor being in operation independent of the operation of said normally opened switch;
- h. a first selector switch having contact means transferrable between a first position at which said manual energization circuit is established and a second position at which said first and second automatic energization circuit is established and transferrable from its second position to its first position in communication with and responsive to said transmission at the end of film transport and from its first position to its second position in communication with and responsive to said transmission at the end of shutter release;
- i. a second selector switch having contact means transferrable between a first position at which said first automatic energization circuit is established and a second position at which said second automatic energization circuit is established, said contact means being in communication with said shutter charge member and transferrable from its said first position to its second position in response to said shutter charge member during film transport and transferrable from its second position to its first position upon completion of the shutter operation; and
- j. a third selector switch having contact means transferrable between a first position at which said second automatic energization circuit is established and a second position wherein the motor is short circuited so as to stop and transferrable from its first position to its second position in communication with and responsive to said transmission during the interval between completion of film transport and the shutter release and from its second position to its first position in communication with and responsive to the transmission during the interval between the shutter release and the change-over of said switch from its first position to its second position as film transport starts whereby upon completion of the shutter release operation the first automatic energization circuit is formed to start the film winding operation, during the film winding operation the transfer of the contact means of the second selector switch is effected to form the second automatic energization on circuit so as to continue the film winding operation and then upon completion of the film winding operation transfer of the contact means of the first selector switch is effected so as to stop the motor.

3,895,390

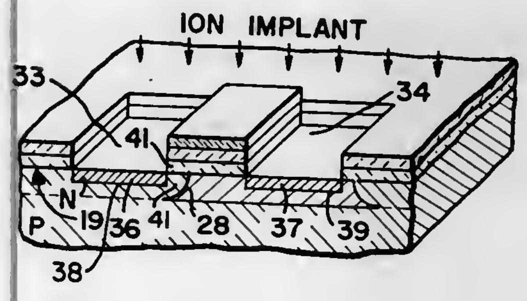
METAL OXIDE SEMICONDUCTOR STRUCTURE AND METHOD USING ION IMPLANTATION

Gerald S. Meiling, Cupertino, and Thomas P. Cauge, Mountain View, both of Calif., assignors to Signetics Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 309,431, Nov. 24, 1972, abandoned. This application June 26, 1974, Ser. No. 483,157

Int. Cl. H01l *11/14*

U.S. Cl. 357—23 **16 Claims**



1. In a metal oxide semiconductor structure of the type having a gate, source and drain, a semiconductor body of one conductivity type, a layer of semiconductor material of opposite conductivity type disposed on the body and having a planar surface, a mask formed on said surface and having a predetermined pattern, said mask having a portion overlying and generally conforming to the geometry of the gate of the semiconductor structure, a first region of said one conductivity type having a controlled doping profile formed in said layer and being defined by a first generally dish-shaped PN junction extending to said surface below said portion of said mask and to said semiconductor body, second and third regions of opposite conductivity type formed in said layer and having implanted substitutional ions therein, said second region being disposed within said first region and being defined by a second PN junction with the second PN junction extending to the surface along a line in registration with the outline of said portion of said mask and being in relatively close proximity to said first PN junction to provide a precision channel therebetween with a precise length of approximately 1 micron and a controlled doping profile determined exclusively by the doping profile of the first region, said third region being disposed in said layer of semiconductor material of opposite conductivity type outside of said first region, said second and third regions serving as the source and drain regions respectively, a layer of insulating material overlying said surface and covering said second and third regions and said mask, a relatively thin layer of insulating material underlying said mask and adherent to said surface, contact elements extending through said layer of insulating material and making contact with said second and third regions to form source and drain contacts and making contact with said mask to provide a gate contact.

3,895,391

MAGNETOSENSITIVE THIN FILM SEMICONDUCTOR ELEMENT AND A PROCESS FOR MANUFACTURING SAME

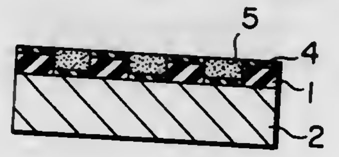
Katsuo Konishi, Tokyo, Japan, assignor to Hitachi, Ltd., Japan

Filed Nov. 6, 1973, Ser. No. 413,222

Claims priority, application Japan, Nov. 8, 1972, 47-111142

Int. Cl. H01l *11/00, 15/00*

U.S. Cl. 357—27 **10 Claims**



1. A magnetosensitive thin film semiconductor element, comprising a semiconductor thin film having a predetermined flat shape and thickness, the bottom and side surfaces of which are surrounded by an insulator film and adhere to said insulator film which constitutes a substrate consisting of a material exhibiting a high magnetic permeability and covered by said insulator film which is harder than the material used for said semiconductor thin film and the upper surface of said semiconductor thin film being approximately on a level with the surface of said substrate.

3,895,392

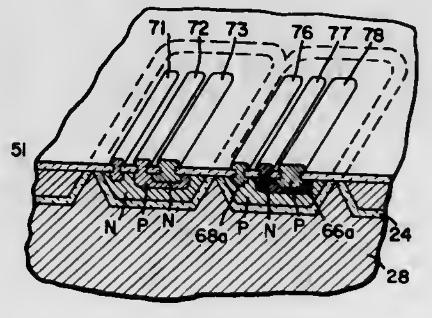
BIPOLAR TRANSISTOR STRUCTURE HAVING ION IMPLANTED REGION AND METHOD

Bohumil Polata, Los Altos; James A. Marley, Jr., Saratoga, and John T. Kerr, Cupertino, all of Calif., assignors to Signetics Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 348,218, April 5, 1973, abandoned, which is a continuation of Ser. No. 89,193, Nov. 13, 1970, abandoned. This application May 10, 1974, Ser. No. 468,699

Int. Cl. H01l *19/00*

U.S. Cl. 357—44 **19 Claims**



1. In a bipolar transistor structure, a semiconductor body having a substantially planar surface, a collector region of one conductivity type formed in the semiconductor body, a base region of opposite conductive type formed in the collector region of the semiconductor body and having a portion thereof extending to said surface, an emitter region formed in the base region and having a portion thereof extending to said surface, said base region having a depth which is substantially less at the edges of the emitter region than at an intermediate portion of the base region, an insulating layer overlying said surface and being adherent thereto, and metallic contact elements formed on said layer of insulating material and extending through said layer of insulating material and making contact with at least said base and emitter regions.

3,895,393

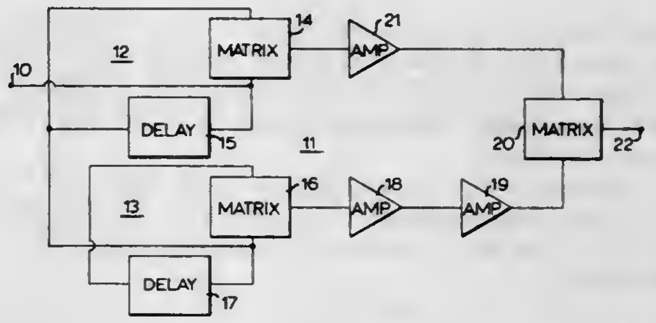
DOUBLE COMB FILTER

Ruth Eleanor Drummond, Kitchener, and John D. Lovely, Waterloo, both of Canada, assignors to Electrohome Limited, Kitchener, Canada

Filed May 14, 1974, Ser. No. 469,630

Int. Cl. H04n *9/535*

U.S. Cl. 358—31 **12 Claims**



1. Apparatus for processing a signal of a type that contains first and second components, said first components occurring at intervals, said second components also occurring at intervals and being interleaved between said first components, said second components also alternating in phase at predetermined intervals; said apparatus comprising a first comb filter having an input terminal to which said signal is applied, a first signal adding network and a first delay network, said first signal adding network having first and second input terminals and an output terminal, said first delay network having an input terminal and an output terminal and a time delay equal to said predetermined interval, means connecting said input terminal of said first comb filter to said first input terminal of said first signal adding network and to said input terminal of said first delay network for supplying said signal thereto, means connecting said output terminal of said first delay network to said second input terminal of said first signal adding network for adding the delayed output signal of said first delay network to said signal supplied to said first input terminal of said first signal adding network to provide an output signal at said output terminal from which said second components have been cancelled, said output signal including an unwanted signal component generated in said first delay network; a second comb filter having an input terminal, a second signal adding network and a second delay network, said second signal adding network having first and second input terminals and an output terminal, said second delay network having an input terminal and an output terminal and a time delay equal to said predetermined interval; means connecting said output terminal of said first delay network to said input terminal of said second comb filter for supplying said delayed output signal of said first delay network thereto, said delayed output signal including said unwanted signal component; said second comb filter also including means connecting said input terminal thereof to said first input terminal of said second signal adding network and to said input terminal of said second delay network for supplying said delayed output signal thereto and means connecting said output terminal of said second delay network to said second input terminal of said second signal adding network for adding the delayed output signal of said second delay network to said signal supplied to said first input terminal of said second signal adding network to provide an output signal at said output terminal of said second signal adding network from which said second components have been cancelled but which contains said unwanted signal component; a third signal adding network having first and second input terminals and an output terminal; and means connecting said output terminals of said first and second signal adding networks to said first and second input terminals respectively of said third signal adding network for supplying said output signals at said output terminals of said first and second signal adding networks respectively with said unwanted signals in phase opposition to said first and second input terminals respectively of said third signal adding network to add the signal

at a said second input terminal of said third signal adding network to the signal at said first input terminal thereof to provide an output signal at said output terminal of said third signal adding network from which both said second components and said unwanted component have been cancelled.

3,895,394
METHOD FOR RECORDING AND READ-OUT OF A PLURALITY OF INFORMATION SEQUENCES STORED IN A SINGLE TRACK OF A DIGITAL STORAGE

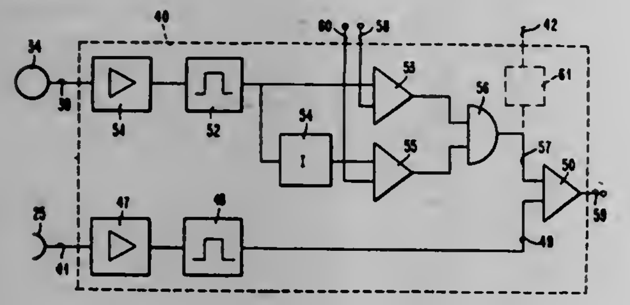
Klaus Schlickeiser, Weibkreuzstrasse 212, Boll near Hechingen, Germany

Division of Ser. No. 162,083, July 13, 1971, Pat. No. 3,772,664. This application Oct. 18, 1973, Ser. No. 407,595

Claims priority, application Germany, July 14, 1970, 2034836

Int. Cl. G11b *5/09*

U.S. Cl. 360—48 **5 Claims**



1. Method for storing a plurality of information sequences each having a plurality of characters, each of said characters comprising a plurality of bits, on a single track on signal carrier means having a first and a second track, comprising, in combination, the steps of furnishing a plurality of markings at predetermined intervals along said second track, each of said intervals having a length corresponding to the storage space required for said plurality of bits in each of said characters; sensing said markings and furnishing a corresponding sequence of marking signals; recording the bits of the first of said characters in a selected one of said information sequences in sequence along said first track in response to the first marking signal in said sequence of marking signals; recording the bits of the remaining ones of said characters of said selected one of said information sequences in sequence along said first track, each in response to a marking signal spaced from the previous one of said marking signals by a number of marking signals corresponding to the number of information sequences in said plurality of information sequences, whereby each character of said selected one of said information sequences is followed on said first track by a number of blank intervals corresponding to the muber of information sequences in said plurality of information sequences, each of said blank intervals having said length corresponding to said storage space required for said plurality of bits in each of said characters; and recording the corresponding characters of the remaining ones of said plurality of information sequences in said intervals in such a manner that each character of said selected information sequence is followed by the corresponding characters in the remaining ones of said information sequences arranged in a predetermined order.

3,895,395
QUINAZOLINE COMPOUNDS

Michihiro Yamamoto, Nishinomiya; Shigeaki Morooka; Masao Koshiba, both of Takarazuka; Shigeho Inaba, Takarazuka, and Hisao Yamamoto, Nishinomiya, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

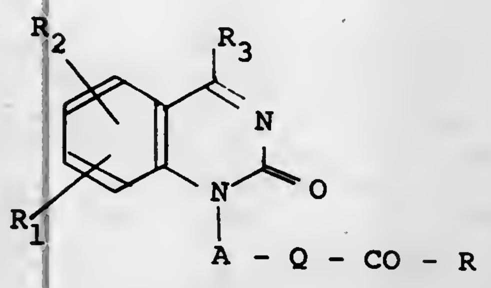
Filed July 3, 1973, Ser. No. 376,163

Claims priority, application Japan, July 24, 1972, 47-74460

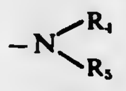
Int. Cl. C07d *51/48*

U.S. Cl. 260—251 QB **11 Claims**

1. 1. A quinazolinone derivative of the formula,



wherein R_1 and R_2 are independently hydrogen, halogen, lower alkyl, lower alkoxy, nitro, trifluoromethyl, cyano, lower alkoxycarbonyl, lower alkylthio or lower alkylsulfonyl; R_3 is phenyl, halophenyl, lower alkylphenyl, lower alkoxyphenyl, nitrophenyl, C_{3-6} cycloalkyl, pyridyl, thienyl or furyl; R is lower alkyl, lower alkenyl, phenyl-lower alkyl, lower haloalkyl, lower alkoxyalkyl, lower hydroxyalkyl, lower mercaptoalkyl, C_{3-6} cycloalkyl or (C_{3-6} cycloalkyl)C_{1-4} alkyl or a group of the formula



$$-N\begin{matrix} R_4 \\ R_5 \end{matrix}$$

(wherein R_4 and R_5 are independently hydrogen or lower alkyl); Q is oxygen or sulfur; and A is lower alkylene.

DESIGN PATENTS

GRANTED JULY 15, 1975

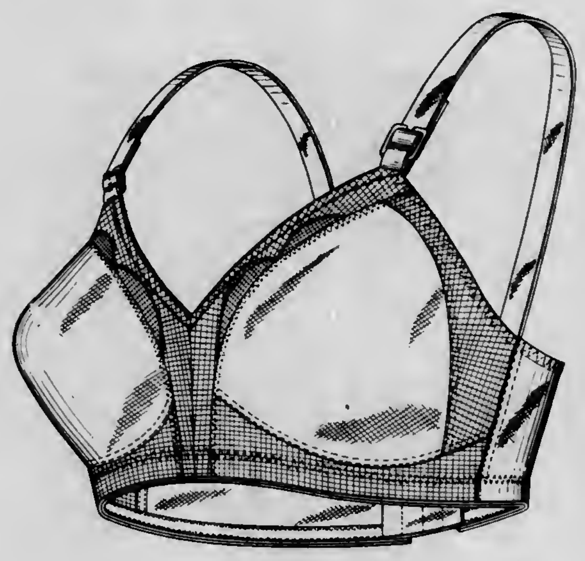
ERRATA

For CLASS	See PATENT NO.
057–001 E	235,918

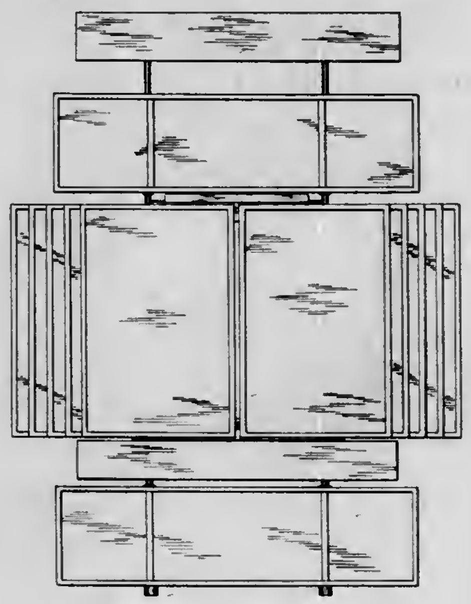
DESIGNS

GRANTED JULY 15, 1975

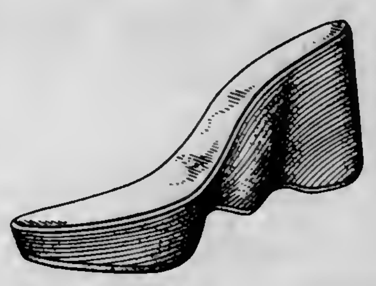
235,817
BRASSIERE
Jack J. Lo Cascio, Bayonne, N.J., assignor to Rapid-American Corporation, New York, N.Y.
Continuation-in-part of design application Ser. No. 359,933, May 14, 1973, now Patent No. 232,007.
This application July 5, 1974, Ser. No. 486,024
The term of this patent subsequent to July 9, 1988, has been disclaimed
Term of patent 14 years
Int. Cl. D2—*01*
U.S. Cl. D2—24



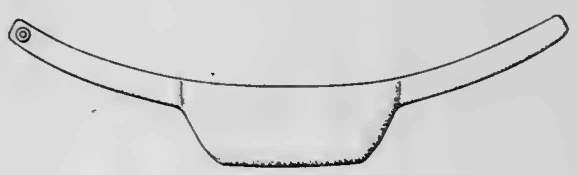
235,818
SWINGING PANEL DISPLAY
Jerome Folkart, New York, N.Y.
(116—16 Queens Blvd., Forest Hills, N.Y. 11375)
Filed Jan. 2, 1974, Ser. No. 429,835
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—139



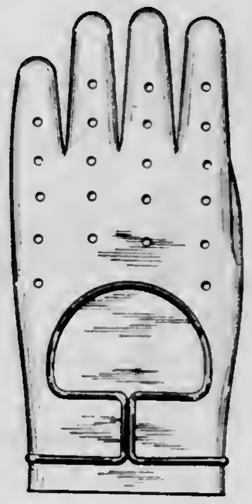
235,819
SHOE SOLE
Joseph P. Famolare, Jr., Florence, Italy, assignor to Famolare, Inc., New York, N.Y.
Filed Aug. 22, 1974, Ser. No. 499,494
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—319



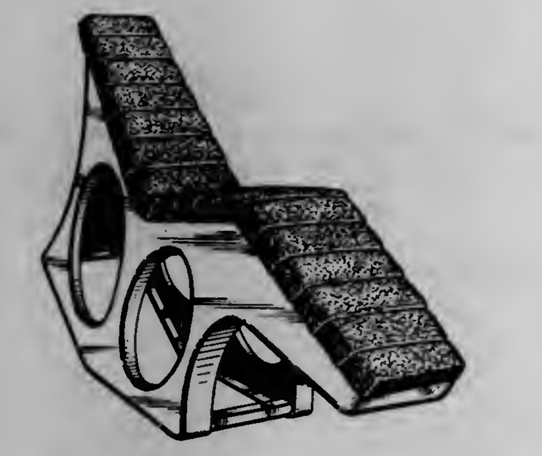
235,820
NECKTIE
Arnold Brown, Rte. 1, Box 13B, Poteau, Okla. 74953
Filed Jan. 8, 1974, Ser. No. 431,596
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—351



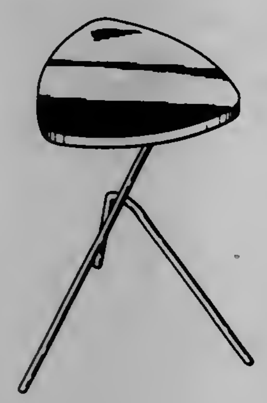
235,821
GOLF GLOVE
Samuel Flaum, 155 E. 34th St., New York, N.Y. 10016
Filed July 30, 1973, Ser. No. 383,887
Term of patent 14 years
Int. Cl. D2—*06*
U.S. Cl. D2—361



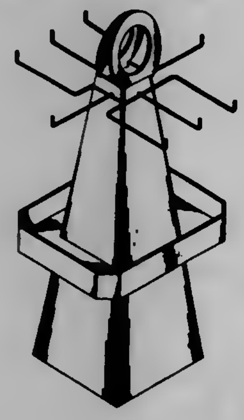
235,822
DENTAL CHAIR OR SIMILAR ARTICLE
Francisco Navarrete Hernandez, Giorgioni 37–4,
Mexico City 19, Mexico
Filed Oct. 10, 1973, Ser. No. 405,189
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—22



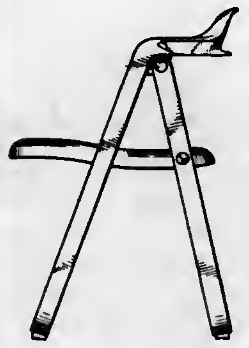
235,823
NESTABLE TABLE
Raphael Hodge, 1500 Noble Ave.,
Bronx, N.Y. 10460
Filed Oct. 9, 1973, Ser. No. 406,085
Term of patent 3½ years
Int. Cl. D6—*03*
U.S. Cl. D6—27



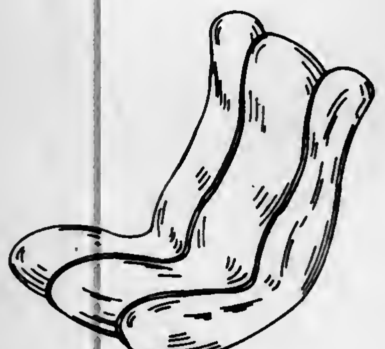
235,824
MERCHANDISE DISPLAY STAND
David A. Long, 7723 Mill Road,
Elkins Park, Pa. 19117
Filed Jan. 25, 1974, Ser. No. 436,833
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—28



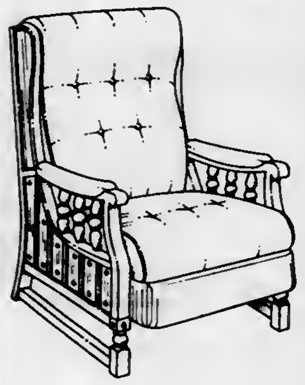
235,825
CHAIR
Carlo Hauner, Mampiano, Brescia, Italy
Filed June 22, 1973, Ser. No. 372,470
Term of patent 3½ years
Int. Cl. D6—*01*
U.S. Cl. D6—41



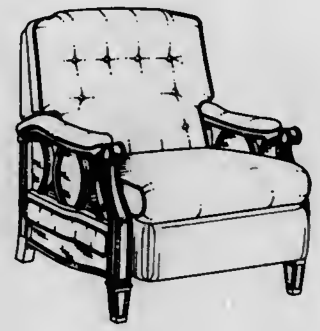
235,826
INFLATABLE BATHTUB SEAT
Joseph M. Jacques, R.R. 1, Box 94,
Sedalia, Colo. 80135
Filed June 29, 1973, Ser. No. 374,912
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—47



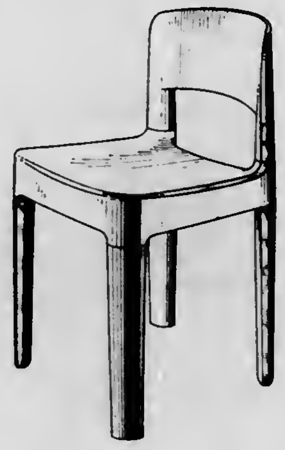
235,827
CHAIR
George Mergenov, Closter, N.J., assignor to Mohasco
Industries, Inc., Amsterdam, N.Y.
Filed Feb. 15, 1974, Ser. No. 443,062
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—69



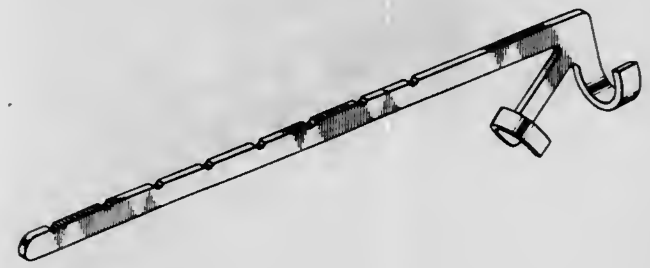
235,828
CHAIR
Thomas Winrow, Naperville, Ill., assignor to Mohasco
Industries, Inc., Amsterdam, N.Y.
Filed Jan. 24, 1974, Ser. No. 436,321
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—71



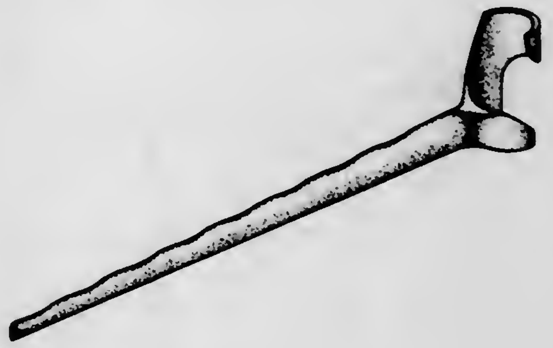
235,829
CHAIR
Jean-Paul Dranssart, Voiron, Isere, France, assignor to
Allibert Exploitation, Puteaux, Hauts-de-Seine, France
Filed July 23, 1973, Ser. No. 381,597
Claims priority, application France Jan. 23, 1973
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—78



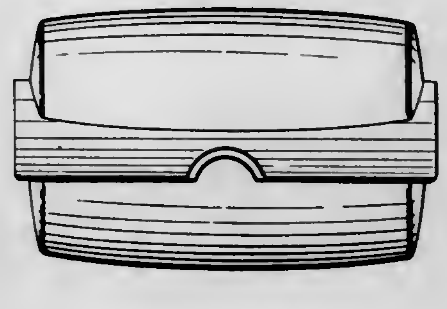
235,830
GARMENT HANGER SUPPORT FOR A SHOWER HEAD
Gerhard Kollitz, 1301 E. Commonwealth Ave., Apt. 111,
Fullerton, Calif. 92631
Filed Jan. 28, 1974, Ser. No. 437,753
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—86



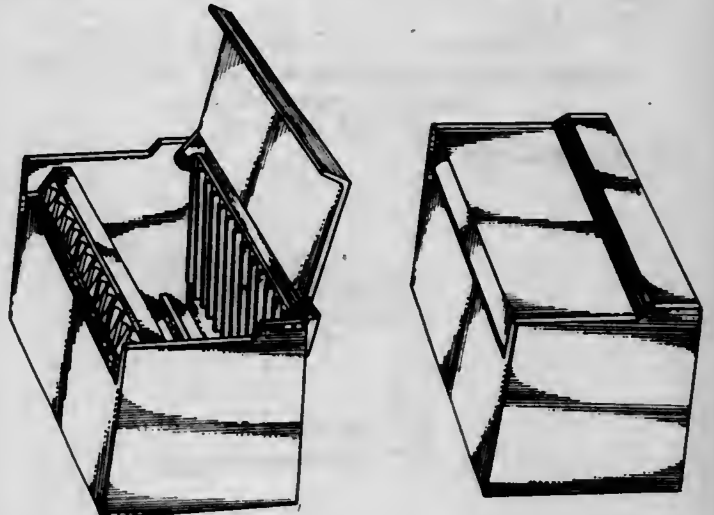
235,831
GARMENT HANGER SUPPORT FOR A SHOWER HEAD
Gerhard Kollitz, 1301 E. Commonwealth Ave., Apt. 111,
Fullerton, Calif. 92631
Filed July 5, 1974, Ser. No. 485,955
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—86



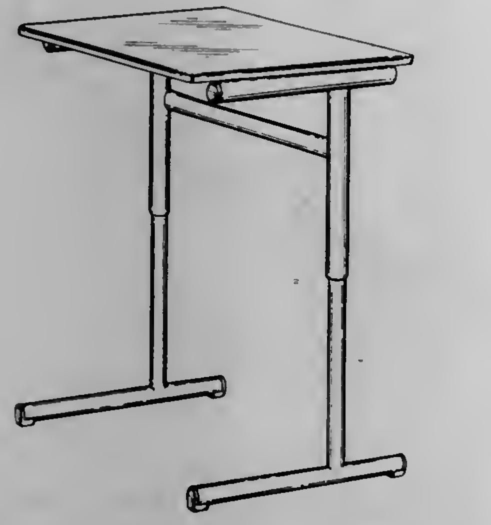
235,832
DISPENSER FOR SHEET MATERIAL ON A ROLL
Livingston C. Douglas, Leonia, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed July 29, 1974, Ser. No. 492,799
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—96



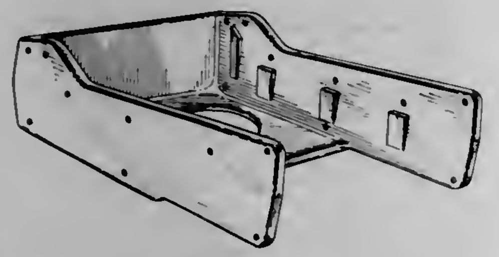
235,833
CABINET FOR CASSETTES OR THE LIKE
William P. McRae, 19969 Acre St.,
Northridge, Calif. 91324
Filed Oct. 18, 1973, Ser. No. 407,752
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—167



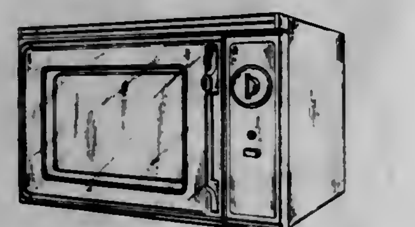
235,834
STUDENT DESK
George Payne, Bedford Hills, N.Y., and Emmett Robert Bales, North Manchester, Ind., assignors to American Standard Inc., New York, N.Y.
Filed Sept. 25, 1972, Ser. No. 291,863
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177



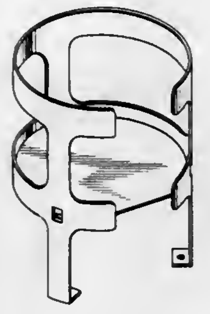
235,835
BASE FRAME FOR RECLINING CHAIR
William P. Taylor, Glencoe, Ill., assignor to Burris Industries, Incorporated, Lincolnton, N.C.
Filed Nov. 9, 1973, Ser. No. 414,593
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—194



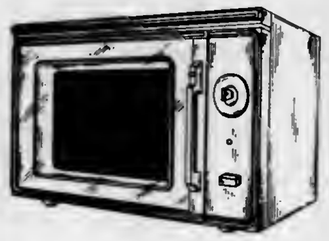
235,836
ELECTRONIC COOKING RANGE
Yoshio Suganoya and Takao Miyake, Osaka, Japan, assignors to Sharp Kabushiki Kaisha (Sharp Corporation), Osaka, Japan
Filed Sept. 21, 1972, Ser. No. 291,083
Claims priority, application Japan Apr. 12, 1972
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—128



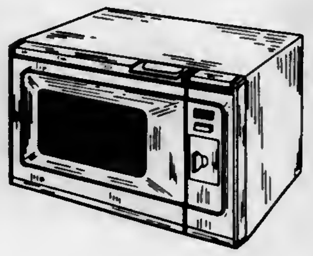
235,837
CONTAINER SUPPORT
Thomas E. Little, 2610 Nicholson, Houston, Tex. 77008
Filed Jan. 23, 1974, Ser. No. 435,783
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D7—189



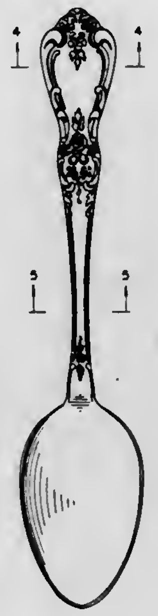
235,838
ELECTRONIC COOKING RANGE
Yoshio Suganoya and Takao Miyake, Osaka, Japan, assignors to Sharp Kabushiki Kaisha (Sharp Corporation), Osaka, Japan
Filed June 20, 1973, Ser. No. 371,744
Claims priority, application Japan Dec. 26, 1972
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—128



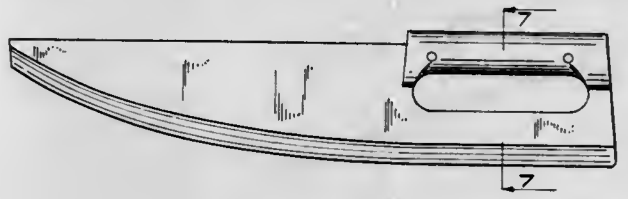
235,839
ELECTRONIC COOKING RANGE
Yoshio Suganoya and Kanji Mizusugi, Osaka, Japan, assignors to Sharp Kabushiki Kaisha (Sharp Corporation), Osaka, Japan
Filed May 9, 1974, Ser. No. 468,514
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—128



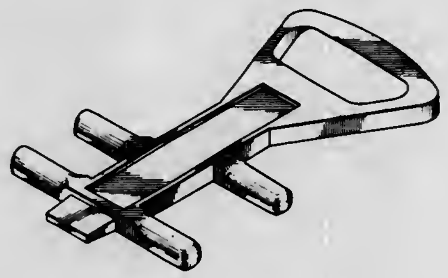
235,840
SPOON OR SIMILAR ARTICLE
Colin B. Richmond II, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed May 3, 1974, Ser. No. 466,553
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—137



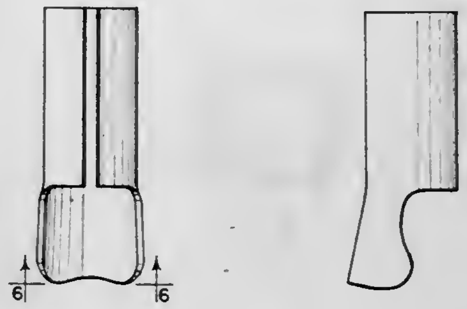
235,841
KNIFE
Henry V. Cremonese, 261 W. 11th St., New York, N.Y. 10014
Filed Feb. 6, 1974, Ser. No. 439,890
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—151



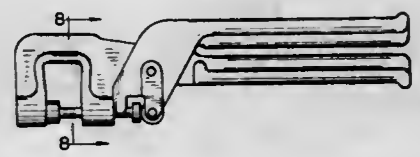
235,842
SKI BOOT BUCKLE TOOL
Michael Peter Shields, 6647 Glade St., Canoga Park, Calif. 91303
Filed Oct. 25, 1973, Ser. No. 409,411
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—14



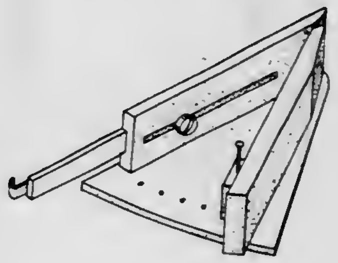
235,843
TERMINAL STUD RECEIVING SOCKET FOR A WHEEL CHANGING TOOL FOR AUTOMOBILES
David Ehlert, 9 Manor Road, Lake Zurich, Ill. 60047
Filed Sept. 11, 1973, Ser. No. 396,215
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—31



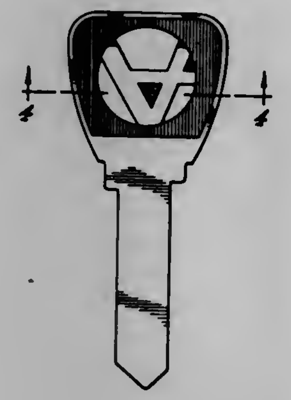
235,844
PUNCH TOOL
Loren A. Matthews, Haslett, Mich., assignor to Matt Tool Corporation, Haslett, Mich.
Filed Nov. 8, 1973, Ser. No. 413,762
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—52



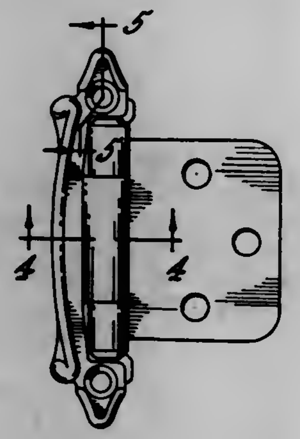
235,845
MITER BOX ATTACHMENT
Emilio Golisano, 5211 Cool Road, Holiday, Fla. 33589
Filed July 9, 1973, Ser. No. 377,629
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—71



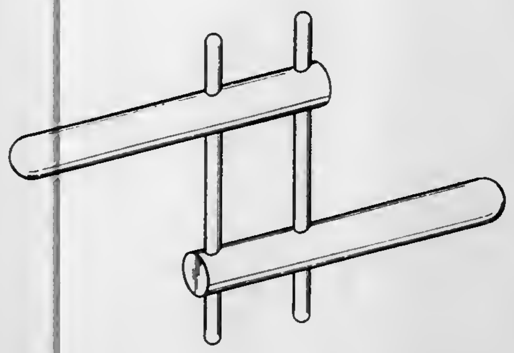
235,846
KEY
Lawrence E. Gloyd and La Verne E. Clayton, Rockford, Ill., assignors to Amerock Corporation, Rockford, Ill.
Filed June 14, 1974, Ser. No. 479,229
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—136



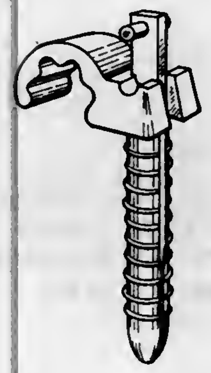
235,847
HINGE
La Verne E. Clayton, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.
Filed June 21, 1973, Ser. No. 372,108
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—195



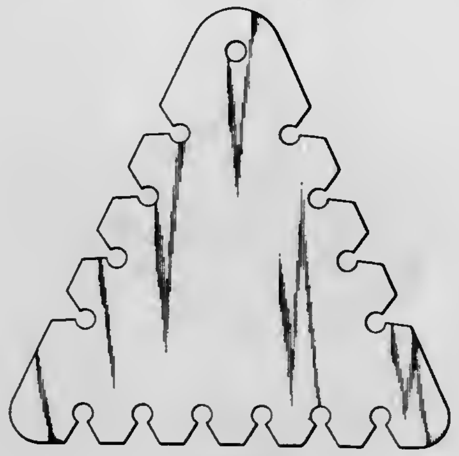
235,848
KITE REEL
Charles A. Short, 806 Old River Road, Humble, Tex. 77338
Filed June 7, 1974, Ser. No. 477,485
Term of patent 14 years
Int. Cl. D8—*99*; D22—*05*
U.S. Cl. D8—220



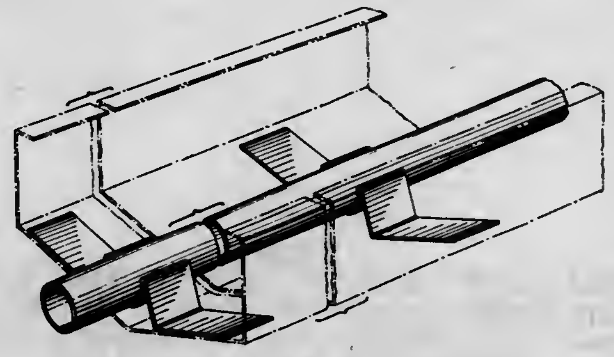
235,849
FASTENER FOR CABLES, TUBES AND SIMILAR ARTICLES
Anders Torvald Sverker Hagelberg, Molnlycke, Sweden, assignor to Bengt Petersson New Products Investment AB, Goteborg, Sweden
Filed Apr. 1, 1974, Ser. No. 456,854
Claims priority, application Sweden Oct. 2, 1973
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—229



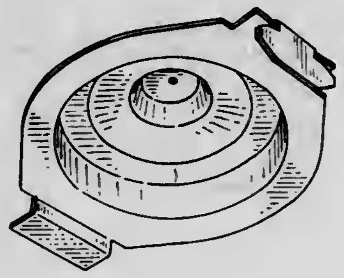
235,850
SPARK PLUG WIRE POSITIONER
Mariano P. Diforte, Jr., Baltimore, Md., assignor to Bat-Weight, Inc., Baltimore, Md.
Filed Sept. 17, 1973, Ser. No. 397,714
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—231



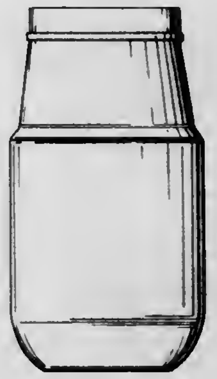
235,851
COMBINED POULTRY FEEDER PIPE AND SUPPORT
Gerald L. Kitson, 9709 Belding Road, Rockford, Mich. 49341
Continuation of design application Ser. No. 160,245, July 6, 1971, now Patent No. 229,030. This application Oct. 23, 1973, Ser. No. 408,372
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—235



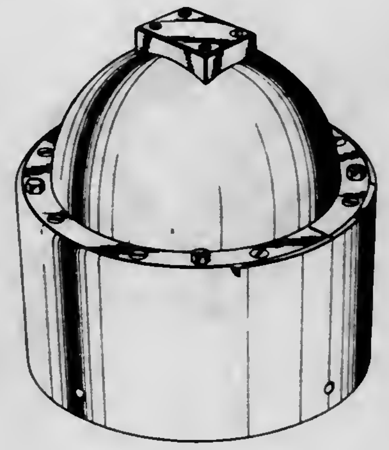
235,852
LIMIT SWITCH COVER
Robert Edward Reichardt, 51 Royal Road, Aurora, Ontario, Canada
Filed May 29, 1974, Ser. No. 474,237
Claims priority, application Canada Dec. 11, 1973
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—263



235,853
JAR
Edward J. Kretz, Toledo, Ohio, assignor to Owens-Illinois, Inc.
Continuation-in-part of design application Ser. No. 376,893, July 5, 1973. This application Feb. 8, 1974, Ser. No. 440,819
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—119



235,854
MAGNETIC COMPASS
James M. Lapeyre, New Orleans, La., and John T. Fowler, Winthrop, Mass., assignors to The Laitram Corporation, New Orleans, La.
Filed July 26, 1973, Ser. No. 382,683
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—68



235,855

LINEAR DISTANCE MEASURING DEVICE

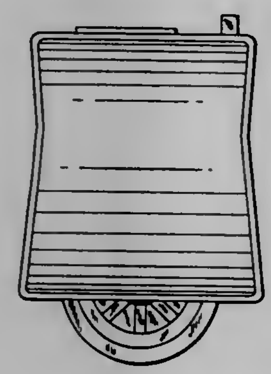
Nicholas G. Polydoris, Kenilworth, and Burnell J. Wollar, Barrington, Ill., assignors to ENM Company, Chicago, Ill.

Continuation-in-part of design application Ser. No. 297,235, Oct. 13, 1972, now Patent No. 232,349. This application Feb. 25, 1974, Ser. No. 445,669

Term of patent 14 years

Int. Cl. D10—*04*

U.S. Cl. D10—70



235,856

DIVER'S DECOMPRESSION COMPUTER

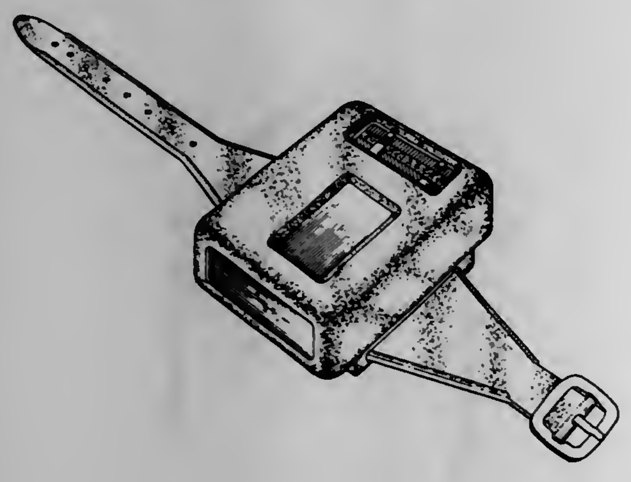
Ralph B. Shamlian, San Francisco, Calif., assignor to Farallon Industries, Inc., Belmont, Calif.

Filed Mar. 19, 1974, Ser. No. 452,615

Term of patent 14 years

Int. Cl. D10—*04*

U.S. Cl. D10—70



235,857

SMOKE DETECTOR OR THE LIKE

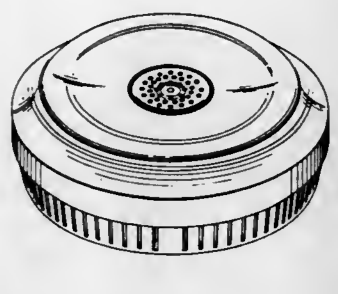
Ernest V. Hart, West Hartford, Conn., assignor to Emhart Corporation, Farmington, Conn.

Filed Oct. 24, 1973, Ser. No. 409,283

Term of patent 14 years

Int. Cl. D29—*02*

U.S. Cl. D10—106



235,858

HYDROPLANE

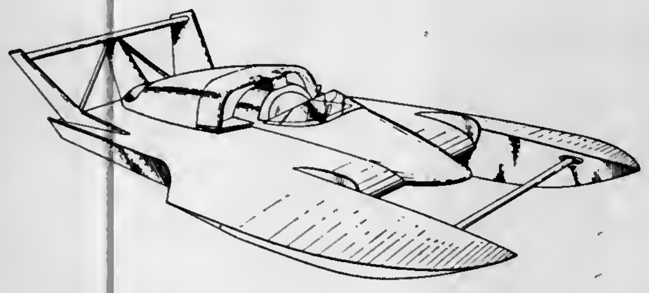
Charles A. Lyford III, 231 Dexter Ave., Seattle, Wash. 98109

Filed May 22, 1974, Ser. No. 472,447

Term of patent 14 years

Int. Cl. D12—*06*

U.S. Cl. D12—62



235,859

INFLATABLE SEALING DEVICE FOR CHAIN-FAIRLEADS AND HAWSE-HOLES AND THE LIKE

Bjarne Skeie, Kristiansand, Norway, assignor to Maritime Hydraulics A.S., Kristiansand, Norway

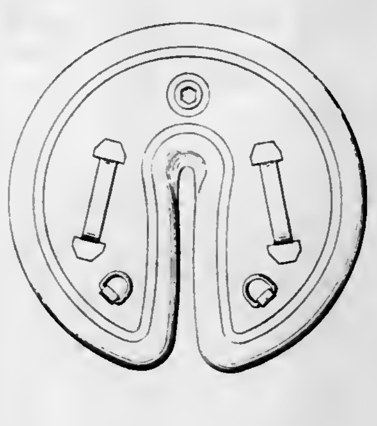
Filed Mar. 14, 1974, Ser. No. 451,245

Claims priority, application Norway Sept. 14, 1973

Term of patent 14 years

Int. Cl. D12—*99*

U.S. Cl. D12—70



235,860

AUTOMOBILE

Karl Wilfert, Gerlingen-Waldstadt, and Friedrich Geiger, Boblingen, Germany, assignors to Daimler-Benz Aktiengesellschaft

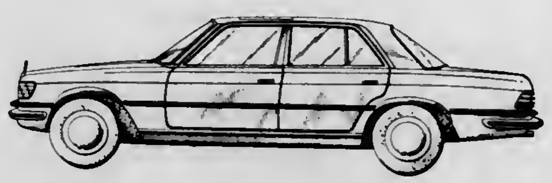
Filed Feb. 7, 1973, Ser. No. 330,433

Claims priority, application Germany Aug. 18, 1972

Term of patent 14 years

Int. Cl. D12—*08*

U.S. Cl. D12—92



235,861

VEHICULAR TANK

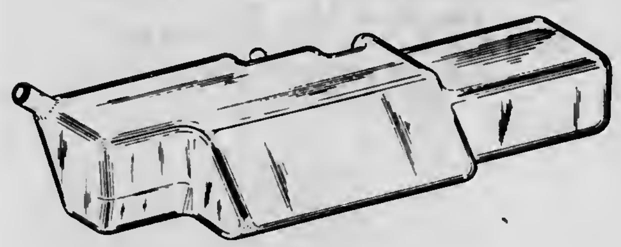
John E. Waters, Waco, Tex., assignor to Recreational Products Marketing, Inc., Waco, Tex.

Filed Jan. 14, 1974, Ser. No. 433,131

Term of patent 14 years

Int. Cl. D12—*16;* D23—*01*

U.S. Cl. D12—155



235,862

INSTRUMENT PANEL FOR BOATS OR THE LIKE

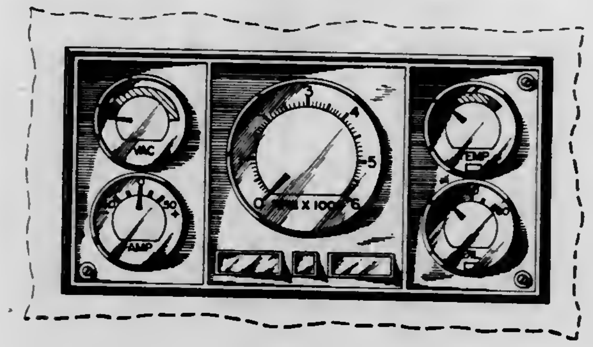
Arthur F. Miller, Oshkosh, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Mar. 13, 1974, Ser. No. 450,888

Term of patent 14 years

Int. Cl. D12—*06*

U.S. Cl. D12—192



235,863

AUTOMOBILE WHEEL

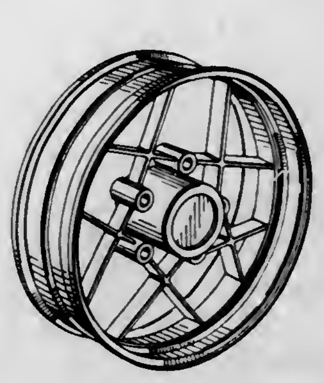
James Kresl, Jr., 3924 Pine Ave., Long Beach, Calif. 90807

Filed July 5, 1974, Ser. No. 486,179

Term of patent 14 years

Int. Cl. D12—*16*

U.S. Cl. D12—205



235,864

WHEEL

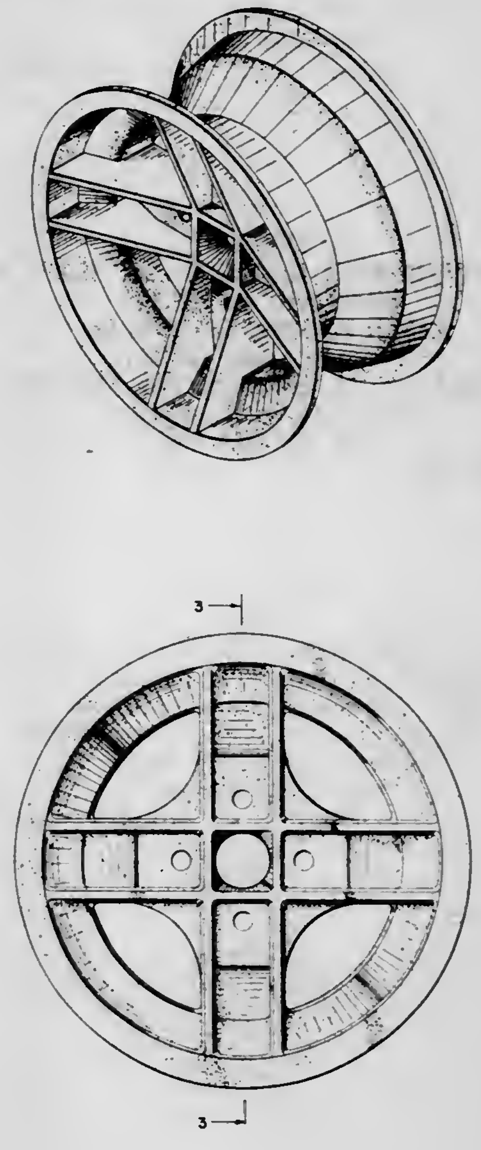
Steven Douglas Gageby, St. Paul, Minn., assignor to Janet Kay Gageby, St. Paul, Minn.

Filed July 23, 1973, Ser. No. 382,043

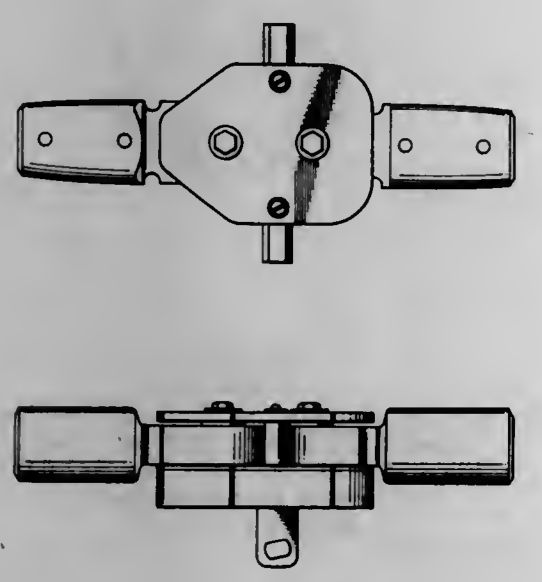
Term of patent 14 years

Int. Cl. D12—*16*

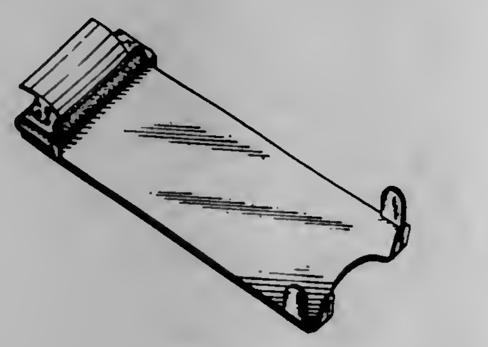
U.S. Cl. D12—209



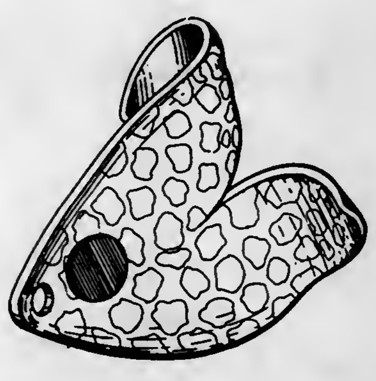
235,865
OAR REVERSING DEVICE
George D. Bellis, 2431 E. Taft, Orange, Calif. 92665
Filed May 31, 1973, Ser. No. 365,408
Term of patent 14 years
Int. Cl. D12—*99*
U.S. Cl. D12—215



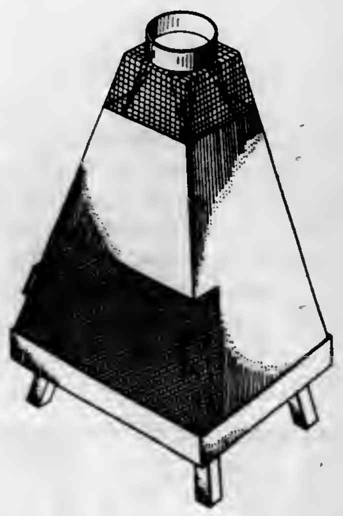
235,866
RETAINER FOR BANK CASH SLIPS OR SIMILAR ARTICLE
Robert E. Seitz, 646 17th St., Nevada, Iowa 50201
Filed Dec. 26, 1973, Ser. No. 428,115
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—88



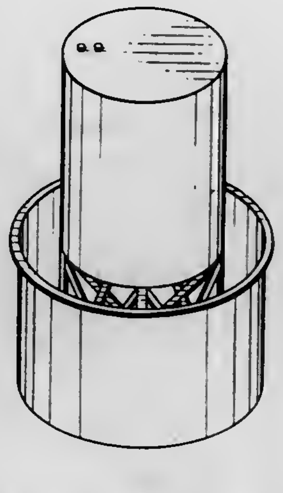
235,867
ARTIFICIAL FISHING LURE SPINNER BLADE
William O. Williams, Jr., 1309 Lynhurst Drive, Gastonia, N.C. 28053
Filed May 10, 1974, Ser. No. 468,819
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—29



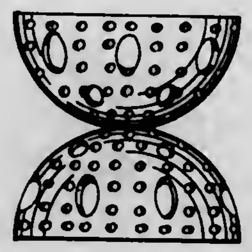
235,868
FREESTANDING FIREPLACE
Heinz-Werner Bade, 2020 York Road, Timonium, Md. 21093
Filed Apr. 2, 1974, Ser. No. 457,361
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



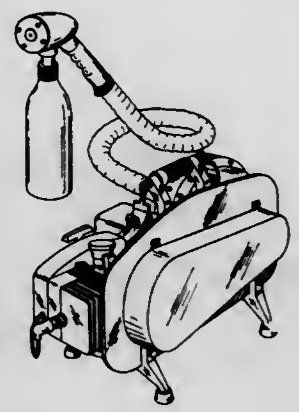
235,869
SOLVENT STORAGE INSTALLATION
Ernest O. Roehl, Huntington Beach, Calif., assignor to RHO-Chem Corporation
Filed Jan. 15, 1973, Ser. No. 323,820
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—2



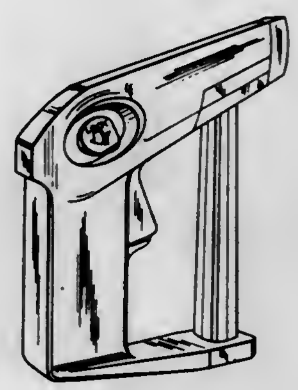
235,870
FILTER ELEMENT
John J. Sheehan, Berea, Ohio, assignor to Envirotech Corporation, Salt Lake City, Utah
Filed June 18, 1969, Ser. No. 17,764
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—4



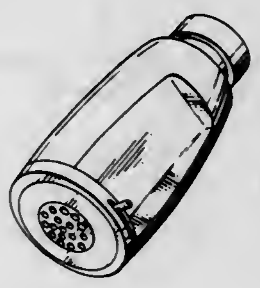
235,871
HAND CARRIED LIQUID CHEMICAL SPRAYER
James G. Parke, and C. Richard Gerlach, San Antonio, Tex., assignors to Micro-Gen Equipment Company
Filed Jan. 21, 1974, Ser. No. 435,188
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—18



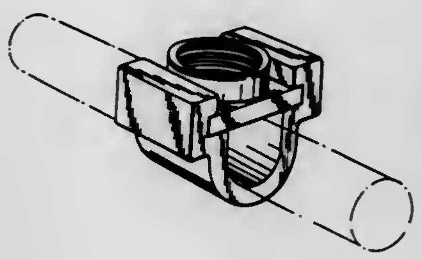
235,872
SPRAY GUN
Yanive Harussi, Ithaca, N.Y., assignor to Beatrice Foods Co., Chicago, Ill.
Filed Feb. 13, 1974, Ser. No. 442,211
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—17



235,873
SHOWER HEAD
Emilie H. Pitman, 620 8th Ave., Seattle, Wash. 98104
Filed Jan. 5, 1973, Ser. No. 321,152
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—35

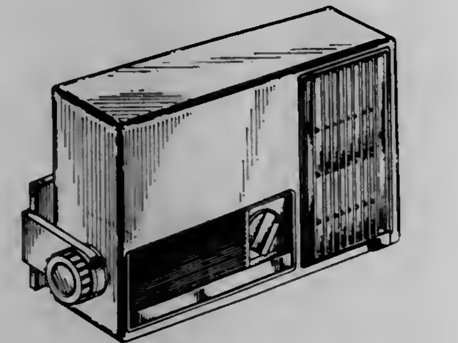


235,874
VALVE RECEIVING TUBING FITTING
John W. Olson, Jr., Garland, Tex., assignor to "B" Series, Ltd., Oklahoma City, Okla.
Filed Apr. 18, 1974, Ser. No. 461,965
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—40



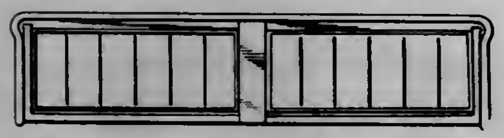
235,875
ELECTRIC HEATER

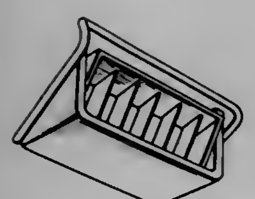
Leonard Osrow, Great Neck, N.Y.
(% Osrow Products Co., Inc., Hazel St., Glen Cove, N.Y. 11542)
Filed Nov. 23, 1973, Ser. No. 418,687
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—110



235,876
LOUVERED OUTLET FOR AN AUTOMOBILE AIR CONDITIONER

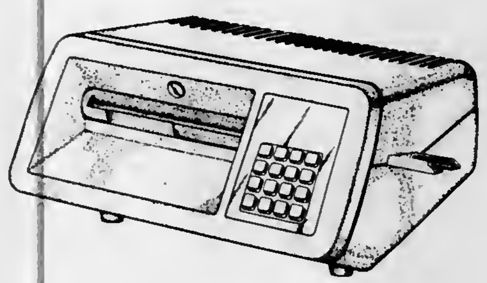
Don P. Dixon, 4926 Space Center Drive, San Antonio, Tex. 78218
Filed Mar. 25, 1974, Ser. No. 454,176
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—142





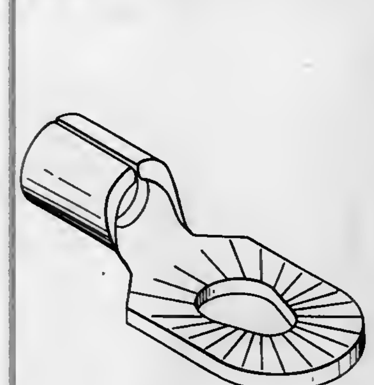
235,877
DATA TERMINAL OR SIMILAR ARTICLE

Sidney H. Bradd, Solon, and Edward L. Brown, Pepper Pike, Ohio, assignors to Addressograph-Multigraph Corporation, Cleveland, Ohio
Filed June 26, 1973, Ser. No. 373,824
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



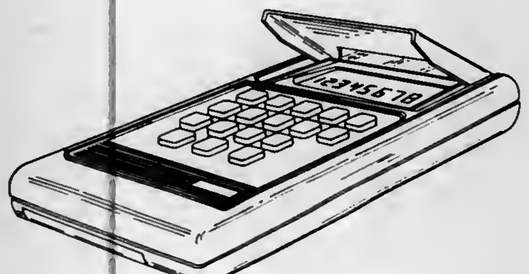
235,878
MULTI-STUD TERMINAL

Charles W. Candiotti, Garden City, N.Y., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Oct. 10, 1973, Ser. No. 404,914
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1 A



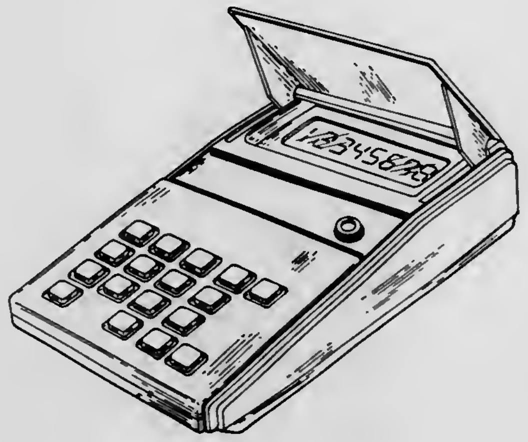
235,879
ELECTRONIC CALCULATING MACHINE

Isao Kitai, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jan. 7, 1974, Ser. No. 431,034
Claims priority, application Japan, July 18, 1973
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D26—5 C



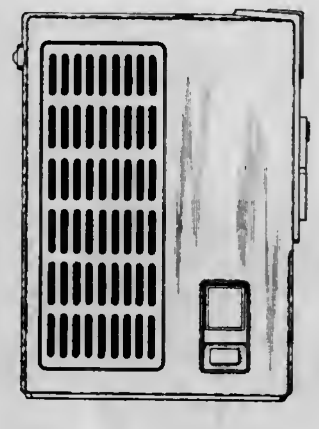
235,880
ELECTRONIC CALCULATING MACHINE

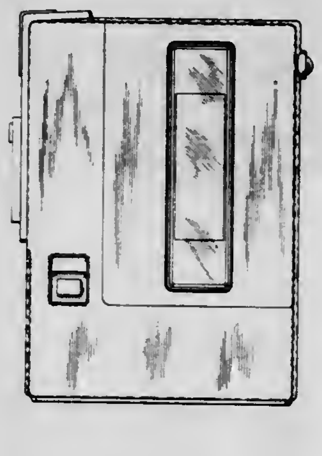
Yoshisaburo Yoshida, Shigetoshi Hazama and Yoshihisa Ohie, Osaka, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Feb. 27, 1974, Ser. No. 446,162
Claims priority, application Japan, Sept. 6, 1973
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D26—5 C



235,881
PORTABLE CASSETTE TAPE RECORDER

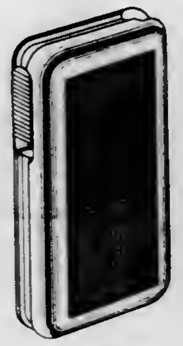
Tomoji Okada, Tokyo, Japan, assignor to General Electric Company
Filed Jan. 30, 1974, Ser. No. 437,722
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 B





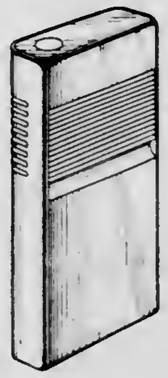
235,882
LIGHTER

Franz Alban Stuetzer, Muhlheim am Main, Germany, assignor to Rowenta-Werke, G.m.b.H.
Filed May 7, 1974, Ser. No. 467,704
Claims priority, application Germany, Nov. 9, 1973
Term of patent 14 years
Int. Cl. D2—*05*
U.S. Cl. D27—42



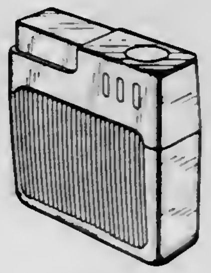
235,883
LIGHTER

Franz Alban Stuetzer, Muhlheim am Main, Germany, assignor to Rowenta-Werke, G.m.b.H.
Filed May 7, 1974, Ser. No. 467,706
Claims priority, application Germany, Nov. 9, 1973
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—42



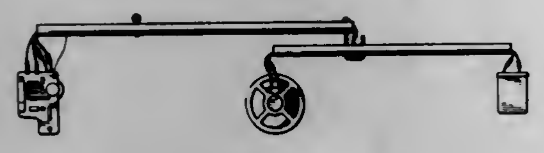
235,884
POCKET LIGHTER

Franz Alban Stuetzer, Muhlheim am Main, Germany, assignor to Rowenta-Werke, G.m.b.H.
Filed July 26, 1974, Ser. No. 492,130
Claims priority, application Germany, Jan. 31, 1974
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—42



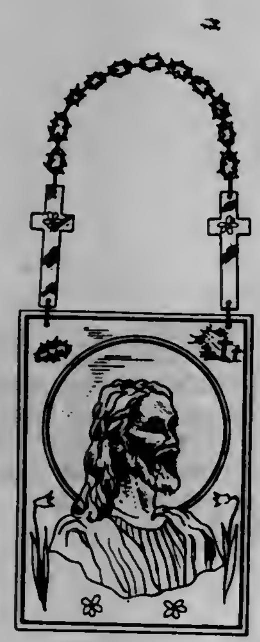
235,885
RADIO MOBILE

Stephen R. Hustvedt, 196 Green St.,
Annapolis, Md. 21401
Filed Mar. 20, 1973, Ser. No. 343,056
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—1 C



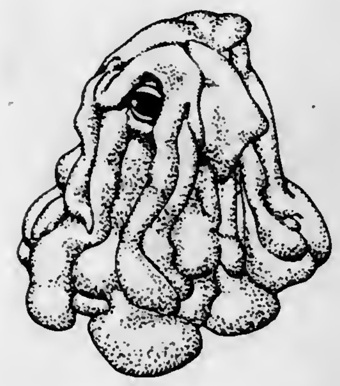
235,886
RELIGIOUS MEDALLION

Norman Kirk, 9 Rosedale Ave.,
Montclair, N.J. 07042
Filed July 5, 1973, Ser. No. 376,798
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—11 C



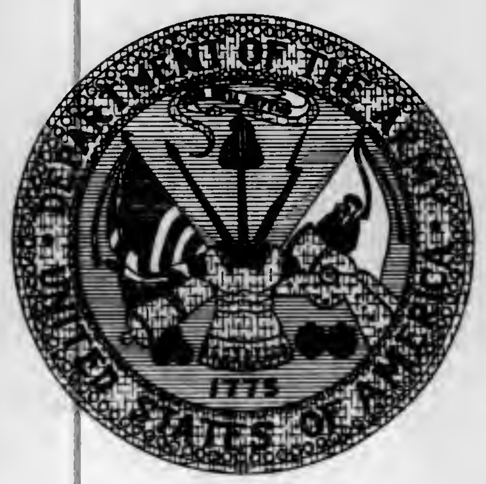
235,887
STATUETTE

René Moncada, 59 W. 69th St.,
New York, N.Y. 10023
Filed Aug. 3, 1973, Ser. No. 385,248
Term of patent 3½ years
Int. Cl. D11—*02*
U.S. Cl. D29—23 A



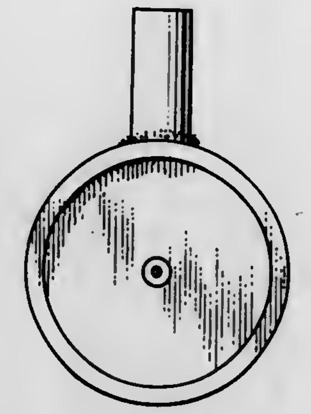
235,888
ARMY PLAQUE

Lewis J. King, Jr., Arlington, Va., assignor to The United States of America as represented by the Secretary of the Army
Filed June 25, 1974, Ser. No. 482,971
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—23 A



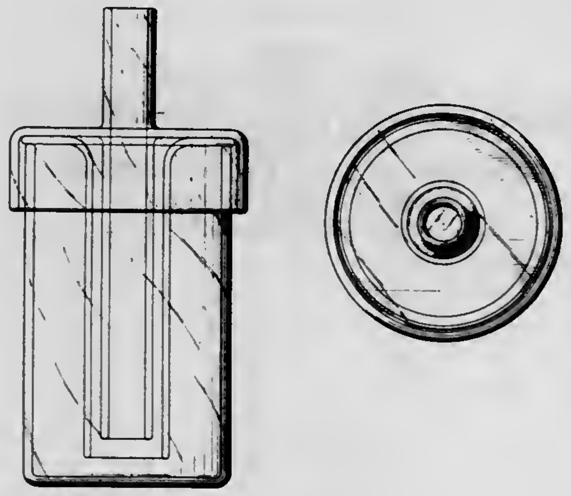
235,889
COIN VAULT

Ira J. Alligood, 1118 Roosevelt Ave.,
York, Pa. 17403
Filed July 26, 1973, Ser. No. 382,675
Term of patent 14 years
Int. Cl. D20—*01*
U.S. Cl. D31—23



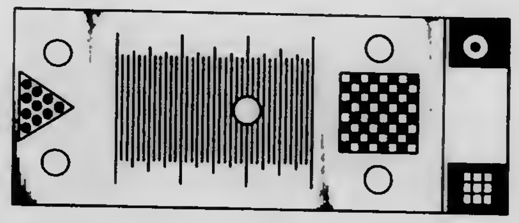
235,890
CELL CULTURE VESSEL OR THE LIKE

Robert Dragotta, Vineland, N.J., assignor to
Bio-Research Glass, Inc.
Filed Nov. 4, 1974, Ser. No. 520,605
Term of patent 14 years
Int. Cl. 24—*02*
U.S. Cl. D32—1



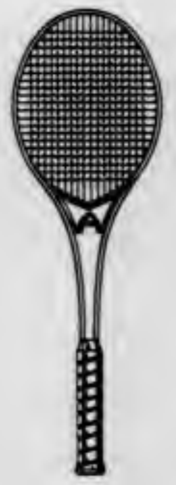
235,891
GAME MAT

Salvatore Pisano, 4321 Hempstead Turnpike,
Bethpage, N.Y. 11714
Filed Apr. 3, 1973, Ser. No. 348,572
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS



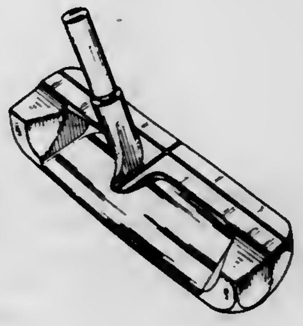
235,892
METALLIC TENNIS RACKET

Massimo Altissimo, Turin, Italy
Filed Aug. 13, 1973, Ser. No. 387,544
Claims priority, application Monaco Feb. 20, 1973
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 ST



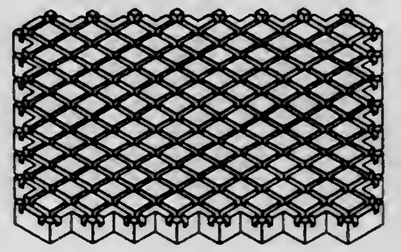
235,893
GOLF PUTTER HEAD

Jerome E. Becker, 3285 Woodbine St.,
Los Angeles, Calif. 90064
Filed Oct. 19, 1973, Ser. No. 408,188
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH



235,894
GAME BOARD

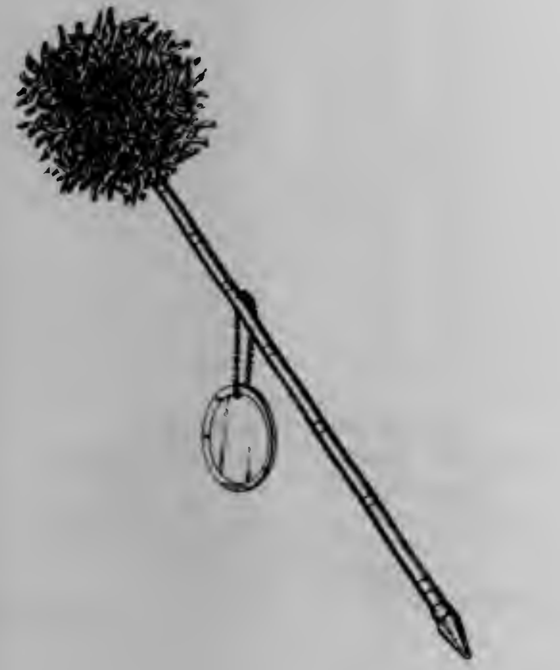
Antonio P. Di Lorenzo, 21 Bedford St.,
Methuen, Mass. 01844
Filed Nov. 9, 1973, Ser. No. 414,418
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS



235,895

SOUVENIR BATON OR THE LIKE

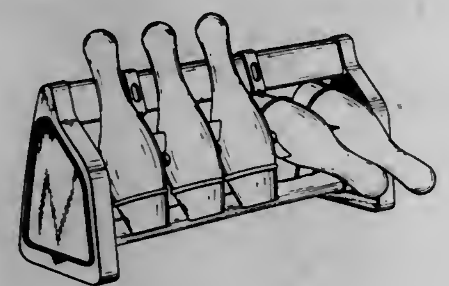
Edward W. Reed, 52 Redwood Ave.,
Edison, N.J. 08817
Filed Nov. 26, 1973, Ser. No. 418,861
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 BC



235,896

TOY BOWLING GAME TARGET

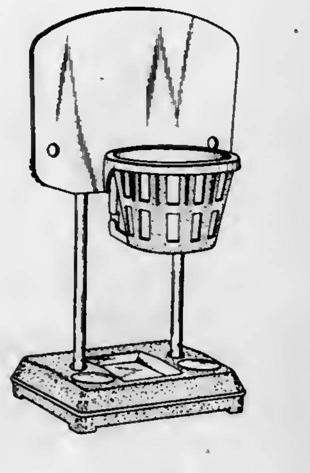
Jack L. Breneman, Orchard Park, N.Y., assignor to
The Quaker Oats Company, Chicago, Ill.
Filed Dec. 5, 1973, Ser. No. 421,771
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 BB



235,897

TOY BASKETBALL GAME GOAL

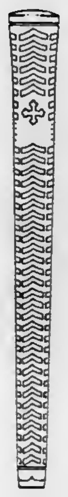
Jack L. Breneman, Orchard Park, N.Y., assignor to
The Quaker Oats Company, Chicago, Ill.
Filed Dec. 5, 1973, Ser. No. 421,773
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 VV



235,898

GOLF CLUB GRIP

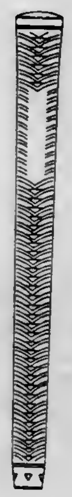
Clifford A. Spencer, Akron, Ohio, assignor to
Eaton Corporation
Filed Dec. 17, 1973, Ser. No. 425,442
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GS



235,899

GOLF CLUB GRIP

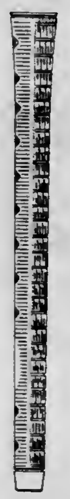
Clifford A. Spencer, Akron, Ohio, assignor to
Eaton Corporation
Filed Jan. 4, 1974, Ser. No. 430,814
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GS



235,900

GOLF CLUB GRIP

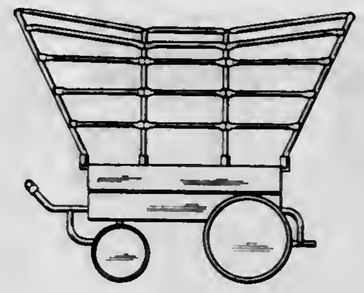
Clifford A. Spencer, Akron, Ohio, assignor to
Eaton Corporation
Filed Jan. 4, 1974, Ser. No. 430,815
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GS



235,901

PLAYGROUND CLIMBER REPRESENTING A CONESTOGA WAGON

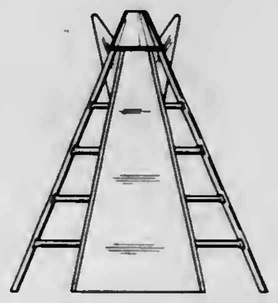
Ronald W. Zick, Coldwater, Mich., assignor to
Game Time, Inc.
Filed Feb. 25, 1974, Ser. No. 445,617
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D34—5 H



235,902

COMBINED PLAYGROUND CLIMBER AND SLIDE REPRESENTING A TEEPEE

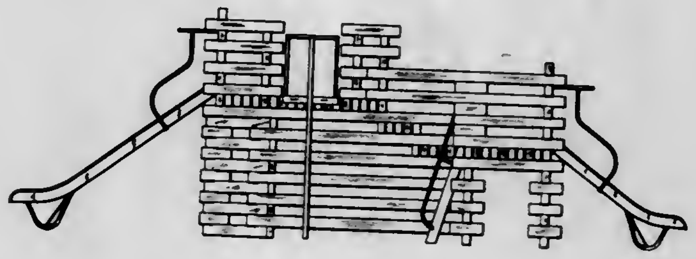
Ronald W. Zick, Coldwater, Mich., assignor to
Game Time, Inc.
Filed Feb. 25, 1974, Ser. No. 445,618
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D34—5 E



235,903

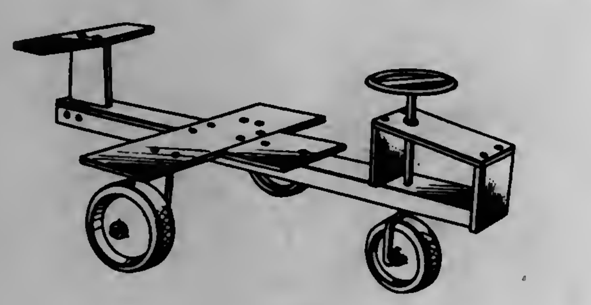
COMBINED PLAYGROUND CLIMBER AND SLIDE OR THE LIKE

Ronald W. Zick, Coldwater, Mich., assignor to
Game Time, Inc.
Filed Feb. 25, 1974, Ser. No. 445,619
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D34—5 H



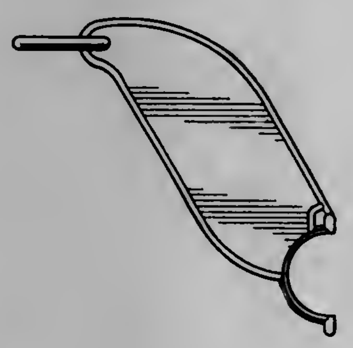
235,904
RIDING TOY AIRPLANE

Marvin D. Onley, Casper, Wyo.
(124 Dawson Place, Longmont, Colo. 80501)
Filed Aug. 22, 1973, Ser. No. 390,350
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AM



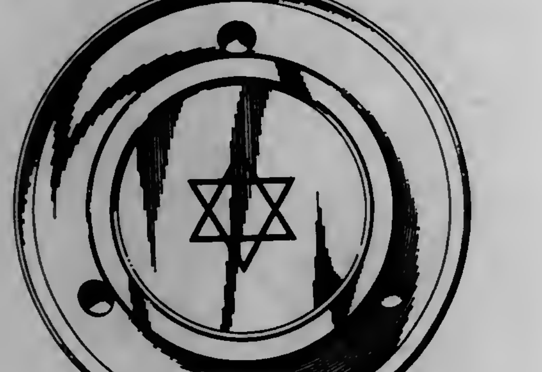
235,905
PIN WHEEL HOLDER

Lester V. Molenaar, Box 777, West Highway 40,
Willmar, Minn. 56201
Filed Dec. 3, 1973, Ser. No. 421,275
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 W



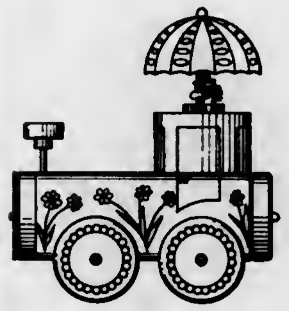
235,906
AERIAL TOY

Abel Napodano, Berlin Center, Ohio
(4093 Columbiana Road, New Springfield, Ohio 44443)
Filed Dec. 10, 1973, Ser. No. 423,512
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 HS



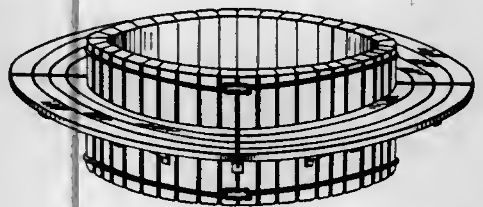
235,907
TRUNDLE TOY

Anthony Pecoraro, 1041 Pleasant St.,
Oak Park, Ill. 60302
Filed Dec. 18, 1973, Ser. No. 425,933
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 D



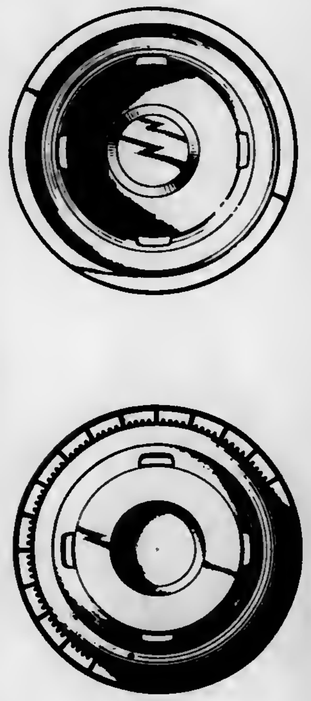
235,908
COMBINATION PLANTER AND BENCH

Wallace Rosenwach, 2 Harbor Road,
Great Neck, N.Y. 11024
Filed Feb. 4, 1974, Ser. No. 439,415
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D35—3 A



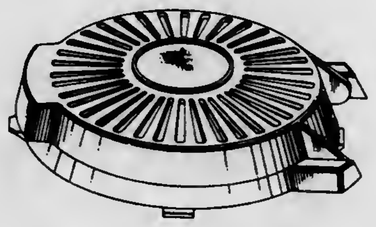
235,909
NURSERY POT

Charles J. Insalaco, Pigeon Swamp Road,
South Windham, Conn. 06266
Filed June 25, 1973, Ser. No. 373,501
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D35—3 R



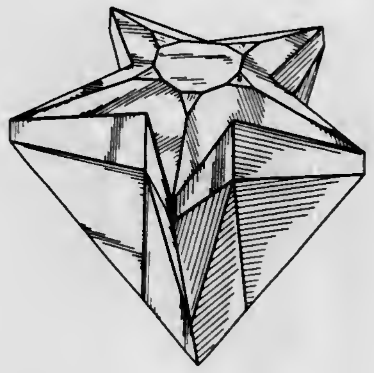
235,910
HINGED COVER FOR A ROTARY MOWER ENGINE

Richard A. Thorud and Darrell W. Hinklin, Minneapolis, Minn., assignors to The Toro Company, Minneapolis, Minn.
Filed Apr. 17, 1974, Ser. No. 461,506
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D40—1 B



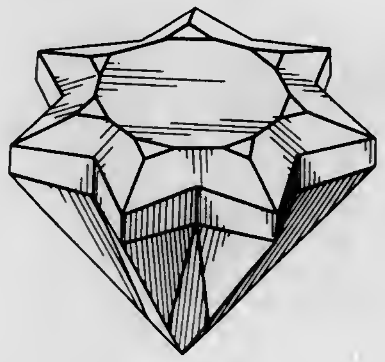
235,911
JEWELRY STONE

Gilbert Golay, Moudon, Switzerland, assignor to Gemstar S.A., Geneva, Switzerland
Filed Dec. 19, 1973, Ser. No. 426,329
Claims priority, application Switzerland June 26, 1973
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—1 A



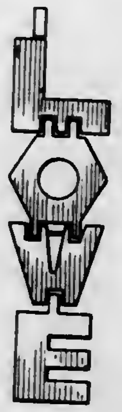
235,912
JEWELRY STONE

Gilbert Golay, Moudon, Switzerland, assignor to Gemstar S.A., Geneva, Switzerland
Filed Dec. 19, 1973, Ser. No. 426,330
Claims priority, application Switzerland June 26, 1973
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—1 A



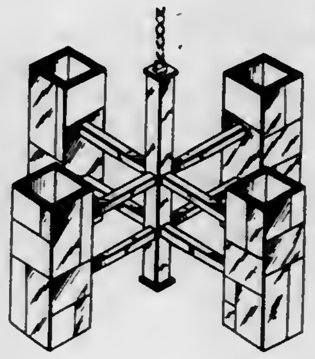
235,913
ARTICULATED PENDANT OR THE LIKE

Aldo Cipullo, 100 Central Park S.,
New York, N.Y. 10019
Filed July 5, 1973, Ser. No. 376,350
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—16 A



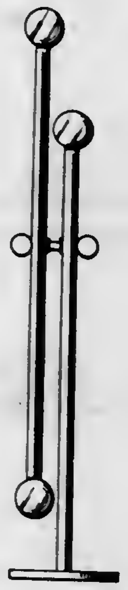
235,914
LIGHTING FIXTURE

Arthur Schacht, East Hills, N.Y., assignor to Crystal Mart, Inc., Deer Park, N.Y.
Filed Oct. 30, 1974 Ser. No. 519,280
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—3



235,915
MODULAR LAMP

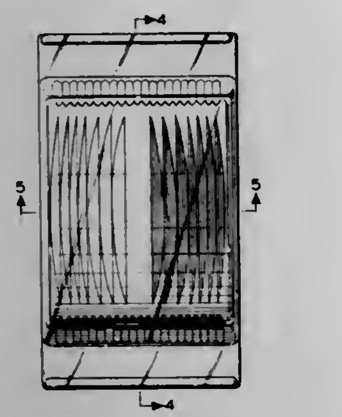
Denis P. Desrochers, 1023 Charon Beach,
Belle River, Ontario, Canada
Filed May 21, 1973, Ser. No. 362,008
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20 A



235,916

COMBINED CLEARANCE AND MARKER LAMP LENS

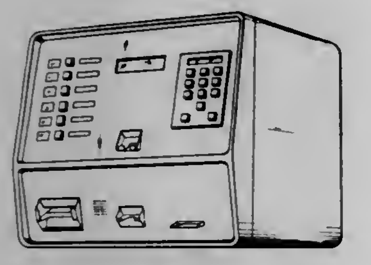
Robert I. Nagel, Skokie, Ill., assignor to Dominion Auto Accessories Limited, Toronto, Ontario, Canada
Filed Jan. 2, 1974, Ser. No. 430,198
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D48—32 A



235,917

FUEL DISPENSING CONSOLE

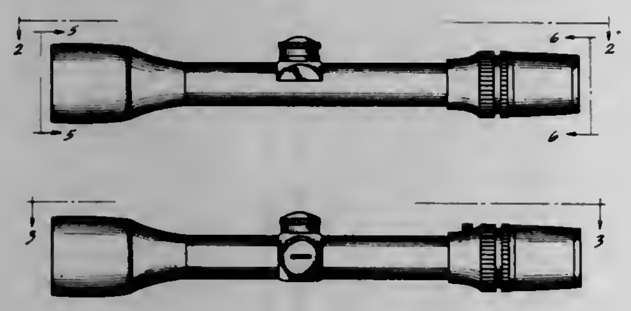
Richard C. Hickey, Plano, and Edward H. McCauley, Dallas, Tex., assignors to Docutel Corporation, Irving Tex.
Filed Jun. 26, 1973, Ser. No. 373,796
Term of patent 14 years
Int. Cl. D20—*01*
U.S. Cl. D52—2 A



235,918

RIFLESCOPE

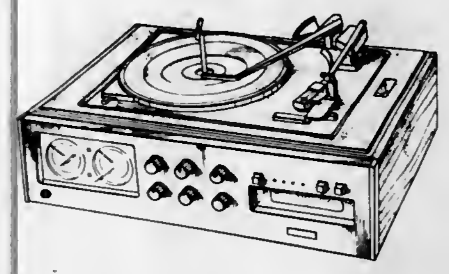
Claus A. Huckenbeck, Sherman Oaks, Calif., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Sept. 9, 1974, Ser. No. 503,938
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 E



235,919

COMBINED TAPE PLAYER, RECORD PLAYER AND HOUSING AMPLIFIER

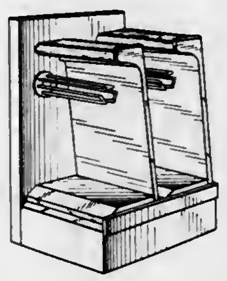
Yoshiaki Iida, Katano-shi, and Yasuhiko Funabiki, Kobe-shi, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka, Japan
Filed Mar. 20, 1973, Ser. No. 343,087
Claims priority, application Japan Sept. 20, 1972
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D56—4 R



235,920

DELEAVER MODULE OR SIMILAR ARTICLE

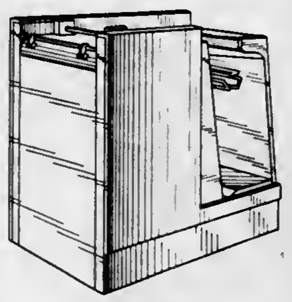
Andrew L. Alger, Wilmette, and Kim Yamasaki, Lombard, Ill., assignors to Uarco Incorporated, Barrington, Ill.
Filed Dec. 20, 1973, Ser. No. 426,448
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D64—11 R



235,921

DELEAVER OR SIMILAR ARTICLE

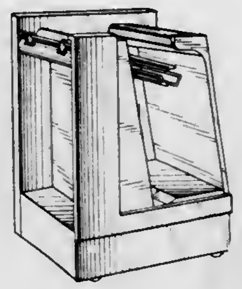
Andrew L. Alger, Wilmette, and Kim Yamasaki, Lombard, Ill., assignors to UARCO Incorporated, Barrington, Ill.
Filed Dec. 20, 1973, Ser. No. 426,449
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D64—11 R



235,922

DELEAVER OR SIMILAR ARTICLE

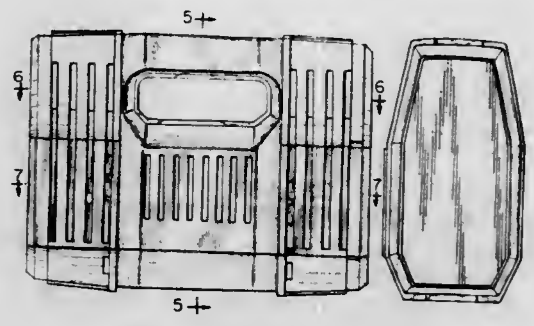
Andrew L. Alger, Wilmette, and Kim Yamasaki, Lombard, Ill., assignors to UARCO Incorporated, Barrington, Ill.
Filed Dec. 20, 1973, Ser. No. 426,450
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D64—11 R



235,923

AIR COMPRESSOR HOUSING

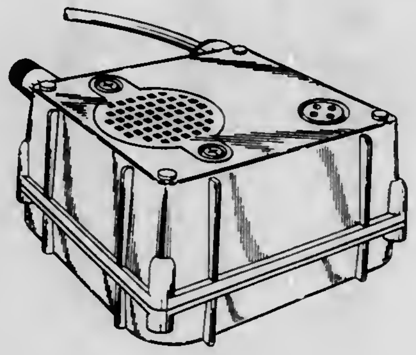
Thomas L. Faul, Toronto, Ontario, Canada, Lawrence P. Feer, Kazenovia, N.Y., and Hugo Magi, Etoblcoke, Ontario, Canada, assignors to The Coleman Company, Inc., Wichita, Kans.
Filed Jan. 24, 1974, Ser. No. 436,120
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D65—1 A



235,924

COMBINED SUBMERSIBLE PUMP AND MOTOR

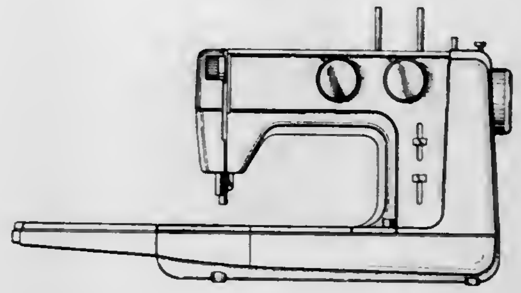
Hugh H. Bright, Oklahoma City, and Lee W. Davis, Del City, Okla., assignors to Little Giant Corporation
Filed Feb. 19, 1974, Ser. No. 443,240
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D65—1 R



235,925

PORTABLE SEWING MACHINE

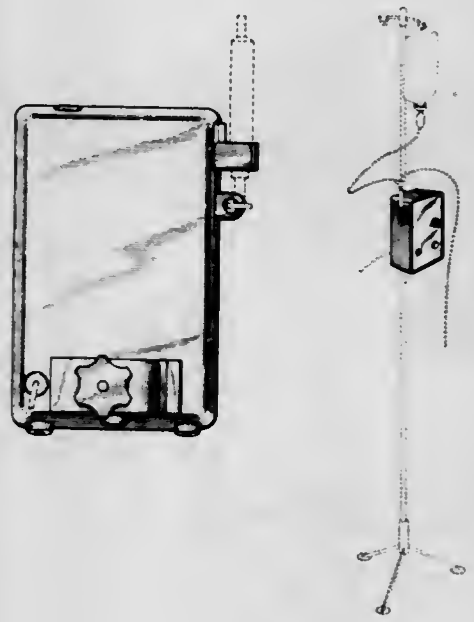
Kiyoshi Kudo, and Kazuo Ito, Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha
Filed June 29, 1973, Ser. No. 374,871
Claims priority, application Japan, Dec. 29, 1972
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D70—1



235,926

SYRINGE PUMP UNIT

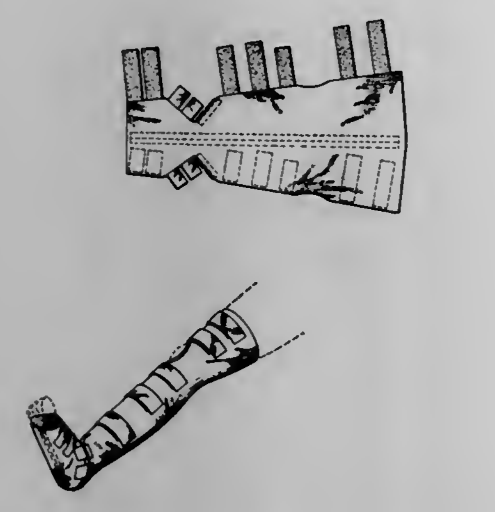
Raymond G. Olson, Niles, Ill., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.
Filed Aug. 15, 1973, Ser. No. 388,535
Term of patent 14 years
Int. Cl. D15—*02;* D24—*02*
U.S. Cl. D83—1 F



235,927
COMBINED LEG AND ARM SPLINT

George E. Moore II, Hollywood, Fla., assignor to
All Orthopedic Appliances, Inc., Miami, Fla.
Filed Feb. 14, 1974, Ser. No. 442,645
Term of patent 14 years
Int. Cl. D24—*04*

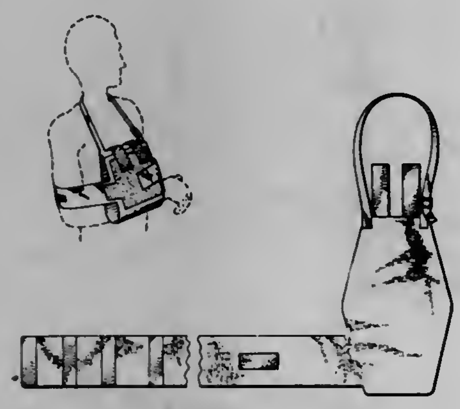
U.S. Cl. D83—1 J



235,928
ARM SPLINT

George E. Moore II, Hollywood, Fla., assignor to
All Orthopedic Appliances, Inc., Miami, Fla.
Filed Feb. 14, 1974, Ser. No. 442,646
Term of patent 14 years
Int. Cl. D24—*04*

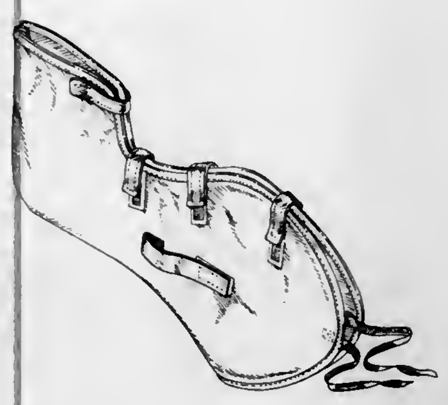
U.S. Cl. D83—1 J



235,929
POST-OPERATIVE SLING FOR HAND OR ARM SURGERY CASES

Shirley B. Thompson, 5016 Williamsburg Blvd.,
Arlington, Va. 22207
Filed Mar. 7, 1974, Ser. No. 449,065
Term of patent 14 years
Int. Cl. D24—*04*

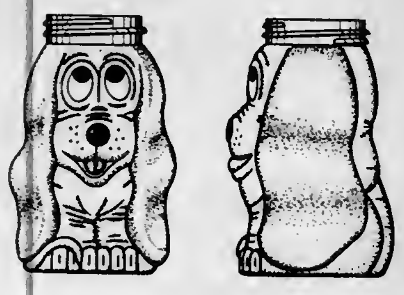
U.S. Cl. D83—1 J



235,930
INFANT FEEDING BOTTLE

Richard E. Cone II, Kent, Ohio, assignor to
Questor Corporation, Toledo, Ohio
Filed Oct. 16, 1974, Ser. No. 515,175
Term of patent 14 years
Int. Cl. D7—*01*

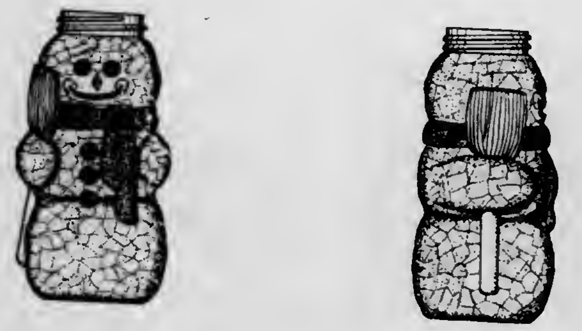
U.S. Cl. D83—8 A



235,931
INFANT FEEDING BOTTLE

Paul Kenneth Meeker, Kent, Ohio, assignor to
Questor Corporation, Toledo, Ohio
Filed Oct. 16, 1974, Ser. No. 515,346
Term of patent 14 years
Int. Cl. D7—*01*

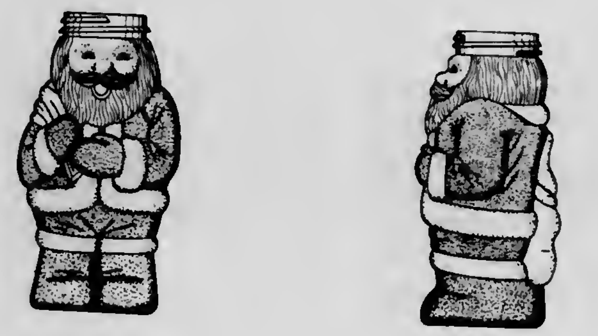
U.S. Cl. D83—8 A



235,932
INFANT FEEDING BOTTLE

Richard E. Cone II, and Paul Kenneth Meeker, Kent,
Ohio, assignors to Questor Corporation, Toledo, Ohio
Filed Oct. 16, 1974, Ser. No. 515,347
Term of patent 14 years
Int. Cl. D7—*01*

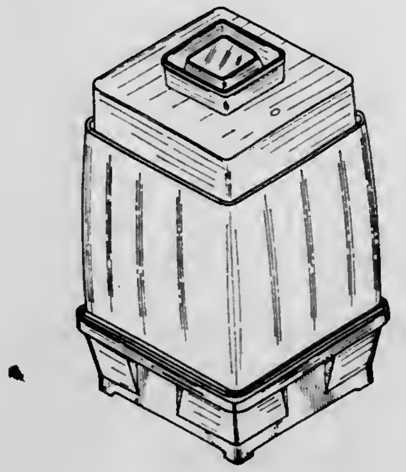
U.S. Cl. D83—8 A



235,933
ELECTRIC STERILIZER

Harold G. Wyse, Dayton, Ohio, assignor to
Questor Corporation, Toledo, Ohio
Filed Aug. 30, 1973, Ser. No. 393,018
Term of patent 14 years
Int. Cl. D24—*01*

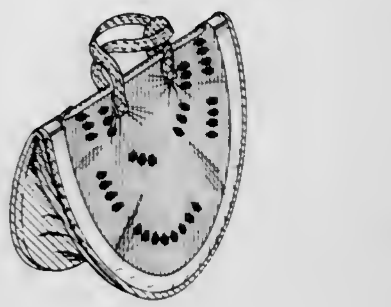
U.S. Cl. D83—1 W



235,934
TOTE BAG

Maxwell B. Chernoff, Little Silver, N.J., assignor to
Dart Industries Inc., Los Angeles, Calif.
Filed Mar. 5, 1974, Ser. No. 448,444
Term of patent 14 years
Int. Cl. D3—*02*

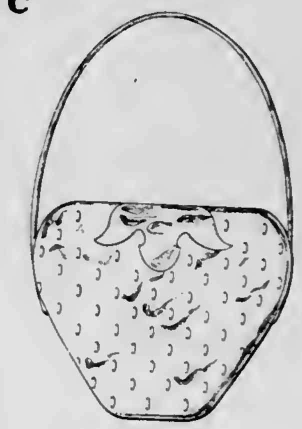
U.S. Cl. D87—3 C



235,935
SHOULDER BAG

Maxwell B. Chernoff, Little Silver, N.J., assignor to
Dart Industries Inc., Los Angeles, Calif.
Filed Mar. 5, 1974, Ser. No. 448,445
Term of patent 14 years
Int. Cl. D3—*02*

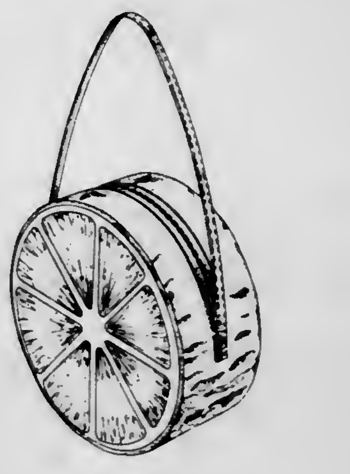
U.S. Cl. D87—3 C



235,936
SHOULDER BAG

Maxwell B. Chernoff, Little Silver, N.J., assignor to
Dart Industries Inc., Los Angeles, Calif.
Filed Mar. 5, 1974, Ser. No. 448,446
Term of patent 14 years
Int. Cl. D3—*02*

U.S. Cl. D87—3 C



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 15TH DAY OF JULY, 1975

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- A. B. Dick Company: *See—*
  - Borneman, Lawrence A., 3,894,733.
  - Keur, Robert; and Stone, Joseph James, 3,895,386.
- A/S Haustrups Fabriker: *See—*
  - Lundtoft, Borge, 3,894,462.
- AAI Corporation: *See—*
  - Barr, Irwin R.; Brown, Paul L.; and Schneppe, Robert W., Jr., 3,894,492.
- AB Bofors: *See—*
  - Andersson, John-Erik; and Karlsson, Bengt-Ake, 3,894,592.
- Abaidullin, Alfred Ibragimovich; Khisameev, Ibragim Gabdulkhakovich; Verny, Adolf Leonidovich; Shvarts, Avely Isaevich; Shnepp, Vladimir Borisovich; and Galiakhmetov, Ildus Gabterievich. Interengaging rotor displacement machine. 3,894,822, Cl. 418-191.000.
- Abbott, Donald W., to Windtie Corporation. Device and method for holding down mobile homes. 3,894,365, Cl. 52-23.000.
- Abbott Laboratories: *See—*
  - Jones, Peter Hadley; and Martin, Yvonne Connolly, 3,895,114.
- Abramov, Vadim Petrovich: *See—*
  - Konopatov, Vladimir Grigorievich; Sorotskin, Izrail Mikhailovich; Rumyantsev, Ivan Ivanovich; Abramov, Vadim Petrovich; Kupriyanov, Alexandr Sergeevich; Mudrenov, Orest Mikhailovich; Soloviev, Ivan Andreevich; Shakhov, Vladimir Alexandrovich; Mironov, Anatoly Konstantinovich; Zhukovskaya, Galina Mikhailovna; and Gleikh, Arkady Markovich, 3,894,899.
- Abrasive Technology, Inc.: *See—*
  - Lowder, James T.; and Tausch, Edwin M., 3,894,673.
- ACF Industries, Incorporated: *See—*
  - Barb, Gayle E., 3,894,716.
  - Dare, Roy R.; Hammonds, James C.; and O'Leary, Walter E., 3,894,495.
- Ackeret, Peter, to Salter Housewares Limited. Balances particularly for kitchen use. 3,894,591, Cl. 177-126.000.
- Acupulse, Inc.: *See—*
  - Morey, Robert Earl, 3,894,532.
- Adachi, Kinichi, to Matsushita Electric Industrial Co., Ltd. Dichromatic thermo-sensitive recording paper. 3,895,173, Cl. 428-537.000.
- Adams, Genevieve Marie; Crowley, John Irving; and Larson, Keith Harris, to International Business Machines Corporation. Method of preparing high temperature stable gamma iron oxide. 3,894,970, Cl. 252-62.540.
- Adaptronics, Inc.: *See—*
  - Cleveland, Dixon; Barron, Roger L.; and Gilstrap, Lewey O., Jr., 3,894,773.
- Adolf, John. Plaster composition. 3,895,018, Cl. 260-29.70S.
- Agency of Industrial Science & Technology: *See—*
  - Aikawa, Teiichi; and Shiihara, Isao, 3,895,081.
  - Fukuta, Kenji; and Miura, Yoshihiro, 3,894,315.
  - Miyazaki, Shoji; and Suhara, Yasuo, 3,895,040.
- Ahn, Kie Y.; and Laming, Frank P., to International Business Machines Corporation. Fabrication mask using divalent rare earth element. 3,895,147, Cl. 428-63.000.
- Aikawa, Teiichi; and Shiihara, Isao, to Agency of Industrial Science & Technology. Tackifying resin and method for manufacture thereof. 3,895,081, Cl. 260-82.100.
- Aikoh Co., Ltd.: *See—*
  - Takashima, Masaru, 3,894,693.
- Air Pollution Industries, Inc.: *See—*
  - Pike, Daniel E., 3,894,853.
- Air Products and Chemicals, Inc.: *See—*
  - Longsworth, Ralph C., 3,894,403.
- Airco, Inc.: *See—*
  - Estes, James W., 3,894,834.
  - Lofredo, Antony; and Biava, Domenick R., 3,894,856.
- Akiyama, Seikichi: *See—*
  - Nagatuma, Kazuyuki; Akiyama, Seikichi; Kozuka, Hirotugu; and Kobayashi, Masayoshi, 3,894,846.
- Akron Rubber Development Laboratory, Inc.: *See—*
  - Samples, Charles R., 3,894,979.
- Akrosil Corporation: *See—*
  - Kapral, Ales M., 3,895,154.
- Alaspa, Allan A., to Motorola, Inc. MOS power-on reset circuit. 3,895,239, Cl. 307-268.000.
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- Alley, Raymond L., to American Warming and Ventilating Inc. Multiblade damper. 3,894,481, Cl. 98-121.00A.
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- Anderson, John E.; Burkholder, Ward J.; and Fannin, Loyd W., to Goodyear Tire and Rubber Company, The. Process for recovery of dihydric phenols. 3,895,079, Cl. 260-621.00A.
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- Barb, Gayle E., to ACF Industries, Incorporated. Fluid control means having plurality discs. 3,894,716, Cl. 251-127.000.
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- Bauerlein, Rudolf; and Uhl, Dieter, to Siemens Aktiengesellschaft. Method for improving the radiation resistance of silicon transistors. 3,894,890, Cl. 148-1.500.
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- Blaha, Franklyn C.: *See—*
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- Blank, Werner Josef, to American Cyanamid Company. Aminoplast crosslinking agents. 3,894,993, Cl. 260-67.60R.
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Camp, Nat. Steam nebulizer. 3,894,537, Cl. 128-193.000.
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Christine, William C.; and Watt, William E. R., to Inpaco. Method and means for attaching fitments to a bag or pouch on a packaging machine. 3,894,381, Cl. 53-128.000.
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- Cohn, Charles E., to United States of America, Energy Research and Development Administration. Determination of parameters of a nuclear reactor through noise measurements. 3,894,912, Cl. 176-19.00R.
- Cole, Edward L.: *See—*
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- Colegrove, George T., to Kelco Company. Process of suspending soluble xanthan gum and pumpable compositions so produced. 3,894,879, Cl. 106-189.000.
- Colegrove, George T., to Kelco Company. Process of suspending soluble alginates and compositions so produced. 3,894,880, Cl. 106-208.000.
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  - Clingan, Larry E.; and Collins, Charles R., Jr., 3,894,409.
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- Colten, Frank P.; and Kaplan, Morton, to General Foods Corporation. Chocolate coating comprising hydroxylated lecithin. 3,895,105, Cl. 426-306.000.
- Comizzoli, Robert Benedict, to RCA Corporation. Method of selectively depositing glass on semiconductor devices. 3,895,127, Cl. 427-39.000.
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  - Naggert, Dietrich K., 3,894,379.
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- Cook, Stephen O., to Crown Zellerbach Corporation. Method of manufacturing synthetic paper laminates. 3,894,904, Cl. 156-229.000.
- Cooke, Anson Richard, to Amchem Products, Inc. Inhibiting crown growth on pineapple fruit. 3,894,860, Cl. 71-116.000.
- Cooke, William C., to ASG Industries, Inc. Electric heater plate and terminal thereof. 3,895,218, Cl. 219-543.000.
- Cooke-Yarborough, Edmund Harry, to United Kingdom Atomic Energy Authority. Member for conducting excess heat away from heat sources. 3,894,911, Cl. 165-86.000.
- Cookson, Alan H.; Farish, Owen; and Gauntz, John M., to Westinghouse Electric Corporation. Coaxial conductor with trap for removing particles from fluid insulation. 3,895,176, Cl. 174-28.000.
- Coombs, Garth, to Johns-Manville Corporation. Non-coloring diatomite-filled polyolefins. 3,894,985, Cl. 260-42.140.
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- Cooper, David, to International Rectifier Corporation. LED coupled switching circuits. 3,895,241, Cl. 307-311.000.
- Cooper, Paul, to TRW Inc. Aircraft fuel supply system having a dual stream tow-phase fluid pump. 3,894,813, Cl. 417-76.000.
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- Corbaz, Andre, to G. Billi & C. S.p.A. Linear motor positioning device with position detent means. 3,895,281, Cl. 318-687.000.
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- Corey, Howard Seebree, Jr.; Barringer, William Charles; and Hansen, Lloyd Frank, to American Cyanamid Company. Asthma treatment by inhalation of micronized N,N-diethyl-4-methyl-1-piperazinecarboxamide pamoate. 3,895,111, Cl. 424-250.000.
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- Coulter Diagnostics, Inc.: *See—*
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  - Longman, Millard D., Jr., 3,895,305.
- Cowdrey, Roy Melvin; and Porter, Oswald Mead, to Singer Company, The. Needle clamp for sewing machine. 3,894,501, Cl. 112-226.000.
- Cowley, Gerald, to Erco Industries Limited. Production of chlorine dioxide. 3,895,100, Cl. 423-478.000.
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- Crawley, Thomas B. Foldable play building blocks. 3,894,354, Cl. 46-25.000.
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- Cressman, Robert C., to General Electric Company. Relay coil with open washer. 3,895,333, Cl. 335-297.000.
- Cricchi, James Ronald; and Blaha, Franklyn C., to Westinghouse Electric Corporation. Block oriented random access memory. 3,895,360, Cl. 340-173.00R.
- Crofoot, Percy. Beam end socket concrete form box. 3,894,368, Cl. 52-105.000.
- Crooke, R. Curtis; Graham, John R.; and McNary, James F., to Global Marine, Inc. Apparatus for raising and lowering large objects from a surface ship. 3,894,640, Cl. 214-15.00R.
- Croullebois, Georges, to Etat Francais. Multipurpose dropping container. 3,894,648, Cl. 220-4.00F.
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- Darda, Helmut. Hydraulically actuated apparatus for the mechanical splitting of rock. 3,894,772, Cl. 299-22.000.

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- Dare, Roy R.; Hammonds, James C.; and O'Leary, Walter E., to ACF Industries, Incorporated. Box car for transport of large elongated articles and method of loading the same. 3,894,495, Cl. 105-366.00R.
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- Davis, Richard C. Bullet proof protective armor. 3,894,472, Cl. 189-36.00A.
- Davis, Ronald I., to Sun Research and Development Company. Separation of cyclic compounds by adsorption on partially sorbed metallic zeolites. 3,895,080, Cl. 260-674.0SA.
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- Deamud, James R.; and Hickson, Charles L., to Ford Motor Company. Method of coating a substrate with an electron beam curable paint composition containing thermoplastic vinyl resin and article formed therefrom. 3,895,171, Cl. 428-461.000.
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- Delamare, Guy Robert, to Societe Superflexit. Spanning members for bridging purposes. 3,894,307, Cl. 14-27.000.
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- Deppe, Georg; Kurt, Gottfried; and Faes, Kurt, to APAG Apparatebau AG. Thread cutters. 3,894,459, Cl. 83-567.000.
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- Donato, Anthony C., to Lightolier Incorporated. Connector plug for power distribution track. 3,894,781, Cl. 339-22.00B.
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- Eckerle, William A., to General Electric Company. Pivotal shelf control means for refuse compactor. 3,894,485, Cl. 100-45.000.
- Eckmayr, Roland L. Ball dispensing device. 3,894,657, Cl. 221-265.000.
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- Eddy, Francis Tozer; and Hanke, Arthur Harold. Dispenser for mixing fluids. 3,894,662, Cl. 222-193.000.
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- Egri, Laszlo, to Tamag Basel AG. Process for producing tobacco structures. 3,894,544, Cl. 131-140.00C.
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- Elizondo, Ruben Contreras. Emergency fire-escape equipment for buildings. 3,894,613, Cl. 182-43.000.
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  - Delekto, Paul J.; Smith, Karl H.; and Mehaffey, William H., 3,894,910.
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- Fibron, Inc.: *See*—
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  - Riester, Hubert A.; and Yard, John S., 3,894,433.
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- Florey, Richard C. Picture mailer. 3,894,684, Cl. 229-92.800.
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  - Pitman, Frank A., 3,895,336.
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- Gold, Charles, to Electrochem, Inc. Reserve-type electrochemical battery. 3,894,888, Cl. 136-114.000.
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- Golden, Gerald; and Kennedy, James D., to Beatrice Foods Company. 360° viewable reflectorized vehicle. 3,894,790, Cl. 350-99.000.
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- Goldstein, Raymond. Golf practice apparatus. 3,894,739, Cl. 273-186.00R.
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- Gordon, Jerry Dale. Cabinet for holding food at a controllable temperature. 3,895,215, Cl. 219-400.000.
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Hulsebusch, Theodor; and Prolss, Hans, to Blaupunkt-Werke GmbH. Car radio tuning device with push-button station selector. 3,895,327, Cl. 334-7.000.

Hunck, Billie Gene; and Wiegardt, Gordon K., to Deere & Company. Control system for hydrostatic drive tractors. 3,894,606, Cl. 180-66.00R.

Hunter, Byron A.; and Hollmann, Gerald J., to Uniroyal, Inc. Hydrazoidicarboxylates used as blowing agents to form gas expandable polymeric materials. 3,894,974, Cl. 260-2.50R.

Hunter, Charley Ward, to Vendo Company, The. Inclined shelf vending apparatus having product jostling structure. 3,894,656, Cl. 221-200.000.

Hurko, Bohdan, to General Electric Company. Low thermal mass solid plate surface heating unit. 3,895,216, Cl. 219-462.000.

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Imazeki, Kazuyoshi; and Nakano, Masao, to General Research of Electronics, Inc. Oscillator-actuated bandswitch. 3,895,303, Cl. 325-470.000.

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Ingraham, Everett L. Sound collecting device. 3,895,188, Cl. 179-1.0MF.

Inman, Eric Richard; McCrae, James McGeachie; and Stirling, John Andrew, to Ciba-Geigy Corporation. Metallised pigments. 3,895,041, Cl. 260-429.900.

Inoue, Kiyoshi. Electrode for electrical machining. 3,894,925, Cl. 204-224.00M.

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Itagaki, Takuo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Photometric circuit with photo-voltaic element. 3,895,230, Cl. 250-214.00P.

Itatani, Hiroshi; and Yoshimoto, Hataaki, to Ube Industries, Ltd. Coupling process of aromatic compounds. 3,895,055, Cl. 260-479.00R.

Itil, Turan M.; and Herrmann, Werner Martin, to Schering Aktiengesellschaft. Methods for the treatment of psychic disturbances. 3,895,110, Cl. 424-242.000.

Ito, Hiroshi; Miyake, Ryozo; and Kobayashi, Fumio, to Fuji Shashin Koki Kabushiki Kaisha. Film magazine. 3,894,700, Cl. 242-71.200.

Ito, Mikiji; Miura, Motohisa; and Ito, Toshiyuki, to Nippondenso Co., Ltd. Exhaust gas control valve for use with an internal combustion engine. 3,894,713, Cl. 251-61.500.

Ito, Toshio; Miyamatsu, Tokuhisa; and Miyashita, Iwao, to Mitsubishi Rayon Company Limited. Process of enhancing pilling resistance of textile materials. 3,894,318, Cl. 26-28.000.

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Iwata, Yoriaki; and Ikoma, Noboru, to Nippondenso Co., Ltd. Rectifier unit for vehicle alternator. 3,895,247, Cl. 310-68.00D.

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Jabbusch, Robert O.; and Gerlach, Carl J., to FMC Corporation. Conveyor for interspacing articles. 3,894,627, Cl. 198-34.000.

Jabsen, Felix S., to Babcock & Wilcox Company, The. Industrial technique. 3,894,327, Cl. 29-200.00R.

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Jacobsen, Fred W.; Jakubowski, Stanley T.; and Weiner, Herman Sam, to Garrett Corporation, The. Method of manifold construction for formed tube-sheet heat exchanger and structure formed thereby. 3,894,581, Cl. 165-166.000.

Jacobson, Gerald. Rail sleeper. 3,894,687, Cl. 238-310.000.

Jacobson, Howard Wayne, to du Pont de Nemours, E. I., and Company. Process for producing germanium-doped iron oxides. 3,894,969, Cl. 252-519.000.

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Jakob, Hans, to Maschinenfabrik GOEBEL GmbH. Apparatus for the longitudinal cutting of narrow strips. 3,894,461, Cl. 83-665.000.

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Jarl, Ronald Burnett, to RCA Corporation. Apparatus for nondestructively testing a forwardly biased transistor for second breakdown. 3,895,297, Cl. 324-158.00T.

Jarvis, Alvar, to Coulter Diagnostics, Inc. Determination of serum creatinine. 3,894,843, Cl. 23-230.00B.

Jauss, Paul. Corn harvester. 3,894,382, Cl. 56-14.300.

Jayne, Laurence I.; and Magnuson, Roland A., to Pacific Car and Foundry Company. Rapid fire weapon for turret installation. 3,894,471, Cl. 89-33.00R.

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Johnson, Cort T., to City of Long Beach. Sand fill compaction system. 3,894,401, Cl. 61-72.400.

Johnson, Edward Arvid, to Johnson Bros. Manufacturing Ltd. Hide pulling devices. 3,894,311, Cl. 17-21.000.

Johnson, Harold L., to Deering Milliken Research Corporation. Dyeing and printing of materials. 3,894,413, Cl. 68-205.00R.

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Johnson, Roger L.: *See—*

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Johnston, Manley R.; and Goeppinger, Roger P., to Minnesota Mining and Manufacturing Company. Friction-surface sheet. 3,895,153, Cl. 428-141.000.

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Jones, Charles H.; and Gilmour, George A., to Westinghouse Electric Corporation. Acoustic camera apparatus. 3,895,339, Cl. 340-3.00R.

Jones, Frederick O., to Wilkinson Sword Limited. Alumina razor blades. 3,894,337, Cl. 30-346.540.

Jones, Larry M.; and Johnson, Roger L., to University of Illinois Foundation. Method and apparatus for reliably parallel self shifting information in a plasma display/memory panel. 3,895,361, Cl. 340-173.0PL.

Jones, Peter Hadley; and Martin, Yvonne Connolly, to Abbott Laboratories. Cyclic hydroxamic acids as antihypertensive agents. 3,895,114, Cl. 424-263.000.

Jones, Richard E. Continuous drive liquid mixing amd metering device. 3,894,722, Cl. 259-22.000.

Jones, Thornton K., to Chevron Research Company. Method of waterproofing with asphalts containing polyamines. 3,895,172, Cl. 428-489.000.

Jones, Warren W., Jr.: *See—*

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Jonsson, Elis, to Skega Aktiebolag. Device at grate means mounted in a mill or another processing apparatus. 3,894,696, Cl. 241-70.000.

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Juels, Ronald J.: *See—*

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Jung, Lothar. Method and apparatus for conversion of crystalline silica raw materials into amorphous silica. 3,895,174, Cl. 13-21.000.

Jungner Instrument AB: *See—*

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Jurovsky, Albert Yakovlevich. Differential pressure gauge. 3,894,436, Cl. 73-393.000.

Kabaya, Yoshihiko; and Ikeda, Heishichi, to Kabushiki Kaisha Kyodo Denshi Gijyutsu. Method for the production of monocrystal-polycrystal semiconductor devices. 3,894,893, Cl. 148-175.000.

Kabel-und Metallwerke Gutehoffnungshuette AG: *See—*

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Kablaoui, Mahmoud S.; and Love, Richard F., to Texaco Inc. Separation of nitroketone from a crude nitrooxidation reaction product. 3,895,071, Cl. 260-586.00R.

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Kagiya, Tsutomu; Hagiwara, Miyuki; Kagiya, Tsukasa; and Sohara, Masayoshi, to Kishimoto Sangyo Co., Ltd. Radiation process for the crosslinking of polyethylene with the use of acrylic and acetylenic compounds. 3,894,928, Cl. 204-159.170.

Kaji, Tetsunori; Murayama, Seiichi; and Fukushima, Masakazu, to Hitachi, Ltd. Display device. 3,895,371, Cl. 340-324.00M.

Kaji, Tetsunori; Fukushima, Masakazu; Mitomo, Isamu; and Kamejima, Shigehiro, to Hitachi, Ltd. Quick response liquid crystal display device. 3,895,372, Cl. 340-324.00M.

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Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, to Societe Anonyme dite: L'Oreal. Dye composition containing indophenol for keratinous fibers and method using the same. 3,894,837, Cl. 8-10.000.

Kaltenbach & Voigt: *See—*

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Kamejima, Shigehiro: *See—*

Kaji, Tetsunori; Fukushima, Masakazu; Mitomo, Isamu; and Kamejima, Shigehiro, 3,895,372.

Kamimura, Shoji: *See—*

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Kammerer, Archer W. Slack removal apparatus. 3,894,582, Cl. 166-.500.

Kane, William S.; McCutchen, Hugh L.; and Cardwell, Paul H., to Deepsea Ventures, Inc. Recovery of metal values from ocean floor nodule ores by halidation in molten salt bath. 3,894,927, Cl. 204-64.00R.

Kaneko, Hidehiko; Aritomi, Jiro; and Nakamura, Keiji, to Dainippon Pharmaceutical Co. Ltd. Aminoalkanols and their pharmaceutically acceptable acid-addition salts, and production thereof. 3,895,057, Cl. 260-501.110.

Kaneko, Yoichi: *See—*

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Kang, Kenneth Suk; and McNeely, William H., to Kelco Company. Pseudoplastic water base paint containing a novel heteropolysaccharide. 3,894,976, Cl. 260-17.4ST.

Kapeller, Klaus, to Teldix GmbH. Rapid resetting gyroscope. 3,894,341, Cl. 33-324.000.

Kaplan, Morton: *See—*

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Kapral, Ales M., to Akrosil Corporation. Gas-release sheet. 3,895,154, Cl. 428-153.000.

Karady, Sandor; Pines, Seemon H.; Ly, Manuel G.; and Sletzinger, Meyer, to Merck & Co., Inc. Diastereomers of n-acyl α-hydrazino-β-(substituted or unsubstituted phenyl)alkanoic acid derivatives. 3,895,052, Cl. 260-471.00A.

Karg, Gerhart, to Avon Products, Inc. Sunscreening method and composition containing film forming polyamide material. 3,895,104, Cl. 424-59.000.

Karlsson, Bengt-Ake: *See—*

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Karpf, Kurt: *See—*

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Kashiwagi, Isamu: *See—*

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Katner, Allen S., to Eli Lilly and Company. Process for preparing pyrazole-3-carboxylic acids. 3,895,027, Cl. 260-310.00R.

Kato, Tetsuji, to Mitsubishi Rayon Company Limited. Apparatus for continuously producing a sheet shaped product. 3,894,826, Cl. 425-224.000.

Kato, Umaki; Endo, Masanori; Satoh, Hiroyasu; and Horiuchi, Kentaro, to Tohoku Metal Industries Limited. Thermo-magnetically operated switches. 3,895,328, Cl. 335-208.000.

Katoh, Hidehiko, to Nippon Electric Company, Limited. Broad-band lumped-element circulator. 3,895,320, Cl. 333-1.100.

Katsuragawa Denki Kabushiki Kaisha: *See—*

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  - Wagner, Joseph F.; Knight, William Benjamin; and Mihal, Dan James, 3,894,600.
- Millar, James S.; and Garrett, Douglas R., to Parker-Hannifin Corporation. Excess flow servo valve. 3,894,712, Cl. 251-61.000.
- Miller, Henry L., to Miller Screen & Design, Inc. Method and apparatus for screen printing fixed and variable indicia. 3,894,487, Cl. 101-129.000.
- Miller, James J.: *See—*
  - Winters, Donald C.; and Miller, James J., 3,894,425.
- Miller, Robert C.: *See—*
  - Lemont, Harold E.; and Miller, Robert C., 3,895,162.
- Miller, Roland E.; and Wayne, Clyde D., to Kraftco Corporation. Method of rapid slicing. 3,894,457, Cl. 83-27.000.
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  - Miller, Henry L., 3,894,487.
- Miller, Wayne A. Game hanger. 3,894,313, Cl. 17-44.200.
- Milyaev, Boris Fedorovich; Ozeshnikov, Zakhar Alexeevich; and Tuchkevich, Nikolai Maximovich. Device for withdrawing castings from mould of continuous metal casting machine. 3,894,577, Cl. 164-282.000.
- Mimura, Masahisa: *See—*
  - Kigane, Koji; Mimura, Masahisa; and Ohkawa, Nobuo, 3,895,134.
- Minamikawa, Yoshihisa; Ozasa, Susumu; Kamimura, Shoji; and Saito, Yasushi, to Hitachi, Ltd. Charged particle accelerator with integral transformer and shielding means. 3,895,254, Cl. 315-57.000.
- Mineral Research & Development Corporation: *See—*
  - Drinkard, William F., Jr.; Brown, Henry S.; and Woerner, Hans J., 3,894,929.
- Minnesota Mining and Manufacturing Company: *See—*
  - Harrington, Joseph Kenneth; and Moore, George G. I., 3,895,062.
  - Johnston, Manley R.; and Goeppinger, Roger P., 3,895,153.
- Minyard, James P.: *See—*
  - Gueldner, Richard C.; Tumlinson, James H.; Hardee, Dicky D.; Hedin, Paul A.; Thompson, Alonzo C.; and Minyard, James P., 3,895,078.
- Miratron AG: *See—*
  - Oejelid, Goran, 3,894,594.
- Mironov, Anatoly Konstantinovich: *See—*
  - Konopatov, Vladimir Grigorievich; Sorotskin, Izrail Mikhailovich; Rumyantsev, Ivan Ivanovich; Abramov, Vadim Petrovich; Kupriyanov, Alexandr Sergeevich; Mudrenov, Orest Mikhailovich; Soloviev, Ivan Andreevich; Shakhov, Vladimir Alexandrovich; Mironov, Anatoly Konstantinovich; Zhukovskaya, Galina Mikhailovna; and Gleikh, Arkady Markovich, 3,894,899.
- Miskolczi Machine Tool Limited: *See—*
  - Miskolczi, Peter; and Ondrus, Michael Joseph, 3,894,478.
- Miskolczi, Peter; and Ondrus, Michael Joseph, to Miskolczi Machine Tool Limited. Roll former. 3,894,478, Cl. 93-58.20R.
- Mitchell, Charles W., Jr., to Xerox Corporation. Liquid crystal imaging system using tribulyltin oxide. 3,894,794, Cl. 350-160.0LC.
- Mitchell, Joseph, Jr.; and Carr, Lester Andrew, Jr., to RCA Corporation. Technique for fabricating high Q MIM capacitors. 3,894,872, Cl. 96-36.000.
- Mitchell, Kenneth M.: *See—*
  - Bonacci, John C.; and Mitchell, Kenneth M., 3,894,937.
- Mitomo, Isamu: *See—*
  - Kaji, Tetsunori; Fukushima, Masakazu; Mitomo, Isamu; and Kamejima, Shigehiro, 3,895,372.
- Mitsubishi Rayon Company Limited: *See—*
  - Ito, Toshio; Miyamatsu, Tokuhisa; and Miyashita, Iwao, 3,894,318.
  - Kato, Tetsuji, 3,894,826.
- Mittelmann, Eugene, to Illinois Tool Works Inc. Wattsecond sensing circuit. 3,895,295, Cl. 324-142.000.
- Mittelmeier, Heinz; Karpf, Kurt; and Moser, Heinz, to Oscobal AG, Chirurgische Instruments und Implantate. Hip joint prosthesis. 3,894,297, Cl. 3-1.000.
- Miura, Minoru: *See—*
  - Watanabe, Masayuki; Narita, Shigeyoshi; Kagaya, Itiro; Miura, Minoru; Suzuki, Yasunobu; Tanaka, Shuji; Sasaki, Masami; Miyatani, Shogo; and Terayama, Kenichi, 3,894,913.
- Miura, Motohisa: *See—*
  - Ito, Mikiji; Miura, Motohisa; and Ito, Toshiyuki, 3,894,713.
- Miura, Teiji; and Takeshita, Hiroshi, to Kabushiki Kaisha Suwa Seikosha. Electronic watch. 3,894,389, Cl. 58-50.00R.
- Miura, Yoshihiro: *See—*
  - Fukuta, Kenji; and Miura, Yoshihiro, 3,894,315.
- Miyake, Ryozo: *See—*
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  - Wada, Jin; Suzuki, Tadayuki; Miyamatsu, Hiroki; Ueno, Shinji; and Shimizu, Mitsuhiro, 3,895,028.

- Miyamatsu, Tokuhisa: *See—*
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- Miyashita, Iwao: *See—*
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- Miyawaki, Syozo; and Hirota, Tetsuro, to Ricoh Co., Ltd. Underline printing control system for use in a typewriter. 3,894,623, Cl. 197-113.000.
- Miyazaki, Shoji; and Suhara, Yasuo, to Agency of Industrial Science & Technology. Method for manufacture of fatty acids and dibasic acids. 3,895,040, Cl. 260-413.000.
- Mizrahi, Sam. Conducting fluid type inertia switch. 3,895,197, Cl. 200-61.470.
- Mizusawa, Akira, to Illinois Tool Works Inc. Tubing clamp assembly for maintaining tubes in locked parallel relationship to surface. 3,894,706, Cl. 248-68.0CB.
- Mobil Oil Corporation: *See—*
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  - Gorring, Robert L.; and Shipman, George F., 3,894,938.
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  - Owen, Hartley; and Venuto, Paul B., 3,894,933.
  - Owen, Hartley; and Demmel, Edward J., 3,894,934.
  - Owen; Hartley, 3,894,935.
  - Owen, Hartley, 3,894,936.
- Mock, George H.; and Simpson, Harold N., to Monsanto Company. Boric acid recovery. 3,895,067, Cl. 260-586.0AB.
- Modular Systems, Inc.: *See—*
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- Moerk, John C., Jr.: *See—*
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  - Mallett, A. J.; and Moffitt, Jerrell F., 3,895,342.
- Moinas, Michel; Groux, Michel John Arthur; and Horman, Ian, to Societe d'Assistance Technique pour Produits Nestle S.A. Cheese flavouring. 3,895,123, Cl. 426-534.000.
- Molecular Controls Limited: *See—*
  - Dudas, Tibor, 3,895,271.
- Moline, Donald V.; and Larson, James A., to Pillsbury Company, The. Apparatus for rolling dough strips in the cross machine direction. 3,894,828, Cl. 425-371.000.
- Molleken, Reiner: *See—*
  - Bauer, Kurt; Molleken, Reiner; and Hopp, Rudolf, 3,895,076.
- Moller, Hinrich; Gloxhuber, Christian; and Schnegelberger, Harald, to Henkel & Cie GmbH. Anti-inflammatory agents, cosmetic preparations and method of preventing inflammation. 3,895,022, Cl. 260-307.00D.
- Molsons Companies Limited, The: *See—*
  - Pugh, Arthur G.; Fortier, Fernand G.; and Patrick, Alfred B., 3,894,628.
- Mones, Harri: *See—*
  - Mones, Walter; and Mones, Harri, 3,894,298.
- Mones, Walter; and Mones, Harri, to Zimmer & Kellerman. Flushing system for sanitary flushing devices. 3,894,298, Cl. 4-1.000.
- Monsanto Company: *See—*
  - Berggren, L. John; Chin, Charles L. D.; and Reilly, Joseph R., 3,894,835.
  - D'Amico, John Joseph, 3,895,019.
  - Mock, George H.; and Simpson, Harold N., 3,895,067.
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- Montecatini Edison S.p.A.: *See—*
  - Sironi, Giuseppe; Fagherazzi, Giuliano; Ferrero, Francesco; and Parrini, Gianfranco, 3,895,092.
- Montesissa, Giorgio; Olivieri, Antonio; and Scapellato, Giuseppe, to Duco S.p.A. Alkyd resins modified with acrylic or methacrylic acid for use in water based paints. 3,894,978, Cl. 260-22.0CB.
- Moore, Earl Phillip, Jr., to du Pont de Nemours, E. I., and Company. Process for forming a refractory laminate based on positive sols and refractory materials containing chemical setting agents. 3,894,572, Cl. 164-26.000.
- Moore, George G. I.: *See—*
  - Harrington, Joseph Kenneth; and Moore, George G. I., 3,895,062.
- Moore, John H., to Zenith Radio Corporation. Method for processing a color cathode ray tube having a thin foil mask sealed directly to the bulb. 3,894,321, Cl. 29-25.150.
- Moore, John J. Game board apparatus with interchangeable playing board plates. 3,894,737, Cl. 273-121.00R.
- Moore, Lancelot Frederick: *See—*
  - Armour, John George Denholm; and Moore, Lancelot Frederick, 3,894,511.
- Moore, Ronald D.: *See—*
  - Hall, Frank Kenneth; and Moore, Ronald D., 3,895,217.
- Moran, George W. Rotary internal combustion engine. 3,894,519, Cl. 123-8.450.
- Moreau, Rene V., to Poclain. Detachable tooth for public works machine having a particular cotter. 3,894,349, Cl. 37-142.00A.
- Morey, Robert Earl, to Acupulse, Inc. Instruments for transcutaneous and subcutaneous investigation and treatment. 3,894,532, Cl. 128-2.10Z.
- Morgan, Thomas H. Artificial lift for oil wells. 3,894,583, Cl. 166-68.000.
- Morgan, Thomas H. Artificial lift for oil wells. 3,894,814, Cl. 417-121.000.
- Morgardshammar Aktiebolag: *See—*
  - Falk, Bertil Alfons, 3,894,698.
- Morgenthaler, Frederic R., to Massachusetts Institute of Technology. Apparatus for processing electromagnetic wave energy. 3,895,324, Cl. 333-30.00M.
- Mori, Yutaka; and Sakan, Takeo, to Suntory Ltd.; and Shiono Koryo Kaisha. Process for the preparation of ketones. 3,895,070, Cl. 260-586.00R.
- Moriki, Yasumitsu; and Shimizu, Hidehiro, to Maruma Jyusharyo Kabushiki Kaisha. Metal build-up apparatus. 3,895,209, Cl. 219-76.000.
- Morooka, Shigeaki: *See—*
  - Yamamoto, Michihiro; Morooka, Shigeaki; Koshiba, Masao; Inaba, Shigeho; and Yamamoto, Hisao, 3,895,395.
- Morris, Francis E. Golf swing sensing device. 3,895,366, Cl. 340-207.00R.
- Morrison, Howard J.; and Nix, Donald F., to Marvin Glass & Associates. Shock proof lightbulb socket. 3,895,195, Cl. 200-51.090.
- Morrison, Lester M. Novel CSA and CSC for use in man and mammals to inhibit atherosclerosis and the recurrence of cardiovascular incidents in atherosclerotic mammals. 3,895,106, Cl. 424-180.000.
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- Moscaret, Eugene J.; and Soran, Thomas C., to Bell & Howell Company. Information carrier magazine handling apparatus. 3,894,701, Cl. 242-194.000.
- Mosebach Manufacturing Company: *See—*
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- Moseley, Charles D., Jr.; and Moses, Hal L. Fluid flow controller. 3,894,562, Cl. 138-44.000.
- Moser, Heinz: *See—*
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- Moses, Hal L.: *See—*
  - Moseley, Charles D., Jr.; and Moses, Hal L., 3,894,562.
- Mosolov, Evgeny Mikhailovich: *See—*
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- Motorola, Inc.: *See—*
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  - Bara, Edwin S., 3,894,699.
- Mott, George E.; and Ratcliff, Lynn J., to Texaco Inc. Offshore vessel mooring. 3,894,567, Cl. 141-388.000.
- Motz, Carl H.: *See—*
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- Mounier, Claude: *See—*
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- Mount, Robert E.: *See—*
  - Gavrun, Michael T.; and Mount, Robert E., 3,894,518.
- Mrowca, Joseph J., to du Pont de Nemours, E. I., and Company. Phosphine oxide flame retardants. 3,895,074, Cl. 260-606.50P.
- Mudrenov, Orest Mikhailovich: *See—*
  - Konopatov, Vladimir Grigorievich; Sorotskin, Izrail Mikhailovich; Rumyantsev, Ivan Ivanovich; Abramov, Vadim Petrovich; Kupriyanov, Alexandr Sergeevich; Mudrenov, Orest Mikhailovich; Soloviev, Ivan Andreevich; Shakhov, Vladimir Alexandrovich; Mironov, Anatoly Konstantinovich; Zhukovskaya, Galina Mikhailovna; and Gleikh, Arkady Markovich, 3,894,899.
- Mueller, Arthur Jacob: *See—*
  - Wu, Yao Hua; and Mueller, Arthur Jacob, 3,895,031.
- Muller, Hans, to Didier Werke AG. Converter outlet lining. 3,894,729, Cl. 266-43.000.
- Muller, Hans, to Grapha-Holding AG. Apparatus for converting a stack of sheets into a stream of overlapped sheets. 3,894,732, Cl. 271-10.000.
- Muller, Helmut; Rosenberger, Siegfrid; and Brunetti, Heimo, to Ciba-Geigy Corporation. Stabilization of homo-or copolymeric polyolefins with diacyl dihydrazides. 3,894,990, Cl. 260-45.85B.
- Muller, Herbert: *See—*
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  - Schuermann, Fritz; Muller, Herbert; Boddicker, Horst; and Heusinger, Peter-Paul, 3,894,428.
- Muller, Thomas P., to Caterpillar Tractor Co. Drive motor guard assembly for vehicles. 3,894,596, Cl. 180-9.200.
- Multi-Stroke Handbrake Controls Limited: *See—*
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- Munz, Siegfried, to Elma, Hans Schmidbauer. Method and system for furnishing an indication of the deviation of the actual frequency of a low frequency signal from a nominal frequency. 3,895,293, Cl. 324-78.00Z.
- Murakami, Masuo; Iwanami, Masaru; Shibanuma, Tadao; Fujimoto, Masaharu; Sato, Norio; Kawai, Ryutaro; and Yano, Kuniichiro, to Yamanouchi Pharmaceutical Co., Ltd. N-alkenyltetracycline derivatives. 3,895,033, Cl. 260-332.20R.

Murayama, Seiichi: *See—*
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Murphy, John C., to Pittsburgh Des Moines Steel Company; and Gaz Transport, part interest to each. Combined tank support and tie down means for a ship or the like. 3,894,505, Cl. 114-74.00A.

Murphy, John R. Cooking oil filtering. 3,894,482, Cl. 99-330.000.

Murray, Omer E.; and Kilpatrick, Robert G., to General Electric Company. Luminaire. 3,895,226, Cl. 240-11.20R.

Murray, Omer E.; and Plemmons, Jerry R., to General Electric Company. Floodlight. 3,895,227, Cl. 240-73.00R.

Murray, Vincent A. Electrical auxiliary powered bicycle. 3,894,599, Cl. 180-33.00C.

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Muslin, Bernard J., to Specialty Connector Corporation. Flexible metal conduit with end connectors and method of making the same. 3,895,177, Cl. 174-48.000.

Muston, Albert Henry; and Loosemore, William Ronald, to United Kingdom Atomic Energy Authority. Apparatus for indicating fluid flow velocity. 3,894,431, Cl. 73-194.00A.

Myers, John Richard: *See—*
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Nace, Donald M.; and Owen, Hartley, to Mobil Oil Corporation. Method for improving olefinic gasoline product of low conversion fluid catalytic cracking. 3,894,931, Cl. 208-73.000.

Nagahara, Hideharu: *See—*
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Nagaoka, Yoshihiko: *See—*
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Nagatuma, Kazuyuki; Akiyama, Seikichi; Kozuka, Hirotugu; and Kobayashi, Masayoshi, to Hitachi, Ltd. Method of producing single crystals of gadolinium molybdate family. 3,894,846, Cl. 23-301.0SP.

Nagel, Robert I., to Beatrice Foods Company. 360° Viewable vehicular reflector flashing system. 3,894,786, Cl. 350-99.000.

Naggert, Dietrich K., to Continental Can Company, Inc. Method of closing a flexible container. 3,894,379, Cl. 53-40.000.

Naka, Hiromitsu. Extensible passage apparatus. 3,894,614, Cl. 182-78.000.

Nakaguchi, Kohei; Kawasumi, Shohachi; Hirooka, Masaaki; Yabuuchi, Hiroshi; and Takao, Hiroyoshi, to Sumitomo Chemical Co., Ltd. Process for preparing an alternating copolymer of a conjugated vinyl compound and an olefinic unsaturated compound. 3,894,997, Cl. 260-79.700.

Nakamura, Keiji: *See—*
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Nakanishi, Kenzo: *See—*
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Namba, Yoshiharu, to Fuji Xerox Co., Ltd. Apparatus for copying different size documents in a copying machine. 3,894,801, Cl. 355-66.000.

Narayan, Thirumurti L.; and Cenker, Moses, to BASF Wyandotte Corporation. Process for the preparation of carbodiimide-isocyanurate foams. 3,894,972, Cl. 260-2.5AW.

Narita, Shigeyoshi: *See—*
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Nathanson, Harvey C.; Thomas, Richard N.; and Guldberg, Jens, to Westinghouse Electric Corporation. Solid state radiation sensitive field electron emitter and methods of fabrication thereof. 3,894,332, Cl. 29-578.000.

National Ceiling Corporation: *See—*
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Nayfa, James E. Treatment of spinning fibers in a textile mill. 3,894,314, Cl. 19-66.00R.

NCR Corporation: *See—*
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Long, Harold A.; Green, Albert J.; Taylor, Richard P.; and Patel, Madhu C., 3,894,624.

Necham, Inc.: *See—*
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Needham, Frederick Harold, to British Steel Corporation. Box girder. 3,894,378, Cl. 52-731.000.

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Nelson, Arnold S., to GAF Corporation. Roofing granules with enhanced algicidal post treatment. 3,894,877, Cl. 106-18.000.

Nelson, Larry L.; Dehart, John R.; and Krehl, William H., to Docutronix, Inc. Selectively encodable envelope insert and related apparatus. 3,895,220, Cl. 235-61.12N.

Nessel, Robert J.: *See—*
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Neumann, John W., to Oxy Metal Finishing Corporation. Workpiece transfer mechanism. 3,894,626, Cl. 198-25.000.

Neuner, James A.; and Traversi, Maurizio, to Westinghouse Electric Corporation. Circuit arrangement for enhancing the reliability of common bus outputs of plural redundant systems. 3,895,223, Cl. 235-153.0AE.

Neuner, James A.; and Traversi, Maurizio, to Westinghouse Electric Corporation. Automatic programming system for standardizing multiplex transmission systems. 3,895,351, Cl. 340-151.000.

Neuray, Dieter; Vernaleken, Hugo; and Rudolph, Hans, to Bayer Aktiengesellschaft. High molecular polycarbonates containing s-triazine rings. 3,894,991, Cl. 260-47.0XA.

Neuwirth, Frank J.: *See—*
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Nezat, Jerry W., to Necham, Inc. Hydraulic particle separator. 3,894,771, Cl. 299-8.000.

Nicholl, Craig Gordon. Tray. 3,894,649, Cl. 220-20.000.

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Nicolet Industries, Inc.: *See—*
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Niemirovich, John, Jr., to Sperry Rand Corporation. Method of making high density electronic interconnections in a termination device. 3,894,329, Cl. 228-180.000.

Niepel, Jurgen: *See—*
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Nippon Selfoc Company, Limited: *See—*
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Nippon Sheet Glass Co., Ltd.: *See—*
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Nippon Shoji Kaisha, Limited: *See—*
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Iwata, Yoriaki; and Ikoma, Noboru, 3,895,247.

Nishimaki, Ko; and Kurihara, Tomomichi, to Hitachi Shipbuilding & Engineering Co. Ltd. Method and structure for thermally insulating low temperature liquid storage tanks. 3,895,146, Cl. 428-56.000.

Nishina, Rintaro; and Suzuki, Tomokazu, to Tamura Electric Works, Ltd. Digit display apparatus. 3,895,380, Cl. 340-378.00R.

Nissan Motor Company Limited: *See—*
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Nolan, William D. Apparatus for treating the hair and scalp with solutions. 3,894,546, Cl. 132-9.000.

Nordisk Kartro Aktiebolag: *See—*
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Nordsiek, Karl-Heinz: *See—*
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Norell, John R., to Phillips Petroleum Company. Halogenated β-sultones, halogenated alkenyl sulfonates, and their preparation. 3,895,044, Cl. 260-456.00R.

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Oejelid, Goran, to Miratron AG. Weight indication and weight indication storage mechanism for a scale. 3,894,594, Cl. 177-211.000.

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Oguchi, Shigeo, to Tomy Kogyo Co., Inc. Toy wherein movement of one element causes movement of another of a plurality of elements, in apparently random sequence. 3,894,353, Cl. 46-1.00R.

Ohata, Shuichi; Takeuchi, Yoji; Ishiguro, Takeshi; and Yauchi, Shiro, to Yokogawa Electric Works, Ltd. Measuring apparatus for two-variable function signal system. 3,895,221, Cl. 235-151.300.

Ohdan, Kyoji: *See—*
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O'Keeffe, Terence W.; and Malmberg, Paul R., to Westinghouse Electric Corporation. Method and apparatus for electron beam alignment with a member. 3,895,234, Cl. 250-492.00A.

Okerman, Jean-Claude; Henry, Georges; and Mounier, Claude, to Societe Anonyme of Merlin Gerin. Multibreak metal-clad puffer type circuit interrupter having staggered arc-extinguishing units. 3,895,202, Cl. 200-148.00A.

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Olson, Richard O.; and Pohto, Gerald R., to Diamond Shamrock Corporation. Apparatus for forming a dimensionally stable anode. 3,895,210, Cl. 219-80.000.

O'Melia, Frances C., to Dow Chemical Company, The. Nematocidal compositions comprising 2-chloro-6-methoxy-4-(trichloromethyl)pyridine and N,N'-dimethyl O-phenyl phosphorodiamidate. 3,895,109, Cl. 424-220.000.

Omodei- Sale, Amedeo; Consonni, Pietro; and Lerner, Leonard, to Gruppo Lepetit S.p.A. Antifertility methods employing triazoloisoquinoline derivatives. 3,895,113, Cl. 424-258.000.

Ondrus, Michael Joseph: *See—*
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Ono, Toshiharu; and Tazaki, Akira. Supervisory system for abnormal conditions. 3,895,369, Cl. 340-310.00R.

Onopchenko, Anatoli; and Schulz, Johann G. D., to Gulf Research & Development Company. Process for preparing a diphenyl carbinol carboxylic anhydride. 3,895,037, Cl. 260-346.300.

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Overbury, Francis G., to International Standard Electric Corporation. Tracking filter with lock-on assurance for doppler navigation system. 3,895,323, Cl. 333-17.000.

Owen, Hartley, to Mobil Oil Corporation. Conversion of hydrocarbons with "y" faujasite-type catalysts. 3,894,932, Cl. 208-74.000.

Owen, Hartley; and Venuto, Paul B., to Mobil Oil Corporation. Method for producing light fuel oil. 3,894,933, Cl. 208-77.000.

Owen, Hartley; and Demmel, Edward J., to Mobil Oil Corporation. Conversion of hydrocarbons with mixture of small and large pore crystalline zeolite catalyst compositions to accomplish cracking cyclization, and alkylation reactions. 3,894,934, Cl. 208-78.000.

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Owen, Hartley: *See—*
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Palermo, Ambrose. Vehicle mounted warning device. 3,895,348, Cl. 340-87.000.

Palis, Julian O., to General Foods Corporation. Coconut paring process. 3,894,810, Cl. 426-482.000.

Pankow, Herbert G.; Larkin, Terrance M.; Young, Roland L.; and McClelland, Donald H., to Gates Rubber Company, The. Apparatus for pasting battery plates. 3,894,886, Cl. 136-67.000.

Pano, Joseph, to Iscar Ltd. Holder with interchangeable cutting inserts for machine tools. 3,894,322, Cl. 29-96.000.

Panzer, Hans Peter; and Dixon, Kenneth Wayne, to American Cyanamid Company. Process for raw water clarification. 3,894,944, Cl. 210-54.000.

Panzer, Hans Peter; and Dixon, Kenneth Wayne, to American Cyanamid Company. Process for raw water clarification. 3,894,945, Cl. 210-54.000.

Panzer, Hans Peter; and Dixon, Kenneth Wayne, to American Cyanamid Company. Process for treating industrial wastes. 3,894,946, Cl. 210-54.000.

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- Panzer, Hans Peter; and Dixon, Kenneth Wayne, to American Cyanamid Company. Process for treating sewage sludge. 3,894,948, Cl. 210-54.000.
- Parazader, Stephen. Reinforced structures incorporating strip deck material. 3,894,370, Cl. 52-173.000.
- Pareja, Ramon, to Lear Siegler, Inc. Pressure limiting valve. 3,894,556, Cl. 137-539.000.
- Parker, Douglas W. Audible fishing lure. 3,894,350, Cl. 43-42.310.
- Parker, Frederick H.: *See—*
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- Parker, Louis W. Direct current energized synchronous motor system. 3,895,273, Cl. 318-138.000.
- Parr, Erfried: *See—*
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- Paton, Boris Evgenievich; Lakomsky, Victor Iosifovich; Chvertko, Anatoli Ivanovich; Asovants, Grigori Bogratovich; and Zabarilo, Oleg Semenovich. Installation and method for plasma arc remelting of metal. 3,894,573, Cl. 164-52.000.
- Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Boiko, Georgy Alexandrovich; Kumysh, Ilya Iosifovich; Puzrin, Leonid Gustavovich; Kovalev, Vikior Alexandrovich; Marinsky, Georgy Sergeevich; Beloglazov, Alexandr Petrovich; Siry, Pavel Osipovich; Sapozhnikov, Alexandr Ivanovich; Nosanov, Valentin Alexandrovich; Rabinovich, Volf Iudovich; Popov, Lev Vasililvich; Shelkov, Sergei Mikhailovich; Strukov, Vladimir Nikolaevich; and Babich, Boris Markovich. Method for producing complex-shaped metal articles utilizing electroslag remelting. 3,894,574, Cl. 164-52.000.
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- Pearl, David R., to Gerber Garment Technology, Inc. Method of reproducing a marker. 3,895,358, Cl. 340-172.500.
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- Peddinghaus, Carl Ullrich. Bending machine, more particularly for steel rods for reinforcing concrete. 3,894,422, Cl. 72-217.000.
- Pedersen, James Miller. Rotary seal. 3,894,558, Cl. 137-580.000.
- Pekau, Dietlind, to Siemens Aktiengesellschaft. Method for aberration-free optical reproduction of highly resolved sonar or radar maps. 3,895,341, Cl. 343-5.00H.
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- Peterson, Neal D., to Foxboro Company, The. Electronic controller with remote tuning. 3,895,280, Cl. 318-610.000.
- Peterson, Stuart R. Theft-deterring device for skis and poles and method of using same. 3,894,414, Cl. 70-19.000.
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- Piber, Earl T., to Cutler-Hammer, Inc. Double-door refrigerator split actuator switch assembly. 3,895,198, Cl. 200-61.620.
- Picunko, Thomas, to Union Carbide Corporation. Rotor acceleration control circuit. 3,895,278, Cl. 318-421.000.
- Pietrocini, Thomas W.; Goodwin, Roy S.; and Parker, Frederick H., to Gould Inc. Method of bonding sintered iron articles. 3,894,678, Cl. 228-207.000.
- Pietz, John F., to Talley Industries, Inc. Method and composition for generating nitrogen gas. 3,895,098, Cl. 423-351.000.
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- Polata, Bohumil; Marley, James A., Jr.; and Kerr, John T., to Signetics Corporation. Bipolar transistor structure having ion implanted region and method. 3,895,392, Cl. 357-44.000.
- Polss, Perry, to du Pont de Nemours, E. I., and Company. Gasoline. 3,894,849, Cl. 44-66.000.
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- Powell, Jack N. Stabilizer wing for a racing vehicle. 3,894,764, Cl. 296-1.00S.
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- Pray, Robert W.; and Foster, Ralph L., to Thermogenics of New York. Ink curing and drying apparatus. 3,894,343, Cl. 34-4.000.
- Precision Valve Corporation: *See—*
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  - Glassmeyer, John J., 3,894,705.
- Putsch, Karl. Water-pump pliers. 3,894,451, Cl. 81-425.00R.
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  - Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Boiko, Georgy Alexandrovich; Kumysh, Ilya Iosifovich; Puzrin, Leonid Gustavovich; Kovalev, Vikior Alexandrovich; Marinsky, Georgy Sergeevich; Beloglazov, Alexandr Petrovich; Siry, Pavel Osipovich; Sapozhnikov, Alexandr Ivanovich; Nosanov, Valentin Alexandrovich; Rabinovich, Volf Iudovich; Popov, Lev Vasililvich; Shelkov, Sergei Mikhailovich; Strukov, Vladimir Nikolaevich; and Babich, Boris Markovich, 3,894,574.
- Quick, David C., to Allis-Chalmers Corporation. Splined thrust washer. 3,894,621, Cl. 192-109.00R.
- Quiring, Bernd: *See—*
  - Wagner, Kuno; Oertel, Gunter; Golitz, Hans Dietrich, deceased; and Quiring, Bernd, 3,895,043.
- Rabinovich, Volf Iudovich: *See—*
  - Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Boiko, Georgy Alexandrovich; Kumysh, Ilya Iosifovich; Puzrin, Leonid Gustavovich; Kovalev, Vikior Alexandrovich; Marinsky, Georgy Sergeevich; Beloglazov, Alexandr Petrovich; Siry, Pavel Osipovich; Sapozhnikov, Alexandr Ivanovich; Nosanov, Valentin Alexandrovich; Rabinovich, Volf Iudovich; Popov, Lev Vasililvich; Shelkov, Sergei Mikhailovich; Strukov, Vladimir Nikolaevich; and Babich, Boris Markovich, 3,894,574.
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- Radutsky, Grigory Avramovich: *See—*
  - Anikanov, Nikolai Ivanovich; Grachev, Leonid Pavlovich; Zaks, Grigory Iosifovich; Radutsky, Grigory Avramovich; and Kheifets, Rafail Efimovich, 3,894,479.
- Ragettli, Christian, to Koninklijke Emballage Industrie. Method of mounting a bushing to a container closure. 3,894,331, Cl. 29-512.000.
- Raley, Garland E.; and Rutherfoord, James K., to Ethyl Corporation. Method and apparatus for embossing plastic film. 3,894,827, Cl. 425-363.000.
- Rambold, Adolf. Infusion bag. 3,895,118, Cl. 426-83.000.
- Ramsey, Robert W. Tree counter code simulator. 3,895,185, Cl. 178-26.00R.
- Ratcliff, James E. Lawn and garden cart. 3,894,748, Cl. 280-41.000.
- Ratcliff, Lynn J.: *See—*
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- Raudman, Charles J., Jr. Muffler. 3,894,611, Cl. 181-57.000.
- Raychem Corporation: *See—*
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- Raymond Lee Organization, The: *See—*
  - Burbidge, Lester J.; and Burbidge, Miriam E., 3,894,304.
- Raynolds, Stuart, to du Pont de Nemours, E. I., and Company. Fluorinated oily soil release agents. 3,894,992, Cl. 260-67.60R.
- Raytheon Company: *See—*
  - Lee, Chong Won; and Tsai, Wei Ching, 3,895,308.
  - Toledo, Emil, 3,894,924.
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  - Comizzoli, Robert Benedict, 3,895,127.
  - Jarl, Ronald Burnett, 3,895,297.
  - Korman, Nathaniel I., 3,895,383.
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  - Steckler, Steven Alan, 3,895,286.
- RCH Energy Corporation: *See—*
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- Rebeles, Paul L., to TRW Inc. Self-balancing push-pull amplifier. 3,895,306, Cl. 330-15.000.
- Redding, Arnold H.: *See—*
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- Rederiaktiebolaget Nordstjernan: *See—*
  - Forsell, Bo, 3,894,955.
- Redmond, John D., Jr., to Gates Rubber Company, The. Elastomer-free fabric surface for power transmission belt tooth facing. 3,894,900, Cl. 156-138.000.
- Reeder, Wilbur C.; and Batterson, Norman D. Combined weeper and sprinkler assembly and method for use in a slow diffusion type irrigation system. 3,894,688, Cl. 239-11.000.
- Regensburger, Paul J., to Xerox Corporation. Electron transport binder structure. 3,894,868, Cl. 96-1.500.
- Reh, Klaus; and Schulz, Peter, to International Standard Electric Corporation. Horizontal deflection circuit for television receivers. 3,895,256, Cl. 315-371.000.
- Reich, Elmar, to Dr. Ing. E. h. Hans Liebherr. Rotary tower crane. 3,894,635, Cl. 212-46.00B.
- Reichel, Harry, to Institut fur Hochseefischerei und Fischverarbeitung. Machine for braiding knotless netting. 3,894,470, Cl. 87-24.000.
- Reifers, Richard F.; and Lord, Henry A., to Diamond International Corporation. High strength open bottom packaging tray. 3,894,679, Cl. 229-2.500.
- Reilly, Joseph R.; and Schon, Lars G., to Monsanto Company. Method and apparatus for handling and trimming blow molded articles. 3,894,454, Cl. 82-47.000.
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- Remy, Ernst; and Von Siemens, Henning, to Efratom California Inc. Method and apparatus for testing transparent containers. 3,894,806, Cl. 356-240.000.
- Research & Development: *See—*
  - Foley, Charles F., 3,894,736.
- Research & Development Laboratories of Ohno Co., Ltd.: *See—*
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- Reske, Eckart; Brinkmann, Ludwig; Fischer, Hartmut; and Rohrscheid, Freimund, to Hoechst Aktiengesellschaft. Transparent polyamides from an isomeric mixture of norbornanes. 3,894,995, Cl. 260-78.00R.
- Reuter, Peter; and Wirth, Friedrich, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Oxidation catalysts. 3,894,971, Cl. 252-437.000.
- Reynolds, Richard L., to Dumont Aviation Associates. Self-tapping fastener. 3,894,570, Cl. 151-22.000.
- Rheinstahl Aktiengesellschaft: *See—*
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- Ribeyre, Jean P.: *See—*
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- Ribnitz, Peter, to GEMA AG. Apparatus for coating articles by means of electrostatically charged articles. 3,895,262, Cl. 317-3.000.
- Richards, Kenneth Julian; and Wright, Craig Nellis, to Kennecott Copper Corporation. Process for recovering rhenium values from dilute solutions of same. 3,894,866, Cl. 75-109.000.
- Richardson, John: *See—*
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- Richdel, Inc.: *See—*
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- Richerson, David W.; and Weaver, Gerald Q., to Norton Company. Composite ceramic heating element. 3,895,219, Cl. 219-553.000.
- Riches, Kenyon A.: *See—*
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- Richter, Gerhard, to Siemens Aktiengesellschaft. Device for supplying medicines. 3,894,538, Cl. 128-260.000.
- Richter, Sidney B., to Velsicol Chemical Corporation. Trifluoromethyl ureas. 3,895,061, Cl. 260-553.00R.
- Rickey, Wynn P.; Rumble, Robert C.; and Hoyer, Wilmer A., to Exxon Production Research Company. Determination of electrical resistivity due to shaliness of earth formations utilizing dielectric constant measurements. 3,895,289, Cl. 324-1.000.
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  - Miyawaki, Syozo; and Hirota, Tetsuro, 3,894,623.
- Rid-O-Ray, Inc.: *See—*
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- Ridgway, Peter Charles; and Mapps, Desmond James, to International Computers Limited. Read after write magnetic transducing head having cross-talk shield means. 3,895,002, Cl. 360-128.000.
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- Riester, Hubert A.; and Yard, John S., to Fischer & Porter Co. Rotameter system with electrical read-out. 3,894,433, Cl. 73-209.000.
- Rinecker, Ulf F., to Envirotech Corporation. Waste grease-burning system and apparatus. 3,894,833, Cl. 431-117.000.
- Risdon Manufacturing Company, The: *See—*
  - Swenson, Roy S., 3,894,665.
- Riseman, John H.; Frant, Martin; and Ross, James W., to Orion Research Incorporated. Electrochemical measuring systems and method of measuring ionic strength in a flow stream. 3,894,917, Cl. 204-1.00T.
- Robert Bosch G.m.b.H.: *See—*
  - Assfour, Hassan; Lindner, Klaus; Bernhardt, Walter; and Bremer, Wolfgang, 3,895,346.
  - Haubner, Georg; Hofer, Walter; and Schmaldienst, Peter, 3,894,525.
  - Stumpp, Gerhard, 3,894,523.
- Roberts, William Melchior; and Dohn, George D., to Baltek Corporation. Cryogenic insulating panel system. 3,894,372, Cl. 52-223.00R.
- Robson, Stephen Ronald, to Marconi Company Limited, The. Pseudorandom binary sequence error counters. 3,895,349, Cl. 340-146.1AL.
- Rocheleau, David O., to Canadian Patents and Development Limited. Digital tone generator. 3,894,463, Cl. 84-1.010.
- Rod, Trygve R., to Xerox Corporation. Label transfer wheel. 3,894,909, Cl. 156-568.000.
- Rodden, Philip J.: *See—*
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- Roesch, Egon: *See—*
  - Liede, Volker; Popelak, Alfred; Thiel, Max; Hardebeck, Klaus; and Roesch, Egon, 3,895,012.
- Rogers, Melvin F., to Zenith Radio Corporation. Preventing thermally induced fracture of cathode ray tube bulbs by application of a thermal insulator. 3,894,858, Cl. 65-23.000.
- Rohm and Haas Company: *See—*
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  - Spilner, Allan John, 3,895,142.
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- Rollei-Werke Franke & Heidecke: *See—*
  - Stiller, Armin, 3,895,257.
- Roller, Philip C.; and Anderson, Gordon F., to Truck-Lite Company, Inc. Sealed, sidemarker lamp assembly. 3,895,228, Cl. 240-8.200.
- Rollett, John Mortimer; and Wise, David Richard, to Post Office, The. Sub networks for filter ladder networks. 3,895,309, Cl. 330-107.000.
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- Romick, R. Burl: *See—*
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- Rose, Boyd W.; and Thornton, George W., to FMC Corporation. Egg transfer mechanism. 3,894,631, Cl. 198-237.000
- Rosenberger, Siegfrid: *See—*
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- Ross, James W.: *See—*
  - Riseman, John H.; Frant, Martin; and Ross, James W., 3,894,917.
- Ross, Joseph I. Catv multi-tap distribution box with switch. 3,895,318, Cl. 333-6.000.
- Rostad, Rolf A. Electronic control system for motors and the like. 3,895,275, Cl. 318-227.000.
- Rothman, Nathan, to Silverson Machines Limited. Mixing devices. 3,894,694, Cl. 241-46.110.
- Rotter, Johann. Projector. 3,894,800, Cl. 355-45.000.
- Roussel Uclaf: *See—*
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  - Perronnet, Jacques; and Girault, Pierre, 3,895,039.
- Roux, Bernard: *See—*
  - Alheritiere, Louis; Gobron, Georges; Falize, Claude; Diet, Jean; Roux, Bernard; and Bouchet, Roland, 3,895,065.
- Rowe, Horace N. Foot pedal for control of musical instruments and the like. 3,894,445, Cl. 74-512.000.
- Rowe, William A.: *See—*
  - Schwartz, James W.; Chiodi, Wayne R.; Rowe, William A.; and Wilson, Iva M., 3,895,253.
- Rozner, Allan, to C. J. I. Industries, Inc. Integral jack strip for pattern wheel knitting machines. 3,894,408, Cl. 66-50.00A.
- Rubbermaid Industrial Products Corporation: *See—*
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- Rumble, Robert C.: *See—*
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- Rummel, Theodor; Hentschel, Rainer; and Appel, Eggert, to Fischer & Porter Co. Electromagnetic flowmeter. 3,894,430, Cl. 73-194.0EM.
- Rumyantsev, Ivan Ivanovich: *See—*
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- Saarem, Myrl J., to Richdel, Inc. Latching solenoid. 3,895,331, Cl. 335-253.000.
- Saari, Veikko Reynold, to Bell Telephone Laboratories, Incorporated. Driver circuit for high speed gating of a field effect transistor. 3,895,238, Cl. 307-255.000.
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  - Wiecko, Ryszard; Sabiniak, Henryk; and Formanski, Marcin, 3,894,617.
- Sacristan, Andres Sarda, to Eurocorset, S.A. Panty girdle. 3,894,542, Cl. 128-547.000.
- Saethre, Arild O.: *See—*
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- Sagami Chemical Research Center: *See—*
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- Sakasegawa, Hiroshi; and Yamamoto, Yoichi, to Nissan Motor Company Limited. Overheat preventing device for motor vehicle engine. 3,894,521, Cl. 123-41.120.
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- Sakowski, Walter J., to Olin Corporation. Process for manufacture of calcium hydrochlorite. 3,895,099, Cl. 423-474.000.
- Sallman, Alfred; and Pfister, Rudolf, to Ciba-Geigy Corporation. Substituted Anilino Benzyl Alcohols. 3,895,063, Cl. 260-571.000.
- Salmon, David; Wierzciki, Edward J.; Langston, Benny; and Beegle, Donald W., to U.S. Reduction Co. Mechanical puddling and skimming device. 3,894,727, Cl. 266-34.00A.
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- Salvadorini, Rolando. Thermo-electrically propelled motor-vehicle. 3,894,605, Cl. 180-65.00R.
- Sam, Donnie Joe, to du Pont de Nemours, E. I., and Company. Substituted 2-amido quinoxalines. 3,895,011, Cl. 260-250.00Q.
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- Sanders, Murray A.; and Sanders, Albert. Removable agitator. 3,894,723, Cl. 259-122.000.

- Sandoz, Jean: *See—*
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- Sanko, Leonid Yakovlevich; Valjukov, Eduard Alexeevich; Grizak, Jury Semenovich; Naumov, Alexandr Grigorievich; and Lysenko, Vasily Denisovich. Process and apparatus for the preparation of asbestos cement suspension. 3,894,692, Cl. 241-4.000.
- Sapozhnikov, Alexandr Ivanovich: *See—*
  - Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Boiko, Georgy Alexandrovich; Kumysh, Ilya Iosifovich; Puzrin, Leonid Gustavovich; Kovalev, Vikior Alexandrovich; Marinsky, Georgy Sergeevich; Beloglazov, Alexandr Petrovich; Siry, Pavel Osipovich; Sapozhnikov, Alexandr Ivanovich; Nosanov, Valentin Alexandrovich; Rabinovich, Volf Iudovich; Popov, Lev Vasililvich; Shelkov, Sergei Mikhailovich; Strukov, Vladimir Nikolaevich; and Babich, Boris Markovich, 3,894,574.
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- Sasaki, Masami: *See—*
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- Sato, Norio: *See—*
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- Schaefer, Michael J. Animal sorting gate. 3,894,516, Cl. 119-155.000.
- Schafer, Heinrich, to Rheinstahl Aktiengesellschaft. Transmission for twin worm extruders. 3,894,725, Cl. 259-192.000.
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- Scherbaum, Friedrich: *See—*
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- Schleigh, William R.; and Deselms, Roy C., to Eastman Kodak Company. Aziridine photoreductive imaging. 3,894,874, Cl. 96-48.00R.
- Schlickeiser, Klaus. Method for recording and read-out of a plurality of information sequences stored in a single track of a digital storage. 3,895,394, Cl. 360-48.000.
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- Schluter, Heinz: *See—*
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- Schmaldienst, Peter: *See—*
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- Schmidt, Peter: *See—*
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- Schmitt, Edward A.: *See—*
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- Schmitt, Robert F.; and Schmitt, Edward A. Building structures. 3,894,369, Cl. 52-173.000.
- Schneeberger, Robert J., to Westinghouse Electric Corporation. X-ray contrast detection system. 3,895,232, Cl. 250-366.000.
- Schnegelberger, Harald: *See—*
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- Schneppe, Robert W., Jr.: *See—*
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- Scholl, Hans-Joachim; Klauke, Erich; Grewe, Ferdinand; and Hammann, Ingeborg, to Bayer Aktiengesellschaft. Preparation of 4,5-bis-(trifluoromethylimino)-thiazolidines. 3,895,020, Cl. 260-306.70T.
- Schollmeier, Gero, to Siemens Aktiengesellschaft. Method and apparatus for transmitting amplitude modulated signals. 3,895,298, Cl. 325-49.000.
- Schon, Franz: *See—*
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- Schon, Lars G.: *See—*
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- Schubel, Kurt: *See—*
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- Schudel, Peter: *See—*
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- Schuermann, Fritz; Muller, Herbert; Boddicker, Horst; and Heusinger, Peter-Paul, to Bergwerksverband GmbH. Device for measuring changes in converging rock formations in a mining cavity. 3,894,427, Cl. 73-88.00E.
- Schuermann, Fritz; Muller, Herbert; Boddicker, Horst; and Heusinger, Peter-Paul, to Bergwerksverband GmbH. Measuring anchors for use in mining. 3,894,428, Cl. 73-88.00E.
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- Schulz, Peter: *See—*
  - Reh, Klaus; and Schulz, Peter, 3,895,256.
- Schwager, Irving; Leak, Robert J.; and Cole, Edward L., to Texaco Inc. Hydrogenation process. 3,895,066, Cl. 260-583.00M.
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- Schwartz, Alfred A.; and Stewart, Joseph R., to International Business Machines Corporation. Buffer memory arrangement for a digital television display system. 3,895,357, Cl. 340-172.500.
- Schwartz, Bertram; Spitzer, Stuart Marshall; and Weigle, Gregory Dyett, to Bell Telephone Laboratories, Incorporated. Contacting semiconductors during electrolytic oxidation. 3,894,919, Cl. 204-15.000.
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- Schwarzmann, Matthias; Widmann, Alfred; Vogel, Ludwig; and Fromm, Dieter, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Manufacture of melamine. 3,895,007, Cl. 260-249.70A.
- Schweizer, Walter; and Reissland, Martin-Ulrich, to VDO Adolf Schindling AG. Apparatus for determining the state of charge of storage batteries. 3,895,284, Cl. 320-48.000.
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- Scott, Walter W.; and Knavish, Leonard A., to PPG Industries, Inc. Method of thermal conditioning of molten glass prior to forming flat glass. 3,894,859, Cl. 65-65.00A.
- Screen, Stafford Thomas; and British Castors Limited. Twin-wheeled castor. 3,894,310, Cl. 16-47.000.
- Sea-Log Corporation: *See—*
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- Seeman, William H., II. Fabric constructions. 3,895,160, Cl. 428-232.000.
- Segal, Bernard C. Combination of interlocking security on chain door guards. 3,894,762, Cl. 292-264.000.
- Seidel, Harold, to Bell Telephone Laboratories, Incorporated. Minimum phase differential phase shifter. 3,895,321, Cl. 333-11.000.
- Seitz, J. Russell, to Entropy Conversion, Inc. Laser systems with diamond optical elements. 3,895,313, Cl. 331-94.50D.
- Sekine, Kenji; and Kaneko, Yoichi, to Hitachi, Ltd. Solid-state active device. 3,895,314, Cl. 331-107.00R.
- Sensormatic Electronics Corporation: *See—*
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- Sentementes, Thomas J.: *See—*
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- Serna, A.G.: *See—*
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- Serota, Samuel: *See—*
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- Serur, Juan Richardo;. Treatment of blood. 3,894,954, Cl. 210-321.000.
- Sette, Paul R.; and Storace, Anthony, to Pitney-Bowes, Inc. Decelerating mechanism. 3,894,734, Cl. 271-2.000.
- Sewell & Charity Ltd.: *See—*
  - Charity, Lawrence E., 3,894,760.
- Sewell, Charles Patrick Blackwood; and Sherriff, William Morris, to Boliden Aktiebolag. Impregnation of wood and the like. 3,895,138, Cl. 427-298.000.
- Seyd, Gunter: *See—*
  - Korn, Roland; Seyd, Gunter; and Paulsen, Uwe, 3,894,364.
- Shaffer, Francis Nathan, to GTE Sylvania Incorporated. Method of making a solution of phosphor raw material for use in manufacturing phosphors containing tin as an activator. 3,894,961, Cl. 252-301.40P.
- Shakhov, Vladimir Alexandrovich: *See—*
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Sharychenkov, Alexandr Alexeevich; and Gavrilova, Ljudmila Nikolaevna. Arrangement for feeding fibres into the twister of an open-end spinning frame. 3,894,386, Cl. 57-58.950.
Shatila, Mounir A., to American Potato Company. Microbially stable gelatinized potato pieces with high water activity and absorbed sulfur dioxide. 3,895,122, Cl. 426-532.000.
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Sheffler, Robert H.; Koncos, Robert; and Riches, Kenyon A., to Atlantic Richfield Company. Carpet backed with thixotropic polyurethane adhesive. 3,895,149, Cl. 428-94.000.
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Yamakawa, Masaaki; Kashiwagi, Isamu; and Tomono, Akio, to Oki Electric Industry Co., Ltd. Integrated magnetic wire memory. 3,895,362, Cl. 340-174.0PW.
Yamamoto, Hisao: *See—*
Yamamoto, Michihiro; Morooka, Shigeaki; Koshiba, Masao; Inaba, Shigeho; and Yamamoto, Hisao, 3,895,395.
Yamamoto, Michihiro; Morooka, Shigeaki; Koshiba, Masao; Inaba, Shigeho; and Yamamoto, Hisao, to Sumitomo Chemical Co., Ltd. Quinazoline compounds. 3,895,395, Cl. 260-251.0QB.
Yamamoto, Yoichi: *See—*
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Yamanouchi Pharmaceutical Co., Ltd.: *See—*
Murakami, Masuo; Iwanami, Masaru; Shibanuma, Tadao; Fujimoto, Masaharu; Sato, Norio; Kawai, Ryutaro; and Yano, Kuniichiro, 3,895,033.
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Yauchi, Shiro: *See—*
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Yeagle, Richard J., to Skuttle Manufacturing Company. Rotary assembly for humidifier. 3,895,083, Cl. 261-92.000.
Yeou, Victor P., to Societe Anonyme: Poclain. Telescopic beam formed of two slidably mounted lengths and an organ for controlling the relative positions of these lengths relative to one another. 3,894,598, Cl. 180-9.480.
Yoakam, Bill G.: *See—*
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Yocum, Earl J.: *See—*
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Yoshida, Kunio; Tsuchiya, Hiroyoshi; Tsuda, Yukifumi; and Hayami, Heijiro, to Matsushita Electric Industrial Co., Ltd. Apparatus for receiving encoded facsimile signals with minimized effect of pulse jitter introduced during transmission. 3,895,186, Cl. 178-69.50F.
Yoshida, Satoshi, to Fuji Photo Film Co., Ltd. Non-linear optical elements. 3,895,242, Cl. 307-88.300.
Yoshika, Masanobu: *See—*
Imaizumi, Kenichi; and Yoshika, Masanobu, 3,894,819.
Yoshikawa, Shogo: *See—*
Uchida, Teiji; Yoshikawa, Shogo; and Koizumi, Ken, 3,894,857.
Yoshimoto, Hataaki: *See—*
Itatani, Hiroshi; and Yoshimoto, Hataaki, 3,895,055.
Yoshimura, Kunihiko, to Ataka & Company, Ltd. Cryogenic insulating material. 3,895,159, Cl. 428-227.000.
Yoshino, Masatsugu: *See—*
Kobayashi, Hidehiko; Yoshino, Masatsugu; and Neki, Kazuya, 3,895,090.
Yost, Betty Jane, to Ledex Incorporated. Bi-level solenoid holding device. 3,895,330, Cl. 335-253.000.
Young, Roland L.: *See—*
Pankow, Herbert G.; Larkin, Terrance M.; Young, Roland L.; and McClelland, Donald H., 3,894,886.
Yuda, Takuo, to Nifco Inc. Grommet for protecting a pipe inserted in an opening of a plate. 3,894,309, Cl. 16-2.000.
Yunan, Malak E., to du Pont de Nemours, E. I., and Company. Use of pneumacel in rebonded structures comprising polyurethane scrap. 3,894,973, Cl. 260-2.5AK.
Zabarilo, Oleg Semenovich: *See—*
Paton, Boris Evgenievich; Lakomsky, Victor Iosifovich; Chvertko, Anatoli Ivanovich; Asovants, Grigori Bogratovich; and Zabarilo, Oleg Semenovich, 3,894,573.
Zacharin, Alexey T., to United States of America, Army. Projectile fuze with unitary deformable detent. 3,894,490, Cl. 102-70.20R.
Zachert, David L.: *See—*
Fuhrman, Delmar L.; and Zachert, David L., 3,894,751.
Zaffaroni, Alejandro, to ALZA Corporation. Intrauterine contraceptive device containing certain pharmaceutically acceptable steroids. 3,895,103, Cl. 424-22.000.
Zahnradfabrik Friedrichshafen, Aktiengesellschaft: *See—*
Beig, Willi; and Feller, Fritz, 3,894,443.
Horl, Adolf, 3,894,418.
Zahring, Gerhard: *See—*
Holzapfel, Immanuel; and Zahring, Gerhard, 3,894,324.
Zair, Eliezer; and Greenfield, Arthur J., to Bar-Ilan University. Bridge circuit for measuring resistances. 3,895,292, Cl. 324-62.000.
Zajacek, John G.; McCoy, John J.; and Fuger, Karl E., to Atlantic Richfield Company. Process for the manufacture of urethanes. 3,895,054, Cl. 260-471.00C.
Zaks, Grigory Iosifovich: *See—*
Anikanov, Nikolai Ivanovich; Grachev, Leonid Pavlovich; Zaks, Grigory Iosifovich; Radutsky, Grigory Avramovich; and Kheifets, Rafail Efimovich, 3,894,479.
Zarlengo, Vincent. Mount adapter for cutting tools and method of operating. 3,894,808, Cl. 408-54.000.
Zellmer, Neale A.: *See—*
Stewart, James A.; and Zellmer, Neak A., 3,895,322.
Zeltmann, Walter. Drying device. 3,894,345, Cl. 34-93.000.
Zenith Radio Corporation: *See—*
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Schwartz, James W.; Chiodi, Wayne R.; Rowe, William A.; and Wilson, Iva M., 3,895,253.
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Ziemek, Gerhard: *See—*
Klebl, Wolfram; Schatz, Friedrich; Staschewski, Harry; and Ziemek, Gerhard, 3,894,675.
Zimmer & Kellerman: *See—*
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Zuech, Ernest A.: *See—*
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LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 15TH DAY OF JULY, 1975

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Andrews, Robert W.: *See—*
  - Shields, Michael A.; and Andrews, Robert W., Re. 28,481.
- Buzano, Michel, to Rhone-Poulenc - Textile S.A. Novel high-bulk yarn. Re. 28,482, Cl. 57-140.00J.
- Dix, Grete: *See—*
  - Rix, Walter; and Dix, Grete, Re. 28,485.
- Fried. Krupp Gesellschaft mit beschrankter Haftung: *See—*
  - Rix, Walter; and Dix, Grete, Re. 28,485.
- General Kinematics Corporation: *See—*
  - Musschoot, Albert, Re. 28,484.
- Musschoot, Albert, to General Kinematics Corporation. Support structure for use with vibratory devices. Re. 28,484, Cl. 198-220.0CA.
- Petrusek, Victor. Inflatable boxing glove or pillow. Re. 28,480, Cl. 2-18.000.
- Ralph, Harold J. Sanitary garment for incontinent persons. Re. 28,483, Cl. 128-289.000.
- Rhone-Poulenc - Textile S.A.: *See—*
  - Buzano, Michel, Re. 28,482.
- Rix, Walter; and Dix, Grete, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Method of producing coatings on hard metal bodies. Re. 28,485, Cl. 29-198.000.
- Shields, Michael A.; and Andrews, Robert W., to Signetics Corporation. Semiconductor structure with fusible link and method. Re. 28,481, Cl. 29-577.000.
- Signetics Corporation: *See—*
  - Shields, Michael A.; and Andrews, Robert W., Re. 28,481.

LIST OF PLANT PATENTEES

- Barberet, Alexandre, and Henri Blanc, to Laboratoire de Physiologie Vegetable de La Londe. Carnation plant. 3,743, 7–15–75, Cl. 70.
- Blanc, Henri: *See—*
  - Barberet, Alexandre, and Blanc. 3,743.
- Brouwer, Peter G. Pieris bush, 3,742, 7–15–75, Cl. 54.
- Laboratoire de Physiologie Vegetable de la Londe: *See—*
  - Barberet, Alexandre, and Henri Blanc, 3,743.
- Mikkelsens, Inc.: *See—*
  - Mikkelsen, James C., 3,744.
- Mikkelsen, James C., to Mikkelsens Inc. Poinsettia plant. 3,744, 7–15–75, Cl. 86.

LIST OF DESIGN PATENTEES

- Addressograph-Multigraph Corp.: *See—*
  - Bradd, Sidney H., and Brown. 235,877.
- Alger, Andrew L., and K. Yamasaki, to Uarco Inc. Deleaver module or similar article. 235,920, 7–15–75, Cl. D64—11.
- Alger, Andrew L., and K. Yamasaki, to Uarco Inc. Deleaver or similar article. 235,921, 7–15–75, Cl. D64—11.
- Alger, Andrew L., and K. Yamasaki, to Uarco Inc. Deleaver or similar article. 235,922, 7–15–75, Cl. D64—11.
- All Orthopedic Appliances, Inc.: *See—*
  - Moore, George E. 235,927.
  - Moore, George E. 235,928.
- Allibert Exploitation: *See—*
  - Dranssart, Jean-Paul. 235,829.
- Alligood, Ira J. Coin vault. 235,889, 7–15–75, Cl. D31—23.
- Altissimo, Massimo, to Societe Civile ALMA. Metallic Tennis racket. 235,892, 7–15–75, Cl. D34—5.
- American Standard Inc.: *See—*
  - Payne, George, and Bales 235,834.
- Bade, Heinz-Werner. Free standing fireplace. 235,868, 7–15–75, Cl. 23—97.
- Bales, Emmett R.: *See—*
  - Payne, George, and Bales. 235,834.
- Bausch & Lomb Inc.: *See—*
  - Huckenbeck, Claus O. 235,918.
- Baxter Laboratories, Inc.: *See—*
  - Olson, Raymond G. 235,926.
- Beatrice Foods Co.: *See—*
  - Harussi, Yanive. 235,872.
- Becker, Jerome E. Golf putter head. 235,893, 7–15–75, Cl. D34—5.
- Bellis, George D. Oar reversing device. 235,865, 7–15–75, Cl. D12—215.
- Bengt Petersson New Products Investment AB: *See—*
  - Hagelberg, Anders T. S. 235,849.
- Bio-Research Glass, Inc.: *See—*
  - Dragotta, Robert. 235,890.
- Bradd, Sidney H., and E. L. Brown, to Addressograph-Multigraph Corp. Data terminal or similar article. 235,877, 7–15–75, Cl. D26—5.
- Breneman, Jack L., to The Quaker Oats Co. Toy bowling game target. 235,896, 7–15–75, Cl. D34—5.
- Breneman, Jack L., to The Quaker Oats Co. Toy basketball game goal. 235,897, 7–15–75, Cl. D34—5.
- Bright, Hugh H., and L. W. Davis, to Little Giant Corp. Combined submersible pump and motor. 235,924, 7–15–75, Cl. D65—1.
- Brother Kogyo Kabushiki Kaisha: *See—*
  - Kudo, Kiyoshi, and Ito. 235,925.
- Brown, Arnold. Neck tie. 235,820, 7–15–75, Cl. D2—351.
- Brown, Edward L.: *See—*
  - Bradd, Sidney H., and Brown. 235,877.
- Brunswick Corp.: *See—*
  - Miller, Arthur F. 235,862.
- Candiotti, Charles W. Multi-stud terminal. 235,878, 7–15–75, Cl. D26—1.
- Chernoff, Maxwell B., to Dart Industries Inc. Tote bag. 235,934, 7–15–75, Cl. D87—3.
- Chernoff, Maxwell B., to Dart Industries Inc. Shoulder bag. 235,935, 7–15–75, Cl. D87—3.
- Chernoff, Maxwell B., to Dart Industries Inc. Shoulder bag. 235,936, 7–15–75, Cl. D87—3.
- Cipullo, Aldo. Articulated pendant or the like. 235,913, 7–15–75, Cl. D45—16.
- Clayton, La Verne E.: *See—*
  - Gloyd, Lawrence E., and Clayton. 235,846.
- Clayton, La Verne E. Hinge. 235,847, 7–15–75, Cl. D8—195.
- Coleman Co., Inc., The: *See—*
  - Faul, Thomas L., Feer, and Magi. 235,923.
- Colgate-Palmolive Co.: *See—*
  - Douglas, Livingston C. 235,832.
- Cone, Richard E., II, to Questor Corp. Infant feeding bottle. 235,930, 7–15–75, Cl. D83—8.
- Cone, Richard E., II., and P. K. Meeker, to Questor Corp. Infant feeding bottle. 235,932, 7–15–75, Cl. D83—8.
- Cremonese, Henry V. Knife. 235,841, 7–15–75, Cl. D7—151.
- Crystal Mart, Inc.: *See—*
  - Schacht, Arthur. 235,814.
- Daimler-Benz Aktiengesellschaft: *See—*
  - Wilfert, Karl, and Geiger. 235,860.
- Dart Industries Inc.: *See—*
  - Chernoff, Maxwell B. 235,934.
  - Chernoff, Maxwell B. 235,935.
  - Chernoff, Maxwell B. 235,936.
- Davis, Lee W.: *See—*
  - Bright, Hugh H., and Davis. 235,924.
- Desrochers, Denis P. Modular lamp. 235,915, 7–15–75, Cl. D48—20.
- Diforte, Mariano P., Jr. Spark plug wire positioner. 235,850, 7–15–75, Cl. D8—231.
- DiLorenzo, Antonio P. Game board. 235,894, 7–15–75, Cl. D34—5.
- Dixon, Don P. Louvered outlet for an automobile air conditioner. 235,876, 7–15–75, C. D23—142.
- Docutel Corp.: *See—*
  - Hickey, Richard C., and McCauley. 235,917.
- Dominion Auto Accessories Ltd.: *See—*
  - Nagel, Robert I. 235,916.
- Douglas, Livingston C., to Colgate-Palmolive Co. Dispenser for sheet material on a roll. 235,832, 7–15–75, Cl. D6—96.
- Dragotta, Robert, to Bio-Research Glass, Inc. Cell culture vessel or the like. 235,890, 7–15–75, Cl. D32—1.
- Dranssart, Jean-Paul, to Allibert Exploitation. Chair. 235,829, 7–15–75, Cl. D6—78.

- Eaton Corp.: *See—*
  - Spencer, Clifford A. 235,898.
  - Spencer, Clifford A. 235,899.
  - Spencer, Clifford A. 235,900.
- Ehlert, David. Terminal stud receiving socket for a wheel changing tool for automobiles. 235,843, 7–15–75, Cl. D8—31.
- Emhart Corp.: *See—*
  - Hart, Ernest V. 235,857.
- Envirotech Corp.: *See—*
  - Sheehan, John J. 235,870.
- Famolare, Joseph P., Jr. Shoe sole. 235,819, 7–15–75, Cl. D2—319.
- Faul, Thomas L., L. P. Feer, and H. Magi, to The Coleman Co., Inc. Air compressor housing. 235,923, 7–15–75, Cl. D65—1.
- Feer, Lawrence P.: *See—*
  - Faul, Thomas L., Feer, and Magi. 235,923.
- Flaum, Samuel. Golf glove. 235,821, 7–15–75, Cl. D2—361.
- Folkart, Jerome. Swinging panel display. 235,818, 7–15–75, Cl. D6—139.
- Fowler, John T.: *See—*
  - Lapeyre, James M., and Fowler. 235,854.
- Funabiki, Yasuhiko: *See—*
  - Iida, Yoshiaki, and Funabiki. 235,919.
- Gageby, Steven D., to Janet Kay Gageby. Wheel. 235,864, 7–15–75, Cl. D12—209.
- Game Time, Inc.: *See—*
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- Gemstar S.A.: *See—*
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- Gloyd, Lawrence E., and L. V. E. Clayton. Key. 235,846, 7–15–75, Cl. D8—136.
- Golay, Gilbert, to Gemstar S.A. Jewelry Stone. 235,911, 7–15–75, Cl. D45—1.
- Golay, Gilbert, to Gemstar S.A. Jewelry stone. 235,912, 7–15–75, Cl. D45—1.
- Gollisano, Emilio. Miter box attachment. 235,845, 7–15–75, Cl. D8—71.
- Hagelberg, Anders T. S., to Bengt Petersson New Products Investment AB. Fastener for cables, tubes and similar articles. 235,849, 7–15–75, Cl. D8—229.
- Hart, Ernest V., to Emhart Corp. Smoke detector or the like. 235,857, 7–15–75, Cl. D10—106.
- Harussi, Yanive, to Beatrice Foods Co. Spray gun. 235,872, 7–15–75, Cl. D23—17.
- Hauner, Carlo. Chair. 235,825, 7–15–75, Cl. D6—41.
- Hazama, Shigetoshi: *See—*
  - Yoshida, Yoshisaburo, Hazama, and Ohie. 235,880.
- Hernandez, Francisco N. A dental chair or similar article. 235,822, 7–15–75, Cl. D6—22.
- Hickey, Richard C., and E. H. McCauley, to Docutel Corp. Fuel dispensing console. 235,917, 7–15–75, Cl. D52—2.
- Hinklin, Darrell W.: *See—*
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- Hodge, Raphael. Nestable table. 235,823, 7–15–75, Cl. D6—27.
- Huckenbeck, Claus O., to Bausch & Lomb Inc. Riflescope. 235,918, 7–15–75, Cl. D57—1.
- Hustvedt, Stephen R. Radio mobile. 235,885, 7–15–75, Cl. D29—1.
- Iida, Yoshiaki, and Y. Funabiki, to Matsushita Electric Industrial Co., Ltd. Combined tape player recorder and amplifier. 235,919, 7–15–75, Cl. D56—4.
- Insalaco, Charles J. Nursery pot. 235,909, 7–15–75, Cl. D35—3.
- Ito, Kazuo: *See—*
  - Kudo, Kiyoshi, and Ito. 235,925.
- Jacques, Joseph M. Inflatable bathtub seat. 235,826, 7–15–75, Cl. D6—47.
- Janet Kay Gageby: *See—*
  - Gageby, Steven D. 235,864.
- King, Lewis J., Jr., to United States of America, Army. 235,888, 7–15–75, Cl. D29—23.
- Kirk, Norman. Religious medallion. 235,886, 7–15–75, Cl. D29—11.
- Kitai, Isao, to Sharp Kabushiki Kaisha. Electronic calculating machine. 235,879, 7–15–75, Cl. D26—5.
- Kitson, Gerald L. Combined poultry feeder pipe and support. 235,851, 7–15–75, Cl. D8—235.
- Kollitz, Gerhard. Garment hanger support for a shower head. 235,830, 7–15–75, Cl. D6—86.
- Kollitz, Gerhead. Garment hanger support for a shower head. 235,831, 7–15–75, Cl. D6—86.
- Kresl, James, Jr. Automobile wheel. 235,863, 7–15–75, Cl. D12—205.
- Kretz, Edward J., to Owens-Illinois, Inc. Jar. 235,853, 7–15–75, Cl. D9—119.
- Kudo, Kiyoshi, and K. Ito, to Brother Kogyo Kabushiki Kaisha. Portable sewing machine. 235,925, 7–15–75, Cl. D70—1.
- Laitram Corp., The: *See—*
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- Lapeyre, James M., and J. T. Fowler, to The Laitram Corp. Magnetic compass. 235,854, 7–15–75, Cl. D10—68.
- Little Giant Corp.: *See—*
  - Bright, Hugh H., and Davis. 235,924.
- Little, Thomas E. Container support. 235,837, 7–15–75, Cl. D7—189.
- Locascio, Jack J., to Rapid-American Corp. Brassiere. 235,817, 7–15–75, Cl. D2—24.
- Long, David A. Merchandise display stand. 235,824, 7–15–75, Cl. D6—28.
- Lyford, Charles A., III. Hydroplane. 235,858, 7–15–75, Cl. D12—62.
- Magi, Hugo: *See—*
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- Matt Tool Corp.: *See—*
  - Matthews, Loren A. 235,844.
- Matthews, Loren A., to Matt Tool Corp. Punch tool. 235,844, 7–15–75, Cl. D8—52.
- McCauley, Edward H.: *See—*
  - Hickey, Richard C., and McCauley. 235,917.
- McRae, William P. Cabinette for cassettes or the like. 235,833, 7–15–75, Cl. D6—167.
- Meeker, Paul K.: *See—*
  - Cone, Richard E., II, and Meeker. 235,932.
- Meeker, Paul K., to Questor Corp. Infant feeding bottle. 235,931, 7–15–75, Cl. D83—8.
- Mergenov, George, to Mohasco Industries, Inc. Chair. 235,827, 7–15–75, Cl. D6—69.
- Miller, Arthur F., to Brunswick Corp. Instrument panel for boat or the like. 235,862, 7–15–75, Cl. D12—192.
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  - Suganoya, Yoshio, and Miyake. 235,838.
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- Micro-Gen Equipment Corp.: *See—*
  - Parke, James G., and Gerlach. 235,871.
- Moncada, Rene. Statuette. 235,887, 7–15–75, Cl. D29—23.
- Moore, George E., to All Orthopedic Appliances, Inc. Combined leg and arm splint. 235,927, 7–15–75, Cl. D83—1.
- Moore, George E., to All Orthopedic Appliances, Inc. Arm splint. 235,928, 7–15–75, Cl. D83—1.
- Nagel, Robert I., to Dominion Auto Accessories Ltd. Combined clearance and marker lamp lens. 235,916, 7–15–75, Cl. D48—32.
- Napodano, Abel. Aerial toy. 235,906, 7–15–75, Cl. D34—15.
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- Olson, John W., Jr. Valve receiving tubing fitting. 235,874, 7–15–75, Cl. D23—40.
- Olson, Raymond G., to Baxter Laboratories, Inc. Syringe pump unit. 235,926, 7–15–75, Cl. D83—1.
- Oneida Ltd.: *See—*
  - Richmond, Colin B., II. 235,840.
- Onley, Marvin D. Riding toy airplane. 235,904, 7–15–75, Cl. D34—15.
- Osrow, Leonard. Electric heater. 235,875, 7–15–75, Cl. D23—110.
- Owens-Illinois, Inc.: *See—*
  - Kretz, Edward J. 235,853.
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- Payne, George, and E. R. Bales, to American Standard Inc. Student desk. 235,834, 7–15–75, Cl. D6—177.
- Pecoraro, Anthony. Trundle toy. 235,907, 7–15–75, Cl. D34—15.
- Pisano, Salvatore. Game mat. 235,891, 7–15–75, Cl. D34—5.
- Pitman, Emilie H. Shower head. 235,873, 7–15–75, Cl. D23—35.
- Polydoris, Nicholas G., and B. J. Wollar. Linear distance measuring device. 235,855, 7–15–75, Cl. D10—70.
- Quaker Oats Co., The: *See—*
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  - Breneman, Jack L. 235,897.
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- Reichardt, Robert E. Limit switch cover. 235,852, 7–15–75, Cl. D8—253.
- Rho-Chem Corp.: *See—*
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- Richmond, Colin B., II., to Oneida Ltd. Spoon or similar article. 235,840, 7–15–75, Cl. D7—137.
- Roehl, Ernest O., to Rho-Chem Corp. Solvent storage installation. 235,869, 7–15–75, Cl. D23—2.
- Rosenwach, Wallace. Combination planter and bench. 235,908, 7–15–75, Cl. D35—3.
- Rowenta-Werke, GmbH.: *See—*
  - Stuetzer, Franz A. 235,882.
  - Stuetzer, Franz A. 235,883.
  - Stuetzer, Franz A. 235,884.
- Schacht, Arthur, to Crystal Mart, Inc. Lighting fixture. 235,814, 7–15–75, Cl. D48—3.
- Seitz, Robert E. Retainer for bank cash slips. 235,866, 7–15–75, Cl. D19—88.
- Sharp Corp. in English: *See—*
  - Suganoya, Yoshio, and Mizusugi. 235,839.
- Sharp Kabushiki Kaisha: *See—*
  - Suganoya, Yoshio, and Miyake. 235,838.
  - Kitai, Isao. 235,879.
  - Yoshida, Yoshisaburo, Hazama, and Ohie. 235,880.
- Shamlian, Ralph B. Divers decompression computer. 235,856, 7–15–75, Cl. D10—70.
- Sheehan, John J., to Envirotech Corp. Filter element. 235,870, 7–15–75, Cl. D23—1.

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Short, Charles A. Kite reel. 235,848, 7-15-75, Cl. D8—220.

Skele, Bjarne, to Maritime Hydraulics A.S. Inflatable sealing device for chain-fairleads and howse-holes and the like. 235,859, 7-15-75, Cl. D12—70.

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Altissimo, Massimo. 235,892.

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Spencer, Clifford A., to Eaton Corp. Golf club grip. 235,900, 7-15-75, Cl. D34—5.

Stuetzer, Franz A., to Rowenta-Werke, GmbH. Lighter. 235,882, 7-15-75, Cl. D27—42.

Stuetzer, Franz A., to Rowenta-Werke, GmbH. Lighter. 235,883, 7-15-75, Cl. D27—42.

Stuetzer, Franz A., to Rowenta-Werke, GmbH. Pocket lighter. 235,884, 7-15-75, Cl. D27—42.

Suganoya, Yoshio, and T. Miyake, to Sharp Kabushiki Kaisha. Electronic cooking range. 235,836, 7-15-75, Cl. D7—128.

Suganoya, Yoshio, and T. Miyake, to Sharp Kabushiki Kaisha. Electrode cooking range. 235,838, 7-15-75, Cl. D7—128.

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Thorud, Richard A., and D. W. Hinklin, to The Toro Co. Hinged cover for a rotary mower engine. 235,910, 7-15-75, Cl. D40—1.

Toro Co., The: *See*—
Thorud, Richard A., and Hinklin. 235,910.

Uarco Inc.: *See*—
Alger, Andrew L., and Yamasaki. 235,920.
Alger, Andrew L., and Yamasaki. 235,921.
Alger, Andrew L., and Yamasaki. 235,922.

United States of America, Army: *See*—
King, Lewis J., Jr. 235,888.

Yamasaki, Kim: *See*—
Alger, Andrew L., and Yamasaki. 235,920.
Alger, Andrew L., and Yamasaki. 235,921.
Alger, Andrew L., and Yamasaki. 235,922.

Yoshida, Yoshisaburo, S. Hazama, and Y. Ohie, to Sharp Kabushiki Kaisha. Electronic calculating machine. 235,880, 7-15-75, Cl. D26—5.

Waters, John E., to Recreational Products Marketing, Inc. Vehicular tank. 235,861, 7-15-75, Cl. D12—155.

Wilfert, Karl, and F. Geiger, to Daimler-Benz Aktiengesellschaft. Automobile. 235,860, 7-15-75, Cl. D12—92.

Williams, William O., Jr. Artificial fishing lure spinner blade. 235,867, 7-15-75, Cl. D22—29.

Winrow, Thomas. Chair. 235,828, 7-15-75, Cl. D6—71.

Wollar, Burnell J.: *See*—
Polydoris, Nicholas G., and Wollar. 235,855.

Wyse, Harold G., to Questor Corp. Electric sterilizer. 235,933, 7-15-75, Cl. D83—1.

Zick, Ronald W., to Game Time, Inc. Combined playground climber and slide representing a teepee. 235,902, 7-15-75, Cl. D34—5.

Zick, Ronald W., to Game Time, Inc. Combined playground climber and slide or the like. 235,903, 7-15-75, Cl. D34—5.

CLASSIFICATION OF PATENTS

ISSUED JULY 15, 1975

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2	
18	Re.28,480
144	3,894,296
CLASS 3	
1	3,894,297
CLASS 4	
	3,894,298
67A	3,894,299
185H	3,894,300
211	3,894,301
	3,894,302
CLASS 5	
81R	3,894,303
93R	3,894,304
CLASS 8	
7	3,894,836
10	3,894,837
30	3,894,840
37	3,894,838
121	3,894,839
169	3,894,841
173	3,894,842
CLASS 9	
1R	3,894,305
CLASS 13	
21	3,895,174
33	3,895,175
CLASS 14	
27	3,894,307
CLASS 15	
369	3,894,308
CLASS 16	
2	3,894,309
47	3,894,310
CLASS 17	
21	3,894,311
43	3,894,312
44.2	3,894,313
CLASS 19	
66R	3,894,314
150	3,894,315
CLASS 23	
230B	3,894,843
	3,894,844
253R	3,894,845
301SP	3,894,846
CLASS 24	
73SM	3,894,316
90W	3,894,317
CLASS 26	
28	3,894,318
CLASS 28	
1.6	3,894,319
72.2R	3,894,320
CLASS 29	
25.15	3,894,321
96	3,894,322
116R	3,894,323
156.8R	3,894,324
187.5	3,894,325
196.3	3,894,847
198	Re.28,485
200P	3,894,326
200R	3,894,327
451	3,894,328
512	3,894,331
577	Re.28,481
578	3,894,332
594	3,894,333
630C	3,894,334
CLASS 30	
43.92	3,894,335
341	3,894,336
346.54	3,894,337
CLASS 32	
27	3,894,338
59	3,894,339
CLASS 33	
185R	3,894,340
324	3,894,341
388	3,894,342
CLASS 34	
4	3,894,343
12	3,894,344
93	3,894,345
CLASS 35	
8	3,894,346
10.4	3,894,347
	3,894,348
CLASS 37	
142A	3,894,349
CLASS 43	
42.31	3,894,350
112	3,894,351
CLASS 44	
1R	3,894,848
66	3,894,849
CLASS 46	
1L	3,894,352
1R	3,894,353
25	3,894,354
CLASS 47	
48.5	3,894,355
CLASS 49	
366	3,894,356
503	3,894,357
CLASS 51	
5D	3,894,358
8R	3,894,359
9R	3,894,360
101LG	3,894,361
211R	3,894,362
287	3,894,363
307	3,894,850
320	3,894,364
CLASS 52	
23	3,894,365
37	3,894,366
80	3,894,367
105	3,894,368
173	3,894,369
	3,894,370
209	3,894,371
223R	3,894,372
236	3,894,373
250	3,894,374
298	3,894,375
518	3,894,376
584	3,894,377
731	3,894,378
CLASS 53	
40	3,894,379
75	3,894,380
128	3,894,381
CLASS 55	
62	3,894,856
94	3,894,851
142	3,894,852
258	3,894,853
294	3,894,854
385	3,894,855
CLASS 56	
14.3	3,894,382
17.5	3,894,383
130	3,894,384
295	3,894,385
CLASS 57	
58.95	3,894,386
77.4	3,894,387
77.45	3,894,388
140J	Re.28,482
CLASS 58	
50R	3,894,389
CLASS 60	
552	3,894,390
575	3,894,391
599	3,894,392
641	3,894,393
644	3,894,394
652	3,894,395
665	3,894,396
CLASS 61	
4	3,894,397
28	3,894,398
36	3,894,399
63	3,894,400
72.4	3,894,401
	3,894,402
CLASS 62	
55	3,894,403
155	3,894,404
241	3,894,405
CLASS 65	
3	3,894,857
23	3,894,858
65A	3,894,859
CLASS 66	
1R	3,894,406
9B	3,894,407
50A	3,894,408
191	3,894,409
CLASS 68	
5D	3,894,410
20	3,894,411
22R	3,894,412
205R	3,894,413
CLASS 70	
19	3,894,414
21	3,894,415
150	3,894,416
156	3,894,417
CLASS 71	
76	3,894,861
94	3,894,862
116	3,894,860
CLASS 72	
108	3,894,418
217	3,894,422
CLASS 73	
1R	3,894,419
37.5	3,894,423
45.6	3,894,420
49.2	3,894,424
67.8S	3,894,425
82	3,894,426
88E	3,894,427
	3,894,428
146	3,894,421
162	3,894,429
194EM	3,894,430
194A	3,894,431
201	3,894,432
209	3,894,433
336.5	3,894,434
393	3,894,435
	3,894,436
423A	3,894,438
432R	3,894,437
CLASS 74	
192	3,894,439
230.17F	3,894,440
242.14R	3,894,441
335	3,894,442
435	3,894,444
476	3,894,443
512	3,894,445
711	3,894,446
713	3,894,447
CLASS 75	
.5R	3,894,863
11	3,894,864
21	3,894,865
109	3,894,866
134N	3,894,867
CLASS 81	
3.2	3,894,448
15.7	3,894,449
72	3,894,450
425R	3,894,451
CLASS 82	
21B	3,894,452
36	3,894,453
47	3,894,454
58	3,894,455
CLASS 83	
7	3,894,456
27	3,894,457
322	3,894,458
567	3,894,459
639	3,894,460
665	3,894,461
	3,894,462
CLASS 84	
1.01	3,894,463
314	3,894,468
327	3,894,464
485	3,894,465
CLASS 85	
10F	3,894,466
23	3,894,467
79	3,894,469
CLASS 87	
24	3,894,470
CLASS 89	
33R	3,894,471
36A	3,894,472
37C	3,894,473
148	3,894,474
CLASS 90	
13.1	3,894,475
CLASS 91	
6	3,894,476
355	3,894,477
CLASS 93	
58.2R	3,894,478
93M	3,894,479
CLASS 96	
1.5	3,894,868
	3,894,869
	3,894,870
3	3,894,871
33	3,894,873
36	3,894,872
48R	3,894,874
160	3,894,875
CLASS 98	
115LH	3,894,480
121A	3,894,481
CLASS 99	
330	3,894,482
331	3,894,483
CLASS 100	
5	3,894,484
45	3,894,485
118	3,894,486
CLASS 101	
129	3,894,487
153	3,894,488
CLASS 102	
24HC	3,894,489
70.2R	3,894,490
76R	3,894,491
93	3,894,492
CLASS 105	
199F	3,895,206
366B	3,894,494
366R	3,894,495
366	3,894,493
CLASS 106	
15FP	3,894,876
18	3,894,877
122	3,894,878
189	3,894,879
208	3,894,880
287SB	3,894,881
288B	3,894,882
CLASS 108	
50	3,894,496
CLASS 110	
8R	3,894,497
CLASS 111	
6	3,894,498
CLASS 112	
158R	3,894,499
.219R	3,894,500
226	3,894,501
252	3,894,502
CLASS 114	
.5R	3,894,503
42	3,894,504
74A	3,894,505
CLASS 116	
114R	3,894,507
CLASS 118	
19	3,894,508
50	3,894,509
308	3,894,510
400	3,894,511
637	3,894,512
	3,894,513
	3,894,514
CLASS 119	
82	3,894,515
155	3,894,516
CLASS 122	
34	3,894,517
CLASS 123	
8.09	3,894,518
8.45	3,894,519
32ST	3,894,520
41.12	3,894,521
56AB	3,894,522
139AW	3,894,523
148E	3,894,524
	3,894,525
CLASS 126	
110B	3,894,526
140	3,894,527
271	3,894,528
CLASS 128	
1R	3,894,529
	3,894,530
2W	3,894,531
2.05A	3,894,535
2.05R	3,894,533
2.1Z	3,894,532
25R	3,894,534
145.8	3,894,536
193	3,894,537
260	3,894,538
261	3,894,539
289	Re.28,483
349R	3,894,540
350R	3,894,541
547	3,894,542
CLASS 131	
2	3,894,543
140C	3,894,544
261B	3,894,545
CLASS 132	
9	3,894,546
	3,894,548
11A	3,894,547
	3,894,549
79E	3,894,550
CLASS 134	
15	3,894,883
25R	3,894,884
135	3,894,551
CLASS 136	
29	3,894,885
67	3,894,886
86S	3,894,887
114	3,894,888
148	3,894,889
CLASS 137	
82	3,894,552
102	3,894,553
206	3,894,554
412	3,894,555
539	3,894,556
554	3,894,557
580	3,894,558
595	3,894,559
606	3,894,560
625.29	3,894,561
CLASS 138	
44	3,894,562
45	3,894,563
155	3,894,564
CLASS 139	
296	3,894,565
CLASS 140	
92.1	3,894,566
CLASS 141	
388	3,894,567
CLASS 144	
3D	3,894,568
327	3,894,569
CLASS 148	
1.5	3,894,890
	3,894,891
108	3,894,892
175	3,894,893
CLASS 149	
19.4	3,894,894
CLASS 151	
22	3,894,570
CLASS 156	
8	3,894,895
69	3,894,896
96	3,894,897
138	3,894,900
143	3,894,901
163	3,894,898
187	3,894,899
229	3,894,904
286	3,894,902
306	3,894,903
384	3,894,905
440	3,894,906
494	3,894,907
527	3,895,059
560	3,894,908
568	3,894,909
CLASS 160	
201	3,894,571
CLASS 162	
343	3,894,910
CLASS 164	
26	3,894,572
52	3,894,573
	3,894,574
97	3,894,575
281	3,894,576
282	3,894,577
CLASS 165	
1	3,894,578
6	3,894,579
67	3,894,580
86	3,894,911
166	3,894,581
CLASS 166	
.5	3,894,582
68	3,894,583
250	3,894,584
CLASS 168	
25	3,894,585
CLASS 173	
91	3,894,586
CLASS 174	
28	3,895,176
48	3,895,177
	3,895,178
50	3,895,179
68.5	3,895,181
92	3,895,180
CLASS 175	
19	3,894,588
23	3,894,589
91	3,894,587
107	3,894,590
CLASS 176	
19R	3,894,912
CLASS 177	
126	3,894,591
163	3,894,592
164	3,894,593
211	3,894,594
256	3,894,595
CLASS 178	
6	3,895,184
6.8	3,895,182
	3,895,183
26R	3,895,185
69.5F	3,895,186
88	3,895,187
CLASS 179	
1MF	3,895,188
6R	3,895,189
15BT	3,895,191
15FS	3,895,190
99	3,895,192

111R	3,895,193
121R	3,895,194
CLASS 180	
9.2R	3,894,600
9.2	3,894,596
9.48	3,894,597
	3,894,598
26R	3,894,601
33C	3,894,599
43R	3,894,602
53R	3,894,603
64R	3,894,604
65R	3,894,605
66R	3,894,606
68.5	3,894,607
82	3,894,608
115	3,894,609
CLASS 181	
50	3,894,610
57	3,894,611
199	3,894,612
CLASS 182	
43	3,894,613
78	3,894,614
CLASS 185	
39	3,894,615
CLASS 187	
9	3,894,616
CLASS 188	
72.2	3,894,618
75	3,894,617
CLASS 192	
53F	3,894,619
75	3,894,620
109R	3,894,621
CLASS 194	
4E	3,894,622
CLASS 195	
65	3,894,913
103.5R	3,894,914
CLASS 197	
113	3,894,623
127R	3,894,624
CLASS 198	
20R	3,894,625
25	3,894,626
34	3,894,627
170	3,894,629
179	3,894,630
220CA	Re.28,484
237	3,894,631
255	3,894,628
CLASS 200	
51.09	3,895,195
61.47	3,895,197
61.58B	3,895,196
61.62	3,895,198
144B	3,895,199
148A	3,895,202
148R	3,895,200
	3,895,201
276	3,895,203
314	3,895,204
340	3,895,205
CLASS 202	
173	3,894,915
CLASS 203	
55	3,894,916
CLASS 204	
1T	3,894,917
15	3,894,918
	3,894,919
64R	3,894,927
158HA	3,894,923
159.17	3,894,928
162R	3,894,920
163R	3,894,921
181	3,894,922
206	3,894,924
224M	3,894,925
286	3,894,929
298	3,894,926
CLASS 206	
424	3,894,632
CLASS 208	
60	3,894,930
73	3,894,931
74	3,894,932
77	3,894,933
78	3,894,934
	3,894,935
	3,894,936
89	3,894,937
97	3,894,938
111	3,894,939
120	3,894,940
290	3,894,941
308	3,894,942
CLASS 209	
123	3,894,633
CLASS 210	
23	3,894,943
54	3,894,944
	3,894,945
	3,894,946
	3,894,947
	3,894,948
109	3,894,949
131	3,894,950
136	3,894,951
	3,894,952
151	3,894,953
321	3,894,954
322	3,894,955
CLASS 211	
150	3,894,634
CLASS 212	
46B	3,894,635
CLASS 214	
1BV	3,894,636
1P	3,894,637
6DK	3,894,638
6A	3,894,639
15R	3,894,640
132	3,894,641
302	3,894,642
450	3,894,643
505	3,894,644
506	3,894,645
522	3,894,646
CLASS 215	
9	3,894,647
CLASS 219	
68	3,895,207
	3,895,208
76	3,895,209
80	3,895,210
113	3,895,211
135	3,895,212
203	3,895,213
230	3,895,214
400	3,895,215
462	3,895,216
523	3,895,217
543	3,895,218
553	3,895,219
CLASS 220	
4F	3,894,648
20	3,894,649
90	3,894,650
269	3,894,651
270	3,894,652
273	3,894,653
283	3,894,654
	3,894,655
CLASS 221	
200	3,894,656
265	3,894,657
CLASS 222	
26	3,894,658
94	3,894,659
170	3,894,660
188	3,894,661
193	3,894,662
309	3,894,663
402.11	3,894,665
402.21	3,894,664
CLASS 223	
102	3,894,666
CLASS 224	
2C	3,894,667
42.06	3,894,668
CLASS 225	
103	3,894,669
CLASS 227	
6	3,894,670
CLASS 228	
4.5	3,894,671
	3,894,672
122	3,894,673
124	3,894,674
130	3,894,675
180	3,894,329
182	3,894,676
190	3,894,677
207	3,894,678
254	3,894,330
CLASS 229	
2.5	3,894,679
17B	3,894,681
17R	3,894,680
62.5	3,894,682
	3,894,683
92.8	3,894,684
CLASS 235	
61.12N	3,895,220
151.3	3,895,221
	3,895,222
153AE	3,895,223
197	3,895,224
CLASS 237	
1A	3,894,685
CLASS 238	
8	3,894,686
310	3,894,687
CLASS 239	
11	3,894,688
18	3,894,689
126	3,894,690
524	3,894,691
CLASS 240	
2SP	3,895,225
8.2	3,895,228
11.2R	3,895,226
73R	3,895,227
108B	3,895,229
CLASS 241	
4	3,894,692
14	3,894,693
46.11	3,894,694
55	3,894,695
70	3,894,696
159	3,894,697
264	3,894,698
CLASS 242	
55.19A	3,894,699
71.2	3,894,700
194	3,894,701
201	3,894,702
CLASS 244	
17.23	3,894,703
153R	3,894,704
CLASS 248	
17	3,894,705
68CB	3,894,706
231	3,894,707
394	3,894,708
445	3,894,709
CLASS 249	
117	3,894,710
185	3,894,711
CLASS 250	
214P	3,895,230
288	3,895,231
366	3,895,232
373	3,895,233
492A	3,895,234
577	3,895,235
CLASS 251	
61	3,894,712
61.5	3,894,713
86	3,894,714
	3,894,715
127	3,894,716
144	3,894,717
148	3,894,718
231	3,894,719
CLASS 252	
14	3,894,956
26	3,894,957
51.5A	3,894,958
62.54	3,894,970
64	3,894,959
99	3,894,960
301.4P	3,894,961
430	3,894,962
437	3,894,971
448	3,894,964
455R	3,894,968
460	3,894,965
464	3,894,963
465	3,894,966
466PT	3,894,967
519	3,894,969
CLASS 254	
171	3,894,720
CLASS 259	
2	3,894,721
22	3,894,722
122	3,894,723
158	3,894,724
192	3,894,725
CLASS 260	
2.5AK	3,894,973
2.5AW	3,894,972
2.5R	3,894,974
17.4GC	3,894,975
17.4ST	3,894,976
18EP	3,894,977
22CB	3,894,978
23.7R	3,894,979
29.6RW	3,894,980
29.7S	3,895,018
31.4R	3,895,029
33.4R	3,894,981
33.6AQ	3,895,035
33.6A	3,894,982
37R	3,894,983
40R	3,894,984
42.14	3,894,985
45.7P	3,894,986
45.75S	3,894,989
45.85B	3,894,990
45.9R	3,894,987
	3,894,988
47XA	3,894,991
67.6R	3,894,992
	3,894,993
75NE	3,894,994
78R	3,894,995
79.5P	3,894,996
79.7	3,894,997
80.78	3,894,998
	3,894,999
82.1	3,895,081
92.8W	3,895,000
93.1	3,895,001
123.5	3,895,003
153	3,895,004
239.3B	3,895,006
239.3T	3,895,005
239.57	3,895,008
240.1	3,895,009
247.1R	3,895,010
249.7A	3,895,007
250Q	3,895,011
251QB	3,895,385
251QP	3,895,395
251.5	3,895,012
270D	3,895,013
283S	3,895,014
294.8F	3,895,015
294.8G	3,895,016
295R	3,895,017
304	3,895,028
306.5	3,895,019
306.7T	3,895,020
306.8R	3,895,021
307B	3,895,023
307C	3,895,024
307D	3,895,022
309.2	3,895,025
310C	3,895,026
310R	3,895,027
326.15	3,895,031
326.41	3,895,032
326.5J	3,895,030
332.2H	3,895,034
332.2R	3,895,033
340.7	3,895,036
346.3	3,895,037
346.7	3,895,038
347.7	3,895,039
413	3,895,040
424	3,895,042
429.9	3,895,041
448.8R	3,895,043
456R	3,895,044
457	3,895,045
463	3,895,046
465H	3,895,048
465.3	3,895,047
	3,895,049
	3,895,050
	3,895,051
471A	3,895,052
471C	3,895,053
	3,895,054
479R	3,895,055
490	3,895,056
501.11	3,895,057
514D	3,895,058
551S	3,895,060
553R	3,895,061
556F	3,895,062
571	3,895,063
	3,895,064
583M	3,895,066
583R	3,895,065
586AB	3,895,067
586F	3,895,073
586G	3,895,068
586P	3,895,072
586R	3,895,069
	3,895,070
	3,895,071
606.5P	3,895,074
612R	3,895,075
613D	3,895,076
613R	3,895,077
617R	3,895,078
621A	3,895,079
674SA	3,895,080
885	3,895,082
CLASS 261	
92	3,895,083
CLASS 264	
29	3,895,084
45.4	3,895,086
46.2	3,895,087
82	3,895,088
89	3,895,089
154	3,895,085
176F	3,895,090
210F	3,895,091
CLASS 266	
32	3,894,726
34A	3,894,727
37	3,894,728
43	3,894,729
CLASS 269	
13	3,894,730
47	3,894,731
CLASS 271	
2	3,894,734
10	3,894,732
172	3,894,733
CLASS 273	
19	3,894,735
95R	3,894,736
121R	3,894,737
134D	3,894,738
186R	3,894,739
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1R	3,894,740
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27	3,894,741
203	3,894,742
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47	3,894,743
CLASS 280	
11.13E	3,894,744
11.13L	3,894,745
16	3,894,746
30	3,894,747
41	3,894,748
47.34	3,894,753
106R	3,894,749
150AB	3,894,750
279	3,894,751
405R	3,894,752
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47	3,894,754
CLASS 283	
1	3,894,755
7	3,894,756
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305	3,894,758
CLASS 290	
55	3,895,236
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92	3,894,759
145	3,894,760
225	3,894,761
264	3,894,762
CLASS 293	
1	3,894,763
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1S	3,894,764
23R	3,894,765
104	3,894,766
137F	3,894,767
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389	3,894,768
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5	3,894,769
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268	3,895,239
279	3,895,240
311	3,895,241
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61	3,895,246
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94	3,895,250
226	3,895,251
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13CG	3,895,253
13C	3,895,252
57	3,895,254
169TV	3,894,506
174	3,895,255
360	3,895,257
371	3,895,256
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380	3,895,259
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18D	3,895,263
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101DH	3,895,266
120	3,895,267
	3,895,268
135R	3,895,269
157.5	3,895,270
246	3,895,271
256	3,895,272
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138	3,895,273
227	3,895,274
	3,895,275
231	3,895,276
269	3,895,277
421	3,895,278
571	3,895,279
610	3,895,280
687	3,895,281
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20	3,895,282
35	3,895,283
48	3,895,284
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8C	3,895,285
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4	3,895,286
20	3,895,287
94R	3,895,288
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37	3,895,290
62	3,895,291
	3,895,292
78Z	3,895,293
83D	3,895,294
142	3,895,295
156	3,895,296
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445	3,895,300
455	3,895,301
464	3,895,302
470	3,895,303
CLASS 328	
167	3,895,304
171	3,895,305
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15	3,895,306
22	3,895,307
38M	3,895,308
107	3,895,309
145	3,895,310
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1A	3,895,311
18	3,895,312
94.5D	3,895,313
107R	3,895,314
111	3,895,315
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7.51	3,895,317
17	3,895,316
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1.1	3,895,319
	3,895,320
6	3,895,318
11	3,895,321
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31A	3,895,326
70S	3,895,325
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297	3,895,333
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183	3,895,335
217	3,895,336

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126	3,895,337
244	3,895,338
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22B	3,894,781
64R	3,894,782
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38S	3,895,344
41R	3,895,345
52E	3,895,346
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146.1AL	3,895,349
146.3D	3,895,350
151	3,895,351
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366R	3,895,379
378R	3,895,380
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5CM	3,895,381
6.5LC	3,895,382
7.3	3,895,383
9	3,895,384
CLASS 346	
1	3,895,386
32	3,895,387
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3.5	3,894,787
96WG	3,894,788
96C	3,894,789
99	3,894,786
	3,894,790
105	3,894,791
160LC	3,894,793
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160R	3,894,792
319	3,894,795
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72	3,894,796
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122	3,894,798
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132	3,895,388
173	3,895,389
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3R	3,894,799
45	3,894,800
66	3,894,801
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2	3,894,802
82	3,894,803
121	3,894,804
138	3,894,805
240	3,894,806
CLASS 357	
23	3,895,390
27	3,895,391
44	3,895,392
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31	3,895,393
CLASS 360	
48	3,895,394
128	3,895,002
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221	3,894,807
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54	3,894,808
128	3,894,809
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34	3,894,811
68	3,894,812
76	3,894,813
121	3,894,814
360	3,894,815
413	3,894,816
415	3,894,817
CLASS 418	
48	3,894,818
61A	3,894,819
121	3,894,820
133	3,894,821
191	3,894,822
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148	3,895,092
213.5	3,895,093
239	3,895,094
305	3,895,095
331	3,895,096
341	3,895,097
351	3,895,098
474	3,895,099
478	3,895,100
574	3,895,101
657	3,895,102
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22	3,895,103
59	3,895,104
180	3,895,106
	3,895,107
219	3,895,108
220	3,895,109
242	3,895,110
250	3,895,111
251	3,895,112
258	3,895,113
263	3,895,114
272	3,895,115
317	3,895,116
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130	3,894,823
146	3,894,824
195	3,894,825
224	3,894,826
363	3,894,827
371	3,894,828
383	3,894,829
459	3,894,830
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69	3,895,117
83	3,895,118
267	3,895,119
306	3,895,105
396	3,895,120
465	3,895,121
482	3,894,810
532	3,895,122
534	3,895,123
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8	3,895,124
18	3,895,125
29	3,895,126
39	3,895,127
81	3,895,129
152	3,895,130
226	3,895,131
227	3,895,132
244	3,895,133
246	3,895,134
248	3,895,135
257	3,895,136
295	3,895,137
298	3,895,138
388	3,895,167
444	3,895,139
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22	3,895,140
33	3,895,141
38	3,895,142
40	3,895,143
43	3,895,128
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53	3,895,145
56	3,895,146
63	3,895,147
81	3,895,148
94	3,895,149
99	3,895,150
102	3,895,151
116	3,895,152
141	3,895,153
153	3,895,154
206	3,895,155
216	3,895,156
220	3,895,157
	3,895,158
227	3,895,159
232	3,895,160
289	3,895,161
292	3,895,162
295	3,895,163
329	3,895,164
374	3,895,165
383	3,895,166
411	3,895,168
420	3,895,169
425	3,894,306
457	3,895,170
461	3,895,171
489	3,895,172
537	3,895,173
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12	3,894,832
117	3,894,833
174	3,894,834
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124	3,894,835

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	28	235,824
	41	235,825
	47	235,826
	69	235,827
	71	235,828
	78	235,829
	86	235,830
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	96	235,832
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	167	235,833
	177	235,834
	194	235,835
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	137	235,840
	151	235,841
	189	235,837
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	31	235,843
	52	235,844
	71	235,845
	136	235,846
	195	235,847
	220	235,848
	229	235,849
	231	235,850
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	263	235,852
D9—	119	235,853
D10—	68	235,854
	70	235,855
		235,856
	106	235,857
D12—	62	235,858
	70	235,859
	92	235,860
	155	235,861
	192	235,862
	205	235,863
	209	235,864
	215	235,865
D19—	88	235,866
D22—	29	235,867
D23—	2	235,869
	4	235,870
	17	235,872
	18	235,871
	35	235,873
	40	235,874
	97	235,868
	110	235,875
	142	235,876
D26—	1A	235,878
	5C	235,877
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D27—	42	235,882
		235,883
		235,884
D29—	1C	235,885
	11	235,886
	23A	235,887
		235,888
D31—		235,889
D32—	1	235,890
D34—	5BB	235,896
	BC	235,895
	GH	235,893
		235,899
	GS	235,898
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	15AM	235,904
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	W	235,905
D35—	3A	235,908
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Notices under 35 U.S.C. 290; Patent of 1952

2,828,449, I. L. Kerper, SAFETY FEATURE FOR ELECTRIC WATERTIGHT DOOR SYSTEMS, **filed** Mar. 4, 1971, D.C., S.D.N.Y., Doc. 71–957, *Irving L. Kerper* v. *Grace Line et al.* Order that action is statistically closed, Sept. 11, 1974.

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3,011,234, T. E. Fiddler, SPRING BIASED ATTACHING CLIP; **3,279,013, same,** FASTENER FOR MOLDINGS; **3,637,961,** Fiddler and Adams, CONTROL DEVICE FOR ACTUATING A SWITCH AND DIRECTING A FLUID PRESSURE FORCE, **filed** Mar. 6, 1975, D.C. Minn. (St. Paul), Doc. C–1–75–76, *Lake Center Industries* v. *Theodore E. Fiddler and T. E. Fiddler Associates, Inc.*

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3,116,557, J. R. Trice, Jr. METHOD AND MEANS FOR LAYING SEWER PIPE, **filed** Jan. 28, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c243, *Laser Alignment, Inc.* v. *Spectra-Physics, Inc.*

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3,759,305, D. E. McIntyre, CREDIT CARD CARRYING CASE, **filed** Mar. 14, 1975, D.C. Ariz. (Phoenix), Doc. C–75–150–PHX WEC, *AMBA Marketing Systems, Inc.* v. *Jobar International Inc.*

3,791,346, Willinger and Dinnerstein, RODENT HABITAT, *filed* Apr. 1, 1975, D.C.N.D. Ill. (Chicago), Doc. 75c1036, *Metaframe Corporation* v. *Pets International Ltd., Inc. and Genyk Products Limited.*

3,833,059, P. L. Sisson, HOT GAS APPARATUS FOR RECOVERY OF OIL VALUES, **filed** Mar. 10, 1975, D.C. W.D. Okla. (Oklahoma City), Doc. C–75–0214–C, *Floyd Dotson* v. *Purdy L. Sisson, Purdy Sisson Industries, Inc. and Motco, Inc.*

D–190,281, H. G. Sher, CHAIR; **D–191,164,** same **D–192,855,** J. P. Mengel, LOUNGE CHAIR; **D–197,645,** A. C. Ferro, CHAIR; **D–197,646,** H. J. Rose, PODIATRIST CHAIR; **D–197,844,** D. F. Rixman, CHAIR; **D–200,310,** A. C. Ferro, same; **D–205,767,** same, **D–207,054,** same, **D–220,690,** same, **Reg. No. 520,737,** (CONTOUR CHAIR-LOUNGE), Contour Chair-Lounge Co., Inc.; **Reg. No. 642,944,** (CONTOUR), same, **filed** Nov. 25, 1974, D.C. Ariz. (Phoenix), Doc. C–74–776 PHX, *Martin M. Rudolph* v. *Contour Chair-Lounge Co., Inc.*

D–191,164. (See D–190,281.)

D–192,855. (See D–190,281.)

D–197,645. (See D–190,281.)

D–197,646. (See D–190,281.)

D–197,844. (See D–190,281.)

D–200,310. (See D–190,281.)

D–192,855. (See D–190,281.)

D–207,054. (See D–190,281.)

D–220,690. (See D–190,281.)

D–222,198, M. H. Boldt, HAIR DRYER, **filed** Mar. 17, 1975, D.C., S.D.N.Y. (New York), Doc. 72–C–1722, *National Presto Industries, Inc.* v. *Sun Electric Mfg. Co., (Sun Denshi Co., Ltd.), Sun Denshi America, Inc. and Sterling-United Ltd.* Consent decree and order for injunction–A permanent injunction shall issue restraining defendants. Judgment entered in favor of plaintiff against defendants Sun Denshi Co. Ltd. and Sun Electric Mfg. Co., jointly and severally. All counterclaims of the defendants dismissed with prejudice, Mar. 17, 1975.

Reg. No. 520,737. (See D–190,281.)

Reg. No. 642,944. (See D–190,281.)

Certificates of Correction for the Week of July 22, 1975

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Disclaimer and Dedication

3,532,850.—*Hans J. Schulz,* Wuppertal-Vohwinkel, Germany, and *Victor H. Marcolini,* Cicero, Ill. POWER SUPPLY FOR ELECTRICAL DISCHARGE MACHINING. Patent dated Oct. 6, 1970. Disclaimer and dedication filed June 5, 1975, by the assignee, *Amsted Industries Incorporated.*

Hereby disclaims and dedicates to the Public the remaining term of said patent.

Dedications

3,082,079.—*David K. Bulloch* and *Deane S. Thomas,* Rochester, N.Y. SILVER RECOVERY FROM PHOTOGRAPHIC FIXING SOLUTIONS. Patent dated Mar. 19, 1963. Dedication filed May 8, 1975, by the assignee, *Eastman Kodak Company.*

Hereby dedicates to the Public the entire remaining portion of the term of said patent.

3,561,682.—*Charles H. Rex,* Marblehead, Mass. LUMINAIRE. Patent dated Feb. 9, 1971. Dedication filed May 5, 1975, by the assignee, *General Electric Company.*

Hereby dedicates to the Public the entire term of said patent.

3,657,003.—*John Thomas Kenney,* Trenton, N.J. METHOD OF RENDERING A NON-WETTABLE SURFACE WETTABLE. Patent dated Apr. 18, 1972. Dedication filed Mar. 13, 1975, by the assignee, *Western Electric Company, Incorporated.*

Hereby dedicates to the Public the entire remaining term of said patent.

3,683,547.—*Kendall L. Harden,* Anderson Township, Hamilton County, Ohio. SELF-CENTERING SPRAYING APPARATUS. Patent dated Aug. 15, 1972. Dedication filed May 2, 1975, by the assignee, *The Procter & Gamble Company.*

Hereby dedicates to the Public the entire term of said patent.

Disclaimers

Design No. 233,918.—*Chester J. Barecki,* Grand Rapids, Mich. TRANSIT SEAT. Patent dated Dec. 17, 1974. Disclaimer filed Mar. 3, 1975, by the assignee, *American Seating Company.*

The term of this patent subsequent to Mar. 19, 1988, has been disclaimed.

3,629,681.—*David Gurwicz,* Gateshead, England. CIRCUITS FOR CONTROLLED BATTERY CHARGERS. Patent dated Dec. 21, 1971. Disclaimer filed Apr. 21, 1975, by the assignee, *Sevcon Engineering Limited.*

Hereby enters this disclaimer to claims 1 to 9 of said patent.

3,712,309.—*Raymond B. Schmitz,* Independence, Mo. STRAW CHOPPER MOUNTING FOR COMBINE. Patent dated Jan. 23, 1973. Disclaimer filed, May 7, 1975, by the assignee, *Allis-Chalmers Corporation.*

Hereby enters this disclaimer to all claims of said patent.

3,713,336.—*Theodore Bernstein,* and *Joseph G. Miller,* Madison, Wis. COMBINATION FLUID FLOW SPEED AND DIRECTION TRANSDUCER. Patent dated Jan. 30, 1973. Disclaimer filed Mar. 7, 1975, by the inventors.

Hereby enter this disclaimer to claim 6 of said patent.

3,753,513.—*Julian Pascoe Grenfell,* Weybridge, and *John Brown Buchanan,* Mytchett, England. HANDLING AND SORTING DEVICES. Patent dated Aug. 21, 1973. Disclaimer filed May 28, 1975, by the assignee, *Badalex Limited.*

Hereby enters this disclaimer to claims 1–9, inclusive, 12, 13 and 14 of said patent.

3,769,631.—*James D. Hill, Hugh E. Naylor, III, Donald L. West* and *Thomas H. Williams,* Lexington, Ky. INCREASING THROUGHPUT IN INK JET PRINTING BY DROP SKIPPING AND REDUCING INK JET MERGING AND SPLATTER USING A STAIRSTEP GENERATOR. Patent dated Oct. 30, 1973. Disclaimer filed May 23, 1975, by the assignee, *International Business Machines Corporation.*

Hereby enters this disclaimer to claims 7–10 of said patent.

3,793,322.—*James R. Schroff,* Bronx, N.Y., and *Victor Bandurco,* Sommerville, N.J. 1,4-DISUBSTITUTED PIPERAZINES. Patent dated Feb. 19, 1974. Disclaimer filed Mar. 14, 1975, by the assignee, *USV Pharmaceutical Corporation.*

Hereby enters this disclaimer to claims 1–9, inclusive, and claim 11 of said patent.

3,795,444.—*Dennis James Glidden* and *Wayne Alan Freiert,* Rochester, N.Y. EXPOSURE CONTROL APPARATUS. Patent dated Mar. 5, 1974. Disclaimer filed Mar. 3, 1975, by the assignee, *Eastman Kodak Company.*

Hereby enters this disclaimer to claim 1 of said patent.

3,813,209.—*Henry J. Venetta,* Warren, Ohio. PREHEATING OF METAL SCRAP. Patent dated May 28, 1974. Disclaimer filed Mar. 12, 1975, by the inventor.

Hereby enters this disclaimer to claims 1, 3, 4 and 10 of said patent.

3,817,722.—*James F. Scott,* Briarcliff Manor, N.Y. COMPOSITIONS FOR INHIBITING CORROSION AND ASH DEPOSITION IN FOSSIL FUEL BURNING EQUIPMENT. Patent dated June 18, 1974. Disclaimer filed Mar. 17, 1975, by the assignee, *The Perolin Company, Inc.*

Hereby enters this disclaimer to claims 1, 2, 3 and 4 of said patent.

3,831,460.—*Francis M. Linley, Jr.,* Easton, Conn. ANTI-BACKLASH NUT. Patent dated Aug. 27, 1974. Disclaimer filed Jan. 13, 1975, by the assignee, *Universal Thread Grinding Company.*

Hereby enters this disclaimer to claims 14, 16 and 17 of said patent.

3,833,845.—*Christopher R. Smallbone,* Port Colborne, and *Laurent W. Beaudoin,* Welland, Ontario, Canada. TOUCH BUTTON CONTROL SYSTEM. Patent dated Sept. 3, 1974. Disclaimer filed Mar. 17, 1975, by the assignee, *General Signal Corporation.*

Hereby enters this disclaimer to claims 4–11 of said patent.

3,836,700.—*John Grear Hutchison,* Catonsville, Md. PROCESS AND APPARATUS FOR PREPARING PRINTING PLATES USING A PHOTOCURED IMAGE. Patent dated Sept. 17, 1974. Disclaimer filed Mar. 4, 1975, by the assignee, *W. R. Grace & Co.*

Hereby enters this disclaimer to claims 1 through 18 and 22 of said patent.

3,847,016.—*Janis Gunars Ziedonis,* Cranbury, N.J. ULTRASONIC TRANSDUCER ASSEMBLY. Patent dated Nov. 12, 1974. Disclaimer filed Apr. 30, 1975, by the assignee, *Hoffmann-La Roche Inc.*

Hereby enters this disclaimer to claim 7 of said patent.

3,854,323.—*Daniel P. Hearn,* Richardson, and *Thomas K. Perkins,* Dallas, Tex. METHOD AND APPARATUS FOR MONITORING THE SAND CONCENTRATION IN A FLOWING WELL. Patent dated Dec. 17, 1974. Disclaimer filed June 2, 1975, by the assignee, *Atlantic Richfield Company.*

Hereby enters this disclaimer to claims 1, 5, 6, 7, 8, 9, 10, 11, 12 and 13 of said patent.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JUNE 21, 1975

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	9-23-74
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-1-74
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	11-1-74
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	10-7-74
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	10-4-74
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	12-4-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	7-2-74
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	10-4-74
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	11-29-74
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-2-74
DESIGNS, GROUP 290—C. D. QUARFORTH, Director Industrial Arts; Household, Personal and Fine Arts.	5-2-74
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	12-13-74
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	10-18-74
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	1-2-75
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	10-8-74
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	12-10-74

Expiration of patents: The patents within the range of numbers indicated below expire during July 1975, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 2,840,821 to 2,845,624 inclusive
Plant Patents	Numbers 1,722 to 1,739 inclusive

REISSUES

JULY 22, 1975

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 28,486

APPARATUS FOR ARTIFICIAL RESPIRATION OR NARCOSIS

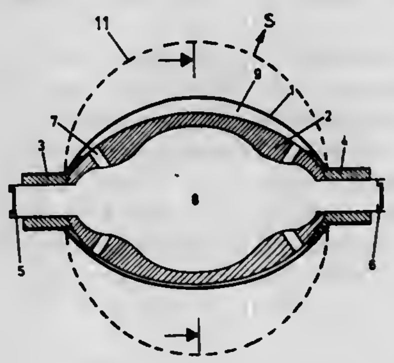
Henning M. Ruben, Copenhagen, Denmark, assignor to Ruth L. Hesse, Testa-Laboratorium, Copenhagen, Denmark

Original No. 3,650,268, dated Mar. 21, 1972, Ser. No. 839,592, July 7, 1969. Application for reissue Nov. 28, 1973, Ser. No. 419,889

Claims priority, application Sweden, July 8, 1968, 9387/68

Int. Cl. A61m *16/00*

U.S. Cl. 128—145.7 **19 Claims**



1. An insufflation apparatus for performing artificial respiration in narcosis, which apparatus includes pumping means for moving gas from a gas source to a patient, the pumping means having a gas containing portion defined by enclosing walls, inlet means on said pumping means for connecting the latter to a gas source and including check valve means for preventing back flow of the gas from the pumping means to the gas source, and outlet means on said pumping means connecting the pumping means to the air ducts of a patient including check valve means for preventing gas from flowing from the air ducts of the patient into the pumping means, said outlet means including an outlet conduit, the improvement which comprises: a first wall section and a second wall section forming the walls of the gas containing portion of the pumping means, said first wall section consisting of a membrane that is more resilient than said second wall section, said membrane forming a portion of the wall of said outlet conduit and being disposed between said check valve means of said outlet means and said second wall section, said membrane being movable between an unexpanded position when the gas pressure in the pumping means is below a predetermined pressure and, under the influence of the gas when the pressure thereof exceeds said predetermined pressure, an expanded position, said membrane thus constituting a means for increasing the volume of the gas containing portion of the pumping means, in consequence of which the pressure of the gas in the pumping means is limited to said predetermined pressure.

Re. 28,487

CRIMPED FLAT MATERIAL FOR FILTER PLUGS

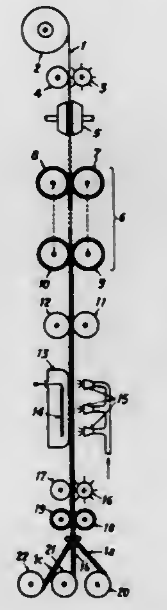
Paul Adolf Müller, Triesenberg, Liechtenstein, assignor to Celfil Company Establishmant, Vaduz, Liechtenstein

Original No. 2,995,481, dated Aug. 8, 1961, Ser. No. 502,016, Apr. 18, 1955. Continuation of Ser. No. 422,872, Nov. 2, 1964, abandoned, which is a continuation of Ser. No. 254,039, Jan. 21, 1963, abandoned, which is a continuation of Ser. No. 173,611, Feb. 9, 1962, abandoned. Application for reissue Jan. 24, 1968, Ser. No. 700,300

Int. Cl. A24d *01/04*

U.S. Cl. 131—261 B **12 Claims**

1. As an article of manufacture, an absorbent sheet for making filters for cigarettes, comprising a web of an elongated fibrous strip material having a plurality of parallel adjacent strips of alternately greater and lesser density of said strip material extending substantially parallel to the longitudinal dimension of said web and having superposed thereonto crimping grooves, the crimping ratio, taken transversely to the direction of the grooves, of a strip when in crimped condition to a crimped strip when ironed flat being in the range of 1:1 to 1:2, said strips being provided with a plurality of spaced cracks therein running substantially in the direction of said grooves.



Re. 28,488

MILK FERMENTING PRODUCT

Stewart M. Farr, Sarasota, Fla., assignor to Microlife Technics, Inc., Sarasota, Fla.

Reissued No. Re. 28,276, dated Dec. 17, 1974, Ser. No. 417,134, Nov. 19, 1973.

Original No. 3,420,742, dated Jan. 7, 1969, Ser. No. 404,526, Oct. 16, 1964. Continuation-in-part of Ser. No. 285,858, June 6, 1963, abandoned. Application for re-reissue Sept. 16, 1974, Ser. No. 506,424

Int. Cl.^{2} C12K *3/00*

U.S. Cl. 195—59 **9 Claims**

4. A stabilized, mixed bacteria concentrate **containing at least about 10×10^9 cells/ml each** consisting essentially of a substantially neutralized mixture of two types of bacteria **which have been separately incubated, concentrated and then mixed**, the first type being selected from the group consisting of Streptococcus lactis, Streptococcus cremoris, Lactobacillus bulgaricus and Streptococcus thermophilus **which has been incubated in a culture medium containing skim milk so as to produce lactic acid and wherein during the incubation the lactic acid produced has been neutralized with a neutralizing agent to maintain the growth of the bacteria**, and the second type being selected from the group consisting of Streptococcus citrovorus and Streptococcus paracitrovorus **which has been incubated in skim milk or a digest milk, said bacteria having been separated from the media and concentrated in a centrifuge**, said concentrate being stabilized by the admixture of a stabilizing agent and a nutrient medium so that the concentrate is stabilized against rapid loss of viability, said concentrate being frozen so that it can be stored for a long period of time without major loss in the viability of the bacteria.

Claim 4 was deleted in Re. 28,276, but is reinstated in this reissue with amendments (matter printed in bold face).

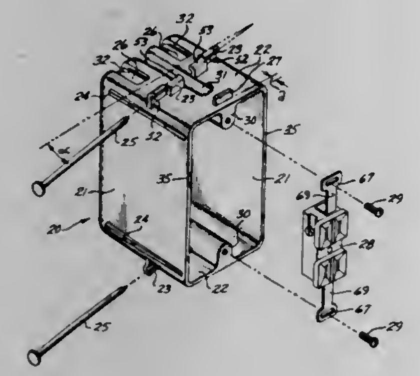
Re. 28,489
MOLDED ELECTRICAL JUNCTION BOX

Edgar C. Schindler, Puyallup, and John C. McEachron, Tacoma, both of Wash., assignors to Nelco Corporation, Orting, Wash.

Original No. 3,740,451, dated June 19, 1973, Ser. No. 265,342, June 22, 1972. Division of Ser. No. 69,266, Sept. 3, 1970, Pat. No. 3,701,451. Application for reissue July 23, 1973, Ser. No. 382,083

Int. Cl.^{2} H02G *3/12*

U.S. Cl. 174—58 **17 Claims**



3. A molded plastic electrical junction box having a wall structure defining a plurality of front-to-rear walls which terminate in a common frontal plane of the box and are interconnected with one another to define a chamber within the box that opens to the ambient surroundings of the box through the frontal plane thereof, a pair of which front-to-rear walls are oppositely disposed to one another and taper relatively toward one another in the direction relatively rearwardly away from the frontal plane of the box, and have corresponding laterally outstanding ribs thereon which extend in the front-to-rear direction of the box and define a pair of flat surfaces thereon that are disposed in spaced parallel planes extending perpendicular to the frontal plane of the box, said ribs providing blunt bearing surfaces having at least as much bearing area at their rearward portions as there is at their forward portions and formed to resistingly bear against the surface of a mounting stud throughout at least their rearward portions so that the frontal plane of a mounted box is generally perpendicular to the surface of the mounting stud, and means on the said box for anchoring said box to a mounting stud, such that the anchor point between the box and a mounting stud is spaced from both the body of the rib and the rearward portion of said rib by an amount sufficient to insure that the rearward portion of said rib is not loaded by mounting forces to an extent that said rearward portion substantially deforms said stud whereby, when the box is mounted on a stud, the box is oriented so that the frontal plane of the box is substantially perpendicular to the surface of the stud·to which the box is attached.

Re. 28,490
NETWORK RECLOSING RELAY

Muchuan M. Chen, Springfield, and William C. Kothelmer, Lansdowne, both of Pa., assignors to General Electric Company, Philadelphia, Pa.

Original No. 3,704,392, dated Nov. 28, 1972, Ser. No. 222,526, Feb. 1, 1972. Application for reissue Sept. 26, 1974, Ser. No. 509,502

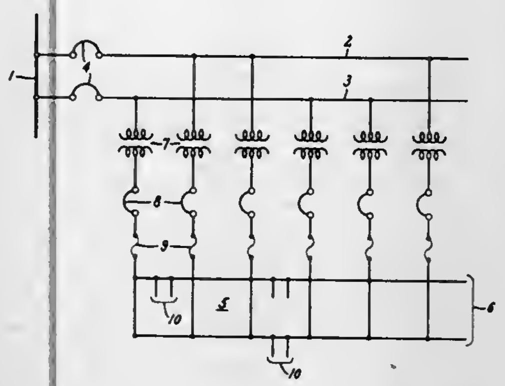
Int. Cl. H02h *3/26*

U.S. Cl. 317—23 **12 Claims**

1. For use in a power distribution system including an alternating current secondary network [applied] *supplied* at a plurality of points from one or more primary feeders, each of said points being connected to a primary feeder by means of a network protector and a transformer, a static relay for supervising a closing operation of the network protector comprising:

a. first means responsive to the AC voltage on the network side of the network protector for providing a first signal during a predetermined interval in the cycle of said AC voltage, the limits of said interval being defined by a predetermined amount of angular displacement on one side of a reference point in the AC voltage cycle and by a predetermined displacement on the other side of said reference point, said reference point being at a predetermined angular position in said AC voltage cycle;

b. second means for deriving from the system a first AC signal proportional to the difference between the voltage on the transformer side of the network protector and the voltage on the network side of the network protector;



c. third means for providing a second signal at a predetermined point in the cycle of the first AC signal, the angular position of said predetermined point in the cycle of the first AC signal being equivalent to said angular position of the reference point in the AC voltage cycle;

d. fourth means for providing a third signal only when the magnitude of the first AC signal is above a predetermined threshold level; and

e. fifth means coupled to said second, third and fourth means for providing an output signal upon the coincidence of said first, second and third signals.

PLANT PATENTS
GRANTED JULY 22, 1975

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,745
CARNATION PLANT

Takeshi Yoichi Yonemoto, 1328 Henderson Ave., Santa Clara, Calif. 95051

Filed July 3, 1974, Ser. No. 485,383

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—70 **1 Claim**

1. A new and distinct variety of carnation plant, substantially as herein shown and described, characterized by its small red-on-white flowers, which are miniatures of those of its parent variety, by its profuse year around production of blossoms, and by the long lasting quality of the blossoms as cut flowers.

3,746
CARNATION PLANT

Takeshi Yoichi Yonemoto, 1328 Henderson Ave., Santa Clara, Calif. 95051

Filed July 3, 1974, Ser. No. 485,384

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—70 **1 Claim**

1. A new and distinctive variety of carnation plant, substantially as herein shown and described, characterized by the purple and white coloration of the flower petals.

3,747
CARNATION PLANT

Takeshi Yoichi Yonemoto, 1328 Henderson Ave., Santa Clara, Calif. 95051

Filed July 3, 1974, Ser. No. 485,385

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—70 **1 Claim**

1. A new and distinct variety of carnation plant, substantially as herein shown and described, characterized by the light pink coloring of its blooms which are of medium size and which have many outwardly projecting guard petals splotched with white at their outer ends, and by its profuse and continuous production of blossoms when grown in greenhouse for cut flowers.

PATENTS

JULY 22, 1975

ERRATA

For CLASS	See PATENT NO.
221-233	3,895,431
228-157	3,895,436
066-091	3,895,489
198-011	3,895,702
317-101 DH	3,895,719
260-033.6 R	3,895,826
335-296	3,895,869
021-074 R	3,895,928
096-115 R	3,895,954
235-151.21	3,896,041
106-149	3,896,054
252-301.2 R	3,896,138
427-306	3,896,252
338-048	3,896,284
053-030	3,896,288
260-078.3 R	3,896,303
215-219	3,896,335
317-068	3,896,352
317-103	3,896,353
317-258	3,896,354

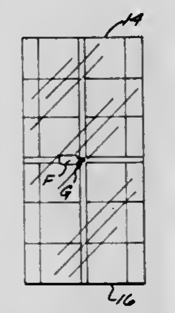
PATENTS

GRANTED JULY 22, 1975

GENERAL AND MECHANICAL

3,895,396
EXPANDABLE PROTECTIVE DEVICE

John Gust Amarantos, 940 Pacific Ave., Apt. C, Long Beach, Calif. 90806
Filed Feb. 4, 1974, Ser. No. 439,351
Int. Cl.² A41D *13/00*
U.S. Cl. 2—2 **4 Claims**



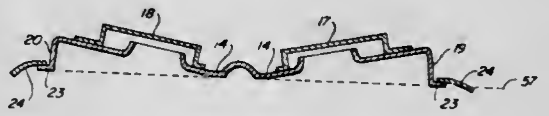
1. A protective device that may be worn in a compact encircling position about the waist of a user and in an emergency inflated by use of compressed air or a gas for the major portion of the device to unfurl and move longitudinally over the user to a protecting position, said device including:

a. first and second cylindrical sheets of a pliable material that have closed ends;
b. a plurality of spaced strips sealed to adjacent interior surfaces of said first and second sheets, with said strips being so disposed as to define a compressed air and gas receiving passage that extends transversely intermediate said ends of said sheet;
c. a plurality of second passages also defined by said strips between said sheets that are at all times in communication with said transversely extending passage and a plurality of cells also defined by said strips that are adjacently disposed to said second passage an opening in said strips between each of said cells and an adjacent said second passage;
d. a plurality of circumferentially spaced longitudinally extending springs that at all times tend to maintain said sheets in a compact, generally donut shaped configuration and in which said configuration said device is worn by said user;
e. a source of compressed gas or air secured to said device;
f. a normally closed valve in communication with said source and said transversely extending passage with said valve when opened by the user permitting compressed gas or air to flow into said transversely extending passage and said second passage and through said opening in said strips into said cells, and said cells when they are inflated deforming said spring means to permit said device to unfurl upwardly and downwardly relative to said transverse passage to envelope desired portions of the user to protect the latter against shock or a change in the surrounding environment that would be detrimental to said user.

3,895,397
FLEXIBLY HINGED EYE PIECE HEADGEAR

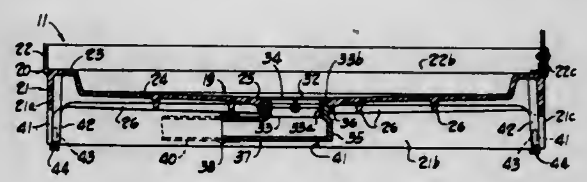
Donald J. Douglas, 10 Glasgow Rd., White Bear Lake, Minn. 55110
Filed Jan. 30, 1974, Ser. No. 438,039
Int. Cl. A61f *9/02*
U.S. Cl. 2—14 W **10 Claims**

1. Headgear comprising a sheath structure having lateral eye accommodating portions, each said eye accommodating portion being connected to a nose accommodating portion of said headgear, each said connection between a said eye accommodating portion and said nose accommodating portion being sufficiently flexible to function as a hinge for tilting a said eye accommodating portion, each said eye accommodating portion comprising a substantially flat eye vision area adapted to be placed in spaced relationship over an eye of a wearer and a temple area elevation curtain outwardly from said substantially flat area, an outwardly extending substantially flat flange about perimeter portions of said sheath structure, said flange being substantially non-parallel to said substantially flat eye vision areas at the lateral extremities of said flange adjacent said temple area elevation curtains said flange being adapted to be placed substantially into a single plane by tilting said eye accommodating portions, which then causes said substantially flat area of each said eye accommodating portion to be at an angle to said plane, and said substantially flat area of each said eye accommodating portion being adapted to be tilted into a single plane which then causes said outwardly extending flange to no longer lie in a single plane.



3,895,398
FREE-STANDING SHOWER STALLS

Bernard E. Mustee, Cleveland, Ohio, assignor to E. L. Mustee & Sons, Inc., Cleveland, Ohio
Division of Ser. No. 158,927, July 1, 1971, Pat. No. 3,751,737, which is a division of Ser. No. 864,716, Oct. 8, 1969, Pat. No. 3,609,773. This application May 10, 1973, Ser. No. 359,078
Int. Cl. A47k *3/22*
U.S. Cl. 4—146 **3 Claims**

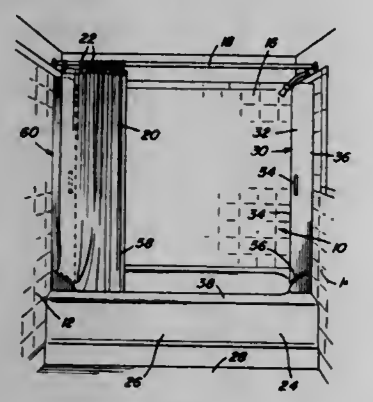


1. A shower stall comprising:

a. a base having a central body portion which defines a shower stall floor, and a support flange formed about the periphery of said central body portion and extending downwardly beyond said central body portion to maintain said central body portion spaced above a floor upon which said base can be positioned;
b. a drain extending down through said central body portion to define a drain opening in said shower stall floor;
c. a drain fitting elbow below said shower stall floor having a portion connected to said drain body and an arm that extends transverse to a vertical axis toward a part of said support flange, said elbow being rotatable about a vertical axis so that said arm can extend in any desired direction,
d. a drain pipe connected to said arm of said drain fitting elbow and extending through an opening of said flange, and
e. wall structure extending upwardly from said base and secured thereto.

3,895,399
TUB SHOWER SPRAY DIVERTER

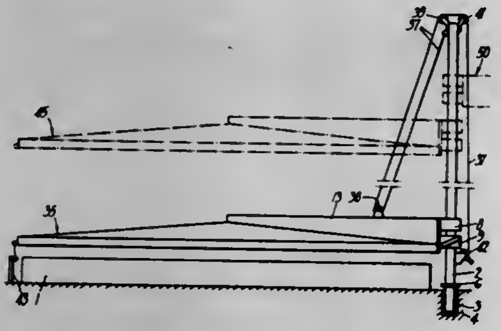
Gary C. Giarrante, 1861 Marlboro, Joliet, Ill. 60435
Filed Apr. 12, 1974, Ser. No. 460,485
Int. Cl. A47k *3/22*
U.S. Cl. 4—149 **16 Claims**



1. In combination with a shower enclosure including an upright structural member defining one upright side of an entrance and exit opening for said enclosure and a spray diverting curtain supported for movement of one upstanding edge portion thereof toward and away from said side across said opening, said structural member having flange means associated therewith defining an upstanding flange projecting at least slightly into said opening and having an upstanding free edge portion and a slot formed in a lower end portion of said free edge portion opening through the latter and of a width to snugly receive the corresponding portion of said curtain upstanding edge portion therein.

3,895,400
COVERING FOR RECREATIONAL AREAS

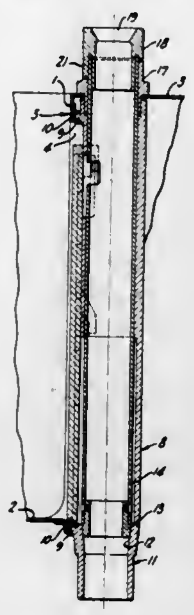
Raymond Robinson Kelcey, 12 Moore St., Coburg, Victoria, 3058, Australia
Filed Mar. 14, 1974, Ser. No. 451,378
Claims priority, application Australia, Mar. 19, 1973, 2631/73
Int. Cl. E04h *3/16, 3/18*
U.S. Cl. 4—172.11 **7 Claims**



1. A cover and cover support apparatus for a recreation area and comprising:
- a single upright support member adapted to be positioned adjacent a recreation area;
- means for mounting said single upright support member for rotation about a vertical axis thereof;
- a horizontally extending cover having a configuration, as viewed from above, sufficient to cover said recreation area;
- said cover having adjacent the center thereof an integral hub;
- a single boom integrally attached along the entire length thereof to the top of said cover and extending from said hub to a position adjacent an edge of said cover;
- bracket means attached to at least one of said cover and said boom for mounting said cover for vertical movement along said single upright support member; and
- means operatively connected to said boom and said single upright support member for selectively vertically moving said cover, said boom and said bracket means along said single upright support member from a first raised position to a second lowered position.

3,895,401
DRAIN STRUCTURE

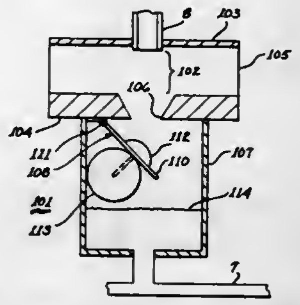
Hank Walraven, P.O. Box 1155, Sausalito, Calif. 94965
Filed Apr. 22, 1974, Ser. No. 462,998
Int. Cl. E03c *1/232*
U.S. Cl. 4—198 **10 Claims**



1. A drain structure for a sink having sidewalls, a top wall and a bottom wall comprising:
- a housing secured to and positioned outwardly of one of said sidewalls,
- a drain conduit at the lower end of said housing and outwardly of said one side,
- a screen positioned substantially coplanar with said one sidewall and extending upwardly from said bottom along a substantial portion of the depth of said sidewall at said housing, and
- quick release means on said screen for removably securing said screen in said position relative to said one sidewall.

3,895,402
REMOTELY LOCATED APPARATUS FOR MAINTAINING THE WATER LEVEL WITHIN A SWIMMING POOL

Littleton Dennis Page, Tucson, Ariz.
Division of Ser. No. 381,360, July 20, 1973, Pat. No. 3,848,627, which is a continuation-in-part of Ser. No. 220,976, Jan. 26, 1972, Pat. No. 3,759,286. This application July 29, 1974, Ser. No. 492,468
Int. Cl. E04h *3/16*
U.S. Cl. 4—172.17 **6 Claims**

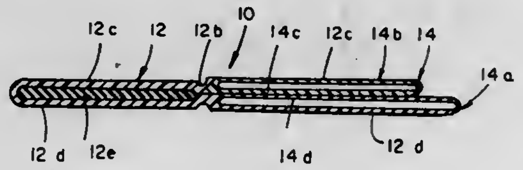


1. In a swimming pool water circulation and filtration system having a suction line, a pump, a return line, makeup water line and a control system for regulating the operation of said pump, wherein said pump draws the pool water through said suction line, pumps the pool water through the filtration system and back into the pool through said return line, the improvement comprising in combination:

- a. means for directing the flow of water from the end of said makeup line in a generally downward direction;
- b. an apertured base, the aperture of said base being vertically displaced from the opening of said makeup line by an air gap and in general vertical alignment therewith;
- c. connecting means disposed intermediate said base and said return line for conveying makeup water from said aperture to said return line; and
- d. a float valve disposed within said connecting means to inhibit a flow of water from said return line through said aperture; whereby, the air gap inhibits any flow of pool water into said makeup line and said return line may be pressured by said pump.

3,895,403
PATIENT ORIENTING DEVICE

Sanford Davis, Stoney Creek Ln., Colts Neck, N.J. 07722
Filed Apr. 5, 1974, Ser. No. 458,171
Int. Cl. A61g *7/10*
U.S. Cl. 5—81 R **11 Claims**

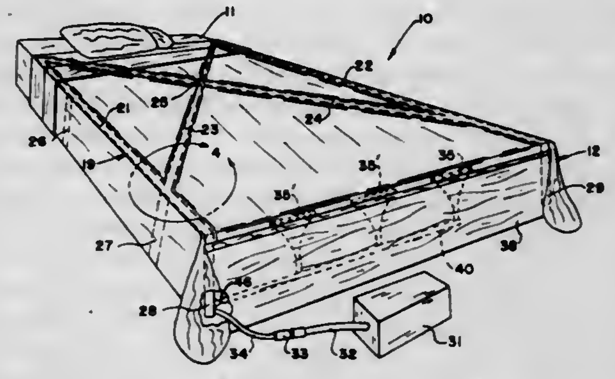


1. A patient orienting device for hospital patients and the like comprising a resilient body provided with two spaced opposing edges arranged adjacent to each side of a patient when the patient is supported by said resilient body, first and second inflatable bodies being provided along each edge of said resilient body, each first inflatable body being arranged for at least partially lifting said resilient body and the patient positioned thereon in response to inflation of the respective first inflatable body, each second inflatable body being arranged to be inflated subsequent to substantial inflation of an associated first inflatable body, at least a portion of each second inflatable body being at least partially supported by said associated first inflatable body and having an opposite other portion thereof in pushing contact against the patient, the inflatable bodies in each pair being in pushing contact with each other and together arranged to bear against and push the patient relative to said resilient body when the respective pair of inflatable bodies are inflated; and pneumatic air supply means for independently and selectively inflating and deflating said bodies on each side of said resilient body to a desired level of pressure to turn the patient or to support the latter in an intermediate inclined position, whereby a patient may be fully turned or inclined in the direction of one or the other of said exposed edges.

3,895,404
BED MAKING APPARATUS

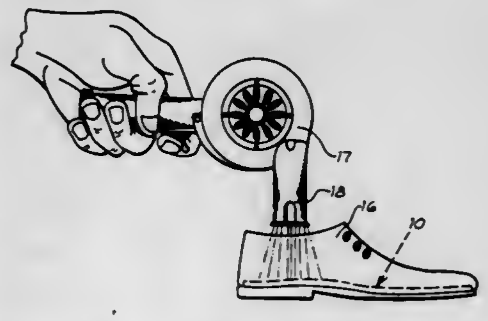
Nathan R. Wilson, 1144 Rhode Island St., San Francisco, Calif. 94107
Filed Feb. 11, 1974, Ser. No. 441,443
Int. Cl.^{2} A47G *9/00;* **A47C** *27/08*
U.S. Cl. 5—334 R **7 Claims**

1. For use in making up the bedding covering a bed, the combination of a plurality of overlying covering layers forming a bedding adapted to drape over and conform with the upper and side surfaces of the bed, a straightening unit carried between at least two layers of the beeding, the straightening unit including a plurality of elongate hollow inflatable tubular members, means mounting the tubular members for a limited range of movement relative to the adjacent layers of the bedding, said tubular members being joined together in a pattern which encompasses a substantial area of the bedding, said tubular members when deflated being substantially non-rigid to permit said bedding to be folded, and when inflated with a charge of gas said tubular members are rigid to cause said bedding to straighten out over said surface of the bed, charging means to selectively inject and release a charge of gas under pressure into and from said tubular members, and means forming vent holes on the undersides of the tubular members for bleeding gas therefrom to form a pressurized gas pocket underneath said bedding.



3,895,405
ADJUSTABLE INSOLE AND METHOD

Clyde A. Edwards, 2722 W. Jackson St., Muncie, Ind. 47304
Filed Sept. 12, 1974, Ser. No. 501,554
Int. Cl. A43d
U.S. Cl. 12—146 M **5 Claims**



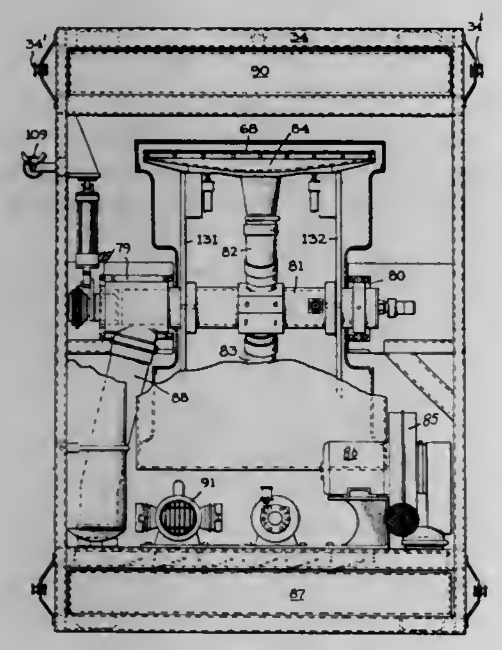
1. A method of fitting an insole in a shoe and comprising the steps of:
- placing in a shoe a flexible insole member;
- heating said member to a temperature sufficient to cause said member to lose at least some of its resiliency;
- placing a foot in the shoe before said member has regained its resiliency; and
- taking steps with the foot in the shoe until the member has regained its resiliency.

3,895,406
AUTOMATIC WINDOW WASHER

Robert D. Fannon, Jr., Columbus, Ohio, assignor to Harsco Corporation, Harrisburg, Pa.
Continuation-in-part of Ser. No. 363,114, May 23, 1973, **abandoned, and Ser. No. 256,610, May 24, 1972, abandoned, which is a division of Ser. No. 107,957, Jan. 20, 1971, Pat. No. 3,715,774. This application Oct. 16, 1973, Ser. No. 406,855The portion of the term of this patent subsequent to Feb. 13, 1990, has been disclaimed.**
Int. Cl.^{2} A47L *1/04*
U.S. Cl. 15—302 **16 Claims**

1. An automatic window washer for buildings having a mobile supporting unit on the roof of the building, at least one cleaning module, nozzles in said module for spraying cleaning fluid on the windows, means in said module for supplying cleaning fluid under pressure to said nozzles, a squeegee in said module above said nozzles, means in said module for moving said squeeegee into and out of engagement with a window being cleaned, vacuum means in said module cooperating with said squeegee for removing residue therefrom, means in said module for supplying high pressure air, means

in said module for supplying low pressure air, means on said module engaging vertical tracks on the building disposed adjacent the windows to be washed, resilient non-extensible means extending from said module to the roof unit for positioning said module adjacent a window to be washed, electric control means energized from the roof unit for energizing said means for supplying cleaning fluid, said vacuum means and for energizing said means for supplying high and low pressure air, fluidic control means mounted in said module energized by said means for supplying low pressure air, a start fluidic sensor in said module for said fluidic control means sensing the top of a window to be cleaned, a stop fluidic sensor in said module for said fluidic control means sensing the bottom of a cleaned window, pneumatic control means energized by said means for supplying high pressure air sequentially actuated by said fluidic control means for first connecting said means for supplying cleaning fluid to said nozzles and then for actuating said means for moving said squeegee, said start sensor starting window cleaning and said stop sensor stopping window cleaning.



2. An automatic window washer as described in claim 1, said fluidic control means including a counter having a start position connected to said means for supplying low pressure air, said start sensor starting said counter and connecting said means for supplying cleaning fluid to said nozzles, said counter after a predetermined interval actuating said pneumatic control means and moving said squeegee into engagement with a window.

3. An automatic window washer as described in claim 2, said counter actuated by said stop sensor after a predetermined interval disconnecting said means for supplying cleaning fluid to said nozzles and thereafter after a predetermined interval said stop sensor actuating said pneumatic control means and moving said squeegee out of engagement with the window.

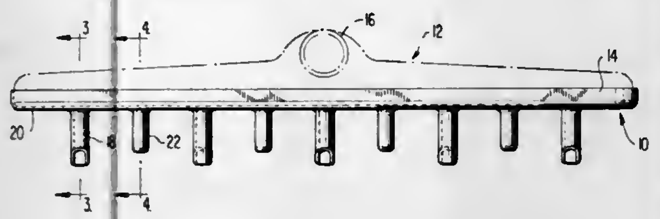
3,895,407
SHAG RUG ADAPTER

Carl Parise, Reno, Nev., assignor to Parise & Sons, Inc., Reno, Nev.

Filed July 17, 1973, Ser. No. 380,026
Int. Cl. A47l ***9/02***
U.S. Cl. 15—397 **14 Claims**

1. In a shag rug vacuum cleaning tool comprising:
1. a housing having
   a. a work face adapted to be brought in contact with shag rugs to clean them,
   b. an air-tight chamber therewithin, and
   c. a passageway adapted to place said chamber in communication with a vacuum source; and
2. a plurality of rake tines each of which
   a. is fixedly mounted on said work face of said housing and
   b. contains a passageway leading from said chamber in said housing to the end of said rake tine removed from said work face,

the improvements
   a. wherein said rake tines have means thereon for directing the vacuum pressure from each of said tines
      i. in a plane parallel to said work face,
      ii. in a direction parallel to the direction of travel of the cleaning tool when in normal use, and
      iii. in the direction opposite to the direction in which the vacuum pressure from the adjacent tine or tines is directed; and



   b. wherein said rake tines and the means thereon for directing the vacuum pressure from each of said tines are located on said work face such that the oppositely directed means on adjacent tines are close enough so that, when the cleaning tool is used to clean a shag rug, the piles of the shag rug located between two of said tines are subjected to a shearing action from the simultaneous application in opposite directions of the vacuum pressure from the adjacent tines.

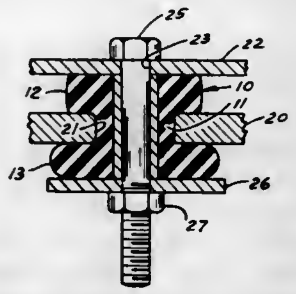
6. A shag rug vacuum cleaning tool as claimed in claim 1 and further comprising a plurality of solid rake fingers mounted on said work face of said housing intermediate said rake tines and adapted to comb the pile on a shag rug as the tool is drawn through it and to act as a divider between the oppositely directed air currents flowing to said rake tines when vacuum is supplied to said chamber.

7. A shag rug vacuum cleaning tool as claimed in claim 6 wherein said housing further has a plurality of lint slots therein intermediate said rake tines tines said work face of said housing.

3,895,408
RESILIENT MOUNTING

Charles J. Leingang, 1535 W. 42 St., Erie, Pa. 16509

Filed Jan. 30, 1974, Ser. No. 438,120
Int. Cl.^{2} B65D ***7/48***
U.S. Cl. 16—2 **8 Claims**



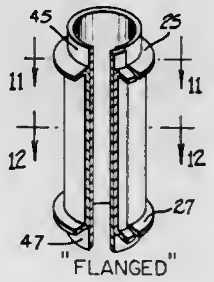
1. A resilient mounting comprising:
a. a tubular bushing of elastomeric material having a central body portion and opposite end portions, said body portion having an exposed outer surface, one of said end portions being an enlarged head projecting radially outside the body portion and the other end portion being an elongate tubular skirt extending axially from the body portion of the bushing; and
b. a rigid tubular sleeve disposed within and bonded to the bushing, the sleeve having one end terminating substantially flush with the head of the bushing and having its other end terminating adjacent the skirt of the bushing,

the tubular skirt having an internal diameter that (i) throughout the length of the skirt is at least equal to the internal diameter of the body portion of the bushing and (ii) adjacent the sleeve is greater than the outside diameter of the sleeve, the wall of the skirt being arched radially outward beyond the outside diameter of the body portion with the end of the skirt remote from the body portion tapering radially inward to an outside diameter substantially equal to the outside diameter of the body portion.

3,895,409
SPACER GROMMET AND METHOD OF MANUFACTURE THEREOF

Frank Kwatonowski, Somerville, N.J., assignor to Johns-Manville Corporation, Denver, Colo.

Filed Aug. 31, 1973, Ser. No. 393,372
Int. Cl. B65d ***7/48***
U.S. Cl. 16—2 **12 Claims**



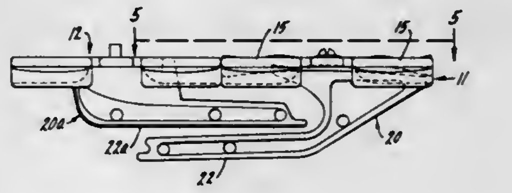
1. A spacer grommet comprising a single strip of sheet material and having
   a. a core composed of at least one layer of said sheet material, said core surrounding the axis of and defining an axial opening through said spacer grommet;
   b. a spacer segment composed of at least one layer of said sheet material, said spacer segment
      i. being disposed radially outwardly from and adjacent to said core; axial
      ii. cooperating with said core to form a shoulder at each axis end of said segment; and
   c. said core having at each axial end thereof a locking portion, each locking portion extending axially beyond the corresponding shoulder of said spacer segment, the amount of extension being such that said locking portion when turned radially outwardly will cooperate with said shoulder to retain said spacer grommet in its operative position.

3,895,410
MASTER SLIDE FOR DRAPERY

Henry Znamirowski, Ellicott City, and William Vanburen Fielder, Jr., Westminster, both of Md., assignors to Roper Corporation, Kankakee, Ill.

Filed July 19, 1974, Ser. No. 489,998
Int. Cl. A47h ***1/04;*** **E05d** ***13/02, 15/06***
U.S. Cl. 16—93 D **8 Claims**

1. In a master slide for use on a slotted drapery rod, the combination comprising a slide body having runners along its upper edge for registering with the slot in the rod and having a depending skirt hanging below rod level, the runners being formed to maintain the skirt in upright position, a bracket having a base portion and an integral supporting arm, the base portion having a mounting surface seating on the front of the skirt for cantilevered support of the leading edge of a section of drapery, the mounting surface on the bracket and the face of the depending skirt being formed in a plurality of mating scallops dimensioned to permit register in a selected one of a plurality of horizontal positions thereby to control the degree of horizontal extension of the bracket, and the drapery thereon, with respect to the slide body, the mounting surface

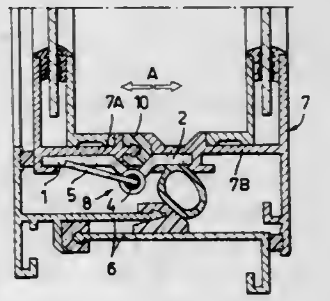


of the bracket being relatively rockered in a horizontal plane with respect to the face of the skirt so as to permit inward and outward angular adjustment of the arm when the bracket is in the selected position on the slide body, and screw means for clamping the bracket onto the face of the skirt in the selected position and angle.

3,895,411
HINGE, IN PARTICULAR FOR COUPLED WINDOW CONSTRUCTIONS

Lauri Matti Ulrik Stark, Helsinki, Finland, assignor to Oy. Nokia AB, Helsinki, Finland

Filed Dec. 18, 1973, Ser. No. 425,765
Claims priority, application Finland, Dec. 29, 1972, 3705/72
Int. Cl. E05d ***7/04***
U.S. Cl. 16—131 **3 Claims**



1. An improved hinge for two components connected pivotally to each other, in particular for the sash halves of a coupled window casement, which hinge comprises at least two hinge blades formed with bearing bushings, and a connecting pivot pin which is rotatably mounted in the bearing bushings, the improvement residing in that the pivot pin is of oval cross-section with the length of the longer axis of the oval section substantially corresponding to the diameter of the interior of the bearing bushings so as to prevent relative movement of the hinge blades in directions along said longer axis and the length of the shorter axis smaller than the diameter of the interior of the bearing bushings so as to permit relative movement of the hinge blades in directions along said shorter axis.

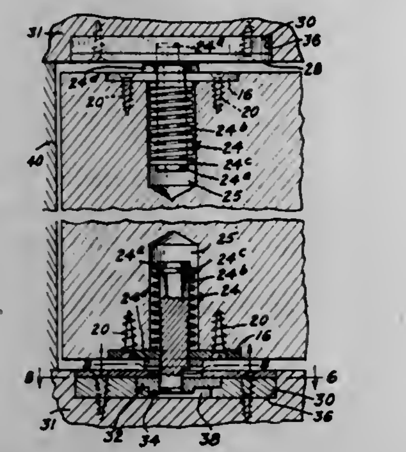
3,895,412
PIVOT ASSEMBLY

Larry K. Johnson, Morrison, Ill., assignor to Lawrence Brothers, Inc., Sterling, Ill.

Continuation-in-part of Ser. No. 352,878, April 20, 1973, abandoned. This application Mar. 11, 1974, Ser. No. 449,321
Int. Cl.^{2} E05D ***7/08***
U.S. Cl. 16—151 **9 Claims**

1. The pivot assembly for a door member, the pivoted vertical edge of which when the door member is in the closed condition is in substantial abutting relation with a complementary vertical door frame member, said assembly including; a

pintle mechanism for attachment to either the corner portion of a door member or a door frame member, and including a vertically disposed pintle device having an extremity adapted to project from the edge surface of said member; and camming means carried by the other of said door or frame members and including a base member having a recess therein defined by an internal peripheral cam surface of predetermined non-circular contour, a pintle accommodating cam member slidably and rotatably disposed in said recess, and including means for receiving the projecting extremity of said pintle device in non-rotating coupled engagement, said cam member further including a plurality of cam surface engaging lobes, such that rotation of the door member in either direction incident to opening will produce relative rotation of said pintle member and said cam member with respect to said base member, which rotation causes the lobes on said cam member to engage said cam surface to produce longitudinal movement of said cam element and said pintle mechanism relative to said base member, which movement is adapted to produce corresponding lateral displacement of a door member relative to a frame member, regardless of the opening direction.



3,895,413
MOUNTING ARRANGEMENT FOR DOORS

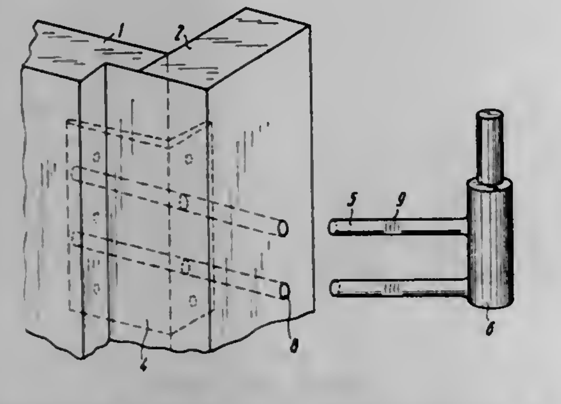
August Buergers, Erkelenz-Gerderath, Germany, assignor to Europatent S.A., Luxemburg, Luxemburg

Filed Aug. 27, 1974, Ser. No. 500,995

Claims priority, application Germany, Sept. 7, 1973, 2345232

Int. Cl.² E05D *5/10*

U.S. Cl. 16—168 **10 Claims**



1. A mounting assembly for use in mounting a door on a door frame comprising a plastic holder mounted on a posterior part of said door frame, said plastic holder having elongated holes which are aligned with corresponding openings in the adjacent part of the door frame, a hinge support having elongated lugs which are constructed and arranged to pass through said openings and to be received in said elongated holes in said plastic holder, said elongated holes being smaller than said lugs so as to provide an interference fit therebetween, said plastic holder being made of a plastic material constructed such that the walls of said elongated holes yield elastically to biasingly clamp said lugs in said holes upon forcible insertion of said lugs in said holes, said lugs being provided with means for increasing the frictional drag between said lugs and said elongated holes.

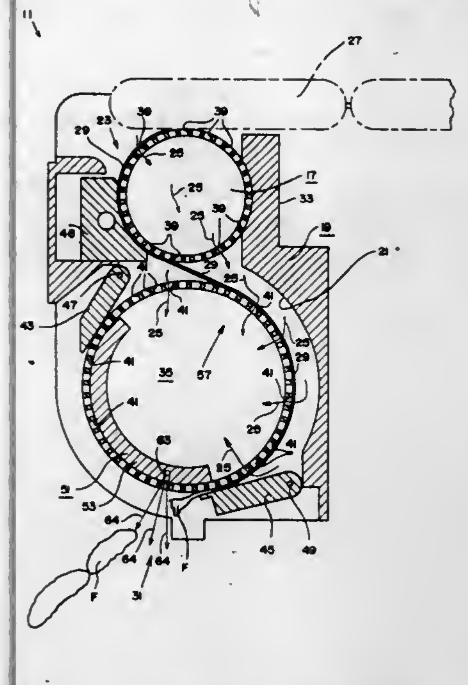
3,895,414
SAUSAGE CASING BREAKER

Thomas A. Klyce, Memphis, Tenn., assignor to Ranger Tool Co., Inc., Ellendale, Tenn.

Filed Sept. 14, 1973, Ser. No. 397,394

Int. Cl. A22b

U.S. Cl. 17—1 F **6 Claims**



1. The combination with apparatus for peeling a continuous string of casing from sausage and the like of casing breaker means, said casing breaker means comprising first means for engaging the continuous string of casing to peel the casing from the sausage, second means for engaging the continuous string of casing after the casing has been peeled from the sausage by said first means, and means for applying tension to the meat-free continuous string of casing between said first and second means to subsequently sever the meat-free continuous string of casing into casing fragments to facilitate further handling of the casing.

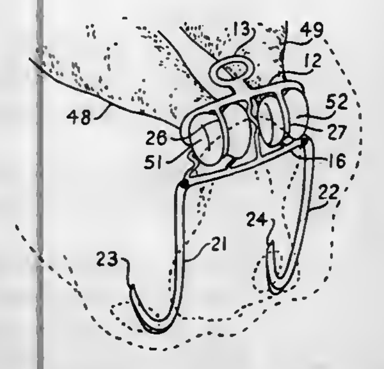
3,895,415
RETAINER FOR DRESSED POULTRY

Anthony J. Volk, 173 E. Syracuse St., Turlock, Calif. 95380

Filed June 4, 1974, Ser. No. 476,297

Int. Cl. A22c *21/00*

U.S. Cl. 17—11 **12 Claims**



1. A limitedly flexible dressed poultry trussing retainer comprising spaced upper and lower bars having the ends thereof connected by end connections and a pair of spaced locking means extending between the bars intermediate the ends thereof for extension along the creases of the hocks of fowl with the bars disposed above and below the legs of the fowl adjacent the hocks, and a pair of hooks with each hook connected by a shank to a respective end of said lower bar for extension into the carcass of a fowl for engagement with bone structure thereof to truss the fowl.

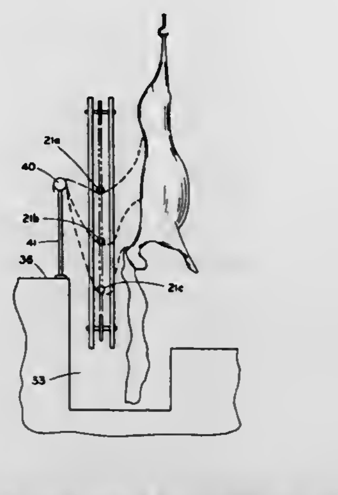
3,895,416
APPARATUS FOR REMOVING HIDES FROM ANIMAL CARCASSES

Melburn W. Haws, Davis, Calif., assignor to Armour and Company, Phoenix, Ariz.

Continuation of Ser. No. 225,236, Feb. 10, 1972, Pat. No. 3,815,177. This application Feb. 22, 1974, Ser. No. 444,813

Int. Cl. A22b *5/16*

U.S. Cl. 17—21 **9 Claims**



1. A device for removing the hide from an animal carcass comprising conveyor means for suspending animal carcasses thereon, a stationary holder spaced from the path of said conveyor means and adapted to receive thereon a loose portion of the hide from a carcass suspended on said conveyor, a roller, and means for passing said roller downwardly against said hide between said carcass and said holder while permitting free turning movement of the roller.

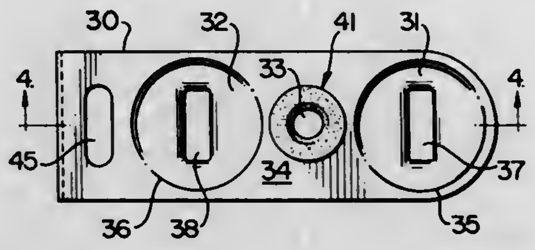
3,895,417
SLIVER GUIDE

Ernest H. Zimmermann, Jr., Webster, Mass., assignor to Brunswick Corporation, Skokie, Ill.

Filed Sept. 17, 1973, Ser. No. 398,012

Int. Cl.² D01H *5/72*

U.S. Cl. 19—288 **7 Claims**



1. A unitary guide for two slivers and a continuous metal filament tow comprising:

an elongated body having two trumpet shaped sliver receiving apertures spaced apart, each sliver aperture being defined by a circular entrance and a rectangular exit;

a tow receiving aperture located on the body substantially halfway between the sliver receiving apertures and having a diameter smaller than the larger dimension of the rectangular exit of the sliver apertures; and

a ceramic insert adaptably mounted in the tow receiving aperture capable of preventing excessive wear of the tow aperture by the abrasive nature of the continuous metal filament tow passing therethrough.

3,895,418
END STOP MEMBER FOR SLIDING CLASP FASTENERS

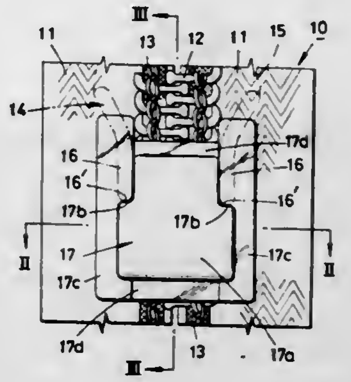
Hiroyuki Ebata, Uozu, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed July 17, 1973, Ser. No. 379,963

Claims priority, application Japan, July 18, 1972, 47-85302[U]

Int. Cl.² A44B *19/36*

U.S. Cl. 24—205.11 F **2 Claims**



1. In a sliding clasp fastener of the type which comprises a pair of oppositely disposed stringer tapes each carrying along their respective longitudinal edges a row of interlocking fastener elements made of a continuous plastic filament and a slider having side flanges and mounted on the fastener for reciprocal movement along said longitudinal edge, the improved bottom end stop member for restricting the movement of the slider which end stop member is formed of a thermoplastic material and which consists of a central body adhesively covering a plurality of interengaged fastener elements and having shoulders laterally projecting for abutting engagement with the side flange ends of the slider, further engaged fastener elements extending beyond the ends of said central body first reduced or thinned out foil portions longitudinally extending on opposite sides of said body and adhesively bonded to the respective stringer tapes, and second reduced or thinned-out foil upper and lower portions extending laterally on opposite ends of said body and downwardly stepped so as to lie below the surface of said body thereby preventing the upper portion from coming into abrasive contact with the slider, said central body being completely circumferentially surrounded by said first reduced portions and said second reduced foil upper and lower portions, and said second foil upper and lower portions being fused to said further fastener elements to form a unitary body with said end stop member and said interengaged fastener elements.

3,895,419
CROSS CHAIN HOOK

Alfred M. Roberts, York, Pa., assignor to Campbell Chain Company, York, Pa.

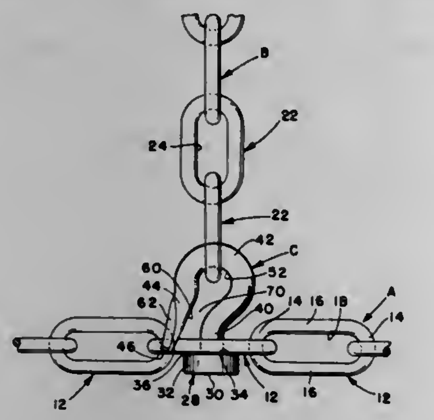
Filed Jan. 30, 1974, Ser. No. 437,834

Int. Cl. A43c *11/08;* **A44b** *13/00*

U.S. Cl. 24—230.5 CR **9 Claims**

1. A hook for interconnecting two links contained in two different chains comprising a head, a shank extending from said head and merging into a reversely curved bowl, said bowl merging into an end section which is spaced from said shank to define therewith a throat leading to said reversely curved bowl, said throat having a width just slightly larger than the diameter of one link whereas the bowl has a width larger than the combined diameters of the two links, whereby to assemble or disassemble the chains the two links are both positioned

about the bowl for relative movement but for operation one link is maintained about said shank and thus extends into said throat to preclude removal of the other link positioned about said bowl.



3,895,420
PROCESS FOR CRIMPING FILAMENTS AND YARNS

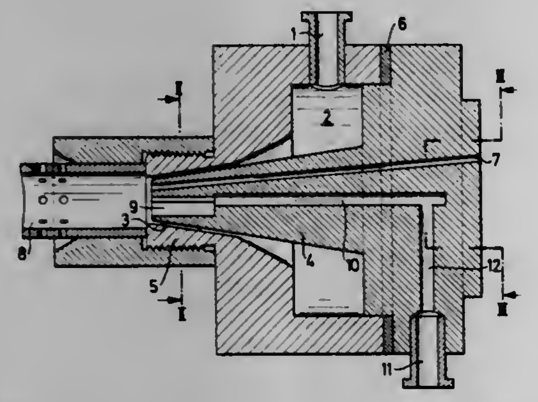
Hans-Jürgen Strutz; Ingolf Jacob, both of Bobingen, and Johann Seelig, Schwabmunchen, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Apr. 5, 1973, Ser. No. 348,226

Claims priority, application Germany, Apr. 10, 1972, 2217109

Int. Cl.^{2} D02G *1/12*

U.S. Cl. 28—72.14 **5 Claims**



1. In a process for crimping filaments and yarns in which a plurality of filamentary yarns are drawn by the current of a motive fluid medium into an injector nozzle and piled up and stuffed in a perforated blowing chamber, the improvement which comprises introducing the individual filamentary yarns into the blowing chamber by separate yarn channels in the injector nozzle, and keeping them separate in the blowing chamber by introducing currents of fluid separating medium through separate fluid channels disposed inbetween the separate yarn channels while piling and stuffing the filamentary yarns in the blowing chamber.

3,895,421
METHOD OF ADJUSTING THE SENSITIVITY OF A WEIGHING MAT

Henry F. Miller, Clifton, N.J., assignor to Uniroyal, Inc., New York, N.Y.

Filed Jan. 2, 1974, Ser. No. 430,370

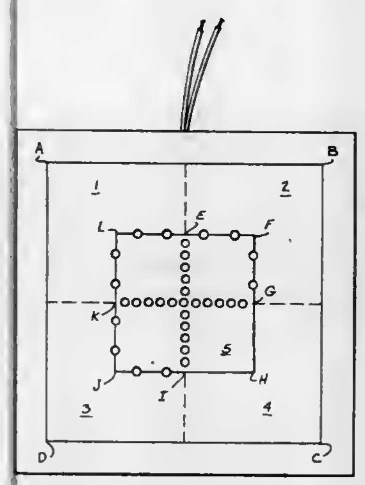
Int. Cl. H01g *13/00*

U.S. Cl. 29—25.42 **7 Claims**

1. The method of adjusting the relative sensitivities of sections of a weighing mat comprising:

assembling at least two electrically conductive layers separated by a deformable dielectric layer to form a weighing mat with sections of different sensitivities;

measuring the sensitivities of said sections to determine the relative sensitivities of said sections;



and removing from one or more of said sections having low sensitivity at least one or more portions of said conductive and dielectric layers to bring the relative sensitivities of said low sensitivity sections of the mat within predetermined tolerance limits.

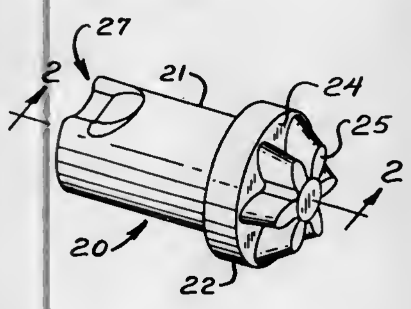
3,895,422
SCREW JACK PINION GEAR AND METHOD OF MAKING SAME

Richard S. Graafsma, Benton Harbor, Mich., and George H. Morgan, South Bend, Ind., assignors to Auto Specialties Manufacturing Co., St. Joseph, Mich.

Division of Ser. No. 388,391, Aug. 15, 1973, Pat. No. 3,862,577. This application July 31, 1974, Ser. No. 493,280

Int. Cl. B21d *53/28*

U.S. Cl. 29—159.2 **2 Claims**



1. A method of making a pinion gear or like article including the steps of first cutting a blank from an elongated supply, next transferring the blank to a first operating station, next cold forming the cut blank to a preliminary size, next transferring the blank to a second work station, next cold forming gear teeth on one end of the blank to a preliminary shape, next transferring the blank to a third work station, next cold forming the gear teeth to a final shape and simultaneously cold forming a collar on the blank end adjacent the gear teeth, next transferring the blank to a fourth work station, next cold back extruding a recess and a skirt surrounding the recess at the other end of the blank, next transferring the blank to a fifth work station and finally cold crimping the end of the recess skirt to a pre-designated shape for engagement by a pinion-gear engaging tool.

3,895,423
MANDREL AND APPARATUS FOR MANUFACTURING MULTILAYER WINDING

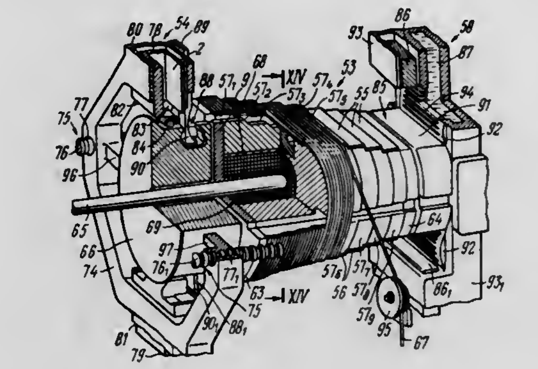
Mikhail Alexandrovich Arakelov, ulitsa Oktyabrskaya, 303; Eduard Galaktionovich Gersamia, ulitsa Oktyabrskaya, 34, kv. 14; Tengiz Grigorievich Zedgenidze, prospekt 1, Chavchavadze 76, and Gennady Pavlovich Nozadze, ulitsa Lenina, 76, all of Tbilisi, U.S.S.R.

Filed Aug. 10, 1973, Ser. No. 387,282

Claims priority, application U.S.S.R., Aug. 11, 1972, 1818190; Aug. 11, 1972, 1818200

Int. Cl. H02k *15/00*

U.S. Cl. 29—205 D **11 Claims**



1. A mandrel for the manufacture of a multi-layer winding with ferromagnetic elements placed between layers thereof; the mandrel comprising a lateral surface defined by a succession of descending steps, the number of the latter being equal to that of said layers of the winding; each of said steps having surfaces with geometric dimensions and shapes of said lateral surfaces that correspond to those of said layers, placed upon each said step with a respective one of said ferromagnetic elements; the mandrel having a configuration and strength of the magnetic field capable of reliably fixing said ferromagnetic elements on said lateral surfaces.

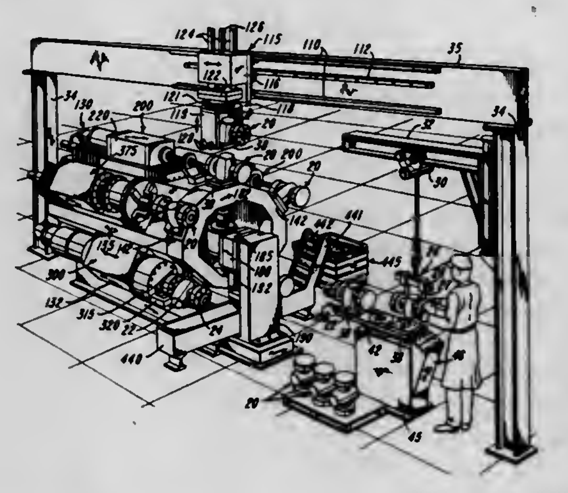
3,895,424
MACHINE TOOL

Charles F. Hautau, Oxford, Ohio, assignor to Vulcan Tool Company, Dayton, Ohio

Filed July 26, 1972, Ser. No. 275,267

Int. Cl. B23q *39/04*

U.S. Cl. 29—38 C **28 Claims**



1. A machine tool adapted for successively machining a supply of workpieces, comprising a base frame, a turret having means forming a plurality of peripherally spaced seats on said turret, said turret having an annular portion defining a cavity, means mounted on said frame and supporting said turret for rotary indexing, a fixture member for each workpiece, means for releasably and rigidly securing each workpiece to its corresponding said fixture member, said turret including a movable clamping member for each of said seats, each said clamping member being movable between a released position and a locked position for rigidly and releasably securing the corresponding said fixture member and workpiece to said turret during indexing of said turret, a power operated actuator positioned within said cavity defined by said annular portion of said turret, means independent of said turret and supporting said actuator for movement relative to said turret, said actuator having means for releasably engaging each said clamping member and for moving each said clamping member between said released and locked positions, a series of machining units disposed around said turret and each unit being adapted to perform a predetermined machining operation on each workpiece, and means for indexing said turret to present each said fixture member and the corresponding workpiece to each of said machining units.

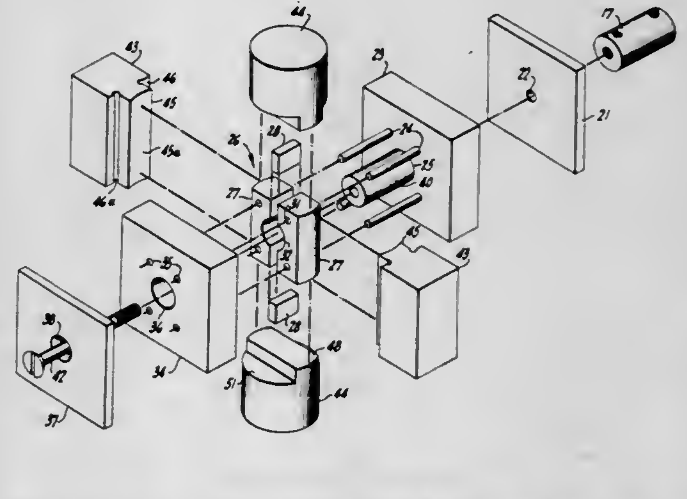
3,895,425
COIL FORMING APPARATUS AND METHOD

John Y. Pun, 10601 San Pablo Ave., El Cerrito, Calif. 94530

Division of Ser. No. 239,655, March 30, 1972, Pat. No. 3,786,353. This application Jan. 8, 1974, Ser. No. 431,666

Int. Cl. H02k *15/04, 15/00;* **H01f** *7/06*

U.S. Cl. 29—205 D **5 Claims**



1. Apparatus for winding and initial forming of galvo-motor coils comprising a collet adapted on one end to mount on a driving shaft extending from a coil winding machine and having engageable means on the opposite end, a first pressure plate aligned with the collet and butting against the collet, a first planar coil width form of a material resisting adhesion by coil impregnation compounds aligned with the first pressure plate and abutting said plate, a center section of a frustum of a cylinder which provides the initial coil form upon which the coil is wound abutting the first coil width form and of a similar material, a second planar coil width form of a material similar to the first coil and abutting the coil winding form, locating means passing through each of the first and second planar coil width forms and the coil winding form, a second pressure plate aligned with the first pressure plate and abutting the second coil width form, shaft means extending through the first and second pressure plates and interposed center section and connected to said engaging means in the collet to thereby interconnect the first and second pressure plates, first and second coil width forms, and the coil winding form together as a unitary structure.

3,895,426
WIRE STRIPPING METHOD AND DEVICE

John W. Papsdorf, Lake Orion, Mich., assignor to Cardinal of Adrian, Inc., Dryden, Mich.

Filed Mar. 22, 1974, Ser. No. 453,787

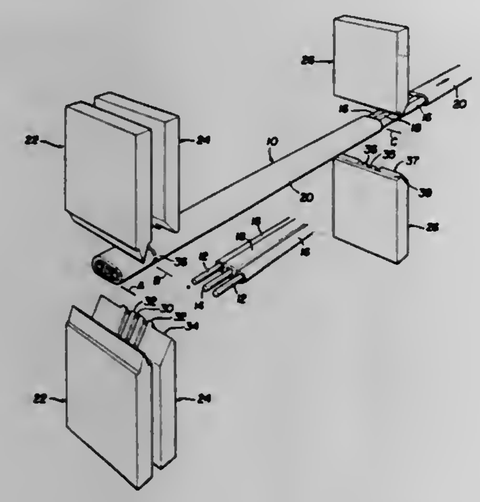
Int. Cl.^{2} B23P *19/02*

U.S. Cl. 29—427 **15 Claims**

1. A method for cutting to length and preparing for use a jacketed cable consisting of a plurality of wires arranged in parallel but spaced and planar relationship within the cable, at

least some of said wires being individually insulated prior to being encased within the jacket, comprising the steps of:

1. feeding cable to be cut into the cutting device and positioning it relative to a plurality of cutting blades to prepare the cable for cutting to a predetermined length;
2. completely severing the cable at a first point along its length;
3. severing only the jacket at secoond and third points along the cable, said second and third points being located at opposite sides of said first point and spaced a short distance therefrom;
4. severing all of the individual insulation without cutting the wires and while only partially severing the jacket at fourth and fifth points along the cable, said fourth and fifth points being located on opposite sides of said first point and between said first point and said second and third points, respectively;



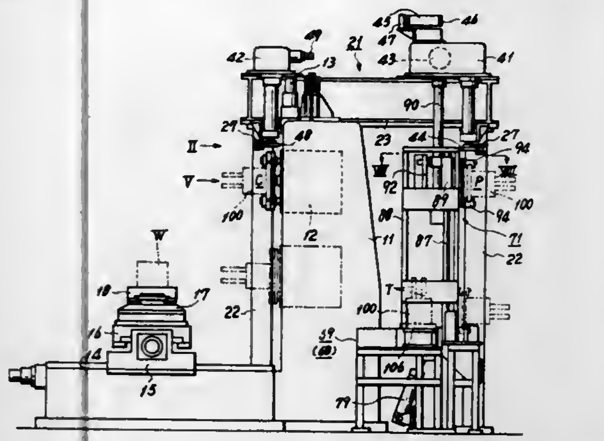
5. said severing steps (2) through (4) being performed simultaneously while the cable is held in a fixed position;
6. maintaining the cutting blades at the second and third points in an extended position at least partially penetrating the jacket to thereby prevent longitudinal movement of the severed jacket segments therebetween;
7. gripping the cable at the sides of the second and third points remote from the first point;
8. longitudinally indexing both gripped cable segments in opposite directions away from the first point while holding in place the severed jacketed segments between said first and second points and between said first and third points, to thereby loosen said jacket segments from the unsevered insulation within.

3,895,427
MACHINE TOOL WITH OVERHEAD TOOL MODULE STORAGE MAGAZINE

Hisaji Nakao; Akira Kurosaka, both of Toyota; Katsunori Otani, Kariya; Sadaaki Tsuzuki, Kariya, and Yuzo Honda, Kariya, all of Japan, assignors to Toyoda-Koki Kabushiki Kaisha, Japan

Filed Mar. 29, 1974, Ser. No. 456,370
Claims priority, application Japan, Apr. 5, 1973, 48-38931
Int. Cl. B23q *3/157*
U.S. Cl. 29—568 **10 Claims**

1. A machine tool comprising:
a machine column;
a plurality of supporting members;
an overhead magazine body mounted on said supporting members, said overhead magazine body having a circular guide way wherein a first changing station and a second changing station are provided;
a plurality of holding means indexably mounted on said circular guide way for detachably holding a plurality of tool modules, respectively, said tool modules being changed at said first changing station and said second changing station;
a spindle head slidably mounted on said machine column so as to be moved from a lower machining position to an upper end of vertical movement thereof defining said first changing station;
means for moving said holding means along said circular guide way to index the same to said first changing station and said second changing station;
clamping means mounted on said spindle head for shifting the tool module between said holding means and said spindle head in a direction traversing said circular guide way to thereby clamp the same on said spindle head, said clamping means permitting said tool modules to pass therethrough in the indexing operation;
a frame base;
an elevator means slidably mounted on said frame base for moving the tool module toward and away from said second changing station defined by the upper end of movement thereof; and,
shifting means mounted on said elevator means for shifting the tool module in the traverse direction to replace the same between said holding means and said elevator means, said shifting means permitting said holding means to pass therethrough in the indexing operation.



3,895,428
CONTINUOUS CASTING OF METAL RODS AND BARS

Jean Leroy, Hoboken-Antwerp, Belgium, assignor to Metallurgie Hoboken-Overpelt, Brussels, Belgium

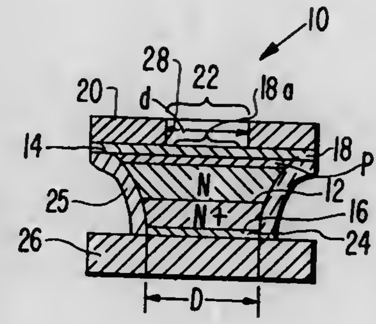
Filed Oct. 17, 1973, Ser. No. 407,044
Claims priority, application Belgium, Oct. 17, 1972, 123169
Int. Cl. B23k *19/00*
U.S. Cl. 29—527.6 **6 Claims**

1. A process for directly and continuously manufacturing profiled bars or wire rods of a metal such as copper comprising continuously casting a molten metal in a casting means in the form of a rough casting, permitting said rough casting to be cooled in the casting means sufficient to develop a solid metal envelope containing a substantial quantity of liquid metal therein, conveying said rough casting out of the casting means into the surrounding atmosphere, conveying said rough casting to a first intensive cooling zone and subjecting said rough casting to direct contact with a coolant capable of intensively cooling said rough casting, conveying said rough casting into the surrounding atmosphere and simultaneously permitting heat to transfer from the central portion thereof to the outer intensively cooled portion to thereby facilitate reheating of the cooled portion, conveying said rough casting to at least a second intensive cooling zone and subjecting said rough casting to direct contact with a coolant capable of intensively cooling said rough casting to further cool the outer portion thereof, and conveying said rough casting to the surrounding atmosphere while simultaneously permitting heat to transfer from the central portion thereof to the outer intensively cooled portion to thereby facilitate reheating of the cooled portion to thereby produce a casting having a substantially uniform temperature distribution while maintaining the rate of production at such levels as to facilitate the continuous casting of such profiled bars or wire rods.

3,895,429
METHOD OF MAKING A SEMICONDUCTOR DEVICE

Ho-Chung Huang, Hightstown, and Angela San-Paolo, Trenton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed May 9, 1974, Ser. No. 468,594
Int. Cl. B01j *17/00*
U.S. Cl. 29—580 **5 Claims**



1. A method of making a semiconductor device comprising the steps of:

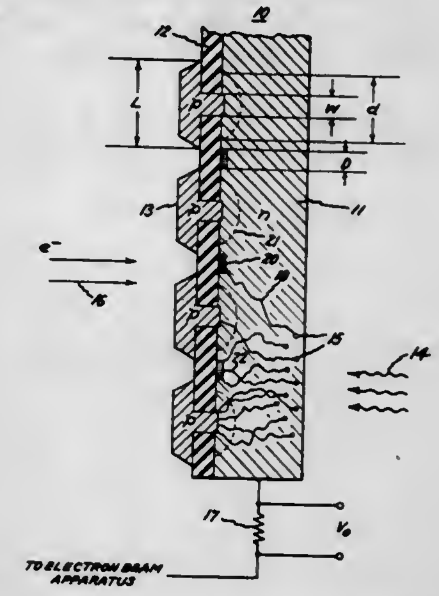
a. providing a first conducting layer on one of a pair of opposed surfaces of a semiconductor wafer, then
b. forming on said first conducting layer a second conducting layer having a plurality of spaced openings, then
c. forming grooves in said semiconductor wafer along lines extending between said openings from the other of said surfaces of said semiconductor wafer so that each one of the remaining portions of said semiconductor wafer is disposed across one of said openings, then
d. inserting a removable filling material into said grooves in said semiconductor wafer, then
e. providing a substrate layer in electrical contact with a surface of each one of said remaining portions of said semiconductor wafer, and then
f. separating said remaining portions of said semiconductor wafer.

3,895,430
METHOD FOR REDUCING BLOOMING IN SEMICONDUCTOR ARRAY TARGETS

Ronald H. Wilson, Schenectady; Martin D. Gibbons, Camillus, and Samuel M. Blumenfeld, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 235,592, Mar. 17, 1972. This application Filed Sept. 20, 1973, Ser. No. 398,928
Int. Cl. B01j *17/00*
U.S. Cl. 29—584 **9 Claims**

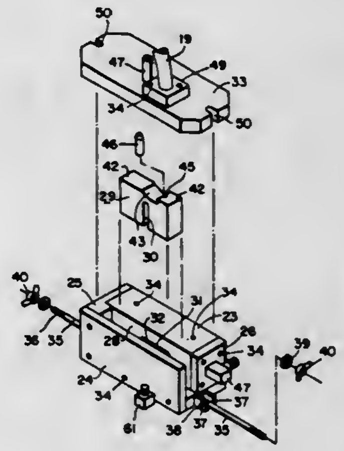
1. A method for reducing highlight blooming in a diode array camera the target having a plurality of diodes formed on one side of a semiconductor wafer and an insulating layer overlying the semiconductor between said diodes to form a semiconductor-insulator interface comprising the step of:
selectively irradiating the region between said diodes with electrons having an energy of approximately 10 kilovolts providing a dosage of approximately 10^{10} to 10^{15} electrons per square centimeter to establish recombination sites at the semiconductor-insulator interface between said diodes.



3,895,431
STUD ESCAPEMENT MECHANISM

Adolf Froehlking, Willingboro, N.J., assignor to Omark Industries, Inc., Portland, Oreg.

Continuation of Ser. No. 152,759, June 14, 1971, abandoned, which is a continuation-in-part of Ser. No. 729,677, May 16, 1968, Pat. No. 3,584,727. This application Sept. 24, 1973, Ser. No. 399,938
Int. Cl.² B23Q *7/00*
U.S. Cl. 221—233 **5 Claims**



1. In stud welding apparatus, an escapement mechanism for receiving a stud from an orientation mechanism and dispatching the stud to a welding gun for welding comprising:
a channel formed by parallel side walls and an interposed bottom wall;
a stud transfer block having a stud receptacle therein disposed within said channel for transverse movement therealong;
a cover plate for said channel having stud feeding and discharge ports therein in registery with said channel;
fluid operated means interconnected with said stud transfer block for moving the transfer block alternately into and out of registry with said loading and discharge ports in the cover plate, and
quick detachable means interconnecting said cover plate to the channel and maintaining the same in proper position whereby the cover plate can be quickly removed to replace the transfer block to accommodate studs of different lengths.

3,895,432
METHOD OF ELECTRICALLY JOINING TOGETHER TWO BIMETAL TUBULAR SUPERCONDUCTORS

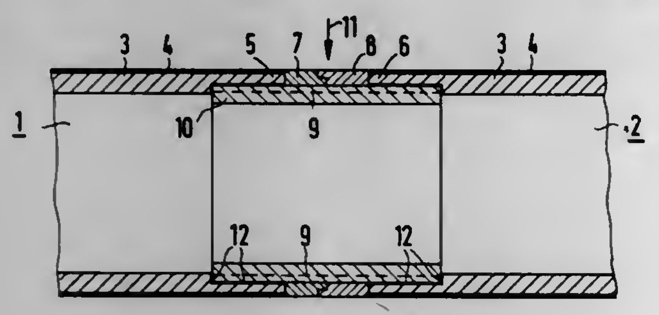
Heinrich Diepers, Erlangen-Bruck; Karl-Heinz Jablonski, Ebermann-Stadt, and Hans Lamamatsch, Nurnberg, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed June 20, 1974, Ser. No. 481,260

Claims priority, application Germany, July 4, 1973, 2334055

Int. Cl. H01v *11/14*

U.S. Cl. 29—599 **30 Claims**



1. A method for joining the end faces of two bimetal tubes made of a normally conducting metal plated with a layer of superconductive material on one of its inside and outside comprising the steps of:

- a. securely attaching to each tube in a tight fitting manner an annular adapter made of the superconductive material;
- b. metallurgically bonding together the adapters and the superconductive layers on each of said tubes; and
- c. joining together the normally conducting metal portions of said tubes using a cylindrical connecting member of a normally conducting material;
- d. wherein when said superconducting layer of material is on the outside, said normally conducting metal portions of the said tubes are joined by a cylindrical connecting member on the inside of said tubes after which said metallurgically bonding step is carried out, and when said superconductive layer of material is on the inside, said adapters are first metallurgically bonded together after which said cylindrical connecting member is joined to the outside of said tubes.

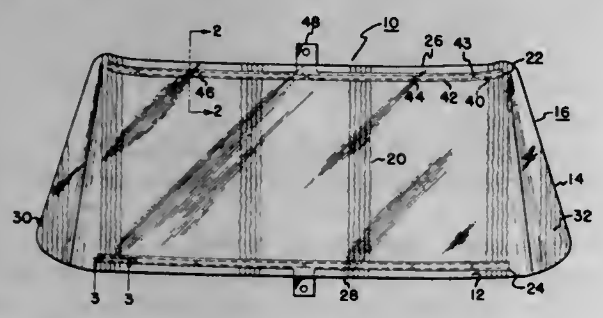
3,895,433
ELECTRICALLY HEATED TRANSPARENT PANEL

George A. Gruss, Mentor, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 302,501, Oct. 31, 1972, Pat. No. 3,745,309. This application Feb. 22, 1973, Ser. No. 334,874

Int. Cl. H05b *3/00*

U.S. Cl. 29—611 **8 Claims**



1. A process of forming a composite sheet member which comprises:

- a. applying a pair of segmented electrically conductive foil strips upon one major surface of a sheet of transparent thermoplastic polymer which shrinks from its original dimensions when heated to an elevated temperature so that each strip is located proximate and parallel to an opposing marginal edge of a curved safety glass window member.
- b. applying a transverse pattern of resistance wires in parallel orientation with respect to one another between said segmented foil strips so that said wire pattern extends beyond the strips and securing the wire patten to the same major surface of the polymer sheet with electrical heating electrodes located at each end of the individual resistance wires.
- c. supplying electrical power to the heating electrodes so that the polymer sheet and resistance wires can expand and contract during heating to embed portions of the wires in the surface of the polymer sheet, and
- d. securing continuous electrically conductive foil strips of greater width and thickness than the segmented foil strips by heat-bonding said continuous foil strips to the same major surface of the polymer sheet for direct contact with the individual resistance wires and the subjacent segmented foil strips whereby portions of the segmented foil strips partially envelop said individual resistance wires.

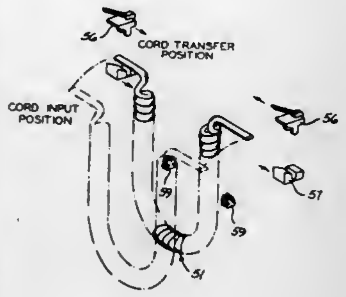
3,895,434
ASSEMBLING ELECTRICAL CONNECTING DEVICE TO CORDAGE

George Phillip Adams; Frederick David Gavin, Jr., and Anthony Pete Natale, all of Baltimore, Md., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Aug. 27, 1974, Ser. No. 501,007

Int. Cl.² H01R *43/00*

U.S. Cl. 29—628 **15 Claims**



1. A method of assembling one dielectric part with another dielectric part about an end portion of a jacketed cord such that blade-like terminals receivable in a plurality of terminal-receiving grooves in the one part establish electrical contact with conductors in the cord, which includes the steps of:

- inserting an end portion of the cord into a workholder;
- moving leading ones of pluralities of the dielectric parts along separate paths into vertical alignment with each other in an assembly position;
- moving the workholder to position the cord conductors thereof in essentially vertical alignment with the grooves in the one part;
- exposing the portions of the conductors in alignment with the grooves while maintaining the alignment;
- moving the dielectric parts into engagement with each other and with the cord such that the conductors are received within the grooves;
- bonding together the dielectric parts at a bonding position to form a dielectric housing; and
- moving terminals into the grooves while the housing is in the bonding position to seat the terminals in the housing to complete the assembly and establish electrical contact with the aligned conductors.

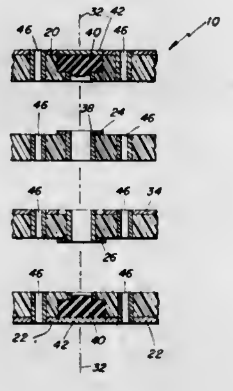
3,895,435
METHOD FOR ELECTRICALLY INTERCONNECTING MULTILEVEL STRIPLINE CIRCUITRY

Kenneth R. Turner, Atkinson, N.H., and James C. Bryanos, Nahant, Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Jan. 23, 1974, Ser. No. 435,817

Int. Cl. H05k *3/00*

U.S, Cl. 29—625 **1 Claim**



1. A method for electrically interconnecting multilevel stripline circuitry, said circuitry including strip center conductors separated from a common inner ground plane and a different outer ground plane by dielectric panels, the steps comprising:

- a. forming a hole through the dielectric panels, such hole passing through the common inner ground plane, strip center conductors and the outer ground planes, said inner ground plane having an aperture concentric with and larger than said hole to thereby electrically isolate said inner ground plane from said hole;
- b. plating the walls of the formed hole with an electrically conductive plating material to effect an interconnection between the strip center conductors as well as the outer ground planes;
- c. counterboring a portion of the electrically conductive material after the plating step to form isolation regions between the outer ground planes and the conductive material;
- d. filling the isolation regions with a dielectric material;
- e. depositing a conductive material over the dielectric material filling the isolation regions to form continuous outer ground planes.

3,895,436
FORMING METALS

Leo Ewart Arthur Summers; John Fyfe Le Cornu-Rickard, and David Sidney Underhill, all of Bristol, England, assignors to British Aircraft Corporation Limited, London, England

Filed Jan. 15, 1973, Ser. No. 323,702

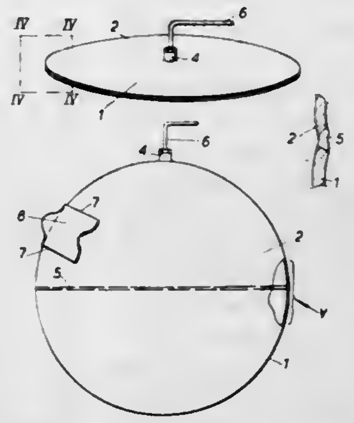
Claims priority, application United Kingdom, Jan. 18, 1972, 2274/72

Int. Cl. B23k *3/02*

U.S. Cl. 228—157 **9 Claims**

6. A method for producing a metal article comprising:

- placing a pair of generally flat sheets of metallic material in contiguous face-to-face relationship with each other and in superposition so that their borders are substantially in registery;
- securing the two sheets together at the borders;
- opening a communication to the region enclosed by the sheets;
- heating the sheets to such an extent that they behave as super-plastic material;
- applying pressure through the communication to said region to inflate the region and thus deflect the sheets away from one another right to the borders thereof without disconnecting the securement at the borders; and



- permitting the resulting product to cool and the pressure to return to ambient.

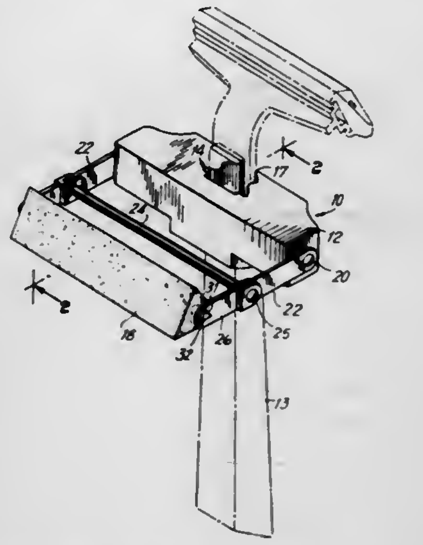
3,895,437
SHAVING MOISTURIZER

Frank M. DiBuono, 68 Merritt St., Port Chester, N.Y. 10573

Filed Aug. 19, 1974, Ser. No. 498,455

Int. Cl. B26b *21/44*

U.S. Cl. 30—90 **8 Claims**



1. A moisturizing device adapted to be detachably connected to a razor or the like, comprising:

1. an extended base member of substantial thickness having a clamp formed therein at one side, said clamp having an edge opening and an interior surface of irregular configuration so as to be adaptable for clamping onto a variety of razor devices;
2. an applicator pivotally connected to said base member, said applicator including
    - a. a first axle and a first pair of arms extending from opposite ends of said axle and pivotally connected to said base member,
    - b. a second axle and a second pair of arms extending from said first axle and connectable with said second axle, and
    - c. an applicator sponge mounted on said second axle.

3,895,438
STYROFOAM CUTTING TOOL

Ivan H. Burkepile, and Jimmie J. Burkepile, both of Rt. 4, Box 377-DE, Fort Smith, Ark. 72901

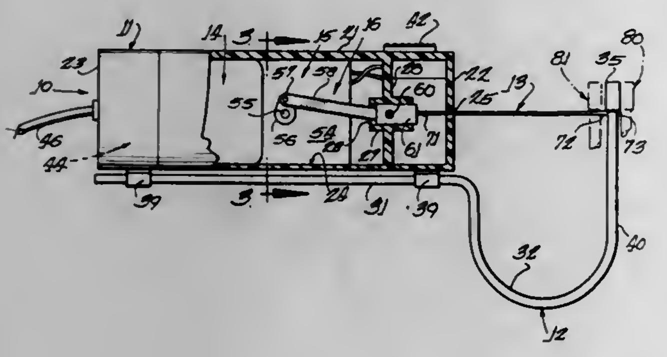
Filed Mar. 25, 1974, Ser. No. 454,730

Int. Cl.² B23D *49/06, 49/16*

U.S. Cl. 30—116 **5 Claims**

1. A cutting tool intended for use in the cutting of Styrofoam-type materials, and the like, the tool comprising:

a handle member having a hollow compartment defined interiorly thereof;
a cutting means;
a blade guard member adapted to be affixed to the handle and to project a position forwardly thereof, the portion of said blade guard projecting forwardly of said handle being resiliently movable in a direction toward and away from said handle, said blade guard being formed of a unitary rod-like member bent to the desired configuration and having a straight shank portion adapted to be affixed to said handle and to extend parallel to the longitudinal axis of said handle, said shank portion terminating in one leg of a U-shaped body portion including a bight portion extending a substantial distance downwardly from the longitudinal axis of said handle, said body portion terminating in a resilient leg portion disposed normal to the longitudinal axis of said handle and projecting upwardly from said bight portion through said longitudinal axis of said handle and terminating at a position disposed on the opposite side of said longitudinal axis from said bight portion, said terminal end having a longitudinally extending slot extending partially therethrough, screw threads disposed about the circumference of said terminal end portion over the length of said slot, said guard being further characterized by an interiorly threaded cylindrically configured cap member adapted to be threadably received on said terminal end over the length of said slot, said slot being of a width adapted to receive one end of said cutting means therein with said cap being threaded onto said terminal end in a manner to assist in securing said end of said cutting means thereto;



low voltage electric motor means disposed in said handle;
transformer means disposed in said handle compartment and adapted to be connected to a conventional source of alternating current power, said transformer having an output end providing a low voltage output connected to said motor;
switch means interposed in electrical series relationship between said transformer and said motor for selectively energizing and de-energizing said motor;
a chuck disposed in said handle compartment adjacent a forward end thereof and mounted for axial longitudinal reciprocal movement; and,
drive means interconnecting said chuck to said motor for converting rotational movement of said motor into reciprocating translational motion for said chuck;
said cutting means having one end affixed to said chuck with the opposite end affixed to the terminal end of said blade guard whereby reciprocal translational motion of said chuck will effect simultaneous reciprocating movement of said cutting means.

3,895,439

HAND TOOL

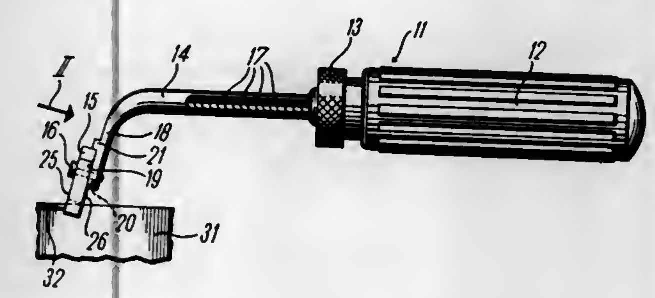
Henry Ehrenberg, Knittlingen, Germany, and Mordechai-Gustav Hirsch, Nahariyya, Israel, assignors to Snel AG, Zug, Switzerland

Filed June 20, 1973, Ser. No. 371,730

Claims priority, application Germany, Oct. 13, 1972, 2250265

Int. Cl. B26b *1/04*

U.S. Cl. 30—171 **10 Claims**



1. A hand tool comprising in combination a handle, a blade holder secured to said handle, a blade having at least three straight peripheral surfaces defining cutting edges for surface scraping and means pivotally attaching said blade to said holder, said blade having thereon at least three peripheral notches each of which forms a substantially V-shaped cutting edge for simultaneously deburring two edges of a workpiece, said holder comprising a pair of stop surfaces engagable with one of said straight surfaces to retain said blade in position for deburring of the workpiece, and with respective ones of said straight surfaces to retain said blade in position for surface scraping of the workpiece.

3,895,440

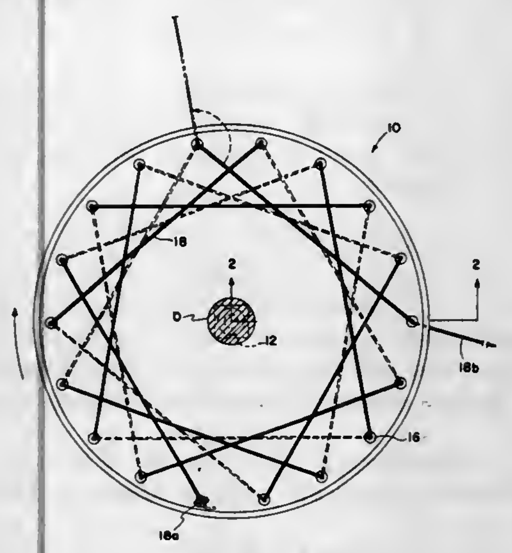
DISK FOR FILAMENT TRIMMER

Charles B. Pittinger, Jr., 79 Maybin Cl., Owings Mills, Md. 21117

Filed Oct. 15, 1974, Ser. No. 514,560

Int. Cl.² B26B *27/00;* **A01D** *55/18*

U.S. Cl. 30—347 **11 Claims**



1. In a filament trimmer, a disk having means centrally thereof for attachment to a rotary drive, structure defining at least one aperture in the disk at a location proximate the perimeter thereof, a filament, means for securing a portion of the filament to the disk at a location circumferentially spaced from said aperture, and the filament passing through said aperture and extending as a cutting length therepast a distance substantially equal to the distance between said aperture and means for securing, whereby on parting of the filament at the aperture the filament will extend as a cutting length from said securing means a distance substantially equal to the distance previously extended past the aperture.

3,895,441

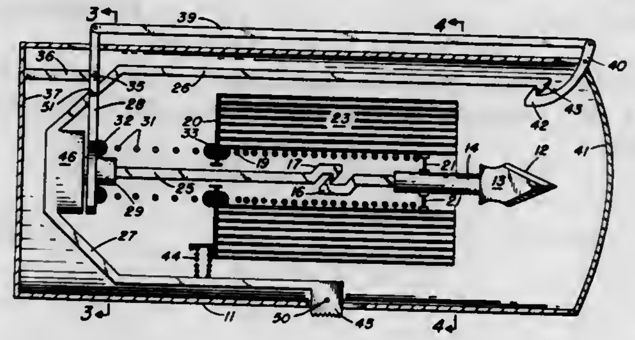
TELESCOPIC FLICK KNIFE

Hobbs H. Horak, 1632 Tucker Rd., Oxon Hill, Md. 20022

Filed Feb. 7, 1972, Ser. No. 224,368

Int. Cl.² B26B *1/08*

U.S. Cl. 30—162 **19 Claims**



1. A hand held knife ejector which comprises:
a casing having an open end;
a power spring within said casing;
a knife blade within said casing adjacent said power spring; latching means, including a cocking fork, cooperating with said knife blade for placing and maintaining said power spring in compression;
a trigger and trigger bar operatively connected to said latching means for releasing the latching means such that the force of the power spring ejects the knife blade from the casing, the trigger bar forming a unitary member with the latching means;
a scroll spring connected to the knife blade for controlling its flight and for recapturing it for redeployment; and
a cover on the open end of the casing, the cover being connected to the latching means and cocking fork such that manual closing of the cover places the power spring in compression.

3,895,442

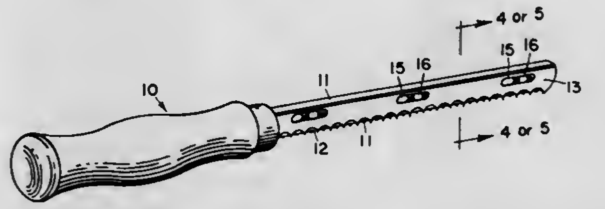
HAND CUTTING TOOL

Orville L. Langford, 120 Lakeview, New Braunfels, Tex. 78130

Filed Dec. 21, 1973, Ser. No. 427,041

Int. Cl. B26b *5/00*

U.S. Cl. 30—299 **6 Claims**



1. A hand cutting tool comprising a handle and three contiguous blades, the outer two blades being serrated support blades positioned on either side of and contiguous to a replaceable thin, flat cutting blade, said support blades having sharp cutting edges and defining a channel adapted to receive and provide transverse support for said replaceable blade.

3,895,443

METHOD OF MAKING A FALSE TOOTH

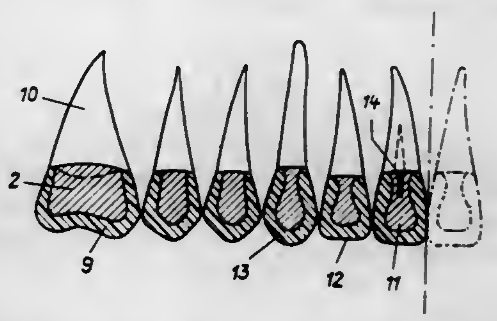
Claude Pétro, 3 rue de Alper, Geneva, Switzerland, and André Glise, Le Coin, Collonges-sous-Saleve, France

Filed Nov. 20, 1972, Ser. No. 307,944

Int. Cl. A61c *13/00*

U.S. Cl. 32—8 **1 Claim**

1. A method of making a false tooth, comprising selecting from among a prefabricated set of different pieces of calcinable synthetic plastic material a piece having the general shape of but smaller than the false tooth to be produced, embedding the selected piece in plaster with a calcinable riser in the plaster, calcining the embedded piece and riser, casting gold into the cavity thus produced in the plaster, thereby to produce a gold core for the false tooth, and then molding the false tooth proper about the gold core.



3,895,444

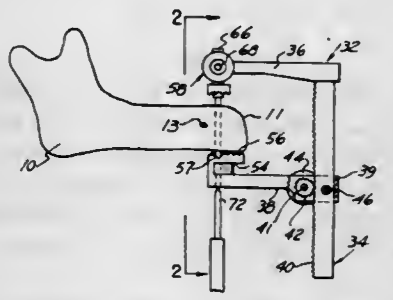
MANDIBULAR STAPLE AND DRILL GUIDE

Irwin A. Small, 751 Chestnut, Birmingham, Mich. 48088

Filed Aug. 28, 1974, Ser. No. 501,318

Int. Cl. A61c *13/00*

U.S. Cl. 32—10 A **5 Claims**



1. In a drill guide assembly for mandibular staples adapted for drilling a plurality of apertures in accurately located positions through a jaw bone; said drill guide assembly having an elongated post having a first arm member extending therefrom, a second arm member longitudinally movable along said post towards and away from said first arm member, means to lock said second arm member in adjusted position relative to said first arm member, said first arm member carrying a pair of spaced locator pins, said second arm member carrying a jig fixture at its outer end, said jig fixture being arcuate in a horizontal plane and having a plurality of spaced apertures extending therethrough, said apertures being located along an arcuate line, the outermost of said apertures being in vertical alignment with said pair of spaced locator pins of said first arm;
the improvement comprising spaced arcuate rows of teeth protecting outwardly from the top surface of the jig fixture in respective alignment with the arcuate inner and outer surfaces thereof;
and an arcuate grooved portion of V shape in the top surface of said jig fixture below and between said teeth;
said locator pins of said first arm member being adapted to be placed in position on the upper surface of said jaw bone at a pair of prelocated points;
said jig fixture of saidsecond arm member being adapted to cooperatively receive and center along its V groove the depending undersurface of the jaw bone and to clampingly engage the lower surface of said jaw bone upon relative adjusting movement of said second arm member towards said first arm member along said post to cause said teeth on the upper surface of said jig fixture to bitingly engage said jaw bone to prevent displacement of said drill guide when said second arm member is locked in position;

the arcuate arrangement of said plurality of apertures corresponding substantially to the curvilinear shape of said jaw bone;

and each of said apertures being adapted to guidingly receive a drill for drilling a plurality of apertures in said jaw bone at accurate predetermined locations.

3,895,445
ADHESIVE COMPOSITIONS

Elliott Silverman, 4829 Alantic Ave., Ventnor, N.J. 08406, and Morton Cohen, 1201 Wrack Rd., Meadowbrook, Pa. 19046

Continuation of Ser. No. 195,857, Nov. 4, 1971, abandoned. This application Aug. 1, 1973, Ser. No. 384,484

Int. Cl.^{2} A61C *7/00*

U.S. Cl. 32—14 R **1 Claim**

1. An adhesive bond adapted to join an orthodontic bracket to a tooth comprising a layer for securement to a tooth of a set thermosetting sealing composition adjacent a layer of a hardened thermoplastic bonding composition for securement to a bracket wherein at the boundary between the two the thermoplastic bonding composition has penetrated the thermosetting sealer composition, and wherein the thermosetting sealing composition contains as major ingredients about 3 parts by weight of the reaction product of bisphenol A and glycidyl methacrylate, and 1 part by weight of methylmethacrylate and the thermoplastic bonding composition comprises a blend of polymethyl methacrylate and polycyclohexyl methacrylate in hexyl methacrylate.

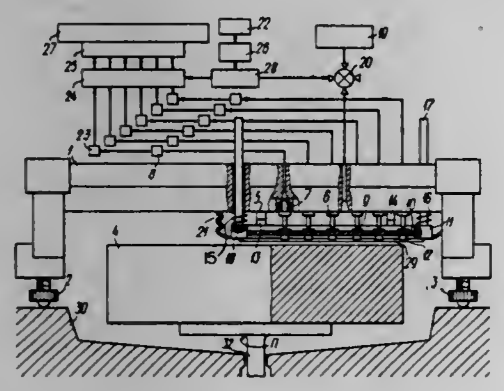
3,895,446
DEVICE FOR MEASURING SURFACE PROFILES

Petr Nikolaevich Orlov, ulitsa M. Ulyanovoi, 21, korpus 2, kv. 54; Jury Ivanovich Nesterov, ulitsa Moldagulovoi 28, korpus 4, kv. 19, both of Moscow; Vasily Yakovlevich Kudashov, ulitsa Komosomolskaya, 22E, kv. 30, and Alexandr Vasilievich Zimnyakov, ulitsa Schelkovichnaya, 184, kv. 19, both of Saratov, all of U.S.S.R.

Filed Dec. 3, 1973, Ser. No. 420,896

Int. Cl. G01b *7/02, 7/28*

U.S. Cl. 33—174 L **6 Claims**



1. A device for measuring the profile of the surface of a movably mounted component both during movement thereof and while said component is stationary, comprising: a plurality of measuring elements for determining linear dimensions disposed displaced from and in alignment with predetermined points of the surface of the component to be tested; a movably mounted flexible wrapper disposed between said measuring elements and the surface of the component to be tested, said flexible wrapper having a plurality of contacting members for contacting the surface to be tested at said predetermined points at a moment of measurement, each of said contacting members being associated with one of said measuring elements; means for bringing the contacting members of said wrapper from an initial position thereof into contact with the surface to be tested at the moment of measurement so that each one of said measuring elements determines the distance at the moment of measurement from a reference plane fixed with respect to said surface to be tested to the associated one of said contacting members of said flexible wrapper.

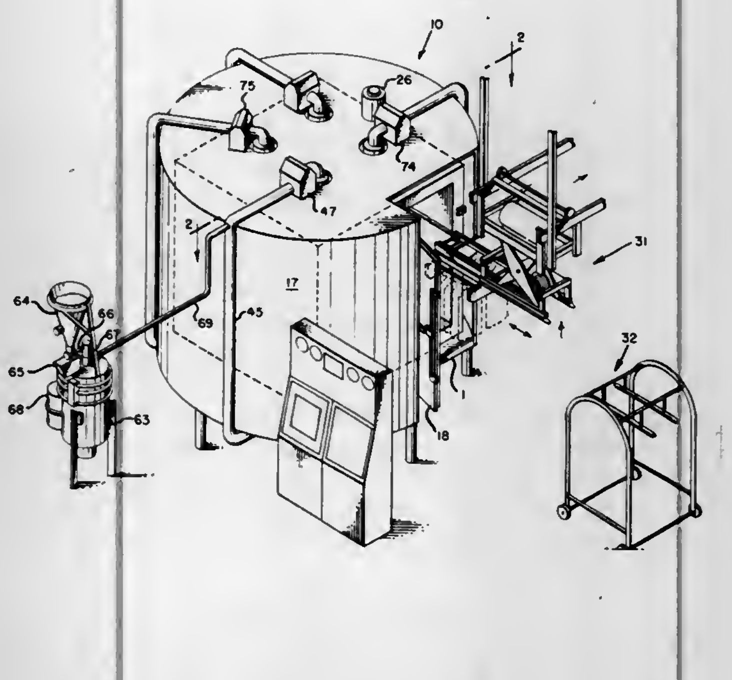
3,895,447
APPARATUS FOR TREATING CELLULOSIC-CONTAINING ARTICLES TO RENDER THEM CREASE RESISTANT

Kenneth J. Masero, Los Altos, and David L. Wise, Salinas, both of Calif., assignors to Vaportech Corporation, Inglewood, Calif.

Filed May 10, 1973, Ser. No. 358,993

Int. Cl. F26b *19/00*

U.S. Cl. 34—48 **9 Claims**



1. An apparatus for the treatment of articles containing cellulosic fibers in all or a part of their composition with treating chemicals in the vapor phase to render them crease resistant, comprising:

a supporting frame;

a rotatable carousel unit supported for rotation on the frame having a series of vapor-confining treatment chambers mounted thereon for rotation between a first and succeeding treatment positions for treatment of articles contained therein, each treatment chamber including (1) access means permitting the articles to be treated to pass into and out of the treatment chamber, (2) support means within the chamber upon which the articles may be positioned in spaced apart relationship, and (3) inlet and outlet ports therein permitting introduction and exhaust of an externally supplied gaseous stream;

power means operatively connected to the rotatable carousel unit to rotate the unit and each of the treatment chambers at periodic intervals between a first and succeeding treatment positions;

gas circulating means including gas conveying ducts at each treatment position for circulating gas through one or more of the treatment chambers at that position; and

valve means associated with each of the gas circulating means and inlet and outlet ports of each treatment chamber controlling flow of gas into and out of each treatment chamber, each valve means retracting to a non-interfering position from the inlet and outlet ports of the treatment chambers prior to rotation of the carousel unit to the next succeeding treatment position and then advancing in sealing contact with the inlet and outlet ports of each of the treating chambers in the succeeding treatment position.

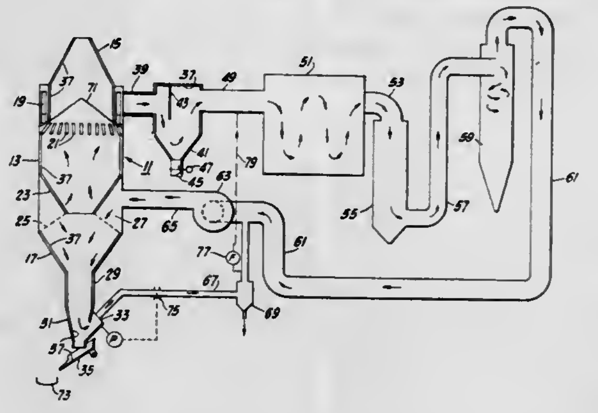
3,895,448
DRY COKE COOLER

Albert G. Jonnet, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Dec. 19, 1973, Ser. No. 426,248

Int. Cl. C10b *39/02*

U.S. Cl. 34—65 **2 Claims**



1. A vertical dry coke cooler having a cooling chamber holding hot coke in which recycle gases flow counter currently through the chamber to cool said coke, wherein the improvment comprises:
- a. a coke leg at the discharge end of said cooling chamber including means to continvously discharge the cooled coke,
- b. a first conduit leading from the discharge end of said coke leg for recycling gases from said discharge end,
- c. a second conduit for carrying hot gases generated by the coke leading from the coke cooling chamber, said second conduit having gas cooling means,
- d. a third conduit joining said first a second conduits and carrying the combined discharge end recycle gases and cooling chamber recycle gases into said cooling chamber and said discharge leg, wherein a major portion of said gases is carried into the cooling chamber.
- e. an automatic pressure controller in said first conduit including means operable to maintain substantially atmospheric pressure at the discharge end of said coke leg.

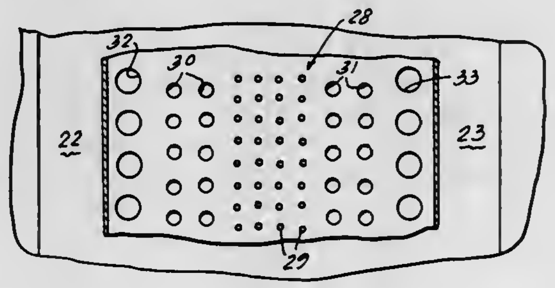
3,895,449
AIR IMPINGEMENT SYSTEM

James L. Chance, Rockford, and Shu Tang Han, South Beloit, both of Ill., assignors to Beloit Corporation, Beloit, Wis.

Continuation-in-part of Ser. No. 405,142, Oct. 10, 1973. This application Dec. 14, 1973, Ser. No. 424,644

Int. Cl. F26b *13/02*

U.S. Cl. 34—155 **5 Claims**



1. An apparatus for drying a moving web comprising a housing, an smoothly curved apertured plate closing off the housing and extending the width of said web, means for introducing pressurized air into said housing for flow through said plate, and exhaust means extending the width of said web for exhausting spent air at the edges of the plate, the apertures in said plate including small diameter holes normal to the plane of the web located centrally of said plate and larger diameter holes normal to the plane of the web located at the edges of said plate and in close proximity and parallel to said exhaust means, the smaller diameter holes being in closer proximity to the web than the larger diameter holes so that increased volume of cross flow spent air occurs at the plate edge at the location of the larger holes with higher volume air jets.

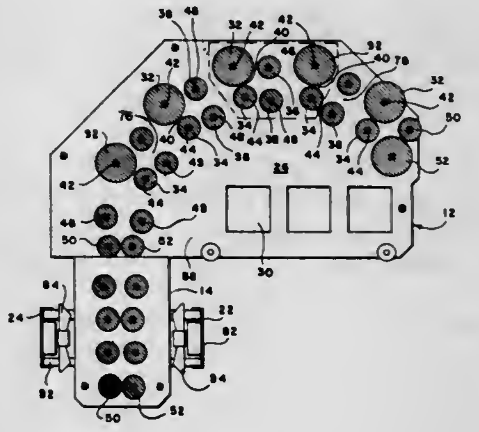
3,895,450
DRYER RACK

Henry F. Hope, 3192 Hunting Rd., Huntingdon Valley, Pa. 19006, and Stephen F. Hope, 2548 Wyandotte Rd., Willow Grove, Pa. 19090

Filed Apr. 4, 1974, Ser. No. 458,391

Int. Cl. F26b *13/04*

U.S. Cl. 34—155 **9 Claims**



1. In a rack assembly having an upstream end and a downstream end for moving a web of material, the combination of
- A. a pair of side plates arranged in spaced relationship;
- B. a plurality of longitudinally spaced pairs of upper and lower web driving rollers rotatively carried by the side plates,
  - 1. said pairs of upper and lower web driving rollers being in substantially tangential contact to form a web driving nip therebetween, said pairs of web driving rollers being substantially equally spaced apart;
  - 2. the pairs of upper and lower web driving rollers being rotated at a first rotative speed;
- C. a plurality of pairs of upper and lower web guide rollers, each pair being positioned intermediate adjacent pairs of web driving rollers,
  - 1. said upper and lower web guide rollers being spaced apart to define an open guide area of height greater than the thickness of the web,
  - 2. said web traveling through the open guide area,
  - 3. the pairs of web guide rollers being rotated at a second rotative speed.

3,895,451
BREAKABLE LEG

Joseph G. Smrcka, Norwalk, Conn., assignor to Alderson Research Laboratories, Inc., Stamford, Conn.

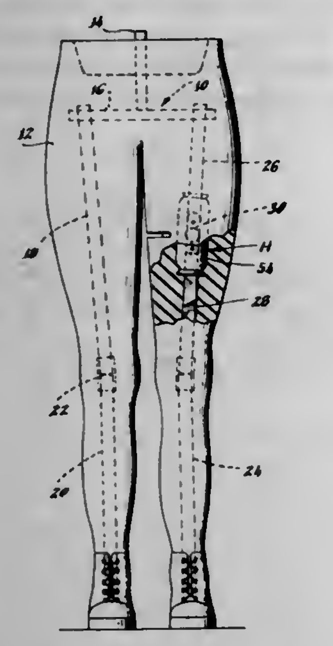
Filed Oct. 9, 1973, Ser. No. 404,330

Int. Cl. G09b *23/32*

U.S. Cl. 35—17 **7 Claims**

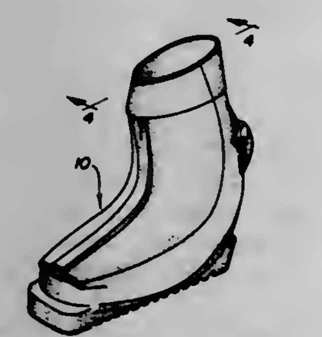
1. A limb for a training dummy which comprises: first and second structural members simulating a bone in said limb; a hinge joining said structural members at a location where a

joint normally does not exist; a non-skinning foam wrapped around said hinge; and integral skin foam simulated flesh enveloping said structural members, hinge, and non-skinning foam and having exterior contours resembling a human limb.



3,895,452
CHILDREN'S SKI BOOT

Alden B. Hanson, and Chris A. Hanson, both of Boulder, Colo., assignors to Hanson Industries Inc., Boulder, Colo.
Filed Aug. 1, 1974, Ser. No. 493,504
Int. Cl. A43b *00/00*
U.S. Cl. 36—2.5 AL **6 Claims**

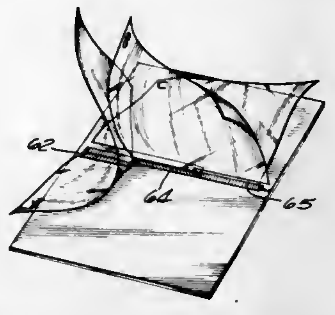


1. A ski boot comprising a sole and a closed front semi-rigid vamp attached to said sole, said vamp having a rear opening through which a foot can be inserted;
- a removable inner resilient padding liner having an inner surface contoured substantially to the surface of a wearer's foot and an outer surface contoured to fit in said outer shell;
- said liner having a tongue portion spanning said rear opening in said vamp and being adapted to be pivoted through said rear opening for permitting entry of a wearer's foot to the interior of said liner; and
- closure means for securing said rear opening in a closed position.

3,895,453
ACCESSORY STORAGE AND PROJECTION APPARATUS FOR VISUAL COMMUNICATIONS

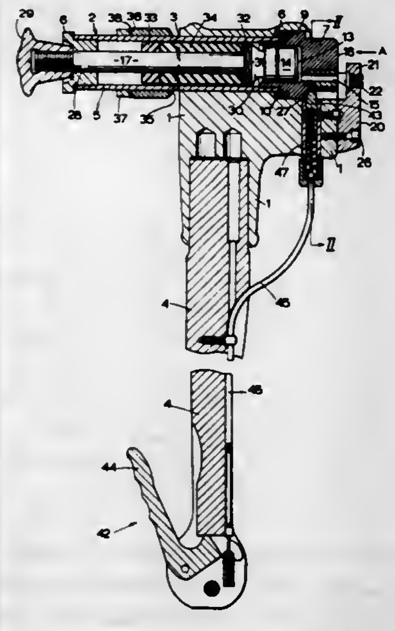
John S. Wright, 6115 N. Lake Ct., Milwaukee, Wis. 53217
Continuation-in-part of Ser. No. 77,570, Oct. 2, 1970, abandoned. This application July 24, 1972, Ser. No. 274,353
Int. Cl. G09f *11/08*
U.S. Cl. 40—102 **6 Claims**

1. A book of transparencies bound together at one margin to be superimposed in a plurality of different sequences for viewing, either with an overhead projector or without projection, the combination comprising
- a book binder;
  - a plurality of flexible transparencies, each of said transparencies being bound to said book binder along a portion of its margin adjacent the book binder, each of said transparencies having substantially the same dimensions and shape as each other transparency, said transparencies being substantially the size of a light window of a stage on an overhead projector, said transparencies being paginally aligned with one another both during storage and viewing and each of said transparencies having binding means on said margin whereby it is bound to said binder;
- said binding means on said flexible transparencies consisting of one elongated rectangular tab with its width projecting perpendicular from said portion of said margin of each of said paginally aligned plurality of flexible transparencies, said tab being substantially shorter in length than the length of said margin, and said tabs being located in different positions along said margin so that no tab overlaps any other tab on said paginally aligned plurality of flexible transparencies, and said free end of each of said tabs being fastened to said binder.



3,895,454
FIREARMS FOR USE IN THE HUMANE SLAUGHTERING OF ANIMALS

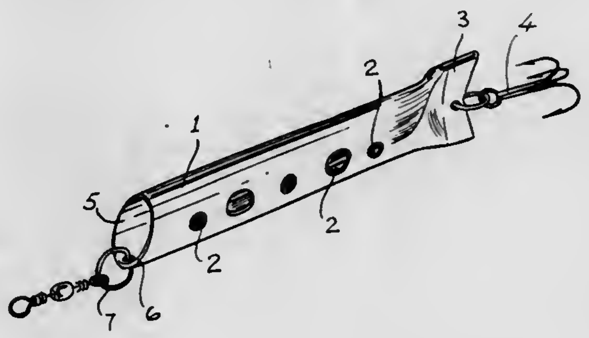
Roger John Hancox, Burntwood, England, assignor to Accles & Shelvoke Limited, Birmingham, England
Filed Nov. 6, 1973, Ser. No. 413,261
Claims priority, application United Kingdom, Nov. 16, 1972, 52917/72
Int. Cl.^{2} A22B *3/02*
U.S. Cl. 42—1 M **17 Claims**



1. A device for use in the humane slaughter of animals comprising a body mounting a barrel and a stock, said barrel slidably locating a captive bolt, a breech block slidably mounted within said body rearwardly of said barrel for axial movement relative to said body, a cartridge chamber for blank cartridges in said breech block extending between a forward and a rearward face of said breech block and communicating with said barrel rearwardly of said bolt, a firing pin fixed rigidly to said body opposite the rearward end of said cartridge chamber and in a first spaced relationship to said rearward face defining the non-operative position of the device, said breech block being movable rearwardly into a second spaced relationship to said rearward face in which said firing pin is closely adjacent to said rearward face defining an operative position of the device.

3,895,455
ILLUMINATED FISHING LURES

Charles James Johnston, 1 Killiney Ter., Breffni Rd., Sandycove, Ireland
Filed June 1, 1973, Ser. No. 366,242
Claims priority, application Ireland, Nov. 17, 1972, 1588/72
Int. Cl. A01k *85/00*
U.S. Cl. 43—17.6 **3 Claims**

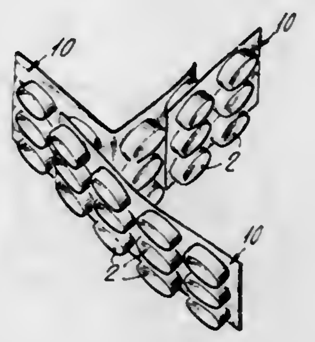


1. A fishing lure comprising an apertured tubular housing for receiving a linear replaceable self-contained light source and for enabling the light source to emit light through the lure from the interior of the housing, one end of said housing being closed to simulate a fish tail, a fish hook connected to said one end, connection means at the other end of said housing for releasably retaining a linear replaceable self-contained light source in said apertured tubular housing and for connecting said fishing lure to a fishing line, said connection means comprising a ring connector which passes through an aperture in the housing, and a said light source in said housing and having a tapered extension in which there is provided an aperture, said ring connector passing also through said aperture in the said tapered extension.

3,895,456
COMPOSITION ASSEMBLY COMPRISING CONSTRUCTIONAL ELEMENTS OF PLASTIC MATERIAL FOR MAKING FREE SCHEME COMPOSITIONS

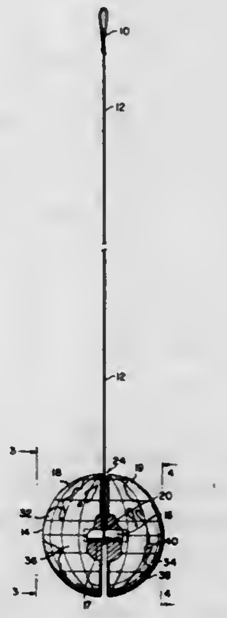
Carlo Fabre, via Pergolesi, 6, Florence, Italy
Continuation of Ser. No. 194,337, Nov. 1, 1971, abandoned. This application Sept. 4, 1973, Ser. No. 393,706
Claims priority, application Italy, Nov. 16, 1970, 9378/70; May 25, 1971, 9525/71
Int. Cl. A63h *33/06*
U.S. Cl. 46—30 **1 Claim**

1. A toy kit for use in forming various objects, comprising a plurality of elements of varied sizes and shapes, each element being formed integrally of a thin, elastomer sheet, a first element formed of a thin, elastomer sheet having a plurality of truncated conical depressions in the sheet, each depression forming a concavity on one side of the sheet and a convexity of the other side, each depression having a very small cone angle and having a depth that is at least one-third of the diameter of the depression, and a second element having depressions of identical shape to those of the first element, the depressions being so shaped that each is capable of forming a shape-conforming locking relationship with any other depression and doing so at separate times.



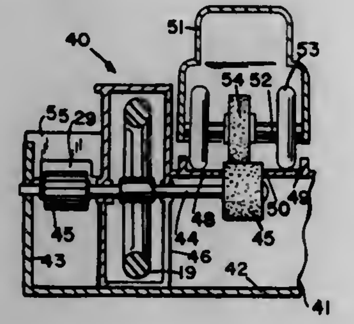
3,895,457
GLOBAL SPHERE YO-YO DEVICE

Emily Koskiewicz, Chicago, Ill., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest
Filed July 18, 1974, Ser. No. 489,585
Int. Cl.^{2} A63H *1/30*
U.S. Cl. 46—61 **5 Claims**



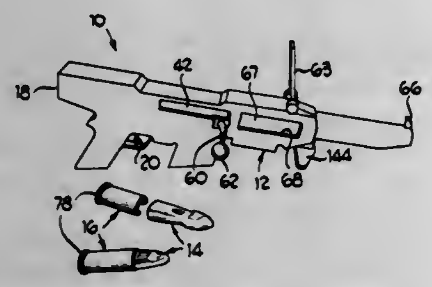
1. A spinning and Yo-Yo game device, which comprises:
- a. two complementary body portions having substantially rounded outer surfaces;
- b. an axle shaft joining said body half portions together in a spaced configuration with an annular grove between said body half portions;
- c. an inner end of an elongated suspension cord communicating with said axle shaft and an outer end of said suspension cord adapted to receive by a hand of a Yo-Yo player; and
- d. a plurality of border ribs contained on said outer rounded surfaces of said body half portions said ribs projecting in and out from said rounded surfaces, said ribs adapted to produce various degrees of air friction to produce as a means for controlling a speed of rotation of said body half portions.

3,895,458
TOY MECHANISM
Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840
Filed Mar. 7, 1973, Ser. No. 338,658
Int. Cl. A63h *29/20*
U.S. Cl. 46—202 **9 Claims**



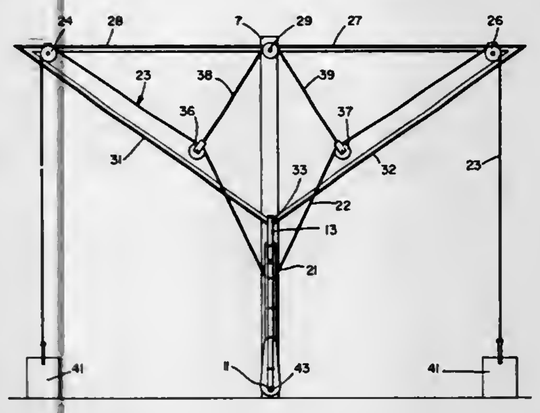
1. A vehicle toy comprising in combination:
a housing having a base for supporting said housing upright on a surface,
a rotatable assembly including a first inertia wheel rotationally supported within said housing, a portion of said rotatable assembly being exposed to the exterior of said housing and including an output driving surface which rotates with the rotation of said assembly,
a toy vehicle having a vehicle body portion and input drive means for said vehicle including a second inertia wheel supported for rotation by said vehicle body,
said second inertia wheel being operable, when inertially rotating, to drive said toy vehicle across a surface,
input drive means for said second inertia wheel,
said housing and said vehicle toy being configured to permit said vehicle to be disposed close to said housing and said output driving surface of said rotatable assembly to be coupled to said input drive means of said vehicle, and
means for power rotating said rotatable assembly within said housing to a high speed for effecting, when coupling is had between said rotatable assembly and said input drive means of said vehicle, the acceleration of said second inertia wheel to a high speed whereby, upon uncoupling of said output driving surface and said input drive means of said vehicle, said vehicle may be powered by the inertial energy of said second inertia wheel and may be driven away from said housing thereby.

3,895,459
PROPELLED TOY DEVICE AND LAUNCHER THEREFOR
Howard J. Morrison, Deerfield; Albert G. Keller, and Marvin I. Glass, both of Chicago, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Nov. 5, 1973, Ser. No. 412,695
Int. Cl.² A63H *29/00*
U.S. Cl. 46—202 **21 Claims**



1. A toy device comprising, in combination:
a toy wheeled vehicle;
a separate shell suitable for slidably receiving the toy vehicle to form a cartridge; and
an implement for launching the toy vehicle while separating the same from and retaining the shell, and for ejecting the empty shell from the launching implement after the toy vehicle has been launched.

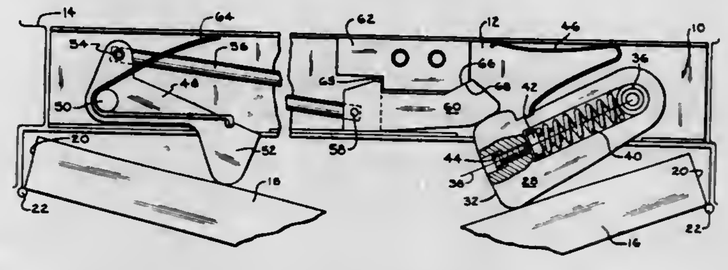
3,895,460
CATTLE RANCH GATE
Elmont C. Lubmann, 4643 Fruitland Rd., Marysville, Calif. 95901
Filed Aug. 16, 1974, Ser. No. 498,069
Int. Cl.² E06B *11/00*
U.S. Cl. 49—131 **6 Claims**



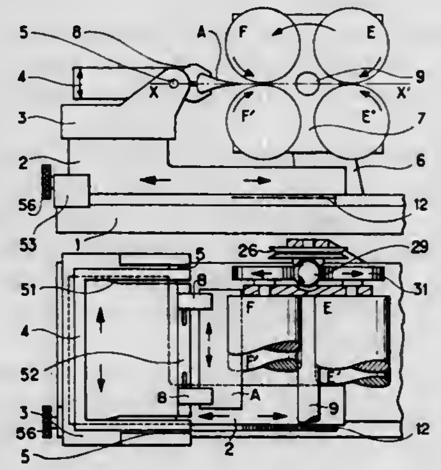
1. A cattle ranch gate for use on a roadway comprising a pair of fixed upright posts disposed opposite each other on opposite sides of said roadway, a pair of supports each including beams disposed in a triangle shape, means for fastening each of said supports to a respective one of said posts with the hypotenuse beam of each of said triangle shape supports extending horizontally and connected to the related one of said posts adjacent the top thereof and with the opposite apex of said triangle shape support secured to said related one of said posts, four sheaves, means for mounting each one of said sheaves on and adjacent to a separate end of said hypotenuse beams, a gate panel including a surrounding frame, barrier cables connected to and extending transversely of said frame, means for pivoting said frame to said posts including pivot pins arranged in alignment on a transverse axis close to said roadway, a pair of balance reevings each including a line, means for connecting the intermediate portion of said line of one of said reevings to said gate frame at one end thereof and at a point spaced well above said axis and extending therefrom upwardly over respective ones of said sheaves and then depending therefrom, means for connecting the intermediate portion of said line of said other of said reevings to said gate frame at the other end thereof and at a point spaced well above said axis and extending therefrom upwardly over the other respective ones of said sheaves and then depending therefrom, and four counter-weights each secured to an end of a respective one of said lines and resting on said roadway when said panel is upright.

3,895,461
DOOR COORDINATOR ASSEMBLY
Ralph D. Maynard, Jr., and Douglas E. Lirette, both of Ann Arbor, Mich., assignors to Door Controls Incorporated, Ann Arbor, Mich.
Filed Mar. 11, 1974, Ser. No. 449,953
Int. Cl.² E05C *7/05*
U.S. Cl. 49—367 **7 Claims**

1. A door coordinator assembly for independently movable companion doors consisting of an active door and an inactive door each of which has a hinged edge and a free edge, said assembly comprising a fixed pivot member, a stop lever mounted on said pivot member for both pivotal and translatory movement relative to said pivot member, said stop lever being pivotally movable between protruding and recessed positions, said lever in its protruding position being engageable with said active door adjacent the hinged edge thereof to impede closing of said active door, said lever being movable to said recessed position on closing of said active door, a trigger member movable between an operative position engageable with said inactive door to prevent closing thereof and an inoperative position in which said trigger member is out of the way of said inactive door during closing thereof, means engaged with and extending between said trigger member and said stop lever maintaining said stop lever in said protruding position so long as said trigger member is in said operative position, and spring means extending between said stop lever and said pivot member in a position to resist said translatory movement of said stop lever, said spring means being capable of absorbing shock loads applied to said lever by said active door so as to cause translatory movement of said stop lever.

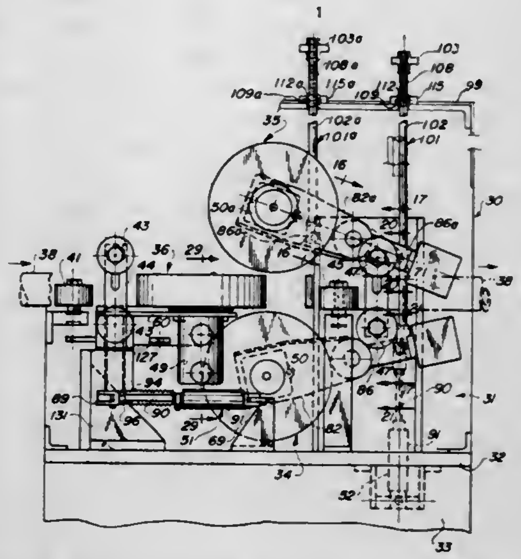


3,895,462
MICROTOME-BLADE SHARPENING MACHINE
Maurice Garin, 5 rue St. Pirest, 69200 Venissieux, France
Filed Mar. 20, 1973, Ser. No. 342,944
Claims priority, application France, Mar. 22, 1972, 72.10741
Int. Cl. B24b *3/48*
U.S. Cl. 51—85 BS **12 Claims**



1. In a microtome blade grinding machine including means for moving a blade to be sharpened between an advanced sharpening position between a pair of driven grinding wheels and a retracted position away from said grinding wheels, the improvement comprising:
a. two pairs of grinding wheels mounted for rotation as a unit about a transfer axis, said grinding wheel pairs comprising roughing and finishing grinders;
b. each of said grinding wheel pairs including spaced grinding wheels mounted for rotation about parallel, coplanar axes, one of said pairs of grinding wheels normally being in working position for sharpening a blade edge;
c. means for selectively causing said grinding wheel pairs to exchange positions by rotation of said grinding wheel pairs as a unit about said transfer axis; and
d. said grinding wheel position changing means being connected to said blade moving means in such a manner that retraction motion of said blade causes simultaneous, automatic exchange of position of said grinding wheel pairs.

3,895,463
METAL TUBE BUFFING AND POLISHING APPARATUS
John R. Brandli, St. Charles, and Herbert Turek, Addison, both of Ill., assignors to Turek & Heller Machine, Inc., Addison, Ill.
Filed Sept. 17, 1973, Ser. No. 397,879
Int. Cl.² B24B *5/38*
U.S. Cl. 51—87 R **5 Claims**



1. Apparatus for buffing and polishing metal tubing comprising
a. a supporting frame;
b. tube-guiding means carried by the said supporting frame for guiding metal tubing through the said apparatus in a direction generally parallel to the longitudinal axis of the said metal tubing to enable buffing and polishing operations to be performed on the peripheral surface of the said metal tubing as it is guided through the said apparatus by the said tube-guiding means;
c. two pairs of buffing and polishing wheel units each having a peripheral abrasive surface and arranged in a cluster of the same at radially spaced intervals around and relative to the longitudinal axis and the path of travel of the said metal tubing as it is guided through the said apparatus by the said tube-guiding means;
d. a first pair of said buffing and polishing wheel units being arranged in a horizontal plane and in coplanar horizontally spaced relationship relative to each other;
e. the second pair of said buffing and polishing wheel units being arranged in a vertical plane and in coplanar vertically spaced relationship relative to each other;
f. first supporting means for rotatably supporting each of the said buffing and polishing wheel units in the said first pair thereof for rotatable movement in a horizontal plane and in coplanar relationship relative to the said supporting frame and in engagement with the peripheral surface of the said metal tubing;
g. second supporting means for rotatably supporting each of the said buffing and polishing wheel units in the said second pair thereof for rotation in a vertical plane and in coplanar relationship relative to the said supporting frame and in engagement with the peripheral surface of the said metal tubing;
h. first pivotal mounting means for pivotally mounting each of said first supporting means and the said buffing and polishing wheel units carried thereby for pivotal movement in a horizontal plane toward and away from the peripheral surface of the metal tubing;
i. second pivotal mounting means for pivotally mounting each of the said second supporting means and the said buffing and polishing wheel units carried thereby for pivotal movement in a vertical plane toward and away from the peripheral surface of the metal tubing, said second pivotal mounting means including an upper pivoted assembly and a lower pivoted assembly, said upper pivoted assembly being movable about an upper pivot

axis, an upper said buffing and polishing wheel unit supported on said upper pivoted assembly and being movable therewith downwardly from a retracted position to a work-engaging position, said lower pivoted assembly being movable about a lower pivot axis, a lower said buffing and polishing wheel unit supported on said lower pivoted assembly and being movable therewith upwardly from a retracted position to a work-engaging position;

j. first motion-limiting means including an upwardly-extending first rod member, first stop means manually adjustable on the first rod member to limit the extent of movement of the first rod member into the supporting frame, first connecting means attaching said first rod member to the upper pivoted assembly at a point between the upper pivot axis and the upper said buffing and polishing wheel unit whereby the first stop means limits the downward movement of the upper said buffing and polishing wheel unit;

k. second motion-limiting means including an upwardly-extending second rod member adjacent to the first rod member, second stop means manually adjustable on the second rod member to limit the extent of movement of the second rod member into the supporting frame, and second connecting means attaching said second rod member to the lower pivoted assembly at a point located on the opposite side of the lower pivot axis from the lower buffing and polishing wheel unit, whereby said second stop means limits the upward movement of the lower said buffing and polishing wheel unit;

l. first power means carried by each of the said first supporting means and extending vertically therefrom at one side of the said buffing and polishing wheels in the said first pair thereof for rotating each of the said buffing and polishing wheel units in the said first pair thereof in a horizontal plane;

m. second power means carried by each of the said second supporting means and extending horizontally therefrom at one side of the said buffing and polishing wheel units in the said second pair thereof for rotating each of the said buffing and polishing wheel units in the said second pair thereof in a vertical plane;

n. first power transmission means for supplying power to the said first power means and to the said second power means for rotating each of the said buffing and polishing wheel units;

o. third power means for moving the said buffing and polishing wheel units in the said first pair thereof and the said supporting means and the said first power means therefor in a horizontal plane on said first pivotal mounting means into and out of a normally retracted position in which the said peripheral working surfaces of the said buffing and polishing wheel units in the said first pair thereof are disposed out of position to engage the said peripheral surface of the said metal tubing and into effective or working position in which the said peripheral abrasive surfaces of the said first pair of said buffing and polishing wheel units are positioned to engage the peripheral surface of the said metal tubing as it is guided through the said apparatus by the said tube-guiding means;

p. fourth power means for moving the said buffing and polishing wheel units in the said second pair thereof and the said second supporting means and the said second power means therefor in a vertical plane on the said second pivotal mounting means and out of a normally retracted position in which the said peripheral working surfaces of the said second pair of buffing and polishing wheel units are disposed out of position to engage the said peripheral surface of the said metal tubing and into effective or working position in which the said peripheral abrasive surface of the said buffing and polishing wheel units are positioned to engage the peripheral surface of the said metal tubing as it is guided through the said apparatus by the said tube-guiding means;

q. second power transmission means for supplying power to the said third power means and to the said fourth power means;

r. first control means for controlling the operation of the said first power transmission means; and

s. second control means for controlling the operation of the said second power transmission means.

3,895,464

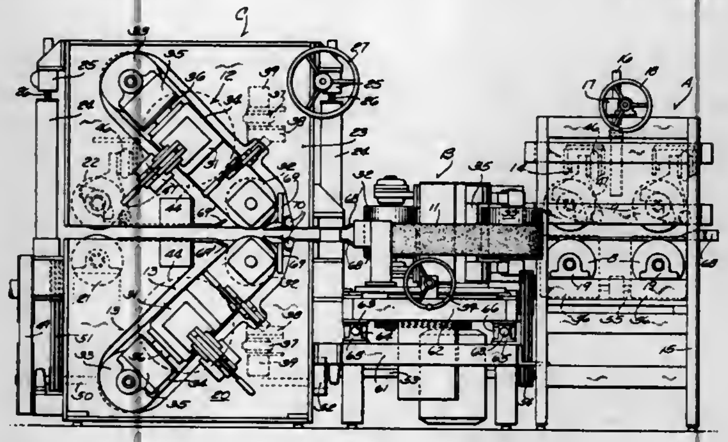
LUMBER DRESSING AND DIMENSIONING MACHINE

Fred W. Kiser, Hopkins, Minn., assignor to Timesavers, Inc., Minneapolis, Minn.

Filed Apr. 22, 1974, Ser. No. 463,115

Int. Cl. B24b *21/04, 9/18*

U.S. Cl. 51—137 **8 Claims**



1. A machine for dressing lumber having length, width and thickness and for sizing the same to predetermined uniform width along the entire length thereof, said machine being characterized by:

A. power driven feed means to grip pieces of lumber presented to the machine and feed the same lengthwise through the machine along a straight linear path;

B. a pair of opposed power driven abrading devices to act simultaneously upon the opposite side edge surface of lumber fed lengthwise through the machine;

C. transversely extending horizontal track means fixed in the machine;

D. carriage means riding on and unrestrictedly free for back and forth translation along said track means; and

E. means mounting both of said pair of abrading devices on said carriage means for movement therewith, with the abrading devices spaced apart a distance to simultaneously abrade said opposite side edge surfaces to a predetermined depth,

whereby by virtue of said abrading devices being both mounted on the carriage means and the latter being free for back and forth translation along said track means, the width of the lumber after being thus abraded is uniform along its entire length regardless of any possible edgewise bowed or warped condition thereof.

3,895,465

CLEANING CONTAMINATED SURFACES OF NUCLEAR POWER PLANTS AND RECOVERY OF REMOVED SURFACE PARTICLES

Roland Korn, Nurnberg; Günter Seyd, and Uwe Paulsen, both of Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Dec. 3, 1973, Ser. No. 420,794

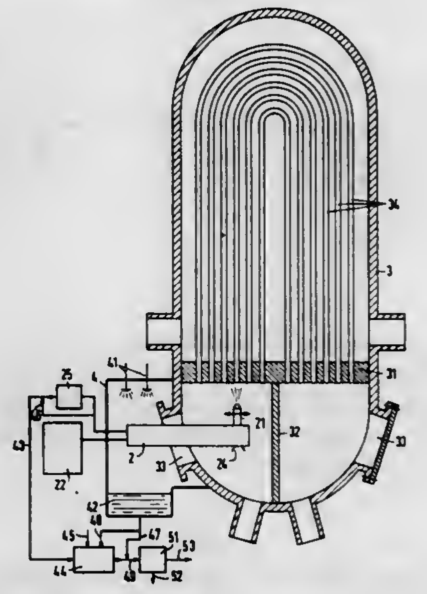
Claims priority, application Germany, Dec. 4, 1972, 2259334

Int. Cl. B24c *1/00*

U.S. Cl. 51—320 **7 Claims**

1. In a process for cleaning of components of nuclear reactor power plants which have been wetted during the operation with H_2O or D_2O, particularly for the decontamination of radio-actively contaminated regions by mechanically abrading the surfaces to be cleaned down to the passivation layer of the

base material by means of boron trioxide particles with the aid of compressed gas, the improvement which comprises admixing water with the abraded solid particles and boron trioxide particles to dissolve the boron trioxide particles, and filtering the boron trioxide aqueous solution containing abraded solid particles to separate and recover the abraded solid particles and the boron trioxide solution.



3,895,466

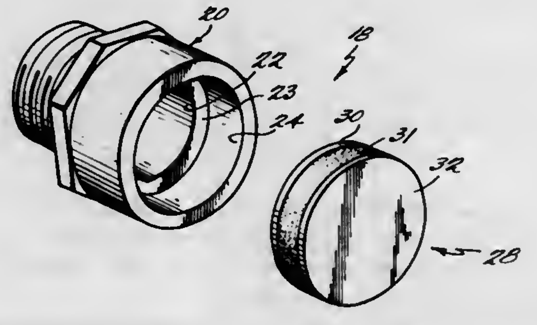
SEWER LINE BLOW-OUT PLUG

Max Ray Melton, Henderson, Tenn., assignor to M. M. S., Inc., Memphis, Tenn.

Filed May 21, 1974, Ser. No. 472,063

Int. Cl. E02d *27/00;* **F16l** *55/12*

U.S. Cl. 52—169 **10 Claims**



1. A blow-out plug assembly for sealing a clean-out end of a pipe or a pipe system under normal conditions but blowing out when subjected to slight over-pressure within said pipe system, said assembly comprising

a. first and second plates for reception within the open end of a clean-out pipe and

b. A jell-like material sandwiched between said first and second plates, said jell-like material being extrudable to engage the interior surface of the pipe and hold said assembly within the pipe under normal conditions.

3,895,467

APPARATUS AND METHOD FOR FORMING FLASHINGS FOR ROOF VENT PIPES

Clyde H. Clement, Phoenix, Ariz., assignor to Lester E. Kron, Phoenix, Ariz.

Filed Nov. 21, 1973, Ser. No. 417,791

Int. Cl. E04h *12/28*

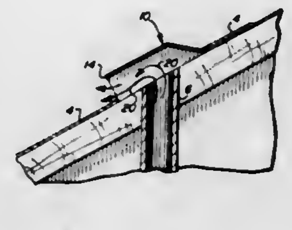
U.S. Cl. 52—199 **7 Claims**

1. A nestable vented roof mounted flashing for shielding an aperture disposed in a roof to prevent the intrusion of water through the aperture, said flashing comprising in combination:

a. a protrusion for covering the aperture, said protrusion being formed of a single piece of material and including:

1. a plurality of serially joined sides for for partially circumscribing the aperture, each of said sides extending upwardly to define a vertical space, each of said sides sloping inwardly and generally toward one another to accommodate nesting of a plurality of said flashings;
2. a cover supported by and extending intermediate the upper edges of said sides for shielding the aperture;
3. a vent for providing fluid communication between the aperture and the atmosphere surrounding said flashing, said vent being defined by the space intermediate the vertical extremities of the serially joined sides; and

b. a flange formed as a unitary element of said protrusion for attaching said flashing to the roof, said flange extending laterally outwardly from the lower edge of each of said sides.



3,895,468

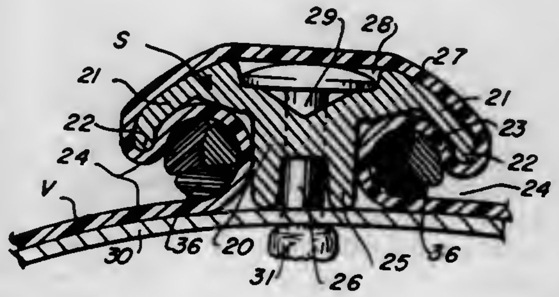
MOUNTING STRIP FOR FLEXIBLE SHEET MATERIAL

Joseph D. Bernstein, 1361 S. Broadway, Denver, Colo. 80210

Filed Jan. 14, 1974, Ser. No. 432,875

Int. Cl. E04b *1/00, 1/347*

U.S. Cl. 52—222 **15 Claims**



1. An edging strip mounted upon a rigid body surface and comprising, in combination therewith:

a. an elongated rigid member of uniform cross section having a central pedestal connected to and upstanding from the body surface, a lateral wing spaced above the body surface at each side of the pedestal which extends outwardly and downwardly with the extended tip of each wing being downturned toward and terminating closely to the body surface whereby to form a socket at each side of the pedestal between the strip and the body surface with a slot-like opening below the tip; and

b. a flexible sheet having a ribbon portion overlying said rigid member to cover the same, said sheet being turned downwardly at each side of the member lying against the body surface and with each side of the sheet being folded at the body surface with the fold tucked into the adjacent wing socket and wherein each wing of said rigid member arches downwardly and outwardly providing a generally arched top surface against which the flexible sheet lies.

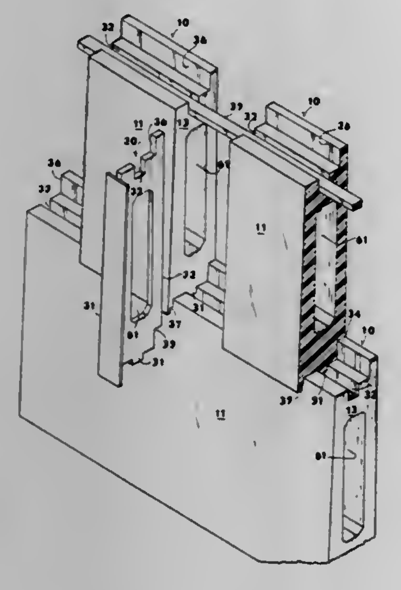
3,895,469
ROOF AND WALL PANEL SYSTEM

John R. Kapitan, 9882 W. Kentucky Dr., Lakewood, Colo. 80226

Filed July 9, 1973, Ser. No. 377,362

Int. Cl. E04c *2/20*

U.S. Cl. 52—595 **8 Claims**



1. A structural panel system comprising a plurality of structural modules each having an upper edge, a lower edge, two opposed side edges, an inner surface, and an outer surface, the upper edge and lower edge of each module being shaped to provide a tongue and groove joint by which the lower edge of each module may be interfitted with the upper edge of the module immediately below it, and the inner surface of each module adjacent to the upper and lower edges thereof being shaped to provide a rabbeted step joint including a raised step projecting above the upper edge of the module and a recess above the lower edge of said module, said recess being shaped to receive the raised step of the module immediately below it, whereby each module may be attached to a member adjacent the inner surface of said raised step and the attachment means may be covered by the module immediately above said raised step, and a vertical joint divider between adjacent modules, said divider being shaped to match the crosssectional shape of said modules including said tongue and groove joint and rabbeted step joint whereby said vertical joint divider will interlock with modules above and below said divider, said divider having a batten joined at a right angle to the front of the divider and overlapping the edges of adjacent modules to prevent water from entering the vertical joint between said adjacent modules.

3,895,470
STRUT FOR INTERCONNECTING REINFORCEMENT RODS

Reinhold Wurth, Schliffenstrasse, 7111 Geisbach Kries Künzelsau, Germany

Filed Feb. 25, 1974, Ser. No. 445,237

Claims priority, application Germany, Dec. 6, 1973, 2360789

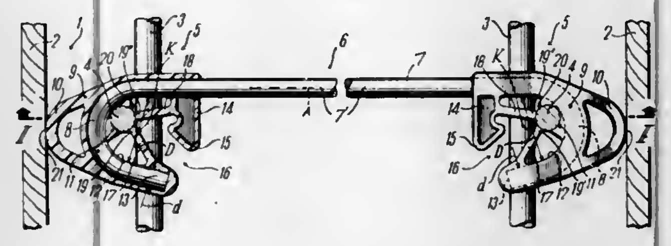
Int. Cl.^{2} E04C *5/16;* **B22D** *5/00*

U.S. Cl. 52—686 **7 Claims**

1. A strut for interconnecting a pair of spacedapart reinforcement rods, said strut comprising:

an elongated bar formed at each end with a hook; and

a hook-shaped body of synthetic-resin material molded on each of said hooks each of said bodies conforming to the respective hook and having a pair of shanks joined at a respective bight, said bodies being formed inside the respective hook at the respective bight with a seat adapted to receive one of said rods and offset from the center of curvature of the respective hook, and with a pair of inwardly extending deflectable tongues each reaching from one of said shanks toward the bight, each of said tongues extending at an acute angle to said bar and said tongues including an acute angle with each other, each of said tongues having an end snugly engageable against a rod in said seat.



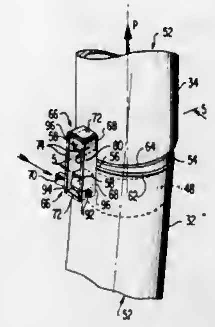
3,895,471
METHOD AND APPARATUS FOR FORMING ELONGATED BATTER PILING IN SITU

Alfred Reeves Kolb, Garalston on Sea, England, assignor to Brown & Root, Inc., Houston, Tex.

Filed Apr. 9, 1974, Ser. No. 459,340

Int. Cl.^{2} E02D *5/28*

U.S. Cl. 52—726 **17 Claims**



1. An improved method of forming, in situ, from successive tubular add-on pilings, an elongated, tubular batter piling for pinning an offshore structure to the bed of a body of water, wherein the improvement comprises:

suspending an add-on piling in a position of at least partial abutting contact with an upwardly projecting free end of a previously placed length of batter piling; exerting a longitudinal clamping force at the location of the at least partial abutting contact between said add-on piling and the previously placed length of batter piling, to maintain and stabilize the position of the add-on piling relative to the previously placed length of batter piling, said clamping force being exerted by

forcing opposed, protruding ear members carried by said add-on piling and said free end of said batter piling into positions of mutually greater proximity by means of a deformable wedging member disposed in force transmitting cooperation with said ear members and operable to transmit divergence preventing force thereto, at least one of said ear members being connected to said add-on piling adjacent the location of said at least partial abutting contact between the add-on and the previously placed length of batter piling and at least another of said ear members being connected to said free end of said batter piling adjacent said at least partial abutting control; and

selectively relaxing said clamping force by deforming said wedging member to permit said ear members to diverge and the force of gravity to gradually pivot said add-on piling about the location of the at least partial abutting contact to a posture of axial alignment with said free end of said batter piling.

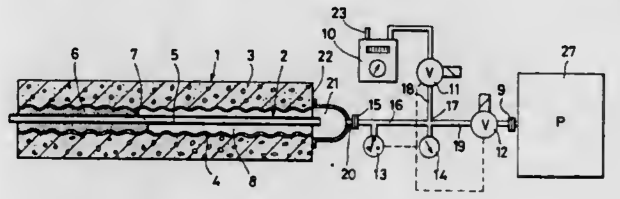
3,895,472
METHOD FOR COMPLETELY FILLING A CAVITY IN A CONCRETE STRUCTURE

Ernst Wilhelm Steinhauer, Halver; Klaus Fischer, and Oskar Lower, both of Wetzlar, all of Germany, assignors to Ernst Wilhelm Steinhauer, Langenscheid, Germany

Filed Nov. 15, 1973, Ser. No. 416,289

Int. Cl.^{2} E04C *1/40*

U.S. Cl. 52—743 **3 Claims**



1. Method for completely filling of a cavity in a concrete structure with a filling compound, wherein prior to introducing the filling compound the cavity is evacuated, comprising the following method steps:

a. withdrawing air from the cavity to a preselected pressure,

b. introducing gas, into the cavity and measuring the volume of the in-flowing gas,

c. determining the volume of the cavity from the amount of gas which entered during the method step b),

d. withdrawing the gas contained in the cavity up to a small residual pressure,

e. introducing the filling compound into the cavity and measuring the volume of the entering filling compound.

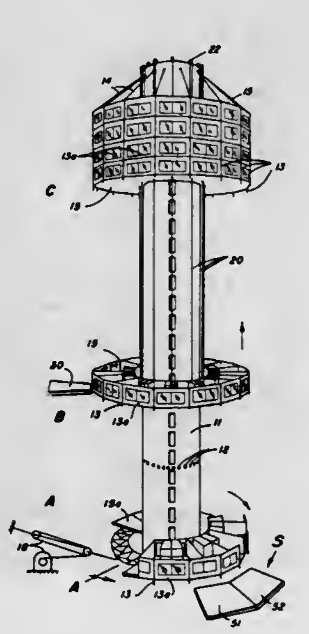
3,895,473
PROCESS FOR THE MANUFACTURE OF LOW COST HOUSING AT THE SITE

R. Lee Fraser, 3723 Northwood Dr., Memphis, Tenn. 38111

Continuation of Ser. No. 223,127, Feb. 4, 1972, abandoned. This application Dec. 28, 1973, Ser. No. 429,047

Int. Cl. E04g *21/14, 23/00*

U.S. Cl. 52—745 **9 Claims**



1. In a process for manufacturing housing of the type in which surrounding floors are positioned on a core from top to bottom and a fixed work area including one or more work stations is spaced radially outwardly from said core, the improvement comprising the steps of:

a. assembling from said work area a unitary washer type floor in concentric relationship to said core by constructing portions of said floor from said work area and horizontally rotating the constructed portions of said floor around said core to bring unconstructed areas of said floor adjacent said work area for construction of further portions of said floor; and

b. continuing the rotation and construction until said washer type floor extends in a complete 360° relationship concentrically around said core.

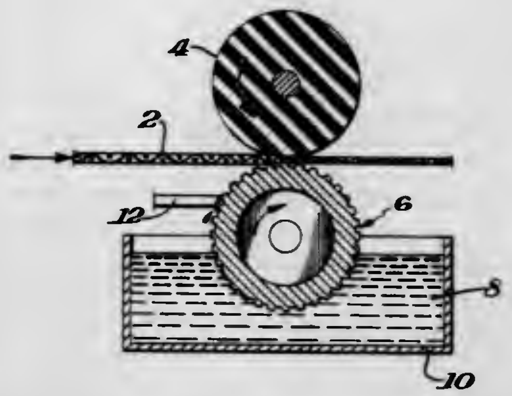
3,895,474
PROCESS FOR PREPARING PRE-MOISTENED ANTIMICROBIAL TOWELS

Stuart M. Bauer, Succasunna, N.J., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 305,859, Nov. 13, 1972. This application Nov. 16, 1973, Ser. No. 416,484The portion of the term of this patent subsequent to Jan. 22, 1991, has been disclaimed.

Int. Cl.^{2} B65B *63/04*

U.S. Cl. 53—21 FC **6 Claims**



1. A process for preparing pre-moistened antimicrobial towels which comprises the steps of coating paper or fabric sheet in strip form with a solution of antimicrobial agent in a volatile vehicle; permitting at least a portion of said vehicle to evaporate; longitudinally folding said coated sheet; transversely perforating said coated sheet into separable towel segments; transversely folding said perforated sheet; arranging said folded and perforated sheet in stack form in a moisture-impervious container; moistening said stack with aqueous liquid; and enclosing said moistened stack with a moisture-impervious cover seal on said container.

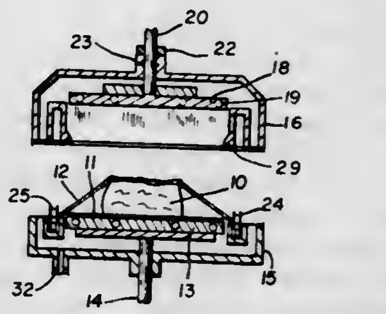
3,895,475
METHOD AND APPARATUS FOR VACUUM SKIN PACKAGING OF SOFT MEAT AND THE LIKE

Robert O. Wolfelsperger, Fairfield, N.J., assignor to William E. Young, Atlantic Highlands, N.J.

Filed Apr. 18, 1974, Ser. No. 462,035

Int. Cl.^{2} B65B *31/02*

U.S. Cl. 53—22 A **6 Claims**



4. Method for vacuum skin packaging of a product such as soft meat, a low profile product, a product of dissimilar por-

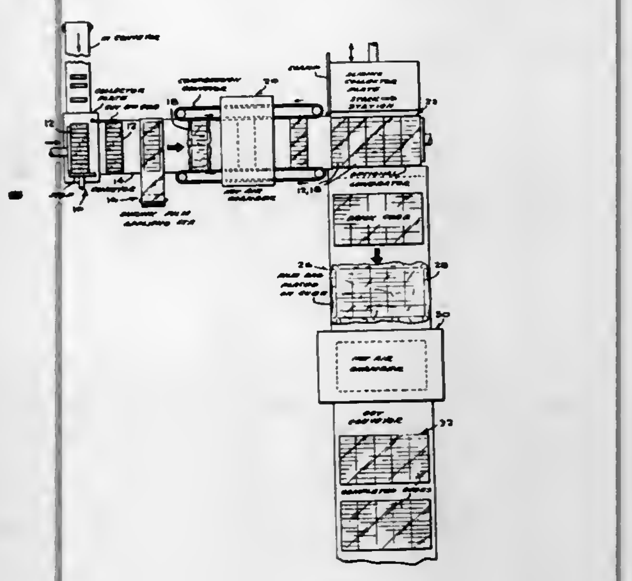
tions and the like, the packing steps requiring the product portion to be brought under the influence of vacuum for at least a short period of time to achieve a condition of reduced pressure, this method including the steps of: (a) providing a chamber having upper and lower halves with the lower half having a platen on which there is formed an upper surface means for supporting a product; (b) delivering and positioning on this lower platen support surface a lower film and subsequent to positioning the lower film placing thereon a product; (c) providing on the upper chamber half a lower sealing means compatible with an upper surface of the lower chamber and when the upper chamber is brought to a seating condition with and on the lower chamber half establishing a substantially vacuum-tight chamber; (d) transporting and positioning an upper film web by means adapted to drape this upper film web over the product and in and after so draping bringing the outer portions of the web into a retained condition on the lower chamber half and establishing therewith a communication pathway between the draped upper film web and the lower film, this pathway insuring that the product is subject to the same environmental condition as that provided in the interior of the sealed chamber; (e) forming and providing an upper film transport having enclosing means so formed and positioned that during the period of closing the upper and lower chambers portions of the film transport is sealed from the interior of the chamber; (f) moving this plate member so that as and when the upper chamber is brought into a seated condition, the intermediate plate member is brought into a fixed position providing therewith a retaining condition of that upper web of film which is above the product to maintain this film in immediate proximity to the product and absent further movement of the plate toward the product therewith and thereby preventing unwanted and excessive ballooning of the upper film during the evacuating of the chamber and the product; (g) bringing the closed chamber and product to a condition of reduced pressure by connecting same to a vacuum producing source; (h) bringing the peripheral portions of the upper and lower films to a condition for sealing to each other; (i) closing the communication pathway between the upper and lower films and to the product, and (j) shutting off the source of vacuum to the chamber and opening the interior of the evacuated chamber to atmosphere, pressurized gas and the like and with the resulting pressure differential one the exterior of the upper film pressing the peripheral portions of the upper and lower films into a sealed condition and thereafter opening the chamber and removing the packaged product.

3,895,476
SHRINK-FILM PACKAGING METHOD
Henry Knox Burns, III, 1830 Redwood Dr., Macon, Ga. 31201
Division of Ser. No. 303,762, Nov. 6, 1972. This application Oct. 18, 1973, Ser. No. 407,607
Int. Cl. B65b *53/02, 35/50*
U.S. Cl. 53—26 **8 Claims**

1. An improved method of heat-shrink-wrap packaging masonary brick articles into a rigid, generally cube-shaped unitary package wherein said brick articles have substantial 3-dimensional size, are of parallelpiped prismatic form and have a pair of major planar opposed surfaces for stacking said bricks and have inherent tolerance variations which contribute collectively to the unstable stacking of bricks in substantial height, superimposed layer-relation when uniformly oriented, said method of brick packaging comprising the steps of:

a. initially forming a plurality of uniform sized smaller sub-packages of multiple unit brick articles by
  1. aligning a predetermined number of the bricks in generally coplanar and contiguously aligned form,
  2. providing and applying a heat-shrinkable film to said aligned bricks, and
  3. applying heat to shrink the film around said aligned bricks so as to compactly maintain them as a collectively wrapped sub-unit or sub-package;

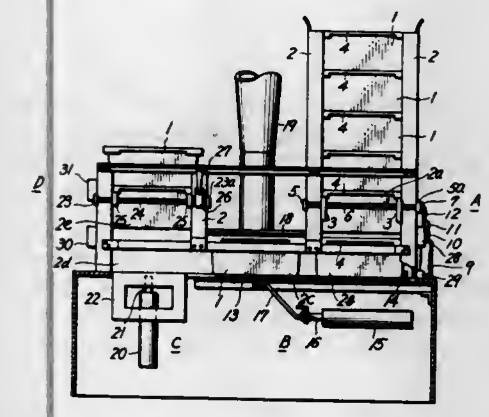
b. accumulating a predetermined number of said heat-shrunk-wrapped sub-packages and assembling them in coplanar form closely adjacent to one another to constitute a given tier or layer of the sub-packages, then stacking plural numbers of said sub-packages into a plurality of superposed layers or tiers with the bricks of each layer substantially vertically aligned with those of the layer below; and then



c. subsequently wrapping said plural tiers or layers of said heat-shrunk-wrapped sub-packages in an outer heat shrink film to substantially envelope the aligned assembly of sub-packages; and

d. subjecting said latter wrapped assembly to heat and then allowing it to cool to effect heat shrink fitting of said outer wrapped film to compactly embrace and stabilize the wrapped bricks into a completed package ready for storage and shipment.

3,895,477
APPARATUS FOR ADVANCING AND POSITIONING ARTICLES
Kameshiro Yamashita, Tokyo, Japan, assignor to Kabushiki Kaisha Seikosha, Japan
Filed Mar. 21, 1973, Ser. No. 343,499
Claims priority, application Japan, Mar. 21, 1972, 47-27447
Int. Cl. B65b *57/20*
U.S. Cl. 53—59 R **4 Claims**



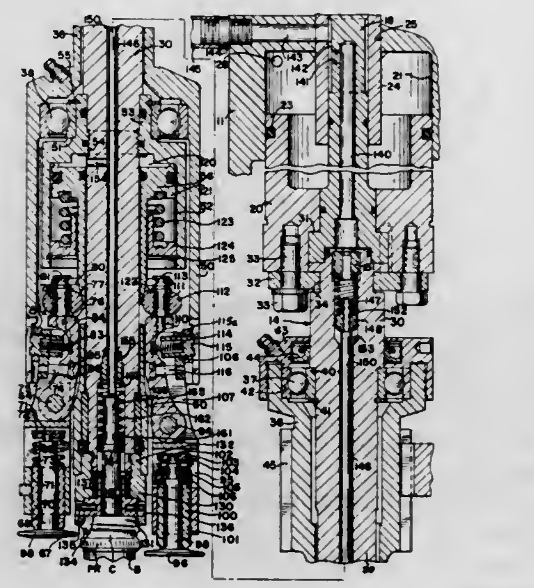
1. Apparatus for advancing articles along a path and selectively positioning the articles at various positions along the path comprising:

first means receptive of a plurality of articles during use of the apparatus for successively positioning the articles in an initial starting position, said first means comprising means defining a vertical guideway aligned with said initial starting position and receiving therein during use of the apparatus a vertical stack of articles for guiding the articles vertically downward, a set of claws disposed around the periphery of said guideway and jointly engageable with an article in said guideway to support said article as well as all the remaining articles stacked thereupon, means mounting said sete of claws for pivotal movement together in synchronism to disengage from said article and engage the article stacked thereon thereby allowing the disengaged article to drop along said guidway into said initial starting position, and means for effecting synchronous pivotal movement of said set of claws;

second means coacting with said first means for successively advancing the articles one-by-one from said initial starting position along a path to a working position and then after a given time delay successively advancing the articles one-by-one from said working position along the path to another position, said second means comprising extendable and collapsible engaging means for releasably engaging with an article located in said initial position, means mounting said engaging means for movement along said path from said initial starting position to said working position, and actuating means for intermittently extending and collapsing said engaging means to effect successive advancement of the articles from said initial starting position to said working position and to push each article located in said working position into said other position by a succedding article being advanced into said working position; and

third means for successively advancing the articles from said other position to a final position.

3,895,478
ROLL ON CAPPING HEAD
Kenneth F. M. Friendship, Hinsdale, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Continuation of Ser. No. 161,235, July 9, 1971, abandoned. This application Oct. 19, 1972, Ser. No. 301,001
Int. Cl. B67b *3/18, 3/26;* **B65b** *57/02*
U.S. Cl. 53—77 **34 Claims**



5. A sealing head for securing a container closure member on the mouth of a container which closure member is characterized by a top panel and a depending skirt, said sealing head comprising:

a support member;

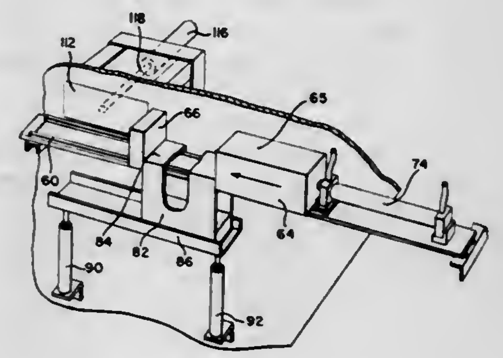
a spindle assembly mounted on said support member for vertical reciprocation relative to a work station and having engaging means on the bottom end thereof engageable with the closure member when the spindle assembly is lowered;

shaping means carried by said spindle to cause the skirt to conform to the surface of the container;

piston actuated cam means adapted to be connected to a source of fluid energy for actuating said shaping means;

valve means carried by said spindle for admitting fluid energy against said piston cam means when a closure is present in said container, said camming comprises a cylinder and piston, said piston having a cam surface thereon for actuating said shaping means, and said shaping means comprises skirt engaging rolls mounted on pivot arms for engagement with the skirt of the closure.

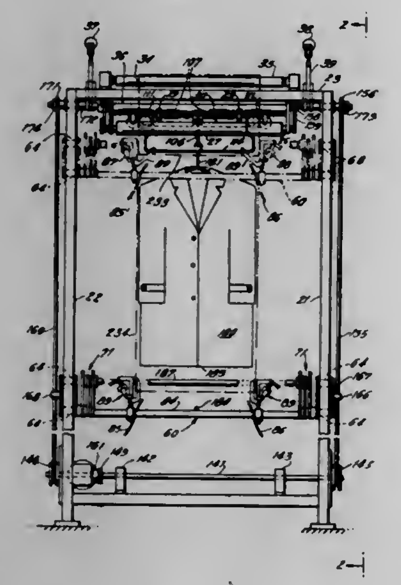
3,895,479
APPARATUS FOR PACKAGING CIGARETTE TUBES
Arnold Kastner, 10220 Armand Lavergne, Montreal, Quebec, Canada
Filed Aug. 2, 1974, Ser. No. 494,285
Claims priority, application Canada, Nov. 16, 1973, 185977
Int. Cl.^{2} B65B *19/34, 19/20*
U.S. Cl. 53—148 **10 Claims**



1. Apparatus for packaging cigarette tubes and like articles including a box-filling assembly comprising a supply hopper for cigarette tubes having an open lower end and a transfer member mounted for horizontal reciprocal movement beneath the hopper to tube restraining and tube receiving positions, the transfer member having a retention surface for holding tubes within the hopper when in tube restraining position and a tube receiving recess for selectively receiving a quantity of tubes when in tube receiving position, and a support plate mounted within the recess and selectively vertically reciprocally movable from a lowered position to tube supporting position, the support plate being mounted for horizontal reciprocal movement with said transfer member, the tube receiving recess receiving a quantity of tubes from the hopper when the transfer member is in tube receiving position and the support plate is in lowered position, and a displacement plate mounted for horizontal reciprocal movement normal to the horizontal reciprocal movement of the transfer member for selectively displacing a quantity of cigarette tubes from the tube receiving recess into an open front or top of a box.

3,895,480
AUTOMATIC BAGGING APPARATUS

Anthony Lombardo, 29 Bailey Ave., Bayshore, N.Y. 11706
Filed Aug. 13, 1973, Ser. No. 387,603
Int. Cl. B65b *5/02, 43/00*
U.S. Cl. 53—256 **13 Claims**

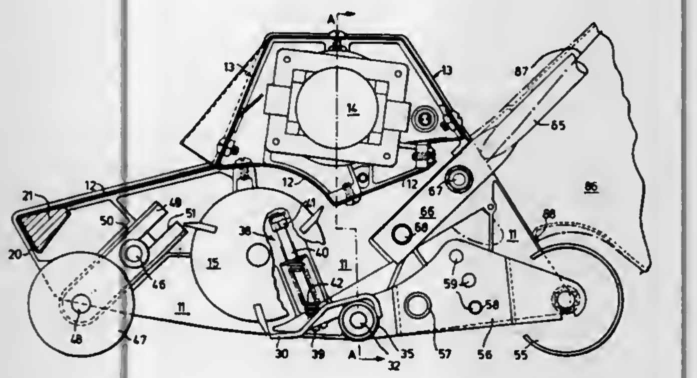


12. Apparatus for bagging a hanger held garment; said apparatus including an upper relatively stationary section; a lower section below said upper section; means mounting said lower section for generally vertical movement toward and away from said upper section; said upper section including first means for supporting a hanger having a garment thereon, second means for drawing thermoplastic tubular stock from a supply thereof in the form of a flattened web, and third means for transversely cutting and sealing stock delivered by said second means at a position below said second means and above a garment on a hanger supported by said first means; said lower section including fourth means for engaging the lower end of stock delivered by said second means and maintaining such stock in an open tubular shape as it moves downward in a surrounding position over a garment on a hanger supported by said first means; said lower section also including seventh means for detecting the lower edge of a garment on a hanger supported by said first means to control stopping of said lower section during downward travel thereof.

3,895,481
LAWN MOWERS

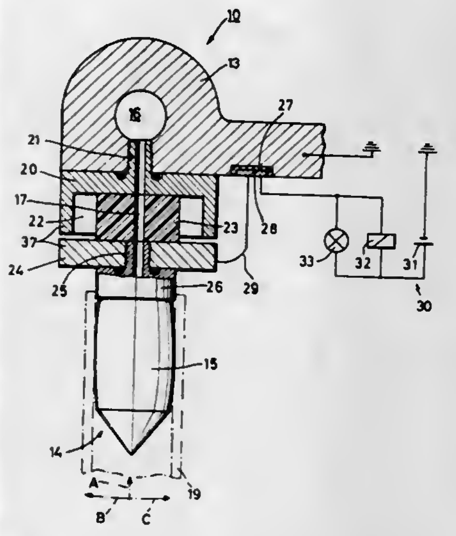
Norman Seth Olney, and Timothy Dickinson, both of Stowmarket, England, assignors to Suffolk Lawn Mowers Limited, Suffolk, England
Filed Dec. 6, 1973, Ser. No. 422,351
Claims priority, application United Kingdom, Dec. 11, 1972, 57000/72
Int. Cl. A01d *55/20*
U.S. Cl. 56—17.5 **9 Claims**

1. A lawn mower comprising a structural frame and an operating handle, said structural frame including a pair of spaced apart side plates formed of electrically insulating plastics material and a plurality of structural metal components extending transverse to said side plates, securing means securing each said metal component to each said side plate at a point spaced apart from the securing points of other of said structural metal components, further securing means securing said operating handle to each said side plate at a point spaced from said metal components securing points, a metal cutting cylinder, bearing means secured to said side plates and rotatably mounting said cutting cylinder, a metal bottom blade in cutting relationship with said cutting cylinder, means mounting said bottom blade to said side plates, and said cutting cylinder and said bottom blade being spaced apart from said handle and from said structural metal components, whereby said structural metal components and said handle are all electrically isolated from one another, and whereby said cylinder and said bottom blade are electrically isolated from said structural metal components and from said handle.



3,895,482
BOBBIN CHANGING APPARATUS

Günter Schulz, and Wolfgang Igel, both of Ebersbach, Germany, assignors to Zinser-Textilmaschinen GmbH, Ebersbach, Germany
Filed June 27, 1973, Ser. No. 374,136
Claims priority, application Germany, June 27, 1972, 2231377
Int. Cl. D01h *9/04*
U.S. Cl. 57—52 **24 Claims**

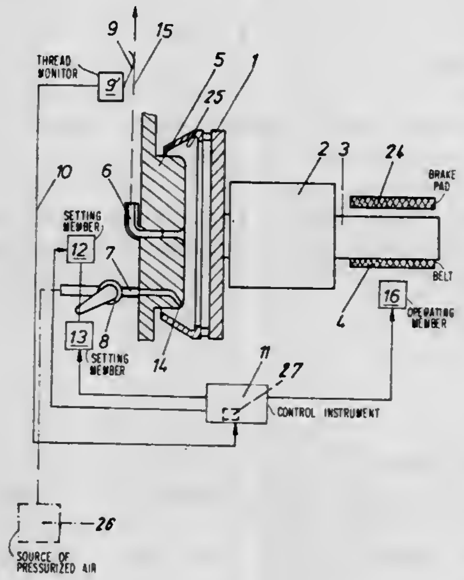


1. An automatic bobbin changing apparatus for a textile machine, the apparatus being particularly useful in conjunction with spinning machines, twisting machines, winding machines and the like comprising, in combination:

a. at least one bobbin gripper for gripping and holding a bobbin;
b. at least one carrier on which said bobbin gripper is disposed;
c. controllable means for effecting movement of said bobbin gripper;
d. sensing means responsive to the impeding of said bobbin gripper in its predetermined path for developing a control signal, said sensing means including a contact member disposed on said bobbin gripper, which contact member is movable against a biasing force relative to said bobbin gripper; and
e. means responsive to the control signal for controlling said means for effecting movement of said bobbin gripper.

3,895,483
APPARATUS FOR CLEANING SPINNING ROTORS

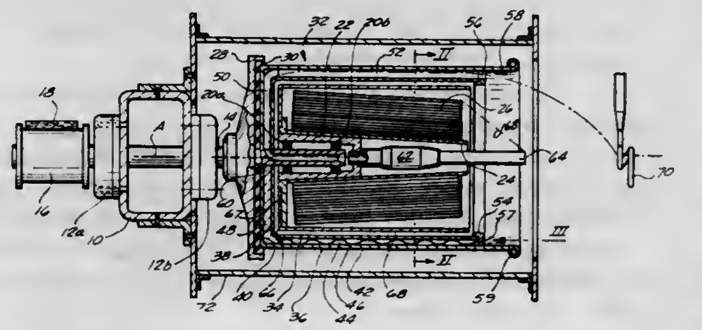
Gerhard Grau, Albershausen, Germany, assignor to Zinser Textilmaschinen GmbH, Ebersbach, Germany
Filed May 28, 1974, Ser. No. 474,050
Claims priority, application Germany, May 28, 1973, 2327127
Int. Cl. D01h *1/12*
U.S. Cl. 57—56 **5 Claims**



1. In an apparatus for removing of deposits from at least one spinning rotor on an open end spinning frame, the apparatus including a respective pneumatic cleaning instrumentality operatively associated with each spinning rotor for freeing fibers and other foreign bodies, if any, not spun into thread from the respective rotor, and a thread monitor provided for initiating a continuous reduction of the rpm of the spinning rotor in case of thread breakage, the improvement comprising a timing device responsive to output from said thread monitor indicative of thread breakage for controlling the cleaning instrumentality to effect the start of cleaning after a predetermined lapse of time from the instant of thread breakage as signaled by said monitor, said timing device also effecting the termination of the cleaning operation upon the lapse of an additional period of time.

3,895,484
SPINNING APPARATUS

Aloys Greive, Munster/Westphalia, and Theodor Tiemann, Bosensell/Munster, both of Germany, assignors to Hamel GmbH Zwirnmaschinen, Munster/Westphalia, Germany
Filed Apr. 11, 1973, Ser. No. 349,990
Claims priority, application Germany, Apr. 11, 1972, 2217369
Int. Cl. D01h *7/86*
U.S. Cl. 57—58.74 **15 Claims**



1. A thread-spinning apparatus comprising:

a spindle lying along and rotatable about a generally horizontal axis;

a flyer having a base attached to said spindle and a sleeve extending axially from said base, said spindle and said flyer being formed with a passage opening axially at one end away from said base at said axis and opening axially at the other end away from said base at a location offset from said axis;

a thread support carried on and rotatable relative to said spindle, said support being provided with an eccentric weight, whereby said weight prevents said support from rotating

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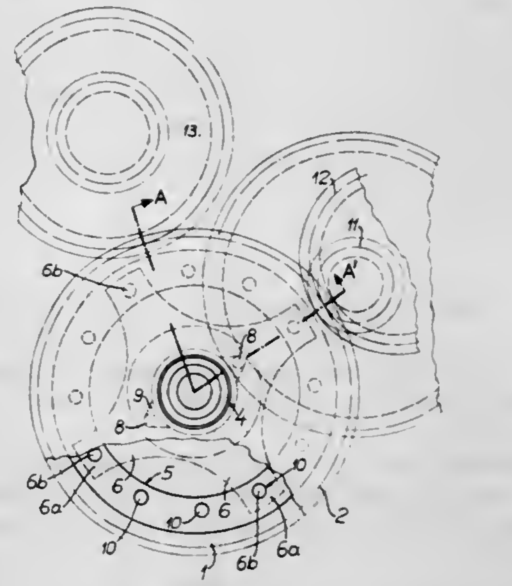
3,895,485
TIMEPIECE CLICK DEVICE

Jean-Pierre Gerber, La Chaux-de-Fonds, and Rudolf Feller, Le Locle, both of Switzerland, assignors to Zenith Time S.A., Switzerland
Filed Feb. 14, 1974, Ser. No. 442,343
Claims priority, application Switzerland, Mar. 6, 1973, 3245/73
Int. Cl. G04b *19/24, 19/22, 9/00*
U.S. Cl. 58—4 R **8 Claims**



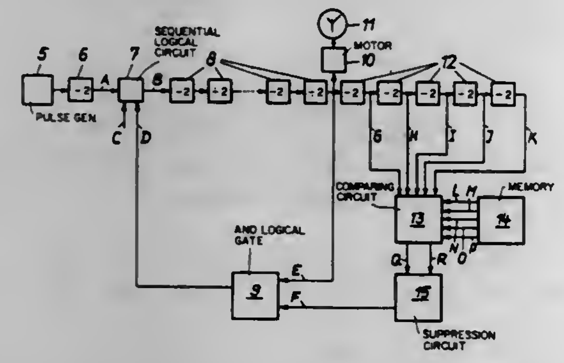
1. In a timepiece comprising a click device between a first hour wheel and a second wheel carrying an hour indicator, the improvement wherein the first hour wheel is mounted freely on a shoulder of the second wheel, the first wheel being maintained on the shoulder by a leaf spring secured to the second wheel, and said spring having at least one arm extending to a free end and provided towards said free end with means co-operating with complementary means carried by said first wheel for holding said first and second wheels in any one of a plurality of discrete relative angular positions.

3,895,486
TIMEKEEPER

Walter Hammer, Boudry, NE; Eric Andre Vittoz, Cernier, NE; Jean Hermann, Neuchatel, NE, and Hubert Choffat, Saint-Blaise, NE, all of Switzerland, assignors to Centre Electronique Horloger S.A., Neuchatel, Switzerland
Filed Mar. 21, 1972, Ser. No. 236,774
Claims priority, application Switzerland, Oct. 15, 1971, 15117/71
Int. Cl. G04b *27/00*
U.S. Cl. 58—23 R **21 Claims**

1. A self-adjusting timekeeping apparatus comprising: a resonator producing a pulsed output signal having a non-adjusted frequency; a frequency divider coupled to said resonator for dividing the frequency of the output singal of said resonator, said frequency divider including auxiliary input means for adjusting the frequency division ratio thereof; memory means for storing coded data in the form of a plurality of binary data bits; and frequency adjusting means coupling said memory means to said auxiliary input means for adjusting the

frequency division ratio of said frequency divider as a function of the coded data stored in said memory means to thereby adjust the output frequency of said frequency divider, said frequency adjusting means including means for comparing the binary coded data bits stored in said memory means with a corresponding plurality of data bits produced at intermediate outputs of said divider, means coupled to said comparing



means for generating an output signal when at least one set of compared memory and divider data bits are in coincidence, said output signal comprising a plurality of pulses the number of which is determined by said binary coded data bits stored in said memory means, and means for feeding said output signal back to said auxiliary input means for adjusting the output frequency of said divider.

3,895,487
SYNCHRONIZING ARRANGEMENT FOR A TIMEKEEPING INSTRUMENT

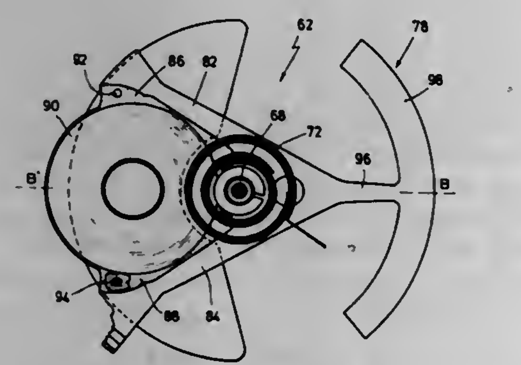
Manfred Barth, Calmbach, and Heinz Meitinger, Mutlangen, both of Germany, assignors to Timex Corporation, Waterbury, Conn.

Continuation of Ser. No. 265,102, June 21, 1972, abandoned. This application Jan. 11, 1974, Ser. No. 432,797

Claims priority, application Germany, Jan. 13, 1972, 2201557

Int. Cl.² G04C *3/04*

U.S. Cl. 58—28 B **10 Claims**



1. A synchronizing arrangement for a time-keeping instrument including an electromechanical actuating device for driving the instrument having a control system which includes at least one driving coil movable in relation to a fixed permanent magnet system by means of which control system a driving coil carried on a mechanical oscillating member rotatable about a axis can be set into motion on either side of a zero point of oscillation predetermined central between two opposite extreme positions of oscillation of said driving coil and substantially at which point a drive impulse is coupled to said driving coil with constant synchronizing frequency through a selected synchronizing amplitude, said oscillation being opposed by a spring member coupled to said oscillating member exerting a substantially constant counterforce in such manner that with said driving coil being disposed at said synchronizing amplitude said oscillating member then having zero oscillating velocity and

a pulse generator for generating electrical control pulses coupled to means for dividing down the frequency of the control pulses and feeding said pulses to the coil of said control system wherein the improvement comprises:

at least two separate ferromagnetic adjunctive elements each being mounted in a fixed geometric relation on said oscillating member in such manner that with said driving coil being disposed symmetrical with respect to a radial line passing through said axis and the center of said driving coil and said zero point of oscillation said adjunctive elements each being then disposed remote nd symmetrical on each side of said radial line and peripheral with respect to said driving coil and with said driving coil being disposed approximately at said selected synchronizing amplitude said adjunctive elements only then being disposed with respect to said fixed magnet system to generate a synchronizing force through cooperation with said fixed magnet system which is dependent upon amplitude variations from said synchronizing amplitude for adjustment of the frequency of said mechanical oscillating member.

3,895,488
GAS TURBINE

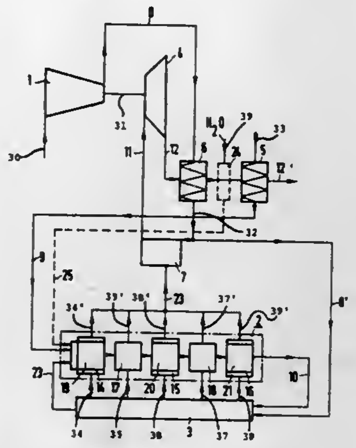
Christian Koch, Nurnberg-Grossgrundlach, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Jan. 10, 1974, Ser. No. 432,422

Claims priority, application Germany, Jan. 25, 1973, 2303586

Int. Cl. F02c *3/20, 7/08*

U.S. Cl. 60—39.46 **5 Claims**



1. In combination with a gas turbine having a compressor, a combustion chamber, a gas converter and a decompression turbine for complete and uniform combustion of the liquid fuel supplied thereto, the improvement which comprises:

a. a first heat exchange means positioned in the path of the exhaust gases emanating from said decompression turbine, said first heat exchange means adapted to receive the air exiting from said compressor, said compressed air being heated by the exhaust gases passing through said first heat exchange means;
b. means for supplying said heated compressed air to said combustion chamber;
c. a second heat exchange means positioned in the path of the exhaust gases emanating from said decompression turbine, said second heat exchange means adapted to receive said liquid fuel, said liquid fuel being vaporized by the heat of the exhaust gases passing through said second heat exchange means;
d. means for connecting said second heat exchange means to said gas converter for supplying said vaporized liquid fuel to said gas converter; and
e. a gas converter comprising:
   1. a plurality of reaction chambers;

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   2. heat exchange means in working relationship with each of said reaction chambers;
   3. heat exchange means interposed between said reaction chambers; and
   4. means for conducting a portion of the exhaust gases from said combustion chamber to each of said heat exchange mechanisms in said gas converter, whereby the heat of said exhaust gases given off in the gas converter heat exchange means facilitates the gas conversion process.

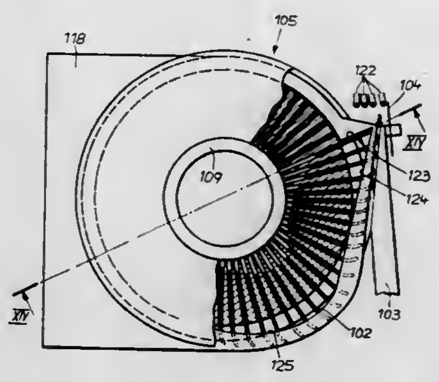
3,895,489
APPARATUS FOR PRODUCING A KNITTED FABRIC WITH PROJECTING BARBS

Norbert Waller, Landhausweg 51, 7031 Weil Im Schonbuch, Germany

Division of Ser. No. 159,036, July 7, 1971, abandoned. This application Sept. 4, 1973, Ser. No. 394,180

Int. Cl. D04b *35/00*

U.S. Cl. 66—91 **1 Claim**



1. In a warp knitting machine for producing a one-face fabric having a base fabric and relatively long-drawn plush loops of monofilament threads of a thermoplastic material knitted into said base fabric and projecting substantially vertically therefrom and being set by a heat treatment and fixed in said vertical position by being dressed with a sizing material, wherein each of said loops is then opened at one laterial side so as to form a barb with a narrow head, an improved construction comprising means rotatably mounted in the knitting machine about an axis for holding each of said loops for a sufficient length of time for being set by said heat treatment before it is fixed and cut open to form said barb, a single needle bar operatively mounted in said knitting machine, said loop-holding means comprise a plurality of setting hooks which form endless rows around said axis, each of said rows being disposed within the space between adjacent needles of said needle bar, said loops are formed by winding said monofilament thread around said setting hooks, and means for moving said setting hooks of each row along a predetermined path in a manner so that said hooks are moved together with said loops during the formation of several courses and so that the distance between the adjacent hooks of each row is gradually increased during said movement.

3,895,490
CONTROL CIRCUIT FOR A PRESSURIZED FLUID ENGINE

Jean G. Pachins, Pavillons sous Bois, France, assignor to Societe Anonyme: Poclain, Le Plessis Belleville, France.

Filed Feb. 13, 1974, Ser. No. 442,043

Claims priority, application France, Feb. 27, 1973, 73.06942

Int. Cl.² F16D *31/02*

U.S. Cl. 60—486 **7 Claims**

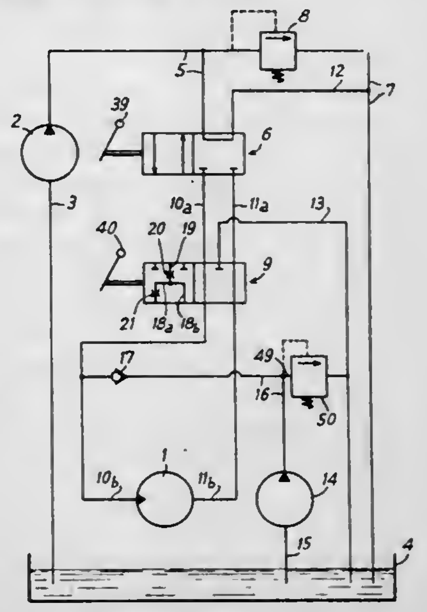
1. Control circuit for a pressurized fluid engine comprising: a first main conduit and a second main conduit for connection to the fluid engine;

means for connection to a main source of pressurized fluid; means for connection to a return for non-pressurized fluid;

a supply selector having at least two positions, which, in its first position, connects said first conduit to said main source connection means and said second conduit to said fluid return connection means and, in its second position, blocks said first and second main conduits at its position; means for connection to a secondary source of pressurized fluid;

a secondary conduit connecting said secondary source connection means to said first main conduit;

a non-return valve in the said secondary conduit permitting passage of fluid from said secondary source connection means to said first main conduit;



a distributor having two positions, arranged in said first and second main conduits, defining two separate portions of each of said main conduits, and which, in its first position, places said two portions of each of said main conduits in communication and, in its second position, isolates said two portions of each said respective main conduit from each other;

a connection conduit which, in the second position of the distributor, connects those of said portions of said first and second main conduits to be connected to the engine; a discharge conduit which connects said connection conduit to a return connection means;

a main restriction in said discharge conduit; and

a secondary restriction in the portion of said connection conduit between the union of said connection conduit to said first main conduit and to said discharge conduit.

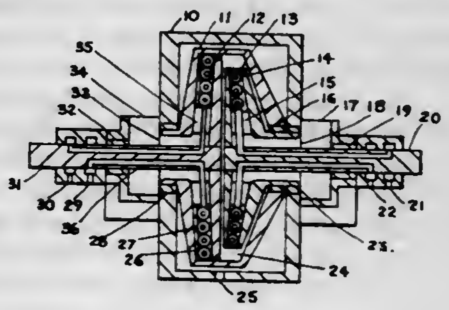
3,895,491
TURBINE WITH DUAL ROTORS

Michael Eskeli, 7994-41 Locke Lee, Houston, Tex. 77042

Filed Oct. 11, 1973, Ser. No. 405,628

Int. Cl. F01k *25/02;* **F02c** *1/04;* **F02g** *1/00*

U.S. Cl. 60—650 **8 Claims**



1. A turbine for generating power from a centrifugally compressed fluid comprising:

enclosure means;

a primary rotor means rotatably mounted in said enclosure means for subjecting the fluid therein to a centrifugal force field; said primary rotor means having a first passageway formed therein for providing a means for introducing the fluid to be compressed; said primary rotor means having internal vanes defining radially extending passageways communicating with said first passageway for ensuring that the fluid in said radially extending passageways rotates with the velocity of said primary rotor means; a nozzle formed at the end of each radially extending passageway being forwardly oriented to discharge the compressed fluid in the radially extending passageways in the direction of rotation for accelerating the fluid to a tangential velocity that is greater than the tangential velocity of said primary rotor means; said discharge nozzles being shaped to obtain the highest obtainable exit velocity for the fluid for the available energy differential available between entry and exit ends of said nozzle;

a first shaft axially formed in said primary rotor means for inputting the necessary power to affect rotation thereof; said shaft extending partially through said primary rotor means with one end of said shaft adjacent an enlarged cavity portion formed axially within said primary rotor means and an opposite end of said shaft extending outwardly from a first side of said enclosure means;

a secondary rotor means positioned within said enlarged cavity and rotatably mounted coaxially with said primary rotor means and said first shaft for absorbing the work associated with the deceleration of the fluid exiting from said discharge nozzles of said primary rotor means; and secondary rotor means having an egress passageway formed therein for providing a means for egress of the fluid compressed in said primary rotor means, said secondary rotor means having internal vanes defining radially inwardly extending passageways communicating with said egress passageway for ensuring that the fluid there in rotates with the velocity of said secondary rotor means; a second shaft axially formed in said secondary rotor means for outputting power effected by the rotation thereof, said shaft extending substantially through said secondary rotor means with an end of said second shaft extending outwardly from a second opposite side of said enclosure means.

3,895,492
POWER PLANT

Siegfried Förster, Alsdorf, Ottenfeld; Günter Hewing, Julich, and Peter Quell, Haaren, all of Germany, assignors to Kernforschungsanlage Julich, Gesellschaft mit beschrankter Haftung, Julich, Germany

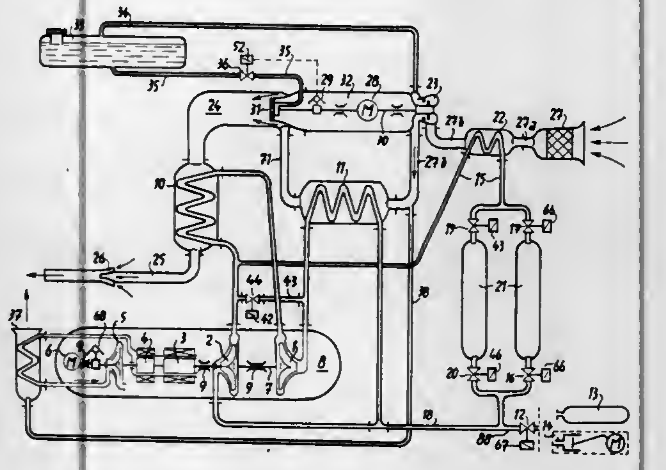
Filed Dec. 26, 1973, Ser. No. 428,230

Claims priority, application Germany, Dec. 27, 1972, 2263559

Int. Cl. F01k *1/00, 3/00*

U.S. Cl. 60—659 **26 Claims**

1. In a power plant; a compressor, and a gas turbine on a common shaft and means to withdraw power from the shaft, a drive motor on the shaft for starting the shaft, conduit means forming an inner gas circuit connecting said compressor and turbine in closed circuit, gas storage means having a gas pressure intermediate of the pressure of the upstream side and the downstream side of said compressor and having valved connections with the upstream and downstream sides of said compressor, a gas heater in said conduit on the upstream side of said turbine and a gas cooler in said conduit on the downstream side of said turbine, a bypass having a controllable flow area between the upstream and downstream side of said compressor an outer gas circuit for an ignitable mixture of burning gas, a blower for said gas, a burner with a combustion chamber located in a direction of the gas flow behind said blower and said outer gas circuit being in heat exchange relation with said cooler before burning and after burning being in heat exchange relation with said heater, the burning gas being composed of air and a gaseous fuel, the outer gas circuit being open to the atmosphere at both ends, an ignition device for the combustion chamber, fuel supply means connected to said combustion chamber, gas supply means connected to said conduit means to supply gas thereto to maintain a predetermined minimum pressure in said conduit means; control means for controlling the pressure in said conduit means and operable to control said valved connections of said gas storage means and the effective area of said bypass being controlled thereby along with the speed of said blower and for controlling the supply of fuel to said combustion chamber; control means for controlling the energization of said drive motor and the actuation of said ignition device; and a monitoring device for detecting the speed of said shaft and operable to control the effective area of said bypass.



3,895,493
METHOD AND PLANT FOR THE STORAGE AND RECOVERY OF ENERGY FROM A RESERVOIR

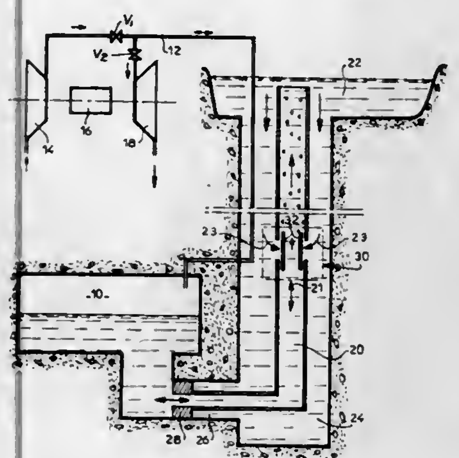
Georges Alfred Rigollot, 66, ave. Henri-Martin, 75116 Paris, France

Filed Apr. 25, 1973, Ser. No. 354,447

Claims priority, application France, May 3, 1972, 72.15654

Int. Cl. F01k *1/00, 3/00*

U.S. Cl. 60—659 **9 Claims**



1. Method for the storage in and recovery of energy from an enclosed reservoir in which such energy is stored in the form of a compressed gas and is recovered through work performed by said gas upon withdrawal from said reservoir, comprising the steps of: introducing gas under pressure into said enclosed reservoir which is at least partially filled with water to store the gas therein at a substantially constant pressure, said water being gasified upon absorption of said pressurized gas, maintaining water pressure within said reservoir substantially equal to the pressure of the stored gas therein by means of (a) a column of water interconnecting said reservoir below the interface of the water and pressurized gas therein and (b) a water reserve completely surrounding the column of gasified water and being of a greater volumn than said reservoir, said water reserve and said column of water having surface levels higher than the water surface level in said reservoir, periodically recovering energy from said reservoir by withdrawing gas from said reservoir at said constant pressure for use in a work zone, and, during pressurization of gas in said reservoir, blocking the flow of gasified water completely through said column of water by communicating the gasified water in said column of water, at a predetermined level thereof, with said non-gasified water in the water reserve to dilute the concentration of the pressurized gas in the water for dissipating the energy in the gas and thereby preventing water in the reservoir from being emptied during pressurization.

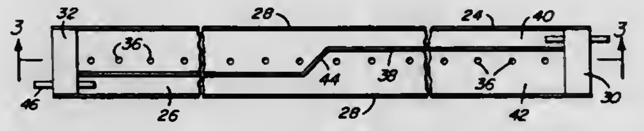
3,895,494
GRAVITY FEED, CONTROLLED FLOW RATE PLANT WATERING SYSTEM

Frank S. Dardano, 2110 S. Wolcott Ct., Denver, Colo. 80219

Filed Mar. 19, 1974, Ser. No. 452,697

Int. Cl.² E02B *13/00*

U.S. Cl. 61—12 **4 Claims**



1. A gravity feed plant watering system including an elongated upwardly opening trough including a bottom wall, interconnecting a pair of upstanding longitudinal side walls and a pair of upstanding end walls, the opposite ends of said trough including water inlet means and said bottom wall including a plurality of longitudinally spaced gravity flow outlet openings formed therein, said trough including a longitudinal upstanding partition extending between said end walls, spaced intermediate said side walls and sealed relative to said bottom and end walls to divide the interior of said trough into two separate opposite side compartments, said partition including opposite end portions disposed on opposite sides of the longitudinal centerline of said trough and a central portion extending across said centerline and joining said opposite end portions, the outlet openings in one end portion of said trough being disposed on one side of the corresponding end portion of said partition and the outlet openings in the other end portion of said trough being disposed on the other side of the corresponding end portion of said partition, the central portion of said partition crossing the centerline of said trough between adjacent outlet openings, the opposite end portions of said partition being disposed on opposite sides of said centerline, the water inlet means at opposite ends of said trough opening through the corresponding end walls thereof on the sides of the adjacent end portions of said partition remote from the bottom wall outlet openings in those end portions of the trough.

3,895,495
PLEASURE BOAT FOR OBSERVATION IN THE SEA

Shigeru Akazaki, 2 of 23 Kamiuma 5, Setagaya, Tokyo; Masaaki Endo, 490 Ohnaricho, Ohmiya, Saitama, and Mamoru Shinozaki, 21 of 6 Yakumo 5, Meguro, Tokyo, all of Japan

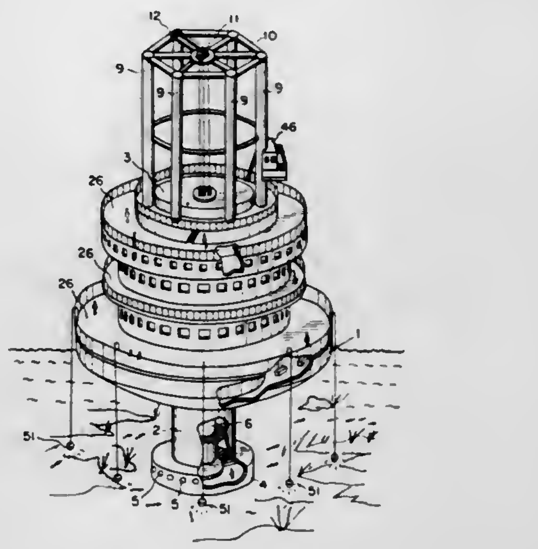
Filed Jan. 22, 1974, Ser. No. 435,466

Claims priority, application Japan, Jan. 23, 1973, 48-10062

Int. Cl. E02b *17/00;* **B63b** *35/00*

U.S. Cl. 61—46 **6 Claims**

1. A vessel for undersea observation comprising a hull means having deck means, an observation tower means located at the central portion of said hull means and movable vertically therethrough, ballast means at the upper portion of said observation tower means, a watertight undersea observation chamber at the lower portion of said observation tower means, passage means connecting the deck means to the observation chamber, turret means on the hull means and positioned above said observation tower means in both its raised and towered positions, means mounted in the turret means for raising and lowering the observation tower means, said hull means and said tower means being circular in plan view and the hull means being substantially larger in plan than said tower means.



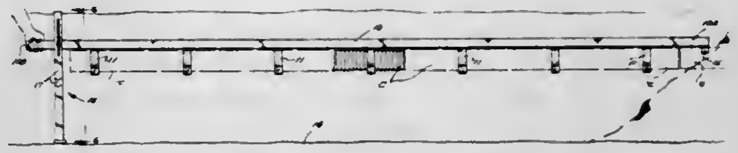
3,895,496
TOOL FOR INSTALLATION OF FLEXIBLE GROUND CONDUIT

Lloyd J. Perrott, and Robert D. Stores, both of Eugene, Oreg., assignors to Lloyd J. Perrott, Eugene, Oreg., a part interest

Filed Oct. 5, 1973, Ser. No. 403,817

Int. Cl. E02b *1/00*

U.S. Cl. 61—63 **2 Claims**



1. A hand tool for the manual setting to grade of consecutive flexible conduits below the ground surface, said tool comprising,

an elongate rigid member,

a series of clips depending at intervals from said elongate member, each of said clips being of a highly flexible nature and in a normal unflexed state having a bite of slightly lesser dimension than a crossectional dimension of the conduit, said clips having outwardly directed end segments contactable with the conduit during a closing movement between the tool and conduit,

an arcuate plate attached to one end of said elongate member for rested placement on the end of a previously laid conduit to align a clip supported conduit with a previously laid conduit,

a level located adjacent the other end of said rigid member for indicating to the worker the grade of the rigid member and hence the grade of the mounted flexible conduit,

an adjustable support structure attached to the other end of said rigid member to permit support of the conduit at a desired grade while the worker backfills the conduit receiving trench, and

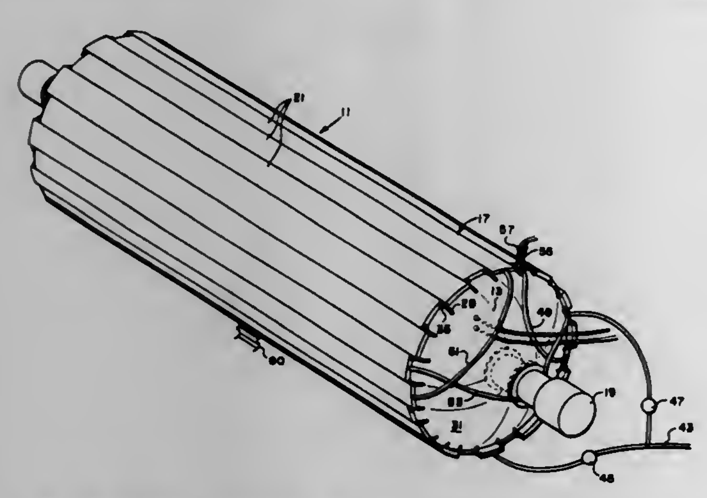
said clips being disengageable from the conduit therein by the manual lifting of the elongate rigid member in the presence of backfill material bearing on the conduit.

3,895,497

WET SHIELD FOR A CRYOGENIC VESSEL

Glen E. McIntosh, and John D. Loudon, both of Boulder, Colo., assignors to Cryenco, Denver, Colo.

Filed Mar. 22, 1974, Ser. No. 453,811
Int. Cl. F17c *1/12*
U.S. Cl. 62—45 **13 Claims**



1. A wet shield cryogenic fluid container comprising:

an inner-shell means for receiving and storing cryogenic fluids;

a wet shield surrounding said inner-shell, said wet shield comprising:

shielding tank means for receiving and storing a quantity of a cryogenic shielding liquid to intercept heat, said shielding tank means including a plurality of shielding tanks mounted side-by-side around said inner shell; and,

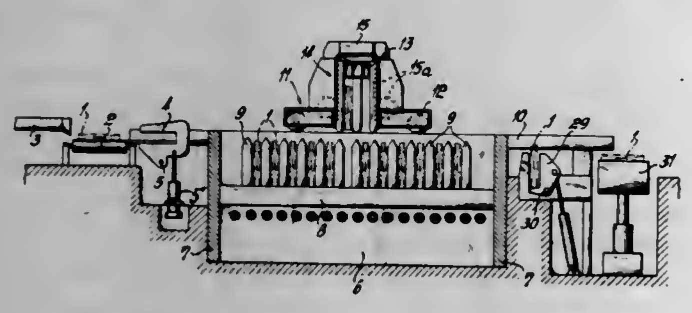
an interconnecting assembly means for supplying said cryogenic shielding liquid to said plurality of shielding tanks and for venting spent gases from each of said shielding tanks at an upper portion thereof, whereby said cryogenic shielding liquid is retained in pockets radially positioned about said inner-shell container.

3,895,498

APPARATUS AND METHOD FOR COOLING METAL SLABS WITH A UNITARY STRUCTURE FOR DEPOSITING AND GRASPING THE SLABS

Willi Manthey, Duisburg, and Horst Deiwick, Krefled, both of Germany, assignors to BWG-Bergwerk-und Walzwerk Machinenbau G.m.b.H., Duisburg, Germany

Filed Oct. 13, 1972, Ser. No. 297,470
Claims priority, application Germany, Nov. 24, 1971, 2158091
Int. Cl. B66f *9/18;* **B65g** *47/34*
U.S. Cl. 62—64 **7 Claims**



7. The method of transporting metal slabs into and from a cooling basin which comprises

a. moving a carriage having slab grasping means thereon in steps from a slab feeding station at one end of an elongate cooling basin to the location of a vacant compartment and an adjacent slab-containing compartment in a succession of slab cooling compartments provided in and along said basin, next from said location to a slab discharge station at the other end of said basin, and then back to said feeding station for a next series of such steps, said grasping means constituting two downwardly opening slab receiving pockets in parallel side-by-side relation;

b. while said carriage is at said feeding station placing and latching a hot slab in one only of said pockets;

c. while said carriage is at said location; lowering said grasping means into said basin so as to place said hot slab in said vacant compartment and to place the other of said pockets in encompassing relation to a cooled slab in said slab-containing compartment, then releasing said hot slab from said one pocket and latching said cooled slab in said other pocket, and then raising out of said basin said grasping means with only said cooled slab held therein; and

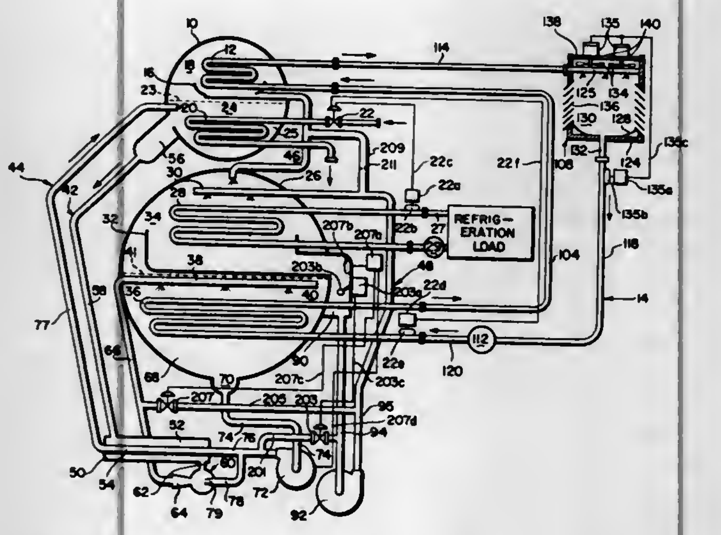
d. While said carriage is at said discharge station releasing said cooled slab from said other pocket.

3,895,499

ABSORPTION REFRIGERATION SYSTEM AND METHOD

Neil E. Hopkins, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed May 29, 1974, Ser. No. 474,299
Int. Cl. F25b *15/06*
U.S. Cl. 62—101 **3 Claims**



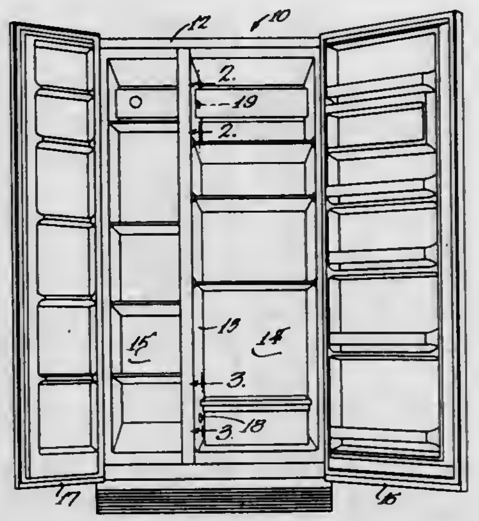
1. A method of operating an absorption refrigeration apparatus of the type comprising a generator, a condenser, an evaporator, and an absorber all connected to provide a continuous cycle absorption system wherein an absorbent solution, consisting essentially of an aqueous solution of a hygroscopic salt, and a refrigerant consisting essentially of water, are circulated through said system and wherein relatively dilute solution is transferred to the generator wherein water vapor is released to the condenser, and wherein the condensed vapor from said condenser is transferred to said evaporator where it is brought into indirect contact with a heat exchange medium supplied to a load, and wherein the water vapor released in said evaporator is absorbed by absorbent solution in said absorber, thereby diluting the same, and wherein relatively concentrated solution is transferred from said generator to said absorber to maintain the absorbent solution at an effective concentration level, comprising the steps of: withdrawing liquid refrigerant from said evaporator by means of a pump and recirculating it back into indirect contact with said heat exchange medium to provide a refrigerant circuit, collecting liquid refrigerant in said evaporator to maintain a reservoir thereof, the level of which fluctuates, in the regular operation of the system between a normal upper limit indicative of a high demand condition and/or high absorber temperatures and a normal lower limit indicative of low demand conditions and/or low absorber temperatures; sensing the level of refrigerant collecting in said evaporator; and transferring absorbent solution from said absorber to said refrigerant circuit when the level of said refrigerant is substantially below said normal lower level to maintain an adequate supply of liquid in said circuit and thereby prevent cavitation of said pump.

3,895,500

ELECTRICAL HEATERS FOR REFRIGERATORS

Ralph D. Barton, and William J. Buchser, both of Evansville, Ind., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Sept. 18, 1974, Ser. No. 507,132
Int. Cl. F25d *23/06*
U.S. Cl. 62—273 **11 Claims**



1. In an apparatus having an insulative wall, means for controlling moisture collection in the wall comprising:

an elongated socket element formed of a thermally conductive material having a tapered tip inserted into a preselected portion of said wall having a surface on which moisture collection is to be controlled, and an outer end opening to exteriorly of said wall;

an electric heater element received in said socket element; and

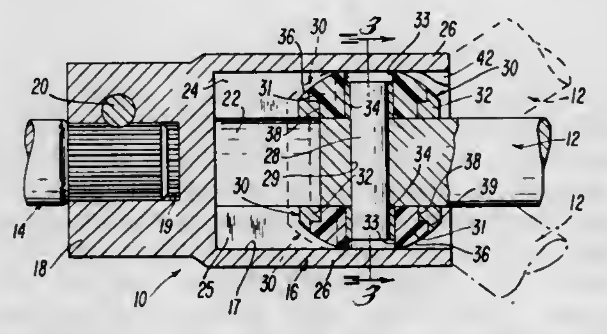
means at said outer socket end for electrically connecting the heater to a power source for heating said preselected wall portion whereby moisture collection on said surface at said preselected portion is effectively controlled.

3,895,501

UNIVERSAL JOINT

Horace D. Holmes, Farmington Hills, Mich., assignor to Masco Corporation, Taylor, Mich.

Filed Nov. 12, 1973, Ser. No. 414,934
Int. Cl. F16d *3/02*
U.S. Cl. 64—8 **2 Claims**



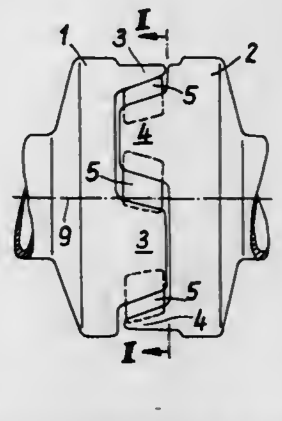
1. A universal joint comprising a first rotative torque-transmitting member provided with an axially outwardly opening socket, a second rotative torque transmitting member having an end received axially in said socket to act therein about a swivel axis in 90° intersecting relation to the axis of said second member, said socket being internally defined in part on opposite sides of the socket axis by pairs of rigid, transversely spaced and generally flat wall surfaces, and means drivingly connected in said socket to said second torque-transmitting member to operate about said swivel axis in transmitting torque between said members, said means including resilient cushion parts shiftable unitarily and axially with said second member relative to the socket and positively transmitting cushioned torque directly between said parts of socket wall surfaces and said second member in any position of the latter about said swivel axis, said cushion parts each including a cushion element of resiliently compressible material, said element having generally flat side surfaces slidably engaged between the respective pairs of wall surfaces of the socket and acting directly against said wall surfaces in said resiliently cushioned transmission of torque.

3,895,502

JAW COUPLING

Wilhelm Schwarz, Wilhelmshaven, Germany, assignor to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Oct. 19, 1973, Ser. No. 407,862
Claims priority, application Germany, Oct. 28, 1972, 2253041
Int. Cl. F16d *3/68*
U.S. Cl. 64—14 **6 Claims**



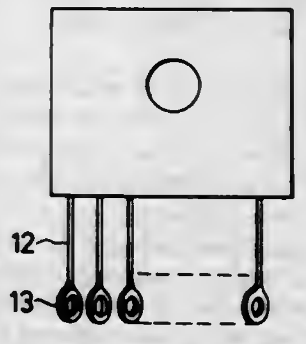
1. A rotatable jaw coupling which includes: a first rotatable coupling section, a second rotatable coupling section axially aligned with said first coupling section, each of said two coupling sections having jaws including concave surfaces tapered from roots to end faces thereof as well as facing toward the other coupling sections and each jaw of one coupling section extending between two jaws of the other coupling section and vice versa, elastic power transmitting bodies respectively interposed between each two jaws facing each other and respectively pertaining to said two coupling sections, said elastic power transmitting bodies and said jaws engaging each other along surfaces which at least within regions in which tangential forces are transmitted extend at an incline with regard to the axis of rotation of said coupling, and means associated with said coupling for axially adjusting at least one of said coupling sections relative to the other coupling section.

3,895,503

YARN GUIDES FOR WARP KNITTING MACHINES

Karl Kohl, 10 Chlorodont Strasse, Obertshausen, Germany (6053)

Filed Apr. 16, 1973, Ser. No. 351,731
Int. Cl. D04b *27/02, 27/06*
U.S. Cl. 66—86 R **4 Claims**



1. A yarn guide unit for a warp knitting machine comprising

a mounting unit, said mounting unit having a transverse axis, and

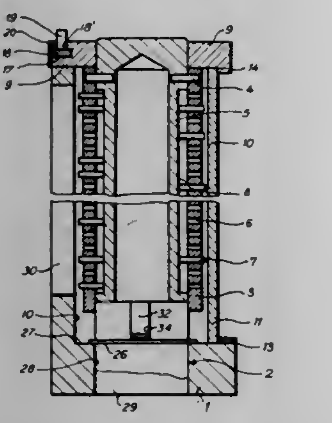
  a plurality of yarn guides each guide comprising
  a shaft portion having a longitudinal axis and
  a substantially flat head portion attached to said shaft portion,
  said head portion having an eyelet therethrough and being bisected by said longitudinal axis, said longitudinal shaft axis being perpendicular to said transverse mounting unit axis,
  said guide shafts being mounted side by side in said mounting unit and the longitudinal axes of said shafts lying upon a common principal plane, said principal plane also passing thru said transverse axis and the center of said eyelet wherein each of said head portions subtending an angle of between about 30° to about 45° to said principal plane which bisects said head portions.

3,895,504

QUICKLY REPLACED PATTERN DRUM

Miroslav Brandstatter, Brno, Czechoslovakia, assignor to Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi, Brno, Czechoslovakia

Filed Oct. 5, 1973, Ser. No. 403,804
Int. Cl. D04b *15/74*
U.S. Cl. 66—156 **5 Claims**



1. A pattern device having a quickly replaced pattern drum having pegs projecting from the peripheral surface of said drum, comprising a body for supporting the drum, a cover overlying one end of the body, bolts each having a recess arranged on the said end of the body and projecting outwardly thereof, openings in said cover in register with said bolts on said end of said body, thereby permitting the bolts to engage in said openings, a transverse slot in said cover, a ledge adapted to slide in said slot into a position wherein it simultaneously engages in said recesses in said bolts, and stop means selectively securing said ledge in said position.

3,895,505

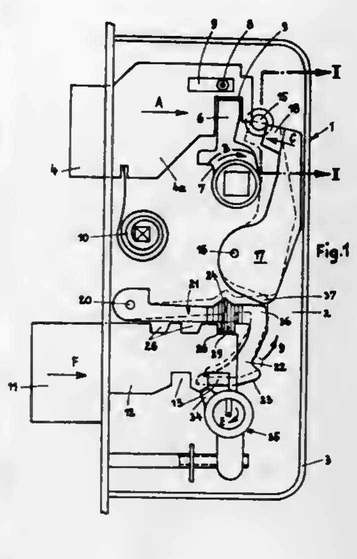
DOOR LOCK

Georg Wasserfaller, 5923 Post Landskron, Gratschach, Austria

Filed June 27, 1974, Ser. No. 483,686
Claims priority application, Austria, June 29, 1973, 5789/73
Int. Cl. E05b *59/00*
U.S. Cl. 70—111 **7 Claims**

1. A door lock comprising, in combination:

1. a latch reciprocal between an open and locked position,
  2. a bolt reciprocal between an open and locked position,
  3. key-operable means for reciprocating the bolt between the locked and open position,
4. a locking mechanism including a locking bolt movable between a latch engaging position for holding the latch in the locked position and a latch disengaging position wherein the locking bolt is disengaged from a latch for permitting the latch to be reciprocated into the open position, and
5. means operably associated with the reciprocal bolt and the movable locking bolt for moving the locking bolt into the disengaged position in response to the key-operated reciprocation of the bolt into the open position thereof.

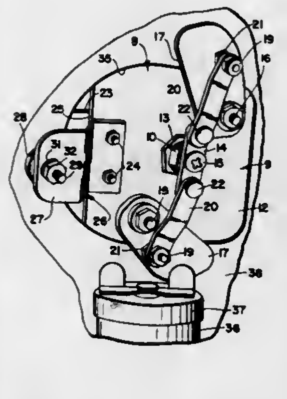


3,895,506

LOCKING CLOSURE FOR FUEL TANK

Steve F. Gallego, 125 E. 40th St., Tuscon, Ariz. 85713

Filed Apr. 19, 1974, Ser. No. 462,421
Int. Cl. E05b *65/12*
U.S. Cl. 70—168 **2 Claims**



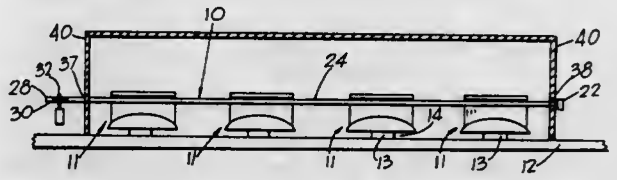
1. A locking closure for a fuel tank comprising a plate adapted to span an opening of a vehicle body normally affording access to a fuel tank filling neck, a key operated cylinder lock mounted in and extending through said plate, a pair of locking dogs, means swingably mounting said locking dogs on an inner side of the plate, crank members secured to and rotatable with a rotatable part of the lock and disposed on the inner side of said plate, rigid links connecting said crank members and locking dogs for simultaneously exerting either a thrust or pull on the locking dogs when the rotatable part of the lock is turned by a key applied to the lock from the other outer side of the plate, for moving the locking dogs between extended, locked positions against the inner side of the vehicle body or retracted unlocked positions out of engagement with the vehicle body and in sufficient close proximity to one another for passage through said opening, a bracket secured to and projecting from said inner side of the plate, a resilient bumper supported by said bracket and disposed to yieldably engage against a portion of the inner side of the body when said dogs are in locking positions, and means to adjustably position the bumper relative to the bracket for varying the pressure exerted by the bumper on said body portion.

3,895,507

SAFETY LOCK DEVICE FOR A STOVE

Henry Moy, Bronx, N.Y., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed Oct. 23, 1974, Ser. No. 517,372
Int. Cl.² F16K *35/00*
U.S. Cl. 70—177 **5 Claims**



1. A safety lock device in combination with a plurality of aligned control knobs on a front face of a stove for the prevention of the accidental rotation of said control knobs of said stove, which comprises:

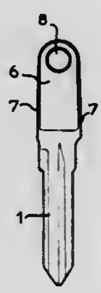
  each control knob fixably secured to a valve operating stem of said stove;
  said control knob formed from a disc shaped bottom base and an upward extending rectangular shaped flange member affixed centrally to said bottom base;
  an eye blot member horizontally extending outward from said front face of said stove;
  a U-shaped member having elongated leg members;
  said U-shaped member communicating with said eye blot member, wherein said legs extend across said stove;
  each said flange member of each said knob extending outward between said legs; and
  a first means of pulling said legs inward toward each other, wherein said pulled in legs engage said flange members of said knobs preventing axially rotation of said knobs.

3,895,508

FLAT KEY

Serge Crasnianski, Grenoble, France, assignor to Cransianski France S.A., France

Filed Nov. 23, 1973, Ser. No. 418,223
Claims priority, application France, Apr. 24, 1973, 73.14753; June 20, 1973, 73.22467
Int. Cl. E05b *19/04*
U.S. Cl. 70—395 **5 Claims**



1. A flat key, comprising;

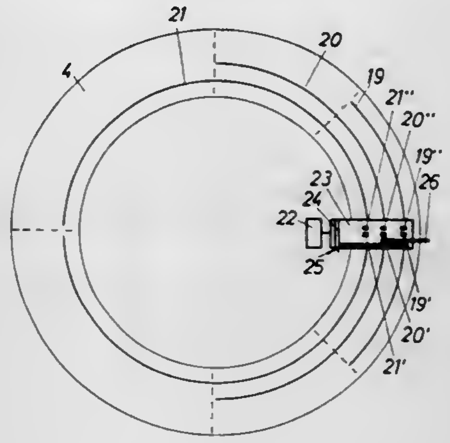
a shank which comprises, a flat and narrow profile section, and a substantially similarly flat and narrow shank head, said shank head slightly tapering toward an end thereof remove from the profile section; and
a key head surrounding the shank head, the key head being thicker and wider than the shank head, with an aperture extending through the key head and slightly tapering to fit the slightly tapering shank head with wedge action between said heads;
whereby said heads are interconnected tightly without employment of crimped or welded portions of the shank or key head.

3,895,509

BENDING MACHINE FOR RODS, WIRES AND OTHER ELONGATED ARTICLES OF STEEL, ETC.

Carl Ullrich Peddinghaus, Obere Lichtenplatzer Str. 276, (56) Wuppertal-Barmen, Germany

Continuation-in-part of Ser. No. 94,251, Dec. 2, 1970, abandoned. This application May 18, 1973, Ser. No. 361,849
Claims priority, application Germany, Dec. 3, 1969, 1960670
Int. Cl. B21d *7/02, 7/12*
U.S. Cl. 72—21 **3 Claims**



1. A bending machine for rods, wires and other elongated articles of steel and other materials, including a bending platen for supporting bending tools, said bending platen being rotatable and directionally controllably driven, a drive motor for the plate, setting means operably associated with the platen for principal bending angles, said setting means having elements corresponding to the specific principal bending angles and which can be actuated in any desired sequence, an electrically operated control system for automatically controlling a bending operation beyond a set principal bending angle to compensate for deviations between the actual bending angle achieved and the required bending angle which may otherwise occur, the improvement being there is provided in association with each principal bending angle, an adjustable time delay device, with the aid of which the drive motor for the platen, after having reached a given principal bending angle, remains activated for a further period of time without changing the position of the setting means, and each delay device comprising an adjustable potentiometer arranged to vary the timing constant of a condenser/resistor link.

3,895,510

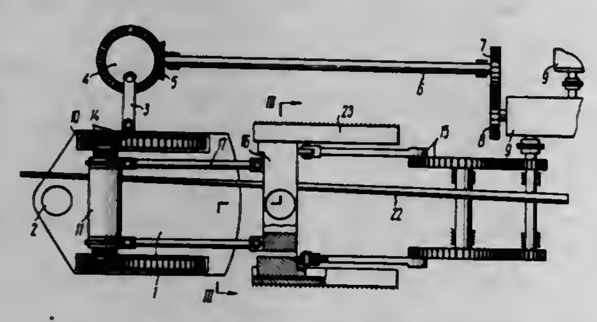
TUBE COLD ROLLING MILL

Sergei Nikolaevich Kozhevnikov, Vystavochnaya ulitsa 3, kv. 73, Kiev; Arkady Semenovich Tkachenko, kina prospekt Gagarina, 63, kv. 22 ulitsa Babush 8/12, kv. 5, both of Dnepropetrovsk, all of U.S.S.R.

Filed July 10, 1972, Ser. No. 270,563
Int. Cl. B21b *21/00*
U.S. Cl. 72—214 **2 Claims**

1. A tube cold rolling mill comprising a stand with rolls having a variable-section groove provided along a spiral line with a variable inclination angle along the groove length; a housing with guides for said stand made so as to ensure its reciprocal-rolling motion relative to the vertical axis; a drive with a crank mechanism for moving the stand along the guides of said housing; a linkage of said housing with the drive of said stand made so that the angle formed by the guides of said housing and the axis of rolling is at each moment of time equal to said variable inclination angle of the roll groove; a crosshead, the housing of which is hinged to a crank mechanism of said stand drive and having a cavity to accommodate a holder;

said holder being disposed in said cavity of the housing of said crosshead and able to turn relative to the vertical axis and



having a hole for passing a billet and being hinged with tie rods of said stand.

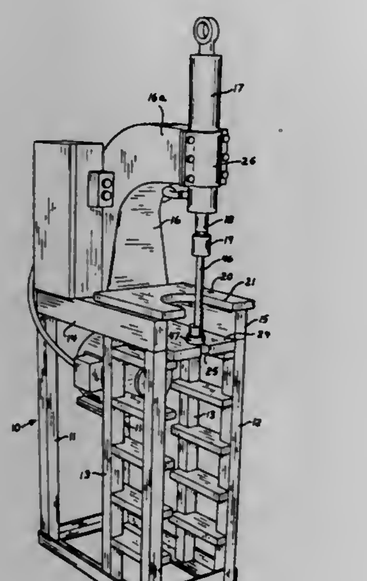
3,895,511
HYDRAULIC PRESS

Daniel A. Delmore, Hopkins, Minn., assignor to Tennant Company, Minneapolis, Minn.

Filed Mar. 1, 1974, Ser. No. 447,213

Int. Cl. B21j *13/04*

U.S. Cl. 72—448 **4 Claims**



1. For reciprocating a tool along a given axis to perform a work operation on a work piece, a hydraulic press comprising a frame, a first piston cylinder combination having a first cylinder and a first piston rod reciprocally operated by the cylinder, said first combination having a fixed length piston stroke, means for mounting the combination on the frame, tool mounting means adapted for attaching a tool to the first piston rod to move therewith along said axis, a platen for supporting a work piece supporting jig or work piece to have a work operation performed on the work piece by a tool mounted by the tool mounting means and moved through actuation of said first combination, means mounted on the frame for supporting the platen in various selected positions at varying spacings from the first cylinder in alignment with the path of movement of the tool mounting means, a work piece or jig support plate fixedly mounted on the frame between the platen support means and the first piston rod in its retracted position and substantially spaced from the first piston rod in its retracted position, said support plate having a cut out of a size and located to have a tool extended therethrough, said frame comprising a pair of spaced frame members extending from the support plate in a direction away from said first combination, said platen supporting means including a platen support mounted on each frame member at the same distance from the support plate as the platen support on the other frame member, said platen supports being spaced from one another and extending from the respective frame member toward the other for supporting the platen in alignment with the cut out, and a second piston cylinder combination having a second cylinder and piston rod, and means for mounting the second combination on the frame, said combination mounting means mounting the cylinders on the same side of the support plate on opposite sides of the cut out and said tool mounting means being attached to the second piston rod.

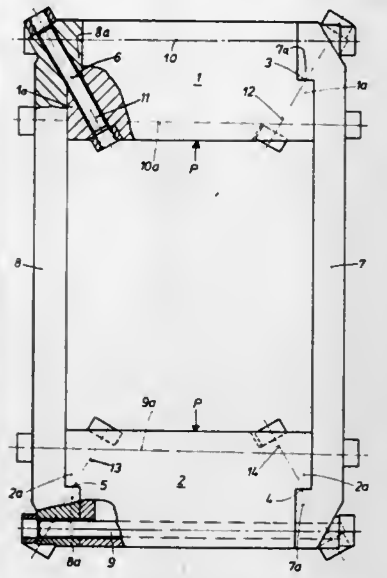
3,895,512
MULTIPLE-PART MACHINE FRAME FOR PRESSES, ROLLING MILLS OR THE LIKE

Ernest Theodor Sack, Hosel, Germany, assignor to Maschinenfabrik Sack GmbH, Dusseldorf-Rath, Germany

Filed Oct. 24, 1973, Ser. No. 368,687

Int. Cl.² B21J *13/04;* **B30B** *15/04*

U.S. Cl. 72—455 **3 Claims**



1. A composite machine frame for highly stressed power presses, rolling mills, and like applications, in which large working forces act to longitudinally deform and stretch the frame, and deformation-related impact relief forces, created by the abrupt cessation of said working forces, act to contract the frame, the machine frame comprising:

a pair of laterally spaced longitudinal frame members extending over substantially the entire length of the frame; a pair of vertically spaced transverse frame members extending between the upper and lower extremities of the longitudinal frame members so as to constitute mating interfaces therebetween and to circumscribe a substantially rectangular frame opening;

first tie-rods extending lengthwise through the transverse frame members and perpendicularly through said longitudinal frame members for the creation of a transverse clamping force across the interfaces of these members;

a pair of oppositely oriented mating projections in each of the four interfaces between the longitudinal and transverse frame members; each pair of projections comprising a laterally outwardly extending projection of the transverse frame member, an inwardly extending overhanging projection of the longitudinal frame member, and intermediate, transversely oriented force-transmitting surfaces by which said projections engage each other for the transmission of the working forces from the transverse frame member to the longitudinal frame member; and

second tie-rods extending generally longitudinally through said pairs of mating projections along an axis which intersects their force-transmitting surfaces, said tie-rods being prestressed to such an extent that they maintain longitudinal clamping pressures on the force-transmitting surfaces between the longitudinal frame members and the transverse frame members of such a magnitude that the clamping pressures are at all times higher than the impact relief forces which tend to separate these members along said force-transmitting surfaces.

3,895,513
VISCOMETRIC APPARATUS

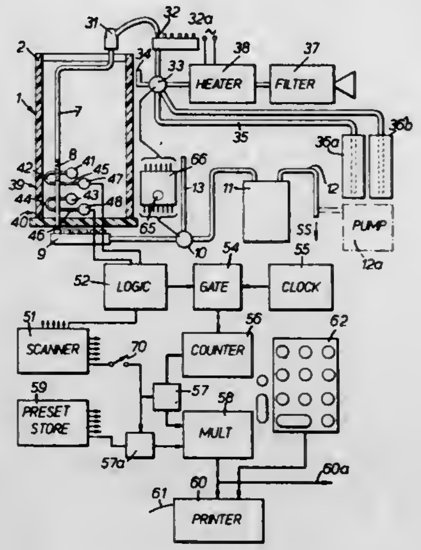
Claude Alan Richardson, Egham, England, assignor to Stanhope-Seta Limited, Surrey, England

Filed Nov. 14, 1973, Ser. No. 415,641

Claims priority, application United Kingdom, June 12, 1973, 28033/73

Int. Cl. G01n *11/06*

U.S. Cl. 73—55 **9 Claims**



1. In viscometric appartus including a generally vertically disposed viscometry tube having an upper end and a lower end and including a capillary portion intermediate said ends and said tube having associated with said capillary portion fiducial marks so spaced that the time of passage of a liquid sample of predetermined volume is a measure of the viscosity of said sample, a suction source and valve means operable to connect said tube to said suction source and to the ambient air, the improvement which comprises:

a hood member applied to the upper end of said viscometry tube, said hood member having therein an aperture for injection of said liquid sample;

a reservoir of cleansing fluid;

first valve means coupled with said lower end of said viscometry tube;

second valve means;

and conduit means coupling said hood member with said second valve means;

said first valve means being operable to connect said lower end of said viscometry tube alternatively with said suction source and with the ambient air and said second valve means being operable to connect said hood member alternatively with said reservoir or with said ambient air.

3,895,514
BOTTLE TESTING APPARATUS

John D. Northup, 2460 Underhill Rd., Toledo, Ohio 43615

Filed Aug. 15, 1974, Ser. No. 497,751

Int. Cl. G01m *3/02*

U.S. Cl. 73—49.4 **7 Claims**

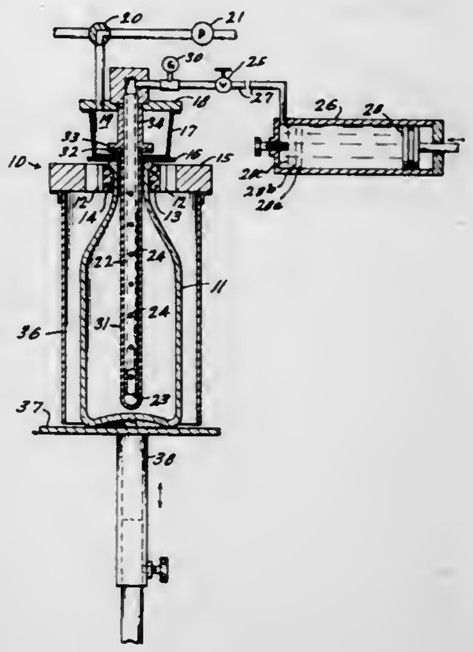
1. A bottle testing apparatus, comprising:

means for engaging the bottle in a testing position;

a flexible expandable bladder adjacent said engaging means for insertion into the interior of the bottle;

means for filling the bladder with fluid while the bladder is positioned inside the bottle, thereby expanding the bladder into contact with the interior wall surface of the bottle to apply pressure;

means for preventing the entrapment of air between the bladder and the interior surface of the bottle; and



means for withdrawing the fluid from the bladder, whereby said bladder may be removed from the bottle.

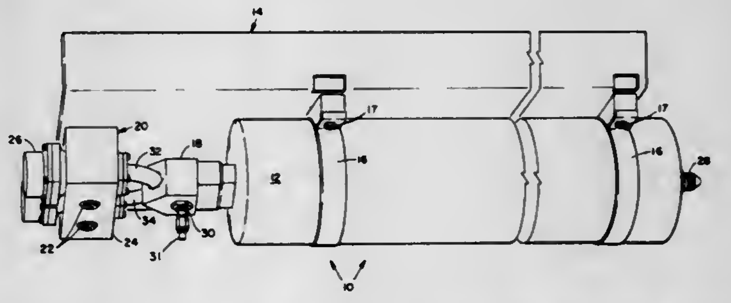
3,895,515
WING THRUSTER

Ronald F. Vetter; Ray A. Miller; Edward A. Panella, all of Ridgecrest, and James J. Rosolanka, China Lake, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 26, 1973, Ser. No. 428,598

Int. Cl.² G01N *29/00*

U.S. Cl. 73—71.5 R **9 Claims**



1. In a thrust producing device for investigating wing flutter in aircraft, the improvement comprising:

a pressure accumulator;

means for pressurizing said accumulator;

valve means connected to said accumulator such that opening of said valve means releases fluid under pressure from said accumulator;

means mounting said valve means and said accumulator in position on a wing surface near the outboard end thereof; and

means connected to said valve means for remotely controlling the opening and closing of said valve means to cause reaction forces to act on said surface;

said valve means comprising at least one electrohydraulically operated thrust valve said thrust valve including first and second chambers communicating with said accumulator so that equal fluid pressure is maintained on both sides of a closure member; means for isolating said chambers from one another and venting one chamber to atmosphere in order to activate said thrust valve.

3,895,516

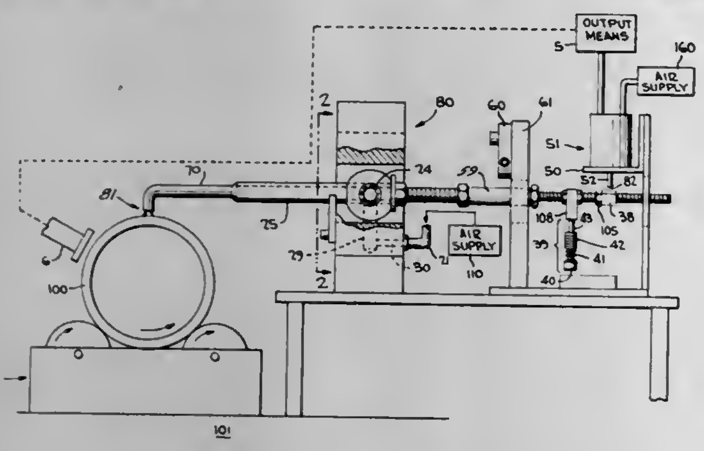
APPARATUS FOR CONTOUR AND LINEAR MEASUREMENT USING FLUIDS

Elmer L. Swartz, Annandale, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 18, 1974, Ser. No. 452,477

Int. Cl.^{2} G01B *13/06*

U.S. Cl. 73—37.6 **5 Claims**



1. A noncontacting contour and linear measurement apparatus for gauging a surface comprising a first fluid source means mounted in spaced relation to the surface and establishing a constant jet of fluid engaging said surface, lever means to rotate said first source means relative to the surface to continuously track the configuration of said surface, a positional sensing means to determine the position of an exteriority of the lever means, located adjacent to the lever means, and a fulcrum means mounted in spaced relation to the exteriority of said lever means and establishing a constant jet of fluid for supporting said exteriority.

3,895,517

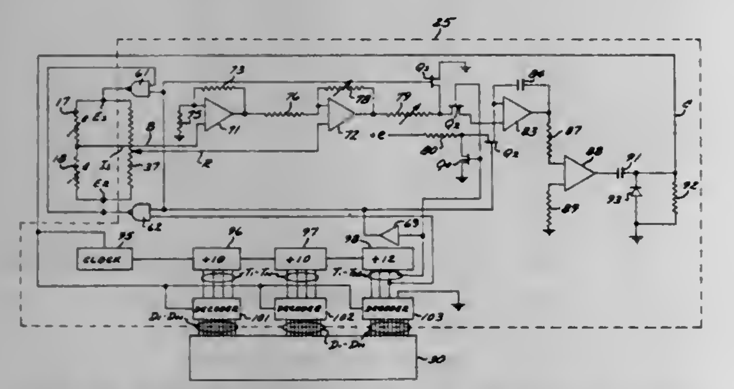
ELECTRONIC TORQUE WRENCH

William M. Otto, Orange, Calif., assignor to JO-Line Tools, Inc., Anaheim, Calif.

Filed Jan. 14, 1974, Ser. No. 433,247

Int. Cl. G01l *1/22*

U.S. Cl. 73—88.5 R **5 Claims**



1. A strain readout apparatus for displaying a numerical equivalent of strain deformation of a structure, comprising:

an electrical signal source;

bridge means operatively connected for excitation to said signal source for developing a first electrical signal indicative of the strain deformation of the structure;

accumulating means connected to said bridge means for accumulating a second electrical signal substantially equal to a fixed time produce of said first electrical signal integrated over a first fixed interval of time;

decay means connected to said signal source and to said accumulating means to be rendered operative subsequent to the expiratin of said first fixed interval of time for subtracting a fixed signal rate determined by said signal source for a variable interval of time from said second electrical signal to reduce said second electrical signal to a predetermined level;

counting means connected to said accumulating means and said decay means for providing a first count corresponding to said first fixed interval of time and a second count corresponding to said variable interval of time; and

readout means connected to said count means for reading out said second count.

3,895,518

TIRE TESTING MACHINE

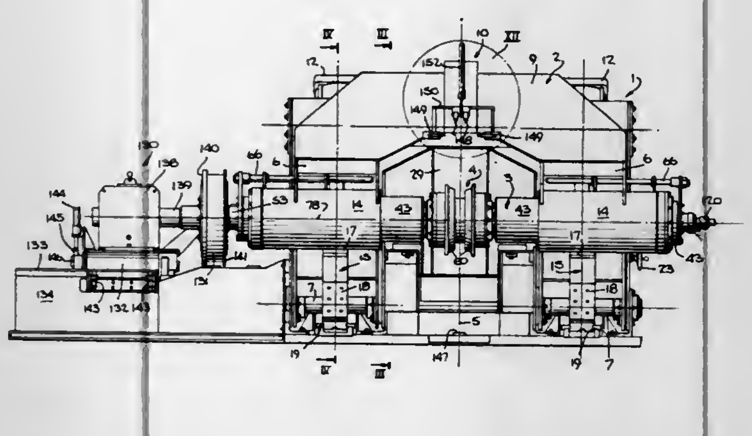
Jean R. Leblond, Compiegne, France, assignor to Uniroyal (France), Clairoix, France

Filed Jan. 10, 1974, Ser. No. 432,256

Claims priority, application France, Feb. 19, 1973, 73.05810

Int. Cl. G01m *17/02*

U.S. Cl. 73—146 **34 Claims**



1. Apparatus for measuring dimensional characteristics of a pneumatic tire sample, said apparatus comprising:

a. a frame;

b. a pair of coaxially aligned, confronting, bead-holding members shiftably supported on said frame for movement toward and away from one another and, thereby, into and out of bead holding association with corresponding bead region of a pneumatic tire sample;

c. power means for selectively shifting said bead-holding members toward and away from one another;

d. locking means for clamping said bead-holding members to one another when the latter are in bead holding association with the tire sample;

e. tire inflation means operatively associated with said bead-holding members for inflating the tire sample between and from within said bead-holding members when the latter are in bead holding association with the tire sample;

f. tire sensing means shiftably mounted on said frame for effecting measurement of selected dimensional characteristics of the inflated tire sample;

g. further power means for shifting said tire sensing means into and out of operative engagement with selected portions of the tire sample, and

h. drive means for rotating the clamped bead-holding members and, thereby, the tire sample relative to said tire sensing means when the latter is in operative engagement with the tire sample, said frame including a stationary frame portion and a pivotal frame portion hinged upon said stationary frame portion, said stationary frame portion including a road-simulating drum freely journaled thereupon, said pivotal frame portion supporting said bead-holding members and being displaceable pivotally relative to said stationary frame portion such that the tire sample held by said bead-holding members is engageable radially with said drum.

3,895,519

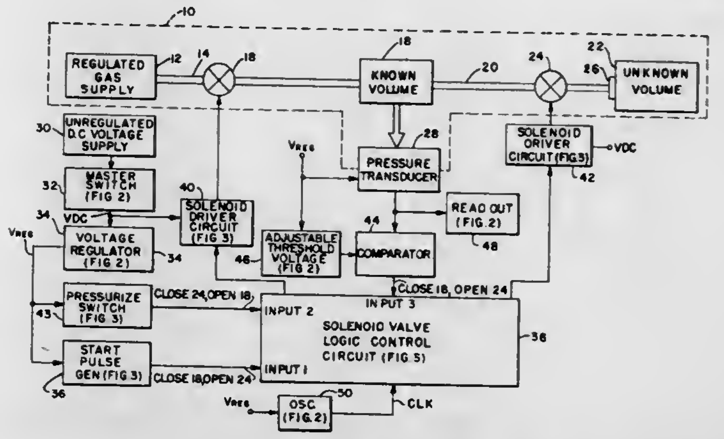
ELECTRONIC CONTROL SYSTEM FOR FLUID MEASUREMENT OF A CLOSED AIR SPACE

Jean C. Bouchy, and T. J. Hardman, both of Cincinnati, Ohio, assignors to McNay Equipment Company, Inc., Cincinnati, Ohio

Filed June 25, 1974, Ser. No. 482,884

Int. Cl. G01f *17/00*

U.S. Cl. 73—149 **5 Claims**


10
REGULATED GAS SUPPLY
KNOWN VOLUME
UNKNOWN VOLUME
UNREGULATED D.C VOLTAGE SUPPLY
MASTER SWITCH (FIG 2)
VOLTAGE REGULATOR (FIG 2)
SOLENOID DRIVER CIRCUIT (FIG 3)
ADJUSTABLE THRESHOLD VOLTAGE (FIG 2)
PRESSURE TRANSDUCER
COMPARATOR
READ OUT (FIG 2)
SOLENOID DRIVER CIRCUIT (FIG 3)
PRESSURIZE SWITCH (FIG 3)
START PULSE GEN (FIG 3)
CLOSE 18, OPEN 24
INPUT 1
INPUT 2
INPUT 3
SOLENOID VALVE LOGIC CONTROL CIRCUIT (FIG 5)
OSC (FIG 2)
CLK
VDC

1. A system for measuring an unknown volume, comprising a source of fluid pressure, a vessel of predetermined volume, first electrically controlled valve means having open and shut conditions and being operable to provide a first fluid connection between said source of predetermined pressure and said vessel in said open condition and to interrupt said first fluid connection in said shut condition, second electrically operated valve means having open and shut conditions and being operable in said open condition to provide a second fluid connection between said vessel and the unknown volume and to interrupt said second fluid connection in said shut condition, transducer means in fluid communication, with said vessel between said first and second valve means for providing an electrical output analog of the pressure in said vessel, an electrical control circuit responsive to a start pulse, a pressurize signal and the output of said transducer means for performing the following functions in sequence: (1) in response to said start pulse shutting said first valve means and opening said second valve means, (2) in response to said pressurize signal, shutting said second valve means and opening said first valve means to charge said vessel with pressure, and (3) in response to the output of said transducer attaining a predetermined level, shutting said first valve means and opening said second valve means to discharge the pressure in said vessel into the unknown volume, whereby the output of said transducer when the pressures in said vessel and in the unknown volume are at equilibrium is a measure of the unknown volume.

3,895,520

WELL LOGGING METHOD USING WELL LOGGING TOOLS RUN THROUGH A DRILL STEM TEST STRING FOR DETERMINING IN-SITU CHANGE IN FORMATION WATER SATURATION VALUES

Walter H. Fertl, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed July 27, 1973, Ser. No. 383,220

Int. Cl. E21b *49/00*

U.S. Cl. 73—152 **13 Claims**

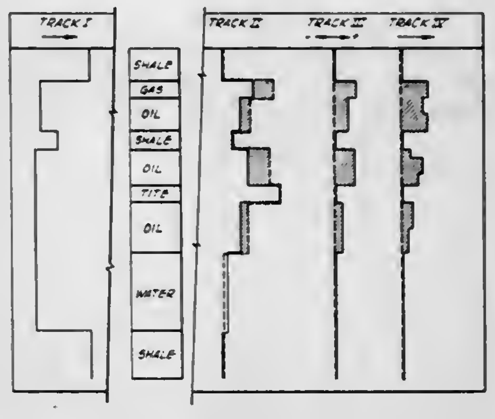
1. A well logging method comprising: positioning s drill stem test string or the like in a borehole near the formation zone of interest; positioning a logging tool through a portion of the drill stem test string or the like generally near the formation zone of interest during a first logging run;

obtaining a first log from said logging tool having a first logging run tool response responsive to the formation fluid generally within the zone of interest;

removing a sample portion of the formation fluid generally from the formation zone of interest, thereby producing an in-situ change in the formation fluid in the zone of interest;

retrieving the sample portion of the formation fluid obtained from the formation zone of interest; and

obtaining a second log from said logging tool through a portion of the drill stem test string or the like generally



near the formation zone of interest during a second logging run, the logging tool having a second logging run tool response responsive to the formation fluid generally within the zone of interest, whereby the first and the second logging run tool responses indicating the formation potential productivity generally within the formation zone of interest.

3,895,521

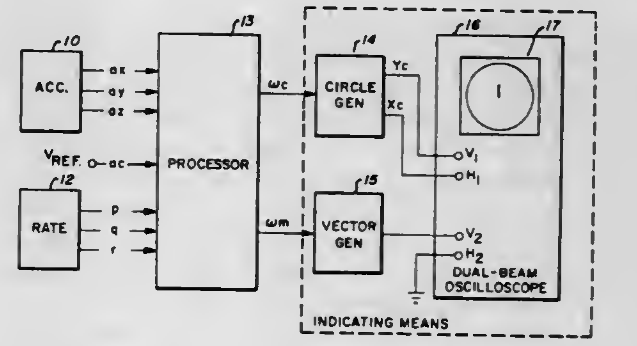
G-LOAD MEASURING AND INDICATOR APPARATUS

James C. Howard, Sunnyvale, Calif., assignor to The United States Government as represented by the National Aeronautics and Space Administration Office of General Counsel-Code GP, Washington, D.C.

Filed June 12, 1974, Ser. No. 478,802

Int. Cl. G01p *5/00*

U.S. Cl. 73—178 R **19 Claims**



1. A *g*-load measuring apparatus for indicating the instantaneous relationship between instantaneous critical velocity and instantaneous maneuvering velocity of an aircraft being maneuvered, comprising:

signal generating means for developing linear acceleration signals respectively corresponding to the three orthogonal components, *ax*, *ay* and *az*, of the instantaneous linear acceleration of the aircraft;

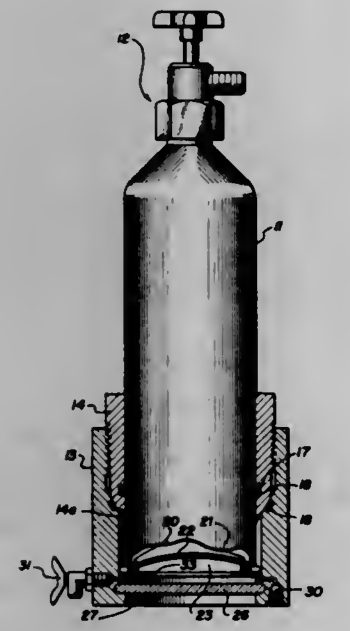
signal generating means for developing angular velocity signals respectively corresponding to the three orthogonal components, *p*, *q* and *r*, of the instantaneous angular velocity of the aircraft;

signal generating means for developing a reference signal representing the design maximum critical acceleration ac for said aircraft;

processor means for receiving and processing said linear acceleration, angular velocity and reference signals to generate a first signal indicative of the instantaneous critical velocity of the aircraft and a second signal indicative of the instantaneous maneuvering velocity of the aircraft; and

indicating means responsive to said first and second signals and operative to indicate the relationship of the instantaneous values of the critical velocity and the maneuvering velocity of the aircraft.

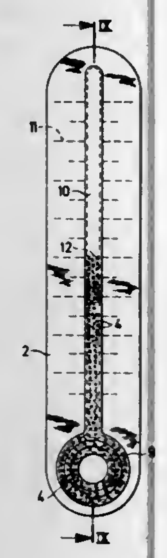
3,895,522
SIGHT GLASS FOR METAL LIQUID CONTAINERS
John A. Skvarenina, 2639 W. Augusta, Chicago, Ill. 60622
Filed Apr. 29, 1974, Ser. No. 465,431
Int. Cl. G01f *23/02*
U.S. Cl. 73—323 **10 Claims**

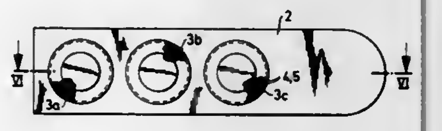


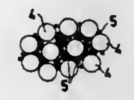
1. In combination a sight glass and a liquid container, said sight glass comprising: a cylindrical sleeve to be positioned about said liquid container at a sealed end thereof, said cylindrical sleeve having an opening that extends beyond said end of the container first securing means position about said container, second securing means on said cylindrical sleeve for engagement with said first securing means, a transparent window element secured across said opening of said cylindrical sleeve to be positioned adjacent the bottom of the container to form a chamber therewith, piercing means mounted on said cylindrical sleeve and positioned radially inwardly thereof to engage the bottom of the container and puncture same when said cylindrical sleeve is tightened by said first and second securing means, and annular seal means formed within said cylindrical sleeve to provide a fluid tight seal for said chamber when the bottom of the container is punctured by said piercing means, whereby the liquid within the container will enter said chamber for viewing to determine the quantity of liquid within the container.

3,895,523
THERMOMETER
Bernard Nollen, Ahrensburg, Germany, assignor to Michael Obladen, Hamburg, Germany, a part interest
Filed Oct. 2, 1974, Ser. No. 511,290
Claims priority, application Germany, Oct. 8, 1973, 2350441
Int. Cl.^{2} G01K *5/00*
U.S. Cl. 73—356 **20 Claims**

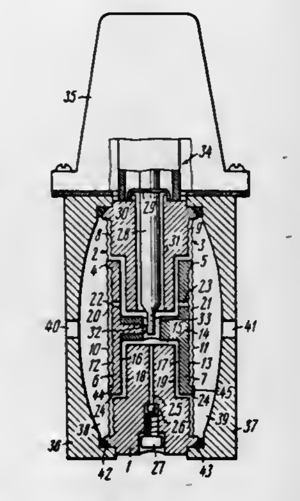
1. A thermometer working on the basis of volume expansion of paraffinic hydrocarbons such as eicosane, heneicosane and docosane, and including an indicating agent disposed within an enclosed cavity wherein said paraffinic hydrocarbons are encapsulated within a first multitude of relatively small capsules disposed within the indicating medium.





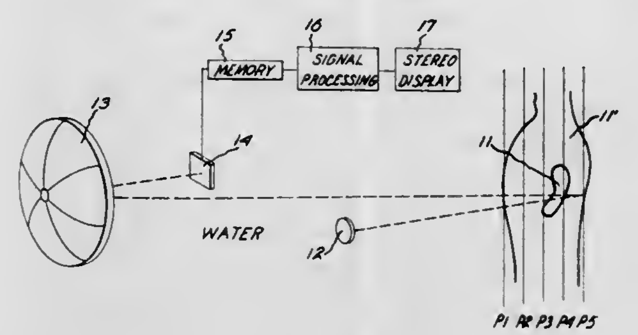


3,895,524
DIFFERENTIAL PRESSURE GAUGE
Albert Yakovlevich Jurovsky, ulitsa Balliiskaya, 4, kv. 94, Moscow, U.S.S.R.
Filed June 11, 1974, Ser. No. 478,336
Claims priority, application U.S.S.R., June 18, 1973, 1933173
Int. Cl. G01l *19/04, 7/08*
U.S. Cl. 73—393 **8 Claims**



1. A differential pressure gauge comprising: a base; two membranes subjected to the effect of pressures; said membranes fastened along the outer contour to the opposite sides of, and at a certain distance from, said base; a pressuretight space between said base and said membrane; two rigid discs secured, each, tightly to one of said membranes on a circular zone and located inside said pressuretight space; two chambers formed between said rigid discs and said membranes inside said circular zones; channels which put each of said chambers in communication with said pressuretight space; a hole in said base; a rigid connector passing through said hole and secured rigidly to said rigid discs; a means joined with said connector and intended to transmit the motion of said membranes; a means for transforming the motion of said membranes into an output signal, said means interacting with said first means; a liquid which fills said pressuretight space and said chambers

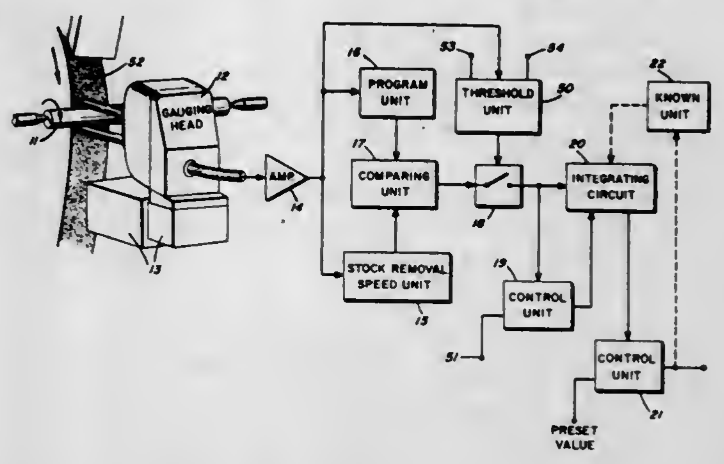
3,895,525
ACOUSTIC IMAGING APPARATUS FOR VISUAL DISPLAY WITH DEPTH PERCEPTION
Charles W. Eichelberger, Schenectady, and Philip M. Garratt, Amsterdam, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Oct. 3, 1973, Ser. No. 403,224
Int. Cl. G01n *29/04*
U.S. Cl. 73—67.9 **19 Claims**



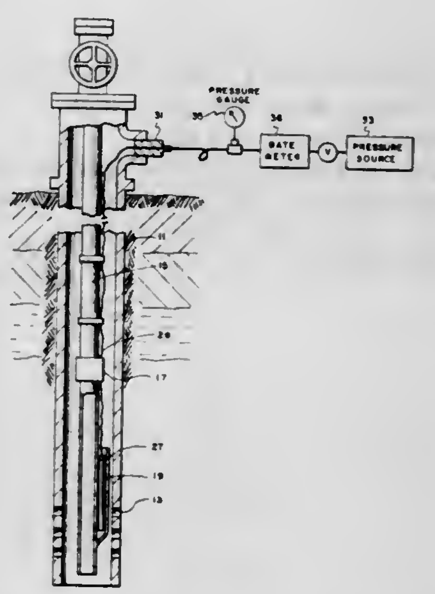
7. Acoustic imaging apparatus for visualizing in depth an object with internal acoustic heterogeneities comprising
means for generating a series of spaced acoustic pulses that are directed toward the object being examined,
focusing means for focusing a train of reflected acoustic echo signals produced by multiple reflection of each acoustic pulse by heterogeneities at multiple parallel planar regions at different depths within the object,
acoustic image converter means comprising a planar array of sensors each of which converts the focused acoustic echo signals to a variable electrical signal, a plurality of signal processing channels each connected to one of said sensors including a sense amplifier and detector for the electrical signal is produced by the respective sensor, and further including an individual multi-stage shift register with a plurality of binary storage stages for sequentially storing as binary data the electrical signals resulting from the sensing of the presence and absence of reflected echo signals from the parallel planar object regions, and means for serially connecting said individual shift registers for reading out the stored binary data,
means for supplying trains of pulses in parallel to selected components of said signal processing channels to effect sequential read-in and shifting of said binary data, and to effect read-out of said stored binary data before the launching of the next acoustic pulse, and
a memory for storage of the binary data read out of said serially connected individual shift registers.

3,895,526
METHOD FOR MEASURING THE CUTTING CAPACITY OF THE GRINDING WHEEL OF A GRINDER
Mario Pozzetti, Bologna, Italy, assignor to Finike Italiana Marposs, s.a.s., Bentivoglio, (BO), Italy
Filed May 31, 1973, Ser. No. 365,734
Claims priority, application Italy, June 15, 1972, 3459/72
Int. Cl. G01n *3/56*
U.S. Cl. 73—104 **5 Claims**

1. A method for checking the cutting capacity of the grinding wheel of a grinder, comprising determining for every piece to be ground, at the end part of the relative machining cycle, the value of at least one quantity, representative of the flexion state and of the strains of the piece itself, combining the succeeding so determined values and comparing the value resulting from said combination with a reference value.



3,895,527
METHOD AND APPARATUS FOR MEASURING PRESSURE RELATED PARAMETERS IN A BOREHOLE
Billy W. McArthur, Houston, Tex., assignor to Sperry-Sun Well Surveying Company, Sugar Land, Tex.
Filed Nov. 8, 1973, Ser. No. 414,060
Int. Cl. E21b *47/06*
U.S. Cl. 73—151 **7 Claims**



1. A system for detecting downhole pressure of formation fluids in a petroleum reservoir and for providing readings at the surface of such pressure, including a well pipe extending from the surface into the petroleum reservoir; a small diameter hollow tube attached to the outside of said pipe and extending from the surface to the bottom of the pipe; a check valve at the lower end of said tube, said check valve comprising a ball floatable in formation fluids, upper seating means to restrict upward movement of the ball, and lower seating means to restrict downward movement of said ball; surface means for applying fluid pressure to the upper end of the tube; and means at the surface for detecting the rate of change of fluid pressure in the tube as pressure is applied to the surface.

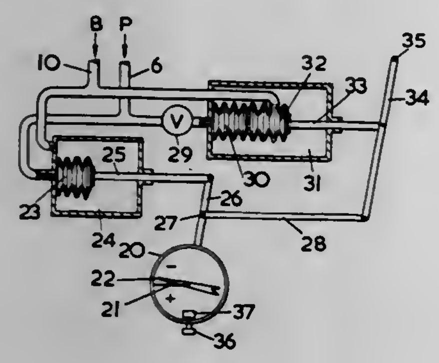
3,895,528
AIRCRAFT INSTRUMENTATION DISPLAYS

John Royal Sturgeon, Farnborough, England, assignor to The Secretary of State for Defence in her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Sept. 21, 1973, Ser. No. 399,524

Int. Cl. G01c *21/10*

U.S. Cl. 73—178 R **5 Claims**



1. An aircraft instrumentation display system having a source of pitot pressure and a source of static pressure comprising; means for combining the pitot and static pressures to provide a signal, representative of aircraft total energy, for use as an engine power director; a first instrument displaying said total energy signal; means for converting pitot pressure into a signal for use as an elevator director; and a second instrument displaying said pitot pressure signal, both of said instruments being mounted upon a common panel visible to the pilot of the aircraft.

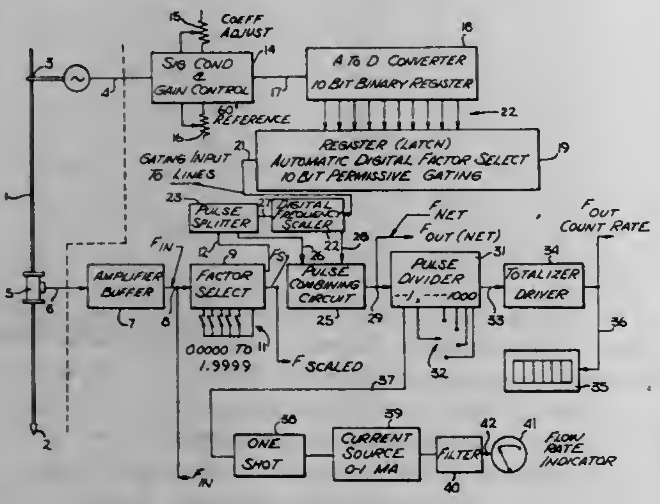
3,895,529
FLOWMETER COMPENSATING SYSTEM

James E. Moore, Reseda, Calif., assignor to Waugh Control Corporation, Van Nuys, Calif.

Continuation of Ser. No. 179,755, Sept. 13, 1971, abandoned. This application Feb. 11, 1974, Ser. No. 441,016

Int. Cl. G01f *1/00*

U.S. Cl. 73—194 M **13 Claims**



1. Apparatus for compensating a first measured parameter of a continuous process in accordance with measured changes in a second parameter of said process, comprising:

first transducer means for converting said first measured parameter into a series of discrete pulses;

pulse dividing means for receiving said series of discrete pulses and directing a first fraction of said pulses into a first signal channel, and directing the remaining fraction of said pulses into a second signal channel;

second transducer means for converting said second measured parameter into a corresponding analog signal,

analog-to-digital conversion means for converting said analog signal to a corresponding digital signal;

pulse multiplying means for multiplying the pulses in said first signal channel as a function of said digital signal to obtain a pulse output; and

combining means for combining the pulse output from said second signal channel with the pulse output of said pulse multiplying means.

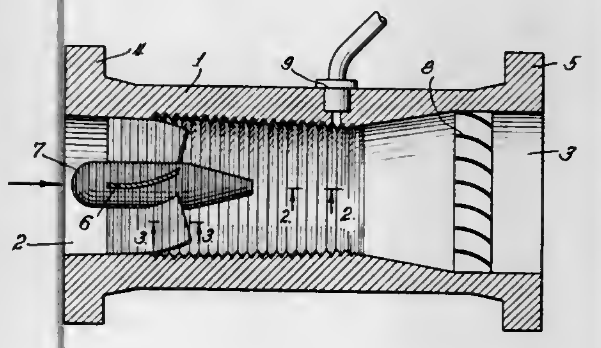
3,895,530
TUBULAR SWIRL FLOW METER

Wolf Paetzold, Hochheim, Germany, assignor to Elster, AG, Mainz-Kastel, Germany

Filed May 16, 1974, Ser. No. 470,403

Int. Cl.² G01F *1/32*

U.S. Cl. 73—194 B **6 Claims**



1. In a tubular swirl flow meter having a measuring tube, a swirl device at the entrance thereto and a measuring sensor downstream from the swirl device, the improvement wherein the internal surfaces of the measuring tube are rough, the roughened surfaces extending from the location of the swirl device within the measuring tube at least to the location of the measuring sensor, the ratio of the diameter of the tube to the depth of the roughness of the measuring tube surface being less than 300, the elements forming the roughness being formed by spaced substantially circumferential grooves and having sharp profiles at their crests.

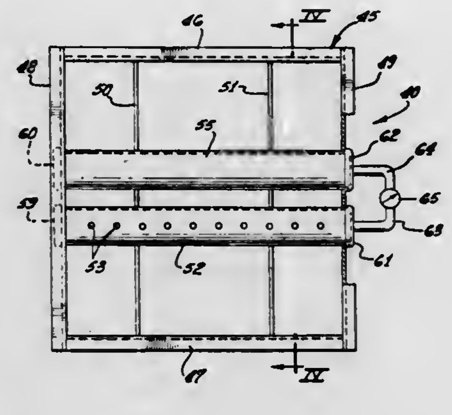
3,895,531
APPARATUS FOR SENSING VOLUMETRIC RATE OF AIR FLOW

Robert R. Lambert, 442 W. Leadora Ave., Glendora, Calif. 91740

Continuation-in-part of Ser. No. 706,058, Feb. 16, 1968, abandoned. This application Mar. 17, 1969, Ser. No. 814,498

Int. Cl. G01f *1/00*

U.S. Cl. 73—212 **6 Claims**



1. An apparatus for sensing volumetric rate of air flow comprising:

a total pressure sensing hollow tubular member having a series of axially spaced in-line openings facing the general direction of air flow,

a static air flow pressure sensing hollow tubular member having at least one series of axially spaced in-line openings facing normal to the direction of air flow,

means for supporting said total pressure sensing member and said static pressure sensing member in a plane transverse to the general direction of air flow and spaced from each other to form a nozzle therebetween, said openings in said static air flow pressure sensing hollow tubular member facing said total pressure sensing hollow tubular member to open towards said nozzle, and

means for measuring differential pressure in fluid communication with the total and static pressure sensing members so as to provide an indication of the velocity pressure.

3,895,532
PRESSURE AND TEMPERATURE COMPENSATED INDICATING APPARATUS FOR FLUID METERS

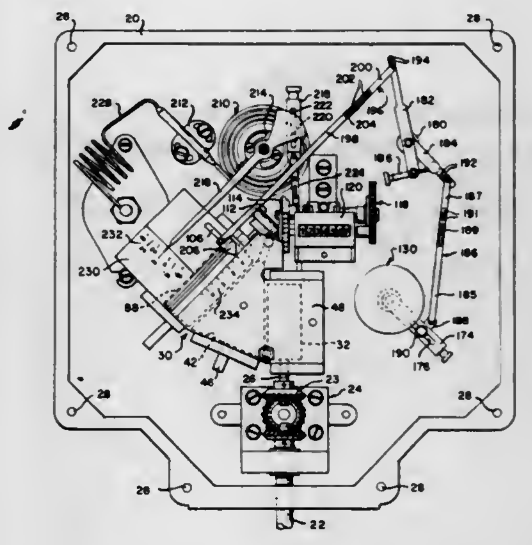
Dirk C. Blakeslee, Verona, and Thomas C. Farrell, Glenshaw, both of Pa., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed Dec. 10, 1973, Ser. No. 423,212

Int. Cl. G01f *1/08*

U.S. Cl. 73—233 **2 Claims**

1. Apparatus for indicating the volume of fluid flow in a pipeline comprising means adapted to be driven by a fluid meter in a pipeline, a first drive element mounted for rotation about its axis, a second drive element mounted for rotation about its axis to one side of said first drive element and in side-by-side relation thereto, one of said drive elements being a cylinder and the other a cone, a third drive element mounted for rotation about its axis on the other side of said first drive element and in side-by-side relation thereto, one of said last two mentioned drive elements being a cone and the other a cylinder, the axes of rotation of said second and third drive elements being angularly disposed with respect to the axis of rotation of said first element whereby adjacent lengthwise portions of said first and second drive elements are spaced and parallel to each other and adjacent lengthwise portions of said first and third drive elements are spaced and parallel to each other, a first drive ring encircling said second element and in driving contact between said lengthwise portions of said first and second drive elements, a second drive ring encircling said third drive element and in driving contact between said lengthwise portions of said first and third drive elements, means to adjust the position of one of said rings axially of said first drive member in accordance with variations in the pressure of the fluid in said pipeline, means to adjust the position of the other of said rings axially of said first drive element in accordance with variations in the temperature of the fluid in said pipeline, means drive connecting said second drive element with said first mentioned means and means drive connecting said third drive element with indicating means adapted to indicate a cumulative total volume of fluid flow through said meter, said first drive element being a cylinder and said second and third drive elements being cones.



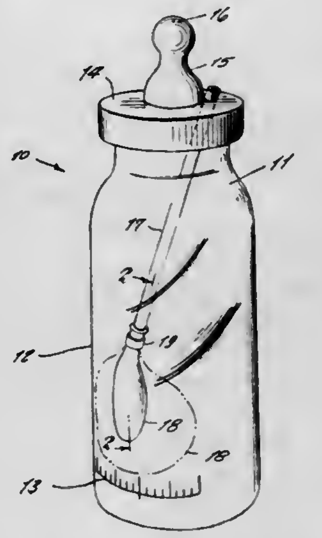
3,895,533
SUCKING MEASURE

Moshe Steier, 67-66 108th St., Forest Hills, N.Y. 11375

Substitute for Ser. No. 155,475, June 22, 1971, abandoned. This application Nov. 14, 1973, Ser. No. 415,819

Int. Cl. G01l *7/08*

U.S. Cl. 73—409 **3 Claims**



1. In a sucking measure, for measuring the sucking power of an infant, the combination of a baby bottle, a removable

cap upon said bottle, said cap having a rubber nipple upon a center thereof, said nipple having an opening therethrough providing an air communication with an interior of said bottle, said cap supporting means for measuring negative pressure within said bottle, said bottle having means for measuring a size of said supported means.

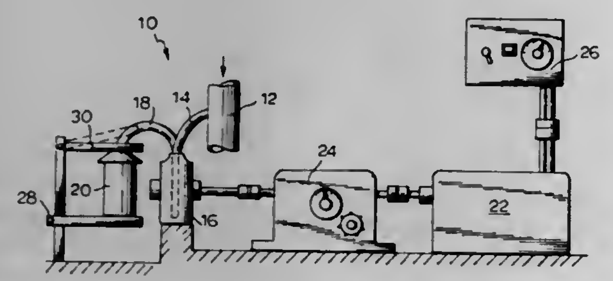
3,895,534
AUTOMATIC LIQUID SAMPLING DEVISE

Stanley Allan Stone, State College, Pa., assignor to Scientific Systems, Inc., State College, Pa.

Filed June 3, 1974, Ser. No. 476,110

Int. Cl. G01n *1/14*

U.S. Cl. 73—422 R **4 Claims**



1. An automatic milk sampling device for readily continuously extracting a proportional sample of milk from a supply being transferred to a milk truck and the like, said device synchronized to operate over the entire time period required for transfer to produce a predetermined sample volume comprising:

- a variable speed motor;
- a sample container;
- pump means connected between a main milk loading conduit and said sample container for drawing a sample from said main milk loading conduit and storing the milk sample in said sample container, said pump means having a pump rate directly proportional to the rate of operation thereof, said variable speed motor being operatively coupled to said pump means for operation thereof at a rate proportional to the rate of operation of said variable speed motor; and
- a motor speed control means coupled to said variable speed motor for controlling the rate of operation thereof, said motor speed control means adjustable to vary the rate of operation of said variable speed motor for driving said pump at a rate to collect a predetermined fixed sample volume over the time required for the milk transfer operation, said speed control means being calibrated to indicate the total amount of milk being transferred as estimated by an operator, the speed of said motor being correspondingly controlled, whereby the rate of operation of said pump means may be adjusted to collect a fixed amount of sample over the time period required for transferring the milk.

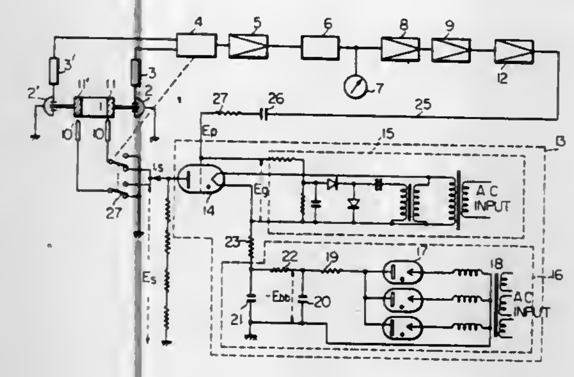
3,895,535
METHOD AND APPARATUS FOR INDICATING THE UNBALANCED CONDITION OF A ROTATING BODY

Yasuo Iijima, and Kenji Tanaka, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Oct. 25, 1973, Ser. No. 409,742

Int. Cl. G01m *1/22*, *1/26*

U.S. Cl. 73—462 **3 Claims**



1. An apparatus for indicating imbalanced masses in a rotating body, comprising, means for rotating a body, means for detecting imbalance of said body and generating vibrations corresponding to the imbalance due to imbalanced masses on said body, means responsive to said vibrations for generating electrical signals corresponding to vibrations of said body due to said imbalanced masses, means for producing a train of pulses in response to said electrical signals having a frequency equal to said electrical signals, a circuit for producing surge currents comprising a thyratron, means comprising a pair of electrodes positioned spaced relative to the surface of said rotating body and defining a load impedance circuit in series with said thyratron, a time constant circuit connected in series with said thyratron for discharging electrical energy in correspondence with an air gap between said electrodes and the surface of said rotating body, a direct current source for charging said time constant circuit, means connecting the grid electrode of said thyratron to receive said train of pulses, whereby said time constant circuit is caused to repeatedly discharge its stored energy simultaneously with a predetermined number of said pulses and develop a spark from said electrodes to the surface of the rotating body marking the location of the masses thereof causing imbalance.

3,895,536
APPARATUS FOR AND METHOD OF TESTING FOR PREDETERMINED UNBALANCE OF ELECTRIC MOTOR ROTORS AND THE LIKE

Carl M. Behm, 27317 Santa Clara Dr., Westlake, Ohio 44145

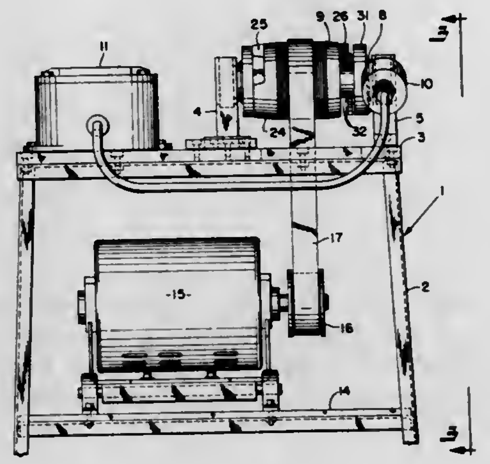
Filed Sept. 9, 1974, Ser. No. 504,153

Int. Cl.^{2} G01M *1/22*

U.S. Cl. 73—462 **7 Claims**

1. A machine for dynamically testing tubular electric motor rotors of the like of the type having fixed and applied weights at its respective axial end portions angularly spaced apart 180°; said machine comprising a stand having coaxial bearing

support members; an arbor for non-rotatably mounting such rotor thereon between bearings on said arbor engaged in said bearing support members; drive means on said stand for driving said arbor and thus said rotor at predetermined angular velocity; said arbor having a heavy spot of selected oz. in. magnitude axially offset from and angularly spaced 180° from said applied weight to decrease the static unbalance of said rotor-arbor assembly to within a prescribed oz. in. limit in connection with a rotor which meets manufacturing specifications therefor and to substantially dynamically balance said



rotor-arbor assembly to within a prescribed oz. in.^{2} limit when said rotor-arbor assembly is driven by said drive means; transducer means on one bearing support producing a signal proportional to the magnitude of dynamic unbalance responsive to the vibration of the associated bearing in said one bearing support; vibration monitor means operatively connected to said transducer means; and indicating means operatively connected to said monitor effective to indicate whether or not said rotor-arbor assembly is within such prescribed oz. in.^{2} dynamic unbalance limit.

3,895,537
CENTRIFUGAL RPM REGULATOR FOR INTERNAL COMBUSTION ENGINES

Herbert Bechstein, Kennenburgerstr. 46/1, Esslingen; Hans-Jurgen Jaenke, Beutenfeldstr. 40, Ditzingen; Rolf Muller, Adalbert-Stifter-Str. 8, 7 Stuttgart-Freiberg; Ernst Ritter, Hattenbuhl, Stuttgart 30; Heinrich Staudt, Am Feldle 16, Markgroningen-Talhausen; Helmut Tomasch, Im Schlossgarten 3, Freiberg-Beihingen, and Alois Urlberger, Waldheimstr. 57, Ruit, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Dec. 11, 1973, Ser. No. 423,743

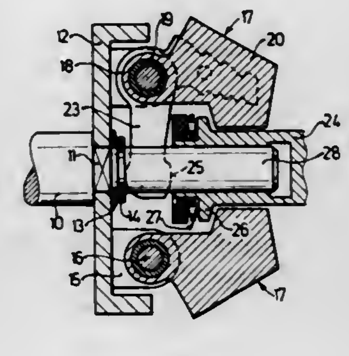
Claims priority, application Germany, Dec. 23, 1972, 2263382

Int. Cl. G05d *13/14*

U.S. Cl. 73—550 **10 Claims**

1. A centrifugal rpm regulator for internal combustion engines comprising, in combination:

- a. a centrifugal weight carrier;
- b. at least two angular centrifugal weights, each said centrifugal weight including:
  1. an angled lever having a first arm and a second arm, said first arm having at least a portion thereof of irregular shape,
  2. a bearing location, defined by a bearing bushing, in the region of connection of said first arm and said second arm serving to mount pivotally the respective said centrifugal weight to said centrifugal weight carrier, and



  3. an angular centrifugal mass, a portion of which surrounds said bearing bushing, fixedly connected to said first arm and surrounding at least that portion of said first arm having said irregular shape; and
- c. a regulating sleeve operatively positioned to be actuated by said second arm.

3,895,538
SLACK COMPENSATOR FOR BRAKE SYSTEMS

Donald T. McGregor, 8067 Monroe Ave., Stanton, Calif. 90680

Filed Nov. 22, 1974, Ser. No. 526,240

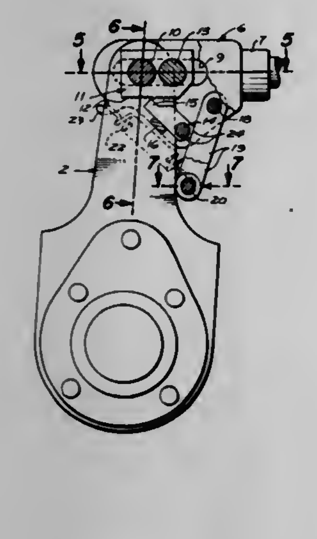
Int. Cl.^{2} B60T *11/08*; G05G *1/04*

U.S. Cl. 74—518 **8 Claims**

1. A slack compensator adapted to be interposed between a brake lever having a journal pin and an operating shaft of a vehicle brake system, the slack compensator comprising:

- a. a clevis structure forming a drive connection between the operating shaft and the brake lever including slots for receiving the journal pin;
- b. a ratchet and pawl means, the ratchet means being movable with the journal pin and guided by the slots, the pawl means being pivotally attached to the clevis structure;
- c. thrust lever means pivotally connected to the clevis structure and engageable with the brake lever at an intermediate point between its pivotal axis and the ratchet means to reduce the effective length thereof; the thrust lever means also engageable with the pawl means to hold the pawl means clear of the ratchet means;
- d. and spring means initially fixing the thrust lever means against the brake lever to transmit a thrust from the operating shaft to the brake lever at said intermediate point thereby to cause increased rotation of the brake lever per unit of movement of the operating shaft;

e. the spring means being yieldable to a predetermined force exerted by the operating shaft through the thrust lever means against the brake lever to cause release of the pawl means for engagement with the ratchet means thereby to cause decreased rotation of the brake lever per further unit of movement of the operating shaft.



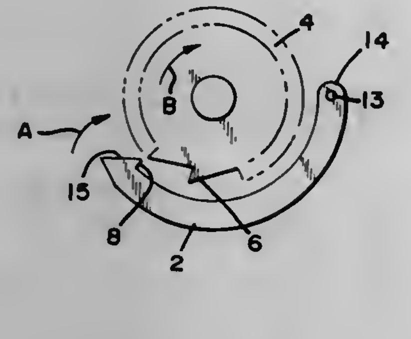
3,895,539
LOCKING PAWL AND RATCHET WHEEL

Per Olaf Weman, Haslah, and Harald Martin Schmelow, Ellerau, Kries Segeberg, both of Germany, assignors to Sigmatex A.G., Switzerland

Filed Jan. 17, 1974, Ser. No. 434,320

Int. Cl. F16d *41/12*

U.S. Cl. 74—575 **8 Claims**



1. An improved locking pawl adapted for use with a wheel having ratchet teeth, said pawl comprising: a locking surface for engagement with a ratchet tooth, said locking surface being substantially perpendicular to a tangent of said ratchet wheel at said ratchet tooth; a sensing tip for sensing the position of said ratchet tooth to be engaged by said locking surface; and a pivoting point on which said locking pawl pivots for engagement with said ratchet wheel; wherein said locking pawl has a substantially arcuate shape in the range of approximately 135° to 180°, said arcuate shape having an interior arc and an exterior arc, said interior arc being disposed closer to said ratchet wheel than said exterior arc; an engaging end which engages said ratchet tooth of said wheel and a pivoting end on which said locking pawl pivots; said sensing tip and said locking surface of said locking pawl being disposed on said engaging end of said locking pawl and being disposed on the interior arc of said locking pawl.

3,895,540
SPEED AND/OR DIRECTION CHANGE MEANS

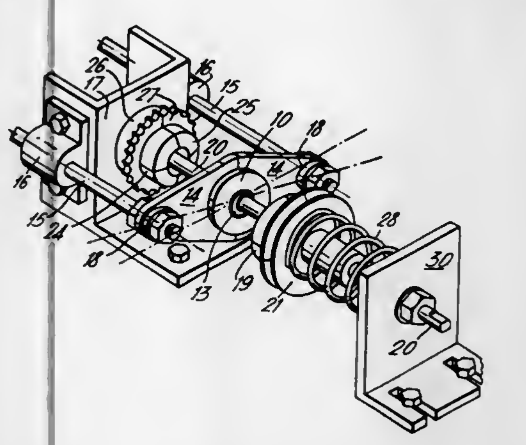
Robert Davidson, Hadlow, No. 4 R.D., Timaru, New Zealand

Filed Dec. 26, 1973, Ser. No. 427,556

Claims priority, application New Zealand, Dec. 27, 1972, 167927

Int. Cl. F16h *1/34, 23/00;* **F16j** *15/52*

U.S. Cl. 74—800 **15 Claims**



1. A speed and/or direction change means comprising, in combination, a wobbling member arranged for orderly cyclic wobbling about a wobble center and having a contact surface, means for imparting an orderly cyclic wobbling motion to the wobbling member, and a rotor having a contact surface, said rotor being rotatable relative to said wobbling member so that, under the orderly cyclic wobbling of said wobbling member, the contact surface of the rotor is progressively engaged by the contact surface of said wobbling member at a circularly moving locus of contact, said wobble center lying in the axis of rotation of said rotor relative to said wobbling member, said imparting means comprising a shaft passing through the wobble center, and bearing means surrounding said shaft and wobble center, said bearing means slidably mounting said wobbling member for movement towards and away from the rotor along the axis of rotation of the rotor relative to the wobbling member.

5. A speed and/or direction change means comprising, in combination, a wobbling member arranged for orderly cyclic wobbling about a wobble center and having a contact surface, means for imparting an orderly cyclic wobbling motion to the wobbling member, and a first rotor having a contact surface, said rotor being rotatable relative to said wobbling member so that, under the orderly cyclic wobbling of said wobbling member the contact surface of the rotor is progressively engaged by the contact surface of said wobbling member at a circularly moving locus of contact, said wobble center lying on the axis of rotation of said rotor relative to said wobbling member, and at least one of said contact surfaces is a frustum of a cone having its vertex at the wobble center.

6. A speed and/or direction change means comprising, in combination, a wobbling member arranged for orderly cyclic wobbling about a wobble center and having a contact surface, means for imparting an orderly cyclic wobbling motion to the wobbling member, and a first rotor having a contact surface, said rotor being rotatable relative to said wobbling member so that, under said orderly cyclic wobbling of the wobbling member, the contact surface of the rotor is progressively engaged by the contact surface of said wobbling member at a circularly moving locus of contact, said contact surface of said rotor being a continuous, convex surface and consisting of a frictional-drive material for contact with said contact surface of said wobbler to thereby drive said rotor in nonsliding contact.

11. A speed and/or direction change means comprising, in combination, a wobbling member adapted for orderly cyclic wobbling about a wobble center and having a contact surface, means for imparting an orderly cyclic wobbling motion to the wobbling member, and a first rotor having a contact surface, said rotor being rotatable relative to said wobbling member so that, under said orderly cyclic wobbling of the wobbling member, the contact surface of the rotor is progressively engaged by the contact surface of said wobbling member at a circularly moving locus of contact, wherein ea̧h of said contact surfaces comprises a plurality of contacting portions arranged such that, during orderly cyclic wobbling of said wobbling member, said contacting portions of said rotor are progressively engaged by the contacting portions of said wobbling member at a zone of contact describing a circle on each of said contact surfaces, said wobble center lying on the axis of rotation of said rotor relative to said wobbling member, said means for imparting an orderly cyclic wobbling comprising stud means extending outwardly from said wobbling member on the wobble plane, said stud means slidably engaging a body for fixing said wobbling member against rotation relative to said body, said imparting means also comprising driving means operatively connected to said stud means to reciprocate said stud means and wobble said wobbling member.

13. A speed and/or direction change means comprising, in combination, a wobbling member adapted for orderly cyclic wobbling about a wobble center and having a contact surface, means for imparting an orderly cyclic wobbling motion to the wobbling member, and a first rotor having a contact surface, said rotor being rotatable relative to said wobbling member so that, under said orderly cyclic wobbling of the wobbling member, the contact surface of the rotor is progressively engaged by the contact surface of said wobbling member at a circularly moving locus of contact, futher comprising a second rotor having a contact surface in direct engagement with a contact surface of said wobbling member, said rotor being coaxially mounted with said first rotor and lying at the opposite side of said wobbling member from said first rotor, said second rotor rotatable about the same axis as said first rotor, first means for rotatably mounting said first rotor, and second means for rotatable mounting said second rotor, said second means allowing rotation of said second rotor at a speed different from that of said first rotor.

3,895,541
CONTROL SYSTEM FOR MOTOR VEHICLE WITH CATALYTIC CONVERTOR AND AUTOMATIC POWER TRANSMISSION MECHANISM

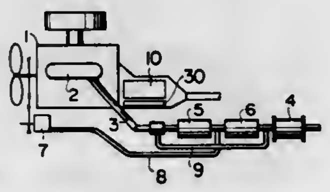
Hidetaka Nohira, Susono, and Shin Ito, Nagoya, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed June 15, 1973, Ser. No. 370,207

Claims priority, application Japan, June 26, 1972, 47-63190

Int. Cl. B60k *23/00;* **F16h** *3/74*

U.S. Cl. 74—844 **7 Claims**



1. In a motor vehicle including an engine, an automatic power transmission mechanism for transmitting power from said engine to drive said vehicle, an engine exhaust gas system having a catalytic convertor including a catalyst for purifying exhaust gases from said engine, and an oil pressure system for controlling operation of said automatic transmission mechanism to selectively provide a plurality of forward driving speed ratios, the improvement consisting of a control system for expediting temperature rise of said catalyst, said control system comprising;

shift means operatively associated with said oil pressure system for effecting shift control operation of said transmission mechanism from a lower to a higher driving speed ratio;

sensing means connected for sensing temperature indicative of the temperature of exhaust gases within said catalytic convertor;

delay means responsive to said sensing means and connected to control said shift means in accordance with the temperature of said exhaust gases in said catalytic converter to prevent operation thereof to shift said transmission from said lower to said higher driving speed ratio when the temperature sensed by said sensing means indicates a catalyst temperature below a predetermined level; whereby upshift of said transmission to said higher driving speed ratio is delayed until said predetermined temperature level is reached.

3,895,542
SHIFT POINT STABILIZING HYDRAULIC CONTROL CIRCUIT FOR AUTOMATIC TRANSMISSION

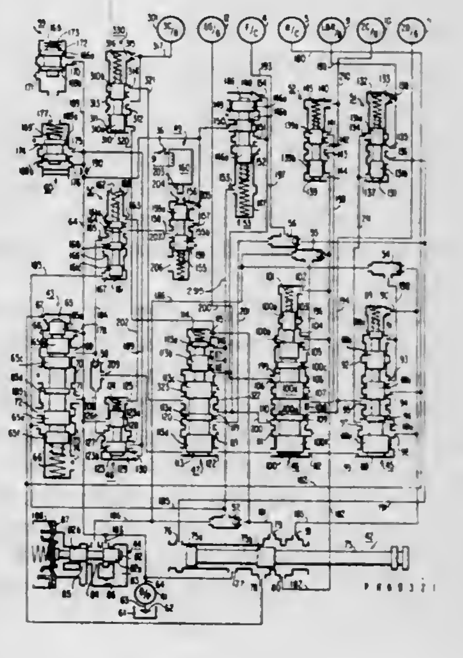
Toshiyuki Miyauchi, Yokohama, Japan, assignor to Nissan Jidosha Kabushiki Kaisha, Yokohama, Japan

Filed Oct. 3, 1973, Ser. No. 403,305

Claims priority, application Japan, Oct. 6, 1972, 47-100494

Int. Cl. B60k *21/02*

U.S. Cl. 74—868 **8 Claims**

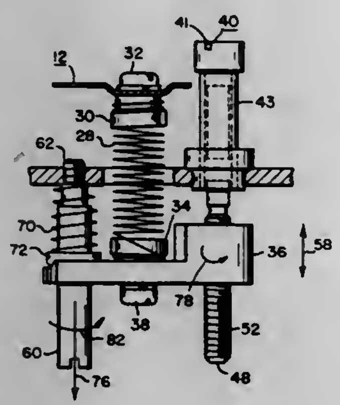


1. In a hydraulic control circuit for a vehicle automatic transmission of the type wherein a plurality of shift control valves selectively deliver hydraulic fluid to a plurality of frictional elements to cause engagement and disengagement of said frictional elements having a first pressure regulating means and a throttle valve responsive to the vehicle engine load interposed between a main supply pump and the shift control valves, the improvements comprising: a second pressure regulating means interposed between the first pressure regulating means and at least one shift control valve and means to control the second pressure regulating means independently of the first pressure regulating means.

7. The improved hydraulic control circuit of claim 1 wherein the second pressure regulating means regulates the pressure supplied to the at least one shift control valve only when a manual gear selection valve is in a position which permits the transmission to automatically shift into its highest forward gear.

3,895,543
ADJUSTMENT MECHANISM

Paul T. Metzger, and Wayne D. Mitchell, both of Rochester, N.Y., assignors to Sybron Corporation, Rochester, N.Y.
Filed Jan. 11, 1974, Ser. No. 432,521
Int. Cl. F16h *27/02*
U.S. Cl. 74—89.15 **4 Claims**

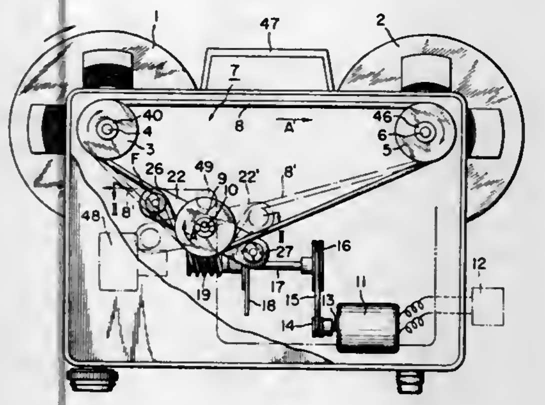


1. An adjustment mechanism comprising:
a rotatable threaded member;
carriage means, including a threaded portion, coupled to said threaded member for movement in response to the rotation of the threaded member;
guide means including a shaft extending generally parallel to said threaded member and through an aperture formed in said carriage means for preventing the rotation of said carriage means in response to the rotation of said threaded member;
said resilient means including a spring positioned around said shaft; and
wherein said aperture formed in said carriage means is in the form of an open ended slot providing a forked end, one forcated member of such end having a dimension extending in the direction of said shaft substantially less than the corresponding dimension of the other forcated member, and
said other forcated member being formed with a beveled edge that engages the resilient means to cause a force to be generated in a first direction generally parallel to said shaft forwards said carriage to apply a continuous twisting moment between the threaded coupling between said carriage means and said threaded member in a direction to provide a tight coupling therebetween, and a force to be generated in a second direction generally normal to said shaft to cause said carriage means to rotate about said threaded coupling to continuously engage a side of the aperature against the shaft.

3,895,544
POWER TRANSMISSION DEVICE BETWEEN A PLURAL NUMBER OF ROTORS OF CINEPROJECTORS

Kuniyoshi Suzaki, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed June 22, 1973, Ser. No. 372,762
Claims priority, application Japan, June 29, 1972, 47-65360
Int. Cl. F16h *7/08, 7/12*
U.S. Cl. 74—242.15 R **16 Claims**

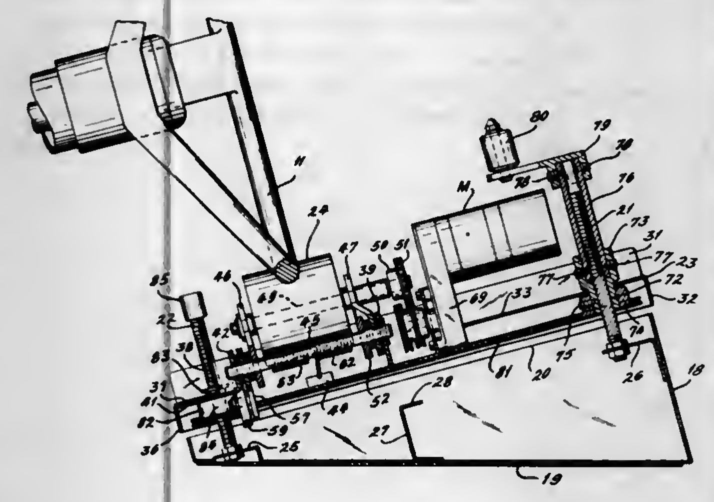
1. A power transmission device for a motionpicture projector, and the like comprising in combination:
a take-up reel spindle (6) which is rotatable to take part in film winding;
a supply reel spindle (4) which is rotatable to take part in film feeding;
driving means for operating said projector, said driving means having a driving shaft (9) which is rotated by the driving force of said driving means;
a first pulley (9) which is coupled directly to said driving shaft and rotates integrally therewith;
a second pulley which constantly rotates integrally with said take-up reel spindle;
a third pulley (3) which constantly rotates integrally with said supply reel spindle;
an endless band-form body (8) stretched between said first, second, and third pulleys in a manner to be friction-engaged with said respective pulleys, said endless band-form body receiving the driving force of said driving means through said first pulley when said driving means is driven, and transmitting said driving force to said second and third pulleys; and



a band-form body adjusting means having a relation to respond to the directions and magnitude of the driving force of said endless band-form body caused by said first pulley, said adjusting means eliminating slack produced in the band-form body adjacent said first pulley which is driven by said driving shaft.

3,895,545
STEERING WHEEL TURNING DEVICE

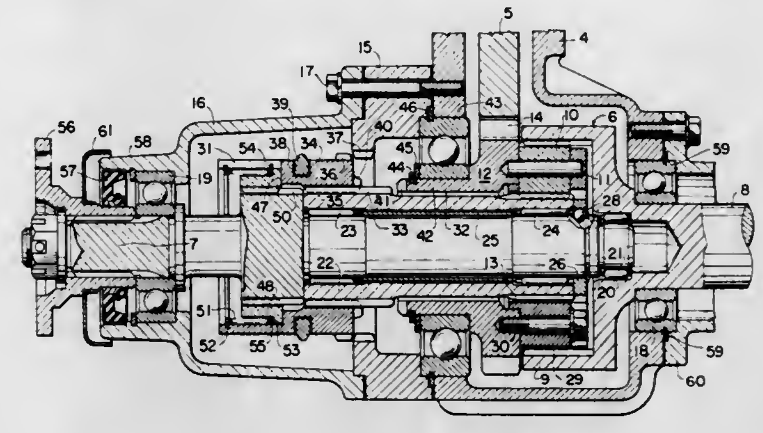
Lee Hunter, 13501 Ladue Rd., Ladue, Mo. 63141
Filed Jan. 2, 1974, Ser. No. 429,506
Int. Cl.² B62D *1/24*
U.S. Cl. 74—494 **7 Claims**



1. A vehicle steering wheel turning device comprising a pair of steering wheel engaging members, means operably carrying said pair of steering wheel engaging members in position to move into steering wheel engagement at spaced points of contact, said carrying means comprising a base and a platform, a plurality of screw posts fixed in said base at spaced positions, cooperating rotary nuts engaged in said platform and riding on said posts, a drive member engaged on each rotary nut, common drive means engaged with said drive members to rotate said nuts in unison and effect movement of said platform relative to said base, and reversible motor means operably connected to both of said steering wheel engaging members to rotate said members simultaneously and in the same direction.

3,895,546
TRANSFER TRANSMISSION MECHANISM

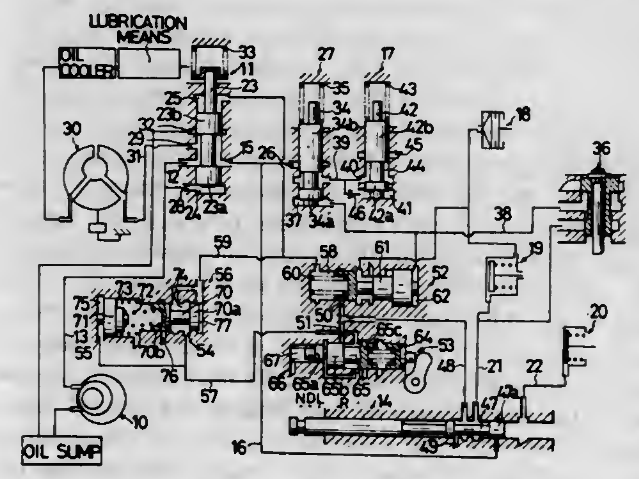
Hiroji Yamaguchi, 50-4 chome, Oyama-cho, Kariya, Aichi Prefecture, and Tunehiko Ogasahara, 14-2 Takabe, Chiryu, Aichi Prefecture, both of Japan
Filed Apr. 23, 1973, Ser. No. 353,611
Claims priority, application Japan, Apr. 27, 1972, 47-43162
Int. Cl. F16h *37/08*
U.S. Cl. 74—695 **5 Claims**



1. In a transfer mechanism for use in a motor vehicle assembly having a source of power and a pair of first and second driven axles aligned with each other, said transfer mechanism including: a three-element planetary gear train consisting of a sun gear, a carrier with at least one pinion gear thereon in mesh with said sun gear and an internal ring gear in mesh with said pinion gear; means connecting one of said three elements in driving relation with said source of power; a second of said three elements being integrally connected with said first driven axle for rotation therewith; a stationary member mounted on a stationary portion of the vehicle and control means for selectively engaging the remaining one of said three elements with said stationary member, said second driven axle, or both said second driven axle and said first one of said three elements, such that said three element planetary gear can be actuated as a differential gear as well as a speed change gear with one of said driven axles isolated from said source of power.

3,895,547
TRANSMISSION CONTROL SYSTEM

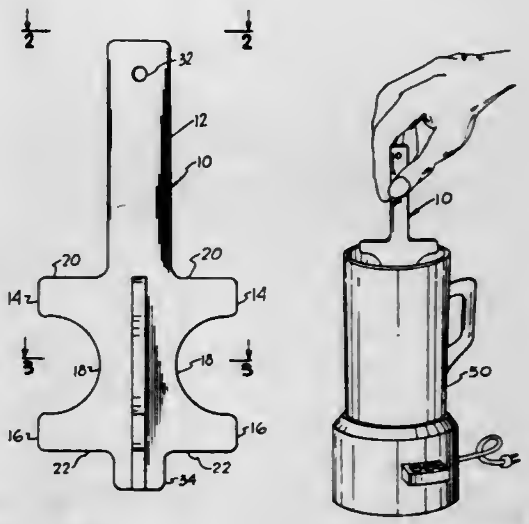
Noboru Murakami, Nagoya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Japan
Filed July 25, 1974, Ser. No. 491,681
Claims priority, application Japan, July 25, 1973, 48-83194
Int. Cl. B60k *21/12*
U.S. Cl. 74—867 **5 Claims**



1. A transmission control system for a vehicle, comprising:
a hydraulic fluid pressure source;
fluid pressure regulator means for regulating the pressure of said hydraulic fluid from said fluid pressure source to a particular line pressure;
a plurality of frictional engaging means actuated by said line pressure from said fluid pressure regulator means for attaining a particular gear ratio within the gear trains of said transmission;
a governor valve for generating a governor pressure which is increased or decreased in response to the speed of said vehicle;
a manual shift valve operatively connected to said fluid pressure regulator means for selectively supplying said line pressure to either of said plurality of frictional engaging means;
a throttle valve fluidically connected to said manual shift valve for generating a throttle pressure reponsive to the degree to which the engine throttle valve is opened;
a shift valve fluidically connected to said manual shift valve and actuated in response to said governor pressure and said throttle pressure for automatically selectively actuating said plurality of frictional engaging means;
a hydraulic conduit for connecting said throttle valve to said shift valve; and
a modulator valve disposed within said hydraulic conduit and actuated in response to said throttle pressure,
whereby said throttle valve and said shift valve are fluidically communicated with each other in order to supply said throttle pressure directly to said shift valve when said throttle pressure is below a predetermined value, and to supply said throttle pressure to said shift valve with a different rate of increase when said throttle pressure is above said predetermined value.

3,895,548
BLENDER PACKING DEVICE

Delsford B. Sauve, Ft. Lauderdale, Fla., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest
Filed July 29, 1974, Ser. No. 492,582
Int. Cl. A47j *43/28*
U.S. Cl. 81—1 R **9 Claims**



1. A tool for use in packing a blender which comprises an elongated flat handle member, a first generally planar elongated blade integrally formed with said handle member and having a plurality of transversely extending fins, a second generally planar elongated blade fixedly carried at right angles to said first generally planar elongated blade and having a plurality of transversely extending fins whereby said first and second blades cooperate to urge foodstuffs into a blender.

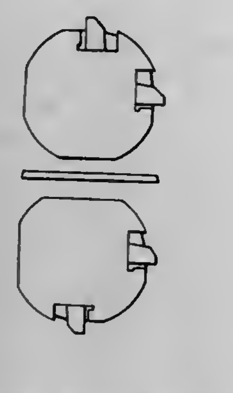
3,895,549
APPARATUS FOR SHEARING OF STEEL STRIP END IN HOT FINISH ROLLING

Akira Noda, Nagoya; Atsuhiro Wakako, Handa; Tadashi Kodashima, and Akio Tanaka, both of Tokai, all of Japan, assignors to Nippon Steel Corporation, Japan

Filed June 13, 1973, Ser. No. 369,421

Int. Cl. B26d *1/40*

U.S. Cl. 83—345 **1 Claim**



1. An apparatus for shearing end portions of strip steel in a hot finish rolling comprising an upper drum, a lower drum mounted parallel with said upper drum so as to form a pass line therebetween for the strip steel, each of said drums having on its periphery only two knives, a first knife for front end shearing, and a second knife for rear end shearing, said first knife lying at a lag angle measured in the direction of shearing rotation from said second knife in the range of 60° 150°, and means for rotating said drums in opposite direction relative to one another, the periphery of said drums from said first knife to said second knife in a direction opposite to that for said lag angle being continuous and uninterrupted.

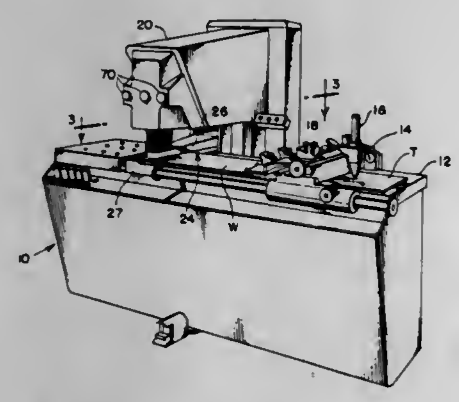
3,895,550
EXTENDABLE ARM PUNCHING APPARATUS

Dennis Daniels, Bellevue, Wash., assignor to U.S. Amada, Ltd., Seattle, Wash.

Continuation-in-part of Ser. No. 445,487, Feb. 25, 1974, abandoned. This application June 5, 1974, Ser. No. 476,375.

Int. Cl. B26f *1/04*

U.S. Cl. 83—409 **8 Claims**



1. In a punching apparatus of the type having a work sheet supporting table, work sheet clamps for holding a work sheet on the table, means for moving the work sheet clamps over the table, and a tool holder having an upper arm provided with a punch and a lower arm provided with a die and movable for positioning said punch and die beneath a striker, the improvement comprising: a second smaller punch and die spaced from said first punch and die on said upper and lower arms in the direction toward said work sheet clamps, and

means for moving said tool holder longitudinally and laterally for positioning said second punch and die beneath said striker whereby a plurality of tools may be employed to punch said work sheet.

3,895,551
COMBINED LIFTING AND CUTTING MEANS FOR UNHARDENED CELLULAR CONCRETE BODIES

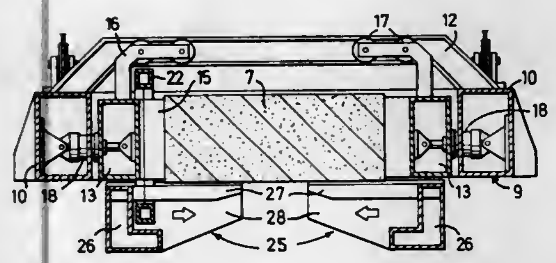
Rolf Erik Göransson, Akarp, Sweden, assignor to Siporex-Francais S.A.R.L., Paris, France

Filed July 8, 1974, Ser. No. 486,726

Claims priority, application Sweden, July 11, 1973, 7309756

Int. Cl. B28b *11/14*

U.S. Cl. 83—453 **6 Claims**



1. A device for gripping and transferring a substantially parallelepipedic, still unhardened cellular concrete body from a first to a second support and for simultaneously cutting the body in the transverse direction thereof, said device comprising, for the first, a horizontal and generally rectangular carrier frame that is supported in a manner permitting at least vertical movement thereof, is large enough to encircle the body, and is provided on the inner sides of its longitudinal side members with clamping jaws adapted to be pressed against the longitudinal side surfaces of the body and having its body-engaging faces divided into a plurality of sections separated by vertical slots; for the second, a vertical cutting frame that extends in the longitudinal direction of said carrier frame, is guided to move in the transverse direction of the latter between opposite end positions located outside the body-engaging faces of the clamping jaws, and has a number of vertically extending cutting members stretched therein in a manner to enter corresponding slots in the clamping jaws, when the cutting frame is in its end positions; and, for the third, on the lower side of said carrier frame, two transversally spaced and longitudinally extending comb-like supporting elements, both of which are connected to said carrier frame to be supported thereby and each of which has a plurality of free fingers projecting inwardly towards the opposite supporting element and thus in the transverse direction of said carrier frame, said supporting elements being movable relative to the carrier frame not only horizontally in the transverse direction thereof between widely spaced, inoperative positions, in which the supporting elements are located entirely outside the body-engaging faces of the clamping jaws, and more closely spaced, operative positions, in which said fingers of said supporting elements extend from either side in under a substantial part of the bottom of the body, but also vertically between a first position, in which the upper sides of said fingers are spaced from the bottom of the body, and a second position, in which the upper sides of said fingers supportingly engage the bottom of the body, said supporting elements being adapted to carry the entire weight of the body all by themselves during the transverse cutting operation.

3,895,552
EXPLOSIVE TYPE SEVERING DEVICE FOR CABLES, RODS AND THE LIKE

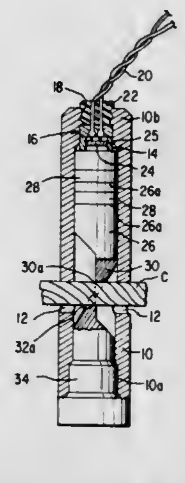
Guy Jean Lagofun, Tarbes, France, assignor to Etat Francais, Paris, France

Continuation-in-part of Ser. No. 358,407, May 8, 1973, Pat. No. 3,873,786. This application Jan. 14, 1974, Ser. No. 433,301

Claims priority, application France, Jan. 11, 1973, 73.00809

Int. Cl.^{2} B23D *15/14;* **B26D** *3/16, 5/12*

U.S. Cl. 83—580 **10 Claims**



1. A device for severing an element such as cable, rod or the like using shear forces generated by gas pressures resulting from the explosion of explosive charge having a useful energy per unit mass of greater than 1000 joules per gram and a detonation speed of greater than 3000 ms., said device comprising a housing defining a recess in which said charge is housed and which opens on a surface delimited by a movable piston that engages the element to be severed, the initial volume presented to the explosion gases, defined by the explosive charge and the recess in which said charge is housed, being no greater than the volume swept by the gas during the useful movement of the severed portion of the element to be severed, said movable piston being located within a chamber and being movable longitudinally therein, and said piston including a knife end which, in the rest position of the piston prior to the severing operation, contacts and bears against the element to be severed.

3,895,553
SAMPLING MODULATION SYSTEM FOR AN ELECTRONIC MUSICAL INSTRUMENT

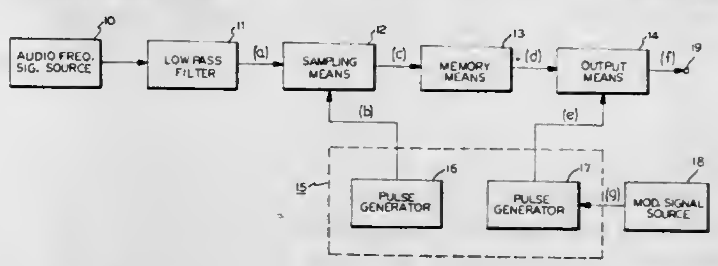
Kinji Kawamoto, Hashimoto, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 330,649, Feb. 8, 1973, abandoned. This application Sept. 6, 1974, Ser. No. 503,920

Claims priority, application Japan, Feb. 10, 1972, 47-14583; July 7, 1972, 47-68430; July 10, 1972, 47-69330; July 20, 1972, 47-73189; Oct. 19, 1972, 47-105098; Nov. 1, 1972, 47-109657

Int. Cl. G01h *1/02*

U.S. Cl. 84—1.24 **28 Claims**



1. A sampling modulation system comprising:
an audio frequency signal source representing music;
a sampling means connected to said audio frequency signal source for sampling an audio frequency signal from said audio frequency signal source so as to produce sample signals, respective ones of which represent instantaneous amplitudes of said audio frequency signal;
a memory means coupled with said sampling means for memorizing said sample signals supplied thereto one by one from said sampling means;
an output means coupled with said memory means for reading out said sample signals memorized in said memory means one by one;
a controlling means coupled at least to said sampling means and to said output means and comprising a pulse generator which generates a sampling pulse train and a reading pulse train, both of said pulse trains having a frequency higher than twice the aduio frequency, said sampling pulse train being applied to said sampling means, and said reading pulse train being applied to said output means; and
a modulating signal source coupled to said controlling means for generating a modulating signal which has a sub-audio frequency, said modulating signal being applied to said pulse generator and frequency modulating at least one of said sampling pulse train and said reading pulse train for producing a periodical difference between the sampling of said audio frequency signal and the reading of said sample signals.

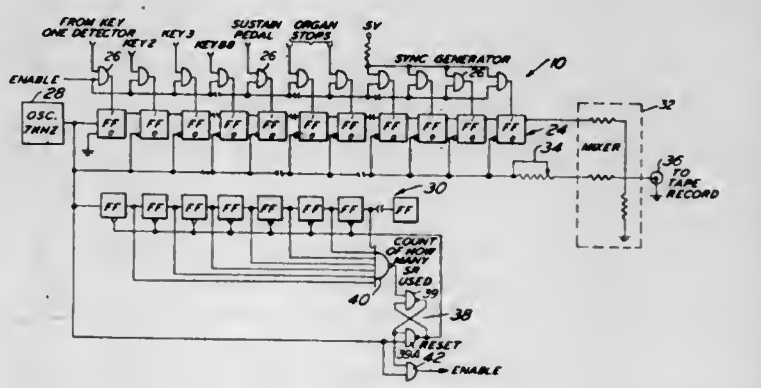
3,895,554
TAPE ACTIVATED KEYBOARD-TYPE INSTRUMENTS

Joseph Maillet, 362 S. Third St., Hammonton, N.J. 08037

Filed July 10, 1974, Ser. No. 486,967

Int. Cl. G10f *5/00*

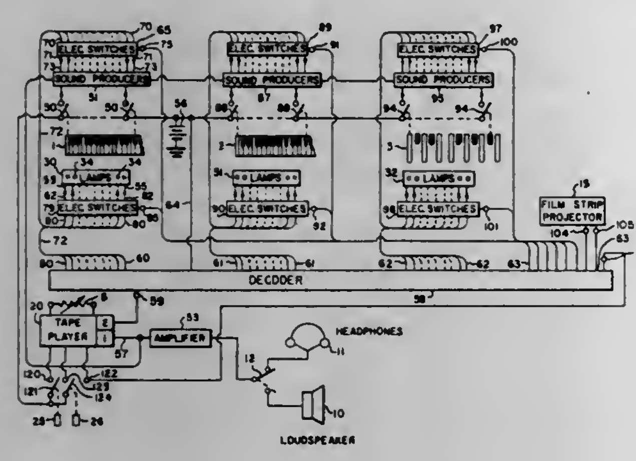
U.S. Cl. 84—115 **10 Claims**



1. An apparatus for recording and reproducing music on a keyboard instrument comprising a keyboard having a plurality of keys, each key having an actuating means, an electrical shift register comprising a series of stages, the actuating means of each key on said keyboard being coupled to a corresponding stage in said shift register through a corresponding keyboard signal gate, each actuating means being adapted upon depression of the corresponding key, to send a key pulse to the corresponding stage of said shift register through the corresponding keyboard signal gate, an electrical oscillator coupled to said shift register to send clock pulses through said shift register to shift signals from said keyboard signal gates from stage to stage of said shift register, a terminal group of stages coupled to each other in said shift register for generating a sync group signal, a mixer stage coupled both to said terminal group to receive key pulses therefrom and to said oscillator for receiving clock pulses therefrom, said mixer stage being coupled to a recording tape which records signals from said mixer stage, a binary counter coupled to said oscillator to receive clock pulses therefrom and having its output coupled to a latch means, said latch means comprising a pair of cross-coupled inverter signal gates, said latch means being adapted to reset said binary counter upon reception therefrom of a clock pulse, said latch means also being coupled to the keyboard signal gates to generate an enabling signal to control the gating of information into the shift register.

3,895,555
TEACHING INSTRUMENT FOR KEYBOARD MUSIC INSTRUCTION

Richard H. Peterson, 11748 Walnut Ridge Dr., and Robert A. Finch, 12219 S. 89th Ave., both of Palos Park, Ill. 60464
Filed Oct. 3, 1973, Ser. No. 403,260
Int. Cl. G09b *15/00*
U.S. Cl. 84—470 **5 Claims**



1. A teaching instrument for music instruction wherein a student is provided with preprogrammed audio instructions accompanied by activation of sound producers, indicator lamps, or both, to illustrate the audio instructions, comprising; a set of electrically operated sound producers for a musical instrument;

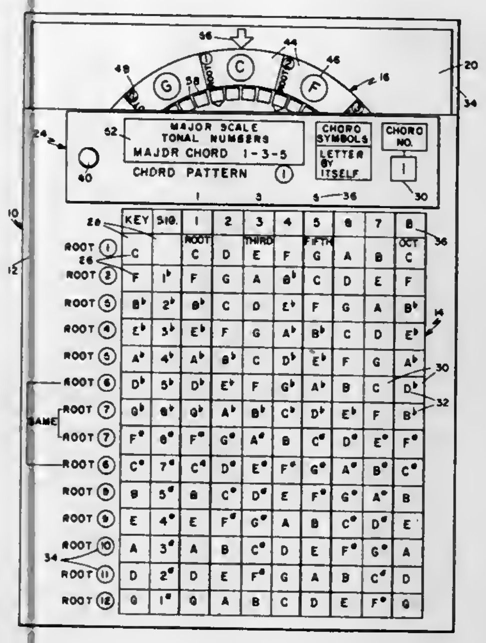
- a set of playing keys connected to corresponding sound producers and being operable by a student to play said musical instrument;
- a first set of electrical switches corresponding to and operable to activate said sound producers;
- a set of electrically operated lamp indicators corresponding to and associated with said playing keys for identifying said keys and indicating operations to be carried out by the student in playing said instrument;
- a second set of electrical switches corresponding to and operable to activate said lamp indicators,
- a magnetic tape recorder having an audio channel carrying prerecorded audio instructions and a digital channel carrying prerecorded digital signals, said channels being simultaneously operable to produce synchronized audio instructions and digital signals, respectively;
- decoding means connecting said digital channel through said first set of switches to said electrically operated sound reproducers and through said second set of switches to said electrically operated lamp indicators and responsive to digital signals in said digital channel to selectively activate said sound reproducers and corresponding lamp indicators;
- speed control means connected to said recorder for selectively increasing and decreasing the speed thereof to permit variation in the pace of instruction; and
- additional decoding means responsive to digital signals in said digital channel for selectively activating and deactivating said first and second sets of switches whereby said sets of sound producers and lamp indicators may be selectively activated for instructing a student.

3,895,556
CHORD PATTERN ANALYSER

Verna M. Leonard, 8701 Highway 41, Fresno, Calif. 93721
Filed Feb. 22, 1974, Ser. No. 444,895The portion of the term of this patent subsequent to Apr. 24, 1990, has been disclaimed.
Int. Cl. G09b *15/02*
U.S. Cl. 84—471 **5 Claims**

1. A chord analyser, comprising:

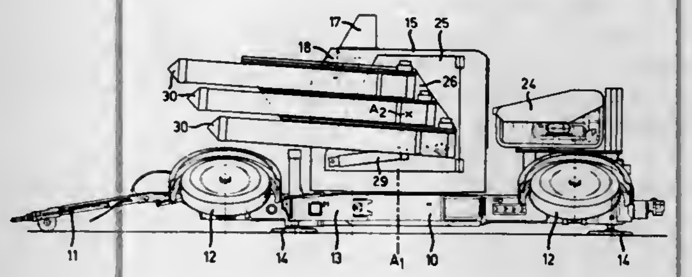
- a support including a display chart panel with tabulated indicia in columns therein plotting the scale tones for the different key signatures in relation to the scale degrees;
- a plurality of strips selectively mountable on said base in conjunction with said indicia plotting the scale degrees;



- said strips having thereon means to point out particular combinations of columns with half-tone raising and lowering indicators for particular chords enabling the reading of the chart to determine the scale tones for said particular chords in the different key signatures.

3,895,557
ROCKET LAUNCHER MOUNT

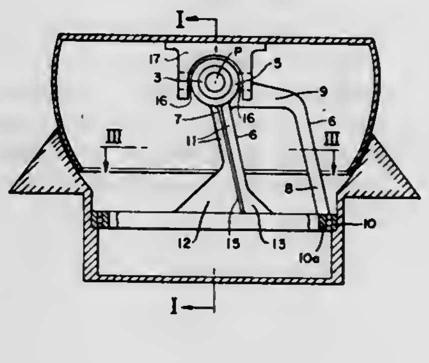
Emil Baumann, Niederglatt, Switzerland, assignor to Contraves AG, Zurich, Switzerland
Filed Nov. 23, 1973, Ser. No. 418,616
Claims priority, application Switzerland, Dec. 4, 1972, 17614/72
Int. Cl. F41f *3/04*
U.S. Cl. 89—1.815 **10 Claims**

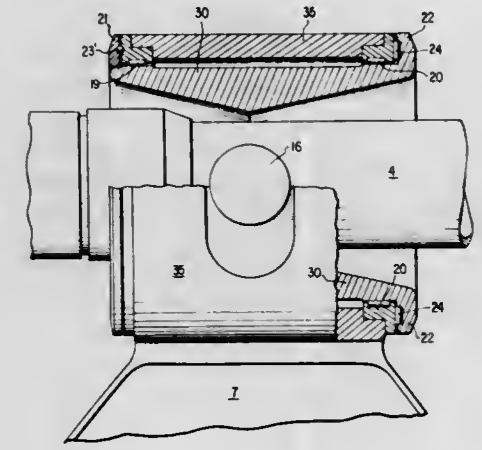


1. A mobile rocket launcher mount comprising a chassis equipped with wheels for permitting travel of the chassis, a housing having pivotal side doors, means for mounting said side doors for pivotable movement about substantially vertically extending hinge axes at the housing, a respective rocket launcher for accomodating a plurality of rockets mounted at each side door for pivotable movement about a respective horizontal pivot axis.

3,895,558
SUPPORT SYSTEM

Rudolf Schöps, Witzenhausen, Germany, assignor to Rheinstahl Aktiengesellschaft, Essen, Germany
Continuation-in-part of Ser. No. 37,498, June 16, 1969, abandoned. This application Feb. 2, 1973, Ser. No. 329,164
Claims priority, application Germany, June 14, 1968, 1703595
Int. Cl.^{2} F41F *21/06;* **F41H** *7/02*
U.S. Cl. 89—36 K **16 Claims**





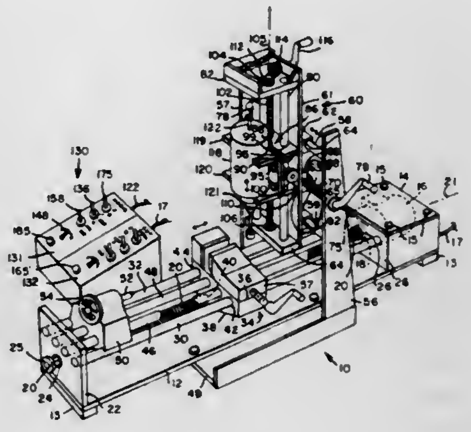
1. In an armored vehicle comprising a vehicle body, a turret containing a gun, and means for mounting the turret and the gun on said body for simultaneous movement in a three-dimensional coordinate system about three-mutually perpendicular axes, the improvement wherein said means includes: an azimuth bearing mounted in said body below said turret; an elevation bearing for said gun and said turret; a tilt bearing, said elevation bearing being connected to said tilt bearing with said elevation and tilt bearings being disposed at approximately the center of said turret along the vertical axis of rotation of said azimuth bearing; and means for rigidly supporting said tilt bearing on said azimuth bearing including a substantially triangularly shaped carrier rigidly connected between the inner ring of said azimuth bearing and said tilt bearing, and extending in the longitudinal direction of said gun; and, at least one brace extending laterally to said carrier and connected rigidly between the inner ring of said azimuth bearing and said tilt bearing.

3,895,559
MILLING MACHINE

Robert E. Hoffman, 10290 Farallone Dr., Cupertino, Calif. 95014
Filed Mar. 21, 1973, Ser. No. 343,507
Int. Cl.^{2} B23C *1/06*
U.S. Cl. 90—14 **3 Claims**

1. A milling machine comprising in combination:

- a base structure for supporting a work piece to be milled and a cutting tool to mill said work piece;
- a pair of brackets extending vertically from said base structure and laterally spaced from one another, a first threaded lead screw engaged about one terminal end to one of said brackets and about the other terminal end to said other bracket, said first lead screw being supported in a horizontal plane and rotatable about its axis of rotation;



- a horizontal travel carriage having an aperture coaxial with said first lead screw, the interior walls about said aperture being threaded with the threads of said first lead screw coupled with the threads about said aperture of said horizontal carriage, horizontal guide means on opposite lateral sides of and parallel with said lead screw and engaged to said horizontal travel carriage to support the horizontal travel carriage relative to said horizontal plane, said horizontal carriage being adapted to receive and secure a work piece thereto whereby said work piece may be positioned within a horizontal plane responsive to rotation of said first lead screw;
- a first position drive means including a first variable speed, bidirectional motor coupled to said first lead screw about one of said terminal ends for driving said first lead screw in either rotational direction about its axis of rotation and to in turn drive the horizontal travel carriage in said horizontal plane along said guide means;
- a pair of vertically extending support columns astraddle said first lead screw, at least one lateral support guide extending laterally intermediate of and engaged to said pair of support columns at an elevated position relative to said first lead screw, a second threaded lead screw engaged about one terminal end to one of said columns and about the other terminal end to said other column, said second lead screw being supported within a lateral plane and rotatable about its axis of rotation;
- a lateral travel carriage having an aperture coaxial with said second lead screw, the interior walls about said aperture being threaded with the threads of said second lead screw coupled with the threads about said aperture of said lateral carriage, said lateral carriage being adapted to support a support base in an elevated vertical plane, and said lateral travel carriage being engaged to said lateral support guide to support the lateral travel carriage relative to said vertical plane;
- a second position drive means to said second lead screw for driving said second lead screw in either rotational direction about its axis of rotation to position said lateral carriage in a desired lateral position within said vertical plane;
- a pair of spaced-apart support brackets extending from said lateral travel carriage and vertically spaced relative to one another, a third threaded lead screw engaged about one terminal end to one of said spaced-apart brackets and

about the other terminal end to said other spaced-apart bracket, said third lead screw being supported in a vertical plane and rotatable about its axis of rotation;

a vertical travel carriage having a releasable split-nut assembly, said split-nut assembly including a pair of U-shaped internally threaded members positioned face-to-face about said third lead screw and a release control means for coupling each of said members about said third lead screw or releasing said members about said third lead screw member responsive to actuation of said release control means, vertical guide means on opposite lateral sides of and parallel with said third lead screw and engaged to said vertical travel carriage to support the vertical travel carriage relative to the vertical plane, said vertical carriage being adapted to receive and secure a cutting tool drive means thereto whereby a cutting tool may be positioned within the vertical plane responsive to rotation of said third lead screw;

a third position drive means coupled to said third lead screw for driving said third lead screw in either rotational direction about its axis of rotation to position said vertical carriage in a desired vertical position;

a cutting tool drive means including a second variable speed, bidirectional motor with a chuck for engaging a cutting tool and supporting said cutting tool in a vertical plane; and

an electronic control network having a power input terminal means for receiving electrical power, the network including a first control circuit extending intermediate said input terminal means and said first motor to control the electrical excitation to said first motor and a second control circuit extending intermediate said input terminal means and said second motor to control the electrical excitation to said second motor, said control network including manual control means positioned in a control console to permit said first and second motors to be controlled responsive to manual commands.

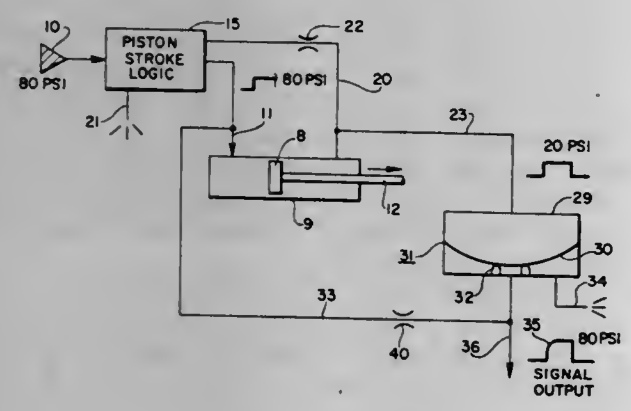
3,895,560
CYLINDER MOTION SENSING

Ernest David Anderson, Narragansett, R.I., assignor to Leesona Corporation, Warwick, R.I.

Filed Nov. 12, 1973, Ser. No. 414,689

Int. Cl.² F01B *25/26, 31/12*

U.S. Cl. 91—1 **8 Claims**



1. Apparatus for sensing the motion of a fluid operated piston within a cylinder, comprising in combination, a source of fluid under pressure, means gating said fluid to produce movement of said piston within said cylinder, a flow channel conveying exhaust fluid forced from the cylinder by movement of said piston, a fluid logic switching element having two fluid reception chambers and being responsive to pressure differential between two fluid pressures at said two chambers to switch a member from one condition to another, flow channel means coupling one said chamber to said source, means coupling the other said chamber to said flow channel conveying exhaust fluid, and means including said member in said switching element responsive to the differential pressure between said exhaust fluid and said source of fluid to switch said member, and output fluid flow path means coupled to said source and responsive to switching of said member to produce thereby at an output lead a fluid output signal in response to exhaust fluid exceeding a predetermined pressure magnitude indicating that the piston is moving at a predetermined rate within said cylinder thereby causing said exhaust fluid to exceed said pressure magnitude.

3,895,561
FLUID ACTIVATED VIBRATORY DEVICE

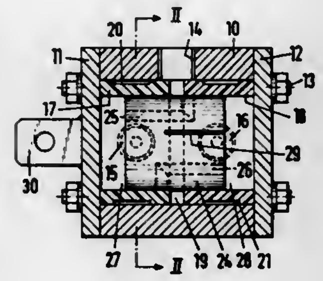
Jan Frederik Felderhof, Voorburg, Netherlands, and James William Alfred Westwood, Upton upon Severn, England

Filed Aug. 16, 1973, Ser. No. 388,914

Claims priority, application United Kingdom, Aug. 19, 1972, 38770/72; Aug. 19, 1972, 38771/72; Aug. 22, 1972, 38998/72

Int. Cl. F01l *21/02*

U.S. Cl. 91—20 **18 Claims**



1. A vibratory device comprising a hollow cylinder with terminal end plates, an inner sleeve fitted in said cylinder and extending between said end plates, said cylinder having an inlet for a gaseous pressure fluid, said sleeve having an inlet opening in registry with said inlet in the cylinder for flow of the pressure fluid therethrough, and a piston slidably mounted in said sleeve for undergoing reciprocating movement therein, said inner sleeve having a pair of axially spaced exhaust ports, said inner sleeve and cylinder defining two circumferential passages therebetween each in axial registry with a respective exhaust port, said cylinder having two outlet ports each in communication with a respective circumferential passage and therethrough with a respective exhaust port, each outlet port in the cylinder being circumferentially displaced with respect to the associated exhaust port in the inner sleeve, said piston being provided with two passageways, each for establishing communication between the inlet opening in the sleeve and a respective working chamber formed between one end of the piston and one terminal end plate, said piston in the course of reciprocating movement passing through respective axial positions in which the piston successively covers and uncovers each exhaust port in the inner sleeve.

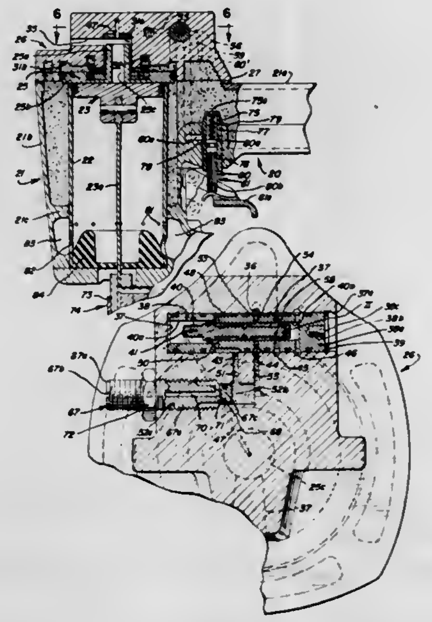
3,895,562
PNEUMATICALLY POWERED FASTENER-DRIVING TOOL

Samir El Guindy, Mt. Prospect, Ill., assignor to Spotnails, Inc., Rolling Meadows, Ill.

Filed Aug. 16, 1973, Ser. No. 388,730

Int. Cl. F01l *25/06;* **F15b** *11/15*

U.S. Cl. 91—308 **8 Claims**



1. A pneumatically powered fastener-driving tool comprising a housing having sections thereof charged with pressured air; a cylinder disposed within said housing; a reciprocating drive piston mounted within said cylinder for movement between extended and retracted positions; adjustable first valve means disposed at one end of said cylinder for movement between open and closed positions with respect thereto; manually actuated second valve means mounted on said housing for controlling the movement of said first valve means to said open position whereby said drive piston is exposed to pressured air and moves from said retracted to said extended positions; and a cap removably mounted on said housing adjacent said cylinder one end; said cap including a first cavity in which said first valve means is adjustably mounted, a second cavity spaced from said first cavity, a pneumatically responsive third valve means adjustably mounted within said second cavity, said second cavity being provided with a plurality of longitudinally spaced ports, a first passageway, when said first valve means is in an open position, connecting one of said housing sections charged with pressurized air with a first port, second and third ports being interconnected by a by-passing second passageway, said third port being continuously charged with pressured air, a third passageway connecting a fourth port with a second portion of said first cavity, the first and second portions of said first cavity being continuously separated from one another by said first valve means, a fourth passageway connecting a fifth port with said second valve means, said third valve means when in one position of adjustment effecting interconnection of said fourth and fifth ports through said second cavity whereby said drive piston moves from said retracted position to said extended position, and when in a second position of adjustment, effecting interconnection of said third and fourth ports whereby said drive piston moves from said extended position to said retracted position; and an exhaust passageway connected to said first cavity and communicating with said first passageway when said first valve means is in said closed position with respect to said cylinder one end; said cap including manually adjustable cycle-control means disposed within said second passageway and, when in a first position of adjustment, effecting interconnection of said second and third ports and repetitive cycling of said drive piston while said second valve means is manually retained in an actuated condition, and when in a second position of adjustment, interrupting interconnection between said second and third ports whereby said drive piston will make only one complete cycle and return to its original position upon said second valve means being manually actuated and then released.

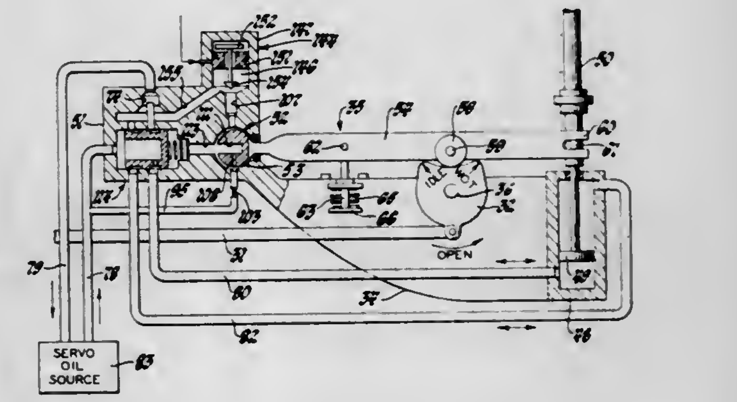
3,895,563
HYDRAULIC SERVOMOTOR

Donald D. Stoltman, Henrietta, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 291,213, Sept. 22, 1972. This application Jan. 14, 1974, Ser. No. 433,010

Int. Cl. F15b *9/10*

U.S. Cl. 91—384 **4 Claims**



1. A power servo system comprising, in combination, a double-acting expansible chamber motor having a movable output member; a movable input member; a servo control valve; a feedback linkage interconnecting the input member, the output member, and the servo control valve; a source of servo fluid under pressure; a fluid return line; two motor lines for conducting servo fluid to and from the motor; a slave valve connecting the motor lines reversibly to the fluid source, the slave valve being biased in one direction by source pressure

and in the other direction by a control pressure; the servo control valve including, in series as recited, a connection to the source, a first variable restriction means, a connection to supply control pressure to the slave valve, a second variable restriction means, and a connection to the return line, the said first and second veriable restriction means being varied reversely by movement of the feedback linkage; and fixed throttling means disposed between the source and the servo control valve.

3,895,564

CIRCUIT FOR THE CONTROL OF A WINCH BY FLUID UNDER PRESSURE INCLUDING AN UNWINDING POSITION

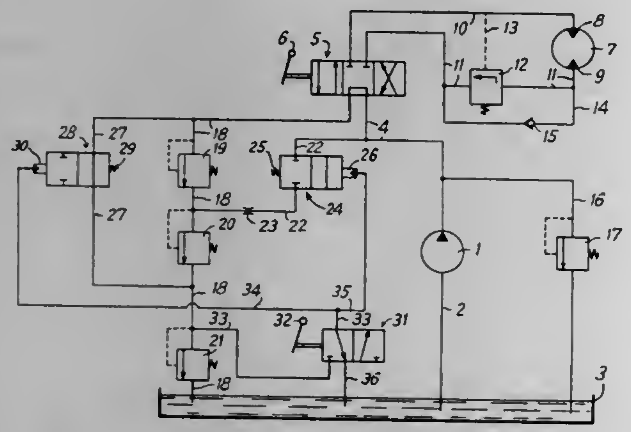
Claude M. Pinson, Senlis, France, assignor to Societe Anonyme: Poclain, Le Plessis Belleville, France

Filed May 13, 1974, Ser. No. 469,687

Claims priority, application France, May 25, 1973, 73.19210

Int. Cl.² F15B *11/08, 13/04*

U.S. Cl. 91—418 **4 Claims**



1. A hydraulic circuit for the control of a winch by fluid under pressure, including an unwinding position, comprising: a fluid motor having an inlet chamber and an exhaust chamber for the fluid,

a source of fluid under pressure,

a fluid tank,

a feed-pipe connecting the source of fluid to the inlet chamber,

a delivery pipe having an upstream end connected to the exhaust chamber and a downstream end communicating with the fluid tank,

a first calibrated discharge valve which is arranged in the delivery pipe,

a connecting tie-pipe which is connected on one end to the delivery pipe downstream of the first calibrated discharge valve with respect to the motor and is connected on an opposite end to the feed pipe,

a flow constriction member for adjustment of the flow of fluid in the tie-pipe,

and a second calibrated discharge valve arranged in the delivery pipe downstream of the connection of the tie-pipe to the delivery pipe.

3,895,565

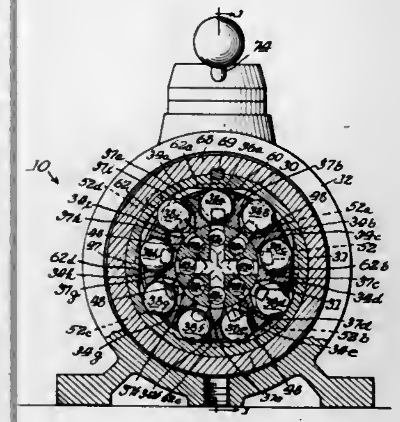
VARIABLE DISPLACEMENT FLUID TRANSDUCER

Henry Schottler, 8008 Country Club Ln., North Riverside, Ill. 60546

Filed Feb. 12, 1973, Ser. No. 331,549

Int. Cl. F01b *13/06*

U.S. Cl. 91—492 **5 Claims**



1. A variable displacement fluid transducer comprising: rotatable shaft means;

a cylindrical piston barrel joined for rotation with said shaft means;

first and second sets of radial pistons, with each set comprising nine uniformly sized piston balls positioned for reciprocation within cylinder bores spaced uniformly around said barrel, said sets of pistons arranged on said barrel to define nine pairs of piston balls;

a piston chamber defined in said barrel for each pair of piston balls so that radial reciprocation of said pair of balls displaces fluid from the associated piston chamber; first and second cam tracks circumscribing said first and second sets of pistons, respectively; each of said tracks including four uniformly positioned cam lobes projecting inwardly toward said barrel in frictional engagement with the balls of one set of pistons and shaped to reciprocate the engaged piston balls with a cycloidal motion so that the relative rotation of said barrel with respect to said tracks orbits said balls into engagement with the cam lobes and reciprocates said balls radially to operate said transducer with a fluid displacement from said piston chambers having a substantially uniform flow through said transducer proportionate to the relative reciprocating movement of the balls comprising each pair;

control means to move said cam tracks to shift the circumferential alignment of said lobes on said first track with respect to the lobes on said second track to vary the fluid displacement of the transducer by changing the relative reciprocating movement of the balls comprising each pair; and

fluid porting means for directing fluid sequentially to and from each of said piston chambers during the operation of said transducer.

3,895,566

APPARATUS FOR ASSEMBLING PILES OF PRINTED SIGNATURES INTO BATCHES

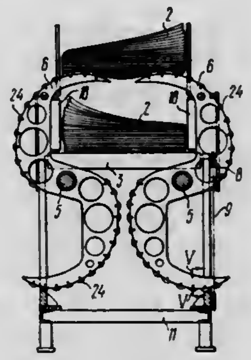
Nikolai Ivanovich Anikanov, Bolshaya Bronnaya ulitsa, 2/6, kv. 6, Moscow; Evgeny Arkadievich Baburin, prospekt Romena Rollana, 25, kv. 264, Kiev; Leonid Pavlovich Grachev, ulitsa Serafimovicha, 2, kv. 181, Moscow; Grigory Iosifovich Zax, ulitsa Mechnikova, 14a, kv. 24, Kiev; Mikhail Evseevich Frumkin, Naberezhnaya Novikova-Priboya, 9, kv. 34; Grigory Avramovich Radutsky, 16 Parkovaya ulitsa, 49, korpus 2, kv. 68, both of Moscow, and Rafail Efimovich Khelfets, Brest-Litovsky prospekt, 162, kv. 30, Kiev, all of U.S.S.R.

Filed Nov. 12, 1973, Ser. No. 415,166

Claims priority, application U.S.S.R., Apr. 13, 1973, 1899753

Int. Cl. B65g *57/30;* **B31b** *1/98*

U.S. Cl. 93—93 R **4 Claims**



1. An apparatus for assembling piles of printed signatures into batches, comprising: a rollerway for advancing the piles, and having a plurality of rollers mounted so that the ends thereof are free to thereby define a plurality of spaces respectively between each adjacent one of said rollers; two rotatably mounted shafts extending longitudinally of said rollerway one at each side thereof; a pair of S-shaped levers having arms and mounted in opposition to each other on said shafts and defining therebetween a zone for assembling the piles successively advanced by said rollerway, said shafts being arranged for timed rotation in opposite directions so that the arms of said levers pass through said plurality of spaces and move toward each other and overlap, whereby a pile advanced into said assembling zone is lifted by the arms of said shafts and is held in said zone and continuing rotation of said shafts causes said arms to spread apart to lower said pile onto a succeeding pile advanced by said rollerway so as to form a batch; two driven arbors respectively arranged longitudinally of said rollerway at both sides thereof in advance of said assembling zone; a rotatable drum mounted on each of said two driven arbors for guiding a pile of printed signatures into said assembling zone; a plurality of driven rollers arranged in said assembling zone in front of said S-shaped levers, said driven rollers extending vertically and forming two parallel arrays for effecting positive levelling of the lateral sides of a pile of printed signatures, as the latter is being advanced in said assembling zone by said rollerway.

3,895,567

AIR OUTLET ARRANGEMENT FOR AIR CONDITIONING AND VENTILATING APPARATUS

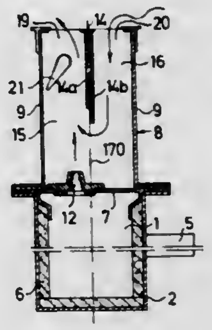
Werner Paul, Neckarstrasse 34, 73 Esslingen am Neckar, Germany

Filed Aug. 8, 1973, Ser. No. 386,573

Claims priority, application Germany, Aug. 30, 1972, 2242582

Int. Cl. F24f *3/02*

U.S. Cl. 98—38 **7 Claims**



1. Air outlet structure arrangement for air conditioning and ventilating apparatus comprising

an elongated box-like structure (2);

an internal elongated partition wall (7) subdividing said structure (2) into two elongated adjacent chambers (1,8), so that said wall (7) will be common to both said chambers and form one side of each;

the first of said chambers (1) forming an elongated pressure chamber (1);

the second of said chambers (8) having substantially parallel boundary walls (9, 10, 11);

means (5) supplying primary air to the pressure chamber (1);

a secondary air inlet (20) formed in the structure and communicating with said second chamber (8);

a mixed air outlet (19) formed in the structure and communicating with said second chamber (8);

orifice means (12, 13) penetrating said wall (7) and forming an outlet for primary air from the pressure chamber (1) leading into the second chamber (8) and being shaped to draw air through the inlet (20) by injector effect into said chamber (8);

partition means (14) extending into said second chamber (8) in a direction towards said wall (7) to partition said second chamber into a secondary air feed channel (16) communicating with said air inlet (20) and a second mixing chamber (15) communicating with said mixing air outlet (19), said orifice means (12, 13) and said air feed channel (16), the partition means (14) terminating short of said wall (7) to form a gap or slot (170) between the edge of the partition means and the wall (7); the spacing between said wall (7) and the lower edge of the partition means (14) being adjustable to adjust the width of said gap or slot;

the orifice means being located in said wall (7) to direct primary air into said mixing chamber of said second chamber and draw air from said air feed channel (16) through the gap, or slot (170) between the partition means (14) and said wall (7) and into said mixing chamber;

the inlet opening (**20**) communicating with the secondary air feed channel (**16**) being located adjacent to the air outlet opening (**19**) and in the plane containing the air outlet opening, so that the inlet opening (**20**) and the outlet opening (**19**) will be located adjacent each other, and separated by said partition means (**14**).

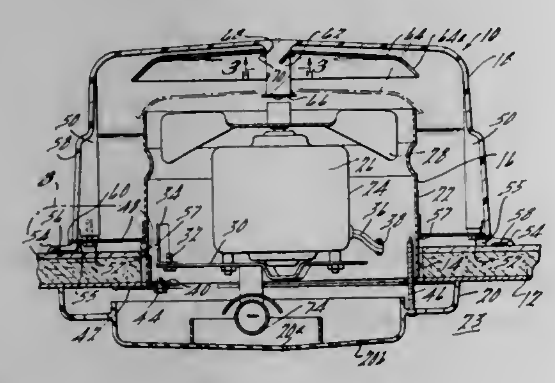
3,895,568
VENTILATOR

Thomas W. Stone, Owosso, Mich., assignor to Ventrola Manufacturing Company, Owosso, Mich.

Filed July 26, 1973, Ser. No. 381,901

Int. Cl.² F24F *7/02, 13/10*

U.S. Cl. 98—43 **3 Claims**



1. A ventilator adapted to be mounted on the ceiling of a room space to be ventilated and to ventilate the room space to the outside via an opening extending through the ceiling from the inside of the ceiling to the outside of the ceiling, said ventilator comprising a body, said body comprising a conduit having a generally vertical axis and defining a generally vertical passage, said conduit being open at the upper end thereof and adapted to communicate the room space to the outside via the ceiling opening, blower means for drawing air from the room space and blowing the same through said conduit to the outside, mounting means for mounting the ventilator on the ceiling, a damper located above said blower means and disposed over the open upper ends of said conduit, and guide means for guiding said damper for generally vertical bodily movement relative to said conduit, said damper being biased into a closed position closing the open upper end of said conduit when said blower means is idle and being displaced bodily upwardly from its closed position when said blower means is actuated, said guide means comprising a post generally coaxial with said conduit, said damper comprising means defining an opening therein, said post passing through said damper opening, said damper opening and the cross section of said post being of similar noncircular shape thereby to provide said damper with vertical sliding engagement with said post and substantially constraining said damper against rotary displacement about said post, and a cover covering the upper end of said body, said post being disposed on said cover, and retaining means for retaining said damper on said post, and an annular flashing plate generally around said conduit and extending in an outward direction therefrom generally parallel to the roof line.

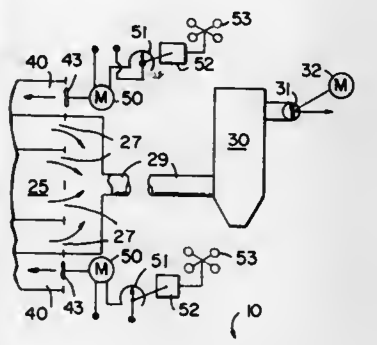
3,895,569
AIR MODULATING FUME SYSTEM

Edward M. Miller, San Rafael, Calif., assignor to Industrial Clean Air, Inc., Berkeley, Calif.

Filed Sept. 26, 1973, Ser. No. 400,889

Int. Cl. F24f *9/00*

U.S. Cl. 98—115 R **3 Claims**



1. A fume-control system comprising:
a. a building having a roof and roof trusses directly below and supporting said roof,
b. a source of hot fumes in said building,
c. a downwardly facing canopy-type hood situated in the roof truss area and spaced above said source of fumes,
d. means for exhausting fumes from said hood and for conducting said fumes to the exterior of said building,
e. means forming a plurality of downwardly facing air plenum chambers open at the bottom thereof to permit cold air at a temperature less than the ambient temperature within said building to flow downwardly therefrom, said air plenum chambers being disposed along and contiguous to opposite sides of said hood, said means (e) utilizing portions of said roof to form upper surfaces of said chambers and including panels secured to said roof trusses to form side walls of said chambers,
f. means for introducing cold air into said plenum chambers comprising blowers for each plenum chamber arranged to take atmospheric air directly from exteriorly of said building at a height above ground level and blow said air into said plenum chambers,
g. means forming openings in said building whereby winds exteriorly of said building may blow crosswise of said source of hot fumes,
h. means responsive to changes in velocity of said winds for increasing the speed of at least one of said blowers.

3,895,570
AIR-INSULATED WORK STATION

John M. Eagleson, Jr., Kennebunk, Maine, assignor to The Baker Company, Inc., Stanford, Maine

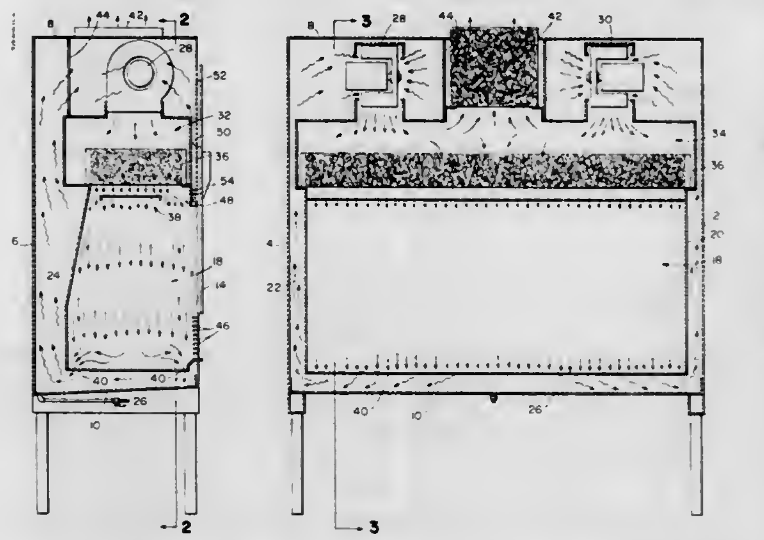
Filed Sept. 27, 1973, Ser. No. 401,196

Int. Cl.² F23J *11/00;* **F24F** *9/00*

U.S. Cl. 98—115 LH **8 Claims**

1. An air-insulated work station comprising the combination of:
bottom, side, and rear walls defining a work space, said bottom wall including a work surface for said work space, baffles cooperating with each of said walls to define air ducts exterior to said work space,
a front wall having an opening providing access to said work space,
blower means having an air intake from said ducts and adapted to blow air down into said work space toward said work surface, said ducts forming a return path to said blower means for air which has passed through said work space,
said work surface being perforated and at least one of said air ducts provided with air passageways to admit air respectively from said work space and from outside of said work station into said ducts,

exhaust means adapted to vent some of the air in said ducts from said work station, and thereby establish a flow of air from outside of said work station through said air passageways and into said air ducts to replenish the vented air, and
filter means in the path of air impelled by said blower means for removing contaminants therein, said filter means intermediate said blower means and both said work space and said exhaust means,
the air flow produced within said ducts serving to insulate said work space from gaseous communication with the outside atmosphere resulting from leaks of unfiltered gas into said ducts, by passing substantially all the gas in said ducts through said filter means.



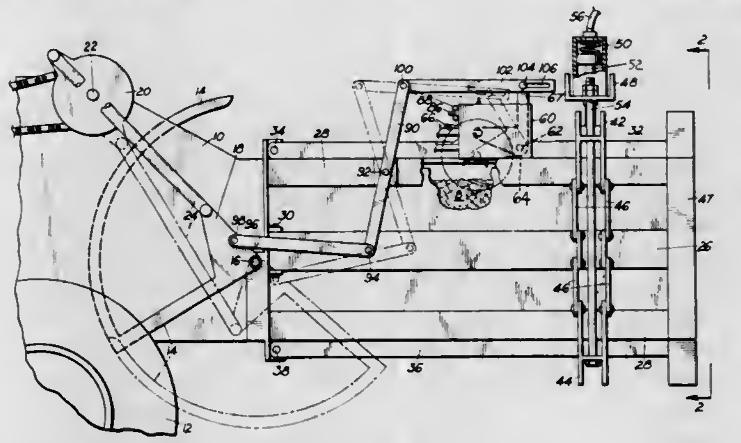
3,895,571
BALER STRUCTURE WITH NEEDLE ACTUATED RELEASE MECHANISM FOR TENSION CONTROL

Percy F. Freeman, 4061 S.W. Greenleaf Dr., Portland, Oreg. 97221

Filed June 27, 1974, Ser. No. 483,719

Int. Cl. B65b *13/22*

U.S. Cl. 100—4 **6 Claims**



1. A baler structure comprising
a. a support frame,
b. wall means on said frame defining a baling chamber for forming bales in end to end relation,
c. said wall means being movable between an outer tension relief position of bales in the bale chamber and an inner bale compressing position,
d. a twine feeding needle mechanism on said frame being movable between a lower inoperative position and an upper twine feeding position,
e. a knotter mechanism on said frame arranged to receive twine from said needle mechanism in the upper position of the latter,
f. pressure operated means engageable with said wall means for moving said wall means to said bale compressing position,
g. and relief means operated by said needle mechanism arranged in the upper feeding position of the latter to relieve said pressure operated means whereby said wall means can move outwardly at such time through their tension relief position so that twine around the bale can move between bales to make an excess amount available to the knotter for forming a knot.

3,895,572
APPARATUS AND METHOD FOR PRE-CONDENSING AND PRESSING FIBER MATERIAL INTO A BALE

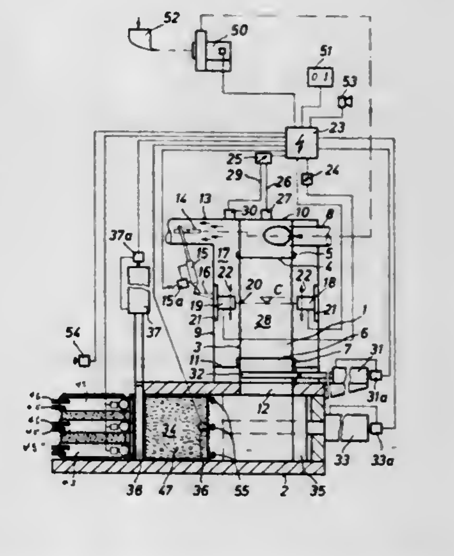
Heinz Nitschke, Winterthur, Switzerland, assignor to Rieter Machine Works, Ltd., Winterthur, Switzerland

Filed Nov. 21, 1973, Ser. No. 417,738

Claims priority, application Switzerland, Nov. 27, 1972, 17218/72

Int. Cl. B30b *13/00*

U.S. Cl. 100—35 **13 Claims**



10. A method for pre-condensing and pressing fiber material into a fiber bale comprising the steps of
forming a charge of fiber material in a vertical collecting chute,
pre-condensing the charge in the chute to a presetable degree under an air pressure differential, and
depositing the pre-condensed charge into a bale press below the chute while subjecting the charge to an increased pressure differential between the chute and press, said step of depositing being carried out in response to a predetermined height of the charge in the chute.

3,895,573
CYLINDRICAL BALE FORMING SYSTEM

Carmen S. Phillips; Albert G. Blanton, and Fenton L. Kenna, Jr., all of Memphis, Tenn., assignors to International Harvester Company, Chicago, Ill.

Filed Sept. 16, 1974, Ser. No. 506,480

Int. Cl.² A01D *39/00;* **B30B** *5/06, 9/00*

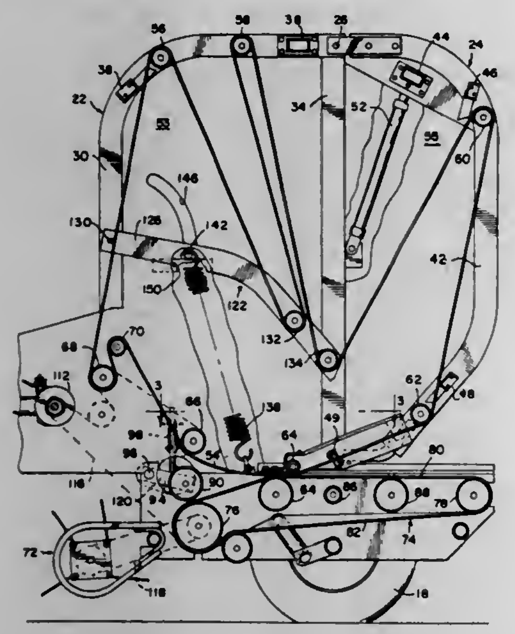
U.S. Cl. 100—88 **5 Claims**

3. In a baler adapted to form a cylindrical bale of fibrous material in a bale-forming zone, the combination comprising:
a frame;
an endless belt conveyor disposed on the frame and having an upper run movable in a front-to-rear conveying direction and defining the bottom of said bale-forming zone;
a superstructure on said frame extending above said belt conveyor, said superstructure including a gate pivotally mounted for rearward opening about a transverse pivot axis;
a roller journaled on an end of said gate and disposed in proximity to said upper run of said belt conveyor and defining therewith a rearmost parameter of said bale-forming zone;

a feed roller journaled on said superstructure above said upper run proximate to the front thereof to guide incoming material onto said belt conveyor;

a power drive roller journaled on said superstructure closely above said feed roller so as to define therewith a forward parameter of said bale-forming zone;

a plurality of bale-forming belts on said superstructure in forwardly running engagement between said gate-



mounted roller and said drive roller so as to define the top portion of said bale-forming zone;

and means for maintaining said bale-forming belts in non-driven relation with said power drive roller while maintaining said belts in position to be driven by said drive roller in response to receipt of material into said zone, whereby material will not be ejected by said belts from said zone.

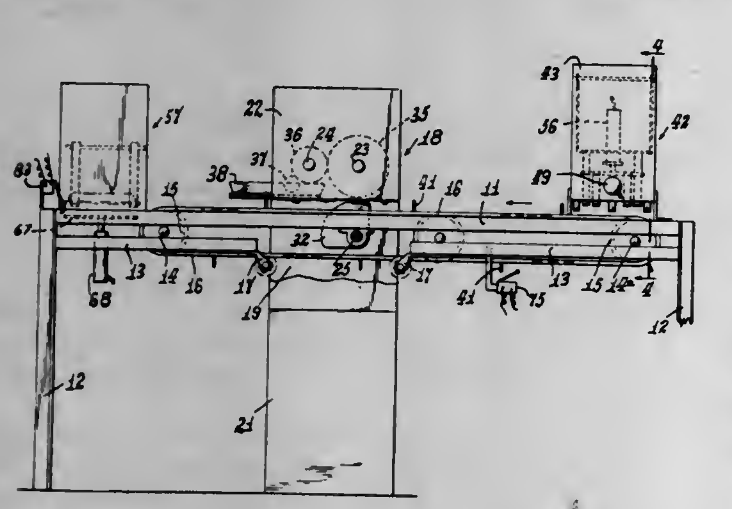
3,895,574
APPARATUS FOR FEEDING, PRINTING AND STACKING ARTICLES

Ralph A. Nyborg, Naperville, Ill., assignor to Maran Manufacturing Corporation, Pompano Beach, Fla.

Filed Aug. 17, 1973, Ser. No. 389,360

Int. Cl. B41f *17/26;* B65h *3/32*

U.S. Cl. 101—37 **8 Claims**



1. Apparatus for imprinting indicia on articles comprising, in combination, conveyor means, means to deliver articles one at a time onto said conveyor, printing apparatus associated with said conveyor, drive means for said conveyor to advance said articles toward and past said printing apparatus, and means to receive printed articles discharged from the conveyor, wherein the means to deliver articles onto the conveyor comprises first movable means normally engaging beneath the bottom article in a stack of articles to hold the stack elevated above the conveyor, second movable means normally disengaged from the stack, a pneumatic cylinder carried by the second movable means and a piston rod operable in said cylinder and connected to said first movable means for withdrawing the first movable means out from beneath the stack and advancing the second movable means into position between the first and second articles in the stack, third movable means carried by the second movable means engageable between the first and second articles in the stack, and pneumatically actuated means carried by the second movable means operable to urge the third movable means downwardly to release the bottom article from the stack.

3,895,575
METERING BAR ASSEMBLY FOR INK FOUNTAIN ROLLER

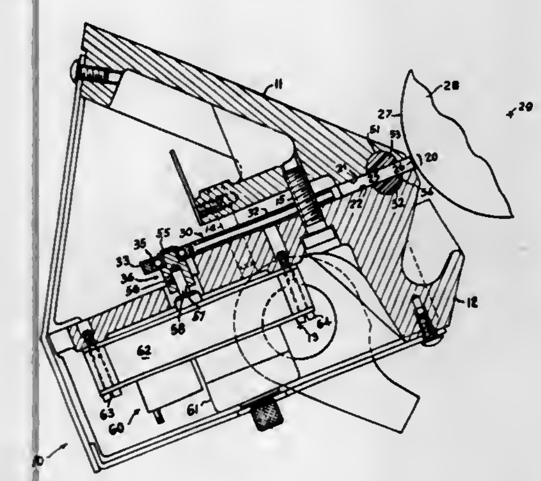
Bert Cappel, Offenbach-Bieber; Siegfried Schuhmann, Offenbach, and Klaus Wolf, Neu-Isenburg, all of Germany, assignors to Roland Offsetmaschinenfabrik Faber & Schleicher AG, Germany

Filed June 20, 1973, Ser. No. 371,594

Claims priority, application Germany, June 21, 1972, 2230126

Int. Cl. B41f *31/02*

U.S. Cl. 101—363 **8 Claims**



1. In an ink fountain, the combination comprising, a frame defining a horizontal retaining slot having parallel walls, a fountain roller rotatable in the frame adjacent the slot, a composite metering bar mounted in the slot and having a presented edge arranged in abutting relation with the surface of the roller, the frame being shaped to support a body of ink adjacent the metering bar so that a film of ink is formed on the roller by the bar as the roller is rotated, the metering bar being made up of a series of slides uniformly spaced from one another along the fountain roller, the slides having individually presented tips in longitudinal alinement to define zones of adjustment of the ink film, means including tough resilient material intimately occupying the spaces between the slides and covering the presented tips of the slides for bridging the slides so as to present to the roller a continuous metering edge of resilient material and so as to present to the respective walls of the slot continuous sealing surfaces while nevertheless permitting individual endwise relative movement of each slide toward and away from the roller independently of the adjacent slides, and separate adjusting means connected to each of the slides at a point remote from the presented edge for adjusting the endwise position of the slide in both directions with respect to the roller thereby to adjust the thickness of the ink film, the slides being relatively wide at the tips but of narrow width behind the tips thereby to provide a substantial width of resilient material between the slides in the region behind the tips to more readily absorb shear stress as adjacent slides are moved with respect to one another, the slides being substantially free of the resilient material rearwardly of the slot to facilitate independent movement of the adjusting means.

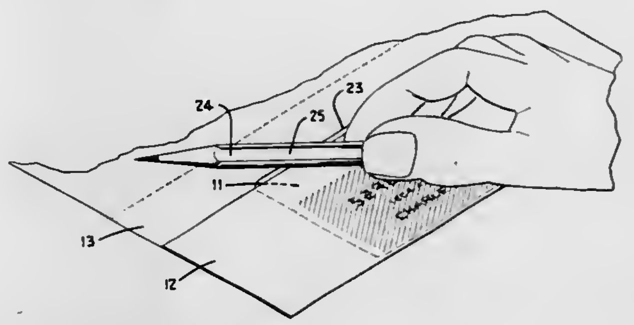
3,895,576
MAIL ORDER SALES DEVICE

Edward L. Fischer, Indianapolis, Ind., assignor to The Indiana National Bank, Indianapolis, Ind.

Division of Ser. No. 234,211, March 13, 1972, abandoned. This application Mar. 11, 1974, Ser. No. 449,984

Int. Cl. B41l *1/36, 47/04*

U.S. Cl. 101—369 **3 Claims**



1. The combination of:

a credit card having a sheet body with upraised characters, said body including a length, width, height and thickness; a paper construction including a pocket with said pocket including:

a piece of plain paper backing having a size larger than said sheet body and including a first portion with instruction thereon and a second portion; and further including:

means mounted to said second portion of said backing operable to permanently display and store an image of said characters when rubbed by a member against said characters, said means including a top piece of pressure sensitive paper having an outer surface, an inner surface and a size also larger than said sheet body and having a dry coating of pressure rupturable capsules on said pressure sensitive paper which rupture when said outer surface of said pressure sensitive paper is rubbed forcing said inner surface of said pressure sensitive paper against said upraised characters leaving the image of said upraised characters on said pressure sensitive paper, said pressure sensitive paper including a top edge, a bottom edge and opposite side portions with a fixed distance between said top edge and said bottom edge, said pressure sensitive paper being mounted to said plain paper backing along said opposite side portions and said bottom edge of said pressure sensitive paper with said top edge of said pressure sensitive paper being free relative to said backing forming an opened top pocket in which said credit card is positioned and held when rubbed, said pocket being sized and adapted to receive said credit card with said upraised characters being adjacent and in contact with said pressure sensitive paper and on top of said plain paper backing, said height of said sheet body being greater than said fixed distance with said credit card projecting out of said pocket when positioned therein.

3,895,577
LONG BURNING DELAY BLASTING CAPS

David T. Zebree, Kingston, N.Y., assignor to Hercules Incorporated, Wilmington, Del.

Filed Sept. 25, 1973, Ser. No. 400,591

Int. Cl. F42b *3/16*

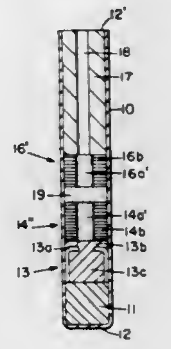
U.S. Cl. 102—29 **7 Claims**

1. A long burning delay blasting cap assembly which comprises,

a closed shell, including a plug closure member therefor;

an explosive base charge, a primer charge and a delay charge disposed in said shell in that order toward said plug closure, said base charge detonatable in response to detonation of said primer charge and said primer charge detonatable in response to burning of said delay charge, and said delay charge having a burning time of at least 1.5 seconds;

an ignition assembly in said shell intermediate said plug closure and said delay charge, including a tube member and an ignition charge within said tube member as a core therein, and said core ignition charge having a heat of reaction of at least 50 calories per gram;



a booster ignition charge having a heat of reaction of at least 60, but less than about 110, calories per gram intermediate said core ignition and delay charges, said booster ignition charge being ignitable in response to burning of said core ignition charge, and said delay charge being ignitable by heat and pressure from burning of said core and booster ignition charges; and

means in said plug closure for support of initiator means for said core ignition charge.

3,895,578
FLARE WITH ADHESIVE LINER

Graham C. Shaw, Garland, and Russell Reed, Jr., Brigham City, both of Utah, assignors to Thiokol Corporation, Bristol, Pa.

Continuation of Ser. No. 138,780, April 29, 1971, abandoned. This application Aug. 14, 1973, Ser. No. 388,317

Int. Cl.^{2} C06D *1/10*

U.S. Cl. 102—37.8 **13 Claims**

1. In a flare having a tubular case and a colored illuminant composition in the case, the improvement comprising an adhesive liner on the inner surface of the case to provide a bond and thermal insulation between the case and the illuminant composition that will promote coextensive linear consumption of case, liner, and illuminant, comprising a cured mixture of:

a saturated, carboxyl-containing polyester, liquid polymeric binder; and

an oxidizer/coloring agent selected from the group consisting of strontium nitrate, potassium perchlorate, sodium nitrate, and barium nitrate, the oxidizer being in stoichiometric deficiency and selected for color compatability with the illuminant— the color of the oxidizer/coloring agent being produced by the predominant flame spectra thereof.

3,895,579
IRRITANT AGENT DEVICE

Heinz Gawlick; Hans Kuschel, both of Furth; Gunther Marondel, Aussere; Werner Siegelin, Stein, Nurnberg, and Wolfgang Spranger, Furth, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Germany

Filed Mar. 23, 1973, Ser. No. 344,099

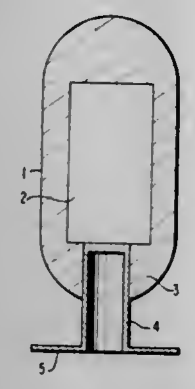
Claims priority, application Germany, Mar. 25, 1972, 2214801

Int. Cl. F42b *13/46*

U.S. Cl. 102—65.2 **20 Claims**

1. An irritant agent device comprising an irritant agent element including a cartridge for housing an irritant agent and

a soft, resilient casing provided about said cartridge, and launching tube means connected with said irritant agent element and positioned in said resilient casing for facilitating the launching of said element, said launching tube means being detachably connected with said irritant agent element for

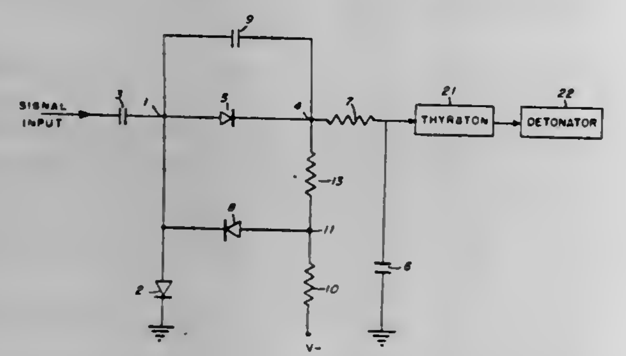


separation from said element after launching of said element, said launching tube means including aerodynamic braking means responsive to air flow after launching of said element for aiding in the separation of said launching tube means from said irritant agent element.

3,895,580
BAND PASS INTEGRATOR FOR PROXIMITY FUSES

Paul M. Tedder, deceased, late of Gainesville, Fla., and by Yvonne M. Tedder, administrator, Gainesville, Fla., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 17, 1957, Ser. No. 690,880
Int. Cl. F42c *13/04*
U.S. Cl. 102—70.2 P **2 Claims**

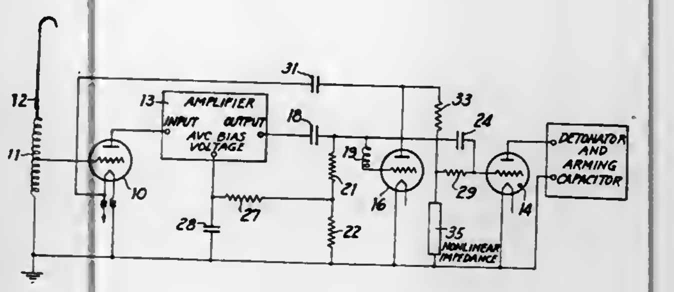


1. A band pass integrator circuit for a proximity fuze comprising in combination: low frequency cutoff means located at the input of said circuit, first diode means for clamping at ground potential the positive peaks of an input signal applied to the input of said circuit, second diode and resistor means for providing partial clamping of the negative peaks of an input signal applied to the input of said circuit, said partial clamping causing said circuit to be desensitized in the presence of high frequency and high amplitude input signals, a capacitor charged to an initial voltage, said proximity fuze functioning when said capacitor discharges to a predetermined voltage, third diode means for causing the positive peaks of an input signal within the pass band of said circuit to discharge said capacitor, said capacitor discharging to said predetermined voltage when the positive peaks of an input signal within said pass band have a predetermined minimum value for a predetermined minimum time, and capacitor means connected to said third diode means to make said third diode means inoperable at frequencies outside of said pass band.

3,895,581
VOLTAGE SUPPLY FOR RADIO PROXIMITY FUZE

Carlyle W. Jacob, Rochester, N.Y., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 12, 1951, Ser. No. 215,043
Int. Cl. F42c *13/04*
U.S. Cl. 102—70.2 P **7 Claims**

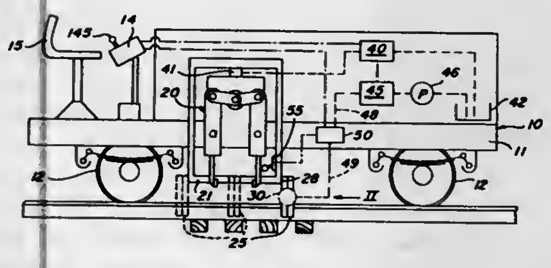


1. In a radio-controlled proximity fuze in which a high frequency signal is generated and radiated and received after reflection from a target approached by said fuze and a beat frequency signal derived from the two signals controls the detonation of said fuze, an electrically-actuated detonator adapted to initiate the detonation of said fuze, a gas-filled discharge tube adapted to actuate said detonator when ionized, means responsive to said high frequency and said reflected signals to bias said tube below its starting voltage, and means responsive to a selected amplitude and number of cycles of said beat frequency signal for ionizing said gas-filled tube.

3,895,582
BALLAST REACTION RAIL CLAMPS

Helmuth von Beckmann, Columbia, S.C., assignor to Canron Inc., Phillipsburg, N.J.

Filed Dec. 13, 1973, Ser. No. 424,279
Int. Cl. E01b *27/17*
U.S. Cl. 104—12 **6 Claims**

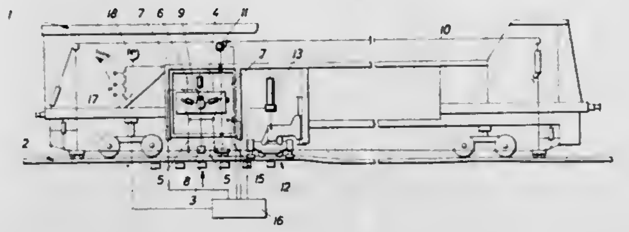


1. A tamping machine comprising a wheel mounted chassis; a tamping head, mounted on the chassis, for penetration of railroad track ballast, rail gripping means on the machine chassis; and actuating means, responsive to tamping head downward movement, for initiating the closing of said rail gripping means.

3,895,583
METHOD AND APPARATUS FOR TAMPING AND LEVELING TRACK

Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed Apr. 8, 1974, Ser. No. 458,580
Claims priority, application Austria, May 25, 1973, 4627/73
Int. Cl. E01b *27/17*
U.S. Cl. 104—12 **8 Claims**



1. In a mobile track tamping and leveling machine for obtaining a controlled degree of ballast compaction and leveling a track consisting of rails mounted on ties, which comprises a vertically adjustable tamping tool assembly including reciprocating and vibratory drive means for exerting pressure on the tamping tools to tamp the ballast under respective ones of the ties, a track lifting means, a track level reference system, a track level error pickup and transmitting device associated with the reference system to sense any error and to convert the sensed error into an electrical error signal proportional to the sensed error, and a control connected to the device and receiving the proportional error signals therefrom, the improvement of

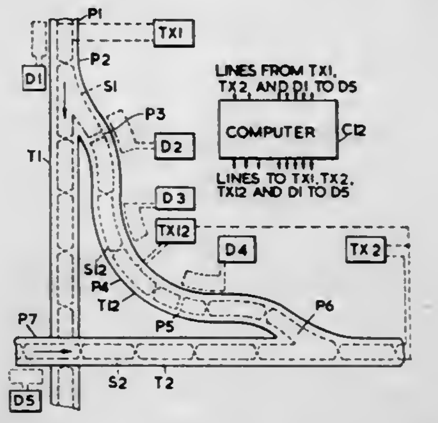
1. the control comprising a control circuit including a pressure control valve connected to the track level error pickup and transmitting device and operative to control the pressure on the tamping tools continuously in proportion to a maximum error signal received from the device, combined with a
2. a track holding device holding the track at the leveled position determined by the refereence system against any upward pressure of the tamped ballast,
3. a pressure-controlled drive for the track holding device to adjust the vertical postion thereof, and
4. a valve for controlling the drive connected to the control circuit.

3,895,584
TRANSPORTATION SYSTEMS

Denys Ian Paddison, Godalming, England, assignor to British Secretary of State for Defence, London, England

Filed Feb. 6, 1973, Ser. No. 330,149
Claims priority, application United Kingdom, Feb. 10, 1972, 6382/72
Int. Cl.² B61L *21/04*
U.S. Cl. 104—88 **12 Claims**

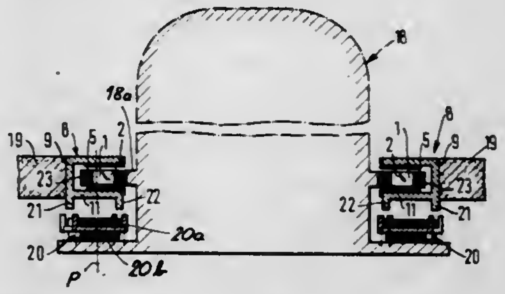
1. A transportation system comprising a plurality of tracks and a plurality of remotely controllable vehicles constructed to run over the said tracks, wherein the said tracks comprise at least a first main track, a second main track, and a junction track by which vehicles may be driven from the first main track to the second main track, and the system also comprises first signalling means for sending control signals to vehicles on the first main track such that all vehicles on a continuous extended length thereof receive the same control signals to cause the said vehicles to proceed in a first regular traffic stream along the said first main track, means for sending signals to selected ones of the said vehicles to divert them on to the junction track, second signalling means for sending control signals to vehicles on the second main track such that all vehicles on a continuous extended length thereof receive the same control signals to cause the said vehicles to proceed in a second regular traffic stream along the said second main track, third signalling means for sending control signals to vehicles on the junction track to control their progress on the junction track and to make them responsive to signals derived from the second signalling means at selected times, further means for sending control signals derived from the second signalling means to vehicles on a part of the junction track to cause the said vehicles to match their speed to the speed of the said second regular traffic stream, a plurality of vehicle detector means for detecting the passage of vehicles on the first main track, the second main track, and the junction track and receiving data signals from the said vehicles, and computer means connected to the vehicle detector means and to the first, second and third signalling means for controlling the transfer of selected vehicles from the first main track to the second main track.


P1
TX1
D1
P2
S1
LINES FROM TX1, TX2, AND D1 TO D5
COMPUTER
C12
LINES TO TX1, TX2, TX12 AND D1 TO D5
P3
D2
T1
D3
TX12
D4
TX2
S12
P4
T12
P6
P7
P5
S2
T2
D5

3,895,585
TWO-SIDED LINEAR INDUCTION MOTOR ESPECIALLY FOR SUSPENDED VEHICLES

Peter Schwärzler, Furstenfeldbruck, Germany, assignor to Krauss-Maffei Aktiengesellschaft, Munich, Germany

Filed Dec. 17, 1973, Ser. No. 425,616
Claims priority, application Germany, Dec. 30, 1972, 2264320
Int. Cl.² B61B *13/08*
U.S. Cl. 104—148 LM **7 Claims**



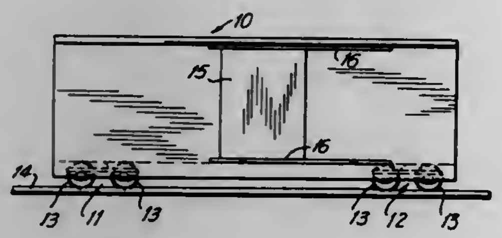
1. A double-sided linear induction motor, comprising a movable central stator having a core and coil means on said core, said stator having a pair of opposite active faces extending along the direction of displacement thereof; and a stationary reaction member extending in the direction of movement of said stator, said member being composed of ferromagnetic material and being of U-profile with opposite parallel shanks of the U flanking said stator and each spacedly juxtaposed with a respective one of said active faces; said shanks each being provided with a reaction layer of material of high conductivity along its surface confronting the respective active face, said core and said coil means being constructed and arranged to produce a traveling magnetic field along said member for displacing said stator in said direction with a substantial part of the flux return path between magnetic flux entry into and return from said shanks being around the bight of the U, said U-profile member constituting a rail of a magnetic-suspension vehicle track, at least one shank of the U

being formed with a pair of projecting flanges defining armature poles cooperating with an electromagnet.

3,895,586
RAILROAD CAR SUSPENSION SYSTEM

Elwood H. Willetts, 102 S. Penataquit Ave., Bay Shore, N.Y. 11706

Filed June 17, 1974, Ser. No. 479,751
Int. Cl. B61f ***5/30, 15/06;*** **F16f** ***1/44***
U.S. Cl. 105—224.1 **1 Claim**



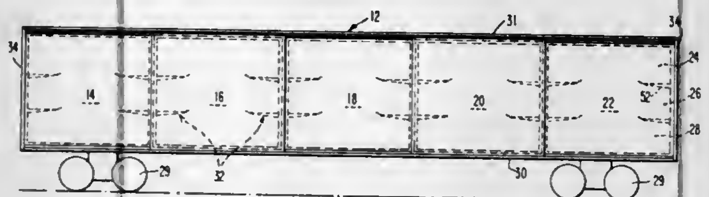
1. A railroad vehicle truck suspension structure for use with railroad freight cars having at least one axle, or the like, comprising, in combination: a journal box disposed at each transverse end of said axle; left and right longitudinally extending vehicle side frame members disposed at each transverse side of said freight car; first and second lower seat members disposed, respectively, fore and aft of the axis of said axle and each supported by a journal box; first and second spaced upper seat members, respectively, said upper seat members being integral with said left frame member during use; first and second elastomeric member disposed intermediate and captively held between each of said first upper and lower and said second upper and lower seat members, respectively, said elastomeric member providing progressively increasing resistance to vertical, transverse and longitudinal operating forces transmitted between the sprung mass and said axle; each of said lower seat members comprising a cup-shaped lower base portion thereof integral with upstanding, arcuately extending lower wall portions which collectively extend substantially half-way about said lower base portion, said lower base portion having bearing surfaces which engage one of said elastomers, said lower upstanding wall portions having curved surfaces which engage one of said elastomers; each of said upper seat members comprising a cup-shaped upper base portion thereof integral with depending, arcuately extending upper wall portions which collectively extend substantially half-way about said upper base portion, pairs of said upper and lower seat members being operatively located such that said upper and lower wall portions are disposed in opposite relationship with respect to each other about one of said elastomers, thereby captively limiting movement of the elastomer, said captive elastomer resisting horizontal movement of said upstanding and depending wall portions towards each other and further resisting vertical movement of said upper and lower base portions towards one another, thereby isolating rail-induced forces in each axle from the vehicle sprung mass.

3,895,587
RAILROAD CAR FOR TRANSPORTING AUTOMOBILES

Richard M. Bell, Arundel, Del., assignor to Penn Central Transportation Company, Philadelphia, Pa.

Filed Sept. 13, 1974, Ser. No. 505,671
Int. Cl.² B65J ***1/22***
U.S. Cl. 105—368 R **12 Claims**

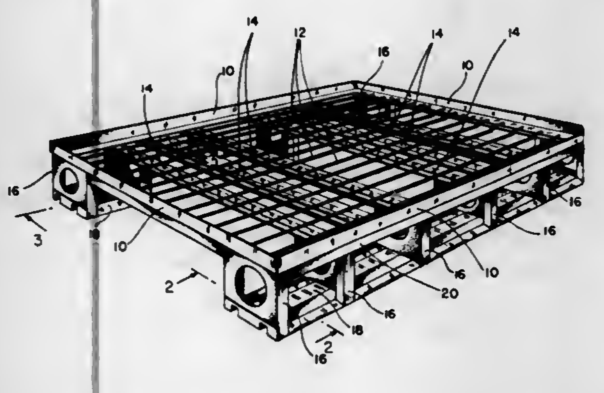
1. A railroad car for transporting vehicles, comprising:
a. a floor mounted on trucks;
b. a plurality of vertical support structures extending upwardly from said floor proximate to the longitudinal edges thereof and spaced longitudinally thereon such that the distance between adjacent supports is greater than the length of the vehicle to be transported therebetween; and
c. a plurality of horizontal support means for supporting a part of a vehicle, each support means being cantilevered from at least one of said plurality of vertical support structures and each extending longitudinally toward a vertical support structure and horizontal support means a distance sufficient to provide a surface area to support either the front or rear wheels of a vehicle thereon and to provide a clearance between adjacent cantilevered horizontal support means in the horizontal direction, said horizontal support means being spaced vertically between adjacent supports and also between the floor and the first support a distance greater than the height of that portion of the vehicle to be transported therebetween, whereby vehicles may be loaded onto said railroad car in the longitudinal direction of both the car and the vehicle from a plurality of positions along the longitudinal side of the railroad car.



3,895,588
HEAVY DUTY SHIPPING TRAY

Ervin W. Miller, Huntington Beach, Calif., assignor to Banner Metals Division Intercole Automation, Inc., Compton, Calif.

Filed Mar. 4, 1974, Ser. No. 447,820
Int. Cl.² B65D ***19/00***
U.S. Cl. 108—51 **4 Claims**

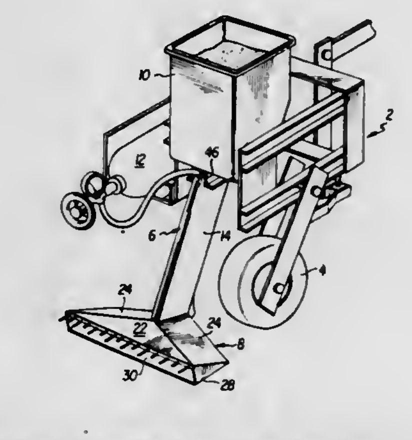


1. A load-bearing shipping tray comprising: a peripheral rim member having an L-shaped cross-section with an inwardly-extending lip portion and an upwardly-extending lip portion; a plurality of wire rods fixed to said inwardly-extending lip portion of said rim member and extending from one end of the tray to the other in spaced parallel relationship to form a deck for the tray; a plurality of elongated deck support members affixed to said inwardly-extending lip portion of said rim member and extending from one side of the tray to the other in spaced parallel relationship under said wire rods; a first plurality of transversely-extending rectangularly shaped upright members affixed to the underside of said inwardly-extending lip portion of said rim and positioned in spaced parallel relationship under said rim along a first side of the tray; a second plurality of transversely-extending rectangular shaped upright members affixed to the underside of said inwardly extending lip portion of said rim member and positioned in spaced parallel relationship under said rim member along the second side of the tray; a first strip member affixed to the bottom edges of the upright members of said first plurality and extending along said first side of the tray as a first base runner displaced down from the plane of said deck and parallel thereto; and a second strip member affixed to the bottom edges of the upright members of said second plurality and extending along the second side of the tray as a second base runner displaced down from the plane of said deck and parallel thereto.

3,895,589
SEED PLANTING APPARATUS

Thomas H. Garner, Seneca, and Byron K. Webb, Clemson, both of S.C., assignors to Cotton Incorporated, New York, N.Y.

Filed Sept. 13, 1973, Ser. No. 396,674
Int. Cl. A21c ***23/02***
U.S. Cl. 111—7 **10 Claims**



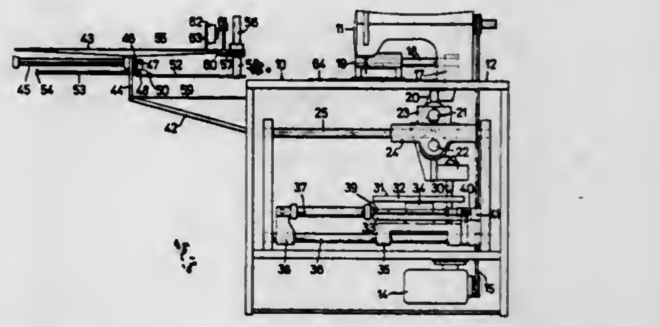
1. A seed planting implement comprising:
a supporting shank having means at the upper end of the shank for attachment to a vehicle;
a sweep secured to the lower end of the shank, said sweep being substantially hollow and having a top wall and bottom wall spaced apart from each other and having an opening at the rearward side of said sweep;
nozzle means mounted in said sweep, said nozzle means being spaced forwardly from said opening, and being between said top and bottom walls;
means providing a source of fluid under pressure and including conduit means extending through the interior of said shank for conducting fluid from said source to said nozzle means;
means providing a source of seeds spaced above the bottom wall of said sweep and including passage means in said shank for conducting seeds from said source to an aperture in the bottom wall of said sweep whereby fluids may be sprayed by said nozzle means through said sweep rearward opening and seeds may be deposited in a furrow under the sweep, as the sweep is drawn through the soil; said sweep including laterally extending forward edges, said top wall including a wedge portion intersecting said bottom wall along said lateral edges; and
said bottom wall being substantially flat, and said implement including a runner opener extending along the forward side of said shank and along said bottom wall in alignment with said bottom wall aperture.

3,895,590
AUTOMATIC APPARATUS FOR SEWING POCKETS ON GARMENTS

Silvano Perlino, Pavia, Italy, assignor to Necchi Societa per Azioni, Pavia, Italy

Filed Apr. 12, 1973, Ser. No. 350,540
Claims priority, application Italy, Apr. 14, 1972, 42907/72
Int. Cl. D05b ***21/00***
U.S. Cl. 112—121.12 **2 Claims**

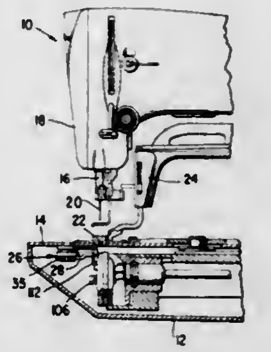
1. An apparatus for sewing pockets on garments comprising a supporting frame, a table top fixed to said frame, a sewing machine fixed to said table top; an electric motor fixed to said frame for actuating said sewing machine, two parallel guides fixed to said frame, a slide bushed to one of said guides and slidable along the other, two blocks rigidly fastened to said slide, two superimposed parallel guides positioned orthogonally to said parallel guides the upper of which is fastened to said blocks and the lower of which is fastened to said slide, a slide positioned on and slidable along said superimposed parallel guides, a pivotable pocketholder nipper carried by said last mentioned slide, a support plate positioned on said table and movable with said nipper, a motor reducer fastened to said last mentioned slide having a shaft of magnetizable material, two parallel cylindrical bars mounted on said frame parallel to said parallel guides, a support block mounted for displacement on said bars, an electromagnetic template mounted on said support block and contactable by said magnetizable shaft, a pneumatic cylinder fixed to one end of one of said bars and connected to said support block to displace said support block and thus the pocketholder nipper and said support plate from an operative position in which the pocket is sewn on the garment to a loading position in which a new garment is loaded.



3,895,591
THREAD CUTTING DEVICE

Karl H. Killinger, Dover, N.J., assignor to The Singer Company, New York, N.Y.

Filed Oct. 17, 1974, Ser. No. 515,807
Int. Cl.² D05B ***65/00***
U.S. Cl. 112—252 **12 Claims**



1. A thread cutting device for simultaneously severing a bobbin thread and one limb of a needle thread loop on a lockstitch sewing machine below a throat plate comprising, a thread puller member mounted on said throat plate for rotation about a fixed axis, said thread puller member comprising a cantilevered flange portion having an aperture, and a blade member mounted on said throat plate for rotatable movement with said puller member about said fixed axis, said blade member having a knife edge disposed in the aperture of said puller member.

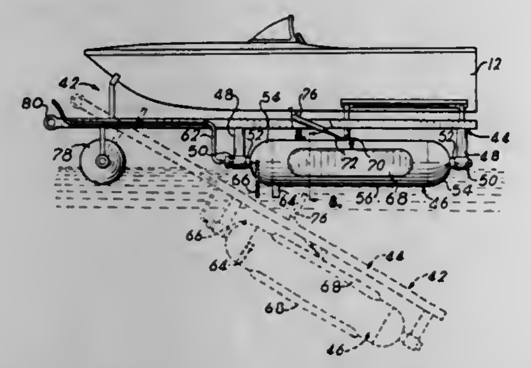
3,895,592
BOAT LIFT

Arthur Shelly King, 8021 Cherokee Ln., Leawood, Kans. 66206

Continuation-in-part of Ser. No. 326,536, Jan. 24, 1973, abandoned. This application Jan. 9, 1974, Ser. No. 431,855
Int. Cl. B63c ***1/6***
U.S. Cl. 114—45 **11 Claims**

1. A boat lift comprising:
a carriage;
a tubular, essentially closed, elongated pontoon having a continuous outer wall defining a chamber within the pontoon and provided with inlet means and outlet means; and

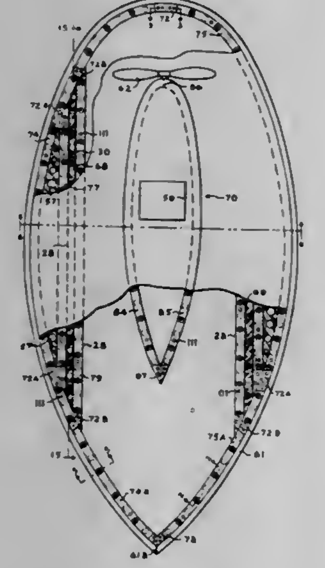
means rotatably mounting said pontoon on the carriage for rotation of the pontoon about its longitudinal axis between a float position wherein said outlet means is sub-



merged for trapping air within the chamber supplied through said inlet means and a sink position wherein said outlet means is open to the atmosphere for exhausting air from the chamber for entry of water into the latter.

3,895,593
LIGHT-WEIGHT, DURABLE, WATER-TRAVERSING VEHICLE

Alvin Edward Moore, Manini Way, Diamondhead, Rt. 1, Bay St. Louis, Miss. 39520
Filed Sept. 24, 1973, Ser. No. 399,952
Int. Cl. B63b *43/10*
U.S. Cl. 114—56 **28 Claims**



1. A vehicle adapted to traverse water, including:

deck structure, having load-containing space above it;

sidewall framework, connected to said deck structure, comprising: a plurality of fore-and-aft sidewall beams of vehicle-strength-providing material, including pairs of spaced-apart, oppositely-positioned beams, each pair having spaced-apart, opposite surfaces of the two beams and opposite holes that extend into said material from said surfaces, each of said holes at one of the surfaces of the two beams opening toward and aligned with a similar, opposite hole in the other of said two beams;

hollow members of vehicle-strength-providing material, connecting and bracing said opposite beams, each of said hollow members having flanged ends extending into and braced in an aligned pair of said opposite holes; and securing means, holding said flanged ends in said holes and said hollow members in vehicle-strength-providing assembled relation;

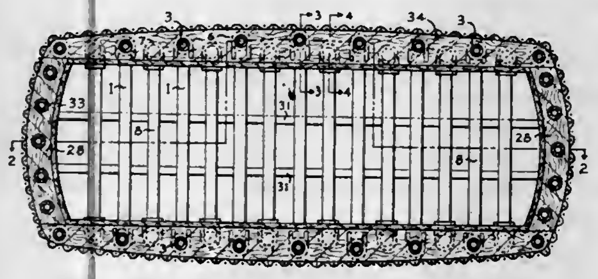
lower water-traversing structure, fixed to said deck structure, comprising: a plurality of lower-structure beams of vehicle-strength-providing material, including pairs of opposite, spaced-apart beams having a plurality of opposite holes that extend into said material from opposite-beam surfaces of each pair of said lower-structure beams, each of said last-named opposite holes at one of said opposite-beam surfaces opening toward and aligned with a hole in the other of said opposite-beam surfaces; lower-structure hollow members of vehicle-strength-providing material, connecting and bracing said opposite lower-structure beams, each of said lower-structure hollow members having ends extending into an aligned pair of said last-named opposite holes; and securing means holding said ends of the lower-structure hollow members in said last-named holes and in vehicle-strength-providing assembled relation;

waterproof, vehicle-strength-providing, exterior skin means, connected to outer portions of said sidewall framework and said lower structure; and

vehicle-strength-providing, interior skin means, connected to inner portions of said sidewall framework.

3,895,594
PIPE-FRAMED, WATER-TRAVERSING VEHICLE

Alvin Edward Moore, Manini Way, Diamondhead, Rt. 1, Bay St. Louis, Miss. 39576
Filed Oct. 15, 1973, Ser. No. 406,576
Int. Cl. B63b *3/00*
U.S. Cl. 114—81 **25 Claims**



1. A vehicle, adapted for travel over water, including:

buoyant, vehicle-strength-providing body framework, including a plurality of juxtaposed, quadrilateral, tubular framework members, encompassing a load-containing space, each of said members comprising: four elongated, end-joined pipes, having axes at angles to each other; a pair of elbow fittings joining ends of one of said pipes to the adjacent ends of two other pipes; two junction fittings connecting ends of a fourth pipe to the ends opposite to said adjacent ends of said other two pipes; one of said four pipes in each of said quadrilateral members being a substantially horizontal lower-deck pipe; bonding material between and connecting each of said fittings and the pipe ends associated with it; tie-members extending across said framework members and means connecting said tie-members to said pipes, each of said pipes having at least a part of its periphery contiguous to portions of said tie-members;

other substantially horizontal deck pipes, each of which lies between a pair of said first-named lower-deck pipes;

float-framework means below said body framework, including: a plurality of of float pipes, connected to said other deck pipes; junction fittings between said float pipes and said other deck pipes; and bonding material between and connecting each of said last-named junction fittings and one of said other deck pipes;

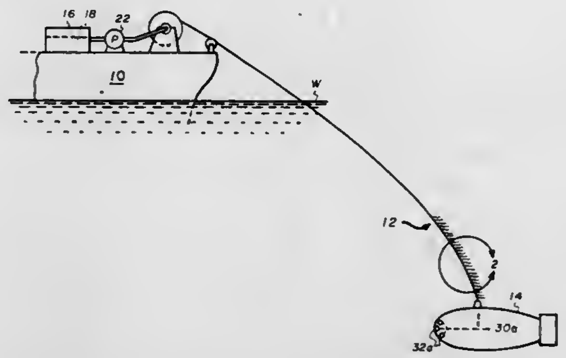
exterior, waterproofed skin means, adjacent to said pipes and tie-members, contiguous to said tie-members; and

interior skin means on said pipes and tie-members, contiguous to tie members;

each of said fittings including portions projecting beyond pipe peripheries a distance equal to the maximum thickness of the fitting around adjacent pipes; and each of said tie-members having portions projecting beyond pipe peripheries an amount at least substantially equal to said distance.

3,895,595
PAIRED CABLE DRAG REDUCTION WITH NON-NEWTONIAN FLUIDS

Raymond E. Kelly, and Richard E. Lovejoy, both of Panama City, Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Feb. 11, 1974, Ser. No. 441,724
Int. Cl.² B63B *21/56, 1/34*
U.S. Cl. 114—235 F **11 Claims**



1. Towing cable apparatus for towing an underwater object from a towing ship in an aqueous medium, said apparatus comprising:

a towing shipboard reservoir for containing a supply of fluid having pronounced non-Newtonian characteristics;

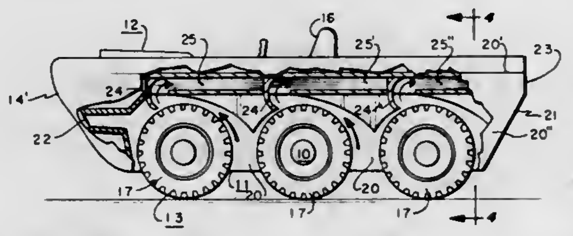
a flexible towing cable comprising means for defining at least one elongate supply passage along a substantial portion of the cable length;

means, connected to said reservoir, for injecting non-Newtonian fluid from said reservoir into said supply passage under pressure; and

said cable being characterized by a plurality of outlet pores communicating between said supply passage and the exterior of said means for defining said passage, said pores being sized and spaced so that the effective areas thereof increase in proportion to distance from said means for injecting, whereby said fluid is distributed into a boundary layer of said aqueous medium adjacent the surface of said cable substantially uniformly along a predetermined portion of the length thereof.

3,895,596
AMPHIBIOUS VEHICLE

William E. Amour, 515 S. 13th, Yakima, Wash. 98901
Filed Mar. 21, 1974, Ser. No. 453,460
Int. Cl. B60f *3/00*
U.S. Cl. 115—1 R **4 Claims**



1. An amphibious vehicle, comprising:

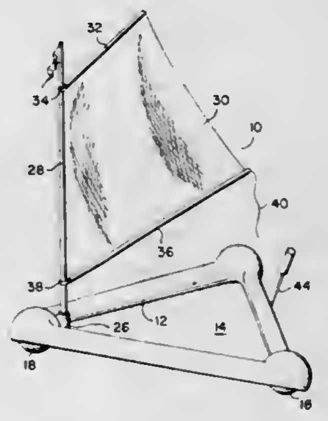
a body-frame, having an inverted U-shaped duct at each respective side of said body-frame extending above the ground line, the forwardmost terminal ends of said ducts are enclosed by a prow-like nose of said body-frame, said prow-like nose portion having apertures through which fluid may be communicated to said wheels, and wherein the rearwardmost terminal ends of said ducts are enclosed by baffle plates issuing sidewardly from said body-frame,

an engine mounted in said body-frame; and

a drive train assembly including a row of wheels in each of said ducts, means for mechanically connecting said rows of wheels, said wheels being communicatingly interconnected with said engine, said ducts having deflectors mounted forwardly and above each of said wheels for receiving fluid drawn upwardly by rotation of said wheels, and conduits disposed rectilinearly in the interior top wall of each of said ducts communicating fluid from respective deflectors rearwardly from said ducts the rearwardmost ends of said conduits ending in orifices issuing through said baffle plates.

3,895,597
WIND OPERATED AMPHIBIOUS VEHICLE

Walter Olevsky, Carlstadt, N.J. 07072, assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest
Filed May 8, 1974, Ser. No. 468,281
Int. Cl. B60f *3/00*
U.S. Cl. 115—1 R **6 Claims**



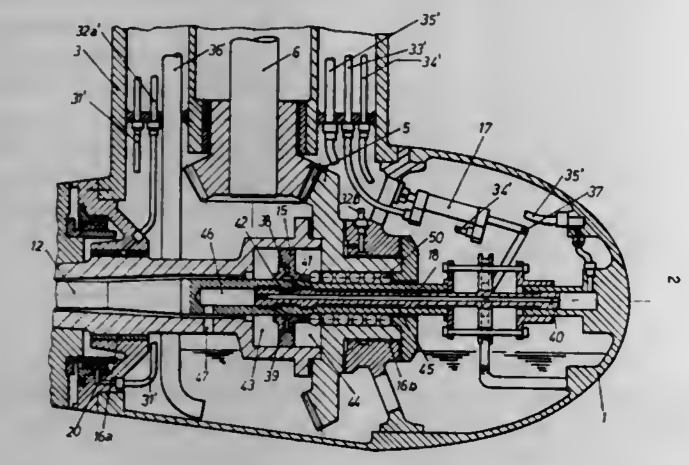
1. A wind powered, amphibious vehicle comprising a three-cornered buoyant frame, a ball-shaped buoyant front wheel rotatably connected to the front corner of said frame; a ball-shaped buoyant rear wheel rotatably connected to each respective rear corner of said frame; dirigible means, mounted on said frame between said rear corners, including a pair of brake shoes contacting one of said rear wheels at a time to steer said vehicle when on land; a mast step adjacent said front corner of said frame; a rigged mast for propelling said vehicle is held in said step; a boom connected to said rigged mast; and a sheet connected to said boom.

3,895,598
SHIP PROPULSION UNIT HAVING A VARIABLE PITCH PROPELLER

Karl Blickle, Bolheim, Germany, assignor to J. M. Voith GmbH, Heidenheim, Germany
Filed Feb. 19, 1974, Ser. No. 443,316
Claims priority, application Germany, Feb. 23, 1973, 2308931
Int. Cl. B63h *1/14*
U.S. Cl. 115—35 **3 Claims**

1. In a ship propulsion unit, the combination of a fixed housing, a vertical hollow member pivotable on said housing about a vertical axis, anti-friction bearing means in said fixed housing for supporting said hollow member therefrom in overhanging relationship to absorb axial and vertical forces, a hub mounted on said hollow member and pivotable therewith, a variable pitch propeller on said hub, means for driving said propeller comprising a drive shaft coaxially positioned within said hollow member, servo motor means within said hub for adjusting the pitch of said propeller blades, packing means between said hollow member and a portion of said housing, said packing comprising a plurality of pairs of spaced sealing

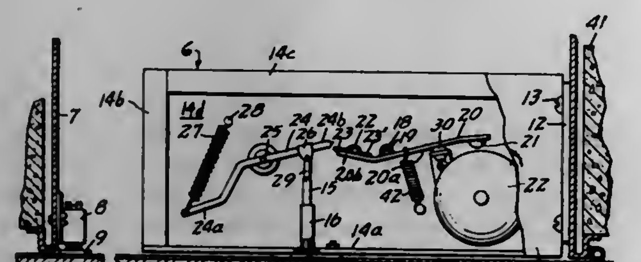
rings and an annular chamber being defined between each said pair of rings, a plurality of fluid pressure systems for said propeller and servo motor means and each system comprising a supply and a return line passing through an annular chamber of said packing means, each of said supply and return lines having an outer portion connected to a said annular chamber from outside of said fixed housing and an inner portion within said hollow member and connected to the said annular chamber.



3,895,599

CABINET DOOR ALARM DEVICE

Gerard J. Berkowitz, 17 Acorn Ln., Plainview, N.Y. 11803
Filed Aug. 30, 1974, Ser. No. 502,030
Int. Cl. G08b *13/08*
U.S. Cl. 116—95 **8 Claims**



1. A door-opening alarm device comprising in combination: a first lever means for providing contact and pivoted at a point spaced-away from one of upper ends of the lever arm means, a first end of the first lever arm means having a first contact surface;

and alarm means for initiating a signal and having a signal-initiating second contact surface positioned to be contacted by said first contact surface;

first biasing spring means for biasing said first lever arm in a direction such that said first contact surface is biased toward said second contact surface;

second lever-arm means for intermittent forcing of said first contact surface away from said second contact surface by acting upon said first lever arm means intermittently in one of opposite to and fro alternate direction and having a third contact surface positioned for contact with a face of a closed door such that when in contact with the face of the closed door the first lever arm means is retained in a first direction such that the first contact surface is not forced away from the second contact surface, the second lever arm means being pivotably mounted at a point spaced away from at least one of opposite ends thereof, said one spaced away end of the second lever arm means being positioned for pressing against said first lever arm means in the direction such that force is impartable thereto for moving the first contact surface away from the second contact surface;

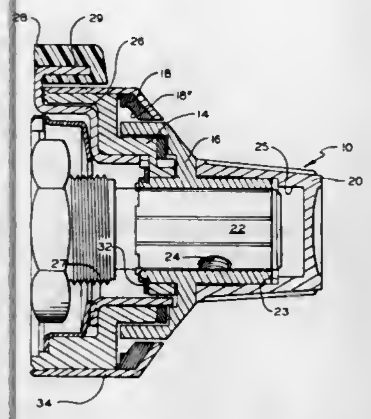
second spring means for biasing said second lever arm means toward a second direction such that when a face of a closed door is moved from a retaining contact with said third contact surface said first contact surface is caused to move away from said second contact surface, biasing action of said second spring means being greater than biasing action of said first spring means;

and spring biased-key means for providing force-imparting engagements of said second lever arm means with said first lever arm means when a face of a closed door is removed from retaining contact with said third contact surface and being mounted on one of the first and second lever arm means for engagement with the remaining other of the first and second lever arm means.

3,895,600

INDICATING DEVICE

Robert J. DeLong, Temple City, Calif., assignor to Spectrol Electronics Corporation, City of Industry, Calif.
Filed May 8, 1974, Ser. No. 468,043
Int. Cl. H03j *1/02;* **F16d** *51/22*
U.S. Cl. 116—115 **8 Claims**



1. A device for indicating the angular position of a rotatable shaft comprising:

a base member;

a first rotatable indicator dial mounted on said base member and operably connected to said rotatable shaft for rotation therewith;

a second rotatable indicator dial;

gear means interconnecting said first and second indicator dials, said gear means functioning to rotate said second indicator dial incrementally once during every revolution of said first indicator dial; and

brake means having first second and third braking positions, said rotatable shaft being freely rotatable when said brake means is in its first braking position, said brake means when in its second braking position preventing rotation of said rotatable shaft except upon application of a force of a relatively large magnitude to said shaft, and said brake means when in its third brake position preventing any rotation of said rotatable shaft.

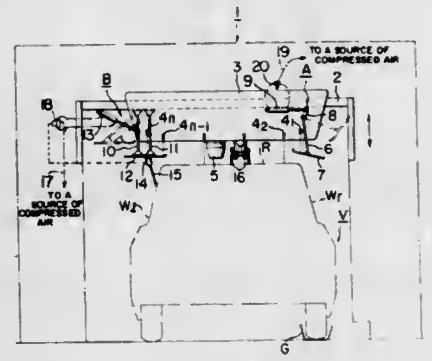
3,895,601

APPARATUS FOR APPLYING WAX TO THE SURFACES OF VEHICLES

Shiegeo Takeuchi, Nagoya, Japan, assignor to Takeuchi Tekko Kabushiki Kaisha, Nagoya, Japan
Filed Aug. 1, 1973, Ser. No. 384,735
Claims priority, application Japan, Dec. 1, 1972, 47-137570
Int. Cl. B05c *5/00*
U.S. Cl. 118—8 **1 Claim**

1. Apparatus for applying wax to the upper surfaces of vehicles during movement thereof, comprising: a portal structure through which a vehicle can pass; a guide rail in a position offset from the medial plane of said portal structure to guide the vehicle therethrough; a frame vertically movably mounted on said portal structure; a plurality of wax guns arranged on

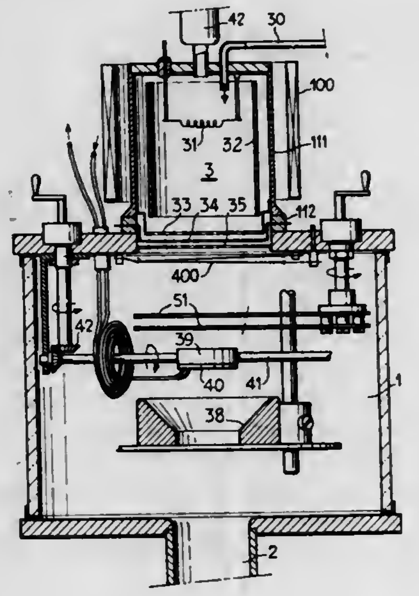
said frame in laterally spaced relation to each other; a first wax receiving pan swingably supported by said frame on its side adjacent to said guide rail; first actuator means connected to said first wax-receiving pans so as to swing said first wax-receiving pan between an inoperative position and an operative position to intercept wax as ejected through the most adjacent one of said wax guns; a second wax-receiving pan swingably supported by said frame on its side remote from said guide rail, second actuator means operable to swing said second wax-receiving pan between an inoperative position and an operative position to intercept wax as ejected through at least one of said wax guns most adjacent thereto; and sensor means arranged on said second wax-receiving pan for sensing the adjacent side surface of the vehicle and operably associated with said second actuator means to adjust the operative position of said second wax-receiving pan to the size of the vehicle.



3,895,602

APPARATUS FOR EFFECTING DEPOSITION BY ION BOMBARDMENT

Albert Bobenrieth, Paris, France, assignor to Thomson-CSF, Paris, France
Filed Feb. 14, 1974, Ser. No. 442,623
Claims priority, application France, Feb. 20, 1973, 73.05937
Int. Cl. C23c *13/12*
U.S. Cl. 118—49.1 **6 Claims**

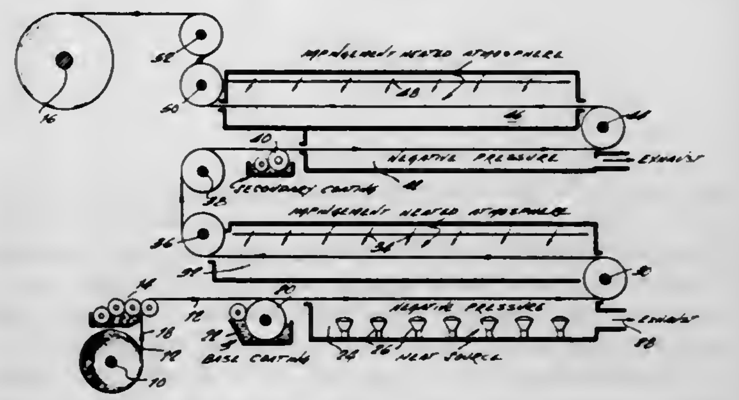


1. An apparatus for effecting deposition by ion bombardment, comprising an evacuated enclosure and in said enclosure: an ion source comprising at least one ion gun producing a uniform beam, a target mounted below said source and made of the material which is to be atomised, an object-holder aligned with and disposed between said source and said target so that ions passing said object-holder impinge on said target and supporting a substrate having a surface to be bombarded means for moving said holder between a first position exposing said surface to be bombarded to said beam and a second position exposing said substrate to the stream of atoms emanating from the target and means for blocking a portion of said beam whereby said beam does not impinge on said object-holder when said object-holder is in said second position.

3,895,603

APPARATUS FOR MANUFACTURING CORRECTION MATERIAL

Victor Barouh, 935 Plum Tree Rd. West, Westbury, and Robert Glenn, 70-20 108th St., Forest Hills, both of N.Y.
Division of Ser. No. 222,538, Feb. 1, 1972, Pat. No. 3,776,756. This application Nov. 23, 1973, Ser. No. 418,424
Int. Cl. B05c *9/06*
U.S. Cl. 118—50 **1 Claim**



1. An apparatus for manufacturing correction material comprising means for continuously feeding strip material, first coating means for applying a base coating on said strip material, a first subatmospheric pressure drying chamber provided with heating means said chamber being adjacent said first coating means for feeding the strip material through said first drying chamber, a first treatment chamber adjacent said first drying chamber for impinging heated air at atmospheric pressure onto the strip material received from said first drying chamber to harden said base coating, a second coating means adjacent said first treatment chamber for applying a release coating over said strip material, a second subatmospheric pressure drying chamber devoid of heating means and adjacent said second coating means for vacuum drying said release coating aftersaid release coating has penetrated said base coating to said strip material, and a second treatment chamber adjacent said second drying chamber for impinging heated air at atmospheric pressure onto said strip material received from said second drying chamber, said apparatus having means for transporting said strip material sequentially through said first coating means, drying chamber and treatment chamber and said second coating means, drying chamber and treatment chamber.

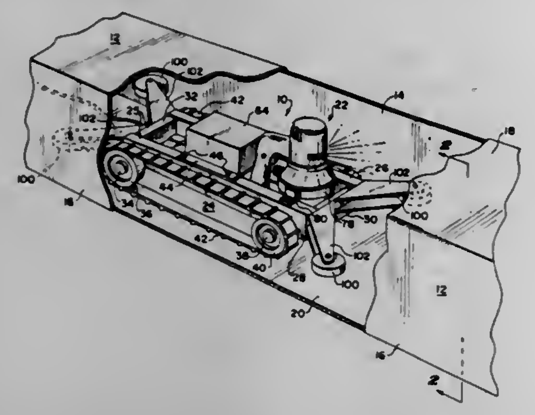
3,895,604

DUCT COATING APPARATUS

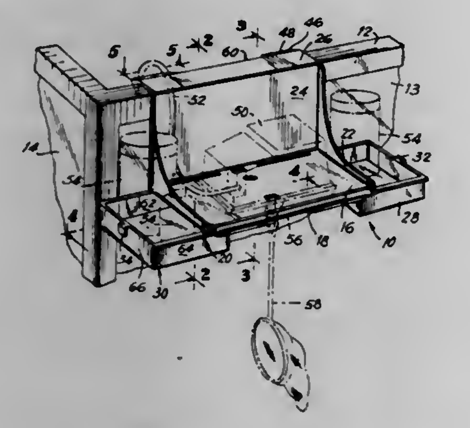
John W. Ryan, 1550 N. Lake Shore Dr., Chicago, Ill. 60610
Filed June 15, 1973, Ser. No. 370,347
Int. Cl. B05c *7/02*
U.S. Cl. 118—306 **1 Claim**

1. In a self-propelled vehicular apparatus for applying a liquid coating material to the inner wall surfaces of a rectangular duct having horizontal top and bottom walls and vertical side walls, in combination, a chassis in the form of a rectangular frame having front and rear transverse frame members and a pair of side frame members, front and rear axles projecting across said side frame members, driving drums on the outer ends of the rear axle, driven drums on the outer end of the front axle, crawler treads connecting each driving drum to an associated driven drum, a reversible electric drive motor mounted on said chassis in the medial region thereof, a gear

reduction drive mounted on said chassis rearwardly of the motor, means operatively connecting the gear reduction device to the motor, means operatively connecting the gear reduction device to one of said driven drums in driving relationship, a spraying device mounted on said chassis adjacent to the forward end of the latter and having a forwardly facing discharge slot designed for wide angle distribution of sprayed liquid coating material both laterally and vertically for simultaneous application thereof to the horizontal and vertical walls of the duct, a pair of outwardly diverging roller-supporting arms removably bolted to the front transverse frame member of said frame and projecting forwardly and laterally of the frame, a similar pair of roller-supporting arms removably bolted to the rear transverse frame member of said frame and projecting rearwardly and laterally of the frame, and a guide roller rotatably mounted on the distal end of each of said arms.

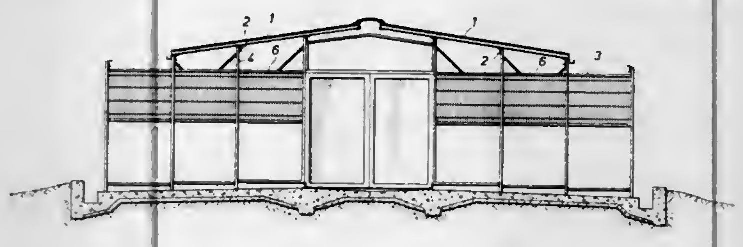


3,895,605
AQUARIUM EQUIPMENT ORGANIZER
Marvin A. Goldman, Great Neck, N.Y., assignor to Penn-Plax Plastics, Inc., Garden City, N.Y.
Filed Apr. 1, 1974, Ser. No. 457,110
Int. Cl. A01k *63/00*
U.S. Cl. 119—5 **4 Claims**



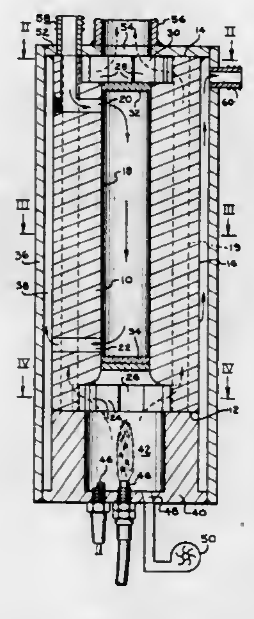
1. An organizer apparatus for use with an aquarium tank or the like, which comprises
- a. a central supporting tray including a horizontal bottom wall having a first predetermined article-supporting surface area and integral upstanding front and side walls;
- b. an integral upstanding rear wall of greater height than said front and side walls;
- c. an integral bracket means formed at upper portions of said rear wall for suspending said tray from and below the upper edge of an aquarium tank;
- d. pairs of opposed, spaced parallel, integral L-shaped brackets formed on the lower surface of said bottom wall;
- e. at least one auxiliary equipment tray with upstanding walls about its perimeter; and
- f. outwardly entending integral horizontal flanges on said tray side walls for cooperating, sliding engagement with said opposed L-shaped brackets, providing at least one second article-supporting surface area slidingly, telescopically supported beneath said central tray for selective incremental expansion of the total exposed article-supporting surface area of said organizer apparatus.

3,895,606
MODULAR KENNEL BUILDING
Charles H. Galloway, P.O. Box 3449, Bryan, Tex. 77801
Filed Jan. 25, 1974, Ser. No. 436,538
Int. Cl. A01k *1/00*
U.S. Cl. 119—16 **6 Claims**



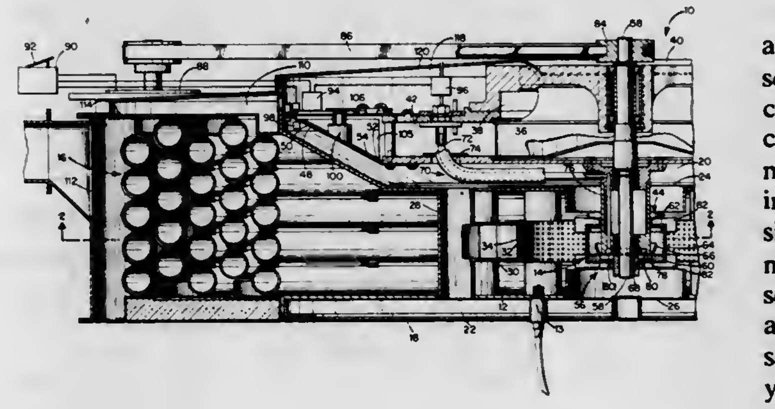
1. A modular animal enclosure, comprising:
- a. a plurality of side panels and door panels, said side and door panels having bottom framing members and being arranged to enclose individual compartments;
- b. a channel affixed to the bottom of side panels and door panels, said channel being adjustable at an angle to the bottom framing member of said side panels and door panels, for permitting angular displacement between said channel and said side panels and door panels to permit horizontal arrangement of said panels on a sloping surface; and
- c. a gasket attached to the bottom of said channel of said side panels and said door panels for preventing communication of fluids between said compartments.

3,895,607
FIRE TUBE FURNACE
Howard R. Johnson, Grass Lake, Mich., assignor to Hush Company, Inc., Wise, Va.
Filed Apr. 29, 1974, Ser. No. 465,322
Int. Cl. F22b *7/00*
U.S. Cl. 122—156 **17 Claims**



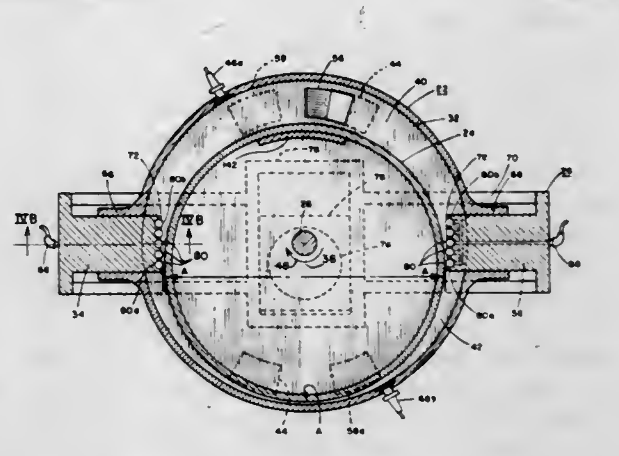
1. A fire tube furnace comprising, in combination, an elongated core of heat conductive material, a heat transfer surface defined on said core for engagement with a medium to be heated, a plurality of elongated passages defined in said core each having an inlet and an outlet axially spaced with respect to each other, a combustion chamber communicating with said passages' inlet, burner means within said combustion chamber, flue means communicating with said passages' outlet, and combustion gas flow control means located at said passages' inlets tangentially introducing combustion gases into said passages whereby gases introduced into and passing through said passages have a spiralling path of movement.

3,895,608
COMBUSTOR
Ravinder K. Sakhuja, Jamaica Plain, Mass., assignor to Thermo Electron Corporation, Waltham, Mass.
Filed Dec. 14, 1973, Ser. No. 425,037
Int. Cl. F22b *27/08*
U.S. Cl. 122—250 R **16 Claims**



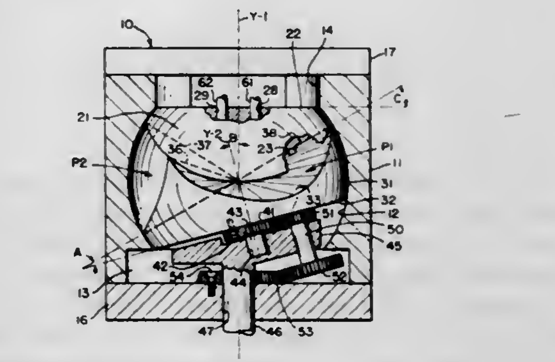
1. In a vapor generator having a combustor adapted for use with a circumscribing tube bundle which conducts fluid to be vaporized into heat exchange relationship with combustion products, the combination comprising:
- a. means forming first and second plenum chambers spaced from and facing each other to define a combustion chamber therebetween, said plenum chambers being adapted to receive a flow of precombustion gases for introduction to the combustion chamber;
- b. a liquid fuel atomizer centrally located within the combustion chamber for directing fuel outward therefrom toward substantially the entire periphery of the combustion chamber, the periphery being adapted to receive the tube bundle;
- c. means forming opposed openings centrally of the combustion chamber for establishing fluid communication between the combustion chamber and the first and second plenum chambers, said openings therefore being so arranged that fluid entering the combustion chamber therethrough tends to flow outward therefrom toward the periphery of the combustion chamber;
- d. a plurality of passages extending through the combustion chamber and connecting the first and second plenum chambers to each other, said passages being arranged intermediate the central portion of the combustion chamber and the tube bundle and along a path surrounding the central portion of the combustion chamber; and
- e. means forming openings in the surfaces of said passages facing the central portion of said combustion chamber for establishing communication between the combustion chamber and the connecting passages, said openings confronting the central portion of the combustion chamber.

3,895,609
ROTARY INTERNAL COMBUSTION ENGINE
John M. Armstrong, 3814 Greenburg Pk, Pittsburgh, Pa. 15221
Continuation-in-part of Ser. No. 280,654, Aug. 14, 1972, abandoned. This application Dec. 21, 1972, Ser. No. 317,205
Int. Cl. F02b *53/08*
U.S. Cl. 123—8.41 **18 Claims**



1. A rotary internal combustion engine comprising a casing, a rotor mounted for eccentric rotation within said casing, separator means engaging said rotor for dividing said casing in cooperation with said rotor into at least two chambers, said casing having a number of intake and exhaust ports, a valve member secured to said rotor for rotation therewith and having a valve opening therein positioned for successive juxtaposition to said casing ports, said casing having wall channel means in substantially diametrically opposed relationship, said separator means including a pair of separator members slidably mounted in said wall channel means, the outward ends of said separator members being connected rigidly through a yoke structure to maintain a predetermined spaced relation therebetween, an output shaft extending through said casing, said rotor being eccentrically mounted on said shaft, and means coupled to said shaft for reciprocating said yoke structure, said reciprocating means including an eccentric member affixed to said shaft and having a phasal relationship to said rotor such that the inward end portions of said separator members are maintained in engagement with adjacent surfaces respectively of said rotor without substantial bearing contact therewith but with sufficient contact to prevent passage of fluid material.

3,895,610
ROTARY NUTATING ENGINE
Robert H. Wahl, 1747 Creek Rd., Rochester, N.Y. 14625
Filed May 17, 1974, Ser. No. 470,860
Int. Cl. F02b *53/00*
U.S. Cl. 123—8.45 **9 Claims**



1. An engine, comprising
- a housing having therein a spherical chamber,
- a solid, segmental-spherical rotor movably mounted in said chamber adjacent one end thereof and having a solid operating surface confronting a stationary operating sur-

face formed in said chamber adjacent the opposite end thereof, said operating surfaces having centers which coincide with the center of said chamber,

- each of said operating surfaces having therein a plurality of generally segmental-conical recesses emanating radially from the center of the surface and forming thereon a plurality of equi-angularly spaced ribs which project radially between said recesses from adjacent the last-named center to points immediately adjacent to the spherical wall of the chamber,
- a shaft supported in said housing adjacent one end there and extending part way only into said chamber at said one end thereof and rotatable about a first axis extending through the center of said chamber,
- means mounting said rotor on the inner end of said shaft for rotation relative to said shaft about a second axis extending through the center of said chamber and inclined to said first axis, and for rotation with said shaft about said first axis, and
- connecting means between said shaft and said rotor for causing said shaft to revolve three times about said first axis for each revolution of said rotor about said second axis, thereby to impart rotary and nutating motion to said rotor to maintain said ribs on the operating surface of said rotor in sliding engagement with the stationary operating surface, whereby a plurality of revolving pockets are formed between said operating surfaces and the wall of said chamber and alternately expand and contract during rotation of said rotor and said shaft.

3,895,611
AIR-FUEL RATIO FEEDBACK TYPE FUEL INJECTION SYSTEM

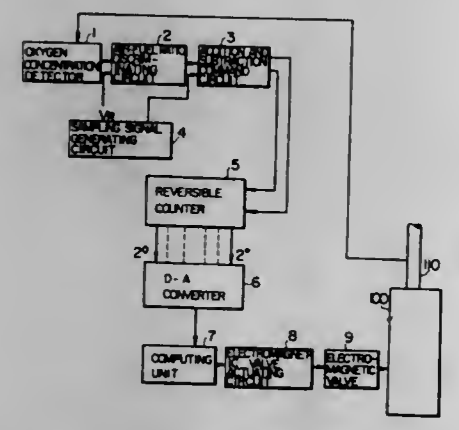
Kunio Endo, Anjo; Junji Kawarada, Kariya; Motoharu Sueishi, Kariya; Susumu Harada, Oobu, and Hideaki Norimatsu, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Oct. 12, 1973, Ser. No. 406,109

Claims priority, application Japan, Oct. 17, 1972, 47-103727; Oct. 19, 1972, 47-104799; Oct. 28, 1972, 47-108220; Nov. 6, 1972, 47-110930; Nov. 7, 1972, 47-111750; Nov. 9, 1972, 47-112440

Int. Cl. F02b *3/00*

U.S. Cl. 123—32 EA **9 Claims**



1. An air-fuel ratio feedback type fuel injection system having electromagnetic valve means connected to a constant pressure fuel line to inject the fuel into an internal combustion engine mounting the fuel injection system and a computing unit connected through an electromagnetic valve actuating circuit to the electromagnetic valve means for generating an injection pulse signal to determine the opening duration of the electromagnetic valve means thereby to control the quantity of said fuel to suitable various operating conditions of the internal combustion engine, comprising:

- an oxygen concentration detector mounted in an exhaust pipe of said engine for detecting the concentration of oxygen contained in the exhaust gases of said engine,
- an air-fuel ratio discriminating circuit means connected to said oxygen concentration detector for comparing an output signal of said detector with a predetermined value to generate an output signal,
- a sampling signal generating circuit means for generating a sampling signal having a predetermined frequency,
- an addition and subtraction command circuit means connected to said sampling signal generating circuit means and said air-fuel ratio discriminating circuit means for generating an output command signal in accordance with the output signal of said air-fuel ratio discriminating circuit each time said sampling signal is applied thereto, a reversible counter connected to said addition and subtraction command circuit means to perform the operation of addition or subtraction on the count thereof in accordance with said output command signal of said addition and subtraction command circuit means for generating a correction signal, and
- valve opening duration correcting means connected to said reversible counter and further to said computer unit for controlling the opening duration of said electromagnetic valve means in accordance with said correction signal of said reversible counter in cooperation with said computing unit to reverse the output signal of said air-fuel ratio discrimination circuit means by changing the quantity of said fuel through said valve means.

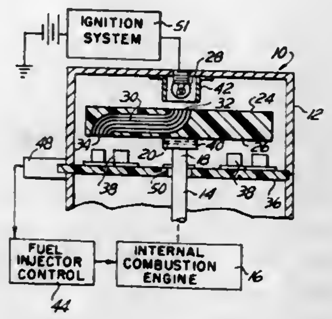
3,895,612
LIGHT ACTIVATED SEQUENTIAL SWITCHING MECHANISM

William Arthur Keely, Highland, Mich., and Merle Manford Kreger, Jr., Liberty, Pa., assignors to The Bendix Corporation, Southfield, Mich.

Filed June 17, 1974, Ser. No. 480,061

Int. Cl. F02b *29/00*

U.S. Cl. 123—32 EA **10 Claims**



1. In a fuel injection system for an internal combustion engine, a light actuated sequential switching mechanism for sequentially activating the fuel injectors, said mechanism comprising:

- a shaft coupled for rotation with the distributor timing shaft of an internal combustion engine;
- a member having a pair of spaced broadside surfaces, one broadside surface attached to said shaft at the end opposite the coupling end, said member mounted for rotation with said shaft;
- a source of light energy axially spaced from the end of said shaft and directed toward the other broadside surface of said member;
- a fiber optic bundle mounted for support between said pair of broadside surfaces having one end adapted for receiving energy from said source of light opposite said other broadside surface and for conducting said received light energy to the one broadside surface; and
- a plurality of light actuated switching members equal in number to the number of injectors and respectively electrically connected in circuit to the injectors, said members positioned in a circumferential spaced apart relationship about said shaft, said switching members spaced from said one broadside surface and each positioned to receive light energy from the other end of said bundle as said shaft rotates for switching said members from one circuit condition to a second circuit condition.

3,895,613
AIR-COOLED INJECTION INTERNAL COMBUSTION ENGINE WITH TURBULENCE CHAMBER

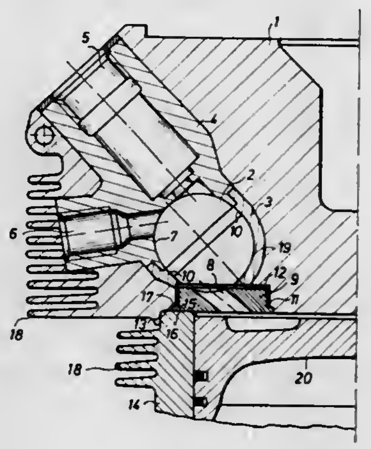
Suryakant Joshi, Cologne, Germany, assignor to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne, Germany

Filed Oct. 11, 1973, Ser. No. 405,651

Claims priority, application Germany, Oct. 11, 1972, 2249766

Int. Cl. F02b *3/00*

U.S. Cl. 123—32 C **1 Claim**



1. An air-cooled fuel injection internal combustion engine comprising a cylinder and a cylinder head with a turbulence chamber with a longitudinal axis and an inner mantle surface, the turbulence chamber having a length slightly greater than its maximum diameter of revolution and having a fuel injection passage tangential thereto for injecting fuel approximately parallel to the longitudinal axis of said turbulence chamber into the periphery thereof, which includes in combination therewith a heat insulated insert member having a passageway therethrough and forming a portion of that inner surface of said turbulence chamber which is located outside that range of surface which is to be impacted upon by the fuel during the fuel injection period, that inner mantle surface portion of said turbulence chamber which is formed by said insert member only being less than a quarter of the total inner mantle surface of said turbulence chamber, and said insert member having a medium height equaling from one quarter to one-third of said diameter of revolution and having a medium diameter equaling from two-thirds to one total of said maximum diameter of revolution.

3,895,614
SPLIT PISTON TWO-STROKE FOUR CYCLE INTERNAL COMBUSTION ENGINE

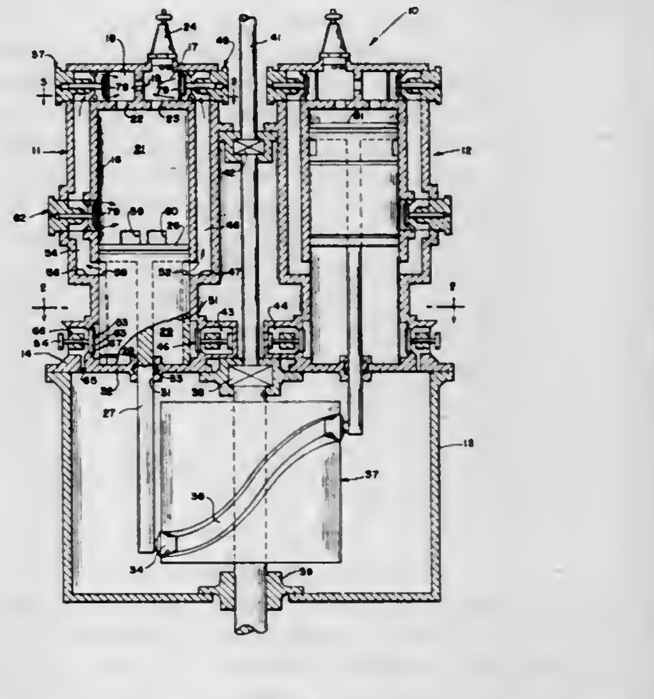
Henry E. Bailey, c/o Bailey Lumber Company, P.O. Box 350, Walnut Creek, Calif. 94597

Filed Dec. 3, 1973, Ser. No. 421,334

Int. Cl. F02b *33/44, 33/12*

U.S. Cl. 123—67 **10 Claims**

1. In a two-stroke, four cycle internal combustion engine, the combination of means forming at least one cylinder having opposed first and second end walls, a piston mounted for reciprocating movement through power and compression strokes within the cylinder, one end of the piston separating the cylinder and cooperating with said first end wall to define a combustion chamber, the other end of the piston having a partition extending transversely across the cylinder and cooperating with said second end wall to define an air pumping chamber and an opposed combustible charge pumping chamber, first means to direct volumes of air and a combustible charge into respective air and charge pumping chambers during movement of the piston along its intake compression stroke, said volumes being compressed in respective chambers during movement of the piston along its power stroke, second means to direct the volume of compressed air from the air pumping chamber into the combustion chamber, third means to direct the volume of compressed charge from the charge pumping chamber into the combustion chamber, fourth means to ignite the charge in the combustion chamber which is compressed by movement of the piston along its compression stroke, and exhaust means to exhaust the products of combustion from the combustion chamber.



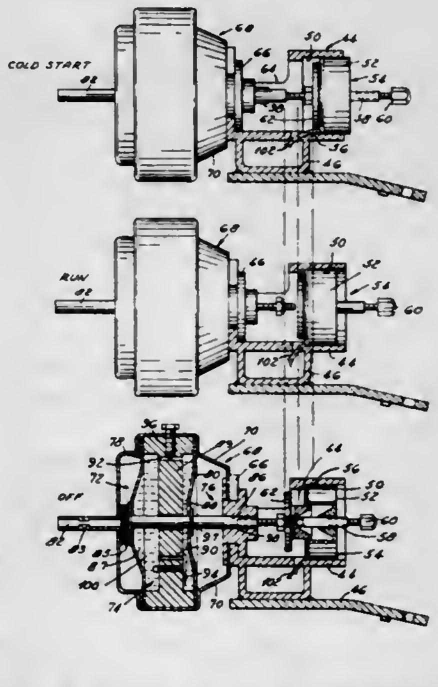
3,895,615
CARBURETOR THROTTLE VALVE POSITIONER

Phillip A. Schubeck, Woodhaven, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 7, 1973, Ser. No. 422,944

Int. Cl.^{2} F02D *11/08*

U.S. Cl. 123—103 R **11 Claims**

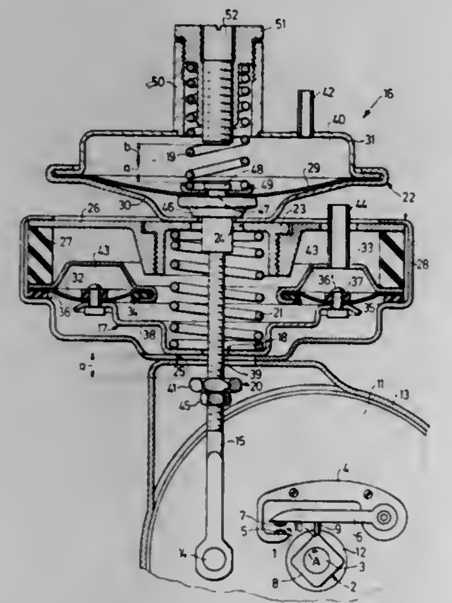


1. A carburetor throttle valve positioner comprising, in combination, an engine carburetor having an induction passage open to atmospheric pressure at one end and adapted to be connected to an engine intake manifold at the opposite end so as to be subject to engine vacuum varying in level from ambient atmospheric pressure at engine shutdown to a maxi-

mum subatmospheric pressure level during engine operating conditions, a throttle valve rotatably mounted across the passage and movable from a closed position to an engine idle speed position and beyond to a wide open throttle position, and return, for controlling flow through the passage, and control means to move the throttle valve to and between the positions,

the control means including a first engine vacuum responsive device having first means operatively acting on and biasing the throttle valve to a first open beyond normal engine idle throttle position, engine vacuum acting on the first means moving the first means to a position permitting return movement of the throttle valve to a closed position during operation of said engine, second movable stop means movable from an initial engine off position positioning the throttle valve in the first position to a second position during operation of the engine to prevent return movement of the throttle valve to a position less open than the normal idle speed position, and means effecting movement of the second means to a third position immediately upon engine shutdown to permit movement of the throttle valve to a closed anti-dieseling position reducing the flow of fuel to the engine.

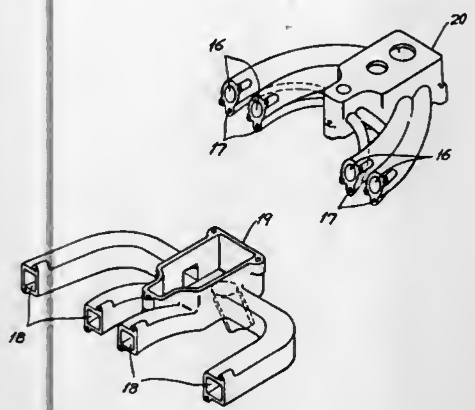
3,895,616
IGNITION CONTACT BREAKER SYSTEM FOR INTERNAL COMBUSTION ENGINE
Leo Steinke, Hegnach, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany
Filed Mar. 7, 1973, Ser. No. 338,903
Claims priority, application Germany, June 7, 1972, 2227629
Int. Cl.² F02P *5/10*
U.S. Cl. 123—117 A **31 Claims**



1. In combination with an internal combustion engine, an ignition contact breaker system to provide ignition pulses for the internal combustion engine having

- a housing (**13**), a camshaft (**3**) in the housing, a support plate (**11**) rotatably located in the housing and surrounding the camshaft, and breaker contacts (**4, 5, 6, 7**) located on the plate adapted to be engaged by the camshaft and opening and closing in synchronism with rotation of the camshaft,
- means to rotate the support plate to adjust the relative angular position of the breaker contacts with respect to the lands of the cam of the camshaft comprising
- a coupling link (**15**) secured to the plate (**11**) to rotatably move the plate;
- first motion transmitting means (**29, 40**) coupled to the link (**15**) to move the link by a first distance (*a*) and hence rotate the plate (**11**) by a first angular excursion;
- and means (**32, 43**) superimposing additional movement on said link in the same direction as said first distance (*a*) to move said link by an additional second distance (*b*) and hence rotate the plate by an additional second angular excursion.

3,895,617
INTAKE MANIFOLD DEVICE OF AN INTERNAL COMBUSTION ENGINE
Yoshitoshi Sakurai, Kawasaki, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed June 22, 1973, Ser. No. 372,764
Claims priority, application Japan, June 28, 1972, 47-76220
Int. Cl. F02b *19/10, 19/18*
U.S. Cl. 123—122 AB **2 Claims**

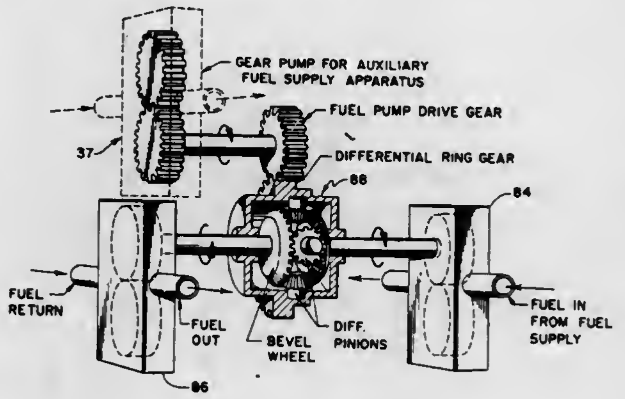


1. In a multi-cylinder internal combustion engine having main combustion chambers each connected to an auxiliary combustion chamber through a torch opening, respectively, the improvement comprising, in combination: an exhaust manifold connected to receive exhaust gases from each main combustion chamber, an intake manifold having main intake conduits for connection with each main combustion chamber, said intake manifold also having auxiliary intake conduits for connection to each auxiliary combustion chamber, said intake manifold having a first chamber to receive a rich air-fuel mixture from a first carburetor, said intake manifold having a second chamber to receive a lean air-fuel mixture from a second carburetor, said auxiliary intake conduits communicating with said first chamber, said main intake conduits communicating with said second chamber, said exhaust manifold having an exhaust chamber in heat transfer relationship with said first and second chambers, said main intake conduits each being integrally associated adjacent said engine for heat exchange with one of said auxiliary intake conduits, respectively.

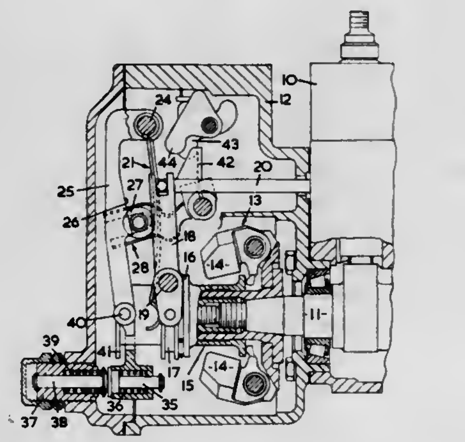
3,895,618
DIFFERENTIAL FUEL SUPPLY SYSTEM FOR INTERNAL COMBUSTION ENGINES
Peter H. Cerf, Edina, Minn., assignor to Anton Braun, Minneapolis, Minn.
Filed June 28, 1973, Ser. No. 374,380
Int. Cl.² F02M *13/06*
U.S. Cl. 123—127 **2 Claims**

1. A differential fuel supply system for internal combustion engines comprising in combination:

- a diesel engine having a combustion chamber, an injection nozzle, an air supply, a fuel supply and an auxiliary fuel supply apparatus connected to the air supply of the engine at a point remote from the injection nozzle;
- means for determining the speed of and load on the engine including means for determining the rate of fuel flow to the engine; and
- means controlled by the speed and load determining means for supplying a portion of the fuel to the auxiliary fuel supply apparatus which is varied according to the speed of and load on the engine.

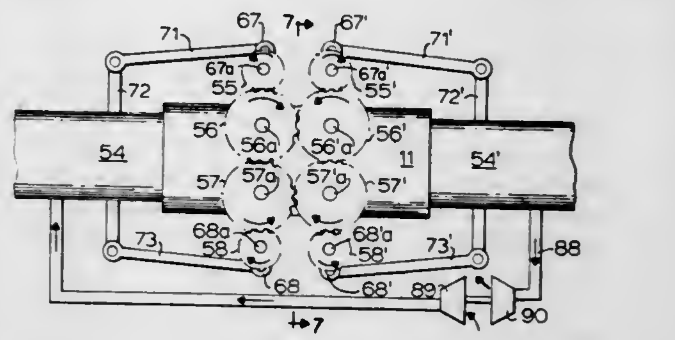


3,895,619
GOVERNORS FOR FUEL PUMPS
James Charles Potter, London, England, assignor to C. A. V. Limited, Birmingham, England
Filed Dec. 28, 1973, Ser. No. 429,170
Claims priority, application United Kingdom, Dec. 29, 1972, 60140/72
Int. Cl. F02d *1/12*
U.S. Cl. 123—140 R **6 Claims**



1. In combination with an internal combustion engine, a governor, a fuel injection pump of the type intended to supply fuel to an internal combustion engine, the pump having an adjustable control rod the setting of which determines the amount of fuel delivered by the pump, the governor comprising a housing, centrifugally operable means mounted within the housing and in use, driven at a speed representative of engine speed, a member movable by said means, a lever pivotally mounted in the housing and connected at one end to said control rod, said lever at its other end bearing on said member, whereby as the speed of the engine increases the lever will move in an direction to effect a reduction in the quantity of fuel supplied to the engine, a leaf spring acting on said member in a direction to oppose the action of said means, a ramp located within the housing, roller means acting intermediate the ramp and the leaf spring, means for adjusting the setting of said roller whereby the force exerted by the leaf spring on said member can be adjusted, said ramp being movably mounted within the housing and there being interposed between the ramp and the leaf spring, resilient means which as the speed of operation of the engine continues to increase above a predetermined value, will be compressed thereby causing movement of the lever in a direction to reduce the amount of fuel supplied by the pump.

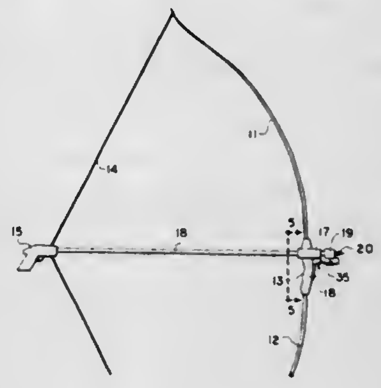
3,895,620
ENGINE AND GAS GENERATOR
Berry W. Foster, 2415 Thomas Ave., Redondo Beach, Calif. 90278
Division of Ser. No. 70,387, Sept. 8, 1970, Pat. No. 3,712,276. This application Dec. 4, 1972, Ser. No. 312,042
Int. Cl. F02b *77/00, 75/24*
U.S. Cl. 123—197 R **13 Claims**



11. An internal combustion engine comprising in combination:

- a. an engine cylinder having a wall and a head end,
- b. means to introduce gas into said cylinder,
- c. an engine piston adapted to reciprocate in said cylinder and to compress said gas therein, said gas then limiting the stroke of said piston toward said head end,
- d. a first rocker arm,
- e. a first connecting rod extending generally in the same direction as said cylinder and connecting said piston and said first rocker arm to form an extended toggle to limit the stroke of said piston in a first direction,
- f. a second rocker arm, and
- g. a second connecting rod extending generally in the same direction as said cylinder and connecting said piston and said second rocker arm to form an extended toggle to limit the stroke of said piston in said first direction,
- h. said first and second rocker arms being positioned to rock in the same plane and being synchronized to rock counter to each other, said plane also including the centerline of said cylinder, whereby toggle link forces on said first and second connecting rods normal to said cylinder wall are balanced on said toggle links to prevent high side forces from acting on said cylinder.

3,895,621
MEANS MOUNTED ON A BOWSTRING TENSIONING DEVICE FOR RELEASABLY HOLDING A BOWSTRING
Warren H. Kellogg, 290 Stony Brook Rd., Rush, N.Y. 14534
Filed July 8, 1974, Ser. No. 486,445
Int. Cl. F41b *5/00*
U.S. Cl. 124—24 R **8 Claims**



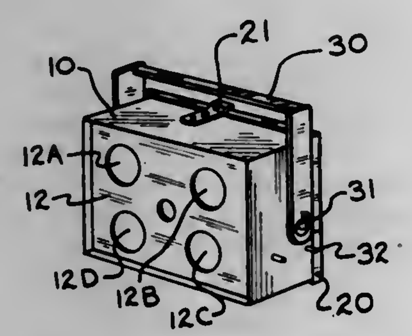
1. In a longbow having bow limbs, a bowstring, a handle with a centerline arrow rest, and a cocking device, the improvement comprising:

- a. a bracket supporting said cocking device and mounted on said handle and including means for pivoting said cocking device between an operating position generally transverse to said bow limbs and a storage position generally alongside one of said bow limbs;
- b. latch means for latching said bracket to said handle in said operating position; and
- c. said cocking device including:
  1. a pair of guide sleeves on said bracket substantially equally spaced from said arrow rest on opposite sides of said arrow rest;
  2. a pair of rods having respective sliding fits in said guide sleeves so that when said bracket is in said operating position with said bow limbs upright and an arrow is fitted to said bow, said rods extending parallel with a nocked arrow and horizontally positioned on opposite sides of a nocked arrow and substantially equally spaced from a nocked arrow when said bow is in a normal upright position for use;
  3. a yoke interconnecting said rods on the back side of said limbs;
  4. a trigger device interconnecting said rods on the belly side of the bow and rearwardly of the bowstring for holding and releasing said bowstring; and
  5. releasable latch means for latching said yoke to said bracket to hold said rods and said trigger device in a full-draw position.

3,895,622
REVERSIBLE COOKING UNIT

Wallace F. Krueger, 4401 Merriweather Ave., Toledo, Ohio 43623

Filed Mar. 18, 1974, Ser. No. 452,780
Int. Cl.^{2} F24C *3/14*
U.S. Cl. 126—38 **2 Claims**



1. A reversible flip-flop cooking unit of the class described comprising,

a rigid flame distribution panel,

a gas burner element attached to one of the faces of said panel with a circular burner head designed to permit the gas to emit only from the sides or periphery of said circular burner head and in close proximity to said rigid flame distribution panel,

a housing securing said burner and said panel within it, said housing surrounding said burner and said panel on four sides and said housing having an opening on one end and a partially vented cover on its other end so that said burner faces said open side of said housing, and said vented cover is designed to permit the flue gases to escape through it when said burner is facing down and act as a secondary air source when said burner is facing up, and said panel is located with reference to said vented cover to provide a restricted air space between said panel and said vented cover to require the secondary air to flow across the rear side of said panel and around the sides of said panel to reach said burner when said burner is facing up, and the hot air and flue gases to escape around the sides of said panel and to flow across the rear side of said panel and through the vented openings in said partially vented cover when said burner is facing down,

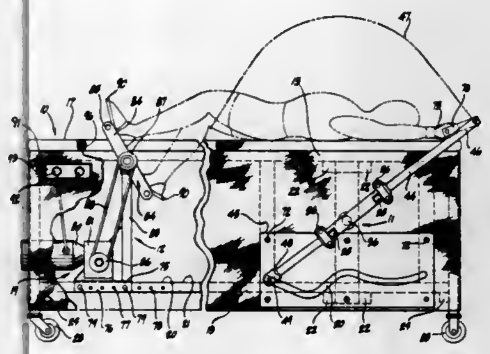
means for rotating and locking in place said housing, which includes said burner and said panel, 180° so that in one position the burner is facing down and on rotation of 180° the burner is facing up,

means for introducing and regulating the flow of pressured gas fuel to said burner.

3,895,623
PHYSICAL THERAPY MACHINE

Lavern N. Mahlandt, 410 S. Hickory, Centralia, Ill. 62801; John R. Smith, 900 Meadow Ln., Salem, Ill. 62881; Floyd R. Elliott, 124 S. Beech, and Larry D. Greene, Rt. 5, both of Centralia, Ill. 62801

Filed Apr. 17, 1974, Ser. No. 461,617
Int. Cl. A61h *1/02*
U.S. Cl. 128—25 R **12 Claims**

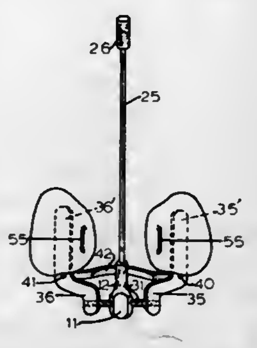


1. In a physical therapy machine:
- a. a support means,
- b. an elongate member including an outer end,
- c. drive and mounting means operatively connecting said elongate member to the support means including oscillating means operatively connected to the elongate member in sliding relation for oscillating movement of the outer end of said elongate member and translational movement of said outer end of said elongate member, said drive and mounting means including guide means operatively connected to the elongate member to predetermine the path of said outer end thereof.

3,895,624
APPARATUS FOR USE IN TREATMENT OF THE BILATERAL CLEFT LIP AND PALATE CONDITION IN INFANTS

Nicholas G. Georgiade, 2523 Wrightwood Ave., Durham, N.C. 27705

Filed July 18, 1974, Ser. No. 489,813
Int. Cl. A61f *5/00*
U.S. Cl. 128—76 R **18 Claims**



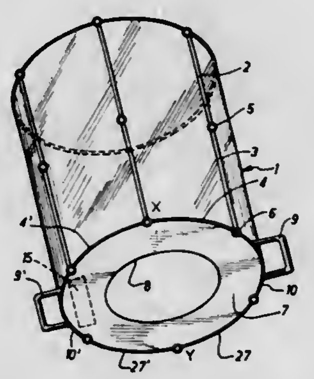
1. A mouth cavity bone correction apparatus, comprising:
- a. a pair of elongated laterally spaced arm members adapted to be intra-orally placed and having outer end portions residing in a common plane and adapted for intra-oral securement to selected similarly laterally displaced maxillary bone and having opposite end portions adapted to be positioned more intra-orally within the cavity and unsecured to said bone;

- b. means for securing said arm member outer end portions to said bone;
- c. an auxiliary structure adapted for intra-oral placement in operative association with said arm members providing an intra-oral mount for the said unsecured opposite ends of said arm members and including movable positioning means responsive to a connected rotated drive shaft, said positioning means being engaged with said unsecured opposite end portions in a manner adapted when connected to an appropriate said drive shaft to laterally position said secured outer end portions of said arm members according to the direction and amount of turning of such shaft; and
- d. a drive shaft having one end adapted to be intra-orally placed and connected to drive said movable positioning means and an opposite end adapted to be intra-orally placed and adapted for finger engagement to turn said drive shaft to effect desired positioning of said arm members and thereby achieve corrective positioning of said bone.

3,895,625
HEAD PROTECTION ENCLOSURE

René Delest, Meudon, France, assignor to S.A. Ulmer Aeronautique, Paris, France

Filed Feb. 28, 1974, Ser. No. 447,024
Claims priority, application France, Mar. 1, 1973, 73.07287
Int. Cl. A61m *15/00*
U.S. Cl. 128—142 **10 Claims**



1. An insulating, heat-resistant and translucent enclosure intended to ensure protection of the head and to be completely closed to the atmosphere and to any source of fresh oxygen when worn on the wearer's head, at least one part of said enclosure being elastically deformable and provided with a means of passage for the wearer's head, said passage means being adjustable to insure the tightness about the wearer's neck, said enclosure being folded in vacuum, handle means associated with said enclosure for facilitating the unfolding of said enclosure, and regeneration means provided inside said enclosure for regenerating the air delivered by the wearer's breath to provide oxygen therefrom and to fix the carbonic anhydride.

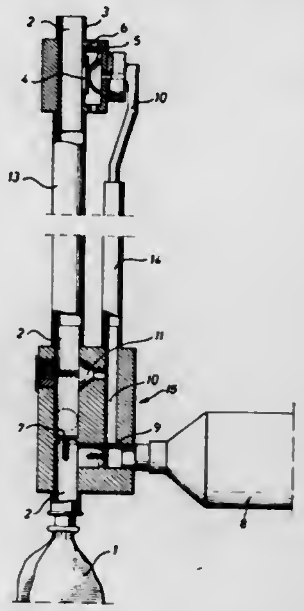
3,895,626
APPARATUS FOR SPONTANEOUS OR ARTIFICIAL RESPIRATION

Stig Olof Elfstrand, Hertigvagen 6, 126 52 Hagersten, Sweden

Filed Apr. 25, 1974, Ser. No. 464,097
Claims priority, application Sweden, Apr. 27, 1973, 7305991
Int. Cl. A61m *16/00*
U.S. Cl. 128—145.8 **5 Claims**

1. In an apparatus for spontaneous or artificial respiration having an attachment (1) for a gas source, a valve system (15), a flexible bladder (8) for respiratory gas connected to the attachment (1) via the valve system, and a mouth valve (3) having an expiratory valve (4), said mouth valve being connected to means engagable with a patient to direct gas into the respiratory system and being connected to the valve system (15) via a hose (13), the improvements comprising:

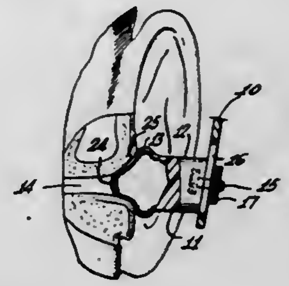
- a. bladder (8) connected via a channel (10) and a flexible hose (14) to a closed chamber, containing a diaphragm (5), in the mouth valve (3), said diaphragm (5) being operatively associated with said expiratory valve such that, when the pressure in said bladder (8) exceeds the pressure in said valve system, the diaphragm (5) expands and preloads the expiratory valve (4); means communicating the bladder (8) to the hose (13) between the mouth valve (3) and the valve system, such that when the pressure in said bladder exceeds the pressure in said valve system, the means allows a one-way communication between the bladder (8) and said hose (13) and wherein said means is adjustable.



3,895,627
EAR PROTECTOR

Howard S. Leight, 16027 Northfield St., Pacific Palisades, Calif. 90272

Division of Ser. No. 164,609, July 21, 1971, Pat. No. 3,768,470. This application June 21, 1973, Ser. No. 372,168The portion of the term of this patent subsequent to Oct. 30, 1990, has been disclaimed.
Int. Cl. A61f *11/02*
U.S. Cl. 128—152 **2 Claims**



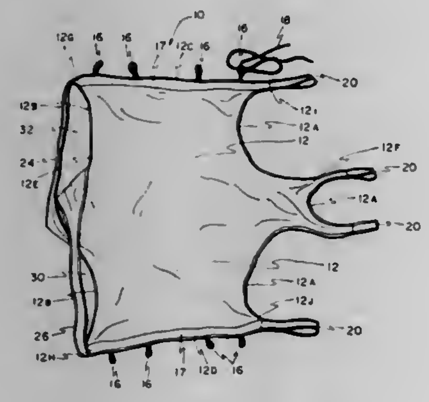
1. An ear protector comprising:

a pair of sound-attenuating pods and means for holding said pods against the ears of a wearer;

each pod being of generally cylindrical shape and having a base portion attached to said holding means and a tip portion adapted to enter the ear canal, at least one side of said tip portion bulging so that it extends radially beyond the boundaries of the base portion and said tip portion forming a smooth continuous curve along the bulging portion and up to the extreme tip of the pod, said pod being solid up to a region near the beginning of said bulging tip portion and said tip portion being hollow and of soft resilient material so that said bulging portion can readily deform against the region of the ear surrounding the ear canal to thereby form a good sound-tight seal therewith.

3,895,628
BODY ENCOMPASSING BANDAGE PROTECTOR FOR DOGS AND OTHER SUCH ANIMALS

Georga Ann Adair, 322 Milburn Dr., Fayetteville, N.C. 28304
Filed Mar. 25, 1974, Ser. No. 454,072
Int. Cl. A61f *13/00;* **A01k** *21/00*
U.S. Cl. 128—171 **11 Claims**



1. A body encompassing bandage protector for animals comprising:

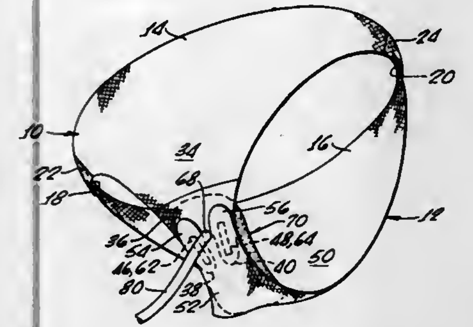
- a. a main body encompassing covering means for encompassing a substantial area of an animal's body and for protecting a bandage thereunder;
- b. said main body encompassing covering means having two separable terminal side edges that allow said main body encompassing covering means to be directly placed about the body of said animal;
- c. said main body encompassing means further including front and rear boundaries that extend between said separable terminal side edges and across respective front and rear end portions of said main body encompassing covering means;
- d. means for interconnecting said two separable terminal side edges such that said main body encompassing covering means is securedly held about the animal's body;
- e. front loop connecting means integrally connected to the front portions of said main body encompassing covering means for attaching to a collar like member normally secured around the animal's neck; and
- f. a pair of cross straps integrally connected to the rear portion of said main body encompassing covering means, each cross strap extending from an intermediate rear area of said body covering means across the other cross strap and integrally connected to an outer portion of said main covering means such that the crossing straps define a central tail opening and a leg opening on each side thereof.

3,895,629
MEDICAL INSTRUMENT RETAINER

Elizabeth M. Snyder, 1763 S. Heather Ln., Anaheim, Calif. 92802
Filed Oct. 15, 1974, Ser. No. 514,655
Int. Cl.² A61F *13/00;* **A61M** *25/02*
U.S. Cl. 128—171 **7 Claims**

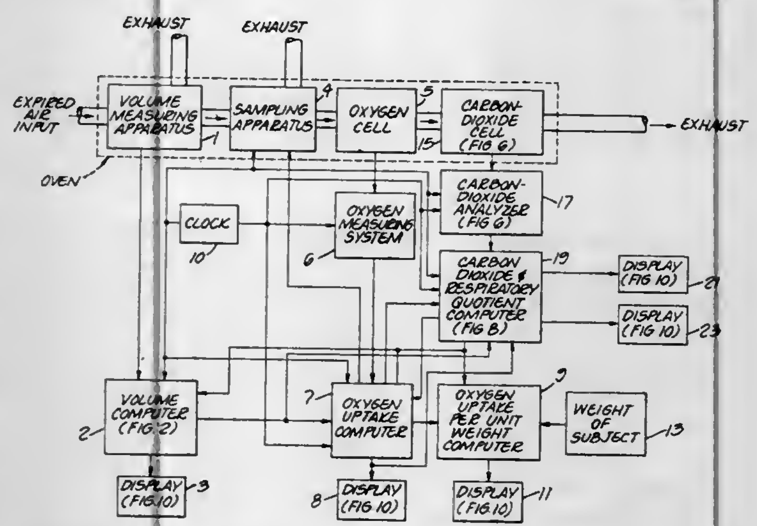
1. A medical instrument retainer comprising

- a first bifurcated panel having first and second mutually spaced branches defining a first open-ended slot therebetween,
- a second bifurcated panel having third and fourth mutually spaced branches defining a second open-ended slot therebetween,
- each said slot terminating in a bight inwardly of said panel,
- means on said branches for detachably connecting said first branch to said third branch and said second branch to said fourth branch in respective overlapping relation, said panels being oppositely oriented relative to each other along the longitudinal extent of the slots to define a gripping aperture between the bights and connected overlapping branches of said panels, whereby said retainer may be positioned with said gripping aperture circumscribing an instrument that extends from a body aperture without removing the instrument from the body aperture and without disconnecting the instrument from other apparatus to which it may be connected.



3,895,630
RESPIRATORY GAS ANALYZER INCLUDING A CARBON DIOXIDE AND RESPIRATORY QUOTIENT COMPUTER

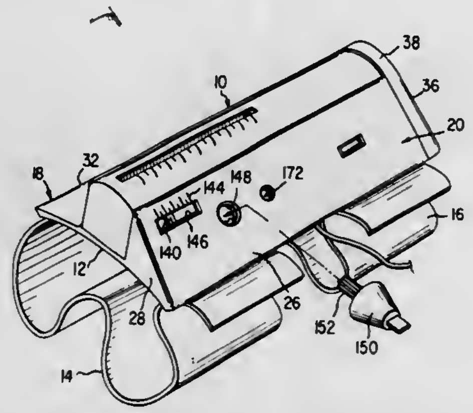
John A. Bachman, Woodland Hills, Calif., assignor to Del Mar Engineering Laboratories, Los Angeles, Calif.
Continuation-in-part of Ser. No. 366,696, June 4, 1973, abandoned. This application June 21, 1974, Ser. No. 481,517
Int. Cl. A61b *5/08*
U.S. Cl. 128—2.07 **13 Claims**



1. Apparatus for automatically periodically measuring the volume of air expired by a subject during each of a succession of given time intervals, and for measuring and computing the carbon dioxide production in the expired air for each of the time intervals, said apparatus including: metering means for receiving the expired air from the subject and for generating electrical output pulses having a repetition frequency representative of the volume of air expired by the subject during successive time intervals and under standard temperature conditions; volume computer means including multiplier circuit means coupled to said metering means for multiplying each pulse of the electrical output pulses therefrom by a predetermined number, and further including divider circuit means coupled to said multiplier circuit means for subsequently dividing the pulses from said multiplier circuit means by a predetermined number, so as to compute the volume of air expired by the subject during each of time intervals corrected to body temperature conditions and to produce electrical output pulses representative of the corrected volume; sampling means coupled to said metering means for extracting a sample of the expired air therefrom having a proportionate relationship to the total volume of air expired by the subject during each of the given time intervals; carbon dioxide measuring means coupled to said sampling means for measuring the concentration of carbon dioxide in each sample of the expired air and for producing output electrical pulses having a repetition frequency representative of the concentration of carbon dioxide in each such sample; and carbon dioxide computer means coupled to said carbon dioxide measuring means and to said volume computer means and including multiplying circuit means for multiplying the output pulses from the carbon dioxide measuring means with the output pulses from the volume computer means to produce electrical output pulses representative of the carbon dioxide production in the expired air of the subject for each given time interval.

3,895,631
LIQUID INFUSION UNIT

Richard G. Buckles, Menlo Park; Seymour Hoff; Sharon Kehr, both of San Jose, and Su Il Yum, Mountain View, all of Calif., assignors to ALZA Corporation, Palo Alto, Calif.
Filed Feb. 4, 1974, Ser. No. 439,137
Int. Cl. A61m *5/14*
U.S. Cl. 128—213 **27 Claims**



1. A liquid storing and dispensing assembly comprising:

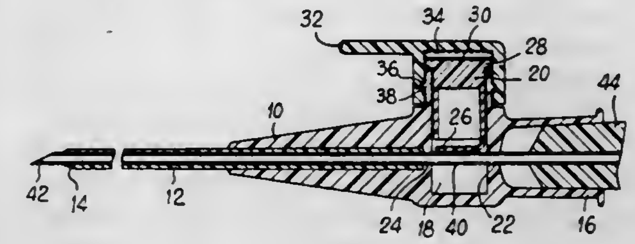
- a main housing;
- a liquid flow passage in said main housing having inlet and outlet means, said outlet means communicating exteriorly of said housing;
- flow control means in said housing between said inlet and outlet means for precisely controlling liquid flow through said passage;
- a cartridge removably engaged with said housing the exterior of said cartridge cooperating with the exterior of said main housing such that the assemblage has a contiguous exterior surface, said cartridge including a repository for a quantity of liquid to be dispensed; and
- said inlet means cooperating with said cartridge to establish communication between said repository and said passage when said cartridge in engaged with said housing.

3,895,632
TROCAR CATHETER

Leopold Plowiecki, Montmorency, France, assignor to Technological Supply S.A., Luxemburg
Filed Feb. 11, 1974, Ser. No. 441,494
Claims priority, application France, Mar. 6, 1973, 73.07873
Int. Cl.² A61M *5/00*
U.S. Cl. 128—214.4 **6 Claims**

1. An intravenous catheter and terminal connector therefor having a longitudinal axis, said connector having a chamber transversely disposed to the longitudinal axis, said chamber having a single inlet in one wall of the chamber and a single outlet in an opposite wall of the chamber, and an obturating plug rotatably disposed in said chamber to control the inlet and outlet, the improvement comprising:

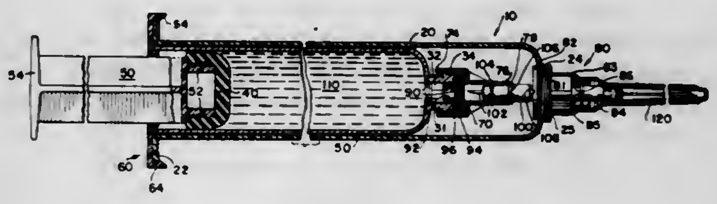
- a flexible extension integrally formed on a lower portion of said plug and being rotated therewith between operative and intermediate positions,
- said flexible extension being rotated with said plug to its intermediate position between the said one wall and the said opposite wall of the chamber whereby a liquid may flow through the chamber,



- said flexible extension abutting said one wall to cover the inlet when in its operative position to prevent a reverse flow of liquid through the inlet, said flexible extension being deflected away from said one wall by liquid passing through the inlet and by a member inserted through the inlet, and
- said inlet and outlet being in alignment with said longitudinal axis whereby the member may be inserted therethrough and protrude through the catheter.

3,895,633
LARGE CAPACITY SYRINGE

Elliot Bartner, South Piscataway, N.J.; Edward M. Curley, Silver Spring, Md.; Sheldon Kaplan, Potomac, Md., and Stanley J. Sarnoff, Bethesda, Md., assignors to Survival Technology, Inc., Bethesda, Md.
Filed Sept. 27, 1973, Ser. No. 401,272
Int. Cl. A61m *5/26, 5/32*
U.S. Cl. 128—218 DA **6 Claims**



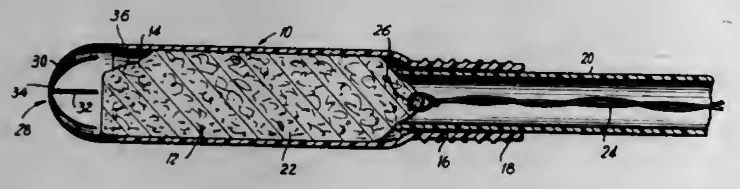
1. A syringe adapted to inject substantial amounts of medicament, said syringe comprising a cylindrical syringe barrel having a rear open end and a forward end provided with internal threads, a cylindrical cartridge body slidably carried within said barrel, said cartridge body having a rear open end and a necked portion at the forward end, a plunger slidably carried within the cartridge body, a stopper mounted in the necked end of the cartridge body to form a closed medicament chamber between said stopper and the plunger, retaining means on the rear end portion of the syringe barrel to retain the cartridge body within the barrel and the plunger within the cartridge body, the improvement comprising:

- a cannula mounting body member having a threaded section threadedly engaging the internal threads on the forward end of the syringe barrel so as to fixedly position said body member in the forward end of said barrel, a needle support integral with and extending rearwardly from the cannula mounting body member, a hollow needle affixed to the needle support with its free end spaced from the cartridge stopper, cooperating means on the necked portion of the cartridge and the needle support to provide sterility of the needle and to maintain relative position of the needle with respect to the cartridge stopper, a cannula hub mounting portion integral with and extending forwardly from the body member, said cannula hub mounting portion comprising an integral forwardly extending outer sleeve having internal threads thereon, an integral inner sleeve within said outer sleeve, a cannula having a hub with an annular peripheral flange thereon, the cannula hub fitting over the inner sleeve with the hub flange engaging the internal threads on the outer sleeve, a passage connecting the needle and the cannula, said inner sleeve forming a portion of the passage connecting the needle and the cannula, and a cannula sheath covering the cannula and snugly engaging the outer surface of the outer sleeve of the cannula hub mounting portion to form a sterile seal so as to maintain sterile integrity of the cannula.

3,895,634
TAMPON INSERTER

Leonard Berger, Ridgewood, and Robert A. Underhill, Ringwood, both of N.J., assignors to Rapid-American Corporation, New York, N.Y.

Filed Oct. 18, 1973, Ser. No. 407,711
Int. Cl. A61f *15/00*
U.S. Cl. 128—263 **21 Claims**

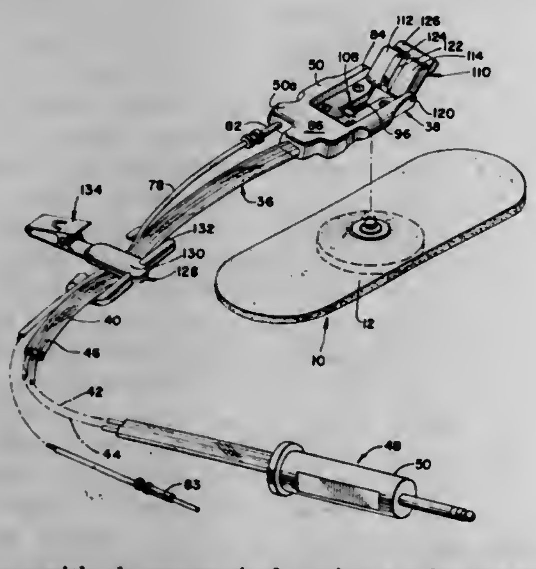


1. A tampon inserter comprising a barrel member adapted to contain a tampon and an ejection means in telescoping relation with said barrel member, said barrel member having a substantially cylindrical, hollow tubular body and a tapered front insertion end comprising a plurality of resilient substantially triangular segments having their bases integral with said tubular body and their sides and apexes converged toward each other to form said insertion end, said tubular body having a predetermined mean cross-sectional wall thickness sufficient to provide wall stability to said tubular body and said triangular segments having a predetermined mean cross-sectional wall thickness which is substantially less than that of said tubular body such that the flexibility of said segments is increased while the overall strength and stability of the major portion of said tubular body is maintained.

3,895,635
ELECTROSURGICAL GROUNDING CABLE ASSEMBLY

George Junior Justus, York Haven, Pa.; Lowell C. Miller, Lewisburg and Charles T. Patrick, Jr., Centerville both of Ohio, assignors to NDM Corporation, Dayton, Ohio

Filed June 20, 1973, Ser. No. 371,773
Int. Cl. A61n *1/04*
U.S. Cl. 128—303.13 **21 Claims**

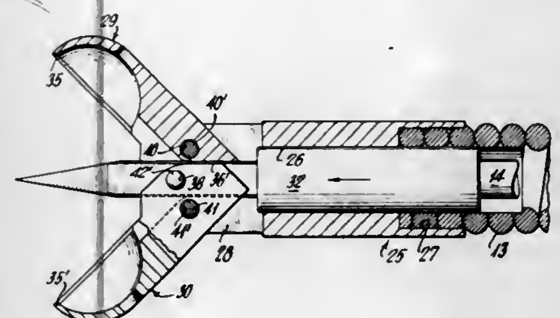


1. For use with electrosurgical equipment including (a) an electrosurgical generator for generating high frequency electric current, (b) an active electrode electrically connected to said generator and used to cut tissue and coagulate blood, and (c) an indifferent electrode for attaching to a patient an electrical ground means, a grounding assembly suitable for said electrosurgical equipment and comprising, in combination, a connector and a cable, said connector, in turn, comprising a body provided with a slot defining an open trackway along a face of said body for receiving, on one end of the trackway, a conductor electrically coupled to said indifferent electrode, and means at the opposite end of the trackway for terminating the trackway while still retaining said conductor on said trackway, an electrically conductive contact means, carried by said body, electrically coupled with said conductor on said trackway, while said conductor is in said trackway, and with one end of the cable, the opposite end of said cable being electrically coupled to ground, and locking means carried by said connector and positionable in said trackway to lock said conductor in electrical contact with said contact means.

3,895,636
FLEXIBLE FORCEPS

William Schmidt, 42-49 Colden St., Flushing, N.Y. 11355

Filed Sept. 24, 1973, Ser. No. 400,340
Int. Cl. A61b *17/32, 17/34, 17/28*
U.S. Cl. 128—305 **9 Claims**



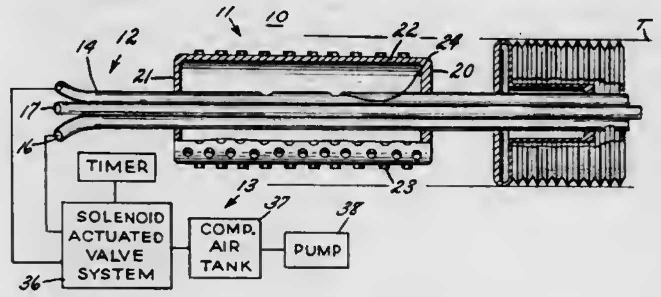
1. Flexible forceps comprising an elongated flexible tubular member having proximal and distal ends, a flexible element extending through and slidably disposed within said tubular member, the distal end of said tubular member including a jaw assembly comprising a sleeve secured to and extending from the end of said tubular member, a trocar assembly including a cylindrical member slidably disposed within said sleeve and secured to the distal end of said flexible element, a trocar carried by said cylindrical member and extending therefrom, a pair of hollow hemispherical jaws each having a rearwardly extending supporting member, means pivoting the supporting members to said sleeve for movement of the jaws between open and closed positions, means coupling said supporting members to said trocar assembly so that movement of said assembly in one direction will open said jaws and movement in the other direction will close said jaws and means on the proximal end for moving said flexible element relative to said tubular member.

3,895,637
SELF PROPELLED CONDUIT TRAVERSING DEVICE

Daniel S. J. Choy, 892 Riverbank Rd., Stamford, Conn. 06903

Filed Oct. 19, 1973, Ser. No. 408,138
Int. Cl. A61m *25/00;* **A61b** *19/00*
U.S. Cl. 128—348 **8 Claims**

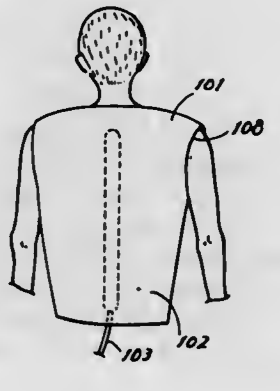
7. A self propelled conduit traversing device comprising a longitudinally extending flexible tubular member having first and second lumens, an inflatable transversely expandable anchor member connected to said tubular member and communicating with said first lumen, an inflatable advancing member connected to said tubular member and communicating with said second lumen and including a transversely expandable first section and a longitudinally expandable second section in free fluid communication with said first section and upon inflation of said advancing member, said second section expanding subsequent to the expansion of said first section, said advancing member including a front wall affixed to said tubular member and a rear wall having a central opening and an axially extending elastomeric tube having a rear end joined to the border of said opening and a front end secured to said tubular member proximate said front end wall, said elastomeric tube surrounding and being radially spaced from said tubular member, and actuating means for connecting said first and second lumens to a source of pressurized fluid and exhaust in a predetermined sequence to expand and deflate said anchor member, and advancing member in accordance with said sequence.



3,895,638
SPINAL COLUMN WARMING TREATMENT APPARATUS

Tadao Ito, 7-1.8 Bangochi, Hanazono-imachi, Kyoto, Japan

Filed Feb. 28, 1974, Ser. No. 446,613
Claims priority, application Japan, Mar. 4, 1973, 48-25449
Int. Cl. A61n *5/00*
U.S. Cl. 128—379 **14 Claims**

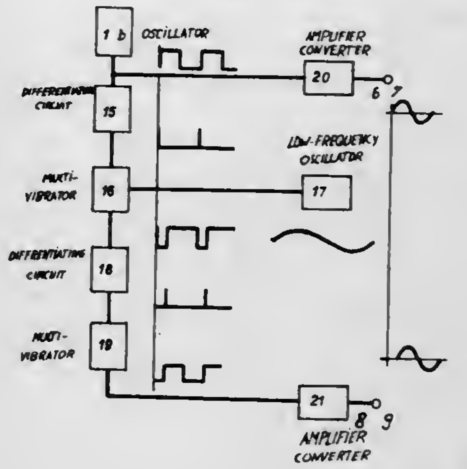


1. A spinal column warming treatment apparatus for selectively and locally warming a predetermined region opposing a spinal column in the back of a human body to a predetermined warming temperature in the range of 40° to 70°C, said predetermined region having a width of from to 3 to 7 cm and a length of from 30 to 90 cm; said apparatus comprising a warming means comprised of a fixing sheet, and a heater means affixed to said fixing sheet and distributed throughout an area on said fixing sheet corresponding to said predetermined region, said heater means further extending back and forth on said fixing sheet in the lengthwise direction thereof and being laid flat on said fixing sheet, said heater means comprising a heating wire, a signal wire, and a heat sensitive layer between said heating wire and said signal wire, means for retaining said warming means adjacent said predetermined region in the back of a human body, comprising an elastic sheet member, an elastic elongated protrusion formed in the region of said sheet member corresponding to said predetermined region in the back of a human body, and a cover covering said elastic sheet member and protrusion, said fixing sheet being affixed to said elastic sheet member underneath said cover at both sides of said heater wire with said heater wire being positioned on and aligned with said elastic elongated protrusion, means for automatically controlling the heating temperature of said heating wire comprising means for controlling the energization of said heating wire in response to the impedence through said heat sensitive layer between said heating layer and said signal wire, said heat sensitive layer having an impedence that changes as the function of the temperature of said warming means, and means for selectively setting said automatic control means for controlling the temperature of said warming means within said range of 40° to 70°C.

3,895,639
APPARATUS FOR PRODUCING AN INTERFERENCE SIGNAL AT A SELECTED LOCATION

Hans Rodler, Karntnerstrasse 161, A-8053 Graz, Austria

Continuation-in-part of Ser. No. 178,159, Sept. 7, 1971, abandoned. This application Sept. 20, 1973, Ser. No. 399,067
Int. Cl. A61n *1/36*
U.S. Cl. 128—422 **9 Claims**



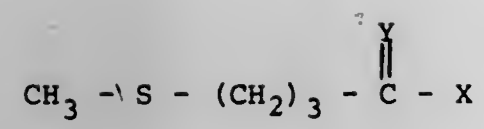
1. Apparatus for producing an interference signal at a selected location comprising, in combination, oscillator means for furnishing an oscillator output signal having a determined frequency and a reference phase; phase shift means connected to said oscillator means cyclically varying the phase of said oscillator output signal, thereby furnishing a phase-shifted oscillator output signal; first electrode means connected to said oscillator means for creating a first current having said determined frequency at said selected location in response to said oscillator output signal; and second electrode means connected to said phase shift means for creating a second current having said determined frequency and a phase varying cyclically with respect to the phase of said first current at said selected location in response to said phase-shifted oscillator output signal, whereby interference between said first and second currents creates said interference signal at said selected location.

3,895,640
COMPOSITIONS AND METHODS UTILIZING THIO DERIVATIVES AND PROCESSES FOR PRODUCING SUCH DERIVATIVES

Alan O. Pittet, Atlantic Highlands; John V. Pascale, Jackson, both of N.J.; Stuart Patton, State College, Pa., and Michael H. Brodnitz, Matawan, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 301,524, Oct. 27, 1972. This application Mar. 29, 1974, Ser. No. 455,986
Int. Cl.^{2} A24B *15/04*
U.S. Cl. 131—17 R **7 Claims**

1. A flavored tobacco or tobacco substitute product comprising tobacco or a tobacco substitute and a fruit flavor altering amount of at least one 4-(methylthio)-butane derivative having the formula



$CH_3 - S - (CH_2)_3 - \overset{\overset{Y}{\|}}{C} - X$

wherein X is hydrogen and Y is carbonyl oxygen; X is hydroxy and Y is two hydrogen atoms or a carbonyl oxygen; or X is lower alkoxy and Y is (a) carbonyl oxygen or (b) hydrogen and lower alkoxy, the alkoxy groups containing from one to three carbon atoms, the flavoring constituting approximately 0.01 ppm to about 200 ppm of the composition.

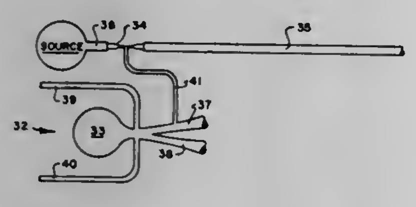
3,895,641
FLUID SYSTEM AND METHOD FOR CODING INFORMATION

Stephen C. Jacobsen, 839 E. South Temple, Salt Lake City, Utah 84122

Filed Aug. 28, 1968, Ser. No. 756,037

Int. Cl. F17d *3/02*

U.S. Cl. 137—1 **13 Claims**



9. A method for coding information which comprises the steps of selecting a plurality of diverse fluids to be non-miscible under the conditions of their use;

feeding said fluids into a small diameter data storage line such that one fluid serves as a data separation fluid to separate bits of data and a characteristic of at least one other of the said fluids is indicative of data bits;

removing the line such that additional fluids are not fed thereinto and maintaining the fluids fed into the line in their positions in which they are fed thereinto; and

thereafter detecting the relative positions of the fluids in the line as being indicative of information provided by the data bits.

3,895,642
METHOD AND APPARATUS FOR MIXING GASES

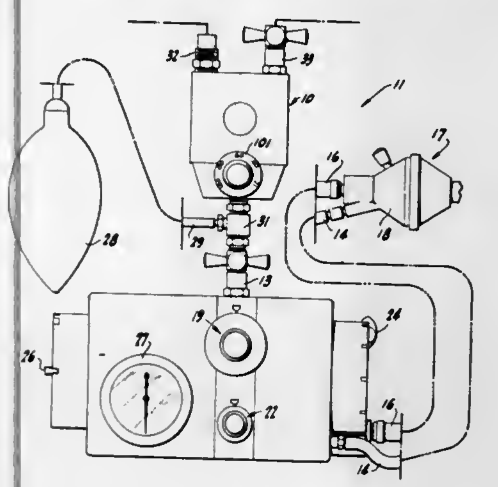
Forrest M. Bird, and Henry L. Pohndorf, both of Sandpoint, Idaho, assignors to Bird Corporation, Palm Springs, Calif., a part interest

Continuation of Ser. No. 316,849, Dec. 20, 1972, abandoned, which is a division of Ser. No. 54,934, July 15, 1970, Pat. No. 3,727,627. This application Jan. 21, 1974, Ser. No. 435,320

Int. Cl. G05d *11/03*

U.S. Cl. 137—7 **2 Claims**

1. A method for mixing gases from separate pressurized gas circuits in a gas mixing device having a differential gas mixing valve, the gas mixing valve having a pair of orifices opening through a mixing chamber, comprising the steps of controlling the gas flow in each circuit at a respective flow control location, sensing the gas pressure in each circuit at a respective zone downstream of each control location, each zone being in a path which leads without branching from said control location to said gas mixing valve, detecting an imbalance between the downstream pressures at said zones of the two circuits, increasing the gas flow rate through the control location having a lower downstream gas pressure while simultaneously decreasing the gas flow rate through the control location having the higher downstream gas pressure, directing the downstream gases in each circuit across a second flow control location in each of said circuits, sensing the gas pressure in each circuit at a second respective zone downstream of said second control location, each second zone being in a path which leads without branching from said second control location to said gas mixing valve, detecting an imbalance between the pressures downstream of said second control location, increasing the gas flow rate through the second control location having a lower downstream gas pressure while simultaneously decreasing the gas flow rate through the second control location having a higher downstream gas pressure to bring said last mentioned pressures into balance, directing the gas flows from the second zones downstream of the second control locations in respective paths leading across said orifices into the mixing chamber in said differential mixing valve, and reciprocally varying the flow areas of respective orifices to selectively vary the ratio of gas flow rates from the separate circuits which are mixed in the mixing chamber.



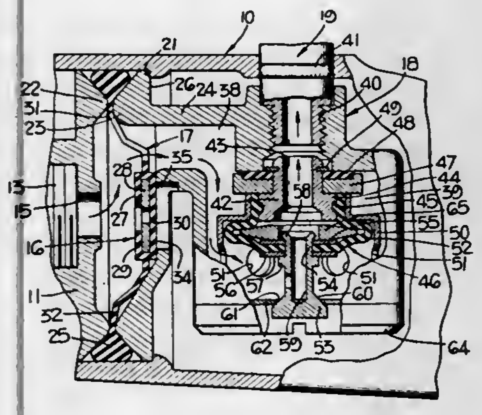
3,895,643
VALVE ASSEMBLY

Irving A. Ward, Hacienda Heights, Calif., assignor to Modern Faucet Mfg. Co., Los Angeles, Calif.

Division of Ser. No. 868,526, Oct. 22, 1969, Pat. No. 3,602,244. This application July 2, 1971, Ser. No. 159,493The portion of the term of this patent subsequent to Aug. 31, 1988, has been disclaimed.

Int. Cl. F03c *1/04;* **F16k** *31/14 B*

U.S. Cl. 137—119 **2 Claims**



1. A spout assembly comprising:

spout means having a passageway therethrough, said passageway having an inlet and an outlet,

partition means mounted in the inlet of said spout means, said partition means being adapted to be coupled to a fluid supply and having an opening therein communicating with the passageway in said spout means,

means defining a drain outlet, said drain outlet being disposed within said passageway and being in axial alignment with said opening in said partition means,

valve inlet means disposed within said passageway, said inlet being adapted to communicate with said opening in said partition means,

flexible anti-siphon valve means mounted within said spout means between said opening in said partition means and said drain outlet for normally closing said opening in said partition means when no fluid is supplied to said assembly, said anti-siphon valve means including a diaphragm normally biased to close said opening in said partition means and having a flexible webbing portion with openings therethrough for allowing said diaphragm to move away from said opening upon supply of fluid to said assembly, said supply of fluid to pass through said openings and said diaphragm to move against said drain outlet preventing fluid flow therethrough and directing said flow to said valve inlet means, said valve means including a rim and said flexible portion intercoupling said rim and said diaphragm, and

retaining means coupled with said rim for maintaining said valve means within said spout means.

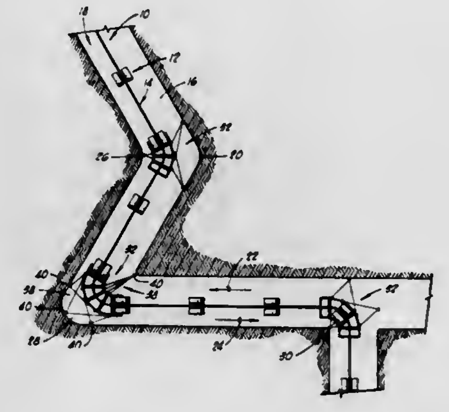
3,895,644
TURNING CONVEYOR FOR A FLEXIBLE HOSE SUPPORTING SYSTEM

Ronald W. Umphrey, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed May 15, 1974, Ser. No. 470,068

Int. Cl. B65g *53/30*

U.S. Cl. 137—344 **8 Claims**



1. In a supporting system for flexible hose which includes at least one flexible hose supported by a plurality of carts linkingly spaced along the length of the hose and pivotally interconnected, and wherein the hose is required to be moved through a determined angle of turn, the improvement comprising:

- a conveyor assembly comprising:
  - a frame;
  - a plurality of vertical support rollers connected to the frame, said rollers forming a planar surface of support for the slack regulating system;
- a plurality of outer horizontal guide rollers connected to the frame at spaced-apart points along an outer guide curve; a plurality of inner horizontal guide rollers connected to the frame at spaced-apart points along an inner guide curve, the inner guide curve being curvilinearly parallel to the outer guide curve; and,
- anchor means securing said conveyor assembly in a stationary position.

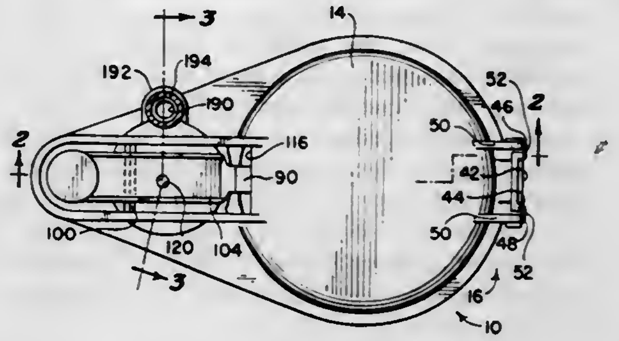
3,895,645
FLUID LEVEL CONTROL VALVE

Dwight N. Johnson, Anaheim, Calif., assignor to JH Industries, Inc., Santa Ana, Calif.

Filed Mar. 9, 1973, Ser. No. 339,548

Int. Cl. F16k *31/34*

U.S. Cl. 137—403 **29 Claims**



1. Apparatus for controlling the level of liquid in a tank having a liquid inlet opening in its floor, said apparatus comprising in combination a housing including a body and a cover having interfacing generally uniplanar surfaces defining a valve chamber and a diaphragm chamber therebetween, said body including a valve seat in said valve chamber generally in the plane of said interfacing surfaces, an integral projection of said body adapted to be received in the liquid inlet opening in the floor of the tank for mounting the housing in a normally submerged position, a liquid inlet passage defined at least in part by said projection and leading to said valve seat, liquid outlet passage means in said housing leading from said valve seat to the exterior of said housing, an air passage defined at least in part by said projection and leading to said diaphragm chamber, a diaphragm in said diaphragm chamber having its periphery sealingly engaged between said interfacing surfaces, a flexible valve member in said valve chamber having its periphery held between said interfacing surfaces, a pressure sensing passage in said cover leading from the exterior of said housing to said diaphragm chamber, said diaphragm being interposed in said diaphragm chamber between said air passage and said pressure sensing passage, and operating means for moving said valve member relative to said valve seat in response to movement of said diaphragm.

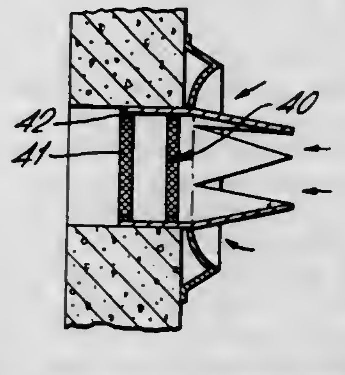
3,895,646
SELF-REGULATING VANE TYPE VALVE FOR CONTROLLING FLUID FLOW

Manuel G. Howat, 24 Douglas St., Victoria, British Columbia, Canada

Filed Nov. 30, 1973, Ser. No. 420,552

Int. Cl. F16k *17/38*

U.S. Cl. 137—468 **5 Claims**



1. A fluid flow control system comprising:

a. means defining a fluid flow passage through a wall and having an inlet and outlet respectively on opposite sides of the wall;

b. a baffle circumscribing said inlet of the passage and having a concave inner surface extending outwardly in a direction away from the wall from immediately adjacent the inlet for directing fluid flow inwardly in a direction toward the axis of the inlet;

c. a fluid flow control device mounted in said inlet consisting of a generally conically shaped segmental valve comprising a plurality of resiliently flexible triangular shaped segmental vanes secured along one edge thereof to said fluid flow passage defining means in contiguous relation around the periphery of the inlet adjacent the juncture of the baffle means and the inlet, said vanes each projecting outwardly from the wall and tapering to provide free terminal ends normally spaced apart from one another allowing fluid flow through said passage; and

d. means retaining edges of segments in continuous rolling contact during flexing of the segments wherein the free ends thereof move in directions toward and away from one another, said baffle directing a portion of fluid flow toward the valve against outer faces of vanes and thereby varying the valve opening in response to changes in velocity of the fluid flow.

3,895,647
VALVE

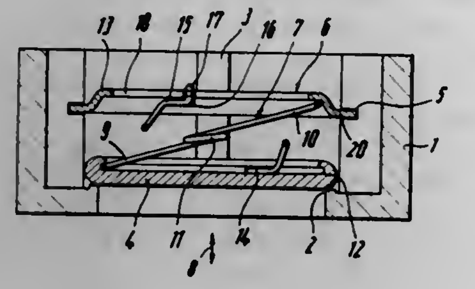
Helmut Willenbrock, Achim, and Friedrich Schittek, Bremen, both of Germany, assignors to Gustav F. Gerdts KG, Bremen, Germany

Filed Jan. 21, 1974, Ser. No. 435,379

Claims priority, application Germany, Jan. 23, 1973, 2303053

Int. Cl.² F16K *15/00, 17/04*

U.S. Cl. 137—529 **11 Claims**



1. A valve controlled by the fluid pressure of medium passing through comprising:
  a housing having an input opening defining a valve seat;
  a locking member movably disposed over the opening of the housing and positioned on the valve seat;
  an abutment member disposed in said housing substantially parallel to and axially spaced from said locking member; a plurality of springs in the form of substantially V-shaped bars having shanks, each spring having one end pivotably clamped to said abutment member, and its other end pivotably clamped to said locking member at a position substantially 180° with respect to said one end, said shanks of each of said springs defining a plane in which said each of said springs extends substantially laterally across the complete width of said members, said springs being spaced apart from the axis of said valve, said springs being axially tensioned, so that when fluid pressure reaches a predetermined level the locking member axially lifts off said valve seat in a direction towards said abutment member, causing said springs to approach a parallel orientation with respect to said members, thereby reducing the axial vector force component of the springs in the direction of the stroke movement, causing a positive snap-open valve action.

10. A valve controlled by the pressure of medium passing through comprising:
  a housing having an input opening defining a valve seat and having an inside wall formed with a plurality of axial ribs, each of said ribs having a radial groove;
  a locking member disposed over the opening of the housing and positioned on the valve seat;
  an abutment disposed in said housing and retained by said radial grooves;
  a plurality of spring bars each angularly arranged in said housing and each having one end pivotably clamped to said abutment and having its other end pivotably clamped to said locking member, said spring bars being axially tensioned and each defining a plane inclined with respect to the said locking member, and said abutment;
  at least one of said spring bars including means defining a bent hook portion adapted for engagement with one side of said ribs to maintain said abutment against turning, whereby when pressure of the medium reaches a predetermined level the locking member axially lifts off said valve seat in a direction towards said abutment causing said spring bars to approach a parallel orientation with respect to said locking member and said abutment and reducing the axial vector force component of the spring bars in the direction of the stroke movement causing a positive snap-open valve action.

3,895,648
VALVES

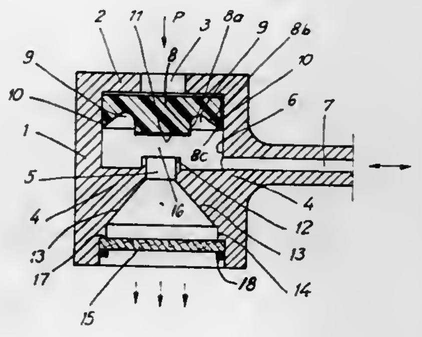
Kurt Stoll, Lenzhalde, Esslingen a.N., and Gerhard Hihn, Schurwaldstr. 7, Berkheim, both of Germany

Filed Jan. 9, 1974, Ser. No. 431,854

Claims priority, application Germany, Jan. 17, 1973, 7301612

Int. Cl.² F16K *15/02*

U.S. Cl. 137—550 **1 Claim**



1. A quick-acting air relief valve which incorporates a valve casing with a cylindrical chamber having an inlet opening for connection to a pneumatic source, a vent opening for connection to atmosphere, and a transverse bore which ends in the chamber for connection to an air-operated device, and which also contains a valve member which is displaceable inside the chamber and has in its underside, which is remote from the inlet opening, an annular groove of curved cross-section which opens conically outwards, providing the valve member with an annular lip which rests elastically against the inner wall surface of the cylinder, and, at the underside of the valve member, a valve sealing member, the casing having, projecting into the chamber around the vent opening, a collar-shaped connection which is engageable by the sealing member and serves as a valve seat surrounding the vent opening, a funnel-shaped, conical, widened section adjacent to and communicating with the vent opening and a filter of a porous, sound-absorbing material in the zone of the largest cross-section of the widened section.

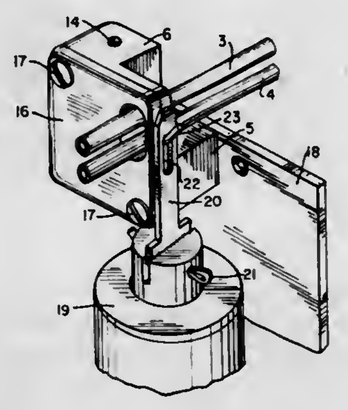
3,895,649
ELECTRIC HOSECOCK

Samuel B. Ellis, Lindenhurst, N.Y., assignor to Delta Scientific Corporation, Lindenhurst, N.Y.

Filed June 19, 1974, Ser. No. 480,959

Int. Cl. F16k *7/06*

U.S. Cl. 137—595 **6 Claims**



1. A hosecock for controlling the flow of a fluid in a flexible tube, comprising:
  a. a body;
  b. a jaw supported in said body;
  c. arm means for defining a channel for receiving the tube, said arm means being spaced from said jaw and adapted to be displaced by an electromechanical operator, said channel being defined between said jaw and said arm means;
  d. a plug rotatably mounted in said body adjacent said arm means;
  e. spring means for urging said arm means toward said jaw to pinch said tube, said spring means being secured to said arm means and plug and disposed around and secured to said plug and being put in torsion by angular displacement of said plug; and
  f. means for setting said plug in a desired angular position.

3,895,650
SHUTTER-TYPE FLUID DISTRIBUTOR

Jean Cadiou, Paris, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France

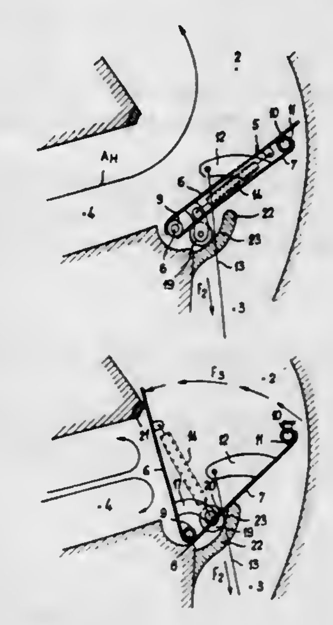
Filed Mar. 12, 1974, Ser. No. 450,446

Claims priority, application France, Mar. 21, 1973, 73.10107

Int. Cl. F74f *13/04*

U.S. Cl. 137—612 **9 Claims**

1. A fluid distributor comprising:
  a housing having therein three ducts angularly spaced from each other;
  a shutter comprising two substantially parallel flap-valves pivotally mounted about a common axis in said housing; said two flap-valves being selectively movable from a first position blocking a first of said ducts to a second position blocking a second of said ducts; and
  means operatively connected with said shutter for causing said two flap-valves, when in one of said first and second positions, to block the respective one of said first and second ducts and to simultaneously block said third duct.



3,895,651
COMPOUND ASEPTIC VALVE

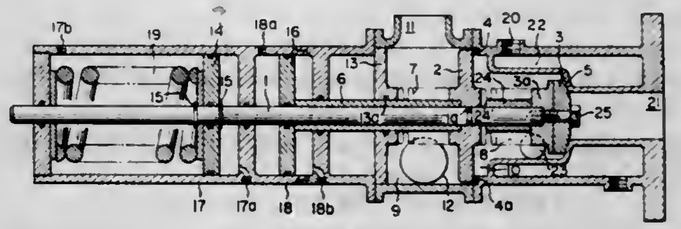
Katsuto Okada; Akichika Ishibashi, and Hirotaka Watanabe, all of Tokyo, Japan, assignors to Morinaga Milk Industry Co., Ltd., Tokyo, Japan

Filed May 16, 1974, Ser. No. 470,618

Claims priority, application Japan, July 12, 1973, 48-83037

Int. Cl. F16k *1/00*

U.S. Cl. 137—630.22 **5 Claims**



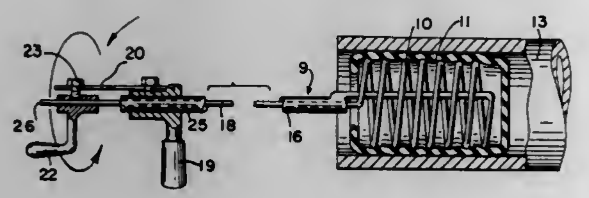
1. A compound aseptic valve comprising:
  a. a valve housing having two ports spaced from each other and defining a valve chamber between the ports;
  b. a first valve seat and a second valve seat spaced from each other in the valve chamber between the ports;
  c. an elongated valve shaft mounted in the valve housing and extending into the valve chamber;
  d. a sleeve slidably mounted on the valve shaft;
  e. first actuating means for axially moving the valve shaft;
  f. second actuating means for axially moving the sleeve on the shaft;
  g. first and second valve members mounted on the valve shaft,
    1. the first valve member being arranged sealingly to engage the first valve seat in response to movement of the valve shaft in one direction by the first actuating means and thereby blocking a path in the valve chamber between the ports, and to be disengaged from the first valve seat in response to movement of the valve shaft in a direction opposite to the one direction by the first actuating means, and thereby opening the path between the ports, and
    2. the second valve member being arranged sealingly to engage the second valve seat in response to movement of the sleeve in one direction by the second actuating means and thereby blocking the path between said

ports, and to be disengaged from the second valve seat in response to the movement of the valve shaft in the direction opposite to the one direction by the first actuating means; and

h. first and second bellows respectively enclosing a portion of the assembly of the shaft and the sleeve,
  1. the first bellows being interposed between the first and second valve members in the axial direction of the shaft, and
  2. the second bellows being interposed between the valve housing and the second valve member in the axial direction of the shaft and sleeve assembly.

3,895,652
DIAMETRICALLY EXPANSIBLE COIL SPRING CONDUIT PLUG

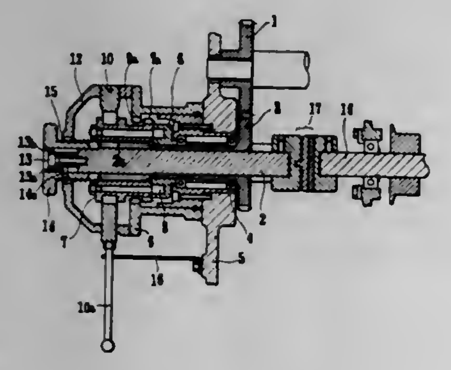
Roger G. Zach, 4144 S. Maple, Berwyn, Ill. 60402
Filed Jan. 11, 1974, Ser. No. 432,567
Int. Cl. B65d *59/02*
U.S. Cl. 138—89 **4 Claims**

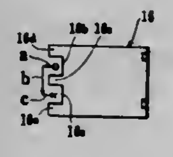


1. A conduit plug comprising:
diametrically expansible coil spring means;
means for sealingly enclosing said coil spring means and binding said coil spring means firmly against the walls of said conduit; and
means for securing said coil spring in diametrically expanded position such that said coil spring means plugs the conduit by binding against said means for sealingly enclosing said coil spring means and binding said coil spring means.

3,895,653
CARD REVERTING AND RACING APPARATUS IN A DOBBY MACHINE

Akira Koyama, Nagoya, Japan, assignor to Yamada Dobby Co., Ltd., Nagoya, Japan
Filed July 9, 1974, Ser. No. 486,937
Claims priority, application Japan, July 21, 1973, 48-81318
Int. Cl.² D03D *51/00*
U.S. Cl. 139—1 E **13 Claims**

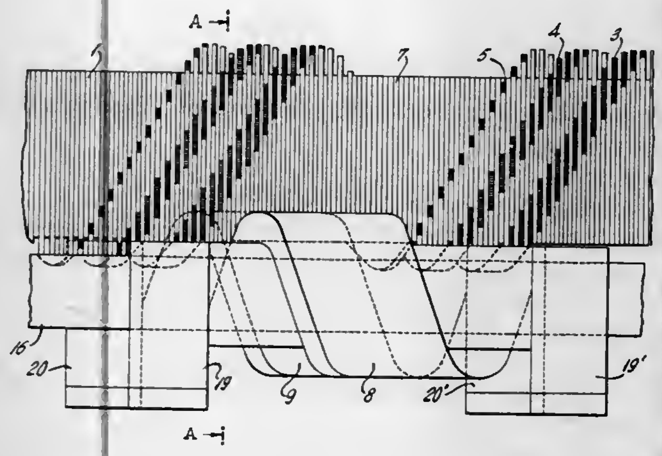




1. A card reverting and racing apparatus as utilized in connection with a card cylinder on a dobby machine, the combination comprising a shaft operatively connected to said card cylinder, a clutch sleeve rotatably mounted on said shaft, means defining a plurality of axial holes in said clutch sleeve, a drive shaft means operatively connected to said clutch sleeve for rotating the latter, a slide rotatably connected to said shaft and longitudinally slidable on said shaft, pins on said slide, lever means operably connected to said slide and operable to longitudinally slide said slide on said shaft upon pivotal movement of said lever means, said slide having a first longitudinal position in which said pins are inserted in some of said holes in said clutch sleeve, said slide having a second longitudinal position in which said pins are withdrawn from said holes and said slide is rotatable relative to said clutch sleeve a limited amount to rotational displace said limited amount so that the pins may be subsequently inserted in different holes in said clutch sleeve, said slide having a third longitudinal position wherein said pins are free and clear of said clutch sleeve so that the slide and shaft are freely rotatable, said lever means being operable to slide said slide to said first, second, and third longitudinal positions.

3,895,654
BEARING MEANS FOR AUTOMATIC SHED LOOM

Günter Welzel, Keplerstr. 50, Karl-Marx-Stadt, Germany, and Dair Ajmaletdinov, Lesnaja ul. 4, Klimovsk, U.S.S.R.
Filed Aug. 22, 1974, Ser. No. 499,694
Claims priority, application U.S.S.R., Nov. 21, 1973, 1967644
Int. Cl. D03d *41/00*
U.S. Cl. 139—12 **4 Claims**



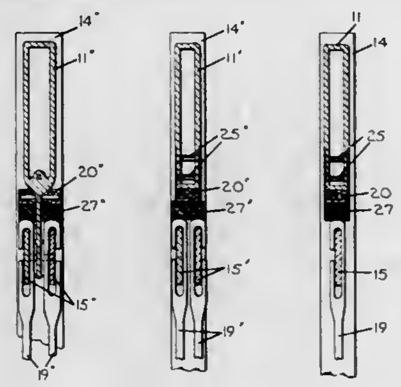
1. In a multipe shuttle automatic shed loom, a rotatable weaving roll, the weaving roll comprising a shaft and mounted on the shaft a plurality of driving hooks having projections for driving the shuttles, the driving hooks being so arranged on the shaft that a helical recess is defined thereby, and bearing means for supporting the weaving roll at a location between the ends of the roll, the bearing means comprising backing rolls arranged on opposite sides of and equidistantly from an axial plane of the shaft of the weaving roll, each of the backing rolls being provided with a helical projection which engages in the helical recess defined by the driving hooks, the helical projections being of the same diameter as the helical recess.

3,895,655
HARNESS FRAME FOR LOOMS

Thomas J. Sujdak, Webster, and Douglas W. Anderson, Westboro, both of Mass. 01581, assignors to Rockwell International Corporation, Pittsburgh, Pa.
Filed Apr. 12, 1974, Ser. No. 460,328
Int. Cl. D03c *9/06*
U.S. Cl. 139—92 **2 Claims**

1. An improved harness frame for looms comprising:

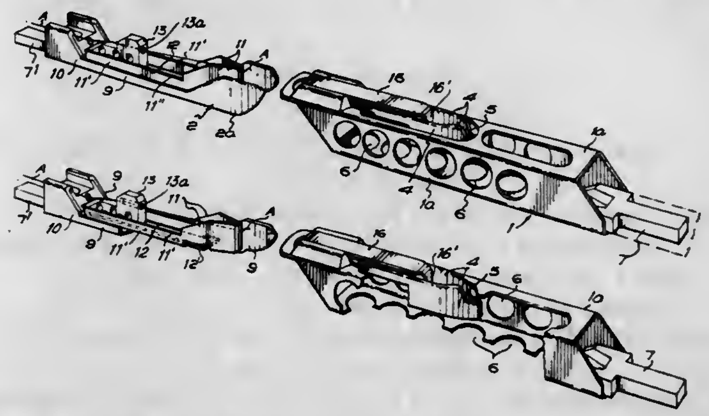
a. an upper and lower rail member;
b. stile members interconnecting the ends of said upper and lower rail members;
c. heddle bars supported by said stile members and disposed parallel with and adjacent the opposed sides of each said rail member for supporting a multiplicity of heddles therebetween; and



d. elongated rigid members extending parallel with an fixed to the opposed sides of said upper and lower rail members having a resilient member of conforming configuration attached to one surface of said rigid members for preventing oscillating movement of the heddles on said heddle bars during movement of the harness frame.

3,895,656
WEFT TRANSFER MECHANISM FOR LOOMS FOR WEAVING

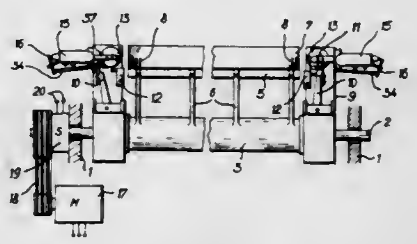
Peter Stockport Allsopp, Halifax, N.Y., assignor to Wilson and Longbottom Limited, Barnsley, England
Filed Mar. 7, 1974, Ser. No. 449,037
Int. Cl. D03d *47/20*
U.S. Cl. 139—122 N **7 Claims**

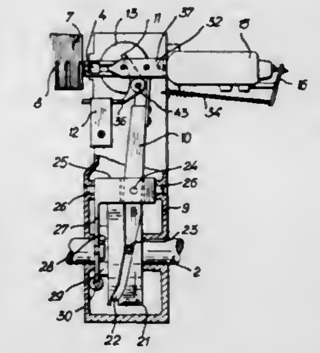


1. In a weft transfer mechanism for a loom for weaving wherein opposed rapier inserter and receiver heads are mounted for relative movement toward and from each other for moving a weft yarn through a shed in the loom, means for periodically driving the inserter head into and through the shed into coacting web transfer relation with the receiver head, a pair of spring jaws on the inserter head biased to closed condition for gripping the weft in the initial position of said inserter head, a pair of spring jaws on the receiver head biased to closed condition, cooperating formations on said spring jaws whereby during said driving movement said inserter head jaws with the weft gripped therebetween enter, separate and pass through said receiver head jaws which then reclose to grip the weft behind the inserter head jaws, means for returning the inserter head to its initial position, and cooperating formations on said spring jaws whereby on said return movement said inserter head jaws pass externally over said receiver head jaws to open said inserter head jaws to release the weft therefrom while the receiver head jaws retain their grip on the weft, means whereby said inserter head jaws are prevented from gripping the weft during return to said initial position, and means effective upon return of said inserter head jaws to said initial position for enabling said inserter head jaws to close on the weft.

3,895,657
DEVICE FOR CONTROLLING GRIPPER SHUTTLE IN LOOMS

Jan Bilek, Liberec, Czechoslovakia, assignor to Elitex, Zavody textilniho strojirenstvi generalni reditelstvi, Liberec, Czechoslovakia
Filed Apr. 16, 1974, Ser. No. 461,412
Claims priority, application Czechoslovakia, Apr. 18, 1973, 2774-73
Int. Cl. D03d *47/24, 49/54, 51/40*
U.S. Cl. 139—125 **3 Claims**





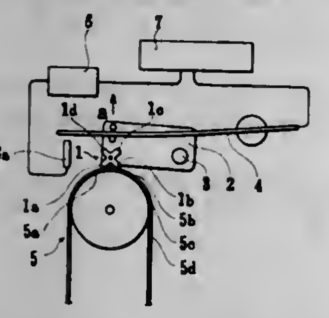
1. A device for controlling gripper shuttles in a loom having a rotary shuttle box at one side of the loom, the shuttle box having a shuttle-receiving guideway disposed parallel to the warp shed, comprising a control lever cooperating with the shuttle box, means mounting the control lever for swinging in both the perpendicular and longitudinal plane relative to the guideway of the shuttle box, two adjustable stops of unequal length extending parallel to the axis of rotation of the shuttle box and spaced in a direction transverse to said axis of rotation of the shuttle box, the stops being located at such distances from the shuttle box as to permit the shuttle when in the shuttle box to pass by them, a two-arm frictional damper permanently mounted upon the free end of the control lever, one arm of the damper bing provided with a surface for receiving and adjusting the position longitudinally of the shuttle receiving guideway a gripper shuttle which has arrived in shuttle box, a mechanism for stopping the loom upon the incorrect arrival of a shuttle in the shuttle box, the other arm of the damper forming a feeler for said loom stopping mechanism.

3,895,658
PAPER CARD READING APPARATUS IN A DOBBY MACHINE

Akira Koyama, Nagoya, Japan, assignor to Yamada Dobby Co., Ltd., Japan
Filed Jan. 2, 1974, Ser. No. 430,037
Claims priority, application Japan, Dec. 29, 1972, 48-2485
Int. Cl.² D03C *1/22, 15/04*
U.S. Cl. 139—331 **6 Claims**

1. A reading apparatus in a loom Dobby for reading weaving instructions to be transmitted to a loom comprising, means for continuously driving an instruction record thereon in operation, said instruction record having thereon holes representative of and corresponding to weaving instructions to be transmitted to a loom, a toothed reading wheel having peripheral teeth insertable into said holes for reading of said instruction record, a reading lever pivotally mounting said reading wheel and elastically biased for engaging the teeth of said reading wheel with the driven instruction record for frictional drive of

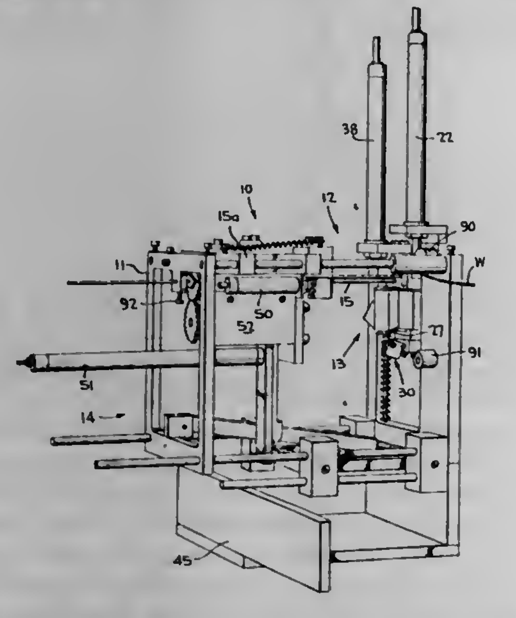
said reading wheel therefrom and insertion of said teeth into said holes when correspondence of a tooth and a hole occurs and retraction of the teeth of said wheel from said holes occurs as said instruction record is rotationally driven, and instruction transmitting means including said reading lever for transmitting the reading of said holes of said instruction record.



3,895,659

WIRE HANDLING AND MANIPULATING APPARATUS

John F. Fidiam, 13133 Madonna Lane, Fairfax, Va. 22030
Filed May 30, 1973, Ser. No. 365,284
Int. Cl. B21f *15/00*
U.S. Cl. 140—93R 47 Claims



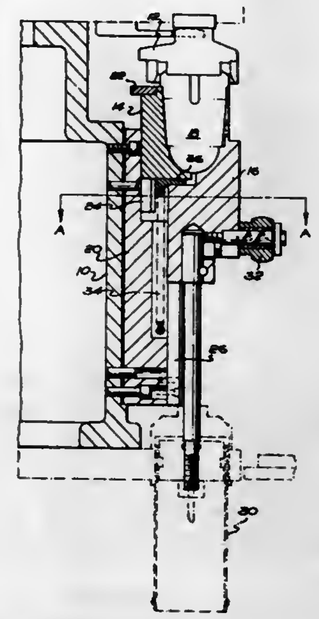
1. A wire wrapping apparatus for interconnecting electrical terminals comprising a rotary wire wrapping tool, means for feeding wire of an indeterminate length to said tool, means for catching and loading said wire on said tool including gripper means separate from but adjacent said tool stripping and cutting means for forming the first and second connector ends of said wire to be wrapped on the terminals, said gripper means positively holding said wire at least during stripping, means for relatively advancing and retracting at least said tool with respect to said terminal, said advancement being along the Z axis of the tool and toward said terminal, means for rotating said tool to perform the wrapping operation, and locator means for relatively traversing said tool with respect to said terminals to a new X, Y location, whereby a single tool with minimal frontal area is operative to position and wrap both ends at the proper Z level on said terminals to form a complete wired interconnection.

3,895,660

HANDLING OF THIN WALLED CONTAINERS

John A. French, and John C. Turner, both of St. Albans, England, assignors to Schweppes Limited, St. Albans, England
Filed Nov. 1, 1972, Ser. No. 302,961
Claims priority, application United Kingdom, Nov. 5, 1971, 51446/71; Nov. 5, 1971, 51447/71; Nov. 5, 1971, 51448/71
Int. Cl. B65b *43/60*
U.S. Cl. 141—172 11 Claims

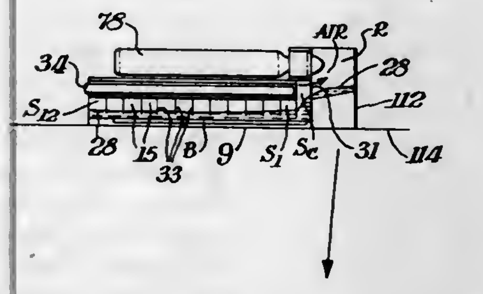
1. Handling apparatus for handling thin walled containers including a handling unit comprising a plurality of individual container holders each adapted to hold a container in upright manner therein, means maintaining the holders in spaced relationship and defining an endless path, means for moving the holders in said endless path, each of said of being split vertically to define two parts which are relatively displaceable vertically from a holder closed position to a holder open position in which one of said holder parts becomes an upper holder part and the other of said parts becomes a lower holder part so that a container can be moved horizontally into the upper holder part by a container moving means, and means for relatively displacing vertically the holder parts of each holder from the holder closed position to the holder open position and for returning the parts to the holder closed position.



3,895,661

CUVETTE APPARATUS FOR TESTING A NUMBER OF REACTANTS

Julius Praglin, East Lyme; James E. McKie, Jr., Ledyard; Alan C. Curtiss, Old Lyme, and David K. Longhenry, East Lyme, all of Conn., assignors to Pfizer Inc., New York, N.Y.
Division of Ser. No. 281,946, Aug. 18, 1972, Pat. No. 3,832,532. This application July 12, 1973, Ser. No. 378,594
Int. Cl. B65b *3/06*
U.S. Cl. 141—241 19 Claims

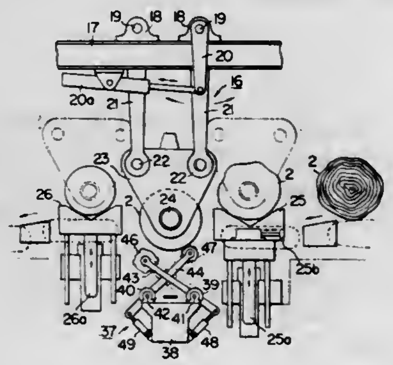


1. A compartmented container for dividing and testing the reaction of a number of reactants upon a solution comprising a longitudinal array of compartments having a longitudinal axis, each of said compartments having a filling and a testing lobe, partitions between each of said compartments said filling and testing lobes in each of said compartments being substantially aligned with each other, a testing lobe rest disposed parellel to said longitudinal axis and for holding said array with said testing lobes disposed in a testing lower position below said filling lobes to cause said solution to flow into said testing lobes from said filling lobes and be there held, a filling lobe rest disposed parallel to said longitudinal axis and for holding said filling lobes in a filling lower position below said testing lobes to cause said solution to be distributed within said filling lobes, a reservoir contiguous to said filling lobes for providing said solution to said filling lobes, connecting ports in said partitions between said reservoir and each of said filling lobes to allow quantities of said solution to become equally distributed between said filling lobes from said reservoir when said filling lobes are disposed in said filling lower position, said filling lobes in said filling lower position each having a volume which contains quantities of said solution which are smaller than the volume of each of said testing lobes in said lower position, said filling testing lobes being connected to one each of said testing lobes whereby rolling said container about its axis with said filling lobes in the filling lower position to the position in which said testing lobes are in the testing lower position pours said equally distributed quantities of solution into said testing lobes, and apertures in a wall of each of said compartments above said testing lobes for inserting said reactants into said testing lobes.

3,895,662

APPARATUS FOR PRESHAPING RAW LOGS

Nagaoka Noriyuki, Nagoya, and Niimi Haruo, Handa, both of Japan, assignors to Kabushiki Kaisha Taihei Seisakusho, Japan
Division of Ser. No. 271,201, July 12, 1972, Pat. No. 3,842,874. This application May 20, 1974, Ser. No. 471,712
Claims priority, application Japan, July 13, 1971, 46-51480; July 15, 1971, 46-52549
Int. Cl. B27l *5/02*
U.S. Cl. 144—209 A 3 Claims



1. Apparatus for preshaping a raw log for economical rotary cutting thereof comprising: a centering device for intercepting said log fed thereto and carrying out centering to determine at least one center axis thereof; a log handling device for grasping, carrying, and rotating the log thus centered; a detecting device for detecting that point in each of the intersections between the outer surface of the log and a plurality of longitudinal sections passing through the center axis of the log which is nearest the center axis; and a shaping device for cutting away the outer surface part of the log along element lines each alined in parallel to the center axis and passing through a respective one of said detected points, while carrying out profiling based on the detected points, thereby to preshape the log into a columnar shape of substantially the same planar shape in any cross section thereof.

3,895,663

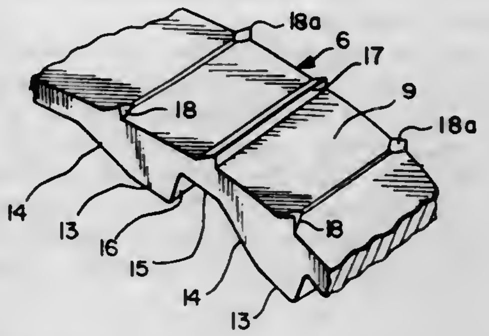
LOCKING DEVICE FOR THREADED FASTENERS

John D. Bashline; Charles A. Dravis, both of Flushing, Ohio, and Richard D. Frye, Erie, Mich., assignors to Donald R. Hunsche, Cincinnati, Ohio
Filed Mar. 15, 1973, Ser. No. 341,398
Int. Cl.² F16B *39/28*
U.S. Cl. 151—34 3 Claims

1. In a locking device for use with a threaded fastener, such as a fastener of the bolt-and-nut type, the combination of two locking members,

one of said locking members being an annular washer member having a toothed face and a cam face, and the other of said locking members having a cam face which is substantially identical to and capable of mating with said cam face of said washer member,

the toothed face of said washer member being in the form of a flat annular surface interrupted by a plurality of teeth which are spaced apart throughout the length of said surface and which provide points of support which are distributed over both the annular length and the radial width of said annular surface and which support the washer member against forces directed axially of the fastener as the fastener is tightened;



said cam face of said washer member comprising a closed circular series of groups of surfaces each including, in order of sequence, a substantially flat crown surface, a slow taper cam surface, a substantially flat low surface, and a fast taper cam surface, said fast taper cam surface of each group being inclined oppositely with respect to said slow taper cam surface of that group and joining said crown surface of the next successive group,

said low surfaces lying in a first common plane parallel to said flat annular surface of said toothed face, said crown surfaces lying in a second common plane parallel to said flat annular surface, and said first common plane being substantially nearer said flat annular surface than is said second common plane, whereby said low surfaces are located on relatively thinner portions of the washer member and said crown surfaces are located on relatively thicker portions of the washer member, the surfaces of said groups of surfaces on said washer member being so oriented that, when the washer member is disposed with its cam face directed toward the nut of a bolt-and-nut type fastener, and the order of said cam surfaces is considered in the direction of tightening rotation of the nut, said crown surface will be first and said fast taper cam surface last in each group,

said cam faces being complementary so that, when said washer member and said other locking member are placed together cam face-to-cam face, said crown surfaces of said washer member can be mated respectively with said low surfaces of said other locking member and said fast taper cam surfaces of said washer member will respectively engage said fast taper cam surfaces of said other locking member,

said slow taper cam surfaces being inclined at an angle which is greater than the thread rise of the fastener, and said fast taper cam surfaces being inclined away from the plane of the locking member at an angle of 93°–135°;

said teeth of said toothed face including a first plurality of teeth each in the form of a raised edge of generally triangular transverse cross section, and a second plurality of teeth,

said first plurality of teeth being spaced apart circumferentially of the washer member and each extending generally radially thereacross, each tooth of said first plurality of teeth being located on a different one of said thinner portions of the washer member,

- the teeth of said second plurality of teeth being mutually independent and located on said thicker portions of the washer member,
- the teeth of said first and second plurality of teeth all being of substantially the same height and said height being equal to a substantial fraction of the thickness of said thinner portions of the washer member;

tightening of the fastener when said washer member and said other locking member are mated cam face-to-cam face and initially clamped by the fastener causing said fast taper cam surfaces of one of said members to coact with said first taper cam surfaces of the other of said members, such coaction of said fast taper cam surfaces forcing said washer member and said other locking member axially apart and thereby causing said teeth of said washer member to be inserted into the member adjacent thereto in the fastener assembly,

- the ones of said teeth carried by said thicker portions of said washer member being inserted more deeply than those carried by said thinner portions, and said thinner portions of said washer member thereby being slightly distorted, under the axial clamping forces resulting from tightening of the fastener, with such distortion opposing return of said washer member toward its fully mated position relative to said other locking member.

3,895,664
VEHICLE ANTI-SKID DEVICE

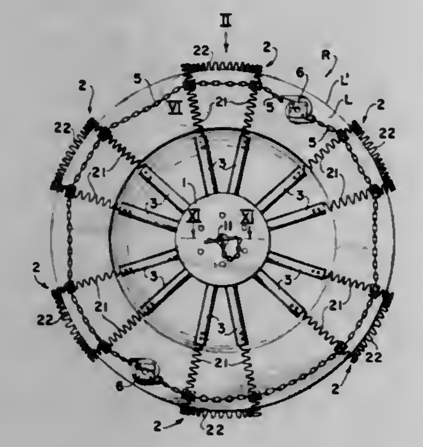
Fritz Muller, Gruneggstr. 38b, 6000 Lucerne, Switzerland

Filed Jan. 28, 1974, Ser. No. 437,497

Claims priority, application Switzerland, Feb. 23, 1973, 2624/73

Int. Cl. B60c *27/02*

U.S. Cl. 152—225 **10 Claims**



1. An anti-skid device for the wheels of vehicles, comprising a support which can be attached to a part of the vehicle defined by either the wheel, the hub or the axle of the vehicle, a plurality of spring straps, each of said straps having a pair of spring arms and a pair of ends attached with said support, said plurality of spring straps extending outwardly from said support to provide a substantially star-like configuration of said straps at said support, each of said straps having a portion which is flexed only over the tread of the tire, means for pivotably connecting each pair of the spring arms with the support, said pivotably connecting means comprising a respective pivot shaft for each spring strap, each pivot shaft extending transversely with respect to the axis of the wheel, a lengthwise adjustable tensioning chain serving as a lateral connection of the spring arms, at least one tensioning lock means for the lengthwise adjustment of the tensioning chain, wherein in the mounted condition of the anti-skid device the spring straps arranged between the wheel and the support are pressed against the wheel and against the support by tensioning the tensioning chain.

3,895,665
REINFORCEMENT FOR RUBBER TIRES

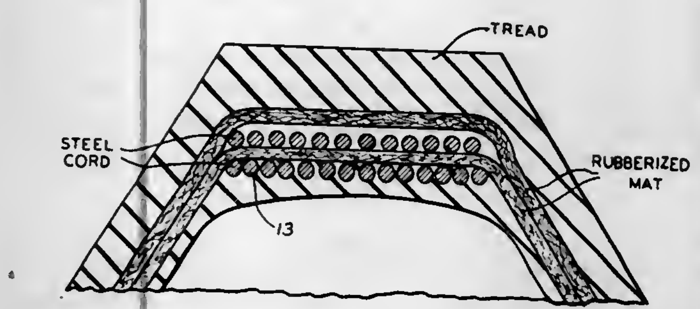
Wilhelm Heling, Bensheim-Auerbach, and Rudolf Ammann, Weinheim, both of Germany, assignors to Firma Carl Freudenberg, Weinheim, Germany

Filed Dec. 21, 1972, Ser. No. 317,337

Claims priority, application Germany, Dec. 24, 1971, 2164667

Int. Cl. B60c *9/16, 9/18*

U.S. Cl. 152—357 **8 Claims**



1. A tire comprising a thread and a carcass portion, said carcass portion reinforced by a non-woven mat, said mat comprising randomly disposed linearly deformed metal fibers entangled with one another in the form of a cohesive mass, said metal fibers being in the form of staple fibers having a staple length up to 100 mm. and a thickness of 0.05 to 0.3 mm, said mat having pores between said metal fibers through the thickness of said mat, said pores containing rubber.

3,895,666
RADIAL PNEUMATIC TIRE

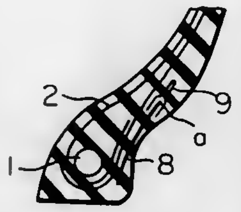
Teruo Inoue, Yao, Japan, assignor to The Toyo Rubber Industry Co., Ltd., Osaka, Japan

Filed Dec. 26, 1973, Ser. No. 427,615

Claims priority, application Japan, Dec. 26, 1972, 48-2466; Dec. 26, 1972, 48-2467

Int. Cl. B60c *15/06, 9/02*

U.S. Cl. 152—362 R **9 Claims**



1. In a pneumatic tire of the radial type having at least one ply of carcass cords extending from annular beads at both ends radially inward of the tire in a nearly radial direction, the improvement wherein: said carcass cords comprise an organic fiber, and wherein a reinforcing ply of steel cords is disposed in the bead area and a lower sidewall area adjacent said bead area and radially outwardly of said carcass cord plies, a terminal edge of said reinforcing ply being embedded with and wrapped by a covering ply of a textile fabric coated with an elastomeric compound, and wherein said reinforcing ply is disposed at an angle ranging from 45° to 75° with respect to the radial direction of said tire and said covering ply is disposed at an angle ranging from 30° to 70° to the radial direction.

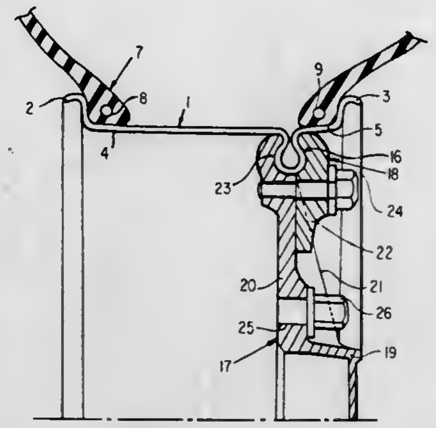
3,895,667
PNEUMATIC TIRE AND WHEEL RIM ASSEMBLY

William E. Mitchell, Coventry, England, assignor to Dunlop Holdings Limited, England

Division of Ser. No. 125,513, March 18, 1971, Pat. No. 3,708,847. This application Oct. 6, 1972, Ser. No. 295,542

Int. Cl. B60b *21/02, 21/06, 23/08*

U.S. Cl. 152—378 R **13 Claims**



1. A pneumatic tire and wheel rim assembly comprising a sheet metal wheel rim having circumferentially extending said flanges and a base portion therebetween, the base portion having a circumferentially extending channel portion projecting radially inwardly therefrom said channel being loop shaped with the edges of the loop spaced slightly apart of the juncture of the loop with the base.

3,895,668
PNEUMATIC WHEEL

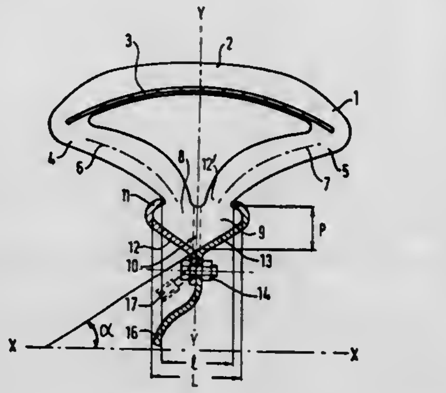
Giorgio Tangorra, Milan, Italy, assignor to Industrie Pirelli, S.p.A., Milan, Italy

Filed Dec. 3, 1973, Ser. No. 421,059

Claims priority, application Italy, Dec. 20, 1972, 33204/72; Netherlands, Sept. 26, 1973, 13262; Yugoslavia, Oct. 1, 1973, 2574/73

Int. Cl. B60c *15/02, 17/00, 5/00*

U.S. Cl. 152—379 **14 Claims**



1. A pneumatic wheel for motor vehicles comprising:
- a pneumatic tire with a tread, an annular reinforcing structure, two sidewalls having a convexity in the meridian plane of their section midline directed toward the inside of the tire and so constructed that as a result of the inflation air they are subjected to compression and to bending and
- a rim connection zone being radially inner with respect to said sidewalls, said rim having a single seat for encasing said connection zone, said seat having the shape of a circumferential channel with an opening directed in a radially outer direction with respect to the axis of rotation of the pneumatic wheel, the width of said opening being smaller than the maximum width of said channel,
- said connection zone having a cross-sectional profile of a form equal to that of the profile of said channel, the profile of said connection zone being enclosed by the profile of said channel, and the cross section of said connection zone being no smaller than the cross section of said channel; the cross section of said tire having a shape approximately that of an isosceles triangle whose base is represented by the chord subtending the annular reinforcing structure, the sides being represented by the chords subtending the respective section midlines of the sidewalls which are wholly internal to the sides of said triangle, the vertex comprised between said sides lying on the tire midline in said connection zone between the tire and the rim.

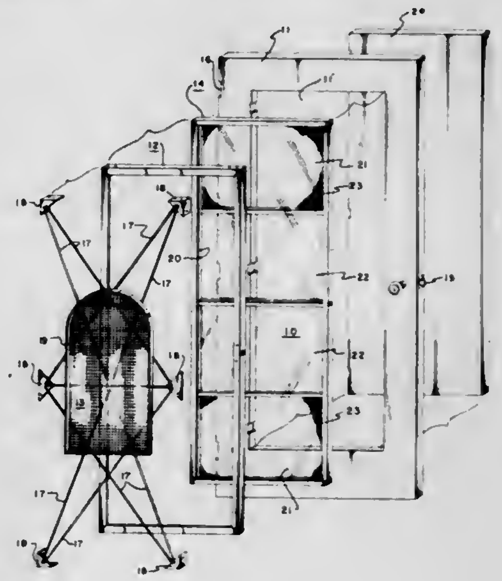
3,895,669
SECURITY DOOR

G. Geert G. Heeling, 1350 Addison Ave., East Twin Falls, Idaho 83301

Filed Apr. 30, 1973, Ser. No. 355,637

Int. Cl.^{2} E06B *7/28, 9/01*

U.S. Cl. 160—92 **5 Claims**



1. A security door, comprising:
- a frame having a central cavity;
- a hingedly mounted panel being mounted in said cavity;
- a window-panel assembly mounted in said cavity by means of a sash and including a plurality of suitably mullioned lights;
- a grill frame mounted over said window-panel assembly sash adjacent the perimeter of said cavity, said grill frame including a lip;
- a grill including a lattice of rods disposed rectilinearly, transversely and diagonally across said cavity over said window-panel assembly; and
- a plurality of gussets joining the intersects of said rods which occur about the geometrical perimeter of said lattice, said gussets being provided with means for fastening said lattice on said grill frame.

3,895,670
SPACE DIVIDER

Emmett R. Bales, and Clarence F. Estes, Jr., both of North Manchester, Ind., assignors to Laminite Plastics Mfg. Corporation, Morristown, Tenn.

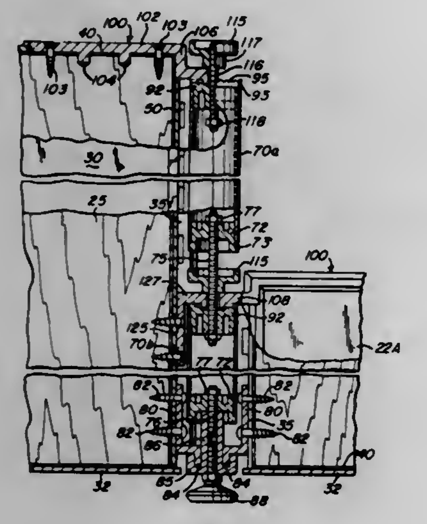
Continuation of Ser. No. 214,917, Jan. 3, 1972, abandoned. This application Sept. 10, 1973, Ser. No. 395,926

Int. Cl. A47g *5/00*

U.S. Cl. 160—135 **2 Claims**

1. A free-standing space divider in which a pair of panels are joined at a vertical post assembly and are adapted to be set at a plurality of predetermined angular relations with respect to each other so that the panels may be self-supporting without

the need of stabilizing feet or the like, comprising a first rectangular panel and a second rectangular panel, a vertical tubular center post between said panels, each of said panels having an upper hinge and a lower hinge attached at one vertical edge thereof, said post having an open upper end and an open lower end, an upper plug tightly fitted in and closing said post upper end and having an upper exposed radial surface, means on said surface defining a plurality of angularly arranged, radially-extending teeth-like projections, each of said upper hinges having transversely extending portions adapted to be positioned in overlying relation to said plug at the upper surface thereof, the lower surfaces of each of said upper hinges being formed with corresponding teeth-like projections which are proportioned for interfitting engagement with selected ones of said plug projections, retainer means threaded on said plug and having a lower surface which is proportioned in overlying relation to said upper hinges and movable into clamping arrangement with said upper hinges to assure engagement between the interfitting said projections to define a desired predetermined angular relation with respect to said panels and said post, a second plug fitted in and closing said post lower end, means associated with said second plug defining an annular recess in underlying relation to said post, and each of said lower hinges having axially extending portions adapted to be received in said recess providing pivotal support of said panels at the lower ends thereof about said post.



3,895,671
METHOD OF MANUFACTURING A THIN SHEET OF BERYLLIUM OR AN ALLOY THEREOF

Kunio Suzuki, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Nov. 13, 1973, Ser. No. 415,417

Claims priority, application Japan, Nov. 15, 1972, 47-114561

Int. Cl.² B22D *23/00*

U.S. Cl. 164—46 **13 Claims**

1. A method for manufacturing a thin sheet of metal selected from a group consisting of beryllium and beryllium alloy which comprises the steps of fabricating a substrate of a predetermined shape made of material selected from a group consisting of copper and magnesium, depositing the thin sheet of said metal on said substrate, and removing the thin sheet from the substrate by dissolving the latter in nitric acid.

9. A method for manufacturing a thin sheet of metal selected from the group consisting of beryllium and beryllium alloy which comprises the steps of fabricating a substrate of quartz glass into a prescribed form, depositing a thin sheet of the metal on the substrate, and heating the combination to separate the thin sheet from the substrate due to different thermal expansion coefficients between the metal and the quartz glass.

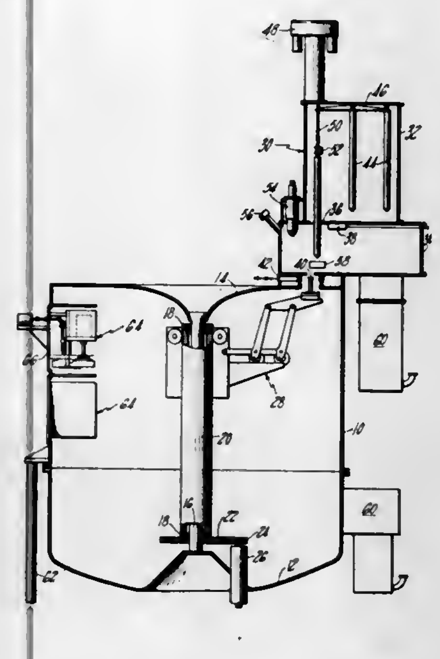
3,895,672
INTEGRATED FURNACE METHOD AND APPARATUS FOR THE CONTINUOUS PRODUCTION OF INDIVIDUAL CASTINGS

Robert E. King, Jr., West Willington, and Bruce E. Terkelsen, Cheshire, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Dec. 26, 1973, Ser. No. 427,980

Int. Cl.² B22D *15/00, 27/16*

U.S. Cl. 164—60 **16 Claims**



9. The method of producing castings continuously in a furnace system having a controllable atmosphere including the steps of:

providing a controlled atmosphere in the furnace;
admitting a supply of casting plates into the furnace through an atmospheric interlock;
admitting a supply of molds into the furnace through an atmospheric interlock;
cooling the casting plates;
preheating the molds;
combining individual preheated molds with individual cooled casting plates to form individual mold assemblies; admitting a source of metal alloy into a melting and pouring chamber in the furnace;
melting the metal alloy;
collecting the melted alloy in a crucible;
pouring the melted alloy into a mold assembly;
inserting the filled mold assembly into a solidification cell in the furnace;
soaking the filled mold assembly within the solidification cell;
cooling the filled mold assembly until the metal alloy is frozen; and
discharging the solidified casting from the furnace through an atmospheric interlock.

3,895,673
GAS COVER FOR CASTING MACHINE

Charles Christian Gerding; Egil Aukrust, and Robert L. Fazio, all of Pittsburgh, Pa., assignors to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.

Filed July 31, 1974, Ser. No. 493,288

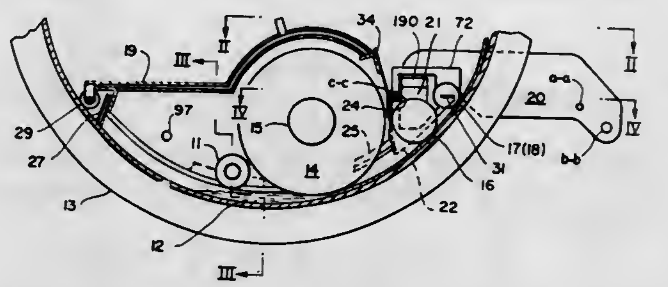
Int. Cl.² B22D *27/00, 11/06*

U.S. Cl. 164—259 **16 Claims**

1. A gas cover assembly in combination with a strip casting device, said strip casting device including a rotatable concave lower casting member, a rotatable roll having a drive shaft for causing cast strip material to remain in contact with said rotatable concave lower casting member upon strip formation,

and feed means for feeding liquid material onto said rotatable concave lower casting member; said gas cover assembly comprising:

a. a gas cover compartment enclosure housing positioned over at least a portion of said feed means and located so as to be in substantially sealed relationship with said rotatable concave lower casting member, said drive shaft of the rotatable roll, and said feed means, said gas cover enclosure housing in rollable contact with and supported by a portion of said rotatable concave lower casting member and in pivotal contact with and supported by the drive shaft of said rotatable roll; and



b. gas feed means for feeding a protective gas into said gas cover compartment.

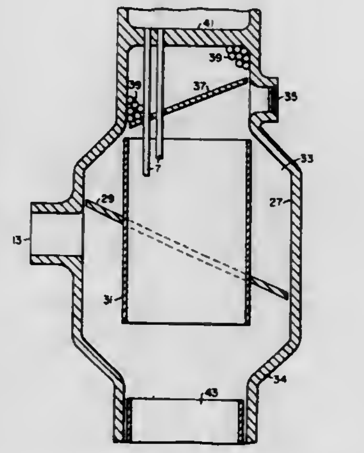
3,895,674
INLET FLOW DISTRIBUTOR FOR A HEAT EXCHANGER

William G. Harris, Tampa, Fla., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Feb. 24, 1972, Ser. No. 229,000

Int. Cl. F28f *7/00*

U.S. Cl. 165—134 **3 Claims**



1. A heat exchanger having a shell portion, a plurality of tubes disposed lengthwise within said shell, to form a tube bundle, said shell having a head portion adjacent one end thereof, a fluid inlet nozzle adjacent said one end, a portion of the shell containing said inlet nozzle having a greater diameter than the remainder of the shell and being eccentrically disposed with respect to the remainder of the sehll, the inlet nozzle being so disposed in the greater diameter portion to maximize the distance between the inlet nozzle and the tubes, and flow directing means disposed in the flow path between said nozzle and said tubes, said flow directing means comprises a plurality of flat plates disposed at an oblique angle with respect to the axis of the inlet nozzle and with respect to the axis of the tube bundle, the flat plates being so disposed as to generally diverge as the distance from the inlet nozzle increases, each of said plates being coopertively associated with a generally circular plate through which the tubes pass, each circular plate having a portion thereof cut away to direct fluid flowing from said inlet nozzle to a different portion of the tube bundle and lengthwise along the outside of the tubes, thereby minimizing the flow resistance of the fluid while so directing the flow.

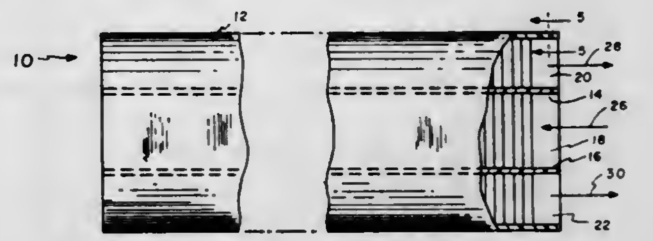
3,895,675
BREATHING GAS HEAT EXCHANGER

Charles R. Rein, and Charles B. Jones, Jr., both of Panama City, Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 15, 1973, Ser. No. 388,704

Int. Cl. F28f *1/42;* **F28d** *1/09*

U.S. Cl. 165—164 **4 Claims**



1. An intermittent flow heat exchanger for use in a breathing system wherein gas to be breathed is to be heated to higher temperatures by exchange of heat from gas that has been breathed, and wherein said gases are each moved intermittently so as to have flow periods and non-flowing periods, said exchanger comprising:

an elongated duct having walls formed of rigid, thermally insulating material, said duct having a substantially uniform cross section from end-to-end;
septum means, disposed in said duct, for dividing space within said duct into a plurality of passages extending lengthwise of said duct, said septum means comprising a thin panel formed of rigid, thermally insulating material free of relatively heat conductive material lying in a plane extending parallel to said directions of flow;
a plurality of elongated, thermally conductive metal wires extending through said septum means at right angles thereto, and transversely across said passages said metal wires being received in pre-formed holes extending through said panel, and effectively obturating said holes; said panel together with the portions of said metal wires that are covered thereby being characterized as having low thermal capacity whereby thermal energy applied to said metal wires in a first passage during one of said flow periods for said gas that has been breathed is conducted, substantially without capacitive delay, to said gas to be breathed in a second of said passages.

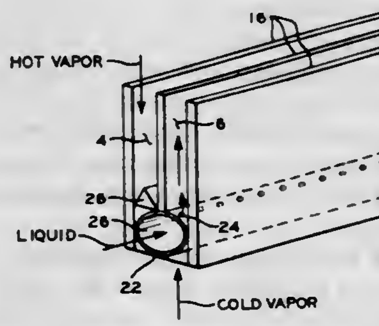
3,895,676
HEAT EXCHANGER DISTRIBUTOR

Richard K. Young, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 209,071, Dec. 17, 1971, abandoned. This application Nov. 12, 1973, Ser. No. 415,136

Int. Cl. F28f *3/14*

U.S. Cl. 165—167 **7 Claims**



1. A heat exchanger-distributor, comprising:

at least first, second and third spaced-apart plates forming at least first and second passages extending in a common substantially vertical direction;

first means adjacent a first end of said passages for passing a first fluid through the first passage in a first direction; second means adjacent a second end of said passages for passing a second fluid through the second passage in a second direction, said second direction being opposed to said first direction; and

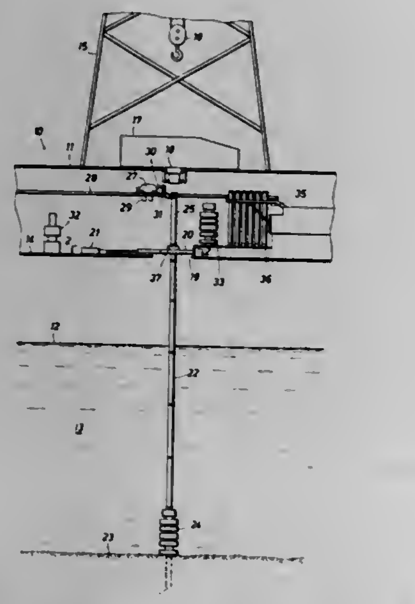
third means, adjacent said second end of said passages and disposed between said first and second means, for passing a third fluid through the second fluid passage and distributing said third fluid into the second fluid in the second fluid passage for forming a resultant mixture and passing the mixture in the second fluid passage into heat exchange relationship with the first fluid in the first fluid passage, said third means comprising a conduit, having an outside diameter of 1.1 to 2.0 times an average spacing between three plates forming one first and one second fluid passage, positioned in said first fluid passage and extending into said second fluid passage with said conduit having a plurality of fluid exit openings formed along its length and opening into said second fluid passage.

3,895,677

RISER PIPE STACKING METHOD

Donald G. Bokenkamp, Houston, Tex., assignor to Dolphin International, Inc., Houston, Tex.

Filed Jan. 18, 1974, Ser. No. 434,651
Int. Cl.² E21B *19/14, 19/16, 7/12*
U.S. Cl. 166—.5 **4 Claims**



1. In an offshore drilling system on location in a body of water, a method for manipulating riser pipe sections between a stored condition of individual sections in a storage area in a drilling rig and an operational condition of sections coupled to one another to define a riser string where said riser string extends downwardly from the drilling rig toward the floor under the water, said method comprising the steps of

coupling the draw works of a drilling rig to the riser string and lifting the riser string through an opening in a riser storage floor until at least the upper end of said riser string is below the rotary table on the rig floor and at least one riser section is above the riser storage floor,

releasably supporting the riser string at said opening in said riser storage floor,

releasably coupling a horizontally movable transfer means to the upper end of a riser section just below the rotary table, disconnecting the draw works from the riser string and disconnecting such riser pipe section from the riser string at a location above said opening,

raising such uncoupled riser pipe section on the horizontal transfer means to clear the end of the supported riser string and transferring such uncoupled riser pipe section in a horizontal direction while in a vertical condition to a storage area on the same level,

at such storage area, lowering such uncoupled riser pipe section with respect to the horizontal transfer means into a storage position on a pipe rack, and

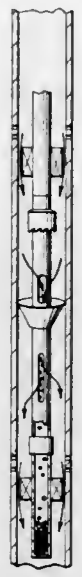
securing such uncoupled riser pipe section to said pipe rack.

3,895,678

SEALER BALL CATCHER AND METHOD OF USE THEREOF

Charles L. Wright, Ratliff City, and Billy C. Williams, Graham, both of Okla., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed July 8, 1974, Ser. No. 486,288
Int. Cl.² E21B *33/124, 43/26, 43/27*
U.S. Cl. 166—284 **11 Claims**



1. Oil well servicing apparatus for diverting perforation sealer balls into a collection area, said apparatus comprising; upper mandrel means having a bore passage therethrough and flow port means through the wall thereof;

lower tubular mandrel means connected to the lower end of said upper mandrel means and having flow port means through the wall thereof;

perforated tubular liner means located concentrically in said upper and lower mandrel means with the upper end of said liner means being open and communicating with said upper mandrel flow port means, and the perforations in said liner means communicating with said lower mandrel port means; and,

annular seal means on said apparatus, located below said upper port means, and adapted to provide an annular seal between said apparatus and the oil well casing in which it is located, said seal means further adapted to channel sealer balls into said upper port means.

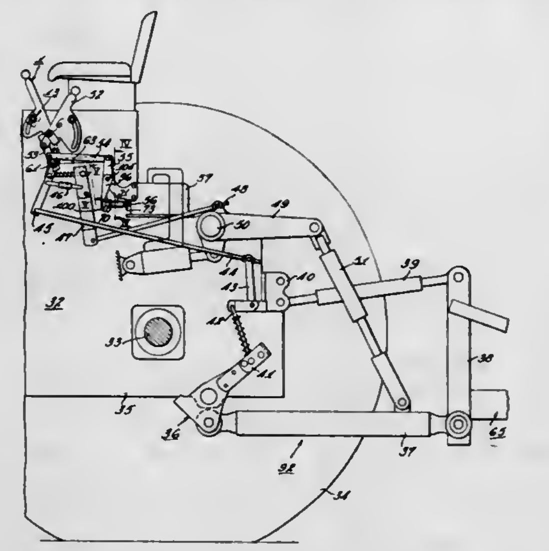
3,895,679

FRICTION BLOCK FOR LEVER

Robert C. Haupt, Milwaukee, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Division of Ser. No. 320,293, Jan. 2, 1973, Pat. No. 3,789,694. This application Oct. 26, 1973, Ser. No. 410,186
Int. Cl. A01b *63/112*
U.S. Cl. 172—9 **10 Claims**

1. A draft control system on a draft vehicle for controlling the height of an implement comprising, a draft vehicle, a draft control system on said draft vehicle including, a pivotal lever on said vehicle for positioning the height of the implement, support means on said vehicle pivotally supporting said lever and defining a pivotal axis, a friction control on said pivotal lever providing a friction lock in a first direction and a friction lock release in the second direction including, a friction block radially spaced from said axis and pivotally mounted on said support means, friction means on said friction block engaging said lever, resilient means on said support means and connected to said friction block biasing said friction means to an engaging position to retard movement of said lever in one direction and permit release of said friction means on said lever to permit said lever to pivot freely in the other direction.

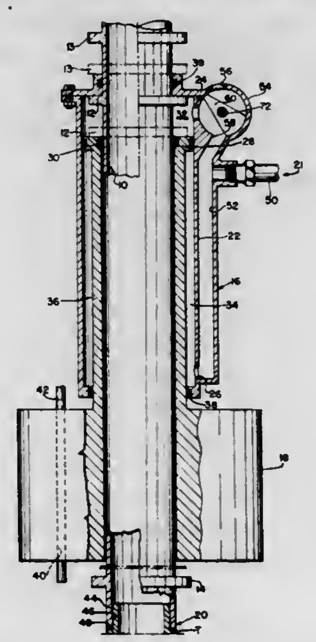


3,895,680

FLUID ACTUATED HAMMER

Allen B. Cook, 2121 W. 38th Ave., Vancouver, B. C., Canada

Continuation-in-part of Ser. No. 212,957, Dec. 28, 1971, abandoned. This application Apr. 19, 1973, Ser. No. 352,556
Int. Cl. H01b *5/00*
U.S. Cl. 173—78 **13 Claims**



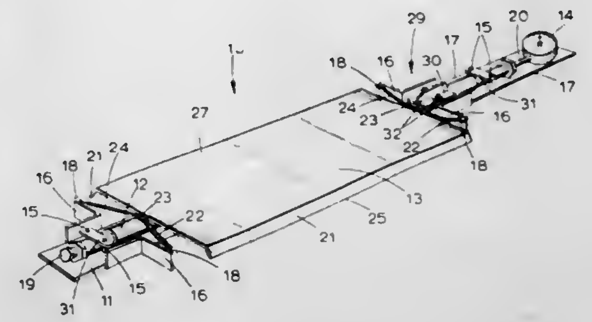
1. Apparatus for driving a casing and permitting the casing to be cleaned out while being driven, comprising a hollow central member having a straight, large axial opening adapted for receiving rods or the like, a driving mechanism surrounding said central member, said driving mechanism including a cylinder axially slidably mounted on said central member and a piston surrounding said central member, means on said central member for limiting said sliding movement of said cylinder, a piston rod secured at one end to said piston, and a ram secured to the opposite end of the piston rod, means at the lower end of the central member for aligning said central member with the casing to be driven and adapted to be impacted by said ram axially of said central member for downward movement, thus forcing the casing downwardly, and air supply means for delivering air to said cylinder in a prearranged sequence to propel the ram downwardly to drive the casing into the ground.

3,895,681

LOAD INDICATING ASSEMBLY

Colin John Griffin, and Kerry Charles Griffin, both of 158 Pinnacle Dr., Upper Ross, Townsville, Australia (4810)

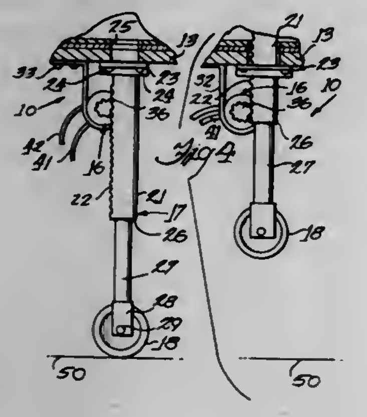
Filed Nov. 4, 1973, Ser. No. 415,500
Claims priority, application Australia, Mar. 16, 1972, 53405/73
Int. Cl. G01g *19/10*
U.S. Cl. 177—141 **4 Claims**



1. A load indicating assembly usable for weighing vehicles and the like and comprising, a support base supporting a resiliently deformable member, a load platen arranged to engage said resiliently deformable member in such manner that a load placed on said load platen will cause deformation of said resiliently deformable member, and indicating means sensitive to such deformation and calibrated to indicate the weight of said load, said resiliently deformable member being a sealed fluid filled resilient tube, said indicating means comprising a pressure gauge connected operatively to said resilient tube to indicate the pressure of the fluid therein, said load platen comprising a substantially flat, horizontally inclined rectangular plate, the latter being supported on said sealed fluid filled resilient tube, said rectangular load platen being elongate and of such length that it is adapted to support thereon a set of dual wheels of a truck axle assembly, with the axis of said wheels substantially parallel to the longitudinal edges of said load platen to enable said load indicating assembly to be used to indicate the weight of said dual wheels, said resilient tube extending along the underside of said load platen and beyond the ends thereof with its axis disposed centrally beneath the longitudinal center line of said load platen, said platen being tiltable about said tube to form, in operation, an approach ramp and an exit ramp to and from the central portion of said platen, said longitudinal edges of said elongate rectangular platen being turned downwards so that in operation, as a vehicle wheel is driven onto said load platen the latter tilts to form an approach ramp and the down-turned edge contacts the surface upon which the assembly is supported in such manner that the contact force between said wheel and said platen, due to the forward motion of said vehicle wheel is transmitted directly to said supporting surface through said downwardly-turned edge, by contact therebetween, and as said wheels move across the load platen, the latter rocks about said elongate tube until the said downturned edge is moved clear of the support base so that the load indicating assembly indicates only the true static weight of said vehicle wheel, said support base being a flat, elongate, rectangular metal plate and said fluid filled resilient tube extending centrally therealong, said assembly being of such size as to be portable, said fluid filled tube being clamped to said base adjacent the ends of said load platen, the latter being arranged to be maintained in its operative position supported on said fluid filled tube by a pair of chains connected between the ends of said platen and said base and a pair of springs opposing said chains to maintain tension therein.

3,895,682
MOTOR DRIVEN DOLLY ACTUATOR FOR SEMI-TRAILERS AND SIMILAR VEHICLES

Richard G. Graham, 1618 Regent St., Niles, Mich. 49120
Filed Sept. 26, 1973, Ser. No. 400,969
Int. Cl. B60s *9/18*
U.S. Cl. 180—1 R **1 Claim**



1. A dolly assembly intended for use with a tractor-trailer type vehicle wherein the dolly assembly is provided for supporting the front end of the trailer when separated from the tractor, the dolly assembly comprising, in combination:

a ring shaped collar member mounted to the bottom surface of the trailer concentric with an opening provided through the trailer bottom surface which is of a diameter not less than the diameter of the opening in the ring shaped collar member;

an elongated vertically disposed cylindrically shaped supporting column having a top end, a bottom end, and vertically extending cylindrical side wall surfaces;

an elongated solid cylindrically shaped rod disposed concentric with said supporting column and having a top end, a bottom end, and cylindrical side wall surfaces;

said top end of said rod being affixed to said bottom end of said supporting column concentric therewith, said rod projecting vertically downwardly therefrom;

an inverted U-shaped bracket having a bight portion and opposed parallel leg portions, the bight portion being affixed to said bottom end of said rod and projecting diametrically outwardly of opposite diametric portions of said rod with said leg portion extending parallel to the longitudinal axis of said rod and downward from said bottom end thereof;

a pin member extending laterally between the opposite ends of said leg members and affixed thereto;

a dolly wheel of a width less than the distance between said leg members and of a diameter less than the distance from said pin member to said bight portion being provided, said dolly wheel having a bore extending through the axis thereof of a diameter greater then said pin with said dolly wheel being rotatively mounted on said pin for rotation thereabout, the dolly wheel being straddled within said leg members;

said top end of said support column being received in said collar member opening with said support column mounted for reciprocal vertical movement relative to said collar member for movement between a retracted position inwardly of said collar member and projecting into said trailer to raise the dolly wheel out of contact with the ground a sufficient distance to prevent any interference of the dolly wheel with the towing of the trailer when attached to the tractor, and to an operable extended position outwardly of said collar member where the dolly wheel is disposed in contact with the ground for supporting the front end of the trailer when separated from the tractor;

a rack of continuous teeth formed integrally along a a longitudinal segment of said support column side walls intermediate said top and said bottom ends thereof;

said rack disposed in the plane defined by said dolly wheel and said axis of said support column;

a U-shaped bracket affixed to the trailer bottom surface in a position adjacent said support column and extending in a plane parallel to said plane defined by said rack of teeth, dolly wheel and support column;

an air operated power driven motor mounted in said U-shaped bracket with its longitudinal axis extending normal to the plane of said bracket;

a shaft extending axially outwardly of said motor to a position adjacent said rack of teeth;

a cylindrically shaped gear wheel having longitudinally extending teeth defined completely about the circumference of the side walls thereof mounted concentric on the outermost end of said motor shaft with said teeth engaging the teeth of said rack;

a source of air supply;

a pump to maintain said source of air supply;

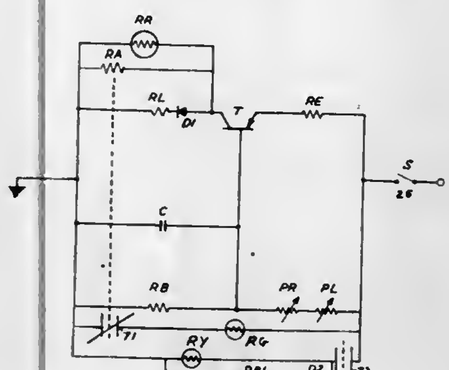
suitable flexible tubing interconnecting said air operated motor to said source of air supply and said pump for energizing said motor;

valve means connected in series relationship with said tubing intermediate said motor and said air supply and operable to direct air supply in a first direction for effecting the operation of said motor in a first direction to retract said column and raise said dolly wheel out of contact with the ground, and operable in a second position to energize said motor in a second direction to lower said column and effect engagement of said dolly wheel with the ground to support the trailer thereon;

said valve means being disposed in the tractor cab to effect operation of the motor and the dolly assembly from the vehicle operator's position in the tractor cab without the operator having to leave the cab.

3,895,683
LATERAL ACCELERATION SENSING SYSTEM

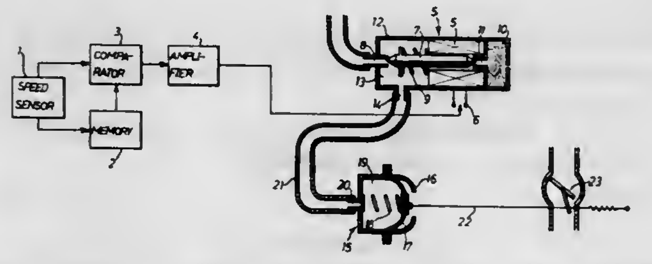
Thomas J. Lang, Torrance, Calif.; Kenneth G. Lang, East Northport; Joseph A. Lang, Huntington Station, and Robert L. Davis, Lloyd Harbor, all of N.Y., assignors to Lang Davis Industries, Inc., Huntington, N.Y.
Filed July 5, 1972, Ser. No. 269,035
Int. Cl. B60t *7/20*
U.S. Cl. 180—103 **5 Claims**



1. An automatic stability control system for a vehicle to prevent swerving and swaying of said vehicle, said system comprising means for sensing lateral acceleration forces acting upon said vehicle to provide low level electrical acceleration signals representative of the magnitude of said forces, means for amplifying said low level acceleration signals to provide large amplitude brake control signals proportional to the magnitude of the forces, and brake means associated with said vehicle including right and left brakes and responsive to said brake control signals to simultaneously actuate said right and left brakes in equal, gradual and continuous mode to prevent swaying and swerving of said vehicle, said sensing means including a pair of pendulums oriented to sense only left and right acceleration, respectively, each of said pendulums including adjustable stop means positioning the pendulum in a predetermined angular at rest position for varying the minimum lateral acceleration force necessary to effect movement of each pendulum, each of said pendulums being operatively associated with a potentiometer to provide low level electrical lateral acceleration signals proportional to the magnitude of movement of the pendulums such that instantaneous response is provided upon movement of a pendulum.

3,895,684
ELECTRONIC SPEED CONTROL SYSTEM FOR VEHICLES

Nakane Takeshi, Okazaki, and Sakakibara Naoji, Chiryu, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya Japan
Filed Oct. 31, 1973, Ser. No. 411,186
Claims priority, application Japan, Oct. 31, 1972, 47-109063
Int. Cl.² B60K *31/00*
U.S. Cl. 180—105 E **3 Claims**



1. An electronic control system for use in automatically controlling speed of a vehicle, comprising an actuator for a throttle valve of the vehicle;

means for generating a speed signal proportional to the vehicle speed;

a memory circuit including a capacitor, a high input impedance amplifier having a control electrode and an output terminal, one of the terminals of said capacitor being connected to said speed signal generating means and the other terminal of said capacitor being connected to the control electrode of said high input impedance amplifier; a manual control variable means for storing a reference signal in said capacitor connected to the junction between the control electrode of said high input impedance amplifier and said capacitor;

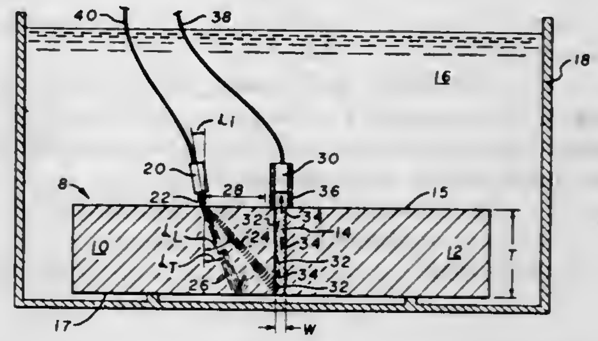
a comparison circuit connected to said memory circuit for operating said throttle valve actuator in accordance with the output of said high input impedance amplifier; in said comparison circuit including

a differential amplifier having conncted first and second transistors, said first transistor being connected at its base to the output terminal of said high input impedance amplifier, said second transistor having a terminal forming the output of said differential amplifier and being connected at its base to a source of electrical energy, and means for controlling the output of said differential amplifier with respect to changes in said speed signal applied thereto after said reference signal is memorized in said memory circuit by actuation of said manual control means;

said means for controlling the output of said differential amplifier including a third transistor whose base is connected to the output of said means for generating a speed signal and whose collector is connected to the junction of the emitters of said first and second transistors.

3,895,685
METHOD AND APPARATUS FOR ULTRASONIC INSPECTION OF WELDMENTS

Carl L. Gillette, Chattanooga, and William M. Ramey, Hixson, both of Tenn., assignors to Combustion Engineering, Inc., Windsor, Conn.
Filed Apr. 19, 1971, Ser. No. 134,999
Int. Cl. G01n *9/24*
U.S. Cl. 181—.5 **25 Claims**



1. The method of ultrasonically inspecting a zone of interest extending a depth of at least about four inches into a material from a surface thereof comprising the steps of:

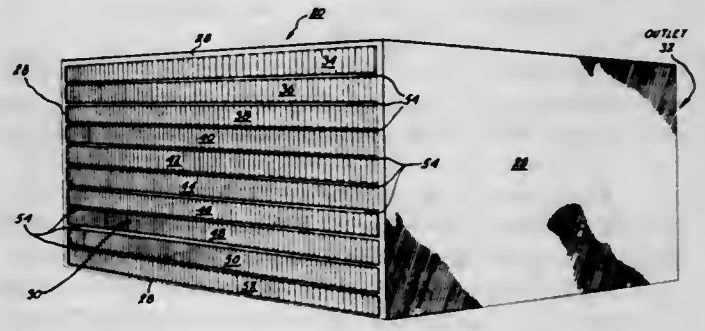
a. generating a beam of pulsed ultrasonic energy;

b. directing said beam at a location on said surface of said material in an incident direction and oblique angle thereto which result in the propagation in said material of a refracted beam of ultrasonic energy in the longitudinal wave mode which is incident with and intersects a portion of said zone of interest at an oblique angle to a line normal to said surface and passing through the intersected portion of the zone of interest, said incident ultrasonic energy being redirected upon contacting a discontinuity in said intersected portion of the zone of interest; and

c. detecting said redirected ultrasonic energy wich exits from said material substantially normal to said surface and within an area overlying said portion of the zone of interest intersected by said longitudinal wave beam, said detected ultrasonic energy being indicative of the presence of a discontinuity in said portion of the zone of interest intersected by said longitudinal wave beam.

3,895,686
ACOUSTIC ATTENUATOR PROVIDING RELATIVELY HIGH INSERTION LOSS AT LOW FREQUENCIES

Sudhir D. Savkar; Walter B. Giles, and Robert B. Tatge, all of Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.
Continuation of Ser. No. 308,323, Nov. 21, 1972. This application Mar. 4, 1974, Ser. No. 447,953
Int. Cl.² F01N *1/08*
U.S. Cl. 181—56 **25 Claims**



1. Apparatus for attenuating the acoustic energy content of acoustic pressure waves propagating through a flowing fluid comprising: a conduit having inlet and outlet openings adapted for the entrance and exit, respectively, of the flowing fluid; and, at least one series of substantially rigid, acoustically

nonabsorptive plates mounted within said conduit and extending from said inlet opening toward said outlet opening, each plate in said series having a leading edge which is initially contactable by the flowing fluid and a trailing edge from which the flowing fluid can leave the plate, each plate in said series having at least one relatively flat surface extending from the leading edge to the trailing edge of the plate in a direction substantially parallel to the flow of said fluid, said plates in said series being spaced apart so that a space exists between the trailing edge of one plate and the leading edge of the next succeeding plate in the series.

3,895,687

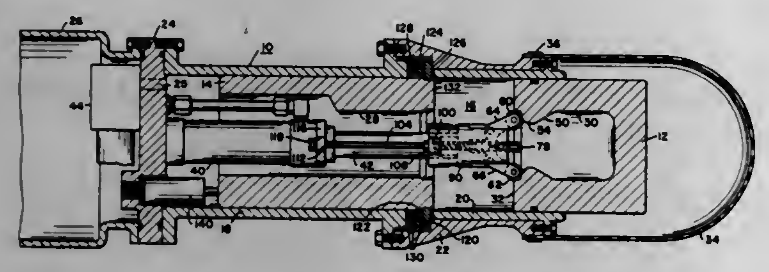
ACOUSTIC IMPULSE GENERATOR

Joseph K. McLaughlin, Jr., Rochester, and Dennis R. Courtright, Canandaigua, both of N.Y., assignors to Hydroacoustics, Incorporated, Rochester, N.Y.

Filed June 26, 1974, Ser. No. 483,262

Int. Cl.² G01V *1/04*

U.S. Cl. 181—120 **14 Claims**



1. For use in an acoustic impulse generator adapted to be submerged in which a piston is mounted for reciprocation in a housing in which the pressure is adapted to be lower than the pressure of the medium in which it is submerged, a mechanism for moving said piston against said pressure of said medium and then releasing said piston to generate said acoustic impulse which comprises

- driving means in said housing movable toward and away from said piston for moving said piston to execute a forward stroke against the pressure of said medium,
- roller means pivotally mounted on said driving means for engaging said piston,
- said piston having a surface disposed for engagement with said roller means during said forward stroke, and
- release means operative when said driving means moves a predetermined distance along its forward stroke for pivoting said rollerss so that they move off said piston surface and release said piston to execute a return stroke under the pressure of said medium whereby to generate the acoustic impulse.

3,895,688

ACOUSTIC TRANSMITTER

John V. Bouyoucos, Rochester, N.Y., assignor to Hyroacoustics Inc., Rochester, N.Y.

Filed July 31, 1972, Ser. No. 276,457

Int. Cl. G10k *10/00*

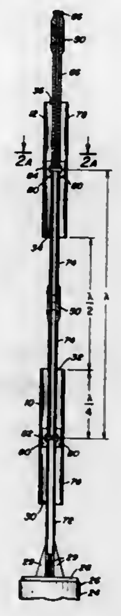
U.S. Cl. 181—402 **34 Claims**

1. Acoustic apparatus for coupling acoustic energy from an acoustic source into a fluid medium, said apparatus comprising

a. a transmission line driven by said source,
b. said transmission line having a plurality of ports spaced from each other lengthwise along said line,
c. said transmission line also having means for providing substantially no reflection of acoustic energy in said line at each of said ports, and
d. means disposed adajcent each of said ports for establishing an anti-resonant condition thereat.

34. Acoustic Apparatus for coupling acoustic energy from an acoustic source into a fluid medium, said apparatus comprising

a. a transmission line driven by said source,
b. said transmission line having a port spaced from said source lengthwise along said line,



c. said transmission line also having means for providing substantially no reflection of acoustic energy in said line at said port, and
d. means disposed adjacent said port for establishing an anti-resonant condition thereat.

3,895,689

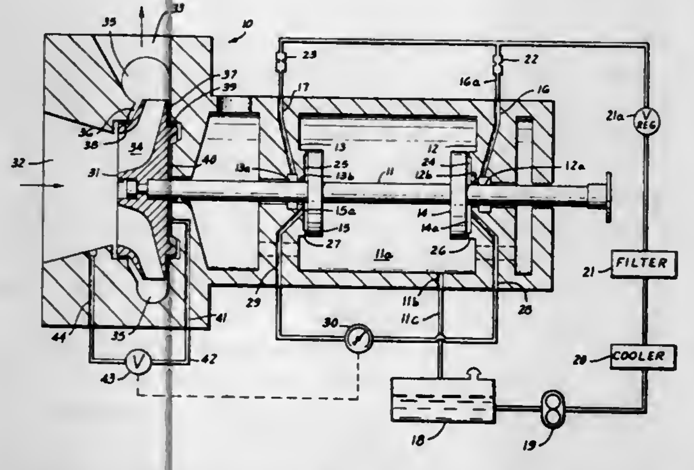
THRUST BEARING LUBRICANT MEASUREMENT AND BALANCE

Judson S. Swearingen, 500 Bel Air Rd., Los Angeles, Calif. 90024

Continuation-in-part of Ser. No. 1,130, Jan. 7, 1970, abandoned, and a continuation-in-part of Ser. No. 210,705, Dec. 22, 1971, Pat. No. 3,828,610. This application Sept. 7, 1973, Ser. No. 395,246

Int. Cl. F01m *1/18*

U.S. Cl. 184—6.4 **13 Claims**



1. The method of controlling the axial thrust on a thrust bearing assembly of a rotating machine wherein said thrust bearing assembly comprises a rotating component and a non-rotating component, one face of said rotating component and one face of said non-rotating component being in opposing relationship with each other, wherein a lubricant is forced in operation between the opposed faces of said components forming a first zone of pressure between said faces maintaining them separated and transmitting thrust load between them; and wherein there is a balancing means operable to apply a desired end thrust to one of said components to adjust the thrust forces on said bearing; said method comprising the steps of determining from time to time the axial thrust on said assembly by monitoring the pressure of said lubricant in said first zone and operating said balancing means in accordance with the axial thrust determination to produce a desired aggregate thrust on said bearing assembly.

2. In a rotating machine having a thrust bearing assembly, said bearing assembly having a rotating component and a non-rotating component, one face of said non-rotating component and one face of said rotating component being in opposing relationship with each other, wherein a lubricant is forced in operation between the opposed faces of said components forming a first zone of pressure which is between said faces, and is pressurized to a thrust sustaining pressure to maintain said components separated, and a second pressure zone is created in said lubricant differing from said thrust sustaining pressure by an amount indicative of the thrust on said bearing assembly; the improvement which comprises a pressure determining means including a pressure sensing means exposed to said first zone, a pressure sensing means exposed to said second zone, and means for comparing the two, and a balancing means operable to adjust to a desired value, as indicated by said pressure determining means, the aggregate thrust force on said bearing assembly.

3,895,690

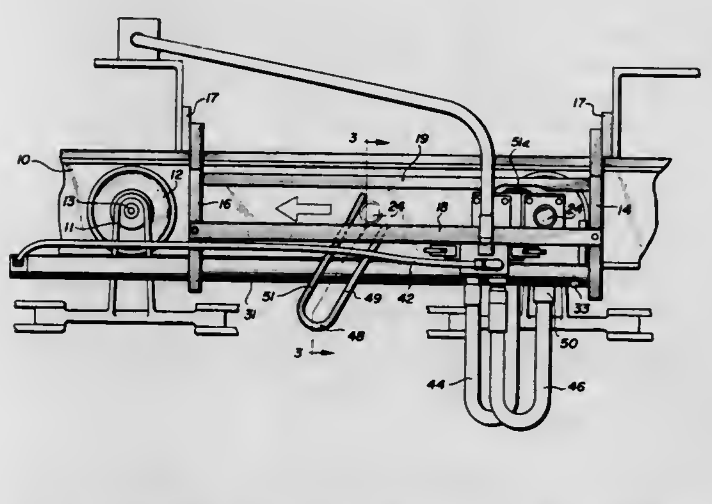
LUBRICATOR ASSEMBLY WITH AUTOMATIC RESET

Ronald E. Thomson, Cambridge, and Philip J. Kast, Madison, both of Wis., assignors to Madison-Kipp Corporation, Madison, Wis.

Filed Mar. 12, 1974, Ser. No. 450,330

Int. Cl. F16n *13/16*

U.S. Cl. 184—15 A **5 Claims**



1. In an automatic lubricator assembly for lubricating conveyor trolley wheels:

- elongated guide means for guiding and supporting a movable carriage along a path to permit reciprocating movement thereof;
- a carriage rotatably mounted on and movable along the length of said guide means from a starting position to a final position;
- conveyor engaging means mounted on said carriage for engaging a moving conveyor and for permitting said carriage to be engaged and moved by and with said conveyor from said starting position along said guide means to said final position;
- lubricating means on said carriage for lubricating a trolley wheel of said conveyor during the combined movement of said carriage and said conveyor;
- return means for moving said carriage in a return direction to said starting position;
- first control means actuated by movement of said carriage beyond a predetermined position for activating said return means, thereby returning said carriage to its starting position;
- second control means for deactivating said return means when the starting position of said carriage is reached;
- roller means mounted on said carriage for rollably supporting a portion of the weight of said carriage;
- elongated roller support means arranged parallel to said guide means below and in supporting contact with said roller means, thereby preventing rotation of said carriage about said guide means during normal operation of said lubricator assembly, said roller support means including release means for permitting said carriage to rotate by gravity, when said carriage has gone beyond a predetermined position, from its normal operative supported position to a rotated position disengaging said conveyor engaging means from engagement with a conveyor; and reset means including an inclined surface leading downwardly from said roller support means to a position therebelow for supporting said roller means during the return of said roller means to its normal operative position during the return trip of said carriage to the starting position.

3,895,691

CIRCULATIVE CATERING TABLE

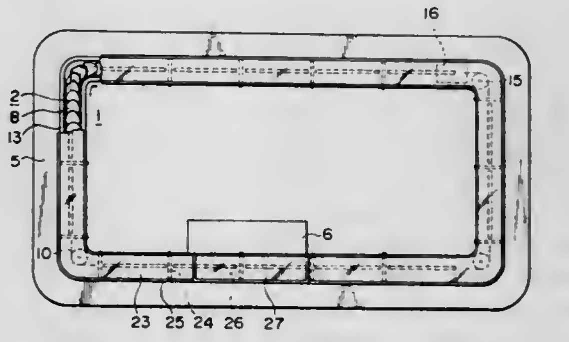
Yoshiaki Shiraishi, No. 68, Chodo 1-chome, Higashi-Osaka, Osaka-fu, Japan

Filed Jan. 14, 1974, Ser. No. 433,043

Claims priority, application Japan, Dec. 10, 1973, 48-140114

Int. Cl. E04h *3/04*

U.S. Cl. 186—1 R **5 Claims**



1. A circulative catering table comprising:

a base frame structure having inner and outer side walls defining therebetween an endless circulating path of travel; a fixed fringe table mounted substantially horizontally around the circumference of said outer side wall of said base frame structure; an endless conveyer mounted in said endless circulating path of travel for circulatively transferring meals on a surface thereof, said endless conveyer comprising a strand of chain movable in and along said endless circulating path of travel and meshed with and driven by a horizontally disposed sprocket wheel which is supported on a vertical shaft, and a series of crescent plates pivotally supported on the respective chain units of said chain and having side wing portions thereof slidingly rested on horizontal racks at the top of said inner and outer side walls of said base frame structure in horizontal alignment with each other to provide a planar meal-transferring surface on said endless circulating path of travel, each said crescent plate including a first concave edge and a second convex edge in opposition to said concave edge with the convex edge of one of said plates being nested in the concave edge of said next adjacent plate; driving means mounted on said base frame structure and associated with said endless conveyer for imparting translational movement thereto; a cover plate mounted overhead said circulating path of travel and supported on said inner side wall of said base frame structure by means of a number of posts in a parallel spaced relationship with said meal-transferring surface of said endless conveyer.

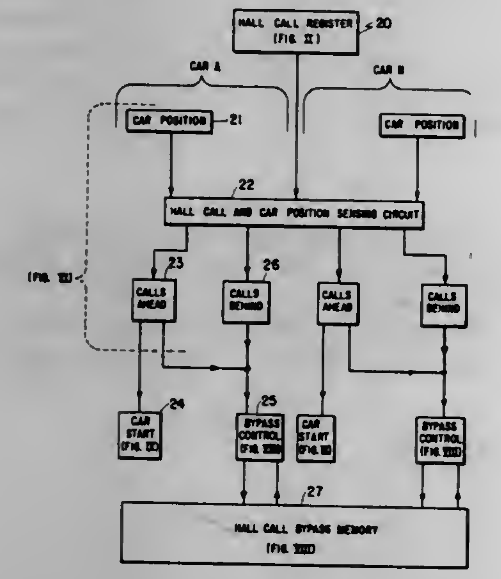
3,895,692
ELEVATOR CONTROL

Maynard C. Yeasting, Elmore, Ohio, assignor to The Reliance Electric and Engineering Company, Cleveland, Ohio

Continuation of Ser. No. 622,877, Feb. 7, 1967, abandoned, which is a continuation of Ser. No. 14,074, March 10, 1960, abandoned. This application Oct. 25, 1972, Ser. No. 300,704

Int. Cl. B66b *1/20*

U.S. Cl. 187—29 **26 Claims**


HALL CALL REGISTER (FIG. II)
20
CAR A
CAR B
CAR POSITION
21
CAR POSITION
22
HALL CALL AND CAR POSITION SENSING CIRCUIT
(FIG. XI)
23
26
CALLS AHEAD
CALLS BEHIND
CALLS AHEAD
CALLS BEHIND
24
25
CAR START (FIG. IX)
BYPASS CONTROL (FIG. XXII)
CAR START (FIG. IX)
BYPASS CONTROL (FIG. XXII)
27
HALL CALL BYPASS MEMORY (FIG. XXIII)

1. In an elevator control system, in combination, a plurality of cars arranged to serve a plurality of floors, means for registering calls for service, control means for each car for stopping the car at floors at which calls are registered, means for indicating the difference between the number of calls registered in the zones between the car and the next preceding and next following cars, auxiliary control means for each car adapted to de-energize the first control means for by-passing calls, and means operatively connected to said difference indicating means for actuating the auxiliary control means when the number of calls in the zone ahead of the car exceeds the number of calls in the zone behind the car.

3,895,693
DISC-BRAKES WITH GRAPHITE FRICTION LININGS

Rene Lucien, Neuilley-sur-Seine, and Jean Masclet, Paris, both of France

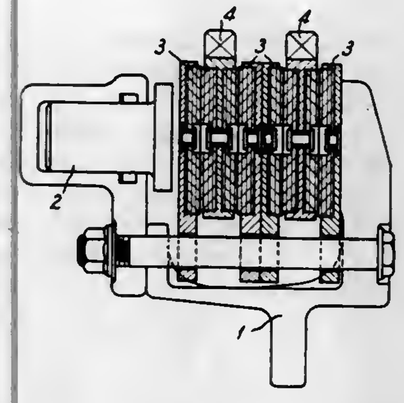
Continuation of Ser. No. 114,476, Feb. 11, 1971, abandoned. This application June 14, 1973, Ser. No. 370,056

Claims priority, application France, Feb. 12, 1970, 70.05033; June 18, 1970, 70.22507

Int. Cl. F16d *55/00, 69/02, 69/04*

U.S. Cl. 188—71.1 **10 Claims**

1. A disk brake comprising a rotating and a non-rotating structure, both structures having facing surfaces and comprising friction linings on said facing surfaces capable of rubbing against each other, said friction linings of the two structures each being composed of a plurality of graphite plates, each of the said graphite plates having two parallel plane surfaces and a flat side surface having generatrices extending perpendicular to the two plane surfaces, said plates being housed in respective recesses in the structures and having a flat bottom, each recess having a depth less than the thickness of the respective plate, each structure including a disk element with a rim surrounding the associated recess and having a side face parallel to the said flat side surface of the associated plate, and means for securing each plate in its recess comprising a single rivet passing through each plate with radial clearance and secured to said disk element, said plate being secured in their recesses with a clear circumferential space formed with said rim.



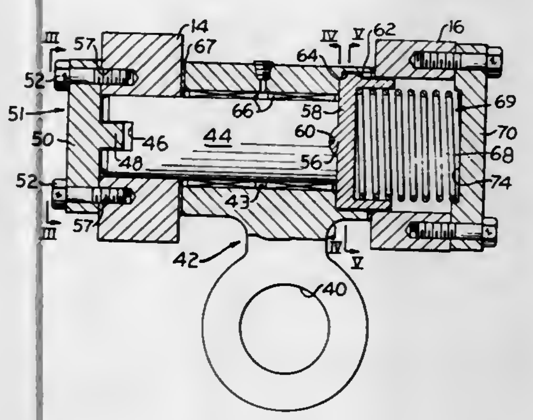
3,895,694
GRAPPLE SNUBBING APPARATUS

John R. Muntjanoff, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed July 11, 1974, Ser. No. 487,726

Int. Cl. F16d *63/00;* **F16f** *13/02*

U.S. Cl. 188—83 **14 Claims**



1. Apparatus for controlling oscillation of a first member relative to a yoke member defining first and second arm means, comprising:
- a pin;
- means for securing the pin from rotation about the longitudinal axis thereof relative to said first and second arm means;
- a housing member secured relative to said first member and positioned between said first and second arm means and defining a bore through which said pin is disposed;
- a retaining member disposed adjacent a first end of the pin and secured from rotation relative to one of the pin and housing member;
- resilient means associated with the second arm means and retaining member for urging the retaining member away from the second arm means;
- means for limiting movement of the pin under urging of the retaining member by the resilient means;
- the one of the pin and housing member which is not secured from rotation relative to the retaining member, and the retaining member, together defining cooperating seatable protrusion and recess means, positioned so that rotation of the first member relative to the yoke member about the longitudinal axis of the pin causes unseating of the protrusion and recess means, against the resilience of the resilient means, from a seated position.

3,895,695
SPRING APPLIED FLUID RELEASED BRAKE UNIT

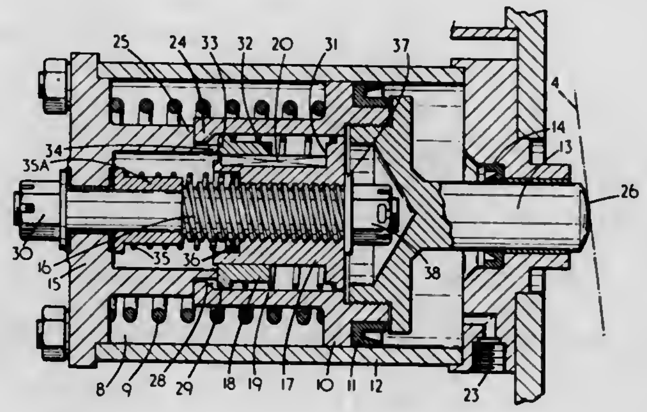
Ian Pearson Hunter, Glossop, England, assignor to Davies & Metcalfe Limited, North Stockport, England

Filed Feb. 25, 1974, Ser. No. 445,701

Claims priority, application United Kingdom, Feb. 24, 1973, 9161/73

Int. Cl. F16d *65/24*

U.S. Cl. 188—170 **13 Claims**



1. A spring brake unit in combination with first piston and cylinder means actuable by fluid pressure for causing operation of a brake, the spring brake comprising: second piston and cylinder means, the second piston being relatively movable in first and second opposite directions for causing brake application and brake release respectively, first spring means continually urging the second piston in said first direction but movement in said first direction being prevented by fluid pressure urging said piston in said second direction, until the fluid pressure falls below a predetermined value, a screw disposed in said second piston and cylinder means, said screw being mounted for inhibiting axial movement thereof in said first and second directions relative to the second piston and cylinder means, a nut threaded on said screw for rotation thereabout, said nut and second piston being arranged for engagement whereby relative rotary movement between the two is prevented when the second piston is moved in said first direction relative to a normal working position of the nut on the screw in the event of fluid pressure falling below said predetermined value, the engagement between the nut and second piston being arranged for the nut to move the second piston in the second direction when the nut is advanced in that direction from its normal working position by rotation of the screw, second spring means stressable by the movement of the nut in the second direction, stop means for abutment by the nut for preventing the latter moving the second piston in the second direction beyond a predetermined position, the second piston being movable in the second direction beyond the predetermined position for interrupting said engagement when fluid pressure above said predetermined value is applied to the second piston, whereby movement of the nut in the direction to its normal working position is effected by rotation of the nut relative to the second piston and the screw in response to force of the second spring means applied to the nut and in the event of said fluid pressure remaining below said predetermined value, the nut in engagement with the second piston being returnable in the first direction to the normal working position of the nut be rotation of the nut along the screw, whereby the second piston under the influence of the first spring means is permitted to move in the first direction.

3,895,696
HANDLE FOR SUITCASES AND THE LIKE HAVING CASTERS

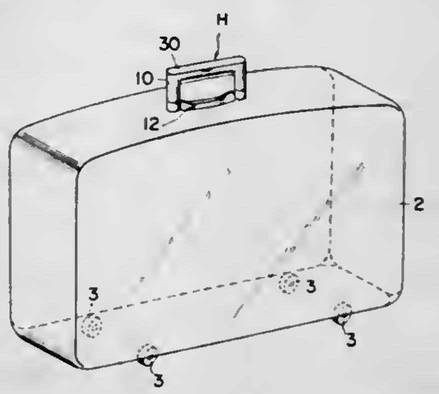
Yutaka Urushibara, 3-Chome, 7-4 Kanamachi, Tokyo, Japan

Filed Nov. 16, 1973, Ser. No. 416,632

Claims priority, application Japan, Aug. 13, 1973, 48-90014

Int. Cl.² A45C *13/26*

U.S. Cl. 190—58 **10 Claims**



1. In a handle structure for a suitcase having rolling means at the bottom, the handle structure having a pair of longitudinally extensible parallel tubes connected to the suitcase at their proximal ends, and a grip connecting the distal ends of said tubes, said grip being capable of selectively taking a retracted position near said suitcase and an extended position more remote from said suitcase depending on the extension of said tubes:
- the improvement comprising an inverted U-shaped body fixedly connected to said suitcase and including a central grip portion and two columnar portions extending perpendicularly at the two ends of the grip portion toward the suitcase, said columnar portions respectively receiving said extensible tubes such that the extensible tubes can extend outwardly of the columnar portions said central portion being located in a position in which it houses a portion of the grip and supports the surface of said grip facing the suitcase when the grip is in said retracted position, said grip portion having a shape and size such that when the grip is in the retracted position, said grip portion cooperates with the grip to form an apparently united single handle.

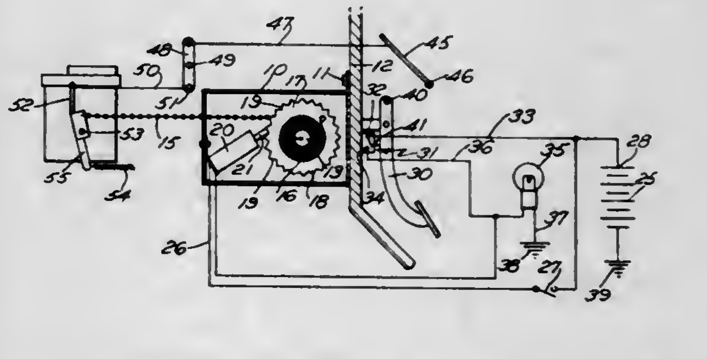
3,895,697
BRAKE CONTROLLED THROTTLE HOLDING MEANS FOR VEHICLE

James A. Wilkins, Jr., 422 Sanford Rd., Westport, Mass. 02790

Filed May 8, 1974, Ser. No. 467,941

Int. Cl. B60k *29/02*

U.S. Cl. 192—3 T **·3 Claims**

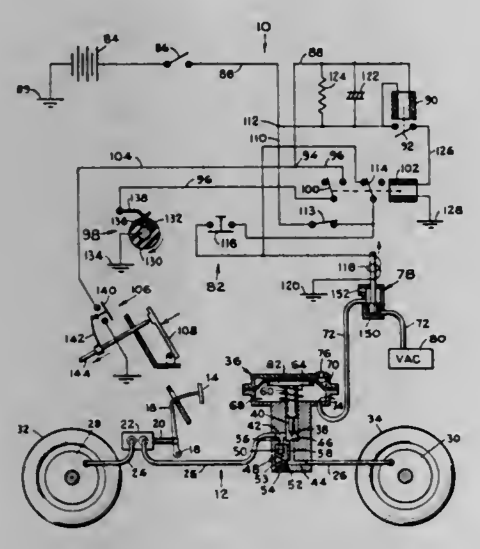


1. A throttle holding means for a vehicle comprising a fuel feeding means including valve means and an arm to operate the same,

an accelerator pedal to operate said arm,
a drum,
a flexible cable connected to said arm and said drum,
spring means to rotate said drum in one direction to wrap said cable about said drum,
a toothed cog gear attached to said drum to rotate therewith the teeth of said cogs each having a face inclined to the gear radius,
a solenoid having a plunger reciprocatable in a direction at substantially right angles to the face of the cog of the gear it is to engage, said direction being at an angle to a vertical plane and a horizontal plane so that the retraction of said plunger is assisted by gravity,
an electric circuit for said solenoid and means to control the circuit to energize said solenoid and move said plunger into engagement with a cog of said gear.

3,895,698
BRAKE CONTROL APPARATUS

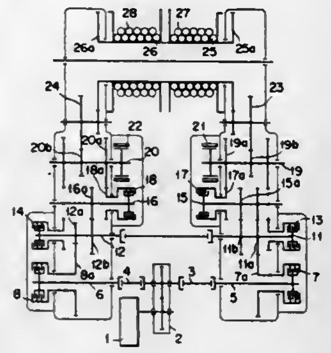
John G. Fontaine, Fort Lauderdale, Fla., assignor to Fail Safe Brake Corporation, Fort Lauderdale, Fla.
Division of Ser. No. 300,128, Oct. 24, 1972. This application Oct. 4, 1974, Ser. No. 511,998
Int. Cl.² B60K *41/20;* **B60T** *17/16*
U.S. Cl. 192—3 TR **10 Claims**



1. Apparatus for controlling hydraulic brakes of a vehicle in which brakes are applied by hydraulic pressure in a conduit responsive to depression of a brake pedal, said apparatus comprising two-way vacuum operated valve means in said conduit for closing said conduit to keep hydraulic pressure applied to the brakes after depression of said foot pedal and for opening to release the hydraulic pressure, and control means for operating said valve means including a first circuit having speed responsive means therein for breaking said first circuit when the vehicle is stopped, a second circuit having accelerator responsive means therein for breaking said second circuit when an accelerator of the vehicle is released, and a third circuit having solenoid valve means therein controlling a vacuum line for operating said two-way vacuum valve means, with the breaking of both of said first and second circuits causing energization of said solenoid valve means to close said two-way vacuum valve means for keeping the hydraulic pressure in said conduit applied to the brakes.

3,895,699
DOUBLE DRUM WINCH

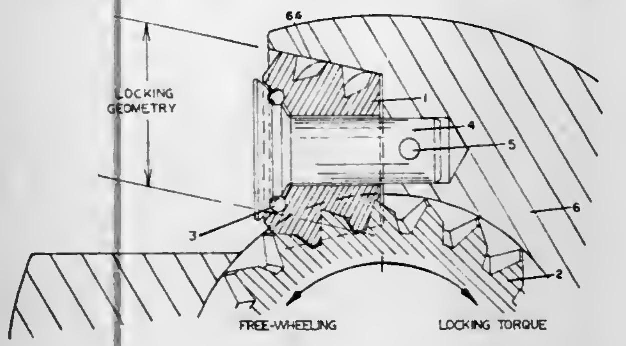
Masazo Mita, and Masami Hashimoto, both of Osaka, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan
Filed Mar. 14, 1974, Ser. No. 451,206
Claims priority, application Japan, June 13, 1973, 48-65835
Int. Cl. B66d *1/26*
U.S. Cl. 192—4 R **3 Claims**



1. A double-drum winch having a source of power, comprising:
a. high and low speed clutches connected to the source of power;
b. hook up and down moving clutches connected to said high and low speed clutches for upwardly and downwardly moving the hook;
c. boom up and down moving clutches connected to said high and low speed clutches for upwardly and downwardly moving the boom;
d. a hook brake connected to said hook down moving clutch;
e. a boom brake connected to said boom down moving clutch;
f. a hook drum connected to the brake shaft of said hook brake;
g. a boom drum connected to the brake shaft of said boom brake;
h. a hook operating valve for switching the hook up and down moving clutches and hook brake;
i. a boom operating valve for switching said boom up and down moving clutches and boom brake; and,
j. high and low speed switching control valve for switching said high and low speed clutches, whereby said boom and said hook may be independently operated.

3,895,700
WORM/WORM-WHEEL OVERRUNNING CLUTCH

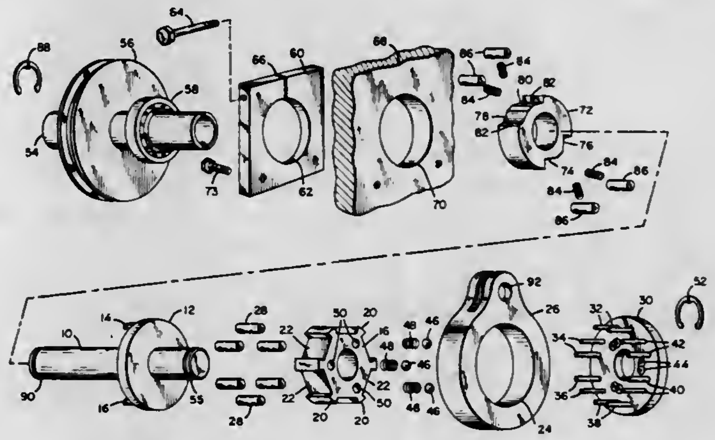
John Hugh Kerr, Kitchener, Canada, assignor to Ker-Train Systems N.V., Curacao, Netherlands Antilles
Filed Jan. 2, 1974, Ser. No. 429,610
Claims priority, application Canada, Jan. 9, 1973, 160906
Int. Cl. F16d *41/00*
U.S. Cl. 192—41 R **6 Claims**



1. A worm and worm-wheel gear assembly, the worm at least partially enveloping the worm-wheel in at least one direction over a subtended angle, the lands of the worm having at least two surfaces each of which is congruent to a corresponding surface on the teeth of the worm-wheel to thereby form at least two pairs of congruent surfaces, wherein the congruent surfaces of one of said pairs are sloped so as to be relatively perpendicular to the axis of the worm throughout the subtended angle of envelopment and the congruent surfaces of the other of said pairs are sloped so as to be relatively parallel to the axis of the worm within said subtended angle, whereby rotation of the worm results from rotation of the worm-wheel when the congruent surfaces of said first pair are engaged and locking of the worm relative to the worm-wheel results when the congruent surfaces of said second pair are engaged, the locking characteristics of the assembly being independent of the coefficient of friction between said pairs of congruent surfaces within said subtended angle.

3,895,701
TRANSMISSION SYSTEM

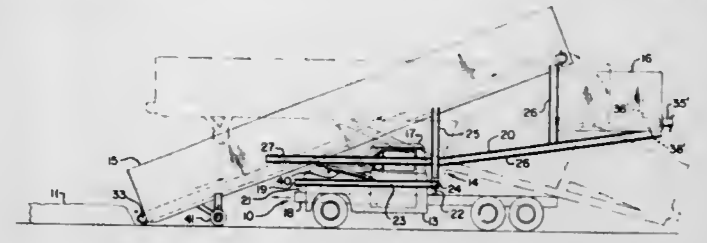
Victor N. Albertson, deceased, late of St. Louis Park, Minn., and by Eleanor M. Albertson, executrix, 4094 Alabama Ave., St. Louis Park, Minn. 55416
Filed Dec. 10, 1973, Ser. No. 423,281
Int. Cl.² F16D *3/34, 43/00, 21/00, 41/04*
U.S. Cl. 192—44 **7 Claims**



1. Transmission apparatus mounted on a support structure and adapted to couple an oscillatory drive member to an output shaft for imparting intermittent rotational motion to said shaft comprising:
a. a mounting plate attached to said support structure and having a circular aperture formed therein of a predetermined diameter;
b. a tubular output shaft;
c. means for rotationally mounting said output shaft in the aperture in said mounting plate;
d. a clutch plate attached to said tubular output shaft and having a generally circular profile of a diameter slightly less than the diameter of said aperture in said mounting plate so as to be insertable therein and having first and second pairs of V-shaped notches diametrically apposed from one another cut in the periphery thereof, the notches in a pair being separated by a region of reduced clutch plate radius;
e. first and second pairs of rollers individually disposed in said V-shaped notches and each normally resiliently wedged between a wall of said V-shaped notch and the wall defined by the aperture in said mounting plate;
f. a driving shaft of a diameter slightly less than the inside diameter of said tubular output shaft so as to be slidably insertable therein in telescoping arrangement;
g. means secured to said driving shaft including projecting tabs movably inserted respectively into the regions of reduced clutch plate radius for moving one of the adjacent rollers out of engagement with the wall of the aperture in said mounting plate only when a torque is applied thereto;
h. coupling means attached to said driving shaft adapted to be connected to a source of oscillating motive power; and
i. directional control means operatively cooperating with said coupling means for causing said driving shaft to rotate in a clockwise or counter-clockwise direction depending on the setting of said directional control means.

3,895,702
LOADING APPARATUS

Alfred T. Newsom, Rte. 4, Box 4, Brownfield, Tex. 79316
Filed Mar. 5, 1974, Ser. No. 448,335
Int. Cl.² B65G *41/00, 67/08*
U.S. Cl. 198—11 **3 Claims**



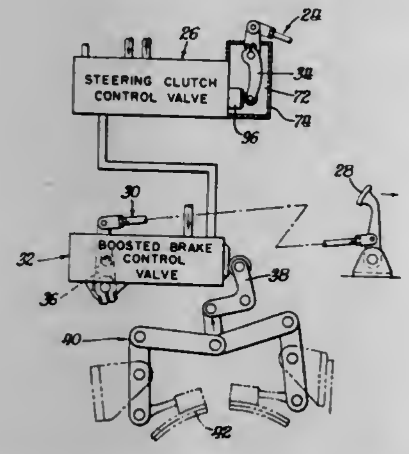
1. Apparatus for loading bulk material piled on the ground into a high-sided cargo body comprising
a frame mounted on a self-propelled vehicle and having a stationary base section extending longitudinally of the vehicle and secured thereto at the front and medial portions of said vehicle,
the frame having a movable section pivotally attached at its intermediate portion to the base section of said frame at the medial portion of said vehicle for forward and rearward swinging between forwardly inclined and substantially horizontal positions,
a pick-up conveyor secured to and oriented longitudinally of the movable section of said frame and being so positioned thereon that its front end closely approaches the ground upon forward pivoting of said movable frame section and that the pick-up conveyor is oriented substantially horizontally when said section is pivoted rearwardly,
means for pivoting said movable frame section between and for maintaining it in its forwardly inclined and substantially horizontal positions, and
a transfer conveyor mounted on said movable frame section for movement therewith and oriented transversely thereof,
the transfer conveyor being disposed below and behind the rear end of said pick-up conveyor and having one of its ends projecting laterally beyond the latter conveyor.

3,895,703
COMBINED STEERING CLUTCH AND BRAKE CONTROL FOR CRAWLER TRACTORS

James L. Schmitt; Clarence L. Castle, Jr., both of Washington, and Orville E. Kessinger, Jr., Mackinaw, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Oct. 26, 1973, Ser. No. 409,865
Int. Cl. F16d *67/02;* **E03b**
U.S. Cl. 192—13 R **7 Claims**

1. In combination with a vehicle in which driving force is applied to both sides thereof, clutch and brake systems associated respectively with both sides thereof and responsive to fluid pressure from a source thereof for steering of the vehicle, each clutch and brake system associated with a side of the vehicle comprising:
clutch means disengageable to disconnect the driving force applied to that side of the vehicle upon application of fluid pressure thereto;
brake means actuatable upon application of fluid pressure thereto to brake that side of the vehicle;
valve means associated with said fluid pressure source and including a reciprocable valving spool positionable in (i) a first position blocking fluid pressure from said clutch means and said brake means and movable sequentially to (ii) second and (iii) third positions, said spool in said

second position allowing fluid pressure from said source through said valve means to said clutch means to disengage said clutch means, but blocking fluid pressure from said brake means, said spool in said third position allowing fluid pressure from said source through said valve means to said clutch means to maintain said clutch means in its disengaged state and allowing fluid pressure from said source through said valve means to said brake means for actuating said brake means;



an actuating member connected with said valving spool so that movement of the actuating member to first, second and third sequential positions moves the valving spool to its first, second and third sequential positions respectively; and

means independent of said valve means for selectively allowing fluid pressure from said fluid pressure source to said brake means, so that the brake means may be actuated with the clutch means in an engaged state.

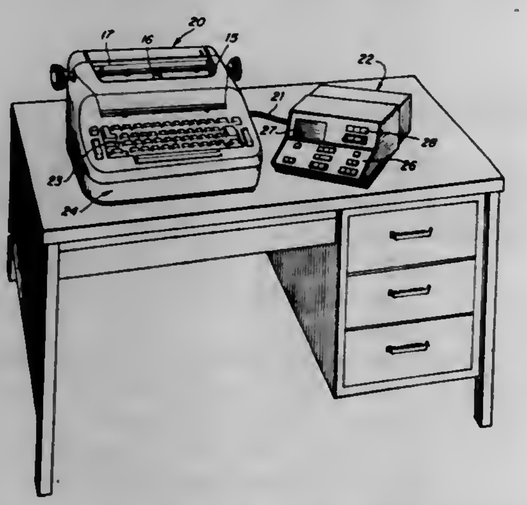
3,895,704
WORD PROCESSOR WITH RIGHT-HAND MARGIN CONTROL

Richard C. Norris, Belmont, Mass., assignor to Arthur D. Little, Inc., Cambridge, Mass.

Filed May 18, 1972, Ser. No. 254,750

Int. Cl. B41j *5/30*

U.S. Cl. 197—19 **23 Claims**



1. Apparatus for processing data in conjunction with formation of characters and performance of selected functions by a printer having a printing means for forming printed characters on a record medium, a carrier for said record medium, means for moving said carrier and printing means relative to one another in increments of distance along a line between a beginning-of-line position and an end-of-line position, means for moving said record medium substantially perpendicularly to said line, and printer control means for controlling said printer to form said characters responsively to corresponding coded character signals and to perform said functions responsively to corresponding coded function signals, said apparatus comprising in combination:

signal storage means for storing a plurality of said coded character and function signals;

means for applying a plurality of said coded character and function signals to the input of said storage means for storage therein;

means for coupling the output of said storage means to said printer control means so that said printer control means is responsive to coded character and function signals appearing at the output of said storage means; and

anticipatory margin adjust means, operative when said printing means and carrier are in a predetermined position on said line relative to one another intermediate said beginning-of-line position and said end-of-line position, for examining a predetermined plurality of those signals stored in the part of said storage means which would affect the operation of the printer during relative movement of said printing means and carrier between only said predetermined position and said end-of-line position, to determine if any of the examined signals correspond to any of selected ones of said coded character and function signals, said examining being completed prior to any response by said printer control means to any of said plurality of signals.

3,895,705
SCRAPER CHAIN CONVEYOR

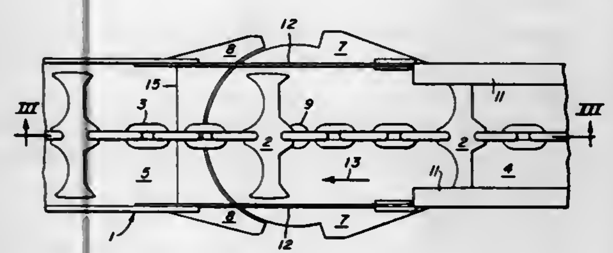
Gustav Bockau, Bochum; Willi Gormann, Wanne-Eickel; Werner Fernholz, and Pal Frenyo, both of Bochum, all of Germany, assignors to Gebr. Eickhoff, Maschinenfabrik und Eisengiesserei m.b.H., Bochum, Germany

Filed Jan. 23, 1974, Ser. No. 435,882

Claims priority, application Germany, Jan. 31, 1973, 2304560

Int. Cl. B65g *41/00*

U.S. Cl. 198—109 **5 Claims**



1. A scraper chain conveyor comprising:

a driven chain having links constructed from material that is round in cross section;

a plurality of flight attachments each having a length extending transverse to said chain, said flight attachments being connected centrally between their opposite ends to said chain at spaced-apart locations for receiving a pulling force transmitted by said driven chain;

a conveyor channel including at least first and second channel sections connected together in an end-to-end relation by a pivotal interconnection for angularly positioning one section with respect to the other about an axis extending in a direction normal to the conveyor direction;

said first channel section extending downstream from said pivotal interconnection with respect to the conveying direction, said first channel section having a downwardly sloping chain support floor commencing from a transverse plane immediately adjacent said pivotal interconnection and sloping downwardly in the downstream direction; and

top guides extending along opposite sides of said second channel section for said flight attachments, said top guides each having one of their terminal ends lying in a transverse plane adjacent to and upstream of said pivotal interconnection, the forces acting on said chain and said flight attachments due to the pull on the driven chain and said downwardly sloping chain support floor being such that as said chain passes along an arcuate path at the pivotal interconnection, the chain intersects points in said transverse planes, the maximum height of said arcuate path from a subtending cord through said points of intersection is smaller than one-half the length of a flight attachment.

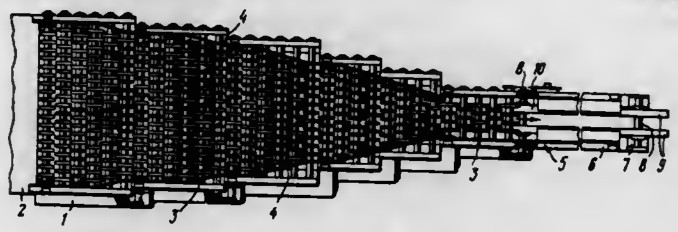
3,895,706
ARRANGEMENT FOR FEEDING THE BULBS OF ELECTRIC VACUUM DEVICES

Solomon Isaakovich Levin, ulitsa Sovetskaya 79, kv. 12; Valentin Terentievich Samonov, ulitsa Svetotekhniki 53, kv. 49; Nikolai Ivanovich Tsygankin, ulitsa Anny Luss, 2, kv. 25, and Nadezhda Serafimovna Khoroneko, ulitsa Svetotekhnik, 119, kv. 41, all of Saransk, U.S.S.R.

Filed May 11, 1973, Ser. No. 360,373

Int. Cl. B65g *13/04*

U.S. Cl. 198—127 R **2 Claims**



1. An arrangement for feeding bulbs of electric vacuum devices, comprising a conveyor for loading bulbs into an automatic exhausting and sealing-off machine, a mechanism for feeding said bulbs onto said conveyor, said mechanism being a set of successive first through last sections in the feed direction for said bulbs, each said section including a train of a number of consecutively arranged rotatable shafts each having a number of disks mounted thereon, rotation of which is adapted to set said bulbs into progressive motion, the number of the shafts in at least some of said successive sections being less than that in a preceding section, the disks on each following shaft in each respective section being of a diameter larger than the disks on the preceding shaft in said section, disks of different diameters being mounted on a last shaft in all of said sections and on all of the shafts in the last section in the feed direction of said bulbs providing lateral orientation of the bulbs so as to align the latter in the feed direction thereof, the increase in diameter of the disks in the feed direction of the bulbs imparting an increased linear feed velocity to the latter for conveying the bulbs into the machine.

3,895,707
CONVEYOR FOR TRANSPORTING PLIES OF NEWSPAPERS

Nikolia Ivanovich Anikanov, Bolshaya Bronnaya ulitsa, 2/6, kv. 6; Leonid Pavlovich Grachev, ulitsa Lva Tolstogo, 7, kv. 32; Grigory Avramovich Radutsky, 16 Parkovaya ulitsa, 49, korpus 2, kv. 68, all of Moscow, and Rafail Efimovich Kheifets, Brest-Litovsky prospekt, 162, kv. 30, Kiev, all of U.S.S.R.

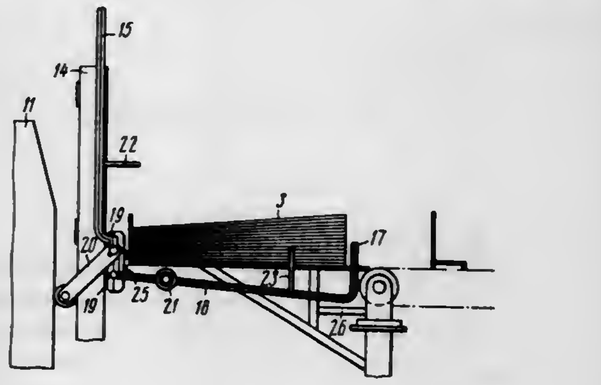
Filed June 12, 1974, Ser. No. 478,717

Claims priority, application U.S.S.R., Jan. 18, 1974, 1983003

Int. Cl. B65g *17/18*

U.S. Cl. 198—179 **3 Claims**

1. A conveyor for transporting piles of newspapers, comprising: an endless driven chain running three-dimensionally along a path having loading and unloading portions; a drive associated with said chain; carriages mounted on said chain for joint travel therewith; a clamp mounted on each said carriage, and including a pair of fork-shaped flaps forming a box-like receptacle adapted to receive a pile therein; a pivot pin supported by said carriage, with one of said flaps being pivotally mounted on said pivot pin for pivoting in a vertical plane, with said flap having the prongs thereof bent toward the prongs of the other said flap to retain a pile within said box-like receptacle during travel of said chain; another pivot pin also supported by said carriage, with said other flap being pivotally mounted on said another pivot pin for pivoting in a vertical plane, with the endmost of said prongs of said respective fork-shaped flaps having less space from one another than the rest of said prongs; and with said flaps being pivotable in a vertical plane to open said box-like receptacle for the loading and unloading thereof.



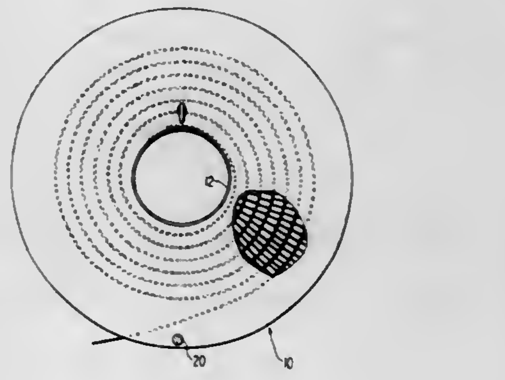
3,895,708
CONNECTOR PLATE COIL

John C. Jureit, Coral Gables; Ben Kushner, and Adolfo Castillo, both of Miami, all of Fla., assignors to Automated Building Components, Inc., Miami, Fla.

Filed Jan. 7, 1974, Ser. No. 431,046

Int. Cl. B65h *75/28*

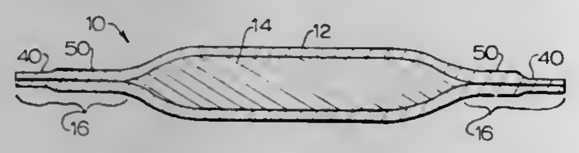
U.S. Cl. 206—53 **7 Claims**



1. An industrial product comprising a reel having a hub and a flange disposed adjacent at least one end of said hub and extending radially outwardly therefrom, and an elongated strip of sheet metal connector plate stock coiled about said hub and supported by said reel, said connector stock having a plurality of spaced elongated nail-like teeth struck integrally therefrom and projecting generally radially from one side of said coiled stock in a plurality of transversely spaced longitudinal rows extending substantially coextensively with the length of said coiled stock, said stock being helically coiled about said hub in successive opposite axial directions and at a predetermined pitch in each direction to form a plurality of generally concentric cylindrical coils of said stock about said hub with said flange limiting the axial extent of the helically coiled stock in one of said axial directions.

3,895,709
METAL MERCURY CAPSULE

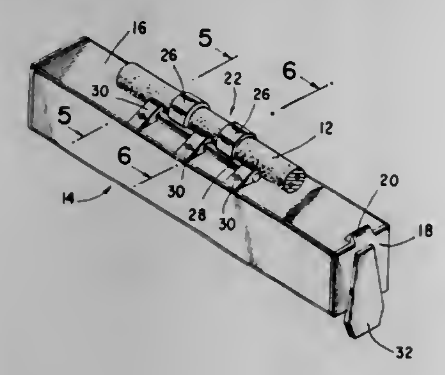
George J. Przybylek, Scotch Plains, N.J., assignor to Burroughs Corporation, Detroit, Mich.
Filed Apr. 27, 1973, Ser. No. 355,178
Int. Cl. B65d *81/00;* **H01j** *61/20*
U.S. Cl. 206—84 **2 Claims**



1. A mercury capsule comprising:
a tubular metal member having a central portion which contains a quantity of mercury to be released therefrom to obtain its vapor, flattened end portions of said member being bonded in intimate face-to-face contact with each other at both ends of said member to provide a hermetic seal for said capsule, and intermediate closed portions between said bonded end portions and said central portion,
said intermediate portions being formed of the walls of said tubular member lightly crimped together to contain the mercury liquid in said central portion, said intermediate portions being openable under elevated mercury vapor pressure at which said hermetically sealed closed end portions are not openable whereby said capsule can be exposed to heat without being ruptured and without permitting mercury to escape.

3,895,710
DRILL AND BLADE HOLDER FOR PORTABLE ELECTRIC TOOL

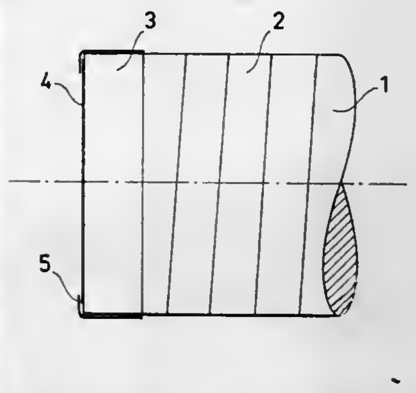
Don L. Harvell, Greenville, S.C., assignor to The Singer Company, New York, N.Y.
Filed Apr. 29, 1974, Ser. No. 465,229
Int. Cl.^{2} B65D *85/54*
U.S. Cl. 206—349 **1 Claim**



1. A drill and blade holder for attachment to a variably sized cord of a portable electric power tool comprising:
a. a one piece molded elongated receptacle having a plurality of walls and a pivotally connected end cover,
b. a strap means including a pair of pedestal bases integrally formed on the exterior of one of the walls in spaced relation to each other, a thin flexible strap element extending from each of the pedestal bases, and a locking bar extending parallel to the wall integrally connected at the ends of the strap elements intermediate the free ends of the locking bar,
c. a plurality of locking projections formed integrally with the wall and spaced from each other along the length of the wall a total distance substantially equal to the length of the locking bar,
d. each of the locking projections spaced with respect to the pedestal bases alternately along the length of the wall, and
e. the locking bar to successively engage the locking projections upon the strap elements encircling the cord to be interconnected therewith, whereby said holder will be attached to the cord.

3,895,711
WRAPPED, PREFERABLY CYLINDRICAL, PRODUCT AND A METHOD OF FARMING SAID PRODUCT

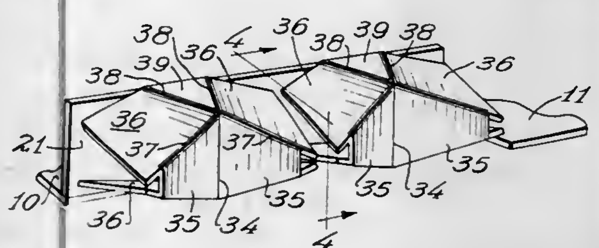
Mikko Hiltunen, and Kaarlo Halmekyto, both of Helsinki, Finland, assignors to Oy Transpak Ab Consulting, Helsinki, Finland
Filed June 20, 1973, Ser. No. 371,713
Claims priority, application Finland, June 28, 1972, 1848/72; Jan. 16, 1973, 102/73
Int. Cl. B65d *85/671, 85/66*
U.S. Cl. 206—413 **12 Claims**



1. A method of wrapping a product, such as a paper roll, particularly for increasing the waterproofing and shockproof qualities thereof, which comprises winding an elastic wrapping band around the end of the product so as to form a protecting hoop at the edges of said end, while keeping part of said band extending over the edge of the product and stretching the band so that, owing to its mechanical elasticity, the band contracts tightly against the end surface of the product during wrapping.

3,895,712
PROTECTIVE CONTAINER

William G. Sieffert, Joliet, Ill., assignor to Hoerner Waldorf Corporation, St. Paul, Minn.
Filed Aug. 30, 1974, Ser. No. 502,046
Int. Cl.^{2} B65D *5/02, 85/30*
U.S. Cl. 206—424 **18 Claims**

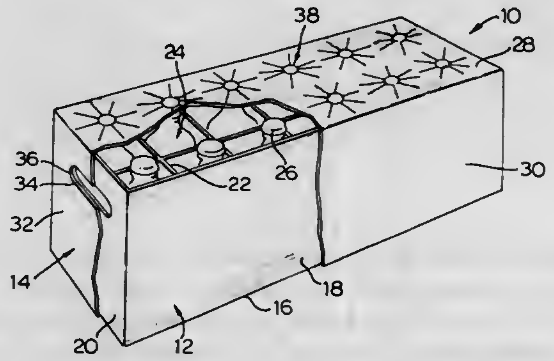


1. In a die-cut blank made from corrugated paperboard or similar sheet-like material and adpated to be folded into a carton for an article such as books or the like, said blank including:
a substantially rectangular sheet of said material having parallel top and bottom edges, and parallel lateral edges; three vertical, parallel, spaced-apart fold lines arranged intermediate said lateral edges defining four rectangular panels;
said four panels including a top panel, a bottom panel, a first side panel positioned between said top and bottom panels, and a second side panel; the improvement comprising:
a protective cell wall flap connected to said bottom panel at one end thereof by a cell wall flap hinge line;

said cell wall flap hinge line spaced from said end of said bottom panel by a section of said material having a pattern of cuts and score lines formed therein defining at least one isosceles triangle having its base perpendicular to said cell wall flap hinge line and also defining a pair of support sections hingedly connected along the equal sides of said isosceles triangle;
a first of said support sections also connected along a first hinge line extending from the base of said isosceles triangle to said bottom panel; and
the second of said support sections also connected along a second hinge line extending from the base of said isosceles triangle to a hinged connecting segment which is also hingedly connected to said protective cell wall flap, said support sections having at least four sides and foldable outwardly along with said isosceles triangle to form a cell structure having at least one edge of each of said support sections in edge abutting relationship with the surface of said cell wall flap.

3,895,713
CONTAINER COVER STRUCTURE

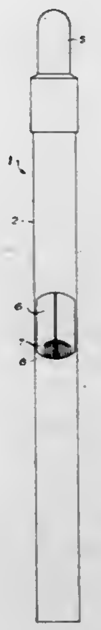
Arthur K. Bunnell, Etobicoke, Canada, assignor to Carling O'Keefe Limited, Toronto, Canada
Filed Apr. 10, 1974, Ser. No. 459,605
Int. Cl. B65d *85/00*
U.S. Cl. 206—427 **17 Claims**



1. A container structure including
a tray member having a base and side walls and end walls upstanding from said base and terminating in an open top, divider means situated in said tray member and extending upwardly from said base, said divider means forming with said side and end walls a plurality of individual compartments in each of which is situated a digit-grip removal item,
closure means closing said open top to provide a cuboid form closed structure, said closure means being a disposable sleeve of light cardboard material, said disposable sleeve including a top panel extending coextensively with the open top of the tray member and side and end panels integral with said top panel and extending downwardly from said top panel in frictional gripping engagement with the side and end walls of the tray member and the height of said walls inhibiting removal of said sleeve from association with said tray member, and
a plurality of openable seal means located in said closure means, one of said plurality of said means being associated with each of said individual compartments,
each of said plurality of openable seal means being formed in said top panel and including a plurality of score lines along which the material of said top panel may tear and extending radially towards the lateral extremities of the compartment sealed thereby, the radially outer extremities of said score lines lying on a circle, said score lines defining a plurality of segments bendable about crease lines extending between the outer extremities of said score lines, whereby, upon breaking open one of said seal means by tearing along the plurality of score lines thereof, access may be had to the item in the compartment with which the broken sealing means is associated without breaking open the sealing means of other of said compartments.

3,895,714
CONTAINER FOR CASSOU STRAWS

Frederick Day, Box 98, Winterburn, Alberta, Canada
Filed June 4, 1973, Ser. No. 367,000
Claims priority, application Canada, May 5, 1972, 141346
Int. Cl. B65d *85/20*
U.S. Cl. 206—443 **3 Claims**



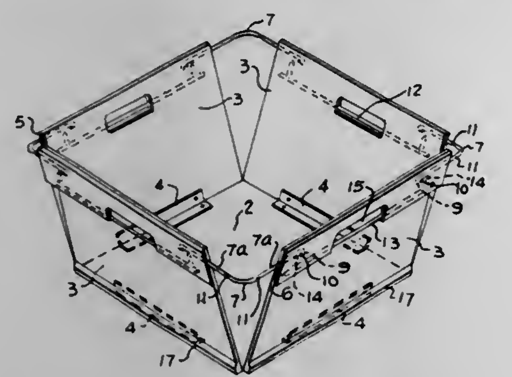
1. In combination:
a container for holding Cassou straws in a cannister; and
a plurality of Cassou straws disposed in the container;
said container being tubular, closed at the bottom end and open at the top, and having sufficient length so as to extend to the top lip of the cannister when placed therein, said container further having a window opening in its side wall intermediate its ends, said opening being spaced above the bottom closure a predetermined distance and being sized so that the upper ends only of the straws are located at the opening and are exposed for identification and removal, said opening being of sufficient size to permit a Cassou straw to be withdrawn therethrough;
said container comprising upper and lower segments, the side wall opening being located in the upper segment, said segments being held together frictionally.

3,895,715
NESTING-STACKING CARRIER HAVING HINGED SIDE WALLS

Clarence Drader, R.R. No. 2, South Edmonton, Alberta, Canada
Filed Feb. 9, 1973, Ser. No. 331,000
Int. Cl. B65d *21/06*
U.S. Cl. 206—506 **1 Claim**

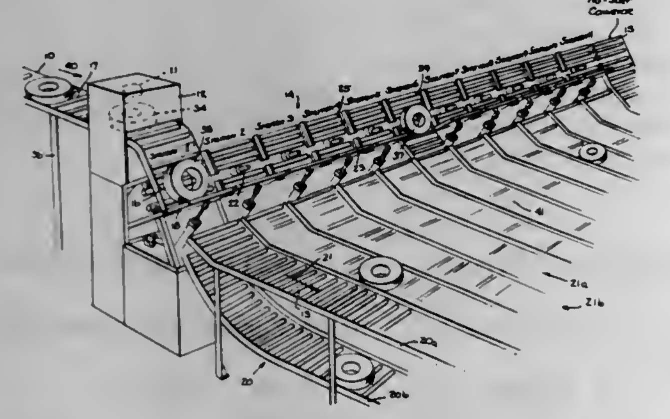
1. A nesting-stacking carrier comprising:
a bottom floor member;
upstanding side wall members hingedly attached along their lower edges to the floor member so that they can be rotated between a substantially vertical stacking position and an outwardly slanted nesting position;
each said side wall member forming handle and arm-receiving passages;
a plurality of rigid right-angle members, one such member connecting each pair of adjacent side wall members at the upper corners thereof, each said right-angle member comprising a pair of arms which are horizontally slidable into the arm-receiving passages; as the side wall members are shifted from the nesting to the stacking position, each said arm having a locking shoulder formed thereon;

a handle member horizontally positioned in the handle-receiving passage and having upwardly turned end portions, said handle member being shiftable upwardly in said passage;
each side wall member defining an opening through which its handle member extends whereby it may be grasped;
spring means, carried by each side wall member in the handle-receiving passage, for normally urging the handle member upwardly so that its end portions contact the



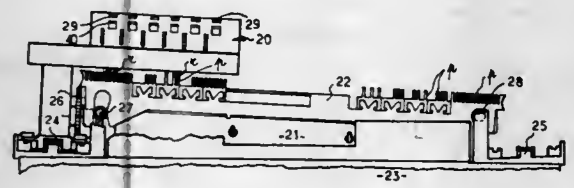
adjacent arms and abut the locking shoulders thereof, thereby locking the side wall members in the stacking position;
each said side wall member carrying catch means adapted, when the handle member is pressed downwardly to release the arms so that the side wall member may be shifted outwardly, to contact the adjacent locking shoulder to limit the outward rotation of the wall members to the nesting position.

3,895,716
TIRE SORTING APPARATUS
John W. Ugo, Warren, Mich., assignor to Uniroyal, Inc., New York, N.Y.
Filed Dec. 27, 1971, Ser. No. 212,143
Int. Cl. B07c
U.S. Cl. 209—74 M **28 Claims**



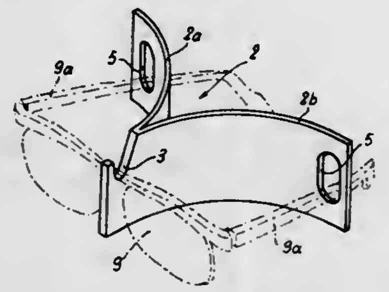
1. An apparatus for sequentially moving articles in step by step increments through a series of diverter stations onto selected ones of a plurality of branch conveyors in association with the diverter stations, comprising:
sensor means for developing code signals defining the selected ones of the plurality of branch conveyors onto which the articles are to be transferred, said sensor means being located remotely from the branch conveyors so as to permit a plurality of the articles to be in transit simultaneously therefrom to the selected branch conveyors thereof, after said sensor means develops the code signals therefor; and
memory means for storing the code signals developed by such sensor means, said memory means including a plurality of serially connected logic circuit means releasing selectively the code signals stored therein so as to transfer designated articles from the diverter stations onto the selected branch conveyors adjacent thereto,
said code signals moving through said serially connected logic circuit means in step by step increments which are in time relationship with the step by step incremental movement of said articles from diverter station to diverter station.

3,895,717
DEVICE FOR PROGRAMMING AND SELECTING DOCUMENTS
Michel Gerard Schimmerling, 30, rue de la Liberte, 67380 Lingolsheim, France
Filed June 11, 1974, Ser. No. 478,349
Claims priority, application France, June 15, 1973, 73.22591
Int. Cl.² B07C
U.S. Cl. 209—80.5 **7 Claims**



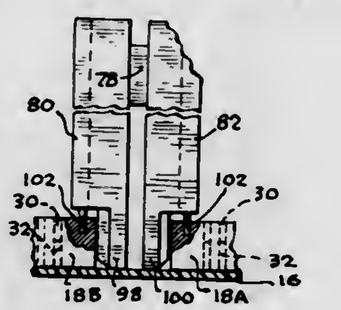
1. In a device for programming and selecting documents having an edge provided with programming and selection tabs, the said documents being adapted to be arranged pell-mell in a filing cabinet, the said device also comprising a selection carriage adapted to be dispaced above the documents in order to select the same by raising at least one side of the selected documents in accordance with data registered in the form of the said tabs which are either absent or present, corresponding to binary information 0, 1, the said carriage being provided with a set of feelers, each travelling opposite the location of one of the said document tabs, the selection being performed by first raising the documents and then lowering the discrepant documents each time the carriage passes above the documents and repels, by at least one of its feelers, an opposite present selection tab of the document, the improvements consisting in that the feelers are mounted juxtaposed on the carriage, each opposite the location of an information tab, and means are provided to maintain according to the desired programming and selection (a) some of said feelers in a lower position in which they either meet, during translatory motion of the carriage above the documents, opposite present tabs or freely pass above the document in the space left free by the absence of a tab and (b) to maintain other feelers in an upper position in which they freely pass during the translatory motion of the carriage above the documents, irrespective of the presence or absence of opposite tabs, each said feeler being mounted on a fork in turn mounted on a pivot pin, said fork having a tooth, a programming disk, having an edge upon which said tooth bears and being formed with slots adapted to receive said tooth for predetermined angular orientations of the said programming disk, said upper and lower positions of the feelers being determined by whether the tooth of the corresponding fork is engaged in a slot of the programming disk, a disengaging lever, and a locking and resilient-return mechanism which acts upon said lever to allow a tooth of the fork to be disengaged from the slot of the programming disk and being effective to rotate said disk to another relative angular position and thereby also the tooth of the fork.

3,895,718
DISPLAY STAND FOR EYEGLASSES
Pierre Francois Xavier Seiller, Lagnieu-Ain, France, assignor to Le Presentroir Seiller, Langnieu, Ain, France
Filed Sept. 12, 1973, Ser. No. 396,428
Claims priority, application France, Sept. 20, 1972, 72.33914
Int. Cl. A47f *7/02*
U.S. Cl. 211—13 **4 Claims**



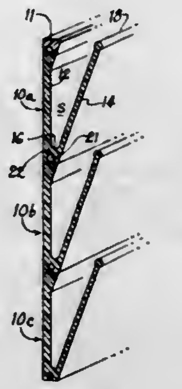
1. A display stand for eyeglasses or the like comprising a support and at least one generally V-shaped holder secured to said support in a generally horizontal position, said holder having a pair of outwardly curved elastically bendable V-legs each formed adjacent its free end with a throughgoing hole adapted to receive an earpiece of a pair of eyeglasses, said holder further having an apex formed with an upwardly open notch adapted to receive the nosepiece of the pair of eyeglasses whose earpieces are received in said holes, said support having a plurality of parallel vertical elements, each of said legs being provided with a hook next to the respective hole and snugly engageable with one of said elements.

3,895,719
SUPPORTING DEVICE FOR PRINTED CIRCUIT BOARDS
Dennis Ronald Cakora, Braidwood, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.
Filed Apr. 22, 1974, Ser. No. 462,639
Int. Cl. H02b *1/02*
U.S. Cl. 317—101 DH **9 Claims**



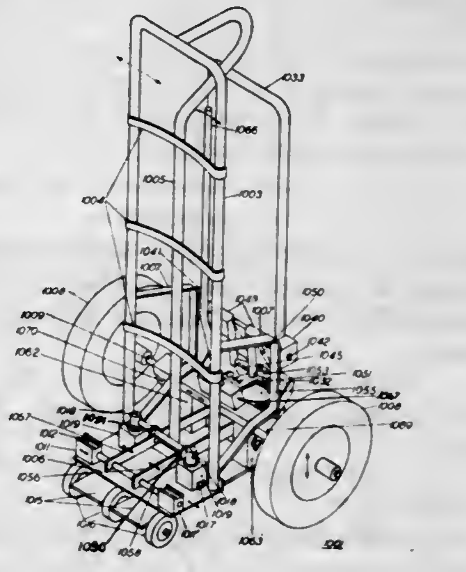
1. In a multi-connector assembly for electrically interconnecting a plurality of circuit carrying boards to a plurality of electrical connectors and including an open-top frame internally supporting said electrical connectors, said connectors facing said open top and arranged in an end-to-end pattern with a space between adjacent ends of adjacent connectors, a support guide for supporting adjacent edges of said boards when interconnected to said adjacent connectors and including
support means insertable in said space between said adjacent connector ends and including a pair of spaced apart vertical uprights with upper and lower end portions and opposite outer sides, each of said outer sides including means for receiving one of said edges of each of said boards,
a bridge member on the upper end portions of said uprights joining said uprights, and alignment means disposed on each of the lower end portions of said uprights for cooperating with the adjacent connector to align each upright and said receiving means with respect to said adjacent connector.

3,895,720
RACK FOR TICKETS AND THE LIKE
Charles D. Presberg, 400 N. Michigan Ave., Deerfield, Ill. 60611
Filed Oct. 15, 1973, Ser. No. 406,299
Int. Cl.² A47F *7/00, 3/14*
U.S. Cl. 211—50 **3 Claims**



1. A modular one piece, rack section adapted to be assembled in multiple to provide a plurality of racks to receive cards and like articles comprising a spine, at least one thin, flat wing outstanding from said spine at an acute angle therewith defining a pocket to receive the articles, adjacent sections having respective male and female members of elongated tongue and groove means, said means being adapted for end-to-end assembly only by relative translational movement in the direction of the ends, at least a portion of the length of one of said means having an enlarged transverse cross section congruent with a corresponding cross section of the other of said means to preclude disconnection by force applied transversely of the assembly.

3,895,721
INDEXING PANEL INSTALLER
Carl D. Russell, Tulsa, Okla., assignor to Aquarius, Inc., Lawton, Okla.
Continuation-in-part of Ser. No. 94,100, Dec. 1, 1970, abandoned, and a continuation-in-part of Ser. No. 56,833, July 21, 1970. This application July 28, 1972, Ser. No. 274,136
Int. Cl. E04f *21/18*
U.S. Cl. 214—1 H **31 Claims**



6. The construction panel handling apparatus for assembling a single panel to one or more panels comprising, in combination means for releasably gripping the single panel; means for moving the single panel up and down along its

longitudinal axis relative to said one or more panels; means for moving the panel right and left at substantially right angles to the direction of up and down movement generally along its axis 90° to the longitudinal axis in the plane of the single panel; means for tilting the panel clockwise or counterclockwise of the direction of up and down movement in the plane of said axes; means for tilting the panel forwardly or rearwardly of the direction of up and down movement in a direction generally orthogonally of said axes; means for reciprocally moving the gripping means along a predetermined path to contact the single panel against said one or more panels; and support means for the means for moving.

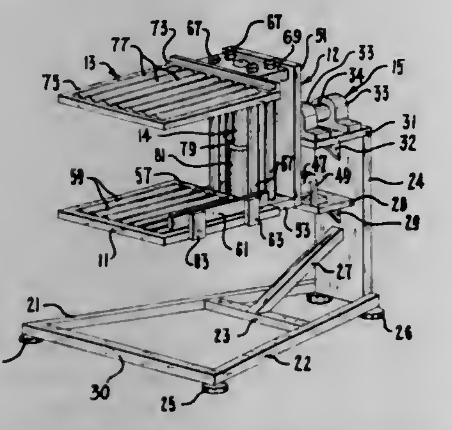
3,895,722
BOX INVERTING APPARATUS

Darrell E. Pluntz, Greenwood, Ind., assignor to Inland Container Corporation, Indianapolis, Ind.

Filed Dec. 20, 1973, Ser. No. 426,512

Int. Cl. B65g *7/00*

U.S. Cl. 214—1 Q **1 Claim**



1. Apparatus for inverting boxes of different heights on a conveyor, comprising, a lower conveyor segment, a stop plate on the downstream end of said lower conveyor segment for stopping a box thereon, a rotary carrier plate for supporting said lower conveyor segment aligned with the upstream portion of a conveyor, an upper conveyor segment moveably supported on said carrier plate, said upper and lower conveyor segments each including a plurality of parallel rollers for supporting the boxes, a pneumatic cylinder coupled to said upper conveyor segment for moving same toward and away from said lower conveyor segment to clamp and release, respectively, a box therebetween and provide full support of its top and bottom flaps, and a rotary mechanism for rotating said carrier plate about 180° such that said upper and lower conveyor segments are inverted, said pneumatic cylinder being operated after the inversion of said segments to release the box with the then lower conveyor segment in alignment with the downstream portion of the conveyor, said rotarty mechanism being operable to reverse rotate said carrier plate about 180° after release of the box to restore said upper and lower conveyor segments to their initial positions.

3,895,723
APPARATUS FOR FEEDING ROD-SHAPED STOCK

Paul Stolzer, Achern, Germany, assignor to Keuro Maschinenbau Gesellschaft mit beschränkter Haftung & Co., Achern, Germany

Filed Sept. 10, 1974, Ser. No. 505,030

Claims priority, application Germany, Sept. 14, 1973, 7333342

Int. Cl.² B65G *37/00*

U.S. Cl. 214—1 P **11 Claims**

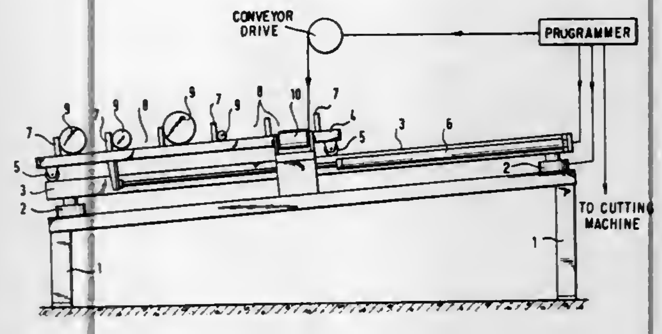
1. An apparatus for automatically feeding rod-shaped stock to a cutting machine that is controlled by a programmer, comprising in combination:

a. a conveyor for transporting rod-shaped stock, said conveyor having an input zone in which the conveyor receives the stock, a conveying path along which the conveyor advances the stock to the cutting machine and a discharge zone in which the stock is introduced from the conveyor into the cutting machine;

b. frame means defining a series of juxtaposed compartments for accommodating the rod-shaped stock in an orientation parallel to said conveying path, said series extending transversely to said conveying path and crossing the same in said input zone of said conveyor;

c. first power means for moving said frame means transversely to said conveying path for aligning a selected one of said compartments with said conveyor; said first power means being controlled by said programmer; and

d. second power means for raising said frame means from a lowered position clear of said conveyor prior to moving said frame means by said first power means and for lowering said frame means for bringing said selected compartment into said input zone of said conveyor for lifting, by said conveyor, the rod-shaped stock in said selected compartment off said frame means for transportation along said conveying path; said second power means being controlled by said programmer.



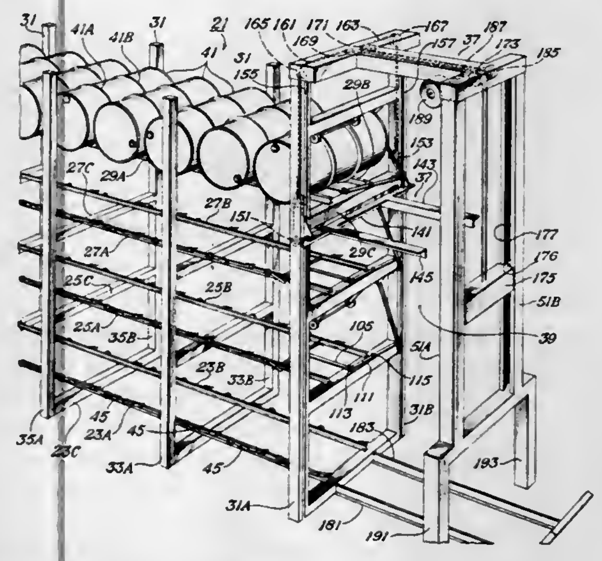
3,895,724
GRAVITY TYPE DRUM RACK WITH AN UNLOADING MECHANISM

Homer T. Thompson, 1821 Muse, Fort Worth, Tex. 76112, and Herschel D. Terrell, Jr., 3928 Wosley, Fort Worth, Tex. 76133

Filed Mar. 4, 1974, Ser. No. 447,945

Int. Cl. B65g *1/06*

U.S. Cl. 214—16.4 R **3 Claims**



1. A drum feed rack comprising:

a plurality of pairs of spaced rails,

each pair of rails being located at a different level and inclined downward toward an unloading end for supporting and storing a plurality of cylindrical drums on their sides and for allowing the drums to roll on said rails,

a plurality of spaced spacer means coupled along the length of each rail forming a plurality of pairs of spacer means for each pair of rails for holding the drums spaced from each other and for allowing the drums sequentially and separately to roll forward on said rails toward said unloading end when the first drum on each pair of rails next to said unloading end is removed,

movable stop means for each of a number of pairs of upper rails,

each movable stop means being located at said unloading end of said rack for holding the first drum of each of said upper rails next to said unloading end and for releasing the first drum to allow it to roll off of the rails,

a carriage for unloading drums from said rails and adapted to move vertically from a feedout position upward and downward next to said unloading end of said rack whereby said carriage may be located next to each of said upper rails for removing the drums therefrom,

cable means or the like connected to said carriage and extending over reel means to a weight means having a weight greater than that of said carriage such that said weight means will pull said carriage upward when a drum is not located thereon,

the combined weight of said carriage and a drum when located on said carriage being greater than that of said weight means whereby said carriage, when carrying a drum will be lowered downward to said feedout position, a movable engaging means for each of said upper rails and which is coupled to its associated movable stop means,

each engaging means being adapted to extend in the path of travel of said carriage, as it moves upward, when a drum is on its associated rails next to the unloading end of said rack,

each engaging means being adapted to release its stop means and to stop the upward travel of said carriage when extending in the path of travel of said carriage and engaged by said carriage as it moves upward to release the first drum on its associated rails to allow it to roll onto said carriage for transportation down to said feedout position.

3,895,725
MOVABLE BOBBIN TRANSPORT APPARATUS

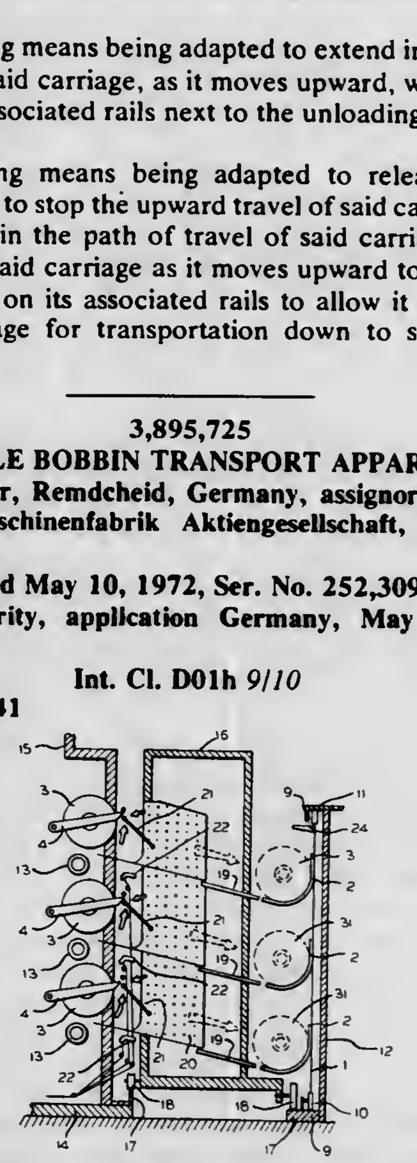
Manfred Mayer, Remdcheid, Germany, assignor to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany

Filed May 10, 1972, Ser. No. 252,309

Claims priority, application Germany, May 13, 1971, 2123689

Int. Cl. D01h *9/10*

U.S. Cl. 214—41 **19 Claims**



1. The combination of a textile machine having bobbin winding stations positioned along a face thereof in multi-level rows and spatially arranged in a predetermined geometric pattern consisting of a lattice of several long, vertically spaced, horizontal rows and many vertical columns, and a bobbin transport unit movable along said face for transportation from the winding stations of wound bobbins, said transport unit being characterized by a longitudinal series of a plurality of longitudinally movable, longitudinally aligned, bobbin-receiving sections, each section being shorter in length than the length of said face, each section having a plurality of bobbin-receiving means for receiving respective finished bobbins doffed from said stations and the bobbin-receiving means being arranged in a geometric pattern of vertically spaced, horizontal rows of same number as in said rows of said lattice with a much smaller number of bobbin-receiving means in each section than the total number of said bobbin winding stations.

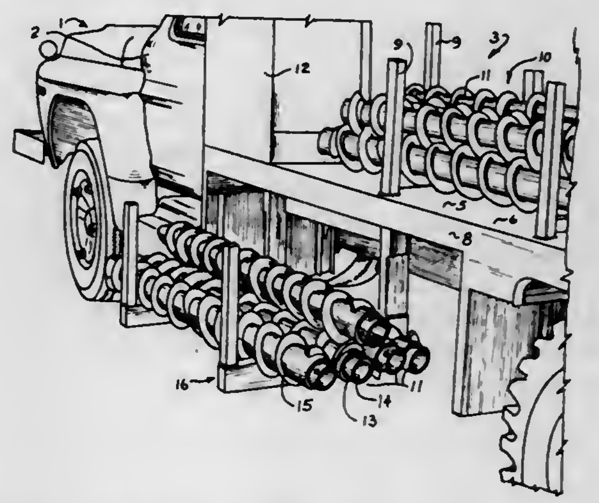
3,895,726
MOVABLE AUGER RACK

Charles L. Rassieur, University City, Mo., assignor to Central Mine Equipment Company, St. Louis, Mo.

Filed Mar. 20, 1973, Ser. No. 342,955

Int. Cl. B60p *3/00*

U.S. Cl. 214—83.24 **6 Claims**



1. A truck vehicle for carrying drilling augers including a bed for bearing equipment, said bed having a longitudinal axis comprising:

an undercarriage supporting said bed, said undercarriage including a main truck beam traversing said bed longitudinally, said truck beam being spaced from said bed;

means for carrying a plurality of drilling augers beneath said bed, at least a portion of said carrying means being mounted for movement with respect to said vehicle, said carrying means comprising shim means mounted to said truck beam and positioned above said truck beam, between said truck beam and said truck bed; spacer means abutting said shim means and positioned above said shim means between said shim means and said truck bed, a track mounted to said vehicle for confining movement of a dolly structure, said track being positioned generally athwart of said longitudinal track vehicle axis, between said spacer means and said truck bed; a dolly structure mounted for movement along said track in a direction generally athwart of said longitudinal truck vehicle axis between at least a first position and a second position, a rack for holding said drilling augers mounted cantilever fashion to said dolly structure and movable with said dolly structure between said first and said second positions, said rack being outboard of said bed in said first position and substantially beneath said bed in said second position, said rack including means for supporting said drilling augers along at least two points and side wall means for permitting stacking of said augers in said rack; and means for moving said dolly structure between said first and second positions.

3,895,727
POULTRY TRANSPORT SYSTEM

Stanley E. Rucker, 8 Highland Dr., St. Charles, Mo. 63301

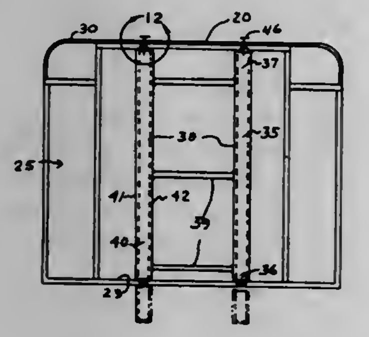
Division of Ser. No. 224,663, Feb. 9, 1972. This application Nov. 12, 1973, Ser. No. 414,797

Int. Cl. B60p *1/00*

U.S. Cl. 214—85 **1 Claim**

1. In a combined cage for transporting live poultry and a vehicle for transferring the same comprising, a cage having a pair of oppositely opposed side wall members, a pair of oppositely opposed end wall members, a pair of oppositely opposed

upper and lower wall members, means for attaching said wall member pairs to one another to form a generally rectangular structure, a plurality of partition members extending from and between the said side and end wall members, and arranged parallel to said upper and lower wall members thereby dividing the volume enclosed by said pairs of wall members into a plurality of compartments, a dividing means arranged perpendicularly to said partition members, extending from and between said side wall members and upper and lower wall members, and being arranged intermediate between said end wall members to divide a plurality of compartments into approximate halves lengthwise, access means to each of said plural compartments and arranged in each of the end wall members of said structure, each access means including a door pivotally depending from said cage and adapted to pivot inwardly of its respective compartment to provide ingress into said compartment, the side edges of each door being disposed for contact with the inner edge of the adjacent end wall to prevent said door from pivoting and opening outwardly, a plurality of casters mounted to the lower wall member, each of said side wall members, upper and lower wall members, partition members, dividing means, and access doors comprising a skeleton structure covered with wire mesh, and the arrangement of the pivotal doors provided in each end wall member of a cage facilitating the compact side-by-side placement of a plurality of cages as during usage, said vehicle including a flat bed structure having at least one access opening thereto, an axle and wheel structure mounted to the underside of said flat bed structure, vehicle skeleton structure mounted upon said bed and delimiting an enclosed area capable of sustaining a plurality of said cages in both adjacent and tandem relationship, ramp means pivotally mounted to the back end of said flat bed structure and providing the instrumentality for loading and removal of said plurality of cages, said ramp means having a first and second position, said first position being designed for loading said vehicle, and said second position being designed such that said ramp becomes a back for the side vehicle skeleton structure for closing of the vehicle, said ramp means comprising first and second channel shaped track parts and support beams between said track parts, said track parts being spaced apart a distance by said support beams to accommodate the movement of the castered cage upon the ramp means, one end of each first and second track parts being hingedly mounted to the back end of said flat bed structure, the other end of said track parts being tabbed, corresponding tabs provided upon the back of the vehicle skeleton structure and being in alignment with the track tabs as when the tracks are pivoted into closure with the back of the said structure, and locking pins cooperating between the tabbed ends of the track parts and the aligned tabs of the vehicle skeleton structure to secure said pair of track parts into the position of function as the back for the flat bed structure for securely retaining the loaded cages upon the vehicle during its transit.

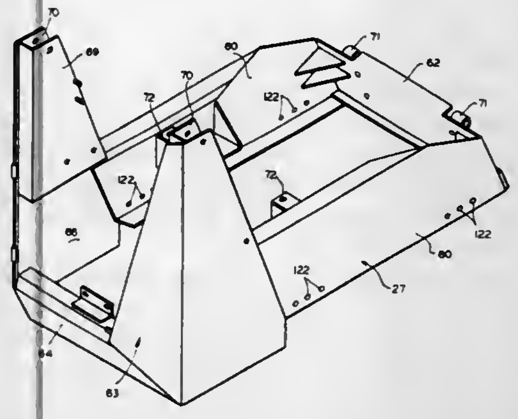


3,895,728

TRACTOR VEHICLE HAVING MATERIAL HANDLING SUBFRAME

John P. Heggen, Lisbon, N. Dak., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Feb. 5, 1973, Ser. No. 329,939
Int. Cl. B66f *11/02*
U.S. Cl. 214—140 **13 Claims**



1. A tractor vehicle and material handling subframe, in combination, comprising a tractor body defined in part by side walls on opposite sides of the tractor centerline, by end walls at opposite ends of the side walls and by a bottom wall all partially enclosing a compartment area, an engine, hydraulic drive means powered by said engine contained within said compartment, a plurality of spaced stub axles projecting from the side walls on opposite sides of said compartment, wheels driven by said hydraulic drive means rotatably mounted on said stub axles, a subframe mounted on said tractor body comprising laterally spaced, longitudinally extending side beams, support means mounted on said stub axles, said side beams secured to said stub axles on said support means and defining an interior space for receiving said tractor body, upright members projecting upwardly from adjacent the rear of each side beams on each side of said engine and providing at the upper ends thereof a pair of pivotal mountings, a pair of lift arms pivotally attached at said pivotal mountings and extending forwardly along each side and downwardly at the front in the lowered position mounting a material handling means whereby material handling loads are contained predominately in said subframe and transferred to said stub axles directly.

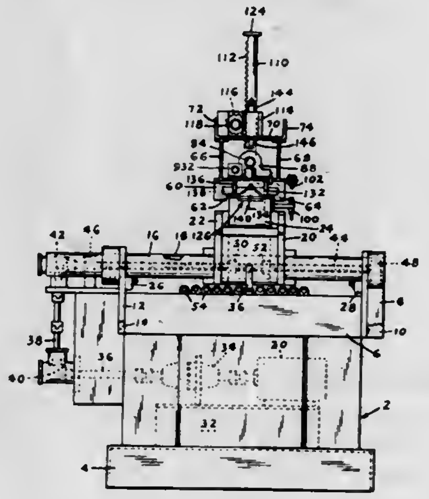
7. A skid steered loader comprising in combination separate tractor and loader subframe assemblies, said tractor assembly including a body defined in part by side walls on opposite sides of the loader center line and by end walls at opposite ends of the side walls and a bottom wall enclosing at least partially a lower compartment area having a length less than the distance between wheels on opposite sides of the loader, additional side and end walls spaced from said first mentioned side and end walls defining a smaller upper compartment area medially of said tractor body so as to provide an engine space at the rear thereof and a space for the operator's legs at the front, a pluarlity of stub axles projecting from the sides of the lower compartment area and spaced apart less than the width across between the wheels, a support mounting on each stub axle said loader subframe assembly comprising a pair of laterally spaced, longitudinally extending side beams generally defining therebetween a space longer than it is wide to receive and partially surround said tractor body and secured to said support mountings on the stub axles, a pair of upright members joined at the bottom by a cross member, said upright members being formed of metal plate elements wider at the bottom than at the top so as to protectively enclose a portion of said engine space, a shoulder plate secured inwardly of and spaced from said upright plate and generally conforming to the configuration of the upper portion thereof providing a pivotal mounting location at the upper end thereof between said shoulder and upright plates, a pair of lifting arms, one connected between each upright and shoulder plate at the pivotal mounting location and extending forwardly and downwardly therefrom alongside the operator's space and supported in the lowermost position on the front portion of the subframe and said arms extending downwardly immediately at the front of said loader and mounting a material handling member on the ends thereof whereby said upright members and side beams protectively surround the tractor and loader forces are contained and transferred to the stub axles directly.

3,895,729

SENSOR RESPONSIVE CYBERNETICS MACHINE

William J. Dukette, Palisades Park, N.J., assignor to American Associated Cybernetics, Inc., New York, N.Y.

Division of Ser. No. 74,784, Sept. 23, 1970, Pat. No. 3,770,140, which is a continuation-in-part of Ser. No. 65,560, Aug. 20, 1974, abandoned, which is a continuation-in-part of Ser. No. 861,015, Sept. 25, 1969, abandoned. This application July 2, 1973, Ser. No. 375,637
Int. Cl. B25j *9/00*
U.S. Cl. 214—152 **6 Claims**



1. In an automatic article manipulator which includes an article engaging head movably mounted on a frame and an article responsive sensor mounted on said head, the method of searching for and locating a randomly positioned article which comprises the steps of:

- a. moving said article engaging head;
- b. sensing for the presence and location of an article while said head is moving; and
- c. stopping the movement of said head when the presence and location of an article is detected.

3,895,730

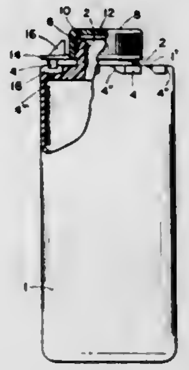
SAFETY CONTAINER

Anthony J. Koehne, Severna Park, and Harry O. Baughan, III, Baltimore, both of Md., assignors to Poly-Seal Corporation, Baltimore County, Md.

Filed Mar. 18, 1974, Ser. No. 451,863
Int. Cl.^{2} B65D *55/02*
U.S. Cl. 215—216 **1 Claim**

1. A container and safety closure therefor, including in combination:

- a. a hollow container having an externally threaded tubular neck integrally molded thereon having its tubular opening extending into the hollow container, the area of the container extending outwardly from the neck being in a plane angularly disposed to the elongated axis of the neck, the outer surface of the container adjacent the neck having a plurality of recesses extending inwardly from the outer upper surface of the container and equidistant from the neck;
- b. an internal threaded closure cap adapted to screw on to and off the externally threaded neck;
- c. said closure having a flexible tab formed integral with the lower edge of the cap and extending outwardly from one side thereof and parallel with the outer surface of the container adjacent the neck to a point overlying the recesses and out of engagement therewith, a pawl formed integrally with the under surface of the flexible tab and positioned on the tab to engage the recesses in the container when the closure is threadably moved downwardly on the neck;
- d. a stop member integrally formed on the tab and spaced outwardly from the closure cap, said stop extending upwardly from the upper surface of the tab at a point to engage the closure cap after the tab has been flexed to a point to disengage the pawl from the said recess in order to rotate the closure cap in its off direction.

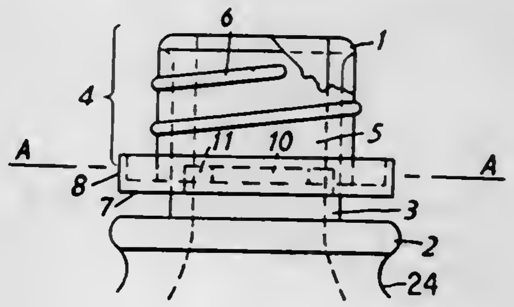


3,895,731

CLOSURE FOR RECEPTACLES

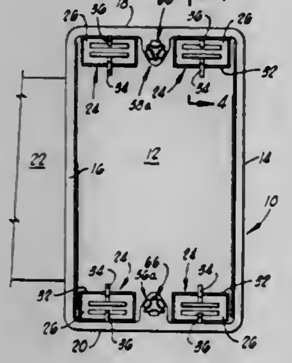
Henri Coursaut, Mercurey, France, assignor to Le Bouchage Mecanique, France

Filed July 9, 1973, Ser. No. 377,313
Int. Cl. B65d *55/02, 85/56;* **A61j** *1/00*
U.S. Cl. 215—218 **4 Claims**



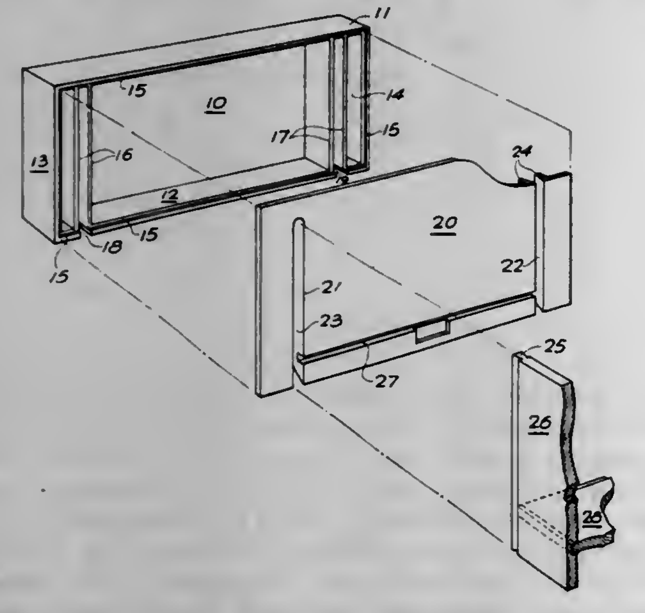
1. Two-part closure means for a receptacle, said closure means comprising an annular member having a substantially cylindrical portion with a thread in the external surface thereof and a flange extending radially from one end thereof, said flange having formed therein a circumferential channel extending over less than a full circle to define over the remainder of the circle an arcuate protuberance, the cylindrical portion being apertured about said protuberance, whereby upon deformation of the flange adjacent the protuberance the protuberance may be displaced axially of the cylindrical portion, said closure means further comprising a cap having an internal thread and having a void formed therein engageable over said protuberance upon engagement of said annular member and cap at their threads.

3,895,732
ELECTRICAL JUNCTION AND SWITCH BOXES
Richard L. Robinson, Bryant, and Ivan L. Volgyesy, Camanche, both of Iowa, assignors to Indian Head, Inc., New York, N.Y.
Filed Feb. 1, 1974, Ser. No. 438,686
Int. Cl. H02g *3/14*
U.S. Cl. 220—3.5 **17 Claims**



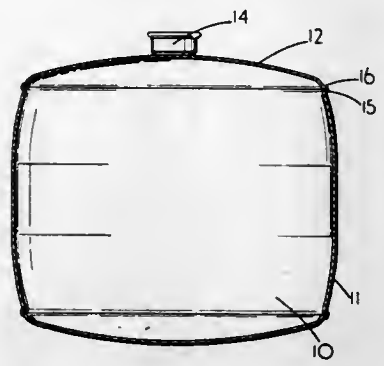
1. A molded synthetic resin electrical service box comprising:
- at least two walls intersecting each other at substantially a right angle; and
- a break-out window extending between said intersecting walls at an acute angle to each of said intersecting walls, said break-out window comprising:
- a removable panel in a surrounding opening spacing the panel from the remainder of the box;
- a pair of bridge webs bridging across said opening and connecting opposite sides of the panel with said two intersecting walls; and
- a pair of guide ribs on the side of said removable panel facing the inside of said box and defining a tool receiving space therebetween.

3,895,733
MOLDED TWO-PART DRAWER FRONT
Herbert R. Chambers, 1358 Vicksburg Dr., Southaven, Miss. 38671, assignor to Spencer Industries, Inc., Youngstown, Ohio
Continuation of Ser. No. 198,231, Nov. 11, 1971, abandoned.
This application Apr. 9, 1973, Ser. No. 348,958
Int. Cl. A17b *88/00*
U.S. Cl. 220—4 R **10 Claims**



1. A drawer front made of two plastic pieces for assembly to drawer sides having dove-tailed end portions, said drawer front consisting of a separately molded exterior piece and a separately molded inner piece arranged to be attached to one another, said inner piece having narrow vertical apertures formed therein with the walls of said inner piece defining said apertures being oppositely inclined with respect to one another so as to form open bottom dove-tailed configurations for the reception of the dove-tailed end portions of said drawer sides, ribs formed on said inner piece alongside said narrow apertures for increasing the thickness of said inner piece adjacent said apertures and increasing the depth of said apertures.

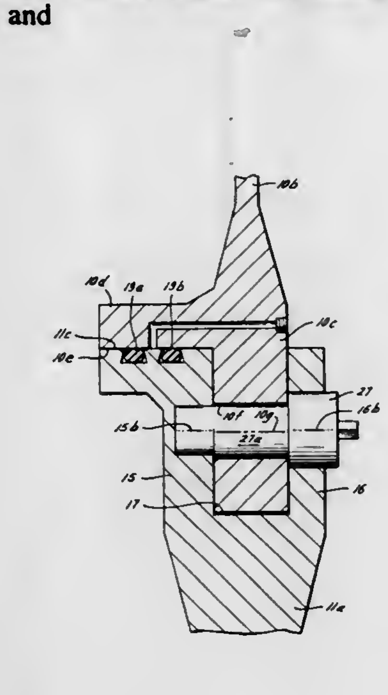
3,895,734
THIN-WALLED CONTAINERS
Lindsay Maitland Thomas, Chisworth near Stockport, England, assignor to Fairey Stainless Limited, Heston, England
Division of Ser. No. 204,250, Dec. 2, 1971, Pat. No. 3,729,812.
This application Mar. 19, 1973, Ser. No. 342,905
Claims priority, application United Kingdom, Dec. 2, 1970, 57247/70
Int. Cl. B65d *7/02*
U.S. Cl. 220—5 R **9 Claims**



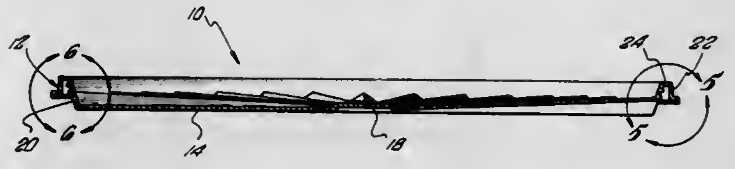
1. A double walled container comprising:
- a. a rigid outer vessel forming the outer wall of said double walled container and
- b. a liner inserted in said rigid outer vessel, said liner being constructed to expand to conform substantially with the inner surface of said outer vessel using fluid pressure, said liner comprising
  - i. an open-ended, thin-walled tube of stainless steel the end portions of which are bent outwardly to form circumferential flanges projecting substantially at right angles to the wall of the tube, the junction of each flange and the wall of the tube being smoothly curved, and
  - ii. two thin end plates made of stainless steel and of size and shape to span the open ends of the tube, one of the end plates being welded to each of the flanges on the tube along the overlapping portion, close to the radially outer edges of the flanges and of the end plates,
- the shape of the weld between the tube and the end plates constituting means responsive to fluid pressure for stretching the welding seams between the tube and the end plates to effect weld seams which are substantially flat internally.

3,895,735
VESSEL WITH PRE-COMPRESSED SEAL
Henry J. Clay, Houston, Tex., assignor to Hahn & Clay, Tex.
Filed July 8, 1974, Ser. No. 486,305
Int. Cl. B65d *7/02*
U.S. Cl. 220—5 A **8 Claims**

1. A new and improved vessel structure, including:
- a first vessel section having an annular end portion formed of inner and outer, concentric connector rings separated to form an annular recess;
- a second vessel section having an annular end portion including a connector ring for insertion into said annular recess of said first vessel section;
- seal means mounted with said annular end portions of said first and second vessel sections for sealing said first and second vessel sections against the passage of fluid therebetween; and
- said connector rings receiving a radially directed pin mounted for rotation with respect to said connector rings and including pre-load means for locking said connector rings together and for pre-compressing said seal means.

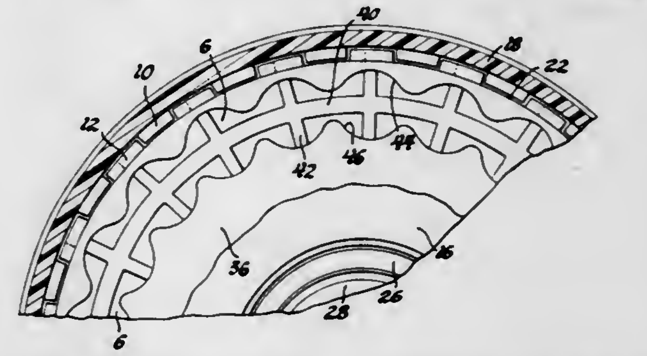


3,895,736
PRESS TYPE CLOSURE WITH DOUBLE SEAL
James B. Swett, Barrington, R.I., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed Oct. 9, 1973, Ser. No. 404,455
Int. Cl. B65d *41/00*
U.S. Cl. 220—306 **1 Claim**



1. A locally distortable plastic closure contractably and distensibly constructed and having an elasticity such that it is adapted to hermetically seal an open-mouthed member and comprising:
- a. a center main wall including a corrugated area emanating from a center portion thereof toward a peripherally extending wall, said center main wall being adapted for the application of pressure to the approximate center thereof in such manner that said corrugated area tends to collapse upon itself and substantially uniformly displace said peripherally extending wall until said closure is easily positionable on an open-mouthed member; and,
- b. first and second integral extended sealing beads positioned around said peripherally extending wall, said sealing beads being displaceable in like manner with said peripherally extending wall such that at least a portion of said sealing means is closely engageable with and sealable against the walls of an open-mouthed member due to the resiliency and elasticity of said closure upon the discontinuance of applied pressure to said center main wall and wherein said secondary annular sealing bead is angularly disposed with respect to the horizontal, is of a more narrow cross-sectional configuration than the first sealing bead and is positioned above the first such bead.

3,895,737
CHILD-PROOF DISPENSING CONTAINER AND COVER ASSEMBLY
Otto Phillips, London, Canada, assignor to International Tools (1973) Ltd., Windsor, Canada
Filed Mar. 7, 1974, Ser. No. 449,121
Int. Cl. B65d *83/04*; **G07f** *11/00*
U.S. Cl. 221—82 **3 Claims**



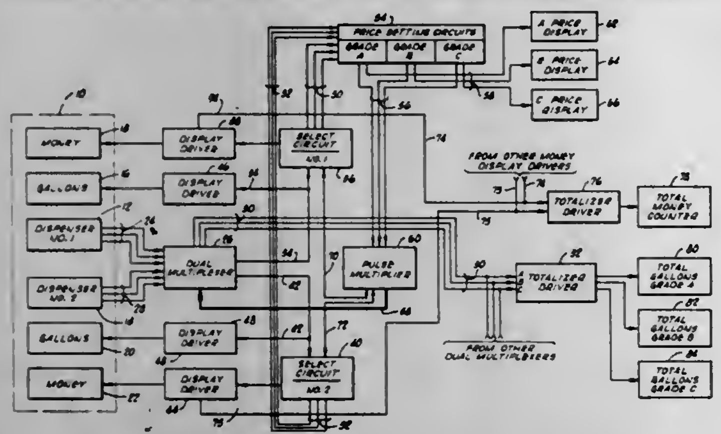
1. A child-proof container and cover assembly for pills and the like comprising: a container member having a base with concentric inner and outer side walls projecting axially therefrom; a cover member rotatably mounted on said container member; a dispensing opening in said cover member sequentially movable to positions in which a pill can be removed from the container member through said dispensing opening; said cover member having an end wall with a skirt projecting axially therefrom; said skirt and outer side wall being disposed in telescopic relationship with respect to each other; locking means on said container and cover members having a locked position in which said cover member is locked against rotation with respect to said container member and an unlocked position in which said cover member can rotate with respect to said container member; said locking means being movable between said locked and unlocked positions by axial movement of said cover member with respect to said container member; and resilient biasing means formed integrally on said container member; a retaining post projecting axially from said base; a pair of arcuate slots formed in said base between said inner side wall and retaining post; a pair of strips extending diametrically between said retaining post and inner side wall and separating said arcuate slots; said biasing means comprising a spring member in each of said arcuate slots; each of said spring members having an inner end joined integrally to said inner side wall and projecting therefrom toward said retaining post and terminating in a free end spaced from said retaining post; and a plunger on said cover member projecting into the space between said inner side wall and retaining post into engagement with said spring members.

3,895,738
GASOLINE DISPENSING SYSTEM
George E. Buchanan, 6613 N. Prospect, Oklahoma City, Okla. 73111; Donald R. Krone, 10505 Ridgeview Dr., Oklahoma City, Okla. 73120; Russell R. Krone, 2908 N.W. 28 St., Oklahoma City, Okla. 73107, and James E. Noyes, 5817 N.W. 72 St., Oklahoma City, Okla. 73132
Filed Sept. 20, 1973, Ser. No. 398,841
Int. Cl. G06f *15/56*; **B67d** *5/08*
U.S. Cl. 222—26 **15 Claims**

1. A gasoline dispensing system for delivery of gasoline from one or more supply reservoirs comprising:
- plural dispensing means, each including metering means, for actuation to dispense gasoline from selected ones of plural supply reservoirs;
- plural circuit means each generating an electrical pulse output as a predetermined rate in proportion to the amount of gasoline flow dispensed through a respective one of said plural dispensing means;
- multiplexing means receiving electrical pulse outputs from each of said plural circuit means to provide plural, time sequential pulse output groups;

scanning means including a clock oscillator for controlling scanning rate of said multiplexing means such that a sequential pulse output group may be generated for each of the respective plural dispensing means;

rate multiplier means including counting circuitry which is controlled by said scanning means to receive input of said sequential pulse output groups and to generate a sequential money pulse output for each of the respective pulse output groups, each money pulse output being at a preselected pulse rate in proportion to total pulses of the respective pulse group;



plural input means controlled by said scanning means to provide sequential binary coded decimal inputs to said counting circuitry to preselect the proportional rate of each money pulse output; and

plural means indicating each of said pulse output groups as gallons dispensed and indicating each of said money pulse outputs.

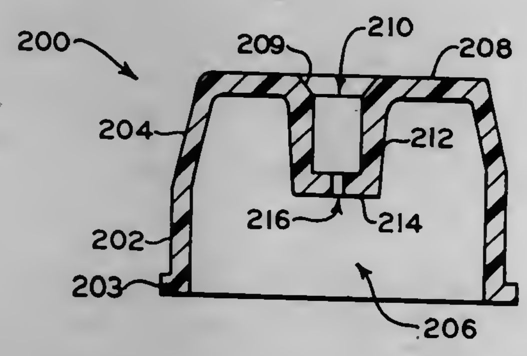
3,895,739
DISPENSER FOR FLUSH TANK

Dean H. Buchtel, Canton, Ohio, assignor to NuCon, Inc., North Canton, Ohio

Continuation-in-part of Ser. No. 202,905, Nov. 29, 1971, Pat. No. 3,784,058. This application Aug. 23, 1973, Ser. No. 390,865

Int. Cl. E03d *9/03*

U.S. Cl. 222—57 **8 Claims**



1. Apparatus for containing and regulating the dispensing of fluids, comprising:

a container for the fluid, the container having an opening at its lowermost point;

a nozzle member received in sealing engagement with the opening, the nozzle member defining an open bottomed chamber and having a recess depending from the top thereof into the chamber, the recess having an orifice therein in communication between the chamber and the interior of the container; and

insert means received within the recess and defining therewith an elongated spiral passageway extending upwardly from the orifice to a point adjacent an upper end of the nozzle, wherein the insert is positionally movable within the recess, the degree of insertion of the insert in the recess regulating the flow-restrictive characteristics of the passageway.

3,895,740
APPARATUS FOR DELIVERING PART QUANTITIES OF FOAM STOCK

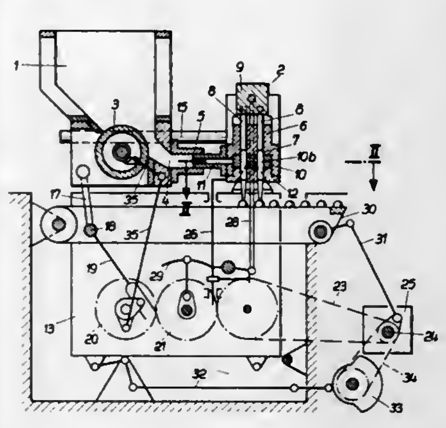
Ralph van der Buylton-Domgraff, Blucherstrasse 23, 3167 Burgdorf, Germany, and Alfred Doderer-Winkler, Tannenweg 22, 5451 Melsbach, Germany

Filed Oct. 2, 1973, Ser. No. 402,712

Claims priority, application Germany, Oct. 2, 1972, 2248235

Int. Cl. B67d *5/52*

U.S. Cl. 222—162 **4 Claims**



1. Apparatus for delivering part quantities of foam stock and the like, comprising a stock container having an open delivery end; a transfer molding device; guide rods carried by said device and engaging said stock container; whereby said stock container is reciprocable relatively to said device; and a rotary feed roller carried by said stock container and extending into said delivery end; said device including a nozzle carried by said container and enclosing said delivery end, a hollow plunger strip slidably supported in said nozzle and having spaced parallel cylindrical bores, a plurality of delivery chambers adapted to communicate with said bores and further having a valve spool movable transversely to said bores and having ducts and parts extending transversely thereto and adapted to communicate with said bores, delivery plungers slidably mounted in said delivery chambers and a die plate carried by said device below said valve spool for the delivery of the foam stock.

3,895,741
INTRAVENOUS FLUIDS ADMINISTRATION APPARATUS

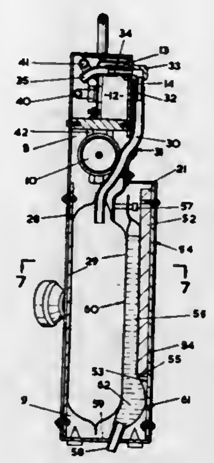
Bede Stanislaus Nugent, Artarmon, Australia, assignor to Bestnu Engineering Pty. Limited, Artarmon, Australia

Filed Sept. 27, 1972, Ser. No. 292,693

Claims priority, application Australia, Sept. 28, 1971, 6452/71

Int. Cl. B65d *35/28*

U.S. Cl. 222—103 **5 Claims**



1. Apparatus for parenteral fluid administration to a patient comprising:

a. two pressure pads having mutually confronting spaced apart pressure applying faces, a side edge and bottom edge of one face being offset from the corresponding side edge and bottom edge of the other face;

b. a pliant bag having a bottom outlet, a gaseous content and a liquid content;

c. means to support said pliant bag sandwiched between said faces so that its liquid content may drain through said outlet, the outlet extending beneath one of said pads;

d. loading means operable to cause one of said pressure pads to approach the face of said other pressure pad;

e. said faces being so sized that when, by said approach, they bring opposed side-walls of said pliant bag therebetween into contact thereby to halt further said approach of said faces, portions of said side-walls remain bulged apart sufficiently for the squeezed bag still to contain said gaseous content thereby to avoid its reaching the patient; and said pressure-applying faces being formed that the said bulged apart side-wall portions form a lateral duct in and at the bottom of the bag to which said outlet opens, and also forms at least one riser duct which opens to said lateral duct and extends for the full height of the bag interior.

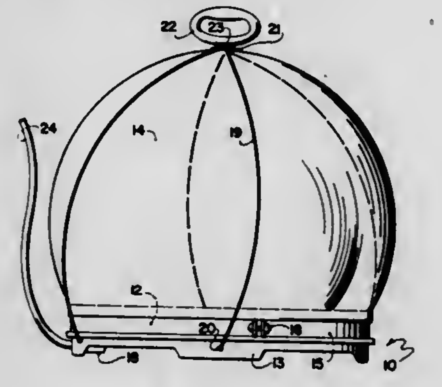
3,895,742
COLLAPSIBLE CONTAINER

Herman Wulbern, Winnipeg, Canada, assignor to Melet Plastics Ltd., Winnipeg, Canada

Filed Nov. 19, 1973, Ser. No. 417,277

Int. Cl. B65d *37/00*

U.S. Cl. 222—105 **2 Claims**



1. A collapsable container comprising in combination a base which is substantially circular when viewed in plan, an elastic membrane secured around the periphery of said base to form a closed container with said base, inlet and outlet means in said base communicating with the interior of said container, a plurality of straps secured by one end thereof around the perimeter of said base, a common carrying handle secured to the other end of said straps, said straps enclosing said membrane when full whereby the load of said container is supported by said carrying handle when said container is being carried, said base including a base panel and a peripheral wall around said panel, said membrane being substantially semi-spherical when full and being secured by the open end thereof around said wall, support surface engaging portions depending from adjacent the periphery of said base panel, a flexible steel strap secured around the base of said membrane and said peripheral wall in clamping relationship, said flexible carrying straps secured equidistantly around said base and extending upwardly and over said membrane to meet at a common apex, said handle being secured to said common apex, said membrane, said straps and said handle nesting within said peripheral wall when said container is empty.

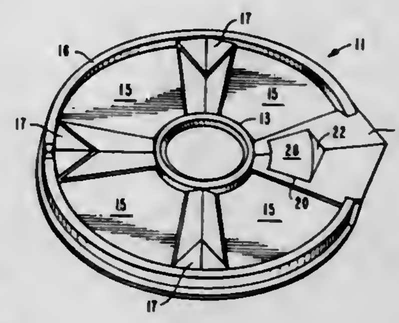
3,895,743
POUR SPOUT LID

Hubert E. Christian, Phoenix, Ariz., assignor to Dart Industries Inc., Los Angeles, Calif.

Filed Dec. 8, 1972, Ser. No. 313,220

Int. Cl. B65d *51/16*

U.S. Cl. 222—143 **8 Claims**



1. A closure having a rim structure adapted to engage the top of a container comprising:

a central ring portion;

a plurality of rib sections extending radially from said ring portion to said rim structure with at least a part of some of said rib sections including a surface for supporting a container; and,

a raised portion extending radially outwardly from said ring to a point above the rim structure, said portion presenting an outwardly flared upwardly directed elongated crest to guide the flow of materials from said container said elongated crest and said container top thereby forming the spout opening.

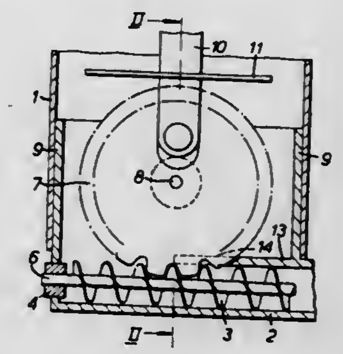
3,895,744
CONVEYORS

Leslie George Powning, Stockport, England, assignor to Sturtevant Engineering Co., Limited, Finchley, England

Continuation of Ser. No. 144,860, May 19, 1971, abandoned. This application Jan. 18, 1974, Ser. No. 434,644

Int. Cl. G01f *13/00*

U.S. Cl. 222—231 **4 Claims**



1. A screw conveyor unit for use with a hopper having an outlet opening, said unit comprising:

a. a hollow carrier removably receivable by the hopper outlet opening and communicating with the hopper;

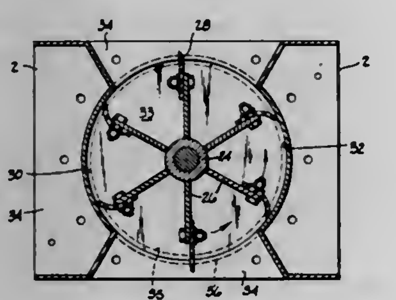
b. a conduit supported by said carrier, said conduit having at one end thereof an inlet disposed within said carrier for communicating with the interior of said carrier, said conduit having a wall and a slot formed in said wall within said carrier, said slot also providing communication between said carrier and said conduit, said slot extending in the direction of said conduit axis and being located downstream of said inlet in the conveying direction; and said conduit having an outlet at its other end for delivering material to be discharged from said hopper;

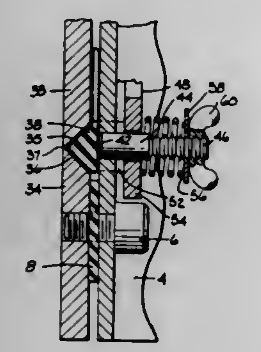
c. a worm conveyor screw having a spindle extending from said inlet to said outlet and having a helical screw flight defining with said conduit a helical passage from material to be conveyed;

d. drive means for said conveyor screw;
e. a generally planar toothed element rotatably mounted in said carrier by bearing means, said element being mounted with a portion thereof extending through said slot in said conduit with the teeth thereof meshing with said flight of said conveyor screw to form a barrier across said helical passage;
f. a reciprocable agitator supported on said carrier and extending from said element into said hopper; and
g. means coupling said element and said agitator so that rotation of said element will effect reciprocation of said agitator.

3,895,745
ROTARY VALVE HAVING AN IMPROVED AIR SEAL

Cecil Hugh Ridler Hook, Asbestos, Canada, assignor to Johns-Manville Corporation, Denver, Colo.
Filed Feb. 25, 1974, Ser. No. 445,181
Int. Cl. G01f *11/10*
U.S. Cl. 222—368 **12 Claims**





1. A rotary valve comprising end plates, a body section, a rotatable shaft running lengthwise through said body section and extending through said end plates, a plurality of vanes extending outward from said shaft, said vanes having wipers along their terminal edges to maintain seals between said vanes and said body section, side plates surrounding said shaft and lying parallel to said end plates, said side plates adapted to rotate with said shaft, and an annular gasket forming a sealing relationship between each side plate and the body section the improvement comprising said annular seal at each side plate being formed by a wear resistant gasket pressed against at least one annular beveled sealing surface on each of said side plates and against a sealing surface on the body section opposite said beveled surface by adjustable pressurizing means.

3,895,746
POSITIVE EXPULSION TANK

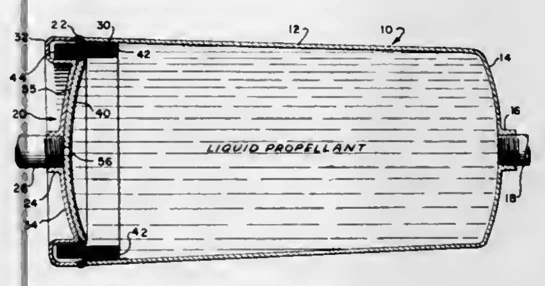
William H. Bauer, Grand Island, N.Y., assignor to Textron Inc., Providence, R.I.
Continuation-in-part of Ser. No. 571,938, Aug. 11, 1966, Pat. No. 3,494,513. This application Aug. 6, 1969, Ser. No. 866,049The portion of the term of this patent subsequent to Feb. 10, 1987, has been disclaimed.
Int. Cl. B67d *5/42*
U.S. Cl. 222—386.5 **3 Claims**

1. An expulsion tank assembly comprising, in combination, a cylindrical container having a portion closed at one end wall and having a storage space therein for a usable fluid to be expelled therefrom,

a telescoped ductile metal bladder defining one end of said storage space and adapted to be extended thereinto to conform closely with the inner surfaces of said container thereby to displace the usable fluid therefrom with high volumetric efficiency, said bladder when extended being of cylindrical form having a cylindrical side wall open at one end and closed at its other end by a head wall portion, said bladder being sealingly secured peripherally around its open end to said container and said side wall of the bladder being initially disposed to present a series of telescoped annular bands, the bands being disposed in close proximity to each other so that the bands successively lead into each other along annular folds of small radius facing alternately toward and away from said storage space and with the innermost band being joined directly to said head wall portion of the bladder, said small radius being set so as not to exceed the ultimate plastic strain capability of the bladder material during expulsion,

means for introducing pressurizing fluid against that side of said bladder facing away from said storage space and at a pressure sufficient to unroll said side wall along those folds facing said storage space to extend said bladder as aforesaid, whereby alternate bands are subjected to axial tension and hoop tension while the remaining bands are subjected to axial compression and hoop compression due respectively in each case to the resistance of the metal to unrolling and the radial pressure of said pressurizing fluid,

each of said bands subjected to axial and hoop tension initially overlapping a next outermost band at least along a length thereof which would not expose a length of such next outermost band therebeyond which is greater than



$$\frac{.56E}{P} \quad \sqrt{Rt}\left(\frac{t^2}{R}\right) + .657\ \sqrt{Rt},$$

where R is the radius of the band in question, E is the modulus of elasticity, t is the material thickness, and P is the required rolling pressure,

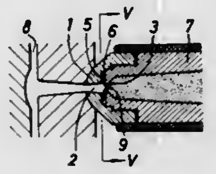
means for stabilizing said innermost band during extension of the bladder whereby the bladder may attain its fully extended state

the fold line leading from said innermost band to the next outermost band facing away from said storage space whereby said means for stabilizing is constituted by the rigidity of said innermost band as effected by the axial and hoop tension forces acting thereon; and

each of said bands subjected to compressive forces having a portion thereof exposed on said storage space side beyond the next innermost tensioned band.

3,895,747
RESIN FLOW CONTROLLING DEVICE FOR INJECTION MOLDING MACHINE

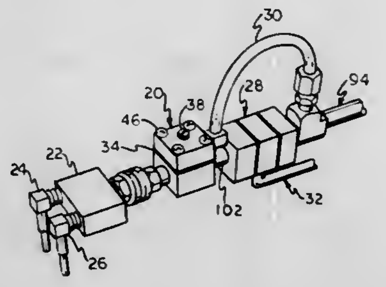
Katashi Aoki, Sakaki, Japan, assignor to Nissei Plastics Industrial Co., Ltd., Sakaki, Japan
Filed Oct. 4, 1973, Ser. No. 403,357
Claims priority, application Japan, Oct. 6, 1972, 47-100379
Int. Cl.² B29F *1/06*
U.S. Cl. 222—494 **6 Claims**



1. A resin flow controlling device for an injection molding machine which comprises an orifice formed near the outlet of a molten resin passage; gap means formed between said outlet and said orifice; a valve plate positioned within said gap; said valve plate comprising a spring plate having a bent closing portion and defining with said gap openings for resin passage, said closing portion normally contacting said orifice and being deformable to an out of contact position by pressure of molten resin at said orifice to open said orifice, wherein said gap means further comprises a supporting member defining an opening for resin passage between said valve plate and said outlet, said supporting member adapted to maintain said closing portion of said spring plate in said out of contact position.

3,895,748
NO DRIP SUCK BACK UNITS FOR GLUE OR OTHER LIQUIDS EITHER SEPARATELY INSTALLED WITH OR INCORPORATED INTO NO DRIP SUCK BACK LIQUID APPLYING AND CONTROL APPARATUS

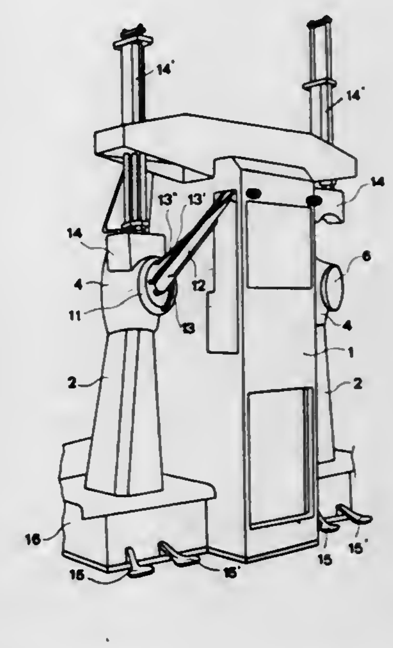
George R. Klingenberg, 615 S. Wright, Tacoma, Wash. 98408
Filed Apr. 3, 1974, Ser. No. 457,447
Int. Cl.² B05B *1/28*
U.S. Cl. 222—571 **20 Claims**



1. A no drip suck back unit for glue and other liquids to completely avoid any dripping after the stopping of the glue or other liquid being supplied through a discharge opening, comprising:
a. a body;
b. an interior chamber in the body;
c. a liquid passageway continuing through the body entering and leaving the interior chamber;
d. an air passageway entering the body and terminating in the interior chamber; and
e. a diaphragm flexible from its mid position in the interior chamber to move one way to decrease the liquid volume of the chamber and to move the opposite way to decrease the air volume of the chamber, the latter movement creating a vacuum volume to suck back liquid increasing the overall liquid volume of the interior chamber.

3,895,749
IRONING MACHINE FOR IRONING SHOULDERS

Giovanni Cartabbia, Via Predore 10, 24067 Sarnico, Italy
Filed July 19, 1974, Ser. No. 490,217
Claims priority, application Italy, Aug. 3, 1973, 27529/73
Int. Cl.² D06C *15/00*
U.S. Cl. 223—57 **10 Claims**



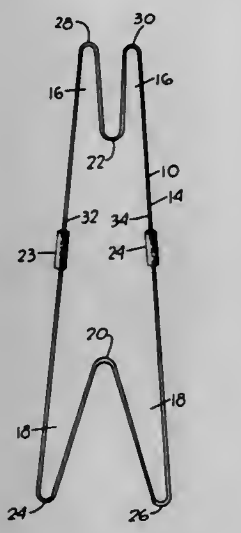
1. An ironing machine for ironing the sleeves of jackets, overcoats or similar garments, comprising an upright central support structure; two halves of a garment form respectively arranged to opposite sides and symmetrically with respect to said central support structure for supporting the shoulders of a jacket or the like; a pair of extension members of substantially oval cross section for said halves, each having an upper portion fixed to the respective half and a downwardly extending portion separated from the respective half by a cutout, said downwardly extending portion adapted to extend into a respective sleeve of the jacket; a pad located in each cutout; means fixed to said pad for reciprocating the same in substantially horizontal direction; a pair of substantially vertical plates located outwardly of said downwardly extending portions, respectively; and means supporting said plates for oscillating motion about an axis between a first position and a second position substantially aligned in horizontal direction with said pad and for reciprocating movement along said axis.

3,895,750
TIE TREE

Joseph J. Fegan, Jamesburg, N.J., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest
Filed Dec. 27, 1974, Ser. No. 536,800
Int. Cl.² D06C *15/00*
U.S. Cl. 223—65 **6 Claims**

1. A device for restoring a tie to its proper shape comprising:
a. a flexible wire top section of an M-shaped configuration, with the sides of said M-at a given angle,
b. a flexible wire bottom section of an inverted M-shaped configuration and being relatively larger than said top section, with the arms of said M directed relatively along the same angle as said sides of said top section,
c. means coupling said arms of said top and bottom sections to form a composite frame member having an intermediate section adapted to conform to the shape of any one of a plurality of ties accommodated by said frame to press on the sides of said tie when accommodated by moving the central portions of either of said top and bottom section M's towards or away from said intermediate sec-

tion of said composite member, with the M of said bottom section being always maintained outside the confines of



any tie being accommodated, while the M of said top section is within said confines of said tie.

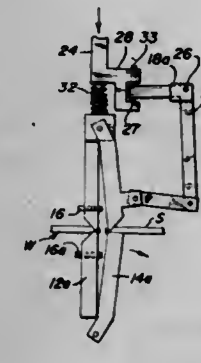
3,895,751
METHOD AND APPARATUS FOR TEARING SECTIONS FROM A WEB

Robert Carl Shepherd, Oak Lawn, Ill., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed July 9, 1973, Ser. No. 377,372

Int. Cl. B26f *3/00*

U.S. Cl. 225—3 **11 Claims**



1. A method for successively tearing a continuous fibrous web into sections having a leading edge and a trailing edge comprising the steps of providing a web; providing two juxtaposed pairs of opposing holding means; feeding said web between said pairs of holding means; moving said pairs of holding means into transverse holding engagement with said web; displacing one pair of said holding means relative to the other pair of holding means and in the direction of web movement during said engagement to tear the web and separate a section therefrom without causing a rearward force against the leading edge of the next successive section; and moving the torn section away from said web together with the displaced pair of holding means while the web is held by the other pair of holding means.

3,895,752
EXPLOSIVE POWDER DRIVEN SETTING GUN WITH SILENCING DEVICE

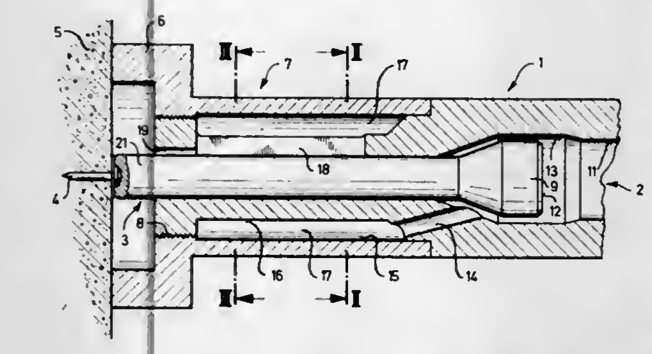
Shigefumi Hatayama, Futtsu, and Masao Tsunekawa, Sooka, both of Japan, assignors to Hilti Aktiengesellschaft, Liechtenstein

Filed Apr. 30, 1973, Ser. No. 355,666

Claims priority, application Germany, May 2, 1972, 2221374

Int. Cl. B25c *1/14*

U.S. Cl. 227—10 **7 Claims**



1. An explosive power driven setting gun for driving anchoring members, such as bolts, studs, nails and the like, into a target material, comprising an axially elongated barrel forming a bore and having a forward muzzle end and an oppositely disposed rearward end, a sleeve extending in the axial direction of said barrel and secured to and laterally enclosing said barrel for a portion of its axial length forwardly of the rearward end of its bore, an axially extending portion of the outer surface of said barrel disposed in spaced relationship to the inner surface of said sleeve and forming therebetween an axially extending ring-shaped slot about said barrel radially outwardly from said bore, at least one connecting passage extending through said barrel between the bore therein and said ring-shaped slot, at least one gas outlet passage located in said barrel radially inwardly of said ring-shaped slot and communicating between said ring-shaped slot and the bore in said barrel, said gas outlet passage located closer to the forward end of said bore than said connecting passage, said bore having a larger diameter adjacent the rearward end of said barrel than the portion of said bore which extends rearwardly from said forward end toward said rearward end, said ring-shaped slot located laterally about the smaller diameter end of said bore extending rearwardly from the forward end of said barrel, and said connecting passage extending from the larger diameter portion of said bore to said ring-shaped slot.

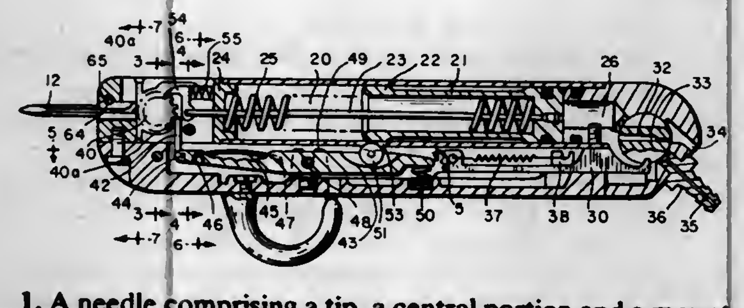
3,895,753
FASTENER ATTACHMENT SYSTEM NEEDLE CONSTRUCTIONS

Arnold R. Bone, Needham, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Continuation of Ser. No. 158,438, June 30, 1971, abandoned, which is a continuation-in-part of Ser. No. 39,564, April 17, 1970, Pat. No. 3,659,769. This application July 26, 1973, Ser. No. 382,963

Int. Cl.² B65C *7/00*

U.S. Cl. 227—67 **25 Claims**



1. A needle comprising a tip, a central portion and a mounting portion, a first slot and a bore extending from the rear of the mounting portion into the central portion, a second slot in the mounting portion offset from the first slot and which extends from the rear of the mounting portion partially to the front portion of the mounting portion closest to the central portion, and a knife provided in the mounting portion opposite the first slot and offset from the second slot, said knife comprising cutting edge portions shaped to form a 'V' with the bottom of the 'V' pointing towards the tip and cutting edge portions spaced apart at the rear of the mounting portion, and the bottom of the 'V' extending partially towards said central portion less than the distance said second slot extends towards said central portion.

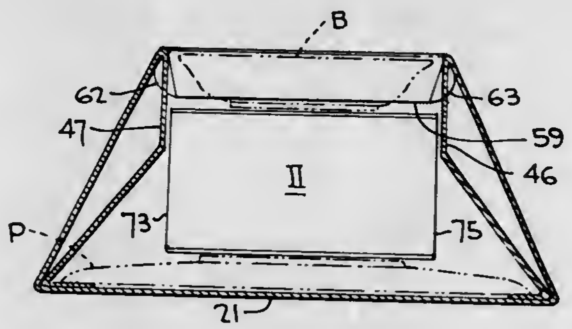
3,895,754
TAPERED CARTON ASSEMBLY CONTAINING FILLER CARTON

Charles W. Rosenburg, Jr., North Tonawanda, N.Y., assignor to F. N. Burt Company, Inc., Buffalo, N.Y.

Filed Aug. 16, 1974, Ser. No. 498,131

Int. Cl.² B65D *5/36, 5/00*

U.S. Cl. 229—23 R **9 Claims**



1. A carton assembly including a tapered carton containing a filler carton, said tapered carton comprising a polygonal bottom wall, an outer side wall connected to said bottom wall along each marginal edge thereof, opposite side edges of each said side wall converging from said bottom wall to the free edge thereof so as to form a truncated pyramidal carton when erected with adjacent side wall edges coinciding, an inner wall connected along the free edge of an opposing pair of said side walls and being secured to said bottom wall, each said inner wall including a rectangular section at said connected edge, each said section lying perpendicular to said bottom wall, each of the remaining side walls being removably connected to said opposing pair of side walls, and said filler carton comprising interconnected flat side walls, the width of said filler carton being substantially equal to the spacing between said rectangular sections, a bottom panel connected along an edge of one of said flat side walls, projections extending outwardly of opposite ends of said bottom panel along the length of said filler carton, whereby said filler carton is prevented from shifting within said tapered carton in directions parallel to said bottom wall.

3,895,755
TAMPER PROOF ENVELOPE

Carol S. McCarthy, Annapolis, Md., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed Feb. 27, 1974, Ser. No. 446,283

Int. Cl.² B65D *27/30*

U.S. Cl. 229—83 **1 Claim**

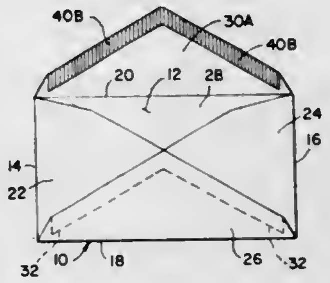
1. A tamper proof envelope, which comprises:

a. a main body face wall having a left, a right, a front and a rear edge;

b. a left, a right, and a bottom flap portion integrally formed to said main body face, said left and said right flap portions folded under and sealed to said bottom flap portion forming an envelope pocket;

c. a top flap portion having a marginal edge, said top flap portion integrally formed to said main body face; and

d. an integral mixture of a heat sensitive dye and an adhesive material which becomes adhesive on application of



moisture, said mixture deposited as a single layer on said marginal edge of said top flap portion, said mixture forming a bond between said top flap portion and said left, said right and said bottom flap portion, said dye changing color upon the application of a heat means.

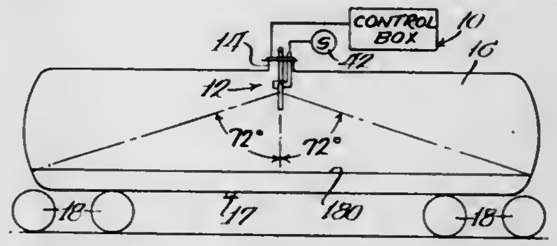
3,895,756
METHOD AND APPARATUS FOR CLEANING VESSELS

Ben E. Jaeger, Rt. 2, Box 49, Plano, Ill. 60545

Filed Mar. 22, 1974, Ser. No. 453,600

Int. Cl.² B05B *3/00, 13/06*

U.S. Cl. 239—227 **12 Claims**



1. Cleaning apparatus for vessels comprising pressure jet means, means for rotatably mounting said jet means about first and second different axes, first power means for tilting said jet means about said first axis in both directions, second power means for tilting said jet means about said second axis in both directions, and first and second separate control means connected to respective first and second power means for automatically and independently tilting said jet means back and forth about said first and second axes in respective arcs of spray direction.

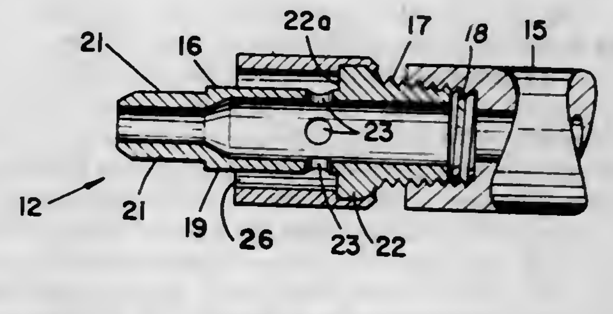
3,895,757
SAFETY TIP AIR NOZZLE

Edward Di Loreto, 10402 River Rd., Downey, Calif. 90241

Filed June 29, 1973, Ser. No. 375,202

Int. Cl.² B05B *01/28*

U.S. Cl. 239—291 **2 Claims**



1. An air nozzle comprising:

a barrel having an axial passageway with threads formed on the end thereof;

- a tubular body having formed at one end threads adapted to engage to threads in said barrel;
- said body having at least one radially directed hole communicating with the center passageway thereof and space between the threads thereon and the other end of said body;
- said threads on said barrel being female threads;
- said body being cylindrical and said threads being male threads;
- a cylindrical annular collar formed on said body between said threads and holes thereon;
- a cylindrical sleeve having an inside diameter less than the outside diameter of said collar and more than the outside diameter of said body;
- said sleeve having a counterbore formed from one end thereof wherein the diameter is of a size to slip around said collar; and
- means to allow the bonding of said sleeve to said collar.

3,895,758

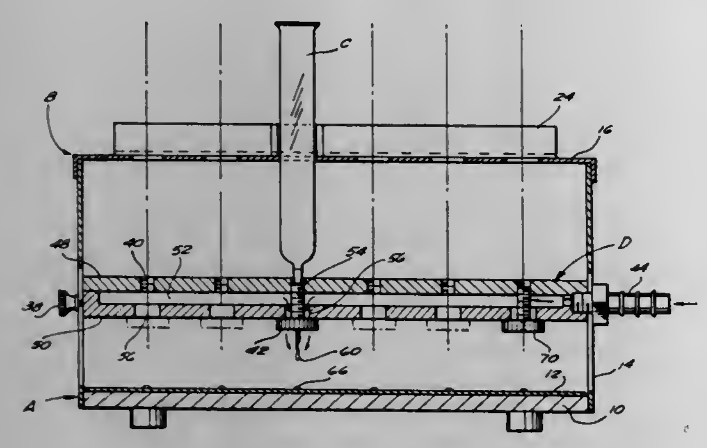
SPOTTER FOR USE IN THIN LAYER CHROMATOGRAPHY

John Thoden, Vineland, N.J., assignor to Kontes Glass Company, Vineland, N.J.

Division of Ser. No. 345,975, March 29, 1973, Pat. No. 3,843,053. This application May 22, 1974, Ser. No. 472,438

Int. Cl. B05b *1/14*

U.S. Cl. 239—296 **7 Claims**



1. A gas manifold for directing a flow of gas from a gas source closely past the drop forming needle in a thin layer chromatographic spotter comprising a nozzle having a channel through which the needle extends, said nozzle being insertable into an aperture in said manifold, said aperture being in fluid communication with said gas source, said nozzle sealingly engaging said manifold to prevent gas escaping from said aperture, said nozzle having passages between said aperture and the exterior of said nozzle radially spaced from said needle channel to direct a flow of gas closely past the needle.

3,895,759

DRY CHEMICAL DISPERSION NOZZLE

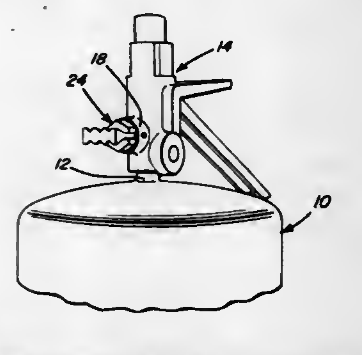
Joseph S. DePalma, Box 353, Closter, N.J. 07624

Filed Aug. 13, 1974, Ser. No. 497,092

Int. Cl. B05b *1/26*

U.S. Cl. 239—498 **9 Claims**

1. A dry powder dispersion nozzle comprising a body having a discharge passage formed therethrough including inlet and outlet ends, said body including jet stream deflecting means disposed outwardly of said outlet end of said passage operative to successively divide a jet discharge of dry powder from said passage into two outwardly divergent flat discharge paths extending in planes oppositely angularly displaced relative to a diametric plane of the outlet end of said passage and to subsequently divert at least three transversely spaced zone portions of the jet discharge of powder moving along each of said flat discharge paths along outwardly divergent secondary paths less angulated relative to said diametric plane than said flat discharge paths.



3,895,760

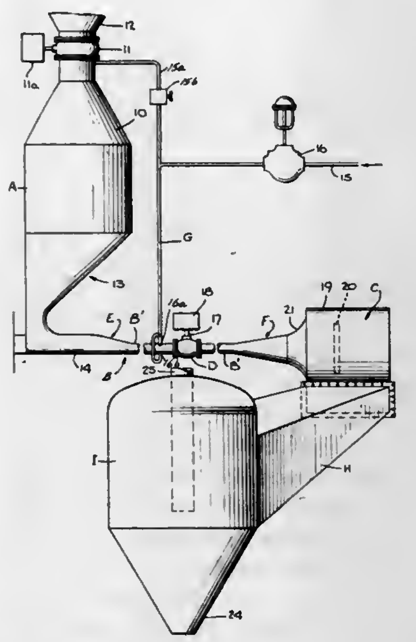
METHOD AND APPARATUS FOR SHATTERING SHOCK-SEVERABLE SOLID SUBSTANCES

Francis Henry Snyder, Newtown, Conn., assignor to Lone Star Industries, Inc., Greenwich, Conn.

Continuation-in-part of Ser. No. 361,610, May 18, 1973, abandoned, which is a continuation of Ser. No. 170,087, Aug. 9, 1971, abandoned. This application Nov. 9, 1973, Ser. No. 414,195

Int. Cl.² B02C *19/06*

U.S. Cl. 241—5 **39 Claims**



1. An apparatus for reducing the size of shock-severable material comprising,

- a first vessel for receiving the material and defining a first zone,
- a second vessel defining a second zone,
- a duct extending from the first vessel to the second vessel, a quick-opening valve in said duct,
- means for introducing a predetermined amount of a compressible working fluid into the first vessel including an inlet in said duct adjacent to said valve for introducing at least a substantial portion of said predetermined amount for carrying any of said material in the duct back to the first vessel.
- means for closing said valve during the introduction of said fluid into the first zone,
- means for opening the valve suddenly to discharge a mixed stream of working fluid and material from said first vessel into the duct, which conducts said stream to the second vessel,
- means located between the first vessel and duct for creating a zone wherein the solid material is subjected to shock phenomena as it exits from the first vessel and enters said duct to thereby shatter and reduce the size of said material,
- said quick-opening valve being located a predetermined distance from the first vessel, and
- the spacing of the valve from said first vessel and the time of opening said valve being such that said valve moves to fully open position before the material discharged from said first vessel reaches said valve.

3,895,761

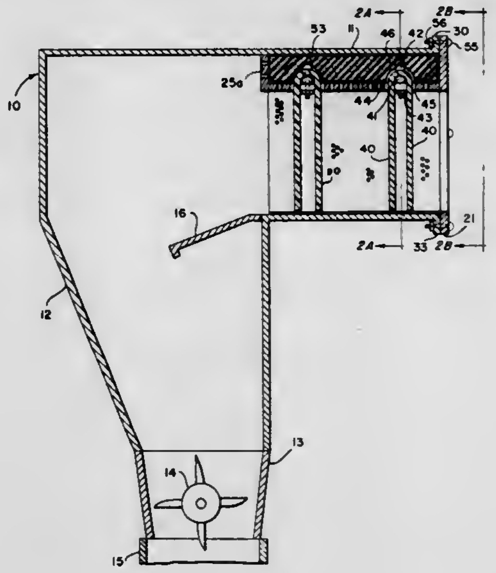
REMOVABLE MUFFLER UNIT FOR GRANULATOR APPARATUS OR THE LIKE

David G. Mills, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Dec. 20, 1973, Ser. No. 426,456

Int. Cl. B02c *23/02*

U.S. Cl. 241—301 **11 Claims**



1. An apparatus for granulating plastic material or the like having a hollow elongate feed section with a feed section opening at one end to receive material to be granulated,

- a liner in said feed section, said liner having at least some walls spaced from the interior surface of the feed section to form a cavity therewith,
- at least a portion of the liner formed of a porous material, a body of sound attenuating material in said cavity adjacent said porous material portion,
- and positioning means for removably mounting the liner and its sound attenuating material within the feed section in such a manner as to hold the liner and its sound attenuating material at a given position when mounted in the feed section while concurrently permitting easy removal of the liner and its sound attenuating material from the feed section as a unit without substantially dismantling the remaining portion of the feed section.

3,895,762

WIRE COILING SYSTEM

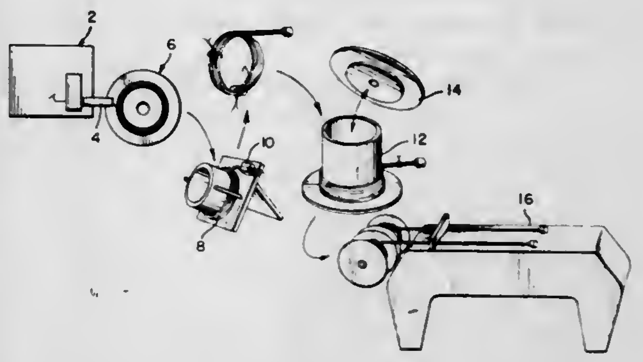
Ralph P. Fletcher, Jr., Snohomish, and Ted C. Pratt, Everett, both of Wash., assignors to Wiretech Corporation, Edmonds, Wash.

Filed May 29, 1973, Ser. No. 365,037

Int. Cl. B65h *75/00, 54/00*

U.S. Cl. 242—54 R **3 Claims**

1. A method of producing an electrical wire harness for installation in aircraft and the like comprising the steps of individually forming a plurality of coils of wire on a powered wire coiling device, wherein the inside diameter of the coils are relatively uniform, maintaining tension on the wire as the respective coils are formed to produce relatively tightly wound coils, removing each coil of wire from the wire coiling device after a coil of desired length is formed, processing the individual coil to join the exposed ends of two or more coils, positioning a plurality of coils of varying length, outside diameter and sizes of wire on a common spool in side-by-side relationship and wherein the respective coils are free to rotate relative to the spool, joining the exposed ends of all of the coils of wire on the spool by means of a single clamping connector means and withdrawing the wires from the separate could simultaneously to permit the layout of the harness with the respective wires in the desired relationship and position.



3,895,763

METHOD AND APPARATUS FOR SPLICING PAPER ROLLS

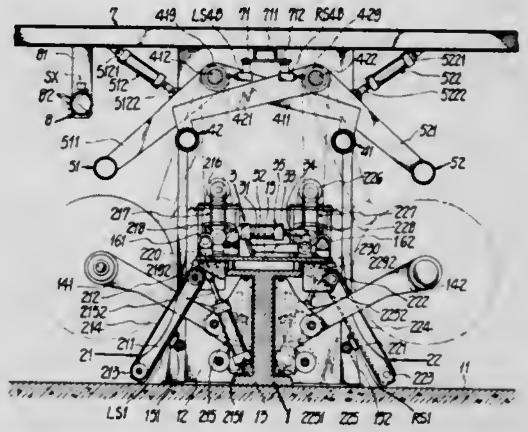
Masateru Tokuno, Nishinomiya, Japan, assignor to Rengo Co., Ltd., Osaka, Japan

Filed Mar. 29, 1973, Ser. No. 345,849

Claims priority, application Japan, Aug. 29, 1972, 47-86942; Nov. 14, 1972, 47-114578

Int. Cl. B65h *19/16*

U.S. Cl. 242—58.3 **11 Claims**



1. A continuous method of splicing the leading end of a fresh web roll which is releasably attached to said roll and which is not yet unwound, with a running web which is being continuously drawn from an expiring roll, without interrupting the continuous operation thereof, so that the smooth face of the leading end of the fresh web roll corresponds to the smooth face of the expiring roll and the rough face of the leading end of the fresh web roll corresponds to the rough face of the expiring roll which comprises pushing a rotatable web-pushing roll against the web running from the expiring roll thereby moving said running web towards the fresh web roll which is not yet unwound and causing said running web to contact a rotatable intermediate roll which is disposed near said fresh roll, rotating the fresh web roll in synchronization with the unwinding speed of the expiring roll, causing the web-pushing roll to push the intermediate roll into contact with the rotating fresh web roll, the running web of the expiring roll being grasped between the intermediate roll and the web-pushing roll, temporarily fastening the leading end of the fresh web roll to the surface of the intermediate roll, thereby drawing out the leading end from the fresh web roll, and

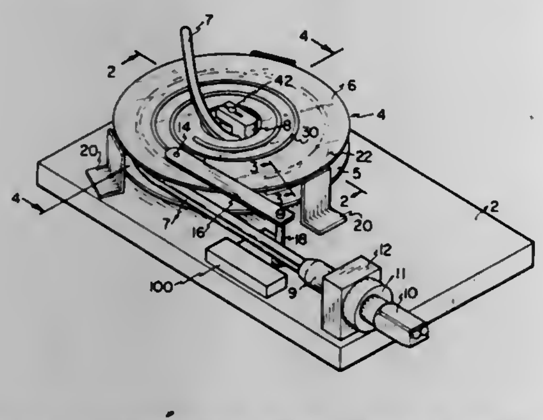
splicing the leading end of the fresh web roll to the running web of the expiring roll by causing said leading end to attach to said running web.

3,895,764
DENTAL RETRACTING DEVICE

Max Roland, Redwood City, Calif., assignor to Roland Mfg. Co., Menlo Park, Calif.

Filed Jan. 2, 1974, Ser. No. 429,887
Int. Cl. B65h *75/48*

U.S. Cl. 242—107.6 **15 Claims**



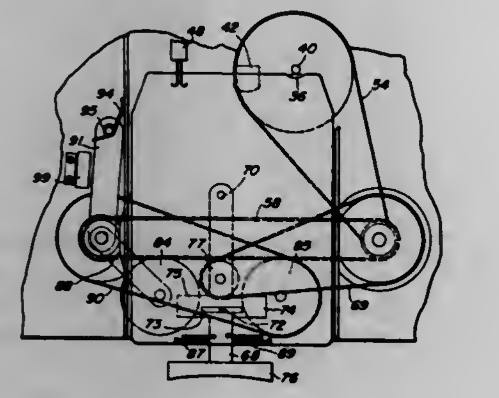
1. A device for supplying and retrieving a hose like member comprising:
a base support member, a hose collecting reel rotatably mounted to said support member, and a hose separating means, said hose collecting reel having an upper and lower disk plate and a spiraled cut-out raceway in one of said disk plates for receiving said hose separating means and thereby maintaining a separation between the coils of said hose like member as said member is coiled or uncoiled on said collecting reel.

3,895,765
REEL TO REEL CARTRIDGE TAPE PLAYER SYSTEM

Hugo Korn, Chicago, Ill., assignor to Motorola, Inc., Chicago, Ill.

Filed Nov. 19, 1973, Ser. No. 417,350
Int. Cl. G03b *1/04;* **G11b** *15/32*

U.S. Cl. 242—194 **16 Claims**



1. In a magnetic tape device having a housing with an opening adapted to receive a cartridge having magnetic recording tape therein, a tape drive mechanism including a capstan positioned to frictionally engage the tape within the cartridge to drive the same, and a transducer head positioned to be adjacent the tape in the cartridge for cooperating therewith, the combination including,
a cartridge having two reels mounted coaxially therein with magnetic tape thereon, each of said reels being independently rotatable and having an outer rim protruding from said cartridge,
drawer means adapted to receive and hold said cartridge, said drawer means being slidably movable in the housing opening between a first position for holding said cartridge away from the tape drive mechanism and a second position to hold said cartridge in playing position against the tape drive mechanism,
drive means within the housing including a portion positioned to engage said reels protruding from said cartridge, and selectively engageable with said reels to drive a selected one of said reels,
switch means actuated by said portion of said drive means for controlling the operation of said drive means, and
control means movably mounted to said housing and engageable with said drawer means and operatively connected to said drive means, said control means being movable between a first position to cause movement of the tape in one direction by engagement of said drive means with one of said reels and a second position to effect engagement of said drive means with the other one of said reels to cause movement of the tape in the opposite direction, said control means acting through said drawer means to disengage said magnetic tape within said cartridge from the tape drive mechanism.

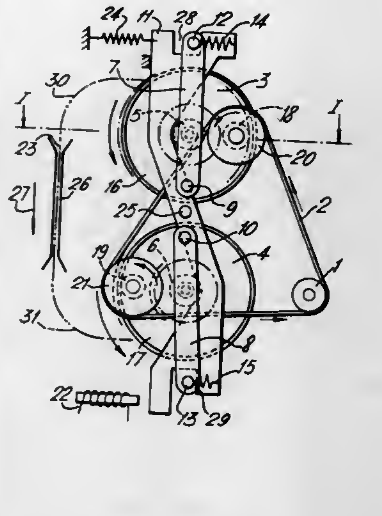
3,895,766
FILM-SPOOL DRIVE IN CINEMATOGRAPHIC EQUIPMENT

Jean Thevenaz, Ruelle de Montagny, CH-1422 Grandson, Switzerland

Filed Sept. 7, 1973, Ser. No. 395,047
Claims priority, application Switzerland, Sept. 8, 1972, 13590/72

Int. Cl. G03b *1/54*

U.S. Cl. 242—205 **3 Claims**



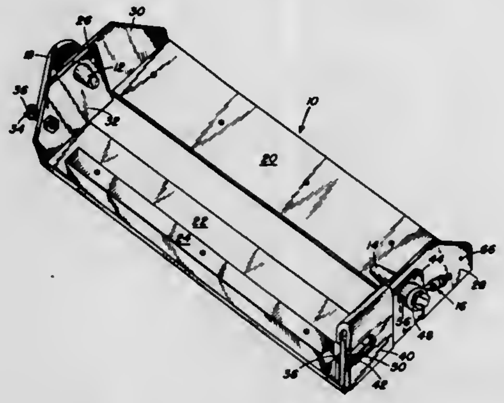
1. A film spool drive apparatus for cinematographic equipment comprising first and second film spool support plates, drive means selectively coupled to each of said plates for driving said first plate in a direction to wind the film on its associated spool and to drive the said second plate to unwind the film on its associated spool, and control means operable in response to a predetermined amount of tension in the film loop associated with each of said respective plates for disengaging the drive means from said first plate when its associated film loop tension is above a predetermined amount and for engaging said drive means with said second plate when its associated film loop tension is above a predetermined amount, and wherein said drive means includes first and second wheels, each having a driving surface operatively cooperating with a driving surface of the respective first and second plates, and said control means comprises first and second members coupled to the first and second plates for moving said plates into and out of operable engagement with said respective wheels.

3,895,767
QUICK ATTACHABLE TOW CABLE ADAPTER FOR A-7 AIRPLANES

Richard K. Maughlin, Great Milk, and John B. Dexter, California, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 9, 1974, Ser. No. 504,611
Int. Cl.^{2} B64D *3/02*

U.S. Cl. 244—3 **4 Claims**



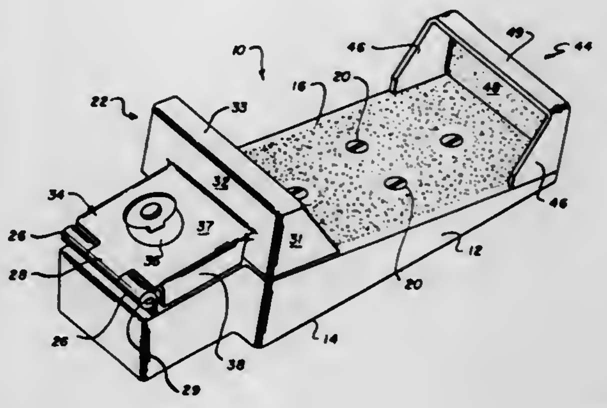
1. A tow adapter for coupling with the recesses in the apical nuts of the arresting hook assembly of the type used in A-7 naval aircraft comprising, in combination:
a fore cross member oriented transversely to the fore-aft axis of an aircraft and having an upright member at each port and starboard end, each end member having a hole therein, the centers of said holes being in alignment, said fore cross member having a folded-over member at its aft end spaced from one of the upright members, both the upright and the folded-over member having corresponding slots extending in a fore-aft direction from the extreme aft portions of the members;
an aft cross member spaced aft from and parallel to said fore-cross-member, said aft cross member having a pair of upright end members affixed thereto and adjacent to said fore-cross-member upright members, the upright member on one side of the fore-aft axis of the aft cross member having a hole therein aligned with the hole in its adjacent fore-cross-member upright member, the upright member on the other side of the aft cross member fitting inside the space between the folded-over member and its upright member and having a hole therein aligned with the hole in its adjacent fore-cross-member upright member and being formed with a tongue at its aft end and with an opening positioned fore of the tongue, said tongue covering the aft part of the fore-aft slots in its normal position and the opening in the aft upright member corresponding in position with the non-covered part of the fore-aft slots; and
a pair of support pins extending through the holes in the upright members, a different one through each upright member for engagement with the nut recesses of an arresting hook assembly, one pin being easily removable from its associated holes;
biasing means attached to one of said pins and to an aft-cross-member upright member for biasing said aft cross member to a normal position wherein said tongue covers the aft portion of said fore-aft slots, said aft cross member being depressible relative to said fore cross member; and locking means for preventing removal of said easily removable pin from its holes,
a towing ring being insertable in said foreaft slots when said aft cross member is depressed, said tongue extending through said towing ring when the aft cross member is released and being locked in place around said tongue until said aft cross member is again depressed.

3,895,768
SECURITY CLAMP

Harold G. Scheck, 726 S. Kenilworth Ave., Oak Park, Ill. 60304

Filed Feb. 8, 1974, Ser. No. 440,822
Int. Cl. F16m *13/00*

U.S. Cl. 248—19 **5 Claims**

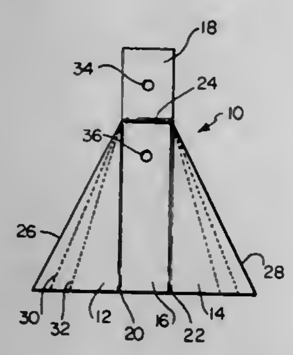


1. A security clamp for lockingly engaging and retaining an electronic calculator and other such devices having an overall substantially rectilinear configuration, comprising in combination,
a base having securement means for securing said base to an underlying support surface,
lock receiving means associated with said security clamp adjacent one end thereof,
an upper retention arm pivotally mounted on said base for overlapping and retaining one end of the device positioned on said base,
lock means associated with said security clamp and positioned in cooperative relationship with said lock receiving means, thereby to permit locking engagement of said lock means with said lock receiving means and lockingly engage said arm in retention position with respect to the device positioned thereon,
a lower retention bridge carried on said base adjacent the opposed end thereof,
said base including arrest means positioned adjacent the end thereof opposed to the positioning of said upper retention arm and including a plurality of arrest positions, said lower retention bridge including engagement means positioned for corporative co-action with said arrest means thereby to permit variable adjustment of said lower retention bridge along said base by positioning said engagement means in engaged relation with respect to one of said arrest positions of said arrest means and permit varying the distance between said lower retention bridge and said upper retention arm,
whereby said base may be fixedly secured to an underlying support surface by way of said securement means, and said lower retention bridge may then be adjustably varied to accommodate the length of the device to be positioned therein, and said upper retention arm pivotally moved to an open position, permitting the positioning of an electronic calculator, or other such device on said base, such that one end of the device is arrested by said lower retention bridge and thereafter said retention arm is lowered into the retention position about the opposed end of the device, and the lock means then activated to coact with said lock receiving means and lockingly engage said retention arm in the closed position to securely lock the device in position within said security clamp.

3,895,769
GUTTER LEVELLING DEVICE

Boynton Craig Hagaman, Box 99-B, Rt. 2, Purcellville, Va. 22132

Filed Aug. 7, 1973, Ser. No. 386,319
Int. Cl. E04d *13/06*
U.S. Cl. 248—48.2 **5 Claims**

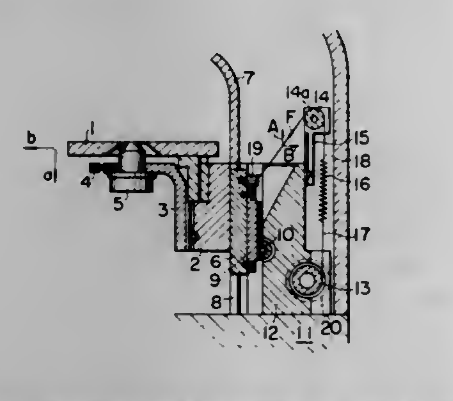


1. A gutter levelling device in combination with two surfaces, namely a facia board slanted with respect to a vertical plane and the back wall of a gutter, comprising:
- a base means abutting one of said surfaces;
- a first and second web means, each being triangular shaped, extending substantially perpendicularly from said base means, and terminating in a first straight line abutting the other of said surfaces;
- at least one line of perforations on each web means defining an angle with said base member smaller than the angle said first terminating line makes with said base member, making the angles adjustable by removing a portion of each web means along said lines of perforation to define a second terminating straight line; and
- an attachment means extending from said base means and forming with the means, which abuts the back wall of said gutter, a generally U-shaped closure receiving the back wall of said gutter between the legs of said U-shaped closure whereby said gutter is maintained level when installed to said slanted facia board by either the first or second terminating line of said web means.

3,895,770
WEIGHT BALANCING MECHANISM FOR USE IN PRECISION ELEVATING AND LOWERING MEANS

Isamu Yoshida, Kokubunji, and Toshimi Hayasaka, Hino, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed July 16, 1973, Ser. No. 379,316
Claims priority, application Japan, July 15, 1972, 47-71138
Int. Cl. G12b *3/00*
U.S. Cl. 248—123 **1 Claim**

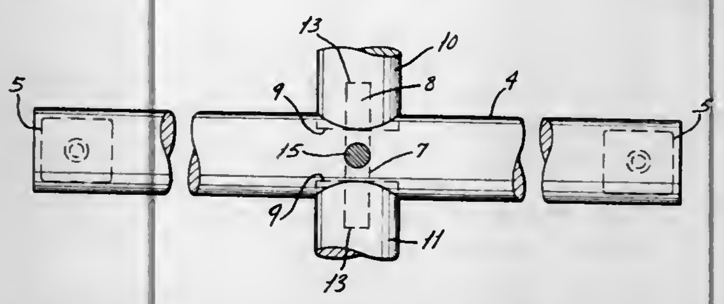


1. A weight balancing mechanism for use in precision elevating and lowering means, comprising object means having a variable weight, elevating and lowering means coupled to said object means at a location which is laterally displaced from the center of gravity of the object for precisely elevating and lowering said object means in a vertical direction, a tension member including a spring portion fixed at one end to said object means and fixed at its other end to a mounting mechanism remote from said object means said tension member extending at an oblique angle from said object means with respect to the vertical direction in the sense which causes the application of both vertical and horizontal force component to said object means in opposition to the weight and weight moment of the object means about said elevating and lowering means, respectively, said mounting mechanism including manual adjustment means for altering the tension upon said object means and said mechanism to thereby selectively increase or decrease the force exerted on said object means in corresponding opposition to variations in the weight of said object means;
- said tension member including an elongated flexible portion extending from one end of the spring portion and wherein said mounting mechanism comprises a cylindrical member about which said elongated flexible portion is wrapped, with said manual adjustment means comprising means to manually rotate the cylinder to wrap more or less of said elongated flexible portion about the cylinder.

3,895,771
BASE CONSTRUCTION FOR SUPPORT OF TABLE STRUCTURE OR THE LIKE

Elliot W. Baum, Maryland Heights, Mo., assignor to Berco Industries, St. Louis, Mo.

Filed Dec. 13, 1973, Ser. No. 424,188
Int. Cl. F16m *11/20*
U.S. Cl. 248—188.7 **11 Claims**



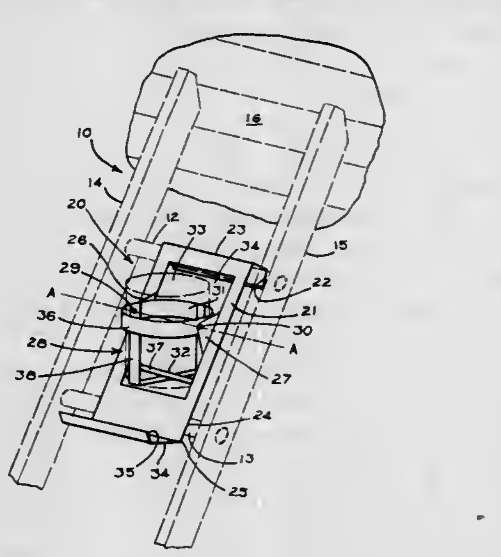
1. In a metallic base construction for use in support of a table structure or the like mounted upon at least one centerpost comprising, an elongated rod member having a length sufficient to stabilize in two directions the structure it is designed to support, said rod member having an aperture provided transversely therethrough and approximately at its midpoint, said rod member being counterbored into its sides and concentrically with the formed aperture, a pair of additional rod members, one end of each additional rod members being axially arranged into said counterbores and totally concealing therein their inserted ends, fastening means arranged through said aperture and projecting through the counterbores to secure the pair of rod members when fitted into said counterbores, and fastening means cooperating with the upper surface of at least one of said rod members to secure the centerpost in place.

3,895,772
DEVICE FOR SUPPORTING A BUCKET ON A LADDER

Erling Ellingson, R.R. No. 1, Creek Rd., Beloit, Wis. 53511

Filed Feb. 25, 1974, Ser. No. 445,442
Int. Cl.² F16M *13/00*
U.S. Cl. 248—210 **5 Claims**

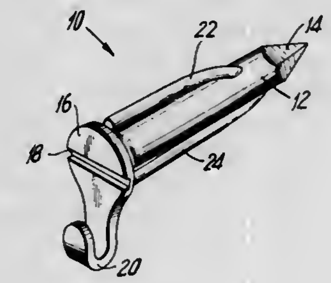
1. A device for supporting a container on a ladder having a plurality of rungs, said device comprising a rigid base of sheet material, a hook formed on one end of the base adapted to hang said base on one of the rungs, a portion of the base engagable with another of the rungs to restrain rotation of the base around said one rung, said hook and said portion defining a plane of the base, an aperture in said base between the hook and said portion, a pair of spaced brackets bent fowardly from the base, means for receiving and supporting the container, and aligned pivots mounting said means on the brackets about an axis parallel to said rungs and displaced from the plane to substantially level the container and to permit substantially unobstructed access from above to said means.



3,895,773
MOLDED WALL FASTENER

Alan J. Solo, Brooklyn, N.Y., assignor to Knock-N-Lok International, Inc., Brooklyn, N.Y.

Continuation-in-part of Ser. No. 474,872, May 31, 1974, which is a continuation-in-part of Ser. No. 469,666, May 14, 1974, which is a continuation-in-part of Ser. No. 463,820, April 24, 1974, which is a continuation-in-part of Ser. No. 454,393, March 25, 1974. This application Aug. 26, 1974, Ser. No. 500,537The portion of the term of this patent subsequent to July 29, 1992, has been disclaimed.
Int. Cl.² F16B *15/04*
U.S. Cl. 248—217 **11 Claims**

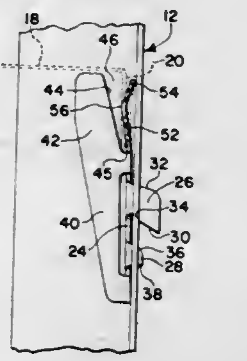


1. A wall fastener for use in relatively brittle penetrable walls comprising an elongate shank, said shank having one end thereof pointed and suitable for being driven into a penetrable wall; an engageable head at the other end of said shank suitable for being hammered to advance the pointed end of said shank through the penetrable wall and for being engaged to permit turning of said shank about the axis thereof; at least one projection extending from said shank proximate to the pointed end and inclined relative to said shank in the direction of said head, said projection being integrally formed with said shank and being flexible and resilient to permit the same to be deformed and at least partially wrapped about the axial length of said shank, whereby hammering the fastener into a penetrable wall causes the wall material to flex said projection to a position substantially coextensive with said shank, and engagement of said head and turning of the latter to thereby cause simultaneous rotation of said shank about the axis thereof, causes said projection to flex and become twisted about said shank, the resiliency of said projections causing the same to tend to flare radially outwardly from the axis of said shank to become wedged between the latter and the wall material to thereby secure the fastener in place and resist the same from becoming removed from the wall.

3,895,774
SHELF SUPPORT CLIP

Larry L. Sharp, Schaumburg, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Nov. 27, 1973, Ser. No. 419,324
Int. Cl.² A47B *29/02*
U.S. Cl. 248—243 **15 Claims**

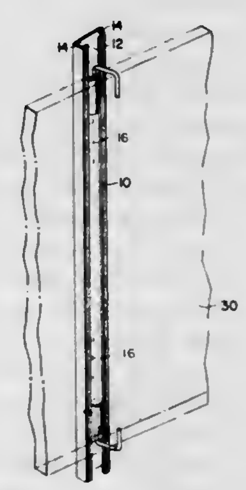


1. A support assembly including a vertical support member, a flanged shelf and a one piece shelf support clip for use in supporting said flanged shelf relative to said vertical support member said vertical support member having a plurality of spaced apertures for selectively accepting said clip in a multiplicity of positions, said clip including a plate-like base, a hook-shaped locking prong extending out from said base and engaging one of said apertures, means engaging a second spaced aperture to prevent rotation of said clip and maintain it in vertical alignment, at least one shelf engaging means extending from said base in the opposite direction from said prong, and resilient means extending from said base and located between the flange of said shelf and said support and engaging both said support and said shelf to maintain said prong and shelf in mounted rattle-free condition.

3,895,775
FRAMELESS PICTURE HANGING

Thomas K. Norton, P.O. Box 29, Cambridge, Mass. 02139

Filed Dec. 19, 1973, Ser. No. 425,998
Int. Cl.² A47G *1/24*
U.S. Cl. 248—476 **1 Claim**



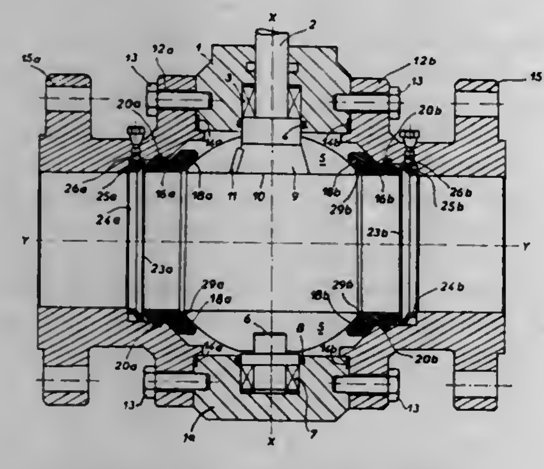
1. A device for detachably securing a picture in vertical position against a wall, said device comprising:
- first and second vertical rails having vertical recessed channels and secured to the wall in spaced parallel position;
- first and second downwardly extending hooks having downwardly pointing shanks;
- first and second plates, each first and second plate being detachably and slidably engagable with a corresponding vertical channel and having a recess receiving a corresponding one of the shanks of the first and second hooks to hold the first and second hooks in desired positions in

said rails, each channel having a plurality of vertically spaced openings;

third and fourth upwardly extending hooks having upwardly pointing shanks, the top end of each shank of the third and fourth hooks having a horizontal finger engagable with any opening in the corresponding channel; and

third and fourth plates, each third and fourth plate being detachably and slidably engagable with a corresponding vertical channel and having a recess receiving a corresponding one of the shanks of the third and fourth hooks in desired positions in the rails, whereby the four hooks can be adjusted in position to accomodate different sized pictures, the first and second hooks engaging the top edge of the picture, the third and fourth hooks engaging the bottom edge of the picture.

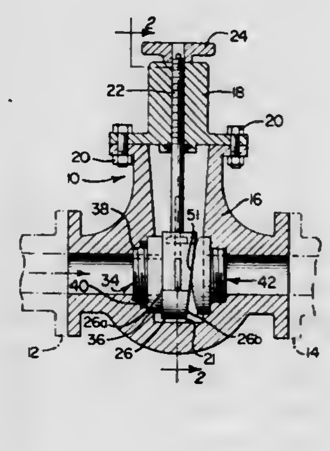
3,895,776
VALVE WITH A SPHERICAL CLOSURE-MEMBER
Roger Laurens, Ensues-La-Redonne, France, assignor to Pipeline Equipment Company E.P.C.O., Marseille, France
Filed Mar. 26, 1974, Ser. No. 454,934
Int. Cl. F16k *5/06*
U.S. Cl. 251—148 **6 Claims**



1. A valve or cock with a completely dismantlable spherical closure-member interposed between two tubular elements of the same conduit system, comprising: a substantially cylindrical valve body constituting the support of a spherical closure-member with a cylindrical orifice, movable in rotation about the longitudinal axis of the said body and with respect to this latter, and provided for that purpose with a pivot-pin and an operating shaft coaxial with the said longitudinal axis, the said shaft being provided as required with a means for preventing ejection of the said operating shaft by the effect of the pressure of the fluid intended to circulate in the conduit system, the said valve body having a plane of symmetry passing through its longitudinal axis and having a cylindrical transverse orifice with a longitudinal axis perpendicular to its plane of symmetry which coincides with the longitudinal axis of the conduit system and intersects this axis at the centre of the spherical closure member, the said transverse orifice being limited on each side of the plane of symmetry of the valve body by two flat annular faces parallel to the said plane of symmetry; two spacing flanges identical with each other and coaxial with the longitudinal axis of the transverse orifice formed in the valve body, the common axis coinciding with that of the conduit system containing the valve, the two said spacing flanges being symmetrical with each other with respect to the plane of symmetry of the valve body, each of them being fixed on the said valve body, on the one hand by fitting one of its transverse end-faces into the corresponding inlet of the transverse cylindrical orifice of the valve body, the transverse faces in contact being complementary in shape with each other, a fluid-tight joint being interposed between two of the faces in contact, and on the other hand by removable means for fixing together the parts in contact, the said spacing flanges having on their transverse faces opposite to those by which they are fixed on the valve body, means for coupling each of them to one of the conduit elements between which the valve is interposed, the internal portion of each of the said spacing flanges arranged opposite the spherical portion of the closure member comprising a frusto-conical portion coaxial with the longitudinal axis of the valve body, open and placed on the side of the said body, and a portion adjacent to the frusto-conical portion of revolution about the longitudinal axis of the valve body, the surface of which has a pseudo-cylindrical shape adapted to that of the fluid-tight member interposed between the spacing flange and the spherical surface of the closure member and being provided, as may be required, with an annular groove for the reception of a toric fluid-tight joint, which annular goove has for its radial section a rectangle, the width of which has a value greater than and a depth less than that of the diameter of the circular central section of the toric joint, which toric joint is supported by its external equatorial circle on the bottom of the said groove along which it can be displaced; and two identical joint-carrier fluid-tight seatings forming the fluid-tight members interposed between the internal face of each of the facing flanges and the spherical surface of the closure member, and each constituted by a body of revolution arranged in the normal position on the one hand coaxially with each other, their axes of revolution then coinciding with the longitudinal axis of the conduit system and on the other hand symmetrically with each other with respect to the plane of symmetry of the valve body, each of the said seatings have a cylindrical orifice the axis of which coincides with its axis of revolution and the internal diameter is equal at the same time to the internal diameter of the cylindrical orifice of the closure member and to the internal diameter of the conduit system; having an internal face of substantially frusto-conical shape, the axis of revolution of which is that of the said seating and which is arranged facing the spherical surface of the closure member and in the immediate vicinity of this latter, provided with an annular groove for the reception of a toric fluid-tight joint having the axis of revolution of the seating as its longitudinal axis, which toric joint is supported on the spherical surface of the closure member along a circle of the said spherical surface, and provided as may be required, with an annular housing coaxial with the axis of revolution of the seating in which is embedded an annular scraper segment supported on the spherical surface of the closure member along a circle of this latter the diameter of which is slightly greater than that of the cylindrical orifice of the said closure member, the said scraper segment co-operating with the said closure member; having an external lateral face substantially of revolution about its longitudinal axis arranged opposite the corresponding internal face of the corresponding spacing flange and comprising a conical portion arranged opposite the conical portion of the said internal face, and a pseudo-cylindrical portion arranged opposite the pseudo-cylindrical portion of the said internal face having the shape adapted to this latter, the said pseudo-cylindrical external face being provided as may be required with an annular groove for reception of the toric fluid-tight joint, the external equatorial circle of which is in contact with the internal lateral pseudo-cylindrical face of the spacing flange and the internal equatorial circle is in contact with the external lateral pseudo-cylindrical surface of the corresponding joint-carrier seating, which annular groove has for its radial section a rectangle the width of which has a value greater than and the depth has a value lower than that of the diameter of the circular central section of the toric joint, which is supported by its internal equatorial circle on the bottom of the said groove, the respective shapes of the lateral internal pseudo-cylindrical face of the housing of the joint-carrier seating in the spacing flange and of the external lateral pseudo-cylindrical face of the said seating being such that the distance separating them is a minimum at the level of the said fluid-tight toric joint; being provided with a transverse face opposite to the frusto-conical face placed facing the spherical face of the closure member and which co-operates with a compressible elastic member supported directly or through the intermediary of a rigid member on a shoulder formed on

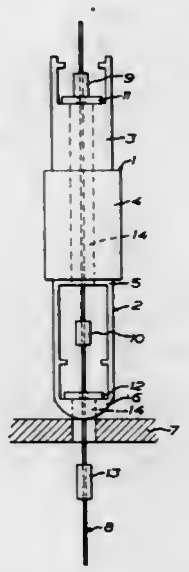
the internal lateral surface of the spacing flange, the position of the said compressible member on which is supported the transverse face of the seating opposite to its frusto-conical face placed facing the spherical face of the closure member being capable of being axially regulated as may be required, the said compressible elastic member being constituted for that purpose by an elastic washer supported on an annular ring, the external diameter of which is equal to the internal diameter of the corresponding spacing flange and the external diameter is slightly greater than that of the elastic washer, the said annular ring being arranged in a cylindrical housing extending the housing of the external frusto-conical lateral face open towards the said seating and constituting an inclined ramp co-operating wth the frusto-conical extremity having an apex angle complementary to the apex angle of the frusto-conical face of the said annular ring of at least one screw the longitudinal axis of which is arranged radially, intersects the longitudinal axis of the corresponding spacing flange and co-operates with a threaded portion formed in the said coupling flange, and said screw being provided with fluid-tight closure means and means for driving in rotation about its axis.

3,895,777
GATE VALVE
Earl G. Althaus, 3208 Jacks Ln., Louisville, Ky. 40216
Filed Sept. 26, 1974, Ser. No. 509,718
Int. Cl.^{2} F16K *25/00*
U.S. Cl. 251—203 **6 Claims**



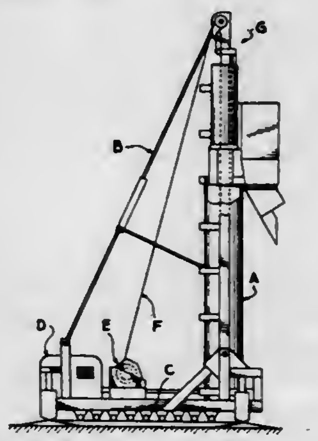
1. A gate valve comprising:
a. a valve body having a horizontal flow passage extending therethrough and an enlarged central cavity in communication with said flow passage,
b. a valve seat secured in fixed position within said flow passsage,
c. a gate vertically moveable within said cavity in said valve body,
d. said gate having a wedge-shaped body with a vertically extending planar face and a tapered face,
e. operating means for moving said gate relative to said valve seat so that said planar face contacts said valve seat to regulate the flow through the valve body,
f. plug means secured in fixed position within said flow passage, and
g. said plug means including at least one resilient lug that contacts the tapered face of said gate as said gate is moved downwardly to thereby cam the planar face of said gate against said valve seat.

3,895,778
METHOD OF LOWERING AND RAISING LOADS BY MEANS OF A JACK ASSEMBLY AND LIFTING ELEMENT
Nils Harald Ahlgren, 22 Skyttevagen, S-133 00 Saltsjobaden, Sweden
Filed Jan. 5, 1973, Ser. No. 321,154
Claims priority, application Sweden, Jan. 12, 1972, 295/72
Int. Cl. B66f *1/00*
U.S. Cl. 254—1 **1 Claim**



1. A method of lowering and raising a load by means of a jack assembly and lifting element, which comprises transferring the load from the lifting element by supporting means moveable along said lifting element and alternately carrying the supporting means by one-and-then the other of two carrying means having holes accommodating the passage of the lifting element, with said carrying means being mounted on relatively moveable parts of the jack assembly, and said lifting element being joined in series with other lengths of lifting element by connectors of a size incapable of passing through the holes of the carrying means, and alternately dismounting the carrier means to permit free passage of the connectors and thus the joined lengths of the lifting element.

3,895,779
HOISTING WINCH, IN PARTICULAR FOR A BORING MACHINE
Pierre Cassez, Bethune, and Claude Pelisson, Seclin, both of France, assignors to Benoto-Sam, Paris, France
Filed Oct. 3, 1973, Ser. No. 403,004
Claims priority, application France, Oct. 3, 1972, 72.34951
Int. Cl. B66d *1/30*
U.S. Cl. 254—150 FH **16 Claims**



1. A winch for hoisting a load and allowing the load to fall freely, comprising a support, a drum which is rotatably mounted relative to the support, a traction cable wound round the drum for attaching to the load, a hydraulic drive motor

permanently coupled to said drum for rotating the drum and comprising first and second main fluid pressure ports, a control fluid pressure port, a stator and a rotor, said winch further comprising a fluid supply device having pump means, a tank and a control device for selectively connecting said main fluid pressure ports to said pump means and said tank, said control device comprising first pipe means connecting said second main fluid pressure port to said tank and second pipe means connecting said first pipe means to said control fluid pressure inlet port for continuously applying thereto a control fluid pressure, whereby upon actuation of said control device, said rotor is drivable by application of main fluid pressure to said first inlet port and capable of rotating freely with respect to said stator from the moment of release of said control device by virtue of control fluid pressure remaining in said second pipe means.

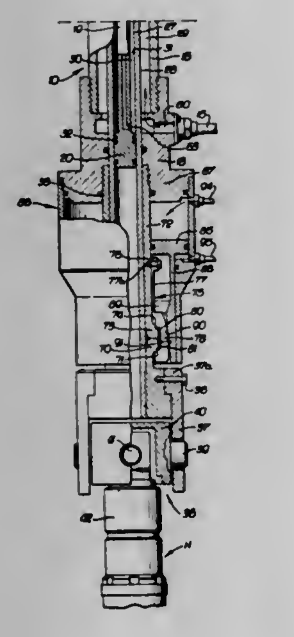
3,895,780
CYLINDER AND PISTON APPARATUS

Edward Larralde, and Glen Robinson, both of Santa Barbara, Calif., assignors to Vetco Offshore Industries, Inc., Ventura, Calif.

Division of Ser. No. 274,880, July 25, 1972, Pat. No. 3,841,607. This application Nov. 19, 1973, Ser. No. 417,209

Int. Cl. B66d *1/48*

U.S. Cl. 254—172 **11 Claims**



3. An apparatus for maintaining a predetermined stress in a running string: comprising cylinder means; piston means slidable in said cylinder means; one of said means having means for operative connection to the running string; the other of said means having means for operative connection to a support; said cylinder means comprising an outer member and an inner member therewithin and secured to said outer member, said inner and outer members being laterally spaced from each other to provide an annular space therebetween in which said piston means is movable; said piston means comprising a piston in said annular space slidably sealing against the inner wall of said outer member and the outer wall of said inner member; said piston means further comprising a piston rod secured to said piston and laterally spaced from said inner wall of said outer member and in slidable sealing relation to said outer and inner members; said piston rod being laterally spaced from said inner member to provide a second annular space therebetween; and means for simultaneously directing a fluid medium under pressure into the space between said piston rod and inner wall of said outer member for action upon said piston on one side of said piston and into said second annular space for action upon said piston on the same side of said piston.

3,895,781
APPARATUS FOR APPLYING GLUE TO WOOD SHAVINGS, FIBERS AND SIMILAR CELLULOSE CONTAINING SUBSTANCES

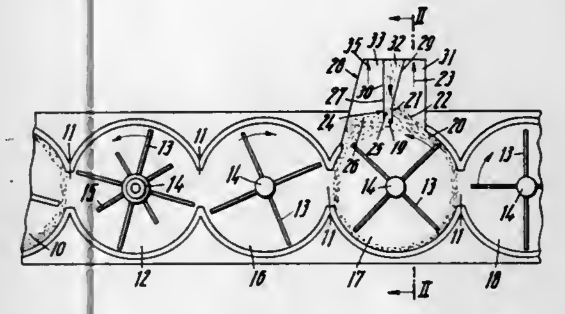
Wilhelm Lodige; Fritz Lodige; Josef Lucke, all of Paderborn; Wilhelm Schluter, Schwaney, and Heinrich Beckschulte, Scharmede, all of Germany, assignors to Wilhelm Lodige; Fritz Lodige and Josef Lucke, all of Paderborn, Germany

Filed Jan. 2, 1973, Ser. No. 320,590

Claims priority, application Germany, Dec. 31, 1971, 2165878

Int. Cl. B01f *7/04*

U.S. Cl. 259—25 **24 Claims**



1. A device for applying dry glue to shavings, fibers and similar cellulose containing substances, especially wood and waste bagasse, which includes in combination: mixing chamber means with cylindrical chamber wall means and rotating agitating means for receiving and mixing the cellulose containing substance with glue, and circulating the thus formed mixture along said cylindrical chamber wall means, deflector means extending into said mixing chamber means for creating a zone of turbulence in a mixture circulating in said mixing chamber means, and conveying means having its mouth located within said mixing chamber means within the range of stagnation action of said deflector means for feeding only pulverous dry glue into said mixing chamber means, said mixing chamber means including at least one venting zone arranged within the range of action of said deflector means.

3,895,782
PROCEDURES AND FACILITIES EMPLOYED FOR ELIMINATING OXYGEN IN OXIDES

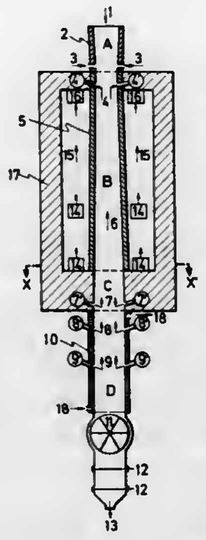
Eduardo de Delas y de Ugarte, Barcelona, Spain, assignor to Servicios de Ingenieria, Proyectos Y Estudios/(SIPE), Barcelona, Spain

Continuation of Ser. No. 195,077, Nov. 2, 1971, abandoned. This application Dec. 6, 1973, Ser. No. 422,197

Claims priority, application Spain, Aug. 11, 1971, 394143

Int. Cl. C21b *1/04*

U.S. Cl. 266—24 **3 Claims**



1. Means for performing highly efficient low temperature oxide reduction comprising a vertical retort for treating a load of a material to be deoxidized, said retort having an opening at the top thereof for the introduction of said material mixed with a solid reducer into the interior of said retort, said solid reducer causing a large proportion of the reduction of said material, said retort further having, from top to bottom, a preheating zone, a heating zone, a holding zone, and a cooling zone; means for indirectly heating said load through the walls of said retort, said load and the means employed as heating agents being kept separated at all times; means located beneath said heating zone for injecting into the interior of said retort at a plurality of different vertical levels an excessive amount of a preheated, powerful reducing gas, whereby an ascending flow of gas is created through said load which acts as a catalyzer for accelerating the reactions in said load to complete the reduction thereof, the reducing process being initiated upon entrance of the mixture into the reducing zone, and which acts as a deoxidizing and treating agent for securing a carburized and desulfurized metal product, the product of said reaction ascending within said vertical retort and directly heating material in the preheating region.

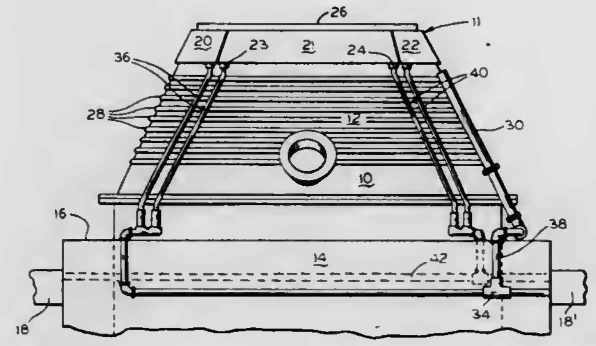
3,895,783
COOLING ASSEMBLY FOR STEEL CONVERTER VESSELS

Howard M. Fisher, New Castle, Pa., assignor to Pennsylvania Engineering Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 400,268, Sept. 24, 1973, abandoned. This application Oct. 21, 1974, Ser. No. 516,272

Int. Cl. C21c *5/42*

U.S. Cl. 266—35 **5 Claims**



1. A metallurgical converter vessel having an opening in the upper end thereof for receiving and discharging metal,

a plurality of metallic segments each separately releasably securable to the outer surface of said vessel and in surrounding relation to said opening, said segments forming a generally annular heat exchanger with the upper outside surface of said vessel,

each of said segments including a generally hollow elongate body portion having a cooling fluid inlet and a cooling fluid outlet disposed on substantially the opposite ends thereof and in fluid communication with said hollow interior,

said segments each having an inner surface of one of its larger dimensional sides generally conforming to a portion of the outer surface of said vessel,

each of said segments also including a pair of elongate flange portions each extending along one of the lateral sides of said body portion and also extending in general conformity with an adjacent outer portion of said vessel, one of said flange portions extending downwardly from said body portion and being secured to the side of said vessel for releasably securing said segments to said vessel with said inner surface thereof in heat exchange relation with the surface of said vessel for cooling and supplying mechanical support for the open end of said vessel,

the other of said flange portions extending inwardly toward said opening, and ring means secured to and joining the other of said flange portions.

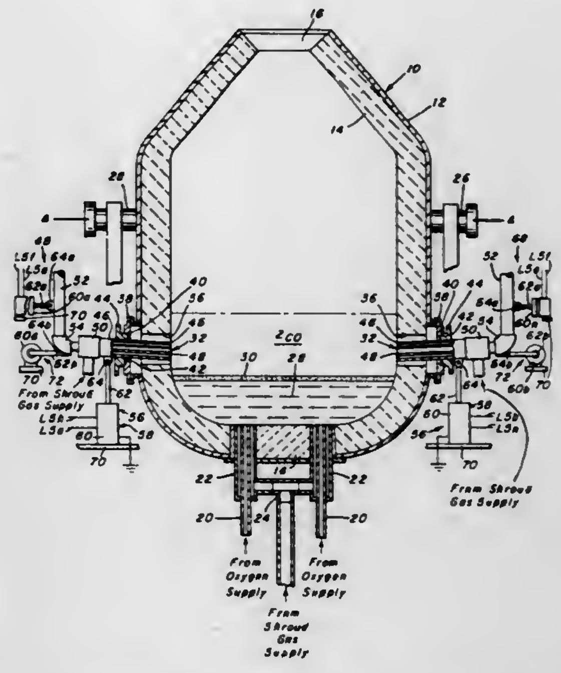
3,895,784
APPARATUS FOR AND METHOD OF OPTIMUM BURNING OF CARBON MONOXIDE IN A CONVERTER

William A. Kolb, Forest Hills Borough, and Jack F. Sigh, Crafton Borough, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 295,761, Oct. 6, 1972, abandoned. This application Nov. 24, 1972, Ser. No. 309,018

Int. Cl. C21c *5/46*

U.S. Cl. 266—35 **22 Claims**



1. Apparatus for the optimum burning of carbon monoxide produced in a carbon monoxide zone above a molten metal bath in a converter to carbon dioxide thereby producng a substantially maximum amount of heat within said converter to melt scrap in said converter, said apparatus having:

a side tuyere mounted in said converter above the level of the molten metal bath;

means for supplying oxygen through said tuyere into said converter and into contact with carbon monoxide in said carbon monoxide zone;

sensing means associated with said converter for sensing an initial effectiveness signal of the amount of carbon monoxide in said carbon monoxide zone being burned to carbon dioxide at a predetermined point relative to said converter, said sensing means being operable to monitor a continuing effectiveness signal;

comparison means connected to said sensing means for comparing said continuing effectiveness signal with said initial effectiveness signal; and

tuyere operating means including program means connected to said comparison means and said side tuyere for moving said side tuyere in a horizontal and a vertical direction in a predetermined order relative to said converter when said continuing effectiveness signal is greater than said initial effectiveness signal to increase the amount of carbon monoxide in said carbon monoxide zone being burned to carbon dioxide.

3,895,785
METHOD AND APPARATUS FOR CONTROLLING THE OPERATION OF A STEEL REFINING CONVERTER

William A. Kolb, Pittsburgh, and Pete Vignovich, Bethel Park, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 277,017, Aug. 1, 1972, abandoned. This application Dec. 4, 1972, Ser. No. 312,173

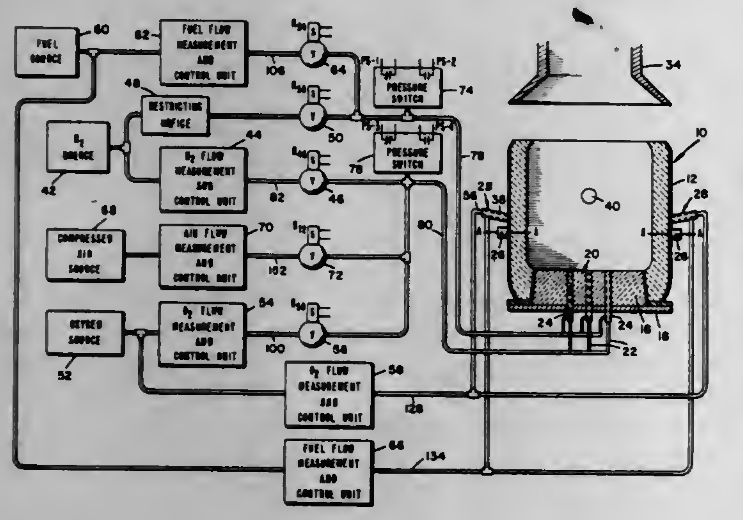
Int. Cl. C21c *5/48*

U.S. Cl. 266—35 **48 Claims**

1. Apparatus for controlling the operation of a steel refining converter of the type having at least one tuyere therein, said

tuyere consisting of a center jet positioned within an annulus jet, and said tuyere being submerged below the level of the molten metal in the converter at least a portion of the time, comprising:

- a. selector means for selecting a first or a second set of fluids to be coupled to said tuyere,
- b. fluid control means for coupling sources of said first and second sets of fluids to said tuyere, and



- c. switching means connecting said selector means to said fluid control means for selectively coupling said first or second sets of fluids to said tuyere in accordance with the position of said selector switch, said switching means including fluid transfer control means for maintaining flow of one of said first and second sets of fluids after the other of said sets of fluids has been selected until flow of said other set of fluids has been established, said apparatus preventing a molten charge in said converter from entering said tuyere and causing damage thereto.

3,895,786
TILTABLE CONVERTER

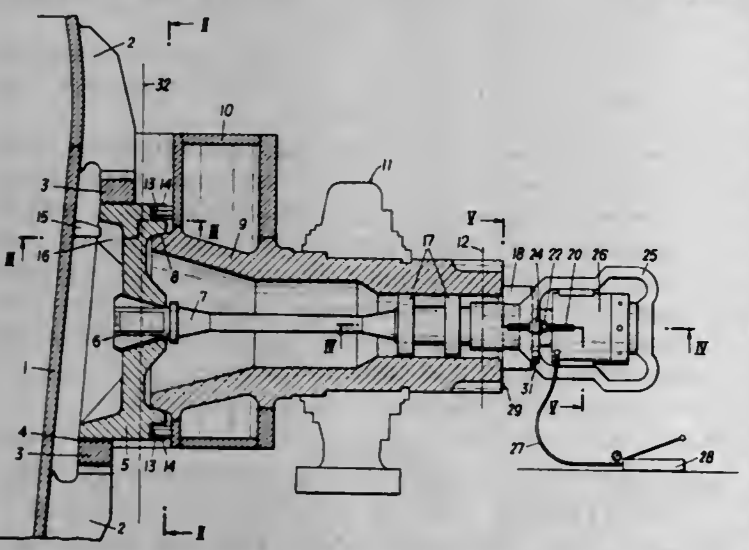
Manfred Eysn, Linz, Austria, assignor to Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft, Linz, Austria

Filed July 2, 1974, Ser. No. 485,296

Claims priority, application Austria, July 12, 1973, 6131/73

Int. Cl. C21c *5/46*

U.S. Cl. 266—36 P **8 Claims**



1. A tiltable converter comprising:

a converter casing,

supporting elements, accommodating supporting- and tilting forces,

a carrying ring having two hollow supporting trunnions provided with bores, the supporting trunnions lying opposite each other, on which carrying ring the converter is borne by means of said supporting elements,

supporting disks assigned to the supporting trunnions, said supporting disks engaging in bearing eyes secured to the converter casing, the supporting disks being axially movable by means of shifting devices penetrating the bores of the supporting trunnions, each supporting disk being connectable by a quickly detachable connecting means with the pertaining shifting device and

a seating provided at the supporting trunnion, with which the carrying disk is engageable and disengageable by operating the shifting device, while maintaining the engagement of the supporting disk in the bearing eye.

3,895,787
RAILWAY AIR SPRING BELLOWS

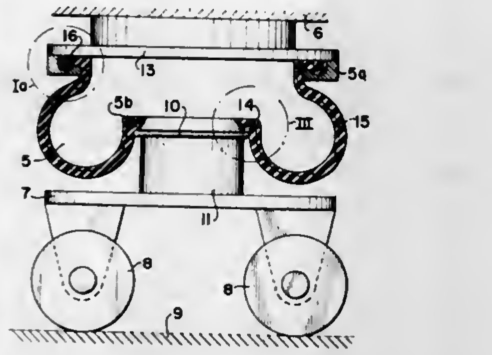
Gunther Niehus, and Hartwig Voss, both of Hannover, Germany, assignors to Continental Gummi-Werke Aktiengesellschaft, Hannover, Germany

Filed Feb. 23, 1972, Ser. No. 228,510

Claims priority, application Germany, Feb. 24, 1971, 2108694

Int. Cl. B61f *5/10;* **F16f** *9/04, 9/54*

U.S. Cl. 267—3 **1 Claim**



1. For use in connection with a rail vehicle having a vehicle body and bogie including an upright supporting body and also having two abutment rings respectively fixedly connected to said vehicle body and on said upright supporting body on said bogie and spaced below the top of said body, an air spring bellows for hanging insertion between and connection to said abutment rings, which includes in combination: a hollow body of revolution of elastomeric material which cross-sectionally has a continuous curvature displaced in small increments, said hollow body having a first opening defined by a first annular bead integral with said hollow body for connection to one of said abutment rings, and also having a second opening opposite said first opening and defined by a second annular bead integral with said hollow body for connection to the other one of said abutment rings, two bead core rings respectively embedded in said first and second beads, strength members extending linearly in force direction first radially and then axially from bead to bead to take up freely forces without bending away with a load of the core ring, one of said beads having a shorter diameter than the other bead mounted on said upright supporting body and resting on the abutment ring on said body, the core ring embedded in the shorter diameter bead having an internal diameter less than the diameter of said abutment ring on said body and an external diameter exceeding the outer diameter of said abutment ring on said body, the free ends of said strength members in said shorter diameter bead being folded lying over said last mentioned bead on that side thereof which faces in the direction toward the abutment ring to which said smaller diameter bead is to be connected, said strength members being bonded to the respective adjacent bead ring, the free ends of said strength members after being looped around the pertaining beads extending in groups into the wall of said bellows, said wall extending downwardly from said smaller diameter bead, the said strength members differing from each other in length and having their free ends arranged to be staggered.

3,895,788
SUSPENSION DEVICE PARTICULARLY FOR PIPES

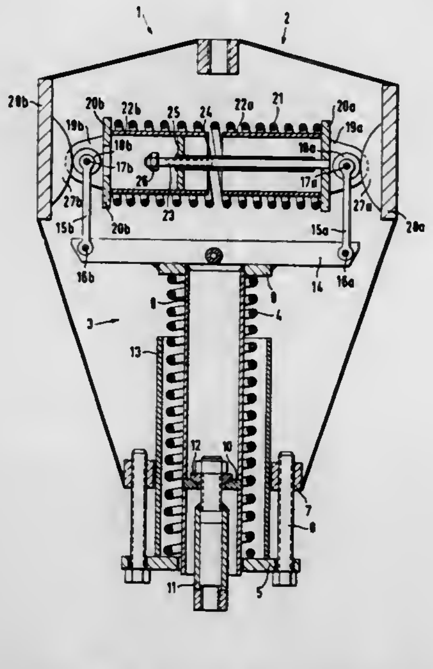
Gerhard Liesegang, Zeven-Aspe, Germany, assignor to Lisega Rohrleitungszubehor GmbH, Zeven-Aspe, Germany

Filed Feb. 11, 1974, Ser. No. 441,213

Claims priority, application Germany, Feb. 10, 1973, 2306674

Int. Cl. F16f *1/26*

U.S. Cl. 267—70 **12 Claims**



1. A spring suspension device comprising means for biasingly suspendingly supporting an element, said last-mentioned means including a main suspension spring, means disposed transversely of said main suspension spring for compensating for variations in tractive or compressive forces of the main suspension spring, said compensating means including a pair of spaced cams having opposed convex cam surfaces, a pair of tubes having aligned axes disposed between said cam surfaces, a cam follower carried by each tube in rolling contact with an associated cam surface, common guide means for maintaining said tubes in axially aligned relationship, and a single spring for biasing said tubes and the cam followers carried thereby toward the associated convex cam surfaces.

3,895,789
ROTATABLE QUICK-ACTING AXIAL PRESSURE ABSORBING CHUCK FOR A CIRCULAR WELDING MACHINE

Max Mengeringhausen, Wurzburg; Hermann Quenzel, Lengfeld; Reinbold Gehrig, Retzstadt, and Willi Spanheimer, Waldbuttelbrunn, all of Germany, assignors to Mero AG, Wurzburg, Germany

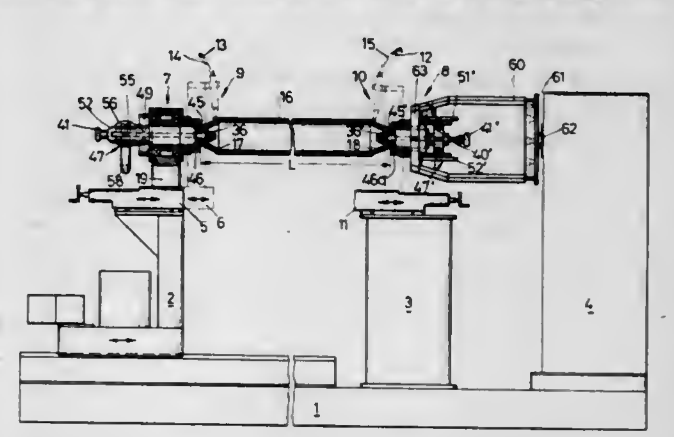
Filed Aug. 6, 1973, Ser. No. 385,678

Claims priority, application Germany, Aug. 18, 1972, 2240613

Int. Cl. B23q *3/14*

U.S. Cl. 269—49 **4 Claims**

1. A rotatable axial pressure absorbing quick-acting chuck for a circumferential welding machine for producing rod elements having an end member with a central bore comprising a bearing block, a clamping bush with a central bore mounted for rotation in said bearing block and fixed against axial movement relative thereto, a clamping stud having a cylindrical bearing section connected for axial movement in the central bore of said clamping bush, a screw cap having a central aperture threadably connected to one end of said clamping bush, said screw cap having an external end face forming a transverse-axial contact surface for an end member, a reduced diameter stud portion on one of said clamping stud extending through the central aperture of said screw cap and adapted to extend through the central bore of an end member, radially extensible and retractable clamp means connected on said reduced diameter stud portion and adapted to engage the interior of an end member when extended, and eccentric displacement means connected to the opposite end of said clamping stud to move said clamping stud axially and adapted to retain an end member placed on said reduced diameter stud against said transverse-axial contact surface when said clamp means is radially extended, removable bolt means connecting said eccentric displacement means to said clamping stud for releasably connecting said eccentric displacement means to said clamping stud; the central bore of said clamping bush



selectively receiving one of a plurality of interchangeable clamping studs, each stud having a cylindrical bearing section of the same diameter for connection in the central bore of said clamping bush, and each clamping stud having a reduced diameter stud portion of a different size for extending through and engaging a respective end member from a plurality of end members of varying sizes having central bores of different sizes, whereby chucks of different sizes corresponding to the sizes of the respective end members to be welded to the rod element may be rapidly interchanged on said welding machine.

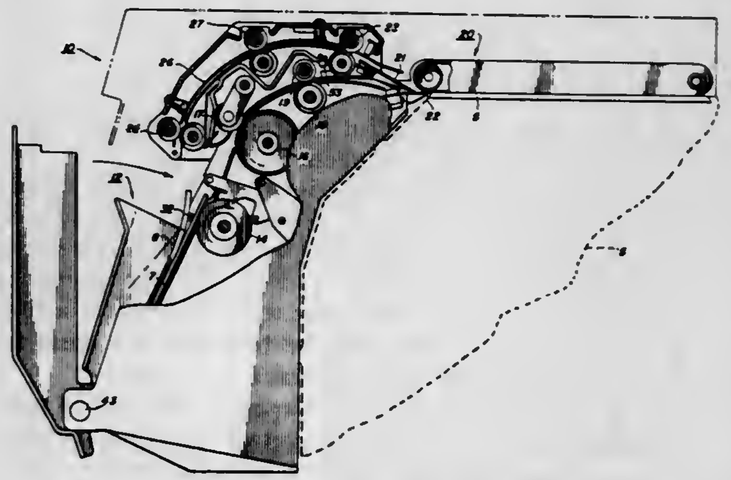
3,895,790
MOVABLE BAIL BAR

August Hoyer, Penfield, and Ronald M. Nekula, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed July 19, 1973, Ser. No. 380,803

Int. Cl. B65h *3/54*

U.S. Cl. 271—10 **5 Claims**



1. Apparatus for separating and feeding individual sheets of material from a stack of sheet material comprising:

separator means adapted for frictional engagement with the bottom sheet in the stack to displace the sheet in a direction parallel to the plane of the sheet;

bail means adapted for engagement with the top of the stack, said bail means including biasing means to bias said bail against the stack to provide a force normal to the plane of the sheet for maintaining the bottom sheet of the stack in frictional engagement with said separator means;

feed means for engaging and feeding the separated sheets away from the stack;

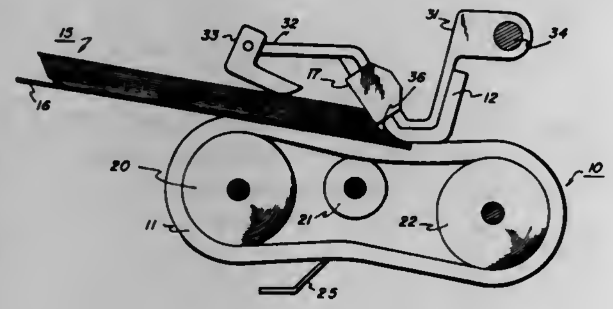
lever means pivotally mounted on said apparatus for engagement with said bail means, pivotal movement of said lever means causing said lever means to lift said bail means from said stack, said lever means including a lever having an arcuate sector formed on one end thereof, the other end of said lever being adapted for contact with said bail means;

biasing means for maintaining said lever in contact with said bail means irrespective of the thickness of the stack of sheet material under said bail means; and,

actuating means including an arm pivotally mounted on said apparatus for contact with said sector when said actuating arm is rotated through a predetermined arc, contact of said actuating arm with the sector portion of said lever causing the other end of said lever to move through an arc of predetermined length to lift said bail means a predetermined distance from the top of the stack irrespective of the thickness of the stack after engagement of the separated sheet by said feed means to minimize the drag on the separated sheet caused by frictional contact between the separated sheet and the adjacent sheet in the stack.

3,895,791
BOTTOM SHEET FEEDER USING SEPARATION BELT AND RETARD PAD

Hans P. Kramell, Perry, and Richard C. Hansen, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Mar. 19, 1973, Ser. No. 342,653
Int. Cl. B65h *3/04*
U.S. Cl. 271—35 **1 Claim**



1. Sheet feeding apparatus for feeding and separating individual sheets from a stack of sheets comprising

an endless sheet separation belt including a section carried in the direction of feed by at least three belt support means, said first belt support means positioned a distance from the edge of the stack and the second positioned opposite the stack near said edge with the first and second belt support means locating the belt between them for feeding engagement with said stack of sheets,

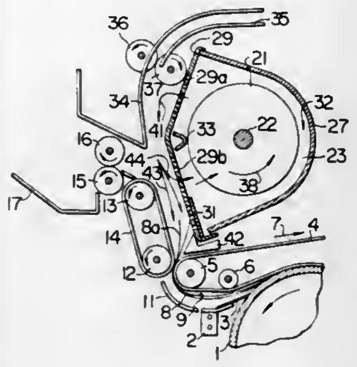
retard means including a fixedly mounted friction pad positioned adjacent said stack edge between second and third belt support means and biased against the belt to form a sheet queuing throat, and

an infeed chute adjacent said retard means and angled relative to the stack to slope the sides of the stack to create a normal force between the stack and a region of the belt adjacent the second belt support means,

said retard means and said infeed chute being carried by a cantilever member fixedly mounted to bias the retard means and belt against one another, said cantilever member extending over the stack of sheets and including a weight pivotally coupled thereto for exerting a force on the last few sheets in the stack requiring a simulation of stack weight for feeding engagement with the separation belt.

3,895,792
AUTOMATIC SEPARATION DEVICE FOR COPYING APPARATUS

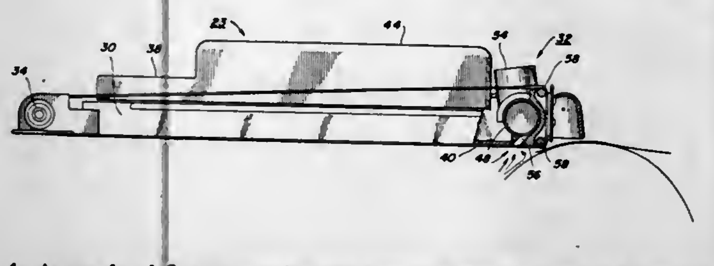
Tokuzo Kaneda, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan
Filed Oct. 29, 1973, Ser. No. 410,530
Claims priority, application Japan, Nov. 15, 1972, 47-115040
Int. Cl. B65h *29/64*
U.S. Cl. 271—172 **1 Claim**



1. An automatic separation device for copying apparatus comprising a ventilation plate consisting of an upper half portion and a lower half portion and formed therein with a multitude of openings, said ventilation plate disposed along a path of movement of an original and a photosensitive sheet released in superposed relationship from an exposing station with the photosensitive sheet being disposed nearer to the ventilation plate, a cross-flow blower adapted to set up a flow of fluid moving out of the interior of the blower through an outlet region thereof in which said upper half portion of said ventilation plate is disposed into said path through said openings in said upper half portion of said ventilation plate, and means for causing said outgoing flow of fluid to change its direction of movement after passing through said openings in said upper half portion of said ventilation plate and move downwardly along said path toward the inlet of the path, a part of said downwardly moving flow of fluid introduced through said openings in said lower half portion of said ventilation plate disposed in an inlet region of the blower into the interior thereof and the rest of said downwardly moving flow of fluid moving toward opposite sides of said path.

3,895,793
VACUUM SHEET STRIPPER

John J. Bigenwald, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Dec. 20, 1973, Ser. No. 427,009
Int. Cl. B65h *29/56*
U.S. Cl. 271—174 **4 Claims**



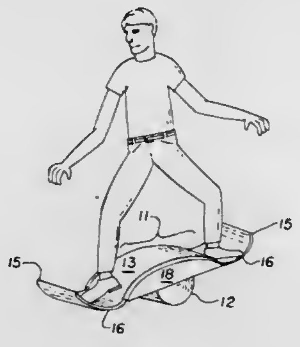
4. A method for removing an electrostatically tacked transfer member from a moving image support member in a reproduction machine including the steps of:

drawing a plurality of streams of air into vacuum ports adjacent the lead edge of the transfer member, substantially all of the air being drawn in a direction substantially opposite to the direction of the moving transfer member to separate the transfer member from the image support member; and

transporting the separated transfer member away from the image support member.

3,895,794
ROLLABLE FULCRUM BALANCING BOARD RECREATIONAL AND EXERCISE DEVICE PROVIDED WITH NON-LINEAR STABILIZATION FEATURES

Will Clarke England, 7310 Eastcrest Dr., Austin, Tex. 78752
Division of Ser. No. 83,763, Oct. 26, 1970, Pat. No. 3,862,768. This application Aug. 15, 1973, Ser. No. 388,362
Int. Cl.² A63B *23/04*
U.S. Cl. 272—1 R **4 Claims**



1. A teeter-totter balancing recreational device provided with non linear stabilization features comprising:

A. a cylindrical shaped fulcruming roller having a uniform diametral cross-section from end to end of the roller and adapted to roll across a horizontal surface;

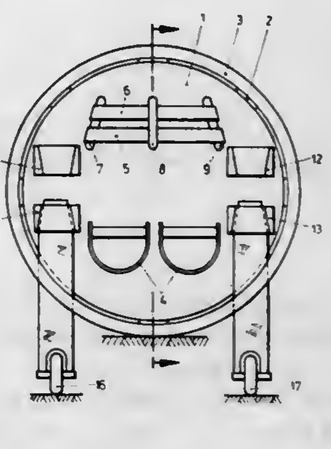
B. a rigid elongated non-linear balancing board adapted to cover and ride on said cylindrical roller and having
  1. a uniform width slightly greater than the length of the cylindrical shaped fulcruming roller with which it must coact,
  2. a length approximating the distance from the heel to the hip joint of the rider for whom the balancing device is designed, having
    a. a protuberant center portion occupying about two-thirds of the length of said balancing board, and
    b. upturned ends forming a foot positioning trench at either end of said balancing board,
  3. vertical side wall boards extending along each side of the protuberant center portion of said balancing board; and

C. the undersurface of said protuberant center portion of said balancing board defining a long arc concave surface gently sloping away from the apex of the concave enclosure to form motion slowing surfaces.

3,895,795
BASE PLATFORM SPORT AND GYMNASTIC APPLIANCE WITH SELECTIVELY CONNECTIBLE ADDITIONAL COMPONENTS

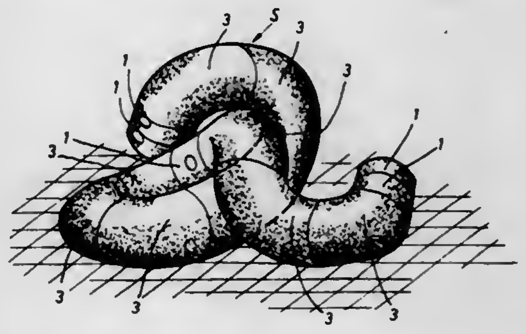
Christof Merz, Schoppershofstr. 75, 8500 Nurnberg, Germany
Filed Apr. 6, 1972, Ser. No. 241,575
Claims priority, application Germany, Apr. 6, 1971, 2116657; Mar. 20, 1972, 2212443
Int. Cl. A63b *23/00*
U.S. Cl. 272—57 J **5 Claims**

1. A sport and gynmastic appliance comprising a circular base platform having opposite surfaces, holding means on one of the surfaces for the feet of the user so that when the feet are positioned in the holding means, the user's body is substantially normal to the major plane of the base platform, further means on said one surface spaced from said holding means for permitting the selective connection of additional components to the base platform, a ring of greater diameter than the base platform secured to and spaced laterally from said one surface and on which ring the base platform can turn when the base platform is in a vertical position, one additional component including two rollers having their axles located coaxially to each other and parallel to the major plane of the base platform, so that with the base platform in a vertical position and being in engagement with a bearing member at substantially the center of the other surface of the base platform, the base platform can be tilted forwardly and rearwardly by virtue of the rollers.



3,895,796
TOY AND SPORTS DEVICE

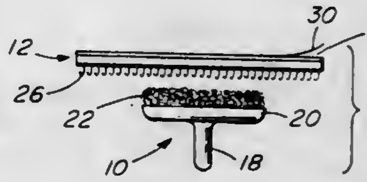
Iwan Pestalozzi, Zollikerstrasse 1221, Binz, Switzerland
Filed Dec. 18, 1973, Ser. No. 425,767
Claims priority, application Switzerland, Dec. 21, 1972, 18636/72
Int. Cl. A63b *9/00*
U.S. Cl. 272—60 R **18 Claims**



1. A toy- and sporting device comprising a set of individual interconnectable tubular elements of substantially circular cross-section, at least some of these tubular elements being constructed as arcuate elements, connected together in series to form a three-dimensionally coiled structure, the connections between the tubular elements being such as to maintain an axially fixed relationship between the individual tubular elements while permitting the individual tubular elements to undergo rotation relative to each other around their respective axes so that upper situated tubular elements bear against tubular elements situated therebelow, said elements having distinct ingress and egress openings whereby a child may climb therethrough.

3,895,797
GOLF BALL MARKER

Harrington Moore, Hidden Harbor, Stuart, Fla. 33494
Filed July 17, 1974, Ser. No. 489,270
Int. Cl. A63b *57/00*
U.S. Cl. 273—32 A **2 Claims**



1. A golf ball marker and holder, comprising in combination

a. a substantially flat disc,

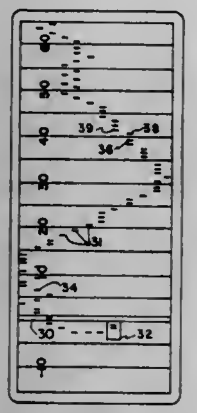
b. a peg extending perpendicularly from one face of said disc,

c. a stratum of fibrous felt material bonded to the other face of said disc, and,

d. a pad having a surface area greater than that of said disc mountable to a selected support surface and formed on one face thereof with a plurality of flexible, resilient hooks for detachable engagement with said fibrous material and a layer of pressure sensitive adhesive material on the other face of said pad.

3,895,798
GAME DEVICE INCLUDING GAME BOARD AND PUNCH CARDS FOR SIMULATING ATHLETIC GAMES SUCH AS FOOTBALL

Clifford J. Collins, 812 Highland, Oak Park, Ill. 60304
Filed Sept. 17, 1973, Ser. No. 397,667
Int. Cl. A63f *9/14*
U.S. Cl. 273—85 R **11 Claims**



1. A game device including in combination:

a game board defining a field of play as used in a game involving the advancement of an object on the field of play,

means positioned on said game board to record thereon the results of plays,

a multiplicity of punched playing cards each having a mark thereon representing the position at which play starts,

a first plurality of said cards being offensive cards each having a plurality of punches therein positioned to represent the position and movement of the object on said game board for a particular play, and

a second plurality of said cards being defensive cards each having a plurality of punches therein positioned to represent the positions of defensive players during a particular play,

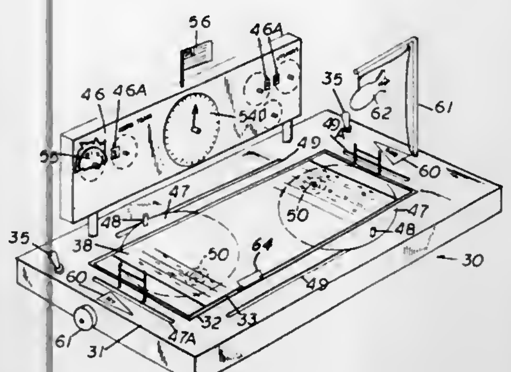
the alignment of a punch on a selected defensive card with a punch on a selected offensive card when either said offensive card is in aligned position over said defensive card or said defensive card is in aligned position over said offensive card indicating the result of the play to be recorded on said game board,

the punches in said offensive cards being positioned so that the plays closely simulate plays used in a game involving advancement of an object on the field of play and the punches in said defensive cards being positioned so that the possibility of success of the play is substantially the same as in such game.

3,895,799
SPORTS GAME

Erik K. Rinne, 4311 Bordeaux Ave., Dallas, Tex. 75205
Continuation of Ser. No. 168,891, Aug. 4, 1971, abandoned.
This application Nov. 2, 1973, Ser. No. 412,426
Int. Cl. A63f *3/00*
U.S. Cl. 273—85 R **8 Claims**

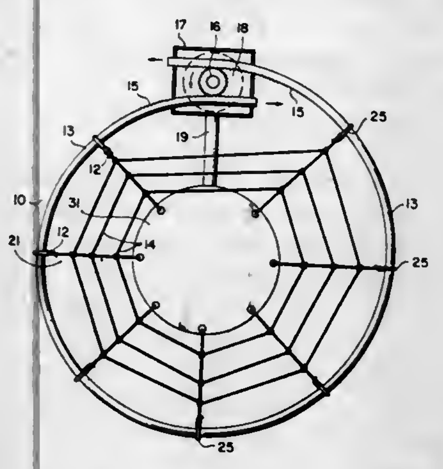
7. A game comprising: a game board having means defining a window opening; a surface traversing said opening which is at least translucent to light; a light source connected beneath said game board for transmitting light through said window surface; sheet means positioned over said surface, said sheet means having a readily erasable writing surface; fixed indicia means formed on said sheet means to define a plurality of playing obstacles; means for indicating simulated wind conditions; a series of distance-indicating members calibrated in accordance to varying simulated wind conditions to indicate various distances of play during the play of the game; adjustably positionable indicia means disposed beneath said sheet, said adjustably positioned indicia means being normally obscured until said light source is energized; and a marking stylus for drawing an erasable line on the writing surface of said sheet.



8. A game comprising: a game board having a cut-out portion defining a window opening; a surface traversing said opening which is at least translucent to light rays; a light source connected beneath said game board for transmitting light rays through said window surface; sheet means positioned over said surface, said sheet means having a readily erasable writing surface, a fixed indicia means formed on said sheet means to define a non-erasable playing obstacle, adjustably positionable indicia means disposed beneath said sheet, said adjustably positionable indicia means being normally obscured until said light source is energized; means to mount said adjustably positionable indicia means for longitudinal and rotational movement relative to said playing field; and a marking stylus for drawing an erasable line on the writing surface of said sheet.

3,895,800
PROJECTOR AND CATCHER WITH VARIABLE TARGET OPENING

Toni B. King, Bronx, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Sept. 3, 1974, Ser. No. 502,515
Int. Cl. A63b *71/00*
U.S. Cl. 273—96 R **4 Claims**



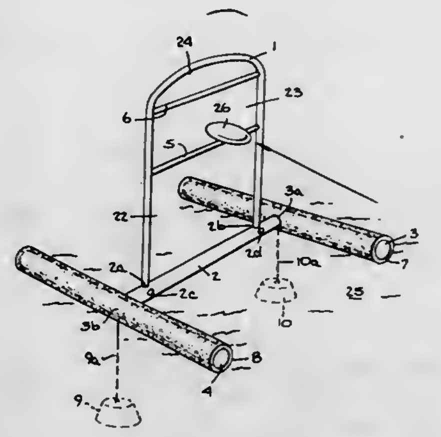
1. A game apparatus for catching an object in a closable net, comprising

a flexible circular net mounted at its bottom to a flat plate, with the top of the net slidably mounted to rim formed as a split ring,

a handle member anchored at one end to said flat plate, and means controllable from the handle to open or close the rim of the net by moving the ends of the split ring forming the rim.

3,895,801
SKIPPING PROJECTILE WATER TARGET

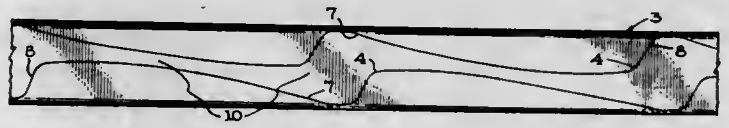
Barbara Baird, Apt. 809, 808 W. End Ave., New York, N.Y. 10025
Filed July 20, 1973, Ser. No. 381,242
Int. Cl. A63b *71/02*
U.S. Cl. 273—95 R **1 Claim**



1. Apparatus for playing a game of skipping projectiles on a body of water such that the projectiles richochet off the water and then pass through a target comprising, a target which includes an H-shaped base member enabling said target to float on the water, an arch-shaped upright member attached at its open ends to the cross bar of said H-shaped base member such that the plane containing said upright member intersects the plane of the surface of the water at substantially right angles thereto, and one or more cross pieces placed within and attached to said arch-shaped upright member substantially parallel to and at different vertical distances from the cross bar of said H-shaped member, said H-shaped base member, said arch-shaped upright member and said cross pieces being readily detachable from and reattachable to each other; and one or more disc-shaped projectiles adapted to skip off the water when directed at the water at a suitable angle thereto, such that said projectiles pass completely through the plane containing said upright member after skipping off the surface of the water.

3,895,802
IMITATION FEATHER FLETCHING AND METHOD OF MAKING SAME

Fred B. Bear, Grayling, Mich., assignor to Victor Comptometer Corporation, Chicago, Ill.
Continuation of Ser. No. 248,019, April 27, 1972, abandoned.
This application Oct. 16, 1973, Ser. No. 406,961
Int. Cl. F41b *5/02*
U.S. Cl. 273—106.5 C **3 Claims**



1. A strip of synthetic resinous material for manufacture of a plurality of vane members for an archery arrow comprising: an elongated central web portion of substantially constant thickness, having a pair of transversely spaced parallel side portions,

a first elongated base flange portion extending along one of said side portions,

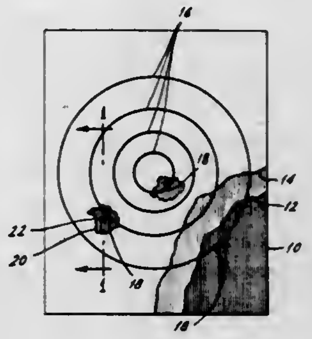
a second elongated base flange portion extending along the other of said side portions,

said first side flange portion and said second side flange portion each having a flat abutment surface which is wider than the thickness of said web portion for attachment to the shaft of an arrow, and

said web portion having two score lines each defining a series of longitudinally spaced vane members integral with one of said base portions.

3,895,803
LAMINAR INDICATING TARGET

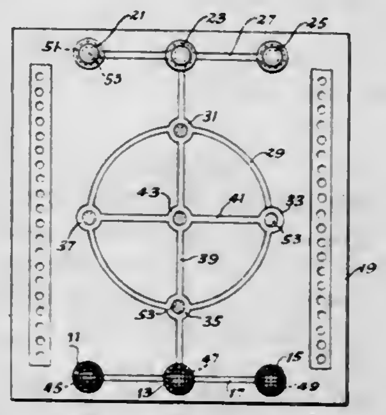
James M. Loe, 27 School Ln., Willow Grove, Pa. 19090
Filed Aug. 22, 1973, Ser. No. 390,584
Int. Cl. F41j *1/02*
U.S. Cl. 273—102 R **11 Claims**



1. A target comprising substrate means and target pattern means formed on one side of said substrate means in a layer substantially covering said one side of said substrate means, said substrate means and said target pattern means being mutually contrasting visually, said substrate means and said target pattern means being arranged such that when struck by a high speed projectile, a substantially larger-than-projectile-size portion of said target pattern means at the projectile's point of impact will be physically separated and removed from the rest of said target pattern means, and a hole, of a size smaller than said removed portion of said target pattern means, will be made in said substrate means, whereby a portion of said substrate means around said hole will be exposed by the impact of said projectile.

3,895,804
GAME APPARATUS

Elizabeth Anna Lee, 39 Fox Hunt Ln., Amherst, N.Y. 14226
Filed Mar. 12, 1973, Ser. No. 340,114
Int. Cl. A63f *3/00*
U.S. Cl. 273—131 AD **12 Claims**

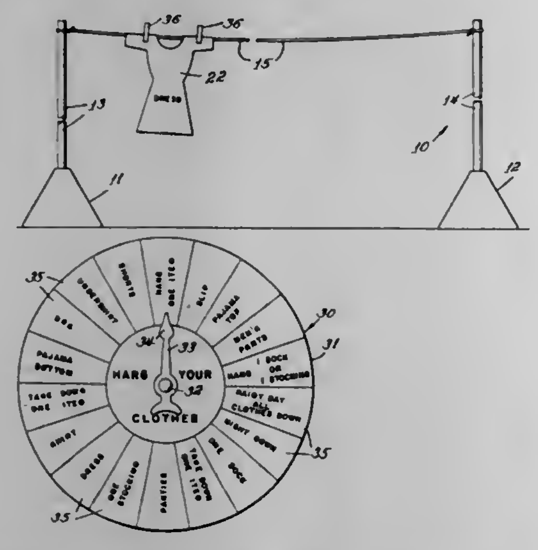


1. A fast playing game, suitable for enjoyment of the young as well as by older persons, which tests mental faculties and yet is amusing to the players, which comprises a marked game playing surface having a plurality of home base positions in

each of a plurality of separate home bases marked for initial placement of at least three game pieces, one at each of at least three positions at each home base, a plurality of stop positions, arranged in a single circuit, at least one connecting path between stop positions that are on the circuit, said path having a stop position on it, a single path only, for each home base, connecting only one home base position to the circuit, for each home base, a plurality of game movers adapted to be moved along on the respective single paths from the initial bases to the circuit and along the circuit and the connecting path, when desired, said pieces comprising at least three pieces for each player and the number of pieces being such that it is possible to have the stops on the circuit and the connecting path(s) occupied by the pieces of a player or a plurality of players so that another player cannot move any of his pieces to an adjacent unoccupied stop position on the circuit or connecting path.

3,895,805
GAME

Madge I. Enos, 337 Harper, Watervliet, Mich. 49098
Filed Nov. 26, 1971, Ser. No. 202,135
Int. Cl.² A63F *3/00*
U.S. Cl. 273—135 F **4 Claims**

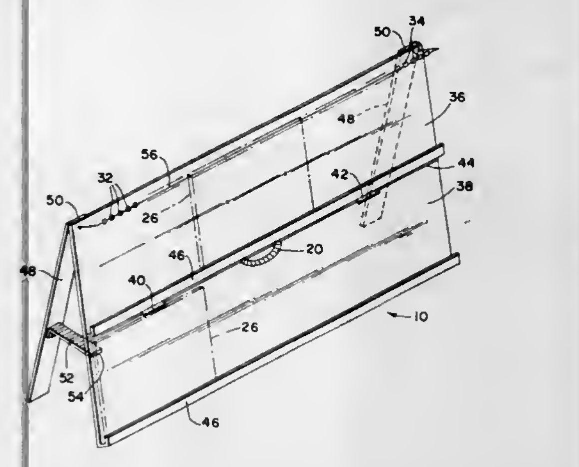


1. A game comprising at least one clothesline and means for supporting same in substantially horizontal position above a horizontal surface comprising a pair of support bases adapted to rest in equilibrium on a flat horizontal surface, and a pair of poles each affixed at one end to one of said support bases, the ends of said clothesline being affixed to the other ends of said poles, a plurality of playing pieces simulating articles of wearing apparel, means for affixing each article of wearing apparel to said clothesline in such manner that said article of wearing apparel hangs suspended from said clothesline, and a spinner assembly comprising a base, a pivot pin vertically mounted with respect to said base having an indicating pointer at one end pivotally mounted on said pivot pin, said base being divided into sectors each providing instructions for adding to or removing from said clothesline one or more playing pieces.

3,895,806
HOLDER BOARD FOR BINGO GAMES

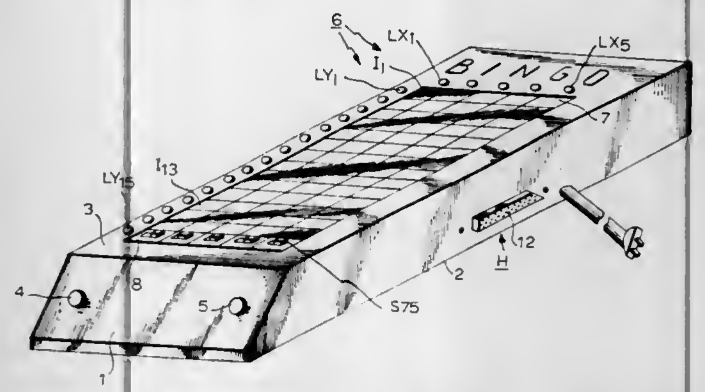
John J. Burns, Ogden, Utah, assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest
Filed July 15, 1974, Ser. No. 488,462
Int. Cl.² A63F *3/06*
U.S. Cl. 273—136 E **2 Claims**

1. A holder for bingo cards and the like, comprising in combination: upper and lower panels hinged along their contiguous longitudinal edges and foldable on one another; a tongue and groove assembly extending along substantially the entire length of the lower portion of each of said panels for receiving and holding said cards therein; a wire for carrying bingo markers, said wire being secured to the upper part of said upper panel; a pair of legs of equal length for supporting said panels at an angle from the horizontal during use; snap-on hinges on the top of said upper panel for removably securing said legs thereto; at least one of said legs having a positioning finger extending therefrom; said lower panel having a slot receiving said finger to hold the assembly of said legs and said panels in a generally A-shaped configuration.



3,895,807
ELECTRONIC SELECTION BINGO GAME UNIT

David Warren Friedman, No. 30-15, 2-chome Kakinokizaka, Meguro-ku, Tokyo, Japan
Filed Aug. 9, 1973, Ser. No. 387,194
Claims priority, application Japan, Jan. 23, 1973, 48-9151
Int. Cl. A63b *71/06*; A63f *3/06*
U.S. Cl. 273—138 A **6 Claims**

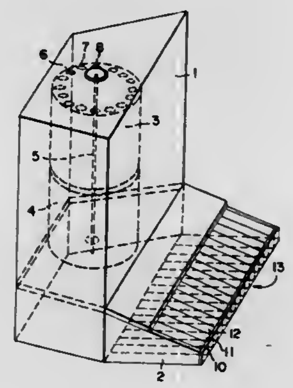


1. An equal probability selection electronic device for a bingo game allowing a human operator to make, by successive operation, the selection of any one of 75 (or fewer, if some are not selectable) unique selection intersections, comprising: a switch matrix comprised of 75 slide switches arranged in a 5 × 15 Cartesian coordinate form, each slide switch being used to indicate a selection intersection and being individually controllable by the operation of the human operator to define whether or not the slide switch is selectable and lamp indicators operatively positioned to define the intersection selected at the time of selection;

- a selector circuit coupled to said switch matrix and comprised of counter circuit means for successively addressing the slide switches;
- clock circuit means coupled to said counter circuit means for driving the counter circuit means and providing a clock pulse output having one of a relatively high and relatively low frequency, the relatively high frequency being used only to sweep past any addresses previously selected;
- feedback circuit means connected between the switch matrix and the clock circuit means for controlling said clock pulse output such that the clock pulse output is selected to be of low frequency when a selectable slide switch is being addressed and is otherwise selected to be of high frequency; and
- selection start switch means arranged to provide, by successive operator use for each desired selection, both a start signal to the clock circuit means for initiating a selection of a slide switch and a stop signal for initiating termination of a selection cycle, the arrangement being such that the clock pulse output may be stopped only when a selectable slide switch is addressed, which occurs at equal time segments of the addressing sequence, regardless of the number of slide switches no longer selectable.

3,895,808
SELECTING DEVICE

Beauford E. Averette, Vancouver, Wash., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Mar. 7, 1974, Ser. No. 448,902
Int. Cl.² A63F *7/02*
U.S. Cl. 273—138 R **5 Claims**

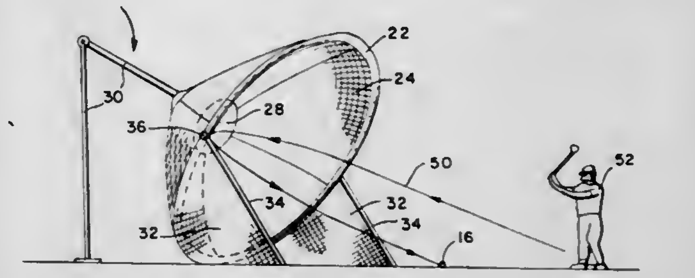


1. A playing element drop chance selecting device, comprising

- a base supporting an upstanding closed housing;
- a plurality of substantially coaxially aligned upstanding cylinders mounted within the housing, each of the cylinders being independently rotatably mounted for rotation about its axis;
- a plurality of substantially vertically aligned holes through the top and bottom ends of the housing, the holes being substantially equianguarly arranged in a circular array;
- means in the housing whereby the cylinders may be individually rotated;
- index means for each of the cylinders, each of the cylinders having a plurality of openings in the top and bottom surfaces thereof corresponding to the vertically aligned holes in the housing at any indexed position of the cylinders;
- a plurality of ducts in each of the cylinders connecting the top and bottom openings of each respective cylinder, with no duct connecting the top opening of a cylinder to the bottom opening positioned directly below it;
- a plurality of channels in the base, one end of each channel underlying a respective hole in the bottom of the housing; and
- a playing element adapted to be dropped through any one of the top housing holes after the cylinders have been rotated and indexed whereby the discharge of the playing element into one of the underlying channels is dependent upon its gravity travel through the ducts of the cylinders as chance indexed with respect to each other.

3,895,809
BALL RETURN DEVICE

Charles Glenn Shockley, Peekskill, N.Y., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest
Filed Aug. 19, 1974, Ser. No. 498,437
Int. Cl.² A63B *69/36*
U.S. Cl. 273—182 R **5 Claims**



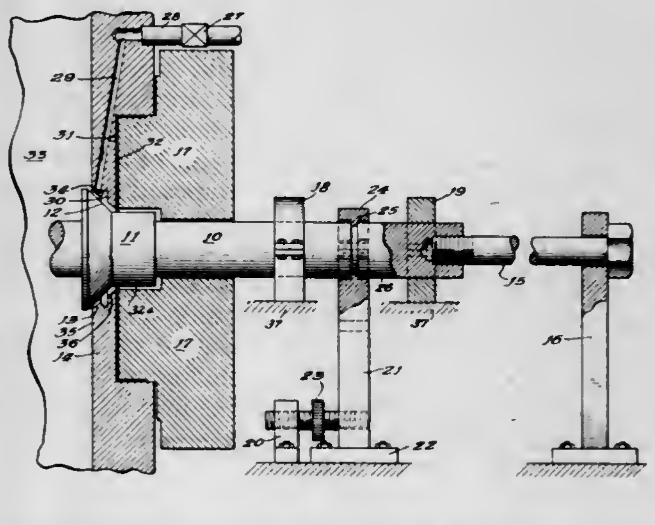
1. A ball return device particularly adapted for use in practicing the game of golf comprising:

a. a circular loop fabricated from at least two sections of metallic tubing whereby each section represents a portion of the periphery of said loop, each section further including means for inserting one section into the other to form a composite circular loop when assembled,

b. a concave canvas member coupled to the periphery of said loop and extending therefrom to form a generally parabolic configuration dimensioned to cause a golf ball impinging thereon in a given direction to return to a point of origin, said canvas member further having a central portion serving as a reflector plate and adapted to return balls which impinge directly thereon.

3,895,810
MECHANICALLY ACTUATED TEMPORARY PUMP SHAFT MAINTENANCE SEAL

Judson S. Swearingen, San Antonio, Tex., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.
Filed Mar. 15, 1948, Ser. No. 14,858
Int. Cl. F16j *9/00*
U.S. Cl. 277—9 SR **3 Claims**



1. A temporary closure for a rotatable shaft passing through a wall of a housing comprising means defining a conical surface extending through said wall, an annular groove in said wall dividing the conical surface into an inner part, and an outer part, means for admitting gas under pressure to said annular groove, a conical collar on said shaft arranged to form a closure with said inner part of the conical surface only, tensioning means externally of the housing for applying axial tension on said shaft to bring said collar into sealing contact with said inner part, and clamping means engageable with the

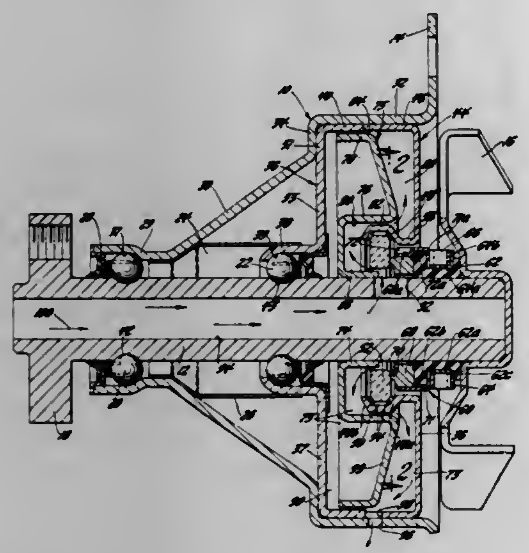
shaft and arranged to maintain the closure when said tensioning means are released.

3,895,811
FACE SEALING ARRANGEMENT FOR AUTOMOTIVE WATERPUMPS AND THE LIKE AND FACE SEAL ASSEMBLY THEREFOR

Raymond L. Richard, Jr., and Peter M. Sampatacos, both of Port Clinton, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed July 19, 1974, Ser. No. 490,066
Int. Cl. F16j *15/40*

U.S. Cl. 277—22 **1 Claim**



1. A face sealing arrangement for an automotive waterpump or the like having a rotatable impeller shaft protruding through an opening in a housing end wall, comprising in combination:
  an inner sleeve portion integral with said housing end wall and coaxial with said hole through which said impeller shaft protrudes,
  an annular face seal element of low tensile strength material having outer beveled ends securely mounted in said sleeve portion and radially spaced from said shaft,
  heat conductive means producing circumferential compressive stresses in said face seal element, said heat conductive means including spaced frustoconical portions of said sleeve portion which impart oblique opposed forces to said beveled ends to produce the circumferential compressive stresses in said face seal element,
  said sleeve portion being an integral part of a heat conductive end wall having a surface juxtaposed to an impeller carried by said impeller shaft whereby said sleeve portion and said end wall are adapted to dissipate heat from said annular face seal element into fluid being pumped by said impeller during operation of the pump, and
  a cooperative face seal assembly secured to said impeller shaft, said face seal assembly including a face seal ring and means biasing said face seal ring into sealing engagement with said annular face seal element.

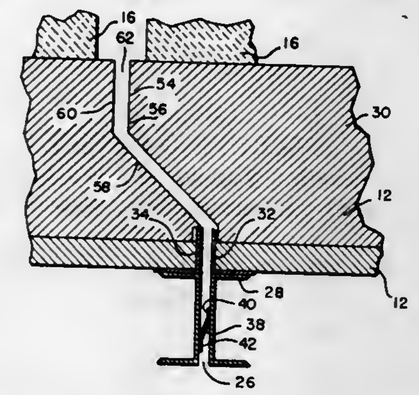
3,895,812
BI-METALLIC SEAL

Hugh Harr, Jr., High Point Farm, Newtown, Pa. 18940

Filed Jan. 21, 1974, Ser. No. 435,195
Int. Cl. F16j *15/08*

U.S. Cl. 277—32 **4 Claims**

1. In a seal between adjacent first and second members, the combination of
  A. a bi-metallic sealing strip of elongate construction,
    1. said strip having one elongated fixed edge and one elongated sealing edge,
      a. said free edge having an initial position,
    2. said fixed edge being affixed to the first member,
    3. said sealing edge flexing outwardly from the initial position when the members are subjected temperature differential,
    4. said sealing edge assuming a final position against the second member when the members are subjected to the temperature differential to thereby establish the seal; and



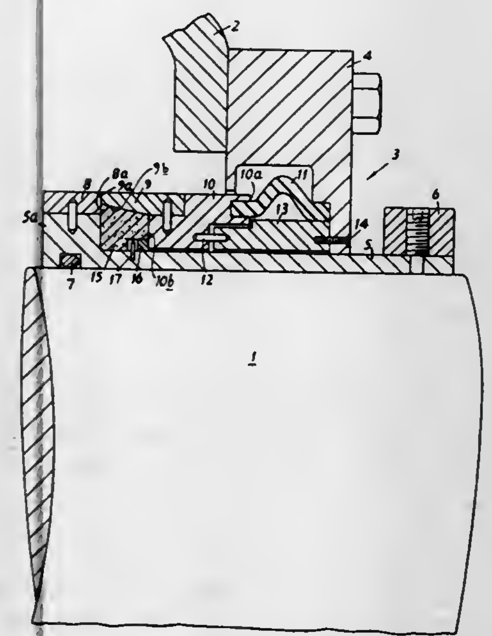
  B. a first member comprising the rear bumper of a kiln car and the second member comprises the front bumper of a kiln car,
    1. the front and rear bumpers being in horizontal alignment to define a transverse junction.

3,895,813
SHAFT SEAL

John Kyffin Davies, 22 Darlton Dr., Arnold, Nottingham, and Bernard Victor Cadman, 1 Woodside Ave., Berryhill Mansfield, Nottingham, both of England

Filed Dec. 3, 1973, Ser. No. 421,347
Int. Cl. F16j *15/36*

U.S. Cl. 277—88 **7 Claims**



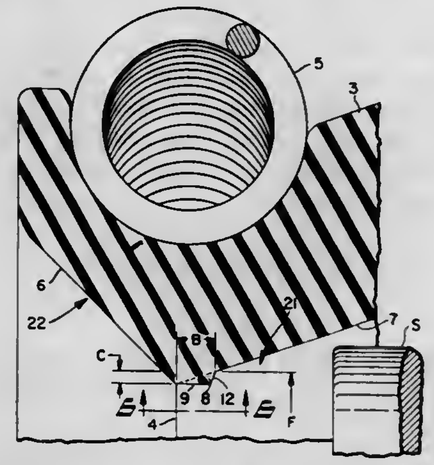
1. A seal assembly for use in sealing an aperture in a containing wall through which a rotatable shaft passes, comprising a primary face seal constituted by a first ring member fixedly securable to the shaft in a liquid tight fashion for rotation therewith and a second ring member fixedly securable in a liquid tight fashion to the wall about the aperture therein, the ring members being provided on opposed faces with cooperating annular sealing surfaces which are of hard material having a hardness of at least 82 on the Rockwell B scale, and which have at least substantially the same wear characteristics, said surfaces being, in use, in light contact to form a barrier to the passage of solid matter therepast but to permit the passage of an amount of liquid, and at least one secondary face seal operable between the wall and the shaft which comprises a rotatable sealing member securable to the shaft and a non-rotatable sealing member securable to the container wall, one of said sealing members having a sealing surface of hard material and the other a sealing surface of relatively soft material, these surfaces being in relatively firm contact to form a barrier to the passage of said amount of liquid.

3,895,814
ROTARY SHAFT SEAL

Bernard F. Kupfert, Peoria, Ill., and Gerald J. Bailey, Lexington, Ky., assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Continuation of Ser. No. 170,426, Aug. 10, 1971. This application Oct. 3, 1973, Ser. No. 403,049
Int. Cl.² F16J *15/40*

U.S. Cl. 277—134 **4 Claims**



1. In combination, a seal and a rotatable shaft of predetermined diameter, said seal comprising a ring of elastomeric material having converging faces meetings at a circumferentially continuous circular edge that is in contact with said shaft about the circumference thereof and which edge may have a minor imperfection that permits leakage of fluid along said shaft from one side of said edge to the other, the face that is on said other side of the edge having thereon a single circumferential series of radially inwardly projecting portions whose largest radial height is about 0.004 inch, each projection having at least one side that converges toward said edge and which constitutes a pumping element that is operative during rotation of the shaft when the seal is mounted thereon and pumps said leakage fluid from said other side of said edge back to said one side; the largest diameter across said projecting portions when the seal is not on the shaft being substantially as large as the largest diameter across said imperfection but smaller than said pre-determined diameter, said elastomeric material being wearable by the rotating shaft whereby said imperfect edge will be worn away followed by a complete wearing away of the projecting portions, such wearing away of the edge and projecting portions resulting in a flat, smooth cylindrical surface of substantially uniformed axial length whose diameter when the projecting portions have just worn away and the seal is removed from the shaft is smaller than the diameter of the shaft.

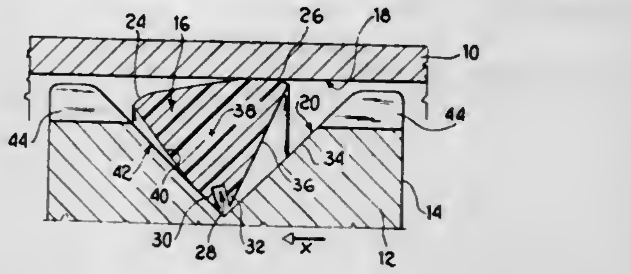
3,895,815
SEALING ASSEMBLY

Pier Luigi Panigati, Lugano, Switzerland, assignor to Etablissements d'Occident, Vaduz, Liechtenstein

Filed Feb. 4, 1974, Ser. No. 439,433
Claims priority, application Switzerland, Feb. 9, 1973, 1884/73
Int. Cl.² F16J *15/32, 15/40*

U.S. Cl. 277—171 **5 Claims**

1. In an assembly comprising first and second relatively movable coaxial cylindrical bodies having opposed first and second cylindrical surfaces respectively, a sealing device comprising diverging flanks defining a V-shaped annular chamber, opening into said first cylindrical surface, a tip of said annular chamber formed at the junction of said flanks, a sealing ring of substantially triangular cross-section located in said annular chamber, two diverging sidewalls of said sealing ring diverging at an angle less than the angle of divergence of the flanks of the annular chamber, whereby the sealing ring is tiltable from



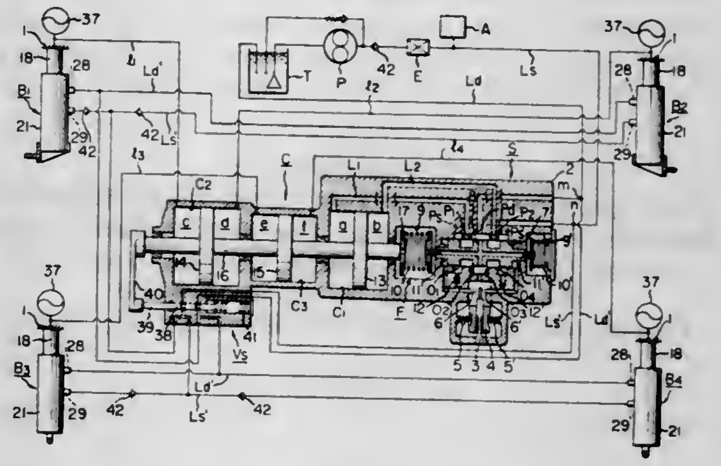
a rest position about said tip of said annular chamber, and a third wall of said sealing ring in opposed facing relationship to said second cylindrical surface, said third wall being spaced from said second cylindrical surface in said rest position of said sealing ring and sealingly contacting said second cylindrical surface only in a tilted position of said sealing ring.

3,895,816
VEHICLE-ATTITUDE CONTROL DEVICE

Noriyuki Takahashi; Hiromitsu Miyahara, both of Tokyo, and Hidehiko Inoue, Oimachi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 8, 1974, Ser. No. 449,468
Claims priority, application Japan, Mar. 12, 1973, 48-28783
Int. Cl.² B60G *13/08*

U.S. Cl. 280—6 H **10 Claims**



1. A vehicle-attitude control device for an automotive vehicle having a frame and wheels, said device comprising: centrifugal force sensing means operable to produce an output signal upon sensing a centrifugal force occurring when the vehicle travels along a curved course; telescopic shock absorbers arranged in left and right pairs between the frame and respective wheels of the vehicle; means operable upon reception of said output signal to controllably increase and decrease the amount of fluid in the left and right pairs of said shock absorbers thereby to tilt the vehicle frame laterally in a direction opposite to the direction of lateral swing ordinarily occurring under the action of said centrifugal force; vehicle-height controlling valve means associated with said respective shock absorbers and each operable to feed the associated shock absorber with pressure fluid upon contraction thereof below a predetermined length and to cause fluid exhaust from the associated shock absorber upon extension thereof above a predetermined length; and means operable to automatically render said vehicle-height controlling valve means ineffective upon operation of said centrifugal force sensing means.

3,895,817
SAFETY SKI BINDING

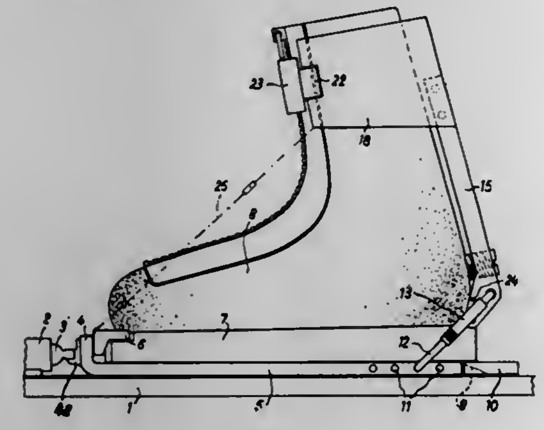
Ernst Gertsch, Wengen, and Ulrich Gertsch, both of Interlaken, Switzerland, assignors to Gertsch AG, Interlaken, Switzerland

Continuation-in-part of Ser. No. 87,404, Nov. 6, 1970, Pat. No. 3,753,571. This application Apr. 13, 1973, Ser. No. 350,754

Claims priority, application Switzerland, Nov. 10, 1969, 016697/69

Int. Cl.² A63C *9/08*

U.S. Cl. 280—11.35 K **4 Claims**



1. In a safety ski binding for a ski, a release plate having a lengthwise axis, a reinforcement element, means for mounting said element on said release plate for pivotal movement about an axis extending substantially transversely with respect to the lengthwise axis of said release plate, said element having a length such that said element extends along the upper of an associated ski boot to a point at least above the ankle joint of the skier's leg, means for placing the element in contact with the skier's leg for movement therewith, and means for locking said element in a predetermined position of pivoting motion thereof, so that forces acting upon the skier's leg are no longer transmitted predominantly through the ankle joint, but via the thus locked element directly to the release plate.

3,895,818
SUPPLEMENTARY WHEEL SET FOR ROAD VEHICLES

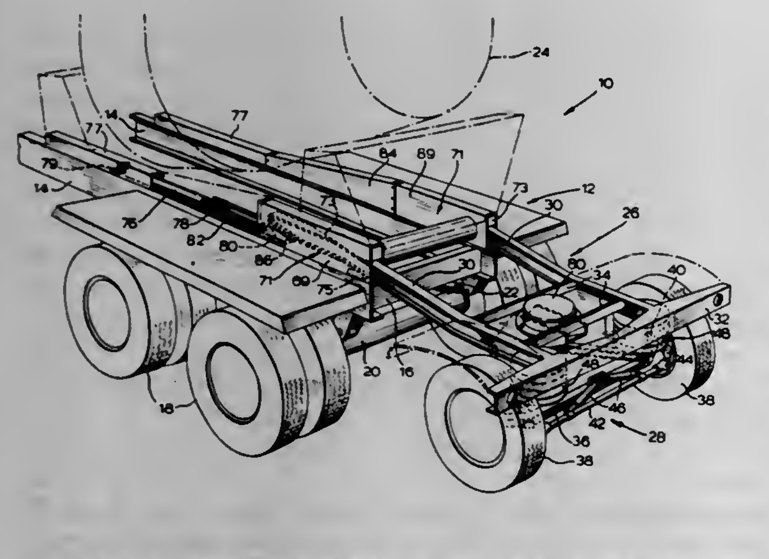
Robert L. Fearon, Edmondton, Canada, assignor to London Concrete Machinery Co., London, Canada

Filed June 3, 1974, Ser. No. 475,443

Claims priority, application United Kingdom, Sept. 13, 1973, 43175/73

Int. Cl.² B60S *9/22*

U.S. Cl. 280—81 R **11 Claims**



1. In a road-going vehicle having rear wheel sets supporting a chassis, the improvement of

- a. **a tag frame supporting a tag wheel set rearwardly of said** chassis, the frame having longitudinal beam means including intermediate beam portions and forward ends;
- b. mounting means on said chassis for mounting said tag frame beam means for longitudinal movement with respect to said chassis between a retracted position where the tag wheel set is closely adjacent the rear end of said chassis and in which said tag wheel set is elevated out of engagement with the road surface, and a second extended position spaced rearwardly of said chassis in which said tag wheel set engages the road surface and supports a portion of the chassis load, said mounting means including slide members carried by the chassis and horizontally pivotally connected to the forward ends of said beam means and further including slipway means fixed with respect to the chassis behind the slide members and including guide means confining said intermediate beam portions vertically and horizontally at the slipway, the slipway means and the slide means being mutually oriented such that the rear end of the tag frame supporting the tag wheel set is raised when the tag frame is retracted and lowered when the tag frame is extended; and
- c. drive means mounted on said chassis and connected to said slide members for driving said tag frame longitudinally with respect to said chassis between said retracted and extended positions.

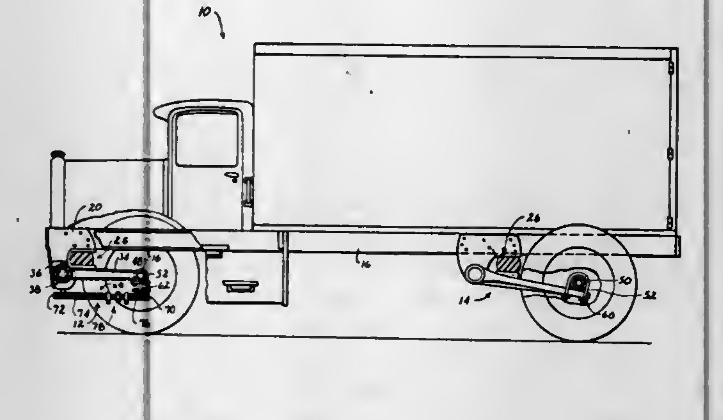
3,895,819
SINGLE AXLE SUSPENSION SYSTEM

Elwood H. Willetts, 102 S. Penataquit Ave., Bay Shore, N.Y. 11706

Continuation-in-part of Ser. No. 293,648, Sept. 29, 1972, abandoned, and Ser. No. 196,982, Nov. 9, 1971, Pat. No. 3,767,222. This application May 2, 1973, Ser. No. 356,496

Int. Cl. B60g *11/22*

U.S. Cl. 280—124 R **11 Claims**



1. A vehicle axle suspension system operatively providing a progressively increasing spring rate, comprising in combination, a vehicle frame structure, a support bracket depending from and secured to said vehicle frame structure, a support trunnion assembly secured to said support bracket, a load-bearing vehicle axle disposed below said frame structure, a suspension beam member cooperatively interconnecting said trunnion assembly and said vehicle axle at first and second ends thereof, respectively, a lower spring seat integral with an disposed upon said beam member intermediate said trunnion assembly and said vehicle axle, a cooperating upper spring seat secured to and supporting said vehicle frame, and a compressively resilient load-deflectible spring member disposed in contact with and interconnecting said lower and said cooperating upper spring seats, said spring member being operatively compressed between said spring seats under load, and said vehicle axle being disposed vertically between said second end portion and a torque rod hingedly interconnected to both said support bracket and said vehicle axle.

3,895,820
VEHICLE-HEIGHT CONTROL DEVICE

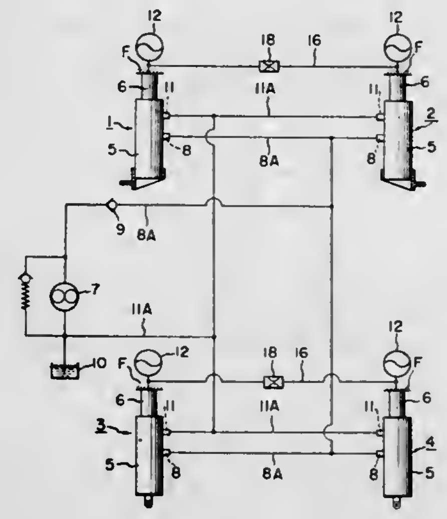
Noriyuki Takahashi; Hiromitsu Miyahara, both of Tokyo, and Hidehiko Inoue, Oimachi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 8, 1974, Ser. No. 449,470

Claims priority, application Japan, Mar. 12, 1973, 48-28784

Int. Cl.² B60G *13/08*

U.S. Cl. 280—124 F **8 Claims**



1. An automatic vehicle-height control device for use on a vehicle having a body with left and right sides and front and rear wheels at said left and right sides, said device comprising a plurality of hydraulic cylinder assemblies disposed between the body and respective road wheels of the vehicle on the left and right sides thereof, each of said cylinder assemblies including a pair of hollow inner and outer telescopic cylindrical members in fluid communication with each other, each hollow cylinder assembly defining an interior hollow space, said outer member having a fluid inlet port and a fluid outlet port extending therethrough, said inlet port being in communication with a source of fluid under pressure, said outlet port being in communication with ambient atmosphere, said inner telescopic member being vertically slidable and sealingly supported in said outer member, an annular bearing member interposed between said telescopic members, said bearing member having a pair of upper and lower annular grooves facing said inner telescopic member and a land portion of a predetermined vertical length defined between said grooves, said inner telescopic member having a through aperture located in a position to be closed by said land portion of said bearing member when the relative length between said inner and outer members is within a predetermined normal range, said aperture being operable to control the communication between said fluid outlet or inlet port and the interior space of the associated cylinder assembly in accordance with relative telescopic movement between said inner and outer members, and means including a hydraulic resistance connecting the interior spaces of a respective pair of said hydraulic cylinder assemblies positioned on the right and left sides of the vehicle.

3,895,821
INFLATION APPARATUS FOR SAFETY DEVICE

Jerome W. Schotthoefer, New Baltimore, and Arduino Colasanti, Detroit, both of Mich., assignors to Allied Chemical Corporation, New York, N.Y.

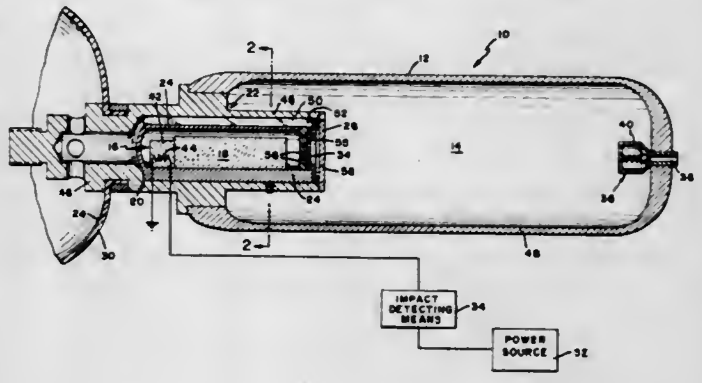
Filed June 1, 1973, Ser. No. 365,907

Int. Cl. B60r *21/06*

U.S. Cl. 280—150 AB **10 Claims**

1. Inflation apparatus adapted to be disposed in a vehicle for inflating a bag upon receipt of an electrical current from an impact detecting means responsive to impact of the vehicle, comprising:

- a. gas-containing means provided with a pressurized gas;
- b. gas generating means provided with a gas generating material;
- c. actuating means for igniting the gas generating material upon receipt of the electrical current to form a generated gas; and
- d. gas releasing means associated with said gas-containing means and having a conduit in communication with the interior of said bag, said gas releasing means comprising:
  - i. housing means containing said gas generating means;
  - ii. sealing means consisting of a first portion separating said pressurized gas from said gas generating means and a second portion separating said pressurized gas from said conduit, said first and second portions having uniform sealing strength; and
  - iii. rupture means disposed adjacent to said sealing means for applying rupturing force thereagainst, said rupture means being so constructed as to direct said rupturing force against each of said first and second portions of said sealing means upon ignition of said gas generating materials, the rupture means contacting said second portion of said sealing means directly at said conduit, whereby gas released from said gas-containing means and said gas generating means flows into and inflates the bag.



3,895,822
SAFETY DEVICE

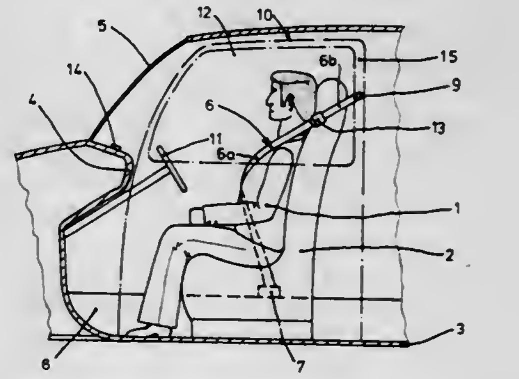
Ulrich Seiffert, Jahnskamp, and Burckhard Struwe, Fallersleben, both of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed Sept. 28, 1973, Ser. No. 401,679

Claims priority, application Germany, Sept. 28, 1972, 2247595

Int. Cl. B60r *21/2*

U.S. Cl. 280—150 SB **6 Claims**



1. A vehicular safety device for restraining movement of a seated passenger in the event of a sudden deceleration of a vehicle having door and window substantially adjacent an occupied seat, said device comprising:

first and second releasably interconnected belt elements, one end of said first element being connected to a vehicular frame member adjacent one side of the seat and one end of said second element being connected to the door adjacent the periphery of the window rearwardly of the passenger at the other side of the seat, said releasable interconnection being substantially closer to said one end of said second belt element than to said end of said first belt element and being situated not lower than a horizontal plane including the lower boundary of the window when the vehicle door is closed.

3,895,823

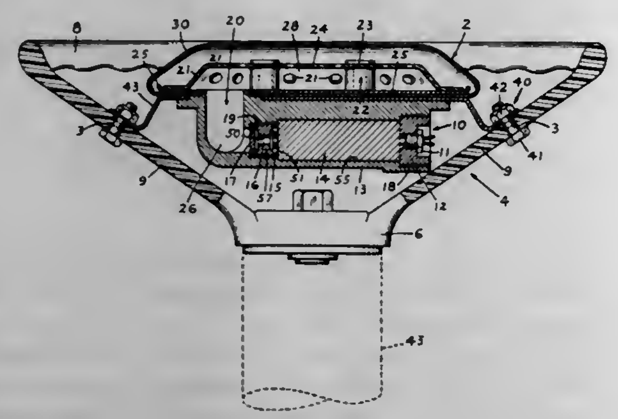
VEHICLE PASSENGER SAFETY ASSEMBLY

Robert L. Stephenson, Sterling Heights, Mich., assignor to Allied Chemical Corporation, New York, N.Y.

Continuation of Ser. No. 132,700, April 9, 1971, abandoned. This application Nov. 20, 1973, Ser. No. 417,657

Int. Cl. B60r *21/08*

U.S. Cl. 280—150 AB **7 Claims**



1. A safety assembly, disposed in a vehicle, comprising:
a pyrotechnic gas generator means as sole source of inflating gas, said gas generator means being located centrally of the steering wheel of said vehicle and spaced upwardly from the hub thereof;
a manifold means connected to and in communication with said gas generator means;
an inflatable gas bag connected about and in communication with said manifold means; and
connecting means to connect said generator means, said manifold means and said inflatable gas bag together and solely to the spokes of the steering wheel of said vehicle.

3,895,824

PASSIVE ACTUATING DEVICE FOR A SAFETY BELT

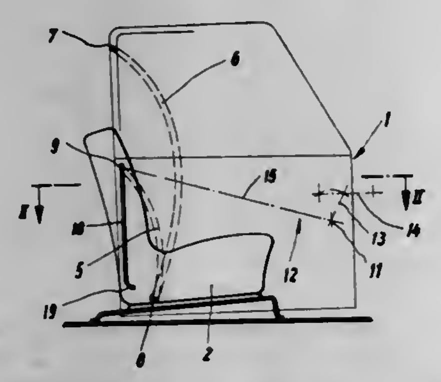
Andrfas Bauer, and Erwin Blüggel, both of Fallersleben, Germany, assignors to Volkswagenwerk Aktiengesellschaft, DT

Filed Feb. 13, 1974, Ser. No. 442,076

Claims priority, application Germany, Feb. 23, 1973, 2308980

Int. Cl. B60r *21/02*

U.S. Cl. 280—150 SB **8 Claims**



1. A passive actuating device for a safety belt associated with a seat in a vehicle comprising (*a*) lever means pivotally mounted in a door of the vehicle and including two interconnected arms oriented at an angle to each other, (*b*) means defining in an interior wall of the door a slot that has a lower end and an upper end located higher on the door than the lower end, (*c*) means passing through the slot for coupling one arm of the lever means to a portion of the safety belt and (*d*) stop means for limiting outward opening movement of the door and for yieldingly resisting inward closing movement of the door from at least one open position, the stop means coupling the other arm of the lever means to the vehicle body, the one arm of the lever means being coupled to the safety belt and the other arm being coupled to the stop means so that, upon opening of the door, the one arm is pivoted into a first position and the portion of the safety belt is raised relative to the associated vehicle seat and, upon closing of the door, the one arm is pivoted into a second position and the portion of the safety belt is lowered relative to the associated vehicle seat.

3,895,825

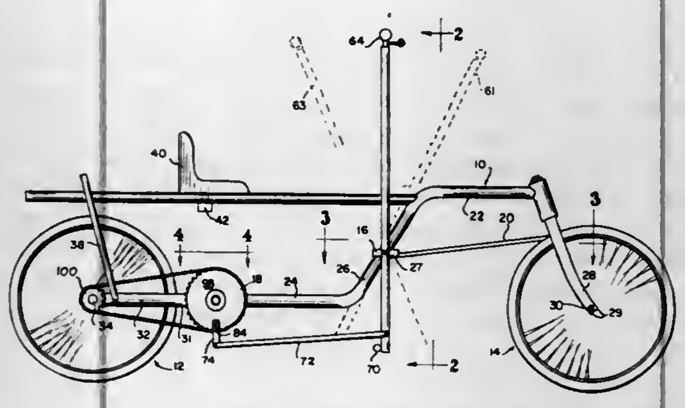
EXERCISE CYCLE

Robert L. Sink, c/o J & R Manufacturing Co., 10 N. Edmondson, Indianapolis, Ind. 46219

Filed Feb. 6, 1974, Ser. No. 440,071

Int. Cl. B62m *1/12*

U.S. Cl. 280—234 **19 Claims**



1. An exercise cycle comprising a frame having a seat mounted thereon, and front and rear wheels rotatably mounted at opposed ends thereof, said front wheel being pivotally mounted to said frame to permit steering of the cycle; a driving column pivotally mounted intermediate its length to said frame for oscillatory movement parallel to the plane of said frame; a one-way clutch rotatably mounted on said frame, said clutch having a clutch housing and a clutch plate, said plate having means thereon for operably engaging said housing upon rotation of said plate in a first direction to continuously drive said housing in the same direction, said means on said plate being partially engageable with saidi housing when said plate is stationary and when said plate is rotated in a relative direction opposite said first direction with respect to said housing to cause said housing to impose a dragging force on said plate; a driving link pivotally coupled between said column and said clutch to cause said clutch to rotate in response to oscillatory movement of said column; means coupling said clutch to said rear wheel to transmit rotational motion of said clutch to said rear wheel; a steering rod rotatably mounted to said driving column for rotation about its own axis and for oscillation with said column; a handle bar rotatably mounted to the upper end of said column and coupled to said steering rod for oscillating said column and for rotating said rod in response to oscillatory and rotary forces applied thereto; a universal joint at the lower end of said rod and having its pivot point disposed along the same general axis as the pivot point of said column; and means coupling said universal joint to said front wheel to turn said front wheel in response to rotation of said steering rod.

3,895,826

PROCESS OF MAKING DISPERSION OF UREA-FORMALDEHYDE RESINS

Raymond Harry Gunning, Box Hill North, and Frederick John Lubbock, Beaumaris, both of Australia, assignors to Dulux Australia Ltd., Melbourne, Australia

Filed Sept. 24, 1974, Ser. No. 508,994

Claims priority, application Australia, Oct. 4, 1973, 5102/73

Int. Cl. C08g *9/10, 51/28, 53/18*

U.S. Cl. 260—33.6 R **2 Claims**

1. A process of preparing beads of urea-formaldehyde resin in which an aqueous urea-formaldehyde convertible syrup which has a solids content of at least 65% by weight and a mol ratio of formaldehyde to urea of 1.9 – 2.3 to 1 is dispersed in the form of globules in a hydrocarbon liquid in the presence of a stabiliser for the dispersion and from 0 to 15% by weight of the continuous phase of a polymeric thickener therefor, converting the disperse syrup globules to hard polymer by adding a catalyst for the curing reaction and then azeotropically stripping water from the system to give an anhydrous slurry of solid polymer beads with diameters within the range of 1–100 microns in hydrocarbon liquid.

3,895,827

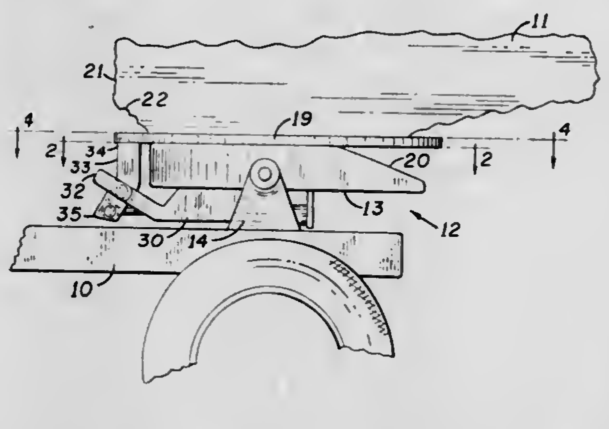
TRACTOR-TRAILER FIFTH WHEEL SAFETY LOCK

James D. Padrick, 420 N. 12th, Beach Grove, Ind. 46107

Filed May 30, 1974, Ser. No. 474,799

Int. Cl. B62d *53/10*

U.S. Cl. 280—432 **2 Claims**



1. A tractor-trailer fifth wheel safety lock comprising:
a truck having a rearwardly extending platform;
a fifth wheel pivotally mounted atop said platform and including a rearwardly opening slot;
a trailer having a main frame with a front edge portion;
a plate fixedly mounted beneath and to said main frame at said front edge portion and including a projection extending down from said main frame into said slot, and a forward edge portion with an arcuate recess with length opening through said forward edge portion and stop surfaces positioned at opposite ends of said recesses, said recess opening through said forward edge portion entirely along said length from one of said stop surfaces to another of said stop surfaces, said recess forms an arc of a maximum angle about said projection;
a stop block movably mounted to said platform;
means connected to said block and operable to move said block into and out of said arcuate recess, said block contactable against said stop surfaces when in said recess to limit relative pivotal movement between said plate and said fifth wheel;
a pair of spaced apart arms fixedly mounted to and beneath said fifth wheel, said arms having proximal ends with said block pivotally mounted therebetween;
said block has a top end and a bottom end with said proximal ends of said arms fastened to said block between said top end and said bottom end;
said means is operable to pivot said top end forward of said block to disengage said block from said plate;
said means includes a cylinder motor mounted to said fifth wheel, a source of pressurized fluid, an electrically operated fluid valve disposed between said motor and said source of pressurized fluid, a source of electrical energy and an electrical switch connecting said source of electrical energy to said electrically operated fluid valve;
said cylinder motor has an extendable piston rod fastened to said bottom end of said block;
said truck includes front wheels turnable through a maximum steering angle not less than the angle of said arc.

3,895,828

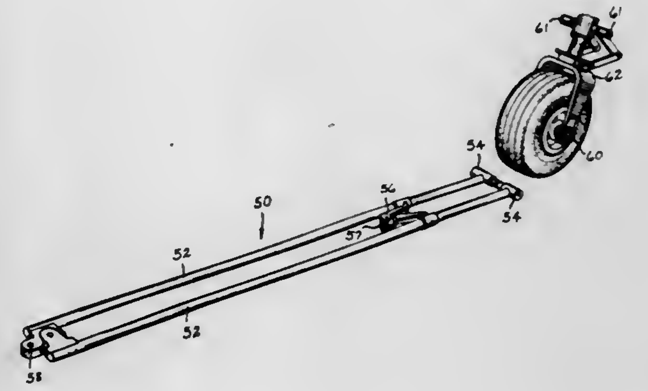
GRIPPING DEVICE FOR ACCOMMODATING EITHER MALE OR FEMALE COMPONENTS

Edward Bitantis, 1639 Howard, Niles, Mich. 49120

Continuation-in-part of Ser. No. 396,766, Sept. 13, 1973, abandoned. This application July 22, 1974, Ser. No. 490,678

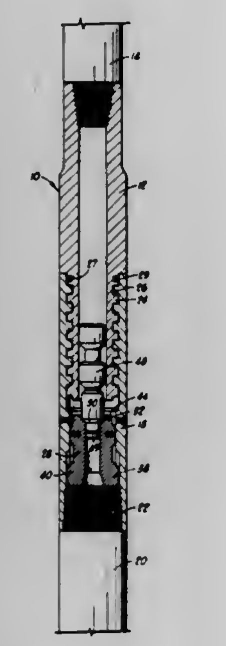
Int. Cl.² B60D *1/14*

U.S. Cl. 280—493 **3 Claims**



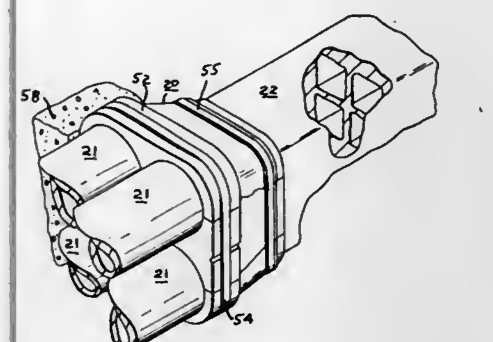
1. A gripping device for towing aircraft, said aircraft having a tow connection including either oppositely extending protrusions or oppositely located outwardly opened socket parts, said gripping device comprising an elongated bar means adapted at one end for connection to a tow means and having its other end defining a pair of opposed grip means shiftable toward and away from another, each grip means having an outer housing, said housing including (a) a side wall defining a chamber within said housing with said chamber having an open end and (b) a center member having a longitudinal axis and an outer surface, and (c) a plurality of sleeves telescopically fitted about said center member and being coaxial therewith with said center member and sleeves fitting within said housing chamber and protruding from said chamber at the open end thereof into extended positions and (d) means securing said sleeves and center member to said housing within the chamber thereof with said securement means permitting relative shiftable movement between said sleeves and center member and (e) biasing means individually urging said sleeves and center member into said extended positions with each sleeve having inner and outer surfaces, the outer surfaces of each sleeve and center member forming a socket part engaging surface, the inner surface of each sleeve forming a protrusion engaging surface, said sleeves and said center member being shiftable relative to each other along the axis of the center member between retracted positions wherein said sleeves and center members are shifted further into said housing chambers and said extended positions to engage various sized socket parts and protrusions, said pair of grip means for engaging either said socket parts or protrusions of the aircraft tow connection when shifted toward one another enable said tow means when connected to said bar means to tow said aircraft.

3,895,829
RELEASABLE PIPE CONNECTOR
Charles D. Manson, Jr., Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.
Filed Feb. 4, 1974, Ser. No. 439,143
Int. Cl.² F16L *37/24*
U.S. Cl. 285—3 **8 Claims**



1. A releasable breech block pipe connector, for connecting a pipe section thereabove to a pipe section therebelow, which comprises:
a. an upper tubular breech block member including:
  i. means for connecting an upper end of said upper tubular breech block member to the pipe section thereabove; and
  ii. interrupted threads positioned at the lower end thereof, said threads being interrupted along longitudinally extending spaces;
b. a lower tubular breech block member including:
  i. means for connecting a lower end of said lower tubular breech block member to the pipe section therebelow; and
  ii. interrupted threads positioned at the upper portion thereof, said threads being interrupted along longitudinally extending spaces and being arranged to engage in breech block manner with said interrupted threads of said upper tubular breech block member whereby said upper and lower tubular members can be selectively connected or disconnected by rotational and longitudinal movement relative to each other;
c. locking sleeve means for locking said upper and lower breech block tubular members against relative rotation, when said tubular members are breech block engaged and said locking sleeve means is fully positioned at an uppermost location within one of said tubular members, for allowing relative rotation of said tubular members when said locking sleeve means is moved to a lower location and for moving from said uppermost location to said lower location responsive to downward force applied to said locking means; and
d. means for maintaining said locking sleeve means at said uppermost location until at least a predetermined downward force is applied to said locking means, said maintaining means adapted to allow movement of said locking sleeve means from said uppermost position to said lower location after only application of at least said predetermined downward force.

3,895,830
CONDUIT ADAPTER
John R. Madlem, Box 136A3, High Falls Rd., R.D. 1, Catskill, N.Y. 12414
Filed Apr. 1, 1974, Ser. No. 457,066
Int. Cl.² F16L *35/00*
U.S. Cl. 285—27 **17 Claims**

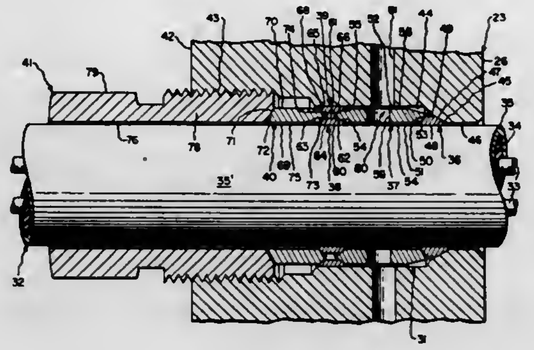


1. An adapter for joining a conduit of substantially square internal open cross section to a conduit of substantially circular internal open cross section comprising in combination, a pair of adapter outer half sections each of which has one open end of semi-circular shape and the opposite open end of semi-square shape, said one open end and said opposite open end being spaced apart with an intervening wall extending therebetween, the inside surface of said intervening wall changing gradually in cross sectional shape from semi-circular to semi-square to thereby form a half conduit, said intervening wall section of each adapter half section terminating along its length from said one open end to said opposite open end in a pair of faces in surface engagement with the pair of faces of the other adapter half section, at least one of said pair of faces of one adapter half section having at least one key element extending therefrom toward the surface engaging face of the other adapter half section, and the face of the other adapter half section toward which said at least one key element extends being formed with a key element receiving recess of proper shape to receive said at least one key element, said adapter half sections being placed with their faces engaged and said key element disposed in said key element receiving recess to thereby form a conduit of circular cross sectional opening at one end which transitions through the length of the adapter to substantially a square cross sectional opening at the other end and in which the assembled adapter halves are restrained from relative sliding movement by said interengaged key element and key element receiving recess, and means holding the adapter sections in assembled relationship.

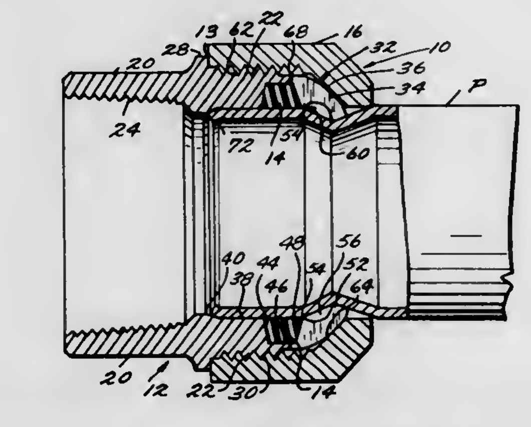
3,895,831
SEAL ASSEMBLY PROVIDING DUAL SEAL ZONES
Edward Fisher, Buffalo, N.Y., assignor to Conax Corporation, Buffalo, N.Y.
Filed May 10, 1973, Ser. No. 358,878
Int. Cl. F16l *35/00*
U.S. Cl. 285—93 **10 Claims**

1. A seal assembly comprising an object having a cylindrical periphery which penetrates an opening through a body member,
means providing an abutment portion of the wall of said opening as an annular seat;
means providing a cylindrical portion of said wall spaced axially from such abutment wall portion;
a first metal ferrule surrounding said object and engaged with said seat and one part of said periphery;
a second metal ferrule surrounding said object and engaged with another part of said periphery;
a third metal ferrule surrounding said second ferrule and engaged with such cylindrical wall portion;

an annular intermediate follower engaged at one end with said first ferrule and engaged at its other end with said second and third ferrules; and
thrust means engaged with said second and third ferrules applying thereto a force axially directed toward said seat effective to utilize said first ferrule to provide a first sealed engagement between said body member and said object, to utilize said second ferrule to provide a second sealed engagement between said intermediate follower and said object and to utilize said third ferrule to provide a third sealed engagement between said intermediate follower and said body member.

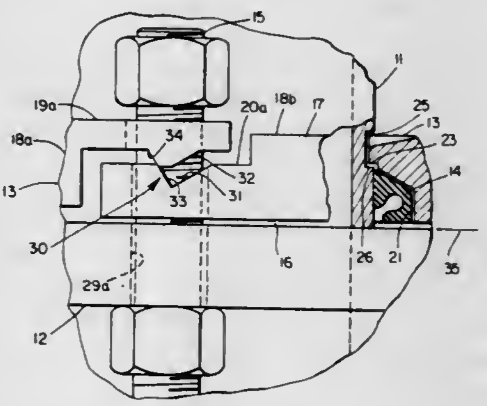


3,895,832
COLLET COMPRESSION CONNECTION
Daniel A. Ellis, and Lawrence F. Luckenbill, both of Decatur, Ill., assignors to Mueller Co., Decatur, Ill.
Filed May 13, 1974, Ser. No. 469,495
Int. Cl.² F16L *21/06*
U.S. Cl. 285—322 **12 Claims**



1. An improvement in a collet-type of joint for connecting an end portion of a smooth wall pipe to fittings or other pipes comprising:
a ring-type compression nut having an opening therethrough of a diameter sufficient to insert the smooth wall pipe and having an interior camming surface, said compression nut also having threads thereon;
a hollow body having a passageway therethrough, an axially extending end portion on said body member and through which a portion of said passageway extends, said end portion of said body member terminating in a nose having an exterior camming surface for cooperating with the camming surface on said nut and said nose having a plurality of longitudinal slots therein which provide constrictable arcuate fingers on the end portion of said body member, said portion of said passageway in said end portion of said body member having an annular shoulder at its inner end facing outwardly and having an interior diameter less than the outside diameter of the pipe and arranged for initial abutting of the end of the pipe and further having an annular groove therein adjacent to said nose and spaced outwardly of said shoulder, said annular groove being defined by an outwardly facing wall, a bottom wall, and a rearwardly facing wall in said nose and into which said slots extend, a first interiorly extending tooth on said nose defined by arcuate tooth segments adjacent the end of the fingers thereof, a second interiorly extending tooth on said nose defined by arcuate tooth segments of the fingers thereof, said second interiorly extending tooth being spaced inwardly from said first interiorly extending tooth to define between said first and second teeth an annular space, and said second tooth having one face defining the rearwardly facing wall of said annular groove, said first tooth having a crest diameter sufficient to receive said pipe prior to constriction of the fingers of said nose and said second tooth having a crest diameter prior to constriction of the fingers of said nose greater than the crest diameter of said first tooth, and threads on the end portion of said body member for cooperating with the threads on said compression nut;
and a sealing ring in said annular groove in the end portion of said body member, said sealing ring being deformed into sealing engagement with said pipe by the one face of said second tooth when the arcuate fingers of said nose are constricted by said compression nut, said first tooth initially engaging and gripping said pipe and any material of said sealing ring flowing outwardly along said pipe being received into said space between said first tooth and said smooth tooth until said second tooth subsequently just engages said pipe and provides a block for further flow of said sealing ring outwardly along said pipe.

3,895,833
FLANGE CONNECTOR ASSEMBLY FOR GROOVED PIPE
Leo K. Thiessen, Shawnee Mission, Kans., assignor to CertainTeed Products Corporation, Valley Forge, Pa.
Filed Feb. 19, 1974, Ser. No. 443,663
Int. Cl.² F16L *23/00*
U.S. Cl. 285—413 **5 Claims**



1. A flange connector assembly for coupling a grooved pipe to a matching flanged member comprising:
a plurality of arcuate flange segments for positioning on the pipe and assembling to make a complete, rigid, circular connector;
said complete connector having a front face adapted to abut flush against the matching flanged member, a rear face, a radially inboard lip to engage the pipe groove, a central, circumferential recess therein opening out of the front face and adjacent the pipe to receive a gasket, and bolt apertures through the body thereof;
each of said segments having opposite and unlike end ear portions of lesser thickness than the rest of the segment extending from the ends thereof, the opposite ear portions of a given segment oriented in line with the front and rear faces of the segment, respectively, whereby to be displaced from one another;
each said segment ear portion operative to overlap an unlike ear portion of another segment in assembly of the connector;

each segement ear portion having an oversized bolt hole therethrough; and

unlike wedge means mounted on each of said segment ear portions and facing in opposite directions on said segment adapted to cooperate with the unlike wedge means and oversized bolt apertures of adjacent segments in assembly of the circular connector,

whereby tightening of bolts engaging overlapping ear portions of adjacent segments causes the wedge means thereof to force the segments into rigid engagement, one with the other, against the matching flange member.

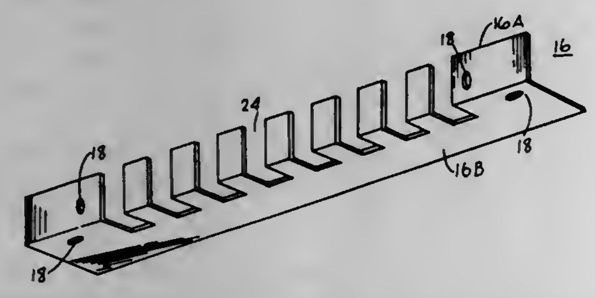
3,895,834
JIMMY PROOF GUARD FOR DOOR

Aron Grinbaum, and Solomon Jakubowicz, both of 8 Sultana Ave., Toronto, Ontario, Canada

Filed Mar. 25, 1974, Ser. No. 454,774

Int. Cl.^{2} E05C *19/00*

U.S. Cl. 292—346 **3 Claims**



1. A jimmy proof guard for a door in a door frame, said guard comprising:

a female member adapted to be secured in a flush manner to a portion of an exposed vertical edge of the frame and to the associated exposed vertical flat surfaces extending at right angles to each other to define the edge, said female member being vertically elongated, defining in horizontal cross section a right angle and containing a plurality of vertically spaced L shaped slots which extend horizontally across both of said surfaces and communicate with a vertical exposed side edge on one selected surface; and

a male member adapted to be secured in a flush manner to a portion of an exposed vertical surface of the door which is swung into and out of abutting relationship with the selected surface of the frame, said male member having vertically spaced horizontal members each detachably engagable with a corresponding portion of a corresponding slot.

3,895,835
ENERGY ABSORBING DEVICES

Ian M. Thomson, Wokingham, England, assignor to Enersorb Limited, Camberley, England

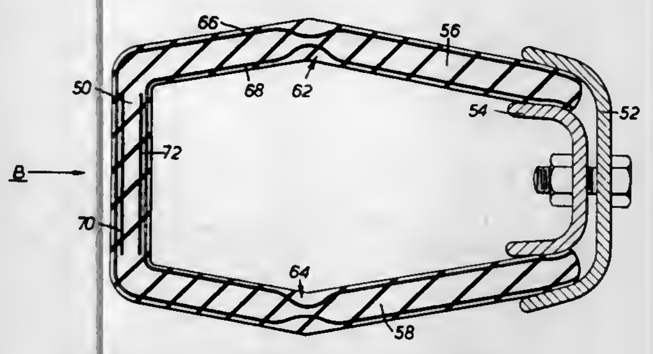
Filed July 23, 1973, Ser. No. 381,553

Claims priority, application United Kingdom, Aug. 11, 1972, 37678/72; Nov. 2, 1972, 50651/72

Int. Cl. B60r *19/08*

U.S. Cl. 293—71 R **42 Claims**

1. An energy controlling device comprising elastomeric material with a plurality of filaments of flexible material embedded therein and bonded or mechanically locked thereto so as to produce a composite beam structure, the composite beam structure being so arranged for mounting with respect to the positioning of the filaments in the elastomeric material and with respect to a predetermined impact direction that when the structure bends in response to an impact occurring in said direction at least some of the filaments are placed in compression and at least some of the filaments are placed in tension, the filaments having such cross-sectional area and modulus of elasticity that the compressive forces generated in the structure by the impact are principally taken by the filaments and the energy of the impact is at least partially controlled by the consequential increased bending reistance of the composite beam structure.



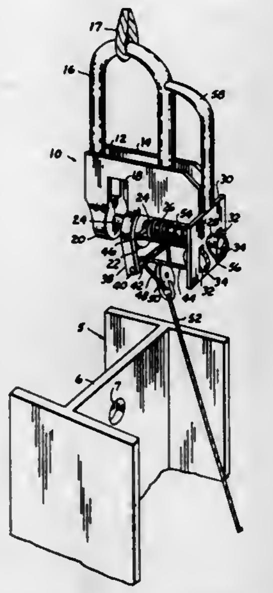
3,895,836
STRUCTURAL MEMBER LIFTING AND RELEASING DEVICE

Eldridge Barnes, Rt. 4, Box 142, Okemah, Okla. 74859

Filed Oct. 25, 1973, Ser. No. 409,549

Int. Cl. B66c *1/36*

U.S. Cl. 294—83 R **1 Claim**



1. An apparatus for hoist lifting and releasing an elongated structural member comprising:

a generally planar body disposed in a vertical plane and having a transverse downwardly open slot in the general form of an inverted U for receiving an edge portion of the structural member to be lifted,

said body having an aperture transversely intersecting the legs of the U-shape;

an elongated reciprocable locking member having one end portion arranged to be projected horizontally across the legs of the U-shape through the aperture;

at least one pulley mounted on said body beside the other end portion of said locking member;

an end plate transversely secured to one end of said body, said plate having an opening coaxial with the body aperture, said other end portion of said locking member being coaxially received slidably by the opening;

a resilient member normally biasing said one end of said locking member across the legs of the U-shape;

a control line entrained around said pulley and operatively connected with said locking member for withdrawing said locking member from its position across the legs of the U-shape in response to a downward pull on the line;

a bail connected with said body opposite the opening of the U-shape slot for connection with a hoisting cable;

a pair of bars secured to said body intermediate its ends in depending spaced relation; and,

a roller extending between said bars and being journalled thereby for rotation about a horizontal axis normal to the plane of said body,

the depending portion of said line adjacent said pulley being entrained over said roller.

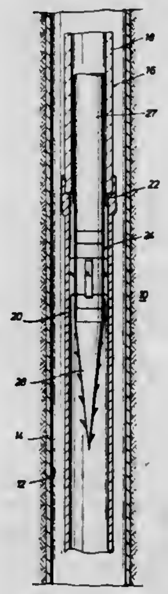
3,895,837
WIRE LINE SPEAR MECHANISM

Willard Barnes, New Iberia, La., assignor to Wilson Industries, Inc., Houston, Tex.

Filed Oct. 25, 1973, Ser. No. 409,429

Int. Cl. E21b *31/10*

U.S. Cl. 294—86.1 **8 Claims**



1. A wire line spear mechanism adapted to be lowered into a well for retrieving broken wire line from the production tubing of wells, said mechanism comprising:

a body portion having means for establishing connection of said body portion to a string of manipulating conduit that is extended into the production tubing;

a wire line spear being connected to the lower extremity of said body portion and including means for engaging broken wire line within the production tubing;

a plurality of tubing wiper means being retained in said body portion and being radially movable relative to said body portion and biased outwardly from said body portion to centralize said wire line spear inside said production tubing and to prevent said wire line spear from extending beyond convolutions of broken wire line more than a fixed distance between said wiper means and said wire line spear.

3,895,838
TAILGATE MOUNT

Ben Hamada, 900 N. Broadway, Suite 725, Santa Ana, Calif. 92701

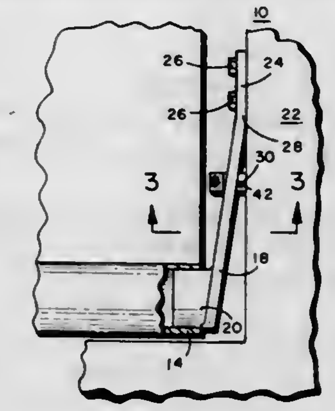
Filed Sept. 4, 1973, Ser. No. 394,400

Int. Cl. B60j *5/10*

U.S. Cl. 296—57 R **2 Claims**

1. A semi-rigid mount for a hinged truck tailgate, comprising:

a single integral generally planar base having a bend near a first end which end is fixedly coupled to the side of the truck, the base having a second end having coupled thereto a hinge pin, wherein the surface of the base defines a hole through the center thereof generally parallel to the axis of the hinge pin coupled thereto; bistable rotatable cam means removeably coupled to the base, the cam means capable of retaining the base in two positions, a first position bent and a second position less bent than the first position, the rotatable cam means rotatably coupled to the truck and passing through the hole, wherein



the rotatable cam means include a cam capable of passing through the hole when oriented in a first selected direction and incapable of passing through the hole and thereby holding the base in the first position when rotated in a second selected direction.

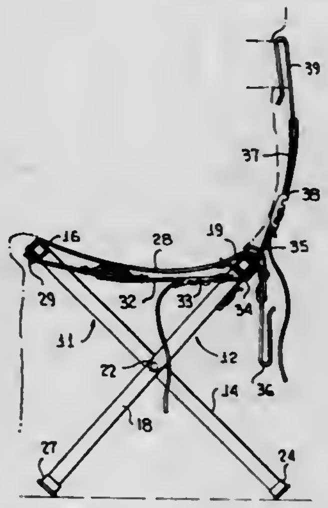
3,895,839
PORTABLE FOLDING SEAT

Harry Amato, 99 Larkin St., Revere, Mass. 02151

Filed Dec. 13, 1973, Ser. No. 424,455

Int. Cl. A47c *3/32*

U.S. Cl. 297—4 **5 Claims**



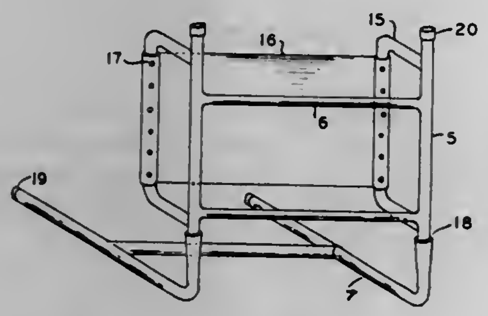
1. A portable folding seat of the type which is adapted to be secured to apparel of a user when not in use, said seat comprising:

first and second inverted U-shaped frames of light weight material, each including first and second legs joined by a cross-piece, said frames being pivotally joined to one another along a common axis through said legs, the legs and cross-piece of said first frame being slightly larger than the legs and cross-piece of said second frame such that in a closed pivotal position of said frames said second frame fits entirely within the periphery and thickness of said first frame;

a strip of foldable material extending between the cross-pieces of said first and second frames to define a seating portion when said frames are in an open position;

adjustable means for adjusting the length of said strip of material extending between said cross-pieces to vary the height of and spacing between said cross-pieces in the open position of said frames, thereby permitting the height of said seating portion to be adjusted at will; and attachment means for removably supporting said seat behind and from the waist of said user, said attachment means comprising; first means for supporting said seat at a standard position below said user's waist when said seat is being carried in a non-deployed condition; and second means for supporting said seat at an adjustable position below the user's waist with the frames in an open position to facilitate deployment of said seat by users of different heights.

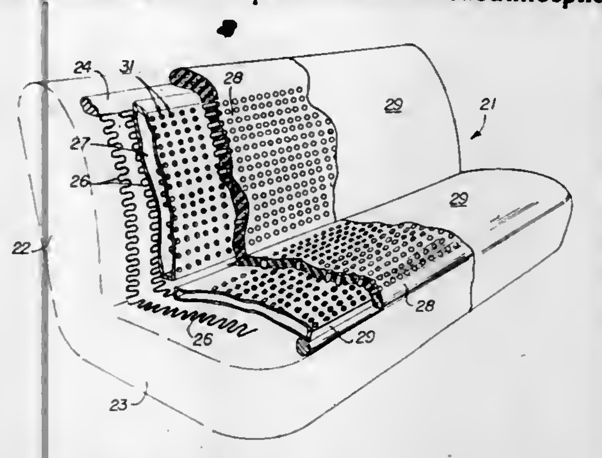
3,895,840
CHAIR SEAT ADAPTER
Dolores Szurszewski, 355 Hawthorne Rd., Pittsburgh, Pa. 15209
Filed June 28, 1973, Ser. No. 374,540
Int. Cl.^{2} A47C *7/42*
U.S. Cl. 297—230 **1 Claim**



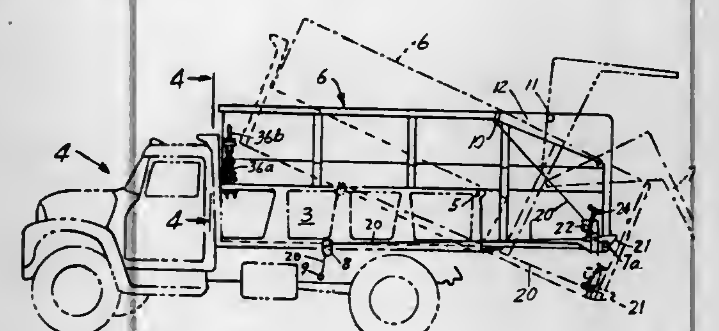
1. A back support for short persons for decreasing the seating depth of a chair or safa seating cushion, comprising a pair of L-shaped members, cross-members for rigidly supporting horizontal and vertical legs of said L-shaped members in spaced, parallel relationship, said L-shaped members being of tubular construction and said vertical legs having bottom ends of reduced diameter which slip-fit into vertically upwardly extending extensions of said horizontal legs to form a readily detachable fit therewith, U-shaped elements having extremities secured to the top and bottom portions of said vertical legs, a back-contacting resilient supporting means mounted on said U-shaped elements by fastening means, said U-shaped elements extending in the same direction as said horizontal legs, and said back contacting surface extending in a vertical plane in spaced parallel relationship to said vertical legs by the distance desired for decreasing the seating depth of said seating cushion, said back contacting resilient supporting means comprising a sheet of flexible material stretched between the base portion of said U-shaped elements to serve as said back resting surface, said horizontal legs extending underneath said seating cushion and said vertical legs resting against the back of said chair or sofa cushion, the bottom end of said resilient supporting means being spaced by about the thickness of said seating cushion from said horizontal legs, without obstruction therebetween so as to allow said seating cushion to fit therebetween and extend laterally outwardly of the vertical planes of said L-shaped elements, and so that when a short person is seated, his weight rests on the seating cushion and horizontal legs of said back support to hold the back support firmly in place.

3,895,841
VACUUM ACTUATED VEHICLE SAFETY DEVICE
Herbert A. Lebert, 25 Windsor Dr., Hillsborough, Calif. 94010
Filed Sept. 3, 1974, Ser. No. 502,651
Int. Cl.^{2} A62B *35/00*
U.S. Cl. 297—384 **12 Claims**

1. A device to momentarily hold an occupant in a vehicle seat against impact-created forces tending to impel the occupant out of his seat, comprising a seat cushion having an air-pervious outer covering, first means in said cushion having a cavity, a plurality of passages throughout said cushion, each leading from said cavity to a discrete area of said covering, a first valve in each said passage, each said first valve having valve opening means shaped to be individually contacted by the body of said occupant and responsive to the pressure of the occupant against said valve opening means, said valve opening means opening communication through the particular first valve with which it is associated through one said passage to said cavity only when a portion of the body of the occupant rests on said valve opening means, said cavity having a normal pressure state and an emergency vacuum state, said first means when in vacuum state pulling air through only those first valves which are open to create a subatmospheric pressure between the occupant and said cushion tending to force the occupant toward said cushion, a source of vacuum, a conduit between said source and said cavity, and a normally-closed impact second valve in said conduit, said second valve having second means therein responsive to impact against the vehicle in which the seat is installed to open said valve, whereby said cavity is changed from pressure state to vacuum state.



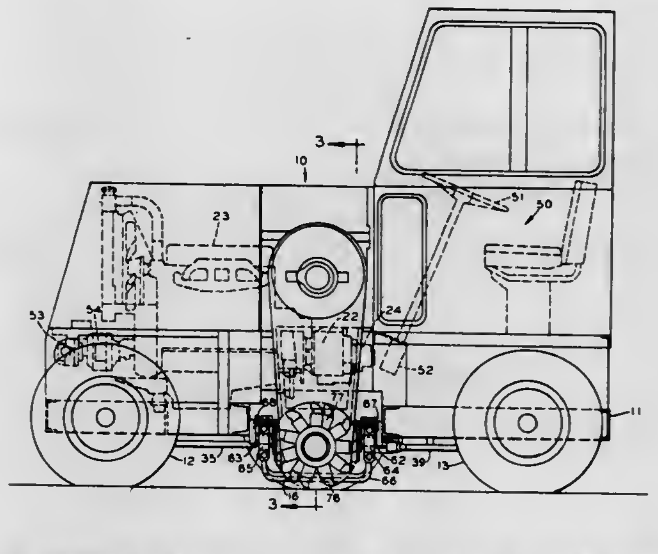
3,895,842
AUXILIARY SNOW BODY
Walter R. Fair, Menno, S. Dak. 57045
Filed July 30, 1974, Ser. No. 493,096
Int. Cl. B60p *1/00*
U.S. Cl. 298—1 R **9 Claims**



1. In a dump truck having a load carrying dump body having a bottom and sides and including a mechanism for dumping the same,

an enlarged insert body unit adapted to be mounted within the dump body to increase the load carrying capacity thereof for use in moving relatively large volumes of snow and other light weight materials,
said insert unit comprising,
a smooth-surfaced bottom panel substantially longer than the dump truck body and slightly narrower than the inside width of said truck body to be received therewithin and extend rearwardly therebeyond,
a pair of upstanding sides connected at their lower edges to said insert bottom and extending a substantial distance above the sides of the dump truck body,
means for rigidly connecting the front ends of said insert sides,
a tail gate connecting at rear ends of said sides and normally retaining the load within said body insert but being hinged to permit the load to be dumped when the truck dumping mechanism is actuated, and
means for removably attaching the insert unit to the dump body of the truck to positively anchor the same therein when in use but permitting the insert unit to be removed from the dump body when heavier loads are to be carried by the truck.

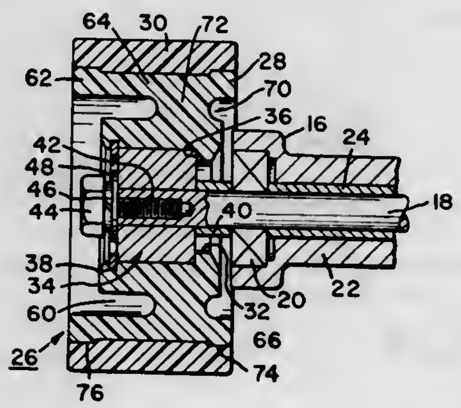
3,895,843
ROAD PLANING MACHINE
Christopher Wall; Ronald Scaife, and Tnomas A. Wood, all of Wakefield, England, assignors to British Jeffrey-Diamond Limited, Dallas, Tex.
Filed Oct. 23, 1973, Ser. No. 408,596
Int. Cl. E21c *47/00*
U.S. Cl. 299—39 **20 Claims**



1. A planing machine for planing roads or other paved surfaces, comprising:

a frame;
first and second ground engaging supporting means mounted at fore and aft locations along one side of said frame;
third ground engaging supporting means mounted on the opposite side of said frame, said first, second and third ground engaging means co-operatively supporting said frame on said surface and capable of moving said frame along a smooth tightly curved path on said surface;
rotary planing means mounted on said frame intermediate and in alignment with said fore and aft ground engaging means and in transverse alignment opposite said third ground engaging means, said planing means being adapted to engage the paved surface for cutting material from the paved surface to a controlled depth; and
power means to propel said machine along said surface and to drive said rotary planing means.

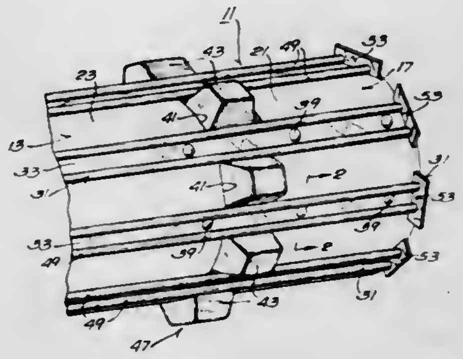
3,895,844
ROLLER SKATE WHEELS
Rudolph Merbler, 108 Brentwood Ln., Fairport, N.Y. 14450
Filed May 22, 1974, Ser. No. 472,008
Int. Cl.^{2} B60B *5/00*
U.S. Cl. 301—5.7 **8 Claims**



1. A wheel adapted for use in a roller skate having an axle, said wheel comprising

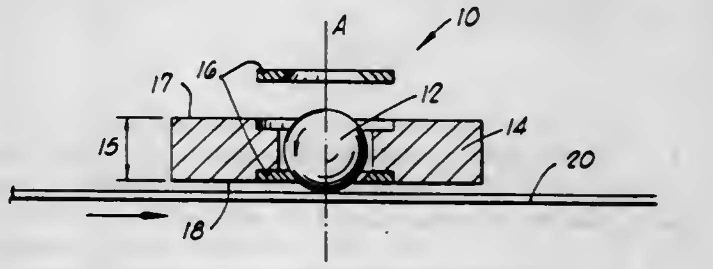
a cylindrical body having an axial opening for receiving said axle, and said body having a cylindrical groove extending axially inwardly from an end face of said body a distance sufficient to define a flexural web along the outer periphery of said body, a second circular groove extending into said body from the end face thereof opposite to said one end face, said second groove being at the same radial distance from said body axis as said first named groove, and said second groove also being of axial depth smaller than said first groove.

3,895,845
TRACK WITH ANTI-SIDE SLIP AND TRACTION BAR
Gordon B. Hale, Waukegan, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed Dec. 28, 1970, Ser. No. 101,782
Int. Cl. B62d *55/24*
U.S. Cl. 305—35 EB **11 Claims**



1. A track for a vehicle, said track comprising an elongated belt having an outer surface, and a plurality of bars secured to said outer surface in transverse relation to the length of the belt and in spaced apart parallel relation to one another, each bar comprising a rigid member including a base portion attached to said belt outer surface, a first rib extending from one of the opposed base portion edges extending transversely of said belt and projecting outwardly from said belt outer surface beyond said base portion, a second rib extending from the other of the opposed base portion edges extending transversely of said belt and projecting outwardly from said belt outer surface beyond said base portion, and a flange extending from one end of said base portion in generally upright relation to said base portion and projecting in the direction of the length of said belt, beyond said first and second ribs.

3,895,846
MAGNETIC BALL RETAINING APPARATUS
William J. Edwards, Oklahoma City, Okla., assignor to Honeywell Information Systems Inc., Oklahoma City, Okla.
Filed Sept. 5, 1974, Ser. No. 503,421
Int. Cl.^{2} F16C *35/00*
U.S. Cl. 308—10 **2 Claims**



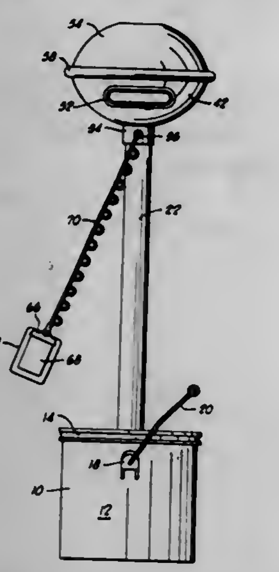
1. A magnetic ball retaining apparatus used as a pressure roller in a media transport, the apparatus comprising:

a metal ball roller; and
a ring magnet having an inner and outer circumferance, said ball roller being captured magnetically within the inner circumferance of said ring magnet, said ball roller having a diameter greater than the width of said magnet and

extending outwardly therefrom and engaging the media as the media is transported thereby.

3,895,847
PORTABLE DOCUMENT AND FORM PRESENTATION DEVICE

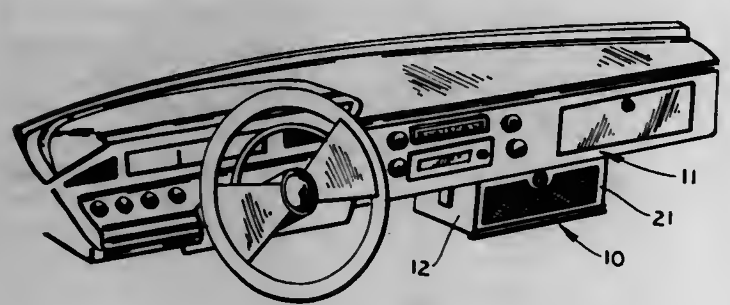
William A. Harris, 6007 N.W. 32nd St., Bethany, Okla. 73008
Filed Jan. 2, 1974, Ser. No. 430,026
Int. Cl. A47b *81/00*
U.S. Cl. 312—100 **9 Claims**



1. A portable document and form presentation device facilitating the intermittent use and alternate storage of forms and documents in an outdoor location comprising:
- a base;
- a standard projecting vertically from said base;
- a hollow housing mounted on the upper end of said standard and having a slot in a side wall thereof, said housing comprising two hollow, hemispherical portions joined together along a substantially equatorial, horizontally extending plane;
- a flat document and form carrying plate; and
- an elongated flexible member connecting said plate to either said standard or housing.

3,895,848
TAPE STORAGE CONTAINER FOR AUTOMOBILES

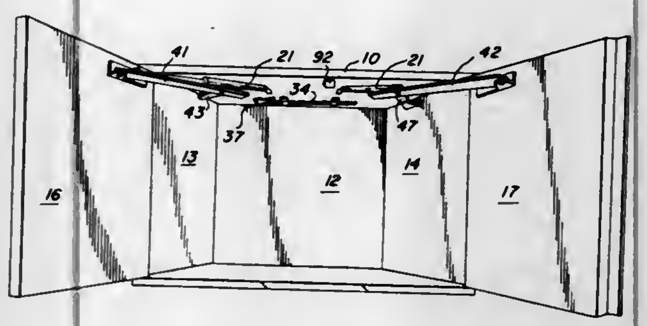
Richard D. Walden, 225 Pecan Dr., Martinez, Ga. 30907
Filed Nov. 14, 1973, Ser. No. 415,743
Int. Cl.² A47B *7/08*
U.S. Cl. 312—236 **1 Claim**



1. A tape storage container for automobiles for storing magnetic tapes, said container comprising a housing including spaced parallel top and bottom walls, spaced parallel side walls, a pervious door selectively covering a front opening of said housing, a hinge on said door connecting said door to said bottom wall, lock means for locking said door in closed relationship with said front opening, a series of partition means spaced across said housing parallel to said side walls defining spaces therebetween for receipt of a tape, cushion protrusion elements carried by said partition means and extending into said spaces for engaging a tape received within said space, fan means rearwardly of said housing and in communication with said housing a rear wall on said housing rearwardly of said partition means, said fan means communicating with said housing through said rear wall, a plurality of air directing means between said rear wall and said partition means, said air directing means being arranged to direct air from said fan means into said spaces, conduit means communicating with said fan means and with outside ambient air, and temperature responsive means within said housing for energizing said fan means, the arrangement being such that energizing said fan means causes outside air to be directed into said spaces and to pass between said partition means and a tape received within said spaces to be discharged through said pervious door.

3,895,849
AUTOMATIC DOOR CLOSURE FOR STORAGE CABINETS

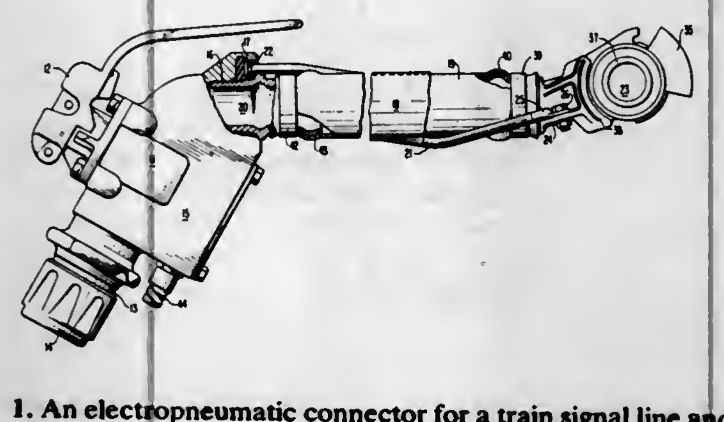
William J. Zehr, Des Plaines, Ill., assignor to The Protectoseal Company, Bensenville, Ill.
Filed Aug. 14, 1974, Ser. No. 497,140
Int. Cl.² A47B *88/00*
U.S. Cl. 312—324 **7 Claims**



1. A door closing mechanism for a storage cabinet, having a top and back walls and side walls, a pair of doors hingedly connected along opposite edges of said side walls, said closing mechanism for each of said doors comprising a hydraulic check including a piston housing and a piston means reciprocable therein, a check spring, pivot means connecting said piston means and one end of said check spring at a common location on said door, means connecting the other end of said check spring to the side wall of said cabinet, and pivot means connecting said housing to said cabinet top wall, so that the moment of force extending between the door hinge and said pivot means is at substantially right angles to the force applied by said spring in the closed position of said doors, and so that said spring and said hydraulic check are substantially in quadrature position in said closed door position.

3,895,850
ELECTROPNEUMATIC TRAINLINE CONNECTOR

Thomas H. Engle, Cape Vincent; Glen O. Bohusch, Watertown, and Thomas M. Bogenschutz, Clayton, all of N.Y., assignors to General Signal Corporation, Rochester, N.Y.
Filed Nov. 9, 1973, Ser. No. 414,461
Int. Cl. H01r *3/04*
U.S. Cl. 339—15 **10 Claims**

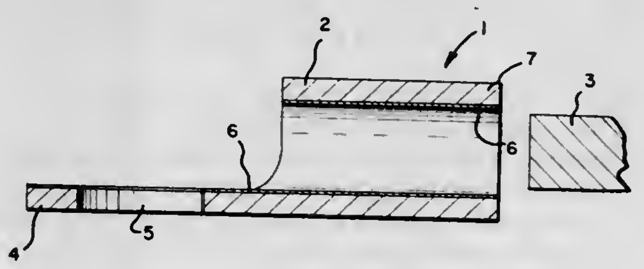


1. An electropneumatic connector for a train signal line and pneumatic brake pipe, said connector comprising:

- a brake pipe angle cock adapted to be mounted on a rail vehicle at the end of said brake pipe;
- a non conductive brake pipe hose having first and second ends;
- an electrically conductive pneumatic coupler attached to the first end of said nonconductive hose, for providing electrical and pneumatic coupling between said hose and a similar hose from another train car;
- first contact means mounted on and insulated from said angle cock for receiving signals from said train line;
- second contact means mounted on the second end of said nonconductive hose;
- conductor means traversing the length of said hose for electrically connecting said pneumatic coupler with said second contact means; and means joining said angle cock and said nonconductive hose for making electrical contact between said first and second contact means and pneumatic contact between the second end of said nonconductive hose and said angle cock during the connecting of said nonconductive hose to said angle cock, regardless of the angular orientation between said angle cock and said nonconductive hose.

3,895,851
BRITTLE-SURFACED CONNECTOR

James Alfred Bolton, Winston-Salem, N.C., and Howard Richard Peiffer, New Cumberland, Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Filed Aug. 23, 1973, Ser. No. 390,975
Int. Cl.² H01R *11/20*
U.S. Cl. 339—95 R **6 Claims**

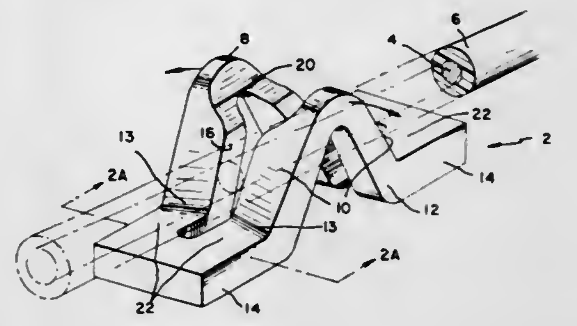


1. An electrical connector having a crimp-termination means for receiving an electrical wire and forming a connection therewith upon crimping thereto, comprising said means being formed of a conductive base-metal whose surface for engaging said wire is at least in substantial part an integral, continuous, thin, frangible, conductive, intermetallic compound layer less than about 300 micro inchese thick, said layer being composed solely of metals.

3,895,852
SLOTTED PLATE TYPE ELECTRICAL CONNECTIONS

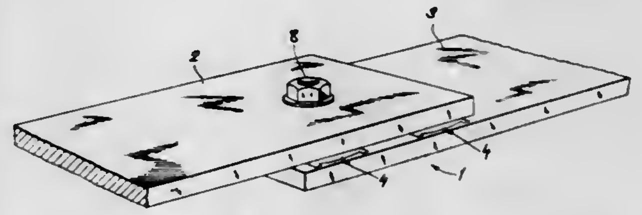
Henry George Wasserlein, Jr., Seminole, Fla., assignor to AMP Incorporated, Harrisburg, Pa.
Continuation of Ser. No. 257,897, May 30, 1972, abandoned. This application Jan. 24, 1974, Ser. No. 436,292
Int. Cl. H01r *9/08*
U.S. Cl. 339—99 R **5 Claims**

1. An electrical and mechanical connection between a conductor and a terminal member,
- said terminal member comprising a plate-like member of conductive sheet metal, said member being bent transversely of its length at a location spaced from one end thereof to define an end section and a conductor-receiving side section
- a wire-receiving slot extending into said conductor-receiving side section and extending for the full length of said side section and into said end section, said slot having a dead end in said end section,
- said conductor being wedged in, and extending transversely through, said slot in said side section only, portions of said side section on each side of said slot being flexed outwardly and away from each other to provide a first spring system maintaining edge portions of said slot in engagement with said conductor, and
- portions of said end section on each side of said slot being torsionally stressed in opposite rotary directions to provide a second spring system maintaining said edge portions of said slot in engagement with said conductor.



3,895,853
ELECTRICAL CONNECTOR

Rudolf Neidecker, Basel, Switzerland, assignor to Multi-Contact A.G., Basel, Switzerland
Filed Aug. 29, 1973, Ser. No. 392,517
Claims priority, application Germany, Sept. 1, 1972, 2243034
Int. Cl. H01r *7/08*
U.S. Cl. 339—272 R **7 Claims**



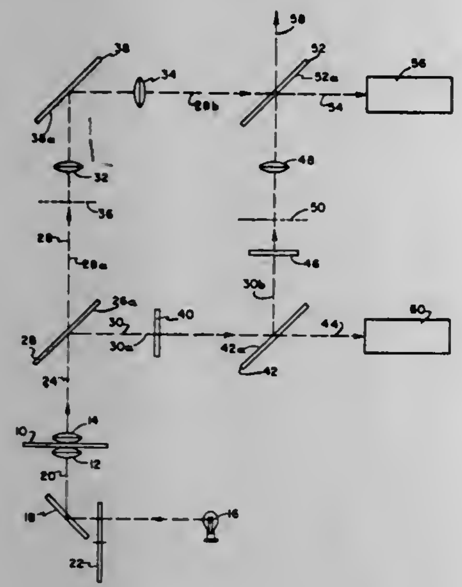
1. An electrical connector for electrically interconnecting two surfaces, said connector comprising a planar conductive metal sheet having a pair of generally coplanar longitudinally extending and longitudinally corrugatedly contracted side portions, the extended lengths of said side portions exceeding the length of said sheet along said side portions, and a plurality of parallel transverse resilient tongues extending between said portions and twisted from the plane of said portions, said tongues having ends joined to said sides and middle regions wider than said ends, said side portions being uniformly corrugated over their entire lengths and having more than one corrugation per tongue.

3,895,854
CHROMATIC METHOD AND APPARATUS FOR CONDUCTING MICROSCOPIC EXAMINATIONS AT A PLURALITY OF MAGNIFICATIONS

Garret Francis Ziffer, Natick, Mass., assignor to Coulter Electronics, Inc., Hialeah, Fla.
Filed Oct. 18, 1973, Ser. No. 407,536
Int. Cl. G02b *21/00*
U.S. Cl. 350—20 **23 Claims**

1. A chromatic method of conducting microscopic examinations of an illuminated object at a plurality of magnifications, in which neither the object nor any magnifying lenses are required to be moved, which comprises the steps of:
- illuminating the object with a plurality of different colors of light,

conducting the light transmitted by said object along different paths for said different colors, and



producing different degrees of magnification along said different paths.

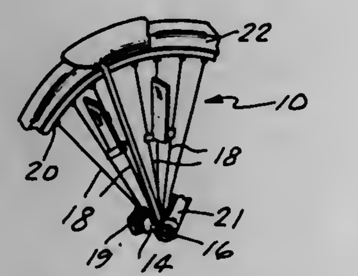
3,895,855
END-VIEWABLE, SPOKE-MOUNTABLE REFLECTOR

Robert L. Nagel, Skokie, Ill., assignor to Beatrice Foods Company, Elgin, Ill.

Filed Dec. 26, 1973, Ser. No. 427,990

Int. Cl.² G02B *5/12*

U.S. Cl. 350—99 **9 Claims**



1. An assembly for producing a light flashing effect comprising in combination

A. a rotatable wheel member having a wheel axis, and a center plane generally perpendicular to said wheel axis,

B. a reflector unit having at least one region comprised of transparent solid material and having a region axis normal thereto, said region having formed therein at least two groups of cube corner reflector elements, all such elements each having a central optical axis, the respective such optical axes of such elements in each such group being disposed substantially parallel to the respective such optical axes of the other such elements in each such group, the respective optical axes of such elements in one such group being generally parallel to said region axis, the respective optical axes of such elements in a second such group being inclined at a predetermined angle relative to said region axis, said region being retro-reflective of light directed thereon over an angle extending from at least about 45° on one side of said region axis to at least about 30° on an opposed side of said region axis measured in a measurement plane containing said region axis and said predetermined angle,

C. said reflector unit being adapted for functional association with a side portion of said wheel member so that said region axis is generally perpendicular to said wheel axis, and

D. mounting means to mount said reflector unit fixedly to said wheel member in such association,

E. said wheel member, said reflector unit and said mounting means coacting together so that, when said wheel member is rotated, said reflector unit is adapted to produce a flashing light signal viewable at any spatial position relatively remote from said assembly within a viewing angle extending from not less than said center plane to at least about 45° on one side of said center plane once during each 360° of rotation of said wheel member.

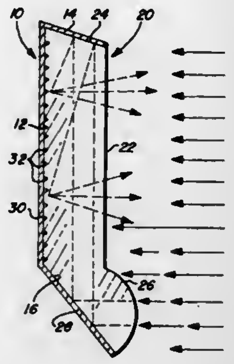
3,895,856
REFLECTIVE APPARATUS

Quentin D. Bickel, 204 S. Papaga Cir., Tempe, Ariz. 85281

Filed Aug. 15, 1974, Ser. No. 497,570

Int. Cl.² G02B *5/00*

U.S. Cl. 350—104 **19 Claims**



1. Reflective apparatus, comprising, in combination:

lens means, including a convex portion for gathering light and a planar portion disposed adjacent said convex portion;

reflector means, including a back portion disposed substantially parallel to the planar portion of the lens means, a portion disposed at an obtuse angle with respect to the back portion and adjacent the convex portion of the lens means, and a portion disposed at an acute angle with respect to the back portion for reflecting light rays from the obtuse angle portion; and

facet means for receiving and reflecting light rays from the planar portion of the lens and from the acute angle portion of the reflector means.

3,895,857
BEHIND-STOP TESSAR TYPE PHOTOGRAPHIC LENS SYSTEM

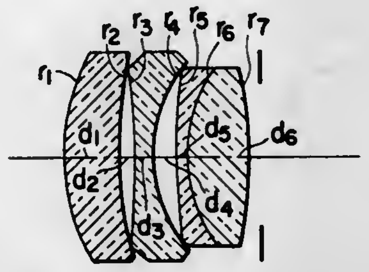
Toshihiro Imai, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed June 24, 1974, Ser. No. 482,762

Claims priority, application Japan, June 26, 1973, 48-72410

Int. Cl. G02b *9/20*

U.S. Cl. 350—227 **1 Claim**



1. A behind-stop Tessar type photographic lens system comprises three lens components of four lenses, a first lens component being a positive meniscus lens with its convex surface positioned on the object side, a second lens component being a biconcave lens and a third lens component being a cemented doublet lens comprising a negative meniscus lens and a biconvex lens, said behind-stop Tessar type photographic lens system having the following numerical data:

$f = 1$			
$r_1 = 0.348$			
	$d_1 = 0.110$	$n_1 = 1.78590$	$\nu_1 = 44.24$
$r_2 = 0.888$			
	$d_2 = 0.033$		
$r_3 = -1.436$			
	$d_3 = 0.040$	$n_2 = 1.67270$	$\nu_2 = 32.10$
$r_4 = 0.304$			
	$d_4 = 0.037$		
$r_5 = 1.617$			
	$d_5 = 0.023$	$n_3 = 1.60717$	$\nu_3 = 40.34$
$r_6 = 0.281$			
	$d_6 = 0.117$	$n_4 = 1.75700$	$\nu_4 = 47.89$
$r_7 = -0.691$			

In the above, reference symbols r_1 through r_7 respectively represent radii of curvature of respective surfaces of lenses, reference symbols d_1 through d_6 respectively represent thicknesses of respective lenses and airspaces between lenses, reference symbols n_1 through n_4 respectively represent refractive indexes for *d*-line of respective lenses, and reference symbols ν_1 through ν_4 respectively represent Abbe's numbers of respective lenses.

3,895,858
LENS BARREL

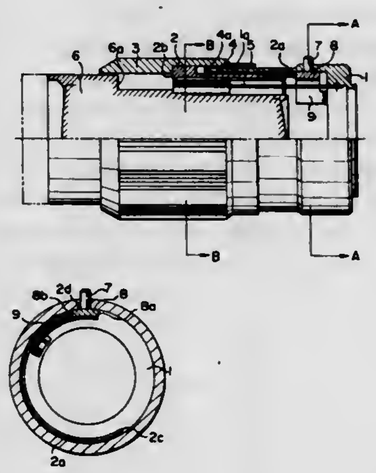
Hiroshi Sawano, Tokyo, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed July 25, 1974, Ser. No. 491,850

Claims priority, application Japan, July 30, 1973, 48-84959

Int. Cl. G02b *7/02*

U.S. Cl. 350—255 **7 Claims**



1. A lens barrel comprising
- a. a focus ring having a first helicoid thread,
- b. a lens frame having a second helicoid thread engaging with said first helicoid
- c. guide means to guide said lens frame without any angular displacement upon operation of said focus ring,
- d. means for stopping said lens frame to define a position where said lens frame is located for infinite-distance-focusing, and
- e. a manually operable member for releasing said stopping means from the stopping state to make said lens frame movable beyond said position.

3,895,859
GLARE-REDUCING WINDOW PANE AND AUTOMOTIVE WINDOW ARRANGEMENT USING THE PANE

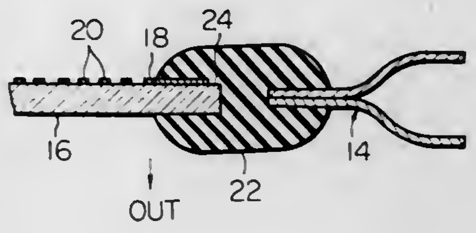
Fumio Yoshida, Tokyo; Setsuo Sakamoto, Yokohama, and Shoichi Tatewaki, Tokyo, all of Japan, assignors to Nissan Motor Company Limited and Central Glass Company Limited, both of Yokohama, Japan

Filed Dec. 11, 1973, Ser. No. 423,753

Claims priority, application Japan, Dec. 12, 1972, 47-142000

Int. Cl. G02b *5/20*

U.S. Cl. 350—276 R **3 Claims**



1. In a glare-reducing window assembly, wherein a sheet of transparent glass having on its one surface a number of spaced opaque film pieces is fitted in a window frame encompassing the glass and having a portion lying upon a peripheral area of said one surface of the glass, the combination with said glass and said window frame, of an opaque film strip formed on and extending along said peripheral area of said one surface of the glass, said film strip being so arranged that the film strip extends toward the center of the glass beyond said portion of the window frame whereby the window frame is made invisible by the film strip to a viewer observing the opposite surface of the glass.

3,895,860
METHOD FOR COMPARING CORNEAL MEASUREMENTS

Malcolm G. Townsley, Park Ridge, Ill., assignor to Wesley-Jessen Inc., Chicago, Ill.

Filed Apr. 8, 1974, Ser. No. 459,106

Int. Cl. A61b *3/00*

U.S. Cl. 351—39 **5 Claims**

1. A method for ascertaining changes in corneal dimensions, comprising the steps of:
- a. measuring a corneal meridian at a first point in time to obtain a first set of data defining said corneal meridian;
- b. generating a reference curve from said first set of data;
- c. tabulating the differences between said first set of data and said reference curve;
- d. storing said tabulated differences and said reference curve;
- e. measuring the corneal meridian at a subsequent point in time to obtain a second set of data;
- f. regenerating said reference curve; and
- g. tabulating the differences between said reference curve and said second set of data.

3,895,861
REAR-SCREEN WIDE-ANGLE ON-AXIS PROJECTION SYSTEM

John W. Herndon, Orlando, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

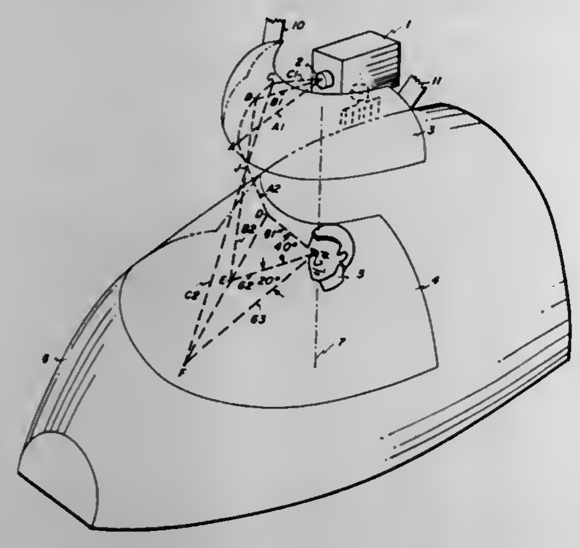
Filed Sept. 13, 1974, Ser. No. 505,448

Int. Cl. G03b *29/00*

U.S. Cl. 352—69 **4 Claims**

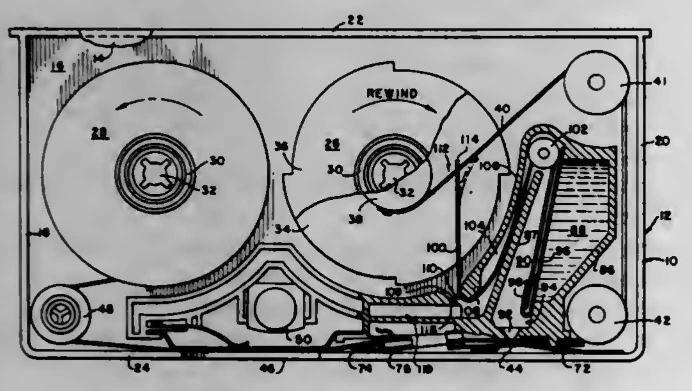
1. A wide-angle on-axis projecting and viewing display system comprising:
- a. a rear projection display screen having a rear convex side and front concave side,

- b. projector means having a wide-angle lens for projecting image light rays,
- c. a reflector means for receiving and redirecting said rays to the rear side of said rear projection screen for image observation from a viewing point in spaced relation from and on said front side of said screen,



- d. the relative curvatures of said reflector and screen means being selected in relation to each other and to said screen viewing point to cause the image rays to pass through a common point which is the mirror image of said screen viewing point and hence provide on-axis viewing of the projected image.

3,895,862
PROCESSING FLUID RELEASE DEVICE AND METHOD FOR MULTIPURPOSE FILM CASSETTES
Joseph A. Stella, Peabody; Edward F. Burke, Jr., Reading, and Paul B. Mason, Magnolia, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Filed Dec. 26, 1973, Ser. No. 428,377
Int. Cl. G03c ***11/00***
U.S. Cl. 352—130 **30 Claims**

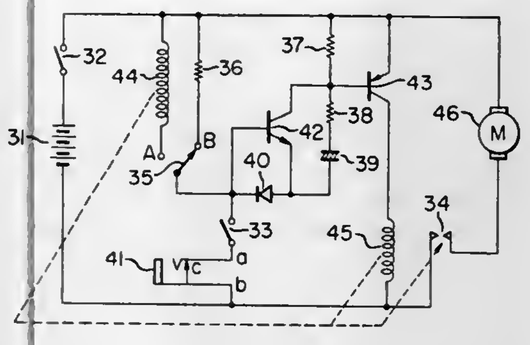


1. In a film cassette containing a strip of photographic film to be exposed and processed without removal from the cassette, processing means also contained in the cassette and having a processing fluid reservoir initially sealed by a tear-tab to be removed by advancement of the tear-tab upon completion of film exposure so as to release reservoir contained processing fluid for deposit on the film strip, the improvement comprising:

a pull-strip joined at one end to said tear-tab; and

means for guiding said pull strip along a predetermined path to advance said tear-tab and release the processing fluid from said reservoir and for separating said pull strip from said tear-tab following release of the processing fluid.

3,895,863
ELECTROMAGNETIC RELEASE DEVICES FOR CAMERAS
Teiji Hashimoto, Kawasaki; Tomoshi Takigawa, and Toshikazu Ichiyanagi, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 6, 1974, Ser. No. 439,906
Claims priority, application Japan, Feb. 12, 1973, 48-17156; Feb. 12, 1973, 48-17157; Feb. 12, 1973, 48-17158
Int. Cl. G03b ***21/38***
U.S. Cl. 352—176 **26 Claims**



1. A photographic camera comprising:

a motor for operating said camera, said motor rotating upon receipt of current supplied from an electric power source housed in said camera;

shutter control means (**114, 115***c*) for controlling operation of a shutter, said shutter control means being actuated by a driving force from said motor when said motor rotates; blocking means comprising stopper means (**115***b*) provided on said shutter control means rotating in cooperation therewith, and actuating means (**109**) selectively movable between a blocking position at which said actuating means is engaged with said stopper means so that operation of said shutter control means is stopped and an unblocking position at which said actuating means is not engaged with said stopper means so that operation of said shutter control means is not stopped;

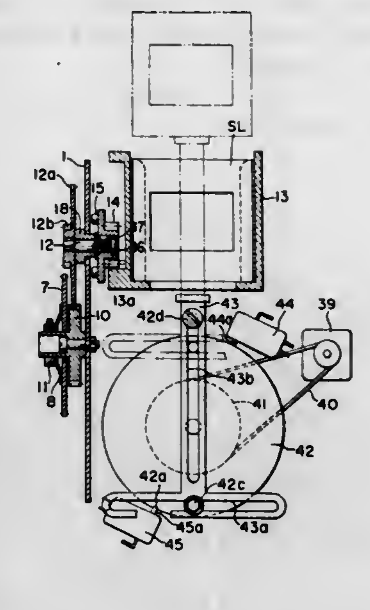
first switching means (**112**) electrically connected in series with said motor for selectively supplying current from said source to said motor, said first switching means being mechanically linked with said actuating means so as to supply current from said source to said motor when said actuating means is at its unblocking position;

electromagnet means (**108**) having at least first and second electromagnet circuits (**124, 125—FIG. 20**), said electromagnet means being located in a position from which said actuating means is magnetically affectable thereby, so as to control the movement of said actuating means;

second switching means (**103**) for inhibiting supply of the current from said source to said second electromagnet circuit when said first switching means is activated, said second switching means being mechanically linked with said actuating means, and electrically connected so as to switch said second electromagnet circuit selectively into and out of parallel connection with said first electromagnet circuit;

whereby power dissipation in the utilization of said camera is reduced.

3,895,864
OPTICAL PROJECTOR CAPABLE OF RANDOM ACCESS AND REPEAT PROJECTIONS
Masanori Uchidoi, Kawasaki, and Tateo Yamada, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 26, 1972, Ser. No. 318,653
Claims priority, application Japan, Dec. 29, 1971, 46-1239
Int. Cl. G03b ***23/04***
U.S. Cl. 353—25 **40 Claims**



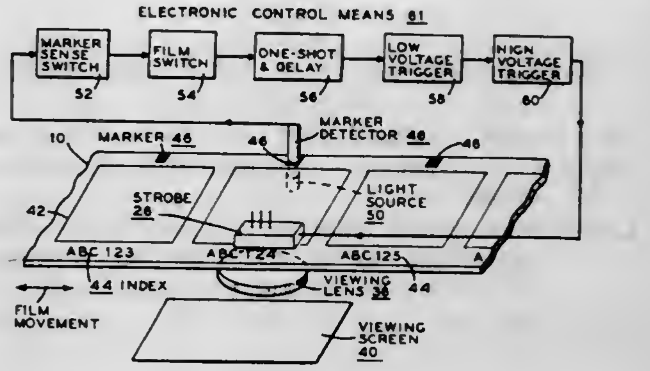
1. A slide film projecting system capable of random access projection comprising:

- a. slide film holding means for holding a plurality of slide films;
- b. drive means operative upon energization to drive said slide film holding means along a predetermined path to a slide delivery position where a selected slide film can be set for projection;
- c. detecting means for detecting the address of the one of said slide films located in said slide delivery position during the operation of said drive means to produce an electrical signal representing the detected address of the slide film in the delivery position;
- d. selector means for inputting a digital signal representing an address of a desired slide film for random access projection, said selector means comprising at least one array of switching members each having one terminal connected to a common connection and being arranged to connect said common connection to one or more code busses which are fewer in number than the switching members of one of said array, and
- e. control circuitry connected to said drive means for actuating said drive means to place the desired slide film into the slide delivery position, said circuitry comprising a plurality of signal holding means each individual to one of said code busses, said signal holding means being operable to hold the electrical signal produced by the selector means during a complete operation of said driving means irrespective of the operating condition of said switching members after said switching members were once operated.

3,895,865
HIGH SPEED MICROFILM SEARCHING SYSTEM
Burton Kaufman, New York, and Bruce H. Schneider, Forest Hills, both of N.Y., assignors to General Computing Corporation, New York, N.Y.
Filed Feb. 11, 1974, Ser. No. 441,049
Int. Cl.² G03B ***21/10, 25/00***
U.S. Cl. 353—26 **17 Claims**

9. A microfilm searching system comprising:

- a. microfilm moving means for rapidly moving microfilm from one reel to another;
- b. microfilm projecting means mounted in the film path between the reels and near to the microfilm for clearly displaying a desired frame on a viewing screen when the microfilm movement is stopped;
- c. an optically displayable index, comprising a plurality of characters, on each of a plurality of frames of the microfilm;
- d. a detectable marker on each of said plurality of frames of the microfilm;
- e. triggerable light source means mounted in the film path between the reels and near the microfilm for optically displaying as a stationary picture, when triggered, at least one character of an index on a passing frame;
- f. electronic control means responsive to a detectable marker on a passing frame for triggering said triggerable light source means so that at least one character of the index on that passing frame may be read by a human reader;

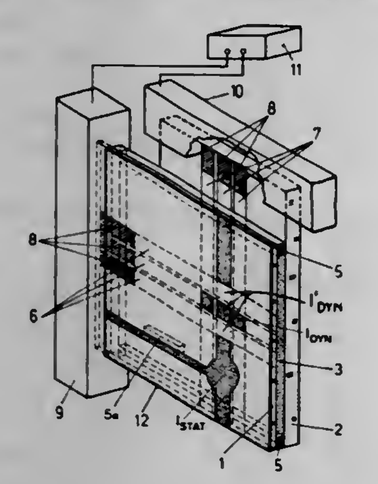


- g. film control means adapted to be operated by a human reader for slowing the movement of the microfilm so that more of the characters of the index on a passing frame may be read and for stopping the microfilm when the desired frame is located and projectable on the viewing screen;
- h. said electronic control means comprising:
  - i. optical switch means for generating a marker signal when a marker is detected;
  - ii. one-shot & delay means responsive to a marker signal for generating a triggering signal; and
  - iii. trigger means responsive to a triggering signal for generating a trigger pulse for triggering said triggerable light source means;
- i. said one-shot & delay means when set by a marker signal not resetting for a given period of time so that subsequent marker signals detected during said given period of time do not trigger such triggerable light souce means;
- j. said given period of time being about 20 microseconds.

3,895,866
INFORMATION-BEARING DEVICES AND PROJECTION DISPLAY SYSTEMS THEREFOR
Alfred de Quervain, Zurich, and Peter Wild, Wettingen, both of Switzerland, assignors to Brown, Boveri & Cie AG, Switzerland
Filed Nov. 29, 1972, Ser. No. 310,263
Claims priority, application Switzerland, Dec. 3, 1971, 17591/71
Int. Cl. G03b ***21/26***
U.S. Cl. 353—30 **31 Claims**

1. A unitary, optically projectable, composite transparency having an electrically variable, optically readable information content and arranged to be interposed between a projector and a display means, the transparency comprising a first portion bearing static optical information, said first portion including distinct indicia, a second portion bearing dynamic information in intimate contact with the first portion and

including a liquid crystalline substance having regions whose optical states can be selectively changed, and control means coupled to the liquid crystalline substance for selectively changing the optical states of the regions.



3,895,867

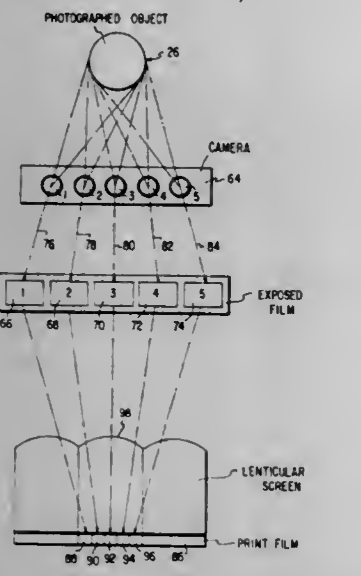
THREE DIMENSIONAL PICTURES AND METHOD OF COMPOSING THEM

Allen Wah Lo, Atlanta, and Jerry Curtis Nims, Dunwoody, both of Ga., assignors to Dimensional Development Corporation, Atlanta, Ga.

Continuation-in-part of Ser. No. 171,269, Aug. 12, 1971. This application July 16, 1973, Ser. No. 379,388

Int. Cl. G03b *35/24*

U.S. Cl. 355—77 **15 Claims**



1. A method of composing an image array of the type containing a multiplicity of lineiform image bands which afford an overall image of an object field when viewed through a lenticular screen having a corresponding multiplicity of lenticules aligned with the lineiform image bands, comprising the steps of:

exposing a photosensitive surface underlying a composing lenticular screen of lenticule width *w* at a number N of spaced locations beneath such lenticule to respective ones of N projected images of elements of N two-dimensional recorded images of an object field, said two-dimensional recorded images being projected onto the composing lenticular screen with the projected image of a selected element of each recorded image in registry with a reference point, thereby to record on the photosensitive surface beneath each lenticule N lineiform images of a portion of the object field separated by unexposed areas of the photosensitive surface; and

exposing each unexposed area to a projected image of the same element of the same two-dimensional recorded image projected in recording an adjacent one of said N lineiform images by effecting sufficient relative movement between the path of projection of said projected image of said same element and the photosensitive surface to cause the projected image of said same element to fall upon at least a portion of said unexposed area.

3,895,868

STRUCTURE OF INTERNAL COMBUSTION ENGINES

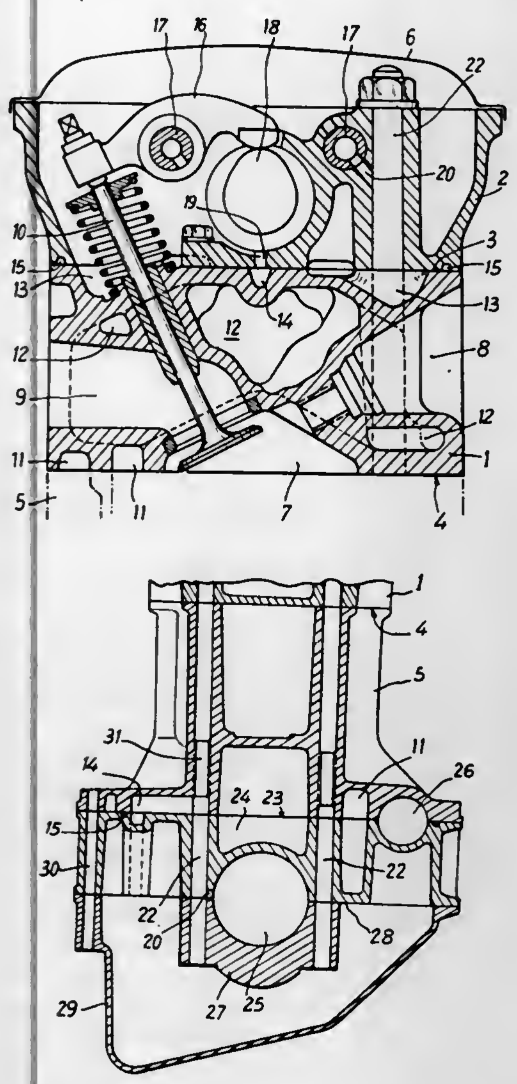
Armand Castarède, Billancourt, France, assignor to Regie Nationale des Usines Renault, Paris and Automobiles Peugeot, Billancourt, both of, France

Filed Apr. 30, 1973, Ser. No. 355,422

Claims priority, application France, May 5, 1972, 72.16134; June 23, 1972, 72.22822

Int. Cl. F02f *7/00*

U.S. Cl. 123—195 R **12 Claims**



1. Internal combustion piston engine structure comprising assembled cast elements, namely a cylinder block, a cylinder head, a valve-gear case and an oil return sump, characterised in that said elements are stacked in planes parallel to the cylinder head gasket, each element receiving separately in the form of pre-assembled sub-assemblies the mechanical components inherent thereto, the stacking of said sub-assemblies being held by a series of common studs having an intermediate screw-thraded portion engaging corresponding tapped holes of the cylinder block, said studs extending through rough-cast holes formed in the other elements of the assembly.

3,895,869

HEADING SENSOR WITH COMPENSATION WINDINGS

Richard W. Lewis, Derby, Kans., assignor to The Boeing Company, Seattle, Wash.

Filed June 17, 1974, Ser. No. 480,055

Int. Cl. H01f *3/00*

U.S. Cl. 335—296 **6 Claims**

1. A magnetic heading sensor suitable for use in a ferrous environment to sense magnetic heading with respect to the earth's magnetic field vector, said magnetic heading sensor comprising:

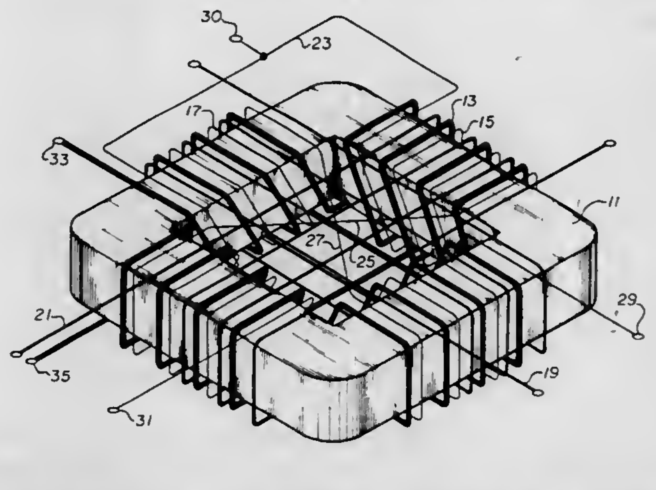
a square core formed of a magnetically permeable material, said square core defining two sets of parallel legs lying orthogonal to each other;

an excitation winding wound about at least one leg of said square core for electrically exciting said square core into and out of magnetic saturation when said excitation winding is connected to a suitable electrical excitation source; a first sense winding wound about one of said sets of parallel legs so as to sense the change in the earth's magnetic field passing through said square core when said excitation winding is excited by a suitable electrical excitation source;

a second sense winding wound about the other of said sets of parallel legs so as to sense the change in the earth's magnetic field passing through said square core when said excitation winding is excited by a suitable electrical excitation source;

a first compensation winding, wound about said square core, said excitation winding and said first and second sense windings so as to encompass said square core, said excitation winding and said first and second sense windings along a first axis; and,

a second compensation winding wound about said square core, said excitation winding and said first and second sense windings so as to encompass said square core, said excitation winding and said first and second sense windings along a second axis lying orthogonal to said first axis.



3,895,870

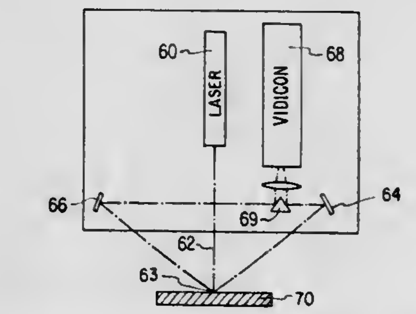
LASER DIMENSION COMPARATOR

Donald L. Cullen, and Teddy L. Moore, both of Columbus, Ohio, assignors to Autech Corporation, Columbus, Ohio

Continuation-in-part of Ser. No. 148,466, June 1, 1971, Pat. No. 3,796,492. This application Jan. 15, 1973, Ser. No. 323,786The portion of the term of this patent subsequent to Mar. 12, 1991, has been disclaimed.

Int. Cl. G01c *3/00*

U.S. Cl. 356—1 **12 Claims**



1. A laser dimension comparator for providing an electrical output indicative of a distance dimension of a workpiece comprising a laser light source for directing a single beam of coherent light onto a workpiece to produce a single laser light intensity gradient on the surface of said workpiece, a photo detector positioned adjacent said source, a pair of light directors on opposite sides of said beam for forming a pair of spaced backscatter light intensity gradients on the face of said photo detector from the gradient on said workpiece, and an electrical circuit coupled to said photo detector for producing an electrical output signal indicative of the position of said images on the face of said photo detector.

3,895,871

ELECTRONIC TACHYMETER

Georg Strasser, Rebstein, Switzerland, assignor to Wild Heerbrugg Aktiengesellschaft, Heerbrugg, Switzerland

Filed Oct. 25, 1972, Ser. No. 300,596

Claims priority, application Switzerland, July 21, 1972, 10940/72

Int. Cl. G01c *3/08*

U.S. Cl. 356—4 **14 Claims**

1. In a tacheometer structure assembly having

a transit unit (31, 33, 34) for optical measurement of surveying angles, and movably mounted for rotation, and tilt about respective perpendicular measurement axes,

an electronic measuring head unit (28) secured to and rotatable with said transit unit to obtain signals representative of distance of a target from said structure;

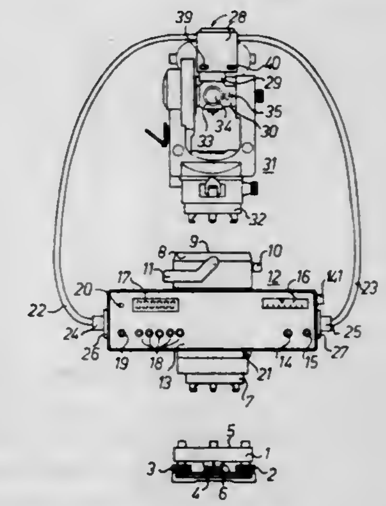
an electronic console unit (12) including circuit components to evaluate the signals and to compute and display distance information;

and a base support unit (1) adapted to be positioned with respect to a reference marker;

the improvement comprising a support shaft (8) having a central axis connectable to said base support unit (1) at one end and connectable to said transit unit (31, 33, 34) at the other end;

means (9, 32) centering said transit unit on said central axis; said electronic console unit being rotatably secured to and surrounding said support shaft (8), located intermediate of the base support unit (1) and the transit unit (31, 33, 34) and rotatable about said central axis,

and signal transmission means (22, 23) interconnecting the radiation head unit (28) and the electronic console unit.



3,895,872

OPTICAL SPEED-MEASURING DEVICES AND METHODS FOR MAXIMIZING THEIR ACCURACIES

Rene Dandliker; Paul Iten, both of Oberrohrdorf, and Baldur Eliasson, Birmensdorf, all of Switzerland, assignors to Brown, Boveri & Company Ltd., Switzerland

Filed Jan. 29, 1973, Ser. No. 327,694

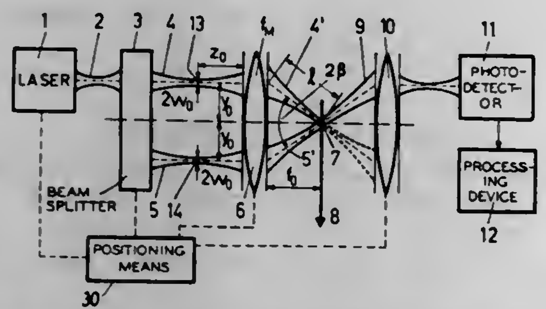
Claims priority, application Switzerland, Jan. 31, 1972, 1316/72

Int. Cl. G01p *3/36*

U.S. Cl. 356—28 **24 Claims**

1. In an optical speed-measuring device, where two laser light beams are directed from at least one laser onto a measur-

ing volume, and Doppler measuring means responds to the reflected light to determine the speed of the volume, and wherein the laser light beams emerging from the laser before being directed onto the measuring volume each exhibit a minimum spot radius, the method of adjusting the accuracy of the speed measurement, which comprises directing the beams onto the measuring volume and locating said minimum spot radii to conicide with the measuring volume.



3,895,873

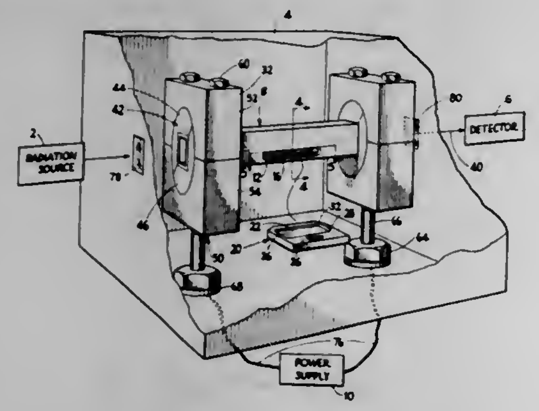
SPECTROSCOPIC ANALYSIS APPARATUS UTILIZING A TUBULAR HEATING ELEMENT AND A PASSIVE SAMPLE HOLDER

Allan G. Dennison, Acton, Mass.; Martha F. Bancroft, Amherst, N.H.; Stanley B. Smith, Jr., Westford, and Marc Joshua Tolkoff, Boston, both of Mass., assignors to Instrumentation Laboratory, Inc., Lexington, Mass.

Filed Apr. 4, 1974, Ser. No. 457,798

Int. Cl. G01j *3/02*

U.S. Cl. 356—85 **19 Claims**



1. In a spectroscopic system for determining the quantity of a substance of interest in a sample material, said system including a radiation source for transmitting a radiation beam at a characteristic wavelength through a sample location, and a radiation detector for sensing said beam after transit through the sample location, sample excitation structure comprising: a tubular heating element positioned at said sample location, said heating element having a longitudinal axis aligned with said radiation beam, the ends of said heating element being transparent to said beam, an access opening in a longitudinal wall of said heating element, and a heating surface adjacent said access opening,

- a sample holder insertable into said heating element through said access opening, said sample holder including a sample receiving surface for receiving sample material and a heat transmitting surface that nests in intimate heat transfer contact with said heating surface of said heating element when the holder is inserted into said heating element, and
- structure for applying an energizing signal to said heating element of sufficient intensity to generate heat for conductive transmission from said heating surface through the nested heat transmitting surface of said sample bolder to excite said sample material on said sample receiving surface to an atomic state.

3,895,874

CIRCUIT FOR GENERATING SYNC PULSES FOR USE IN DETECTING OUTPUT SIGNALS OF SPECTROPHOTOMETER OR THE LIKE

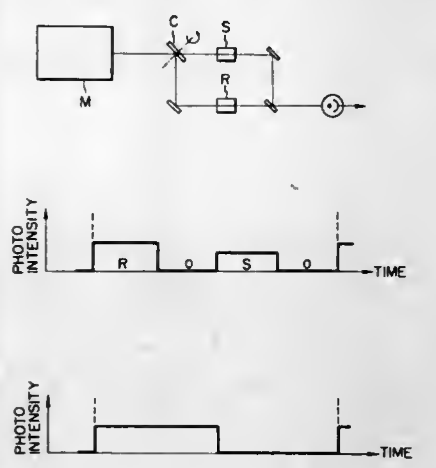
Yutaka Ogiwara, Niiza, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Mar. 19, 1974, Ser. No. 452,522

Claims priority, application Japan, Mar. 26, 1973, 48-33470; Mar. 26, 1973, 48-33471

Int. Cl. G01j *3/42*

U.S. Cl. 356—93 **5 Claims**



iii. shift registers (SR1-SR4) for receiving said pulse (h), and having a number of outputs capable of being shifted to the following stages during one rotation of said chopper (c); and

1. A circuit for generating sync pulses for use in detecting the output signals of a measuring instrument such as a double-beam spectrophotometer using a chopper which is rotated in response to the electrical signal, said circuit comprising:

i. means (PG, Di–1) adapted to generate a first clock pulse (*b*) in synchronism with said electrical signal,
ii. means adapted to generate one pulse (*h*) whose pulse duration equals that of said first clock pulse for each revolution of said chopper (*c*),
iv. means adapted to select and synthesize the outputs of said shift registers (SR1-SR4) contained in the components (R,S,O) of said output signal (*a*) of said measuring instrument which components are to be separated from each other.

3,895,875

DIGITAL INDICATOR FOR CAMERAS

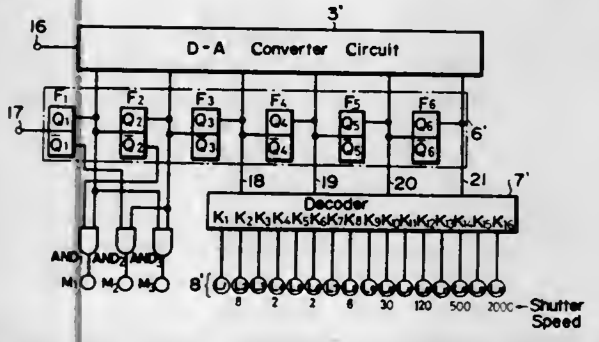
Mashio Kitaura; Koutaro Yata, and Seiji Yamada, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Japan

Filed Aug. 31, 1973, Ser. No. 393,585

Claims priority, application Japan, Aug. 31, 1972, 47-101938

Int. Cl. G01j *1/44*

U.S. Cl. 356—226 **12 Claims**



1. A digital display for a camera for providing an indication of an exposure condition with respect to the level of illumination of an object being viewed comprising, in combination:

a. a light measuring circuit responsive to the illumination of the object viewed for producing an analog signal affording an exposure condition measurement;
b. first means for converting the analog signal of said light measuring circuit into a corresponding plural bit digital signal;
c. a main indicator unit including a first plurality of radiation emitting elements for selectively indicating corresponding exposure condition values in accordance with a given exposure condition measurement;
d. a subindicator unit including a second plurality of radiation emitting elements for indicating a subinterval value of the exposure condition between the exposure condition measurement indications of corresponding, adjacent elements of said main indicator unit; and
e. second means for applying predetermined bits of said digital signal of said first means selectively to said main indicator unit and to said subindicator unit respectively, to selectively actuate one of said elements of said main indicator unit and one of said elements of said subindicator unit for display of an exposure condition value and a subinterval value, respectively, for each exposure condition measurement.

3,895,876

QUANTIZED INDICATION APPARATUS

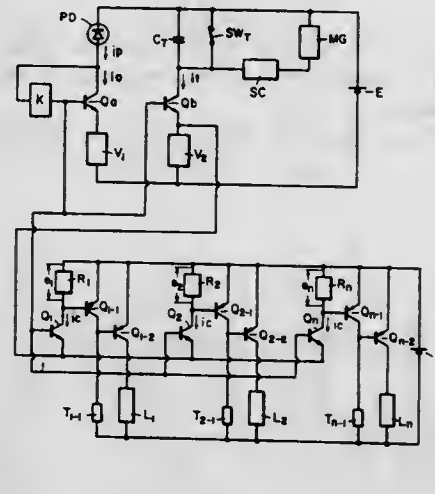
Chiharu Mori, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 286,988, Sept. 7, 1972, Pat. No. 3,828,253. This application Sept. 10, 1973, Ser. No. 395,660

Claims priority, application Japan, Sept. 11, 1972, 47-91030

Int. Cl. G01j *1/44*

U.S. Cl. 356—226 **10 Claims**



1. Apparatus for providing a quantized indication of a parameter that varies in relation to a variable input signal which comprises:

- a logarithmic compression circuit including a controllable voltage source providing a first voltage and control means responsive to the signal for controlling the controllable voltage source so that the first voltage varies in logarithmic relationship with respect to variations in the signal;
- a plurality of logarithmic expansion circuits each including a voltage-controlled current source controlled by the first voltage and each having an inverse-logarithmic voltage-in to current-out transfer characteristic; and
- indicating means including a plurality of threshold-detecting switching elements respectively corresponding to the plurality of expansion circuits, each switching element having a different threshold and being operative to switch between opposite switching conditions in accordance with whether the current out of its corresponding expansion circuit is on one side or the other of its threshold.

3,895,877

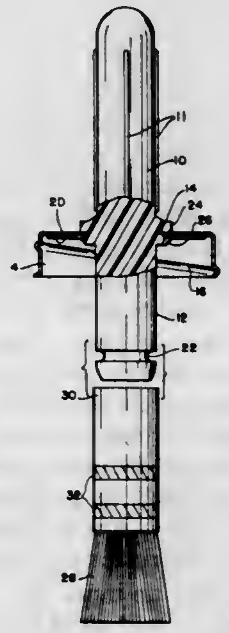
APPLICATOR BRUSH AND METHOD OF MAKING SAME

Kenneth A. Fomby, c/o K & D Tooling & Machine, 402 Lindsay St., Gainesville, Tex. 76240

Filed Mar. 5, 1973, Ser. No. 338,384

Int. Cl. A46b *3/02, 11/00*

U.S. Cl. 401—129 **2 Claims**



1. A method of making an applicator brush for a container, comprising the steps of;

a. providing a mold cavity having a portion to receive plastic to integrally form a handle and a stem portion, which stem portion is to receive a brush thereon,
  1. introducing molding material into the mold cavity,
  2. said stem portion and said handle portion being integrally molded with a container cover positioned within the length of said handle portion and said stem portion,
  b. providing a brush for attachment to the end of said stem portion,
  1. providing said cover with a central aperture, with at least a portion of the aperture being non-circular so the moldable plastic introduced through the non-circular aperture will extend therethrough to lock said cover against rotational movement with respect to the handle, and

2. forming a boss of plastic integrally with said stem and said handle on each side of said container cover to restrain the cover against relative longitudinal movement with respect to the handle and the stem.

3,895,878

COUPLING ELEMENT HAVING A SPLIT HUB

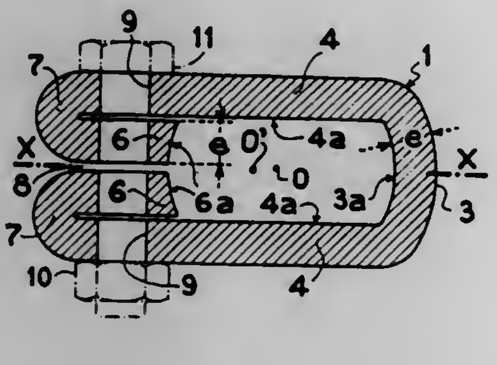
Alfred Pitner, Paris, France, assignor to Nadella S.A., France, a part interest

Continuation of Ser. No. 792,915, Jan. 22, 1969, abandoned. This application Feb. 29, 1972, Ser. No. 230,361

Claims priority, application France, Jan. 30, 1968, 68.137889; Nov. 7, 1969, 69.172874

Int. Cl. B60b *27/06*

U.S. Cl. 403—344 **10 Claims**



1. An assembly comprising a shaft, a sheet of sheet metal stock in the shape of a tube constituting a coupling element comprising a hub closely surrounding said shaft and having a substantially C-section shape and a longitudinal axis and at least one extension portion extending from the hub, said hub including two lateral ears, each ear comprising an end portion of said sheet and an intermediate portion of said sheet in parallel adjacent relation to each other, said end portions defining between them a narrow split putting the inside of the C-section hub in communication with the exterior in a plane containing said axis and having end faces in contact with said shaft in regions of said end faces adjacent said split so as to retain said shaft in said hub in said plane, means defining apertures in said two ears, nut-and-bolt tightening means extending through said apertures for urging said ears toward each other, the hub having an inner face comprising a keying face means and a face on said shaft having substnatially the same cross-sectional shape as said keying face means and in close-fitting relation to said keying face means.

3,895,879

COMBINED POST TENSIONING ANCHOR AND CABLE

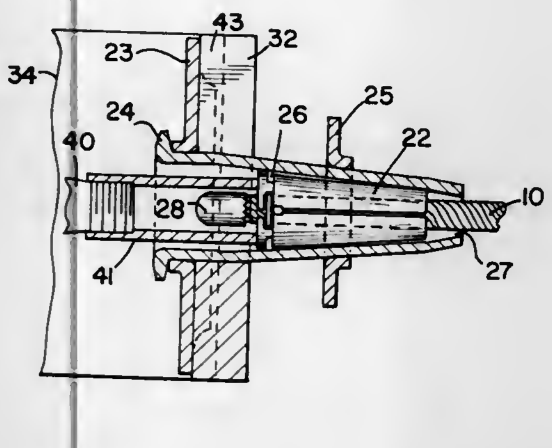
Frederick W. Burtelson, Lombard, Ill., assignor to Reliable Electric Company, Franklin Park, Ill.

Division of Ser. No. 38,247, May 18, 1970, Pat. No. 3,762,027. This application June 6, 1973, Ser. No. 367,380

Int. Cl.² F16B *7/04*

U.S. Cl. 403—369 **2 Claims**

1. A cable and dead anchor assembly for use in post-tensioned concrete comprising an anchor sub-assembly and a pre-cut length of cable, said anchor sub-assembly comprising a tapered shell open at both ends and having a flange at its larger end, a reaction plate having an aperture therein, said tapered shell being received in said aperture with said flange engaging said reaction plate, a tapered jaw cluster disposed within said shell and comprising circumferentially disposed jaws, a removable closure cap disposed within the shell at its larger end, and a cable extending through the smaller end of said shell and being disposed centrally of said jaw cluster, and terminating short of said closure cap, the jaws of said jaw cluster being equally spaced from the larger end of the shell in permanent wedging engagement with said cable and with the inner surface of said shell, said permanent wedging engagement being of a type that is formed by a push-developed axial pressure imposed from an external power source against the larger end of the jaw cluster and in a direction toward the smaller end of the shell and substantially uniformly on said jaws so that each jaw engages said cable with substantially the same gripping force and subsequent movement of the cable in the jaws is prevented during handling and vibration incident to curing of the concrete, said anchor sub-assembly and said precut length of cable being a separate transportable structure.



3,895,880

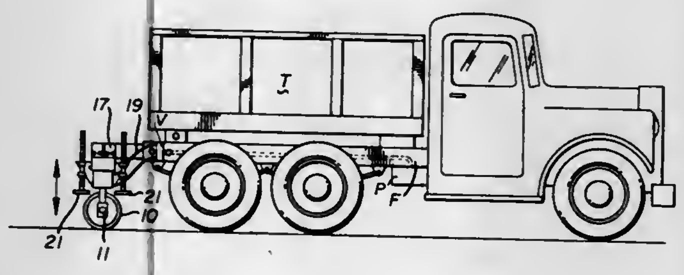
ROLLER ATTACHMENT FOR TRUCKS

Robert Fink, Youngstown, Ohio, assignor to Inglis Nurseries, Inc., Youngstown, Ohio

Filed Aug. 15, 1973, Ser. No. 388,480

Int. Cl.² E01C *19/26*

U.S. Cl. 404—86 **1 Claim**



1. In a hydraulically operated roller attachment for mounting on a dump truck having a main frame and a hydraulically operated dump body thereon and a hydraulic fluid power system therefor; said roller attachment comprising the combination of a transverse beam attached to the truck main frame at a point below the rear end of the dump body, said beam consisting of an elongated I-beam, side and end pieces sealingly attached to the opposite sides and ends thereof so as to reinforce the same and form a liquid holding tank thereabout, a vertically positioned hydraulic cylinder and piston ram secured to each end of said transverse beam, a roller positioned between and journeled on said rams below said cylinders and movable toward and away from said transverse beam on the vertical axes of said hydraulic cylinders and transverse beam, means in said hydraulic fluid power system communicating with said hydraulic cylinders and valve means in said communication means for controlling hydraulic fluid with respect to said hydraulic cylinders.

3,895,881

TOOL-CARRIERS WITH RETRACTABLE TOOL-BITS

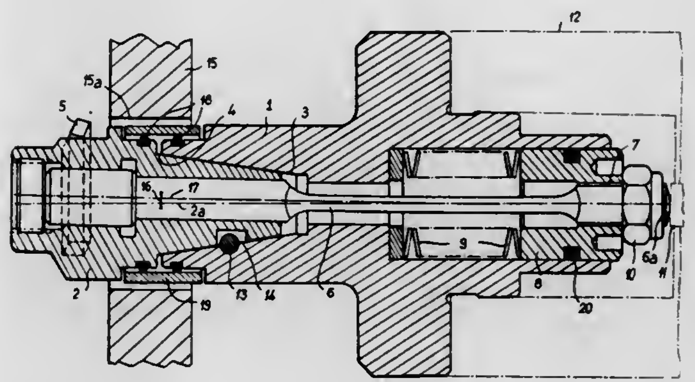
Christian Charles Langlois, Billancourt, France, assignor to Regie Nationale des Usines Renault, Billancourt and Automobiles Peugeot, Paris, both of, France

Filed Mar. 29, 1973, Ser. No. 346,038

Claims priority, application France, Apr. 10, 1972, 72.12465

Int. Cl. B23b *47/00*

U.S. Cl. 408—156 **8 Claims**



1. A tool carrier with a retractable tool bit, comprising; a tool carrier body, a bit holder member displaceably mounted with respect to said tool carrier body in order to cause the tool bit to pass from a working position to a retracted position and vice-versa, in which the bit holder member and the tool carrier body have conical surfaces for centering said carrier body and said bit holder member in a position in an axis on which said carrier body and said bit holder member are displaceable, a rod rigidly fixed to said bit holder member and in which the extremities of the rod are arranged substantially along said axis, and restoring means in said body tending normally to return said conical surfaces to the centering position, said rod being subjected to said restoring means, said rod being further subjected in the centering position to a bending stress which tends to cause said bit holder member to move radially closer to said axis when said carrier body and said holder member are displaced from their centering position by the action of an external force.

3,895,882

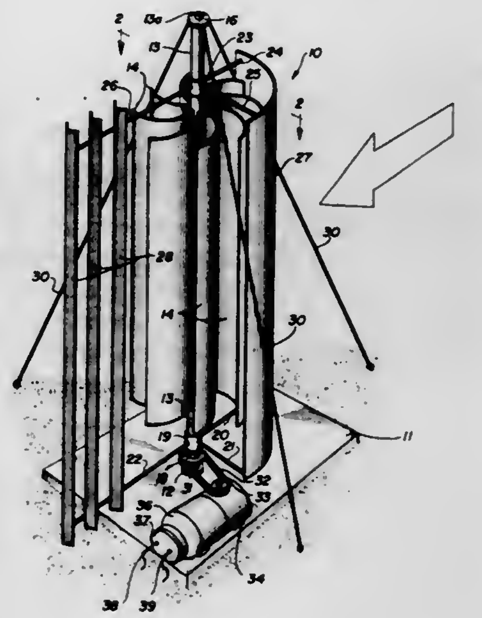
WINDMILL STRUCTURE

Robert D. Moyer, c/o B. & J. Distributors, R.R. 1, Box 39, Star City, Ind. 46985

Filed Apr. 17, 1974, Ser. No. 461,632

Int. Cl.² F03D *7/06*

U.S. Cl. 415—2 **7 Claims**



1. In a windmill structure for converting wind energy to mechanical energy, the combination comprising: a base structure; thrust bearing support means formed in said base structure for rotatably receiving the bottom end of a vertically disposed shaft, a shaft member positioned within said base structure with the bottom end thereof journaled within said thrust bearing support means, a plurality of wind-engaging blades secured to and extended from said shaft member, a thrust bearing plate member positioned at the upper end of said shaft, support means secured to said thrust bearing plate means to support said shaft, whereby rotation of said shaft is obtained by said plurality of wind-engaging blades, shield means first and second spaced apart collars rotatably secured to said shaft below and above said wind-engaging blade means, means extending from said collars to said shield means for supporting said shield means, and directional wind vane means extending from said collars to rotate said shield means to be predominantly facing the direction of the wind, said directional vane comprises a pair of spaced apart rods secured to and extending from said collar means, and a plurality of substantially parallel vertically disposed vane members being substantially triangular in configuration with the apex thereof receiving said rods therethrough, said vertically disposed vane members are triangular in configuration and have the concave

portion thereof directed toward said shaft, whereby said wind-engaging blades extended from one side of said vertical shaft engage the wind and wind-engaging blades extending on the opposite side of said shaft, behind shield means, are free of impingement from the wind, whereby the effective overall efficiency of said wind-engaging blades is increased.

3,895,883

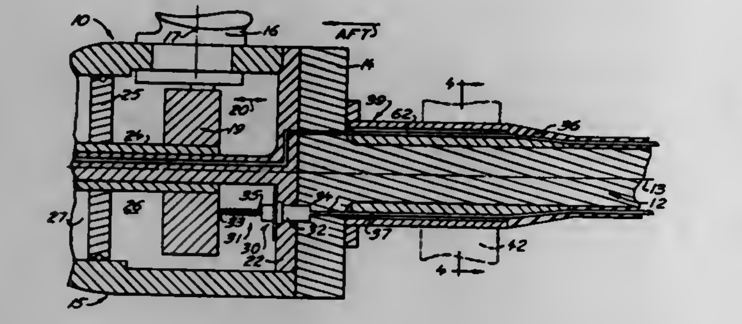
PROPELLER PITCH INDICATOR

James Miller Pedersen, 3809 Puget Dr., Vancouver, British Columbia, Canada

Filed Oct. 29, 1973, Ser. No. 410,343

Int. Cl. B63h *3/00*

U.S. Cl. 416—61 **10 Claims**



1. A propeller pitch indicator for indicating pitch of a controllable pitch propeller of a marine vessel at a station remote from the propeller, the propeller having a hub, a hub datum, and a pitch reflecting means of the hub movable relative to the hub datum to reflect pitch of the propeller, the propeller being mounted on a tailshaft journalled for rotation relative to the vessel, the indicator including:

a. a sensor cooperating with the hub to rotate therewith, the sensor including a precision sheathed control link having a longitudinal axis disposed generally parallel to the tailshaft and being capable of transmitting force in both directions along the axis, the link having a sheath and a control rod, the sheath enclosing the control rod and having an outer end secured relative to the hub and the shaft, and an inner end supported radially relative to the tailshaft to rotate therewith, portions of the sheath remote from the outer end thereof being permitted to move axially relative to the tailshaft; the control rod having an outer end cooperating with a stylus engaging the pitch reflecting means, and an inner end responsive to movement of the stylus,

b. a position transducer cooperating with the inner end of the sensor and adapted to rotate therewith, the transducer having a resistance member coupled to an electrical power source so as to conduct electrical current to produce an electrical potential drop across the resistance member, and a movable contact member adapted to sweep the resistance member so as to provide a variable potential at the contact member proportional to position of the contact member relative to the resistance member, the contact member cooperating with the sensor so as to be responsive to position of the stylus relative to the hub datum so that the contact member is at an electrical potential dependent on position of the stylus, so that output from the transducer reflects position of the pitch reflecting means,

c. a galvanometer adapted to be fitted in the vessel remote from the hub so as to be stationary relative to the vessel, the galvanometer being connected to output from the contact member and the electrical power source and being responsive to current from the contact member, which current is dependent upon pitch of the propeller, the galvanometer being adapted to indicate pitch of the propeller,

d. a rotary contact unit cooperating with the shaft, the unit connecting electrically the galvanometer and the electrical power source to the position transducer.

3,895,884

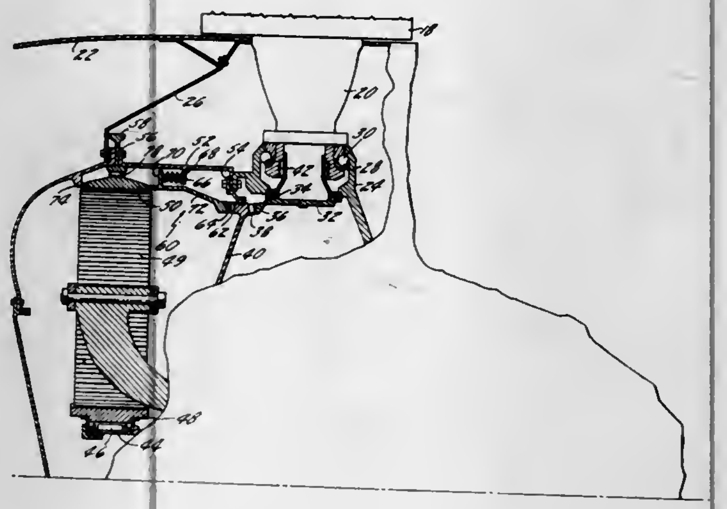
TORQUE SENSITIVE PITCH LOCK

Merritt B. Andrews, Westfield, Mass., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed July 5, 1974, Ser. No. 486,023

Int. Cl.^{2} B64C *11/34*

U.S. Cl. 416—153 **4 Claims**



1. For a fan propulsor having a hub rotatably supporting a plurality of circumferential blades mounted therein for pitch change movement, means including a rotary actuator having connection means connected to said blades for imparting pitch change movement, a pitch lock element on said connection means and movable therewith, a retractable pitch lock element normally urged out of engagement with said pitch lock element and means responsive to the blades when they are extracting energy out of the airstream for engaging said

pitch lock elements to prevent the pitch from going to a lower blade angle.

3,895,885

EMPTYING SYSTEM FOR FLUID TANKS

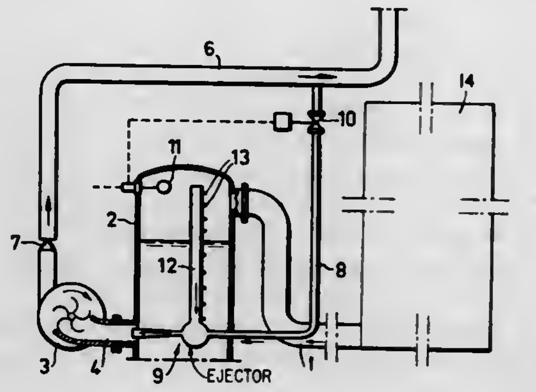
Lars-Olof Liberg, Gothenburg, Sweden, assignor to Jonkopings Mekaniska Werkstads AB, Jonkoping, Sweden

Filed Jan. 3, 1973, Ser. No. 320,828

Claims priority, application Sweden, Jan. 12, 1972, 303/72

Int. Cl. F04b *23/04, 23/08*

U.S. Cl. 417—54 **13 Claims**



10. Apparatus for emptying a container for liquid, such as a cargo oil tank, comprising a liquid container, a centrifugal pump which has an inlet, a pump impeller and a pressure pipe, for emptying said container, a suction pipe connecting said container to said pump, a separator tank which is interconnected in said suction pipe between said container and said pump for separating gas from the liquid on its way from said container to said pump,

means for mixing gas which is present in an upper portion of the separator tank, in a diffused form into recirculated liquid, said means being separate from and not forming a part of said separator and disposed in a bottom portion of said tank below the normal operating surface of said liquid,

means for recirculating liquid from the pressure pipe of the pump to said mixing means,

pipe means connected to said mixing means and extending into said upper portion of said separator tank wherein said gas is contained for conducting said gas from said separator tank and introducing it into said mixing means, and

means attached to said mixing means, for introducing the gas-liquid mixture thus created into the inlet of the pump.

3,895,886

DEVICE FOR CORRECTING THE DELIVERY OF A DISTRIBUTING INJECTION PUMP AND PUMP EQUIPPED THEREWITH

Jean Leblanc, Lyon, France, assignor to Societe Industrielle Generale de Mecanique Applique S.I.G.M.A., Venissieux, France

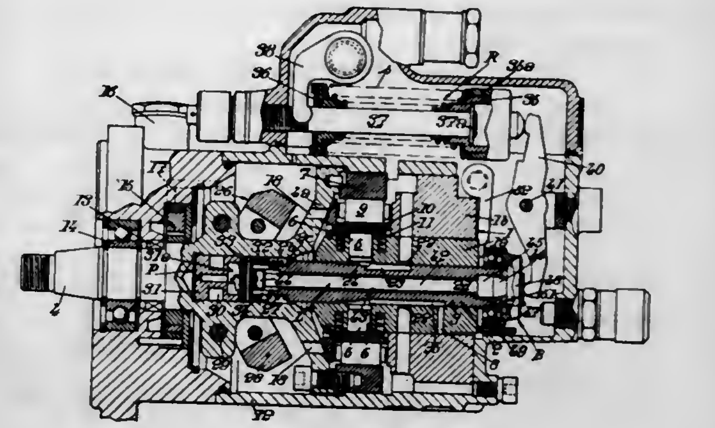
Filed Apr. 23, 1973, Ser. No. 353,533

Claims priority, application France, May 8, 1972, 72.16432

Int. Cl. F04b *49/00*

U.S. Cl. 417—284 **9 Claims**

1. Device for correcting the delivery per revolution of a distributing rotary injection pump for an internal combustion engine, which pump comprises a first fixed body member and a rotary distributor located inside said body and driven by a second substantially coaxial drive shaft member which itself is driven by the engine supplied by the pump, said pump comprising at least one pumping piston disposed in a transverse bore formed in one of said first and second members, a cam borne by the other of said first and second members for slidingly driving said piston, the fixed body member being provided with distributing channels which lead to the supply injectors of the engine and which cooperate with the distributing passages borne by the rotary distributor and are capable of communicating with said bore, said distributing passages being inclined to the longitudinal direction of the distributor so that a longitudinal displacement of this distributor causes the delivery per revolution of the pump to vary, thrust means, flexible return means, stop means, and a regulator sensitive to the rotary speed of the drive shaft member for controlling the said longitudinal displacements of the distributor so that said longitudinal displacements are subjected to the action of the regulator by said thrust means, and to the opposing action of said flexible return means through the action of said stop means cooperating with said distributor, second flexible return means being provided between the distributor and said thrust means, said device also comprising linking means for linking the thrust means and the distributor and for linking the thrust means and the stop means so that longitudinal movement of the thrust means with respect to the stop means causes longitudinal movement of the distributor with respect to the stop means, said linking means being mounted so as to rotate freely with respect to said stop means.



3,895,887

GAS TURBINE FOR USE IN A CLOSED CYCLE PLANT

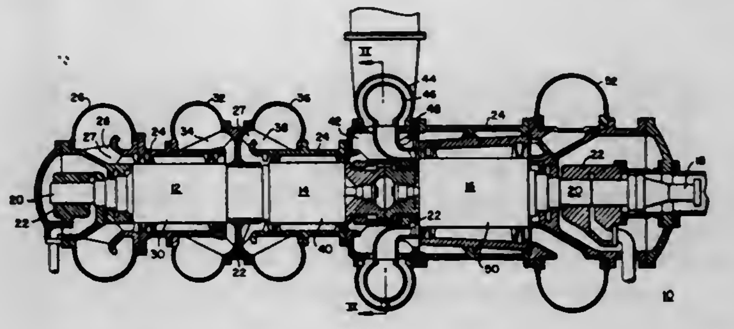
Hermann Finckh, Boxdorf, and Martin Trabler, Grossdechsendorf, both of Germany, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 12, 1973, Ser. No. 369,331

Claims priority, application Germany, June 16, 1972, 2229510

Int. Cl. F04b *17/00*

U.S. Cl. 417—408 **3 Claims**



1. A gas motive fluid utilizing machine arrangement including:

at least one turbomachine member,

said turbomachine member having an axis,

said turbomachine member being enclosed by a generally coaxial rigid housing,

said turbomachine member having at least one generally annularly shaped conduit disposed generally outside of and adjacent said rigid housing,

said generally annularly shaped conduit being disposed around at least one end of said turbomachine, said conduit providing ingress or egress for said motive fluid, a plurality of orifices in registration between said conduit and said rigid housing, said orifices being generally deformed by a plurality of axially aligned ribs disposed generally radially inwardly of said conduit, said ribs providing directional guidance for said motive fluid, said ribs also being in a supportive relationship between said housing and said axis for the maintenance of rigidity in said housing, said orifices providing means for passage of gaseous fluid therethrough.

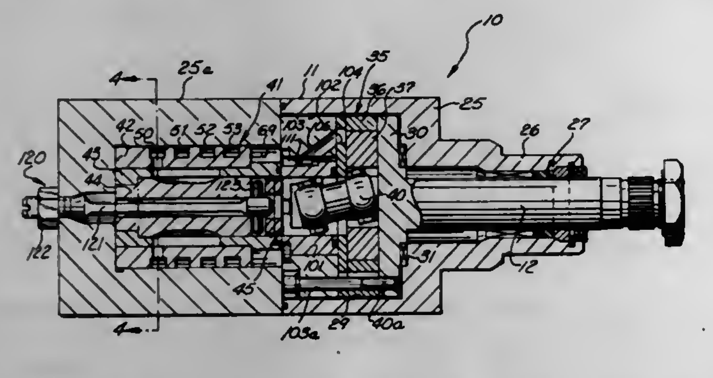
3,895,888
HYDROSTATIC CONTROL UNIT

Maurice Paul Roberts, Otterbein, Ind., assignor to TRW Inc., Cleveland, Ohio

Filed Oct. 19, 1973, Ser. No. 407,776

Int. Cl. F01c *1/02;* **B62d** *5/00;* **F04c** *1/02*

U.S. Cl. 418—61 B **22 Claims**



1. A control unit comprising: metering means for metering fluid flow and including first and second toothed members disposed in meshing engagement with one another; input means for rotating said first member relative to said second member; a changeover valve means for directing fluid flow to one of alternative flow paths and movable between a neutral position and first and second oppositely disposed operating positions in response to torque applied thereto by said second member for directing the metered flow of fluid from said metering means to one of said alternative flow paths.

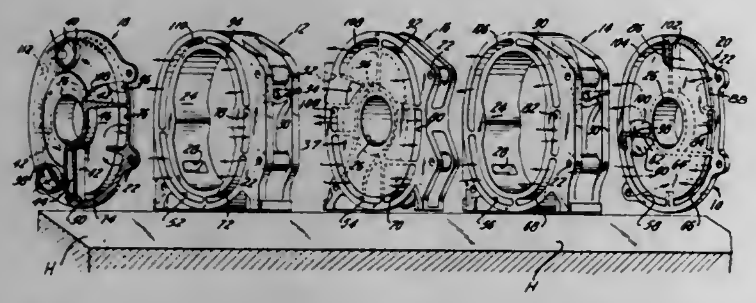
3,895,889
LIQUID COOLING SYSTEM FOR ROTARY INTERNAL COMBUSTION ENGINE

Robert W. Loyd, Jr., Wyckoff, and Charles Lombaerde, Ridgewood, both of N.J., assignors to Curtiss-Wright Corporation, Wood-Ridge, N.J.

Filed Mar. 4, 1974, Ser. No. 447,916

Int. Cl. F01c *21/06;* **F02b** *55/10*

U.S. Cl. 418—83 **4 Claims**



1. In a rotary internal combustion engine in which a rotor is eccentrically mounted on a mainshaft so that the rotor planetates within a multi-lobed, substantially trochoidal shaped cavity formed within the housing of the engine and which engine is disposed in its normal operative position with the major and minor axes of the cavity respectively extending substantially vertically and parallel to a horizontal plane and wherein combustion occurs in the area adjacent one of the lobe junctures so that the area of highest heat flux extends substantially along one side of the housing parallel to the major axis of said cavity, a cooling system for the housing of said engine comprising:

a. a plurality of first cooling passageways in the housing adjacent the area where the highest heat flux is produced and extending substantially parallel to the longitudinal axis of said mainshaft;

b. header means forming chambers in the housing at the opposite ends of said housing to connect said first cooling passageways together end-to-end to provide for series flow of coolant through each of said plurality of first cooling passageways from one end of the housing to the other and upwardly adjacent said area of highest heat flux;

c. inlet means in the housing at a point below the minor axis of the trochoidal cavity and adjacent the combustion exhaust gas discharge means to communicate said first cooling passageways to a source of coolant to supply the first cooling passageways with coolant;

d. outlet means in the housing at a point above the minor axis to communicate with said first cooling passageways and receive heated coolant from the latter;

e. second cooling passageways in the housing adjacent the area where the lowest heat flux is produced and extending substantially parallel to the longitudinal axis of the mainshaft and communicating with said outlet means; and

f. by-pass means downstream from said inlet means for passing a portion of the coolant passing through said first cooling passageways into said second cooling passageways.

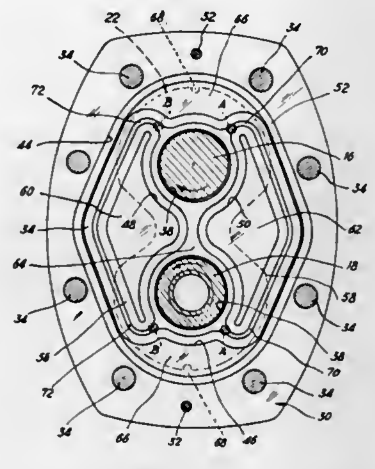
3,895,890
GEARED HYDRAULIC APPARATUS

Roger Laumont, Nogent-sur-Marne, France, assignor to Hydroperfect-International H P I, Chennevieres sur Marne, France

Filed Jan. 24, 1974, Ser. No. 436,240

Int. Cl. F04c *27/00*

U.S. Cl. 418—132 **5 Claims**



1. A geared hydraulic apparatus comprising:

a body defining a central recess, covers secured to opposite ends of said body to close the ends of said recess, and an outer gasket between each cover and its respective end of said body for providing a fluid-tight seal between said body and each cover, said body having fluid inlet and discharge ports,

two spaced apart side plates within said recess, each side plate being adjacent to one of said covers,

two cooperating toothed wheels within said recess and mounted on shafts rotatably supported in bearings carried by said side plates,

three gaskets arranged between the inner face of each cover, on the one hand, and its respective side plate and body end, on the other hand, said gaskets all being surrounded by said outer gasket and including two spaced apart inner gaskets and an intermediate gasket surrounding said inner gaskets,

said inner gaskets surrounding two independent regions connected to the inlet and discharge ports, respectively, of said body, said inner gaskets defining between them a region of low pressure connected to means for lubricating the shaft bearings, said intermediate gasket defining between itself and said outer gasket a region of intermediate pressure connected to said recess, and said intermediate gasket defining a passageway between itself and each of said inner gaskets,

a blind hole in each side plate opening toward its respective cover, and a plug arranged to slide in fluid-tight manner within said hole, and

means for urging said plug toward said cover to seal said low pressure region from the one of said passageways adjacent to the one of said inner gaskets surrounding a high pressure region.

3,895,891
VANE-TYPE MACHINE

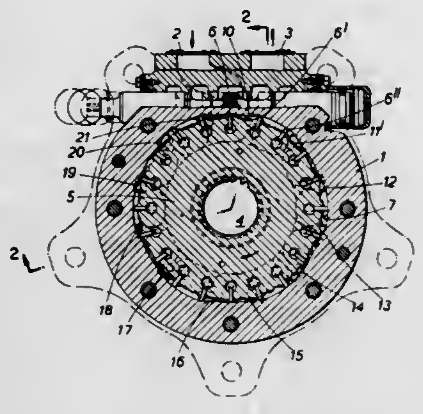
Ludwig Budecker, Frankfurt am Main, and Lothar Kunze, Langenhain, both of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed June 11, 1973, Ser. No. 368,781

Claims priority, application Germany, June 12, 1972, 2228506

Int. Cl. F01c *19/08;* **F03c** *3/00;* **F04c** *15/00*

U.S. Cl. 418—133 **4 Claims**



1. A vane-type machine comprising a housing enclosing a plurality of working chambers communicating with either a pressuremedium inlet or a pressure-medium outlet, a lateral disc sealing one side of the working chambers, a counter-pressure pocket assigned to each working chamber to enable equalization of pressure on both sides of the lateral disc, said counter-pressure pockets being located alternately on both sides of a partition wall located between the lateral disc and the housing of the vane-type machine, and means coupling said counter-pressure pockets to respective pressure-medium inlets and pressure-medium outlets to provide equalization pressure to the respective pockets.

3,895,892
OIL SEAL MEANS OF A ROTARY ENGINE

Yoshio Sasaki, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

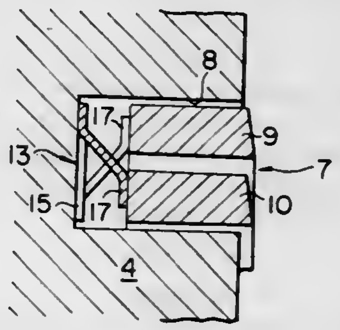
Filed Nov. 9, 1973, Ser. No. 414,216

Claims priority, application Japan, July 18, 1973, 48-80284

Int. Cl. F04c *27/00*

U.S. Cl. 418—142 **6 Claims**

1. An oil seal means of a rotary engine comprising a plurality of oil seal rings disposed one over the other and mounted in a common annular oil seal groove formed at a side wall portion of a rotor, said annular oil seal groove containing a bottom wall and spring means adapted to resiliently urge each of said oil seal rings independently and axially outwardly of the rotor, characterized in that said spring means includes a substantially flat base portion to seat upon the bottom wall of said annular oil seal groove and a plurality of spaced spring portions extending from opposite edges of said base portion and inclined with respect to said base portion, said spring portions each supporting only one of said plurality of oil seal rings.



3,895,893
ROTARY PISTON PUMP

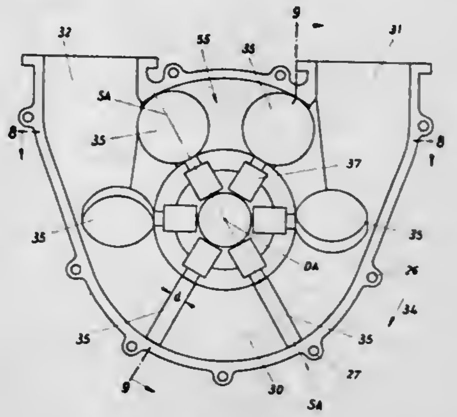
Manfred Sommer, Talstrasse D-7101, Ontergruppenbach, Germany

Filed Dec. 4, 1972, Ser. No. 311,816

Claims priority, application Germany, Dec. 3, 1971, 2160162; Austria, Nov. 2, 1972, 9332/72

Int. Cl. F01c *1/00, 21/00;* **F04c** *1/00*

U.S. Cl. 418—153 **21 Claims**



1. A rotary piston pump comprising a casing having an annular channel therein, a hub rotatable in said casing concentric with said annular channel, said hub comprising a shaft portion rotatably supported in said casing and an overhanging annular flange portion at an inner end of said shaft portion and having a central space inside said shaft portion and having a central space inside said annular flange portion, said flange portion being disposed wholly radially inwardly of said annular channel of the casing, means providing a fluid tight seal between said hub and said casing, means for rotating said hub, a plurality of circumferentially spaced generally radial shafts extending through and rotatably supported by said annular flange portion of said hub, a flat circular disc-shaped vane mounted on the outer end of each of said shafts and disposed in said annular channel whereby upon rotation of said hub, said vanes are carried around in said annular channel, said channel having an arcuate pumping portion of uniform circular cross section corresponding in size to said circular vanes and a sealing portion of restricted cross section corresponding in size and shape to the diametrical cross section of said vanes, inlet and outlet openings at the opposite ends respectively of said pumping channel portion and means for cyclically controlling the rotational orientation of said vanes in said channel to hold said vanes at least approximately perpendicular to the direction of movement while passing through said pumping channel portion and to position said vanes in line with said direction of movement for passage through said sealing channel portion, said controlling means comprising portions of said shafts extending inwardly to said central space inside said annular flange portion of said hub, an eccentric portion on the

inner end of each said shaft and actuating means acting cyclically on said eccentric portions to orientate said vanes, the peripheral edge of each of said vanes in cross section being of spherical curvature and being formed of resilient non-metallic material to provide an effective seal with the wall of said channel, the circumferential length of said sealing channel portion being at least slightly greater than the spacing between successive vanes whereby one vane enters the upstream end of said sealing channel portion sufficiently to form a seal therein before the preceding vane exits from the downstream end of said sealing channel portion.

3,895,894

DEVICE FOR GENERATING HIGH PRESSURES AND TEMPERATURES

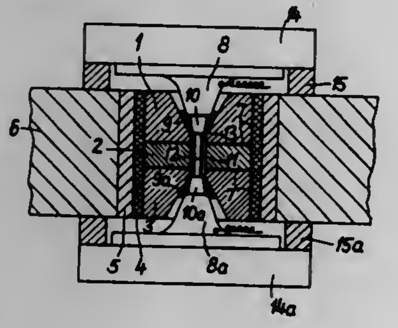
Klaus Biermann; Jürgen Burbach; Horst Gimpel, and Burckhard Zirpins, all of Essen, Germany, assignors to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

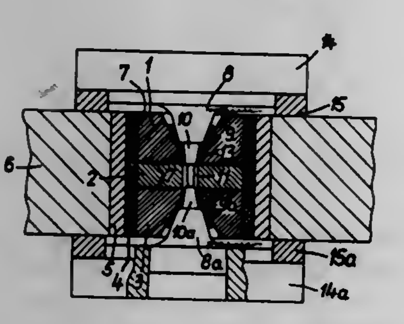
Filed Apr. 23, 1973, Ser. No. 353,738

Claims priority, application Germany, Apr. 26, 1972, 2220349

Int. Cl. B29c *11/00;* **B29f** *5/00*

U.S. Cl. 425—77 **10 Claims**





1. A device for generating high pressures and temperatures, which includes in combination: a high-strength metallic pressure container comprising a pressure chamber adapted to receive a tubular member of plastically deformable and electrically insulating material with a charge of material to be compressed therein, two oppositely located conical piston ram means arranged in axial alignment with each other and with said pressure chamber and movable toward and away from each other and said pressure chamber for respectively compressing a charge of material in a tubular member received in said pressure chamber and relieving the thus compressed charge, electric current conveying means electrically connected to said piston ram means for heating a charge to be compressed received in said pressure chamber, said pressure chamber being defined by at least two axially aligned annular members of high strength hard metal, pressure resistant insulating material interposed between and electrically insulating said annular members from each other, annular fitting means surrounding said annular members, additional pressure resistant mica insulating means permanently interposed durably between the outer periphery of said annular members and the inner peripheral surface of said fitting means and electrically insulating the same from each other, and strong metallic sealing means arranged between said piston ram means and at least the respective adjacent one of said annular members.

3,895,895

DEVICE FOR TRANSFERRING PRESSINGS TO BE SINTERED FROM A PRESS PRODUCING THEM FROM POWDER MATERIALS, TO A SINTERING SUPPORT

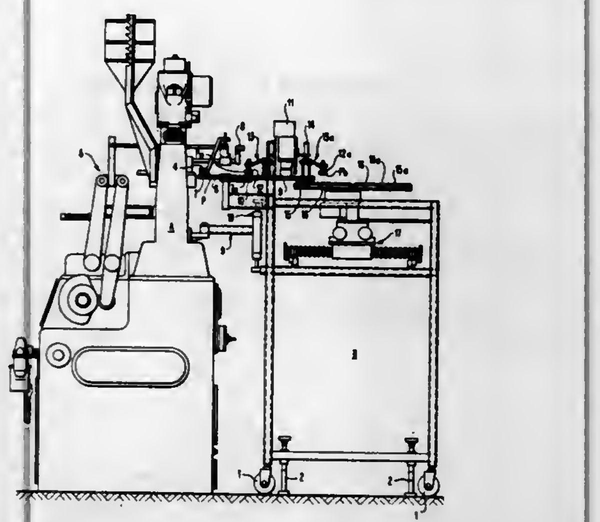
Harald Märker, Kochel am See, and Josef Leingärtner, Bad Heilbrunn, both of Germany, assignors to Dorst-Keramikmaschinen-Bau Inh. Otto Dorst u. Dipl.-Ing. Walter Schlegel, Kochel am See, Germany

Filed Sept. 19, 1973, Ser. No. 398,762

Claims priority, application Germany, Sept. 20, 1972, 2246048

Int. Cl. B65g *47/91*

U.S. Cl. 425—78 **2 Claims**



1. In an apparatus for transferring an unsintered pressed blank for a sintered part from a pressing die to a support holding the pressing while it is sintered, a forming press having a die; a movable carriage for said support; a lifter; a transfer means having a primary suction head and a transfer plate; said lifter having means for gripping a pressing and lifting it from the die; said lifter being movable to a pressing release position over said suction head; said suction head being adapted to transfer the pressed blank to said plate; said plate being rotatably mounted and means for rotating the same in 180° increments; means for coordinating the operation of said die, suction head and transfer plate; said transfer plate having a secondary suction lifter mounted thereon; means forcing said suction lifter to lower when said suction lifter is over said support and to release the suction grip on a pressing when the suction lifter has been lowered; means for moving said carriage in synchronization with said press and secondary suction lifter whereby the pressings are deposited on said support in a close packed prearranged pattern.

3,895,896

APPARATUS FOR PULTRUDING HOLLOW OBJECTS

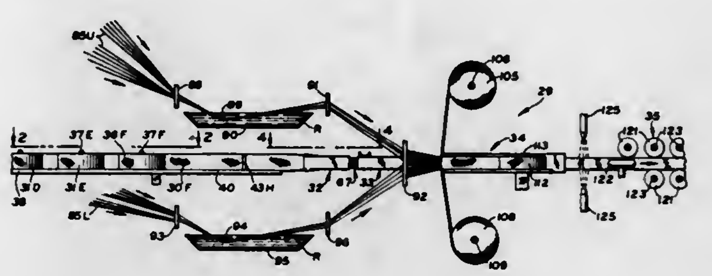
Roger B. White, Shaker Heights; David E. Pearson, Hudson, and Hugô E. Birkner, Jr., Kent, all of Ohio, assignors to The Pultrusions Corporation, Kent, Ohio

Division of Ser. No. 303,648, Nov. 3, 1972, abandoned. This application Mar. 11, 1974, Ser. No. 449,701

Int. Cl. B29d *23/05*

U.S. Cl. 425—93 **15 Claims**

1. Apparatus for the continuous manufacture of articles having upper, lower and laterally displaced peripheral walls and having hollow cavities therethrough, separated by at least one internal web wall, from fiber reinforced, thermosetting resin comprising: a die having a throat to delineate the exterior configuration of the hollow article, at least two mandrels positioned within the throat of said die to delineate the configuration of said hollow cavities and at least one said internal web wall through the article, creel means to supply a plurality of dry ribbons of fiber matting, means for directing said ribbons along and between opposing sides of said mandrels, a forming guide to incorporate each said ribbon of dry matting into at least three of said article walls and including a first turning vane to fold at least one of said ribbons directly over one said mandrel and downstream of said first vane a second turning vane to fold another of said ribbons over and in the opposite direction to said first folded ribbon and completely enclose at least one of said mandrel to form at least one said hollow cavity prior to contact with the thermosetting resin, an exposure chamber to receive the dry folded mat ribbons from said forming guide and deposit an amount of resin on a portion of said folded ribbons that is at least sufficient to impregnate all ribbons of matting with resin, means continuously to draw said mat ribbons from said creel means, along said means for directing, through said forming guide and exposure chamber and between said mandrel and die, and means to heat said die.



3,895,897

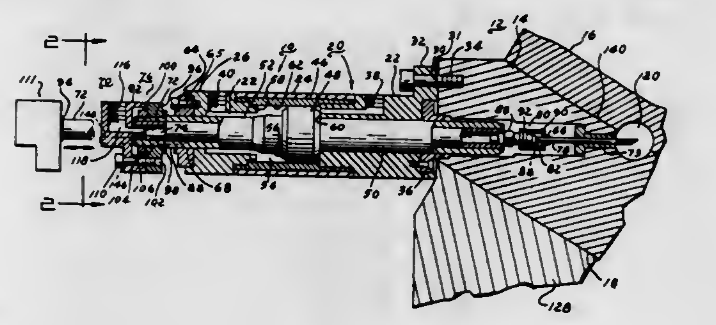
BLOW NEEDLE ASSEMBLY

Joseph F. Hudson, Royal Oak, Mich., assignor to Monsanto Company, St. Louis, Mo.

Filed Mar. 4, 1974, Ser. No. 447,472

Int. Cl. B29d *23/03*

U.S. Cl. 425—182 **11 Claims**



1. In a molding machine of the type including a split mold associated with a blow needle assembly comprising cylinder means and elongated piston means including a piston rod reciprocable within said cylinder means and a hollow needle reciprocable in a bore opening into a cavity formed in a section of said split mold at an angle to the parting line thereof for puncturing and expanding tubular plastic material within the split mold, the improvement wherein said piston means comprises stem means including an elongated hollow stem extending through said piston rod having said blow needle at its forward end, said stem means being releasably secured to said piston rod at the end opposite that having said blow needle, whereby said blow needle may be removed from and replaced in said piston means without removing the piston rod therefrom.

3,895,898

FLAT SHEET INJECTION HEAD FOR ROLLER-HEAD INSTALLATIONS

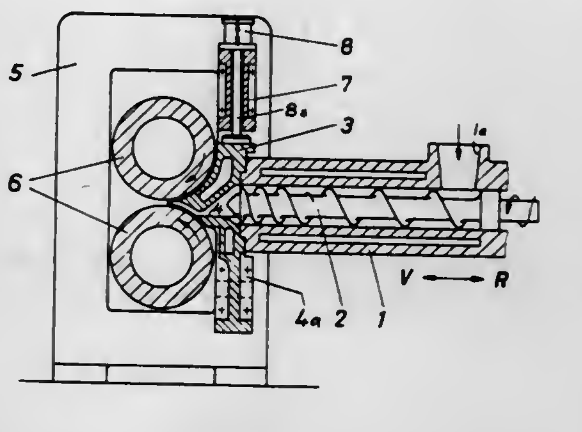
Helmuth Theysohn, Wiehbergstrasse 25 C, 3 Hannover, Germany

Filed June 14, 1973, Ser. No. 369,846

Claims priority, application Germany, June 19, 1972, 2229828

Int. Cl. B29c *15/00;* **B29f** *3/00*

U.S. Cl. 425—325 **9 Claims**



1. Roller head apparatus comprising;
- a calender stand; calender rolls rotatably supported by said stand and defining a nip between the rolls;
- an extruder barrel; an extruder screw rotatable therein for the extruding of material in a plastic state from said barrel;
- an elongate injection head for said barrel aligned with said nip, said injection head defining an elongate flat sheet extruder nozzle for said extruding of material and comprising two elongate parts generally disposed on opposite elongate sides of said elongate flat sheet extruder nozzle; rigid means mounted on said calender stand and extending along said elongate injection head;
- means supporting a first of said elongate parts of said injection head mounted stationary on said rigid means, the other of said elongate parts of the injection head being mounted on said barrel and being movable therewith toward and away from said calender stand and rolls; and pressure means mounted on said rigid means for acting between the same and said movable elongate part of the injection head for releasably pressing this part toward said stationary elongate part, in portions of said parts including at least a central portion thereof, to counteract distortion of said movable elongate part in the use of the apparatus.

3,895,899

EXTRUSION DIE

Herbert Weber, Effretikon, Switzerland, and Alfred Wagner, Steisslingen, Germany, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Mar. 26, 1973, Ser. No. 344,481

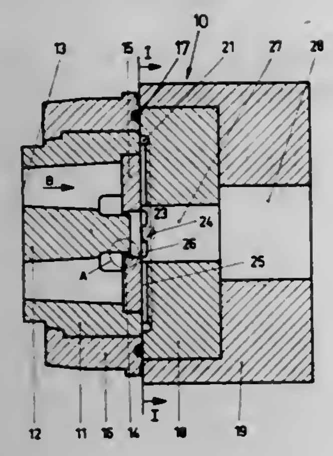
Claims priority, application Switzerland, Mar. 30, 1972, 4784/72

Int. Cl. B29f *3/08*

U.S. Cl. 425—378 R **10 Claims**

10. An extrusion die having a die body, for use in the manufacture of sections of metallic materials,
- said body including a portion composed of a certain material defining a working surface region,
- said body further defining a conduit for a coolant in good thermal conductive communication with said working surface region,
- said working surface region comprising a layer of diffusion products of said body material and

a coating disposed on said layer,



said coating including an inorganic binder resistant to elevated temperatures, metallic substances and solid lubricants.

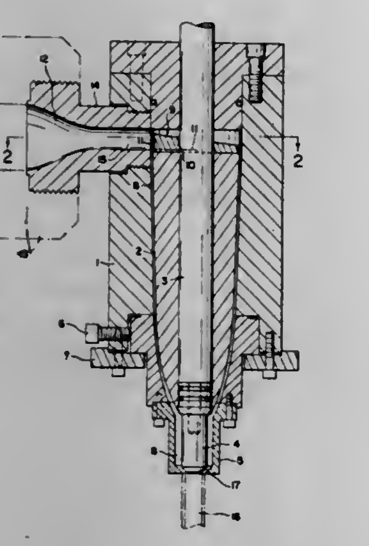
3,895,900
PLASTICS EXTRUSION DIE HEAD IMPROVEMENT

Albert J. Herold, Bedford; Paul E. Koch, Chagrin Falls, and Richard C. Adams, Chardon, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Feb. 21, 1974, Ser. No. 444,341

Int. Cl. P29d *23/04*

U.S. Cl. 425—466 **2 Claims**



1. In an extrusion blow molding die head comprising a die body equipped with a removable die bushing, said die body having an internally, somewhat generally conical hollow area fitted with a stationary tubular cone through which extends a movable internal shaft having a core pin which extends into and near the end of the opening in the die bushing said die body also having a fixed gap and a channel for plastic flow near an insert ring located at the top of said tubular cone, the improvement comprising an obstruction located at the bottom of the insert ring and extending about half the circumference of the tubular cone in the area where the plastic enters the channel for plastic flow.

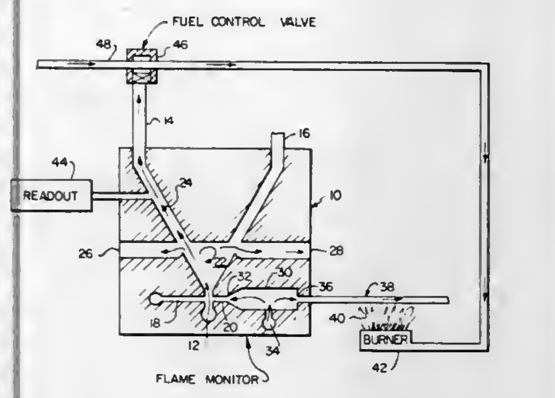
3,895,901
FLUIDIC FLAME DETECTOR

Elmer L. Swartz, Annandale, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 14, 1974, Ser. No. 497,413

Int. Cl.² F23N *5/02*

U.S. Cl. 431—77 **6 Claims**



1. A fluidic flame monitoring device comprising: a fluidic amplifier means having an inlet channel, an outlet channel, and a control port communicating with an interaction region such that a control signal applied to said control port modulates a power stream flowing between said inlet and output channels; readout means coupled to said outlet channel for providing an indication of the pressure therein; a chamber coupled to a fluid source and having an output connected to said control port to provide said control signal thereto, said chamber further incorporating a vented pressure regulating output; and means coupled to said pressure regulating output for controlling the amount of venting therethrough in response to the temperature of an external flame; whereby the pressure within said chamber is varied by said external flame and the power stream within said fluidic amplifier is thereby modulated and indicated.

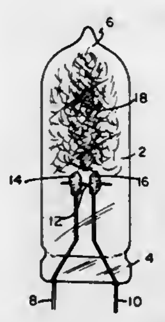
3,895,902
PHOTOFLASH LAMP

David R. Broadt, Lewisburg, and Donald E. Armstrong, Williamsport, both of Pa., assignors to GTE Sylvania Incorporated, Montoursville, Pa.

Filed Sept. 9, 1971, Ser. No. 179,056

Int. Cl.² F21K *5/02*

U.S. Cl. 431—93 **4 Claims**



1. A photoflash lamp comprising:
an hermetically sealed, light transmitting envelope;
a combustion-supporting gas in said envelope;
a quantity of filamentary combustible material located within said envelope, said filamentary material comprising a plurality of strands having a length inversely related to the weight of said filamentary material, the density of said strands being sufficient to render said filamentary material self-supporting within said envelope, and said filamentary material being distributed within said envelope with the strands thereof most dense toward the center of said envelope and least dense at the walls of said envelope;
and ignition means attached to one end of said envelope and disposed in operative relationship with respect to said combustible material.

3,895,903
DISCARDABLE LIGHTER

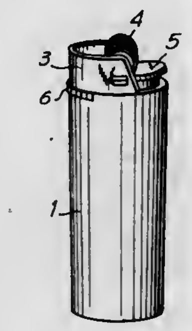
Pierre Lefebvre, 55, rue de Turbigo, 75 Paris 3e, France

Filed Aug. 15, 1973, Ser. No. 388,643

Claims priority, application France, Apr. 17, 1973, 73.13885

Int. Cl.² F23Q *2/00*

U.S. Cl. 431—143 **3 Claims**



1. A disconnectable housing for a lighter having a body and an igniting mechanism carried by said body and provided with a flame-generating serrated wheel, said housing comprising first and second cases, the first case being adapted to enclose said body and the second case being adapted to enclose said igniting mechanism, the second case including depending lugs positioned to be slidingly fitted with slight friction between the first case and said body to hold the lighter fast with respect to both said cases, the second case being provided with an opening for the passage of a flame and an opening for the flame-generating serrated wheel.

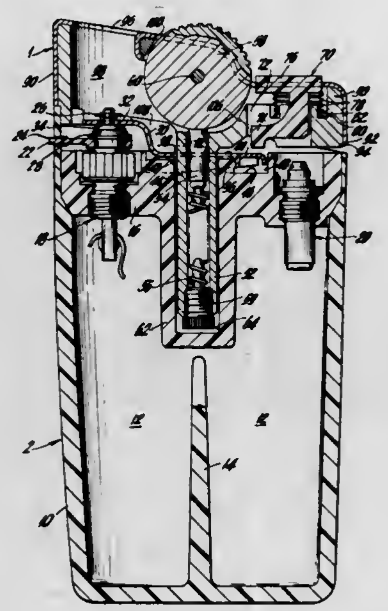
3,895,904
BUTANE LIGHTER ASSEMBLY

Everett L. Kimball, Stroudsburg, Pa., assignor to Ronson Corporation, N.J.

Filed Jan. 21, 1974, Ser. No. 434,782

Int. Cl.² F23Q *2/00*

U.S. Cl. 431—143 **12 Claims**



1. A lighter assembly consisting essentially of a first and a second unitary modular subassembly detachably mounted together; said first modular subassembly comprising a hollow body portion defining a chamber for storing flammable fuel, an inlet valve assembly for inserting fuel into said chamber, a burner valve assembly for emitting fuel from said chamber, and a burner valve actuating arm for opening said burner valve assembly to effect emission of fuel therefrom; said second modular subassembly comprising a spark mechanism including flint means for igniting said fuel emitted from said burner valve assembly, a manually operable actuator button engaging said actuating arm to effect opening of said burner valve assembly and extending to the outer extremity of said lighter to be engaged by the thumb of a user, spring means for biasing said actuator bottom out of engagement with said actuating arm, and an integrally formed body portion having said spark mechanism and said actuator button operatively mounted thereupon, said second subassembly being formed to extend across said first subassembly to provide a cover member therefor; said lighter assembly including means for detachably mounting said first and second subassemblies together during operation of said lighter to enable said subassemblies to be manually detached to permit access to said inlet valve assembly and to said spark mechanism for refueling and reflinting said lighter, said detachable mounting means including detent means formed on one of said subassemblies and means located to cooperatively releasably engage said detent means formed on the other of said subassemblies.

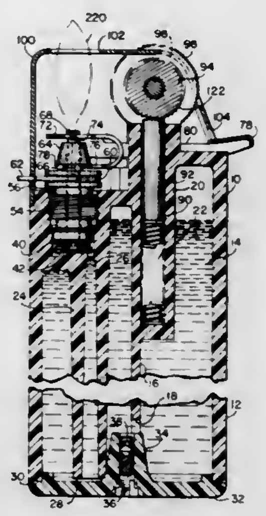
3,895,905
LIGHTER

Warren I. Nissen, Topsfield, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Nov. 9, 1973, Ser. No. 414,267

Int. Cl.² F23Q *2/16*

U.S. Cl. 431—254 **19 Claims**



1. A lighter comprising fuel chamber defining structure having an outlet port, valve means for controlling the flow of fuel from said fuel chamber through said outlet port, said valve means including a first valve member and a second valve member mounted for movement between a valve closed position and a valve open position, a valve actuator for moving said movable member, said valve actuator being a one-piece member and including a first coupling portion secured to said first member, a second coupling portion juxtaposed to said first coupling portion and secured to said second member, a spring portion connecting said first and second coupling portions and normally urging said first and second coupling portions towards one another to move said first and second valve members towards said valve closed position, and an exposed surface portion at the end of said actuator remote from said coupling portions, and manually operated ignition means adjacent said exposed surface portion for operation in coordination with opening of said valve by said valve actuator in response to manual engagement of said exposed surface.

3,895,906

HEATING PROCESS AND APPARATUS USING OXYGEN

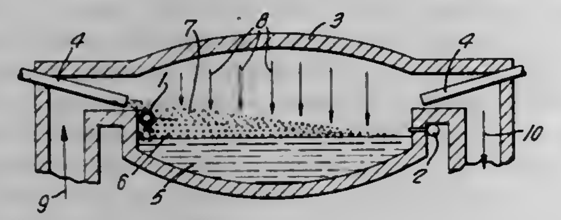
Robert Roy Kottmeier, Hamilton, Canada, assignor to Canadian Liquid Air Ltèe, Air Liquide Canada Ltd., Montreal, Canada

Continuation-in-part of Ser. No. 342,397, March 19, 1973, abandoned. This application Mar. 18, 1974, Ser. No. 452,350

Claims priority, application United Kingdom, Mar. 24, 1972, 13937/72

Int. Cl. F23l *15/00*

U.S. Cl. 432—22 **21 Claims**



1. A method of heating a charge in a furnace having means forming an enclosed chamber disposed between a primary air and fuel inlet and an off-gas outlet, said chamber including means for containing a charge presenting an extensive surface to be heated, said chamber defining a surrounding enclosure containing a global atmosphere of primary air and fuel above the charge, in which method a flame is continuously propagated in said global atmosphere which is continuously renewed by primary air supplied to said primary air and fuel inlet and proceeds at a relatively low velocity above the surface of the charge towards said off-gas outlet from which off-gases are continuously withdran, comprising, the steps of: continuously projecting over a substantial width of the chamber, below said primary air and fuel inlet between said global atmosphere and immediately over a major area of the surface of the charge, substantially parallel to said surface, an oxidizing gas containing at least 50% oxygen and thereby forming a continuously propagated, relatively highvelocity incandescent blanket of reacting gases having a width several times its thickness moving at a substantially greater velocity than that of said global atmosphere, and

controlling the respective supplies of primary air and oxidizing gas and maintaining a substantial velocity difference between the incandescent blanket and the global atmosphere forming a pressure gradient pressing the incandescent blanket against the surface of the charge.

CHEMICAL

3,895,907

TURNBULL'S BLUE SINGLE BATH MINERAL DYEING PROCESS (FERRI-ZIRC) FOR CELLULOSIC TEXTILES

Charles James Conner, New Orleans, La., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Oct. 10, 1973, Ser. No. 404,974

Int. Cl. D06p *3/60*

U.S. Cl. 8—52 **8 Claims**

1. A mineral dyeing process for imparting a Turnbull's Blue coloration to cellulosic textiles, the process consisting of impregnating a cellulosic textile with an aqueous solution containing an inhibited reducing agent, ferric salt, and alkali metal ferricyanide, and zirconyl ammonium carbonate, then curing the impregnated cellulosic textile.

3,895,908

AUTOCLAVING PROCEDURE FOR TEXTILE FIBERS

Richard E. Harder, and Leland B. Ticknor, both of Williamsburg, Va., assignors to Dow Badische Company, Williamsburg, Va.

Filed Jan. 28, 1971, Ser. No. 110,644

Int. Cl. D06m *3/26*

U.S. Cl. 8—130.1 **6 Claims**

1. In the process for improving the physical properties of fibers comprising acrylonitrile polymers containing at least about 85 weight per cent of acrylonitrile and up to about 15 weight per cent of another polymerizable mono-olefinic monomer copolymerizable therewith, which process comprises contacting a mass of the fibers, while in an oriented state, with steam at a temperature of about 105° to 140°C, at a steam pressure of at least about 20 pounds per square inch in a closed chamber, the improvement therein comprising:

a. pretreating the fibers before their contact with steam by evenly distributing on the surface of the fibers at least about 5 weight per cent of water; and

b. ensuring complete penetration of the steam into all portions of the mass of fibers in the chamber.

3,895,909

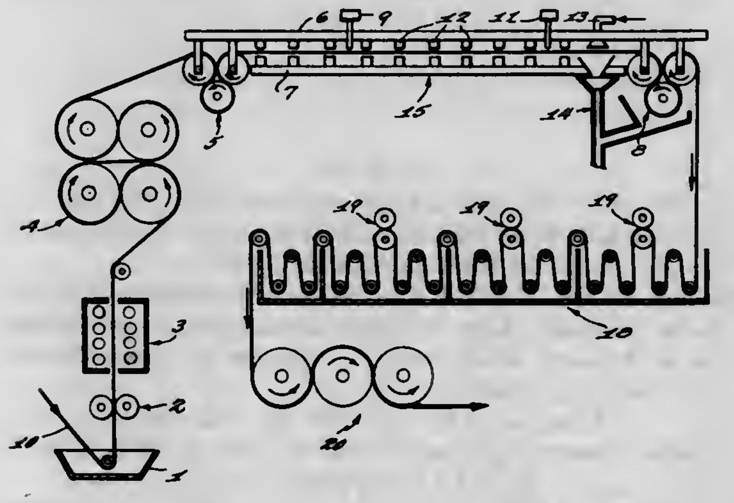
PROCESS FOR THERMOSOL DYEING OF POLYESTER FABRICS

James E. Greer, Greensboro, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed June 6, 1973, Ser. No. 367,360

Int. Cl. D06p *3/52*

U.S. Cl. 8—176 **3 Claims**



1. In a process for dyeing, drying, thermosoling, washing and drying a polyester material, the improvement comprising thermosoling the polyester material in an infrared oven under tension and subsequently quenching the polyester after the thermosoling but before the polyester material contacts any holding or restraining roll.

3,895,910

METHOD OF PROTECTING TIN-PACKAGING AGAINST CORROSION AND MAKING THEM GLOSSY

Romuald Juchniewicz, Gdansk, Poland, assignor to Politechnika Gdanska, Gdansk, Poland

Division of Ser. No. 267,983, June 30, 1972, Pat. No. 3,822,998, which is a continuation of Ser. No. 872,748, Oct. 30, 1969, abandoned. This application Oct. 11, 1973, Ser. No. 405,659

Claims priority, application Poland, Oct. 10, 1968, 129973

Int. Cl.^{2} C23F *11/12, 11/14, 11/18*

U.S. Cl. 21—2.7 R **2 Claims**

1. A method for preventing corrosion and imparting glossiness to tin-packings during the sterilization or pasteurization thereof with water, said method comprising adding to the water used in said sterilization or pasteurization, a mixture comprising (a) water glass; (b) an organic derivative having an anion in common with water glass; (c) a washing agent and (d) a brightening agent, the organic derivative being at least one organic silicate selected from the group consisting of 4-phenoxysilane, 4-butoxysilane, calcium silane, and aminoalkylpolysiloxanes.

2. A method for preventing corrosion and imparting glossiness to tin-packings during the sterilization or pasteurization thereof with water, said method comprising adding to the water used in said sterilization or pasteurization, a mixture comprising (a) sodium nitrite; (b) an organic derivative having an anion in common with sodium nitrite; (c) a washing agent and (d) a brightening agent, the organic derivative being at least one organic nitrite selected from the group consisting of dicyclohexylamine nitrite, diisobutylamine nitrite, piperidine nitrite and guanidine nitrite.

3,895,911

CYLINDRICAL TANK STERILIZER

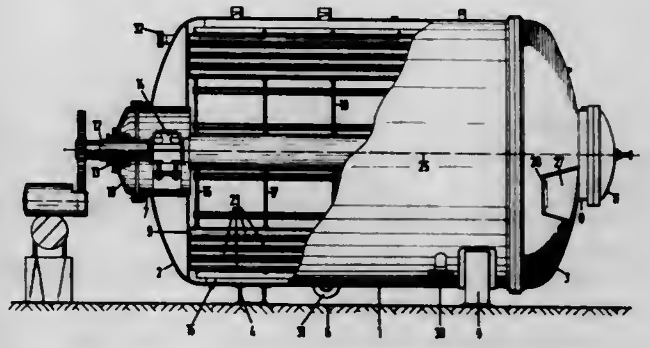
Antoon Adrianus Prins, Breukelen, Netherlands, assignor to Schiedamsche Werktuigenen Machinefabriek N.V., Schiedam, Netherlands

Filed Aug. 28, 1972, Ser. No. 284,251

Claims priority, application Netherlands, Aug. 27, 1971, 7111843

Int. Cl. A23l *3/02*

U.S. Cl. 21—98 **4 Claims**



1. In a sterilizer of the type having a cylindrical tank with a head on each end and a drum therein rotatable relative to the tank about its central axis for receiving objects to be sterilized such as cans, milk bottles or the like, the tank being provided with a sealable opening via which the drum can be charged or discharged, the improvement wherein the tank is arranged with its central axis substantiall horizontal and the sealable opening comprises:

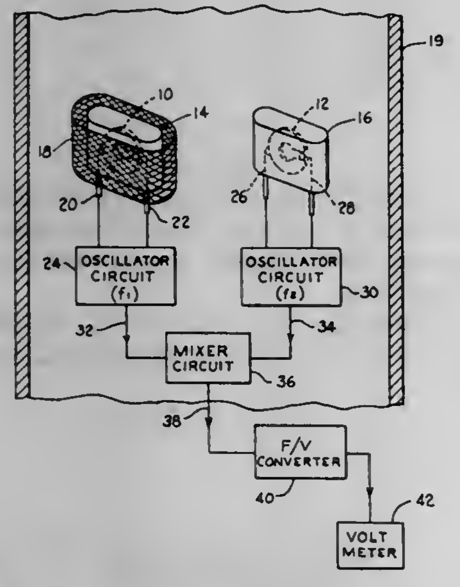
a first opening disposed eccentrically in one of the heads of the tank and a second opening similarly disposed in the other head, in axial alignment with said first opening, each of said first and second openings comprising a plurality of object accommodating holes, having centers spaced along a straight line which is substantially horizontal and perpendicularly intersects a vertical plane containing the rotation center line of the drum, at a given distance vertically from said rotation center line; and

said drum comprises a series of sets of tubular cages, each cage accommodating the objects end to end in a column with their longitudinal axes aligned, and with the center lines of all the cages in a set disposed parallel to the rotation center line of the drum and spaced in correspondence with the spacing of said holes along a straight line which perpendicularly intersects a radius drawn from the rotation center line of the drum, at said given distance, whereby through stepwise rotation each set of cages can be brought in line with the holes of the first and second openings at the same time so that the first opening may be used for loading a plurality of columns of objects to be sterilized into the drum while the second opening is used for simultaneously discharging a similar plurality of columns of sterilized objects from the drum.

3,895,912
CARBON MONOXIDE MONITOR

Robert J. Naumann, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 6, 1974, Ser. No. 521,603
Int. Cl. G01n *27/00, 31/10, 31/12*
U.S. Cl. 23—255 E **3 Claims**



1. A monitor device for providing a real time, continuous monitor of carbon monoxide concentration in a fluid stream comprising:

a. a first container filled with a pressurized heat conducting gas;
b. a first temperature sensitive crystal material encapsulated within said first container;
c. a second container filled with a pressurized heat conducting gas;
d. a second temperature sensitive crystal material encapsulated within said second container;
e. said first container being surrounded by a layer of hopcalite coating for reacting with the carbon monoxide, with said first crystal detecting the heat from said reaction;
f. a first oscillator circuit having a variable output frequency and having connected therein said first crystal for controlling said output frequency of said first circuit;
g. a second oscillator circuit having a variable output frequency and having connected therein said second crystal for controlling said output frequency of said second circuit;
h. said first and second oscillator circuits having matched output frequencies in the absence of carbon monoxide; and
i. circuit means for comparing said first oscillator circuit output frequency and said second oscillator circuit output frequency to obtain a single net output frequency signal and for converting said single net output frequency into a voltage signal which represents the concentration of carbon monoxide;

whereby the carbon monoxide in the fluid stream will react with said hopcalite coating giving off a heat of reaction to heat said first crystal changing the frequency of said first oscillator circuit to create a single difference in said comparing circuit means which is then converted to a voltage signal for providing a continuous readout of the concentration of carbon monoxide.

3,895,913
PHOTOMETRIC TEST METHOD FOR CHELANT RESIDUAL OR DEFICIENCY

Edmund J. Bockowski, Hatboro, Pa., and Louis J. Stefanelli, Pennsauken, N.J., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Sept. 6, 1974, Ser. No. 503,895
Int. Cl.² G01N *31/22, 33/18*
U.S. Cl. 23—230 R **3 Claims**

1. A method of determining the amount of a first metal chelating agent relative to the level of magnesium, calcium and heavy metal ions in water, which comprises,

a. adding to a sample of said water a solution comprised of equimolar portions of a magnesium or calcium salt and a second chelating agent, said second chelating agent having a higher stability constant for heavy metal ions than the said first chelating agent; wherein the second chelating agent substitutes magnesium or calcium ions for the heavy metal ions in the water; and then,
b. adding to the sample a color indicator pre-complexed with magnesium or calcium ions, said pre-complexed color indicator being capable of reacting with calcium or magnesium ions in the water when said first chelating agent is present in an amount stoichiometrically less than that required to bind up all calcium and magnesium ions present, simultaneously generating a characteristic color, and said pre-complexed color indicator capable of yielding calcium and magnesium ions where said first chelating agent is present in an amount equal to or greater than the stoichiometric amount required to bind up all calcium and magnesium ions present, thus generating another characteristic color; then,
c. measuring the absorbance of the generated color photometrically to determine the relative amount of said first metal chelating agent which is present.

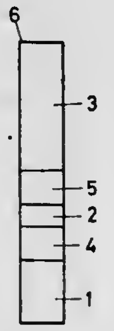
3,895,914
MEANS FOR ISOLATION AND DETECTION OF BARBITURIC ACID DERIVATIVES AND GLUTETHIMIDE IN BIOLOGICAL FLUIDS

Joachim Alberty, Helsinki; Eero Salomaa, Kauklahti; Nils-Erik Saris, Helsinki; Eero Sjöström, Kaunlainen, and Gabriel Zewi, Tapiola, all of Finland, assignors to Orion-Yhtymä OY, Helsinki, Finland

Filed Jan. 31, 1973, Ser. No. 328,336
Claims priority, application Finland, Feb. 2, 1972, 319/72
Int. Cl. G01n *21/06, 33/16*
U.S. Cl. 23—253 TP **3 Claims**

1. A test strip for the detection of barbituric acid, barbituric acid derivatives and glutethimide in biological fluids comprising a bibulous paper strip having consecutive chemically-impregnated zones sequentially identified from one end of said strip as follows:

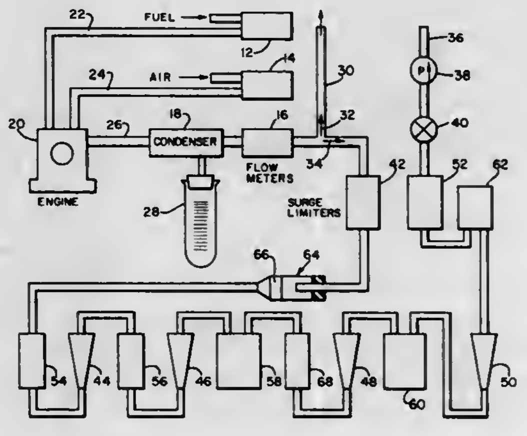
a. a first zone impregnated with an acid for acidifying a sample of the biological fluid being tested,
b. a second zone impregnated with alkaline buffered mercuric acetate, and
c. a third zone impregnated with diphenyl carbazone.



3,895,915
GAS ANALYZING

Charles W. Haldeman, Concord, Mass., assignor to Megatech Corporation, Billerica, Mass.

Filed Aug. 16, 1973, Ser. No. 389,015
Int. Cl. G01n *31/06, 33/22*
U.S. Cl. 23—254 R **8 Claims**



1. Gas analyzing apparatus comprising,

means defining a gas flow series array of flowmeters between a gas flow inlet and a gas flow outlet interspersed with means for selectively sorbing component gases of a gas mixture to be analyzed,

means defining a gas sampling system connected to said gas flow inlet for taking gas samples and comprising means for condensing water vapor and for dumping a portion of the gas sampled before admittance of the balance to said gas flow inlet,

means for driving gas through said array and selecting flow rate therefor and proportions of sample gas dumped and sampled gas admitted to said gas flow inlet,

and means for displaying directly differential flow rate between at least two of said flowmeters indicative of gas sorbed in the course of passage of a sample gas mixture between said flowmeters, and wherein

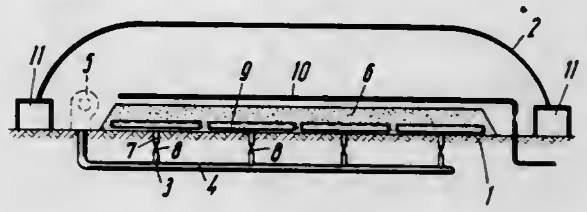
said two flowmeters are of ball and tube type and are arranged with their tubes in parallel and said display means comprise a common scale between said tubes,

and further comprising an additional flowmeter means located within said apparatus for defining a zero reference for said scale.

3,895,916
COMPOSTING INSTALLATION

Kurt Rosner, Munster, Germany, assignor to Hazemag Dr. E. Andreas KG, Munster, Germany

Filed May 31, 1973, Ser. No. 365,763
Claims priority, application Germany, June 2, 1972, 2226729
Int. Cl.² C05F *9/00, 9/02;* **E04B** *1/345*
U.S. Cl. 23—259.1 **14 Claims**

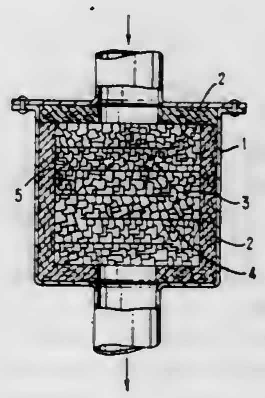


1. In a composting installation, a combination comprising support means for material to be composted; an inflatable bubble covering said support means and having an air lock for ingress and egress of the material; supply means for continuously supplying pressurized air into the interior of said bubble; vent means communicating said interior of said bubble with the exterior thereof; means for controlling at least one of said supply means and vent means so as to establish a controlled air flow and an overpressure in said interior for maintaining said bubble inflated; and means for directing said pressurized air through said composting material and said support means so as to enhance the composting process in said composting material.

3,895,917
GAS REACTORS INCLUDING FOAM-STRUCTURED CERAMIC BODY WITH INTEGRAL INTERNAL CERAMIC BAFFLES

Frank Ernest George Ravault, Birmingham, England, assignor to Foseco International Limited, Birmingham, England

Filed Dec. 29, 1972, Ser. No. 319,847
Claims priority, application United Kingdom, Jan. 14, 1972, 1932/72
Int. Cl.² B01J *8/00;* **F01N** *3/10, 3/15*
U.S. Cl. 23—277 C **5 Claims**



1. A reactor element comprising a body of porous foam-structured ceramic material made by impregnating an organic foam with a slurry of ceramic material, drying and firing the foam, and having integral therewith a plurality of internal impermeable baffles defining a tortuous path through the element and formed by locating in the so impregnated foamed body, prior to firing, layers of porous sheet material impregnated with ceramic slurry at the positions where it is desired to have the baffles in the finished element.

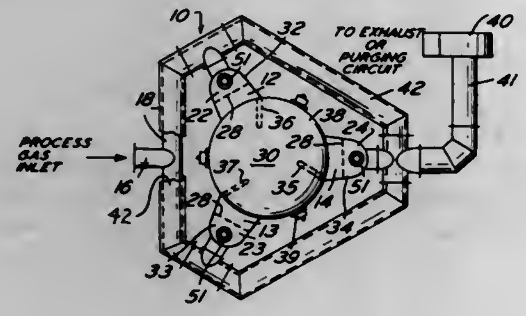
3,895,918
HIGH EFFICIENCY, THERMAL REGENERATION ANTI-OLLUTION SYSTEM

James H. Mueller, 100 E. Hunter Ave., Maywood, N.J. 07607

Filed Jan. 16, 1973, Ser. No. 324,230

Int. Cl. F23g *7/06;* **F23c** *9/04*

U.S. Cl. 23—277 C **11 Claims**



1. Apparatus for processing of an industrial exhaust gas flow or the like comprising:

- a. a centrally disposed chamber in which a high temperature range is maintained,
- b. at least three separate, spaced heat-exchange beds disposed substantially equiangularly around and protruding from the periphery of said chamber, each bed containing randomly disposed packing comprised of a plurality of solid heat exchange elements, said beds being bounded by vertical non-parallel walls,
- c. a plurality of inlet means, each being coupled to one of said beds, for conducting said gas flow to said bed for passage through it into said chamber,
- d. a plurality of outlet means, each coupled to one of said beds, for conducting said gas flow away from said bed after the gas flow has passed outwardly through said bed from said central chamber, and
- e. fueled heating means within said chamber for continuously producing or maintaining said high temperature range, said temperature range being considerably higher than the temperature range of the gas flow as it first is applied to the apparatus and sufficiently high to cause continuous thermal oxidation of said gas flow.

3,895,919
DEVICE FOR THE PRODUCTION OF A HOMOGENOUS GAS MIXTURE

Friedrich Forster; Erich Barth, and Heinz-Jochen Keller, all of Dortmund-Horde, Germany, assignors to Friedrich Uhde GmbH, Dortmund, Germany

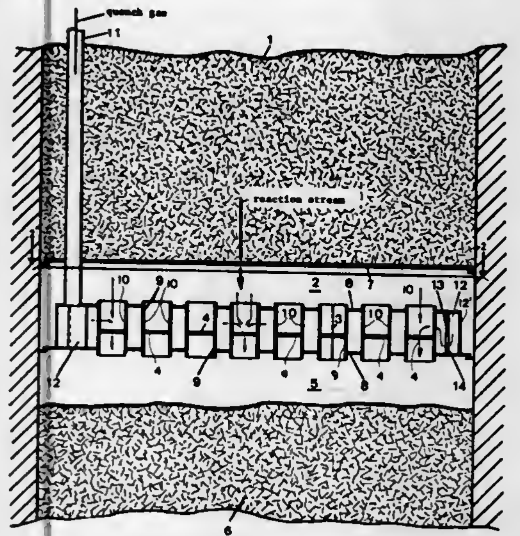
Filed Nov. 29, 1973, Ser. No. 419,909

Claims priority, application Germany, Jan. 13, 1973, 2301644

Int. Cl. B01j *4/00, 7/02, 9/00*

U.S. Cl. 23—288 K **1 Claim**

1. Apparatus for producing a gas mixture, comprising means providing a free equalizing space beneath a superimposed catalyst layer, a mixing chamber in said space having spaced upper and lower plates, a plurality of spaced open ended mixing tubes having their upper and lower end portions sealed in said plates, within each tube a partition between the upper and lower ends thereof, said partition having a restricted orifice, a quench gas pipe leading to said mixing chamber and terminating in a duct means positioned between said upper and lower plates, said duct means having an outer wall and an inner wall, the outer wall of said duct means constituting the periphery of said mixing chamber, and the inner wall of said duct means extending from the upper to the lower plate of said mixing chamber and being displaced inwardly of said periphery, the duct consequently surrounding said plurality of mixing tubes, a plurality of openings in the inner wall of said duct means at points below said partitions to permit passage of quench gas about said mixing tubes, and orifices in said mixing tubes above said partitions to admit quench gas thereto.



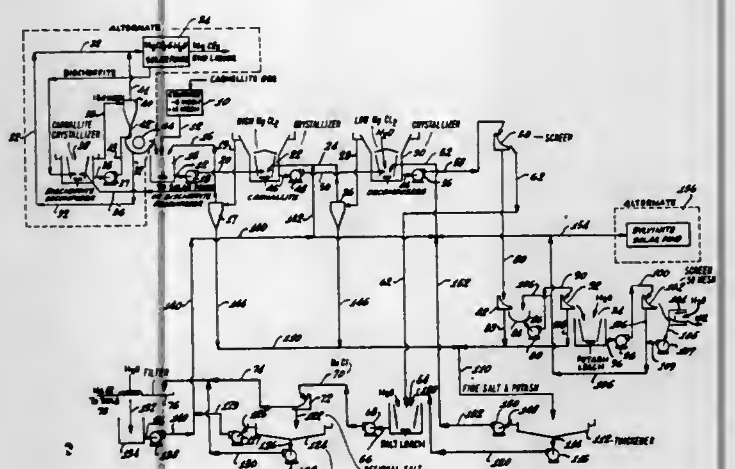
3,895,920
METHOD OF PRODUCING COARSE POTASH

Donald E. Garrett, 505 W. Ninth St., Claremont, Calif. 91711

Continuation-in-part of Ser. No. 69,219, Sept. 3, 1970, abandoned. This application Sept. 17, 1973, Ser. No. 397,963

Int. Cl. B01d *9/00;* **C07d** *3/00;* **C13k** *1/10;* **C09d** *1/30*

U.S. Cl. 23—298 **7 Claims**



1. A method for producing coarse crystals of KCl from the direct decomposition of carnallite, comprising:

- a. crushing an ore containing substantial quantities of carnallite;
- b. mixing said crushed ore in an aqueous liquor having a $MgCl_2$ content of at least about 68 mols per 1,000 mols of water to form a slurry whereby decomposition of said carnallite is substantially prevented;
- c. passing said slurry into a crystallizer into which an aqueous decomposition liquor having an $MgCl_2$ content up to about 65 mols per 1,000 mols of water is continuously added;
- d. intensely re-circulating within the crystallizer the thus formed mixture of the slurry and the decompositon liquor such that the amount of liquor which is being re-circulated is substantially greater than the amount of new decomposition liquor which is added, whereby the driving force towards decomposing the carnallite and the crystallization of KCl is substantially lessened;
- e. introducing and maintaining in said crystallizer between about 10 wt. % and about 40 wt. % of KCl seed, said wt. % being based on the weight of solids in said slurry;
- f. continuously forming KCl crystals in said crystallizer and elutriating therefrom KCl crystals of a size -80 mesh thereby to promote formation of about +50 mesh KCl crystals;
- g. recovering said +50 mesh KCl crystals.

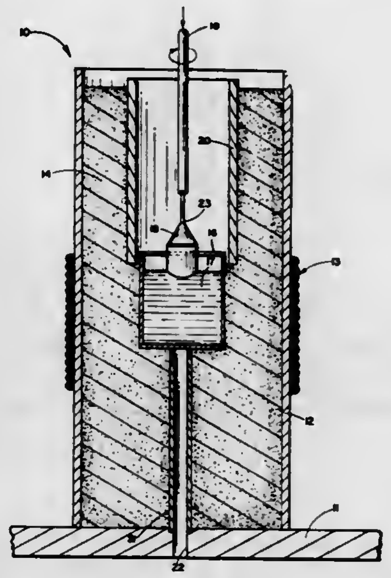
3,895,921
GROWTH OF INCONGRUENTLY MELTING CRYSTALS FROM A QUATERNARY SILICATE SYSTEM USING THE CZOCHRALSKI METHOD

Michael F. Ehman, Mission Viejo, and Stanley B. Austerman, Villa Park, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 19, 1973, Ser. No. 426,412

Int. Cl. B01j *17/00, 17/20*

U.S. Cl. 23—301 SP **6 Claims**



1. A method of growing single crystal compounds from the class comprising mullite, akermanite and gehlenite selected from the quaternary silicate system Al_2O_3-CaO-MgO-SiO_2, comprising the steps of:

- forming a charge containing weight percentages of Al_2O_3, CaO, MgO, and SiO_2 corresponding to the weights present in the silicate compound in a suitable reservoir;
- heating said charge to a temperature that is sufficiently above the melting point of the silicate compound to provide a homogeneous melt;
- placing a seed crystal of the compound in physical contact with the surface of the melt; and
- pulling vertically upward a seed crystal from the melt at (a) predetermined withdrawal rate on the order of about 0.2 to 0.3 inches per hour and a rotational rate on the order of about 14 to 30 rpm.

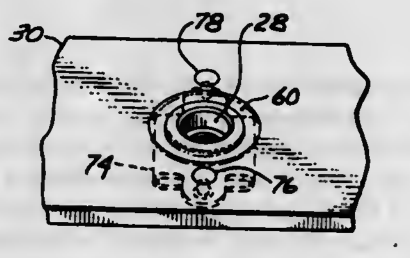
3,895,922
RING PAD STRESS COINED STRUCTURE

Austin Phillips, Santa Monica, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.

Division of Ser. No. 277,359, Aug. 2, 1972, Pat. No. 3,796,086. This application Nov. 12, 1973, Ser. No. 415,174

Int. Cl. B26f *1/00*

U.S. Cl. 29—183 **3 Claims**



1. A structural member having a first and second surface and a discontinuity in at least the first surface, the improvement comprising:

- a first depressed groove coldworked in said first surface spaced from said discontinuity, said depressed groove having a cross section which has a linear portion at the bottom thereof and a grooved portion which extends upwardly from a point of tangency with said linear portion to said first surface, said coldworked depressed groove forming a first volume of member material having residual radial and circumferential compressive stress therein due to said coldworking thereof, said first volume being adjacent said discontinuity and extending therefrom to said first groove and a second volume of member material between said first and second surfaces and under said first groove, said first and second volumes of stressed material improving the fatigue strength of said structural member by fencing out fatigue causing stress concentrations at the discontinuity.

3,895,923
HIGH STRENGTH METAL CARBONITRIDED COMPOSITE ARTICLE

Gene F. Wakefield, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 30, 1969, Ser. No. 889,347

Int. Cl. B32b *15/02, 15/08*

U.S. Cl. 29—191 **8 Claims**

1. A laminated composite article comprising a first layer of a solid solution carbonitride of a metal selected from silicon, boron, and the transition metals in Groups IVB, VB and VIB of the Periodic Table integrally bonded between second and third metal layers.

3,895,924
CONSUMABLE WELD INSERT

Emerson J. Hallenbeck, 2934 Shoreland Ave., Toledo, Ohio 43611

Division of Ser. No. 171,546, Aug. 13, 1971, Pat. No. 3,770,302. This application Feb. 7, 1973, Ser. No. 330,203

Int. Cl. B22f *5/00*

U.S. Cl. 29—183 **6 Claims**

1. A consumable weld insert made of weld metal for connecting adjacent ends of two sections of pipe or the like, said insert comprising a ring-like body of weld metal, said ring having an internal diameter and an external diameter, with an inner edge portion adjacent the inner diameter and an outer edge portion adjacent the outer diameter, said body having a wedge-shaped, transverse cross section with the inner edge portion being thicker than the outer edge portion.

3,895,925
MOTOR FUEL COMPOSITION

Raymond C. Schlicht, Fishkill, and George W. Eckert, Wappingers Falls, both of N.Y., assignors to Texaco Inc., New York, N.Y.

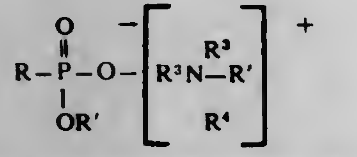
Filed June 10, 1974, Ser. No. 477,716

Int. Cl. C10l *1/26*

U.S. Cl. 44—72 **11 Claims**

1. A motor fuel composition comprising a mixture of of hydrocarbons in the gasoline boiling range containing from

about 0.0005 to 0.1 wt. percent of an alkylammonium alkyl alkanephosphonate represented by the formula;



$$R-\underset{\underset{\displaystyle OR'}{|}}{\overset{\overset{\displaystyle O}{\|}}{P}}-O^{-}\left[\begin{matrix} & R^3 & \\ R^3N & - & R' \\ & R^4 & \end{matrix}\right]^{+}$$

in which R is an aliphatic hydrocarbon radical having from about 8 to 22 carbon atoms, R′ is a lower aliphatic hydrocarbon radical having from 1 to 2 carbon atoms. R^2 is an aliphatic hydrocarbon radical having from 8 to 20 carbon atoms or an aminoalkyl group of the structure $NH_2(CH_2)_n$- or an N′ -alkylaminoalkyl group of the structure R^5-NH-$(CH_2)_n$-, where R^5 is an aliphatic hydrocarbon radical having from 8 to 20 carbon atoms and n is an integer from 2 to 6, and R^3 and R^4 each represent a hydrogen atom or an alphatic hydrocarbon radical having from 1 to 20 carbon atoms.

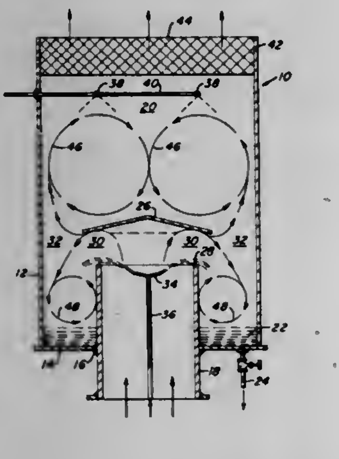
3,895,926
METHOD FOR TREATING A GAS

Bernard J. Lerner, 727 Orchard Hill Dr., Pittsburgh, Pa. 15238

Continuation-in-part of Ser. No. 356,572, May 2, 1973, abandoned. This application Apr. 9, 1974, Ser. No. 459,290

Int. Cl.² B01D *47/06;* **B05B** *7/10*

U.S. Cl. 55—84 **10 Claims**



1. A method for treating a gas with apparatus including a treating vessel, a liquid spray nozzle, and means for supplying a liquid to said nozzle, the said method comprising,

introducing a stream of untreated gas into said vessel,

forming at least one toroidal vortex of said untreated gas in said vessel, the axis of said vortex being generally transverse to the flow of said untreated gas,

introducing said liquid in droplet form into said vortex by means of said nozzle, the liquid injection rate of the liquid droplets and the liquid pressure of said nozzle respectively being sufficient to cause a trapped-spray zone of extremely high liquid holdup in said vortex, and

withdrawing said treated gas from said vessel.

3,895,927
APPARATUS FOR THE DEGASSIFICATION OF DRILLING MUDS

Gerald E. Bournham, Sr., Lafayette, La., assignor to Well Control, Inc., Houston, Tex.

Continuation of Ser. No. 119,799, March 2, 1971, abandoned, which is a division of Ser. No. 12,543, Feb. 19, 1970, Pat. No. 3,616,599. This application May 14, 1973, Ser. No. 359,625

Int. Cl.² B01D *19/00*

U.S. Cl. 55—170 **11 Claims**

1. A system for degassification of drilling mud comprising a vacuum tank defining a degassification area in the upper portion and a mud receiving area in the lower portion,

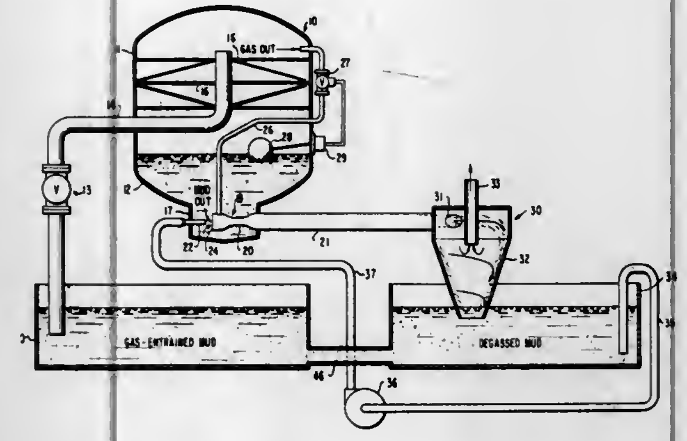
means in communication with said degassification area for drawing a vacuum on said tank to effect a separation of entrapped gas from said mud,

a mud outlet conduit in communication with said mud receiving area,

a mud inlet conduit in communication with said degassification area, and

density sensing means for controlling mud flow into said tank,

a portion of said density sensing means providing means to throttle said mud inlet conduit to vary the rate of mud flow therethrough,



a portion of said density sensing means providing means responsive to the density of drilling mud,

said means responsive to the density of drilling mud being responsive to the density of that certain mud which is in said mud inlet conduit,

said means responsive to the density of drilling mud being associated with said means to throttle the inlet conduit so as to throttle the inlet conduit to decrease the flow therethrough upon a decrease in the density of said mud in said mud inlet conduit and to allow increased flow through said mud inlet conduit upon an increase in the density of said mud in said mud inlet conduit.

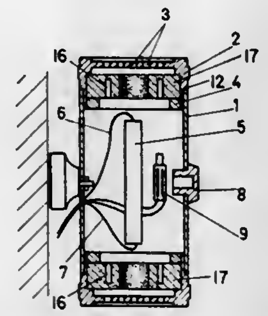
3,895,928
AIR TREATMENT DEVICE

Gonzalo Moran, Madrid, Spain, assignor to Comercial Super - Dix, S.A., Madrid, Spain

Filed Sept. 26, 1972, Ser. No. 292,308

Int. Cl.² A61L *9/02*

U.S. Cl. 21—74 R **5 Claims**



1. An air treatment device for perfuming, deodorizing and purifying air comprising, a tubular casing, grate means on each end of said casing providing communication between the interior of said casing and the atmosphere, holding means axially spaced from said grate means at each said one end of said casing, a cake of solid carrier material carrying thereon a heat activated gasifiable, air-treatment material mounted on each said holding means adjacent its respective grate means, an electrically activated heating means in said casing between said two cakes of carrier material to heat said cakes of carrier material and liberate the treatment material therein which passes through the respective grate means to the area adjacent

the casing, and means for connecting said heating means to an electrical power source.

3,895,929
DEVICE FOR COLLECTING DRILL DUST

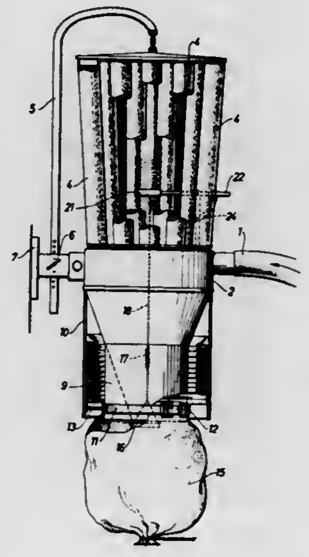
Goran Jysky; Ilmar Mardla, and Bjorn Eriksson, all of Nykoping, Sweden, assignors to Ilmeg AB, Nykoping, Sweden

Filed July 17, 1972, Ser. No. 272,415

Claims priority, application Sweden, July 19, 1971, 9269/71

Int. Cl. B01d *50/00*

U.S. Cl. 55—334 **3 Claims**



1. A device for collecting drill dust, especially in rock drilling, comprising:

means for conveying dust in an air stream;

means for separating the dust from said air stream, said separating means having a downwardly opening dust outlet;

means for storing a stock of flexible tube material in annular folded form around the lower portion of said separating means and the dust outlet thereof, said storing means being equipped with means for dispensing said tube material from storage intermittently in desired lengths to allow formation of successive bags therefrom in position for filling with dust through said outlet;

means surrounding said tube material stored in said storing means for causing a bag formed as aforesaid to be secured tightly around the downwardly opening outlet of said separating means;

a continuous length of flexible tube material sufficient to form a plurality of bags folded in an annular pack and held in said storage means, and

means for temporarily closing said dust outlet in the interval between the filling of one bag and completion of the formation and securing of a succeeding bag without interrupting the operation of said separating means or that of said conveying means.

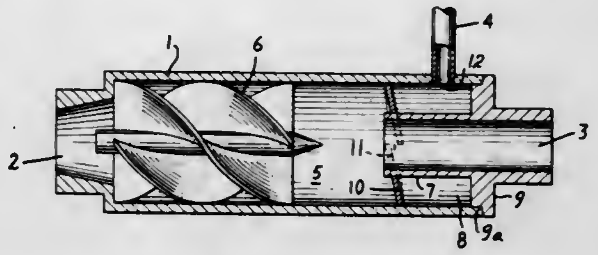
3,895,930
VORTEX SEPARATOR

Joseph Campolong, St. Petersburg, Fla., assignor to Pall Corporation, Glen Cove, N.Y.

Continuation-in-part of Ser. No. 306,119, Nov. 13, 1972, abandoned, which is a continuation of Ser. No. 31,471, April 24, 1970, abandoned. This application May 15, 1973, Ser. No. 360,516

Int. Cl. B01d *45/16*

U.S. Cl. 55—394 **10 Claims**



1. A vortex particle separator with provision to prevent abrasion by separated particles retained therein, and/or exhausted therefrom by scavenge flow, comprising a tubular body having an inlet at one end, an outlet at the opposite end and a central passage therebetween; a deflector coaxially mounted in the passage adjacent the inlet, having a plurality of helical vanes abutting the wall of the passage, and positioned at an angle to the line of flow from the inlet to the outlet so as to create a vortex stream in the influent air, which concentrates the contaminant particles in the whirling stream at the periphery of the passage, thereby leaving the air at the center of the passage relatively clean; a generally tubular outlet member disposed within the central passage at the outlet end of the tubular body, for delivery of clean air from the central passage of the tubular body; said tubular outlet member defining an annular contaminant chamber between the exterior of the outlet member and the interior wall of the central passage of the tubular body receiving separated contaminant particles; an outlet port in a wall of the annular contaminant chamber for scavenge flow; a wall extending between the tubular outlet member and the tubular body at the outlet end of the annular chamber closing off the annular chamber at that end; and a baffle having at least one opening defining an inlet into the annular chamber and disposed across the entrance to the annular chamber so that the annular chamber is closed off at that end, and all flow of air and separated particles that enter the annular chamber must pass through the opening, the baffle being effective at least when scavenge flow ceases, and optionally; also while scavenge flow continues, to deflect the whirling air stream in a manner to inhibit the whirling movement of the particles retained in the chamber, and thus prevent abrasion of the wall of the tubular body there, substantially without interfering with the entry of particles into the chamber or with normal scavenge flow, the opening having a larger available open area than the outlet port from the annular chamber, so that at least some particles small enough to enter the annular chamber via the opening cannot escape from the annular chamber.

3,895,931
CONTINUOUS MOTION GLASS MOLDING MACHINE WITH GOB DELIVERY MEANS

Joseph R. Hamilton, Anderson, Ind., assignor to Lynch Corporation, Anderson, Ind.

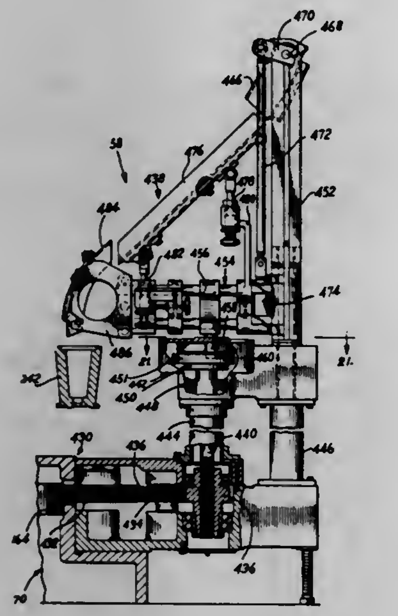
Filed Oct. 5, 1972, Ser. No. 295,164

Int. Cl. C03b *5/30*

U.S. Cl. 65—207 **20 Claims**

1. In a continuous motion glass molding machine: upwardly opening mold means; means for delivering a glass gob into said mold means; means for pivoting said delivering means about an upright axis; said delivering means having a delivery

end for the gob at a fixed horizontal distance from the upright axis; drive means for pivoting said delivering means with said delivery end through an arcuate path of travel of fixed length within a first horizontal plane; a base; carriage means on said base for carrying said mold means; mold drive means for continuously moving said carriage means and mold means thereon in synchronization with said delivery end of said delivery means; fixed cam means on said base; means interconnecting said cam means and said carriage means for moving said mold means into the fixed length path of said delivery end when aligned below said path of travel of said delivery end; and means to supply a glass gob to said delivery means including said delivery end whereby said mold means is moving in the same arcuate path of travel in the same direction as said delivery end during the same period.



3,895,932

METHOD OF INHIBITING ALGAE EMPLOYING NITROGEN DERIVATIVES OF HALOGENATED BIPHENYLS

John J. Merianos, Jersey City, N.J.; Edward Griffin Shay, Suffern, N.Y.; Phillip Adams, Murray Hill, and Alfonso N. Petrocci, Glen Rock, both of N.J., assignors to Millmaster Onyx Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 38,513, May 18, 1970, Pat. No. 3,733,421, which is a continuation-in-part of Ser. No. 883,636, Dec. 9, 1969, Pat. No. 3,663,620. This application Apr. 9, 1973, Ser. No. 349,630

Int. Cl.^{2} A01N *9/20*

U.S. Cl. 71—67 **3 Claims**

1. A method of inhibiting algae which comprises applying to the algae an algaecidally effective amount of at least one disubstituted polyhalobiphenyl selected from the group consisting of:

Bis-(Ethylenediamino) Trichlorobiphenyl
Bis-(Propylenediamino) Trichlorobiphenyl
Bis-(3-Dimethylaminopropylamino) Trichlorobiphenyl
Bis-(Triethylenetetramino) Trichlorobiphenyl
Bis-(isophoronediamino) Trichlorobiphenyl
Bis-(Hexamethylenediamino) Trichlorobiphenyl
Bis-(Diethylenetriamino) Octachlorobiphenyl
Bis-(isophoronediamino) Tetrachlorobiphenyl
Bis-(isophoromediamino) Octachlorobiphenyl
Bis-(Ethylenediamino) Tetrachlorobiphenyl

3,895,933

PLANT GROWTH REGULANTS COMPRISING 2-HYDROXYETHYL-1-PYRIDINIUM-(1) SALTS

Gerhard Jäger, Wuppertal, and Klaus Lürssen, Grosskoenigsdorf, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

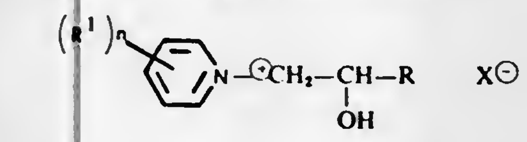
Filed June 14, 1973, Ser. No. 370,067

Claims priority, application Germany, June 21, 1972, 2230179

Int. Cl. A01n *9/22*

U.S. Cl. 71—94 **7 Claims**

1. Method of influencing the growth of plants which method comprises applying thereto a regulatingly effective amount of a composition containing as an active ingredient a 2-hydroxyethyl-1-pyridinium-(1) salt of the formula



wherein

R is phenyl; substituted phenyl wherein the substituent is at least one of halogen, alkyl of up to 4 carbon atoms, alkoxy of up to 4 carbon atoms, nitro and hydroxyl; furyl; or thienyl;

n is 1, 2 or 3;

R^1 is hydrogen, alkyl of up to 6 carbon atoms or halogen; the R^1 substituents being selected independently when *n* is 2 or 3; and

X^- is a halide or perchlorate ion;

3,895,934

DINITROPHENYLENEDIAMINES AS HERBICIDES

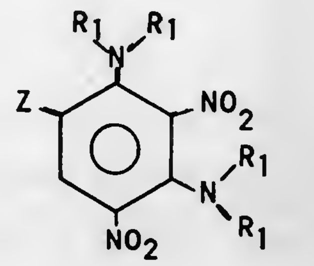
Jerome Linder, Westfield, N.J., and Edward D. Weil, Hastings-on-Hudson, N.Y., assignors to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 577,154, Sept. 6, 1966, abandoned. This application Feb. 27, 1970, Ser. No. 15,301

Int. Cl. A01n *9/20*

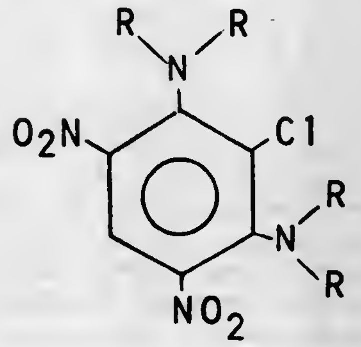
U.S. Cl. 71—121 **4 Claims**

1. A method for controlling weeds comprising applying, to the locus to be controlled, a herbicidal amount of a compound of the formula



in which Z is lower alkyl, each R_1 is selected from the group consisting of hydrogen and lower alkyl.

4. A method for controlling weeds comprising applying, to the locus to be controlled, a herbicidal amount of a compound of the formula



in which each R is selected from the group consisting of hydrogen and lower alkyl, at least one of said R's being a lower alkyl.

3,895,935

PROCESS FOR ELECTROSLAG REFINING OF URANIUM AND URANIUM ALLOYS

Philip S. Lewis, Jr., Oak Ridge; William A. Agee, Jacksboro; Jonathan S. Bullock, IV, and James B. Condon, both of Oak Ridge, all of Tenn., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Dec. 16, 1974, Ser. No. 533,111

Int. Cl.^{2} C22B *4/00*

U.S. Cl. 75—10 R **5 Claims**

1. An improvement in the method of salvaging and refining scrap oxidized uranium material by electroslag melting comprising the steps of forming the scrap uranium material into an elongated electrode, electrically melting uranium material in a crucible within a closed furnace having an atmosphere of inert gas maintained at a subatmospheric pressure for forming a pool of molten uranium material, introducing a granular slag of a fluoride material into said furnace atop said pool of molten uranium material, melting the slag to form a molten body of slag above said pool, electrically melting said electrode within said molten body of slag to form droplets of molten uranium material which pass through said molten body of slag into said pool for forming an ingot of said uranium material, and thereafter separating said ingot from said slag; said improvement being in the step of reducing the oxygen content in the uranium material forming said ingot to a level of less than 100 ppm by incorporating calcium metal in said slag in an amount effective to reduce the oxides in said electrode to said level in said ingot.

3,895,936

PROCESS FOR REDUCING IRON OXIDES IN ROTARY KILN

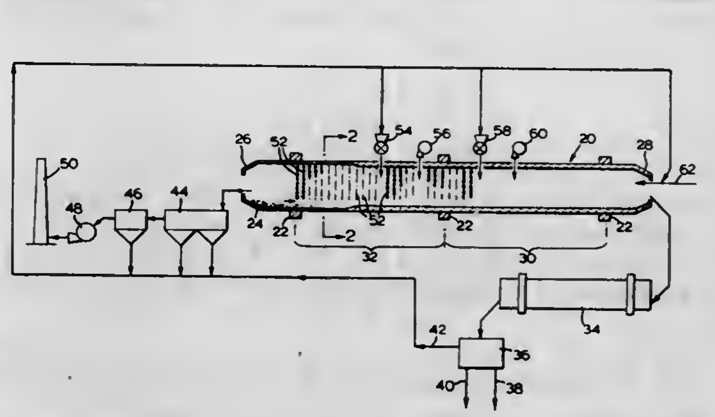
Hans D. Toepell, 4 Erinbrook Ct., Islington, Ontario, Canada

Filed Oct. 18, 1973, Ser. No. 407,592

Claims priority, application United Kingdom, Oct. 20, 1972, 48381/72

Int. Cl.^{2} C21B *13/08*

U.S. Cl. 75—29 **3 Claims**



1. In a process for reducing iron oxide bearing materials of a type comprising the steps: mixing said materials with reducing agent having volatiles to prepare a kiln charge; entering the kiln charge into a charge end of a kiln; causing combustion to reduce the iron oxide; and allowing the products of combustion to exit through the charge end of the kiln, the improvement in which the kiln is provided with a heat transfer zone and a reduction zone, and in which oxygen is fed into the kiln adjacent an interface between the reduction zone and the heat transfer zone to support the last of the combustion in the reduction zone, the oxygen supply being adjustably controlled to effectively confine combustion to the reduction zone so that the products of combustion passing through the heat transfer zone have substantially no oxygen thereby preventing combustion in the heat transfer zone, and in which the heat transfer zone is provided with heat transfer elements to enhance heat transfer from the products of combustion to the charge for driving off volatiles and moisture from the charge before reduction.

3,895,937

DYNAMIC VACUUM TREATMENT TO PRODUCE ALUMINUM ALLOYS

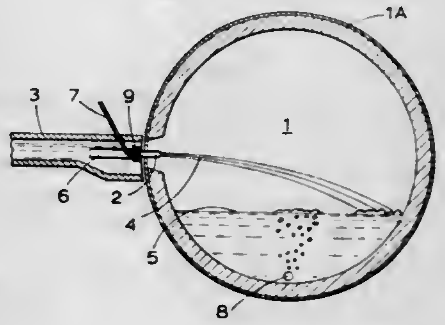
Ole Georg Gjosteen; Trygve Olavson Terum, and Aksel Ola Aarflot, all of Sunndalsora, Norway, assignors to A/S Ardal OG Sunndal Verk, Oslo, Norway

Continuation-in-part of Ser. No. 269,086, July 5, 1972, abandoned. This application Aug. 12, 1974, Ser. No. 496,859

Claims priority, application Norway, May 5, 1972, 1607/72; July 16, 1971, 2730/71

Int. Cl. C22c *1/02*

U.S. Cl. 75—68 R **8 Claims**



1. A method for producing aluminum alloys by means of a melting and mixing process, said method comprising:

introducing desired alloying elements into a vacuum furnace;

substantially reducing the pressure in said vacuum furnace, thus creating a vacuum therein;

thereafter introducing by suction into said vacuum furnace aluminum melt, having undesirable impurities therein, in the form of a free-falling metal jet and passing said free-falling metal jet without obstruction through the interior of said vacuum furnace to form in said vacuum furnace a melt bath formed by said aluminum melt and said alloying elements, reducing the content of said impurities in said free-falling metal jet, and thereafter directing said free-falling metal jet against said melt bath, thereby dissolving and mixing said alloying elements into said aluminum melt.

3,895,938
PURIFICATION OF MERCURY

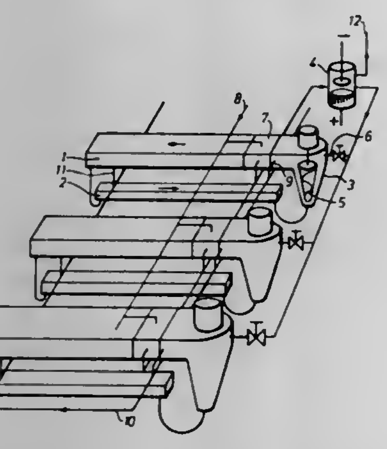
Helmut Klotz, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 14, 1974, Ser. No. 433,324

Claims priority, application Germany, Jan. 27, 1973, 2304063

Int. Cl. C22b *43/00*

U.S. Cl. 75—101 R **6 Claims**



1. In the purification of mercury by contacting it with an aqueous medium to extract the impurities into the aqueous medium the improvement which comprises employing as said aqueous medium a solution of sulfuric acid having mercury (I) sulfate dissolved or suspended therein.

3,895,939
WELDABLE, AGE HARDENABLE, AUSTENITIC STAINLESS STEEL

John A. Brooks, Livermore, Calif., and Robert W. Krenzer, Arvada, Colo., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Oct. 31, 1973, Ser. No. 411,554

Int. Cl.² C22C *38/06, 38/44, 38/46, 38/50*

U.S. Cl. 75—124 **6 Claims**

1. A stainless steel for use in hydrogen environment with good retention of properties having high weldability and minimum susceptibility to hot cracking during welding consisting of from about 0 to about 0.0015 weight percent boron, from about 0 to about 0.25 weight percent silicon, from about 0 to about 0.25 weight percent manganese, from about 0.01 to about 0.05 weight percent carbon, and the remainder consisting of from about 24.0 to about 34.0 weight percent nickel, from about 13.5 to about 16.0 weight percent chromium, from about 1.9 to about 2.3 weight percent titanium, from about 1.0 to about 1.5 weight percent molybdenum, from about 0 to about 0.01 weight percent phosphorous, from about 0 to about 0.010 weight percent sulfur, from about 0.1 to about 0.35 weight percent aluminum, from about 0.10 to about 0.50 weight percent vanadium, and the balance iron.

3,895,940
CORROSION RESISTANT HIGH CHROMIUM FERRITIC STAINLESS STEEL

Clarence George Bieber, West Milford, N.J., assignor to The International Nickel Company, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 841,121, July 11, 1969, abandoned. This application Dec. 23, 1971, Ser. No. 211,736

Int. Cl. C22c *39/20*

U.S. Cl. 75—128 W **25 Claims**

1. A stainless steel having a substantially ferritic microstructure and characterized by good resistance to corrosive environments such as stagnant seawater while concomitantly displaying good notch toughness, said steel consisting essentially of from 30 to about 36% chromium, from 0.5 up to about 5% molybdenum, up to 3% silicon, with the provisos that the "CMS" indicator represented by the sum of the chromium plus three times the amount of molybdenum plus three times the percentage of silicon is not less than 34%, nor above about 48% where good workability is desired, about 2 to about 8% nickel, up to less than 2% titanium, up to about 2% vanadium and up to about 2% columbium, with at least one element from the group consisting of titanium, vanadium and columbium being present in a small but effective amount to enhance the corrosion resistance in respect of steels produced by air melting and in which the "CMS" indicator is not above about 41%, the sum total of titanium, vanadium and columbium not exceeding about 4%, up to 0.1% carbon, up to 2% aluminum, up to about 2% manganese, up to about 10% cobalt, up to about 4% tungsten, and the balance essentially iron.

3,895,941
ALUMINUM SILICON ALLOYS

Gustaf Frederic Bolling, Dearborn, Mich., and Jean Cisse, St. Germain en Laye, France, assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 1, 1973, Ser. No. 402,527

Int. Cl.² C22C *21/04*

U.S. Cl. 75—148 **8 Claims**

7. A hypereutectic aluminum-silicon alloy composition consisting essentially of 16–18% silicon, Al_2O_3 in an amount such that the sum of silicon plus Al_2O_3 is generally about 20% by volume of the alloy, sodium being present in an effective amount less than 1.5% to refine the eutectic silicon, remainder aluminum, said composition being characterized by both the eutectic silicon and primary silicon being uniformly distributed and finely divided.

3,895,942
STRONG, HIGH PURITY NICKEL

Jeremy Painter Morse, Chesapeake, Ohio, assignor to The International Nickel Company, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 157,004, June 25, 1971, abandoned. This application Mar. 16, 1973, Ser. No. 342,034

Int. Cl. B22f *1/00*

U.S. Cl. 75—200 **14 Claims**

1. A method of producing a dispersion-strengthened nickel alloy powder metallurgy product comprising:

- a. providing a blended powder charge consisting essentially of, by weight, up to about 0.2 percent carbon, about 0.07 to about 0.1 percent magnesium; a metal oxide as a source of oxygen, said metal oxide being present in sufficient amount to oxidize at least 10 percent of the magnesium to magnesia, said metal oxide being stable at the temperature at which the magnesium vaporizes, and said metal oxide having a free energy of formation less than that of the magnesia; and the balance fine nickel powder; b. sintering the powder mixture in a reducing atmosphere at a temperature at least in excess of the boiling point of magnesium in said charge to convert metal in said metal oxide to the elemental state and magnesium to magnesia and to form a sintered billet; and
- c. thereafter hot working the sintered billet to provide a dispersion-strengthened product.

3,895,943
METHOD FOR THE PREPARATION OF CDS OR CDSE POWDER FOR ELECTROPHOTOGRAPHY

Hiroshi Hanada, Yokohama, and Nobuo Kitajima, Tokyo, both of Japan, assignors to Canon Camera Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 164,464, July 20, 1971, abandoned, which is a division of Ser. No. 734,637, June 5, 1968, abandoned. This application July 30, 1973, Ser. No. 383,610

Int. Cl.² G03G *5/04*

U.S. Cl. 96—1.5 **2 Claims**

1. A process for preparing CdS or CdSe powder useful as an electrophotographic material in an electrophotographic process which method consists of: (1) activating the Cds or CdSe powder by adding thereto silver or copper as an activator as a silver or copper compound and firing the resulting mixture in the presence of hydrochloric acid and at least one member selected from the group consisting of cadmium chloride and zinc oxide; (2) washing the powder produced by step (1) with water; (3) drying the water-washed powder; and (4) firing the dried powder in an atmosphere of sulfur vapor.

3,895,944
ELECTROPHOTOGRAPHIC RECORDING MATERIAL HAVING A LAYERED STRUCTURE OF CHARGE GENERATING AND CHARGE TRANSPORT LAYERS

Wolfgang Wiedemann, Geisenheim-Johannisberg, and Horst Zimmer, Niedernhausen, Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Germany

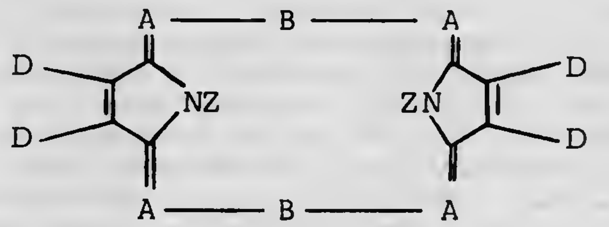
Filed Apr. 25, 1973, Ser. No. 354,202

Claims priority, application Germany, Aug. 14, 1972, 2239924

Int. Cl. G03g *5/04*

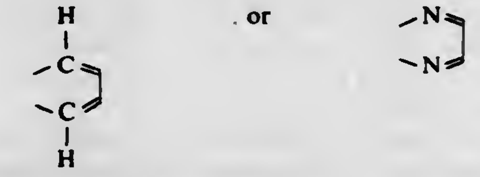
U.S. Cl. 96—1.5 **14 Claims**

1. Electrophotographic recording material comprising an electroconductive support and a photoconductive double layer of organic materials thereon, said double layer being composed of a homogeneous, opaque, charge carrier producing dyestuff layer of a dyestuff corresponding to the general formula



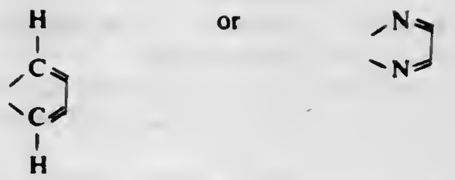
wherein

- Z is hydrogen or two groups Z together stand for a bivalent metal atom,
- A is nitrogen or CR, with R being hydrogen, alkyl with 1 to 4 carbon atoms, phenyl, which may be substituted by alkyl with 1 to 4 carbon atoms or halogen, and
- B is an m-phenylene, 2,6-pyridylene, 1,3-isoindolylene or pyrrolylene group, and
- D is hydrogen, or two groups D together stand for a group

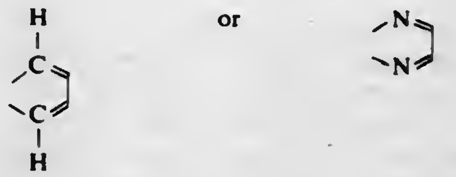


with the proviso that

1. if B is m-phenylene or 2,6-pyridylene, A is nitrogen and two groups D together stand for a group



2. if B is 1,3-isoindolylene, A is nitrogen and two groups D together stand for a group



and

3. if B is pyrrolylene, A is CR and D is hydrogen, and a transparent top layer of insulating materials containing at least one charge transporting compound, in which the transparent top layer is composed of a mixture of a binder with a charge-transporting, monomeric heterocyclic compound having an extended π-electron system which is substituted by at least one dialkylamino group or by two alkoxy groups, or with a condensation product of 3-bromopyrene and formaldehyde.

3,895,945
PROCESS FOR PREPARATION OF A DYESTUFF SENSITIZED PHOTOCONDUCTIVE COMPOSITION

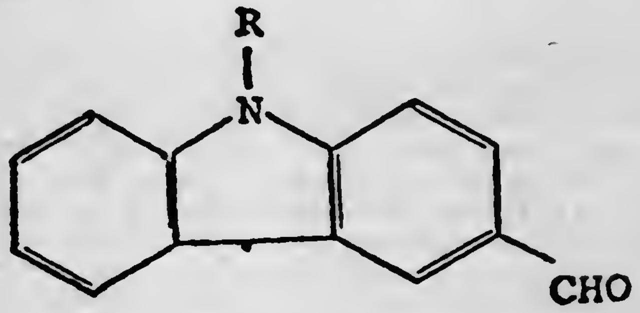
Syu Watarai, and Yoshio Seoka, both of Tokyo, Japan, assignors to Rank Xerox, Ltd., London, England

Filed Nov. 14, 1973, Ser. No. 415,594

Int. Cl. G03g *5/06;* **G03c** *1/72*

U.S. Cl. 96—1.6 **11 Claims**

1. A process for preparation of a dyestuff sensitized photoconductive composition from an organic polymeric photoconductive material, polyphosphoric acid and a compound of the formula



wherein R is alkyl of 1 to 5 carbon atoms, said process comprising:

- a. providing a mixture containing (i) organic polymeric photoconductive material (ii) about 2 to about 50 parts by weight of a compound of the above formula per 100 parts organic polymeric photoconductive material, and (iii) a quantity of polyphosphoric acid equivalent to about 5 to about 50 times the weight of organic polymeric photoconductive material in the mixture; and
- b. heating said mixture at a temperature in the range of from about 20° to about 120°C for an interval sufficient to effect condensation polymerization of the compound of the above formula to the extent desired.

3,895,946

PROCESS FOR PRODUCING A LITHOGRAPHIC PRINTING PLATE

Kikuo Kubotera; Eiichi Mizuki, both of Saitama, and Tadahiro Fujiwara, Kanagawa, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 18, 1972, Ser. No. 298,695

Claims priority, application Japan, Oct. 18, 1971, 46-82345; Oct. 18, 1971, 46-82346

Int. Cl. G03f *7/02*

U.S. Cl. 96—33 **5 Claims**

1. A process for producing a printing plate material which comprises the steps of successively forming a hydrophilic layer, an intermediate layer, and a hardened photosensitive silver halide emulsion layer, said intermediate layer between said hydrophilic layer and said emulsion layer being etching-bleachable corresponding to a silver image formed in said emulsion layer and said intermediate layer enabling easy removal of said emulsion layer, on a support having a hydrophobic surface to obtain a photosensitive printing plate material, the hydrophilic layer being etching-bleachable corresponding to a silver image formed in the emulsion layer, exposing the emulsion layer through a negative copy, developing to form a silver image in said emulsion layer, removing portions of said hydrophilic layer corresponding to said silver image in the emulsion layer by an etching-bleaching treatment to thereby expose the corresponding portions of said support material, and removing the entire emulsion layer and intermediate layer in the non-image areas to thereby expose the hydrophilic layer.

3,895,947

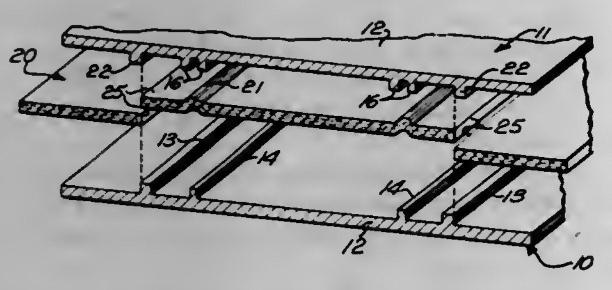
METHOD OF MAKING DIE PLATES

Albert J. Sarka, Fairview Park, Ohio, assignor to Harris-Intertype Corporation, Cleveland, Ohio

Continuation of Ser. No. 159,961, July 6, 1971, abandoned. This application Jan. 9, 1974, Ser. No. 432,035

Int. Cl. G03c *5/00*

U.S. Cl. 96—36 **30 Claims**



1. In a method of making die plates having a planned layout of lands thereon which project from a main body of the die plates and which cut and/or crease material, the steps of: (a) providing a sheet having a light transmitting base and an opaque coating thereon and making a master negative from said sheet by forming light transmitting lines in the coating to produce line images thereon and to define between said lines at least two areas on said opaque coating; (b) providing a sheet material comprising a light transmitting base sheet having a removable light-sensitive opaque coating thereon, exposing said sheet to light through said master negative to form line images defining at least two areas in said opaque coating corresponding to said line images defining said at least two areas in said master negative opaque coating; (c) removing coating from at least one but less than all of the areas defined by said lines in said first sheet to render at least one area thereof light transmitting and thereby to produce on said sheet an image of the planned layout of the lands on one of said die plates; (d) exposing a light hardenable resist coating on a plate in accordance with said image of the planned layout on said sheet to harden an area of the resist on said plate, and etching said plate in the unhardened areas thereof to produce a first of said die plates; (e) repeating steps (b), (c) and (d) with at least one other sheet material and at least one other plate to produce at least one other of said die plates.

3,895,948

SILVER HALIDE LIGHT-SENSITIVE MATERIAL CONTAINING A HETEROCYCLIC THIONE AND A POLYALKYLENE OXIDE

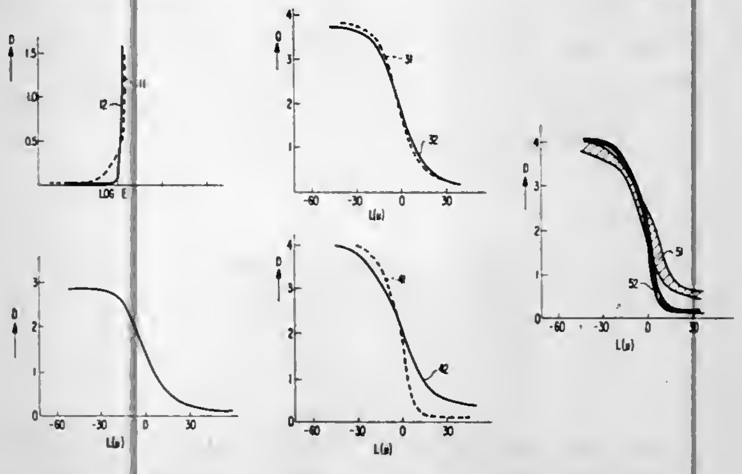
Keisuke Shiba; Seiiti Kubodera; Reiichi Ohi; Tadao Shishido; Nobuo Yamamoto, and Takeo Sakai, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami Ashigara, Japan

Filed Dec. 29, 1972, Ser. No. 319,815

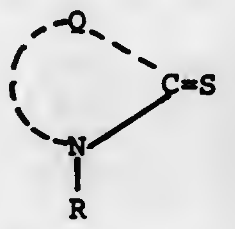
Claims priority, application Japan, Dec. 28, 1971, 47-3037

Int. Cl. G03c *1/06, 1/28*

U.S. Cl. 96—76 R **10 Claims**



1. A silver halide light-sensitive material which comprises in a silver halide emulsion layer or a layer adjacent thereto at least one heterocyclic thioketone compound which does not form a mercapto group through tautomerism, said compound being represented by the following general formula (I):



(I)

wherein Q represents the group of atoms necessary to form a heterocyclic ring selected from the group consisting of benzothiazoline-2-thione ring, benzoselenazolin-2-thione ring, benzoxazolin-2-thione ring, imidazolin-2-thione ring, benzimidazolin-2-thione ring, selenazolidin-2-thione ring, 4-selenazolin-2-thione ring, 1,3,4-thiodiazolin-2-thione ring, 1,3,4-selenadiazoline-2-thione ring, 1,2-dihydropyridin-2-thione ring, 1,2-dihydroquinolin-2-thione ring, 4,5-tetramethylenethiazolin-2-thione ring, 4,5-trimethylenethiazoline-2-thione ring, naphthothiazolin-2-thione ring, and thiazolidin-2-thione ring, and R represents an unsubstituted alkyl group, an aralkyl group an aryl group, a 2-pyridyl group or a dipyridyl group and at least 1 polyalkylene oxide derivative having a molecular weight ranging from 500 to 12,000 selected from the group consisting of

- a. block copolymers of alkylene oxide,
- b. polyalkyleneglycols,
- c. addition polymerization products between alkylene oxides and a compound selected from the group consisting of an aliphatic alcohol, an aromatic alcohol, glycols, fatty acids, organic amines, and a dehydrated compound of hexitol derivatives, and
- d. condensates of a polyalkylene oxide with said compound, the combination of said thioketone compound and said polyalkylene oxide derivative being incorporated in said layer in concentrations which provide a high edge gradient with comparatively short development time and/or dots having good toe-gradation when said material is developed.

3,895,949

PHOTOSENSITIVE ELEMENT COMPRISING PHOTOPOLYMERIZABLE LAYER AND PROTECTIVE LAYER

Kiyoshi Akamatsu, Tokyo; Yuzo Yokota, Doimachi; Hiroshi Sagami, Shiki-shi, and Isao Imai, Niiza-shi, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka City, Japan

Filed July 17, 1973, Ser. No. 380,018

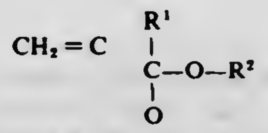
Claims priority, application Japan, July 24, 1972, 47-73976

Int. Cl. G03c *1/68, 1/70*

U.S. Cl. 96—86 P **9 Claims**

1. A photosensitive element comprising, in order,

1. a support,
2. a layer of a photopolymerizable composition comprising
   - a. about 100 parts by weight of an addition polymerizable polymeric compound obtained by esterification reaction of a copolymer having pendent carboxyl groups with about 0.03 to 1.0 equivalent, based upon the carboxyl groups of said copolymer, of an ethylenically unsaturated compound having one oxirane ring,
   - b. about 5 to 70 parts by weight of at least one ethylenically unsaturated compound and
   - c. about 0.0001 to 10 parts by weight of a photopolymerization initiator, said copolymer being obtained by copolymerizing
     - i. about 10 to 95 percent by weight of at least one member selected from the group consisting of styrene and the methyl-substituted styrene derivatives,
     - ii. about 5 to 70 percent by weight of at least one ethylenically unsaturated mono- or dicarboxylic acid, its anhydride or its monoester with an alkanol of 1 to 4 carbon atoms,
     - iii. up to about 30 percent by weight of at least one member selected from the group consisting of acrylonitrile and methacrylonitrile,
     - iv. up to about 85 percent by weight of at least one compound of the formula



$$CH_2=C \quad \begin{array}{c} R^1 \\ | \\ C-O-R^2 \\ | \\ O \end{array}$$

wherein R^1 represents a hydrogen atom or methyl group; and R^2 represents an alkyl group having 1 to 12 carbon atoms,

     - v. up to about 50 percent by weight, based upon the total weight of said compounds (iii) and (iv.), of at least one vinyl ester of a saturated aliphatic monocarboxylic acid having 2 to 10 carbon atoms, and
3. a protective layer having a thickness of about 0.5 to 20 microns, said protective layer being transparent to actinic radiation, substantially impermeable to oxygen, insoluble in water, non-strippable as an unsupported film and composed of a copolymer having a degree of polymerization of about 100 to 1,000 and being obtained by reaction between
   - a. about 10 to 70 percent by weight of an unsaturated carboxylic acid selected from the group consisting of acrylic acid, methacrylic acid and itaconic acid and
   - b. at least one ethylenically unsaturated compound comprising (i) up to about 40 percent by weight of at least one ethylenically unsaturated compound, as a hard component, selected from the group consisting of styrene, alpha-methylstyrene, methyl methacrylate, acrylonitrile and methacrylonitrile and (ii) about 50 to 30 percent by weight of at least one ethylenically unsaturated compound, as a soft component, selected from the group consisting of methyl acrylate, ethyl acrylate, n-propyl acrylate, n-butyl acrylate, 2-ethylhexyl acrylate and n-octyl methacrylate,

said protective layer being applied from an aqueous solution obtained by neutralizing said copolymer with about 0.4 to 1.0 mole, per mole of the carboxyl groups of said copolymer, of a member selected from the group consisting of diethylamine, triethylamine, isopropylamine, ethanolamine, diethanolamine, morpholine and ammonia.

3,895,950

PHOTOGRAPHIC MATERIAL WITH IMPROVED ANTISTATIC PROPERTIES

Julius Geiger, Odenthal; Günter Meinhardt, Leverkusen, and Werner Wagenknecht, Cologne, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen-Bayerwerk, Germany

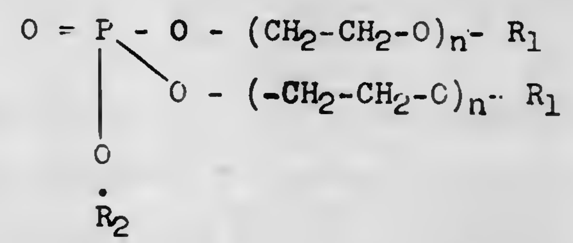
Continuation of Ser. No. 252,026, May 10, 1972, abandoned. This application July 16, 1974, Ser. No. 489,069

Claims priority, application Germany, May 12, 1971, 2123455

Int. Cl. G03c *1/78*

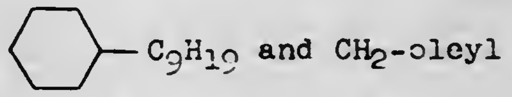
U.S. Cl. 96—87 A **3 Claims**

1. A light sensitive photographic material having improved antistatic properties containing at least one silver halide gelatin emulsion layer and a layer containing a binder and silica obtained by pyrogenic method and having a BET value of between 50 and 110 m^2/g and in said silica-containing layer an orthophosphoric acid ester of the following formula:



in which

R_1 × an aliphatic group with up to 18 carbon atoms,



$R_2 = H$ or $(CH_2.CH_2.0)_n - R_1$ and

$n = 4$– 15, 15,

and in which layer the total weight of phosphoric acid ester and silica is 1 to 33.5% of the weight of layer binder of the photographic layer and the proportion of phosphoric acid ester to silica is between 1:10 and 10:1.

3,895,951

SILVER HALIDE EMULSION SUPERSENSITIZED WITH A MEROCYANINE DYE AND A TERTIARY PHOSPHINE SULFIDE

Oskar Riester, Leverkusen, and Hans Ohlschlager, Cologne, both of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen-Bayerwerk, Germany

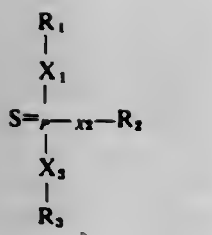
Filed Sept. 24, 1973, Ser. No. 400,238

Claims priority, application Germany, Sept. 29, 1972, 2247893

Int. Cl. G03c *1/40, 1/08, 1/28, 1/34*

U.S. Cl. 96—100 **3 Claims**

1. A light sensitive photographic material comprising at least one silver halide emulsion layer containing a merocyanine spectral sensitizing agent and a sensitizing and stabilizing tertiary phosphine sulfide having the general formula:



$$\begin{array}{c} R_1\\ |\\ X_1\\ |\\ S{=}P{-}X_2{-}R_2\\ |\\ X_3\\ |\\ R_3\end{array}$$

wherein

- R_1 and R_2 may be the same or different and represent a saturated aliphatic hydrocarbon group; a cycloalkyl group; an aralkyl group an aryl group; a heterocyclic group comprising a 5-, 6- or 7-membered heterocyclic ring;
- and R_1 and R_2 together with the phosphorus atom may form a phospholine ring;
- R_3 represents a saturated or unsaturated aliphatic hydrocarbon group; a cycloalkyl group; an aralkyl group; an aryl group; a heterocyclic group comprising a 5-, 6- or 7-membered heterocyclic ring; a hydroxyl group or a thiol group;
- X_1 and X_2 and X_3 represent a chemical bond or linking member containing hetero-atoms and being selected from the group consisting of —O—, —S—, —Se—, $—NR_4—$(-wherein R_4 stands for hydrogen, alkyl, aralkyl or cycloalkyl), —NH—N=, $—NH—NH—SO_2—$, $—NH—SO_2—$, —NH—CO—, —NH—CS—, —NH—CS—, —NH—CS—NH— and —NH—NH—CS—NH—;
- X_1, X_2 and X_3 may be the same or different but do not simultaneously all three represent —O—, said phosphine sulfides being present in an effective amount to increase and stabilize the spectral sensitization.

3,895,952

PHOTOTROPIC COMPOUNDS AS ACID CATALYST FOR EPOXY MATERIALS

Sheldon I. Schlesinger, Hightstown, N.J., assignor to American Can Company, Greenwich, Conn.

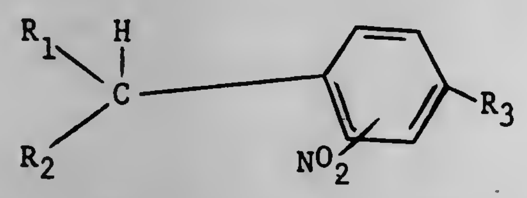
Filed Feb. 9, 1973, Ser. No. 331,179

Int. Cl. G03c *1/68;* **C01j** *1/10, 1/12*

U.S. Cl. 96—115 R **14 Claims**

1. A photopolymerizable composition comprising:

- a monomeric or prepolymeric epoxide material, polymerizable to higher molecular weights by cationic polymerization, selected from the group consisting of glycidyl ethers of bisphenol A, epoxy-cycloalkanes, epoxy-cycloalkenes, epoxy-alkanes, glycidyl alkyl ethers, epoxy-novolacs and allyl glycidyl ether-glycidyl methacrylate copolymer
- in admixture with a phototropic aromatic compound containing at least one nitro radical in a position ortho to an alkyl substituent selected from compounds having the formula:



wherein R_1 and R_2 are selected from the group consisting of hydrogen, alkyl, aryl, carbalkoxy, pyridyl, carbazolyl, N-oxidopyridyl nitroalkyl, nitroaryl, dinitrophenyl, alkaryl, aralkyl, haloalkyl and haloaryl radicals and R_3 is selected from the group consisting of hydrogen, alkyl, aryl, nitroalkyl, nitroaryl, alkaryl, aralkyl, haloalkyl, haloaryl radicals and electron-withdrawing groups selected from $—NO_2$, —CN, —COOR, —COR, $—NR_3$, —Br, —Cl, —F, —I, —RCOX, $—RX_3$, —NO, RCO—, and $R_2NCO—$ wherein X is halogen and R is alkyl; said phototropic compound being reversibly converted upon exposure to actinic or electron beam radiation to provide an acid form of said compound effective to initiate cationic polymerization of said epoxide material.

3,895,953

ADMIXTURES FOR REDUCING SLUMP LOSS IN HYDRAULIC CEMENT CONCRETES

Povindar K. Mehta, El Cerrito, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed Jan. 11, 1974, Ser. No. 432,514

Int. Cl. C04l *7/03*

U.S. Cl. 106—88 **7 Claims**

1. A composition for reducing early slump loss in hydraulic cement concretes comprising a mixture of an hydraulic cement, sand, gravel, water and a styrene-butadiene latex present, on a solids basis, in an amount of from about 0.1 to about 1.5% by weight of the cement.

3,895,954

EPOXY RESIN PHOTORESIST WITH IODOFORM AND BISMUTH TRIPHENYL

Jerome Roteman, Solon, Ohio, assignor to American Can Company, Greenwich, Conn.

Filed June 11, 1973, Ser. No. 369,086

Int. Cl. G03c *1/68, 1/04;* **C01j** *1/10;* **D01j** *1/12*

U.S. Cl. 96—115 R **8 Claims**

1. A polymerizable composition comprising a polymerizable material consisting essentially of:

- a monomeric or prepolymeric epoxide material or mixture thereof, said epoxide material being polymerizable to higher molecular weights through the action of a cationic catalyst;
- a radiation-sensitive catalyst precursor which decomposes upon exposure to actinic or electron-beam radiation to provide an active cationic catalyst effective to initiate cationic polymerization of said epoxide material, said precursor being an organohalogen compound wherein the organo radicals are alkyl, aryl, alkaryl, aralkyl alkoxy and aroxy in combination with an organometallic compound having the formula R_3M wherein M is P, Sb, As or Bi and R is a hydrocarbyl radical or hydrogen with the proviso that at least one R is a hydrocarbyl radical.

3,895,955

PROCESS FOR BURNING CEMENT CLINKER

Marekata Kondo, Yono; Seiwa Fukuda, Kawagoe, and Toyohiko Yamamoto, Omiya, all of Japan, assignors to Mitsubishi Mining & Cement Company, Ltd., Tokyo, Japan

Filed Aug. 22, 1973, Ser. No. 390,400

Claims priority, application Japan, Aug. 31, 1972, 47-86610

Int. Cl.² C04B *7/36*

U.S. Cl. 106—100 **2 Claims**

1. In a process for burning cement clinker which comprises feeding cement raw material from a feeder to a multi-stage preheating zone, heat exchanging successively said cement raw material with a combustion gas from a combustion zone through said multi-stage preheating zone, burning to cement clinker in a non-fluidized state the heat exchanged cement raw material in said combustion zone with the aid of fuel and cooling said cement clinker, the improvement with comprises introducing a part of said cement raw material heat exchanged from said multi-stage preheating zone into a fluidized calcining zone having a separate heat source where said part thereof is calcined in a fluidzied bed, introducing a waste gas from said calcining zone which entrains the calcined cement ras material to a final stage of said multi-stage preheating zone where the calcined cement raw material is separated from said waste gas and brought to be mixed with another part of the heat exchanged cement raw material which has not been introduced into said fluidized calcining zone, and then feeding the calcined and the heat exchanged cement raw materials to said combustion zone to produce a burned cement clinker.

3,895,956

WATER PERMEABILITY REDUCING INORGANIC COATING SLURRY COMPOSITION

Akitoshi Yoshida; Koichi Asahara; Koichiro Yanagida; Tadanobu Maruyama; Ikue Takatsu, and Yoshiko Kumagai, all of Funabashi, Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

Filed Aug. 21, 1973, Ser. No. 389,635

Claims priority, application Japan, Aug. 21, 1972, 47-83534

Int. Cl. C08b *27/04;* **C08f** *45/24*

U.S. Cl. 106—193 R **10 Claims**

1. A coating slurry composition with reduced water permeability which comprises 5 – 700 parts by weight of an inorganic filler other than a water swellable magnesium silicate or bentonite, 0.1 – 30 parts by weight of a water swellable magnesium silicate, bentonite, or mixtures thereof, 0.1 – 50 parts by weight of a water repellent, selected from the group consisting of an alkali alkyl siliconate and inorganic powders coated with an alkali alkyl siliconate or a fatty acid or salts thereof, 0.01 – 10 parts by weight of an organic viscosity improver selected from the group consisting of a monovalent alkali metal, ammonium or amine salt of a polyacrylic acid having a degree of polymerization of at least 2000, polyethyleneoxide of 500,000 molecular weight and a water soluble cellulose derivative and 100 parts by weight of a silica sol containing a silica component ranging from 3 – 50 weight percent and at least one alkali component wherein the mole ratio of SiO_2 to M_2O is greater than 4 and wherein M_2O represents an alkali metal oxide, ammonium hemihydrate, an amine hemihydrate, guanidine hemihydrate or hydrazine hemihydrate.

3,895,957

METHOD FOR CLEANSING SURFACES OF BUILDINGS AND PASSAGE-WAYS

Klaus Scheel, Herscheider Landstrasse 47, 588 Ludenscheid, and Wolfgang Luthe, Kunostrasse 8, 58 Hagen, both of Germany

Filed Apr. 23, 1973, Ser. No. 353,367

Claims priority, application Sweden, Apr. 26, 1972, 5496/72

Int. Cl.² B08B *3/02*

U.S. Cl. 134—34 **1 Claim**

1. Method of cleansing the exterior surface of a building of masonry, stone, brick or the like, comprising

- a. directing a jet of water at a temperature not less than about 100°C. from a nozzle at a pressure of about 20 atm against the surface to be cleaned,
- b. disposing said water jet at approximately right angles to such surface with the end of the nozzle spaced at a maximum distance of about 2 cm from the surface, and
- c. moving the water jet parallel to such surface while maintaining same in said right angle position, whereby due to the proximity of the jet to such surface the greater volume of water does not vaporize before touching the surface and part of the water is forced into the pores for achieving vaporization therein.

3,895,958

CONTINUOUS FLOW COUNTER-CURRENT LIQUID AND SOLID CONTACT APPARATUS

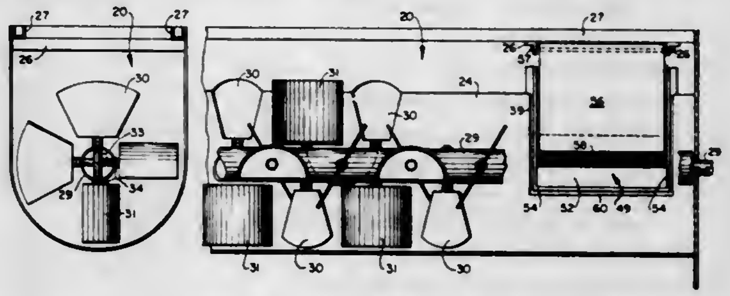
William N. Gill, Eggertsville; Mahendra R. Doshi, Buffalo, both of N.Y., and Robert E. Adams, Topsfield, Mass., assignors to J. W. Greer, Inc., Wilmington, Mass.

Filed Feb. 8, 1973, Ser. No. 330,888

Int. Cl. B08b *3/08*

U.S. Cl. 134—60 **8 Claims**

8. A liquid and solids continuous contact counter flow apparatus comprising a body portion defining at least a trough, a rotary shaft extending longitudinally through said trough, a plurality of spaced generally radial paddles on said shaft collectively forming an interrupted helical distribution on said shaft, said paddles including relatively flat blades and relatively curved scoops, said paddles being arranged as pairs of oppositely radially directed scoops and blades.



3,895,959

SEALED, GAS-TIGHT ELECTRIC STORAGE BATTERY

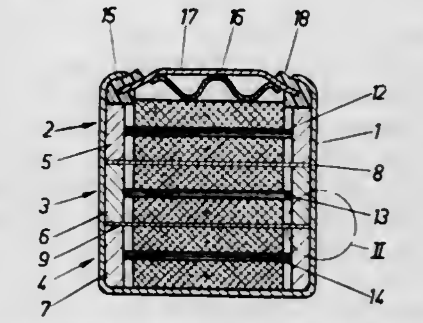
Klaus H. Dehmelt, Oberjasse 28, 6374 Steinbach, Taunus, Germany

Filed Oct. 18, 1974, Ser. No. 516,096

Claims priority, application Germany, Oct. 27, 1973, 2353958

Int. Cl. H01m *35/00*

U.S. Cl. 136—6 R **14 Claims**



1. An electric battery comprising, in combination:

- a. a metal container having a filler opening,
- b. a plurality of stacked spacer rings disposed in the container, arranged to line the side walls thereof,
- c. isolator plates interposed between adjacent spacer rings and sealing therewith to form a plurality of sealed compartments in the container,
- d. electric cell elements respectively in said compartments,
  - e. said isolator plates having means to establish electrical contact between an element of one cell and an element of an adjoining cell,
- f. a cover fitted to the filler opening of the container, and
  - f. means sealing the cover to the container.

3,895,960

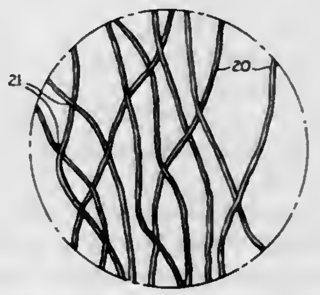
DIFFUSION-BONDED BATTERY ELECTRODE PLAQUES

Jack T. Brown; William Feduska, both of Pittsburgh, Pa., and Wesley L. Bradford, Pentress, W. Va., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 27, 1970, Ser. No. 67,567

Int. Cl. H01m *35/04*

U.S. Cl. 136—36 **4 Claims**



1. A method of producing battery electrode plaques by:

1. providing a sheet of intermingled relatively smooth unoxidized metallic fibers being essentially free of clefts and

protuberances, said fibers having a diameter of about 0.0002 to 0.015 inches, and then

2. establishing physical contact between said unoxidized smooth fibers, and then
3. maintaining said physical contact between said unoxidized smooth fibers and heating the sheet of unoxidized smooth fibers in a non-oxidizing atmosphere to form a metallurgical bond of interdiffused unmelted metal between fibers at points of physical contact by an interdiffusion of atoms between the fibers, and finally
4. depositing a metal coating on the bonded fibers of said sheet, to form an electrode plaque of bonded coated fibers essentially free of clefts and protuberances.

3,895,961

ELECTRODEPOSITION OF IRON ACTIVE MASS

Ian Paul Gutridge, Kingswinford, England, assignor to The International Nickel Company, Inc., New York, N.Y.

Continuation of Ser. No. 313,446, Dec. 8, 1972, abandoned. This application July 29, 1974, Ser. No. 492,591

Int. Cl. H01m *35/30*

U.S. Cl. 136—76 **7 Claims**

1. An electrolytic process for forming negative, hydroxidic iron active mass on a metal foil in which the active mass as electrolytically deposited is adherent to the foil and comprises essentially iron hydroxide and about 1 to about 20 percent total by weight of copper comprising electrolytically depositing said active mass onto said metal foil from an aqueous electrolyte containing ferrous ions, nitrate ions and a salt of copper and having a bulk pH of about 0.5 to about 3 at a cathode current density of about 10 to 100 milliamperes per square centimeter for a period of time sufficient so that the weight of the deposit at least equals the weight of the foil.

3,895,962

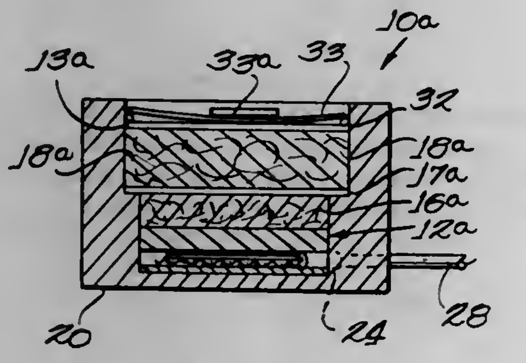
SOLID STATE BATTERY AND METHOD OF MAKING THE SAME

Ralph T. Mead, Kenmore, N.Y., assignor to Wilson Greatbatch Ltd., Clarence, N.Y.

Division of Ser. No. 230,923, March 1, 1972, Pat. No. 3,773,557. This application Nov. 9, 1973, Ser. No. 414,305

Int. Cl. H01m *31/00*

U.S. Cl. 136—83 R **10 Claims**



1. A method of making a lithium-iodine cell comprising the steps of:

- a. providing a housing of non-conductive material;
- b. placing a lithium anode means in said housing;
- c. pouring an organic-iodine complex into said housing and into operative contact with a lithium surface of said anode means, said complex being formed by reacting a polymer with iodine in the presence of heat; and
- d. placing a cathode means in operative relationship with said complex.

3,895,963

PROCESS FOR THE FORMATION OF BETA ALUMINA-YPE CERAMICS

H. Christopher McGowan; Joseph A. Male, both of Piscataway, and Malcolm G. McLaren, Milford, all of N.J., assignors to Exxon Research & Engineering Co., Linden, N.J.

Filed Dec. 20, 1972, Ser. No. 316,731

Int. Cl. H01m *11/00*

U.S. Cl. 136—153 **14 Claims**

1. A process for the preparation of a crystalline beta alumina-type ceramic comprising a major amount of beta'' alumina having the steps of

- a. preparing a homogeneous mixture comprising powders of alpha alumina and an alkali metal oxide, the alumina/alkali metal oxide mole ratio in the mixture ranging between about 5 and about 11,
- b. calcining said mixture at a temperature ranging between about 850° and 1150°C., said temperature being insufficient to cause substantial reaction of alpha alumina and alkali metal oxide to form a material selected from the group consisting of beta or beta'' alumina,
- c. forming said calcined mixture thereby obtaining a dense green containing a major amount of alpha alumina, and
  d. sintering the green body at a temperature ranging between about 1450° and 1700°C., thereby obtaining a crystalline beta alumina-type ceramic comprising a major amount of beta'' alumina.

3,895,964

STORAGE BATTERY FOR VEHICLES

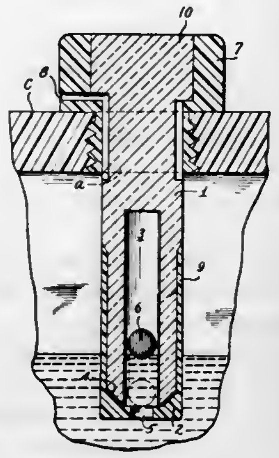
Akira Sakamoto, Kureme, Japan, assignor to Daiden Co., Inc., Fukuoka, Japan

Filed July 18, 1973, Ser. No. 380,337

Claims priority, application Japan, Aug. 2, 1972, 47-91022

Int. Cl. H01m *31/04*

U.S. Cl. 136—182 **8 Claims**



1. In a storage battery having at least one cell containing a liquid electrolyte which should be maintained at at least a predetermined minimum level and a cap for said cell, the improvement according to which the lower part of said cap extends downwardly to said minimum level and defines a central chamber open at its bottom to admit said electrolyte, the portion of said cap directly above said chamber being transparent and said chamber having a light reflective bottom wall portion inclined downwardly toward and encircling said opening, and a transparent colored float in said chamber which is larger in diameter than said opening but smaller than the outer diameter of said inclined wall portion and has a specific gravity less than the specific gravity of said electrolyte when said cell is fully charged, whereby when said colored float is resting on said bottom wall portion, only the color of said float may be seen through said transparent material due to reflection of said color by said bottom wall portion, whereas a ring of a different color may be seen encircling said float when said float is above said bottom wall portion.

3,895,965

METHOD OF FORMING BURIED LAYERS BY ION IMPLANTATION

Alfred Urquhart MacRae, Berkeley Heights, N.J.; Paul Miller, Allentown, Pa.; Robert Alan Moline, Gillette, and John Simpson, Bernardsville, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 146,252, May 24, 1971, abandoned. This application May 24, 1973, Ser. No. 363,401

Int. Cl.^{2} H01L *7/54, 7/36*

U.S. Cl. 148—1.5 **14 Claims**

1. A method for forming a silicon device which includes a buried impurity layer comprising the steps of:

implanting impurities into a surface region of a silicon substrate by exposing the surface to a beam containing impurity ions for an exposure of at least 10^{14} ions/cm^2 and at an accelerating voltage such that the silicon surface is damaged to a depth which is greater than the average depth of ion penetration whereby the major fraction of the implanted ions are in the damaged region;

heating the substrate in an oxidizing ambient for a time and at a temperature sufficient to oxidize the surface of the substrate to a depth greater than the average depth of ion penetration while diffusing the majority of impurities out of the damaged region deeper into the substrate;

removing the oxide layer; and

growing an epitaxial layer on the surface of the substrate.

3,895,966

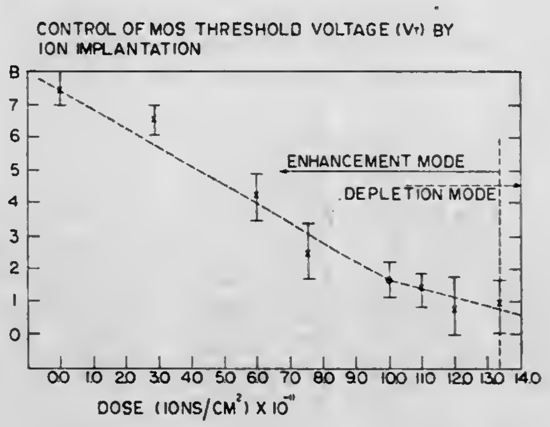
METHOD OF MAKING INSULATED GATE FIELD EFFECT TRANSISTOR WITH CONTROLLED THRESHOLD VOLTAGE

John D. MacDougall, and Kenneth E. Manchester, both of Williamstown, Mass., assignors to Sprague Electric Company, North Adams, Mass.

Filed Sept. 30, 1969, Ser. No. 862,238

Int. Cl. H01l *7/54*

U.S. Cl. 148—1.5 **5 Claims**



1. A method of making at least one IGFET on one semiconducting wafer with precisely controlled threshold voltages for each IGFET formed, including the steps of:

- a. doping a semiconducting substrate to form at least one pair of spaced apart souce and drain regions within said substrate and of opposite conductivity type from said substrate;
- b. forming an insulating layer on said substrate surface between said source and drain region of each IGFET, and a fixed surface state charge density within the insulating layer and concentrated at the layer substrate interface;
- c. subsequently introducing at about room temperature a controlled quantity of dopants into the gate and channel region between said source and drain of selected IGFET's through said insulating layer by masking other devices on said substrate and exposing each unmasked insulator and underlying channel to an energetic ion beam to produce in the channel an implanted doping layer having at least one concentration of ion beam implanted impurity ions, whereby the charge density per unit area within an active channel region is modified and a specific threshold or pinch-off voltage is provided;
- d. annealing the structure;
- e. depositing a metallic gate over said implanted layer and metallic contacts to said source and drain.

3,895,967

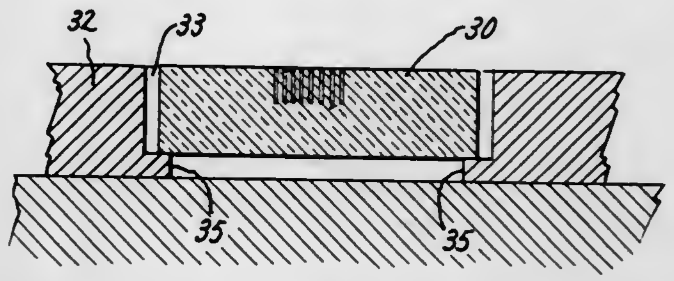
SEMICONDUCTOR DEVICE PRODUCTION

Thomas R. Anthony, and Harvey E. Cline, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 30, 1973, Ser. No. 411,006

Int. Cl. Holl *7/34*

U.S. Cl. 148—1.5 **3 Claims**



1. In the thermal gradient zone melting method of semiconductor device production including the steps of providing a deposit of a suitable metal in solid form as a migration droplet source within a first surface of a matrix body of semiconductor material, providing a heat source body to melt the deposited metal and cause the resulting droplet to migrate through the matrix body in the direction of a second surface of the matrix body, and placing the matrix body in juxtaposition to the heat source body, the combination of the step of providing a high heat conductivity gas at pressure between **0.1** and **10** atmospheres one portion of which is in heat exchange contact with the heat source and the second surface of the matrix body to deliver heat by conduction uniformly to the matrix body's second surface and the other portion of which is in heat exchange contact with the first surface of the matrix body and a relatively colder body to remove heat continuously from the matrix body.

3,895,968

METHOD OF MAKING FINISHED STEEL CASTINGS

Paul L. McCulloch, and Burton O. Heinrich, both of 1442 N. Memorial Dr., Racine, Wis. 53404

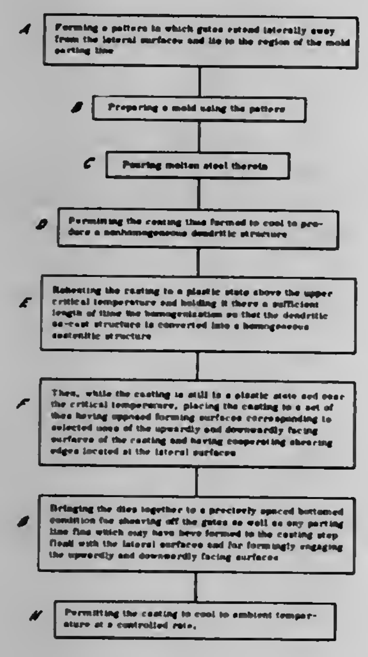
Filed Jan. 7, 1974, Ser. No. 431,233

Int. Cl. C21d *5/00;* **B22d** *31/00*

U.S. Cl. 148—2 **12 Claims**

1. The method of making a finished steel casting having lateral surfaces as well as upwardly and downwardly facing surfaces, which comprises: forming a pattern in which gates extend laterally away from the lateral surfaces and lie in the region of the mold parting line, and in which the upwardly and downwardly presented surfaces are free of extraneous protuberances in the form of gates or the like, preparing a mold using the pattern, pouring molten steel therein, permitting the casting thus formed to cool to produce a nonhomogeneous as-cast grain structure, reheating the casting to a plastic state above the upper critical temperature and holding it there a sufficient length of time for homogenization so that the as-cast grain structure is converted into a homogeneous austenitic structure, then, while the casting is still in a plastic state and near the holding temperature, placing the casting in a set of dies having opposed forming surfaces corresponding to selected ones of the upwardly and downwardly facing surfaces of the casting and having cooperating shearing edges located at the lateral surfaces, bringing the dies together for shearing of the gates as well as any parting line fins which may have

been formed in the casting step flush with the lateral surfaces and for formingly engaging the upwardly and downwardly


A
Forming a pattern in which gates extend laterally away from the lateral surfaces and lie in the region of the mold parting line
B
Preparing a mold using the pattern
C
Pouring molten steel therein
D
Permitting the casting thus formed to cool to produce a nonhomogeneous dendritic structure
E
Reheating the casting to a plastic state above the upper critical temperature and holding it there a sufficient length of time for homogenization so that the dendritic as-cast structure is converted into a homogeneous austenitic structure
F
Then, while the casting is still in a plastic state and over the critical temperature, placing the casting in a set of dies having opposed forming surfaces corresponding to selected ones of the upwardly and downwardly facing surfaces of the casting and having cooperating shearing edges located at the lateral surfaces
G
Bringing the dies together to a precisely spaced bottomed condition for shearing off the gates as well as any parting line fins which may have been formed in the casting step flush with the lateral surfaces and for formingly engaging the upwardly and downwardly facing surfaces
H
Permitting the casting to cool to ambient temperature at a controlled rate.

facing surfaces, and finally permitting the casting to cool at a controlled rate.

3,895,969

COMPOSITION AND PROCESS FOR INHIBITING CORROSION OF NON-FERROUS METAL SURFACED ARTICLES AND PROVIDING SURFACE FOR SYNTHETIC RESIN COATING COMPOSITIONS

Russell C. Miller, Chicago, Ill., assignor to J. M. Eltzroth and Associates Inc., Schaumberg, Ill.

Continuation-in-part of Ser. No. 137,682, April 26, 1971, Pat. No. 3,755,018. This application June 13, 1973, Ser. No. 369,479. The portion of the term of this patent subsequent to Aug. 28, 1970, has been disclaimed.

Int. Cl. C23f *7/26*

U.S. Cl. 148—6.2 **17 Claims**

1. A process for treating non-ferrous metal surfaced articles to improve corrosion resistance and receptivity to synthetic resin coatings which comprises bringing said articles into contact with a chromate depositing solution containing as essential components hexavalent chromium and trivalent chromium together with an acid from the group consisting of fluoboric acid, fluosilicic acid, hydrofluoric acid and mixtures thereof in sufficient amount to enhance adherency of the resultant surface to organic film forming polymers which dry to a water resistant coating, said chromate depositing solution having a solids content within the range from 0.2 gram per liter to 75.0 grams per liter, the remainder being water, and consisting essentially of the following:

Ingredients	Grams per Liter
Hexavalent chromium (expressed as Cr)	0.05–50.0
Trivalent chromium (expressed as Cr)	0.03–5.0
Fluoride or bifluoride (expressed as F)	0.03–3.0
Borate (expressed as B_2O_3)	0.01–3.0
Fluoborate (expressed as BF_4)	0.03–10.0
Sulfate (expressed as SO_4)	0.01–3.0
Magnesium (expressed as Mg)	0.01–3.0
Aluminum (expressed as Al)	0.01–3.0
Iron (expressed as Fe)	0.01–0.05
Nickel (expressed as Ni)	0.01–0.05
Acetate (as acetate radical)	0.0–0.1

with the further proviso that the weight ratio of trivalent chromium as Cr to hexavalent chromium as Cr is at least 1:100 but no more than 200:1, and the pH of said solution is between 0.8 and 5.0.

3,895,970

SEALING RINSE FOR PHOSPHATE COATINGS OF METAL

William A. Blum, Fort Washington, and Kurt Goltz, Exton, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed June 11, 1973, Ser. No. 365,019

Int. Cl. C23f *7/08*

U.S. Cl. 148—6.15 R **5 Claims**

3. The process of sealing a phosphate coating on a metal comprising wetting the phosphate coated metal with the composition consisting essentially of an acidic aqueous fluoride solution free of chromates and having a pH within the range of about 3 to about 7 and containing fluoride ion at a concentration ranging from about 0.01 to about 25 grams/liter which is supplied by at least one of the members selected from the group consisting of calcium fluoride, zinc fluoride, aluminum fluoride, titanium fluoride, zirconium fluoride, chromic fluoride, chromic zirconium fluoride, nickel fluoride, ammonium fluoride, hydrofluoric acid and fluoboric acid, drying the said fluoride solution on the said wetted metal and thereafter rinsing the metal with water and redrying the metal.

3,895,971

METHOD OF LUBRICATING AN ALUMINUM WORKPIECE

Albert H. Bushey, and Ewell E. McDole, both of Danville, Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed May 18, 1973, Ser. No. 361,763

Int. Cl. C23f *7/06, 17/00*

U.S. Cl. 148—6.27 **8 Claims**

1. A method of applying a lubricant to an aluminum workpiece prior to the cold working thereof consisting essentially of:

a. forming a tenacious coating of complex alkaline earth metal aluminates on the surface of the aluminum workpiece by treating said workpiece in an alkaline solution at a temperature of at least 100°F containing at least 0.1 gram/mol per liter of a soluble alkaline earth metal compound selected from the group consisting of calcium, barium, strontium and magnesium compounds; and

b. applying a metal working lubricant onto said formed coating.

3,895,972

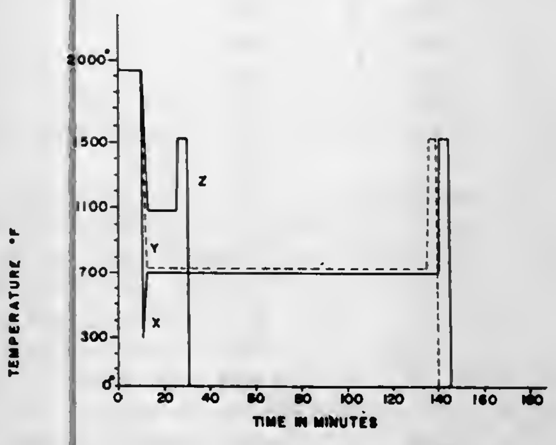
THERMAL TREATMENT OF STEEL

John E. Woodilla, Jr.; Gordon W. Hunt, both of Torrington, and Willard B. Green, Jr., Harwinton Heights, all of Conn., assignors to The Torrington Company, Torrington, Conn.

Division of Ser. No. 254,454, May 18, 1972, Pat. No. 3,826,694. This application May 9, 1974, Ser. No. 468,497

Int. Cl. C21d *1/78*

U.S. Cl. 148—12.1 **1 Claim**



1. A method for producing hardened hypereutectoid steels of less than about 10 percent total alloy resulting in a structure with an ultra-fine grain size free from microcracks, and very small well dispersed excess carbides comprising the steps of: heating the material to a temperature not exceeding the solidus for a time sufficient to dissolve the carbides present in the initial microstructure,

quenching quickly into a suitable liquid quench medium to the approximate range of 900° to 1333°F to produce pearlite,

when the pearlite transformation is complete, cooling to a suitable temperature for mechanical deformation, and mechanically deforming the material then,

rapidly heating through the $A_{1,3}$ and A_{cm} temperature range of its equilibrium diagram to the austenitizing temperature for the material for a controlled time only sufficient to convert the carbide lamellae within the pearlite into very small excess carbides and transform the ferrite to austenite, and,

quenching to harden the steel.

3,895,973

ACTIVATED SOLDERING FLUX

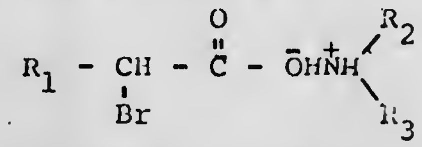
Robert A. Stayner, Lafayette, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 17, 1973, Ser. No. 425,673

Int. Cl. C23c *1/12*

U.S. Cl. 148—25 **22 Claims**

1. A flux composition for low-melting point alloys comprising a rosin and an amount effective to improve the ability of said rosin to clean a surface to be soldered and to prepare said surface to receive solder of an activator agent comprising an amine salt of an alpha-bromo-aliphatic carboxylic acid, wherein said amine salt has the following formula



$$R_1-\underset{\underset{\displaystyle Br}{|}}{CH}-\overset{\overset{\displaystyle O}{\|}}{C}-\bar{O}H\overset{+}{N}H\begin{matrix}\diagup R_2\\ \diagdown R_3\end{matrix}$$

wherein (a) R_1 represents a hydrocarbyl containing 4 to 20 carbon atoms and 0 to 2 sites of olefinic unsaturation, and (b) R_2 and R_3 each independently represent hydrogen or a hydrocarbyl, in which the sum of the carbon atoms contained in R_2 and R_3 is between 6 and 40 to insure substantial water insolubility of said activator agent.

3,895,974

PROCESS FOR PRODUCING A GRAIN-ORIENTED ELECTRICAL STEEL SHEET HAVING EXCELLENT MAGNETIC CHARACTERISTIC

Shozo Watanabe, Tokyo; Kiyoshi Tanaka, and Yozo Suga, both of Himeji, all of Japan, assignors to Nippon Steel Corporation, Japan

Filed Oct. 3, 1973, Ser. No. 402,908

Claims priority, application Japan, Oct. 11, 1972, 47101795

Int. Cl. H01f *1/04*

U.S. Cl. 148—111 **2 Claims**

1. A process for producing a goss texture, grain-oriented electrical steel sheet having excellent magnetic characteristics greater than 1.85 Wb/m^2 comprising hot rolling a silicon sheet material consisting essentially of not less than 2% silicon, 0.01 to 0.45% acid soluble aluminium, 0.003 to 0.0095% nitrogen with the balance being iron and unavoidable impurities, cold rolling the hot rolled material to a final sheet thickness, subjecting the cold rolled sheet to decarburization annealing and further subjecting the sheet to a final annealing in a temperature range where the secondary recrystallisation proceeds in the presence of aluminium nitride as it exists in the steel sheet thus produced, wherein the hot rolled sheet is subjected to a light hot working of 3 to 20% in a temperature range between 700° to 900°C and is held in this temperature range for not less than 2 seconds prior to the cold rolling to precipitate aluminium nitride which is effective for the secondary recrystallisation at the stage of final annealing.

3,895,975

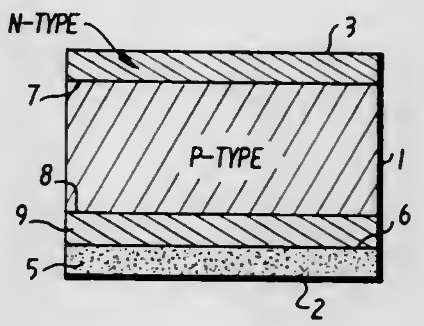
METHOD FOR THE POST-ALLOY DIFFUSION OF IMPURITIES INTO A SEMICONDUCTOR

Joseph Lindmayer, Bethesda, Md., assignor to Communications Satellite Corporation, Washington, D.C.

Filed Feb. 13, 1973, Ser. No. 331,740

Int. Cl. H01l *7/46*

U.S. Cl. 148—178 **6 Claims**



1. In a method of fabricating a solar cell out of a slice of semiconductor material having first and second major surfaces which constitute the front light receiving surface and the back semiconductor surface, respectively, of the fabricated solar cell, said method being of the type wherein a p-n junction is formed by diffusing a dopant of a first type conductivity into said first major surface of said slice of semiconductor material having a second type conductivity opposite said first type conductivity, the improvement in said method comprising the steps of:

a. placing a layer of material on said second major surface of said slice prior to the formation of said p-n junction, said layer of material being characterized in that it will form an alloy with the semiconductor at temperatures below the melting point of said semiconductor material and it contains atoms which are dopant atoms of said second type conductivity,

b. heating said slice with said layer of material thereon to a temperature sufficient to cause said material to alloy with said semiconductor material and be in a molten state and said dopant atoms of a second type conductivity to diffuse into said slice from said material thereby forming a heavily doped region of said second type in said slice near said second major surface of said slice, and

c. subsequently diffusing said dopant of a first type conductivity into said first major surface from a gaseous mixture containing atoms of said dopant at a temperature above the melting point of said material and above the alloying and melting point of an alloy of said material and said semiconductor, wherein said semiconductor slice is silicon and said layer of material comprises a metal selected from the group consisting of aluminum, indium, gallium and thallium.

3,895,976

PROCESSES FOR THE LOCALIZED AND DEEP DIFFUSION OF GALLIUM INTO SILICON

Guy H. Dumas, Paris, France, assignor to Silec-Semi-Conducteurs, Paris, France

Filed Sept. 22, 1972, Ser. No. 291,479

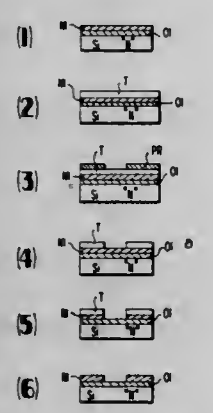
Claims priority, application France, Sept. 27, 1971, 71.34698

Int. Cl. H07l *7/44*

U.S. Cl. 148—187 **17 Claims**

1. In a process of localized and deep diffusion of gallium into silicon, wherein the following sequential operations are carried out:

- a. preparation of the surface of a sample of N-type silicon intended to receive a diffusion localization mask;
- b. deposition of a first oxide layer on said surface;
- c. deposition of a silicon nitride layer forming a mask on the first oxide layer;
- d. photoengraving of the mask by means of photosensitive product and a transfer layer formed by a second oxide layer; and opening of localized diffusion windows in the mask;
- e. pre-diffusion of gallium into the silicon through said windows and through said first oxide layer and



- f. removal of the silicon nitride mask and of the first oxide layer, the improvement comprising then
- g. depositing a new first oxide layer on the whole silicon surface, followed by depositing a new layer of silicon nitride on this oxide layer;
- h. thermally treating said sample to cause penetration diffusion of gallium into the silicon and
- i. removing the layers of oxide and silicon nitride deposited during operation g), in order to obtain a structure with localized and deep P-N junctions.

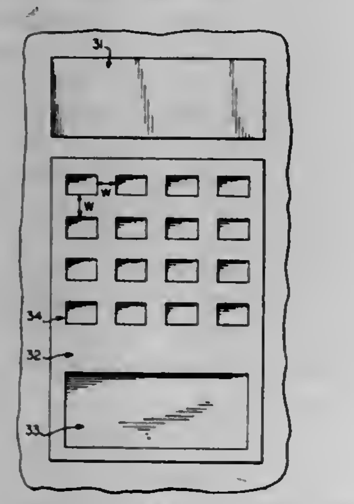
3,895,977
METHOD OF FABRICATING A BIPOLAR TRANSISTOR

Thomas J. Sanders, Indialantic, Fla., assignor to Harris Corporation, Cleveland, Ohio

Filed Dec. 20, 1973, Ser. No. 426,584

Int. Cl. H01l *7/34*

U.S. Cl. 148—187 **4 Claims**



1. A process for fabricating transistors having approximately identical peak current gain, but different current capacities comprising the steps of:

- forming base regions of first current capacity transistor and second current capacity transistor by diffusion;
- forming an emitter region of said first current capacity transistor of a given effective area and an emitter region of said second current capacity transistor of a larger effective area than said given area so that both of said emitter regions have substantially identical impurity distribution by impurity deposition and diffusion through a mask having a plurality of identical area apertures; and
- forming collector contact regions of said first and second current capacity transistors by diffusion.

3,895,978
METHOD OF MANUFACTURING TRANSISTORS

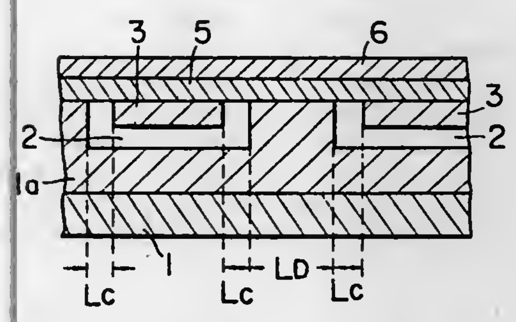
Yasuo Tarui; Yutaka Hayashi, both of Tokyo, and Toshihiro Sekigawa, Yokohama, all of Japan, assignors to Kogyo Gijutsuin, Japan

Division of Ser. No. 61,906, Aug. 7, 1970. This application July 6, 1971, Ser. No. 160,201

Claims priority, application Japan, Aug. 12, 1969, 44-63257; Sept. 18, 1969, 44-73849; Oct. 14, 1969, 44-81501; Oct. 14, 1969, 44-81502; Oct. 14, 1969, 44-81503; Oct. 20, 1969, 44-83209

Int. Cl. H01l *7/44*

U.S. Cl. 148—187 **7 Claims**



1. In a method for making an insulated gate field effect transistor having at least a semiconductor substrate, a first region of a first conductivity type in said semiconductor substrate, a second region of a second conductivity type in said semiconductor substrate, a gate insulating layer on the surface portion of said second region, a conductive gate eletrode on said gate insulating layer and third region of said first conductivity type in said semiconductor substrate, said first and third regions being separated by said second region, the improvement comprising the steps of,

- a. forming a first diffusion mask on said semiconductor substrate,
- b. forming in said first diffusion mask a first opening to expose the first surface portion of said semiconductor substrate and a second opening to expose the second surface portion of said semiconductor substrate, said first and second openings being separated by the remaining portion of said first diffusion mask,
- c. forming a second diffusion mask on said exposed first and second surface portions of said semiconductor substrate and said remaining portion of said first diffusion mask,
- d. forming in said second diffusion mask a third opening including said first opening and having an area larger than that of said first opening to expose again said first surface portion of said semiconductor substrate and not to expose said second opening,
- e. diffusing a first impurity of a second conductivity type into said semiconductor substrate through said first opening exposed in said third opening to form said second region in said semiconductor substrate,
- f. removing said second diffusion mask to expose said second opening, and
- g. diffusing a second impurity of first conductivity type into said semiconductor substrate through said first and second openings to form said third region and said first region respectively.

3,895,979
EXPLOSIVE OF REDUCED CAPACITY CONTAINING SILICEOUS FOAM PARTICLES

Stefan Kraemer, Essen; Alois Seidl, Thurnstern, both of Germany, and Hans-Joachim Riedl, deceased, late of Recklinghausen, Germany (by Herta Emilie Riedl, legal representative), assignors to Wasag Chemie, Munich, Germany

Continuation of Ser. No. 73,625, Sept. 18, 1970, abandoned. This application Dec. 19, 1973, Ser. No. 426,306

Int. Cl. C06b *19/00*

U.S. Cl. 149—2 **5 Claims**

1. A novel explosive charge having a reduced explosive capacity comprising an explosive in the form of a powder, a slurry or a semi-plastic or plastic mass and a content of porous filler particles which do not take part in the detonation reaction and will, therefore, not influence the fume composition, particularly the carbon monoxide content, said filler particles being selected from the group consisting of foam glass particles melting between 500° and 900°C and other foamed silicate containing products of synthetic origin, said particles being spherically shaped with a diameter of 0.1 to 10 mm and having a bulk density of 0.3 to 0.25.

3,895,980
COATED LEAD AZIDE COMPOSITIONS SENSITIVE TO FLAMES BUT INSENSITIVE TO FRICTION

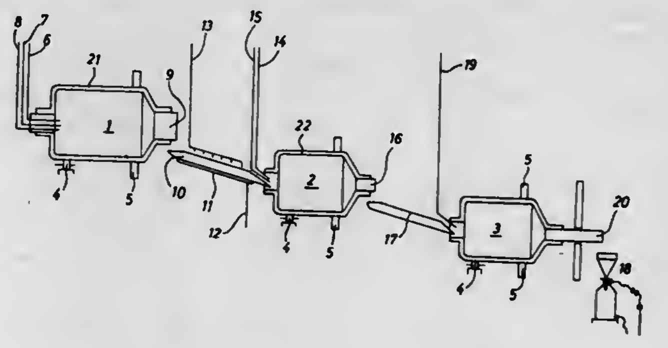
Nicolas Makay, Rio de Janeiro, Brazil, assignor to F. G. Kretschmer & Co., Vaduz, Liechtenstein

Continuation of Ser. No. 240,962, April 4, 1972, abandoned. This application Nov. 7, 1973, Ser. No. 413,573

Claims priority, application Germany, Apr. 4, 1972, 2120916

Int. Cl. C06c *1/02*

U.S. Cl. 149—8 **6 Claims**



1. A lead azide composition comprising uniformly sized lead azide particles covered uniformly with lead trinitroresorcinate.

3,895,981
TEXTILE BOTTOM FLOOR COVER HAVING AT LEAST ONE REINFORCING STRIP AND METHOD OF PRODUCTION THEREOF

Guenter Horst Tesch, Schoenberg, Switzerland, assignor to Breveteam S.A., Fribourg, Switzerland

Continuation-in-part of Ser. No. 705,664, Feb. 15, 1968, abandoned. This application Sept. 29, 1972, Ser. No. 293,566

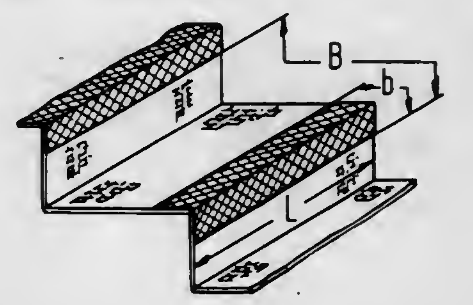
Claims priority, application Switzerland, Feb. 20, 1967, 2614/67

Int. Cl. E04f *11/16;* **B32b** *7/14;* **D03d** *27/00*

U.S. Cl. 156—71 **5 Claims**

1. A method of laying a floor covering upon the stairs of a staircase, comprising the steps of:

- a. forming a continuous textile web having a base and an exposed face;
- b. depositing in a flowable state on said face along a longitudinally edge thereof a thermally softenable strip of synthetic-resin material and permitting same to harden to a non-tacky solid state at room temperature;
- c. coating the underside of said base with adhesive having increased bonding strength upon heating;
- d. cutting said web into individual lengths equal to the transverse width of the stairs of said staircase;
- e. thermally softening said strip and simultaneously thermally activating said adhesive and bending the strip of each of said length around an edge of the respective stair while applying the respective adhesive as activated upon the thermal softening of the respective strip against a stair surface to bond the individual length to the respective stair.



2. A floor-covering material for individual stairs of a staircase consisting of a continuous length of a textile web having a base and an exposed face; a strip of thermally softenable synthetic-resin material deposited along a longitudinal edge of said web and bonded to said face, said strip being in a solid non-tacky state at room temperature; and an adhesive coated onto the underside of said base at least in the region of said strip and thermally activatable concurrently with said thermal softening of said strip to increase the adhesive bond of said covering to surfaces of a stair upon the softening of said strip to conform to a stair edge.

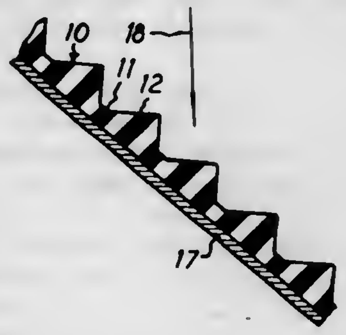
3,895,982
WEAR PROTECTION ELEMENTS FOR PLANAR OR CURVED SURFACES EXPOSED TO ABRASION

Bo Klas Gerhard Persson, Trelleborg, Sweden, assignor to Trelleborgs Gummifabriks Aktiebolag, Trelleborg, Sweden

Continuation-in-part of Ser. No. 98,295, Dec. 15, 1970, abandoned. This application Nov. 22, 1972, Ser. No. 308,858

Int. Cl. B32b *31/00*

U.S. Cl. 156—71 **7 Claims**



1. The method of preparing a durable elastomeric surface for receiving abrasive material falling thereon having wear resistance enhanced by control of the angle of impact of said material thereon, which surface has lower wear resistance than conventional hardened materials for a range of angles between grazing and perpendicular impact, comprising the steps of observing for a particular material flow and surface motion in an installation a characteristic angle of impact of a predominant portion of said material upon said surface generally, selecting a set of wear resistant resilient elements having like forward and after faces meeting asymmetrically a ridged vertex, the respective forward and after faces making differing angles to the perpendicular to said surface, securing to said surface said elements in mutually parallel relation oriented transversely to the linear motion of the surface when moving,

and to the direction of impact of material when fixedly inclined, to effect relative motion between the elements arranged on said surface and motion of said material falling thereon to cause said characteristic angle to lie substantially within 20 degrees of said perpendicular to said forward faces.

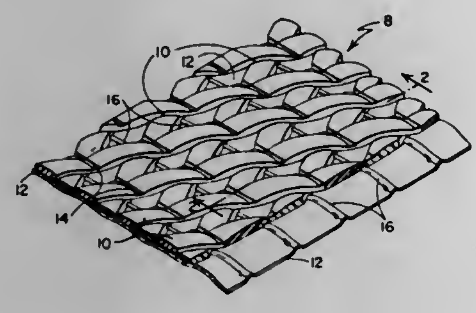
3,895,983
PROCESS OF FABRICATING A PLASTIC NET LAMINATE MATERIAL

Theo O. Lang, Leominster, and Thomas A. Lane, E. Pepperell, both of Mass., assignors to Foster Grant Co., Inc., Leominster, Mass.

Division of Ser. No. 29,596, April 17, 1970. This application Aug. 23, 1973, Ser. No. 390,817

Int. Cl.² B32B ***31/20***

U.S. Cl. 156—79 10 Claims



1. A process for the fabrication of a laminated material including an expanded plastic foam net layer and a layer of continuous sheet material bonded thereto comprising:
- a. forming a layer of expandable plastic net including net strands and intersections thereof composed of expandable plastic material;
- b. applying heat to said plastic net layer in at least two separate operations to cause a first stage and second stage expansion of the expandable plastic material in said net layer;
- c. joining a layer of continuous sheet material to said plastic net layer after the application of heat to cause said first stage expansion but before the application of heat to cause said second stage expansion of the expandable plastics material in said plastic net layer.

2. A process for the fabrication of a laminated material including an expanded plastic foam net layer and a layer of continuous sheet material bonded thereto comprising:
- a. forming a layer of expandable plastic net including net strands and intersections thereof composed of expandable plastic material;
- b. applying heat to said plastic net layer in at least two separate operations to cause a first stage and second stage expansion of the expandable plastic material in said net layer;
- c. joining a layer of continuous sheet material to said plastic net layer before the application of heat to cause said second stage expansion of the expandable plastic material in said plastic net layer.
- d. after the joining of the layer of continuous sheet material layer to said expandable plastic net layer, compressing said laminate material in zones along spaced parallel lines on at least one side thereof to improve the bendability of said material and to aid in the joining of the layers of the laminate material.

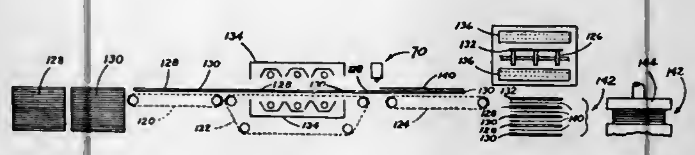
3,895,984
PLYWOOD MANUFACTURE USING FOAMED GLUES

Charles N. Cone, Portland, and Julius M. Steinberg, Hillsboro, both of Oreg., assignors to Pacific Adhesives Company, Hillsboro, Oreg.

Continuation-in-part of Ser. No. 80,961, Oct. 15, 1970, abandoned, which is a continuation-in-part of Ser. No. 839,481, July 7, 1969, abandoned. This application Oct. 12, 1973, Ser. No. 405,752

Int. Cl. B32b ***5/18***

U.S. Cl. 156—79 18 Claims



9. The method of making plywood which comprises:
- a. continuously propelling an unfoamed liquid plywood glue at a predetermined flow rate,
- b. continuously foaming the liquid glue as it is propelled,
- c. continuously applying the foamed glue to the surfaces of a succession of wood veneers,
- d. laying up the veneers into a plywood assembly,
- e. and pressing the assembly to form a plywood panel, thereby breaking the foam and forming substantially unfoamed glue bonds between the veneers.

3,895,985
METHOD OF REPAIRING TIRES AND SHELLS USED FOR THIS METHOD

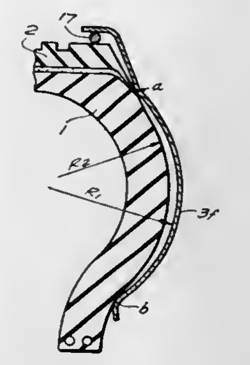
Wilhelm Schelkmann, Crengeldanzstr. 85a, D 581 Witten, Germany

Filed Apr. 10, 1973, Ser. No. 349,787

Claims priority, application Germany, Apr. 11, 1972, 2217293; Apr. 11, 1972, 2217244

Int. Cl.² B29H ***5/04, 17/36***

U.S. Cl. 156—96 17 Claims



1. A method of repairing tires, comprising the steps of forming an assembly from a tire having a U-shaped cross-section and a tread strip on the peripheral surface of the tire with a layer of binder material sandwiched between the tire surface and the tread strip; forming a pair of shape-retaining annular shells and applying said shells against the sidewalls of the tires; forming a fluid-tight seal at the inner edge of each annular shell; forming a fluid-tight seal at the outer annular edge of each shell in engagement with at least a lateral portion of the tread strip so as to form an enclosure at least partly enclosing said assembly; evacuating air from beneath said enclosures so as to cause the sidewalls of the tires to approach the corresponding shells; and treating the partly enclosed assembly with heat to permanently bond the tread strip to said tire, whereby said shape-retaining shells prevent the tire from deforming due to the presence of heat.

3,895,986
APPARATUS FOR AND METHOD OF APPLYING A STRIP OF ELASTIC MATERIAL TO A TIRE BEAD

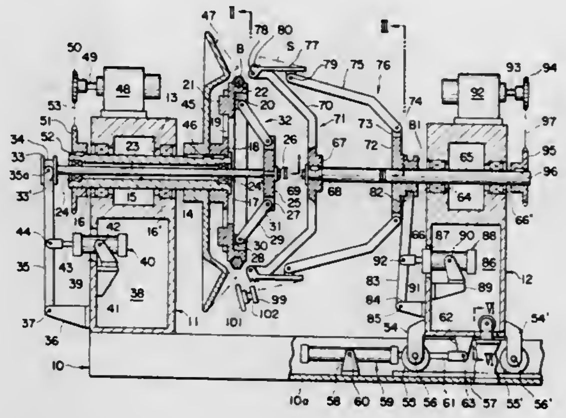
Tasaaki Komatsu, and Shinichi Arai, both of Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Sept. 20, 1974, Ser. No. 507,983

Claims priority, application Japan, Sept. 21, 1973, 48-106582

Int. Cl.² B29H ***17/32***

U.S. Cl. 156—136 18 Claims



1. An apparatus for applying an annular strip of elastic material to an outer peripheral edge of a continuous loop of bead to be incorporated into an automobile tire, comprising bead holding means having a generally circular outer perimeter which has a variable diameter and around which said bead is to be lapped in a generally circular form, strip transfer means including a number of support members which are positioned in a substantially coaxial relationship to said bead holding means and which are movable between first angular positions operable to carry the strip of elastic material in a generally cylindrical form and second angular positions operable to carry the strip in a generally annular form in the vicinity of the outer perimeter of the bead holding means conditioned to a predetermined diameter, said cylindrical form and said annular form having a common axis which is substantially in line with an axis of the outer perimeter of the bead holding means, and strip receiving means having an annular wall portion which has an inner peripheral extending substantially coaxially with and radially at a close spacing from said outer perimeter of the bead holding means and angled to be in proximity to and in a face-to-face relation to said support members in said second angular positions thereof for releasably receiving thereon the strip of the generally annular form from said support members with an inner peripheral edge of the strip in close contact with the outer peripheral edge of the bead on said bead holding means.

3,895,987
IDENTIFICATION PLATE AND METHOD FOR ITS MANUFACTURE

Walter Loreck, Wattens, Austria, assignor to D. Swarovski & Co., Austria

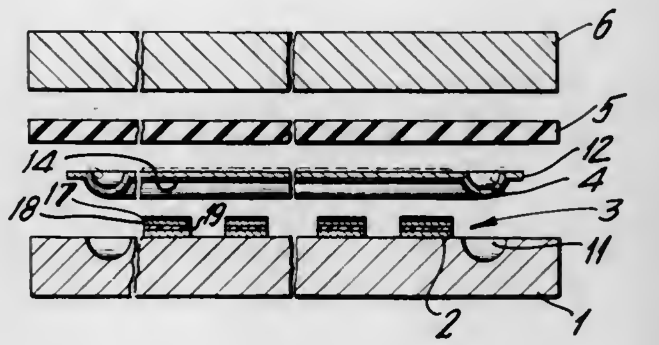
Filed Aug. 3, 1972, Ser. No. 277,833

Claims priority, application Austria, Aug. 4, 1971, 6826/71

Int. Cl. B32b ***31/12***

U.S. Cl. 156—223 6 Claims

1. A method for producing an identification plate assembly, such as a motor vehicle license plate, utilizing a blank plate upon which indicia is applied, said method comprising the steps of providing a pair of pressure members between which said assembly may be formed by application of a compressive force thereto, positioning upon one of said pressure members at least one templet member consisting of rigid material and being shaped in the form of said indicia to be produced upon said identification plate assembly, applying over said templet member indicia sheet material having a first side adapted to be viewed during use of said identification plate assembly and a second side opposite said first side, said indicia sheet material having a configuration conforming to the shape of said templet and being applied thereon with said first side against said templet, applying said blank plate over said templet and indicia sheet with said second side of said indicia sheet in contact



with said blank plate, applying a resilient pressure sheet over said blank plate and compressing the assembly thus formed between said pair of pressure members to simultaneously cause said blank plate to be indented in the form of said templet members while said indicia sheet material is adhered to said blank plate along said indentations.

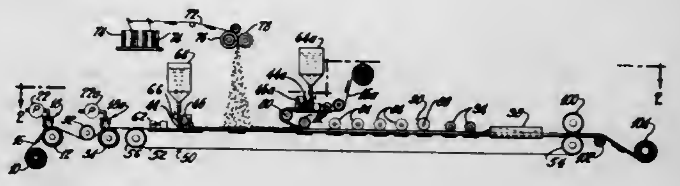
3,895,988
METHOD OF MAKING INLAID RESINS

Everett R. Miller, Dennisport, Mass., assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 146,266, May 24, 1971, Pat. No. 3,752,690. This application May 25, 1973, Ser. No. 364,215

Int. Cl. B44c ***1/20***

U.S. Cl. 156—245 3 Claims



1. In a method of producing a continuous sheet of moldable fiber reinforced resinous compound having a decorative inlay, the steps of:
- a. passing a carrier sheet having a memory over a first surface having a depression therein,
- b. causing said carrier sheet material to be moved down into said depression taking the form thereof,
- c. depositing a resinous material into the resulting carrier sheet depression,
- d. causing said carrier sheet to return to a generally flat condition leaving a raised area of resinous material thereon,
- e. depositing a second layer of resinous material atop said carrier sheet such that said second layer is flowed around and over said raised area of resinous material producing a continuous sheet of resinous material in which said raised area becomes an inlay,
- f. applying fiberous reinforcement over the top of said sheet of resinous material,
- g. applying a second carrier sheet having a coating of resinous material thereon over said fiberous reinforcement to produce a continuous sheet of fiber reinforced moldable compound between said two carrier sheets.

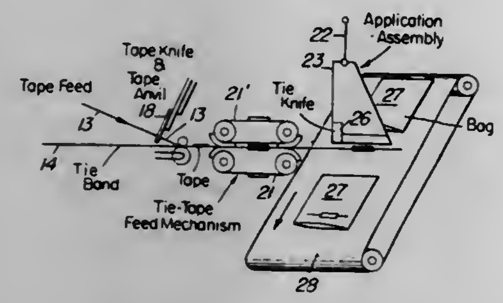
3,895,989
METHOD FOR TIE-BAND APPLICATION

Paul Adrian Lucas, Webster, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 225,131, Feb. 10, 1972, Pat. No. 3,794,545. This application May 4, 1973, Ser. No. 357,283

Int. Cl. B32b *31/00*

U.S. Cl. 156—265 **1 Claim**



1. A method for applying a detachable closure onto the exterior wall surface of a bag which comprises (a) bringing a continuous length of closure wire into contact with a length of pressure-sensitive adhesive coated tape; (b) adhesively laminating said length of tape to said continuous wire; (c) subsequently severing a length of said wire to form an individual closure assembly comprising said severed wire and tape length adhered thereto; and (d) subsequently applying said closure assembly to said exterior bag wall surface whereby said closure wire is adhesively affixed to said bag wall.

3,895,990
PROCESS FOR JOINING STRIPS OF BELT ALONG THEIR LENGTHWISE RUNNING SIDE EDGES

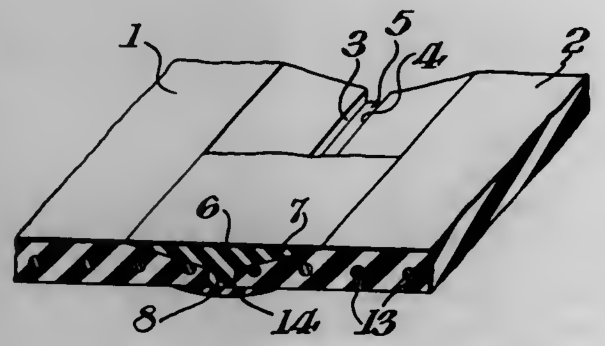
Heinz Josteit, Frechen-Bachem, Germany, assignor to Rheinische Braunkohlenwerke AG, Cologne, Germany

Filed July 27, 1972, Ser. No. 275,755

Claims priority, application Germany, July 30, 1971, 2138132

Int. Cl. C09j *5/10*

U.S. Cl. 156—304 **11 Claims**



1. A process for joining belt strips together along their lengthwise running side edges wherein the side edges of the belt strips are slightly spaced apart and beveled to provide an intermediate area having a double tapered outer section and a stub-shaped root section, the intermediate area situated between these side edges being filled and sealed by inserted material having elastic rubber properties characterized in that between the side edges to be connected together there is arranged a profiled fillet strip, the profiled fillet strip comprising a double tapered outer section and a stub-shaped root section substantially corresponding to the intermediate area between the side edges of the joined belt strips, the profiled fillet strip being sealed with the side edges of the joined belt strips by being bonded thereto and the outer surface of the joined belt strips and profiled fillet strip being substantially even and smooth.

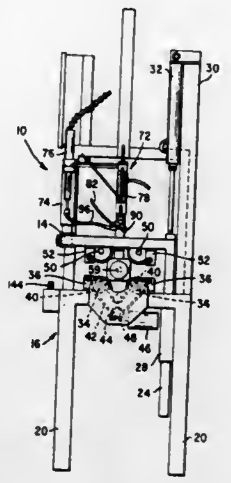
3,895,991
MACHINE FOR JOINING A THERMOPLASTIC CAP TO A THERMOPLASTIC TUBE

Gene A. Brothers, Gering, Nebr., assignor to Eltra Corporation, Toledo, Ohio

Filed June 6, 1974, Ser. No. 477,110

Int. Cl.² B29C *27/10*

U.S. Cl. 156—457 **3 Claims**



1. A machine for joining a thermoplastic cap to a thermoplastic cylindrical tube comprising a main frame, a top frame carried by said main frame and movable relative thereto, first roller means mounted on said main frame, second roller means mounted on said top frame, said top frame means being movable by its weight so that a tube supported between said roller means will be restrained and straightened, stop means carried by said roller means, biasing means carried by said main frame, said roller, stop and biasing means cooperating to support a tube for rotation about its longitudinal axis and to hold a cap in abutment with one end of the tube, an assembly carried by said top frame for supplying thermoplastic fillet material to the junction of the tube and cap, pressing the fillet material against the junction and locally heating the cap, tube and fillet material in the area where the fillet material is pressed against the junction to a temperature at which the cap, tube and fillet material soften sufficiently to bond to each other, and means connected to one of said roller means for driving said one roller means and causing the tube supported by said roller means to rotate about its longitudinal axis so that a continuous circumferential fillet joint is formed between the cap and tube.

3,895,992
APPARATUS FOR MANUFACTURING FOAMED PLASTIC

Kimikazu Azuma, No. 3-18 Matsugaoka 3-chome Kugenuma, Fujisawa-shi, Kanagawa-ken, Japan

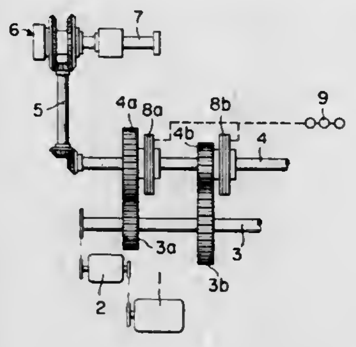
Division of Ser. No. 129,455, March 30, 1971, Pat. No. 3,758,459. This application Apr. 13, 1973, Ser. No. 350,766

Claims priority, application Japan, Apr. 2, 1970, 45-28086; Apr. 2, 1970, 45-28087

Int. Cl. B29d *23/04*

U.S. Cl. 156—500 **2 Claims**

1. An apparatus for use in manufacturing a foamed plastic tubular net, comprising a motor, a first shaft driven by and drivingly interconnected to said motor, a second shaft driven by and drivingly interconnected to said first shaft, first means drivingly connectible between said first and second shafts for permitting driving of said second shaft from said first shaft, said first means including a low speed driving gear provided on said first shaft and a low speed driven gear provided on said second shaft, said first means further including first electromagnetic clutch means associated with said low speed driven gear for selectively clutching same to said second shaft, second means drivingly connectible between said first and second shafts for permitting driving of said second shaft from said first shaft, said second means including a high-speed driving gear provided on said first shaft and a high-speed driven gear provided on said second shaft, said second means further including second electromagnetic clutch means associated with said high speed driven gear for selectively clutching same to said second shaft, timer means coupled to said first and second electromagnetic clutch means for causing said first and second clutch means to be alternately and sequentially energized for causing said second shaft to be alternately and sequentially rotated at high and low speeds for predetermined time periods, a variable speed gear mechanism drivingly connected in series between the high-speed driving gear and the high-speed driven gear, die means for extruding a tubular net, said die means being connected to and rotatably driven by said second shaft and being rotatable in a direction transverse to the direction of extrusion of the net, and extruder means connected with said die means for extruding said tubular net therefrom.



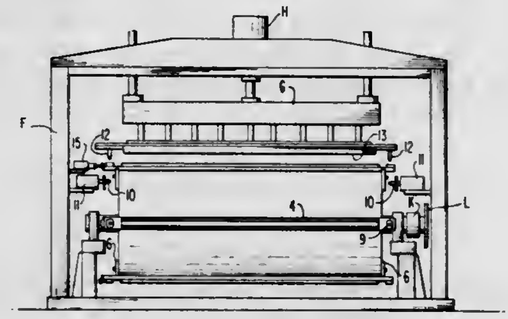
3,895,993
ROTARY AUTOMATIC WELDER

Masao Mikami, No. 9-19, Kougominami 1-chome, Hiroshima-shi, Hiroshima, Japan

Filed July 25, 1974, Ser. No. 491,899

Int. Cl. B32b *31/00;* **B02c** *11/08*

U.S. Cl. 156—582 **5 Claims**



1. A rotary automatic welder comprising:

a fixed welder frame,

a fusion welding bar vertically movable on said fixed frame, means for moving said bar vertically,

a center shaft mounted beneath said fusion welding bar for rotation about a horizontal axis,

a roller, supporting pieces of thermoplastic cloth thereon and being fixed to said shaft and rotatable therewith, about the shaft axis,

a plurality of fusion welding beds fixed to said roller, extending the length of said roller, parallel to each other, and at spaced circumferential positions about the periphery of said roller, and receiving said clothpieces,

means for rotating said shaft and said roller, and

means for locking said roller at positions such that a given fusion welding bed may be fixed with respect to said overlying vertical movable bar and in alignment therewith to permit fusion welding of the pieces of thermoplastic cloth carried by said fusion welding bed.

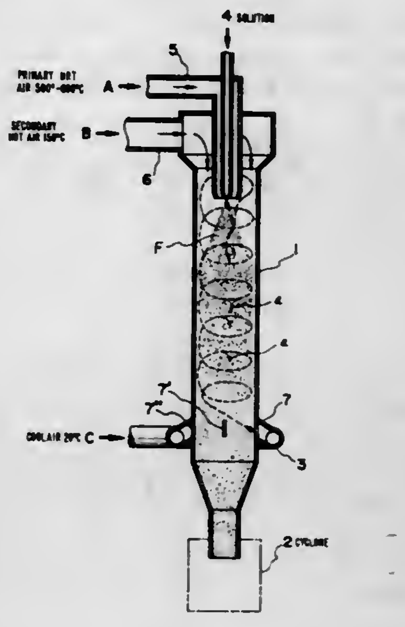
3,895,994
SPRAY DRYER

Kenji Saguchi, 4-15 Yamanone 1-chome, Zushi, Kanagawa Prefecture, and Takashi Hiraiwa, 129 Sasanodai, Yokohama, Kanagawa Prefecture, both of Japan

Filed Feb. 15, 1974, Ser. No. 442,872

Int. Cl.² B01D *1/16*

U.S. Cl. 159—4 B **3 Claims**



1. A spray dryer comprising: a hollow cylinder forming a drying chamber having a first inlet end and a second outlet end, a liquid supply tube having a discharge end disposed axially within said inlet end of said chamber, a first primary hot air supply tube concentrically disposed with respect to said liquid supply tube, and terminating in a common transversely plane therewith, a second hot air supply tube connected with said inlet end of said cylinder to provide a cylindrical column of air completely surrounding said first hot air supply tube in the area of said common plane, a third air supply tube having means for communicating with the interior of said outlet end of said chamber and introducing at least one spiral air current moving tangentially with respect to the inner surface of said cylinder and in a longitudinal direction toward said inlet end; whereby said spiral air current forms a moving curtain preventing hot dry particles outwardly penetrating said cylindrical column of air from adhering to the inner surface of said cylinder, said spiral air current mixing with said cylindrical column of hot air along the axis of said cylinder to lower the effective temperature thereof at the outlet end of said cylinder.

3,895,995
FILM DRYING OF HYDRATED ALKALI METAL SILICATE SOLUTIONS

Robert W. Spencer, Wallingford, and Newton W. McCready, Newtown Square, both of Pa., assignors to Philadelphia Quartz Company, Valley Forge, Pa.

Filed Jan. 18, 1971, Ser. No. 107,446

Int. Cl. B01d *1/22*

U.S. Cl. 159—49 **3 Claims**

1. In the known process of drying an alkali metal silicate solution, including casting a thin film and drying with heat to obtain amorphous particles, the improvement to said process including the control of process conditions by:

a. maintaining the surface upon which said film is cast at a temperature between 95° C and 136° C and below the boiling point of the alkali metal silicate solution,

b. maintaining the air surrounding said film during the drying at 25 to 35% relative humidity, and

c. maintaining the thickness of said film to be dried between 0.5 and 5.0 millimeters; whereby the product obtained from said process will be equilibrated with respect to the moisture content, said moisture content being 10 to 30% by weight, and have a bulk density of 20 to 70 lbs./cu.ft., and the product has an SiO_2/M_2O mole ratio of 1.5 to 5.0/1.0.

3,895,996
BENEFICIATION OF LIGNIN SOLUTIONS AND PULP MILL WASTES

K. Robert Lange, Huntington Valley; Arthur M. Stern, Morrisville; Lawrence L. Gasner, and Yuan Tsun Hsu, both of Cornwells Heights, all of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Division of Ser. No. 277,006, Aug. 1, 1972, Pat. No. 3,829,252. This application June 22, 1973, Ser. No. 372,889

Int. Cl.² D21C *11/00;* **C07G** *1/00*

U.S. Cl. 162—16 **10 Claims**

1. A method of producing a utilizable water-soluble product from an aqueous solution of a lignin derivative which comprises

i. insuring that the aqueous lignin waste is at a pH of from about 8.5 to 13;
ii. adding a sufficient quantity of a water-soluble salt of a polyvalent metal cation, the cations of which will react with said lignin derivative and thereby produce a water-insoluble precipitate, and separating the water-insoluble precipitate from the remaining supernatant solution;
iii. acidifying the precipitate to a pH of from about 0 to 3 with a mineral acid solution; and allowing the resulting medium to digest for from about 1 minute to about 48 hours; and
iv. contacting said precipitate with an aqueous alkaline solution of an alkali metal or ammonium compound in an amount sufficient to produce a solution having a pH of from about 9 to 13 and thereby solubilize precipitate.

3,895,997
PRODUCTION OF SHAPED ARTICLES FROM PAPER SLUDGE

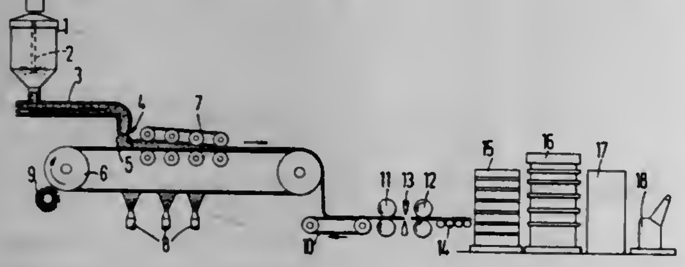
George Robert Haywood, Tideswell, near Buxton, England, assignor to National Research Development Corporation, London, England

Filed July 19, 1972, Ser. No. 273,279

Claims priority, application United Kingdom, July 21, 1971, 34243/71; Feb. 8, 1972, 5817/72

Int. Cl. D21h *1/00;* **D21f** *1/82, 11/00*

U.S. Cl. 162—100 **38 Claims**



1. A process for the production of a shaped article from paper sludge which comprises depositing a layer of an aqueous slurry of said sludge, controlling the water content of the layer by applied pressure and drying so as to produce a coherent agglomerated layer having a degree of wet strength and a water content of from about 15 to 30% by weight based on the total weight of the layer and then forming the layer under pressure with drying to produce a shaped article.

30. A pressure-formable coherent agglomerated layer of paper sludge having a thickness greater than one-sixteenth of an inch, a density of from 0.8 to 2.0 grams per cubic centimeter and a water content of from 15 to 30% by weight based on the total weight of the layer, the layer being sufficiently self-supporting to enable it to be handled without disintegration.

3,895,998
PRODUCTION OF SHAPED ARTICLES FROM PAPER SLUDGE

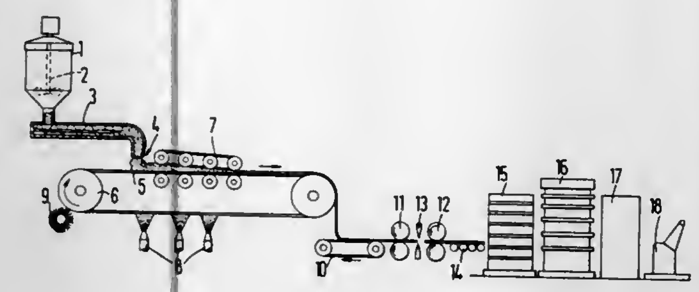
George Robert Haywood, Tideswell, near Buxton, and Alan David Plumstead, London, both of England, assignors to National Research Development Corporation, London, England

Filed July 19, 1972, Ser. No. 273,280

Claims priority, application United Kingdom, Feb. 8, 1972, 5817/72

Int. Cl. D21f *1/82, 11/00;* **D21h** *1/00*

U.S. Cl. 162—100 **38 Claims**



1. A process for the production of a shaped article from paper sludge which comprises depositing a layer of an aqueous slurry of said sludge, controlling the water content of the slurry by applied pressure so as to produce a coherent agglomerated layer having a degree of wet strength and a water content of from 40 to 85% by weight based on the total weight of the layer and then forming the layer under pressure with drying to produce a shaped article.

30. A pressure-formable coherent agglomerated layer of paper sludge having a thickness greater than one-sixteenth of an inch, a density of from 0.8 to 2.0 grams per cubic centimeter, and a water content of from 40 to 85% by weight based on a total weight of the layer, the layer being sufficiently self-supporting to enable it to be handled without disintegration.

3,895,999
PROCESS FOR OBTAINING A CRUDE SAPOGENIN FROM AGAVE LEAVES

Bjarte Loken, Milan, Italy, assignor to Omni Research Incorporated, San German, P.R.

Filed Jan. 22, 1974, Ser. No. 435,464

Int. Cl.² C12B *1/00*

U.S. Cl. 195—7 **7 Claims**

1. A process for recovering a crude sapogenin containing product from agave leaves, which comprises:

squeezing a virgin juice from agave leaves prior to any decortication thereof, the virgin juice being expressed in amount of from about 10–40 percent by weight of the leaves;
thereafter concentrating the saponin steroid values present in the virgin juice;
then acid hydrolyzing the steroid value containing concentrate to thereby convert saponin steroid values into a water insoluble sapogenin containing solids hydrolyzate product;
and recovering said water insoluble sapogenin containing hydrolyzate product from the aqueous portion of the hydrolyzate.

3,896,000
HALOPHILIC NUCLEASE AND A PROCESS FOR PRODUCING THE SAME

Masahiro Kamekura, Urawa, and Hiroshi Onishi, Noda, both of Japan, assignors to Noda Institute for Scientific Research, Noda, Japan

Filed Oct. 16, 1973, Ser. No. 406,798

Claims priority, application Japan, Oct. 18, 1972, 47-103600; Aug. 20, 1973, 48-92390

Int. Cl.² C12D *13/10*

U.S. Cl. 195—62 **11 Claims**

1. A process for producing a halophilic nuclease comprising culturing in a medium containing 1 to 4 moles/*l* of at least one member selected from the group consisting of sodium chloride and potassium chloride a microorganism strain *Micrococcus varians var. halophilus var nov.* (ATCC 21971, FERM-P No. 1648) said strain having a capability of producing halophilic nuclease in the presence of sodium chloride and/or potassium chloride to accumulate the enzyme and collecting the enzyme from the cultured broth.

11. A halophilic nuclease having the following characteristics:

1. having a capability of releasing nucleotides by cleaving the nucleotide-chain at the terminal of native or heat-denatured deoxyribonucleic acid (DNA) or ribonucleic acid (RNA),
2. decomposing calf thymus DNA and RNA of yeasts,
3. being unable to decompose di-p-nitrophenyl phosphate which is decomposed by phosphodiesterase,
4. showing a stronger activity against heat-denatured DNA as compared with DNA,
5. being three times active against RNA than DNA,
6. the optimum pH thereof is around 8.0 and the stable pH range is 5 – 12 and being inactivated slightly at pH 4.0, 7. the optimum temperature for enzymatic reaction is at a temperature of 40° – 45°C while it is inactivated to a considerable extent at 40°C and it is inactivated completely at 50°C,
8. being inactivated quickly when dialyzed against water, 0.05 mole/*l* of sodium chloride-containing 0.01 mole/*l* tris-buffer solution (pH 8.0),
9. showing a strong enzymatic activity in a 1 – 3 mole/*l* of sodium chloride-containing aqueous solution,
10. being activated by 0.1 mole/*l* of Mg^{++} ion or 0.01 mole/*l* of Mn^{++} ion-containing aqueous solution,
11. being inactivated completely 0.01 mole/*l* of Zn^{++} ion or 0.01 mole/*l* of Cu^{++} ion-containing aqueous solution,
12. whose molecular weight is about one hundred thousand and
13. being single electrophoretically.

3,896,001
MALTING PROCESSES

James Barrett, Tonbridge; Brian Heys Kirsop, Redhill, and Godfrey Henry Oliver Palmer, Copthorne, all of England, assignors to Brewing Patents Limited, London, England

Filed Nov. 17, 1972, Ser. No. 307,631

Claims priority, application United Kingdom, Nov. 29, 1971, 55410/71

Int. Cl. C12c *1/02*

U.S. Cl. 195—71 **5 Claims**

1. A process for the production of malt comprising removing at least a part of the husk of the barley in such manner as to perforate the pericarp and testa to render the aleurone layer of the barley accessible to externally applied gibberellic acid, steeping the barley in an aqueous medium, resting the steeped barley in air, resteeping the barley in an aqueous medium, treating the barley with an aqueous mineral acid of a strength in the range of 0.003N –0.5N during or at the end of the resteeping step, applying at least 0.1 p.p.m. gibberellic acid, based on the barley weight, to said barley at or before completion of the resteeping operation, allowing the resteeped barley to germinate for a period of 35–45 hours and then terminating germination before visible growth of microorganisms has taken place.

3,896,002
PRODUCTION OF BREFELDIN-A

Colin C. Howard, Downham Market; Robert A. W. Johnstone, Bebington, and Ian D. Entwistle, Sittingbourne, all of England, assignors to Shell Oil Company, Houston, Tex.

Filed May 14, 1973, Ser. No. 359,937

Claims priority, application United Kingdom, May 22, 1972, 23949/72

Int. Cl. C12d *9/00*

U.S. Cl. 195—81 **4 Claims**

1. A process for the production of Brefeldin-A which comprises cultivating a fungus of the species *Phyllosticta medicaginis* in the presence of an aqueous medium containing a source of assimilable carbon, and recovering Brefeldin-A from the cultivated mixture.

3,896,003
PROCESS AND MEDIUM FOR THE CULTIVATION OF MICROORGANISMS TO ACHIEVE OPTIMUM GROWTH AND YIELD

Nils Torsten Ingestad, Jakobsberg, and Nils Ludvig Molin, Sollentuna, both of Sweden, assignors to AB Marabou, Sundyberg, Sweden

Filed Mar. 19, 1973, Ser. No. 342,742

Claims priority, application Sweden, Mar. 20, 1972, 3535/72

Int. Cl. C12k *1/10*

U.S. Cl. 195—100 **3 Claims**

1. A microbiological mineral nutrient medium for cultivating the microorganism *Methylomonas methanolica*, NRRL B-5458, to obtain maximal production of cell mass and maximal utilization of the medium, which comprises, in addition to carbon, the nutrient elements nitrogen (N), phosphorus (P), potassium (K), sulfur (S), calcium (Ca), magnesium (Mg), and iron (Fe), in weight proportions within the following ranges: 100 nitrogen; 22.5–27.5 phosphorus; 2.25–2.75 potassium; 8.1–9.9 sulfur; 1.35–1.65 calcium; 1.3–2.2 magnesium; and 2.25–2.75 iron.

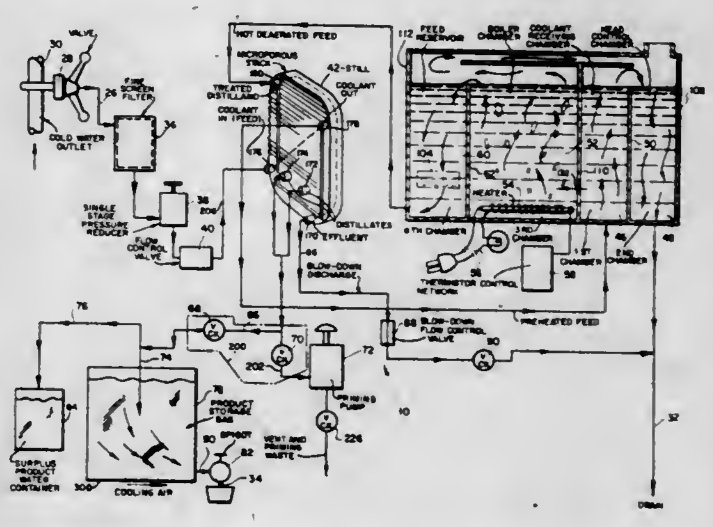
3,896,004
DISTILLATION SYSTEM UTILIZING A MICROPOROUS STACK

Franklin A. Rodgers, Brookline, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 22, 1972, Ser. No. 317,623

Int. Cl. B01d *3/00, 3/42, 3/08, 3/10*

U.S. Cl. 202—167 **13 Claims**

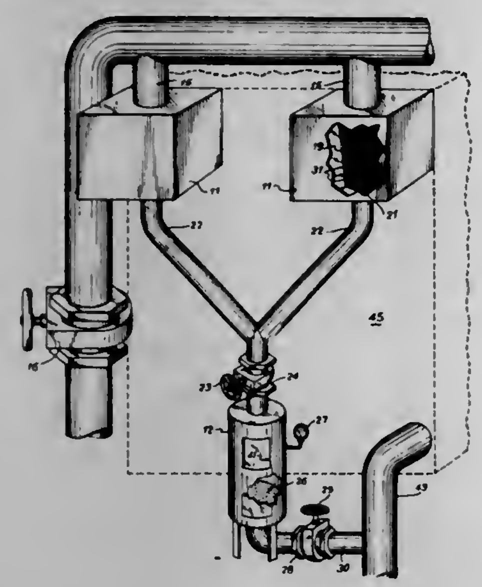


2. The invention in accordance with claim 1, wherein said priming means comprises a pump and further including means for venting said priming means.

3,896,005

FILTERING AND DEBRIS REMOVING APPARATUS FOR CLEANING A SEA WATER STREAM

Hector M. Zuccolotto, Malintzin 44, Coyoacan, Mexico
Filed Sept. 13, 1973, Ser. No. 396,745
Int. Cl.² B01D *3/00*
U.S. Cl. 202—185 **4 Claims**



1. A filtering and debris removing apparatus for cleaning a coolant liquid stream comprising:

a liquid evaporator which comprises a vacuum chamber means, (45), and a condenser including a tube bundle means (17) within said vacuum chamber means (45);

at least two debris removing chamber means (11) coupled to said condenser;

strainer means (19) within each of said debris removing chamber means (11) and having ends extending between a pair of opposing walls thereof for dividing each of said debris removing chamber means (11) into a respective upstream compartment and a downstream compartment; debris containing coolant liquid entrance means (34, 15, 16) discharging into said respective upstream comopartments of said debris removing chamber means (11) and adjacent an end of said strainer means (19);

first valve means (16) in said debris containing coolant liquid entrance means (34, 15, 16);

coolant liquid outlet means sidewardly leading from said respective downstream compartments of saidi debris removing chamber means (11) to the inlet of said tube bundle means (17) of said condenser;

blowdown pipe means (22) leading from said respective upstream compartments and adjacent the other ends of said strainer means (19);

second valve means (23) coupled to said blowdown pipe means (22);

debris collecting means (12) connected in common to at least two debris removing chamber means (11) through said blowdown pipe means (22) and through said second valve means (23);

screening means (26) in said debris collecting means (12) for collecting debris and dividing said debris collecting means (12) into an upstream and a downstream portion, said blowdown pipe means (22) being connected to said upstream portion;

means (40) in said upstream portion of said debris collecting means (12) for removing debris collected on said screening means (26);

fluid discharge means (28) leading from the downstream portion of said debris collecting means (12) to said vacuum chamber means (45) of said liquid evaporator; and third valve means (29) in said fluid discharge means (28); whereby with said first valve means (16) open and in said second (23) ang third (29) valve means closed said debris containing coolant liquid is filtered by flow thereof through said debris containing coolant liquid entrance means, first valve means (16), upstream compartment, strainer means (19), downstream compartment, coolant liquid outlet means and into said tube bundle means (17), while at the same time maintaining said debris collecting means (12) isolated from said debris removal chamber means (11) and said vacuum chamber means (45) to provide for the disposal of the debris previously collected thereby;

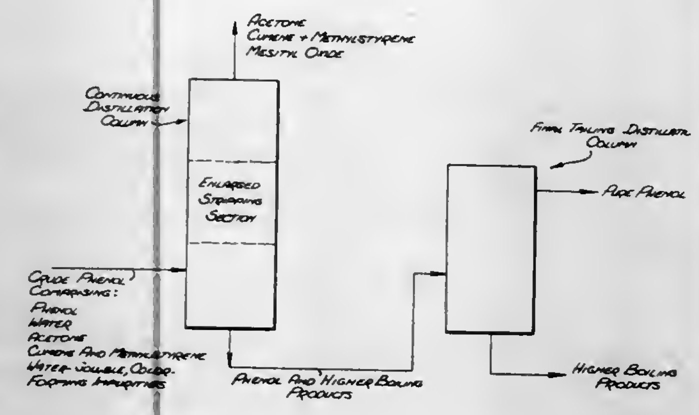
whereby with said first valve means (16) closed and said second (23) and third (29) valve means open the previously filtered liquid in said tube bundle means (17) acts as a source of backwash fluid for backwashing said strainer means (19) by flow of said filtered coolant liquid from said tube bundle means (17) through said coolant liquid outlet means, downstream compartment, strainer means (19), upstream compartment, blowdown pipe means (22), second valve means (23), debris collecting means (12), fluid discharge means (28), third valve means (29) and into said vacuum chamber means (45); and

whereby with said first (16), second (23) and third (29) valve means open a scrubbing action is effected over the entire upstream filtering surface of said strainer means (19) by violent flow of debris containing coolant liquid from siad debris containing coolant liquid entrance means (34, 15, 16) through said first valve means (16), upstream compartment fully scrubbing the upstream surface of said strainer means (19), blowdown pipe means (22), second valve means (23), debris collecting means (12), fluid discharge means (28), third valve means (29), and into siad vacuum chamber means (45), with part of said coolant liquid being simultaneously filtered through said strainer means (19) to pass through said downstream compartment and said coolant liquid outlet means into said tube bundle means (17) in order to permit substantially continuous operation of said condenser.

3,896,006

MESITYL OXIDE REMOVAL FROM HIGH-PURITY PHENOL

Maurice Dudley Cooke, East Horsley, England, assignor to BP Chemicals International Limited, London, England
Continuation-in-part of Ser. No. 360,975, May 16, 1973, abandoned. This application May 8, 1974, Ser. No. 468,147
Claims priority, application United Kingdom, June 1, 1972, 25598/72
Int. Cl. B01d *3/34*
U.S. Cl. 203—28 **14 Claims**

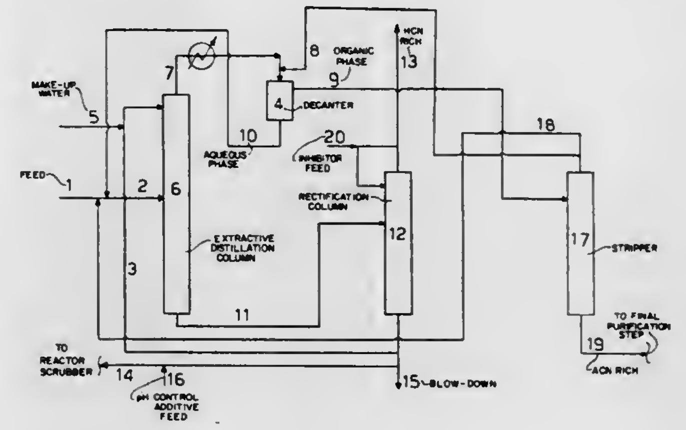

ACETONE
CUMENE + METHYLSTYRENE
MESITYL OXIDE
CONTINUOUS DISTILLATION COLUMN
ENLARGED STRIPPING SECTION
FINAL TAILING DISTILLATION COLUMN
PURE PHENOL
CRUDE PHENOL COMPRISING:
PHENOL
WATER
ACETONE
CUMENE AND METHYLSTYRENE
WATER-SOLUBLE, COLOR-FORMING IMPURITIES
PHENOL AND HIGHER BOILING PRODUCTS
HIGHER BOILING PRODUCTS

1. A process for the purification of crude phenol obtained from the acid cleavage of cumene hydroperoxide which comprises subjecting a feed of crude phenol consisting essentially of phenol and less than 1,000 parts per million of water-soluble color-forming impurities boiling from 152° to 182°C. to a fractional distillation such that the water-soluble color-forming impurities are retained within a section of the column under distillation conditions so as to concentrate said impurities and at least partially to decompose said impurities to mesityl oxide, removing a base product comprising phenol free from water-soluble color-forming impurities boiling from 152° to 182°C. and an overhead fraction containing mesityl oxide, and thereafter distilling the phenol from the higher-boiling decomposition products.

3,896,007

pH CONTROL OF RECYCLE WATER IN THE PLURAL STAGE DISTILLATION OF A CRUDE ACRYLONITRILE FEED

Carlo Rescalli; Pierluigi Rebora, and Alessandro Ginnasi, all of San Donato Milanese, Italy, assignors to Snam Progetti S.p.A., Milan, Italy
Filed Nov. 10, 1972, Ser. No. 305,227
Claims priority, application Italy, Nov. 17, 1971, 31195/71
Int. Cl. B01d *3/34*
U.S. Cl. 203—33 **4 Claims**



1. In a cyclic process for removing impurities from a synthesized acrylonitrile mixture wherein said mixture is extractively distilled with water, the overhead stream containing raw acrylonitrile and the bottom stream containing substantially all of said impurities, the improvement which comprises the steps of:

a. subjecting a mixture containing acrylonitrile and impurities selected from the group consisting of HCN, CH_3CN, carbonyl compounds, benzene, propionitrile, allyl alcohol and mixtures thereof to an extractive distillation step using water as the extracting solvent and collecting an overhead stream comprising predominately raw acrylonitrile and a bottom stream comprising the impurities recited above;

b. subjecting said bottom stream from the extractive distillation to a distillation step whereby predominately HCN, CH_3CN and carbonyl compounds are discharged overhead; and removing and recovering as a bottom stream all the water necessary for absorbing acrylonitrile from the reaction gases and as the extractive solvent for the extractive distillation column, introducing an additive compound to the water necessary for absorbing acrylonitrile for maintaining the pH in this water and separately adding make-up water to the recycled extractive solvent;

c. separating said overhead stream from the extractive distillation comprising predominately raw acrylonitrile into an aqueous phase which is recycled to said extractive distillation step and an organic phase comprising raw acrylonitrile which is conveyed to stripping step (d);

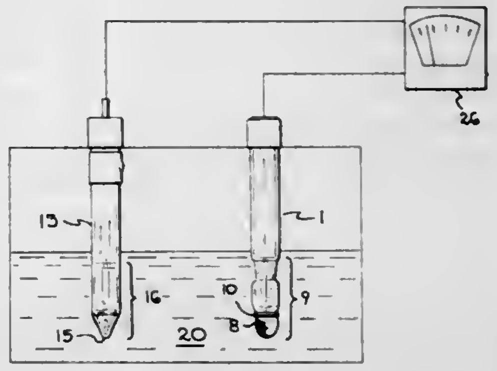
d. stripping the raw acrylonitrile from step (c) into an overhead phase comprising a gaseous water component which is condensed and recycled to said extractive distillation step and an HCN-containing aqueous component which is recycled to separation step (c), and a bottom organic phase comprising substantially pure acrylonitrile;

whereby the contents of the extractive column and rectification column are maintained at a pH in the range 5.5 to 7.5 by the incorporation of additives.

3,896,008

ELECTROCHEMICAL POTENTIOMETRIC METHOD FOR SELECTIVELY DETERMINING ALKALINE PHOSPHATASE CONTENT IN AQUEOUS FLUIDS

Melvin H. Keyes, Sylvania, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Continuation-in-part of Ser. No. 193,468, Oct. 28, 1971, abandoned. This application Dec. 20, 1971, Ser. No. 209,741
Int. Cl. G01n *27/46*
U.S. Cl. 204—1 T **6 Claims**



1. A potentiometric method for selectively determining the concentration of alkaline phosphatase of an aqueous fluid sample, comprising;

a. diluting the aqueous fluid sample with a buffered aqueous solution having a pH in the range of about 8.5 to about 9;

b. providing a potentiometer electrically connected in series to a D-serine specific electrode and a reference electrode, wherein the D-serine specific electrode is provided with an ammonium ion-sensitive membrane in contact with and substantially encapsulated by a coating of insolubilized D-serine deaminase, said coating containing a catalytically effective amount of D-serine deaminase and being permeable to both the aqueous fluid sample and products of the reaction of the aqueous fluid sample and the D-serine deaminase;

c. contacting the D-serine specific electrode and the reference electrode with the diluted sample;

d. recording the ionic background activity of the sample;

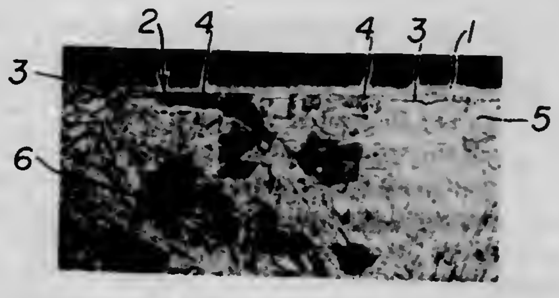
e. adding to the diluted sample about 5×10^{-4} to about 5×10^{-1} moles D-phosphoserine per liter of diluted sample;

f. and recording the incremental change in potential at regular intervals for a period ranging from about 5 to about 15 minutes.

3,896,009

ALUMINUM ALLOY CYLINDER

Torao Kobayashi, and Chikato Ninagawa, both of Tokyo, Japan, assignors to Kioritz Corporation, Tokyo, Japan
Filed July 9, 1974, Ser. No. 487,213
Claims priority, application Japan, May 21, 1974, 49-56833
Int. Cl.² C25D *7/04;* F02F *1/00;* C25D *5/44*
U.S. Cl. 204—26 **8 Claims**



1. In a process for providing an aluminumsilicon hypereutectic alloy cylinder, the improvements comprising the steps of:

machining and finishing the sliding surface of said cylinder to a given dimension so that finished primary crystal grains of silicon clearly appear on said sliding surface;

subjecting said finished surface to pickling activating treatment to remove eutectic aluminum solid solution surrounding the primary crystal grains of silicon to a given depth in the manner that said primary crystal grains of silicon are not substantially corroded and are left intact; electroplating on said sliding surface having thus been treated by said pickling-activating treatment a metal or alloy which is capable of improving the sliding performance of said sliding surface in relation to a mating surface, said metal or alloy being selected from the group consisting of lead, tin, copper, zinc, iron, nickel, silver, and alloys thereof;

whereby said electroplated metal surfaces and the top finished surfaces of primary crystal grain silicon provide a desired sliding surface in combination.

3,896,010

PROCESS AND APPARATUS FOR THE COATING OF AN ELECTRICALLY CONDUCTIVE FIBROUS STRAND

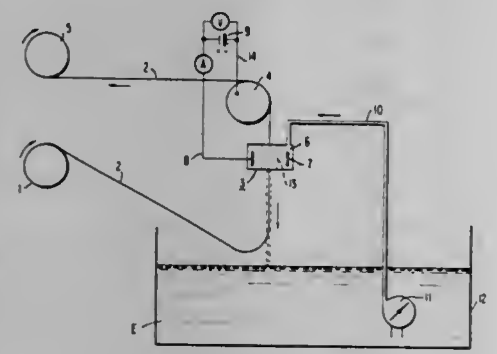
Jochen Vetter, Karlsfeld, Germany, assignor to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Germany

Filed Oct. 16, 1972, Ser. No. 297,851

Claims priority, application Germany, Oct. 16, 1971, 2151618

Int. Cl. C23b *5/58*

U.S. Cl. 204—28 **11 Claims**



1. A process for the coating and treatment of an electrically conductive fiber strand made of a multiplicity of individual filaments of a quasi infinite length, said filaments in said fiber strand being twisted together, which comprises the steps of:

electrically connecting the fiiber strand to a voltage source to act as a cathode,

passing the strand through an anode-equipped whirl chamber,

supplying fluid electrolyte to said whirl chamber from a storage tank containing a reservoir of said fluid electrolyte, said whirl chamber being separated from said storage tank such that said whirl chamber is substantially free of the fluid electrolyte reservoir, and

subjecting the strand to at least one jet of said fluid electrolyte to open up the strand such that the filaments throughout the strand are uniformly treated exclusively with said electrolyte jet, said at least one jet of fluid electrolyte being suppliled annularly to the strand, wherein each jet of electrolyte is arranged with a sinusoidal line in the axial direction of the strand and annularly to the strand in a direction counter to the direction of the twist in said strand.

3,896,011

PROCESS FOR THE PREPARATION OF SEBACIC ACID

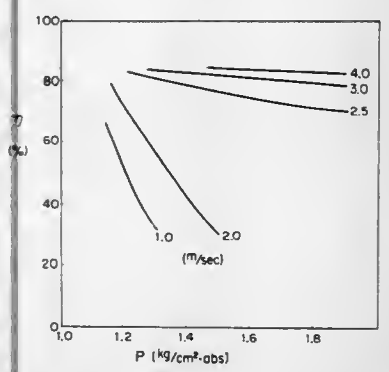
Toshiro Isoya; Rinichi Kakuta, and Chikayuki Kawamura, all of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jan. 24, 1974, Ser. No. 436,275

Claims priority, application Japan, Jan. 31, 1973, 48-11883; Mar. 26, 1973, 48-34863; Oct. 3, 1973, 48-111218; Dec. 17, 1973, 48-141604

Int. Cl. C07b *29/06;* **C07c** *51/02, 69/50*

U.S. Cl. 204—59 R **13 Claims**



1. In a process for preparing dimethyl sebacate comprising subjecting to an electrolytic condensation in an electrolytic cell a solution of monomethyl adipate and an alkali salt thereof in methanol, the improvement which comprises maintaining the concentration of dimethyl sebacate in the solution at a level of at least 5% by weight, and passing the solution through the cell at a liquid velocity of at least 2.5 m/sec.

3,896,012

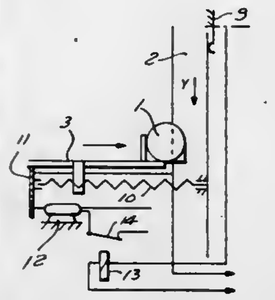
ELECTROCHEMICAL METAL-REMOVAL METHOD

Edwin Buschbaum; Siegfried Motschmann, and Gert Strenge, all of Leipzig, Germany, assignors to Veb Polygraph Leipzig Kombinat fur Polygraphische Maschinen und Ausrustungen, Leipzig, Germany

Filed June 27, 1972, Ser. No. 266,751

Int. Cl. B23p *1/00, 1/12*

U.S. Cl. 204—129.46 **10 Claims**



1. A method of electrochemically removing metal from a workpiece, comprising the steps of connecting a metallic workpiece and a metallic work tool having surface high-points each to a different terminal of a source of electrical energy, so that the workpiece and work tool can be used as the anode and cathode, respectively, of an electrolytic reaction; effecting relative movement between said workpiece and said work tool in a first direction, associated with penetration of said work tool into said workpiece; effecting relative movement between said workpiece and said work tool in a second direction transverse to said first direction; passing an electrolyte between and in contact with said work tool and said workpiece; establishing a current flow between said work tool and said workpiece to effect oxidation of the metal of said workpiece and the generation of hydrogen gas; and establishing continual physical and electrical contact between the work tool and the workpiece to an extent causing the development of momentary short-circuits between surface high-points on said workpiece and said work tool to ignite hydrogen gas in

the immediate vicinity of the short-circuiting surface high-points and to effect localized heating and softening of the material of the workpiece in the immediate vicinity of the short-circuiting surface high-points.

3,896,013

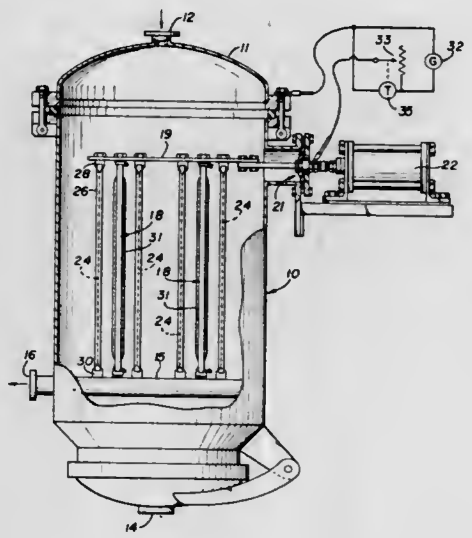
PROCESS FOR REMOVING METALLIC IONS FROM AN ELECTROLYTIC SOLUTION

James F. Zievers, LaGrange, Ill., assignor to Industrial Filter and Pump Mfg. Co., Cicero, Ill.

Filed Feb. 25, 1974, Ser. No. 445,544

Int. Cl. C02c *5/12;* **B01k** *3/02, 3/08*

U.S. Cl. 204—149 **6 Claims**



1. A process for removing metal ions from a solution, comprising the steps of

depositing a porous cake of carbon particles on a foraminous substrate by flowing a liquid in which said particles are entrained through said substrate, and

passing said solution through said cake and said substrate while maintaining said cake at a negative electric potential relative to an anode immersed in said solution in spaced relationship to said cake,

whereby said metal ions are deposited on the surfaces of said particles.

3,896,014

UV CURABLE POLYENE-POLYTHIOL-SURFACTANT COMPOSITIONS

Ira Rosenberg, West Norwalk, Conn., assignor to Clairol Incorporated, New York, N.Y.

Filed June 14, 1973, Ser. No. 370,071

Int. Cl.^{2} C08F *2/50, 4/28;* **C08L** *75/00*

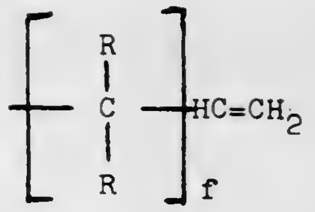
U.S. Cl. 204—159.23 **39 Claims**

1. A photocurable liquid nail lacquer composition comprising in photocurably effective amounts as separate components distinct from each other from 1% to about 98.5% by weight of a mixture of a polyene component and 0.5% to 1.0% by weight of a polythiol component, 1% to 10% by weight of a photocuring rate accelerator component and a surfactant which is soluble in said liquid composition and selected from the group consisting of sorbitan sesquioleate, sorbitan dioleate, sorbitan trioleate, pentaerythritol dioleate, pentaerythritol trioleate, glyceryl monooleate, glyceryl dioleate, glyceryl trioleate, polyglycerol ester of oleic acid, alkenyldimethylethyl ammonium bromide, di "coco" dimethyl ammonium chloride, and quaternary imidazolinium salt (from stearic acid) wherein:

A. Said polyene component being a terminally unsaturated polyene which comprises the formula:

$$[A]-(X)_m$$

herein m is an integer of at least 2, wherein X is



$$\left[-\underset{R}{\overset{R}{\overset{|}{\underset{|}{C}}}}-\right]_f HC=CH_2$$

where f is an integer from 1 to 9; R is a radical selected from the group consisting of hydrogen, fluorine, chlorine, furyl, thienyl, pyridyl, phenyl and substituted phenyl, benzyl and substituted benzyl, alkyl and substituted alkyl, alkoxy and substituted alkoxy, cycloalkyl and substituted cycloalkyl; said substituents on said substituted members being selected from the group consisting of nitro, chloro, fluoro, acetoxy, acetamide, phenyl, benzyl, alkyl, alkoxy and cycloalkyl; said alkyl and alkoxy having from one to nine carbon atoms and said cycloalkyl having from three to eight carbon atoms; wherein [A] is free of reactive non-aromatic carbon-to-carbon unsaturation; free of highly water sensitive members, and is a polyvalent chemically compatible member of the group consisting of carbonate, carboxylate, carbonyl, ether, silane, silicate, phosphonate, phosphite, phosphate, alkyl and substituted alkyl, cycloalkyl and substituted cycloalkyl, aryl and substituted aryl, urethane and substituted urethane, urea and substituted urea, amine and substituted amine, amide and substituted amide, hydroxyl, heterocyclic carbon containing radical, and mixtures thereof, said substituents on said members being defined above, said component having a molecular weight in the range from about 64 to 20,000; and a viscosity in the range from essentially 0 to 20 million centipoises at 70°C; and

B. said polythiol component having a molecular weight in the range from about 50 to about 20,000 of the general formula:

$$R_8-(SH)_n$$

wherein R_8 is a polyvalent organic moiety free from reactive non-aromatic carbon-to-carbon unsaturation and n is at least 2, the sum of m and n being greater than 4, with the ene/thiol mole ratio being in the range of about 0.50:1.0 to 1.5:1.0 so as to provide a cross-linked solid, self-supporting cured product.

3,896,015

METHOD AND APPARATUS FOR SEPARATING WEAKLY IONIZABLE SUBSTANCES FROM FLUIDS CONTAINING THE SAME

Wayne A. McRae, Lexington, Mass., assignor to Ionics, Incorporated, Watertown, Mass.

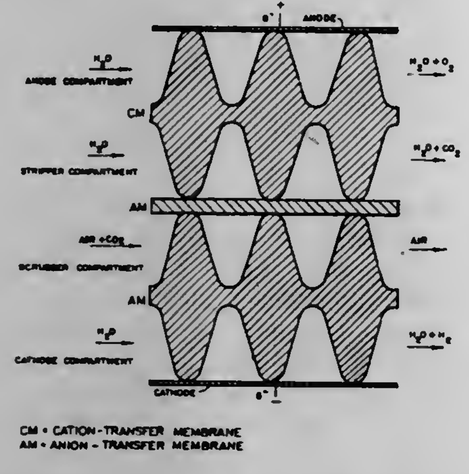
Filed July 24, 1968, Ser. No. 747,158

Int. Cl. B01d *13/02;* **B01k** *1/00*

U.S. Cl. 204—180 P **13 Claims**

7. A method of separating a weakly ionizable substance from fluid mixtures containing the same comprising passing said fluid mixture in the presence of moisture through a scrubber compartment of a four compartment electrolytic unit, said unit defined on its outer ends by anode and cathode electrodes, three ion exchange membranes between said electrodes defining said four compartments, the first and second of said membranes being of a like charge type and different from the charge type of the third membrane, said like charged membranes being adjacent to each other and to the electrode of the opposite charge sign, said membranes of like charge thereby forming a scrubber compartment there-between, embossments on at least one of said membranes of like charge, said embossments contacting at least the other of said membrane of like charge thereby providing a current path and a fluid passage through said scrubber compartment, passing water through the anode and cathode compartments, passing a direct electric current between the electrodes transversely

through all four compartments, removing at least part of said weakly ionizable substance from the stripper compartment

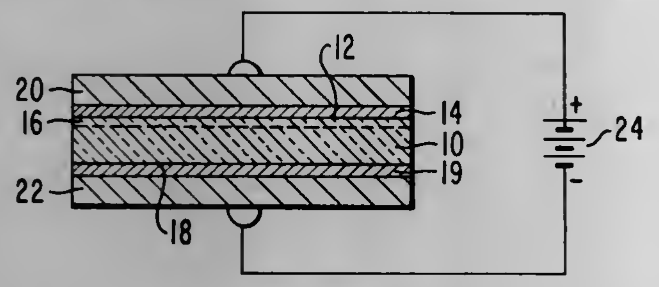


defined between the membranes of unlike charge and removing at least a partially purified fluid mixture from the scrubber compartment defined between the membranes of like charge.

3,896,016
FABRICATION OF LIQUID CRYSTAL DEVICES

Lawrence Alan Goodman, East Windsor, N.J., and David Emil Carlson, Yardley, Pa., assignors to RCA Corporation, New York, N.Y.

Filed July 5, 1974, Ser. No. 486,244
Int. Cl. B01d *13/02*
U.S. Cl. 204—180 R **4 Claims**



1. In the fabrication of a liquid crystal device comprising a pair of oppositely disposed substrates of an alkali-containing glass, first surfaces of each of said substrates being disposed in oppositely disposed, facing relationship, the method comprising:
   coating each of said first surfaces of said substrates with a layer of an electrically conductive material,
   depleting alkali ions from a region of each substrate immediately beneath said conductive material layer thereon using a process in which the positive terminal of a DC power supply is electrically connected to said first surface of each substrate through said conductive layer thereon, a second surface of each of said substrates spaced from said first surface thereof being electrically connected to the negative terminal of said power supply, and
   assembling said substrates with said first surfaces in facing relationship.

3,896,017
ELECTRODEPOSITION OF THERMOSETTING COATING AT THE CATHODE

Kazys Sekmakas, Chicago, Ill., assignor to DeSoto, Inc., Des Plaines, Ill.

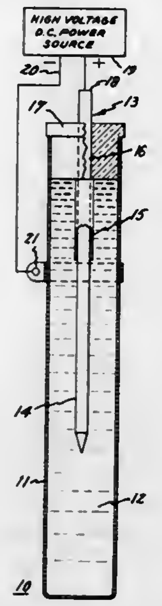
Filed Mar. 1, 1973, Ser. No. 337,007
Int. Cl. B01k *5/02*
U.S. Cl. 204—181 **6 Claims**

1. A method of electrodepositing a thermosetting coating at the cathode of a unidirectional electrical system comprising passing a unidirectional electrical current through an aqueous electrocoating bath comprising water having dispersed therein a water dispersible salt of an acid with an hydroxy functional polyamine resin, said polyamine resin being the reaction product of a solvent-soluble epoxy resin advanced by reaction with up to about 10% by weight of diisocyanate and reacted with monosecondary amine to be substantially devoid of epoxy functionality, said polyamine resin being precondensed with from 2% to 60%, based on the total weight of resin, of a water dispersible heat-hardening phenolic resin to cause the codeposition of said polyamine resin and said phenolic resin in the form of a film of coating at the cathode, removing the coated cathode from said bath and then baking the coated cathode to cure said polyamine resin by reaction thereof with said phenolic resin.

3,896,018
METHOD OF FORMING BETA-ALUMINA ARTICLES

Robert W. Powers, Schenectady, and Robert S. Owens, Latham, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sept. 24, 1973, Ser. No. 400,046
Int. Cl. B01k *5/00;* **C23b** *13/00*
U.S. Cl. 204—181 **7 Claims**



1. A method of forming a beta-alumina article which comprises providing a suspension consisting of beta-alumina particles the majority of which have a diameter in the range of 1 to 2 microns in an organic fluid having a dielectric constant at 25°C of from 12 to 24, adding 0.05 to 0.5 percent aluminum stearate by weight of the betaalumina to the suspension, electrophoretically depositing the beta-alumina particles from the suspension as a dense deposit onto a charged electrode in a DC electric field of from 100 to 10,000 volts per centimeter, drying the deposit on the electrode, removing the deposit from the electrode, and sintering the deposit in an oxygen oxidizing atmosphere at a temperature between 1700 and 1825°C resulting in a dense, sintered beta-alumina article.

3,896,019
METHOD OF FORMING BETA-ALUMINA ARTICLES

Stephan P. Mitoff, Elnora; Robert W. Powers, Schenectady, and Randall N. King, Johnstown, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

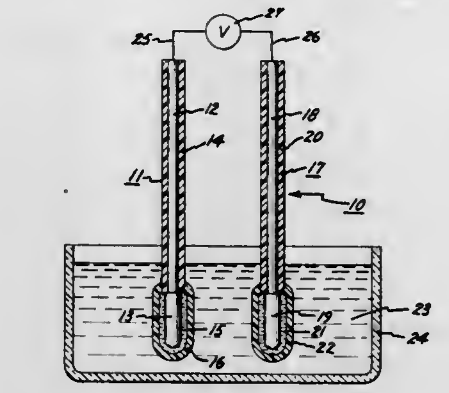
Filed Oct. 4, 1973, Ser. No. 403,454
Int. Cl.² C04B *35/10, 35/64;* **C25D** *1/14*
U.S. Cl. 204—181 **6 Claims**

1. A method of forming a beta-alumina article which comprises providing a plurality of beta-alumina particles the majority of which have a diameter from submicron size to 5 microns, forming the particles into greenware with a density of at least 40 percent of the theoretical density, and passing the greenware at a temperature between 1650° and 1825°C through a preheated oxygen oxidizing atmosphere and at a controlled passage rate of from one-half to four inches per minute with greenware exposure to such temperature ranging from about 6 minutes to ¾ minute resulting in a dense, sintered beta-alumina article.

3,896,020
CARBON DIOXIDE AND pH SENSOR

Oliver H. Le Blanc, Jr., Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 2, 1974, Ser. No. 493,863
Int. Cl. G01n *27/46*
U.S. Cl. 204—195 M **8 Claims**



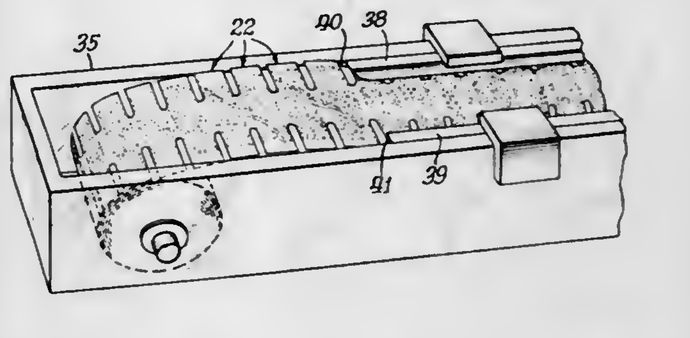
1. A carbon dioxide sensor which comprises a carbon dioxide insensitive hydrogen ion electrode comprising a flexible metallic elongated electrode lead, an electrochemically active region at one end adhering tightly to and in electrical contact with the electrode lead, electrical insulation surrounding the remainder of the electrode lead, an electrolyte containing a hydrogen ion buffering system and an ion which enters into equilibrium with the electrochemically active region of the lead contacting the electrochemically active region, and an outer sheath of a membrane selectively permeable to hydrogen ion and also permeable to carbon dioxide encapsulating the electrochemically active region and the electrolyte, the hydrogen ion permeable membrane material being a hydrophobic elastomer with a dielectric constant of from 4 to 13, and a hydrophobic and lipophilic H^+ ion carrier; a separate, spaced apart, carbon dioxide sensitive hydrogen ion electrode comprising a flexible, elongated electrode lead, an electrochemically active region at one end adhering tightly to and in electrical contact with the electrode lead, electrical insulation surrounding the remainder of the electrode lead, an unbuffered electrolyte containing bicarbonate ions and an ion which enters into equilibrium with the electrochemically active region of the lead contacting the electrochemically active region, and an outer sheath of a membrane selectively permeable to hydrogen ions and also permeable to carbon dioxide encapsulating the electrochemically active region and the electrolyte, the hydrogen ion permeable and carbon dioxide permeable membrane material being a hydrophobic elastomer with a dielectric constant of from 4 to 13, and a hydrophobic and lipophilic H^+ ion carrier; and the electrodes being electrically connected.

3,896,021
AUTOMATED ELECTROPHORESIS INSTRUMENT

Egil Fosslien, Columbia, Mo., assignor to The Curators of the University of Missouri, Columbia, Mo.

Filed Oct. 22, 1974, Ser. No. 516,982
Int. Cl. B01k *5/00*
U.S. Cl. 204—299 **8 Claims**

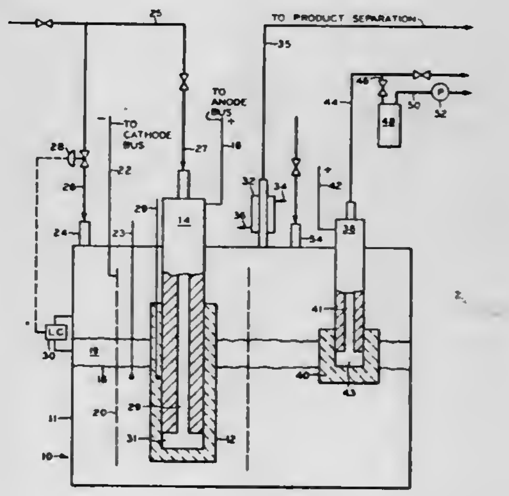
1. Automated electrophoresis apparatus comprising:
   an elongated electrophoretic separation chamber defining a pair of elongated electrolyte wells;
   electrolyte media contained within said wells;
   electrode means contained within said media;
   an elongated, flexible, coated plastic tape divided into transverse segments and mounted for movement longitudinally with respect to said separation chamber;
   deflecting means mounted adjacent the top of said separation chamber and operable to flex the lateral ends of the segments of said tape so as to make electrical contact with said electrolyte media; and
   a source of DC power connected to said electrode means and operable to establish an electrical field transversely across said tape whereby electrophoretic separation can take place on the coated surface of said tape.



3,896,022
APPARATUS FOR SEPARATING LIQUIDS

William V. Childs, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 143,892, May 17, 1971, Pat. No. 3,798,144, which is a division of Ser. No. 858,734, Sept. 17, 1969, Pat. No. 3,617,453. This application Jan. 10, 1974, Ser. No. 432,131
Int. Cl. B03c *5/02*
U.S. Cl. 204—302 **6 Claims**



1. Apparatus comprising, in combination:
   a vessel for containing a body of a first liquid having a body of a second liquid, substantially insoluble in said first liquid, disposed as a layer on the surface of said first liquid;
   a phase splitter means comprising an electrically conductive porous cup disposed in said vessel, adapted to extend through said layer of second liquid and into said first liquid, for selectively separating one of said liquids from the other said liquid;
   means for causing said one liquid to selectively flow into said phase splitter and be removed from said vessel; and
   means for applying a positive electric voltage to said cup to increase the selectivity of said cup for the flow of said one liquid through the pores of and into said cup.

3,896,023
PROCESS FOR PRODUCING SYNTHETIC COKING COAL

Hiromi Ozaki, Urawa; Mamoru Yamane, and Haruo Yoshikai, both of Tokyo, all of Japan, assignors to Nippon Mining Co., Ltd., Tokyo, Japan

Filed Feb. 1, 1974, Ser. No. 438,861
Claims priority, application Japan, Feb. 3, 1973, 48-13369
Int. Cl. C10g *9/00*
U.S. Cl. 208—46 **7 Claims**

1. A process for preparing a synthetic coking coal or a binder pitch, which comprises the steps of:

coking a heavy hydrocarbon feedstock having an aromaticity factor fa greater than 0.4, wherein fa is defined by the equation:

$$fa = \frac{C/H - \frac{1}{2}(H\alpha/H) - \frac{1}{2}(Ho/H)}{C/H}$$

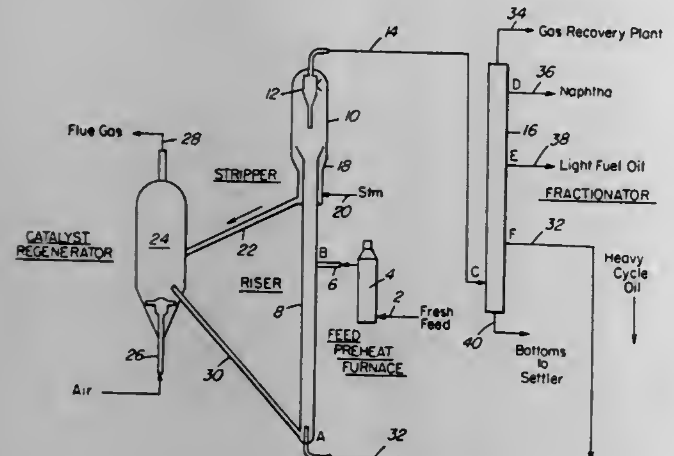
and wherein C/H represents the ratio of carbon atoms to hydrogen atoms, Hα/H represents the ratio of the hydrogen atoms in the α-position of the aliphatic hydrocarbon groups attached to the aromatic rings to the total hydrogen atom content, and Ho/H represents the ratio of the hydrogen atoms in the β-position or higher positions of the aliphatic hydrocarbon groups attached to the aromatic rings to the total hydrogen atom content at a temperature greater than that which initiates cracking; and

recovering said synthetic coking coal or binder pitch from said coking step.

3,896,024
PROCESS FOR PRODUCING LIGHT FUEL OIL

Donald M. Nace, Woodbury, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 2, 1974, Ser. No. 457,281
Int. Cl. C10g *37/02*; **C01b** *33/28*
U.S. Cl. 208—74 **10 Claims**



1. A method for producing light fuel oil and lower boiling hydrocarbons which comprises:

combining a heavy cycle oil product of catalytic cracking with freshly regenerated catalyst particles to form a suspension at a temperature in the range of 900°F. to 1000°F., passing the suspension upwardly through a riser conversion zone under limited conversion conditions designed to produce light fuel oil product and deposit from about 0.5 to about 1.2 weight percent carbon on the suspended catalyst particles,

combining a fresh gas oil feed with said suspension of carbon containing catalyst and cycle oil conversion products in an amount to form a second suspension of reduced temperature within the range of about 800°F. to about 900°F.,

passing the second suspension through a riser conversion zone under conversion conditions selected to particularly produce light fuel oil product,

separating the hydrocarbon product of said cycle oil and said gas oil conversion from catalyst particles and then into hydrocarbon fractions comprising gasoline and lower boiling components, a light fuel oil product fraction, a heavy cycle oil product fraction and a high boiling residual material, and

recracking the separated heavy cycle oil fraction with freshly regenerated catalyst as above defined.

3,896,025
PRODUCTION OF IMPROVED LUBRICATING OILS

Richard L. Coleman, Port Arthur; Billy H. Cummins, Nederland, and Ambrose J. Startz, Groves, all of Tex., assignors to Texaco, Inc., New York, N.Y.

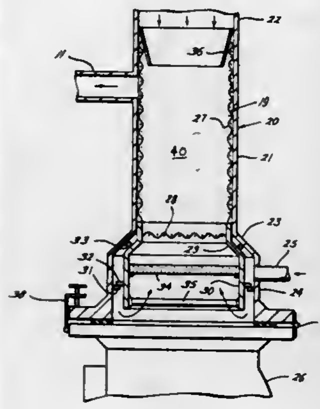
Filed June 15, 1973, Ser. No. 370,246
Int. Cl. C10g *13/04*
U.S. Cl. 208—95 **9 Claims**

1. A process for the production of a lubricating oil of specified flash point and viscosity which comprises subjecting a crude lubricating oil to catalytic hydrocracking, distilling the hydrocracked product to remove material boiling up to about 600°F., subjecting the hydrocracked fraction boiling above about 600°F. to additional distillation to obtain a lubricating oil having a predetermined flash point, distilling said lubricating oil of predetermined flash point until a heart cut is obtained having substantially the same viscosity as said fraction boiling above about 600°F., returning the remainder of the hydrocracked fraction boiling above said heart cut to the hydrocracking zone and dewaxing said heart cut.

3,896,026
METHODS AND APPARATUS FOR FORMING A DENSE PHASE CATALYST TRANSFER SYSTEM

John P. MacLean, Stafford; Dorrance P. Bunn, and Adolph S. Mager, both of Houston, all of Tex., assignors to Texaco Inc., New York, N.Y.

Filed Sept. 27, 1973, Ser. No. 401,321
Int. Cl. B07b *7/06*
U.S. Cl. 209—250 **10 Claims**



1. A method for forming a dense phase catalyst transfer system having a conduit with loading air admitted thereto for rapid transit of a catalyst mixture including foreign debris material from one element to another element in a fluid catalytic cracking unit comprising the steps of,

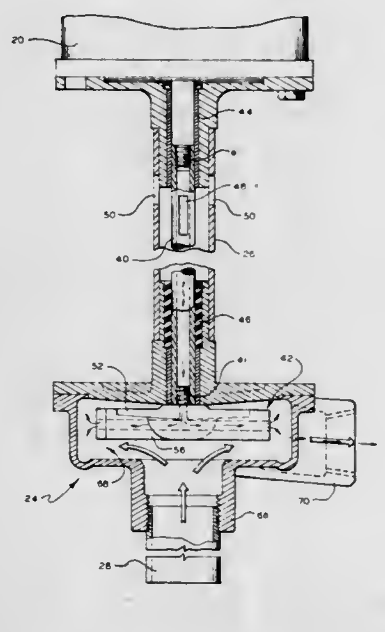
a. passing the catalytic mixture through a debris collector for removing substantially all foreign debris material therefrom, and

b. using a conduit of a smaller diameter than would be required for said catalyst mixture to increase the flowing density of the pure catalyst in the conduit.

3,896,027
METHOD OF TREATING SEWAGE TO ENHANCE AEROBIC DECOMPOSITION

Kenneth A. Digney, Woodchuck Hill Rd., Fayetteville, N.Y. 13066, and Alfred P. Gallauresi, 112 Wycliffe Rd., Solvay, N.Y. 13209

Continuation-in-part of Ser. No. 372,776, June 22, 1973. This application Mar. 19, 1974, Ser. No. 452,602
Int. Cl. C02c *1/12*
U.S. Cl. 210—14 **6 Claims**



1. A method of treating sewage to enhance aerobic decomposition thereof comprising:

a. placing the sewage, substantially in a liquid state, into a container;

b. pumping the sewage through an impeller pump having inlet and outlet openings both within the container;

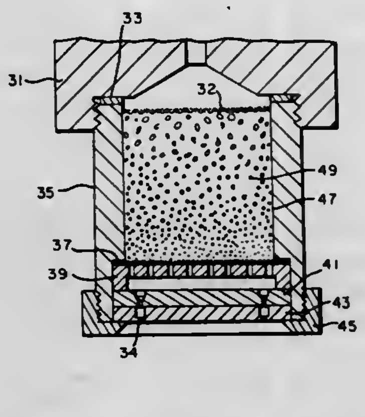
c. converting a portion of the velocity energy of the sewage passing through the pump to pressure energy; and

d. mixing air into the sewage passing through said pump by ejecting air from an opening in at least one impeller blade of the pump.

3,896,028
PARTICULATE METAL FILTER MEDIUM FOR POLYMER MELTS

William Lewis Phillips, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.

Filed Nov. 29, 1973, Ser. No. 420,323
Int. Cl. B01d *23/10*
U.S. Cl. 210—152 **4 Claims**

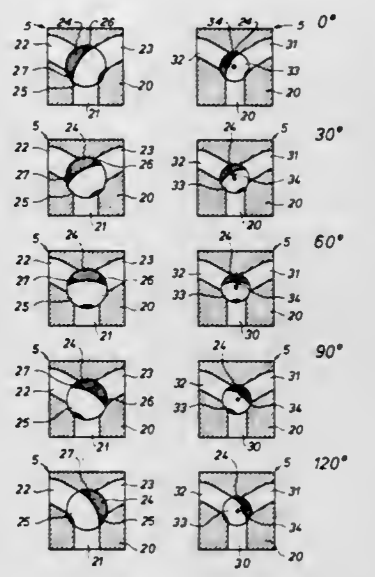


3. In a spinning pack assembly including a filter body through which polymer flows from a pressurized source to a spinneret for forming filaments, the improvement comprising: said body containing a bed of irregularly shaped rough surfaced metal particles having a shape factor of less than about 0.58, said bed being characterized by a porosity of at least 60 percent under no applied load and by compaction of no more than about 20 percent or about 30 percent under applied loads of about 5,000 pounds per square inch or 10,000 pounds per square inch respectively, said metal particles being formed from an alloy, said alloy consisting essentially of about 30 percent to about 40 percent by weight chromium; about 2 percent to about 4 percent by weight silicon, 100 to 400 parts per million by weight carbon; 600 to 1,000 parts per million by weight nitrogen; and the remainder iron.

3,896,029
SWITCHING VALVE FOR CONTINUOUS FILTERING DEVICES

Marcel Leon Beuselinck, Wommelgem, Belgium, assignor to Agfa-Gevaert Aktiengesellschaft, Mortsel, Belgium

Filed Feb. 15, 1974, Ser. No. 443,100
Claims priority, application United Kingdom, Feb. 16, 1973, 7839/73
Int. Cl. B01d *29/36*
U.S. Cl. 210—341 **5 Claims**



1. A flow control unit for selectively controlling fluid flow from a common inlet conduit through two loop-shaped flow paths into a common outlet conduit comprising a valve housing having at one section thereof a supply inlet port connected to said common inlet conduit and two loop inlet ports arranged in generally regularly angularly spaced relation about the axis of said housing, said loop inlet ports having substantially equal cross-sectional areas, and a valve member rotatable within said housing about said axis, said member having at one section thereof a main feed passage extending therethrough for continuous communication with said common inlet conduit and defining between said passage ends a wall section larger in angular extent that either of said loop inlet ports whereby upon rotation of said valve members either of said ports can be exclusively in communication with said feed passage and the other closed by said wall section or both said ports partially in communication therewith, and said valve member also having two substantially symmetrically arranged bleed passages extending from said feed passage through said wall section at loci spaced respectively from the corresponding ends of said wall section periphery and of said feed passage and from each other to maintain flow continuity during rotation of said valve member; said valve housing having at a second axially spaced section a supply discharge port connected to said outlet conduit and two loop discharge ports arranged in generally regularly spaced relation about the axis of said housing, said loop outlet ports having substantially equal cross-sectional areas, said valve member having at a second section thereof a discharge passage extending therethrough for establishing upon rotation of said valve member intercommunication between said supply discharge port and

said loop discharge ports alternatively or both said loop discharge ports partially in correspondence with said inlet ports, and said valve member also having a vent passage extending from a locus on the valve member periphery generally intermediate the ends of said discharge passage to the outside atmosphere for venting the loop discharge port not is communication with said supply discharge port.

5. The control unit of claim 1 wherein each of said loop-shaped flow paths include a filtration unit.

3,896,030

FILTER PRESS, PARTICULARLY FOR DEWATERING SLUDGE IN SEWAGE TREATMENT PLANTS

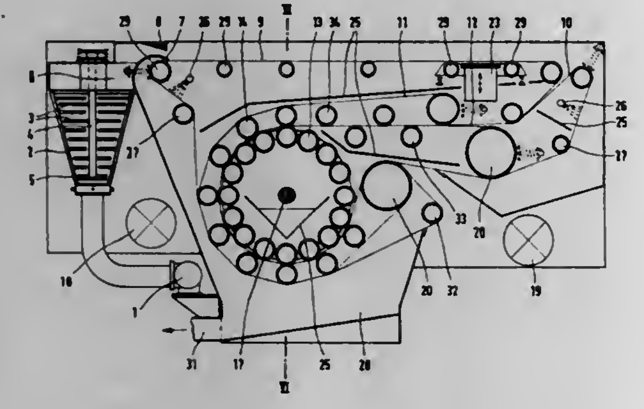
Albert Bahr, Parallelstrasse 2a, D-6683 Elversberg, Saar, Germany

Filed May 28, 1974, Ser. No. 473,589

Claims priority, application Germany, Aug. 28, 1973, 2343324The portion of the term of this patent subsequent to July 3, 1990, has been disclaimed.

Int. Cl. B01d *33/14*

U.S. Cl. 210—384 **12 Claims**



1. Filter press, particularly for dewatering sludge in sewage treatment plants, comprising two endless filter belts that retain the sludge between them, said two filter belts circulating simultaneously and being guided in concentric paths around a rotary drum against which they are held by adjustable pressure rollers in a manner that the liquid phase is squeezed out of the sludge, said two filter belts travelling along horizontal sections situated above the drum before reaching said rotary drum, the sludge being pre-treated in these sections before entering between the two filter belts around the drum.

3,896,031

PREPARATION OF COLLOIDAL SOLID SUSPENSIONS IN AQUEOUS SOLUTIONS

Leroy L. Carney, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Apr. 20, 1973, Ser. No. 353,060

Int. Cl. C10m *3/34, 3/30*

U.S. Cl. 252—8.5 C **9 Claims**

1. An additive for forming a colloidal suspension of asphaltic solids in an aqueous solution in the absence of oil which comprises:

- colloidal asphaltic solids; and
- a dispersant present in said additive in an amount in the range of from about 1% to about 50% by weight thereof consisting of a mixture of waste lignin liquor present in an amount in the range of from about 25% to about 75% by weight of said mixture and an amide present in an amount in the range of from about 25% to about 75% by weight of said mixture, said amide being formed by reacting a saturated or unsaturated fatty acid having in the range of from about 14 to about 18 carbon atoms with N-methyl taurine.

3,896,032

DIORGANOPOLYSILOXANE-BASED LUBRICANT FOR ORGANIC FIBERS

Anton Stroh, Munich, and Leonhard Gollwitzer, Jetzendorf, both of Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

Filed Dec. 8, 1972, Ser. No. 313,292

Claims priority, application Germany, Dec. 13, 1971, 2161813

Int. Cl. D06m *11/00*

U.S. Cl. 252—8.6 **4 Claims**

1. A lubricating composition for organic fibers which comprises a mixture of organopolysiloxanes containing:

- a. from 10 to 75 percent by weight of an organopolysiloxane having a viscosity of from 20 to 200 cs. at 25°C.,
- b. from 10 to 50 percent by weight of an organopolysiloxane having a viscosity of from 1,000 to 30,000 cs. at 25°C., and
- c. from 0 to 80 percent by weight of an organopolysiloxane having a viscosity of from 201 to 999 cs. at 25°C.,

in which the organo groups of said organopolysiloxanes consist of alkyl groups having from 1 to 5 carbon atoms.

3,896,033

ENCAPSULATED FABRIC SOFTENER

John Edward Grimm, III, New York, N.Y., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed July 3, 1972, Ser. No. 268,598

Int. Cl. D06m *13/00*

U.S. Cl. 252—8.8 **8 Claims**

1. A fabric softener in particulate capsule form for the treatment of fibrous materials which consists essentially of at least one fabric softening compound selected from the group consisting of quaternary ammonium fabric softeners, alkyl pyridine salts, alkyl imidazolines, higher alkyl primary, secondary or tertiary amines, higher alkyl guanidine salts, higher alkyl morpholinium chlorides, higher alkyl beta-alanines, N-higher alkyl taurines, N-higher alkyl aspartic acids, betaines and sulfobetaines suitable for treatment of damp laundry to soften it and improve the anti-static properties thereof when the laundry contains materials which are prone to the accumulation of static charges, said softener having a coating of a water-soluble or dispersible organic polymeric colloid material, said coating being from 0.001 to 2 millimeters thick over at least 40% of the surface of said softening compound, the capsule particles having a thickness of from 1 to 4 millimeters.

3,896,034

SOFTENING AGENT COMPOSITIONS

Hans-Werner Eckert, Dusseldorf; Peter Nikolaus, Dusseldorf-Holthausen, and Claus Werner, Haan, all of Germany, assignors to Henkel and Cie GmbH, Dusseldorf, Germany

Filed Dec. 20, 1972, Ser. No. 317,058

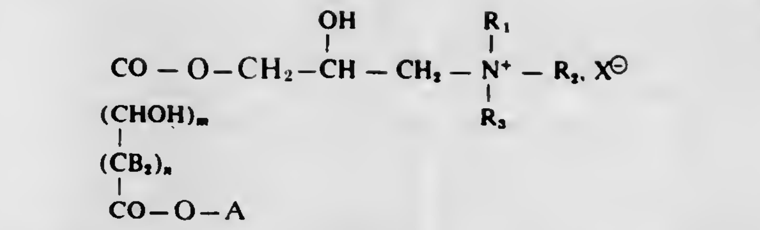
Claims priority, application Germany, Dec. 27, 1971, 2164742; Dec. 27, 1971, 2164743

Int. Cl. D06m *13/46*

U.S. Cl. 252—8.8 **10 Claims**

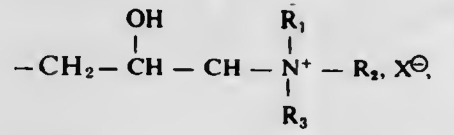
1. A liquid or powdery softening agent composition for washed textiles consisting essentially of

- a. from 1 to 50% by weight of a 3-acyloxy-2-hydroxypropyltrialkylammonium compound of the formula



$$\begin{array}{l} \mathrm{CO-O-CH_2-\overset{\displaystyle OH}{\overset{|}{C}H}-CH_2-\overset{\displaystyle R_1}{\overset{|}{\underset{\underset{\displaystyle R_3}{|}}{N^+}}}-R_2,\ X^{\ominus}} \\ \mathrm{(CHOH)_m} \\ \quad | \\ \mathrm{(CB_2)_n} \\ \quad | \\ \mathrm{CO-O-A} \end{array}$$

wherein *m* and *n* are integers from 0 to 4 and the sum of $m + n$ is an integer from 0 to 4, R_1 and R_2 are selected from the group consisting of alkyl and alkenyl having from 10 to 24 carbon atoms, R_3 is alkyl having 1 to 4 carbon atoms, A is selected from the group consisting of hydrogen and



$$\mathrm{-CH_2-\overset{\displaystyle OH}{\overset{|}{C}H}-CH-\overset{\displaystyle R_1}{\overset{|}{\underset{\underset{\displaystyle R_3}{|}}{N^+}}}-R_2,\ X^{\ominus},}$$

B is selected from the group consisting of hydrogen and, when $m = 0$ and $n = 1$, methyl and ethyl, and X^- is an anion selected from the group consisting of halide and the anion of an organic non-surface-active acid having 2 to 8 carbon atoms,

- b. from 0.2 to 10% by weight of at least one nonionic surface-active dispersing agent selected from the group consisting of a water-soluble dispersing agent and a water-dispersible dispersing agent,
- c. from 0 to 15% by weight of at least one member selected from the group consisting of optical brighteners, antimicrobial active agents, souring agents, sequestering agents, perfumes and dyes, and
- d. the remainder up to 100% by weight of at least one diluent selected from the group consisting of water, and water-soluble or readily water-dispersible liquid and solid carriers.

3,896,035

PILE FABRIC TREATING COMPOSITION PROVIDING SOIL RESISTANCE

William J. Schultz, White Bear Lake, and Samuel Smith, Roseville, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Apr. 2, 1973, Ser. No. 346,838

Int. Cl. D06m *13/42*

U.S. Cl. 252—8.75 **3 Claims**

1. A treating solution for rendering pile fabrics stain-repellent and soil-resistant while avoiding an increase in flammability, consisting essentially of a dispersion in liquid medium at a total solids concentration of from about 0.1 to about 50% by weight of the combination of fluoroaliphatic radical-containing urethane adduct and fluoroaliphatic radical free urethane adduct in proportions of from about 1:1.5 to about 4:1 each of said adducts melting to a flowable liquid at above 45° C. and below about 200° C.

3,896,036

BEARING COMPOSITIONS

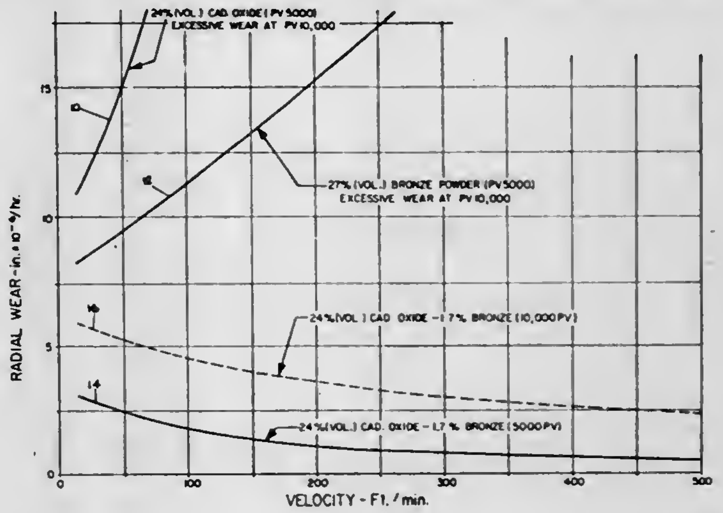
James Cairns, Cherry Hill, N.J., assignor to Garlock Inc., Palmyra, N.Y.

Filed Mar. 17, 1969, Ser. No. 807,868

Int. Cl. C10m *7/28, 7/02*

U.S. Cl. 252—12 **11 Claims**

1. A plain bearing material comprising, in percent by volume, from about 40% to about 95% of a fluorocarbon resin, from about 5% to about 60% of cadmium or an oxide of cadmium, and from about 0.1% to about 35% of a filler selected from the class consisting of copper, alloys of copper, quartz, and glass.



3,896,037

HIGH BASIC SULFONATE PROCESS

Charles R. Dickey, Covina, Calif., assignor to Bray Oil Company, Los Angeles, Calif.

Filed Dec. 27, 1971, Ser. No. 212,661

Int. Cl.² C10M *1/40*

U.S. Cl. 252—33.4 **5 Claims**

1. The method of making highly overbased oil soluble sulfonates of metals of Group 2 of the Periodic System characterized by low viscosity and high clarity, with alkali values upwards of 250 which comprises the following steps:

1. Preparing a complex of said Group 2 metal, methanol and CO_2 by reacting said metal or oxide thereof with anhydrous methanol and CO_2-mixing sufficient complex with oil soluble sulfonate and hydrocarbon lubricating oil to provide a base number in excess of 250 in the final product, in the presence of a volatile hydrocarbon solvent to reduce viscosity;
2. Heating the resulting mixture above the boiling point of methanol but below the point of incipient gel formation, thereby distilling off the major amount of anhydrous methanol present in anhydrous form suitable for recycling in the process;
3. Initially treating the resulting mixture at 180°-210°F. with a critically limited amount of liquid water determined by the formula: Mols of water = 0.6 to 1.5 (mols of overbasing oxide) + 1.2 to 3 (atoms of overbasing metal) - mols of water present in the methanol and sulfonate;
4. Stripping methanol from the initially water treated sulfonate mixture at a temperature of about 250° to 300°F;
5. Again treating the mixture with an excess of liquid water at least equal to the amount used in the initial water treat;
6. Dehydrating the mixture at a higher temperature and filtering the product to remove unreacted metal oxide, carbonate, and contaminating solids.

3,896,038

LUBRICATING OIL CONTAINING A POLYAMIDE POUR POINT DEPRESSANT

Robert J. Hartle, Gibsonia, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

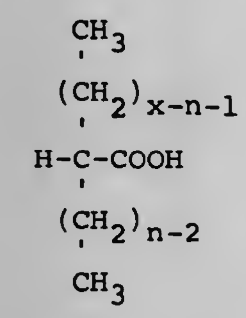
Filed June 5, 1973, Ser. No. 367,179

Int. Cl. C10m *1/32*

U.S. Cl. 252—51.5 A **11 Claims**

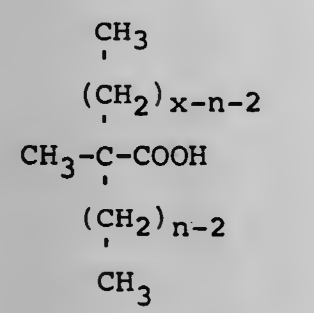
1. A lubricating composition comprising a major amount of a lubricating oil and a small amount, sufficient to improve the pour point and detergency-dispersancy characteristics of the lubricating oil, of a polyamide of a mixture of about equal amounts of secondary and tertiary monocarboxylic acids and a polyalkylene polyamine containing about 2 to about 6 alkyl-

ene units, there being from 2 to 4 carbon atoms in each alkylene group, said mixture of secondary and tertiary monocarboxylic acids falling within each of the following general structures



$$\begin{array}{c} CH_3 \\ | \\ (CH_2)_{x-n-1} \\ | \\ H-C-COOH \\ | \\ (CH_2)_{n-2} \\ CH_3 \end{array}$$

wherein *x* is a number from 18 to 30 and *n* is the integer 2, 3, 4 up to *x*/2 for even integers between 18 and 30 and 2, 3, 4 up to (*x*+1)/2 for odd integers between 18 and 30, and



$$\begin{array}{c} CH_3 \\ | \\ (CH_2)_{x-n-2} \\ | \\ CH_3-C-COOH \\ | \\ (CH_2)_{n-2} \\ CH_3 \end{array}$$

wherein *x* is a number from 18 to 30 and *n* is the integer 2, 3, 4 up to *x*/2 for even integers between 18 and 30 and 2, 3, 4 up to (*x*+1)/2 for odd integers between 18 and 30, said polyamide containing about 1 to about 3 amine groups in addition to amide groups and being the product obtained by reacting said polyalkylene polyamine and said mixture of secondary and tertiary monocarboxylic acids at a temperature of about 250° F. (121° C.) to about 500° F. (260° C.) until the reaction is substantially complete, the proportion of said carboxylic acid mixture and the polyalkylene polyamine being such that there are from about 1 to about 3 moles less acid than the number of available amino groups in the polyamine.

3,896,039

DUST ENTRAPMENT COMPOSITION

Charles H. Jacoby, Dalton, Pa., assignor to Akzona Incorporated, Asheville, N.C.

Filed Mar. 5, 1973, Ser. No. 337,964

Int. Cl. C09k *3/22*

U.S. Cl. 252—88 **12 Claims**

1. A coating of at least two layers to be applied to the surface of a mine working for dust entrapment, the first layer adjacent the mine working surface consisting essentially of a mixture of sodium chloride, clay and water, and at least one additional layer consisting essentially of a mixture of sodium chloride, water and a water soluble complex iron cyanide selected from the group consisting of alkali metal ferrocyanide salts, alkaline earth metal ferrocyanide salts, alkali metal ferricyanide salts and alkaline earth metal ferricyanide salts.

3,896,040

DETERGENT COMPOSITION

Andre Danesh, 8 Browne St., Brookline, Mass. 02146

Continuation-in-part of Ser. No. 103,792, Jan. 4, 1971, abandoned. This application Dec. 11, 1972, Ser. No. 314,111

Int. Cl. C11d *3/20, 1/00*

U.S. Cl. 252—89 **3 Claims**

1. A laundering and cleansing detergent composition consisting essentially of an effective amount of a detergent selected from the group of non-ionic detergents, cationic detergents, anionic detergents and ampholytic detergents and from 5 to 95% by weight of a detergent builder corresponding to the formula

$H—OCH_2\ CH_2—_n\ OCH_2\ COOM$

where

M is selected from the group of alkali metal and ammonium, and *n* is a whole integer of from 1 to 100.

3,896,041

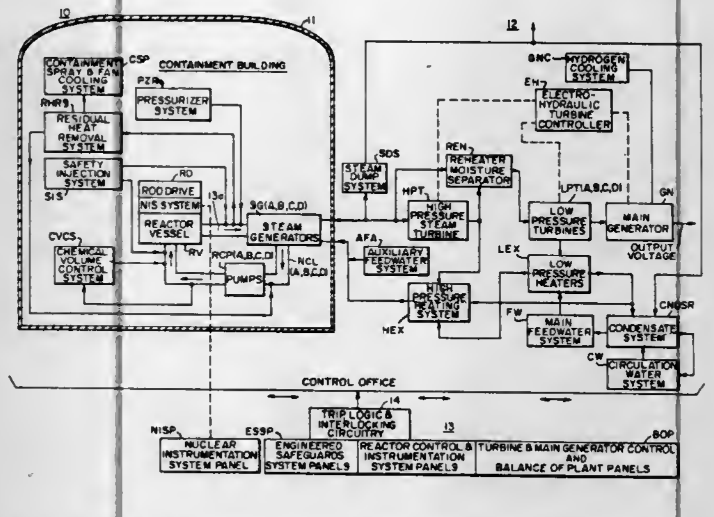
METHOD AND SYSTEM OF SIMULATING NUCLEAR POWER PLANT COUNT RATE FOR TRAINING PURPOSES

William H. Alliston, and Rainer H. Koenig, both of Murrysville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 14, 1973, Ser. No. 341,193

Int. Cl. G09b *9/00*

U.S. Cl. 235—151.21 **11 Claims**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11
12
CONTAINMENT SPRAY & FAN COOLING SYSTEM
CSP
CONTAINMENT BUILDING
PZR
PRESSURIZER SYSTEM
RHRS
RESIDUAL HEAT REMOVAL SYSTEM
SAFETY INJECTION SYSTEM
SIS
RD
ROD DRIVE
NIS SYSTEM
REACTOR VESSEL
13a
SG(A,B,C,D)
STEAM GENERATORS
RV
RCP(A,B,C,D)
PUMPS
NCL (A,B,C,D)
CVCS
CHEMICAL VOLUME CONTROL SYSTEM
GNC
HYDROGEN COOLING SYSTEM
EH
ELECTRO-HYDRAULIC TURBINE CONTROLLER
SDS
STEAM DUMP SYSTEM
REN
REHEATER MOISTURE SEPARATOR
HPT
HIGH PRESSURE STEAM TURBINE
LPT(A,B,C,D)
LOW PRESSURE TURBINES
GN
MAIN GENERATOR
OUTPUT VOLTAGE
AFA
AUXILIARY FEEDWATER SYSTEM
LEX
LOW PRESSURE HEATERS
HIGH PRESSURE HEATING SYSTEM
HEX
FW
MAIN FEEDWATER SYSTEM
CNDSR
CONDENSATE SYSTEM
CW
CIRCULATION WATER SYSTEM
CONTROL OFFICE
14
TRIP LOGIC & INTERLOCKING CIRCUITRY
13
NISP
ESSP
BOP
NUCLEAR INSTRUMENTATION SYSTEM PANEL
ENGINEERED SAFEGUARDS SYSTEM PANELS
REACTOR CONTROL & INSTRUMENTATION SYSTEM PANELS
TURBINE & MAIN GENERATOR CONTROL AND BALANCE OF PLANT PANELS

1. A system for simulating the real-time operation of a nuclear power plant that includes a simulated nuclear reactor controlled to selected power levels, comprising,

a plurality of manually operable devices to provide input signals related to the operation of a simulated reactor control mechanism,

means to generate a physical value relating to the power level of a nuclear reactor in accordance with the input signals,

first counting means responsive to the generated physical value for producing an output pulse at successive time intervals related to the physical value,

second counting means driven by the output pulses of the first counting means to produce an output pulse upon the counting of each of successive trains of differing numbers of pulses, and indicating means responsive to each of the output pulses from the second counting means.

3,896,042

LOW TEMPERATURE, LOW PRESSURE HYDROGEN GETTERING

D. Richard Anderson; Robert L. Courtney, and Larry A. Harrah, all of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Feb. 15, 1974, Ser. No. 443,077

Int. Cl.^{2} H01J *7/18;* **C01B** *1/32*

U.S. Cl. 252—184 **7 Claims**

1. A system for gettering hydrogen and its isotopes including deuterium and tritium from within a closed volume comprising a closed volume having therein a hydrogenation catalyst selected from the group of metals consisting of group VIII of the periodic table and alloys thereof, coated with a solid, organic material selected from the group consisting of dimerized propargyl phenyl ether, dimerized benzylacetylene, dimerized phenylpropiolate, dimerized biphenyl propargyl ether and polydipropargyl ether of bisphenol-A.

3,896,043

NON-CYANIDE ALKALINE COMPOSITION FOR DISSOLVING NON-FERROUS METALS

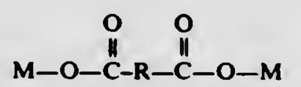
Earl J. Fadgen, Jr., Clinton, Conn., assignor to Enthone, Incorporated, West Haven, Conn.

Filed Aug. 27, 1973, Ser. No. 392,169

Int. Cl. C23f *1/00;* **C23g** *5/00, 1/18*

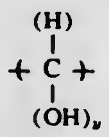
U.S. Cl. 252—186 **20 Claims**

1. A non-cyanide alkaline aqueous solution for dissolving non-ferrous metal consisting essentially of about 15 to about 85 g/l of a water-soluble nitrate, about 0.1 to about 20 g/l of a water-soluble compound of the formula



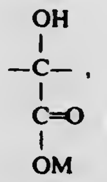
$$M—O—\overset{\displaystyle O}{\overset{\|}{C}}—R—\overset{\displaystyle O}{\overset{\|}{C}}—O—M$$

wherein R is selected from the group consisting of a valence bond, $—CH_2—_x$ wherein x is an integer of 1 to 2,



$$\begin{array}{c} (H) \\ | \\ +\ C\ + \\ | \\ (OH)_y \end{array}$$

wherein y is an integer of 1 to 2, and



$$\begin{array}{c} OH \\ | \\ —C— \\ | \\ C{=}O \\ | \\ OM \end{array},$$

and M is a hydrophilic cation, about 17 to about 220 g/l of a water-soluble persulfate, about 1 to about 65 g/l of a water-soluble urea compound, and ammonium hydroxide in amount sufficient to adjust the pH to within the range of about 9 to about 10.

3,896,044

NITRO-SUBSTITUTED AROMATIC ACID CORROSION INHIBITORS FOR ALKANOLAMINE GAS TREATING SYSTEM

Blake F. Mago, New City, and Charles W. West, Niagara Falls, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 201,131, Nov. 22, 1971, Pat. No. 3,808,140, which is a continuation-in-part of Ser. No. 54,595, July 13, 1970, abandoned. This application Nov. 2, 1973, Ser. No. 412,508

Int. Cl. B01d *53/34;* **C23f** *11/14*

U.S. Cl. 252—192 **10 Claims**

1. A corrosion inhibited composition consisting essentially of an aqueous alkanolamine solution employed in acid gas removal service and an inhibiting amount of a corrosion inhibitor selected from the class consisting of:

nitro-substituted aromatic acids
and nitro-substituted acid salts.

3,896,045

DECONTAMINATION PROCESS FOR RADIO-ACTIVE LIQUIDS

Karel J. A. Peeters, Geel, and Norbert L. C. Van De Voorde, Mol, both of Belgium, assignors to Belgonucleaire S.A., Brussels, Belgium

Continuation-in-part of Ser. No. 174,504, Aug. 24, 1971, abandoned. This application Dec. 21, 1972, Ser. No. 317,224

Claims priority, application Germany, Aug. 29, 1972, 2242412

Int. Cl. G21c *19/46*

U.S. Cl. 252—301.1 W **13 Claims**

1. A method for extracting radioactive ions present in tracer quantities from a contaminated liquid which comprises contacting said liquid with a mixed sorbent of an insoluble barium salt selected from the group consisting of barium sulfate and barium carbonate, mixed with up to 50 percent of a metal ferrocyanide in a sulfate-containing medium.

3,896,046

COMPOSITION FOR CONTROLLING PITCH IN PAPER MANUFACTURE

Ronald A. Carstens, Anacortes, and William J. Butcher, Vancouver, both of Wash., assignors to Key Chemicals, Inc., Anacortes, Wash.

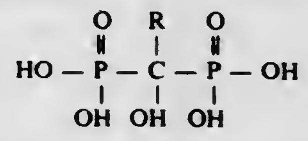
Filed Sept. 7, 1972, Ser. No. 286,975

Int. Cl. B01j *13/00*

U.S. Cl. 252—310 **8 Claims**

1. A colloidal aqueous dispersion for control of pitch in a paper pulp system which consists essentially of:

a. about 1 to 25 weight percent of an alumina component;
b. about 1 to 50 weight percent of an organo-phosphorus sequestering agent selected from the group consisting of: a compound having the structure



$$\begin{array}{ccccccc} & & O & & R & & O \\ & & \| & & | & & \| \\ HO & — & P & — & C & — & P & — OH \\ & & | & & | & & | \\ & & OH & & OH & & OH \end{array}$$

wherein R is an alkyl radical having from 1 to 5 carbon atoms; alkali metal, ammonium and ethanolamine salts of said compound, mono- and dialkyl esters of said compound with methanol, ethanol, propanol or butanol; and a salt of polymethylenediamine tetramethyl phosphonic acid having the formula

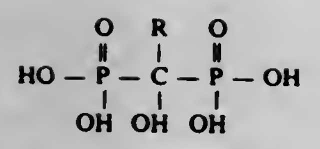
$$(H_2O_3PCH_2)_2N(CH_2)_nN(CH_2PO_3H_2)_2$$

wherein n equals 2 through 6; and

c. sodium glucoheptonate syrup in an amount of about 1 to 20 weight percent of the total dispersion.

4. A colloidal aqueous dispersion for control of pitch in a paper pulp system which consists essentially of:

a. about 1 to 25 weight percent of an alumina component comprising 25 to 75 percent by weight of a first alumina composition having an ultimate dispersed particle size no more than about one-fifth as great as a second alumina composition and correspondingly 75 to 25 percent by weight of said second alumina composition; and
b. about 1 to 50 weight percent of an organo-phosphorus sequestering agent selected from the group consisting of: a compound having the structure



$$HO-\overset{\overset{O}{\|}}{\underset{\underset{OH}{|}}{P}}-\overset{\overset{R}{|}}{\underset{\underset{OH}{|}}{C}}-\overset{\overset{O}{\|}}{\underset{\underset{OH}{|}}{P}}-OH$$

wherein R is an alkyl radical having from 1 to 5 carbon atoms; alkali metal, ammonium and ethanolamine salts of said compound, mono- and dialkyl esters of said compound with methanol, ethanol, propanol or butanol; and a salt of polymethylenediamine tetramethyl phosphonic acid having the formula

$$(H_2O_3PCH_2)_2N(CH_2)_nN(CH_2PO_3H_2)_2$$

wherein n equals 2 through 6.

3,896,047
PROCESS FOR RECYCLING A COBALT HYDROFORMYLATION CATALYST

David F. Aycock, Lenox, and Daniel E. Sliva, Pittsfield, both of Mass., assignors to General Electric Company, Pittsfield, Mass.

Filed June 6, 1973, Ser. No. 367,553
Int. Cl. B01j *11/02*

U.S. Cl. 252—414 **9 Claims**

1. In an improved process for recycling a cobalt hydroformylation catalyst from a hydroformylation reaction wherein an olefinic compound is reacted with carbon monoxide and hydrogen in the presence of a cobalt hydroformylation catalyst dissolved in an inert organic solvent in a reaction zone under hydroformylation conditions to produce a hydroformylation product comprising a hydroformylation compound and the cobalt hydroformylation catalyst, wherein the improvement comprises feeding the hydroformylation product into a mixing zone; adding water to the hydroformylation product in the mixing zone; feeding the mixture of water and hydroformylation product from the mixing zone into a settling zone wherein two phases are formed, a solvent phase containing the cobalt hydroformylation catalyst and a water phase containing the hydroformylation compound; separating the solvent phase therefrom and recycling said solvent phase into the initial reaction zone.

3,896,048
CATALYST COMPOSITION

Emil J. Mebalchick, Towanda; Joseph J. Cleveland, Wysox; Robert A. Long, Towanda; Harry O. Schulze, Wyalusing, and Paul K. Marshall, Towanda, all of Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Aug. 20, 1973, Ser. No. 389,900
Int. Cl. B01j *11/22*

U.S. Cl. 252—455 R **22 Claims**

1. A solid catalyst composition comprising essentially of a polycrystalline catalytically active inorganic complex having the formula:

$$Li_a\, Ce_b\, M_c\, M'_d\, O_x$$

wherein M is a metal selected from the group consisting of copper and iron, M′ is a metal selected from the group consisting of cobalt and nickel, *a* is from about 0.1 to about 0.1, *b* is from about 0.1 to about 1, *c* is from about 0.25 to about 2.0, *d* is from about 0.25 to about 1.0 and x varies in direct chemical relationship to the values of a, b, c and d.

3,896,049
METHOD OF FORMING CO-PRECIPITATED MATERIAL

Dennis D. Dworak, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 3, 1973, Ser. No. 421,140
Int. Cl. B01j *11/08*

U.S. Cl. 252—466 J **8 Claims**

1. A method of forming an improved material having a matrix including oxidized, uniformly dispersed active and carrier materials so as to be useful, not only as a catalyst, but also as an adsorbent to adsorb from a liquid a high concentration of contaminants selected from the group consisting of arsenic and selenium deeply within its matrix and retain its structural integrity comprising the steps of:

a. preparing a first single aqueous solution containing uniformly distributed throughout dissolved water-soluble salts XM and YM of an active cation and of a carrier cation, respectively:
   where X is a cation of an active material and is selected from the group consisting of iron and cobalt;
   where Y is a cation of a structurally adequate carrier forming a high surface area material and is aluminum; and
   where M is an anion of a water-soluble salt of X and Y and is selected from the group consisting of nitrate and halide;
b. reacting said dissolved salts in said first single aqueous solution with a basic ZN in aqueous solution to form insoluble co-precipitates XN and YN and a by-product ZM; said ZN being present in an amount greater than the stoichiometric amount required for complete reaction in order to form uniformly dispersed insoluble co-precipitates:
   where Z is a cation forming a water-soluble basic material with N and forming a reaction product with the anion M that can be readily removed from said insoluble co-precipitates; and
   where N is an anion forming a water-soluble basic material with Z and forming insoluble co-precipitates with X and Y and is selected from the group consisting of carbonate and hydroxide;
c. drying said uniformly dispersed co-precipitates to remove the water therefrom;
d. removing said by-product from said uniformly dispersed co-precipitates;
e. comminuting the dried uniformly dispersed co-precipitates;
f. forming the comminuted uniformly dispersed co-precipitates into an aqueous slurry;
g. forming said slurry into particles of desired size and shape;
h. drying said particles; and
i. calcining in the presence of an oxidizing atmosphere the dried particles to incorporate oxygen atoms into the matrix and to achieve the requisite co-precipitated uniformly dispersed active and carrier material, hardness and surface area.

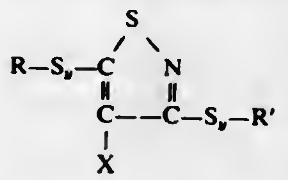
3,896,050
LUBRICATING OIL ADDITIVES

James A. White, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed July 5, 1974, Ser. No. 486,148
Int. Cl. C10m *1/38, 3/32*

U.S. Cl. 252—47.5 **15 Claims**

1. A lubricating oil composition comprising a blend of
a. a major amount of a lubricating oil substrate and
b. a minor corrosion inhibiting amount of the composition



wherein:
R and R′ = C_1 to C_{20} alkyl and may be the same or different
Y = 2 or more
X = CN or COOR″ or R‴ wherein R″ is C_1 to C_{20} alkyl or alkyl substituted with oxygen or sulfur and R‴ is C_1 to C_{20} alkyl or cycloalkyl

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3,896,051
METHOD OF REACTIVATION OF RANEY NICKEL

Shunsuke Mabuchi; Kenji Tsuzuki; Hideaki Matsunaga; Sadami Shimizu, and Makoto Sumita, all of Shin-Nanyo, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Japan

Filed Dec. 26, 1973, Ser. No. 427,683

Claims priority, application Japan, Dec. 25, 1972, 47-129219

Int. Cl. B01j *11/30*

U.S. Cl. 252—412 **10 Claims**

1. A method for the reactivation of a poisoned Raney nickel catalyst modified by a small amount of metal from the group consisting of copper, chromium and iron which is used for the hydrogenolysis of inorganic peroxide polymer to form a diol product which comprises treating said catalyst with a 0.1 – 5 N aqueous or lower alcohol solution of an activating reagent selected from the group consisting of ammonia, an alkaline earth metal hydroxide, carbonate or carboxylate having 1 – 4 carbon atoms and an alkali metal carbonate or carboxylate having from 1 – 4 carbon atoms at 20°–200°C under an atmosphere of hydrogen or nitrogen from 2 to 8 hours, and separating said treated catalyst from said aqueous or lower alcohol solution.

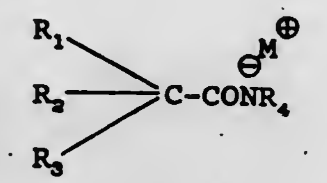
3,896,052
COCATALYST SYSTEM FOR TRIMERIZING POLYISOCYANATES

Robert J. Lockwood, East Haven; Harold E. Reymore, Jr., Wallingford, and Edward J. Thompson, Watertown, all of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

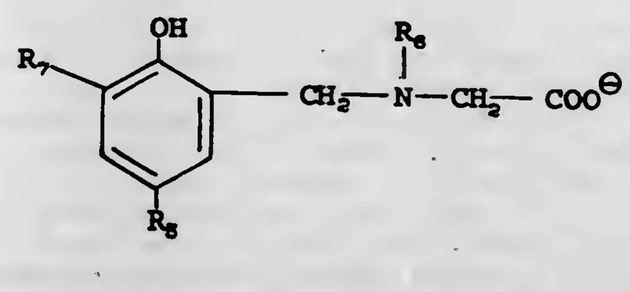
Filed Jan. 30, 1974, Ser. No. 437,780
Int. Cl. C08f *47/10;* **C08g** *22/44*

U.S. Cl. 252—431 C **13 Claims**

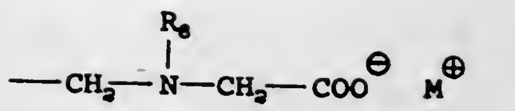
1. A cocatalyst system for the trimerization of a polyisocyanate consisting essentially of:
a. from about 33 to about 67 mole percent of an amide salt having the formula



wherein M is an alkali metal, R_1, R_2, and R_3 can be the same or different and are selected from the group consisting of H, lower alkyl, aryl, aralkyl, and cycloalkyl, and R_4 is selected from the group consisting of lower alkyl and aryl; and
b. from about 33 to about 67 mole percent of a glycine salt having the formula



wherein M is an alkali metal, R_5 is selected from the class consisting of hydrogen and alkyl having from one to 12 carbon atoms, inclusive, R_6 is selected from the class consisting of hydrogen, alkyl having from one to 12 carbon atoms, inclusive, and $—CH_2—COO^- M^+$, and R_7 is selected from the class consisting of hydrogen and the group



$$—CH_2—\overset{\overset{R_6}{|}}{N}—CH_2—COO^{\ominus}\ M^{\oplus}$$

3,896,053
NICKEL-CONTAINING HYDROGENATION CATALYSTS FOR THE SELECTIVE HYDROGENATION OF FATS AND OILS

Franz Josef Broecker; Juergen Heners, both of Ludwigshafen; Laszlo Marosi, Speyer; Matthias Schwarzmann, Limburgerhof, and Peter Rudolf Laurer, Ludwigshafen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Rhine, Germany

Claims priority, application Germany, June 10, 1972, 2228332

Filed June 7, 1973, Ser. No. 367,949
Int. Cl. B01j *11/22*

U.S. Cl. 252—466 J **2 Claims**

1. A catalyst for the selective hydrogenation of fats and fatty acids, which has been prepared by calcining a compound of the formula

$$Me_6^{(2+)}Al_2(OH)_{16}.CO_3.4H_2O$$

in which $Me^{(2+)}$ is nickel, copper or cobalt, and reducing said calcined compound with hydrogen at temperatures ranging from 200° to 600°C and in which said compound has been prepared from an aqueous solution, which contained 1M to 2M solutions of the divalent metal salts and of trivalent aluminum salt, by precipitating with a 1M to 2M alkali metal carbonate or bicarbonate solution at temperatures ranging from 50° to 95°C and a pH of from 4.0 to 8.5 and then washing, filtering and drying to obtain said compound.

3,896,054
HIGH ADHESION METALLIZATIONS

John Robert Larry, Youngstown, N.Y., assignor to E. I. du Pont de Nemours & Co., Wilmington, Del.

Continuation-in-part of Ser. No. 231,375, March 2, 1972, abandoned. This application Oct. 9, 1973, Ser. No. 404,796
Int. Cl. C03c *3/10, 5/02;* **H01b** *1/02*

U.S. Cl. 106—1 **9 Claims**

1. In metallizations useful for printing silver or silver/palladium conductors on substrates comprising finely divided silver or silver/palladium powder and finely divided inorganic binder, improved metallizations wherein the inorganic binder consists essentially of, by weight,

5–22% PbO
1–5% CaO
0.7–3% Al_2O_3
0.7–2.5% B_2O_3
5–20% SiO_2
50–85% Bi_2O_3,

said metallizations being useful for producing conductors of enhanced soldering characteristics and improved adhesion to the substrate upon thermal aging versus compositions employing other inorganic binders.

3,896,055
PYROCHLORE-RELATED OXIDES CONTAINING COPPER AND/OR SILVER AND RESISTOR COMPOSITIONS THEREOF

Robert Joseph Bouchard, and Donald Burl Rogers, both of Wilmington, Del., assignors to E. I. du Pont de Nemours & Co., Wilmington, Del.

Filed Jan. 26, 1973, Ser. No. 326,955
Int. Cl. H01b *1/08*

U.S. Cl. 252—521 **16 Claims**

1. Electrically conductive polynary oxides of pyrochlore-related crystal structure having the formula

$$M_xM'_{2+x}M''_2O_{7+z}$$

wherein:

1. M is at least one of Ag or Cu;
2. M' is Bi or a mixture of at least one half Bi plus up to one half of one or more cations from among
   - a. bivalent Cd or Pb and
   - b. trivalent Y, Tl, In and rare earth metals of atomic number 57–71, inclusive;
3. M'' is at least one of
   - a. Ru,
   - b. Ir, and
   - c. a mixture of at least three-fourths of at least one of Ru and Ir and up to one-fourth of at least one of Pt, Ti and Rh;
4. x is in the range 0.10 to 0.60 and
5. z is in the range 0.10 to 1.0, and is equivalent to the sum of monovalent cations M and half of divalent cations in the polynary oxide.

9. A powder composition comprising the polynary oxides of Claim 1 and dielectric material, useful for producing low resistivity resistors on dielectric substrates.

3,896,056
BUILT DETERGENT COMPOSITION

Lawrence Benjamin, and Daniel S. Connor, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 100,546, Dec. 21, 1970, abandoned, which is a continuation-in-part of Ser. No. 98,158, Dec. 14, 1970, abandoned. This application Mar. 2, 1973, Ser. No. 337,333

Int. Cl.² C11B *3/065*

U.S. Cl. 252—539 8 Claims

1. A built detergent composition consisting essentially of:
- a. from 8 to 50% by weight of an organic surface-active agent selected from the group consisting of anionic; nonionic; zwitterionic; and ampholytic detergents; and mixtures thereof;
- b. from 70 to 25% by weight of an inorganic precipitating builder selected from the group consisting of a water-soluble carbonate, silicate and aluminate salt and mixtures thereof; and
- c. from 0.1 to 10% by weight of a precipitation modifier selected from the group consisting of:
  mellitic acid, xylaric acid, cyclopentane-cis, cis, cis-tetracarboxylate acid, addition product of polyvinylethylether (MW 4000) & 20% maleic acid, addition product of polyethyleneglycol (MW 1000) diacetate & 10% maleic acid, addition product of polyethyleneglycol (MW 600) diacetate &
  40% maleic acid, addition product of pentaerythritol ethylene oxide (MW 4000) tetraacetate & 40% maleic acid, addition product of polyethylene oxide (20 molecules) sperm oil alcohol acetate & 32.5% maleic acid, ethylenetetracarboxylic acid, polyallylsuccinate, hexapotassium cyclopentadienide pentacarboxylate, 2,3,4,5-tetrahydrofuran-cis, cis, cistetracarboxylic acid, carboxymethyl starch degree of substitution 0.8, carboxymethyl starch degree of substitution 1.7, polycarboxymethylated dicarboxyl starch degree of substitution approx. 2.8, sodium salt of carboxymethyl cellulose degree of substitution 2.0, carboxymethyl dextran degree of substitution 2.0, propylene/maleic acid copolymer, diacid cellulose, carboxymethylated sodium alginate, sodium polymaleate (mol. weight 2500), sodium alginate, 70:30 acrylic acid/hydroxyethylmaleate copolymer, polyvinyl sulfate, hexasodium 1,1,3,3,5,5-pentane hexacarboxylate and mixtures thereof

whereby the weight ratio of said builder to said modifier is in the range from 1000:1 to 1:1 and the weight ratio of said organic surface-active agent to said builder is in the range from 20:1 to 1:20.

3,896,057
COMPOSITE OLEFIN SULFONATE

Kenneth L. Lindsay; Gerhard O. Kuehnhanss, and Melvin E. Tuvell, all of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 760,993, Sept. 19, 1968. This application Oct. 13, 1972, Ser. No. 297,462

Int. Cl. C11d *1/12*

U.S. Cl. 252—555 7 Claims

1. The composite olefin sulfonate product obtained by sulfonating with gaseous uncomplexed SO_3 a mixture of olefins having from about 12 to about 16 carbon atoms per molecule and the following mol percent composition:

vinyl olefins — from about 40 to about 60 percent
internal olefins — from about 10 to about 35 percent
vinylidene olefins — from about 5 to about 40 percent,

saponifying the sulfonated olefins with NaOH, and removing the unsaponified material from the saponified mixture.

3,896,058
POLYPHOSPHAZENES CONTAINING THE $CF_3CHFCF_2CH_2O$- GROUP

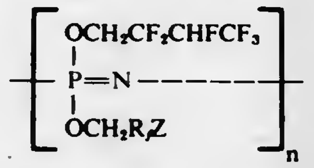
Kennard A. Reynard, Mentor; Arthur H. Gerber, University Heights, and Selwyn H. Rose, Beachwood, all of Ohio, assignors to Horizons Incorporated, Cleveland, Ohio

Filed Dec. 20, 1973, Ser. No. 426,527

Int. Cl.² C08G *73/00, 79/02*

U.S. Cl. 260—2 P 4 Claims

1. Poly(fluoroalkoxyphosphazenes) soluble in dimethylformamide and represented by the general formula



$$\left[\begin{array}{c} OCH_2CF_2CHFCF_3 \\ | \\ P{=}N\text{------} \\ | \\ OCH_2R_fZ \end{array} \right]_n$$

wherein the ZR_f groups are selected from CF_3CHFCF_2— or from groups which contain from 1 to 4 carbon atoms which are fluorinated and in the latter groups Z is F or H, and the amount of CF_3CHFCF_2 groups may be present in amounts up to 100%, and n is an integer from 10 to 50,000.

3,896,059
PRODUCTION OF RESINS FROM SOLUBILIZED SCRAP RUBBER, THE RESINS THUS PRODUCED AND RUBBER COMPOUNDS AND PRODUCTS INCORPORATING THE RESINS

Lynn B. Wakefield; Grant Crane, and Edward Leo Kay, all of Akron, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Feb. 5, 1974, Ser. No. 439,774

Int. Cl.² C08J *11/00;* C08C *19/08*

U.S. Cl. 260—2.3 8 Claims

1. The method of producing a resin by the successive steps of

heating solid scrap rubber in contact with a hydrocarbon liquid at 400° to 800°F. for 0.1 to 50 hours to convert the solid scrap rubber to a fluid,

and contacting the fluid thus produced with an alkylation catalyst which is a Lewis acid, a protonic acid or a condensation catalyst in an amount which is from 0.1 to 20% by weight, based on the fluid, at a temperature of from 60°F. to 300°F. for from 0.5 to 50 hours, wherein said solid scrap rubber is natural or synthetic rubber or blends of the two, and said synthetic rubber is a homopolymer of butadiene, isoprene, chloroprene or piperylene, or a copolymer of them with each other or with styrene, alpha-methylstyrene, divinylbenzene, ethylene, propylene, isobutylene, or an ethylenically unsaturated carboxylic acid ester or nitrile.

3,896,060
PROCESS FOR FORMING FOAMED UNSATURATED POLYESTER RESIN PRODUCTS WHILE UNDER A PARTIAL VACUUM

Mark Plungulan, 461 W. Chestnut Hill Rd., Newark, Del. 19713, and Charles E. Cornwell, 710⁴ Marlan Dr., Alexandria, Va. 22307

Continuation-in-part of Ser. No. 449,593, March 11, 1974. This application Dec. 9, 1974, Ser. No. 530,683

Int. Cl.² C08J *9/14, 9/30*

U.S. Cl. 260—2.5 N 8 Claims

1. A process for producing a cured cellular structure which process comprising mixing (a) an unsaturated polyester formed by condensing at least one dicarboxylic acid containing α,β-ethylenic unsaturation with a dihydric alcohol, with (b) an α,β-ethylenically unsaturated copolymerizable monomer, and incorporating (c) gaseous cells derived from air into the mixture, foaming this mixture by creating a partial vacuum of 180 to 50 Torr, and effecting the copolymerization of (a) and (b) while under this partial vacuum and while the mixture is in the foamed state.

3,896,061
SEMI-PERMEABLE MEMBRANES, THEIR PREPARATION AND THEIR USE

Hiroshi Tanzawa; Yoshitada Sakai, both of Kamakura; Takao Matsushita, Yuushudainishi; Yoshishige Fujii, Otsu; Kouji Sugita, Otsu, and Haruki Maekawa, Otsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Aug. 7, 1973, Ser. No. 386,388

Claims priority, application Japan, Aug. 16, 1972, 47-81408; Feb. 17, 1973, 48-188779

Int. Cl. C08f *47/10*

U.S. Cl. 260—2.5 M 6 Claims

1. A hydrogel semi-permeable membrane which is comprised of isotactic polymethylmethacrylate and syndiotactic polymethylmethacrylate, having a molecular weight of more than 100,000, wherein the tacticity of the mixture of said isotactic polymethylmethacrylate and said syndiotactic polymethylmethacrylate is within the range of

$$0.1 < I/S < 10$$

and

$$I + S > H$$

wherein I is the percent of the isotactic structures expressed by triad, S is the percent of syndiotactic structures expressed by triad, and the means molecular weight of the polymers is more than 100,000.

3,896,062
POLYETHER URETHANE FOAM

Edward Lewis Morehouse, Danbury, Conn., assignor to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 305,713, Nov. 13, 1972, Pat. No. 3,839,384. This application July 10, 1974, Ser. No. 487,192

Int. Cl. C08g *22/46*

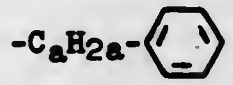
U.S. Cl. 260—2.5 AH 31 Claims

1. A process for producing high resilience polyether urethane foam, said process comprising foaming and reacting a mixture comprising:

- I. organic polyol selected from the group consisting of (A) a polyether triol containing at least 40 mole per cent primary hydroxyl groups and having a molecular weight from about 2,000 to about 8,000 and (B) a mixture of said polyether triol and another polyether having an average of at least two hydroxyl groups, said polyether triol of said mixture amounting to at least 40 weight percent of the total polyol content;
- II. organic polyisocyanate, said organic polyol and said polyisocyanate being present in the mixture in a major amount and in the relative amount of required to produce the urethane;
- III. blowing agent in a minor amount sufficient to foam the reaction mixture;
- IV. a catalytic amount of catalyst for the production of the urethane; and
- V. a foam stabilizing amount of aralkyl modified siloxane oil having the average formula

$$(X)zR_3\text{-}zSiO(R_2SiO)_x[(X)(R)SiO]_ySiR_3\text{-}zX_z$$

wherein x has a value of 2 to 8 inclusive; y has a value of 0 to 6 inclusive; z has a value of 0 to 1 inclusive; R is a lower alkyl or phenyl radical; and X is an aralkyl radical of the formula



where a has a value of 2 or 3; said siloxane containing at least one of said aralkyl radicals and having a viscosity in the range of about 4 to about 40 centistokes at 25°C.

3,896,063
PROCESS FOR PRODUCING VINYLIDENE CHLORIDE/VINYL CHLORIDE COPOLYMERS

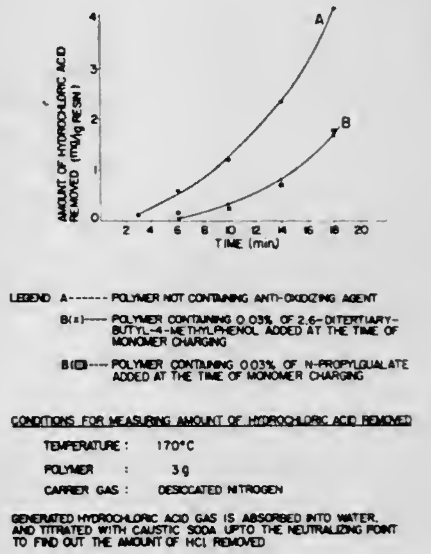
Yasushi Toyoda, and Hidetora Kashio, both of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 146,622, May 25, 1971, abandoned. This application Feb. 5, 1973, Ser. No. 329,413

Claims priority, application Japan, May 28, 1970, 45-45836

Int. Cl. C08f *19/14*

U.S. Cl. 260—23 XA 2 Claims



1. In a process for producing an odorless copolymer of vinylidene chloride and vinyl chloride having improved heat-stability by suspension-polymerizing a monomer mixture composed of 65 to 95 parts by weight of a vinylidene chloride monomer and 35 to 5 parts by weight of vinyl chloride at a polymerization temperature of from 10° to 80°C using an oil-soluble-polymerization initiator, the improvement which consists of adding to said reaction system at the time of polymerization, a polymerization stabilizer selected from the group consisting of 2,6-ditertiarybutyl-4-methylphenol and normal-propyl-gallate in a quantity ranging from 0.10 to 0.005 part by weight with respect to 100 parts by weight of the vinylidene chloride and vinyl chloride monomers.

3,896,064
VEHICLES FOR PRINTING INK

Hitoshi Koishi, Tokyo, and Yoshihiro Ishida, Kawaguchi, both of Japan, assignors to Tokyo Printing Ink Mfg. Co., Ltd., Japan

Filed Apr. 2, 1973, Ser. No. 347,177

Claims priority, application Japan, May 17, 1972, 47-048175

Int. Cl. C08c *9/18;* **C08d** *3/40*

U.S. Cl. 260—24 **6 Claims**

1. In a vehicle for a printing ink composed of a resin with or without a solvent, the improvement wherein the resin is prepared by the addition reaction of a petroleum resin with at least one unsaturated polybasic acid or anhydride thereof in an amount from 0.5 to 3 mols of acid per mol of resin and the subsequent reaction of the resulting addition product with rosin or rosin derivatives containing polyamines in an amount from 0.3 to 0.8 mols based on the amount of said acid in said resin.

3,896,065
SUBSTRATES COATED WITH STABLE PIGMENTED ETHYLENE COPOLYMER DISPERSIONS

Joseph Edward Reardon, and Vernon Clare Wolff, Jr., both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 757,096, Sept. 3, 1968, abandoned. This application Nov. 20, 1970, Ser. No. 91,568

Int. Cl. C08f *45/52*

U.S. Cl. 260—28.5 AV **2 Claims**

1. An aqueous dispersion comprising: about 50% by weight, based on the weight of solids, of a pigment mixture of about 20 to 35% by weight, based on the total weight of pigment mixture, of clay and about 65 to 80% by weight, based on the total weight of pigment mixture, of titanium dioxide; about 50% by weight, based on the weight of solids, of a polymeric pigment binder comprising about 80 to 99% by weight, based on the total weight of polymeric binder, of an ethylene copolymer of about 85 to 97% by weight ethylene and about 15 to 3% by weight of methacrylic acid, about 3 to 75% of the acid groups neutralized and about 1 to 20% by weight, based on the total weight of polymeric binder, of a hydrocarbon wax having a melting point of about 143° to 150°F., said dispersion having a solids content of about 30 to 65% by weight.

3,896,066
VINYLIDENE CHLORIDE COATING COMPOSITION CONTAINING AN AROMATIC POLYESTER AND POLYESTER SUBSTRATES COATED WITH THE COATING COMPOSITION

Ralph Oliver Ranck, Richmond, Va., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.

Continuation-in-part of Ser. No. 356,442, May 2, 1973, abandoned. This application July 6, 1973, Ser. No. 377,087

Int. Cl. C08f *29/20, 45/32, 45/52*

U.S. Cl. 260—28.5 AV **11 Claims**

1. A volatile organic solvent solution of a heat-sealable tack-free coating composition comprising

1. a copolymer of vinylidene chloride and at least one other ethylenically unsaturated monomer copolymerizable therewith, said copolymer containing at least 80% by weight of vinylidene chloride,
2. about 0.1 to 6% by weight, based on said vinylidene chloride copolymer, of a linear film-forming polyester resin having a molecular weight of at least about 500 prepared by condensing a glycol and a polyfunctional acid, at least 70% by weight of said polyfunctional acid being an aromatic polyfunctional acid, and
3. wax and particulates.

3,896,067
PROCESS FOR PREPARING POLYMER COMPOSITIONS HAVING SUBSTANTIAL ADHESIVE PROPERTIES

Yujiro Kosaka; Masaru Uemura; Tokio Fujiki; Masatoshi Kimura, and Mitsutaka Saito, all of Shin Nanyo, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Yamaguchi, Japan

Filed Oct. 2, 1973, Ser. No. 402,919

Claims priority, application Japan, Oct. 7, 1972, 47-100304The portion of the term of this patent subsequent to July 31, 1990, has been disclaimed.

Int. Cl. C08c *11/70*

U.S. Cl. 260—28.5 AV **10 Claims**

1. An adhesive polymer composition, which comprises:

a grafted copolymer wherein a monomer mixture of an alkyl acrylate and maleic anhydride is grafted onto 95 – 20 parts by weight of a mixture of an ethylene-vinyl acetate copolymer containing 5 – 70 wt.% vinyl acetate and a hydrocarbon base, wherein the ratio of said hydrocarbon base to said ethylene-vinyl acetate copolymer is 1 : 0.1 – 10; and

a copolymer formed by the polymerization of said monomer mixture, wherein the content of said monomer mixture in said polymer composition is 5 - 80 parts by weight.

3,896,068
PRINTABLE ANTI-BLOCKING RESINOUS BLOCK COPOLYMER

John H. Walker, Bartlesviille, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 15, 1974, Ser. No. 460,936

Int. Cl. C08c *11/70*

U.S. Cl. 260—28.5 B **11 Claims**

1. A composition comprising a resinous block copolymer of a monovinyl-substituted aromatic compound and a conjugated diene;

0.1 to 20 weight percent based on the weight of said block copolymer of an anti-block agent; and

0.1 to 1 weight percent based on the weight of said block copolymer of a normally solid crystalline olefin polymer.

3,896,069
HOT MELT COMPOSITION HAVING IMPROVED SOFTENING TEMPERATURE

Yujiro Kosaka; Hitoshi Kuroki; Nobuhiro Echida; Kanji Otomo, and Masaru Uemura, all of Yokohama, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Japan

Filed May 28, 1974, Ser. No. 474,071

Claims priority, application Japan, May 26, 1973, 48-58977

Int. Cl. C08c *11/70*

U.S. Cl. 260—28.5 AV **6 Claims**

1. In a hot melt composition which comprises an ethylene-vinylacetate copolymer having a vinylacetate content of 10 – 45 weight percent and melting index of 1 – 1000 g/10 min. and at least one additive selected from the group consisting of a tackifier, wax and asphalt, the improvement which comprises: admixing an oxidized low molecular weight polypropylene having an acid value of 1 – 20, which is prepared by oxidizing polypropylene having an average molecular weight of 500 – **10,000** in a ratio of 1/100 – 60/10 by weight with said ethylene-vinylacetate copolymer.

3,896,070
DISPERSION OF CROSS-LINKABLE ACRYLIC RESIN WITH AMINO-ALDEHYDE

Peter Tümmler, and Herbert Zima, both of Graz, Austria, assignors to Vianova-Kunstharz A.G., Vienna, Austria

Filed July 2, 1974, Ser. No. 485,273

Claims priority, application Austria, July 3, 1973, 5863/73; July 3, 1973, 5864/73

Int. Cl. C08f *15/40;* **C08g** *37/32*

U.S. Cl. 260—29.4 UA **8 Claims**

1. Heat hardenable coating compositions comprising -

1. 60 – 95 % by weight of a polymer dispersion prepared by emulsion polymerization of -
   - 25 – 35 % by weight of butylmethacrylate
   - 10 – 25 % by weight of ethylhexylacrylate and/or n-butylacrylate
   - 10 – 20 % by weight of methylmethacrylate
   - 10 – 20 % by weight of styrol
   - 1 – 3 % by weight of methacrylic acid and/or acrylic acid
   - 10 – 25 % by weight of polypropyleneglycol monomethacrylate and/or polyethyleneglycol monomethacrylate,
2. 5 – 40 % by weight of a water-soluble or water-dispersible amine-formaldehyde-condensation product, the methylol groups of which are partially or completely etherified with monoalcohols, and
3. 0 – 150 % by weight of the total solids of (1) and (2) of a pigment paste of -
   - a. 4 – 70 % by weight of a pigment and/or filler, and
   - b. 30 – 96 % by weight of a pigment wetting agent.

3,896,071
STORAGE STABLE AQUEOUS DISPERSION OF TETRAFLUORETHYLENE POLYMER

Robert Victor Poirier, Vienna, W. Va., assignor to E. I. du Pont de Nemours & Co., Wilmington, Del.

Continuation-in-part of Ser. No. 301,537, Oct. 27, 1972, abandoned. This application July 10, 1974, Ser. No. 487,266

Int. Cl. C08f *45/24*

U.S. Cl. 260—29.6 F **4 Claims**

1. An aqueous dispersion consisting essentially of water; tetrafluoroethylene polymer particles wherein the polymer is tetrafluoroethylene homopolymer or a copolymer of tetrafluoroethylene with up to 35% by weight based on weight of copolymer of another copolymerizable ethylenically unsaturated monomer; a nonionic surfactant dissolved in said water, present in an amount of about 1 to 6 % by weight based on weight of tetrafluoroethylene polymer; and an essentially hydrophilic alkylene oxide polymer having a molecular weight of at least 5000 dissolved in said water, said alkylene oxide polymer being present in an amount of between about 1 to 6 % by weight based on weight of tetrafluoroethylene polymer.

3,896,072
PROCESS OF MAKING AQUEOUS CO-POLYMER DISPERSION AND DISPERSION THEREFOR

Peter Tummler, and Herbert Zima, both of Graz, Austria, assignors to Vianova-Kunstharz A.G., Vienna, Austria

Filed July 2, 1974, Ser. No. 485,274

Claims priority, application Austria, July 3, 1973, 5863/73; July 3, 1973, 5864/73

Int. Cl. C08f *1/13, 45/26*

U.S. Cl. 260—29.6 TA **11 Claims**

1. Process for producing aqueous cross-linking co-polymer dispersions for stoving metal finishes comprising emulsion co-polymerizing monomers as follows

- 25 – 35 % by weight of butylmethacrylate
- 10 – 25 % by weight of ethylhexylacrylate and/or n-butylacrylate
- 10 – 20 % by weight of methylmethacrylate
- 10 – 20 % by weight of styrol
- 1 – 3 % by weight of methacrylic acid and/or acrylic acid
- 10 – 25 % by weight of polypropylene glycolmonomethacrylate and/or polyethylene glycolmonomethacrylate

the total monomer content, within said ranges, being 100 %, in the presence of an anionic emulsifier.

10. An aqueous cross-linkable dispersion which is a copolymer prepared by emulsion co-polymerizing monomers as follows

- 25 – 35 % by weight of butylmethacrylate
- 10 – 25 % by weight of ethylhexylacrylate and/or n-butylacrylate
- 10 – 20 % by weight of methylmethacrylate
- 10 – 20 % by weight of styrol
- 1 – 3 % by weight of methacrylic acid and/or acrylic acid
- 10 – 25 % by weight of polypropylene glycolmonomethacrylate and/or polyethylene glycolmonomethacrylate

the total monomer content, within said ranges, being 100 %, in the presence of an anionic emulsifier.

3,896,073
AQUEOUS DISPERSIONS OF FILM-FORMING

Thomas Woods Smith, Ann Arbor, Mich., assignor to The Lubrizol Corporation, Cleveland, Ohio

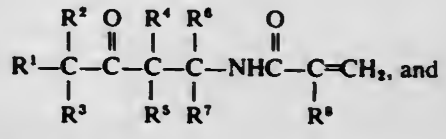
Continuation-in-part of Ser. No. 62,677, Aug. 10, 1970, abandoned. This application Nov. 28, 1972, Ser. No. 310,067

Int. Cl. C08f *45/24*

U.S. Cl. 260—29.6 RW **11 Claims**

1. A composition which is fluid at room temperature and which comprises a substantially stable dispersion in water of a graft polymer wherein the base polymer is at least one vinyl acetate, alkyl acrylate or alkyl methacrylate homopolymer or interpolymer and the grafted units are derived from at least one polymerizable component selected from the group consisting of:

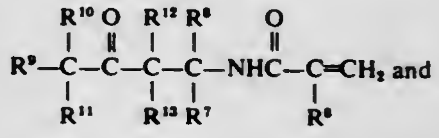
A. Substituted acrylamides of the formula



$$R^1{-}\underset{R^3}{\overset{R^2}{C}}{-}\overset{O}{\overset{\|}{C}}{-}\underset{R^5}{\overset{R^4}{C}}{-}\underset{R^7}{\overset{R^6}{C}}{-}NH\overset{O}{\overset{\|}{C}}{-}\underset{R^8}{C}{=}CH_2, \text{ and}$$

B. Water-soluble hydroxyalkylated compositions consisting essentially of

X. compounds of the formula



$$R^9{-}\underset{R^{11}}{\overset{R^{10}}{C}}{-}\overset{O}{\overset{\|}{C}}{-}\underset{R^{13}}{\overset{R^{12}}{C}}{-}\underset{R^7}{\overset{R^6}{C}}{-}NH\overset{O}{\overset{\|}{C}}{-}\underset{R^8}{C}{=}CH_2 \text{ and}$$

Y. condensation dimers and trimers of X; wherein

each of R^1, R^2, R^3, R^4, R^5, R^6 and R^7 is hydrogen or a lower alkyl or substituted lower alkyl radical, at least one of R^1, R^2, R^3, R^4, and R^5 being hydrogen;

R^8 is hydrogen, halogen or a lower alkyl or substituted lower alkyl radical;

each of R^9, R^{10}, R^{11}, R^{12} and R^{13} is hydrogen, a lower alkyl or substituted lower alkyl radical, a hydroxyalkyl radical having not more than 4 carbon atoms, or an alkoxy derivative of said hydroxyalkyl radical, at least one being a hydroxyalkyl radical or alkoxy derivative thereof.

3,896,074

ALKYLACRYLATE-ALKANEDIOL METHACRYLATE INTERPOLYMERS AND POUR DEPRESSED COMPOSITIONS THEREOF

Roy Isamu Yamamoto, Wappingers Falls, and George S. Saines, Fishkill, both of N.Y., assignors to Texaco, Inc., New York, N.Y.

Division of Ser. No. 309,585, Nov. 24, 1972, Pat. No. 3,817,866. This application Dec. 6, 1973, Ser. No. 422,218

Int. Cl. C08f *15/16*

U.S. Cl. 260—80.81 **2 Claims**

1. A cross-linked interpolymer of an n-alkylacrylate mixture and alkanediol dimethacrylate of a molecular weight between about 3000 and 100,000 (membrane osmometry) wherein the alkanediol dimethacrylate moiety is of from 10 to 18 carbons, said n-alkyl is at least 18 carbons and at least 70 wt. % of said n-alkyl in said mixture is of from 20 to 24 carbons consisting of between about 2 and 65 wt. % C_{20}, between about 18 and 65 wt. % C_{22} alkyl and between about 8 and 35 wt. % C_{24} alkyl, said interpolymer having a weight ratio of the n-alkylacrylate mixture moiety to dimethacrylate moiety of between about 99.5:0.5 to 95:5.

3,896,075

FRICTION MATERIALS

John William Longley, Bradford, England, assignor to BBA Group Limited, Cleckheaton, England

Filed Nov. 3, 1972, Ser. No. 303,364

Claims priority, application United Kingdom, Nov. 4, 1971, 51434/71

Int. Cl.² C08K *3/22, 3/36;* **C08L** *67/10*

U.S. Cl. 260—38 **5 Claims**

1. A friction material for friction engaging mechanisms comprising by weight

40 to 60% of basalt fiber,

8 to 15% of thermosetting resin binder, the balance being at least one compound selected from the group consisting of fillers and additives.

3,896,076

ADHESIVE COMPOSITION FOR FLEXIBLE PRINTED CIRCUIT AND METHOD FOR USING THE SAME

Tsutomu Watanabe; Shigenori Yamaoka, and Koichi Tanaka, all of Yokohama, Japan, assignors to Sumitomo Bakelite Company, Limited, Tokyo, Japan

Filed Dec. 11, 1973, Ser. No. 423,708

Claims priority, application Japan, June 20, 1973, 48-68802

Int. Cl. C08g *51/04*

U.S. Cl. 260—40 R **8 Claims**

1. An adhesive composition for a flexible printed circuit comprising a mixture of (A) a high molecular weight linear polyester resin obtained by poly-condensation of dibasic acids and divalent alcohols; (B) 1–20 parts by weight, per 100 parts by weight of said polyester resin, of a polyisocyanate compound having at least two isocyanate groups in the molecule selected from the group consisting of a polyisocyanate having such groups as alkyl, aryl and aralkyl, and a reaction product of tolylene diisocyanate and trimethylol propane; and (C) 2 to 50 parts by weight, per 100 parts by weight of said polyester resin, of a B-stage epoxy resin containing substantially no free curing agent and having a number average molecular weight of from 1,000 to 10,000, and obtained by reacting a compound having at least two epoxy groups in the molecule and the epoxy equivalent of from 100 to 4,000 with a compound containing at least two active hydrogen atoms in an equivalent ratio of from 0.2 to 1.0 mole of active hydrogen compound to 1.0 mole of epoxy compound.

3,896,077

UNDERWATER ADHESIVE

Fred Leonard, 7713 Beech Tree Rd., Bethesda, Md. 20034, and George Brandes, 30 Sidonia Ave., Coral Gables, Fla. 33134

Continuation of Ser. No. 857,538, Sept. 12, 1969, Pat. No. 3,607,542, which is a continuation-in-part of Ser. No. 699,062, Jan. 19, 1968, abandoned, which is a continuation-in-part of Ser. No. 586,316, Oct. 10, 1966, abandoned. This application Nov. 30, 1970, Ser. No. 93,903

Int. Cl. C08f *45/04*

U.S. Cl. 260—42.48 **24 Claims**

1. A composition having a paste-like consistency and containing, as essential ingredients, (*a*) at least one β-unsubstituted α-cyanoacrylic acid ester which is liquid at room temperature and atmospheric pressure, the α-cyanoacrylic acid ester consisting of the acyl group $H_2C{=}C(CN)—CO—O—$ and a group a carbon atom of which is directly bound to the available bond of an oxygen atom of said acyl group, and (*b*) water-insoluble solid filler which is essentially inert with respect to the α-cyanoacrylic acid ester and insoluble therein, the filler being capable of forming a paste-like consistency with the α-cyanoacrylic acid ester and being present in the composition in an amount sufficient to form the paste-like consistency.

3,896,078

STABILIZATION OF POLYMERS CONTAINING POLY(ALKYLENE OXIDE) UNITS

Guenther Kurt Hoeschele, Wilmington, Del., assignor to E. I. Du Pont De Nemours & Company, Wilmington, Del.

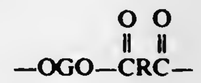
Filed Dec. 18, 1972, Ser. No. 316,268

Int. Cl. C08f *45/60*

U.S. Cl. 260—45.9 NC **10 Claims**

1. A stabilized copolyester composition consisting essentially of a mixture of (a) a copolyether ester consisting of a multiplicity of recurring long chain ester units and short chain ester units joined head-to-tail through ester linkages, said long chain ester units being represented by the formula

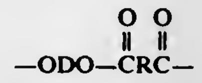
I



$$—OGO—\overset{\overset{\displaystyle O}{\|}}{C}R\overset{\overset{\displaystyle O}{\|}}{C}—$$

and said short chain units being represented by the formula

II



$$—ODO—\overset{\overset{\displaystyle O}{\|}}{C}R\overset{\overset{\displaystyle O}{\|}}{C}—$$

where G is a divalent radical remaining after the removal of terminal hydroxyl groups from a poly(alkylene oxide) glycol having a molecular weight of about 400–6000 and a carbon to oxygen ratio of about 2.0–4.3; R is a divalent radical remaining after removal of carboxyl groups from a dicarboxylic acid or dicarboxylic acid ester having a molecular weight less than about 300 and D is a divalent radical remaining after removal of hydroxyl groups from a diol having a molecular weight less than about 250; provided said short-chain ester units amount to about 15–95% by weight of said copolyester (b) an effective concentration of amide linkage containing material which on hydrolysis yields primary amino groups and carboxyl groups and (c) an effective amount of an antioxidant.

3,896,079

IMINOXYORGANOSILANES

Jean Boissieras; Louis Ceyzeriat, and Guy Poy, all of Lyon, France, assignors to Rhone-Poulenc, S.A., Paris, France

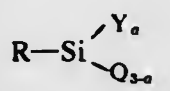
Continuation of Ser. No. 265,486, June 23, 1972, abandoned, which is a division of Ser. No. 84,149, Nov. 12, 1970, Pat. No. 3,697,568. This application Oct. 30, 1973, Ser. No. 411,153

Claims priority, application France, Nov. 12, 1969, 69.38761

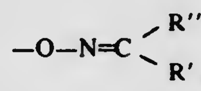
Int. Cl. C08f *11/04*

U.S. Cl. 260—46.5 G **10 Claims**

1. An elastomer forming composition comprising at least one polydiorganosiloxane terminated at each end of the chain by a hydroxy, alkoxy, amino, aminoxy, iminoxy or acyloxy group and, as cross-linking agent, at least one silane of the general formula:



wherein R represents an unsubstituted hydrocarbon radical, a halogen substituted monovalent hydrocarbon radical or a nitrile substituted monovalent hydrocarbon radical, one of Y and Q represents a



radical and the other of Y and Q represents a $—O—(DO)_nR'''$ radical, and *a* represents a positive number in the range 1 to 2 inclusive; each symbol R′ independently represents a monovalent hydrocarbon radical, each symbol R″ independently represents hydrogen or an alkyl radical containing 1–5 carbon atoms or, together with R′ represents a divalent hydrocarbon radical, each symbol R‴ independently represents a monovalent aliphatic hydrocarbon radical having 1–4 carbon atoms, each symbol D independently represents an alkylene radical having 1–8 carbon atoms and $n=0, 1, 2$ or 3.

3,896,080

LIQUID HARDENERS FOR LIQUID EPOXY RESINS, MANUFACTURING METHOD AND USE

Silvio Vargiu, Sesto S. Giovanni; Renato Berti, Milan, and Mario Pitzalis, Arcore, all of Italy, assignors to Societa' Italiana Resine S.I.R. S.p.A., Milan, Italy

Filed Sept. 20, 1973, Ser. No. 399,006

Claims priority, application Italy, Sept. 20, 1972, 29429/72

Int. Cl. C08g *30/14*

U.S. Cl. 260—47 EN **5 Claims**

1. Liquid compositions curable at temperatures of from room temperature down to −5°C., comprising a liquid 1,2-epoxy resin, which can be synthesized from the reaction of a halohydrin and a polyfunctional phenol, and about 20–60 weight percent, based on the liquid 1,2-epoxy resin, of a liquid hardener comprising the reaction product at high temperature of:

a. an aromatic polyamine,

b. at least one hydroxy compound selected from the group consisting of:
  polyalkylene glycols,
  furan alcohols and their polymers selected from the group consisting of furfuryl alcohol,
  tetrahydrofurfuryl alcohol or a still curable furfuryl alcohol resin with a molecular weight of about 200 to 300, and

c. at least one acidic compound selected from the group consisting of:
  phenols selected from the group consisting of phenol, o-chlorophenol, m-chlorophenol, p-chlorophenol, 2,4-dichlorophenol, o-nitrophenol, m-nitrophenol, and p-nitrophenol, and
  carboxylic acids selected from the group consisting of formic, acetic, benzoic and salicyclic acid,

said hardener being formed under the following reaction conditions:

the aromatic polyamine (A) and the hydroxyl compound (B) are heated together for about 60 to 120 minutes to temperatures of about 90 to 130°C., the ratio of primary amino groups to hydroxyl groups being about 4:1 to 7:1, and

the product from the preceding reaction is heated with the acidic compound (c) for about 1 to 5 hours to temperatures of about 70° to 170°C, the ratio of the aromatic polyamine used to phenolic hydroxyl groups being about 1:1 to 3:1.

3,896,081

RAPID CURING RESIN COMPOSITIONS EMPLOYING AMINOPLAST CONDENSATION POLYMER MODIFIED WITH A DI-SUBSTITUTED BIS-ARYL AMINE

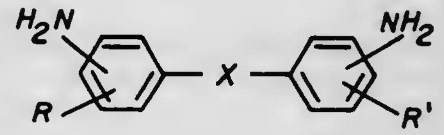
Gene F. Baxter; Harlan G. Freeman, and George T. Tiedeman, all of Seattle, Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

Division of Ser. No. 148,905, June 1, 1971, Pat. No. 3,784,516, which is a continuation-in-part of Ser. No. 821,961, May 5, 1969, abandoned. This application Oct. 23, 1973, Ser. No. 408,409

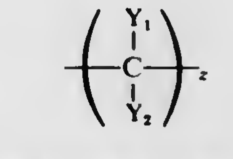
Int. Cl.² C08G *12/12, 12/32, 12/36, 12/38*

U.S. Cl. 260—47 R **48 Claims**

1. an amine-modified condensation polymer comprising the reaction product of an aminoplast containing reactive alkylol groups with a bis-aryl amine of the formula



wherein R and R′ are alkoxy, amino, hydrogen, hydroxyl, nitro, carboxyl or alkyl of 1 to 4 carbon atoms and X is —NH—, —O—, —C=C—, —S—, —S—S—, $—SO_2—$ or



$$\left(\begin{array}{c} Y_1 \\ | \\ —C— \\ | \\ Y_2 \end{array}\right)_z$$

where Y_1 and Y_2 are hydrogen or alkyl of 1 to 3 carbon atoms and *z* is 0, 1 or 2; said reaction product being further reactable at ambient temperatures with a curing agent to form an insoluble, infusible product.

3,896,082

EPOXY POWDER COATINGS AND METHOD THEREFOR

Leo Rensmann, Dorsten; Felix Schulde, Wulfen; Johann Obendorf, Dorsten, and Kurt Neubold, Bottrop, all of Germany, assignors to Veba-Chemie AG, Gelsenkirchen-Buer, Germany

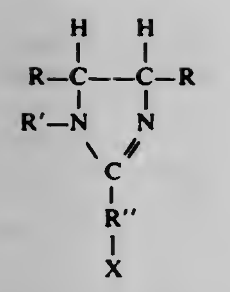
Filed Oct. 4, 1973, Ser. No. 403,687

Claims priority, application Germany, Oct. 5, 1972, 2248776

Int. Cl. C08g *30/16*

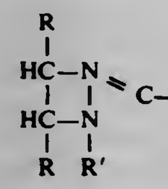
U.S. Cl. 260—47 EN **3 Claims**

1. Powder coating composition consisting essentially of a finely divided mixture of 1,2-epoxy compounds having at least one 1,2-epoxy group in the molecule and a lower softening point greater than 40°C., and from 2 to 10% by weight of an imidazole derivative having the formula



wherein

R is selected from the group of hydrogen, alkyl and aryl;
R′ is selected from the group of cycloalkyl, heterocycloalkyl and R;
R″ is selected from the group of alkylene and arylene and the foregoing substituted by alkyl and/or aryl; and
X is hydrogen or the radical



wherein R and R′ are as defined previously.

3,896,083
HETEROCYCLIC POLYMERS FROM TRIAMINOPYRADINE COMPOUNDS

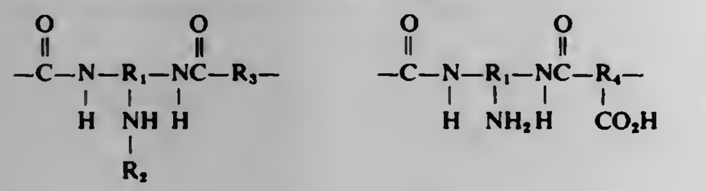
Arthur H. Gerber, University Heights, Ohio, assignor to Horizons Incorporated, Cleveland, Ohio

Filed Mar. 4, 1974, Ser. No. 447,639

Int. Cl. C08g *20/32*

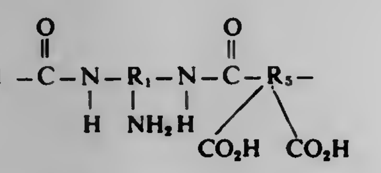
U.S. Cl. 260—47 CP **10 Claims**

1. Precyclized polyamides consisting essentially of at least one of the following recurring formulae:



$$-\overset{O}{\overset{\parallel}{C}}-\underset{H}{N}-\underset{\underset{R_2}{NH}}{R_1}-\underset{H}{N}\overset{O}{\overset{\parallel}{C}}-R_3- \qquad -\overset{O}{\overset{\parallel}{C}}-\underset{H}{N}-\underset{NH_2}{R_1}-\underset{H}{N}\overset{O}{\overset{\parallel}{C}}-\underset{CO_2H}{R_4}-$$

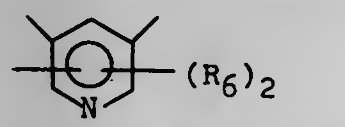
and



$$-\overset{O}{\overset{\parallel}{C}}-\underset{H}{N}-\underset{NH_2}{R_1}-\underset{H}{N}-\overset{O}{\overset{\parallel}{C}}-\underset{CO_2H\quad CO_2H}{R_5}-$$

wherein

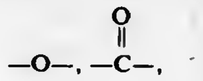
R₁ is a trivalent radical represented by the formula



wherein one bond from either an α or γ position is bonded to the $-NHR_2$ or $-NH_2$ group; and all of the R_1 groups are not required to be the same in the polyamide;

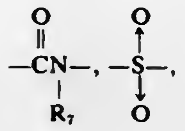
wherein R_6 represents a monovalent member selected from the group consisting of hydrogen, methyl, ethyl, propyl, butyl and pentyl, and both R_6 members are not required to be the same;

R_2 is a monovalent member selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, arylalkyl, substituted arylalkyl, aryl, substituted aryl, heterocyclic, substituted heterocyclic, in which said substituents are selected from the group consisting of methyl, phenyl, pyridyl, F(aromatic), Cl(aromatic), $-CN$, $-COOH$ and its salts, $-COOC_6H_5$, $-SO_3H$ and its salts, $-SH$, thioaryl, thioalkyl, $-CH{=}CHC_6H_5$, and N,N-(dialkylamino); and not all of the R_2 groups are required to be the same in the polyamide; R_3, R_4 and R_5 are divalent, trivalent, and tetravalent radicals respectively, selected from the following structural types: aliphatic, cycloaliphatic, alkenyl, perfluoroalkyl, perfluoropolyalkylene oxide, aromatic and heteraromatic, and inorganic/organic radicals, the carbocyclic and heterocyclic radicals having a single, multiple or fused ring structure, the multiple ring structures including polyarylenes with 2 to 9 aryl rings in which the aryl groups are bonded directly to each other or bridged by a divalent member selected from the group consisting of alkylene with up to 3 carbon atoms, perfluoroalkylene of 2 to 10 carbon atoms,



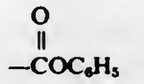
$$-O-,\ -\overset{O}{\overset{\parallel}{C}}-,$$

—S—,



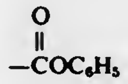
$$-\overset{O}{\overset{\parallel}{C}}\underset{R_7}{N}-,\ -\overset{O}{\overset{\uparrow}{\underset{\downarrow}{\underset{O}{S}}}}-,$$

$-CH{=}CH-$, 5- and 6- membered heteroaromatics containing at least one nitrogen atom, and mixtures thereof, and substituted aromatic radicals where the substituents are selected from lower alkyl, F, Cl, $-CN$, $-SO_3H$, and



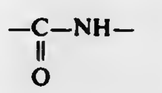
$$-\overset{O}{\overset{\parallel}{C}}OC_6H_5$$

with the proviso that the $-CN$, $-SO_3H$, and



$$-\overset{O}{\overset{\parallel}{C}}OC_6H_5$$

substituents are not ortho or peri to a

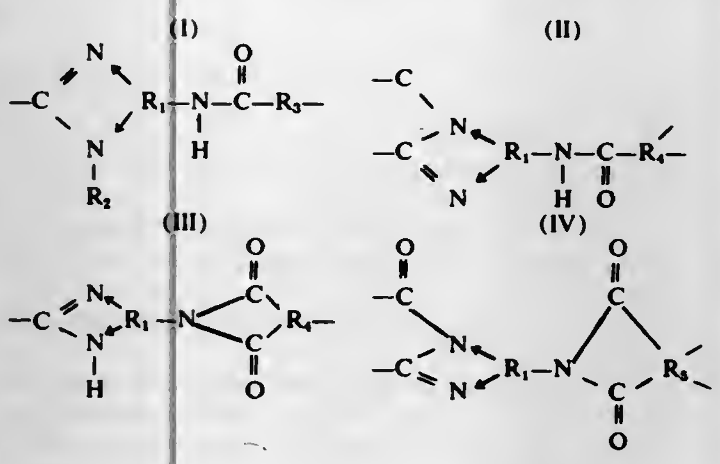


$$-\underset{O}{\underset{\parallel}{C}}-NH-$$

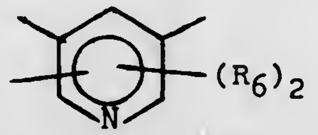
group; the inorganic/organic radicals consisting of ferrocenyl, carboranyl, and biaryls separated by at least one phosphorus atom or by at least one silanyl or siloxanyl group, and mixtures thereof; R_7 represents H, lower alkyl, or phenyl; and every R_3, R_4 and R_5 is not required to be the same as every other R_3, R_4 and R_5;

and acid salts thereof, of an acid selected from the group consisting of HCl, HBr, H_3PO_4, CF_3COOH, alkanesulfonic and perfluoroalkane sulfonic acids.

3. Cyclized heterocyclic polymers prepared by cyclodehydration of the polyamides and acid salts thereof of claim 1 and which contain recurring structural units consisting essentially of at least one of the following formulae:



in which R_1 is a trivalent radical represented by the formula



wherein one bond from either an α or γ position is bonded to the $-N-$, $-NH-$ or $=N-$ group in the above cyclized structures I–IV; and

wherein each R_6 represents a monovalent member selected from the group consisting of hydrogen, methyl, ethyl, propyl, butyl and pentyl, and both R_6 members are not required to be the same; and

R_2 is a monovalent member selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, arylalkyl, substituted arylalkyl, aryl, substituted aryl, heterocyclic, substituted heterocyclic; said substituents being selected from the group consisting of methyl, phenyl, pyridyl, F(aromatic), Cl(aromatic), $-CN$, $-COOH$ and its salts, $-COOC_6H_5$, $-SO_3H$ and its salts, $-SH$, thioaryl, thioalkyl, $-CH{=}CHC_6H_5$, and N,N-(dialkylamino), with the proviso that each of the several R_1's, R_2's, R_3's, R_4's and R_5's in any recurring unit is not required to be the same as the R's in any other recurring unit, and the symbol → represents possible isomerism.

3,896,084
COPOLYMERS OF ACETONE WITH UNSATURATED COMPOUNDS OF ALIPHATIC SERIES AND A METHOD FOR PREPARING SAME

Alexandr Ivanovich Bolshakov, Obschezhitie NNTS, kv. 309; Alfa Ivanovich Mikhailov, ulitsa Pervaya, 16, kv. 11; Igor Mstislavovich Barkalov, ulitsa Galushkina, 17, kv. 92, and Vitaly Iosifovich Goldansky, Vorobievskoe shosse, 2b, kv. 45, all of Moscow, U.S.S.R.

Filed May 30, 1973, Ser. No. 365,174

Claims priority, application U.S.S.R., July 21, 1972, 1813887

Int. Cl. C08g *15/00*

U.S. Cl. 260—63 R **7 Claims**

1. Copolymers of acetone with a compound selected from the group consisting of acrylic acid and its esters, anhydrides, and imides.

3,896,085
EMULSION COPOLYMERS OF ACROLEIN AND THEIR USE IN TREATING LEATHER

Bjorn E. Larsson, Rushland, and Stanley Le Sota, Horsham, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 160,178, July 6, 1971, abandoned. This application Apr. 12, 1973, Ser. No. 350,573

Int. Cl. C08f *15/12*

U.S. Cl. 260—67 UA **7 Claims**

1. An emulsion copolymer of
- a. from about 0.25 to 4% by weight of acrolein;
- b. from about 0.5 to about 10% by weight of an α,β-ethylenically unsaturated carboxylic acid or a mixture of α,βethylenically unsaturated carboxylic acids;
- c. from 0 to about 99.25% by weight of a alkyl (C_1–C_{24}) ester of methacrylic acid or a mixture of alkyl (C_1–C_{24}) esters of methacrylic acid; and
- d. up to about 99.25% by weight of a alkyl (C_1–C_8) ester of acrylic acid or of a mixture of alkyl (C_1–C_8) esters of acrylic acid, the sum of $(a+b+c+d)$ always being 100 parts by weight.

3,896,086
PROCESS FOR THE PREPARATION OF BIODEGRADABLE POLYCARBOXYLATES

Heinz Haschke; Gerhard Morlock, both of Grossauheim, and Wilfried Felber, Grosswelzheim, all of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Germany

Filed June 5, 1974, Ser. No. 476,633

Claims priority, application Germany, June 14, 1973, 2330260

Int. Cl.² C08F *16/34*

U.S. Cl. 260—67 UA **37 Claims**

1. In a process for the preparation of an improved biological degradable polycarboxylate by the oxidative polymerization of acrolein alone or with acrylic acid, said process comprising slowly adding acrolein monomer or acrolein-acrylic acid monomer mixture to a heated, moving aqueous hydrogen peroxide solution, the improvement comprising slowly adding to said peroxide solution about 0.1 to about 10% by weight of n-dodecyl mercaptan, related to the weight of monomer or monomer mixture, during polymerization.

3,896,087
MANUFACTURE OF STABLE UREA/FORMALDEHYDE RESINS IN A THREE STAGE REACTION

Friedrich Brunnmueller; Helmut Henkel, and Johann Lenz, all of Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Rhine, Germany

Filed July 12, 1972, Ser. No. 271,054

Claims priority, application Germany, July 16, 1971, 2135738

Int. Cl. C08g *9/10*

U.S. Cl. 260—69 R **2 Claims**

1. A process for the manufacture of impregnating urea/formaldehyde resins, particularly for use in the surface-treatment of wood materials, which comprises:
- a. reacting urea and formaldehyde in aqueous acid solution in a molar ratio of from 1:1.5 to 1:2.5 and at a concentration to give a 40 to 70% solids content resin solution, the pH being from 4.5 to 6.5, the reaction being conducted to at least such an extent that a sample of the solution causes turbidity when added dropwise to cold 50% magnesium sulfate solution, but not to an extent exceeding the point at which the resin still remains soluble in the solution at temperatures above 60°C;
- b. adding at least 0.2 moles of formaldehyde per mole of urea to obtain a molar ratio of urea to formaldehyde of from 1:2.5 to 1:4 followed by condensing at a temperature of between 40°C and the boiling point of the solution and at a pH of between 3.5 and 9 until the resin solution is capable of being diluted with at least 20 volumes of water at room temperature to form a clear solution; and
- c. adding urea to give a final molar ratio of urea to formaldehyde of from 1:1.5 to 1:2.5 effecting post-condensation of the mixture of a pH of between 4.0 and 6.5 until all free urea has disappeared.

3,896,088
FLUORINATED OILY SOIL RELEASE AGENTS

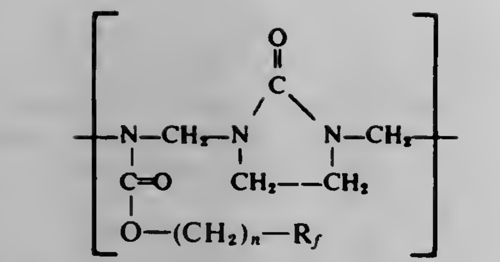
Stuart Raynolds, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 24, 1972, Ser. No. 309,447

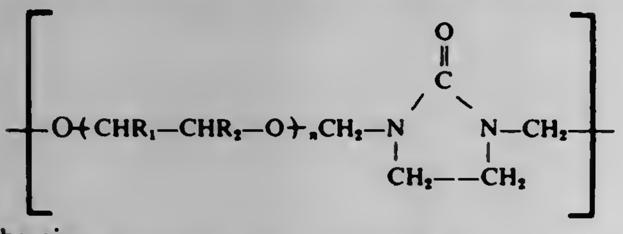
Int. Cl. C08g *9/36*

U.S. Cl. 260—70 R **5 Claims**

1. An adduct containing units

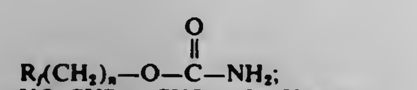


wherein
n is an integer of from 1 through 12 and
R_f is perfluoroalkyl of from 4 through 16 carbon atoms; and



wherein
m is an integer of from 10 through 300,
R_1 is hydrogen or methyl and R_2 is hydrogen or methyl with the limitation that at least one of R_1 and R_2 is hydrogen; prepared by condensing in the presence of an acid catalyst

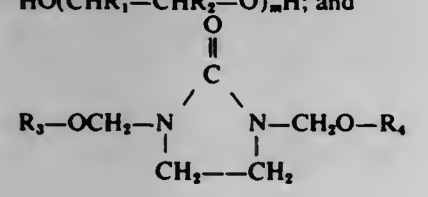
A)



$R_f(CH_2)_n—O—\overset{O}{\overset{\|}{C}}—NH_2$;

B) $HO(CHR_1—CHR_2—O)_mH$; and

C)



wherein
m, *n*, R_f, R_1 and R_2 are as defined above,
R_3 is alkyl of from 1 through 4 carbon atoms
and R_4 is alkyl of from 1 through 4 carbon atoms;
wherein the molar ratio of A to B is from about 0.25:1 to 9:1, and the molar ratio of A + B to C is from about 0.6:1 to 1.5:1, the condensation being carried out at a temperature of about from 50° to 150°C. to distill from the system alcohol formed by the condensation.

3,896,089
SOLUTION FOR FORMING THERMAL RESISTING POLYMERS

Yuzuru Noda; Makoto Kojima; Shiro Mazaki, and Yasutada Katashiba, all of Ibaragi, Japan, assignors to Nitto Electric Industrial Co., Ltd., Ibaragi, Japan
Filed Apr. 4, 1973, Ser. No. 347,761
Claims priority, application Japan, Apr. 4, 1972, 47-34046
Int. Cl. C08g *22/32, 20/32*
U.S. Cl. 260—77.5 TB **2 Claims**

1. A solution for forming thermal resisting polymers comprising a mixture of a prepolymer solution and blocked polyisocyanate compound in an approximately stoichiometric equivalent amount to said prepolymer, said prepolymer having been prepared by reacting an organic diisocyanate or diamine and a molar excess of 1,2,3,4-butane-tetracarboxylic acid or an anhydride thereof and the prepolymer having an imide group in the main chain of the molecule and an acid group at the terminals of said molecule, wherein said blocked polyisocyanate is a blocked compound of a polyisocyanate having a hydantoin ring in the main chain of the molecule, and having isocyanate groups at both terminals of the molecule prepared by reacting the glycine derivatives represented by the general formula

$$[R_1OOC(R_2)_2CHN]_2R_3$$

wherein R_1 and R_2, which may be the same or different, each represent a hydrogen atom or a lower alkyl group, and R_3 represents a divalent organic group with a molar excess amount of an organic diisocyanate.

3,896,090
PROCESS FOR PREPARING POLYCARBONATES

Michael J. Maximovich, Akron, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.
Continuation-in-part of Ser. No. 215,410, Jan. 4, 1972, abandoned. This application Sept. 4, 1973, Ser. No. 393,875
Int. Cl. C08g *17/13, 17/007*
U.S. Cl. 260—77.5 D **11 Claims**

1. In the process for preparing polycarbonates by the polymerization of alkylene carbonate, or 1,2-epoxide and carbon dioxide, with from about 0.005 to about 0.2 mole of an organic compound having at least 2 active hydrogens per mole of epoxide or alkylene carbonate, the improvement which comprises conducting said polymerization in the presence of a catalytic amount of a catalyst selected from the group consisting of alkali metal, alkaline earth metal or ammonium hydrocarbyloxy titanate catalyst, and sodium, potassium, lithium and ammonium tetraborates and metaborates.

3,896,091
MODIFIED POLYVINYL CHLORIDE

Hubert Jakob Fabris, Akron; Heinz Uelzmann, and Willem Johannes Van Essen, both of Tallmadge, all of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio
Filed Feb. 13, 1974, Ser. No. 442,259
Int. Cl.^{2} C08G *63/76;* **C08F** *114/06*
U.S. Cl. 260—78.4 D **7 Claims**

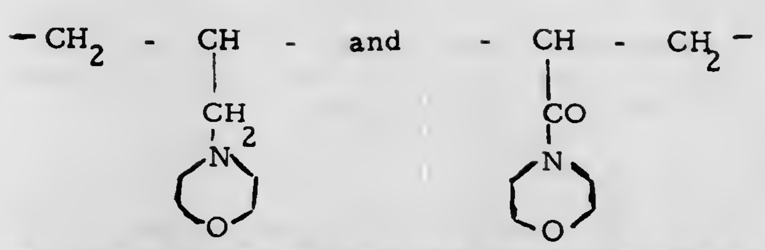
1. A process for preparing a modified polyvinyl chloride which comprises (1) reacting in a Diels-Alder reaction polyvinyl chloride and a dienophile in an amount of at least 70 parts by weight of dienophile per 100 parts by weight of non-modified polyvinyl chloride at ambient pressure and at a temperature in the range of from about 100°C. to 300°C. but not above the reflux temperature of the system for 1 to 60 hours under conditions under which said polyvinyl chloride dehydrochlorinates, said dienophile being a sufficinet solvent for said polyvinyl chloride at least to swell said polyvinyl chloride and being substantially unreactive with hydrogen chloride under said reaction conditions, and

(2) recovering the resulting modified polyvinyl chloride.

3,896,092
MATERIAL FOR GEL PERMEATION CHROMATOGRAPHY

Roger Epton, 22 Winchester Rise, Dudley, Worcestershire; Christopher Holloway, 12 Leicester Close, Smethwick, Worley, Worcestershire, and John Vincent McLaren, 35 York Ave., Finchfield, Wolverhampton, Staffordshire, all of England
Filed Sept. 15, 1972, Ser. No. 289,461
Claims priority, application United Kingdom, Sept. 15, 1971, 43093/71
Int. Cl. C08f *19/00*
U.S. Cl. 260—80.3 N **5 Claims**

1. A cross-linked polymer having repeating units in the backbone chains, at least some of the repeating units of the backbone chains having morpholine groups covalently bonded through the nitrogen atom of the morpholine groups through divalent linking groups to the atoms constituting the backbone chains, said repeating morpholine units having morpholine groups selected from the group consisting of



said polymer further characterized in having cross-links between said backbone chains formed by copolymerized diethylenically unsaturated monomers, the molar ratio of said diethylenically unsaturated monomers to the other monomers in the polymer being from 1:150 to 1:1.5 so that sufficient cross-links exist between the backbone chains to make the polymer capable of forming a gel in water or chloroform.

3,896,093
PROCESS FOR THE PRODUCTION OF POLYMERS OF ACRYLONITRILE AND STYRENE AND OF ACRYLONITRILE, STYRENE, AND BUTADIENE

GianFranco Valoti, and Giancarlo Antonini, both of Milan, Italy, assignors to Societa' Italiana Resine S.I.R. S.p.A., Milan, Italy
Filed Dec. 26, 1973, Ser. No. 428,571
Claims priority, application Italy, Dec. 22, 1972, 33447/72
Int. Cl. C08d *7/6;* **C08c** *1/4*
U.S. Cl. 260—80.78 **6 Claims**

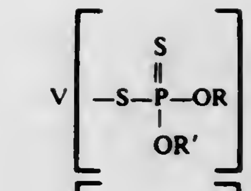
1. A process for the recovery of polymers of acrylonitrile and styrene optionally containing butadiene by coagulation of aqueous latices containing these polymers, which comprises maintaining said aqueous latices, in a first coagulation phase, in the presence of a coagulant selected from the group comprising hydrochloric acid, sulphuric acid, formic acid, oxalic acid, acetic acid, and a water soluble chloride, nitrate, sulphate, or acetate of sodium, potassium, calcium, magnesium, zinc or aluminum, at a temperature between equal to and up to about 15°C higher than the distortion temperature of the polymer for a time in the range of from about 10 to 100 minutes at atmospheric or greater pressure, and bringing the aqueous mixture obtained in this way into conditions of boiling or close to boiling in a second coagulation phase carried out in at least two stages, the product being maintained in such conditions for a time in the range of from about 10 to 100 minutes in each individual stage.

3,896,094
PREPARATION OF ALPHA-OLEFIN COPOLYMERS WITH VANADIUM PHOSPHORODITHIOATE CATALYST

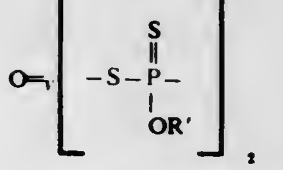
Harry D. Visser, Cheshire, and Walter Nudenberg, Newtown, both of Conn., assignors to Uniroyal, Inc., New York, N.Y.
Filed Mar. 25, 1974, Ser. No. 454,346
Int. Cl. C08f *15/40, 15/02, 1/42*
U.S. Cl. 260—80.78 **33 Claims**

1. A method of copolymerizing ethylene and an alpha-olefin with or without a copolymerizable nonconjugated diene to form a copolymer of the said monomers comprising contacting the said monomers in an inert organic solvent with a catalyst which is a vanadium phosphorodithioate of one of the formulas (1) or (2)

(1)



(2)



where R and R′ are the same or different and are alkyl groups with 1 to 10 carbon atoms and a cocatalyst which is an alkyl aluminum halide.

3,896,095
HALOGENATION OF ETHYLENE TERPOLYMERS IN A WATER SLURRY

Richard T. Morrissey, Cuyahoga Falls, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio
Filed Nov. 12, 1973, Ser. No. 414,889
Int. Cl.^{2} C08F *8/22*
U.S. Cl. 260—80.78 **4 Claims**

1. The method of halogenating an ethylene-propylene-polyene terpolymer wherein said polyene is a polyunsaturated bridged-ring compound having at least one carbon-to-carbon double bond in a bridged ring and is a member of the group consisting of 5 -alkylidene-2-norbornenes wherein the alkylidene group contains 1–20 carbon atoms, the alkenyl-2-norbornenes wherein the alkenyl group contains 3 to 8 carbon atoms and the 5-alkadienyl-2-norbornenes wherein the alkadienyl group contains from 5 to 9 carbon atoms in a water system whereby the amount of halogen combined with 100 weight parts of said terpolymer is from 3.0 to 6.0 weight percent, comprising:

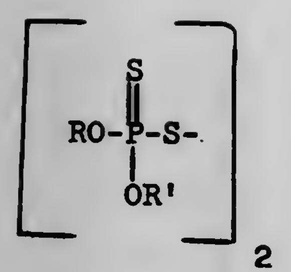
a. dispersing said terpolymer in crumb form in a water slurry wherein the weight percent of said crumb is in the range 12 to 25,
b. adding halogen in excess to said slurry with agitation,
c. Neutralizing said mixture with an alkaline medium,
d. Filtering, washing and drying said crumb.

3,896,096
MOLECULAR WEIGHT REGULATION OF ETHYLENE ALPHA-OLEFIN COPOLYMERS

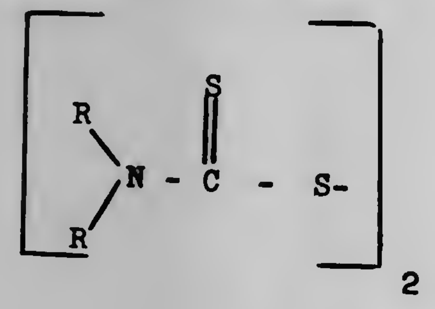
Harry D. Visser, Cheshire, and Walter Nudenberg, Newton, both of Conn., assignors to Uniroyal, Inc., New York, N.Y.
Filed Mar. 25, 1974, Ser. No. 454,993
Int. Cl. C08f *1/56, 1/80, 15/04, 15/40*
U.S. Cl. 260—80.78 **27 Claims**

1. In a method of copolymerizing ethylene and an alpha-monoolefin, with or without a copolymerizable non-conjugated diene, in solution in an inert organic solvent in the presence of a vanadium salt-alkylaluminum halide anionic coordination polymerization catalyst which is soluble in said solvent, the improvement comprising carrying out the said polymerization in the presence of a regulator-activator selected from the group consisting of

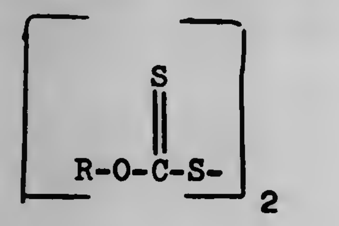
a. a bis(thionophosphonato) disulfide of the formula:



b. a thiuram disulfide of the formula



and c. a xanthogen disulfide of the formula:



where the R's are the same or different and are hydrocarbon groups containing 1 to 18 carbon atoms devoid of olefinic and acetylenic unsaturation selected from alkyl, cycloalkyl, aryl and aralkyl groups, whereby the molecular weight of the resulting copolymer is regulated and/or the catalyst is activated.

3,896,097
PROCEDURE FOR THE PRODUCTION OF POLYMERS AND COPOLYMERS OF ISOBUTYLENE

Aldo Priola; Sebastiano Cesca, and Giuseppe Ferraris, all of San Donato Milanese, Italy, assignors to Snam Progetti S.p.A., San Donato Milanese, Italy

Filed Apr. 17, 1973, Ser. No. 352,084
Claims priority, application Italy, Apr. 17, 1972, 23216/72
Int. Cl. C08d *1/26, 3/04;* **C08f** *3/14*
U.S. Cl. 260—85.3 R **9 Claims**

1. Process for the production of polymers and copolymers of isobutylene, wherein the polymerization reaction is conducted in the presence of a catalytic system consisting essentially of:

a. a metalorganic compound of aluminum represented by the formula AlR^1R^2X wherein X is a halogen atom; R^1 is ethyl; and R^2 is the same as R^1 or ethoxy,

and

b. Cl_2O or, when (a) is AlEt.Oet.Cl, SO_2.

3,896,098
UNSATURATED POLYESTER RESIN, COATINGS MADE THEREFROM AND METHOD OF MAKING SAME

Edward A. Lasher, Beverly Hills, Calif., assignor to Whittaker Corporation, Los Angeles, Calif.

Filed June 13, 1973, Ser. No. 369,431
Int. Cl.² C08F *236/20, 267/06;* **C08L** *67/06*
U.S. Cl. 260—872 **24 Claims**

1. A method of making a polyester prepared from an unsaturated dicarboxylic acid component and a diol, said method comprising the steps of:

admixing about 3 moles of a diol with 2 moles of an unsaturated aliphatic dicarboxylic acid to provide a reaction mixture;

heating said reaction mixture to a temperature sufficient to esterify the reactants in said reaction mixture to produce a tetraester having end hydroxyl groups;

adding a monoester of an unsaturated monohydric alcohol and an unsaturated dicarboxylic acid to said tetraester in an amount to provide about 1.2 moles of said monoester per mole of said tetraester; and

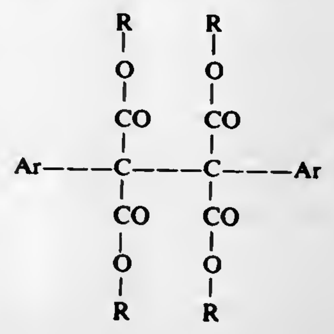
heating the resulting mixture to esterify said tetraester and said monoester and continuing said heating until an acid number of less than about 28 is obtained on the solids in said mixture to produce said unsaturated polyester.

3,896,099
POLYMERIZATION OF ETHYLENICALLY UNSATURATED MONOMERS WITH A 1,1,2,2-TETRACARBOALKOXY-DIARYL-ETHANE

Hendrik A. P. de Jongh, Oss, and Cornelis R. H. I. de Jonge, De Steeg, both of Netherlands, assignors to Akzo N.V., Arnhem, Netherlands

Continuation-in-part of Ser. No. 159,949, July 2, 1971, abandoned. This application Sept. 28, 1973, Ser. No. 401,604
Claims priority, application Netherlands, July 3, 1970, 7009925
Int. Cl. C07c *69/76;* **C08f** *7/04, 3/74*
U.S. Cl. 260—93.5 R **4 Claims**

1. In the process for the free radical-initiated polymerization of ethylenically unsaturated monomers, the improvement which comprises using as the free radical initiator a 1,1,2,2-tetracarboalkoxy-diaryl ethane of the formula



where Ar is a phenyl group substituted on the ortho-or ortho- and para-position by an alkyl group with 1 to 4 carbon atoms, a chlorine atom and/or a bromine atom, and R is a hydrocarbon containing 1 to 24 carbon atoms in an amount of from about 0.01 part to about 5 parts per 100 parts of reactants.

3,896,100
NUCLEATION OF ISOTACTIC POLYSTYRENE

Henry Nelson Beck, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 293,823, Oct. 2, 1972, Pat. No. 3,817,966. This application Mar. 21, 1974, Ser. No. 453,468
Int. Cl.² C08F *7/04*
U.S. Cl. 260—93.5 A **1 Claim**

1. An isotactic polystyrene composition, the composition comprising in intimate admixture from about 99.995 to about 95 parts by weight of isotactic polystyrene and from about 0.005 to about 5 parts by weight of 4-hydroxy-6,7-dimethylpteridine.

3,896,101
ADDITIVE FOR PLASTIC MATERIALS

Robert H. McIntosh, and Ezekiel H. Hull, both of Greensboro, N.C., assignors to Anthony B. Askew, Atlanta, Ga.

Continuation-in-part of Ser. No. 139,265, April 30, 1971, Pat. No. 3,705,235. This application Nov. 16, 1971, Ser. No. 199,327
Int. Cl.² C08K *3/24, 5/17*
U.S. Cl. 260—93.7 **7 Claims**

1. Antistatic plastic material having incorporated therein an effective amount of an additive having a decomposition temperature above the molding temperature of the plastic material, said additive consisting essentially of a mixture of dimethyllaurylamine and barium acetate.

3,896,102
PREPARATION OF POLYBUTADIENE

Floyd E. Naylor, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 25, 1974, Ser. No. 463,978
Int. Cl. C08d *1/14, 3/08*
U.S. Cl. 260—94.3 **10 Claims**

1. A method for polymerizing 1,3-butadiene comprising contacting 1,3-butadiene under polymerization conditions with a four-component catalyst comprising;

a. an organoaluminum hydride represented by the general formula R_aAlH_b wherein R is alkyl, cycloalkyl or mixtures thereof containing from about 1 to 16 carbon atoms, *a* is an integer from 1 to 2, *b* is an integer from 1 to 2 such that the sum of *a* plus *b* equals 3;

b. an organolithium or organosodium compound represented by the general formula $R'M_x$ wherein x is an integer from 1 to 4, R' is a hydrocarbon radical selected from the group consisting of aliphatic and cycloaliphatic radicals containing from about 1 to 20 carbon atoms per radical and M is lithium or sodium;

c. a titanium halide component selected from the group consisting of titanium tetrachloride plus molecular iodine, titanium tetrabromide plus molecular iodine, and titanium tetraiodide; and

d. an ether represented by the general formula R''OR''' wherein R'' and R''' are alkyl or cycloalkyl groups containing from about 1 to 12 carbon atoms per R'' or R''' group and wherein the ether contains up to 20 carbon atoms per molecule.

3,896,103
ACYLATED DERIVATIVES OF TRP-MET-ASP-PHE-NH_2

Paul Martin Hardy, Exeter; George Wallace Kenner, Liverpool; Robert Charles Sheppard, Liverpool; John Selwyn Morley, Liverpool, and John Keith MacLeod, Liverpool, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed June 7, 1965, Ser. No. 462,107
Claims priority, application United Kingdom, June 25, 1964, 26355/64; Mar. 9, 1965, 9978/65
Int. Cl. C07c *103/52;* **A61k** *37/00*
U.S. Cl. 260—112.5 **5 Claims**

1. N-t-Butyloxycarbonyl-L-alanyl-L-phenylalanyl-L-isoleucylglycyl-L-tryptophanyl-L-methionyl-L-aspartyl-L-phenylalanine amide and the acid addition salts thereof.

3,896,104
P-GLU-HIS-TRP-SER-TYR-D-LYS-LEU-ARG-PRO-GLY-NH_2 AND INTERMEDIATES

Wayne A. McKinely, Wallingford, and Dimitrois Sarantakis, West Chester, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed May 22, 1974, Ser. No. 472,269
Int. Cl. C07c *103/52;* **C07g** *7/00;* **A61k** *37/00*
U.S. Cl. 260—112.5 **5 Claims**

1. A compound selected from the class consisting of L-p-Glu-L-His-L-Trp-L-Ser-L-Tyr-D-Lys-L-Leu-L-Arg-L-Pro-Gly-NH_2 (I)

and

R^5-L-p-Glu-L-His(N^{im}-R^6)-L-Trp-L-Ser(R^4)-L-Tyr(R^3)-D-Lys(R^2)-L-Leu-L-Arg(N^G-R^1)-L-Pro-Gly-X (II)

and its non-toxic salts; wherein

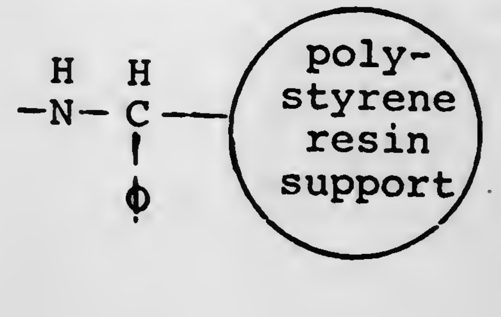
R^1 is a protecting group for the N^δ , N^ω and $N^{\omega'}$ nitrogen atoms of arginine selected from the group consisting of nitro, tosyl, benzyloxycarbonyl, adamantyloxycarbonyl and tert-butyloxy-carbonyl or R^1 is hydrogen; R^2 is selected from the group consisting of hydrogen and a protecting group for the side chain amino substituent; R^3 is a protecting group for the phenolic hydroxyl group of tyrosine selected from the group consisting of tert-butyl, tetrahydropyranyl, trityl, benzyl, 2,6-dichlorobenzyl, p-bromobenzyloxycarbonyl and benzyloxycarbonyl or R^3 is hydrogen;

R^4 is a protecting group for the alcoholic hydroxyl group of serine and is selected from the group consisting of acetyl, benzoyl, tetrahydropyranyl, tert-butyl, trityl, 2,6-dichlorobenzyl and benzyl or R^4 is hydrogen;

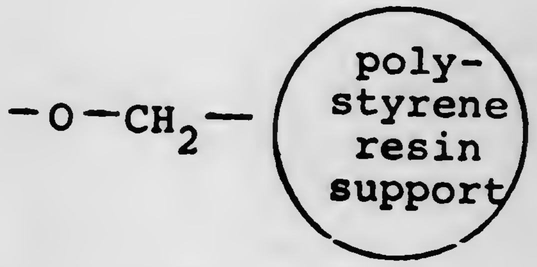
R^5 is selected from the group consisting of hydrogen or an α-amino protecting group;

R^6 is a protecting group selected from the group consisting of tosyl, benzyl, trityl, 2,4-dinitrothiophenyl, 2,2,2-trifluoro-1-benzyloxycarbonylaminoethyl and 2,2,2-trifluoro-1-butyloxycarbonylaminoethyl; and

X is selected from the group consisting of NH_2, OH, O-(lower)alkyl, O-benzyl and an anchoring bond linked to a solid polystyrene resin represented by one of the formula



and



wherein said polystyrene resin is cross linked through the phenyl group on each second carbon atom of the alkyl chain of said polystyrene, with the proviso that at least one of R^1, R^2, R^3, R^4 and R^6 is other than hydrogen.

3,896,105

(N-PROPIONYL) -GLY-CYS-LYS-ASN-PHE-PHE-TRP-LYS-THR-PHE-THR-ER-CYS-OH AND INTERMEDIATES

Sie-Yearl Chai, Royersford, and John P. Yardley, King of Prussia, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Apr. 1, 1974, Ser. No. 457,158

Int. Cl. C07c *103/52;* **A61k** *37/00*

U.S. Cl. 260—112.5 **6 Claims**

1. A tridecapeptide selected from those of the formula

(N-propionyl)-Gly-L-Cys-L-Lys-L-Asn-L-Phe-L-Phe-L-Trp-
L-Lys-L-Thr-L-Phe-L-Thr-L-Ser-L-Cys-OH,

(N-propionyl)-Gly-L-Cys-L-Lys-L-Asn-L-Phe-L-Phe-L-Trp-
L-Lys-L-Thr-L-Phe-L-Thr-L-Ser-L-Cys-OH

and the non-toxic acid addition salts therof.

3,896,106

ANTIBIOTIC DERIVATIVES

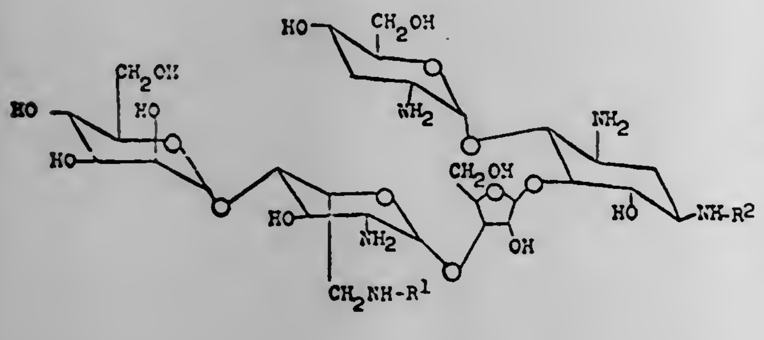
Takayuki Naito; Susumu Nakagawa, both of Tokyo, and Soichiro Toda, Koshigaya, all of Japan, assignors to Bristol-Myers Company, New York, N.Y.

Continuation-in-part of Ser. No. 266,164, June 26, 1972, abandoned. This application June 4, 1973, Ser. No. 366,925

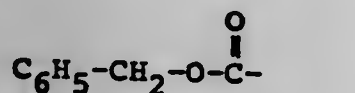
Int. Cl. C07c *129/18*

U.S. Cl. 260—210 AB **7 Claims**

1. A compound having the formula



in which R^1 is H or



$$C_6H_5-CH_2-O-\overset{O}{\overset{\|}{C}}-$$

and R^2 is H, L-(−)-γ-amino-α-hydroxybutyryl, L-(−)-β-amino-α-hydroxypropionyl, L-(−)-γ-amino-α-hydroxyvaleryl, L-(−)-γ-benzyloxycarbonylamino-α-hydroxybutyryl, L-(−)-β-benzyloxycarbonylamino-α-hydroxypropionyl, or L-(−)-δ-benzyloxycarbonylamino-α-hydroxyvaleryl, wherein R^1or R^2 must be other than H; or a nontoxic pharmaceutically acceptable acid addition salt thereof.

3,896,107

DERIVATIZED ETHYL CELLULOSE

Eugene D. Klug, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Mar. 8, 1974, Ser. No. 449,568

Int. Cl. C07c *97/00*

U.S. Cl. 260—211 R **5 Claims**

1. Ethyl cellulose substituted with tertiary lower alkyl amine group-containing substituents and having an ethoxyl D.S. of about 1.8 to 2.8 and a tertiary amine group substituent D.S. of about 0.05 to 0.4, said ethyl cellulose being soluble in dilute aqueous acid media and insoluble in neutral and alkaline aqueous media.

3,896,108

CARBOXYALKYL MODIFIED ETHYL CELLULOSE

Eugene D. Klug, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed May 10, 1974, Ser. No. 468,957

Int. Cl. C08b *11/00*

U.S. Cl. 260—231 A **4 Claims**

1. A carboxyalkyl ethyl cellulose having an ethoxyl D.S. of about 2.0 to 2.8 and a carboxyalkyl D.S. of about 0.05 to 0.5 and selected from the class consisting of carboxymethyl and carboxyethyl, said modified ethyl cellulose being soluble in dilute aqueous bases and insoluble in neutral or acid aqueous medium.

3,896,109

2,3-DEHYDRO-1H-1,4-BENZODIAZEPINES

Jackson B. Hester, Jr., Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 185,381, Sept. 30, 1971, abandoned. This application Jan. 7, 1974, Ser. No. 431,111

Int. Cl.² C07D *243/14, 295/12*

U.S. Cl. 260—239 BD **3 Claims**

1. 7-Chloro-2,3-dihydro-5-(hydroxyamino)-1-methyl-1H-1,4-benzodiazepine.

2. N-(7-Chloro-2,3-dihydro-1-methyl-1H-1,4-benzodiazepine-5-yl)aminoxyacetic acid ethyl ester.

3. 7-Chloro-2,3-dihydro-1-methyl-5-(4-phenylpiperazino)-1H-1,4-benzodiazepine.

3,896,110

PROCESS FOR PREPARATION OF 6-AMINOPENICILLANIC ACID

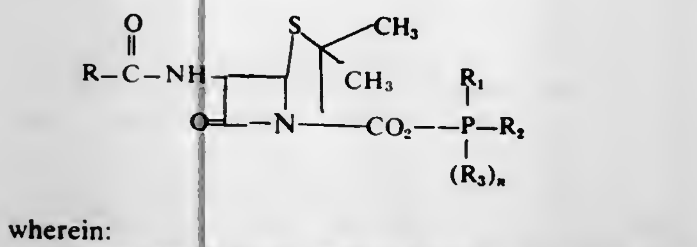
John H. Sellstedt, King of Prussia, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Oct. 4, 1971, Ser. No. 186,397

Int. Cl. C07d *99/16*

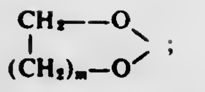
U.S. Cl. 260—239.1 **8 Claims**

1. A compound of the formula



wherein:

- R is selected from the class consisting of benzyl, phenoxymethyl, n-heptyl, n-amyl, 2-pentenyl, p-hydroxybenzyl and p-aminobenzyl;
- R_1 or R_2 is a member selected from the class consisting of C_1 through C_7 alkoxy, phenoxy, naphthoxy, phenyl(-lower)alkyloxy naphthyl(lower)alkyloxy and halogen;
- R_1 and R_2 when joined together with the phosphorus atom form the ring



- R_3 is =O (oxygen); *n* is a number which is 0 or 1; and *m* is a number from 0 to 6.

3,896,111

ANSA MACROLIDES

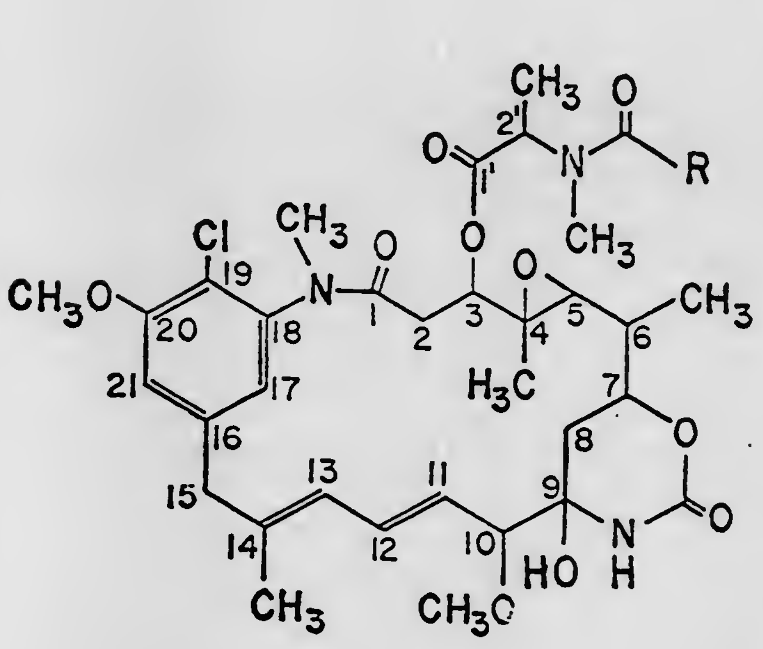
S. Morris Kupchan, Charlottesville, Va.; Yasuo Komoda, Chiba-shi, Japan; Gareth J. Thomas, Hitchin, England, and William A. Court, Delhi, Canada, assignors to Research Corporation, New York, N.Y.

Filed Feb. 20, 1973, Ser. No. 333,940

Int. Cl. C07d *99/02*

U.S. Cl. 260—239.3 T **4 Claims**

1. A compound selected from the group having the formula:



wherein R=CH_3, CH_2CH_3, or $CH(CH_3)_2$

3,896,112

BISBENZOPYRAN AND BISBENZOPYRYLIUM ADDUCTS

Tomio Kubota; Katsue Kojima, and Masafumi Ohta, all of Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

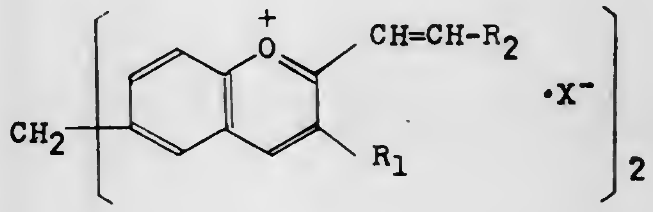
Filed Oct. 20, 1972, Ser. No. 299,272

Claims priority, application Japan, Oct. 21, 1971, 46-83586

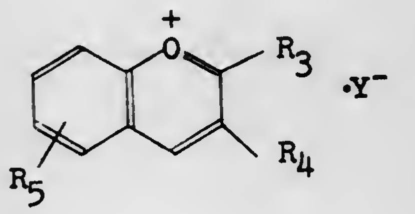
Int. Cl. C07d *7/32*

U.S. Cl. 260—240 D **6 Claims**

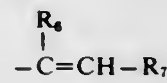
1. A compound which is a bisbenzopyran or bisbenzopyrylium adduct of a member selected from the group consisting of bisbenzopyrylium salts represented by the general formula I:



wherein R_1 represents hydrogen, iso- or normal-alkyl having 1 to 10 carbon atoms or phenyl; R_2 represents phenyl, naphthyl, styryl or any of these radicals having 1 to 3 substituents selected from methyl, alkoxy containing 1 to 4 carbon atoms; and X represents an anionic functional radical; and benzopyrylium salts represented by the general formula II:

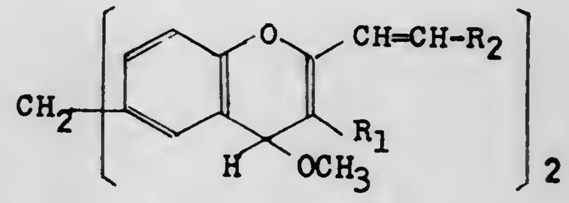


wherein R_3 represents methyl, phenyl or



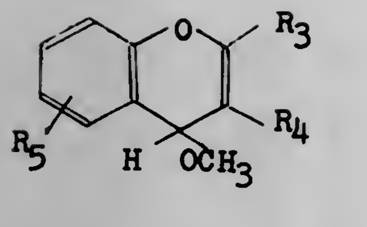
$$-\overset{R_6}{\overset{|}{C}}=CH-R_7.$$

wherein R_6 represents hydrogen or a lower alkyl radical having 1 to 3 carbon atoms; R_7 represents phenyl, naphthyl or these radicals having 1 to 3 substituents selected from methyl, methoxy, nitro, nitrile, halogen, carboxyl, amino and hydroxy; R_4 represents hydrogen, methyl or phenyl; R_5 represents hydrogen, lower alkyl containing 1 to 2 carbon atoms, alkoxy containing 1 to 2 carbon atoms, halogen, nitro or nitrile; and Y represents an anionic functional radical; and a member selected from the group consisting of bisbenzopyran derivatives having the following general formula I′:



wherein $R_1$and R_2 are identical with R_1 and R_2 in the general formula I respectively;

and benzopyran derivatives having the following general formula II′:



wherein R_3, R_4 and R_5 are identical with R_3, R_4 and R_5 in the general formula II respectively.

3,896,113

NOVEL METALLIZED HETEROCYCLIC DERIVATIVES

Bansi Lal Kaul, Basel, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

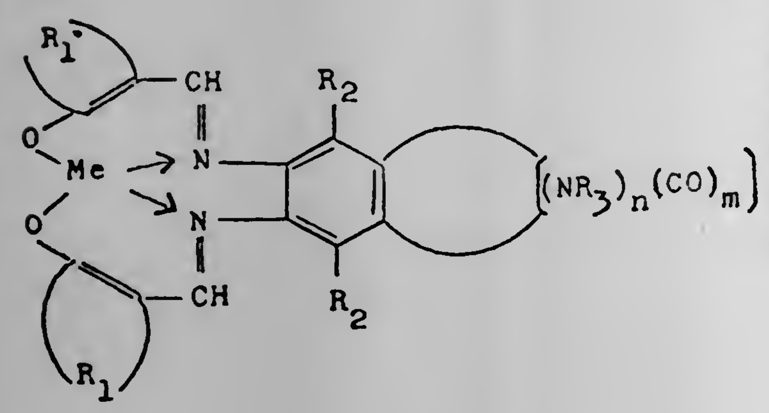
Filed Dec. 22, 1972, Ser. No. 317,518

Claims priority, application Switzerland, Dec. 31, 1971, 19258/71; Jan. 28, 1972, 1317/72

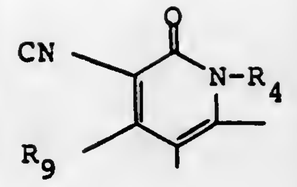
Int. Cl. C07d *51/02*

U.S. Cl. 260—240 G **18 Claims**

1. A compound of formula



in which the radicals R_1, which may be the same or different, together with the carbon atoms to which they are attached, each signifies an unsubstituted or mono-, di-, tri- or tetra-substituted carbocyclic radical selected from the group consisting of 1,2-phenylene, 1,2-naphthalene and 2,3-napthalene, or a heterocyclic radical of the formula

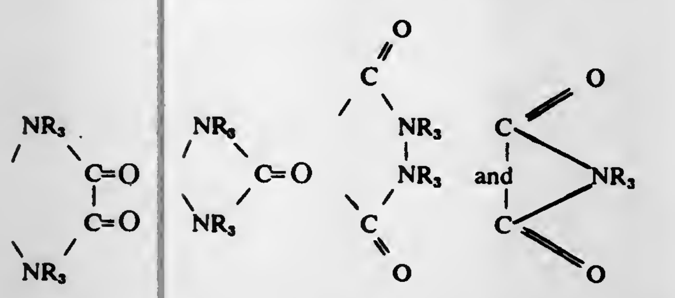


in which R_4 signifies hydrogen or an alkyl radical of 1 to 8 carbon atoms or a phenyl radical

and R_9 signifies an alkyl radical of 1 to 8 carbon atoms,

each R_2 is hydrogen, halogen or alkyl or alkoxy of 1 to 4 carbon atoms,

$>[(NR_3)_n(CO)_m]$ signifies a radical selected from



R_3 signifies hydrogen, an alkyl radical of 1 to 8 carbon atoms, which is unsubstituted or substituted by halogen, cyano, alkoxy of 1 to 8 carbon atoms, phenyl, phenoxy, acyl, acylamino or acyloxy, or a phenyl radical which is unsubstituted or mono-, di- or tri-substituted,

Me signifies chromium, manganese, iron, copper, zinc, nickel or cobalt,

m signifies 1 or 2,

and *n* signifies 1 or 2,

provided that the sum of *n* and *m* is at least 3 and that the compounds contain no carboxylic or sulphonic acid groups, and further provided that any substituent on a carbocyclic significance of R_1 or on the phenyl significance of R_3 is selected from the group consisting of halogen, alkyl or alkoxy of 1 to 8 carbon atoms, trifluoromethyl, cyano, nitro, hydroxylamine, alkylamino or dialkylamino in which the alkyl radical(s) contain 1 to 8 carbon atoms, and acyl, and further provided that any acyl radical is selected from the group consisting of alkoxycarbonyl and alkanoyl in which the alkyl radical contains 1 to 4 carbon atoms, alkylsulphonyl or alkoxysulphonyl of 1 to 4 carbon atoms, phenylsulphonyl, benzoyl, phenoxycarbonyl, phenoxysulphonyl and alkylaminocarbonyl and dialkylaminocarbonyl in which the alkyl radical(s) contain 1 to 4 carbon atoms.

3,896,114

CHROMONE DERIVATIVES

Akira Nohara, 15-12, Kamizato-torimi-cho, Kyoto; Tomonobu Umetani, 34, Deguchi-cho, and Yasushi Sanno, 3-18, 4-chome, both of Osaka, all of Japan

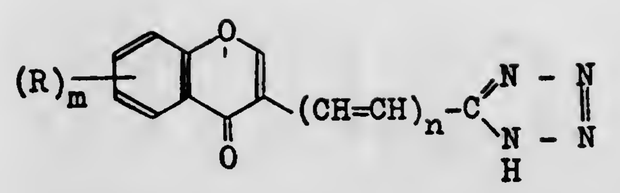
Filed Apr. 10, 1973, Ser. No. 349,848

Claims priority, application Japan, Apr. 12, 1972, 47-37235

Int. Cl. C07d *55/00*

U.S. Cl. 260—240 E **45 Claims**

1. A compound of the general formula



wherein *m* is 0, 1 or 2, *n* is 0 or 1, and each of R's represents halogen atom, nitro, hydroxy, straight or branched alkyl having 1 to 6 carbon atoms, cyclopentyl, cyclohexyl or butadienylene (—CH=CH—CH=CH—) which forms a benzene ring with any two adjacent carbon atoms at positions 5, 6, 7 and 8, lower alkoxy, RCOO—, wherein R is a straight or branched chain alkyl having 1 to 3 carbon atoms or phenyl, —COOR, wherein R is hydrogen alkyl having 1 to 3 carbon atoms, benzyl or phenethyl, carboxamide which may be unsubstituted or substituted by at least one alkyl having 1 to 3 carbon atoms or benzyl, or amino group which may be unsubstituted or substituted by RCO—, wherein R is a straight or branched chain alkyl having 1 to 3 carbon atoms or phenyl, or alkyl having up to 3 carbon atoms, benzyl, phenethyl, phenyl or naphthyl, or their pharmaceutically acceptable salts.

3,896,115

6,7-EPOXYGERANYL ETHERS OF OXYGEN HETEROCYCLIC COMPOUNDS

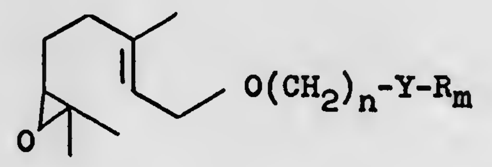
Edward Koon Wah Wat, Wilmington, Del., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.

Division of Ser. No. 231,394, March 2, 1972, Pat. No. 3,823,162. This application Dec. 27, 1973, Ser. No. 428,719

Int. Cl. C07d *327/04, 327/06*

U.S. Cl. 260—240 R **2 Claims**

1. A compound of the formula



wherein

n is 0 to 3;

Y is a 5- or 6-membered divalent ring having 1 atom of oxygen and 1 atom of sulfur in non-adjacent relationship and 3 or 4 carbon atoms;

R is hydrogen, alkyl, perchloroalkyl or alkoxy each having up to 4 carbon atoms; and

m is 1.

3,896,116

LACTONE COMPOUNDS DERIVED FROM PYRIDINE-CARBOXYLIC ACIDS AND PROCESS FOR PREPARING THE SAME

Minoru Ozutsumi; Yoshihide Miyazawa, and Susumu Suzuka, all of Tokyo, Japan, assignors to Hodogaya Chemical Co., Ltd., Tokyo, Japan

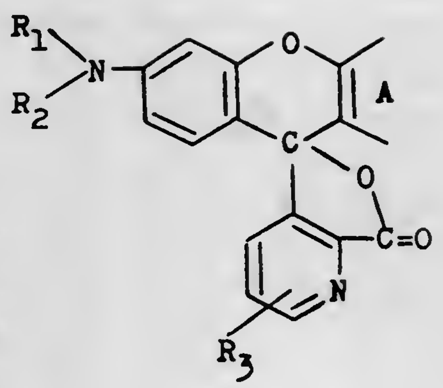
Filed Mar. 25, 1974, Ser. No. 454,526

Claims priority, application Japan, Mar. 23, 1973, 48-32746

Int. Cl. C07d *7/42, 5/14*

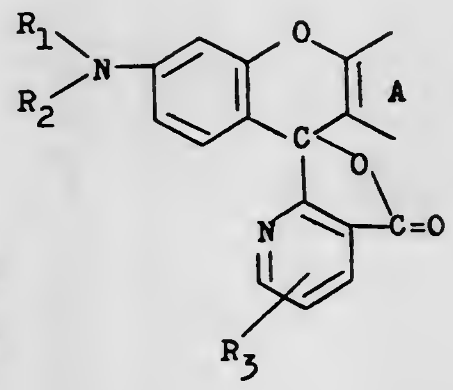
U.S. Cl. 260—240 D **9 Claims**

1. A lactone compound represented by the following formula



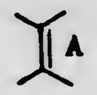
(Ia)

or

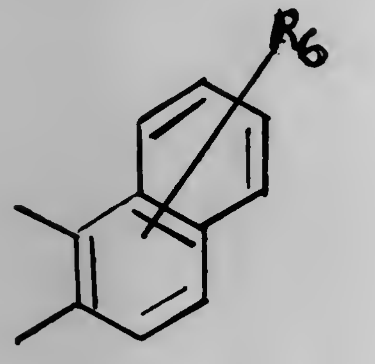


(Ib)

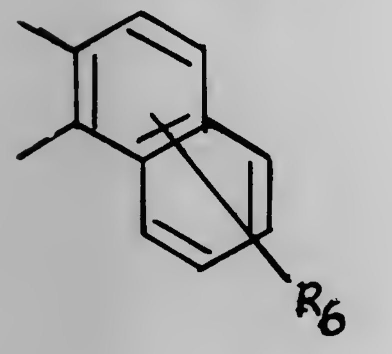
or a mixture thereof, wherein R_1 represents a hydrogen atom, a lower alkyl group or a benzyl group, R_2 represents a lower alkyl group, a benzyl group or an unsubstituted or substituted phenyl group wherein the substituent is a lower alkyl group or a halogen atom, R_3 represents a hydrogen atoms, a lower alkyl group, a halogen atom or a phenyl group, and the partial structure



represents a naphthalene residual group of the formula (IV*a*) or (IV*b*)



(IVa)



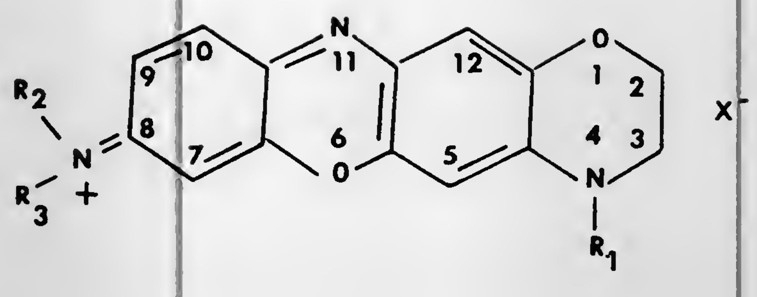
(IVb)

wherein R_6 represents a hydrogen atom, a lower alkyl group, a lower alkoxy group, a halogen atom, an amino group, a mono-lower alkylamino group, di-lower alkylamino group, a monobenzylamino group, a dibenzylamino group, an N-lower alkyl-N-benzylamino group, an anilino group, an N-lower alkylanilino group, a —NHCO—X group wherein X represents a lower alkyl group, a lower alkenyl group, or an unsubstituted or substituted styryl group, an unsubstituted or substituted phenyl group or an unsubstituted or substituted naphthyl group wherein the substituent is a lower alkyl group, a lower alkoxy group, a di-lower alkylamino group, a hydroxy group, a nitro group or a halogen atom and said lower alkyl, alkoxy and alkenyl groups have 1 to 5 carbon atoms.

3,896,117
SALTS OF MORPHOLINO-(2,3-b) PHENOX AZONIUM AND HAIR DYE AND HAIR SETTING LOTION COMPOSITIONS CONTAINING THE SAME

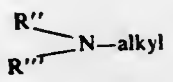
Andrée Bugaut, Boulogne-sur-Seine, and Monique Laudon, Gagny, both of France, assignors to L'Oreal, Paris, France
Division of Ser. No. 165,740, July 23, 1971, Pat. No. 3,824,074. This application Jan. 30, 1973, Ser. No. 328,091
Claims priority, application Luxembourg, July 31, 1970, 61452
Int. Cl. C09b *19/00*
U.S. Cl. 260—242 **2 Claims**

1. A phenoxazonium salt having the formula



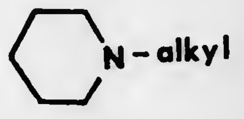
wherein R_1 is selected from the group consisting of hydrogen and lower alkyl having 1–4 carbon atoms.

R_2 and R_3 each independently are selected from the group consisting of alkyl having 1–4 carbon atoms, hydroxyalkyl having 1–4 carbon atoms, carbamylalkyl having 1–4 carbon atoms, ω-aminoalkyl having 1–4 carbon atoms, ω-aminoalkyl of the formula R′-CONH-alkyl wherein R′ is selected from the group consisting of alkyl having 1–4 carbon atoms and phenyl and -alkyl has 1–4 carbon atoms, ω-aminoalkyl of the formula

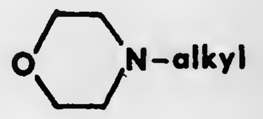


$$\begin{matrix} R'' \diagdown \\ \quad N\text{—alkyl} \\ R''' \diagup \end{matrix}$$

wherein R″ and R‴ are selected from the group consisting of hydrogen and alkyl having 1–4 carbon atoms with at least one of R″ and R‴ being said alkyl and -alkyl has 1–4 carbon atoms, ω-aminoalkyl of the formual



wherein said alkyl has 1–4 carbon atoms and ω-amino alkyl of the formula

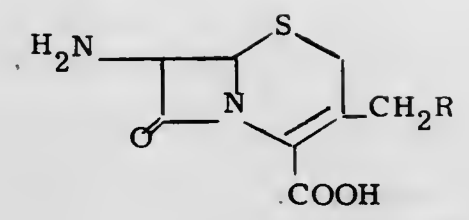


wherein said alkyl has 1–4 carbon atoms, and X is selected from the group consisting of Cl, Br, ClO_4 and Cl_3Zn and the tautomeric forms thereof.

3,896,118
PROCESS FOR PRODUCING 7-AMINOCEPHALOSPORANIC ACIDS

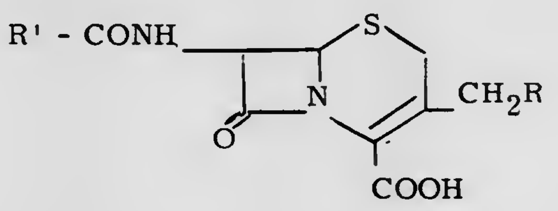
Toshiyasu Ishimaru, Osaka, and Yutaka Kodama, Toyama, both of Japan, assignors to Toyama Chemical Co., Ltd., Tokyo, Japan
Filed Oct. 8, 1971, Ser. No. 187,910
Claims priority, application Japan, Nov. 17, 1970, 45-90973
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 C **13 Claims**

1. A process for producing 7-aminocephalosporanic acids of the formula:

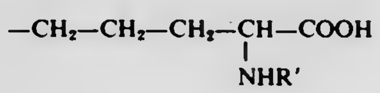


wherein R signifies a hydrogen atom, acetoxy, lower alkoxy or lower alkythio, which comprises:

A. reacting a 7-acylamidocephalosporanic acid of the formula:

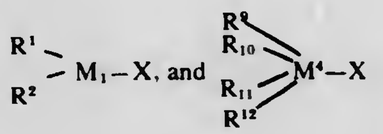


wherein R′ signifies phenyl lower alkyl, phenoxy lower alkyl, thienyl lower alkyl or



$$\text{—}CH_2\text{—}CH_2\text{—}CH_2\text{—}\underset{\substack{|\\ NHR'}}{CH}\text{—}COOH$$

wherein R″ signifies phenyl lower alkyl carbonyl and R is the same as defined above, in the presence of an acid-binding agent selected from the group consisting of triethylamine, N-loweralkylmorpholine, N-loweralkylpiperidine, quinoline, N,N-lowerdialkylaniline pyridine, picoline and lutidine, with a phosphorus compound selected from the group consisting of:



$$\begin{matrix} R^1 \diagdown \\ \quad M_1\text{—}X \\ R^2 \diagup \end{matrix}\text{, and } \begin{matrix} R^9 \diagdown \\ R_{10} \diagdown \\ \qquad M^4\text{—}X \\ R_{11} \diagup \\ R^{12} \diagup \end{matrix}$$

wherein each of R^1 and R^2 which may be the same or different, and signifies halogen, lower alkyl, phenyl, lower alkoxy, or lower alkoxy which is substituted by lower alkoxy, halogen, phenoxy, phenyl, cyclohexyloxy or R^1 and R^2 jointly form 1, 3, 2-dioxaphospholane; each R^9 to R^{12} signifies halogen, lower alkoxy, lower alkoxy substituted by a lower alkoxy or halogen, phenoxy, phenyl lower alkoxy or phenyl, or R^{11} and R^{12} jointly signify O; M^1 and M^4 signify phosphorous; and X signifies a halogen.

B. reacting the resulting product with an imido halide-forming reagent selected from the group consisting of phosphorous oxychloride, phosphorous pentachloride, phosphorous tribromide, phosphorous pentabromide, phosgene, thionyl chloride, oxalyl chloride, protocatechinylphosphorous trichloride and toluenesulfonylchloride, to obtain the corresponding imido halide,

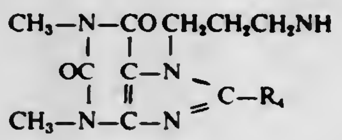
C. reacting the resulting imido halide with a hydroxyl compound selected from the group consisting of lower alkanol, lower alkyl substituted lower alkanol, benzyl alcohol, cyclohexanol, ethyleneglygol monolower-alkyl ether, ethylene chlorohydrin, and β-cyanoethanol to obtain the corresponding imino ether, and

D. hydrolyzing the imino ether to obtain 7-aminocephalosporanic acid.

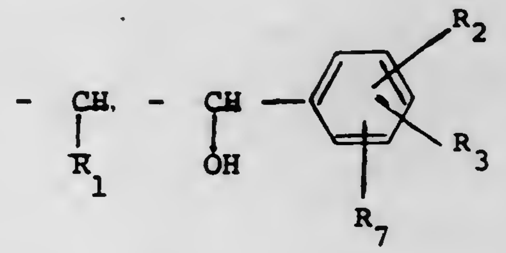
3,896,119
XANTHINES SUBSTITUTED IN THE 8-POSITION

Karl-Heinz Klingler, Langen, Germany, assignor to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Germany
Filed Sept. 27, 1972, Ser. No. 292,798
Claims priority, application Austria, Oct. 28, 1971, 9312/71
Int. Cl. C07d *87/34*
U.S. Cl. 260—247.2 A **23 Claims**

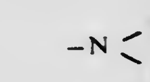
1. A compound having the formula:



$$\begin{array}{llll} CH_3\text{—}N\text{—} & CO & CH_2CH_2CH_2NH & \\ \quad | & \;| & \;| & \\ \quad OC & C\text{—} & N \diagdown & \\ \quad | & \;\| & & C\text{—}R_4 \\ CH_3\text{—}N\text{—} & C\text{—} & N \diagup\!\!\!= & \end{array}$$



wherein R_1 is hydrogen or methyl, R_2 and R_3 are hydrogen, methyl, hydroxy or hydroxymethyl, R_7 is hydrogen or methyl and R_4 is



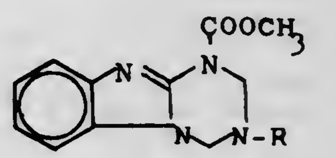
$$\text{—}N\begin{matrix} \diagup R_5 \\ \diagdown R_6 \end{matrix}$$

where R_5 and R_6 individually are hydrogen or alkyl of 1 to 6 carbon atoms or R_5 and R_6 collectively together with the nitrogen atom form a 5 to 7 membered heterocyclic ring with 0 to 1 additional hetero atom and 0 to 2 alkyl substituents, said additional hetero atom being nitrogen, sulfur or oxygen, or a pharmacologically acceptable salt thereof.

3,896,120
NOVEL TRIAZINO-BENZiMIDAZOLES

Hans Rochling, Altenhain, Taunus, and Kurt Hartel, Hofheim, Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany
Filed May 14, 1973, Ser. No. 361,073
Claims priority, application Germany, May 18, 1972, 2224244; Feb. 13, 1973, 2308067
Int. Cl. C07d *55/12*
U.S. Cl. 260—249.5 **18 Claims**

1. A triazino-benzimidazoles of the formula



where

R is alkyl having from 1 to 18 carbon atoms; alkenyl having from 3 to 18 carbon atoms, alkinyl having from 2 to 8 carbon atoms, cycloalkyl having from 3 to 12 carbon atoms, optionally substituted by one or more alkyl groups having from 1 to 4 carbon atoms or by hydroxy;

cyclohexylalkyl, cyclohexylalkenyl, or cyclohexylalkinyl each having from 1 to 3 carbon atoms in the chain, endomethylene-cyclohexylmethyl, endomethylenecyclohexenylmethyl, tricyclodecyl, or tricyclodecenyl; phenalkyl, diphenylalkyl or triphenylalkyl each having from 1 to 6 carbon atoms in the alkylene radical, the phenyl nuclei of which being optionally substituted by halogen, alkyl, alkoxy or alkylthio each having from 1 to 4 carbon atoms or by di-(C_1–C_4)amino;

phenyl or naphthyl, optionally being substituted by alkyl having from 1 to 4 carbon atoms, halogen, halogeno-alkyl having from 1 to 4 carbon atoms, trifluoromethyl, hydroxy, alkoxy having from 1 to 4 carbon atoms phenoxy or $(C_1–C_4)$-alkylthio; di-$(C_1–C_4)$-alkyl-amino-$(C_2–C_6)$-alkyl; hydroxy$(C_2–C_{12})$-alkyl, $(C_2–C_{18})$-alkoxyalkyl or dialkoxyalkyl, $(C_2–C_{18})$-alkylmercaptoalkyl, $(C_3–C_9)$-dialkylphosphinylalkyl, furfuryl, morpholino-$(C_1–C_4)$-alkyl, pyrrolidino-$(C_1–C_4)$-alkyl, piperidino-$(C_1–C_4)$-alkyl or $(C_2–C_{12})$-carbalkoxylalkyl.

3,896,121

S-(β-SUBSTITUTEDAMINO-ETHYL)-CYSTEINE

Maurice Joullie, St-Germain-en-Laye, France; Lucien Lakah, Paris; Gabriel F. Maillard, Paris, and Pierre Muller, Paris, all of France, assignors to Recherches Pharmaceutiques et Scientifiques, Paris, France

Filed Oct. 2, 1972, Ser. No. 294,105

Claims priority, application France, Oct. 4, 1971, 71.35680

Int. Cl. C07c *149/24;* **C07d** *29/36, 87/46*

U.S. Cl. 260—247.1 R **2 Claims**

1. A cysteine derivative selected from the group consisting of S-(β-dimethylamino-ethyl)-cysteine, S-(β-diethylaminoethyl)-cysteine, S-(β-pyrrolidino-ethyl)-cysteine, S-(β-morpholinoethyl)-cysteine, S-(β-piperidino-ethyl)-cysteine and S-[β-(4-methylpiperazino)-ethyl]-cysteine or a monohydrochloride thereof.

3,896,122

MORPHOLINE DERIVATIVES OF 3,4,5-TRICHLORO-2,6-PYRIDINEDICARBONITRILE

Christian T. Goralski, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed July 2, 1973, Ser. No. 375,415

Int. Cl. C07d *87/40*

U.S. Cl. 260—247.5 G **3 Claims**

1. A compound selected from the group consisting of 3,4-dichloro-5-(4-morpholinyl)-2,6-pyridinedicarbonitrile and 3,5-dichloro-4-(4-morpholinyl)-2,6-pyridinedicarbonitrile.

3,896,123

SILYL CYANURATES

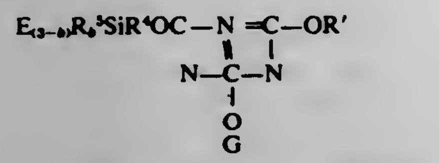
George P. DeZuba, Mechanicville; Abe Berger, and Terry G. Selin, both of Schenectady, all of N.Y., assignors to General Electric Company, Waterford, N.Y.

Division of Ser. No. 241,831, April 6, 1972, abandoned, which is a continuation-in-part of Ser. No. 132,552, April 8, 1971, abandoned. This application Jan. 18, 1973, Ser. No. 324,778

Int. Cl. C07d *55/50*

U.S. Cl. 260—248 CS **3 Claims**

1. A silyl cyanurate of the formula,



$$\begin{array}{l} E_{(3-b)}R_b^5SiR^4OC—N=C—OR' \\ \qquad\qquad\qquad\quad\;\; N—C—N \\ \qquad\qquad\qquad\qquad\;\; O \\ \qquad\qquad\qquad\qquad\;\; G \end{array}$$

where G is selected from R′ radicals, $E_{(3-b)}R_b^5SiR^4$— radicals and R radicals, E is selected from R^6O— and R^6COO— where R, R^5 and R^6 are selected from the class consisting of lower alkyl radicals and halo lower alkyl radicals, R′ is a lower alkenyl radical, R^4 is a lower alkylene radical, *b* is a whole number varying from 0 to 3, inclusive, and wherein the Si atom may be attached to either the alpha or beta carbon atom in the R^4 radical.

3,896,124

PREPARATION OF 2 (ARYL)-AS-TRIAZINE-3,5(2H,4H)-IONES

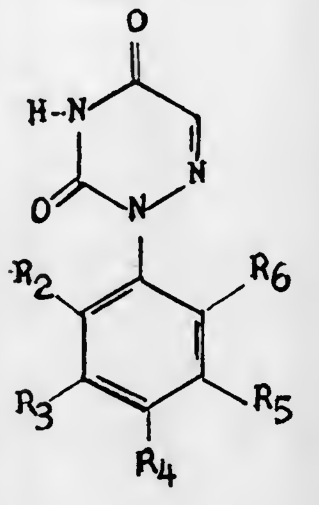
Banavara L. Mylari, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 160,530, July 7, 1971, abandoned. This application Nov. 20, 1973, Ser. No. 417,675

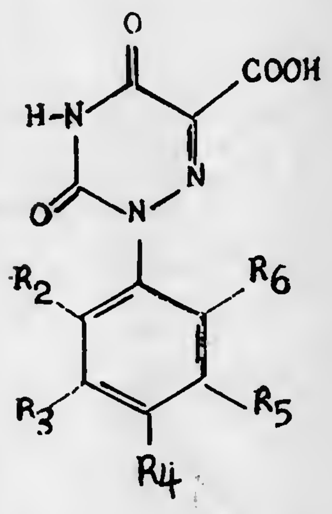
Int. Cl. C07d *55/10*

U.S. Cl. 260—248 AS **8 Claims**

1. A process for the preparation of a 2-(aryl)-as-triazine-3,5(2H,4H)dione of the formula



which comprises contacting compound A of the formula:

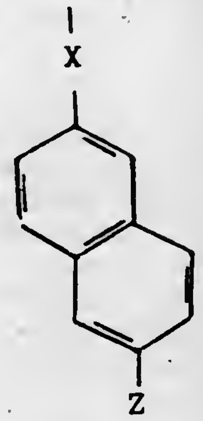


wherein

each of R_2 and R_6 is hydrogen, fluoro, chloro, cyano or methyl, with the proviso that at least one of R_2 and R_6 is hydrogen or fluoro;

each of R_3 and R_5 is selected from a first sub-group consisting of hydrogen, cyano, trifluoromethyl, halogen and lower alkyl; a second sub-group consisting of lower alkoxy and lower alkylthio; or a third sub-group consisting of nitro and thiocyanato;

R_4 is $—NR_7R_8$, lower alkanoyl, lower alkyl sulfonyl, SO_2NRR_1;



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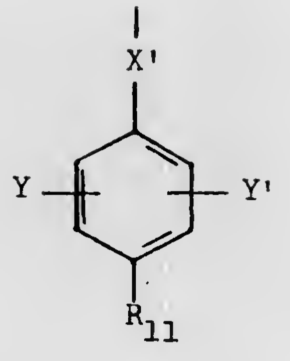
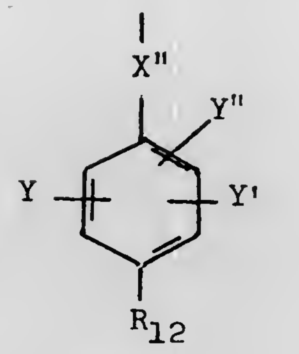
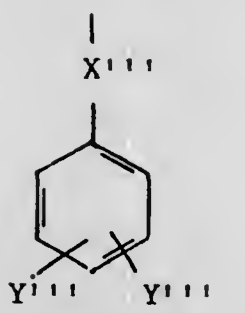


II



III



IV

or $-CH_2-NR_{13}R_{14}$;

with the proviso that when R_4 is SO_2NRR_1 or lower alkanoyl, at least one of R_3 and R_5 is other than hydrogen;

R is selected from the group consisting of methyl, ethyl, phenyl, benzyl, allyl, propargyl and p-chlorophenyl;

R_1 is selected from the group consisting of methyl, ethyl, allyl and propargyl;

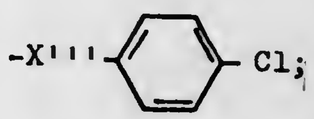
R and R_1 when taken together with the nitrogen to which they are attached are selected from the group consisting of pyrrolo, pyrrolino, pyrrolidino, piperidino, N-(lower alkyl)piperazino, hexamethyleneimino, 3,4-dichloropiperidino, thiazolidino, and Δ^3-tetrahydropyridino and piperazino;

each of R_7 and R_8 is selected from the group consisting of lower alkyl of from 1 to 4 carbon atoms; R_7 and R_8 when taken together with the nitrogen atom to which they are attached are selected from the group consisting of pyrrolo, pyrrolino, pyrrolidino, piperidino, N-(lower alkyl)-piperazino, hexamethyleneimino, thiazolidino, Δ^3-tetrahydropyridino and piperazino;

X‴ is selected from the group consisting of oxygen, sulfur, >C = O, =NH, —S O, $—SO_2—$, and —CHOH—;

Y‴ is hydrogen, nitro, cyano, halogen, lower alkyl, or lower alkoxy;

provided that where R_3 or R_5 is methyl or chloro and X‴ is sulfur, $—SO_2—$, or >C = O, then R_4 is other than



R_{11} is hydrogen, halogen, lower alkylthio, lower alkylsulfinyl, lower alkylsulfonyl, lower alkoxy, trifluoromethyl, or nitro;

R_{12} is lower alkylthio, lower alkylsulfinyl, lower alkysulfonyl, trifluoromethyl, lower alkanoyl or $SO_2NR_{15}R_{16}$ wherein

R_{13} and R_{14} taken together with the nitrogen to which they are attached complete a morpholino, thiomorpholino, or thiazolidino ring;

R_{15} is hydrogen, lower alkyl, propargyl, allyl, hydroxyethyl, acetoxyethyl, β-methylthioethyl, β-methoxyethyl, or 3-(2-methoxyethoxy)propyl;

R_{16} is hydrogen, lower alkyl, propargyl, allyl, hydroxyethyl, or acetoxyethyl;

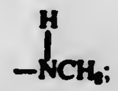
R_{15} and R_{16} when taken together with the nitrogen to which they are attached are pyrrolino, pyrrolidino, morpholino, thiomorpholino, N-(lower alkyl)piperazino, thiazolidino, Δ^3-tetrahydropyridino or piperazino,

Z is hydrogen, lower alkylthio, or halogen;

Y, Y′ and Y″ are each hydrogen, halogen, lower alkyl, or trifluoromethyl;

X is oxygen, sulfur, or $—OCH_2—$;

X′ is $—OCH_2—$, $—SCH_2—$, $—SOCH_2—$, $—SO_2CH_2—$, or $—CH_2—$, $—OCH_2—CO—$,



$$\overset{H}{\underset{|}{}}\!—NCH_3;$$

X″ is oxygen, sulfur, SO, SO_2, >C=O, or —CHOH—;

with at least about 0.1 molar proportion of compound B which is mercapto-substituted-alkanoic acid of up to about eleven carbon atoms; thiosalicylic acid; or the lower alkyl esters thereof, until the reaction is substantially complete.

3,896,125

O-HYDROXYPHENYL-S-TRIAZINES

Brunetti Helmo, Riehen; Peterli Hans Jakob, Fullinsdorf, Basel-Land, and Hansjorg Heller, Riehen, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

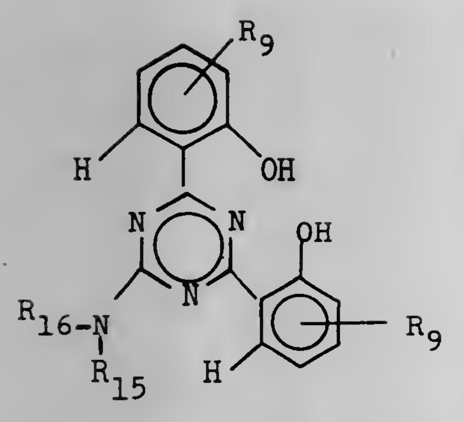
Filed Jan. 21, 1964, Ser. No. 340,124

Claims priority, application Switzerland, Jan. 24, 1963, 847/63; Jan. 24, 1963, 843/63; Jan. 24, 1963, 844/63; Jan. 24, 1963, 845/63; Jan. 24, 1963, 846/63

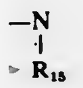
Int. Cl. C07d *55/18*

U.S. Cl. 260—249.5 **4 Claims**

1. A substantially non-coloring light stabilizer for organic polymeric substrata which is sufficiently stable to heat up to at least 200°C to withstand incorporation at such temperature into said substrata, and which is of the formula



wherein R_9 is a member selected from the group consisting of hydrogen, chlorine, bromine, alkyl of from 1 to 18 carbon atoms, alkenyl of from 2 to 18 carbon atoms, cycloalkyl of from 5 to 8 carbon atoms, 5 to 6 of which are ring members, phenylalkyl of from 7 to 10 carbon atoms, alkylphenyl-alkyl of from 8 to 10 carbon atoms, chloro- and
- bromo-phenyl-alkyl of from 7 to 10 carbon atoms, phenyl, alkylphenyl of from 7 to 10 carbon atoms, chlorophenyl, bromophenyl, alkanoyloxy of from 1 to 18 carbon atoms, alkenoyloxy of from 3 to 18 carbon atoms and one double bond, carboxy-alkanoyloxy of from 4 to 12 carbon atoms, alkoxy-carbonyl-alkanoyloxy of from 3 to 13 carbon atoms, carboxy-alkenoyloxy of from 4 to 12 carbon atoms, alkoxy-carbonyl-alkenoyloxy of from 5 to 13 carbon atoms, benzoyloxy, alkylbenzoyloxy of from 7 to 10 carbon atoms, chloro-benzoyloxy, bromo-benzoyloxy, alkoxy-carbonyloxy of from 2 to 13 carbon atoms, cyclohexyloxycarbonyloxy, benzyloxycarbonyloxy and phenoxycarbonyloxy, and a radical of the formula —O—R_5 wherein
- R_5 is a member selected from the group consisting of hydrogen, alkyl of from 1 to 12 carbon atoms, chloroalkyl, bromo-alkyl and hydroxyalkyl, each of from 2 to 12 carbon atoms, alkoxy-alkyl of from 1 to 8 carbon atoms in the alkoxy moiety and from 2 to 4 carbon atoms in the alkyl moiety, cyclohexyloxy-alkyl of from 2 to 4 carbon atoms in the alkyl moiety, the heteroatom of the substituent in alkyl in the five last-mentioned members being spaced by at least two carbon atoms from the -O-bridge in the above formula, cyano-alkyl of from 2 to 6 carbon atoms, carboxyalkyl of from 2 to 6 carbon atoms, alkoxy-carbonyl-alkyl of from 1 to 8 carbon atoms in the alkoxy moiety, and from 1 to 5 carbon atoms in the alkyl moiety, N,N-di-(lower alkyl)-carbamyl-alkyl of from 1 to 5 carbon atoms in the last-mentioned alkyl moiety, alkenyl of from 3 to 8 carbon atoms, phenyl-alkyl of from 7 to 12 carbon atoms, and lower alkyl-phenyl-alkyl of from 1 to 5 carbon atoms in the last-mentioned alkyl moiety,
- R_{15} is a member selected from the group consisting of hydrogen and lower alkyl, and
- R_{16} is a member selected from the group consisting of alkyl of from 1 to 18 carbon atoms, amino-alkyl of 1 to 12 carbon atoms, hydroxy-alkyl of 1 to 12 carbon atoms, alkoxy-alkyl wherein the alkoxy moiety has from 1 to 8 carbon atoms and the alkyl moiety has from 1 to 12 carbon atoms, alkylthio-alkyl wherein the alkylthio moiety has from 1 to 8 carbon atoms and the alkyl moiety has from 1 to 12 carbon atoms, N-alkylamino-alkyl wherein the alkylamino moiety has from 1 to 8 carbon atoms and the alkyl moiety has from 1 to 12 carbon atoms, N,N-di-(alkyl)amino-alkyl wherein the N-alkyl groups have each from 1 to 8 carbon atoms, and the alkyl moiety bearing the amino group has from 1 to 12 carbon atoms, alkoxy-carbonyl-alkyl wherein the alkoxy moiety has from 1 to 8, and the alkyl moiety from 1 to 12 carbon atoms, carboxy-alkyl with a total of from 2 to 13 carbon atoms, chloro-alkyl of from 1 to 12 carbon atoms, bromo-alkyl of from 1 to 12 carbon atoms, cycloalkyl of from 5 to 10 carbon atoms, 5 to 6 of which are ring members, alkenyl of from 3 to 17 carbon atoms, phenylalkenyl of from 9 to 12 carbon atoms, alkyl-phenyl-alkenyl of from 10 to 12 carbon atoms, alkoxy-phenyl-alkenyl of from 10 to 12 carbon atoms, chloro-and bromo-phenyl-alkenyl of 9 to 12 carbon atoms, phenyl, chlorophenyl, bromophenyl, lower alkyl-phenyl, lower alkoxy-phenyl, there being at least two carbon atoms present intermediate the nitrogen atom of



$$-\underset{R_{15}}{\overset{}{\underset{|}{N}}}$$

and the hetero atom in those of the aforesaid members of R_{16} containing such hetero atom, and all of said members comprising alkenyl being bonded to the nitrogen atom of

$$-\underset{R_{15}}{\overset{}{\underset{|}{N}}}$$

via a saturated carbon atom of said alkenyl, benzyl, phenylethyl, chloro-, bromo-, lower alkyl- and lower alkoxy-substituted benzyl and phenyl-ethyl, cyano-alkyl of from 2 to 6 carbon atoms, and N,N-di-(lower alkyl)-carbamyl-alkyl of from 1 to 5 carbon atoms in the last-mentioned alkyl moiety.

3,896,126
2-OXO-3 SPIROPYRAN QUINOXALINES

Andreas Oberlinner, Mannhelm; Hans Baumann, Ludwigshafen, and Klaus Grychtol, Bad Durkheim, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

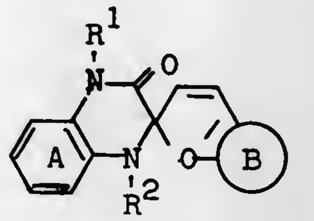
Filed June 21, 1973, Ser. No. 372,298

Claims priority, application Germany, June 21, 1972, 2230225

Int. Cl. C07d *51/78*

U.S. Cl. 260—250 Q **4 Claims**

1. Spiropyrans of the formula:



in which
- R^1 is hydrogen, alkyl, cyanoalkyl, carboalkoxyalkyl or methoxyalkyl each of from 1 to 6 carbon atoms or phenyl, R^2 is alkyl of from 1 to 4 carbon atoms,
- A is a benzene nucleus optionally mono substituted by methyl, chlorine, bromine or alkoxy or from 1 to 4 carbon atoms, and
- B is a benzene or naphthalene nucleus mono substituted by chlorine, bromine, nitro, alkyl, alkoxy or dialkylamino having from 1 to 5 carbon atoms in each alkyl group.

3,896,127
THEOPHYLLINE DERIVATIVES

Hidehiko Takahashi, Tokyo; Yoshio Suzuki, Misato-Machi, and Tuyoshi Kinoshita, Koshigaya, all of Japan, assignors to Nippon Chemiphar Co., Ltd., Tokyo, Japan

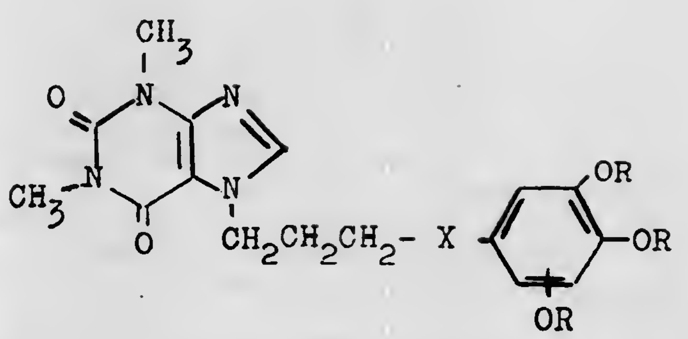
Filed July 13, 1973, Ser. No. 378,806

Claims priority, application Japan, July 13, 1972, 47-70294

Int. Cl. C07d *57/48*

U.S. Cl. 260—256 **5 Claims**

1. A theophylline compound of the formula



wherein R is a lower alkyl having from 1 to 5 carbon atoms and X is oxycarbonyl, carboxyl or carbonyl.

3,896,128
LACTONES OF THE DIAZAXANTHENE SERIES AND DYE PRECURSORS FOR COPYING PROCESSES

Hellmut Kast, Bobenheim-Roxheim, and Guenter Dunkelmann, Ludwigshafen, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

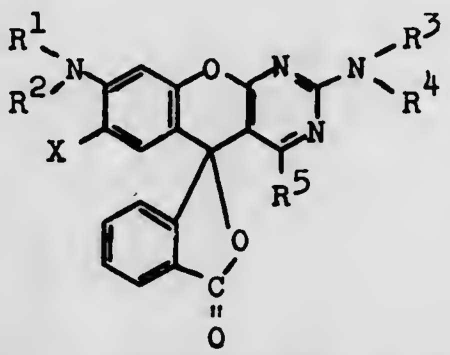
Filed Aug. 29, 1973, Ser. No. 392,745

Claims priority, application Germany, Sept. 5, 1972, 2243483

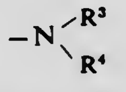
Int. Cl. C07d *51/42*

U.S. Cl. 260—256.4 F **5 Claims**

1. A diazaxanthene of the formula



wherein R^1 and R^2 denote hydrogen or alkyl of from 1 to 4 carbon atoms, R^3 and R^4 each denote alkyl having 1 to 4 carbon atoms or the group



$$-N\begin{matrix}\diagup R^3\\ \diagdown R^4\end{matrix}$$

denotes a five- or six-membered saturated heterocyclic ring which may contain a further N— as a member of the ring, and R^5 and X each denote hydrogen or methyl.

3,896,129
(2-PYRIMIDINYLTHIO) ALKANOIC ACIDS, ESTERS, AMIDES AND HYDRAZIDES

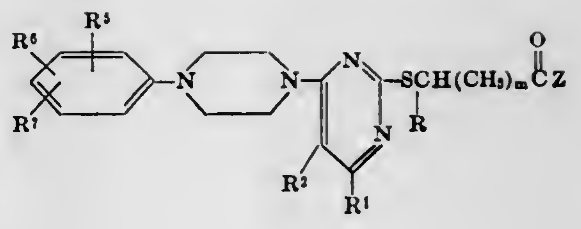
Arthur A. Santilli, Havertown; Anthony C. Scotese, King of Prussia, and Rudolph M. Tomarelli, Phoenixville, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 240,266, March 31, 1972, Pat. No. 3,814,761. This application Oct. 24, 1973, Ser. No. 409,353

Int. Cl. C07d *51/40*

U.S. Cl. 260—256.5 **3 Claims**

1. A compound of the formula:



in which
- R and R^2 are members independently selected from the group consisting of hydrogen and lower alkyl;
- R^1 is a member selected from the group consisting of hydrogen, halo and lower alkoxy;
- Z is a member selected from the group consisting of hydroxy, lower alkoxy, —OM and —$(NH)_pNH_2$, wherein *p* is 0 or 1 and M is an alkali metal cation, an alkaline earth metal cation or the ammonium ion;
- R^5 is a member selected from the group consisting of lower alkyl, halo, aryl of 6 to 10 carbon atoms and haloaryl of 6 to 10 carbon atoms;
- R^6 is a member selected from the group consisting of hydogen, lower alkyl, lower alkoxy and halo;
- R^7 is a member selected from the group consisting of hydrogen and lower alkyl; and
- *m* is one of the integers 0, 1 or 2.

3,896,130
OCTAHYDROBENZOCYCLOHEPTAPYRIDOISOQUINOLINE DERIVATIVES AND PROCESS FOR THE PREPARATION THEREOF

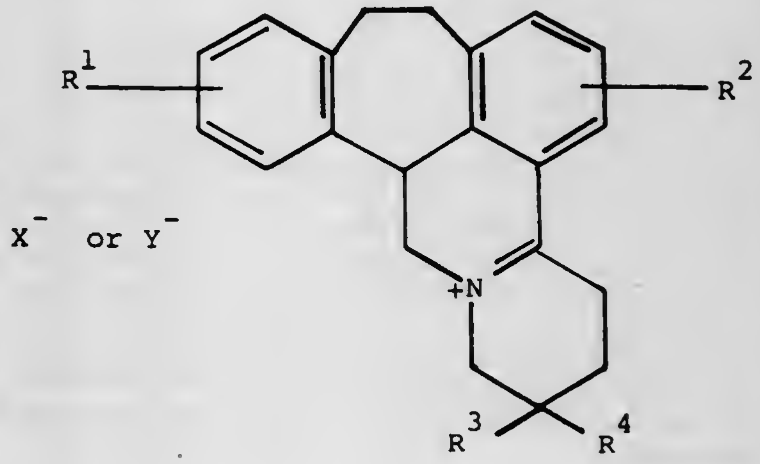
Adolf H. Phillipp, Montreal; Leslie G. Humber, Dollard Des Ormeaux; Francois T. Bruderlein, Montreal, and Manfred K. Gotz, Hudson, all of Canada, assignors to Ayerst McKenna and Harrison Ltd., Montreal, Canada

Filed Aug. 4, 1972, Ser. No. 278,167

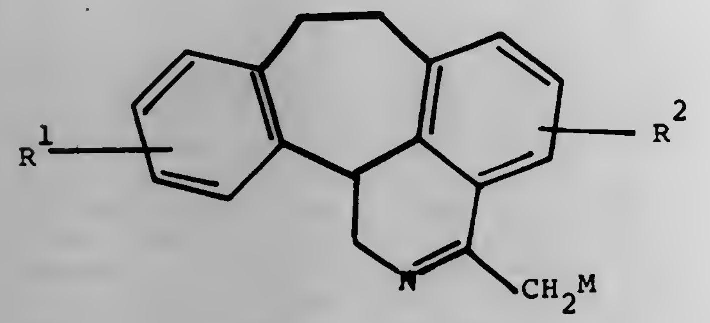
Int. Cl. C07d *33/32*

U.S. Cl. 260—286 Q **1 Claim**

1. A process for preparing a compound of the formula:



in which R^1 and R^2 are the same or different, selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, trifluoromethyl, and halo; X and Y are selected from the group consisting of chlorine, bromine, iodine, methylsulfonyloxy, phenylsulfonyloxy and p-toluenesulfonyloxy; R^3 is hydrogen or lower alkyl, and R^4 is hydrogen or protected hydroxyl of formula OR^5, wherein R^5 is selected from the group consisting of tetrahydropyran-2-yl, (α-ethoxy)ethoxy, t-butyl, trityl, acetyl, p-methoxybenzyl, propionyl, and benzyl, or R^3 and R^4 together represent an alkylenedioxy group having from two to four carbon atoms, comprising the step of reacting a compound of the formula



in which R^1 and R^2 are as defined herein and M is an alkali metal, selected from the group consisting of lithium, sodium or potassium, with a compound of formula $XCH_2CR^3R^4CH_2Y$, wherein X and Y are the same or different and selected from the group defined above; R^3 and R^4 as defined herein, and wherein the reaction is initiated at a temperature between −80°C and 20°C.

3,896,131

SUBSTITUTED BENZO(IJ)QUINOLIZINE-2-CARBOXYLIC ACIDS AND DERIVATIVES THEREOF

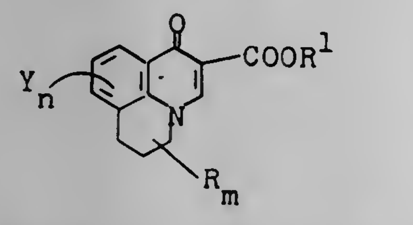
John F. Gerster, Woodbury, Minn., assignor to Riker Laboratories, Inc., Northridge, Calif.

Continuation-in-part of Ser. No. 214,409, Dec. 30, 1971, abandoned. This application Nov. 2, 1972, Ser. No. 303,254

Int. Cl. C07d *33/48*

U.S. Cl. 260—287 R **25 Claims**

1. Carboxylic acids having the formula



wherein Y is alkyl having 1–4 carbon atoms, alkoxy having 1–4 carbon atoms, halogen, hydroxy, nitro, cyano, trifluoromethyl, amino, alkanamido having 1–4 carbon atoms, trifluoroacetamido or N,N-dialkylamino having a total of 2–4 carbon atoms, and the number of carbon atoms, when present in the Y-substituents, does not exceed a total of four, R is methyl, ethyl or trifluoromethyl, *n* is 0, 1 or 2, *m* is 0, 1 or 2, and when R is trifluoromethyl, *m* is one; and R^1 is hydrogen, alkyl having 1–4 carbon atoms or a pharmaceutically acceptable cation.

3,896,132

PROCESS FOR PREPARING 1,2,3,8,9,9A-HEXAHYDRO-5,6-DIALKOXY-1-ALKYL-BENZO[D,E]QUINOLIN-7-ORE COMPOUNDS

Karl Bernauer, Allschwil; Janos Borgulya, and Fernand Schneider, both of Basel, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

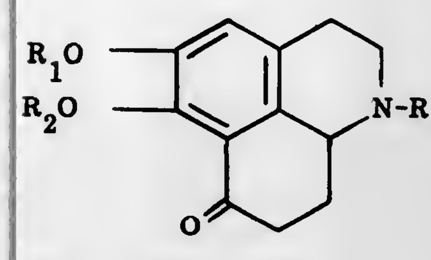
Division of Ser. No. 57,348, July 22, 1970, abandoned. This application Jan. 4, 1973, Ser. No. 321,069

Claims priority, application Switzerland, Aug. 19, 1969, 12532/69

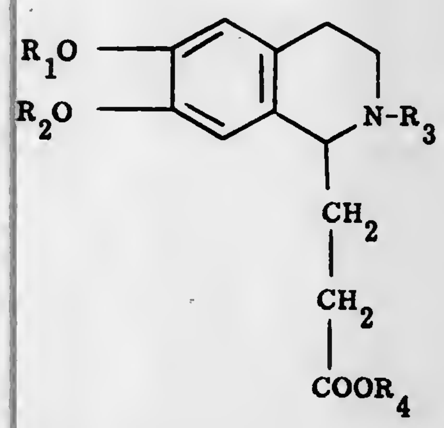
Int. Cl. C07d *33/46*

U.S. Cl. 260—289 R **1 Claim**

1. A process for the preparation of a compound of the formula



wherein R_1, R_2 and R_3 are lower alkyl, or acid addition salts thereof, comprising the step of cyclizing a compound of the formula



wherein R_1, R_2 and R_3 are as previously described and R_4 is hydrogen or lower alkyl, or a salt thereof, by treatment with sulfuric acid containing free sulfur trioxide at a temperature in the range of about 65°C. to about 85°C.

3,896,133

SUBSTITUTED 10-HETEROCYCLICAMINOALKYL-9,10-IHYDROANTHRACENES

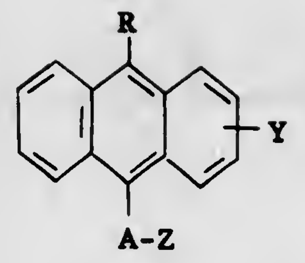
Paul N. Craig, Ambler, and Charles L. Zirkle, Berwyn, both of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Division of Ser. No. 121,544, March 5, 1971, Pat. No. 3,766,183, which is a division of Ser. No. 742,171, July 3, 1968, Pat. No. 3,622,630, which is a continuation-in-part of Ser. No. 631,584, April 18, 1967, abandoned, which is a continuation-in-part of Ser. No. 526,975, Feb. 14, 1966, abandoned. This application June 28, 1973, Ser. No. 374,745

Int. Cl. C07d *29/36*

U.S. Cl. 260—293.62 **4 Claims**

1. A chemical compound of the structural formula:



in which:
- R is hydrogen, methyl, ethyl or phenyl;
- Y is chlorine, methyl, trifluoromethyl, methylthio, methylsulfonyl or N,N-dimethylsulfamyl;
- A is an alkylene chain of 2 to 4 carbon atoms; and
- Z is N-pyrrolidinyl or N-piperidinyl.

3,896,134

3-PYRIDYLMETHYL CARBAMATE RODENTICIDES

Edward E. Kilbourn, Chalfont, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 352,854, April 18, 1973, Pat. No. 3,835,147. This application Apr. 1, 1974, Ser. No. 456,933

Int. Cl.² C07D *213/75*

U.S. Cl. 260—295.5 C **1 Claim**

1. The compound 3-pyridylmethyl N-(4-pyridyl)-carbamate.

3,896,135

3-DEAZAGUANINE

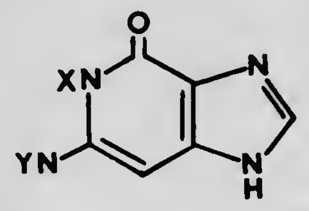
Robert J. Rousseau, Laguna Niguel, and Roland K. Robins, Santa Ana, both of Calif., assignors to ICN Pharmaceuticals, Inc., Irvine, Calif.

Filed July 6, 1973, Ser. No. 377,078

Int. Cl. C07d *31/42*

U.S. Cl. 260—296 H **4 Claims**

1. A compound of the structure:



Where Y is H_2 and X is H or an (alkalai)alkali metal.

3,896,136

METHOD FOR PROTECTING AQUEOUS COATING SYSTEMS FROM BACTERIAL ATTACK WITH BENZYL BROMO ACETATE

Seymour J. Lederer, Fair Lawn, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 276,604, July 31, 1972, abandoned. This application Aug. 15, 1974, Ser. No. 497,801

Int. Cl. C08f *45/24*

U.S. Cl. 260—29.6 R **2 Claims**

1. A method of preserving an aqueous paint and coating formulation susceptible to bacterial attack during storage prior to use against such bacterial attack comprising adding and mixing benzyl bromoacetate to such formulation in an amount such that the preserved formulation, including the benzyl bromoacetate, comprises from 0.025 to 1.00% by weight of benzyl bromoacetate.

3,896,137

8-ALKYL AND ALKENYL-10-HYDROXY-5H[1]BENZOPYRANOPYRIDINE DERIVATIVES AND USES THEREOF

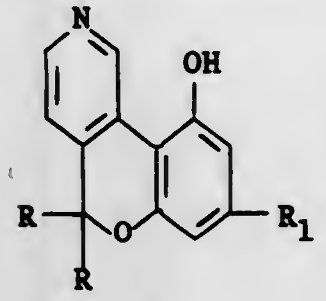
Clifton A. Baile, Glen Mills, Pa.; Paul E. Bender, Willingboro, N.J., and Bernard Loev, Broomall, Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Filed Mar. 11, 1974, Ser. No. 450,118

Int. Cl. C07d *31/28*

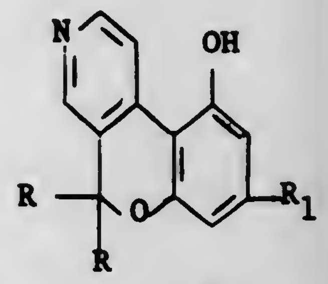
U.S. Cl. 260—297 T **8 Claims**

1. A basic compound of the structure:



I

or



II

in which R is hydrogen, methyl or ethyl and R_1 is a straight or branched alkyl of from 1–20 carbon atoms; and its non-toxic pharmaceutically acceptable salts.

3,896,138

HIGH OPACITY RESIN COATINGS

Robert W. Kreider, St. Charles, Ill., assignor to DeSoto, Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 239,719, March 30, 1972, Pat. No. 3,819,542, and Ser. No. 245,266, April 18, 1972, and Ser. No. 277,918, Aug. 4, 1972, Pat. No. 3,817,880. This application Feb. 8, 1973, Ser. No. 330,672

Int. Cl. C09k *1/02*

U.S. Cl. 252—301.2 R **12 Claims**

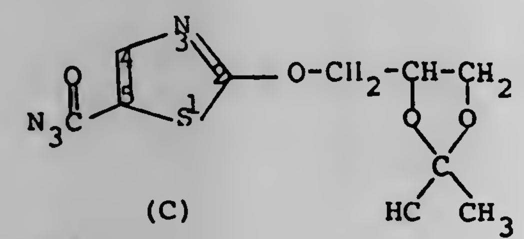
1. An aqueous latex coating composition adapted to deposit a film of low opacity resin which dries to produce a cellular film of high opacity and brightness, consisting essentially of an aqueous continuous phase having stably suspended therein polymer of emulsion polymerized unsaturated monomer in the form of particles of low opacity organic solvent-soluble resin, said polymer particles being swollen by having absorbed therein at least 5 parts by weight per 100 parts of polymer of a primary organic solvent which is essentially immiscible in the aqueous phase of said latex, and at least 5 parts by weight per 100 parts of polymer of a secondary water miscible organic solvent in said aqueous phase, said secondary organic solvent being a glycol having a lower evaporation rate than said primary solvent and a lesser capacity for solvating said polymer, said composition further including an organic solvent soluble optical brightener or fluorescent agent dissolved in said primary organic solvent and absorbed therewith in said polymer particles whereby, when said latex is deposited and dried, said solvents will evaporate to produce a film having a contrast ratio of at least about 0.7 in the absence of pigment and said optical brightener or fluorescent agent will be retained within the body of the film.

3,896,139
PROCESS FOR PREPARING 3-(4-OR-5-AZIDOCARBONYLTHIAZOL-2-OXY)-PROPANEDIOL-1,2-ACETONIDES

Belig M. Berkoz; John A. Edwards, both of Los Altos, and John H. Fried, Palo Alto, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

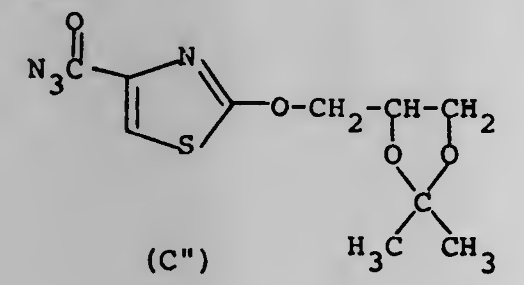
Filed Mar. 14, 1974, Ser. No. 451,194
Int. Cl. C07d *91/32*
U.S. Cl. 260—302 R **9 Claims**

1. A process for preparing a compound selected from the group having the formulas:



(C)

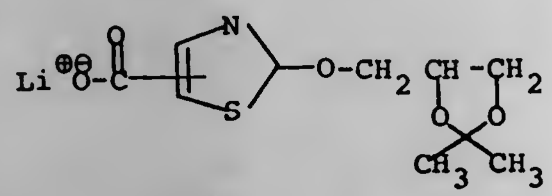
and



(C")

which comprises the steps of:

a. reacting the corresponding 4′- or 5′-substituted thiazole salt compound having the formula:



(A)

with a lower alkyl chloroformate in an inert organic solvent at temperatures in the range of about from −78° to 20°C., thereby affording the corresponding 4- or 5-lower alkoxycarbonyloxycarbonylthiazole derivative; and

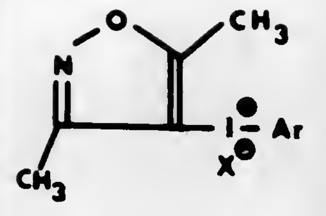
b. treating the product reaction mixture of step (a) in situ with an alkali metal azide under reactive conditions at temperatures in the range of about from −10° to 30°C, thereby yielding the corresponding compound of formula C or C″

3,896,140
IODONIUM COMPOUNDS OF 3,5-DIMETHYLISOXAZOLE

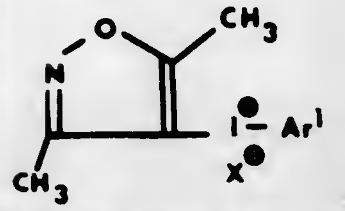
Raymond A. Plepys, and Zdravko Jezic, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 2, 1973, Ser. No. 320,508
Int. Cl. C07d *85/22*
U.S. Cl. 260—307 H **5 Claims**

1. A compound represented by the formula



or



wherein Ar represents thienyl, phenyl or mono-substituted phenyl in which the substituents are selected from lower alkyl, lower alkoxy and phenoxy and wherein Ar′ represents monohalophenyl and X represents an anion selected from trifluoroacetate, trichloroacetate, chloride and bromide.

3,896,141
4-(4′-AMINO-3′,5′-DICHLORO-PHENYL)-3-TERTIARY BUTYL-OXAZOLIDINES

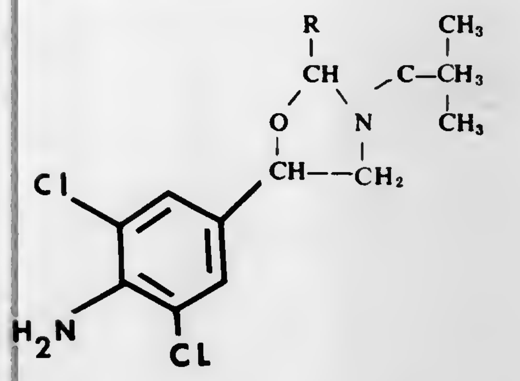
Johannes Keck, and Gunther Engelhardt, both of Biberach an der Riss, Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

Filed Mar. 8, 1973, Ser. No. 339,389

Claims priority, application Germany, Mar. 18, 1972, 2213271

Int. Cl. C07d *85/26*
U.S. Cl. 260—307 FA **4 Claims**

1. A compound of the formula



wherein

R is hydrogen, methyl, ethyl, propyl, isopropyl, n-pentyl, phenyl, 2-chlorophenyl, pyridyl-(4) or styryl,

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

3,896,142
PROCESS FOR THE PREPARATION OF SUBSTITUTED BENZIMIDAZOLES

Gunther Dransch, Eschborn, Taunus, and Gerhard Horlein, Frankfurt am Main, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Oct. 11, 1973, Ser. No. 405,400

Claims priority, application Germany, Oct. 14, 1972, 2250469

Int. Cl. C07d *49/38*
U.S. Cl. 260—309.2 **6 Claims**

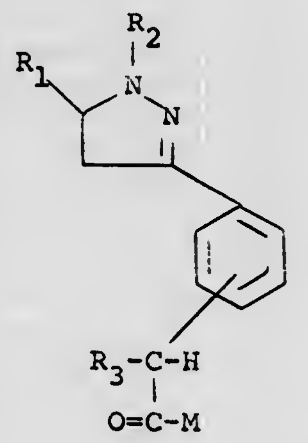
1. A process for the preparation of a 2-benzimidazole-carbamic acid alkyl or benzyl ester or a salt thereof, which comprises reacting a 2-aminobenzimidazole with a base and a carbonic acid dialkyl or dibenzyl ester with exclusion of water to obtain the corresponding 2-benzimidazole alkyl or benzyl carbamate salt.

3,896,143
SUBSTITUTED PYRAZOLYL PHENYLACETIC ACID DERIVATIVES

Faizulla G. Kathawala, West Orange, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Filed Oct. 18, 1972, Ser. No. 298,604
Int. Cl. C07d *49/10*
U.S. Cl. 260—310 D **6 Claims**

1. A compound of the formula



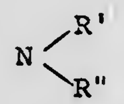
wherein

R₁ is alkyl of 1 to 5 carbon atoms, phenyl or monosubstituted phenyl in which the substituent is halo of atomic weight 19 to 80, alkyl of 1 to 3 carbon atoms, alkoxy of 1 to 3 carbon atoms or trifluoromethyl,

R_2 is alkyl of 1 to 5 carbon atoms, cycloalkyl of 3 to 7 carbon atoms, phenyl or monosubstituted cycloalkyl or phenyl in which the substituent is halo of atomic weight 19 to 80, alkyl of 1 to 3 carbon atoms, alkoxy of 1 to 3 carbon atoms or trifluoromethyl,

R_3 is hydrogen or alkyl of 1 to 5 carbon atoms,

M is hydroxy, alkoxy of 1 to 5 carbon atoms or



$$N\begin{matrix} R' \\ R'' \end{matrix}$$

wherein

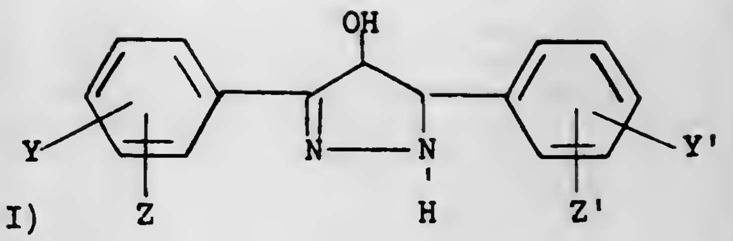
R′ and R″ are, independently, hydrogen or alkyl of 1 to 3 carbon atoms, and the carbon attached to the phenyl ring is attached to the para- or meta- position of said phenyl ring with respect to the pyrazolyl group, and their pharmaceutically acceptable salts.

3,896,144
PREPARATION OF 3,5-DIPHENYL-2-PYRAZOLIN-4-OL, 3,5-DIPHENYL-PYRAZOLE AND THE PHENYL-SUBSTITUTED DERIVATIVES THEREOF

Frank Albert Wagner, Jr., Pennington, N.J., assignor to American Cyanamid Company, Stamford, Conn.

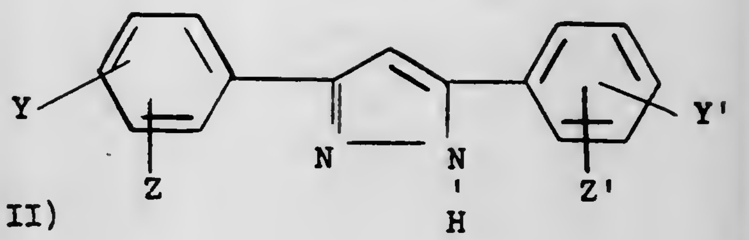
Filed July 13, 1973, Ser. No. 379,031
Int. Cl. C07d *49/10, 49/18*
U.S. Cl. 260—310 R **11 Claims**

1. A process for the preparation of compounds having a formula selected from the group consisting of:



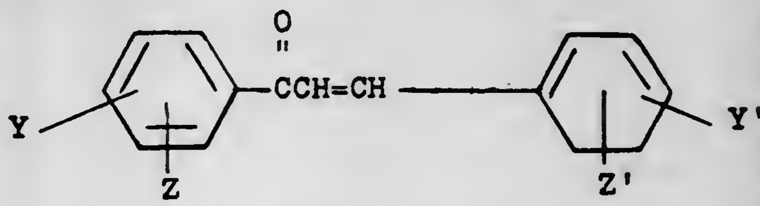
(I)

and

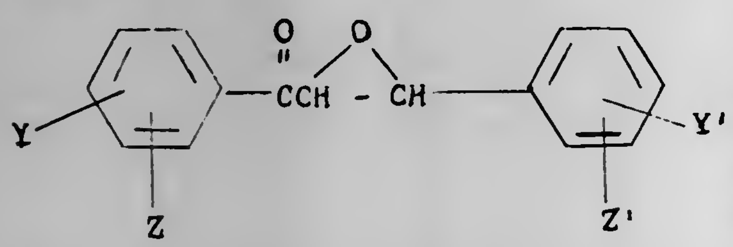


(II)

wherein Y, Y′, Z and Z′ each represents members selected from the group consisting of hydrogen, halogen, nitro, alkyl C_1–C_4, haloalkyl C_1–C_4 having 1 to 4 halogens and alkoxy C_1–C_4; which comprises the steps of: reacting a compound having the formula:



wherein Y, Y′, Z and Z′ are as defined above, with from about 1 to 2 mole equivalents of aqueous hydrogen peroxide, maintaining the pH of said reaction mixture between pH 8 and 11 while carrying out said reaction (a) in the presence of water and an organic solvent with appreciable water solubility, said solvent being selected from the group consisting of a C_1–C_6 aliphatic alcohol, a C_5–C_8 carbitol, a C_4–C_6 cellosolve, a C_4–C_{10} glyme, an aliphatic C_3–C_5 ketone, ethylene glycol and propylene glycol, and (b) at a temperature between 0°C. and 60°C., whereby an epoxyketone is formed, said epoxyketone having the structure:



wherein Y, Y', Z and A' are as defined above, reacting said epoxyketone in the presence of a water-miscible solvent with from about 1 to 2 mole equivalents of hydrazine, hydrazine monohydrate or an aqueous solution thereof in the presence of from about 1% to 10% by weight of an acid selected from the group consisting of mineral acids and organic sulfonic acids, said reaction being carried out (a) at a temperature between about 20°C. and 100°C., whereby the formula (I) 3,5-diphenyl-2-pyrazolin-4-ol is formed, or (b) at a temperature between about 125°C. and 225°C., whereby the formula (II) 3,5-diphenylpyrazole is formed.

3,896,145
CARBAZOLES

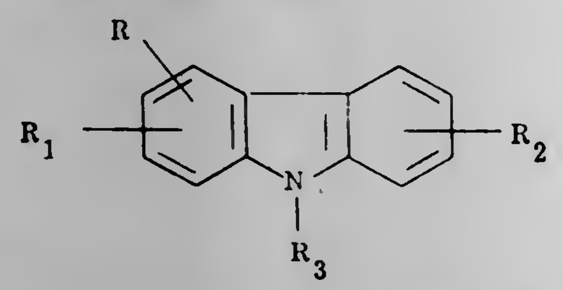
Leo Berger, Montclair, and Alfred John Corraz, Wayne, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 274,142, July 24, 1972, abandoned. This application May 17, 1973, Ser. No. 361,103

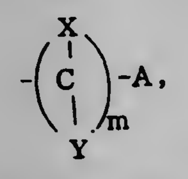
Int. Cl. C07d *27/68*

U.S. Cl. 260—315 **20 Claims**

1. A compound of the formula

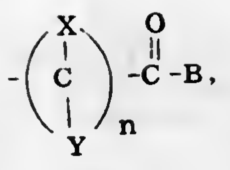


wherein R is hydrogen, halogen, hydroxy, cyano, lower alkyl, hydroxy-lower alkyl, lower alkoxy, acetyl, benzyloxy, lower alkylthio, trifuloromethyl, carboxy, carbo-lower alkoxy, nitro, amino, mono-lower alkylamino, di-lower alkylamino, sulfamoyl, di-lower alkylsulfamoyl or difluoromethylsulfonyl; R_1 is halogen, cyano, hydroxy-lower alkyl, lower alkoxy, acetyl, acetamido, benzyloxy, lower alkylthio, trifluoromethyl, hydroxy, carboxy, carbo-lower alkoxy, nitro, amino, mono-lower alkylamino, di-lower alkylamino, sulfamoyl, di-lower alkylsulfamoyl or difluoromethylsulfonyl; or R taken together with an adjacent R_1 is also lower alkylenedioxy; R_2 is



$$-\left(\begin{array}{c}X\\|\\C\\|\\Y\end{array}\right)_m-A,$$

wherein A is hydroxy, lower alkoxy, amino-lower alkoxy, mono-lower alkylamino-lower alkoxy or di-lower alkylamino-lower alkoxy, X and Y, independently, are hydrogen or lower alkyl, and *m* is 1 to 7, or R_2 is



$$-\left(\begin{array}{c}X\\|\\C\\|\\Y\end{array}\right)_n-\overset{O}{\overset{\|}{C}}-B,$$

wherein B is hydroxy, lower alkoxy, amino, hydroxyamino, mono-lower alkylamino, di-lower alkylamino, amino-lower alkoxy, mono-lower alkylamino-lower alkoxy or di-lower alkylamino-lower alkoxy, Y and X, independently, are hydrogen or lower alkyl, and n is 1 to 7 and R_3 is hydrogen, lower alkyl, lower alkoxycarbonyl-lower alkyl, carboxy-lower alkyl, lower alkanoyl, halo-substituted lower alkanoyl, benzyl, halobenzyl, benzoyl or halo-benzoyl; and

when X and Y are different, their enantiomers; when R or R_1 is carboxy and/or when B is hydroxy, salts thereof with pharmaceutically acceptable bases; and when R or R_1 is amino, mono-lower alkylamino or di-lower alkylamino, and/or when B or A is amino-lower alkoxy, mono-lower alkylamino-lower alkoxy or di-lower alkylamino-lower alkoxy, addition salts thereof with pharmaceutically acceptable acids.

3,896,146
3,5-DIALKYL-4-HYDROXYPHENYLALKYL SUBSTITUTED TRICYCLIC IMIDES

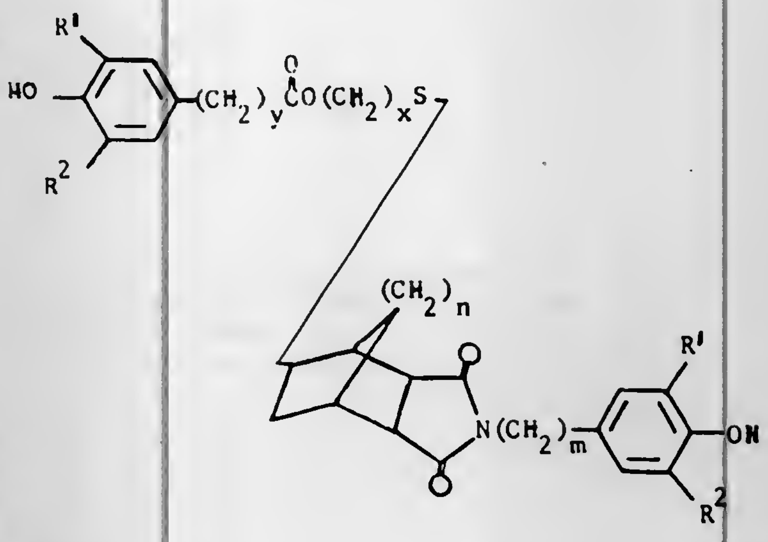
John F. Stephen, New City, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 28, 1973, Ser. No. 429,233

Int. Cl. C07d *27/48*

U.S. Cl. 260—326 C **7 Claims**

1. A compound having the formula



wherein

R^1 and R^2 are the same or different alkyl groups of 1 to 4 carbon atoms,

m has a value of 0 to 3,

n has a value of 1 and 2,

x has a value of 1 to 6, and

y has a value of 1 or 2.

3,896,147
HINDERED PHENOLIC NORBORNANE-2,3-DICARBOXIMIDES

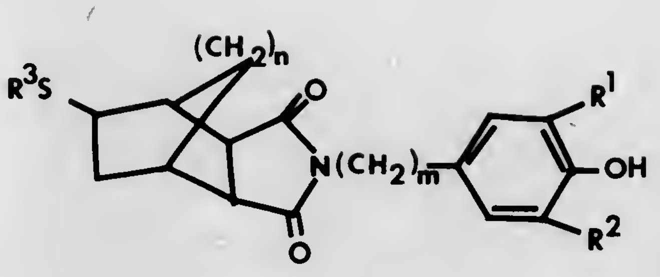
John F. Stephen, New City, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 28, 1973, Ser. No. 429,234

Int. Cl. C07d *27/48*

U.S. Cl. 260—326 C **11 Claims**

1. A compound of the formula



I

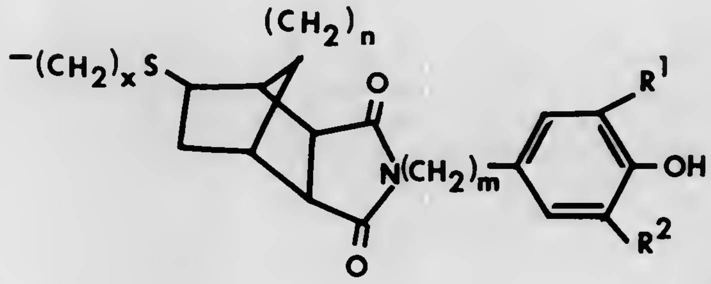
wherein

R^1 and R^2 are the same or different (lower)alkyl groups of 1 to 4 carbon atoms,

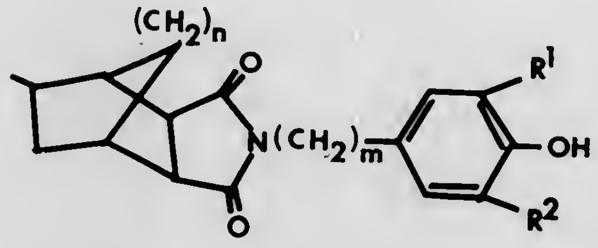
m has a value of 0 to 3,

n has a value of 1 or 2, and

R^3 is alkyl group of 1 to 18 carbons, a group of the formulae



II



III

or

$$-(CH_2)_p-CO_2R^4 \qquad \text{IV}$$

where

x has a value of 2 to 18,

R^4 is alkyl of 1 to 18 carbons, and

p has a value of 1 to 2.

3,896,148
1-DIALKYLAMINOALKOXY-5,5-DIPHENYL-2-PYRROLIDINONE COMPOUNDS

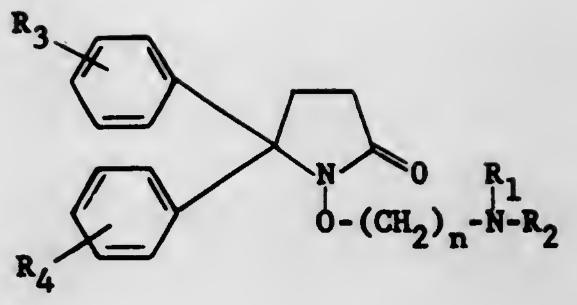
Bernard Loev, Broomall, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

Filed Jan. 17, 1974, Ser. No. 435,132

Int. Cl. C07d *27/08*

U.S. Cl. 260—326.5 FL **3 Claims**

1. A compound of the formula:



in which:

n is two to four;

R_1 and R_2 are lower alkyl; and

R_3 and R_4 are hydrogen, halogen, lower alkyl, lower alkoxy or trifluoromethyl.

3,896,149
NOVEL PYRROLIDONE DERIVATIVES AND MANUFACTURING THE SAME

Akira Kotone, Nara; Yoshiyuki Hiri, and Tadashi Masada, both of Osaka, all of Japan, assignors to Sakai Chemical Industry Company, Limited, Japan

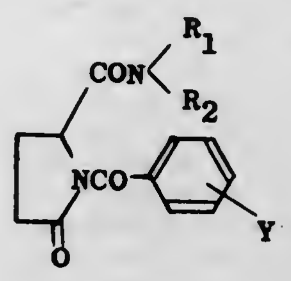
Filed June 7, 1973, Ser. No. 367,890

Claims priority, application Japan, June 7, 1972, 47-57238

Int. Cl. C07d *27/08*

U.S. Cl. 260—326.25 **3 Claims**

1. A pyrrolidone derivative represented by the formula



wherein R_1 and R_2 are the same alkyl group having 1 to 6 carbon atoms or taken collectively form a tetramethylene group and Y is hydrogen or a halogen atom.

3,896,150
2,6,10-TRIMETHYLDODECA-2,6,11-TRIEN-10-OL-1-AL-2,6-DIMETHYL-2,6-UNDECADIEN-10-ON-1-AL AND THEIR ACETALS AND PROCESSES FOR THEIR PRODUCTION

Werner Hoffman, Ludwigshafen, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

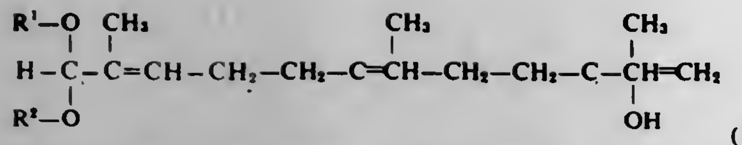
Filed Aug. 23, 1972, Ser. No. 283,171

Claims priority, application Germany, Sept. 2, 1971, 2143991; Sept. 2, 1971, 2143992

Int. Cl. C07d *15/04*

U.S. Cl. 260—340.7 **4 Claims**

1. A compound of formula (I):



$$H-\overset{\displaystyle R^1-O}{\underset{\displaystyle R^2-O}{C}}-\overset{CH_3}{C}=CH-CH_2-CH_2-\overset{CH_3}{C}=CH-CH_2-CH_2-C-\overset{CH_3}{\underset{OH}{C}}H=CH_2$$

(1)

in which R^1 and R^2 together are alkylene of two to six carbon atoms, cycloalkylene of five or six carbon atoms in the ring, or o-phenylene.

3,896,151

2-HALO-2,3-DIHYDROBENZOFURAN-5-OLESTERS OF SULFONIC ACIDS

Peter Stuart Gates, Cambridge, England, assignor to Fisons Limited, London, England

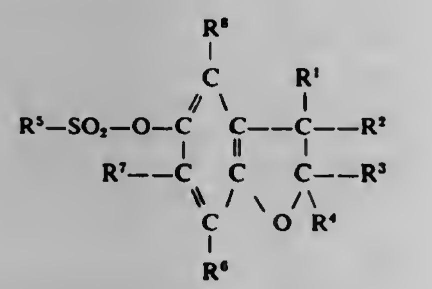
Filed Apr. 11, 1974, Ser. No. 460,150

Claims priority, application United Kingdom, Apr. 17, 1973, 18395/73

Int. Cl. C07d *5/36*

U.S. Cl. 260—346.2 R **10 Claims**

1. A compound of formula:



in which

R^1, R^2 and R^3 are the same or different and each represents hydrogen or alkyl of 1–6 carbon atoms, or R^1 and R^2 together or R^2 and R^3 together form an alkylene chain of 2–5 carbon atoms;

R^4 represents a halogen atom;

R^5 represents alkyl of 1–4 carbon atoms, alkyl of 1–4 carbon atoms substituted by halogen or alkoxy of 1–6 carbon atoms, phenyl, or phenyl substituted by halogen or alkyl of 1–4 carbon atoms; and

R^6, R^7 and R^8 are the same or different and each represents hydrogen, alkyl of 1–4 carbon atoms, halogen, cyano, alkanoyl of 2–6 carbon atoms or alkoxy of 1–4 carbon atoms.

3,896,152

AZIDES

Hideo Otsuka, Osaka, and Ken Inouye, Kobe, both of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Division of Ser. No. 266,748, June 27, 1972, Pat. No. 3,839,395. This application Jan. 8, 1974, Ser. No. 431,603

Claims priority, application Japan, July 15, 1971, 46-52707; July 15, 1971, 46-52708; Aug. 19, 1971, 46-63182

Int. Cl. C07c *117/00*

U.S. Cl. 260—349 **2 Claims**

1. 1-methylcyclohexyl azidoformate.

3,896,153

SYNTHESIS OF QUINONE DERIVATIVES HAVING BIOLOGICAL ACTIVITY

Kikumasa Sato, Yokohama; Seiichi Inoue, Fujisawa; Shizumasa Kijima, Tokyo, and Kimio Hamamura, Kashiwa, all of Japan, assignors to Eisai Company, Ltd., Japan

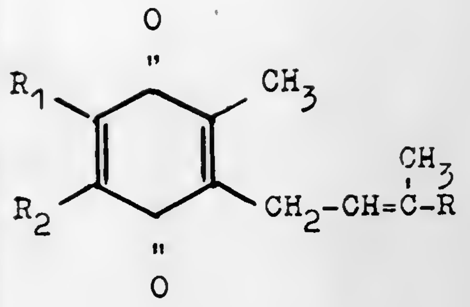
Filed Mar. 25, 1974, Ser. No. 454,574

Claims priority, application Japan, Apr. 6, 1973, 48-38748

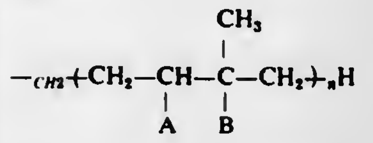
Int. Cl.² C07C *49/64*, *49/66*

U.S. Cl. 260—396 R **6 Claims**

1. A process for the synthesis of quinone derivatives having biological activity represented by the formula:

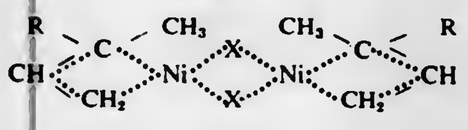


wherein R_1 and R_2 are methoxy or together with the carbon atoms to which they are attached constitute a benzene ring, and R is

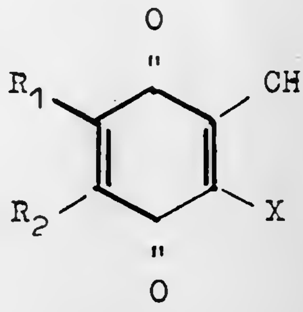


$$-CH_2(CH_2-\underset{A}{CH}-\overset{CH_3}{\underset{B}{C}}-CH_2)_nH$$

wherein *n* denotes zero (0) or an integer of from 1 to 9 inclusive, and A and B are hydrogen or together form a direct bond, characterized in that a π-allyl-type halonickel complex compound represented by the formula:



wherein X(s) are halogen, R(s) have the same meanings as aforementioned, and each of the bonds with a single dotted line, , represents a half bond and each of the bonds with the combined full and dotted lines, , represents a half-double bond, is reacted with a quinone derivative represented by the formula:



wherein R_1, R_2 and X respectively have the meanings as aforedefined, at a temperature of 30° to 80°C and in the presence of an amide-type solvent selected from the group consisting of dimethyl formamide, dimethyl acetamide, hexamethyl phosphoramide, N-methyl pyrrolidone and tetramethyl urea, or a mixed solvent consisting of said amide-type solvent and a non-polar solvent selected from the group consisting of benzene, xylene, and cyclohexane.

3,896,154

PROCESS FOR PRODUCING ALIPHATIC POLYISOCYANATES

Yasunobu Takahashi, Nobeoka; Maomi Seko, Tokyo; Akira Ide, Nobeoka; Soziro Matumoto, Nobeoka, and Takashi Nishigaki, Nobeoka, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Nov. 1, 1973, Ser. No. 412,020

Claims priority, application Japan, Nov. 7, 1972, 47-110783

Int. Cl.² C07C *119/042*

U.S. Cl. 260—453 P **5 Claims**

1. A process for preparing an aliphatic polyisocyanate which comprises

heating a mixture containing hexamethylene diisocyanate and an aromatic hydrocarbon selected from the group consisting of benzene, toluene, xylene, chlorobenzene, dichlorobenzene, bromobenzene and nitrobenzene, to a temperature of from 100°C. to 140°C under agitation, and

adding water to the resulting heated mixture in an amount of from 3to 2/l molar ratio of said diisocyanate to water, whereupon reaction of water and said diisocyanate is effected.

3,896,155

OXIME ETHERS

Gerhard Hamprecht, Mannheim; Karl-Heinz Koenig, Frankenthal, and Adolf Fischer, Mutterstadt, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

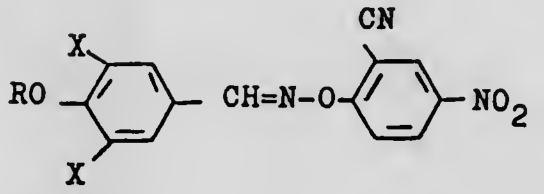
Filed Apr. 11, 1973, Ser. No. 349,914

Claims priority, application Germany, Apr. 22, 1972, 2219802

Int. Cl. C07c *121/78*

U.S. Cl. 260—465 E **7 Claims**

1. A compound of the formula

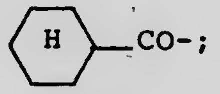


I,

wherein:

X is selected from the group consisting of bromine and iodine; and

R is selected from the group consisting of hydrogen; lithium; sodium; potassium; alkyl of 1 to 3 carbon atoms or said alkyl substituted by chlorine, methoxy or thiomethoxy; alkanoyl of 2 to 3 carbon atoms; chloroacetyl;



benzoyl or said benzoyl substituted by chloro, nitro, methyl, methoxy, thiomethoxy or trifluoromethyl; carboalkoxy of 1 to 4 carbon atoms in the alkoxy group or said carboalkoxy substituted by chlorine, methoxy or thiomethoxy; carbophenoxy or said carbophenoxy substituted by chlorine, nitro, cyano, methyl, methoxy, thiomethoxy or trifluoromethyl; alkylcarbamoyl of 1 to 3 carbon atoms in the alkyl group or said alkyl carbamoyl substituted on the alkyl chain by chlorine, methoxy or thiomethoxy; cyclohexylcarbamoyl; phenylcarbamoyl or said phenylcarbamoyl substituted on the phenyl ring by chlorine, nitro, cyano, methyl, methoxy, thiomethoxy or trifluoromethyl; N-methyl-N-phenyl-carbamoyl; N,N-dimethylcarbamoyl; alkylsulfonyl of 1 to 3 carbon atoms; phenylsulfonyl or said phenylsulfonyl substituted on the phenyl ring by methyl, methoxy, thiomethoxy, chlorine, nitro, cyano or trifluoromethyl; monoalkylsulfamoyl of 1 to 3 carbon atoms; and dimethylsulfamoyl; phenylmethylsulfamoyl or said phenylmethylsulfamoyl substituted on the phenyl ring by chlorine, methyl, nitro, cyano or trifluoromethyl.

3,896,156

DIHYDROPROSTAGLANDIN E, ANALOGS

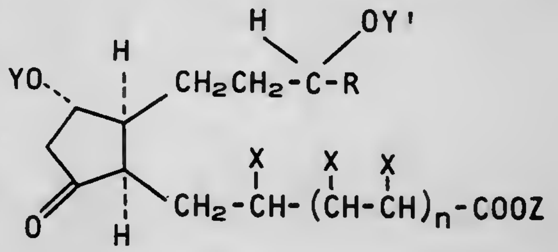
Philip F. Beal, III, Kalamazoo; Frank H. Lincoln, Jr., Portage, and John E. Pike, Kalamazoo, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 51,370, June 30, 1970, abandoned, which is a division of Ser. No. 809,046, March 20, 1969, Pat. No. 3,524,867, which is a division of Ser. No. 555,283, June 6, 1966, Pat. No. 3,435,053. This application July 16, 1973, Ser. No. 379,475

Int. Cl.² C07C *61/38*, *69/74*

U.S. Cl. 260—468 D **8 Claims**

1. An optically active compound of the absolute configuration of natural PGE_1 or a racemic compound of the formula:



wherein R is an alkyl group containing from one to eight carbon atoms, inclusive, X is hydrogen or methyl with the proviso that not more than one methyl group can be present in a given side chain, Y and Y′ are hydrogen or alkanoyl of one to 12 carbon atoms, inclusive, Z is hydrogen, a hydrocarbyl group of one to 12 carbon atoms, inclusive, or a pharmacologically acceptable cation, and *n* is 0, 1 or 2.

3,896,157

DIHYDO 2-NAPHTHYLACETIC ACID DERIVATIVES

John H. Fried, and Ian T. Harrison, both of Palo Alto, Calif., assignors to Syntex Corporation, Panama City, Panama

Division of Ser. No. 694,771, Dec. 7, 1967, abandoned, which is a continuation-in-part of Ser. No. 608,997, Jan. 13, 1967, abandoned. This application Nov. 4, 1971, Ser. No. 195,878

Int. Cl.² C07C *69/76*

U.S. Cl. 260—469 **6 Claims**

1. A compound selected from the group consisting of 3,4-dihydro-6-fluoro-2-naphthyl-α-methylacetic acid, the alkyl esters thereof wherein the alkyl moiety has 1 to 12 carbon atoms, and the pharmaceutically acceptable addition salts thereof.

6. A compound selected from the group consisting of 3,4-dihydro-6-methylthio-2-naphthyl-α-methylacetic acid, the alkyl esters thereof wherein the alkyl moiety has 1 to 12 carbon atoms, and the pharmaceutically acceptable addition salts thereof.

3,896,158

N,N-DIALKYLALKANOLAMINES

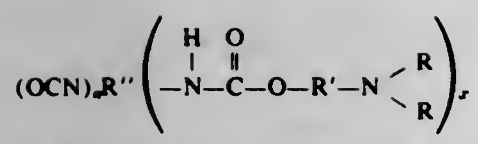
David E. Rice, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 241,413, April 5, 1972, Pat. No. 3,786,030. This application Oct. 9, 1973, Ser. No. 404,323

Int. Cl. C07c *125/06*

U.S. Cl. 260—472 **6 Claims**

1. A dialkylaminoalkylurethane of the structure:



$$(OCN)_aR''\left(-\overset{\overset{H}{|}}{N}-\overset{\overset{O}{\|}}{C}-O-R'-N\begin{matrix}R\\R\end{matrix}\right)_x$$

where R'' is the isocyanate-free residue of an isocyanateterminated prepolymer, R' is lower alkylene having 2–5 carbon atoms, R is lower alkyl having 1–6 carbon atoms, *x* is an integer of at least one, and *a* is zero or an integer of at least one.

3,896,159

PRODUCTION OF DICARBOXYLIC ACID DIESTERS

Otto Kratzer, Bobenheim-Roxheim, and Hansjoerg Bipp, Limburgerhof, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed May 10, 1974, Ser. No. 468,743

Claims priority, application Germany, May 12, 1973, 2324165

Int. Cl. C07c *67/06, 69/80*

U.S. Cl. 260—475 B **3 Claims**

1. A process for the continuous production of diesters of aliphatic and aromatic dicarboxylic acids or their anhydrides and alcohols of three to fifteen carbon atoms while recycling the alcohol used in excess and in the absence of an esterification catalyst at a temperature of from 150° to 250°C in which the reaction mixture, after water of esterification has been removed, has aqueous alkali added to the point of neutralization to separate the monoester from the diester, the aqueous solution of the monoester salt thus separated is acidified with sulfuric acid to recover the monoester, the diester is washed with water to remove residue of alkali and the diester which has been washed until neutral is treated with steam, wherein there is added to the aqueous solution of the monoester salt prior to, during or after acidification a weight of the alcohol serving for the production of the ester which is from one-half to once the weight of the aqueous solution of the monoester salt, washing of the diester is carried out in two stages, the water of esterification and the aqueous condensate obtained in the final steam treatment are used together or separately for washing the diester and the waste water obtained in the diester washing is used completely for the production of the aqueous alkali.

3,896,160

AMIDINOCARBAMATES

Karl Gaetzi, Bäsel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

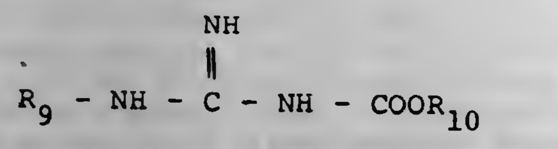
Filed Mar. 9, 1972, Ser. No. 233,292

Claims priority, application Switzerland, Mar. 17, 1971, 3931/71; Feb. 3, 1972, 1612/72

Int. Cl. C07c *125/06*

U.S. Cl. 260—482 C **3 Claims**

1. A compound of the formula



$$R_9-NH-\overset{\overset{NH}{\|}}{C}-NH-COOR_{10}$$

in which R_9 represents a straight chain alkyl radical containing from 4 to 15 carbon atoms which is interrupted by -NH-, and R_{10} represents methyl or ethyl.

3,896,161

NOVEL ESTERS OF ALKYLOXY AND ALKARYLOXYPOLYETHYLENE GLYCOLS

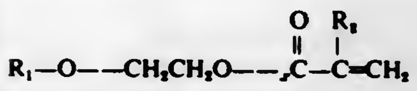
George Wayne Borden, Charleston, and David John Trecker, South Charleston, both of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 245,182, April 18, 1972, abandoned. This application Apr. 5, 1974, Ser. No. 458,322

Int. Cl. C07c *69/54*

U.S. Cl. 260—486 R **5 Claims**

1. Compounds represented by the formula:



$$R_1-O-\!\!-CH_2CH_2O-\!\!-_x\overset{\overset{O}{\|}}{C}-\overset{\overset{R_2}{|}}{C}=CH_2$$

wherein R_1 represents alkyl of from 8 to 24 carbon atoms, wherein R_2 is hydrogen or methyl, and wherein *x* represents a number having an average value within the range of from 3 to 40.

3,896,162

STABLE COMPOSITIONS AND METHODS OF INHIBITING POLYMERIZATION OF UNSATURATED CARBOXYLIC ACID ESTERS

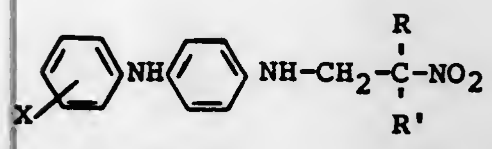
Darrell Dexter Mullins, Norton, Ohio, assignor to Monsanto Company, St. Louis, Mo.

Filed Jan. 23, 1974, Ser. No. 435,676

Int. Cl. C07c *69/54*

U.S. Cl. 260—486 R **6 Claims**

1. A monomer composition consisting essentially of unsaturated carboxylic acid ester and, in amount effective to inhibit polymerization of the ester, an inhibitor of the formula



in which R is lower alkyl, R' is hydrogen, nitro or lower alkyl and X is hydrogen, lower alkyl or lower alkoxy.

3,896,163

PURIFICATION OF ALIPHATIC PHOSPHONIC ACIDS

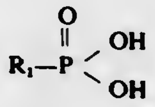
Albert M. V. Jacques, Norristown, Pa., assignor to Amchem Products, Inc., Ambler, Pa.

Filed May 31, 1974, Ser. No. 474,993

Int. Cl. C07c *9/38*

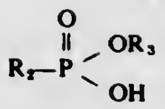
U.S. Cl. 260—502.4 R **14 Claims**

1. A process for separating an aliphatic phosphonic acid, represented by the general formula:



$$R_1-\overset{\overset{O}{\|}}{P}\begin{matrix}OH\\OH\end{matrix}$$

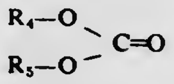
from an aliphatic phosphonic acid half-ester, represented by the general formula:



$$R_1-\overset{\overset{O}{\|}}{P}\begin{matrix}OR_3\\OH\end{matrix}$$

wherein R_1, R_2 and R_3 are each independently selected from the group consisting of alkyl, alkenyl, halo-substituted alkyl and halo-substituted alkenyl, all having from 1 to 6 carbon atoms, which comprises:

extracting the half-ester from an aqueous crude reaction mixture, comprised of the half-ester and the phosphonic acid, with an alkyl ester of carbonic acid represented by the general formula:



$$\begin{matrix}R_4-O\\R_5-O\end{matrix}C=O$$

wherein R_4 and R_5 are each independently alkyl having from 1 to 6 carbon atoms.

3,896,164

3-DIHALOMETHYL-1-CARBOXY-1,2,2-TRIMETHYLCYCLOPENTANE

Cal Yale Meyers, Carbondale, Ill., and Ashok M. Malte, Poona, India, assignors to Southern Illinois University Foundation, Carbondale, Ill.

Filed Dec. 14, 1970, Ser. No. 98,079

Int. Cl. C07c *61/06*

U.S. Cl. 260—514 J **15 Claims**

1. A compound selected from the group consisting of d- and l-3-dihalomethyl-1-carboxy-1,2,2-trimethylcyclopentanes wherein halo is chlorine or bromine.

3,896,165

BENZOIC ACID DERIVATIVES

Peter Werner Feit, Gentofte, and Ole Bent Tvaermose Nielsen, Vanlose, both of Denmark, assignors to Lovens Kemiske Fabrick Produktionsaktieselskab, Ballerup, Denmark

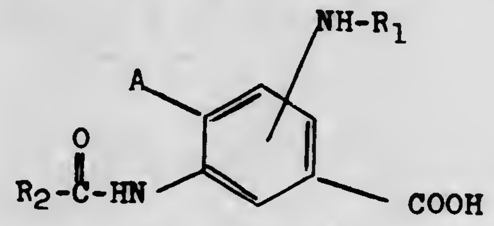
Division of Ser. No. 149,012, June 1, 1971, Pat. No. 3,819,692. This application Oct. 25, 1973, Ser. No. 409,394

Claims priority, application United Kingdom, June 18, 1970, 29740/70

Int. Cl. C07c *103/12*

U.S. Cl. 260—517 **2 Claims**

1. Compounds of the general formula I



I

in which R_1 is selected from the group consisting of alkyl radicals with from 3 to 8 carbon atoms in the carbon chain, and phenyl substituted methyl and ethyl; A is benzoyl; R_2 is selected from the group consisting of hydrogen and lower alkyl groups; and pharmaceutically acceptable salts of the carboxylic acid of formula I.

3,896,166

FORMYL-SUBSTITUTED TYROSINE

Ado Kaiser, Lausen, Switzerland; Hermann Bretschneider, and Kraft Hohenlohe-Oehringen, both of Innsbruck, Austria, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

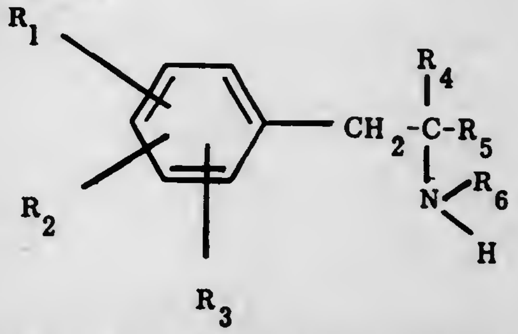
Continuation-in-part of Ser. No. 139,297, April 28, 1971, Pat. No. 3,763,218. This application June 27, 1973, Ser. No. 374,146

Claims priority, application Switzerland, May 6, 1970, 6806/70

Int. Cl.² C07C *103/30*

U.S. Cl. 260—519 **11 Claims**

1. A compound selected from the group consisting of compounds of the formula:



wherein one of R_1 or R_2 is formyl and the other of said R_1 or R_2 is hydroxy, which can be either ortho or para to said formyl; R_3 and

R_4 are independently hydrogen or lower alkyl; R_5 is carboxyl and R_6 is hydrogen, lower alkanoyl, benzoyl or naphthoyl

and pharmaceutically acceptable salts thereof.

3,896,167

PERFLUORINATED LINEAR POLYETHERS

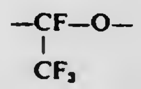
Dario Sianesi; Adolfo Pasetti, and Costante Corti, all of Milan, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Continuation of Ser. No. 254,612, May 18, 1972, abandoned, which is a division of Ser. No. 31,852, May 1, 1970, Pat. No. 3,699,145, which is a continuation of Ser. No. 650,257, June 30, 1967, abandoned, which is a continuation-in-part of Ser. No. 446,292, April 7, 1965, Pat. No. 3,442,942. This application Aug. 30, 1973, Ser. No. 393,179

Int. Cl. C07C *53/34, 53/36*

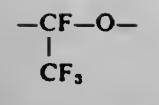
U.S. Cl. 260—544 F **2 Claims**

1. A linear perfluorinated polyether formed of molecules having a chain structure consisting of a $-C_3F_6-O-$ repeating unit and at least one repeating unit selected from the group consisting of



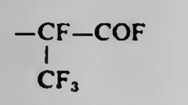
$$-\underset{\underset{CF_3}{|}}{CF}-O-$$

and CF_2-O- units, said repeating units being linked one to another either directly or through an oxygen atom in which latter case there is a peroxy linkage, the sum of the repeating units present along the chain being from 2 to 100, the ratio of the sum of the total $-CF_2-O-$ units and total



$$-\underset{\substack{|\\ CF_3}}{C}F-O-$$

units to the total $-C_3F_6-O-$ units being from 0.02 to 2, and the ratio of total active peroxidic oxygen units to the total $-C_3F_6-O-$ units being from zero to 1, said chain having as terminal groups at one end a CF_3-O- radical linked to said chain through a carbon atom and at the other end a radical selected from the group consisting of $-CH_2COF$ and



$$-\underset{\substack{|\\ CF_3}}{C}F-COF$$

linked to said chain through a non-peroxidic oxygen atom.

3,896,168
METHOD OF MAKING CARBAMOYL SULFOXIDE DERIVATIVES

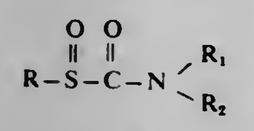
Harry Tilles, El Cerrito, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 280,364, Aug. 14, 1972, abandoned. This application June 13, 1973, Ser. No. 369,676

Int. Cl.² C07C *103/32, 147/14*

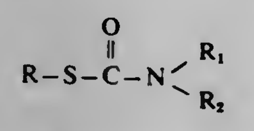
U.S. Cl. 260—551 R **1 Claim**

1. A process of manufacturing a herbicidally active compound having the formula:



wherein R and R_1 is lower alkyl and R_2 is selected from phenyl and benzyl; comprising the steps of:

a. reacting an oxidizing agent selected from m-chloroperoxy benzoic acid with a thiocarbamate in the presence of a solvent, said thiocarbamate having the formula:



wherein R, R_1 and R_2 have been previously defined;

b. said reaction being carried out at a temperature of between −25°C and 25°C;

c. said oxidizing agent being present in an amount of at least one molar equivalent.

3,896,169
METHOD OF MAKING CARBONOYL SULFOXIDE DERIVATIVES

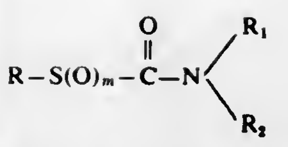
Harry Tilles, El Cerrito, and John E. Casida, Berkeley, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 280,371, Aug. 14, 1972, abandoned. This application June 18, 1973, Ser. No. 371,326

Int. Cl.² C07C *103/32, 103/56, 147/14*

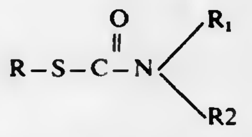
U.S. Cl. 260—551 R **2 Claims**

1. A process for manufacturing a pesticidal compound corresponding to the following formula:



wherein *n* is 1 or 2; R is selected from the group consisting of lower alkyl, lower haloalkyl, lower alkoxyalkenyl and lower alkenyl; R_1 and R_2 can be the same or different and are selected from the group consisting of lower alkyl, cyclohexyl, lower alkylcyclohexyl, lower alkenyl and lower alkynyl; comprising the steps of:

a. combining an oxidizing agent selected from peracetic acid and m-chloroperoxybenzoic acid and a thiocarbamate compound in a solvent system; said thiocarbamate having the following formula:



wherein R, R_1 and R_2 have been defined above;

b. maintaining the temperature between −15°C. and 60°C.;

c. said oxidizing agent being present in an amount of at least one stoichiometric equivalent and not more than two stoichiometric equivalents.

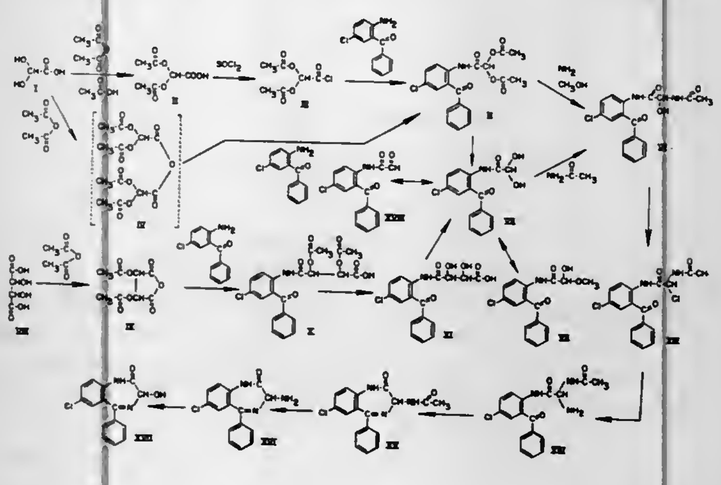
3,896,170
INTERMEDIATES FOR THE PREPARATION OF 1,3-DIHYDRO-2H-1, -BENZODIAZEPIN-2-ONES

Ronald J. McCaully, 26 Buck Run Ln., Malvern, Pa. 19355, assignor to American Home Products Corporation, New York, N.Y.

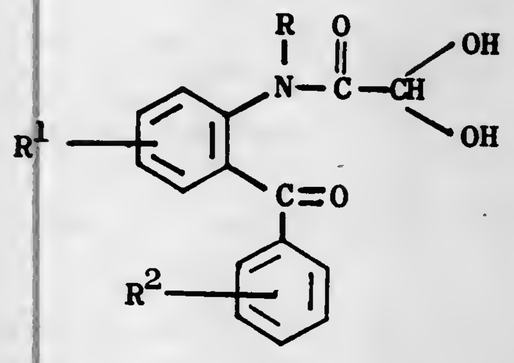
Division of Ser. No. 802,345, Feb. 6, 1969, Pat. No. 3,763,171. This application Feb. 15, 1973, Ser. No. 332,983

Int. Cl. C07c *103/42*

U.S. Cl. 260—562 P **4 Claims**



1. A compound of the structure:



wherein R is hydrogen, methyl, ethyl, propyl, allyl, methyl allyl, benzyl or phenylethyl; R^1 is hydrogen, lower alkyl, chlorine, bromine, trifluoromethyl, nitro, or methylsulfonyl; and

R^2 is hydrogen, lower alkyl, chlorine, bromine, trifluoromethyl, nitro or methyl sulfonyl.

3,896,171
1-DODECYLAMINOMETHYL-2-AMINO-CYCLOPENTANE

Ulrich Holtschmidt, Essen, and Günter Schwarzmann, Essen-Uberruhr, both of Germany, assignors to Th. Goldschmidt AG, Germany

Filed July 30, 1973, Ser. No. 383,679

Claims priority, application Germany, Sept. 13, 1972, 2244778

Int. Cl.² C07C *87/38*

U.S. Cl. 260—563 R **1 Claim**

1. 1-dodecylaminomethyl-2-amino-cyclopentane.

3,896,172
PREPARATION OF AMINO-DIPHENYLSULFIDES

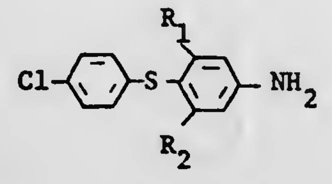
Banavara L. Mylari, Waterford, and Thomas M. Brennan, Niantic, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 342,969, March 20, 1973, Pat. No. 3,852,289. This application Apr. 2, 1974, Ser. No. 457,196

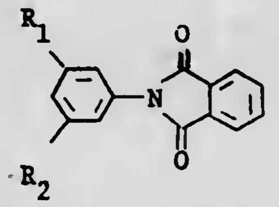
Int. Cl. C07c *87/50, 87/60*

U.S. Cl. 260—578 **4 Claims**

1. A process for the preparation of compounds of the formula:



wherein R_1 is selected from the group consisting of hydrogen and methyl; and R_2 is selected from the group consisting of methyl and chloro, which comprises contacting p-chlorophenylsulfenyl chloride with a compound of the formula:



in the presence of a reaction-inert solvent at a temperature of 25°–110° C., and thereafter removing the phthaloyl moiety.

3,896,173
TWO STAGE CATALYTIC HYDROGENATION OF UNSATURATED DINITRILES EMPLOYING RUTHENIUM, NICKEL OR MIXTURE THEREOF AS CATALYTIC AGENT

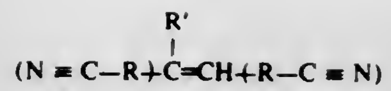
Charles A. Drake, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 19, 1973, Ser. No. 416,784

Int. Cl. C07c *87/14*

U.S. Cl. 260—583 P **18 Claims**

1. A process for the catalytic hydrogenation of an unsaturated dinitrile feedstock comprising at least one unsaturated dinitrile compound of the formula:



$$(N\equiv C-R+\overset{\substack{R'\\ |}}{C}=CH+R-C\equiv N)$$

wherein each R is independently selected from the group consisting of an alkylene radical and an alkylidene radical, R′ is an alkyl radical, and the number of carbon atoms in said compound is in the range of 7 to 30; which comprises contacting said feedstock under suitable hydrogenation conditions in a first stage reaction zone with ammonia; hydrogen; at least one diluent selected from the group consisting of unsubstituted alkanols having from 1 to 12 carbon atoms per molecule, saturated hydrocarbons having from 4 to 12 carbon atoms per molecule, and unsubstituted acyclic and unsubstituted cyclic ethers having from 4 to 12 carbon atoms per molecule; and a catalyst consisting essentially of a catalytic component selected from the group consisting of elemental ruthenium, elemental nickel, ruthenium compounds which are reducible by hydrogen to elemental ruthenium at said hydrogenation conditions, nickel compounds which are reducible by hydrogen to elemental nickel at said hydrogenation conditions, and mixtures thereof; removing ammonia from the first stage reaction zone effluent to provide an intermediate unsaturated diamine product at least substantially free of ammonia; and contacting said intermediate unsaturated diamine product under suitable hydrogenation conditions in a second stage reaction zone with hydrogen, at least one of said diluents, and at least one of said catalysts to thereby effect the at least substantially complete hydrogenation of said at least one unsaturated dinitrile compound to the corresponding branched-chain saturated diamine product.

3,896,174
CATALYTIC HYDROGENATION OF UNSATURATED DINITRILES EMPLOYING RUTHENIUM, NICKEL OR MIXTURE THEREOF AS CATALYTIC AGENT

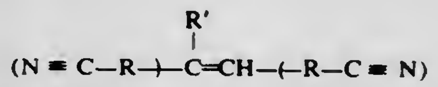
Charles A. Drake, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 19, 1973, Ser. No. 416,785

Int. Cl.² C07C *87/14*

U.S. Cl. 260—583 P **16 Claims**

1. A single stage reaction process for the catalytic hydrogenation of an unsaturated dinitrile feedstock comprising at least one unsaturated dinitrile compound of the formula



$$(N\equiv C-R+\overset{\substack{R'\\ |}}{C}=CH+R-C\equiv N)$$

wherein each R is independently selected from the group consisting of an alkylene radical and an alkylidene radical, R′ is an alkyl radical, and the number of carbon atoms in said compound is in the range of 7 to 30; which comprises contacting said feedstock under suitable hydrogenation conditions in a single stage reaction zone with ammonia; hydrogen; and a catalyst consisting essentially of a catalytic component selected from elemental ruthenium, elemental nickel, ruthenium compounds which are reducible by hydrogen to elemental ruthenium at said hydrogenation conditions, nickel compounds which are reducible by hydrogen to elemental nickel at said hydrogenation conditions, and mixtures thereof; in a diluent consisting essentially of at least one component selected from the group consisting of unsubstituted tertiary alkanols having from 4 to 12 carbon atoms per molecule, unsubstituted acyclic and unsubstituted cyclic ethers having from 4 to 12 carbon atoms per molecule, and saturated hydrocarbons having from 4 to 12 carbon atoms per molecule, said diluent consisting essentially of at least one of said alkanols or said saturated hydrocarbons when said catalyst consists essentially of elemental ruthenium or a ruthenium compound which is reducible by hydrogen to elemental ruthenium at said hydrogenation conditions and consisting essentially of at least one of said alkanols or said ethers when said catalyst consists essentially of elemental nickel or a nickel compound which is reducible by hydrogen to elemental nickel at said hydrogenation conditions; to thereby effect the at least substantially complete hydrogenation of said at least one unsaturated dinitrile compound to the corresponding branched-chain saturated aliphatic diamine.

3,896,175

3,7-DIMETHYL-OCTA-2,6-DIENYL-MERCAPTAN

Daniel Helmlinger, Dubendorf; Dietmar Lamparsky, Wangen-Dubendorf; Peter Schudel, Grut; Jost Wild, Zurich, and Trudi Sigg-Grutter, Winterthur, all of Switzerland, assignors to Givaudan Corporation, Clifton, N.J.

Filed May 8, 1972, Ser. No. 251,060

Claims priority, application Switzerland, Mar. 17, 1972, 7772/71

Int. Cl.^{2} C07c *149/08*

U.S. Cl. 260—609 R **1 Claim**

1. 3,7-Dimethyl-octa-2,6-dienyl-mercaptan.

3,896,176

ORGANIC PEROXIDES DERIVED FROM UNSATURATED COMPOUNDS

Egeo Sacrini, and Claudio Cavallotti, both of Milan, Italy, assignors to The BF Goodrich Company, Akron, Ohio

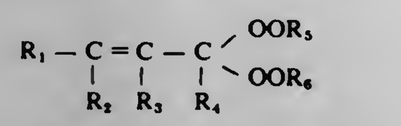
Filed July 8, 1970, Ser. No. 53,267

Claims priority, application Italy, Apr. 11, 1970, 20222/69

Int. Cl. C07c *73/00*

U.S. Cl. 260—610 R **8 Claims**

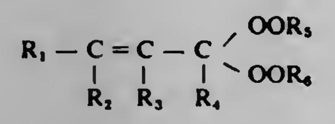
1. An organic peroxide having the formula:



$$R_1-\underset{R_2}{\overset{|}{C}}=\underset{R_3}{\overset{|}{C}}-\underset{R_4}{\overset{|}{C}}\begin{matrix}\diagup OOR_5\\ \diagdown OOR_6\end{matrix}$$

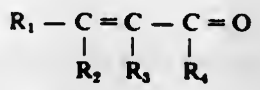
wherein R_1 is selected from the group consisting of cycloalkyl having 5–30 carbon atoms and phenyl; R_2 is selected from the group consisting of hydrogen, alkyl having 1–12 carbon atoms, and phenyl; and R_1 and R_2 together with the carbon atom to which they are bonded may form a cycloaliphatic hydrocarbon ring having 5–30 carbon atoms; R_3 and R_4 are each selected from the group consisting of hydrogen, alkyl having 1–12 carbon atoms, and phenyl; and R_3 and R_4 taken together with the two adjacent carbon atoms to which they are respectively bonded may form a cycloaliphatic hydrocarbon ring having 5–25 carbon atoms; and R_5 and R_6 are each selected from the group consisting of alkyl having 4–12 carbon atoms, phenylalkyl having 9–18 carbon atoms, cycloalkyl having 5–21 carbon atoms, and phenyl cycloalkyl having 9–25 carbon atoms.

3. A process for the preparation of an organic peroxide having the formula:



$$R_1-\underset{R_2}{\overset{|}{C}}=\underset{R_3}{\overset{|}{C}}-\underset{R_4}{\overset{|}{C}}\begin{matrix}\diagup OOR_5\\ \diagdown OOR_6\end{matrix}$$

wherein R_1 is selected from the group consisting of cycloalkyl having 5–30 carbon atoms and phenyl; R_2 is selected from the group consisting of hydrogen, alkyl having 1–12 carbon atoms, and phenyl; and R_1 and R_2 together with the carbon atom to which they are bonded may form a cycloaliphatic hydrocarbon ring having 5–30 carbon atoms; R_3 and R_4 are each selected from the group consisting of hydrogen, alkyl having 1–12 carbon atoms, and phenyl; and R_3 and R_4 taken together with the two adjacent carbon atoms to which they are respectively bonded may form a cycloaliphatic hydrocarbon ring having 5–25 carbon atoms; and R_5 and R_6 are each selected from the group consisting of alkyl having 4–12 carbon atoms, phenylalkyl having 9–18 carbon atoms, cycloalkyl having 5–21 carbon atoms and phenylcycloalkyl having 9–25 carbon atoms, this process comprising reacting a hydroperoxide selected from the group consisting of R_5OOH and R_6OOH, wherein R_5 and R_6 are as defined above, with an unsaturated carbonyl compound having the formula:



$$R_1-\underset{R_2}{\overset{|}{C}}=\underset{R_3}{\overset{|}{C}}-\underset{R_4}{\overset{|}{C}}=O$$

wherein R_1, R_2, R_3, R_4 are as defined above dissolved in a solvent in the presence of a sulfonic acid catalyst at a temperature between about −30° and +80°C, the molar ratio of said carbonyl compound to said hydroperoxide being between about 1:2 and 1:10.

3,896,177

1-CHLORO-1-HYDROPERFLUOROPROPYL DIFLUOROMETHYL ETHER

Ross C. Terrell, Plainfield, N.J., assignor to Airco, Inc., Montvale, N.J.

Division of Ser. No. 187,582, Oct. 7, 1971, Pat. No. 3,784,706. This application Aug. 10, 1973, Ser. No. 387,563

Int. Cl. C07c *43/00*

U.S. Cl. 260—614 F **1 Claim**

1. l-chloro-l-hydroperfluoropropyl difluoromethyl ether of the formula

$$CF_3—CF_2—CHCl—O—CHF_2.$$

3,896,178

INHALANT ANESTHETIC COMPOSITIONS AND METHOD

Ross C. Terrell, Plainfield, N.J., assignor to Airco, Inc., Montvale, N.J.

Division of Ser. No. 159,512, July 2, 1971, Pat. No. 3,769,433. This application July 18, 1973, Ser. No. 380,419

Int. Cl. C07c *43/00, 43/12*

U.S. Cl. 260—614 F **3 Claims**

1. The compounds of the formula:

$$CHF_2CHX—O—CHF_2$$

wherein X is hydrogen or chlorine.

3,896,179

DECOMPOSITION OF UNSTABLE ISOMERS

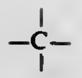
Paul Raphael Resnick, Wilmington, Del., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.

Continuation-in-part of Ser. No. 44,111, June 8, 1970, abandoned. This application Apr. 23, 1973, Ser. No. 353,882

Int. Cl. C07c *41/12*

U.S. Cl. 260—616 **4 Claims**

1. Process for preparing substantially pure primary isomer from a mixture of primary and secondary and/or tertiary isomers wherein said isomers are represented by the formula $ROCF{=}CF_2$ where R is a perfluorinated alkyl radical having 3 to 7 carbon atoms, and wherein the primary isomer is one in which the $—OCF{=}CF_2$ is connected to a $>CF_2$ group in R, the secondary isomer is one in which the $—OCF{=}CF_2$ is connected to a $>CF$ group in R and the tertiary isomer is one in which the $—OCF{=}CF_2$ is connected to a



$$—\overset{|}{\underset{|}{C}}—$$

carbon bearing no fluorine atoms, which comprises heating a mixture consisting essentially of said isomers in which the combined concentration of secondary and/or tertiary isomers present is at least 0.6 percent and less than 16.7 percent by weight of the mixture at a temperature of between 250° and 350°C. for a time sufficient to selectively destroy the secondary and/or tertiary isomers until the combined concentration of the secondary and/or tertiary isomers is below 0.6 percent by weight of the mixture.

3,896,180

CYCLODODECADIENEOLS AND THEIR PREPARATION

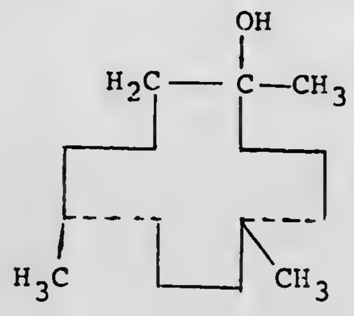
Seymour Lemberg, Elizabeth, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 551,675, May 20, 1966, abandoned. This application Feb. 27, 1974, Ser. No. 446,143

Int. Cl. C07c *35/02*

U.S. Cl. 260—617 M **3 Claims**

1. Compounds of the formula



wherein the dashed lines represent single or double bonds.

3. A method of preparing 1,5,9-trimethylcyclododeca-4,8-dien-1-ol which comprises the step of reacting 1,5,9-trimethylcyclododecatriene-1,5,9 with an organic percarboxylic acid under anhydrous conditions in the presence of an alkaline reagent to form 1,5,9-trimethyl-13-oxabicyclo[10.1.0]-trideca-4,8-diene and reducing said trideca-4,8-diene compound with an alkalli metal hydride to form 1,5,9-trimethylcyclododeca-4,8-dien-1-ol.

3,896,181

PROCESS FOR PRODUCING CHLOROPRENE

Peter John Nicholas Brown, Epsom, and Clifford William Capp, Ewell, both of England, assignors to BP Chemicals International Limited, London, England

Filed Oct. 11, 1973, Ser. No. 405,324

Claims priority, application United Kingdom, Oct. 26, 1972, 49350/72

Int. Cl. C07c *17/34, 21/20*

U.S. Cl. 260—655 **10 Claims**

1. A process for producing chloroprene comprising dehydrochlorinating 3,4-dichlorobutene-1 in a substantially non-aqueous environment by contact with a metal alkoxide wherein the alcohol moiety in the alkoxide has between 3 and 20 carbon atoms.

3,896,182

PROCESS FOR PREPARING VINYL CHLORIDE BY THE PYROLYSIS OF 1,2-DICHLORO-ETHANE

Donald Peter Young, South Croydon, England, assignor to BP Chemicals Limited, London, England

Continuation of Ser. No. 160,172, July 6, 1971, abandoned. This application Sept. 27, 1973, Ser. No. 401,394

Int. Cl. C07c *21/02*

U.S. Cl. 260—656 R **3 Claims**

1. A process for the production of vinyl chloride comprising substantially removing oxygen from 1,2-dichloroethane and the reaction system so that said reaction system contains no more than 2.0 parts per million of oxygen and pyrolysing said 1,2-dichloroethane at elevated temperatures in the range of about 250° to 600°C.

3,896,183

PROCESS FOR THE LIQUID PHASE CHLORINATION OF C6–C18 ALPHA-OLEFIN HYDROCARBONS

Albert J. Henderson, Corapolis, and John E. Krol, Moon Twp., both of Pa., assignors to Neville Chemical Company, Pittsburgh, Pa.

Filed Mar. 11, 1974, Ser. No. 449,756

Int. Cl. C07c *17/06*

U.S. Cl. 260—660 **15 Claims**

1. An improved process for the production of chlorinated hydrocarbons containing about 20 to 73 percent chlorine by weight comprising chlorinating in the absence of a Lewis acid catalyst a hydrocarbon mixture which is a liquid at room temperature containing on the average 6 to 18 carbon atoms per molecule and consisting mainly of normal alpha-olefins while present in the liquid state at a temperature of about 25° to 120°C. in a reaction zone wherein a gaseous mixture comprising a minor proportion of hydrocarbon vapor and gaseous chlorine exists in contact with said liquid hydrocarbon during at least a portion of the chlorination reaction while providing in said reaction zone about 2 to 20 percent by weight based upon the weight of said hydrocarbon mixture of an additive selected from the group consisting of carbon tetrachloride, chloroform, ethylene dichloride, 1,1,1-trichloroethane, 1,1,2-trichloroethane, and perchloroethane and with no solvent for said hydrocarbon mixture being present in said reaction zone other than said minor concentration of said additive which primarily serves a role other than a solvent and which is at least partially volatilized and present in said gaseous mixture in contact with said liquid hydrocarbon where it serves to eliminate an undesirable reaction between said hydrocarbon vapor and said gaseous chlorine thereby improving the quality of the resulting chlorinated hydrocarbon product, and thereafter substantially removing said additive from said chlorinated hydrocarbon product.

3,896,184

POLYMERS OF BENZANTHRACENE AS ACTIVE MATRIX MATERIALS

John Alf Bergfjord, Macedon; Richard William Radler, Marion, and Richard Phillip Millonzi, Macedon, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed June 27, 1973, Ser. No. 374,163

Int. Cl. C07c *15/20*

U.S. Cl. 260—669 QZ **10 Claims**

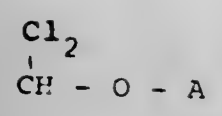
1. A process for producing a vinyl substitued aromatic polycyclic compound of the formula

$$Q — CH = CH_2$$

comprising contacting a corresponding reactant represented by the formula:

$$Q — H$$

with at least a molar amount of a haloalkyl ether of the formula



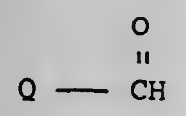
$$\overset{Cl_2}{CH} - O - A$$

in the presence of a catalytic amount of $SnCl_4$ or $TiCl_4$

wherein Q is defined as a polycyclic group having at least 4 fused ring nuclei; and

A is individually defined as an alkyl group;

to obtain a corresponding polycyclic aldehyde intermediate represented by the formula



$$Q — \overset{\overset{O}{\|}}{CH}$$

and then contacting the aldehyde intermediate with a reactive amount of a phosphine compound represented by the formulae

$$(Y)_3 - P = CH_2 \qquad (Y)_3P^{(+)}—CH_2^{(-)}$$

in which Y is defined as a phenyl or an alkyl group; to obtain the corresponding vinyl substituted polycyclic compound.

3,896,185
FLAME RESISTANT MOLDING RESIN COMPOSITION

Eiichi Yonemitsu, Chiba; Seiichi Kamiyama; Toshiaki Kanada, and Norio Nagai, all of Tokyo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 382,122, July 24, 1973, abandoned. This application Feb. 19, 1974, Ser. No. 443,244

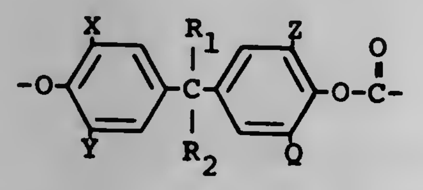
Claims priority, application Japan, July 29, 1972, 47-755-36

Int. Cl. C08g *39/10*

U.S. Cl. 260—873 **6 Claims**

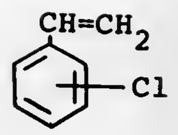
1. A resin composition high in flame resistance and excellent in mechanical properties and moldability comprising:

A. a polycarbonate resin having repeating units represented by the formula,



wherein X, Y, Z and Q are individually one member selected from hydrogen, chlorine and bromine atoms, provided that not all of them are hydrogen atoms at the same time, and that in case one of the substituents X to Q is a chlorine or bromine atoms, the other 3 substituents are not bromine or chlorine atoms; and R_1 and R_2, which be the same or different, are individually a hydrogen atom or an alkyl group having 5 or less carbon atoms, and having an intrinsic viscosity in the range from 0.40 to 1.0 in methylene chloride at 20°C, and

B. a rubber-modified nucleus-chlorinated styrene resin having repeating units derived from a nucleus-chlorinated styrene represented by the formula



and repeating units derived from a member selected from the group consisting of a vinyl cyanide and a methacrylic acid ester of an alkyl alcohol having at most 12 carbon atoms, which has been modified with a rubbery polymer derived from a conjugated diene monomer selected from the group consisting of butadiene and isoprene, wherein comprising 90 to 20 percent by weight of said polycarbonate resin and 10 to 80 percent by weight of said rubber-modified nucleus-chlorinated styrene resin.

3,896,186
CYCLIC O,O,S-TRIESTERS OF PHOSPHORODITHIOIC ACID

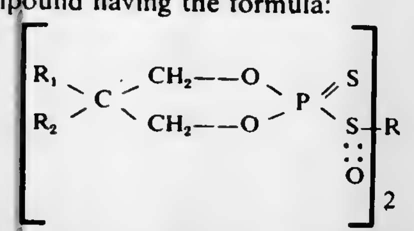
Walter Nudenberg, Newtown, Conn.; Merlin P. Harvey, Denison, Iowa, and James Urquhart Mann, Wayne, N.J., assignors to Uniroyal, Inc., New York, N.Y.

Division of Ser. No. 282,640, Aug. 21, 1972, which is a division of Ser. No. 66,870, Aug. 25, 1970, Pat. No. 3,712,878. This application July 17, 1974, Ser. No. 489,220

Int. Cl. C07d *105/04*

U.S. Cl. 260—927 R **3 Claims**

1. A compound having the formula:



wherein R_1 and R_2 are C_1 to C_5 alkyl groups which can be the same or different; the O portion represents the optional presence of an oxygen atom; and R is 2,5-norbornylene.

3,896,187
POLY(HALOETHYL-ETHYLENEOXY) PHOSPHORIC ACID ESTER POLYMERS

Edward D. Weil, Hastings-on-Hudson, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 164,928, July 21, 1971, abandoned, which is a continuation of Ser. No. 760,988, Sept. 19, 1968, abandoned. This application Oct. 25, 1973, Ser. No. 409,486

Int. Cl. C07f *9/08*

U.S. Cl. 260—928 **2 Claims**

1. Liquid poly(chloroethylethyleneoxy) phosphoric acid esters which are prepared by reacting tris(2-chloroethyl) phosphate by heating said phosphate to a temperature within the range of from about 140° to about 220°C. in the presence of a basic catalyst with ethylene dichloride as reaction byproduct; and terminating said reaction at a reaction byproduct level of ethylene dichloride in an amount of from about 0.5 mole to about 0.9 mole ethylene dichloride per mole of tris(2-chloroethyl) phosphate in said reaction.

2. The product of claim 1 which further includes the step of post treating the reaction product with an alkylene oxide to neutralize the acidity in said product.

3,896,188
N-CYANOPHOSPHORUS IMIDES

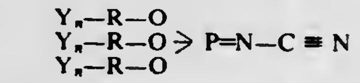
Ronald A. Mitsch, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 202,667, Nov. 26, 1971, Pat. No. 3,776,950, which is a continuation-in-part of Ser. No. 808,656, March 19, 1969, abandoned, which is a continuation-in-part of Ser. No. 482,585, Aug. 25, 1965, abandoned. This application Dec. 3, 1973, Ser. No. 421,356

Int. Cl. C07f *9/02*

U.S. Cl. 260—940 **11 Claims**

1. Compounds having the formula



$$\left.\begin{array}{l} Y_n—R—O \\ Y_n—R—O \\ Y_n—R—O \end{array}\right\rangle P{=}N—C \equiv N$$

wherein each R is alkyl having 1 to 16 carbon atoms, alkenyl having two to 6 carbon atoms, aryl having 6–14 carbon atoms, alkaryl having 7–12 carbon atoms, aralkyl having 7 to 15 carbon atoms or cycloalkyl having 3–6 carbon atoms; Y is halogen, nitro, cyano, carbonyl, acyl, carboalkoxy, hydroxy and alkoxy; *n* is zero to 3, provided that when R is methyl, *n* is zero or one and when R is alkenyl, *n* is 0; and two of said R-O-groups when alkyl, alkoxy, alkylmercapto or alkoxy-alkyl when taken together with each other and the phosphorus atom can form a 5 to 6 membered ring system having a total of up to 12 carbon atoms; of which 4 carbon atoms can form part of an aromatic ring fused to the said 5–6 membered ring.

3,896,189
S-(2-METHOXYIMINOETHYL) O-ETHYL-N-ISOPROPYLTHIOLO-PHOSPHORAMIDATE

Leonard J. Stach, Riverside, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Filed Sept. 5, 1972, Ser. No. 286,486

Int. Cl. C07f *9/24;* **A01n** *9/36*

U.S. Cl. 260—944 **1 Claim**

1. The compound S-(2-methoxyiminoethyl) O-ethyl N-isopropylthiolophosphoramidate.

3,896,190
SULFUROUS PHOSPHORIC AND PHOSPHONIC ESTERS

Peter Beutel, Mannheim; Heinrich Adolphi, Limburgerhof, and Karl Kiehs, Lampertheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

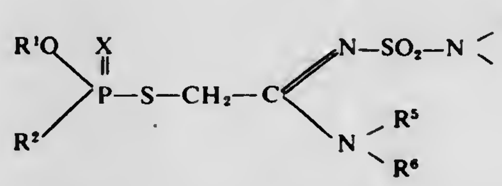
Filed Oct. 10, 1973, Ser. No. 405,157

Claims priority, application Germany, Oct. 12, 1972, 2249939

Int. Cl. C07f *9/16, 9/38;* **A01n** *9/36*

U.S. Cl. 260—945 **2 Claims**

1. A phosphoric ester of the formula



where R^1 denotes methyl or ethyl, R^2 denotes methyl, ethyl, phenyl, methoxy or ethoxy, R^3 denotes alkyl of a maximum of 3 carbon atoms, R^4 denotes hydrogen or alkyl of a maximum of 3 carbon atoms, R^5 denotes alkyl of a maximum of 3 carbon atoms, R^6 denotes methyl, ethyl or phenyl, and X denotes oxygen or sulfur.

3,896,191
O-ETHYL-S-N-PROPYL-O-(2,6-DICHLORO-4-BROMO-PHENYL)PHOSPHOROTHIOLATE

Jozef Drabek, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

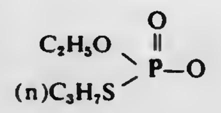
Filed Dec. 20, 1973, Ser. No. 426,777

Claims priority, application Switzerland, Dec. 22, 1972, 18732/72

Int. Cl. A01n *9/36;* **C07f** *9/18*

U.S. Cl. 260—964 **1 Claim**

1. Compound of the formula



3,896,192
PROCESS FOR THE PREPARATION OF THIONOPHOSPHORIC AND THIONOPHOSPHONIC ACID ESTERS

Richard Sehring, and Wolfgang Buck, both of Ingelheim, Rhein am Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

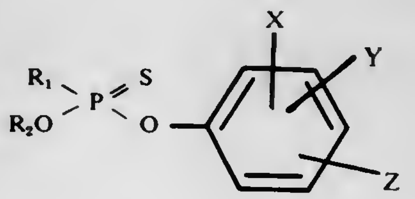
Continuation-in-part of Ser. No. 329,463, Feb. 5, 1973, abandoned. This application Aug. 2, 1973, Ser. No. 385,065

Claims priority, application Germany, Feb. 7, 1972, 2205565; May 9, 1972, 2222578

Int. Cl.² C07F *9/165, 9/40*

U.S. Cl. 260—982 **5 Claims**

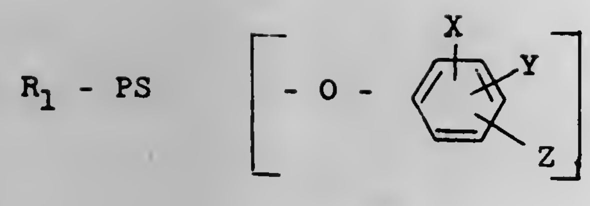
1. A process for the preparation of a compound of the formula



wherein

- R_1 is lower alkyl, chloro-lower alkyl, phenyl, halophenyl, lower alkyl-phenyl or R—O—,
  - where R is alkyl of 1 to 12 carbon atoms, alkoxyalkyl of 2 to 12 carbon atoms, alkenyl of 3 to 12 carbon atoms, or (alkyl of 1 to 12 carbon atoms)—COOR′, where R′ is lower alkyl,
- R_2 is lower alkyl,
- X and Y, which may be identical or different from each other, are each hydrogen, chlorine, bromine, iodine, lower alkyl or nitro, and
- Z is hydrogen, chlorine, bromine, iodine, lower alkyl, nitro, cyano, acetyl or $—S(O)_n—R''$, where R″ is lower alkyl and *n* is 0, 1 or 2,

which comprises subjecting a thionophosphoric or thionophosphoric acid diphenyl ester of the formula

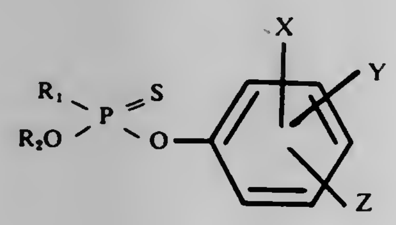


wherein R_1, X, Y and Z have the meanings previously defined, to an ester exchange reaction at room temperature or below with a lower alkanol of the formula

$$R_2OH$$

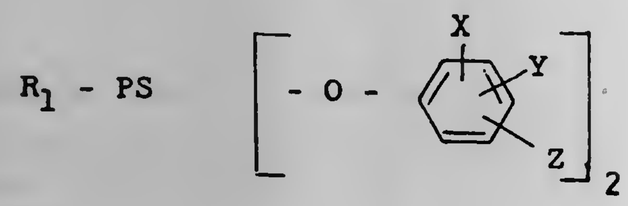
wherein R_2 has the meanings defined above, in the presence of an equimolar amount of a base selected from the group consisting of alkali metal alcoholate of said lower alkanol, alkali metal hydroxides and tertiary amines.

4. In a process for the preparation of a compound of the formula



wherein
- R_1 is lower alkyl, chloro-lower alkyl, phenyl, halophenyl, lower alkyl-phenyl or R-O,
  - where R is alkyl of 1 to 12 carbon atoms, alkoxyalkyl of 2 to 12 carbon atoms, alkenyl of 3 to 12 carbon atoms, or (alkyl of 1 to 12 carbon atoms)—COOR′, where R′ is lower alkyl,
- R_2 is lower alkyl,
- X and Y, which may be identical or different from each other, are each hydrogen, chlorine, bromine, iodine, lower alkyl or nitro, and
- Z is hydrogen, chlorine, bromine, iodine, lower alkyl, nitro, cyano, acetyl or $—S(O)_n—R''$, where R″ is lower alkyl and *n* is 0, 1 or 2,

which comprises subjecting a thionophosphoric or thionophosphoric acid diphenyl ester of the formula



wherein R_1, X, Y and Z have the meanings previously defined, to an ester exchange reaction with a lower alkanol of the formula

$$R_2OH$$

wherein R_2 has the meanings defined above, the improvement which consists in performing the transesterification at −20° to +100°C in the presence of gaseous ammonia.

3,896,193

PROCESS FOR PREPARING N-ACTYL-O-HYDROCARBYLPHOSPHOROAMIDOTHIOATE METAL SALTS

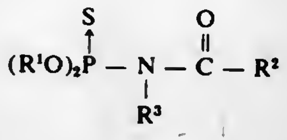
Hans G. Franke, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 317,479, Dec. 21, 1972, Pat. No. 3,832,425. This application June 17, 1974, Ser. No. 479,970

Int. Cl.² C07F *9/24*

U.S. Cl. 260—987 **9 Claims**

1. A process for preparing S-metal salts of N-acylphosphoroamidothioates which comprises reacting an N-acylphosphoroamidothioate of the formula



$$(R^1O)_2\overset{\overset{S}{\uparrow}}{P} - \underset{\underset{R^3}{|}}{N} - \overset{\overset{O}{\|}}{C} - R^2$$

wherein R^1 individually is alkyl, alkenyl, or alkynyl of up to 6 carbon atoms, R^2 has up to 18 carbon atoms and is hydrogen, alkyl, alkenyl, phenyl, aralkyl or alkaryl substituted with up to 3 fluorine, chlorine or bromine atoms or with up to 1 alkoxy or alkylthio of 1 to 4 carbon atoms, and R^3 is hydrogen or alkyl of 1 to 6 carbon atoms, with an alkali or alkaline earth metal sulfide or polysulfide and from 0.2 mol to 5 mols of sulfur per mol of sulfide or polysulfide, in liquid phase at a temperature of about 10°C to 125°C.

3,896,194

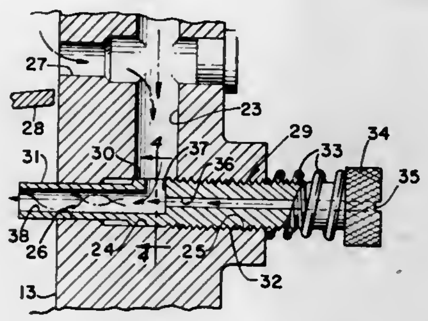
CARBURETOR IDLE CONTROL MEANS

Frank T. Martin, 925 Majorca Ave., Coral Gables, Fla. 33134

Filed June 6, 1974, Ser. No. 477,317

Int. Cl. F02m *3/08*

U.S. Cl. 261—41 D **7 Claims**



1. In a carburetor having a side wall defining an air horn and a throttle bore in communication with the air horn, a throttle valve in the throttle bore for controlling flow of air and fuel therethrough, said side wall having a radial bore therethrough spaced below the throttle valve and including an inner end portion defining an idle fuel discharge port opening into the throttle bore, an idle fuel supply passage means in communication at one end with a fuel supply and in communication at the other end with the radial bore, the improvement comprising an elongage idle mixture control screw extended completely through the radial bore in the side wall of the carburetor and having a screw threaded outer end portion threadably engaged in said radial bore and extending outside the carburetor and having a smooth, cylindrical inner end portion sealingly and slidably engaged in and extended through the idle fuel discharge port and into the throttle bore of the carburetor and precluding flow of fuel through said discharge port around said screw, said screw having an axial passage therethrough opening through the opposite ends thereof and a radial passage communicating at its inner end with the axial passage and at its outer end with the idle fuel supply passage means, so that air is drawn from atmosphere into the axial passage and fuel is drawn through the radial passage into the axial passage and is mixed with air therein, said air-fuel mixture discharged

through said inner end of the screw into the throttle bore of the carburetor spaced from the side wall thereof for thorough mixing and atomization of the fuel and air and thus resulting in more efficient operation and reduced fuel consumption and less air pollution.

3,896,195

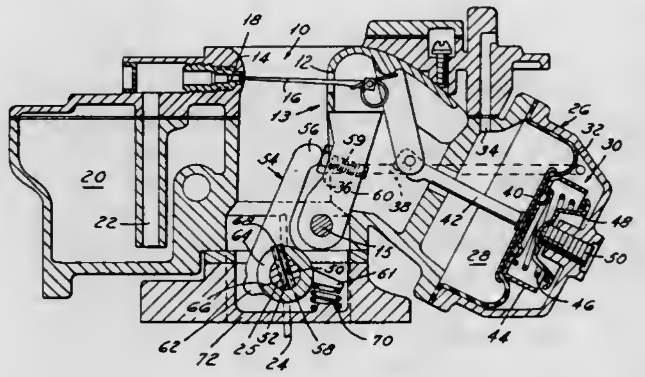
ACCELERATION RESPONSIVE SUPPLEMENTAL FUEL SUPPLY FOR VARIABLE AREA VENTURI CARBURETOR

Robert S. Harrison, Grosee Ile, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 26, 1973, Ser. No. 428,525

Int. Cl. F02m *9/06*

U.S. Cl. 261—44 R **1 Claim**



1. A carburetor variable venturi control device for use with a carburetor having an induction passage open to air essentially at atmospheric pressure at one end and adapted to be connected to an internal combustion engine intake manifold at the opposite end, the induction passage containing a movable variable area venturi, defined by at least one movable partial venturi-shaped wall cooperating with a number of matingly venturi-shaped stationary walls together defining a venturi, the movable wall being movable to vary the cross-sectional area of the venturi, a variable area fuel port adjacent the venturi whereby fuel is inducted into the passage during airflow through the venturi, tapered fuel metering means secured to the movable wall and cooperating with the fuel port to vary the fuel port area as a function of the change in venturi area to change fuel flow concurrent with airflow capacity changes, a throttle valve mounted for a rotative movement across the passage between closed and fully open positions to control airflow capacity through the passage, control means to simultaneously vary the area of the venturi and the fuel port to vary both airflow and fuel flow, including vacuum servo means operably connected to the venturi movable wall to move the same and responsive to rises in carburetor venturi-like vacuum acting thereon for enlarging the venturi and fuel port, and other means operable in response to a predetermined movement of the throttle valve to increase fuel flow by overriding the action of the venturi-like vacuum servo means and mechanically moving the venturi movable wall to a larger venturi area position than the position to which the venturi movable wall normally would be moved by the level of venturi-like vacuum acting on the servo means, to increase fuel flow and airflow capacity beyond the level that would be provided by movement of the wall by the level of venturi-like vacuum prevalent for the same position of the throttle valve and engine speed and load conditions, the other means comprising a lever rotatably mounted on the throttle valve with a lost motion connection therebetween, the lever being operably engagable with the venturi wall to move the same after a predetermined initial opening movement of the throttle valve, the lost motion connection including a shaft mounting the throttle valve, pin means projecting from the shaft, the lever having an abutment portion in the path of opening throttle valve movement of the pin means to be engaged by the second means, the portion being spaced from the pin means in the closed position of the throttle valve, and spring means biasing the lever abutment portion towards the pin means away from the venturi movable portion.

3,896,196

METHOD OF PRODUCING SPHERICAL THERMOPLASTIC PARTICLES

Clarence A. Dickey, Atlanta, and John E. McDaniel, Fairburn, both of Ga., assignors to Glasrock Products, Inc., Atlanta, Ga.

Filed Feb. 27, 1973, Ser. No. 336,179

Int. Cl. B29d *27/00*

U.S. Cl. 264—6 **7 Claims**

1. A process for the manufacture of a porous thermoplastic product comprising:
- a. mixing thermoplastic polymer particles in a liquid medium at a first temperature to form a stable suspension;
- b. breaking said suspension into droplets;
- c. passing said droplets through a heating zone wherein said droplets are heated to a second temperature sufficient to at least partially solubilize said thermoplastic and to evaporate said liquid medium from said droplets, said droplets being converted into spheres by surface tension, and wherein said spheres are subsequently solidified;
- d. collecting said solidified spheres; and
- e. molding said collected solid spheres at a temperature sufficient to sinter said spheres thereby forming said spheres into a unitary porous structure, said porous structure being defined by the interstices between said sintered spheres.

3,896,197

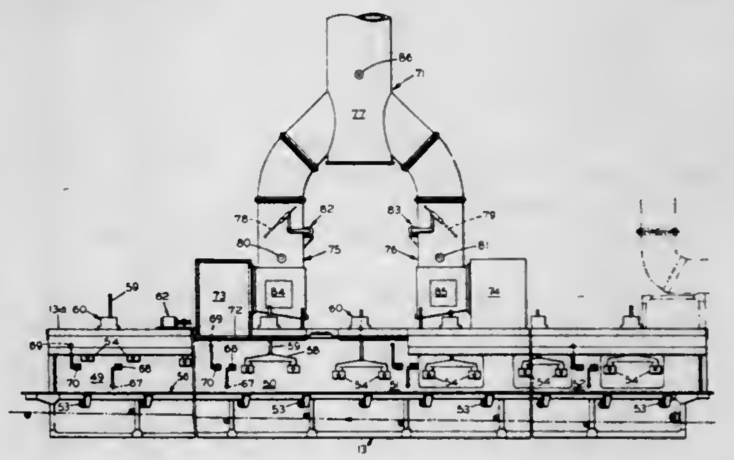
METHOD OF MAKING SYNTHETIC RESIN SURFACE COVERING INCLUDING USE OF TWO HEAT TRANSFER MODES

John Francis Gillespie, Corona del Mar, Calif., assignor to Saguaro Industries, Inc., Kingman, Ariz.

Filed Sept. 1, 1972, Ser. No. 285,844

Int. Cl. B29d *7/00*

U.S. Cl. 264—40 **6 Claims**



1. In a method for manufacturing fabricless vinyl resin carpeting and the like, the steps comprising:
- a. disposing a predetermined quantity of a fusible synthetic resin on a moving carrier and moving said carrier with said resin thereon through a series of heating zones, each

of said zones being individually controlled to successively increase the temperature of said resin from that in the preceeding zone;

b. progressively heating said quantity of fusible synthetic resin in each of said successive zones to ultimately raise it to the fusion temperature and cause said quantity of fusible synthetic resin to fuse prior to discharge from the last of said series of heating zones;

c. individually sensing and controlling at least two temperatures in each of said successive zones so as to effect complete fusion of said resin without excessive heating thereof by:
  1. predetermining the temperatures to be attained at, at least, two points in each of said successive zones to successively increase the temperature of the resin to the desired fusion temperature for said resin prior to discharge from the last of said series of heating zones, one of said temperatures being measured adjacent said resin and another temperature being that of the atmosphere in said zone measured at a point remote from said resin;
  2. sensing deviations in the temperature at each of said points of each of said zones as compared to said predetermined temperature for that point of that zone;
  3. automatically adjusting the heat supplied in a zone to compensate for the deviation sensed in the temperature at a point to adjust the temperature to the predetermined temperature for that point; and

d. embossing said quantity of fusible synthetic resin after fusing to provide at least one external surface thereof with a design pattern.

3,896,198

PROCESS FOR PRODUCING A FOAMED POLYOLEFIN INSULATED CONDUCTOR

Atushi Utumi; Yasuaki Fujiwara; Akira Asai, all of Hyogo, and Masao Jitsukawa, Saitama, all of Japan, assignors to Dainichi Nippon Cable Co., Ltd., Amagasaki, Japan

Filed Jan. 31, 1973, Ser. No. 328,162

Claims priority, application Japan, Jan. 31, 1972, 47-11731

Int. Cl. B29d *27/00;* **B29f** *3/10*

U.S. Cl. 264—45.9 **13 Claims**

1. A process for producing a foamed polyolefin insulated conductor having a insulation wall thickness of 0.08–0.5 mm by extruding an expandable polyolefin melt, wherein the polyolefin has a melt index of 0.1 to 2.0 10 g/min, containing a chemical blowing agent onto a conductor having an outer diameter of 0.32–1.20 mm comprising:

a. adding an organic softening agent having a viscosity lower than 10^4 c.st. at 20°C and a boiling point of 150°–400°C to the polyolefin melt in an extruder in an amount satisfying the following formula:

$$5 \leqq X, \text{ and } -10\log_{10}(MI) \leqq X \leqq -10\log_{10}(MI) + 30$$

wherein X is the percent by weight of the softening agent based on the weight of polyolefin melt and MI is the melt index of the polyolefin;

b. mixing said polyolefin melt and said softening agent in the extruder;

c. extruding the polyolefin melt containing the softening agent onto the conductor to make a foamed layer around it, said conductor, prior to being introduced into the crosshead of the extruder, having been heated up to the temperature Tc(°C) satisfying the following formula:

$$-0.4Tr + 160 \leqq Tc \leqq -0.4Tr + 300$$

wherein Tr is the temperature of the polyolefin melt in the crosshead of the extruder; and then

d. initiating the water cooling of the foamed polyolefin layer on the conductor within 2×10^{-2} seconds after the layer leaves the crosshead of the extruder.

3,896,199

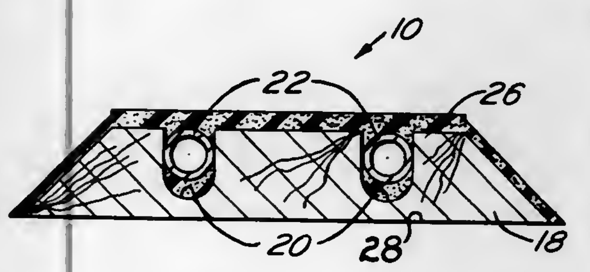
METHOD FOR MAKING SIMULATED WOOD PANEL

David E. Michaelis, Warminster, Pa., assignor to Plastics Development Corporation of America, Philadelphia, Pa.

Filed Sept. 21, 1972, Ser. No. 291,100

Int. Cl. B29d *27/04, 29/02*

U.S. Cl. 264—46.5 **7 Claims**



1. A method for making a simulated wood panel which resists warpage and bending comprising providing a substrate formed of a water absorbing fibrous material, said substrate having at least one elongated groove on one surface thereof for receiving a rigid elongated reinforcing means, inserting a rigid elongated reinforcing means in said groove, placing said substrate in a mold having a simulated wood grain pattern formed therein and having a quantity of foaming polymer placed therein whereby the expanding polymer anchors said rigid elongated reinforcing means to said substrate and while foaming to a predetermined volume embeds said elongated reinforcing means into said foam and seals said substrate against moisture, while providing the outside surface of said foam polymer with a simulated wood grain finish.

3,896,200

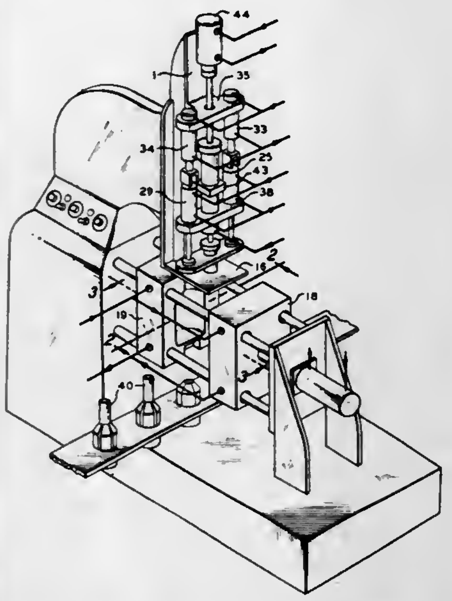
METHOD OF MOLDING BIAXIALLY ORIENTED HOLLOW ARTICLES

Fred E. Wiley, Longmeadow, Mass., and Edward W. Turner, Somers, Conn., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 706,219, Feb. 14, 1968, abandoned, which is a continuation-in-part of Ser. No. 489,934, Sept. 24, 1965, Pat. No. 3,390,426. This application June 11, 1970, Ser. No. 48,846

Int. Cl. B29c *17/07*

U.S. Cl. 264—89 **1 Claim**



1. A method for blow molding a biaxially oriented hollow article comprising: grasping a first end of a preformed hollow parison which has been heated in the solid state to a temperature between 1° and 50° F. below the crystalline melt temperature of the material comprising said parison; applying pressure radially inward from a plurality of directions toward a central point on a second end of said parison so as to effect a seal

without severing said parison at said second end; applying pressure against said thus sealed area from inside said parison; thereafter severing said parison by further application of said inwardly directed pressure; applying axial tension to said parison to stretch said parison; closing a mold cavity around said parison; and creating a pressure differential between the inner portion and outer portion of said parison so that said parison will expand to fill said mold.

3,896,201

METHOD OF PROCESSING RAW MATERIALS FOR THE MANUFACTURE OF GLASS

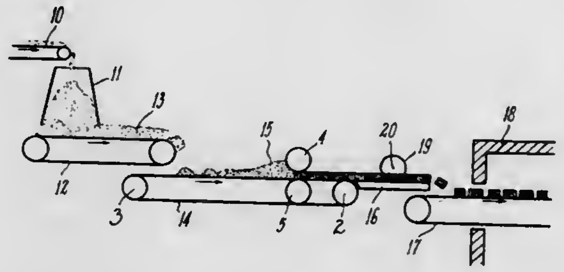
Marcel Mabru, Paris, France, assignor to Saint-Gobain Industries, France

Filed Aug. 14, 1972, Ser. No. 280,324

Claims priority, application France, Aug. 24, 1971, 71.30696

Int. Cl. B01j *2/22*

U.S. Cl. 264—118 **7 Claims**



1. A method of processing vitrifiable powdery raw materials for the manufacture of glass by fusion which comprises:

a. mixing and moistening with water the raw materials,

b. depositing and supporting the mixed and moistened raw materials on a moving support,

c. pressing the mixed and moistened raw materials while on said support into a ribbon of approximately uniform thickness to a degree that the ribbon will break under its own weight when unsupported,

d. transporting the ribbon off of said support to an unsupported condition to cause the ribbon to break into fragments under its own weight, and

e. drying the resultant fragments for subsequent use in a fusion furnace for the manufacture of glass.

3,896,202

MANUFACTURE OF PROTECTIVE FOOTWEAR

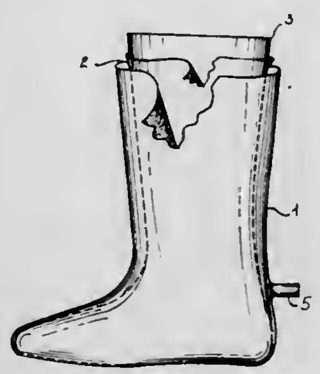
Alfred Palau, 64503 Pontacq, France

Filed May 7, 1973, Ser. No. 357,541

Claims priority, application France, Feb. 12, 1973, 73.004816

Int. Cl.^{2} B29H *7/08*

U.S. Cl. 264—154 **7 Claims**



1. A method of manufacturing a protective sock, the sock including a sectional element of arcuate cross-section which defines an integral tongue, the method including the steps of: installing a sock-like inner liner comprised of a fabric material on a form whereby the inner liner corresponds exactly to the shape of the form;

placing the liner covered form in a mold;

injecting plastic material into the mold around the form and liner;

preventing flow of the injected plastic material into at least a pair of spatially displaced elongated arcuate regions extending from the upper edge of the desired sock to the area of the instep;

permitting the injected material to cure so as to define a molded one piece sock; and

cutting the upper leg portion of the molded sock to the instep along lines defined by the regions from which the injected plastic material has been excluded to define an integral tongue.

3,896,203

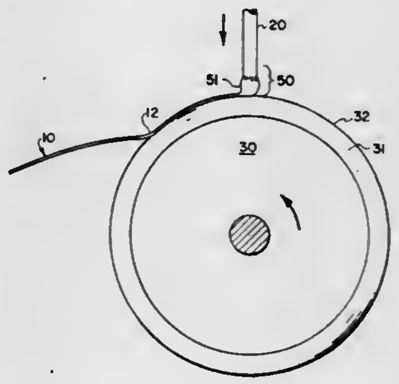
CENTRIFUGAL METHOD OF FORMING FILAMENTS FROM AN UNCONFINED SOURCE OF MOLTEN MATERIAL

Robert E. Maringer, Worthington, and Carroll E. Mobley, Jr., Columbus, both of Ohio, assignors to Battelle Development Corporation, Columbus, Ohio

Filed Apr. 23, 1973, Ser. No. 353,692

Int. Cl. B29c *5/04;* **B22d** *11/06*

U.S. Cl. 264—165 **13 Claims**



1. A method of making filamentary material comprising the steps of:

a. heating a solid material so as to form an adherent pendant drop;

b. rotating a heat-extracting member at a rate so as to yield a velocity on its circumferential edge in excess of 3 feet per second;

c. limiting the area on said edge by constructing said member with at least one circumferential projection; and

d. contacting the surface of said pendant drop of molten material with said edge.

3,896,204

MELT-EXTRUSION OF ACRYLONITRILE POLYMERS INTO FILAMENTS

Albert Goodman, Martinsville, and Mark A. Suwyn, Waynesboro, both of Va., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

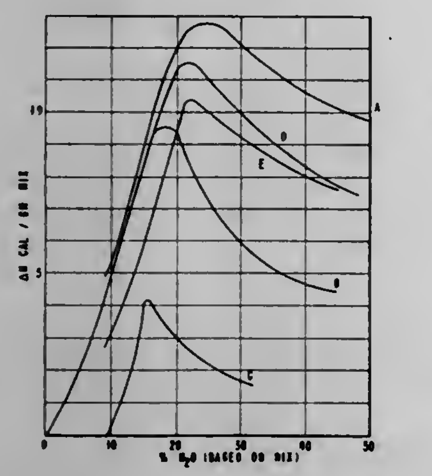
Filed Oct. 2, 1972, Ser. No. 294,186

Int. Cl.^{2} D01F *7/00;* **D01D** *5/04*

U.S. Cl. 264—206 **10 Claims**

1. In the process for preparing acrylonitrile polymer filaments, the improvement for providing better loop tenacities which comprises mixing and heating to form a substantially single phase composition of (a) one or more acrylonitrile polymers which contain at least 40 weight percent acrylonitrile units, (b) about 0.5 to about 10 parts by weight of a compatible solvent per 100 parts by weight of polymer, and (c) an amount of water which is between 45 and 100 percent by weight of the minimum amount required to hydrate all of the nitrile groups present in the polymer, with the proviso that

there is sufficient water to hydrate at least 80 percent of any coupled nitrile groups present; extruding the substantially single phase composition under at least autogenous pressure



to form filaments at a temperature between about 25°C. below and about 10°C. above the temperature of hydrate formation of the polymer; and then processing the filaments in conventional manner.

3,896,205

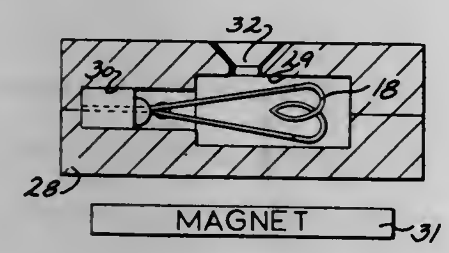
METHOD FOR MAKING TUBULAR FLUIDIC RESISTORS

David C. Broker, and Judith L. Wisniewski, both of Milwaukee, Wis., assignors to Johnson Service Company, Milwaukee, Wis.

Filed June 1, 1970, Ser. No. 41,814

Int. Cl. B28d *3/00*

U.S. Cl. 264—251 **4 Claims**



1. A method of forming a linear fluidic capillary member defining a capillary passageway having a predetermined and accurate length and diameter for insertion of an accurate linear flow resistance in a fluidic circuit, comprising forming of a cavity mold having a cavity wall with a pair of spaced locations corresponding to the opposite ends of the capillary passageway, forming a rod member as a rectilinear member having a length in excess of the length of said capillary passageway, releasably attaching bead members spaced in accordance with the length of said capillary passageways, inserting said rod member with said beam members within the mold cavity with the rod shaped in accordance with said capillary passageway, and with the rod member engaging the cavity wall at said pair of spaced locations in accordance with the opposite ends of the capillary passageway, filling the mold cavity with a molding material to enclose the rod member except at said cavity walls, said rod member and said molding material being selected of non-adhering mediums and said rod member having a rigid and smooth outer peripheral surface, pulling one end of said rod member and thereby removing said rod member to directly define a capillary passageway, and removing said bead members from the molded member to expose the ends of said passageways.

3,896,206

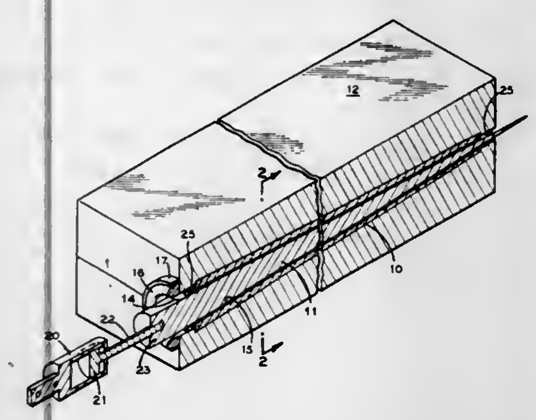
METHOD FOR FORMING AND CURING A FIBER REINFORCED HOLLOW EPOXY SHAFT

Guy Daniel Beaver, Wadsworth; Robert Cleland Young, Louisville, and Donald Theodore Martin, Alliance, all of Ohio, assignors to The Babcock & Wilcox Company, New York, N.Y.

Filed June 25, 1973, Ser. No. 373,206

Int. Cl. B29d *9/04;* **B29g** *1/00*

U.S. Cl. 264—258 **6 Claims**



1. In the method of curing a tapered multilayered fiber reinforced plastic shaft having a tapered mandrel therein wherein the angle of mandrel taper is less than one degree, the intersurface between the exterior of the mandrel and the innermost layer of fiber reinforced plastic having a film of lubricant therebetween, the innermost layer of fiber reinforced plastic having the fibers therein extended beyond the other layers at the end of the shaft adjacent the larger end of the mandrel, the improved method comprising placing the shaft and mandrel in a mold, fixing the extended ends of the fibers of the innermost layer to the mold, heating the mold and the shaft therein to a selected temperature, forcing the tapered mandrel longitudinally into the shaft to exert an outward pressure on the shaft, controlling the longitudinal movement of the mandrel to determine the radial pressure exerted on the shaft, removing the mandrel and shaft from the mold, and removing the mandrel from the shaft.

3,896,207

PROCESS FOR FORMING HOLLOW BODIES OF THERMOPLASTIC MATERIAL

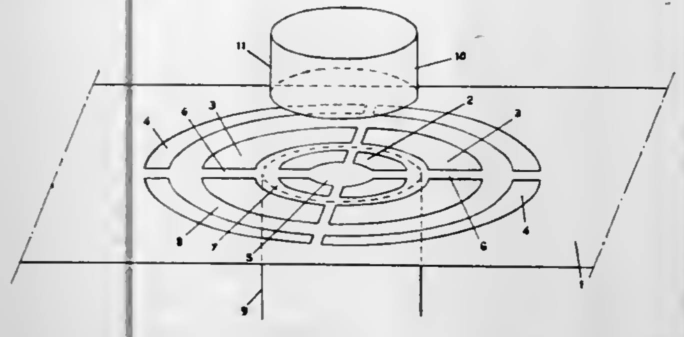
Jean Cospen, Cachan, and Bernard Baumann, Paris, both of France, assignors to Societe de Vente de l'Aluminium Pechiney, Paris, France

Filed Dec. 13, 1973, Ser. No. 426,708

Claims priority, application Luxemburg, Dec. 13, 1972, 66646

Int. Cl. B29b *3/00;* **B29d** *23/13*

U.S. Cl. 264—322 **4 Claims**



1. A process for stamping blanks of thermoplastic material for the formation of hollow bodies of cylindrical shape in which, prior to the stamping stage, the blanks are heated to the pre-fusion point of the thermoplastic material in zones in the form of ring segments which are transformed into quadrilaterals upon stamping, with the portion between said ring segments below the pre-fusion point of the thermoplastic material.

3,896,208

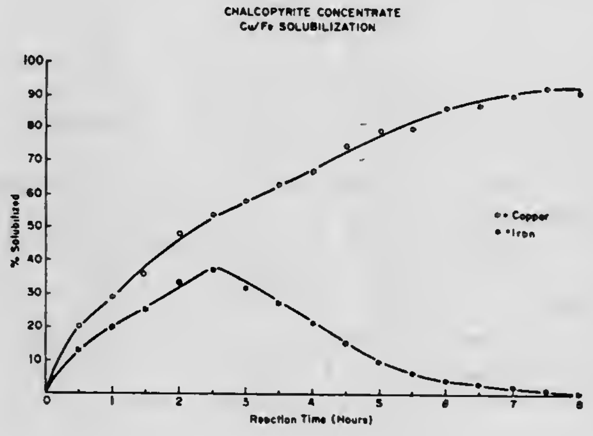
HCL TREATMENT OF COPPER SULFIDE MINERALS

Michael Dubeck, Birmingham, Mich., and Leon Lech, Windsor, Canada, assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 266,475, June 26, 1972, abandoned, which is a continuation-in-part of Ser. No. 255,833, May 22, 1972, abandoned. This application Mar. 29, 1973, Ser. No. 345,847

Int. Cl. C22b *15/08, 11/06*

U.S. Cl. 423—27 **22 Claims**



1. A process for recovering copper from sulfide copper mineral concentrate which comprises

1. treating said concentrate with (a) an acid material selected from the group consisting of hydrochloric acid, hydrogen chloride gas and mixtures thereof, and (b) an oxygen-bearing gas, said treatment being carried out, in an aqueous medium with said concentrate in slurry form, at about atmospheric pressure, at temperatures of from about 75°C. to about 105°C. to solubilize the copper from said concentrate,
2. separating insoluble material from the aqueous system obtained in step (1),

whereby (a) a solution is obtained containing copper as copper chloride, and (b) said insoluble material contains sulfur as free sulfur.

3,896,209

REDUCTION OF HEXAVALENT CHROMIUM

Louis Byron Fournier, and Raymond Alan Meyer, both of Wilmington, Del., assignors to E. I. du Pont de Nemours & Company, Wilmington, Del.

Filed Jan. 22, 1973, Ser. No. 325,623

Int. Cl. C01g *37/02, 37/00*

U.S. Cl. 423—55 **9 Claims**

1. A method for treating an aqueous industrial waste solution containing hexavalent chromium ions to reduce the hexavalent chromium ions to trivalent chromium ions comprising the steps of

a. adjusting and maintaning the pH of the ion solution to a level below 1.5 by the addition as necessary of mineral acid; and
b. slowly adding hydrogen peroxide to the thusly acidified ion solution with continuing agitation to avoid local excesses of the peroxide and to promote an excess of chromate until addition of the peroxide is substantially complete, the amount of hydrogen peroxide added being at least equal to the stoichiometric amount necessary to reduce all of the hexavalent chromium in the ion solution to trivalent chromium.

3,896,210

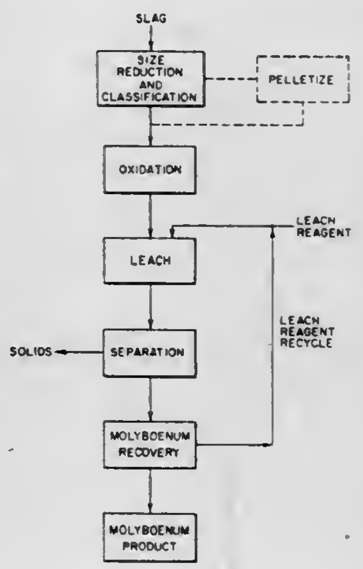
METHOD FOR RECOVERING MOLYBDENUM FROM PARTICULATE SILICATE SLAGS

Paul R. Ammann, Boxford, Mass., assignor to Kennecott Copper Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 316,570, Dec. 19, 1972, abandoned, which is a continuation of Ser. No. 78,777, Oct. 7, 1970, abandoned. This application June 25, 1973, Ser. No. 372,983

Int. Cl. C01g *39/00*

U.S. Cl. 423—56 **17 Claims**



1. A method for recovering molybdenum from ferrosilicate slags containing iron, silica, molybdenum and other non-ferrous metals including a member from the group consisting of: the alkaline earth metals, calcium and magnesium; the alkali metal, sodium; and, mixtures thereof, comprising the steps of:

a. comminuting the slag to produce particulate slag;
b. oxidizing the particulate slag at a temperature between the range of 800°C and 1200°C to convert the particulate ferrosilicate slag into particles containing an iron oxide phase and a silicate phase, the oxidation step also oxidizing the molybdenum in the slag to its highest oxidation state so that molybdenum complexes with the alkali and alkaline earth metals in the slag to form stable molybdates that remain with the silicate phase;
c. selectively leaching the molybdenum from the oxidized slag of step (b) to form a molybdenum bearing leach solution; and

recovering molybdenum from the leach solution of step (c).

3,896,211

PURIFICATION OF IRON OXIDES

Yoland Pierre Paul Mayor, and Pierre Francois Tord, both of Paris, France, assignors to Harle & Lechopiez, Paris, France

Continuation of Ser. No. 763,785, Sept. 30, 1968, abandoned. This application Feb. 5, 1973, Ser. No. 329,460

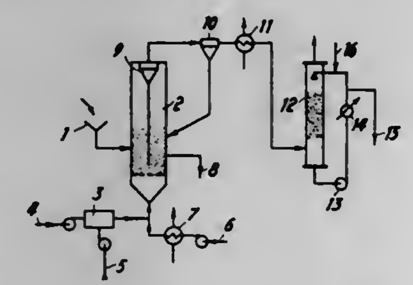
Claims priority, application France, Oct. 2, 1967, 67.123049; Jan. 3, 1968, 68.134647

Int. Cl. C01g *49/02;* **C21b** *1/04;* **C22b** *11/06*

U.S. Cl. 423—138 **6 Claims**

1. A method for the purification of iron oxides containing non-ferrous metals impurities consisting essentially of intimately contacting said oxides in a reaction zone at a temperature of about 550° – 700°C with a vapor mixture of a halohydric gas in the presence of 0.5 to 10 parts by weight of steam per each part by weight of halohydric gas, whereby halides of non-ferrous metal impurities are formed and vaporized, leav-

ing iron oxide as a solid phase, carrying off said vaporized halides out of said reaction zone by means of a current of a hot



carrier gas flowing through said reaction zone, and recovering purified iron oxodes from said reaction zone.

3,896,212

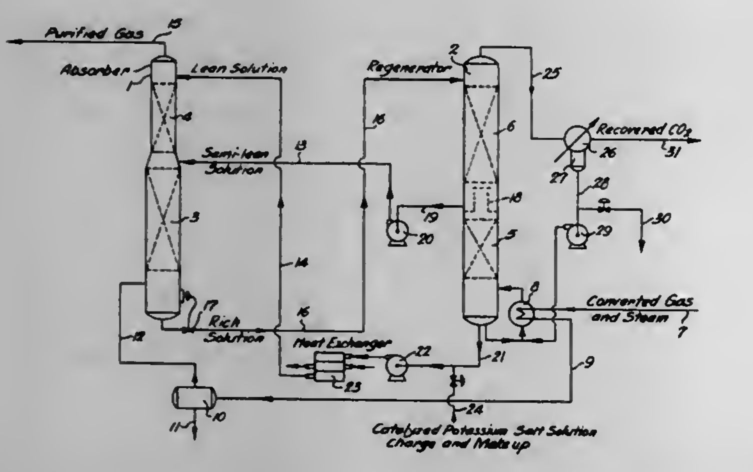
METHOD AND COMPOSITIONS FOR REMOVING ACID GASES FROM GASEOUS MIXTURES AND REDUCING CORROSION OF FERROUS SURFACE AREAS IN GAS PURIFICATION SYSTEMS

Allen G. Eickmeyer, 7204 Cherokee Dr., Prairie Village, Kans. 66208

Continuation of Ser. No. 22,505, March 25, 1970, which is a continuation-in-part of Ser. No. 523,926, Feb. 1, 1966, abandoned, and a continuation-in-part of Ser. No. 432,334, Feb. 12, 1965, which is a continuation-in-part of Ser. No. 291,532, June 28, 1963, abandoned, which is a continuation-n-part of Ser. No. 231,963, Oct. 22, 1962, abandoned, which is a continuation-in-part of Ser. No. 209,221, July 11, 1962, abandoned. This application Sept. 17, 1973, Ser. No. 398,066

Int. Cl. B01d *53/34*

U,S. Cl. 423—223 **9 Claims**



1. In an absorption-desorption process for removing carbon dioxide from a gaseous mixture containing substantially no oxygen or hydrogen sulfide, wherein said mixture is contacted with an aqueous absorption solution comprising at least one potassium salt selected from the group consisting of potassium carbonate, potassium borate and mixtures thereof, said solution thereafter being regenerated by removing at least a portion of the absorbed carbon dioxide and thence recycled for further absorptive contact with said gaseous mixture, the improvement which comprises:

adding a small amount of a corrosion inhibitor selected from the group consisting of the sodium, potassium and ammonium metavandates and peroxyvanadates to said aqueous absorption solution; and

contacting said absorption solution with a small amount of an oxidizing agent selected from the group consisting of air, oxygen, hydrogen peroxide and the alkali metals dichromates,

said oxidizing agent being present in an amount sufficient to maintain most of said corrosion inhibitor in an oxidized condition.

3,896,213

PROCESS FOR DISPOSING OF OFF-GASES CONTAINING CARBON DIOXIDE AND CHLORINE

Louis C. Hirdler, Lake Charles, La., assignor to Olin Corporation, New Haven, Conn.

Filed July 5, 1973, Ser. No. 376,491

Int. Cl. B01d *53/34;* **C01b ; C07d** *55/36*

U.S. Cl. 423—232 **20 Claims**

1. The process for disposing of off-gases comprised of a gaseous mixture of carbon dioxide and chlorine which comprises reacting said gaseous mixture containing from about 0.1 to about 50 percent by volume of chlorine with an aqueous solution of an alkaline compound selected from the group consisting of alkali metal hydroxides, alkali metal carbonates, alkaline earth metal hydroxides and alkaline earth metal carbonates in the presence of a reducing agent to form a substantially neutral aqueous solution containing an alkaline bicarbonate and an alkaline chloride.

3,896,214

PROCESS FOR REMOVING SULFUR DIOXIDE FROM GASES

Jacques Newman, Houston, Tex., assignor to Thermotics, Inc., Houston, Tex.

Filed Sept. 5, 1972, Ser. No. 286,449

Int. Cl. C01b *17/00*

U.S. Cl. 423—242 **8 Claims**

1. In the process for removing sulfur oxides from gas in which the gas enters a scrubbing system where it contacts a hydroxide solution having a cation capable of forming water-soluble salts when reacted with sulfur oxides, the improvement which comprises

regenerating the hydroxide solution by contacting a solution of the water-soluble salt with an anion exchange resin in the free hydroxyl form whereby hydroxyl radicals of the resin are replaced by the anion of the salt and react with the cation of the salt, thereby at least partially exhausting the resin of hydroxyl ions,

returning the regenerated hydroxide solution to the scrubbing system, and regenerating the exhausted resin by contacting it with a solution of a hydroxide having a cation which forms a salt substantially insoluble in water when reacted with the anion on the exhausted resin, whereby the hydroxyl radicals of the latter hydroxide replace the anions on the resin and the cations of the latter hydroxide react with said anions to form water-insoluble salts.

3,896,215

PROCESS FOR THE REMOVAL OF HYDROGEN SULFIDE FROM A GAS STREAM

Karl Bratzler, Bad Homburg; Alexander Doerges, and Johann Schlauer, both of Frankfurt am Main-Goldstein, all of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed Oct. 19, 1973, Ser. No. 407,997

Claims priority, application Germany, Nov. 3, 1972, 2253806

Int. Cl. C01b *17/04*

U.S. Cl. 423—573 **11 Claims**

1. A method of removing hydrogen sulfide from a gas stream, comprising the steps of:

a. passing said gas stream through a Claus-process reactor having at least one stage and reacting the hydrogen sulfide with oxygen therein to produce elementary sulfur and an effluent gas stream containing residual sulfur at least part of which is in the form of hydrogen sulfides;

b. afterburning said effluent gas stream and contacting same at a temperature of 200° to 500°C with a layer of coke to form sulfur dioxide and minimize sulfur trioxide formation

c. cooling the gas stream contacted with said layer to a temperature of at most 50°C;

d. scrubbing the cold gas with an absorbent solution capable of reversibly binding sulfur dioxide from which in the afterburning of said effluent gas stream;

e. desorbing sulfur dioxide from the absorbent solution by the application of heat thereto; and

f. feeding the desorbed sulfur dioxide to step (a) for admixture with the gas stream fed through said Claus-process reactor to augment the sulfur dioxide concentration thereof.

3,896,216

PROCESS FOR THE PREPARATION OF BARIUM TITANATE

Giuliano Fagherazzi; Francesco Ferrero, and Gianfranco Accattino, all of Novara, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Filed Nov. 27, 1973, Ser. No. 419,250

Claims priority, application Italy, Nov. 30, 1972, 32283/72

Int. Cl. C01g *23/00;* **C01f** *11/00*

U.S. Cl. 423—598 **2 Claims**

1. A continuous process for preparing barium titanate characterized in that:

a. a slurry containing titanium dioxide and a barium source selected from the group consisting of barium carbonate and barium oxide is dried and granulated by using the hot gases flowing out of step (b), supplemented by hot gases obtained separately, and which have inlet temperatures of from 400° to 800°C, thus obtaining granules with an average size of 150–300 microns;

b. the granules obtained in step (a) are calcined at temperatures between 1150° and 1200°C in a fluid bed reactor, for 0.5–4 hours, by injecting into the reactor itself an oxidizing or inert gas heated either inside or outside the reactor itself; and

c. the product thus obtained is cooled down in a controlled manner and is then ground to obtain the desired final product.

3,896,217

METHOD AND APPARATUS FOR RADIOIMMUNOASSAY WITH REGENERATION OF IMMUNOADSORBENT

Lavell R. Johnson, Salt Lake City, Utah, assignor to Summa Corporation, Las Vegas, Nev.

Filed Mar. 19, 1973, Ser. No. 342,513

Int. Cl. A61k *27/04;* **G01n** *23/00*

U.S. Cl. 424—1 **10 Claims**

1. In an analytical method for biochemical analysis of an antigen wherein a mass of antibodies specific to a selected antigen is immobilized to form an immunoadsorbent and wherein a solution containing the selected antigen is flowed into and out of contact with the immunoadsorbent whereby at least part of said selected antigen is bound to said mass of antibodies immobilized by said immunoadsorbent and the remainder is not bound to said antibodies, the improvement which comprises the steps of:

regenerating the immunoadsorbent for reuse by releasing the antigen bound to the antibodies of the immunoadsorbent,

said regenerating step including contacting said immunoadsorbent with a solvent characterized by the ability to break the bond between the antigen bound to the antibody of the immunoadsorbent to free substantially all of said antigen therefrom without substantially adversely affecting the flow-through quality of said immunoadsorbent and the capacity thereof to bind antigen material subsequently brought into contact therewith,

utilizing at least one of (1) the said remainder which is not bound to said aantibodies or (2) the antigen formerly bound to said immunoadsorbent and released during regeneration thereof, or both, in an analytical assay of said selected antigen, and

repetitively reusing said regenerated immunoadsorbent for analytical assays of further selected antigen material.

3,896,218

RADIOMMUNOASSAY DETERMINING THE HEPATITIS ASSOCIATED ANTIGEN CONTENT OF BLOOD

Stanley E. Charm, Newton, and Bing Lou Wong, Somerville, both of Mass., assignors to Research Corporation, New York, N.Y.

Filed July 13, 1972, Ser. No. 271,452

Int. Cl. A61k *27/04*

U.S. Cl. 424—1 **4 Claims**

1. A method of determining the HAA content of a fluid comprising an unknown quantity of HAA particles per unit value designated *H*, comprising the steps of:

I. Coupling serum hepatitis antibody to a support phase comprising carbohydrate groups by the sequential steps of treating said support phase with cyanogen bromide, raising the pH of the mixture to between pH 10 and pH 12, removing the supernatant liquid, washing said support phase at from about ph 7 to about pH 8, adding said serum hepatitis antibody to the mixture, washing the mixture free of unreacted antibody, buffering the support phase/antibody complex to pH 7.8 to pH 8 to yield a complex designated BHAB,

II. Incubating a predetermined portion of the thus produced support phase/antibody complex with the fluid containing HAA,

III. Washing the thus produced support phase/antibody/-HAA complex designated BHAB/HAA,

IV. Incubating said BHAB/HAA with radio active HAA,

V. Washing the thus produced BHAB/HAA/radio active HAA complex,

VI. Measuring the radio activity of said BHAB/ HAA/radio active HAA complex to obtain a value designated *B* units of radio activity,

VII. Incubating a predetermined portion of the support phase of Step (I) designated as BHAB using the same quantity thereof as utilized in Step (II) under the same physical conditions of incubation using neutral saline as the incubation medium,

VIII. Washing the product of Step (VII),

IX. Incubating the product of Step (VIII) with radio active HAA selected from the sample used in Step (IV) for the same time under the same conditions of temperature, pressure and pH,

X. Washing the product of Step (IX),

XI. Measuring the radio activity of the product of Step (X) to obtain a value designated B_o units of radio activity,

XII. Repeating Steps (II) – (VI) utilizing a fluid containing a predetermined quantity of HAA particles per unit value designated as ^{s}H to obtain a value designated ^{s}B units of radio activity.

3,896,219

S-CHLOROMETHYL DIETHYL PHOSPHOROTHIOLOTHIONATE AS A SOIL INSECTICIDE

Max Pianka, St. Albans, England, assignor to The Murphy Chemical Company Limited, St. Albans, England

Continuation of Ser. No. 169,875, Aug. 6, 1971, abandoned, which is a continuation of Ser. No. 824,291, May 13, 1969, abandoned. This application Sept. 28, 1973, Ser. No. 401,692

Claims priority, application United Kingdom, May 25, 1968, 25279/68

Int. Cl. A01n *9/36*

U.S. Cl. 424—225 **1 Claim**

1. A method for the control of wireworms and the larvae of rootflies in soil by applying to the soil containing said pests or larvae from 1.12 to 4.49 kg/ha of s-chloromethyl diethylphosphorothiolothionate.

3,896,220
METHOD OF TREATING FUNGAL INFECTIONS WITH AZIDO COMPOUNDS

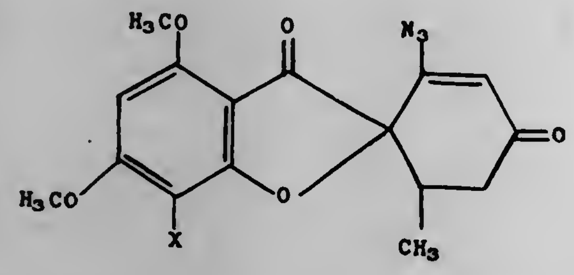
Elliot L. Shapiro, and Ashit K. Ganguly, both of Cedar Grove, N.J., assignors to Schering Corporation, Kenilworth, N.J.

Division of Ser. No. 269,347, July 6, 1972, Pat. No. 3,816,472. This application Apr. 18, 1974, Ser. No. 462,055

Int. Cl. A61k *27/00*

U.S. Cl. 424—226 **3 Claims**

1. A method for treating fungal infections comprising administering to a mammal infected with a fungus, a fungistatically effective amount of a compound represented by the structural formula:



wherein X is hydrogen, bromine, chlorine or fluorine.

3,896,221
ANESTHETIC COMPOSITION

George Johnstone Christie, Skaneateles, and Frank Harold Buckwalter, Syracuse, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Filed Feb. 28, 1973, Ser. No. 336,848

Int. Cl. A61k *27/00*

U.S. Cl. 424—246 **9 Claims**

1. A method for inducing anesthesia in an animal which comprises injecting said animal with an effective amount of an anesthetic composition comprising 100.0 mg. of ketamine hydrochloride, 7.5 mg. of promazine hydrochloride and 0.0625 mg. of aminopentamide hydrogen sulphate in an amount of water sufficient to make up 1 ml.

3,896,222
COMPOSITIONS CONTAINING A CARBONAMIDOQUINOXALINE-DI-N-OXIDE AND METHOD OF USING SAME

Florin Seng, Cologne; Kurt Ley, Odenthal-Globusch, and Karl Georg Metzger, Wuppertal-Elberfeld, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

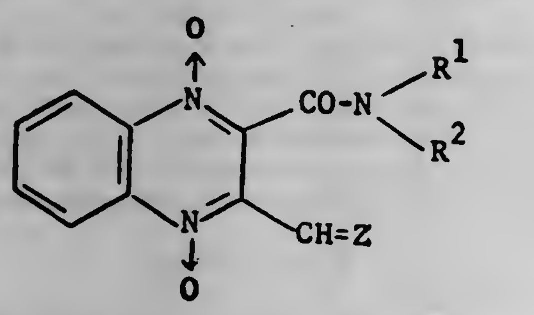
Division of Ser. No. 249,121, May 1, 1972. This application Sept. 20, 1973, Ser. No. 399,445

Claims priority, application Germany, May 7, 1971, 2122572

Int. Cl. A61l *27/00*

U.S. Cl. 424—248 **83 Claims**

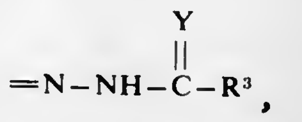
1. An antibacterial composition comprising an antibacterially effective amount of a compound of the formula:



wherein

each of R^1 and R^2, independent of the other, is hydrogen, lower alkyl, hydroxy(lower alkyl), (lower alkoxy)lower alkyl, cyclopentyl, cyclohexyl or cycloheptyl, or R^1 and R^2, together with the nitrogen atom to which they are attached, are pyrrolidino, piperidino, hexamethyleneimino, morpholino or thiomorpholino; and

Z is =N—OH or



$$=N-NH-\overset{\overset{\displaystyle Y}{\|}}{C}-R^3,$$

in which Y is an oxygen or sulfur atom and R^3 is lower alkyl, hydroxy(lower alkoxy), lower alkoxy, pyridyl, or —NR^5R^6 in which each of R^5 and R^6, independent of the other, is hydrogen, lower alkyl, hydroxy(lower alkyl) or lower alkoxy(lower alkyl), or R^5 and R^6, together with the nitrogen atom to which they are attached, are pyrrolidino, piperidino, hexamethyleneimino, morpholino or thiomorpholino, in combination with a pharmaceutically acceptable non-toxic inert diluent or carrier.

3,896,223
ANTI-INFLAMMATORY THIAZOLE COMPOSITIONS AND METHODS FOR USING SAME

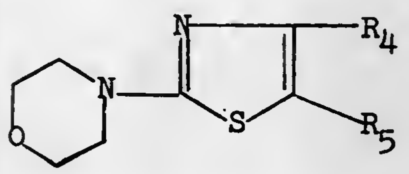
Zaven S. Ariyan, Woodbury, Conn., and William A. Kulka, Guelph, Canada, assignors to Uniroyal, Inc., New York, N.Y. and Uniroyal Ltd., Montreal, Canada

Division of Ser. No. 201,143, Nov. 22, 1971, Pat. No. 3,796,800. This application Oct. 12, 1973, Ser. No. 405,944

Int. Cl.² A61K *27/00*

U.S. Cl. 424—248 **28 Claims**

1. A method of preventing and inhibiting the formation of granuloma tissue in an animal subject, said method comprising administering to an animal subject a therapeutically effective amount of a compound having the formula as hereinafter set forth:



wherein R_4 is a lower alkyl, R_5 is hydrogen, $—CONHC_6H_5$, or $—CONHC_6H_3$(2,6-diethyl); or a pharmaceutically acceptable acid addition salt thereof.

3,896,224
1-(4′,6′-DICHLORO-S-TRIAZIN-2-YLCARBAMOYL)-2-METHOXY- CARBONYLAMINO-BENZIMIDAZOLE AS PESTICIDE

Adolf Hubele, Magden, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 347,739, April 4, 1973, Pat. No. 3,840,538. This application July 17, 1974, Ser. No. 489,314

Claims priority, application Switzerland, Apr. 10, 1972, 5209/72

Int. Cl.² A01N *9/00, 9/22*

U.S. Cl. 424—249 **2 Claims**

1. A pesticidal composition for controlling bacteria, fungi and nematodes comprising a pesticidally effective amount of 1-(4′, 6′-dichloro-s-triazin-2-ylcarbamoyl)-2-methoxy-carbonylaminobenzimidazole and a pesticide carrier.

3,896,225
HYDROCARBYL SULFENYLMERCAPTO PYRIMIDINES USED AS PESTICIDES

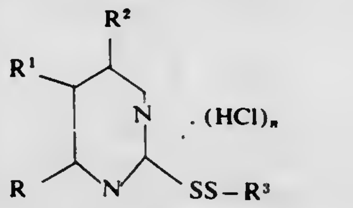
Joseph E. Moore, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 201,185, Nov. 22, 1971, Pat. No. 3,821,222. This application Apr. 17, 1974, Ser. No. 461,578

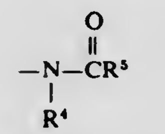
Int. Cl.² A01N *9/00;* **A01n** *9/22*

U.S. Cl. 424—251 **10 Claims**

1. A method for controlling fungi which comprises applying to said fungi or its habitat a fungicidally effective amount of the compound of the formula



wherein R^1 is hydrogen, R and R^2 are individually hydrogen, hydroxy or alkyl of 1 to 4 carbon atoms, and R^3 is



$$-\underset{\underset{\displaystyle R^4}{|}}{N}-\overset{\overset{\displaystyle O}{\|}}{C}R^5$$

wherein R^4 is hydrogen or alkyl of 1 to 4 carbon atoms and R^5 is hydrogen, alkyl of 1 to 4 carbon atoms, alkenyl of 2 to 4 carbon atoms or phenyl substituted with 0 to 2 halogen atoms of atomic number 9 to 35, and *n* is 0 or 1.

3,896,226
6-METHYLENE-6-DESOXY DIHYDRO MORPHINE AND CODEINE DERIVATIVES AND PHARMACEUTICALLY ACCEPTABLE SALTS THEREOF, AND USE OF THE SAME AS A NARCOTIC ANTAGONIST

Jack Fishman, New York, N.Y., assignor to Evalina Lewinstein; Henry Hirsch and Stanley Rothschild, all of New York, N.Y.

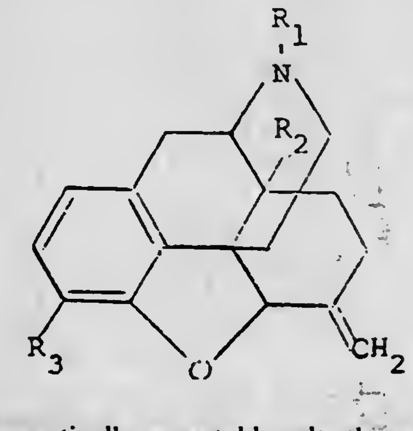
Continuation-in-part of Ser. No. 202,575, Nov. 26, 1971, Pat. No. 3,814,768. This application Feb. 27, 1974, Ser. No. 446,498

Int. Cl. A61k *27/00*

U.S. Cl. 424—260 **19 Claims**

1. A narcotic antagonist composition comprising

a. an effective amount of a compound selected from the group consisting of those having the formula



and pharmaceutically acceptable salts thereof

where R_1 is selected from the group consisting of allyl and cyclopropylmethyl, R_2 is selected from the group consisting of hydrogen and hydroxy, and R_3 is selected from the group consisting of hydroxy and methoxy, and

b. a pharmaceutically acceptable inert carrier.

3,896,227
1-(3-HYDROXYSTYRYL PYRIDINIUM SALTS AND THEIR DERIVATIVES AS WHIPWORM CONTROL AGENTS

James W. McFarland, and Harold L. Howes, Jr., both of East Lyme, Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 169,087, Aug. 4, 1971, abandoned. This application June 19, 1973, Ser. No. 371,370

Int. Cl. A61k *27/00*

U.S. Cl. 424—263 **4 Claims**

1. A method for treating a whipworm infected mammal which comprises orally or parenterally administering to said whipworm infected mammal a whipworm burden reducing amount of a compound selected from the group consisting of trans-1-(3-hydroxystyryl)pyridinium bromide, trans-1-(3-methoxystyryl)pyridinium bromide and trans-1-(3-benzoyloxystyryl)pyridinium bromide.

3,896,228
METHOD FOR TREATING NEPHRISES

Brian Peter Richardson, Basel, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Division of Ser. No. 341,509, March 15, 1973, Pat. No. 3,849,562. This application July 24, 1974, Ser. No. 491,342

Int. Cl.² A61k *27/00*

U.S. Cl. 424—266 **5 Claims**

1. A method of treating nephrosis which comprises administering to an animal in need of such treatment a therapeutically effective amount for the treatment of nephrosis of a prolactin inhibitor selected from ergocornine or 9,10-dihydroergocornine.

3,896,229
SLIME CONTROL COMPOSITIONS AND THEIR USE

Bernard F. Shema, Glenside, and Robert H. Brink, Jr., Doylestown, both of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Aug. 27, 1973, Ser. No. 391,724

Int. Cl.² A01N *9/12, 9/20, 9/24*

U.S. Cl. 424—270 **8 Claims**

1. A composition for the control of the microorganism *Aerobacter aerogenes* in aqueous systems comprising a mixture of 75% of 5-chloro-2-methyl-4-isothiazolin-3-one calcium chloride and 25% 2-methyl-4-isothiazolin-3-one calcium chloride with an octyl-phenoxy polyethoxy ethanol, said ethanol possessing an average molecular weight of about 536 and a Brookfield viscosity (12 rpm) of about 260 cps at 25° C, wherein the weight ratio of the chloride mixture of the ethanol ranges from about 95:5 to about 5:95 respectively.

3,896,230
FUNGICIDAL FORMULATIONS OF 2-BENZIMIDAZOLE-ARBAMIC ACID, ALKYL ESTERS

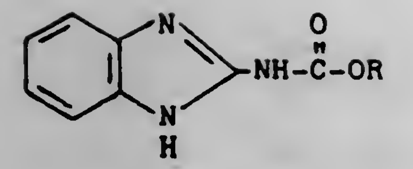
Hein L. Klopping, Wilmington, Del., assignor to E. I. du Pont de Nemours & Co., Wilmington, Del.

Continuation of Ser. No. 182,541, Sept. 21, 1971, abandoned, which is a continuation-in-part of Ser. No. 862,081, Sept. 29, 1969, Pat. No. 3,657,443, which is a continuation-in-part of Ser. No. 727,036, May 6, 1968, abandoned, which is a continuation-in-part of Ser. No. 629,914, April 11, 1967, abandoned. This application Feb. 1, 1974, Ser. No. 438,943The portion of the term of this patent subsequent to Apr. 18, 1989, has been disclaimed.

Int. Cl. A01n *9/22*

U.S. Cl. 424—273 **8 Claims**

1. A fungicidal composition useful for the systemic, curative and preventive treatment of fungus diseases in living plants with a wide margin of safety to the plants comprising a fungicidal amount of a compound represented by the formula:



where R is methyl or ethyl, with 10 to 50,000 parts per 100 parts of said compound of a nonphytotoxic spray oil selected from the group consisting of naphthenic spray oils having an unsulfonatable residue of from 75 to 100%, a viscosity in Saybolt seconds at 100°F. of 40 to 220 and a distillation at 10 mm/Hg. 50% point of 300° to 600°F., paraffinic spray oils having an unsulfonatable residue of from 75 to 100%, a viscosity in Saybolt seconds at 100°F. of 40 to 220 and a distillation at 10 mm/Hg. 50% point of from 300° to 600°F., natural triglyceride oils consisting essentially of glycerol esters of at least one fatty acid selected from the group consisting of caproic, caprylic, capric, lauric, myristic, palmitic, stearic, oleic, erucic, linoleic, linolenic, and eleostearic acid, and derived mono and diglycerides which are reaction products of glycerols with at least one fatty acid selected from the group consisting of caproic, caprylic, capric, lauric, myristic, palmitic, stearic, oleic, erucic, linoleic, linolenic and eleostearic acid.

3,896,231

2,2-DIBROMO-3-NITRILOPROPIONAMIDE AND HEXACHLORODIMETHYLSULFONE AS A SLIME CONTROL COMPOSITION

Bernard F. Shema, Glenside; Robert H. Brink, Jr., Doylestown, and Paul Swered, Philadelphia, all of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed June 28, 1973, Ser. No. 374,582

Int. Cl.^{2} A01N *9/06*

U.S. Cl. 424—304 **8 Claims**

1. A composition for the control of Aerobacter aerogenes in aqueous systems comprising 2-2-dibromo-3-nitrilopropionamide and hexachlorodimethyl sulfone, wherein the weight ratio of the amide to the sulfone ranges from about 95:5 to about 5:95 respectively.

3,896,232

SUBSTITUTED BENZYLIDENE HYDRAZINES AS ANTIGRAINE SYNDROME AGENTS

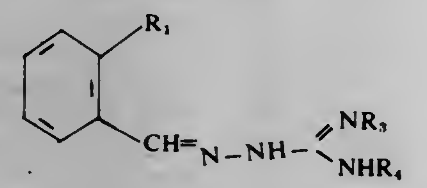
William J. Houlihan, and Robert E. Manning, both of Mountain Lakes, N.J., assignors to Sandoz, Inc., E. Hanover, N.J.

Continuation-in-part of Ser. No. 322,623, Jan. 11, 1973, abandoned. This application Apr. 29, 1974, Ser. No. 465,187

Int. Cl.^{2} A61K *27/00*

U.S. Cl. 424—326 **10 Claims**

1. The method of treating the pain of the migraine syndrome, which comprises administering to a mammal in need of said treatment a migraine syndrome pain relieving effective amount of a compound of the formula



wherein

R_1 and R_2 are independently hydrogen, halo having an atomic weight of 19 to 36, methyl, or trifluoromethyl,

R_3 is hydrogen,

R_4 is hydrogen or OH, or

R_3 and R_4 together are $-(CH_2)_2-$,

provided that one of R_1 or R_2 is other than hydrogen, or a pharmaceutically acceptable acid addition salt thereof.

3,896,233

PHARMACEUTICAL COMPOSITIONS AND METHODS OF INHIBITING GASTRIC ACID SECRETION

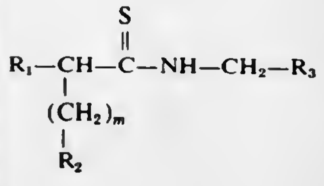
L. Martin Brenner, Havertown, and Bernard Loev, Broomall, both of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 266,024, June 26, 1972, Pat. No. 3,853,865. This application Sept. 18, 1974, Ser. No. 507,093

Int. Cl. A61k *27/00*

U.S. Cl. 424—248 **8 Claims**

1. A pharmaceutical composition having gastric acid secretion inhibitory activity, in dosage unit form, comprising a pharmaceutical carrier and an effective gastric acid secretion inhibiting amount of a thioamide compound of the formula:



$$R_1-\underset{\substack{|\\(CH_2)_m\\|\\R_2}}{CH}-\overset{\substack{S\\\|}}{C}-NH-CH_2-R_3$$

in which:

m is 0 or 1;

R_1 is 2-pyridyl; and

R_2 and R_3 are di-lower alkylamino, N-lower alkyl-N-phenylamino, piperidino, pyrrolidino or morpholino

or a pharmaceutically acceptable acid addition salt thereof.

3,896,234

PHARMACEUTICAL COMPOSITION AND METHOD EMPLOYING PHENYLVULPINIC ACID DERIVATIVES

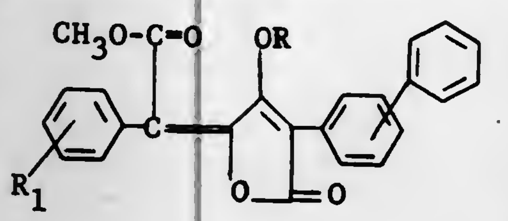
Blaine M. Sutton, Hatboro, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

Division of Ser. No. 279,597, Aug. 10, 1972, Pat. No. 3,780,065, which is a continuation-in-part of Ser. No. 188,555, Oct. 13, 1971, abandoned. This application Aug. 30, 1973, Ser. No. 393,235

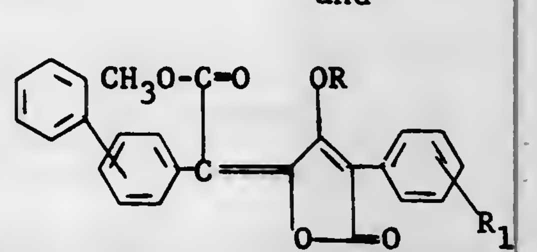
Int. Cl. A61k *27/00*

U.S. Cl. 424—279 **3 Claims**

1. A pharmaceutical composition having antiarthritic activity in dosage unit form comprising a pharmaceutical carrier and from about 10 mg. to about 50 mg. of a chemical compound selected from the formulas:



and



wherein:

R is hydrogen, acrylyl, methacrylyl, dimethylacrylyl, crotonyl or cinnamoyl; and

R_1 is hydrogen, chlorine, bromine, fluorine, lower alkyl of from 1 to 4 carbon atoms, lower alkoxy of from 1 to 4 carbon atoms, dimethoxy, trimethoxy, or trifluoromethyl.

3,896,235

ANTHELMINTIC ETHERS AND COMPOSITION THEREOF

Morton Harfenist, Chapel Hill, N.C., assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

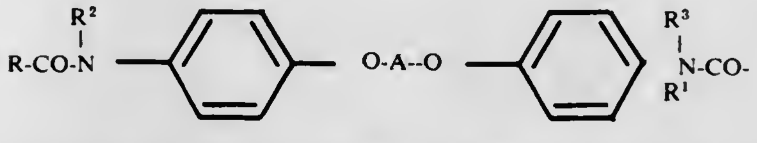
Filed Aug. 25, 1971, Ser. No. 174,986

Claims priority, application United Kingdom, Sept. 1, 1970, 41871/70; Sept. 1, 1970, 41872/70; July 23, 1971, 34668/71

Int. Cl. A01n *9/20, 1/24*

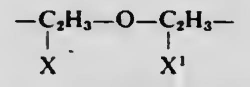
U.S. Cl. 424—324 **58 Claims**

1. The method of treating a liver fluke infection in an infected mammal which comprises administering to said infected mammal a therapeutically effective liver fluke treatment amount of a compound of the formula



wherein R and R^1 are the same or different and each is selected from the class consisting of hydrogen,

saturated aliphatic hydrocarbon having 1 to 7 carbon atoms, and unsaturated aliphatic hydrocarbon having 2 to 4 carbon atoms; wherein R^2 and R^3 are the same or different and each is selected from the class consisting of hydrogen and lower alkyl having 1 to 4 carbon atoms; and wherein A is selected from the class consisting of $-CH_2-$, $-(CH_2)_2-$, $-CH_2-O-CH_2-$, and



$$-\underset{\substack{|\\X}}{C_2H_3}-O-\underset{\substack{|\\X^1}}{C_2H_3}-$$

wherein X and X^1 are the same or different and each is selected from the class consisting of hydrogen and alkyl having 1 to 3 carbon atoms.

3,896,236

SLIME CONTROL COMPOSITIONS AND THEIR USE

Bernard F. Shema, Glenside; Robert H. Brink, Jr., Doylestown, and Paul Swered, Philadelphia, all of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Continuation-in-part of Ser. No. 271,459, July 13, 1972, Pat. No. 3,827,873, which is a continuation-in-part of Ser. No. 464, Jan. 2, 1970, abandoned. This application Apr. 9, 1973, Ser. No. 349,358

Int. Cl.^{2} A01N *9/12, 9/20*

U.S. Cl. 424—329 **8 Claims**

1. A composition of the control of the growth of the microorganism *Aerobacter aerogenes* in aqueous systems in which said microorganism is found comprising betabromo-beta-nitrostyrene and cetyl trimethyl ammonium p-toluene sulfonate, wherein the weight ratio of the styrene to the sulfonate ranges from about 10:90 to about 95:5 respectively.

3,896,237

METHOD OF TREATING CARDIAC ARRYTHMIA WITH PHENYLALKYLARALKYLAMINES

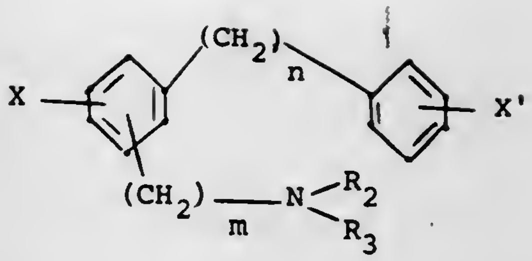
Marcia Elizabeth Christy, Perkasie, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 106,889, Jan. 15, 1971, abandoned. This application Dec. 27, 1973, Ser. No. 428,643

Int. Cl.^{2} A61K *27/00*

U.S. Cl. 424—330 **8 Claims**

1. A method for treating cardiac arrhythmia in animals which comprises administering to an afflicted animal an antiarrhythmic dose of an active compound having the formula



or a pharmaceutically acceptable salt thereof, wherein

X and X′ are selected from the group consisting of hydrogen, halogen, alkyl of from 1–6 carbon atoms, alkoxy of from 1–5 carbon atoms, perfluoroalkyl, alkylmercapto of from 1–6 carbon atoms, alkylsulfonyl of from 1–6 carbon atoms, and dialkylsulfamoyl of from 2–8 carbon atoms;

R_2 and R_3 are each members of the group consisting of hydrogen, alkyl of from 1–6 carbon atoms, aralkyl, alkenyl and alkynyl;

m is an integer selected from the group consisting of 1–4 inclusive; and

n is an integer selected from the group consisting of 1–3 inclusive.

3,896,238

DERMATOLOGICAL COMPOSITIONS

Donald Edward Smith, Hamilton, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 241,404, April 5, 1972, abandoned. This application Mar. 13, 1973, Ser. No. 340,787

Int. Cl. A61k *7/00, 27/10*

U.S. Cl. 424—358 **11 Claims**

1. A composition in liquid or semi-liquid form adapted to topical application to animal tissue, comprising: (1) at least about 0.1% by weight of a sugar ester; and (2) at least about 0.1% by weight of a sulfoxide of the formula $R'S(O)R^2$ wherein R′ is a substituent selected from the group consisting of straight and branched chain alkyl, alkenyl, hydroxy-substituted alkyl, methoxy-substituted alkyl, oxaalkyl, thiaalkyl, azaalkyl, and ketoalkyl containing from 8 to 12 carbon atoms and R^2 is a substituent selected from the group consisting of low molecular weight alkyl and hydroxy-substituted alkyl.

3,896,239

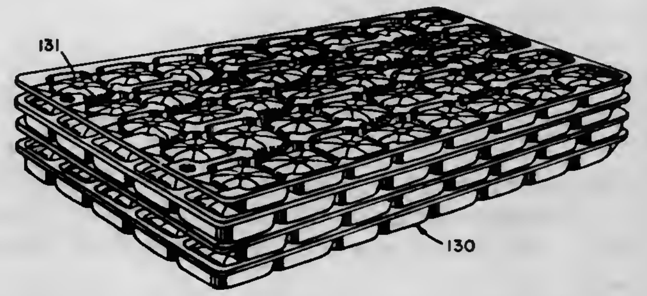
BUTTER PAT PACKAGE

Leo Peters, 750 Plymouth Road SE., Grand Rapids, Mich. 49506

Filed Apr. 24, 1972, Ser. No. 247,138

Int. Cl. B65b *25/06;* **B65d** *1/36*

U.S. Cl. 426—119 **3 Claims**



1. A nestable and stackable tray for food pats comprising a plurality of elongated parallel channels, each channel having a flat bottom wall, a pair of side walls extending upwardly from the bottom wall, and a first and second end walls, the first end wall extending generally vertically upwardly from the bottom wall and the second end wall extending from the bottom wall away from the first end wall and forming an obtuse included angle with the bottom wall, the first end walls of the channels being aligned transversely across the tray at one end thereof and the second end walls of the channels being aligned transversely across the tray at the other end thereof, each side wall of each channel including a plurality of

longitudinally spaced projections extending toward the projections of the other side wall of the channel to form pat-confining pockets between adjacent projections, adjacent side walls of each adjacent pair of channels being spaced apart and having the upper ends joined by a top wall, the portions of the top wall extending between the projections providing flat supporting surfaces extending generally parallel to the bottom walls, the extent of the second end wall of each channel in a direction parallel to the bottom wall being about one-half the distance between adjacent pocket-forming projections, whereby a plurality of the trays may be nested by aligning the first end walls of the trays and inserting the top walls of each tray into the spaces between adjacent channels of the tray immediately thereabove and a plurality of trays can be stacked and supported out of contact with food pats contained in the pat-confining pockets thereof by aligning the first end walls of each tray with the second end walls of the trays immediately thereabove and therebelow so that the flat supporting surfaces of each tray engage and support the bottom walls of the channels of the tray immediately thereabove.

3,896,240
PREPARATION OF SIMULATED HUMAN MILK

Friedrich-Karl Gruette, Caputh; Juergen Schulze, Bergholz-Rehbruecke, and Heinz-Georg Hampel, Stendal, all of Germany, assignors to Akademie der Wissenschaften der DDR, Berlin, Germany

Filed Apr. 2, 1973, Ser. No. 347,345
Int. Cl. A23c *11/00*
U.S. Cl. 426—271 **5 Claims**

1. A process for the production of a composition that simulates human milk and which is especially suitable for the feeding of infants which comprises
   a. treating whey with an anion-exchange resin charged with chloride ions to remove substantially all anions of weak acids from the said whey,
   b. adding to the said treated whey a protein produced by pouring a preselected quantity of skim milk into a preselected quantity of an aqueous solution of hydrochloric acid containing only such an amount of hydrochloric acid that upon addition of the preselected quantity of the skim milk to the aqueous solution of hydrochloric acid the hydrogen-ion concentration of the resulting mixture corresponds to a pH between 4.4 and 5.1,
   c. adding fats, vitamins, and minerals to the resulting mixture of protein and treated whey,
   d. homogenizing the resulting mixture, and
   e. subsequently adding lactose to the resulting homogenized mixture in an amount between 6 and 8% by weight of the mixture.

3,896,241
PREPARATION OF A WHEY PROTEIN CONCENTRATE

Alex Malaspina, Atlanta, Ga., and Roberto H. Moretti, S. Paulo, Brazil, assignors to The Coca-Cola Company, Atlanta, Ga.

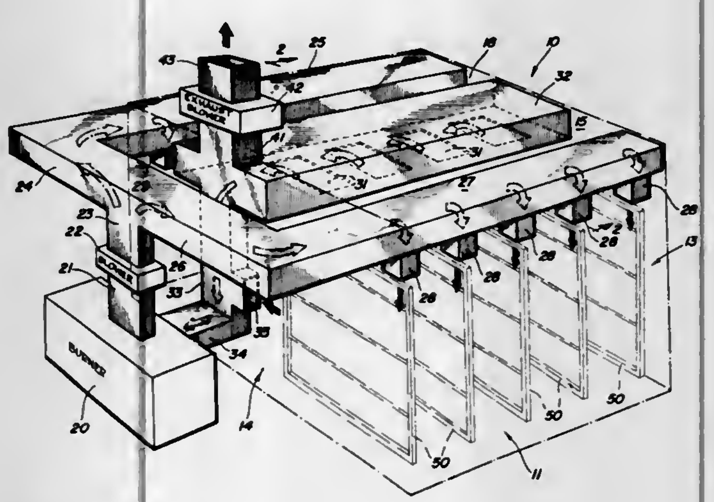
Continuation-in-part of Ser. No. 177,082, Sept. 1, 1971, abandoned. This application May 24, 1974, Ser. No. 473,258
Int. Cl. A23c *21/00*
U.S. Cl. 426—271 **10 Claims**

1. A process for producing a whey protein concentrate suitable for incorporation into beverages which comprises providing whey from bovine milk, passing the whey through a diatomaceous earth filter, subjecting the whey to ultrafiltration with water injection to form a whey protein concentrate and thereafter contacting the concentrate with a strongly acidic cationic exchange resin to produce a whey protein concentrate low in viable and total microbial count, low in mineral salt and having a pH in the range of 2.7–3.6.

3,896,242
PROCESS FOR SMOKING COMESTIBLE MATERIAL

Donald G. Moore, Manitowoc, Wis., assignor to Red Arrow Products Company, Milwaukee, Wis.

Filed July 9, 1973, Ser. No. 377,456
Int. Cl.^{2} A23B *4/04*
U.S. Cl. 426—314 **9 Claims**



7. A method of smoking a comestible product in a smokehouse having a smoking chamber, a burner for developing heat in the form of hot air, a supply duct for delivering the hot air from the burner to the smoking chamber, a blower for circulating the hot air from the burner through the supply duct to the smoking chamber, a return duct for withdrawing air from the smoking chamber and delivering it the burner, and an exhaust duct exiting from the smoking chamber, comprising;

placing a comestible product in the smoking chamber;
heating the comestible product by means of the burner and hot air produced thereby and fed with the aid of the blower to the smoking chamber to a temperature of 60° to 210°F.;
producing a liquid smoke cloud in the smoking chamber while the burner is on and the exhaust duct is closed;
withdrawing a gaseous stream of the liquid smoke cloud and heated air from the smoking chamber by means of the return duct, with the exhaust duct closed, delivering it to the burner and returning it by means of the supply duct to the smoking chamber with the blower operating substantially most of the time to facilitate said circulation of the gaseous stream, said burner being on and supply heat to the smoking chamber during at least most of such circulation of the liquid smoke cloud; and
continuing said process until the comestible product acquires an acceptable smoke flavor and smoke color.

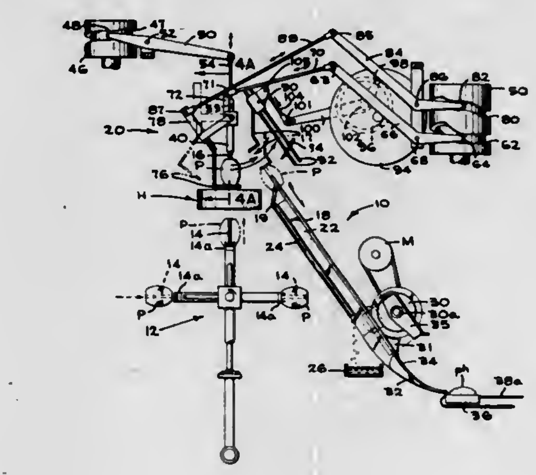
3,896,243
PINEAPPLE SLITTING AND CONVEYING

Leslie Vadas, Los Gatos, Calif., assignor to FMC Corporation, San Jose, Calif.

Division of Ser. No. 233,130, March 9, 1973, Pat. No. 3,760,665. This application Mar. 29, 1973, Ser. No. 345,928
Int. Cl. A23l *1/00*
U.S. Cl. 426—482 **3 Claims**

1. The method of processing pineapples comprising the steps of pre-coring the fruit to leave a reinforcing core shell, removing the crowns of the fruit, pushing the cored fruit vertically through a contour peeling head onto a vertical discharge pin, tilting the discharge pin, removing the butts of the fruit, and stripping the peeled, fruit off the discharge pin onto a downwardly inclined guide pin, slitting the fruit from below up to the core hole while continuing to guide the advancing fruit by their core holes and the newly formed slit,

completely halving the advancing fruit from above, guiding the halves along divergent planar paths which gradually twist

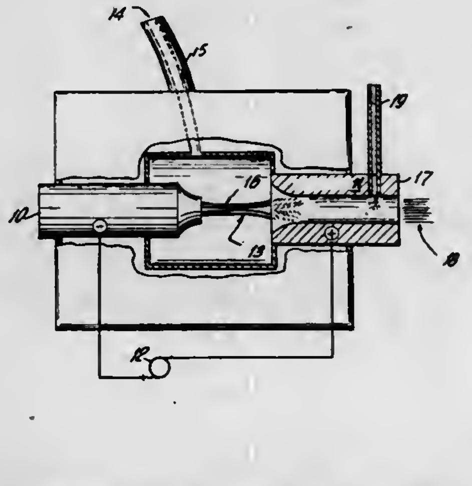


from the vertical to the horizontal, and advancing the halves cut face down along separate conveying paths.

3,896,244
METHOD OF PRODUCING PLASMA SPRAYED TITANIUM CARBIDE TOOL STEEL COATINGS

John L. Ellis, White Plains; M. Kumar Mal, Spring Valley, and Stuart E. Tarkan, Monsey, all of N.Y., assignors to Chromalloy American Corporation, New York, N.Y.

Division of Ser. No. 199,497, Nov. 17, 1971, Pat. No. 3,779,720. This application June 8, 1973, Ser. No. 368,063
Int. Cl.^{2} B05D *11/10*
U.S. Cl. 427—34 **7 Claims**

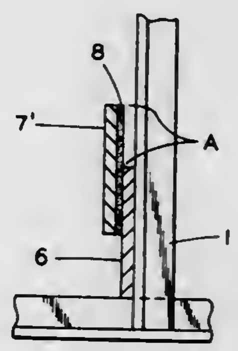


1. A method of producing a hard, wear resistant coating of a heat treatable titanium carbide tool steel onto a metal substrate which comprises,
selecting a powder composition containing about 10 to 80% by weight of primary grains of titanium carbide and the balance essentially about 90 to 20% by weight of steel-forming ingredients which, when melted to form a steel and quenched from an austenitizing temperature, tends to form martensite,
and then spraying said powder composition with a plasma flame directly onto said metal substrate to quench-deposit a thin coating of said composition thereon of thickness ranging up to about 0.025 inch,
thereby producing an adherent thin coating of said titanium carbide tool steel composition on said metal substrate characterized by primary grains of titanium carbide uniformly dispersed through a matrix containing an austenitic decomposition product containing martensite, and further characterized in that said coating is capable of being heat treated at a temperature below the melting point of the metal substrate.

3,896,245
PRESSURE SENSITIVE ADHESIVE STRIPS AND SHEETS

Kenneth Hon Seto, and James Thomas Thompson, both of Dayton, Ohio, assignors to Protective Treatments, Inc., Dayton, Ohio

Filed Apr. 4, 1973, Ser. No. 347,823
Int. Cl.^{2} B32B *25/02, 25/14, 27/20*
U.S. Cl. 428—7 **6 Claims**

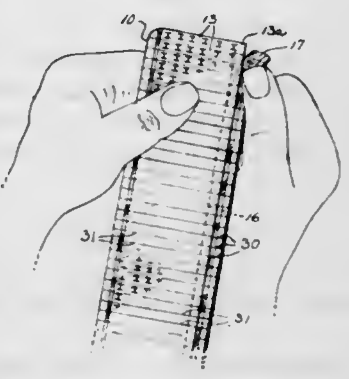


1. A permanently compressible pressure sensitive composite strand adapted for attachment to an automobile body consisting essentially of a tacky permanently compressible, nonporous cohesive base strand having a thickness of about 0.03 to 0.08 inch, said base strand having little or no resilience and constituted by elastomeric material compounded with from 0.45 to 2.5 times the weight of elastomeric material of low volatile liquid plasticizer and finely divided solids in an amount of at least 0.93 parts per part of elastomeric material, the finely divided solids including from 0.5 to 2 ½ parts, per part of elastomeric material, of finely divided bulk fibrous solids or solids that form thixotropic mixtures with the said liquid plasticizer, said base strand being coated with a pressure sensitive adhesive, and said base strand being permanently deformable by pressure above about 15 pounds per square inch, but exhibiting negligible flow at 0.6 pounds per square inch pressure.

3,896,246
STORAGE CARD FOR LABELS

William H. Brady, Jr., Milwaukee, Wis., assignor to W. H. Brady Co., Milwaukee, Wis.

Continuation of Ser. No. 237,816, March 24, 1972, abandoned. This application Dec. 12, 1973, Ser. No. 424,034
Int. Cl. B32b *33/00;* C09j *7/02*
U.S. Cl. 428—41 **3 Claims**



1. In a combination including an adhesive article of the type having a layer of pressure sensitive adhesive and a storage card about 10 to 25 mils thick for supporting the adhesive article,
the improvement wherein:
the storage card is characterized as being made of a homogenous non-fibrous synthetic plastic material having (1) an Izod impact strength of about 0.5 to 3.0 foot pounds per inch of notch, (2) a tensile elongation at yield of about 1.0 to 2.5%, and (3) a tensile modulus of about 200,000 to 400,000 psi.,

the adhesive layer of the adhesive article is releasably joined to a first surface of the storage card,

the storage card is rectilinearly crackable upon a single flexion in a direction away from the adhesive article on its first surface and also flexible to permit cyclic bending without cracking and the first surface of said storage card has a smoothness with surface irregularities in the range of 0 to 15 RMS microinches underlying the pressure sensitive adhesive article supported thereon, and a second surface of the card opposite from the first surface has a smoothness with surface irregularities in the range of more than about 20 RMS microinches.

3,896,247

THERMAL SHOCK PROTECTION FOR REFRACTORY MATERIAL SUBJECT TO MOLTEN METALS

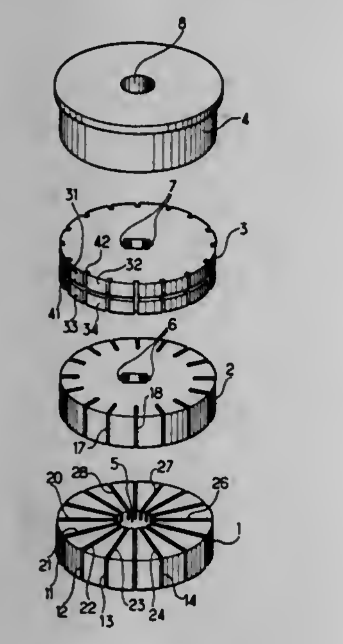
Pierre Descleve, Bures sur Yvette, and Jean-Claude Megnin, Fontenay aux Roses, both of France, assignors to Groupement Atomique Alsacienne Atlantique, France

Filed Feb. 5, 1974, Ser. No. 439,786

Claims priority, application France, Feb. 9, 1973, 73.04667; Apr. 16, 1973, 73.13733

Int. Cl.² B32B *1/04;* **F16J** *15/00;* **B32B** *3/14*

U.S. Cl. 428—65 **14 Claims**



1. In a refractory material structure for repeated immersion in a very hot and corrosive fluid medium such as molten aluminum, the improvement wherein said element comprises a block of refractory material having at least one network of slots within the surface thereof and a material stuffing within said slots which is more compressible than the refractory material to be protected and nonpermeable to said fluid medium.

3,896,248

TENNIS MARKING TAPE AND METHOD OF MAKING SAME

Paul E. Scarpa, 118 Highland Dr., Greensville, S.C. 29405

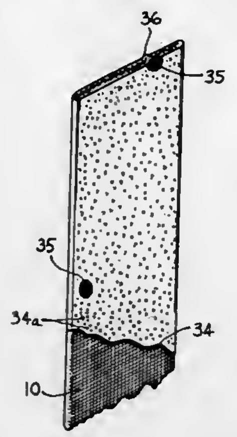
Filed Oct. 10, 1972, Ser. No. 296,037

Int. Cl.² B05D *5/02;* **B32B** *1/00*

U.S. Cl. 428—172 **4 Claims**

1. The method of manufacturing a textured tape for use in marking tennis courts comprising: impregnating the interstices of a length of textile webbing with a liquid film forming composition; curing said liquid film forming composition; then applying a viscous tacky coating curable to form a tough film to said webbing so as to form a surface layer of coating on the impregnated webbing; moving the coated webbing relative to a smooth rotatable roller with said layer of coating in contact with said roller forming a textured surface therein by puckering said coating by the action of the roller thereon; and curing said viscous coating forming a tough textured surface thereon.

3. A marking tape for a tennis court comprising: a length of woven textile webbing impregnated with a film forming composition; a layer of water repellant film carried on the surface of the impregnated webbing, said layer having been applied thereto as a tacky coating and puckered while tacky to produce a textured surface in said film including a plurality of randomly spaced puckered areas covering said film; and a plurality of spaced punctures in said webbing facilitating placement of fastening means for fixing the webbing to the court with the textured surface up; whereby said textured surface avoids skipping of a tennis ball and slipping of players.



3,896,249

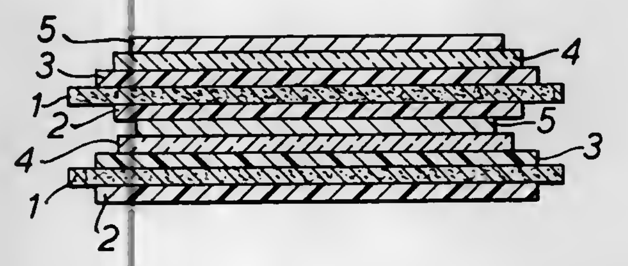
SELF-ADHESIVE TRANSFERS

Robert Alan Keeling, and John Garrick Priest, both of London, England, assignors to Johnson, Matthey & Co. Limited, London, England

Continuation of Ser. No. 175,705, Aug. 27, 1971, abandoned, which is a continuation of Ser. No. 791,091, Jan. 14, 1969, abandoned. This application Apr. 4, 1973, Ser. No. 347,629

Int. Cl.² B32B *3/00, 7/06*

U.S. Cl. 428—202 **33 Claims**



1. In a flexible, self-adhesive transfer for applying a design to a base, said transfer including a backing sheet, release layers, a design layer, and a layer of high tack pressure-sensitive adhesive, two or more transfers being adapted to be stacked one directly upon another prior to use, the improvements comprising:

- a. a backing sheet having oppositely facing first and second surfaces, a first of said surfaces being smoother than the second surface;
- b. a release layer on at least a part of each surface of said backing sheet, each release layer being of the same composition but of different relative smoothness, said first and second surfaces of the backing sheet imparting their respective difference in smoothness to the release layer thereupon;
- c. a design layer applied to the smoother release layer; and
  d. a layer of high tack, pressure-sensitive acrylic resin adhesive applied to the design layer,

said transfer being adapted to be stacked with the adhesive layer in contact with the less smooth release layer of an adjacent transfer, said adhesive layer having a lower adhesion to the less smooth release layer than the adhesion of the smoother release layer to said design layer, thereby reducing blocking and rendering adjacent transfers separable.

3,896,250

FLAMEPROOFING OF FABRICS

George T. Miller, Lewiston, N.Y., assignor to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 361,706, May 18, 1973. This application June 18, 1973, Ser. No. 371,335

Int. Cl.² C09D *5/18*

U.S. Cl. 428—272 **19 Claims**

1. Flameproofed synthetic fibrous material comprising a normally flammable synthetic material selected from the group consisting of poly(hexamethylene adipamide), polycaproamide, and poly(m-phenyleneisophthalamide) which material contains a flame retardant amount of a reaction product of an aqueous solution of an acid ammonium phosphate and an alkylene oxide, said reaction product having been obtained by reacting at a temperature from about 0° to about 100° centigrade, an aqueous solution of an acid ammonium phosphate containing from about 5 to about 40 weight percent of an acid ammonium phosphate selected from the group consisting of diammonium acid ortho-phosphate, mono ammonium diacid ortho-phosphates and mixtures thereof with an amount of at least one alkylene oxide selected from the group consisting of ethylene oxide, propylene oxide and butylene oxide which is about 0.5 to 1.5 times the weight of said acid ammonium phosphate.

9. The process which comprises the steps of treating a normally flammable synthetic polymer material selected from the group consisting of poly(hexamethylene adipamide), polycaproamide, and poly(m-phenyleneisophthalamide) with a reaction product of an aqueous solution of an acid ammonium phosphate and an alkylene oxide, said reaction product having been obtained by reacting at a temperature from about 0° to about 100° centigrade, an aqueous solution of an acid ammonium phosphate containing from about 5 to about 40 weight percent of an acid ammonium phosphate selected from the group consisting of diammonium acid orthophosphate, mono ammonium diacid ortho-phosphates and mixtures thereof with an amount of at least one alkylene oxide selected from the group consisting of ethylene oxide, propylene oxide and butylene oxide which is about 0.5 to 1.5 times the weight of said acid ammonium phosphate to deposit a flame retarding amount of said reaction product on the polymer material.

3,896,251

OUTERWEAR FABRIC TREATMENT

Dennis P. Landucci, Lake Elmo Twp., Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation-in-part of Ser. No. 232,186, March 6, 1972, abandoned. This application July 19, 1973, Ser. No. 380,702

Int. Cl. D06m *15/32, 15/52*

U.S. Cl. 428—290 **7 Claims**

1. The process for conferring durably launderable aqueous dry-cleanable repellency to oil and water on fabrics consisting substantially completely of hydrophobic synthetic fibers consisting essentially of applying to said fabric a blend, in suitable aqueous or non-aqueous medium, in proportions of 10:90 to 95:5, of

- A. fluoroaliphatic radical-containing substantially linear vinyl polymer containing from 10 to 60 percent by weight thereof of fluorine in the form of fluoroaliphatic radicals terminating in CF_3 groups, said fluoroaliphatic radicals containing at least three fully fluorinated carbon atoms, and
- B. a solvent-soluble carbodiimide consisting essentially of from 1 to a plurality of carbodiimide groups, terminal organic radicals free from isocyanate-reactive hydrogen atoms connected to carbodiimide and, when two or more carbodiimide groups are present, polyvalent organic groups, residues of polyisocyanates, linking successive carbodiimide groups, and

thereafter vaporizing said medium whereby a coating of said blend is deposited on said synthetic fibers.

3,896,252

PROCESS OF METAL PLATING ON PLASTICS

Carole K. Tuttle, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Feb. 4, 1974, Ser. No. 439,453

Int. Cl. C23c *3/02;* **B44d** *1/092*

U.S. Cl. 427—306 **21 Claims**

1. A process for metallizing plastic articles formed from a rubber modified unsaturated carboxylic acid or anhydride containing thermoplastic polymer which comprises the steps of

- a. aminating the surface to be metallized by contacting it with a solution of ethylenediamine or 1,3-diaminopropane in an inert solvent comprising from about 50 to 100 volume percent of a water miscible organic solvent and from 0 to about 50 percent water,
- b. contacting the aminated surface with a noble metal salt solution and
- c. treating said surface with a reducing agent forming a metallized surface having a resistance of about 100 ohms/sq. or less;

wherein said rubber modified polymer contains about 12 to 40 weight percent rubber, about 12 to 30 weight percent of said acid or anhydride and the balance to make 100 percent of one or more monomers copolymerized therewith and wherein said polymer is the product of polymerizing the monomers in the presence of the rubber in a finely divided form.

3,896,253

BONDING GLASS FIBERS TO RUBBER

Otto C. Elmer, Akron, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Filed Nov. 21, 1973, Ser. No. 417,859

Int. Cl.² B29H *9/06, 9/10*

U.S. Cl. 428—382 **15 Claims**

1. A glass fiber reinforcing element containing from about 10 to 40% by weight (dry) based on the weight of said element of a heat cured adhesive composition useful for adhering said element to a rubber compound and consisting essentially of 100 parts by weight of a rubbery vinyl pyridine copolymer, from about 0.5 to 20 parts by weight of silica from a stabilized colloidal silica sol in which the particles of silica have an average particle diameter of from about 1 to 150 millimicrons, and from about 10 to 75 parts by weight of a water soluble, heat reactable resorcinol-formaldehyde resole having hydroxyl and methylol groups, said resole being made by reacting an excess of formaldehyde with resorcinol, said composition coating and at least substantially totally impregnating said element.

5. A method for adhering a glass fiber reinforcing element to a rubber compound which comprises treating said element with a composition consisting essentially of an aqueous alkaline dispersion of 100 parts by weight of a rubbery vinyl pyridine copolymer, from about 0.5 to 20 parts by weight of silica in the form of a stabilized colloidal silica sol in which the particles of silica have an average particle diameter of from about 1 to 150 millimicrons, from about 10 to 75 parts by weight of a water soluble, heat reactable resorcinol-formaldehyde resole having hydroxyl and methylol groups, from about 0 to 3 parts by weight of an alkaline material selected from the group consisting of NH_4OH, KOH and NaOH, and from about 150 to 1100 parts by weight of water, heating said treated element at a temperature and for a time sufficient to remove essentially all of the water from said composition and to provide said element with a heat cured adhesive in an amount of from about 10 to 40% by weight (dry) based on the weight of said reinforcing element, combining said dried and heat cured adhesive containing reinforcing element with an unvulcanized vulcanizable rubber compound, and vulcanizing the same, said resole being made by reacting an excess of formaldehyde with resorcinol, said composition coating and at least substantially totally impregnating said element.

12. A bonded composite material comprising a glass fiber reinforcing element embedded in a vulcanized rubber, said element containing from about 10 to 40% by weight (dry) based on the weight of said element of a heat cured adhesive composition consisting essentially of 100 parts by weight of a rubbery vinyl pyridine copolymer, from about 0.5 to 20 parts by weight of silica from a stabilized colloidal silica sol in which the particles of silica have an average particle diameter of from about 1 to 150 millimicrons, and from about 10 to 75 parts by weight of a water soluble, heat reactable resorcinol-formaldehyde resole having hydroxyl and methylol groups and said composition forming a bond between said element and said rubber, said resole being made by reacting an excess of formaldehyde with resorcinol, said composition coating and at least substantially totally impregnating said element.

3,896,254
COATING SEMICONDUCTOR SURFACES
Rolf Berkner, Wolkersdorf, Germany, assignor to Semikron Gesellschaft fur Gleichrichterbau u. Elektronik m.b.H., Nuremberg, Germany

Filed Nov. 7, 1972, Ser. No. 304,331

Claims priority, application Germany, Nov. 10, 1971, 2155849

Int. Cl.^{2} B44C *1/18;* **B05D** *5/12*

U.S. Cl. 428—411 **12 Claims**

1. A semiconductor body of an element of Group IV of the periodic table or a compound of elements of Groups III and V of the periodic table having a surface coated with a protective oxide layer including at least one organic coloring agent, the coloring agent having a molecular configuration with conjugated double bonds and being a member of a class which promotes oxidation on exposure to light radiation having a wavelength of from 0.01 micron to 1 micron.

3,896,255
RECORDING SHEET
Hajime Kato, and Takao Hayashi, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

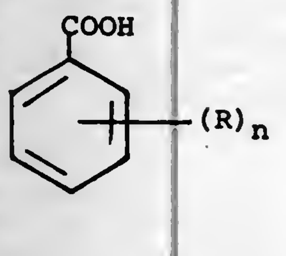
Filed July 13, 1973, Ser. No. 378,859

Claims priority, application Japan, July 14, 1972, 47-70498

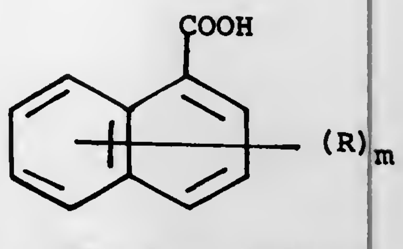
Int. Cl.^{2} B41M *5/00*

U.S. Cl. 428—411 **5 Claims**

1. A recording sheet which comprises a layer of a color developer which forms a color image upon contact with a color coupler, said layer containing at least one metal compound of an aromatic carboxylic acid represented by the formula:



or



wherein R may be the same or different and represents a hydrogen atom, a hydroxy group, a halogen atom, a nitro group, an alkyl group having 1 to 10 carbon atoms, the total carbon number in the R's being less than 13, an aryl group, an arylamino group or an alicyclic group, *m* is an integer of 0 to 7 and *n* is an integer of 0 to 5, or said aromatic carboxylic acid may be dimerized through the substituent R as a methylene group, and a surface active agent.

3,896,256
PROCESS FOR IMPROVING THE SOLDERABILITY OF A STAINPROOFED COPPER SURFACE AND PRODUCT
Adam M. Wolski, Edgewater Park, N.J., assignor to Yates Industries, Inc., Bordentown, N.J.

Filed Dec. 1, 1972, Ser. No. 311,308

Int. Cl.^{2} B23B *15/04*

U.S. Cl. 428—457 **16 Claims**

1. A continuous process for treating copper foil comprising the steps of:
stainproofing the copper foil by immersing the copper foil in an aqueous electrolyte containing hexavalent chromium ion-containing anions and rendering said copper foil cathodic to produce a stainproofed surface, said aqueous electrolyte being sufficiently alkaline to cause precipitation of copper and chrome cations;
coating the stainproofed surface with a compound which, at soldering temperatures, will react with the stainproofing coating to expose the copper; and
drying the stainproofed surface.

ELECTRICAL

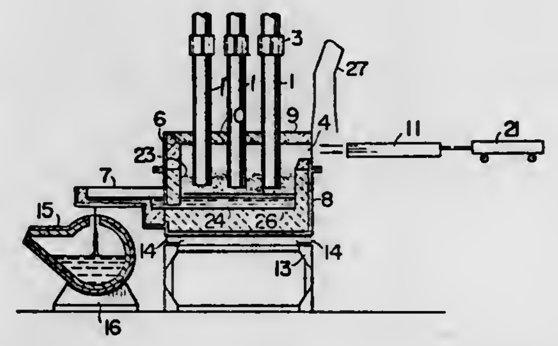
3,896,257
ELECTRIC ARC FURNACE FOR MELTING METALS AND METAL MELTING METHOD USING SUCH FURNACE
Sadamu Kinoshita, No. 389, 7-chome, Ohzumachi Hiroshima, Japan

Continuation-in-part of Ser. No. 122,463, March 9, 1971, abandoned. This application Jan. 12, 1973, Ser. No. 323,129

Claims priority, application Japan, Sept. 24, 1970, 45-83233; Sept. 24, 1970, 45-83234

Int. Cl. F27d *3/10*

U.S. Cl. 13—33 **6 Claims**



1. An enclosed electric arc furnace for melting materials comprising:
a main furnace body comprised of separable upper and lower portions,
a row of electrodes mounted in said upper portion of said main furnace body, said electrodes arranged so that taken together they define a substantially straight line along said main furnace body,
combined exhaust and charging means in said upper portion of said main furnace body, said combined exhaust and charging means positioned to permit raw materials to be distributed along the entire length of said row electrodes while simultaneously allowing dust and smoke generated within said main furnace body to be quickly exhausted therefrom,
a dust and smoke collecting hood positioned adjacent and above said combined exhaust and charging means for collecting said dust and smoke generated within said main furnace body,
said combined exhaust and charging means includes two identical apertures formed in said main furnace body,
alternating raw material feeding means for alternatively supplying raw materials to said furnace through one then the other of said two identical apertures whereby the aperture not receiving raw materials remains open for direct exhaustion of said dust and smoke to said dust and smoke collecting hood, and
tapping means located in said lower portion of said main furnace body for withdrawing molten materials from said furnace.

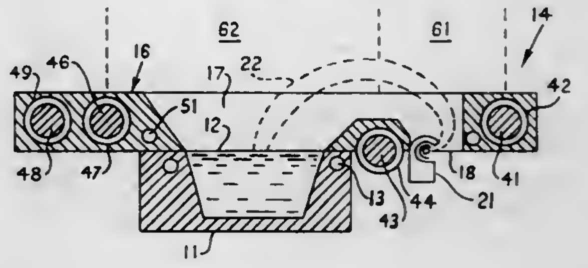
3,896,258
ELECTRON BEAM GUN SYSTEM
Charles W. Hanks, 26 Camino Del Diablo, Orinda, Calif. 94563

Continuation-in-part of Ser. No. 393,904, Sept. 4, 1973, abandoned. This application Apr. 29, 1974, Ser. No. 465,087

Int. Cl. H01j *37/14*

U.S. Cl. 13—31 **15 Claims**

1. An electron beam gun system for an electron beam furnace comprising
first and second electromagnets disposed in substantially parallel spaced relation,
an electron gun disposed between and below said first and second electromagnets,
a third electromagnet disposed in substantially parallel spaced relation to said second electromagnet and adapted to have a crucible or the like disposed therebetween for electron bombardment of material contained therein, and controllable energization means connected to each of said electromagnets for establishing a first variable magnetic lens between said first and second electromagnets and a second variable magnetic lens between said second and third electromagnets
whereby electrons emitted from said electron gun are controllably focused into a beam of variable cross section at said crucible.



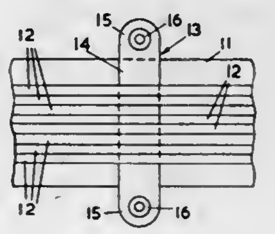
3,896,259
WIRING HARNESS WITH MOUNTING DEVICE AND METHOD OF MAKING SAME
William Lawrence Fry, Haughton, England, assignor to Rist's Wires & Cables Limited, Birmingham, England

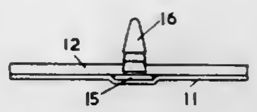
Filed Jan. 29, 1974, Ser. No. 437,698

Claims priority, application United Kingdom, Feb. 13, 1973, 7112/73

Int. Cl. H02g *3/02*

U.S. Cl. 174—72 A **3 Claims**



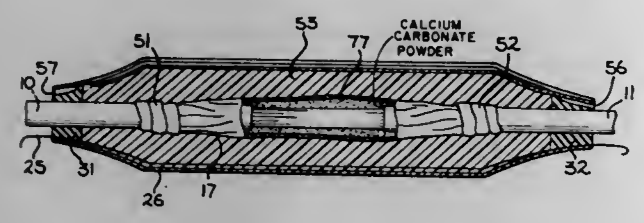


2. A wiring harness including a thermoplastic backing strip, at least one conductive lead comprising a conductive core within a thermoplastic sheath, said sheath being fused to the backing strip to secure the lead to the backing strip, and, a mounting device whereby the harness can be mounted on a support panel or the like in use, the mounting device including a member formed from thermoplastic material held against movement relative to the backing strip and the lead by being fused to the backing strip, and, the mounting device further including an element extending outwardly from the backing strip for attachment to the support panel or the like.

3. A method of manufacturing a wiring harness including the steps of positioning at least one lead having a conductive core in a thermoplastic sheath, on a platform, engaging with the lead a thermoplastic member of a mounting device so that the member overlies part of the lead, and engaging with the lead along its length, and at least that portion of the member overlying the lead, a thermoplastic backing strip while heating the mutually presented surfaces of the lead, the member, and the backing strip so that the sheath of the lead and said member fuse to the backing strip.

3,896,260
POWDER FILLED CABLE SPLICE ASSEMBLY

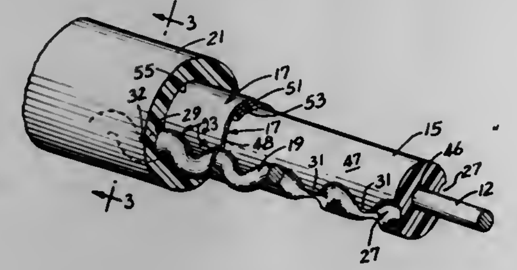
Walter A. Plummer, 3546 Crownridge Dr., Sherman Oaks, Calif. 91403
Continuation-in-part of Ser. No. 347,435, April 3, 1973, Pat. No. 3,836,702. This application Sept. 16, 1974, Ser. No. 506,599
Int. Cl. H02g *15/08*
U.S. Cl. 174—92 12 Claims



1. An electrical cable splice assembly protecting a plurality of spliced conductors in a cable comprising:
- a. an inner cover disposed about said conductors in said cable;
- b. a protective powder disposed within said inner cover;
- c. an outer jacket disposed about said inner cover and said conductors, said conductors passing through corresponding apertures in first and second ends of said outer jacket;
- d. means sealing said apertures; and
- e. an insulative foam material disposed within the space between said outer jacket and said sealing means; whereby said splice assembly protects said conductors from the elements.

3,896,261
COAXIAL CABLE WITH AN UNDULATED DRAIN WIRE

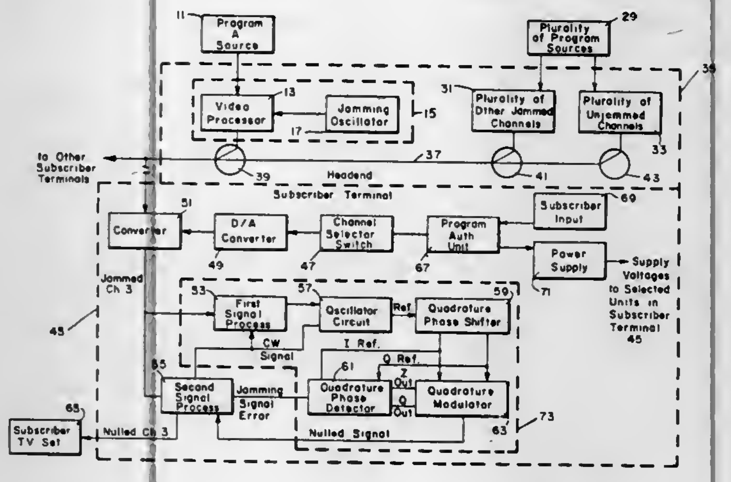
Robert B. Cole, Richmond, Ind., assignor to Belden Corporation, Geneva, Ill.
Filed Apr. 15, 1974, Ser. No. 460,718
Int. Cl. H01b *7/00*
U.S. Cl. 174—115 4 Claims



1. A coaxial cable having a drain wire with resistance to slipping comprising an elongated central conductor extending longitudinally of the cable, a surrounding layer of insulating material in contact with said central conductor, a conductive shield surrounding said layer of insulating material and in contact therewith, an outer surrounding protective jacket of insulating material disposed about said conductive shield, an undulated drain wire in contact with said conductive shield and having a number of undulations and disposed between said jacket and said insulating layer, an undulating groove formed in said insulating layer and having one side of said undulated drain wire projecting therein, and an undulating groove formed in said jacket receiving the other side of said drain wire therein.

3,896,262
SUBSCRIPTION TELEVISION JAMMING SYSTEM

Thomas Hudspeth, Malibu; Harold A. Rosen, Santa Monica, and Bernard L. Walsh, Jr., Northridge, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed Mar. 21, 1974, Ser. No. 453,223
Int. Cl.² H04N *1/44*
U.S. Cl. 178—5.1 6 Claims

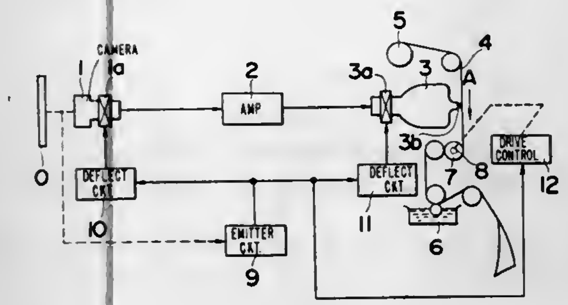


4. A secure television transmission system of the type having at least one source of program signals, said program signals each including a carrier having video modulation impressed thereon and extending over a given video sideband, at least one source of jamming signals having a frequency within said video sideband, an extended signal transmission path, first means for coupling said program and said jamming signal to said transmission path, at least one subscriber receiver, and second means coupled between said transmission path and said subscriber receiver for substantially eliminating said jamming signal wherein the improvement comprises;

second means which includes a first and second phase-locked loop, said first phase-locked loop being adapted to provide a replica of said jamming signal and said second phase-locked loop being adapted to combine the replica of said jamming signal with said jamming signal in phase opposition.

3,896,263
SYSTEM FOR RECORDING PHOTO-IMAGES OF AN OBJECT

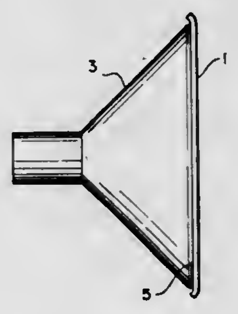
Yoshizo Ikegami, Amagasaki, Japan, assignor to Konan Camera Research Institute, Japan
Filed Apr. 18, 1973, Ser. No. 352,462
Claims priority, application Japan, Apr. 20, 1972, 47-39932; Apr. 25, 1972, 47-41520; July 25, 1972, 47-74306
Int. Cl. H04n *1/00, 5/76*
U.S. Cl. 178—6.8 11 Claims



1. A photo-image recording system for obtaining a continuous series of photographs produced on the surface of a photosensitive recording material comprising camera tube means for constantly scanning a line covering a location of an object being photographed in which the position of the object relative to the camera tube means changes and for providing an output of video signal indicative of the photographed object, pulse emitter means responsive to the change in relative position between the object and the camera tube means for providing an output signal having a pulse repetition frequency corresponding to the amount of change, image reproducing means for converting the video signal of the camera tube means into optical signals on the surface of a photosensitive recording material, and drive means for moving the recording material in a predetermined direction past the image reproducing means, the pulse emitter means supplying the output signal thereof to the camera tube means, the image reproducing means and the drive means for synchronizing the sweeps of the camera tube means, the image reproducing means and the moving speed of the recording material with the pulse repetition frequency corresponding to the change of relative position between the camera tube means and the object.

3,896,264
LONG PERSISTENCE DISPLAY SCREEN SUPPLEMENT TO CRT

Donald Reiser, 5647 Ravenel Ln., Springfield, Va. 22151, and Ralph Belcher, 10603 Lorain Ave., Silver Spring, Md. 20901
Filed Dec. 3, 1973, Ser. No. 421,042
Int. Cl. H04n *5/72*
U.S. Cl. 178—7.8 11 Claims



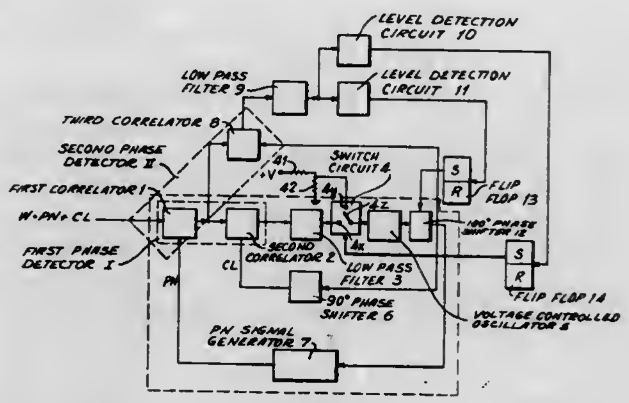
7. A long persistence display system comprising:

a cathode ray tube; and

a flexible screen comprising a flexible binder impregnated with a long persistence phosphor, said flexible screen being placed directly on the outside of the face plate of said cathode ray tube.

3,896,265
FRAME SYNCHRONIZATION SYSTEM

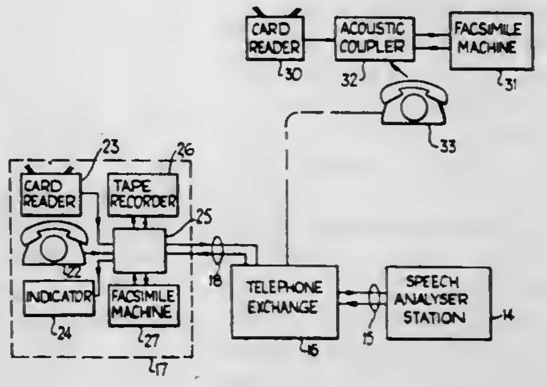
Takao Hara, and Yukio Murayama, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Oct. 26, 1973, Ser. No. 410,169
Claims priority, application Japan, Nov. 6, 1972, 47-110961
Int. Cl. H04l *7/04, 27/14*
U.S. Cl. 178—69.5 R 7 Claims



1. A frame synchronization system for input signals comprising a combination of false random signals and clock signals, a first phase detector having an input supplied with the input signals, the first phase detector comprising a first correlator and a second correlator and having other inputs and an output, a voltage controlled oscillator having an input selectively coupled to the output of the first phase detector, the voltage controlled oscillator having an input, a first feedback circuit comprising a first feedback loop and a 90° phase shifter circuit connected therein for shifting output signals of the oscillator 90° in phase, the first feedback loop being connected between the output of the voltage controlled oscillator and another input of the first phase detector and a second feedback circuit comprising a second feedback loop and a false random signal generator connected therein for generating false random signals, the second feedback loop being connected between the output of the voltage controlled oscillator and still another input of the first phase detector, the frame synchronization system comprising
- a second phase detector including the first correlator and a third correlator and having an input coupled to the output of the voltage controlled oscillator for correlating the input signals with the output of the voltage controlled oscillator, the second phase detector having an output;
- a first level detection circuit having an input coupled to the output of the second phase detector for detecting a specific level of positive polarity of the output of the second phase detector, the first level detection circuit having an output;
- a source of constant voltage; and
- a switch circuit having an armature connected to the input of the voltage controlled oscillator, a first contact coupled to the output of the first phase detector and a second contact connected to the source of constant voltage, the switch circuit being coupled to the output of the first level detection circuit whereby the armature of the switch circuit selectively contacts the first and second contacts in accordance with specific levels of positive polarity detected by the level detection circuit.

3,896,266
CREDIT AND OTHER SECURITY CARDS AND CARD UTILIZATION SYSTEMS THEREFORE

Nelson J. Waterbury, 400 Coconut Row, Palm Beach, Fla. 33480
Continuation-in-part of Ser. No. 169,906, Aug. 9, 1971, Pat. No. 3,752,904. This application June 2, 1972, Ser. No. 259,248
Int. Cl. G10l *1/04*
U.S. Cl. 179—1 SB 16 Claims



1. A security card utilization system comprising:
- a plurality of security cards, each having data recorded thereon relating to the voice characteristics of a respective authorized card holder;
- at least one reading transducer adapted to read said data of any one of said cards presented thereto and to produce a first group of electrical signals which contain said data;
- a first recording means comprising a first magnetic tape loop and a first recording head operative to receive and record said first group of electrical signals on said first tape loop;

at least one acoustical transducer responsive to the voice of any person and operative to produce a second group of electrical signals representative of the voice of such person;

a second recording means comprising a second magnetic tape loop and a second recording head operative to receive and record said second group of electrical signals on said second tape loop;

first and second pickup means operative to read said first and second tape loops respectively and produce first and second output signals therefrom; and

at least one comparator connected to said first pickup means and to said second pickup means to receive said first and said second groups of output signals therefrom and operative to effect a comparison thereof to indicate whether or not said person is the authorized holder of said one card.

3,896,267

TELECOMMUNICATIONS SYSTEM FOR THE HEARING IMPAIRED UTILIZING BAUDOT-ASCII CODE SELECTION

Reynold Sachs, McLean, Va., and Frank Cicchiello, Norristown, Pa., assignors to Phonics Corporation, Silver Spring, Md.

Filed Sept. 21, 1973, Ser. No. 399,553
Int. Cl. H04h *11/06*
U.S. Cl. 179—2 TV **9 Claims**

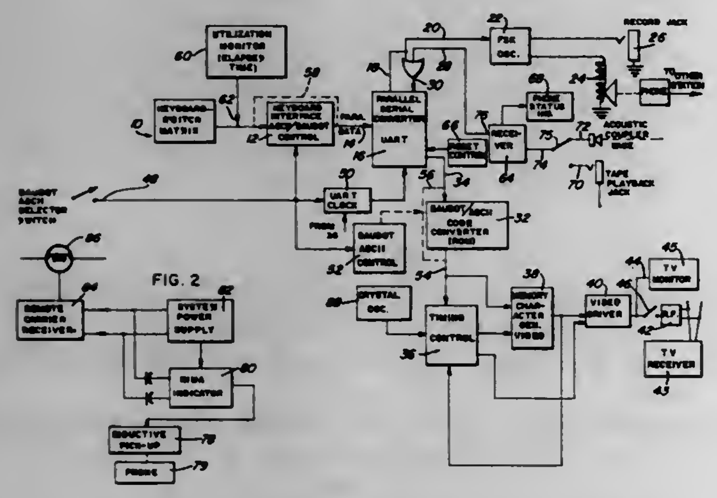


FIG. 2

1. In a telecommunication data terminal for selectively transmitting data in one of at least first and second codes, the terminal comprising:

code select switch means;

means for entering data into the terminal;

means connected to the data entry means for encoding the entered data in accordance with the selected code;

interface means connected between the data entering means and the encoding means, said interface means responsive to the code select switch means, for interposing a special indication when the first code is selected and there is a change from alpha to numeric characters and vice versa;

clock means connected at the input thereof to the switch means for generating timing signals which control the data rate from the encoding means in accordance with the selected code;

transducer means connected to the output of the encoding means for coupling encoded data to a telephone for transmission over telephone lines to another station at a data rate determined by the clock means;

means for visually displaying the entered data at the terminal as it is transmitted to another station, the displaying means including:

means connected to the output of the encoding means and the code select switch means for converting encoded data in the first code format to the second code format for internal processing;

memory means connected to the converting means for storing the data therefrom;

means connected to the output of the memory means for generating video data therefrom corresponding to the entered data;

means for generating video display synchronizing signals;

signal mixing means for mixing the video data with video synchronizing signals and producing a composite video signal; and

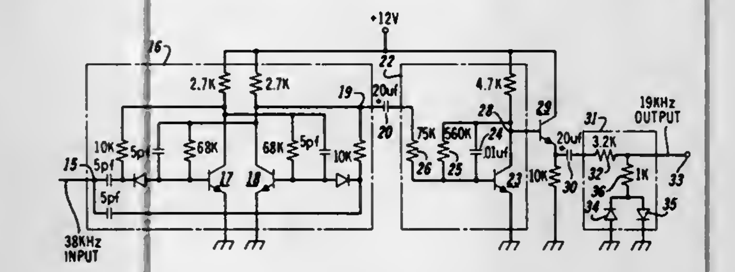
output means whereat the composite signal is present for connection to a video display which displays the entered data.

3,896,268

CIRCUIT FOR GENERATING A STEREO PILOT SIGNAL

Ramer W. Streed, Sioux Falls, S. Dak., assignor to Sencore, Inc., Sioux Falls, S. Dak.

Filed May 29, 1973, Ser. No. 364,961
Int. Cl. H04h *5/00*
U.S. Cl. 179—15 BT **3 Claims**



1. A circuit for generating an FM stereo pilot signal comprising

a flip-flop circuit having an output which changes state in response to a negative transition of the input,

means for applying to said input a signal equal in frequency and phase to an FM stereo subcarrier signal,

an integrator circuit having an input and an output,

means coupling said output of said flip-flop circuit to said input of said integrator circuit,

a wave-shaping circuit having an input and an output, and means coupling said output of said integrator circuit to said input of said wave-shaping circuit,

whereby the signal developed at the output of said wave-shaping circuit is equal in frequency to one-half the frequency of said subcarrier signal and is in phase therewith.

3,896,269

FOUR CHANNEL STEREOPHONIC BROADCASTING SYSTEM AND RECEIVING DEVICE

Mayumi Cho, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed May 29, 1973, Ser. No. 364,476
Claims priority, application Japan, June 6, 1972, 47-56391
Int. Cl. H04h *5/00*
U.S. Cl. 179—15 BT **8 Claims**

1. A discrete system four-channel stereophonic receiver adapted to receive a four-channel stereophonic frequency modulated wave of the following format:

a main channel domain having all four signals of four-channel stereophonic information in said main channel domain, said four signals being designated as R_F, L_F, R_B and L_B and comprising a first composite signal in said main channel domain such that the vector representations of said four signals of said first composite signal are of equal magnitudes and have the following angular displacements from the positive x-axis in two-dimensional space:

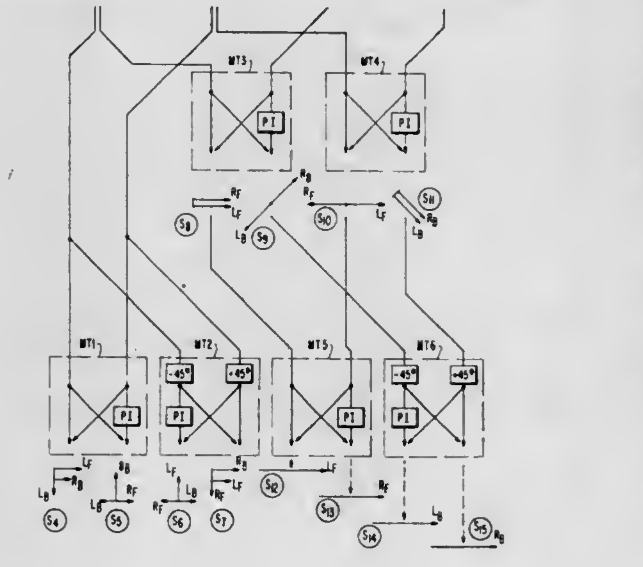
$$R_F<0^\circ$$
$$L_F<0^\circ$$
$$R_B<+45^\circ$$
$$L_B<-135^\circ$$

a first sub-channel domain having all four signals of four-channel stereophonic information in said first sub-channel domain, said four signals comprising a second composite signal in said first sub-channel domain such that the vector representations of said four signals of said second composite signal are of equal magnitudes and have the following angular displacements from the positive x-axis in two-dimensional space:

$$R_F<180^\circ$$
$$L_F<0^\circ$$
$$R_B<-45^\circ$$
$$L_B<-45^\circ$$

a second sub-channel domain having all four signals of four-channel stereophonic information in said second sub-channel domain, said four signals comprising third and fourth composite signals in said second sub-channel domain such that the vector representations composite signal are of equal magnitudes and have the following angular displacements from the positive x-axis in two-dimensional space:

$$R_F<0^\circ$$
$$L_F<0^\circ$$
$$R_B<-135^\circ$$



$$L_B<+45^\circ$$

and the vector representations of said four signals of said fourth composite signal are of equal magnitudes and have the following angular displacements from the positive x-axis in two-dimensional space:

$$R_F<180^\circ$$
$$L_F<0^\circ$$
$$R_B<+135^\circ$$
$$L_B<+135^\circ$$

said discrete system four-channel stereophonic receiver comprising:

first means for matrix-processing said first and third composite signals to generate a fifth composite signal consisting of the signals designated R_F and L_F and a sixth composite signal consisting of the signals designated R_B and L_B,

second means for matrix-processing said second and fourth composite signals to generate a seventh composite signal consisting of the signals designated R_F and L_F and an eighth composite signal consisting of the signals designated R_B and L_B, and

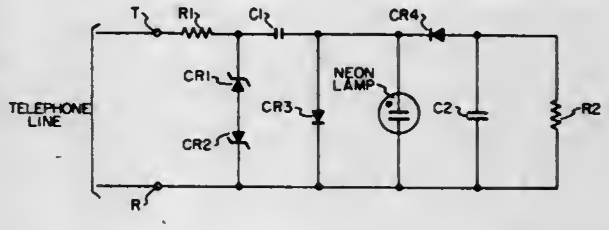
combining means for receiving said fifth, sixth, seventh and eighth composite signals and deriving therefrom four independent sound signals R_F, L_F, R_B, and L_B.

3,896,270

RINGING SIGNAL DETECTOR CIRCUIT

Thomas J. Kopec, Arlington Heights, and Richard A. Morstadt, Elmhurst, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Dec. 7, 1973, Ser. No. 422,809
Int. Cl.^{2} H04M *1/26*
U.S. Cl. 179—84 L **8 Claims**



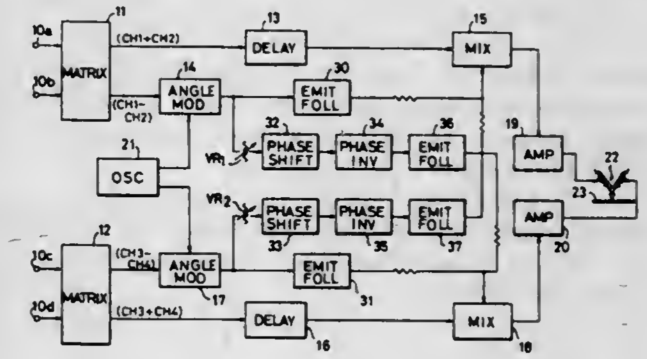
1. A ringing signal detector circuit connected to a telephone line, said line including a pair of line conductors subject to the impression thereon of dial pulses and line voltage, said line voltage polarity being reversable, said ringing signal detector circuit operable in response to ringing signals received over said line, said detector circuit comprising: a neon lamp; a peak-limiting network connected between said lamp and said line, operable to prevent operation of said lamp in response to dial pulses; a voltage doubler network connected between said peak-limiting network and said lamp, operated in response to said ringing signals to operate said lamp; and a battery reversal suppressor network connected to said line in parallel with said lamp, operable to absorb transient energy caused by reversal of the polarity of said line voltage impressed on said telephone line.

3,896,271

SYSTEM FOR A MULTICHANNEL RECORD DISC WITH CROSSTALK COMPENSATION PROVIDED DURING RECORDING

Yukinobu Ishigaki, Yamato; Isao Ohwaki, Tokyo; Kohei Sasamura, Sagamihara, and Masahiro Ohba, Yokohama, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed May 2, 1973, Ser. No. 356,378
Claims priority, application Japan, May 2, 1972, 47-43260
Int. Cl. G11b *3/00, 3/74*
U.S. Cl. 179—100.4 ST **4 Claims**



1. A multichannel disc system for recording first and second channels on a left groove wall and third and fourth channels on a right groove wall of a phonograph record, said system comprising:

a. first matrix means for forming a first sum signal and a first difference signal responsive to said first and second channel signals;
b. second matrix means for forming a second sum signal and a second difference signal responsive to said third and fourth channel signals;
c. first modulating means for angularly modulating a carrier wave responsive to the first difference signal to produce a first angular modulated wave;

d. second modulating means for angularly modulating the carrier wave responsive to the second difference signal to produce a second angular modulated wave;
e. first attenuating means for attenuating the first angular modulated wave;
f. first phase-shifting means for shifting the phase of the output signal of said first attenuating means;
g. first phase-inverting means for inverting the phase of the output signal of said first phase-shifting means;

said first attenuating means having an attenuating quantity for making the amplitude of the output signal of said first phase-inverting means equal to the amplitude of a first crosstalk component leaking from the left channel into the right channel; said first phase-shifting means having a phase-shifting quantity for causing the phase angle of the output signal of said first phase-inverting means to cancel the phase angle of the first crosstalk component;

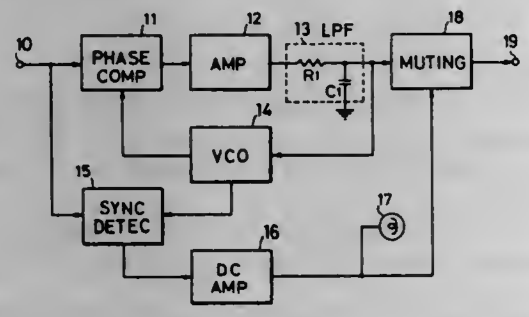
h. second attenuating means for attenuating the second angular modulated wave;
i. second phase-shifting means for shifting the phase of the output signal of said second attenuating means;
j. second phase-inverting means for inverting the phase of the output signal of said second phase-shifting means;

said second attenuating means having an attenuating quantity for making the amplitude of the output signal of said second phase-inverting means equal to the amplitude of a second crosstalk component leaking from the right channel into the left channel; said second phase-shifting means having a phase-shifting quantity for causing the phase angle of the output signal of said second phase-inverting means to cancel the phase angle of the second crosstalk component;

k. first mixing means for mixing and multiplexing the first direct-wave sum signal, the first angular modulated wave and the output signal of said second phase-inverting means;
l. second mixing means for mixing and multiplexing the second direct-wave sum signal, the second angular modulated wave and the output signal of said first phase-inverting means; and
m. recording means for recording the output signal of said first and second mixing means on the left and right channel sides, for simultaneously recording the output signal of said first mixing means on the left wall of a groove of a record disc and the output signal of said second mixing means on the right wall of the groove.

3,896,272
MUTING SYSTEM IN MULTICHANNEL DISC REPRODUCING APPARATUS

Nobukai Takahashi, Yamato; Yoshiki Iwasaki, Yokohama; Masao Kasuga, Sagamihara, and Yasuo Itoh, Tokyo, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan
Filed Oct. 3, 1973, Ser. No. 403,165
Claims priority, application Japan, Oct. 9, 1972, 47-101262
Int. Cl. G11b *3/00, 3/74*
U.S. Cl. 179—100.4 ST **8 Claims**



1. A muting system in a multichannel disc reproducing apparatus, said system comprising:

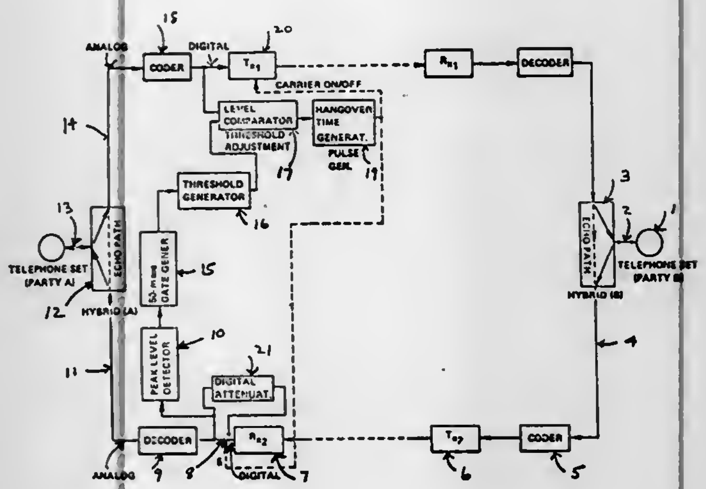
a phase locked loop circuit means including a phase comparator means operated responsive to the receipt of an angular modulated wave reproduced from a multichannel disc having recorded thereon a multiplexed signal including an angular modulated wave signal and a direct wave signal; a voltage controlled oscillator means operated responsive to an output signal from said phase comparator means to produce an output oscillation signal having an oscillation frequency controlled by said output signal, means for supplying said output oscillation signal to said phase comparator means, said phase locked loop circuit operating to demodulate said angular modulated wave;

synchronous detector means jointly responsive to said angular modulated wave and the output oscillation signal of said voltage controlled oscillator for producing a specific output when said phase locked loop circuit is locked to the input reproduced angular modulated wave during normal demodulation operation; and

muting means operating in response to said said specific output of said synchronous detector means to carry out a gating operation and thereby introduce an output demodulated signal of said phase locked loop circuit to a succeeding stage.

3,896,273
DIGITAL ECHO SUPPRESSOR

Ettore Fariello, Gaithersburg, Md., assignor to Communications Satellite Corporation, Washington, D.C.
Filed Jan. 8, 1971, Ser. No. 105,069
Int. Cl. H04b *3/20*
U.S. Cl. 179—170.6 **14 Claims**

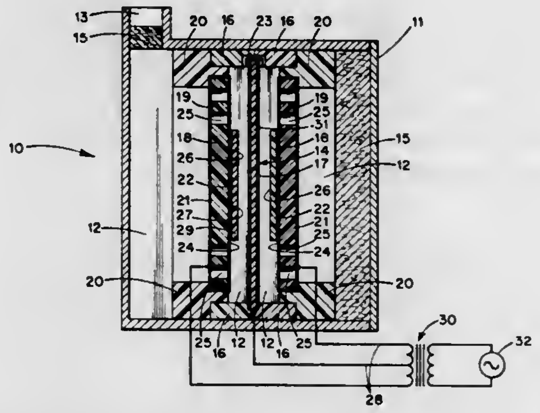


1. In a communications system having a four-wire transmission circuit connected to a two-wire circuit via a terminal, apparatus for suppressing echo comprising:

a. means for detecting the amplitude level of a signal being received on the receive line of said four-wire circuit;
b. means, connected to said detection means, for generating a threshold level which is a predetermined value less than said detected amplitude level;
c. means, connected to said generating means, for storing, for a predetermined period of time, said threshold level and comparing the amplitude of a signal on the transmit line of said four-wire circuit to said stored threshold level, and
d. means, connected to said means for comparing, for maintaining the transmit line of said four-wire circuit disabled if the signal amplitude on the transmit line is less than said stored threshold level.

3,896,274
ELECTRET EARPHONE

Freeman W. Fraim, Lexington, Mass., and Preston V. Murphy, Barcelona, Spain, assignors to Thermo Electron Corporation, Waltham, Mass.
Filed Oct. 4, 1973, Ser. No. 403,573
Int. Cl. H04r *19/00*
U.S. Cl. 179—111 E **11 Claims**



1. An electroacoustic transducer comprising:

a thin, substantially flexible electrically conductive diaphragm;

a pair of rigid backplates positioned on opposite sides of said diaphragm;

a separate imperforate electret bonded to each said backplate along the surface thereof confronting said diaphragm, each said electret being imperforate to provide a single continuous surface uninterrupted by perforations, thereby to maximize the ratio of surface area of perimeter length;

each said backplate being vented at locations not obstructed by the electret bonded thereto;

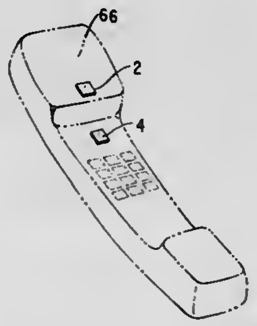
said diaphragm and each of said electrets being electrically insulated from one another;

means for supporting said diaphragm between said electrets with sufficient clearance for said diaphragm to vibrate; and

means for electrically connecting individually to said diaphragm and to each of said electrets.

3,896,275
TELEPHONE LINE SWITCH

James Wilson, Fair Haven, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Aug. 22, 1974, Ser. No. 499,763
Int. Cl.^{2} H04M *1/02*
U.S. Cl. 179—158 R **7 Claims**



1. A telephone line switch comprising contacts for effecting a connection with a telephone line when said contacts are in a closed position and opening said connnection when said contacts are in an open position, and operating card means for moving said contacts between said closed and open positions characterized in that said line switch includes:

first means including a first pushbutton for operating said card means to move said contacts between said closed and open positions when said first pushbutton is moved from first to second positions, respectively, and conversely;

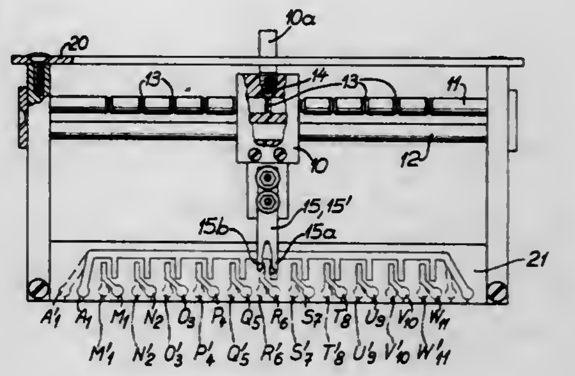
a magnetic latching means for latching said first pushbutton in said second position to hold said contacts in said open position;

second means including a second pushbutton operable between first and second positions for releasing said magnetic latching means if said first pushbutton is latched in said second position when said second pushbutton is operated from said first position to said second position and for moving said first pushbutton into said second position without engaging said magnetic latch if said first pushbutton is in said first position when said second pushbutton is operated from said first position to said second position; and

means for biasing said first and second pushbuttons toward respective said first positions.

3,896,276
MATRIX TYPE SLIDE SWITCH ASSEMBLY

George Held, Neuchatel, Switzerland, assignor to Compagnie Industrielle Radioelectrique, Switzerland
Filed Nov. 8, 1973, Ser. No. 413,943
Claims priority, application Switzerland, Mar. 13, 1973, 3672/73
Int. Cl. H01h *15/06*
U.S. Cl. 200—16 R **1 Claim**



1. A switch, comprising;

a frame which has a plurality of plates disposed in planes parallel to one another, each plate having a pair of first conductors and a plurality of terminals of each first conductor, all disposed in the respective planes; said frame also having a plurality of pairs of second conductors disposed transversely of said planes, each second conductor having a plurality of terminals also disposed in said planes, including a pair of terminals for each plate, adjacent terminals of the first conductors on the plate;

a plurality of slide means, one for each plate and each mounted for individual linear movement along the respective pair of first conductors into any one of a plurality of determined positions aligned with the second conductors; and

contact means on each slide means, each for connecting a selected terminal of a second conductor with the corresponding terminal of a first conductor and for thereby interconnecting two or more of said pairs of first conductors by elements of said second conductors when respective slide means are in corresponding ones of said positions.

3,896,277
TIME SWITCH MECHANISM WITH AUTOMATIC AND/OR MANUAL ACTUATING ASSEMBLY

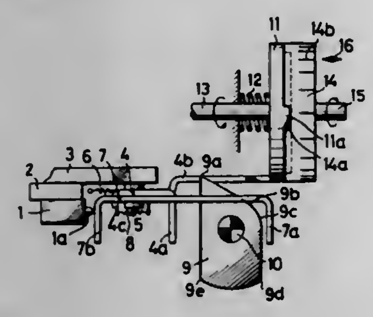
Jusuke Yaginuma, Koriyama, Japan, assignor to Copal Company Limited, Japan

Filed Mar. 25, 1974, Ser. No. 454,228

Claims priority, application Japan, Apr. 9, 1973, 48-42526

Int. Cl. H01h *43/10*

U.S. Cl. 200—38 R **2 Claims**



1. Time switch mechanism adapted to actuate a switch either automatically by means of a clock mechanism at a manually set, predetermined time or manually at a desired time, wherein the improvement comprises a timer cam actuated by said clock mechanism at a manually set, predetermined time, a timer lever coupled with said timer cam so as to be actuated by the actuation of said timer cam, a switch lever coupled with said timer lever and said switch for actuating said switch by the actuation of said timer lever, and a manually operable switching cam engageable with said timer lever as well as said switch lever by the operation thereof, said switching cam being so configured that, when moved to its first position, it is disengaged from said timer lever as well as said switch lever so as to permit said timer lever to be actuated by said timer cam thereby allowing said switch to be automatically actuated by said clock mechanism through said switch lever and, when moved to its second position, engages and arrests said timer lever so as to prevent the same from being actuated by said timer cam thereby disabling the automatic actuation of said switch by said clock mechanism, while, when moved to its third position, it engages both said timer lever and said switch lever thereby preventing said timer lever from being actuated by said timer cam for disabling the automatic actuation of said switch by said clock mechanism while it permits said switch to be actuated manually by the actuation of said switch lever to said third position.

3,896,278
FREEZER MONITOR THERMAL RESPONSIVE SWITCH WITH GRAVITY ACTUATED PLUNGER CONTACT RETAINED BY FREEZABLE LIQUID IN OPEN SWITCH POSITION

Stephen Murawski, and Bernard J. McKairnes, both of 1846 E. Schiller St., Philadelphia, Pa. 19134

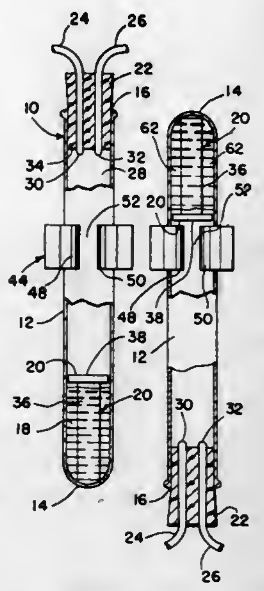
Filed Jan. 8, 1974, Ser. No. 431,747

Int. Cl. H01h *37/74*

U.S. Cl. 200—52 R **5 Claims**

1. In a freezer monitor switch positioned within a freezer, the combination of

A. a hollow body having one closed end and one closed contact containing end;
B. an electrically conductive element positioned within the body,
  1. the conductive element comprising an elongated body and a contact head, the contact head having a diameter to readily slide within the hollow body,
  2. said element being movable from a first position to a second position, the first position being above the second position;
C. a quantity of freezable liquid contained within the body;
  a. said liquid being frozen to a solid state by operation of the freezer,
  b. the said liquid when in the solid state maintaining the element in its first position,
  c. the said liquid melting to the liquid state upon freezer failure to release the element,
  d. the element falling by gravity from the first position to the second position upon freezer failure;
D. a pair of spaced electrical contacts positioned at the contact containing end,
  1. the contacts extending into the interior space,
  2. the said element being positioned at the closed end and spaced from the contacts when in the first position,
  3. the said element contacting both of the electrical contacts and forming an electrically conductive path therebetween when the element is moved to its said second position,



E. a bracket mounted interiorly of the freezer,
  1. said hollow body being removably mounted on the bracket,
  2. the hollow body being initially mounted within the freezer with the closed end down and the contact containing end up,
  3, the said freezable liquid and conductive element initially falling to the said closed end and the action of the freezer freezing the liquid and entrapping the conductive element at the closed end,
  4. the hollow body being then removed from the bracket and being rotated through 180° within the freezer after the liquid is frozen to position the closed end vertically above the contact containing end and being remounted on the bracket.

3,896,279
TONER LEVEL DETECTOR ASSEMBLY INCLUDING MAGNETICALLY RESPONSIVE SWITCH ACTUATED BY DIFFERENTIAL LOADED BLADE TYPE ROTOR CARRYING MAGNETIC ACTUATOR

Kiyoshi Sugawara, Ebina, Japan, assignor to Rank Xerox, Ltd., London, England

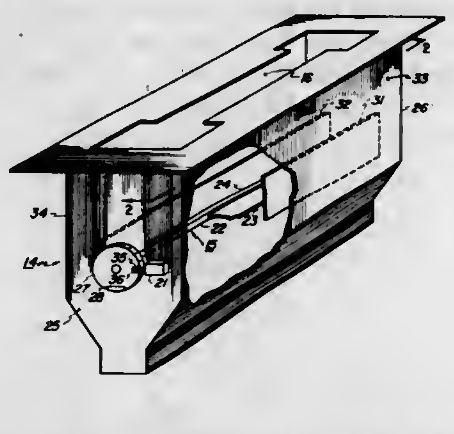
Filed Mar. 15, 1974, Ser. No. 451,628

Claims priority, application Japan, Sept. 5, 1973, 48-103485

Int. Cl. H01h *36/00*

U.S. Cl. 200—61.21 **5 Claims**

1. In a toner dispenser having a reservoir for storing a supply of toner, a detector for sensing impending exhaustion of the toner supply; said detector comprising the combination of a rotor journalled in opposed ends of said reservoir with a plurality of blades of different surface areas extending therefrom to be differentially loaded by toner when said supply is above a predetermined level, bias means for urging said rotor to rotate against said differential loading, actuating means mounted for rotation with said rotor along a predetermined path, a switch, and means for supporting said switch in a predetermined position relative to said path so that said switch is positioned to be actuated by said actuating means when said toner supply drops below said predetermined level.



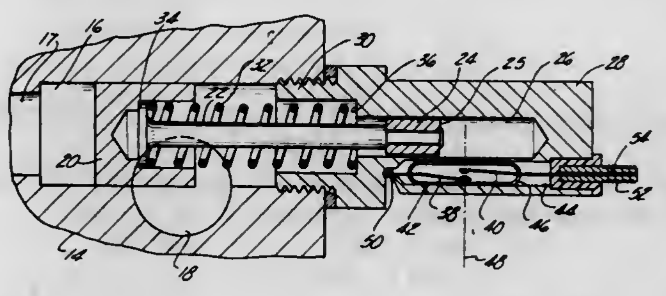
3,896,280
VALVE POSITION INDICATOR

Douglas O. Blake, Newton, Mass., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 13, 1974, Ser. No. 450,715

Int. Cl. H01h *35/40*

U.S. Cl. 200—81.9 M **1 Claim**



1. In an engine lubricating system having an oil filter mounted on a base to receive dirty oil from a first passage therein and to discharge clean oil to a second passage therein; said base having a first sealable bore therein which forms a pressure relief passage between the first and second passages; a pressure-responsive plunger slidably disposed in said bore to move between a first closed position preventing flow through the relief passage and a second open position permitting flow through the relief passage; and a compression coil spring biasing the plunger toward the first passage in opposition to the pressure drop created across the first and second passages by the oil filter, whereby the plunger moves to its open position only when the filter is sufficiently obstructed to generate abnormally high oil pressures on the upstream face of said plunger:

> the improvement comprising means for indicating an open condition of the plunger; said indicating means comprising an elongated cap member attached to the oil filter base to seal the open end of said first bore; said cap member having a second internal bore forming an axial continuation of the base bore, and a third external bore parallel to the axis defined by the first and second bores; said plunger being equipped with a special stem that projects therefrom into the second internal bore formed in the cap member; a magnet operator carried on a section of the stem within the cap member internal bore for reciprocatory movement with the stem and plunger; the aforementioned coil spring being located so as to surround the stem in the axial space between the plunger and a shoulder defined by the cap member internal bore; and a reed switch located within the third external bore of the cap member for actuation by the magnet operator; said magnet operator being movable by the stem so that the switch contacts are closed as soon as the pressure-relief plunger begins to crack open in response to abnormally high pressures generated on the upstream face of the plunger.

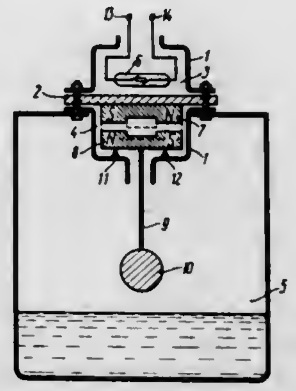
3,896,281
MAGNETICALLY ACTUATED LIQUID LEVEL SIGNALLING DEVICE

Evgeny Ilich Feoktistov, Prospekt Oktyabrya, 53, kv. 75; Evgeny Arkadievich Chechulin, Aiskaya ulitsa 77/2, kv. 24; Nikolai Semenovich Zonov, ulitsa Parkhomenko, 104, kv. 60; Leonid Kronidovich Prozorov, ulitsa Tsjurupy 84, kv. 239; Jury Maximovich Poskryakov, Revoljutsionnaya ulitsa 82, kv. 5; Grigory Grigorievich Kremennoi, ulitsa Festivalnaya 15, kv. 25, all of Ufa, and Vladimir Mikhailovich Goryachy, Komsomolskaya ulitsa 37a, kv. 29, Okha-na-Sakhaline, all of U.S.S.R.

Filed Nov. 7, 1973, Ser. No. 413,453

Int. Cl. H01h *35/18, 36/02*

U.S. Cl. 200—84 C **2 Claims**



1. A liquid level signalling device controlling the level of liquid in a reservoir comprising: a housing having an upper and lower part separated by a non-magnetic partition and rigidly attached to said reservoir; a first magnet stationarily fixed in the lower part of said housing; a second magnet accomodated in the lower part of said housing beneath said first magnet and at a predetermined distance therefrom so as to be movable toward and away from said first magnet, said second magnet being movably positioned relative to the first magnet for continuous magnetic attraction therebetween so that the poles of said first magnet face the poles of the second magnet having opposite polarity; a float floatably co-operating with the level of liquid being controlled in the reservoir; a flexible link connecting said second magnet to said float to move therewith and relative to said first magnet according to movements of the level of the liquid in the reservoir; a magnetically driven contact mounted in the upper part of said housing in the stray magnetic flux field of said first magnet, said second magnet compensating for the action of the stray magnetic flux of said first magnet upon said magnetically driven contact whereby when the level of the liquid in the reservoir falls, the second magnet moves away from the first magnet and the stray flux of said first magnet in the vicinity of said contact increases to close said contact, and when the level of the liquid in the reservoir rises the stray flux of said first magnet in the vicinity of said contact decreases to thereby open said magnetically driven contact.

3,896,282
HIGH VOLTAGE CIRCUIT INTERRUPTING DEVICE

Leonard Valentine Chabala, Maywood, Ill., assignor to S&C Electric Company, Chicago, Ill.

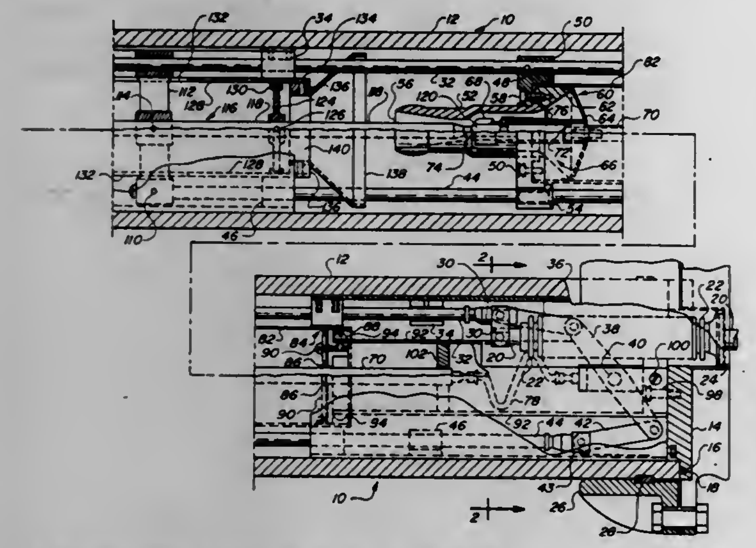
Filed May 25, 1973, Ser. No. 363,997

Int. Cl.^{2} H01H *33/70*

U.S. Cl. 200—148 A **21 Claims**

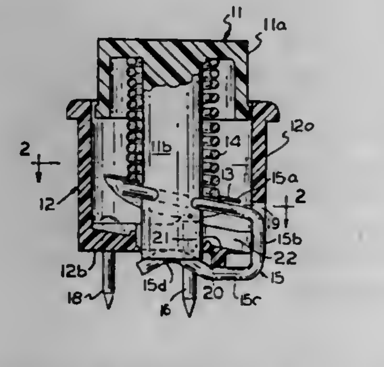
1. A high voltage electrical circuit interrupting device inter-

rupting current flow between a first portion of the circuit and a second portion of the circuit comprising:
- a hollow sealed gas tight housing;
- an arc quenching gas contained in said housing;
- a first movable electrical contact connected to the first portion of the circuit mounted within the housing;
- a second movable electrical contact connected to the second portion of the circuit within the housing normally engaging said first contact to complete the electrical circuit;
- operating means including:
- an operating rod extending through a wall of said housing;
- a first pull rod connected to said first contact;



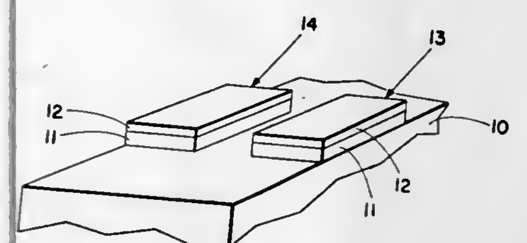
- a second pull rod connected to said second contact;
- a first mechanical linkage connecting said first pull rod and said operating rod so that movement of said operating rod causes movement of said first pull rod; and
- second mechanical linkage connecting said first and said second pull rods so that movement of said first pull rod in one direction causes movement of said second pull rod in an opposite direction;
- whereby movement of said operating rod produces movement of said first and second pull rods in opposite directions thereby causing said first and second contacts to move in opposite directions to interrupt the electrical circuit.

3,896,283
TWO-STAGE PUSH BUTTON SWITCH
Julian D. Hayden, Vancouver, Wash., assignor to Syndyne Corporation, Vancouver, Wash.
Filed Sept. 1, 1971, Ser. No. 176,870
Int. Cl. H01h *13/52*
U.S. Cl. 200—159 R **8 Claims**



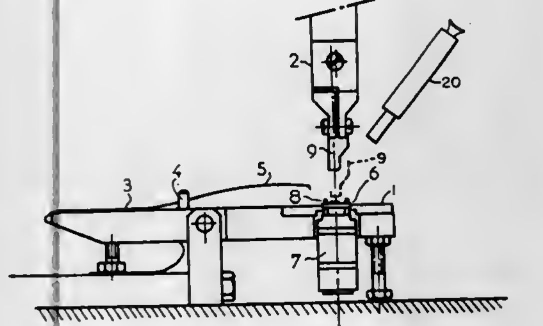
1. A multiple stage push button switch comprising:
- a push button,
- a single spring resisting depression of the push button,
- and means mounting said spring so that only a fraction of its resistive force resists depression of said button during one stage of operation, while a larger fraction resists depression during a second stage, and a still larger fraction is resisting depression during a third stage.

3,896,284
THIN-FILM MICROELECTRONIC RESISTORS
Edward S. B. Holmes, Almonte, Canada, assignor to Microsystems International Limited, Montreal, Canada
Continuation of Ser. No. 261,722, June 12, 1972, abandoned. This application Mar. 11, 1974, Ser. No. 450,076
Int. Cl. H01c *13/00*
U.S. Cl. 338—48 **2 Claims**



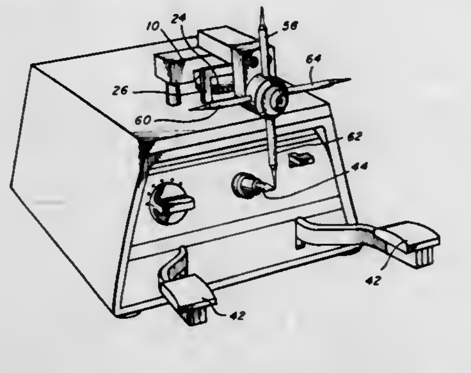
1. A multi-layer resistor assembly comprising a substrate member having two layers of electrically conductive material thereupon extending between terminal means for said resistor, the first layer, adjacent said substrate, being comprised of chromium, and the second layer, of decreased resistivity with respect to the first layer, being comprised of tantalum.

3,896,285
PROCESS AND DEVICE FOR WELDING OF MULTIWIRE CABLES
Raymond Louis Delorme, Bagnolet, France, assignor to Societe Honeywell Bull (Societe Anonyme), Paris, France
Filed May 16, 1973, Ser. No. 360,881
Int. Cl. B23k *11/00*
U.S. Cl. 219—80 **8 Claims**



1. A welding device for use in welding plural wires of a multiwire flat cable of the type wherein the wires are arranged in predetermined evenly spaced insulated relation within an insulating sheath, to a printed circuit having conductive zones of a predetermined spacing corresponding to the spacing of the wires, said device comprising a welding head and a pedestal below said welding head, aid pedestal having first means for supporting a printed circuit including a slideway for slideably receiving a printed circuit, and second means on said pedestal defining a guide path for a multiwire flat cable, said second means including a pair of guide feed spaced transversely of said guide path and a cable holding spring extending longitudinally of said guide path and in elevated relation to said pedestal for holding a cable in an elevated position relative to said pedestal.

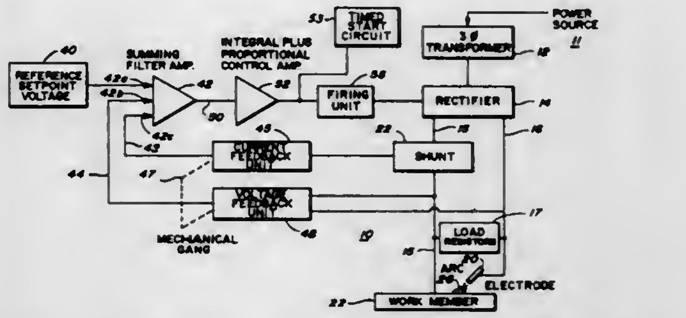
3,896,286
ELECTRIC WELDING APPARATUS
Christopher John Minors, 9 Southbourne Rd., Sheffield S10 2QN, England
Filed Sept. 25, 1973, Ser. No. 400,537
Claims priority, application United Kingdom, Sept. 26, 1972, 44320/72; Sept. 26, 1972, 44321/72
Int. Cl. B23k *11/10*
U.S. Cl. 219—86 **9 Claims**



1. An orthodontic welding machine comprising
1. a first electrode,
2. a turret support,
3. a turret rotatably mounted on the turret support,
4. a plurality of second electrodes radiating from the turret and disposed to permit any one of the second electrodes to be selectively brought into welding registration with the first electrode,
5. a push button located centrally of the rotatable turret,
6. locking and registration pin means connected to the push button,
7. turret locking spring means acting upon the locking and registration pin means and urging the locking and registration pin means into locking apertures in the turret support, whereby release of the turret is effected by pressing the push button against the action of the turret locking spring means to disengage the locking and registration pin means from the locking apertures, the turret and the second electrodes thereupon being enabled to rotate on the turret support to permit a selected second electrode to be brought into welding registration with the first electrode and whereby release of the push button causes reengagement of the locking and registration pin means in the locking apertures to retain the selected electrode in firm welding registration with the first electrode,
8. two spaced parallel pillars,
9. carrier means movably mounted on the pillars, the carrier means having the turret support mounted thereon,
10. welding spring means acting on the carrier means to urge the first electrode and turret together,
11. displacement means for moving the turret and first electrode apart against the action of the welding spring means, and
12. electrical power supply means for supplying electrical power to the first electrode and the second electrode which is locked in registration therewith to effect welding.

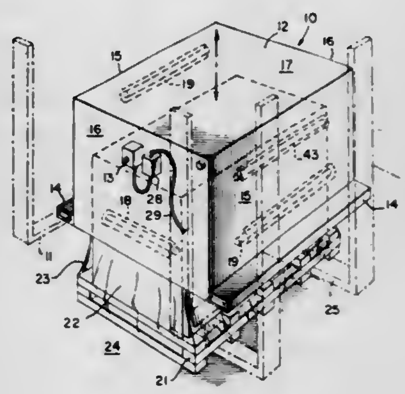
3,896,287
DIRECT CURRENT ARC POWER SUPPLY
George E. Cook, Brentwood, Tenn., assignor to Air Products and Chemicals, Inc., Allentown, Pa.
Filed July 11, 1973, Ser. No. 378,265
Int. Cl. B23k *9/10*
U.S. Cl. 219—131 R **22 Claims**

1. An arc power supply for controlling the volt-ampere characteristic of the direct current applied by way of lead means to a pair of electrodes which establishes and maintains an arc between said electrodes, comprising:
- power means operable for providing through said lead means direct current to said electrodes,
- reference setpoint means to produce a set reference signal related to a desired value of said direct current,
- adjustable means connected to said lead means for sensing said arc current and providing an adjustable current feedback signal,
- adjustable means connected to said lead means for sensing the voltage across said electrodes and providing an adjustable voltage feedback signal,



- feedback control means coupled to said power means for summing said set reference signal, said adjustable current feedback signal and said adjustable voltage feedback signal for applying a control signal to said power means to control said volt-ampere characteristic, and
- means for simultaneously adjusting both said adjustable current sensing means and said adjustable voltage sensing means to provide infinite and continuous control of said volt-ampere characteristic of said direct current between and including a constant current characteristic and a constant potential characteristic.

3,896,288
METHOD OF HEAT-SHRINK WRAPPING GOODS
Martin J. Tulkoff, 3404 Shelburne Rd., Baltimore, Md. 21208
Continuation-in-part of Ser. No. 254,548, May 18, 1972, Pat. No. 3,723,708. This application Mar. 26, 1973, Ser. No. 344,774
Int. Cl.^{2} B65B *53/02;* **H05B** *1/00*
U.S. Cl. 53—30 **1 Claim**



1. A method of heat-shrink-wrapping goods with a heat-shrinkable film comprising the steps of:
- a. covering said goods with said film to embrace and retain the goods in a desired condition when the film is shrunken thearound;
- b. providing a wall-enclosed housing having one open wall to permit entrance of the goods;
- c. placing said film-wrapped goods in alignment with said wall-enclosed housing;
- d. heating the air within said wall-enclosed housing to a heat-shrink temperature such that said air is maintained in a substantially quiescent state; and while said air is in said heated quiescent state;
- e. imparting movement to at least one of said goods and wall-enclosed housing whereby said film-wrapped goods are esentially enclosed by said wall-enclosed housing.

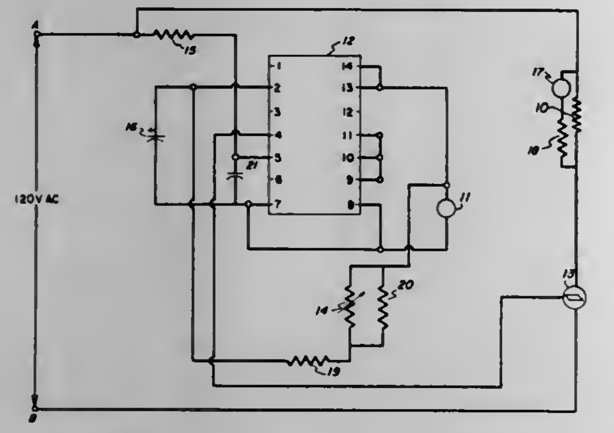
3,896,289
AQUARIUM WATER HEATER

Edmond F. Di Renna, 60 Lessing Rd., West Orange, N.J. 07052

Filed Nov. 13, 1974, Ser. No. 523,346

Int. Cl.² H05B *3/06*

U.S. Cl. 219—523 **2 Claims**



1. An immersion-type electric aquarium heater comprising:

a. an electric heater element;

b. temperature sensing means located at a spaced point from said heater element and thermally insulated therefrom and comprising a negative temperature coefficient thermistor, the change in electrical resistance exhibited by said thermistor over the temperature range of about 72° to about 86°F. being substantially linear with respect to variations in temperature over said temperature range;

c. alternating current supply means for said heater element;

d. heater element control means electrically connected to said alternating current supply means, said heater element and said temperature sensing means and comprising (i) a zero voltage switch, (ii) a bi-directional thyristor and (iii) a multi-turn potentiometer, said temperature sensing means and potentiometer connected in series in a circuit that is adapted to provide a voltage V to said zero voltage switch, said zero voltage switch operable responsive to said voltage V and adapted to electrically actuate said thyristor, said thyristor adapted to permit or halt the flow of alternating current to said heater element; and

e. housing means formed of an electrical insulating material and adapted to receive said heater element and heater element control means and be positioned within an aquarium.

3,896,290
ELECTRONIC CALCULATOR

Roger Denoual, Tokyo, Japan, assignor to Establissement Teltest R.D., Vaduz, Liechtenstein

Filed Jan. 30, 1974, Ser. No. 437,991

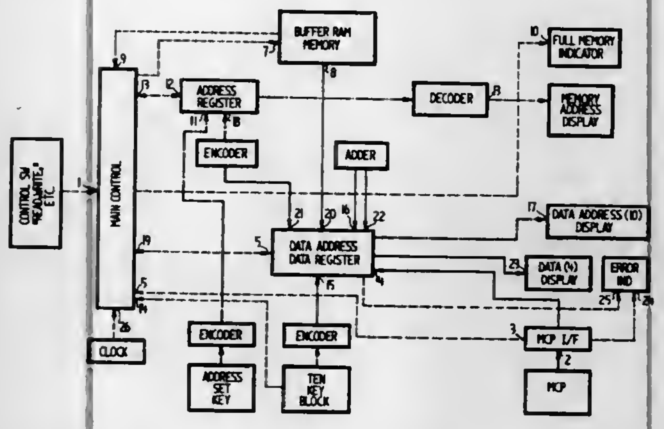
Claims priority, application France, Jan. 12, 1973, 73.01076

Int. Cl. G06k *7/00*

U.S. Cl. 235—61.7 R **1 Claim**

1. An electronic calculator for authenticating messages comprising:

a main control;
a control switch;
a clock;
an address register;
a first encoder;
a second encoder;
an address set key;
a buffer ram memory;
a data address-data register;
third encoder;
a key block;
an adder;
a decoder;
a full memory indicator;
a memory address display;
a data address display;
a data display
an error indicator;
a magnetic card printer interface;
a magnetic card printer;
means connecting the main control to the buffer ram memory for address transmissions from the buffer ram memory to the main control;
means connecting the main control to the buffer ram memory for address transmissions from the main control to the buffer ram memory;



means connecting the main control to the address register for control transmissions between the main control and the address register;
means connecting the main control to the full memory indicator for address transmissions from the main control to the full memory indicator;
means connecting the main control to the data address-data register for address transmissions between the main control and the data address-data register;
means connecting the main control to the magnetic card printer interface for address transmissions between the magnetic card printer interface to the main control;
means connecting the main control to the key block for address transmissions between the main control and the key block;
means connecting the main control to the address set key for address transmissions from the main control to the address set key;
means connecting the main control to the clock for address transmissions from the clock to the main control;
means connecting the main control to the control switch for address transmissions from the control switch to the main control;
means connecting the address register to the buffer ram memory for control transmissions from the address resister to the buffer ram memory;
means connecting the address register to the decoder for control transmissions from the address register to the decoder;
means connecting the address register to the first encoder for control transmissions from the first encoder to the address register;
means connecting the address register to the second encoder for control transmissions from the second encoder to the address register;
means connecting the first encoder to the data address-data register for control transmissions from the first encoder to the data address-data register;
means connecting the second encoder to the address set key for control transmissions from the second encoder to the address set key;
means connecting the buffer ram memory to the data address-data register for data transmissions between the buffer ram memory and the data address-data register;
means connecting the data address-data register to the third encoder for control transmissions from the third encoder to the data address-data register;
means connecting the third encoder to the data address-data register for data transmissions between the third encoder and the data address-data register;
means connecting the third encoder to the key block for control transmissions from the key block to the third encoder;
means connecting the third encoder to the key block for data transmissions from the key block to the third encoder;
means connecting the adder to the data address-data register for control transmissions between the adder and the data address-data register;
means connecting the adder to the data address-data register for data transmissions between the adder and the data address-data register;
means connecting the data address-data register to the data address display for control transmissions from the data address-data register to the data address display;
means connecting the data address-data register to the data display for control transmissions from the data address-data register to the data display;
means connecting the data address-data register to the magnetic card printer interface for data transmissions between the data address-data register and the magnetic card printer interface;
means connecting the data address-data register to the error indicator for address transmissions from the data address-data register to the error indicator;
means connecting the decoder to the memory address display for control transmissions from the decoder to the memory address display;
means connecting the magnetic card printer interface to the error indicator for address transmissions from the magnetic card printer interface to the error indicator; and
means connecting the magnetic card printer interface to the magnetic card printer.

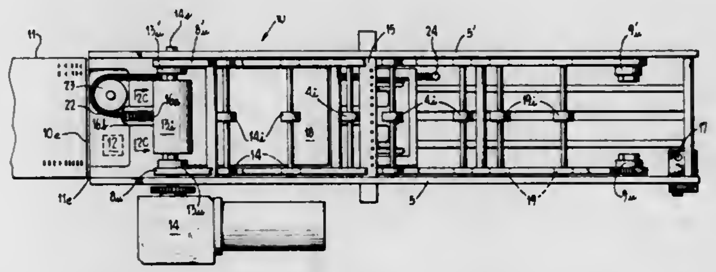
3,896,291
CARD READER MECHANISM

Charles W. Wiedeman, Castro Valley, Calif., assignor to The Singer Company, New York, N.Y.

Filed Feb. 14, 1974, Ser. No. 441,181

Int. Cl. G06k *13/02, 7/10*

U.S. Cl. 235—61.11 R **12 Claims**



1. In a card reader for reading a punched card and having a planar transport channel and a read-out station, the combination comprising:

a. card transport means for transporting a punched card into and out of said card reader, wherein said card transport means includes means for grasping the longitudinal edges of a punched card in a yieldable fashion;

b. means for longitudinally aligning an inserted punched card to insure a proper vertical column alignment of each column across said read-out station, and wherein said means for longitudinally aligning a card includes a movable carriage having a flange-head for abutting the leading edge of an inwardly driven punched card, said flange-head precipitating slippage of the longitudinal edges of said incoming punched card when one portion of the leading edge of said punched card strikes said flange-head before the remainder of the leading edge does so, causing the correct alignment of said punched card in said planar transport channel;

c. means for triggering a strobe signal upon the correct placement of a vertical column of the punched card in said read-out station.

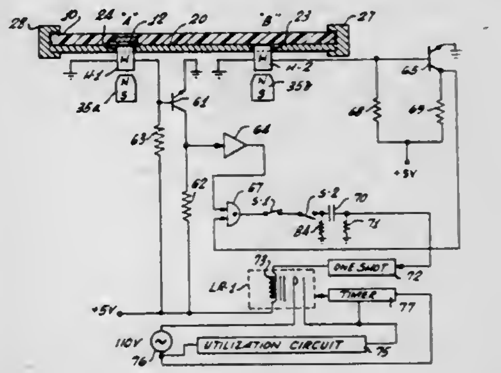
3,896,292
HALL EFFECT POSITION CODED CARD DETECTOR

Michael May, and Melvin M. English, both of Los Angeles, Calif., assignors to Michael May and Melvin M. English, both of Los Angeles, Calif.

Filed June 18, 1973, Ser. No. 371,063

Int. Cl.² G06K *7/08*

U.S. Cl. 235—61.11 D **15 Claims**



1. In a Hall effect encoded card detector, the improvement comprising:

a. a transistor circuit having a two terminal magnetoresistor connected in a bias circuit thereof to control the state of conductivity of said transistor, said bias circuit being such that said transistor is rendered conductive at one resistance value of said magnetoresistor and is rendered nonconductive at another resistance value of said magnetoresistor;

b. means positioned to provide a magnetic bias field of fixed magnitude to said magnetoresistor;

c. encoded card receiving plate means having means to position said magnetoresistor adjacent a predetermined position on said plate means; and

d. said plate means further having means to position an encoded card with respect to said plate means so as to position a card encoding piece of unmagnetized but high permeability material embedded in said card adjacent said magnetoresistor predetermined position to thereby modify the bias field through said magnetoresistor and thus control the state of conductivity of said transistor responsively to the presence or absence of said piece of high permeability material in said card to indicate said presence or absence.

3,896,293
CARD READER TRANSPORT MECHANISM

Raymond Vincent Pass, Camp Hill, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 6, 1973, Ser. No. 385,776

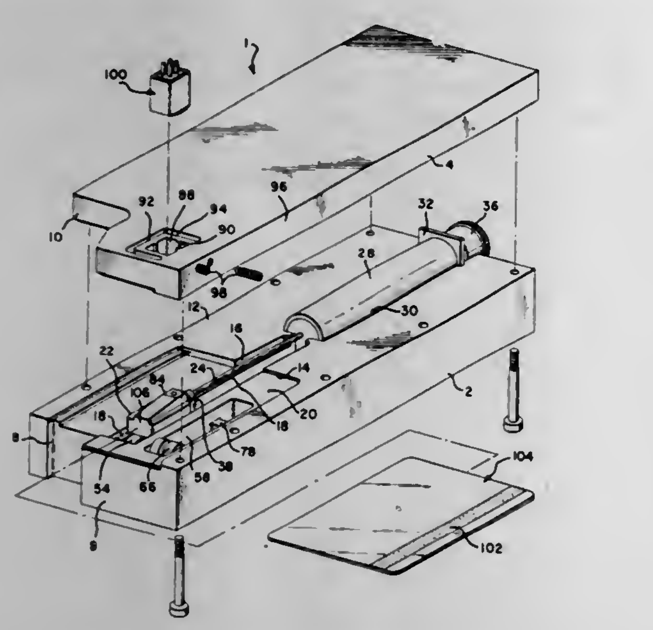
Int. Cl.² G06K *13/04;* **B65H** *9/14;* **H01H** *61/00*

U.S. Cl. 235—61.11 R **4 Claims**

1. In a card reader transport mechanism, the combination comprising;

a base, a transducer mounted above said base and adapted to serially scan across an encoded portion of an encoded card which is transported past said transducer, wherein said transport mechanism is adapted to transport said card serially past said transducer, the improvement comprising:

an energy storing mechanism comprising a reeling device which is provided with a reeled strip capable of automatically rewinding in reeled configuration on said reeling device, said energy storing mechanism being responsive to the displacement of said card from a first position to a second position to store energy thereby, said displacement of said card from said first position to said second position creates unreeling of said strip from said reeling device, said energy storing mechanism expending the stored energy at a constant rate to rewind said strip and thereby displace said card from said second position to said first position, thereby transporting said card serially past said transducer, and a throttling device coupled to said energy storing mechanism for controlling the rate at which the stored energy is expended so as to limit displacement of said card to a constant velocity past said transducer, said throttling device being in the form of a fluidic dash-pot opposing the automatically rewinding strip and thereby limiting the rate of rewinding of said strip to a constant rate.



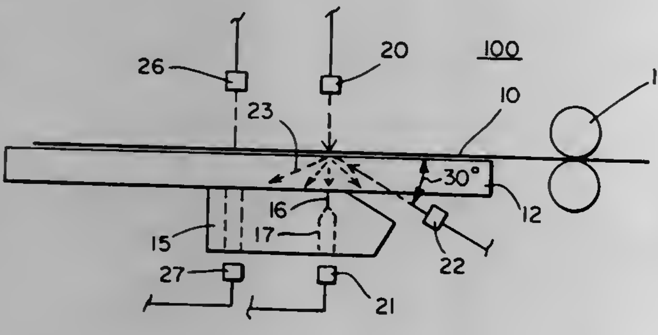
3,896,294
PLURAL MODE CARD READING APPARATUS

John C. Schisselbauer, Southampton, and James P. Jacobs, Phoenixville, both of Pa., assignors to Peripheral Dynamics, Inc., Norristown, Pa.

Filed Sept. 5, 1973, Ser. No. 394,547

Int. Cl.^{2} G06K *7/10, 7/14, 19/06*

U.S. Cl. 235—61.11 E **9 Claims**



1. Apparatus adapted for reading both data cards encoded in the transmissive mode and data cards encoded in the reflective mode, comprising:

a. transport means for transporting data cards through said apparatus;

b. transmissive light source means for transmitting light onto transmissive mode cards which are being transported through said transport means;

c. reflective light source means for transmitting light onto reflective mode cards which are being transported through said transport means;

d. detection and conversion means positioned

i. relative to said transmissive source means so as to detect light transmitted therefrom through transmissive mode cards which are being transported through said transport means and

ii. relative to said reflective source means so as to detect light transmitted therefrom and reflected from reflective mode cards which are being transported through said transport means, said detection and conversion means converting such detected light to electrical signals carrying information representative of the encoded information of said transported cards;

e. signal processing means for processing said electrical signals to provide digital signals representative of said encoded card information, said signal processing means having timing means synchronized.

i. in a first time relationship to the passage of said cards through said transport means for processing of transmissive mode cards and

ii. in a second time relationship to the passage of said cards through said transport means for processing of reflective mode cards; and

f. said signal processing means having column rate reading means adapted to read said cards according to a first column rate when in a first column mode and according to a second column rate when in a second column mode.

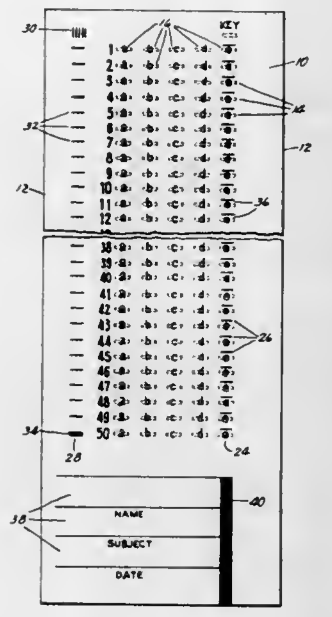
3,896,295
DATA PROCESSING FORM

Harold J. LaPlante, Bloomington, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Aug. 2, 1974, Ser. No. 494,233

Int. Cl.^{2} G06K *19/06;* **G09B** *7/00*

U.S. Cl. 235—61.12 N **4 Claims**



1. A data processing form for use with photoelectric sensing apparatus of the type for sensing the presence of indicia in indicia receiving locations on the form, said form comprising

a. a generally rectangular shaped sheet of paper or like material having longitudinal and transverse axes, and at least one generally straight edge parallel with one of said axes, said straight edge providing a reference edge for guiding the movement of the paper through said sensing apparatus;

b. a series of indicia receiving locations indicated on said sheet of paper, with each location having a given number of positions in which an indicia can be placed, said given number of positions of each location being spaced to form rows generally perpendicular to said straight edge of the sheet and said series of locations being spaced with each position of said given number of positions therein being aligned with similar positions of adjacent locations to form columns generally parallel with said straight edge of the sheet;

c. a first timing mark column containing a plurality of first timing marks aligned with one of the columns of indicia receiving positions, with one of the first timing marks preceding each indicia receiving location in sequence;

and

d. a second timing mark column containing a plurality of second timing marks, spaced from the column of indicia receiving positions and aligned parallel with said straight edge of the sheet, with each second timing mark being approximately aligned with a corresponding row of indicia receiving positions perpendicular to said straight edge of the sheet and being positioned with respect to the first timing mark preceding said corresponding aligned row of indicia receiving positions so as to be sensed after completion of the sensing of said first timing mark.

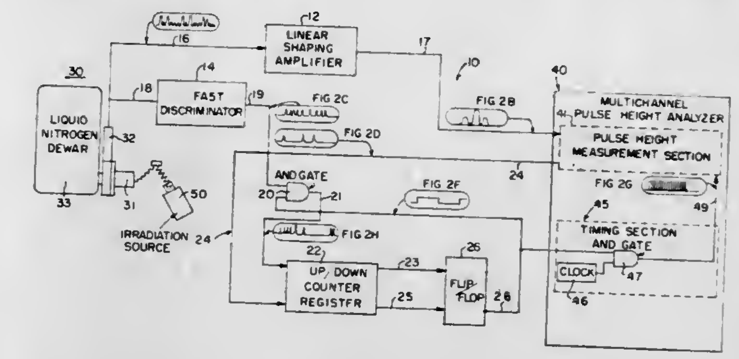
3,896,296
LIVE TIME CORRECTION SYSTEM

Morris W. Barnhart, Buffalo Grove, Ill., assignor to Edax International Inc., Prarie View, Ill.

Filed Dec. 11, 1972, Ser. No. 313,777

Int. Cl. G06m *3/14*

U.S. Cl. 235—92 EV **2 Claims**



1. In a system including an analyzer for analyzing a stream of input data pulses from a pulse source wherein the analyzer requires a finite time period for the analysis of the input data pulses and provides an output pulse corresponding to the completion of each analysis, which finite time period overlaps in real time one or more adjacent input data pulses so that the analyzer provides an output pulse corresponding to only a portion of said input pulses and where the analyzer has a clock means providing a real time correlation input to said analyzer means, the improvement of an accurate live time correction circuit comprising:

a gate means,

an up/down counter register for counting pulses from zero up to a pre-set maximum count capacity,

said up/down register being connected to the pulse source through said gate means for counting up for each of the input data pulses from the pulse source and being connected to the analyzer for receiving and simultaneously counting down for each of the output pulses from the analyzer, so that the count normally in said register is the subtracted difference between the total count of the input data pulses from the pulse source and the total count of the output pulses from the analyzer,

and switch means operatively connecting said register to the clock means and also to said gate means,

said switch means being operative between a closed condition in response to said register reaching said pre-set maximum count capacity of said register and an opened condition in response to said register reaching zero,

said switch means, in said closed condition, switching off both the clock means input to the analyzer and said gate means for the time period extending between the time said pre-set maximum count capacity of said register is reached and the time said register is counted down to zero; whereby counts to said register corresponding to input data pulses are interrupted and said register is counted down to zero by the output pulses from said analyzer, and

the time periods in which said switch means is closed providing accurate time correction adjustment for the difference between the number of the input data pulses from the pulse source and the number of output pulses from the analyzer.

3,896,297
ELECTRONIC COUNTER SYSTEM WITH VARIABLE COUNTING RANGES

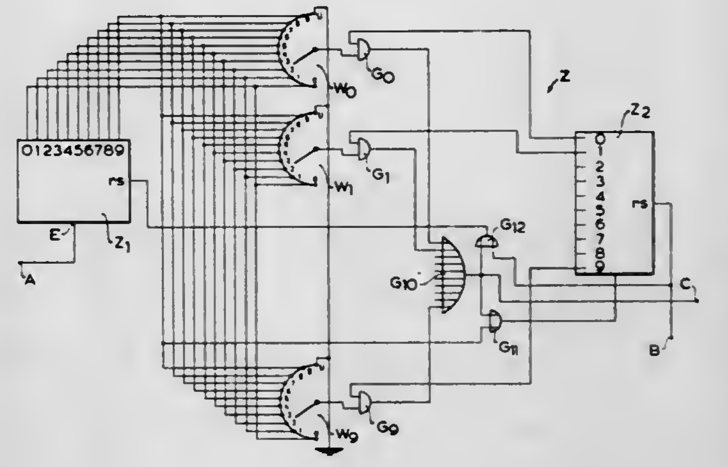
Jurgen Ploppa, Postfach 73, Reutlingen, Germany

Filed May 18, 1973, Ser. No. 361,491

Claims priority, application Germany, May 18, 1972, 2234309

Int. Cl. H03k *21/36*

U.S. Cl. 235—92 PD **3 Claims**



1. In a flat knitting machine, an adjustable electronic counter system providing variable counting ranges for counting pattern repetitions, said counter system comprising a plurality of selector switches connected together in serial relationship, each said selector switch including a preselected plurality of sequential selector positions which constitute the counting range of that switch, a first decade counter which is connected to receive a signal related to the pattern count and which includes a plurality of outputs each of which is individually connected to a corresponding selector position of each of the selector switches, a plurality of AND gates each having a first input connected to the output of a corresponding selector switch, a further decade counter having a plurality of outputs, each said output of said further decade counter being individually connected to the second input of a corresponding AND gate, and an OR gate connected to the outputs of said AND gates and having an output connected to the counting input to said second decade counter, each said selector switch including an overrun position which is connected to ground and said counter system including means for interconnecting said selector switches and said decade counters such that when one of said selector switches is set to the overrun position, the corresponding AND gate is disabled and the next said selector switch is enabled so that the counting range of said next selector switch is added to that of said one selector switch.

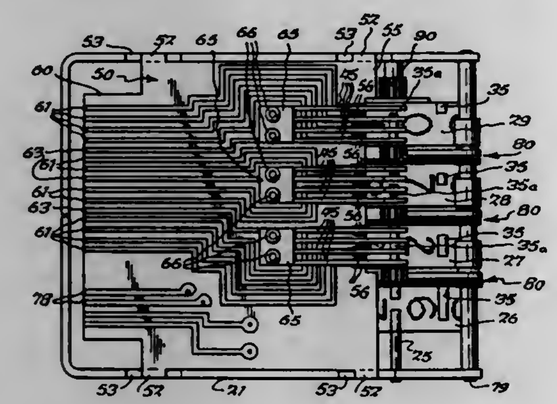
3,896,298
COUNTING DEVICE

Arthur W. Haydon, Middlebury, Conn., assignor to Tri-tech, Inc., Waterbury, Conn.

Division of Ser. No. 197,343, Nov. 10, 1971, Pat. No. 3,787,663. This application July 6, 1973, Ser. No. 376,950The portion of the term of this patent subsequent to Jan. 22, 1991, has been disclaimed.

Int. Cl. G06m *1/276*

U.S. Cl. 235—92 C **15 Claims**



1. A counting device comprising, in combination:

a plurality of indicia bearing counting elements including a lower order element and a higher order element, each of said counting elements having switch actuating at spaced intervals thereon;

mounting means for supporting the counting elements in predetermined relationship with each other;

means for operating said counting elements, the operating means including resiliently biased transfer means interconnecting said lower order element and said higher order element for transferring motion therebetween;

switching means cooperating with the switch actuating means on each of said elements for providing a circuit condition representative of the angular position of each element; and

conductor means electrically connected to said switching means for sensing said circuit condition, said conductor means comprising only a single printed circuit board for all of said counting elements which is rigidly affixed to said mounting means to maintain the board in a single stationary position during both the operation of said counting elements and the sensing of said circuit condition.

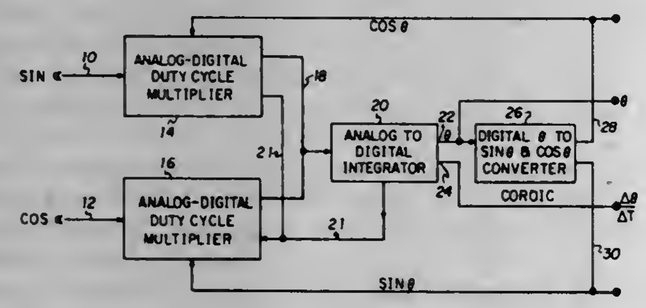
3,896,299
TRIGONOMETRIC ANALOG-TO-DIGITAL CONVERSION APPARATUS

Melvin H. Rhodes, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed May 28, 1974, Ser. No. 474,119

Int. Cl.² G06G *7/22;* **H03K** *13/02*

U.S. Cl. 235—150.53 **7 Claims**


COS θ
SIN
10
ANALOG-DIGITAL DUTY CYCLE MULTIPLIER
18
14
16
COS
12
ANALOG-DIGITAL DUTY CYCLE MULTIPLIER
21
20
ANALOG TO DIGITAL INTEGRATOR
22
θ
24
26
DIGITAL θ TO SINθ & COSθ CONVERTER
CORDIC
28
θ
Δθ/ΔT
30
SIN θ

1. Conversion apparatus comprising, in combination:

first and second duty cycle multipliers, each including first and second signal inputs and a product output;

first and second means for supplying first and second analog signals indicative respectively of sine α and cosine α connected to said first signal inputs of respectively of said first and second multipliers;

conversion means, including input means and first and second outputs, for providing digital output signals at said first and second outputs thereof in response to digital signals supplied to said input means thereof, the output signals being indicative of cosine θ at said first output and sine θ at said second ouput when θ is applied to the input thereof;

means for connecting said first and second outputs of said conversion means to said second inputs of said first and second multipliers respectively; and

analog-to-digital integrating means connected between said outputs of said multipliers and said input of said conversion means for providing to said conversion means a digital signal θ obtained from integrating the difference of the product signals obtained from said multipliers.

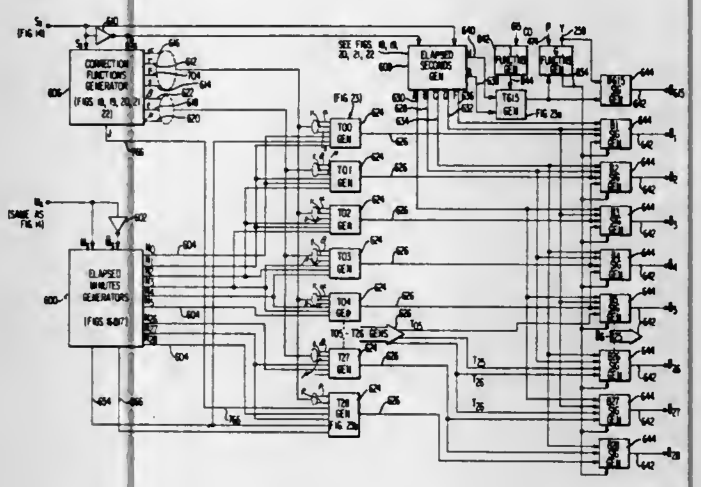
3,896,300
AUTOMATIC ARTICLE SORTING AND PUNCHING MACHINE

John W. Dillard; Dominick Tringali; Richard L. Swartz, and Ernest M. Hinson, Jr., all of Columbia, S.C., assignors to Universal Business Machines, Inc., Columbia, S.C.

Division of Ser. No. 135,656, April 20, 1971, Pat. No. 3,767,113. This application June 15, 1973, Ser. No. 370,530

Int. Cl. G06f *11/00;* **G06k** *5/00*

U.S. Cl. 235—153 R **9 Claims**



1. An error checking and correction circuit for use with document control apparatus, the apparatus being responsive to at least two human readable recordings of time carried by a document to effect an operation on the document, one of the recordings being of values of greater significance than the other recording and the range of the recording of values of lesser significance includes at least all such values as are encompassed by at least one complete unit value of the most significant values, the circuit comprising:

first time signal generator means responsive at least in part to a digital signal which is representative of the recording having greatest value significance applied to inputs of the said means to generate a time signal unique to such value; second time signal generator means responsive at least in part to a digital signal which is representative of the recording having lesser value significance to generate at least a first or second error checking and correction signal; and

comparator means responsive to said time signal and to said error checking and correction signal to provide a circuit output.

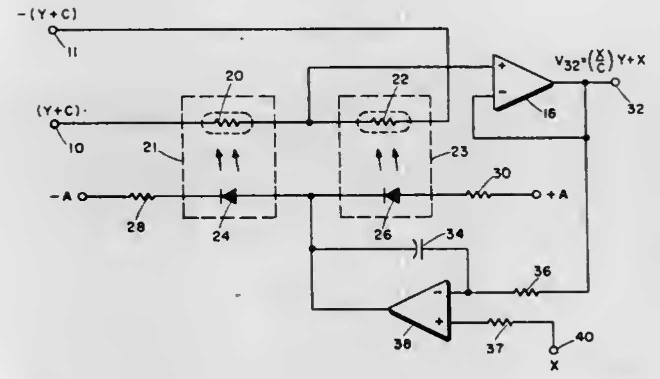
3,896,301
SOLID STATE DC TIMES AC MULTIPLIER

Vincent A. Resta, Lauderdale Lakes, Fla., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jan. 11, 1974, Ser. No. 432,731

Int. Cl.² G06G *7/16*

U.S. Cl. 235—194 **11 Claims**



1. Means for multiplying a first quantity by a second quantity wherein at least said first quantity is represented by a first d.c. signal and said second quantity is represented by an a.c. signal + a D.C. reference and the a.c. signal + the D.C. reference inverted, comprising:

a voltage source;

a pair of light emitting means having a common junction point and connected in series across said voltage source; a pair of light responsive resistive means having a common junction point and connected in series between said a.c. signal + a D.C. reference and said a.c. signal + a D.C. reference inverted;

an output terminal upon which an output signal related to the product of said first quantity and said second quantity is generated;

means for connecting the junction point of said pair of light responsive means to said output terminal; and,

first means responsive to the d.c. component of siad output signal and said first d.c. signal for generating a second signal related to the difference thereof, said pair of light emitting means being responsive to said second signal whereby the ratio of light emitted by said light emitting means with respect to one another is controlled, the ratio of the resistance of said light responsive resistive means with respect to one another being controlled by said ratio of light.

3,896,302
AUTOMOTIVE SPOT LAMPS

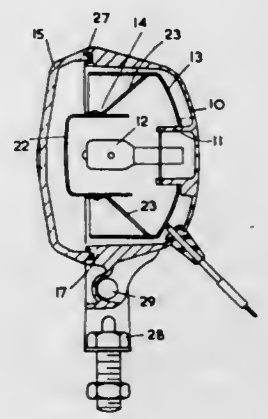
George Joseph Whitney, Walsall, England, assignor to Lucas Electrical Company Limited, Birmingham, England

Filed Oct. 19, 1973, Ser. No. 407,841

Claims priority, application United Kingdom, Oct. 18, 1972, 49821/72

Int. Cl. F21m

U.S. Cl. 240—41 R **4 Claims**



1. An electrical lamp comprising a body functioning as a housing for said lamp, said body having a recess therein; a bulbholder integral with said body; a reflector mounted in said body; a buld shield carried by said reflector; and a lens cover overlying said recess in said body.

3,896,303
POLYEPOXIDE-CAPROLACTONE POLYOLS AND COATINGS BASED THEREON

Richard Michael Gerkin, Charleston, and Lowell Ray Comstock, South Charleston, both of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Nov. 14, 1973, Ser. No. 415,791

Int. Cl. C08g *17/14*

U.S. Cl. 260—78.3 R **12 Claims**

1. A polyol composition prepared by the reaction of (a) a caprolactone polyol having an average of at least three hydroxyl groups per molecule and (b) a polyepoxide having at least two vicinal epoxy groups per molecule, said reactant (a) being employed in an amount at least sufficient to effect substantially complete reaction of the epoxy groups of (b).

3,896,304
AUTOMATIC FOCUS ADJUSTMENT MEANS

Harumi Aoki, Tokyo, and Takuo Itagaki, Wako, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 4, 1973, Ser. No. 403,534

Claims priority, application Japan, Oct. 4, 1972, 47-99544

Int. Cl. G03b *3/00;* **G01j** *1/20*

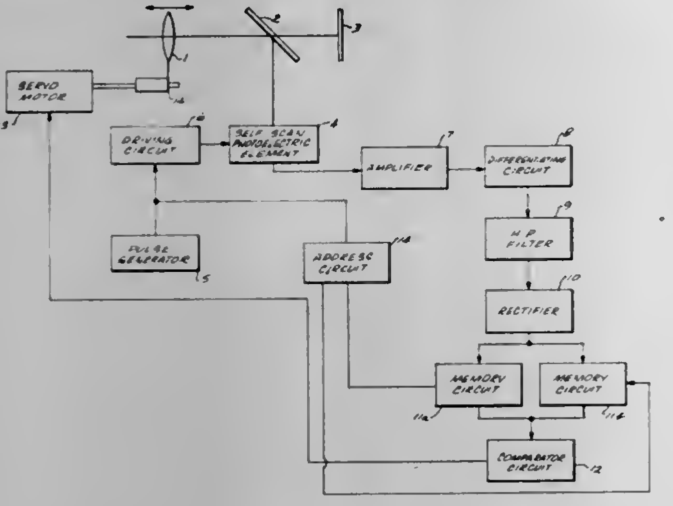
U.S. Cl. 250—201 **5 Claims**

1.. Automatic focusing apparatus comprising:

focusing means, including a lens spaced from a plane, for forming an image on the plane, the lens and the plane being movable relative to each other in either of two opposite directions;

circuit means for generating trigger pulses;

a self-scan type photoelectric element disposed in the plane for linearly scanning the intensity distribution of the image, said photoelectric element having an input for receiving the trigger pulses, and an output on which, in response, it provides a time-varying electrical signal indicative of the degree of the intensity distribution; and servomechanism means responsive to the time-varying electrical signal for adjusting the spacing between the lens



and the plane to a relative position that maximizes the degree of intensity distribution.

3,896,305

INTEGRATED OPTICAL DEVICE ASSOCIATING A WAVEGUIDE AND A PHOTODETECTOR AND FOR METHOD MANUFACTURING SUCH A DEVICE

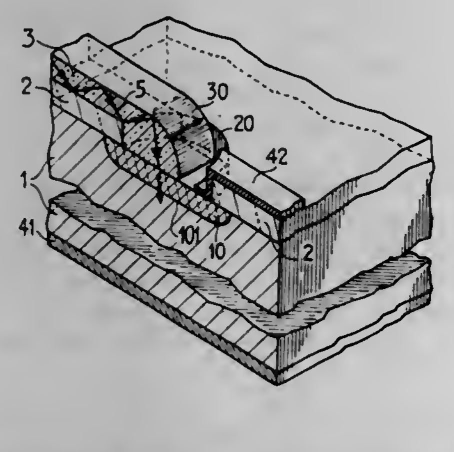
Daniel Ostrowsky; Louis Marcel Reiber, and Raymond Poirier, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Apr. 16, 1974, Ser. No. 461,406

Claims priority, application France, Apr. 20, 1973, 73.14633

Int. Cl. G02b *5/14*

U.S. Cl. 250—227 **8 Claims**



1. An integrated optical device associating at least one optical waveguide for guiding a light wave with at least one photodetector for receiving at least part of said lightwave, and comprising :

a flat substrate of a semiconductor material having a given conductivity type and including upon one of its faces at least one region having a conductivity of the opposite type to that of the substrate, the junction between said region and said substrate forming said photodetector ;

a first dielectric layer arranged upon the same face of the substrate as said region, said first dielectric layer having a thickness at least equal to the wavelength of said light wave and including a window opposite said region;

a second dielectric layer, forming said waveguide, arranged at the surface of said first layer and at least partially covering said region within said window, said second dielectric layer having a thickness close to the wavelength of the said lightwave, being transparent to said lightwave and having a refractive index higher than that of the first layer.

3,896,306

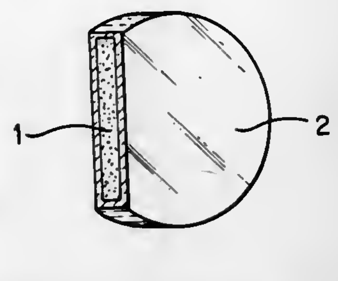
FAST-NEUTRON SOLID-STATE DOSIMETER

Klaus H. Becker; Fred F. Haywood; Philip T. Perdue, and John H. Thorngate, all of Oak Ridge, Tenn., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed June 20, 1974, Ser. No. 481,262

Int. Cl.² H05B *33/00;* **G01T** *3/00*

U.S. Cl. 250—392 **5 Claims**



1. An improved fast-neutron solid-state dosimeter comprising an intimate mixture of p-sexiphenyl and a finely powdered thermoluminescent material selected from the group consisting essentially of $CaSO_4$:Dy; $CaSO_4$:Tm; CaF_2:Dy; BeO; CaF_2:Mn; $Li_2B_4O_7$:Mn; natural CaF_2; LiF:Mg,Ti; and Mg_2SiO_4:Tb.

3,896,307

METHOD FOR AUTOMATIC DIFFERENTIAL LEUKOCYTE COUNT

Neil M. Trowe, Potomac, Md., assignor to Wheeler International Inc., Washington, D.C.

Filed Aug. 24, 1970, Ser. No. 66,560

Int. Cl. G01n *33/16*

U.S. Cl. 250—304 **3 Claims**

1. A method for making a differential count of leukocytes in blood which comprises the steps of:

a. preparing a dilute saline solution of the blood sample;

b. passing the dilute saline blood solution into a constricted chamber so that the individual cells are disposed in a single array;

c. subjecting the cells disposed in said constricted chamber in single file to sufficient ultraviolet radiation as the cells pass through the chamber to cause them to fluoresce;

d. segregating the fluorescent emissions from each cell according to the characteristic wavelength of the fluorescent emission of that type of cell;

e. registering the respective fluorescent emissions from each leukocyte cell according to its wavelength on a photomultiplier tube;

f. by means of counters recording the number of fluorescent emissions registered on the photomultiplier tubes from each type of leukocyte cell.

3,896,308

DETECTOR FOR ELECTRON MICROSCOPES

John Anthony Venables, Lewes; Peter John Pollard, Polegate, and Barrie William Griffiths, East Grinstead, all of England, assignors to National Research Development Corporation, London, England

Filed Jan. 7, 1974, Ser. No. 431,296

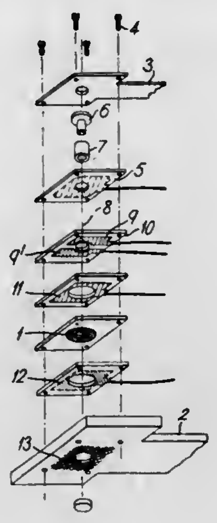
Claims priority, application United Kingdom, Jan. 10, 1973, 1278/73

Int. Cl. H01j *37/26*

U.S. Cl. 250—305 **9 Claims**

1. A detector for an electron microscope and arranged to be mounted coaxially with regard to the electron beam of the electron microscope and adjacent a specimen to be analysed, the detector comprising a channel plate mounted between a pair of electrodes so that a potential can be applied across the channel plate, a grid of highly conductive material to control the field distribution in the specimen region and to select the

energies of the electrons reaching the channel plate and a pair of detector electrodes mounted so that the channel plate is located between a specimen to be analysed and said detector



electrodes and conductor means connected to each of said electrodes for directly and separately deriving electrical output signals therefrom.

3,896,309

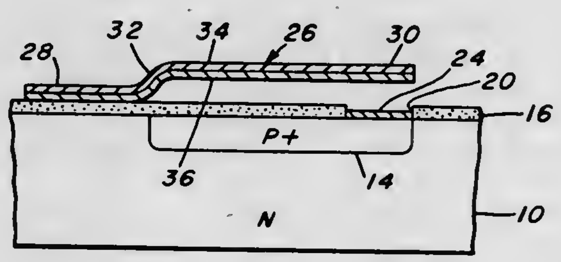
RADIATION DETECTING DEVICE

Jack L. Halsor, Baltimore; Pieter Dewit, Ferndale, and Edgar L. Irwin, Glen Burnie, all of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 21, 1973, Ser. No. 362,138

Int. Cl. H01l *15/00*

U.S. Cl. 250—211 J **6 Claims**



1. A radiation detecting device for integrating incident radiation comprising a substrate of semiconductive material of one type conductivity, spaced regions of the other type conductivity formed in a surface of said substrate, an oxide layer covering at least selected portions of said surface of the substrate, a cantilevered member secured to said oxide layer at an area removed from said spaced regions and having a free end extending over the area of said substrate between said spaced regions, said cantilevered member being formed from at least two layers of different materials one above the other, the different materials having different coefficients of expansion, source and drain electrodes connected to said spaced regions, and a gate electrode connected to said cantilevered member, the arrangement being such that upon exposure to radiation and resulting heating of the cantilevered member, it will bend due to the different coefficients of expansion of said materials and vary the spacing between said cantilevered member and the substrate, whereby the surface conductivity characteristics of the substrate between the spaced regions can be made to vary as a function of the amount of radiation absorbed by the cantilevered member.

3,896,310

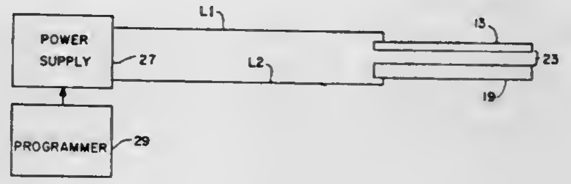
FIELD CONTROL IN IMAGING SYSTEMS

Alex E. Jvirblis, and Walter Roth, both of La Jolla, Calif., assignors to Diagnostic Instruments, Inc., San Diego, Calif.

Continuation of Ser. No. 158,172, June 30, 1971, abandoned. This application Jan. 7, 1974, Ser. No. 431,020

Int. Cl. H01j *37/26*

U.S. Cl. 250—315 **15 Claims**



1. In a method of ionographic imaging including directing X-ray or gamma radiation toward an electrode of a first polarity having a photoemissive surface thereby to cause electrons to be emitted therefrom, and applying an electrical potential between said electrode and a second electrode of opposite polarity spaced therefrom, said emitted electrons causing charges to be deposited on an opposed insulative surface of said second electrode, said surfaces being spaced apart to define a gap, said depositing of charges forming retarding fields tending to reduce the electric field in the gap and retard the capture and deposit of additional charges on the insulative surfaces; the improvement which comprises increasing the potential applied between said electrodes as a function of incipient reduction of the average electric field in the gap as the charges are deposited on the insulative surface so as to maintain a substantially constant average electric field in said gap and thereby substantially completely compensate for the effect of the retarding fields.

3,896,311

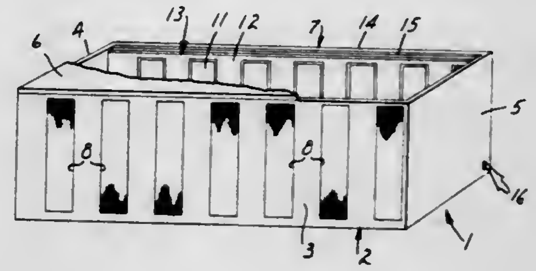
PYROELECTRIC MOTION AND TEMPERATURE SENSITIVE INFRARED DETECTOR WITH CONDUCTIVE FINGERS

Allen L. Taylor, Woodbury, and Francis J. McFadden, Lake Elmo, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 2, 1974, Ser. No. 429,521

Int. Cl. G01t *1/16*

U.S. Cl. 250—342 **9 Claims**



1. An infrared motion and temperature sensitive detector for detecting a moving source of infrared radiation and comprising:

a front portion having a plurality of laterally spaced apart radiation transmissive apertures;

a back portion spaced from said front portion and formed of a multi-layer construction that includes:

inner and outer conductive layers, at least one of which is formed to provide one or more electrically connected sets of fingers that are substantially parallel to the apertures of said front portion, one of said conductive layers is electrically grounded, and said inner conductive layer has areas that are simultaneously exposed to and heated by radiation that emanates from said moving source and passes through the apertures of said front portion and has other areas that are shielded from such radiation; and

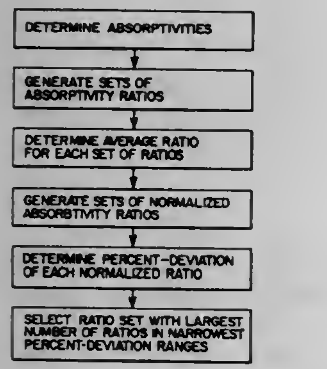
a layer of poled, pyroelectric material interposed between and in surface-to-surface contact with such conductive layers and having areas that are heated by the heated areas of said inner conductive layer to result in the development of electrostatic charges on said heated pyroelectric areas and on at least one of said sets of conductive fingers in contact with said heated pyroelectric areas; and

electronic circuitry for sensing the potential on said one of said sets of fingers and for triggering an alarm only when a certain pattern of voltage potentials are developed on said one set within one predetermined time period.

3,896,312
PETROLEUM IDENTIFICATION

Christopher W. Brown, R. R. 1, Box S-12, Saunderstown, R.I. 02874; Mark Ahmadjian, 10 Blackamore Ave., Cranston, R.I. 02910, and Patricia F. Lynch, 320 Boston Neck Rd., Narragansett, R.I. 02882

Filed June 7, 1974, Ser. No. 477,414
Int. Cl. G01n *21/26*
U.S. Cl. 250—343 **11 Claims**


DETERMINE ABSORPTIVITIES
GENERATE SETS OF ABSORPTIVITY RATIOS
DETERMINE AVERAGE RATIO FOR EACH SET OF RATIOS
GENERATE SETS OF NORMALIZED ABSORBTIVITY RATIOS
DETERMINE PERCENT-DEVIATION OF EACH NORMALIZED RATIO
SELECT RATIO SET WITH LARGEST NUMBER OF RATIOS IN NARROWEST PERCENT-DEVIATION RANGES

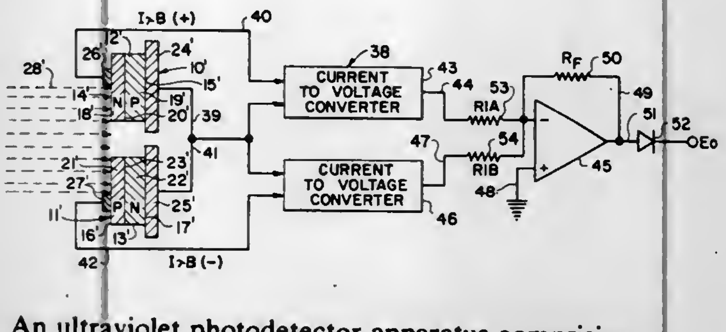
1. A method of comparing an unidentified oil sample to a set of reference oil samples which comprises the steps of:

a. preparing infrared spectra of the various oil samples;
b. selecting a plurality of characteristic frequencies in said infrared spectra and determining the absorptivity for each spectrum at each characteristic frequency, said absorptivities defining for each reference sample a set of ratios of absorptivities of the unidentified sample to the reference sample at each characteristic frequency;
c. for each reference sample, determining the average of the ratios in said set of ratios and thereafter generating a normalized ratio for each reference sample at each characteristic frequency by dividing each ratio in said set of ratios by said average ratio of the set;
d. for each reference sample and for each characteristic frequency thereof, determining the absolute value of the difference between said normalized ratio and 1.0 and multiplying that difference by 100 to generate a percent-deviation for each characteristic frequency of each reference sample;
e. establishing a plurality of percent-deviation ranges and determining for each set of normalized ratios the number of ratios having a percent-deviation falling within each of said percent-deviation ranges; and,
f. determining on the basis of the largest numerical quantity of characteristic frequencies falling within said percent-deviation ranges the reference sample which the unidentified sample most closely approximates.

3,896,313
PHOTODETECTOR APPARATUS WITH A ZERO CUT-OFF RESPONSE TO ABSOLUTE ZERO AT A SPECIFIED LIGHT FREQUENCY

Herbert A. Berman, Lahaina, Hawaii; Robert B. Campbell, Pittsburgh, and Wallace D. Loftus, Clairton, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 16, 1974, Ser. No. 433,959
Int. Cl. G01t *1/24*
U.S. Cl. 250—372 **8 Claims**



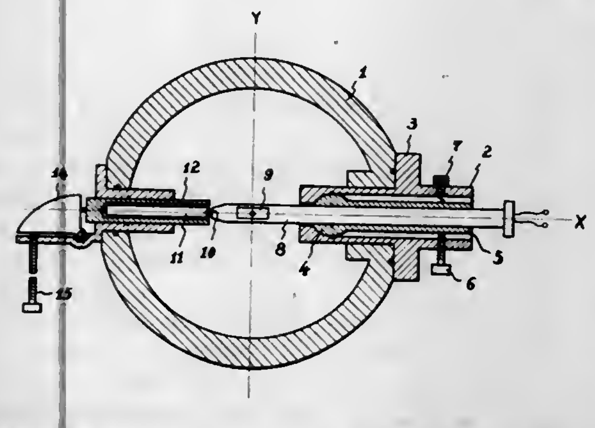
6. An ultraviolet photodetector apparatus comprising:

A. at least first and second light sensor means each comprised of a silicon carbide semiconductor body having a PN junction therein, said first sensor means capable of producing electrical signals responsive to electromagnetic radiation of a first frequency range and producing a peak electrical response at a first peak ultraviolet frequency, and said second sensor means capable of producing electrical signals responsive to electromagnetic radiation of a second frequency range and producing a peak electrical response at a second peak ultraviolet frequency, said first and second frequency ranges being overlapping and said first and second peak ultraviolet frequencies being different; and
B. an electrical means for electrically comparing the electrical signals from at least said first and second light sensor means and producing an electrical signal of only one polarity and equal to a product of a first constant times the amplitude of the electrical signal produced by said first light sensor means minus a product of a second constant times the amplitude of the electrical signal produced by said second light sensor means.

3,896,314
SPECIMEN HEATING AND POSITIONING DEVICE FOR AN ELECTRON MICROSCOPE

Shigeru Nukui, Saitama, and Hideaki Mikazuki, Tokyo, both of Japan, assignors to Nihon Denshi Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 5, 1973, Ser. No. 421,978
Claims priority, application Japan, Dec. 14, 1972, 47-143726
Int. Cl. H01j *37/20*
U.S. Cl. 250—442 **4 Claims**



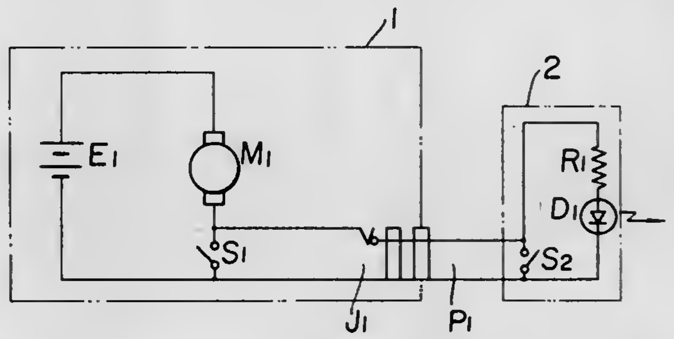
1. A specimen heating and positioning device for an electron microscope or the like having an electron optical axis comprising a specimen stage adjustably fixed for positioning

a specimen along the optical axis, said stage arranged to expand on heating on an axis passing through the optical axis away from a first reference point fixed relative to the optical axis and spaced therefrom, a specimen holder mounted in said specimen stage for holding the specimen and arranged to expand on heating along the same axis along which the specimen stage expands in a direction away from a second reference point fixed relative to the specimen stage and on the opposite side of the optical axis from the first reference point, means for heating the specimen, the distances between the reference points and the optical axis being selected such that as the specimen holder and specimen are heated, incidental to the heating of the specimen, the expansion of the stage and holder are approximately equal thus maintaining the specimen substantially at the optical axis.

3,896,315
REMOTE CONTROL UNIT WITH DISPLAY DEVICE

Toshikazu Ichiyanagi, Tokyo, and Mitsutoshi Ogiso, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Japan

Filed Aug. 10, 1973, Ser. No. 387,312
Claims priority, application Japan, Aug. 16, 1972, 47-82003
Int. Cl. H01h *47/00*
U.S. Cl. 307—112 **8 Claims**



1. In a camera system having a camera and a detachable remote control unit, said camera including a driving motor, the improvement comprising:

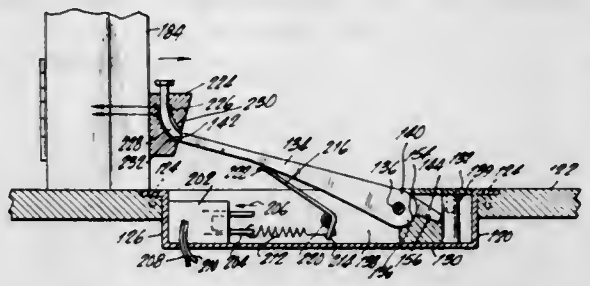
a first pair of electrical connectors mounted on the body of the camera and connected in series with said motor;
a source of electrical energy mounted in said camera for driving said motor, said source being connected with said motor and at least one of said first pair of connectors, said energy source forming a drive circuit with said motor;
a second pair of electrical connectors associated with said remote control unit and detachably connectable with said first connectors;
light emitting indicating means associated with said remote control unit being responsive to current flow; and
switching means associated with said remote control unit and connected to at least one of said second pair of connectors for actuating said motor drive circuit and for causing change of current flow through said indicating means for changing the condition of said indicating means.

3,896,316
ENTRY CONTROL DEVICE

Salomon Serrano, 684-222nd St., Bronx, N.Y. 10467

Filed Jan. 25, 1974, Ser. No. 436,617
Int. Cl. G08b *13/08*
U.S. Cl. 307—149 **7 Claims**

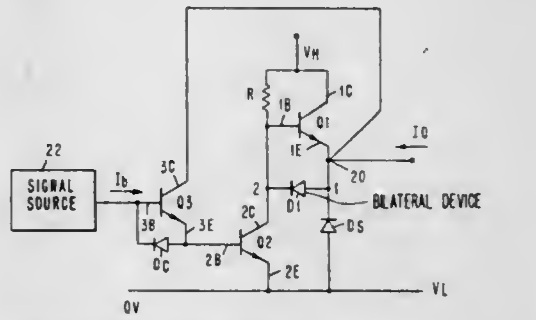
1. An entry control device comprising a housing having end walls and opposed side walls, a base and a partial top, said base and partial top being connected to said end walls and side walls, a substantially rectangular stop plate having a first end pivotally mounted to shaft means within said housing and a second opposed end rotatable about said shaft to raised and closed positions, said stop plates being essentially aligned with the plane of said partial top, finger means attached to said first end of said stop plate, stop means connected to said base and positioned to engage said finger means when said stop plate is pivoted to open position, second pivotable means within said housing for urging said stop plate to raised and closed positions, electrical means within said housing for actuating said second pivotable means, said electrical means being disposed on said base within said housing and providing support means for said second end of said stop plate when in closed position, and circuit connecting means for connecting said electrical means to a source of electric power.



3,896,317
INTEGRATED MONOLITHIC SWITCH FOR HIGH VOLTAGE APPLICATIONS

Charles Noble Alcorn; Robert Joseph De Filippi, both of Reston; John David Henke, and Robert Ng Liang, both of Manassas, all of Va., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 28, 1973, Ser. No. 429,307
Int. Cl. H03k *17/00*
U.S. Cl. 307—254 **10 Claims**



1. A voltage switch comprising
a. first and second voltage supplies,
b. an output terminal,
c. an input amplifier connected to the output terminal and responsive to first and second input signals, and
d. a power output switch connected to the output terminal and to the input amplifier
e. whereby the first input signal causes the output terminal to follow the first voltage supply
f. and the second input signal causes the output terminal to follow the second voltage supply and the input amplifier to lower the output impedance between the output terminal and the second voltage supply.

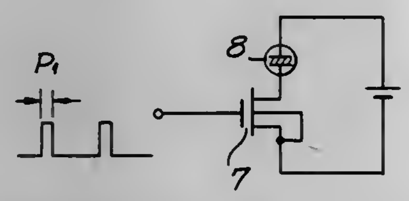
3,896,318
DRIVING DEVICE FOR LIQUID CRYSTAL CELL

Hiromitsu Mitsui, Shimosuwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Continuation-in-part of Ser. No. 298,678, Oct. 18, 1972, abandoned, which is a continuation-in-part of Ser. No. 99,402, Dec. 18, 1970, abandoned. This application Dec. 20, 1973, Ser. No. 426,785
Claims priority, application Japan, Dec. 25, 1969, 44-103751
Int. Cl. G02f *1/28, 3/16*
U.S. Cl. 307—304 **1 Claim**

1. A display device comprising liquid crystal cell means having an impedance of 100 meg-ohms or greater and at least

two electrodes, said cell means being responsive to an electric field produced upon the application of a voltage to said electrodes; a direct-current power source having a pair of terminals; a source of an input signal formed from repetitive pulses; and an insulated gate field effect transistor for driving said cell means, one of said cell means electrodes being connected to one of the source and drain electrode of said insulated gate field effect transistor, the other of said source and drain electrodes of said transmitter being connected to one of the terminals of said power source, the other terminal of said power source being connected to the other electrode of said cell means, said input signal being applied to the gate electrode of said insulated gate field effect transistor wherein the pulse frequency of said pulse input signal is between 30 and 500 Hz and a duty cycle of one-third to one-eighth to permit the application of a driving pulse to said cell means of increased width relative to the pulse width of said input signal due to the input capacitance of said cell means and said transistor.



3,896,319

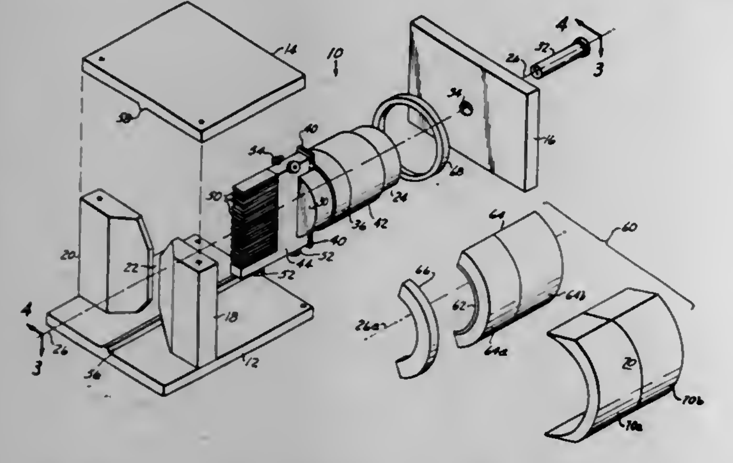
LINEAR MOTOR

Srinivasan V. Chari, Foster City, Calif., assignor to Control Data Corporation, Minneapolis, Minn.

Filed Apr. 17, 1974, Ser. No. 461,565

Int. Cl.² H02K *33/18*

U.S. Cl. 310—14 **4 Claims**



1. A linear motor or the like comprising a housing; substantially cylindrical core means supported by said housing and having an axis, said core means having a first slot extending diametrically through said core means along a portion of the length of said core means from one end thereof; substantially cylindrical magnet means supported by said housing in substantially coaxial relation with said core means and substantially surrounding said core means, said magnet having its opposite poles radially aligned so that one pole portion is closer to said axis than the other pole portion, said magnet means having a second slot extending diametrically through said magnet means, said second slot being radially aligned with said first slot; substantially rectangular armature means at least partially supported by said housing for reciprocable movement along said axis; and coil means fixedly mounted to an end portion of said armature means and positioned between said core means and said magnet means, said end portion of said armature means being positioned in said first slot, whereby a magnetic circuit is formed between said core means, said magnet means, said coil means and a portion of said housing and is so disposed and arranged as to exclude said first and second slots so that magnetic flux is induced in said coil means without significantly inducing flux into said armature means.

3,896,320

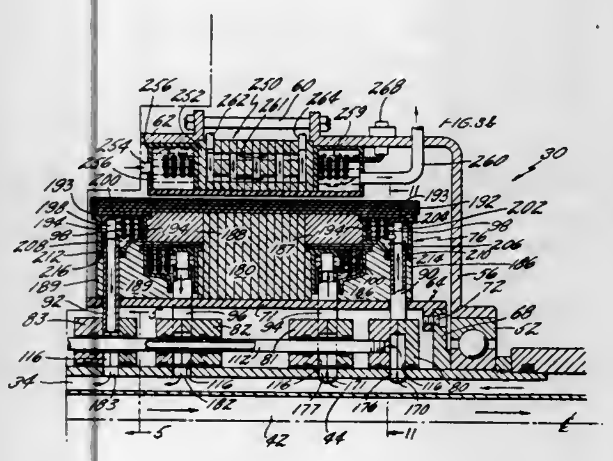
HIGH SPEED ELECTRIC GENERATOR

E. Marston Moffatt, Glastonbury, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Oct. 19, 1971, Ser. No. 190,509

Int. Cl.² H02K *1/32*

U.S. Cl. 310—64 **6 Claims**



1. A rotary dynamo-electric machine comprising:

a magnetic core having poles and slots thereon and adapted for rotation about the axis of said machine;

a coil structure including electrical conductor means disposed to conduct current about a pole on said core, said conductor disposed with an exposed surface along substantially all of the differential elements of current carrying portions thereof;

means disposed along the axis of said machine for providing a source of coolant fluid under pressure; and

a pair of radial electrical conductor means extending from said fluid source radially outward to said coil structure, each of said conducting means being hollow and adapted to flow coolant fluid from said source to the exposed surfaces of said coil at one end thereof and from the other end of said coil structure back to said source, each conducting means electrically connected to one end of said coil.

3,896,321

SYSTEM FOR SUSPENDING A COLOR SELECTION ELECTRODE IN A COLOR CATHODE RAY TUBE

Stanley J. Sedlvy, Chicago Ridge, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Dec. 12, 1973, Ser. No. 424,017

Int. Cl. H01j *29/06, 29/08, 31/20*

U.S. Cl. 313—404 **14 Claims**

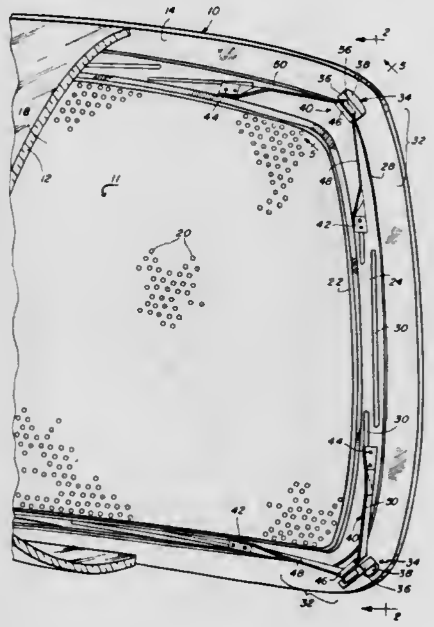
1. For use in a rectangular-type color cathode ray tube, a system for suspending a generally rectangular color selection electrode having a pattern of electron-transmissive apertures on the envelope of the tube at a predetermined precise spacing from a faceplate portion of the envelope bearing a corresponding pattern of red-emissive, blue-emissive and green-emissive phosphor element triads, including four electrode suspension devices spaced around the electrode, one at each corner thereof, each device comprising:

envelope-mounted means secured in a corner location on the inside of the envelope for supporting a corner of a color selection electrode; and

electrode-mounted means for retentively engaging said envelope-mounted means, comprising:

a bracket having an intermediate portion externally surrounding and embracing a corner of the electrode and end portions secured to adjoining sides of the electrode, and

coupling means including a folded-back leaf spring having one leg secured to said intermediate portion of said bracket and arching radially inwardly therefrom, said coupling means including a provision on an opposed leg of said spring for retentively engaging said envelope-mounted means.



3,896,322

SPARK PLUG OPERABLE WITH A FLOATING ARC

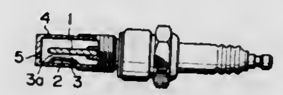
Daisaku Sawada, and Yuji Takeda, both of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

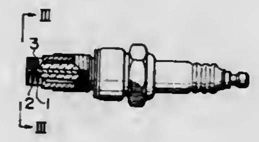
Filed Jan. 28, 1974, Ser. No. 436,840

Claims priority, application Japan, Sept. 25, 1973, 48-111637

Int. Cl. H01t *13/20*

U.S. Cl. 313—142 **12 Claims**





1. A spark plug comprising electrodes disposed adjacent to each other, said electrodes defining a spark gap therebetween, a flow regulating means axially confronting the spark gap for regulating the flow direction of a fuel-air mixture to the spark gap for traversing the spark gap, said spark gap being narrowest at a region located upstream of said flow and extending along the flow of the fuel-air mixture.

3,896,323

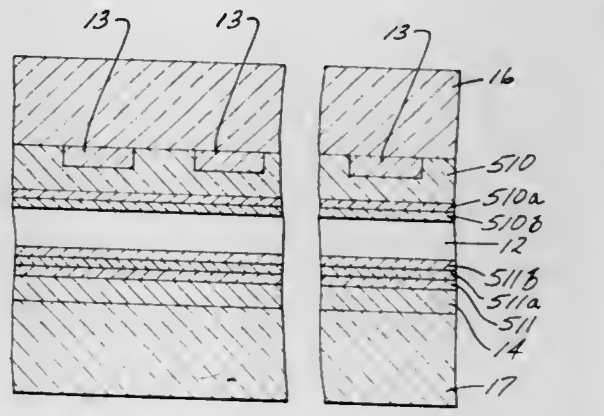
GASEOUS DISCHARGE DEVICE HAVING LOWER OPERATING VOLTAGES OF INCREASED UNIFORMITY

Roger E. Ernsthausen, Luckey, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Continuation-in-part of Ser. No. 70,523, Sept. 8, 1970, abandoned. This application Sept. 20, 1973, Ser. No. 399,041

Int. Cl. H01j *61/35*

U.S. Cl. 313—188 **4 Claims**



1. In a gaseous discharge panel comprising a chamber formed by a pair of opposed walls and being sealed to contain an ionizable gaseous medium therein, said opposed walls including dielectric material charge storage surfaces on the gaseous side of each wall and being backed by electrode members, the improvement comprising:

a. a first contiguous layer of at least one oxide of Al, Ti, Zr, Hf, or Si, disposed on each dielectric surface,

b. a second contiguous layer of lead oxide disposed on said first layer, and

c. each said layer having a thickness of an amount sufficient to substantially decrease and stabilize panel operating voltages for a given period of panel operating time.

3,896,324

GAS-DISCHARGE DISPLAY PANEL WITH MATRIX OF ORTHOGONAL INSULATING LAYERS

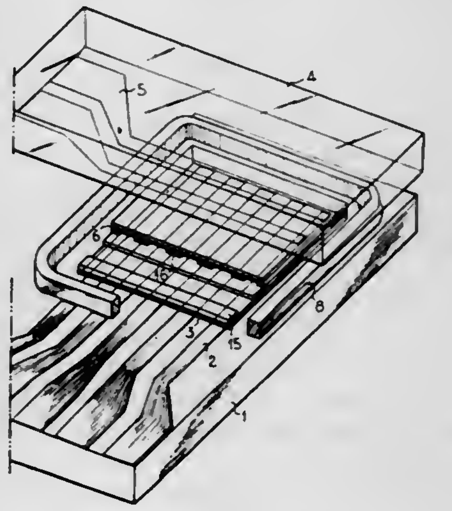
Jean Pierre Galves, and Jean Philippe Reboul, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Dec. 27, 1971, Ser. No. 211,920

Claims priority, application France, Dec. 30, 1970, 70.47285

Int. Cl. H01j *61/10*

U.S. Cl. 313—190 **3 Claims**



1. A gas discharge display panel comprising:

a. two insulating slabs, at least one of which is transparent, said two slabs being sealed at their periphery by a sealing ring and defining in assembly parallel pairs of inner and outer surfaces;

b. an ionizable gas contained between the slabs inside said ring;

c. a network of conducting electrodes disposed on each of the inner surfaces of said slabs, the two networks being crossed in such a way that the application of suitable voltages between two electrodes respectively of each network produces a gaseous discharge in the intersection zones of these electrodes;

d. a first continuous layer of insulating material covering each of the two networks; and

e. a second discontinuous layer of insulating material deposited on each one of said first layers, each of said second discontinuous layers being constituted by a network of raised insulating strips orthogonal to the network of electrodes of the corresponding slab so as to allow discharges to be produced in the intersection zones and to prevent the discharges from spreading beyond said zones, the presence of insulating material along the electrodes between their intersection zones preventing the electric field from extending into the gas along said electrodes, said second layers thus assuming the function of a matrix.

3,896,325

DISCHARGE TUBE CONTAINING MERCURY

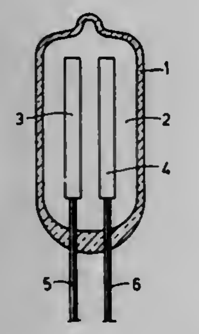
Henricus Gerardus Antonius Willems, Terneuzen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 20, 1973, Ser. No. 390,167

Claims priority, application Netherlands, Sept. 12, 1972, 7212337

Int. Cl. H01j *61/06*

U.S. Cl. 313—218 **3 Claims**



1. A discharge tube having a wall of glass, which tube contains at least mercury and is furthermore provided with an internal electrode which is connected to an electrical lead-through conductor consisting mainly of copper-clad wire, and in which at least the part of said electrical lead-through conductor located between the electrode and the glass wall is provided with an oxide coating, said coating being in direct contact with the discharge space of the discharge tube, wherein said part of the lead-through conductor consists of a copper-clad wire which is surrounded by a Cu_2O coating, the lead-through conductor being manufactured in known manner from a copper-clad wire of which part of the copper has been oxidised during heating by an electrical process.

3,896,326

METAL HALIDE DISCHARGE LAMP HAVING EXPANDED SECTION ARC TUBE

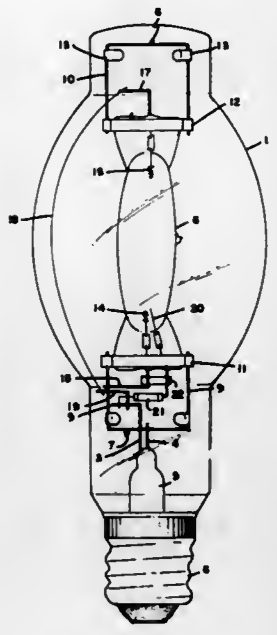
Timothy Fohl, Carlisle, Mass., assignor to GTE Sylvania Incorporated, Danvers, Mass.

Filed July 19, 1973, Ser. No. 380,737

Int. Cl. H01j *17/16*

U.S. Cl. 313—220 **2 Claims**

1. A general illumination wall stabilized metal halide arc discharge lamp comprising: an outer envelope; a generally tubular arc tube, having electrodes at each end, disposed within said envelope, said arc tube containing a fill including mercury, metal halide and an inert gas, the diameter of said arc tube being at a minimum at about the electrode regions thereof and gradually increasing therefrom to a maximum diameter at about the center of said arc tube; and means to energize said arc tube.



3,896,327

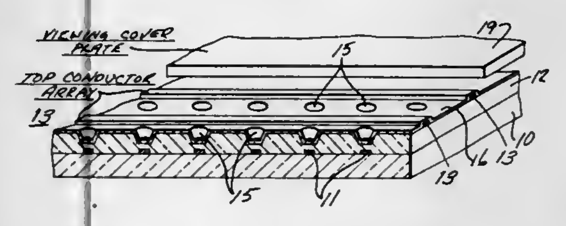
MONOLITHIC GAS DISCHARGE DISPLAY DEVICE

Jerry D. Schermerhorn, Swanton, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Continuation-in-part of Ser. No. 239,015, March 29, 1972, abandoned, which is a continuation-in-part of Ser. No. 197,003, Nov. 9, 1971, Pat. No. 3,787,106. This application Nov. 19, 1973, Ser. No. 416,727

Int. Cl. H01j *11/02, 61/30*

U.S. Cl. 313—220 **7 Claims**



1. A monolithic gas discharge display/memory device which comprises:

a dielectric member having a selected thickness;

a cover plate member for maintaining an inert ionizable gaseous medium on one side of the dielectric member;

a first array of electrodes on the surface of the gas side of the dielectric member;

a second array of electrodes on the surface of the opposite non-gas side of the dielectric member, the electrodes in the arrays defining cooperating pairs of electrodes;

electrical circuit means for applying a potential to the electrodes to cause a gas discharge at each cooperating pair of electrodes;

and a plurality of structural formations in said one side of the dielectric member forming gas-filled cavities in the gas side of the dielectric member, one cavity forming structural formation juxtaposed adjacent to each cooperating pair of electrodes, respectively, so as to isolate each gas discharge relative to other gas discharges and increase the resolution of the device.

3,896,328

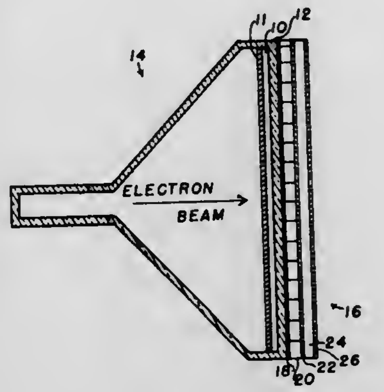
DUAL MODE CRT SCREEN

Roy F. Potter, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 28, 1974, Ser. No. 473,987

Int. Cl.² H01J *29/18, 31/20, 31/12*

U.S. Cl. 313—463 **2 Claims**



1. A multiple mode cathode ray tube screen for presenting a display of differing persistence comprising:

a. an envelope having a viewing area with a screen supporting surface related thereto;

b. a dual phosphor screen formed on the inside of said supporting surface, said dual phosphor screen being composed of a first phosphor material responsive to optical and cathode ray excitation and exhibiting a phosphorescence of substantially short persistence in the visible spectrum and a second phosphor material responsive to optical and cathode ray excitation and exhibiting a phosphorescence in the non-visible spectrum, said dual phosphor material being approximately 50% phosphor emitting in the ultraviolet, having medium or long persistence, and approximately 50% short persistence green phosphor, and said photoconductive material being ultraviolet sensitive;

c. a photoconductive material whose resistance becomes negligible in response to excitation by photons from said non-visible phosphorescence;

d. a first transparent electrode layered between the outside surface of said face plate and said photoconductive material;

e. an electroluminescent material responsive to excitation by the presence of an electric field;

f. a second transparent electrode layered between said photoconductive material and said electroluminescent material;

g. a third transparent electrode layered on the outside surface of said electroluminescent material whereby a voltage may be established across said first and third electrodes that portion of said electro-luminescent material as said phosphor screen is scanned by the electron beam of said cathode ray tube.

3,896,329

PERMANENT MAGNET BEAM FOCUS STRUCTURE FOR LINEAR BEAM TUBES

Erling L. Lien, Los Altos, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Sept. 21, 1972, Ser. No. 291,117

Int. Cl. H01j *25/34*

U.S. Cl. 315—3.5 **7 Claims**

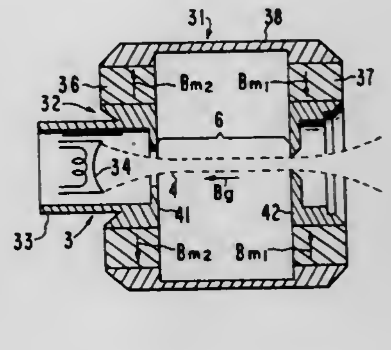
1. In a linear beam tube:

electron gun means for forming and projecting a beam of electrons over an elongated beam path;

collector means at the terminal end of the beam path for collecting and dissipating the energy of the collected electrons;

electrical circuit means disposed along the beam path intermediate said cathode means and said collector means in energy exchanging relation with the beam to produce an output signal;

magnet means for magnetically focusing the beam over said beam path between said electron gun means and said collector means, said magnet means including, electron gun and collector pole piece structures coaxially disposed of the beam path in axially spaced relation, said pole piece structures each being centrally apertured for passage of the beam therethrough and each being made of a magnetically permeable material, magnetically permeable magnetic yoke means coaxially disposed of said beam path and including axially spaced portions surrounding said electron gun and collector pole piece structures respectively in radially spaced relation therefrom, permanent magnet means for energizing said pole piece structures, said permanent magnet means comprising essentially only first and second axially spaced centrally apertured radially polarized permanent magnet means of opposite radial polarity interposed between said respective pole piece structures and said respective surrounding yoke portions for producing an axially directed beam focus magnetic field within the beam path and extending axially between said pair of axially spaced electron gun and collector pole piece structures, the magnetic field within said permanent magnet means being composed of flux lines which are substantially radially directed and centered substantially at the beam axis.



3,896,330

COLOR TELEVISION DEGAUSSING CIRCUIT

Richard Travers Chamberlain, Arlington Heights, Ill., assignor to Admiral Corporation, Chicago, Ill.

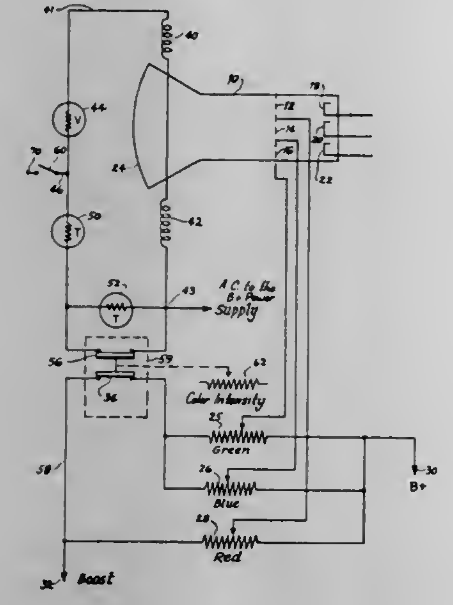
Filed Sept. 28, 1970, Ser. No. 76,022

Int. Cl. H01j *31/20;* **H01f** *13/00;* **H01j** *29/98*

U.S. Cl. 315—8 **6 Claims**

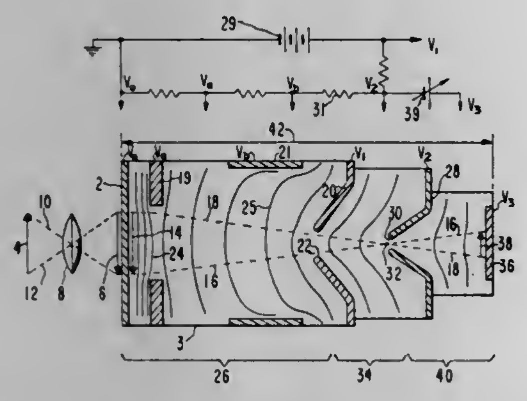
1. In a color television receiver having a picture tube susceptible to the effect of external magnetic fields, an electric circuit comprising: degaussing means positioned adjacent to the picture tube for degaussing the same, means for connecting the degaussing means to a power supply, circuit means connected to the degaussing means for causing a relatively large current to be passed from the power supply through the degaussing means for the time interval needed to degauss the picture tube, display circuit means for controlling the color of the field displayed on the picture tube, manual means for triggering operation of the degaussing circuit means to initiate a degaussing action, and said manual means substantially

simultaneously with the triggering function also producing a change in the normal operation of the display circuit means of such character as to cause a visual effect of the degaussing action to appear on the picture tube.



3,896,331
ELECTRON OPTICAL SYSTEM

Richard S. Enck, Jr., Mountain View, and James P. Sackinger, San Jose, both of Calif., assignors to Varian Associates, Palo Alto, Calif.
Filed June 28, 1973, Ser. No. 374,440
Int. Cl. H01j *29/70*
U.S. Cl. 315—17 **11 Claims**



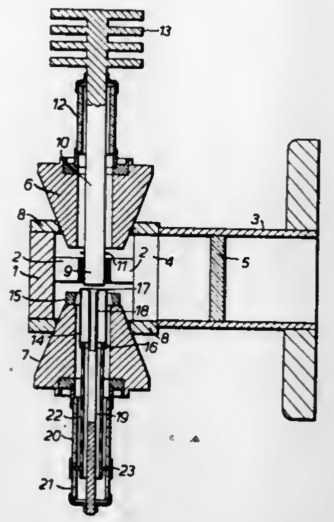
1. An electron optical system comprising: image input means for providing a source of charged particles corresponding to an image, said means having a charged particle output surface maintained at a first potential;

- a first electrode having an aperture and maintained at a second potential greater than said first potential, whereby the particles are accelerated from the particle output surface toward the first electrode and through the aperture thereof;
- a second electrode having an aperture and located downstream from said first electrode, said second electrode being maintained at a third voltage less than said second voltage and being so shaped, dimensioned and positioned as to cause convergence of said charged particles and focussing thereof in a region adjacent said aperture in said second electrode; and

image output means having a surface downstream from said second electrode on which the particles form an image.

3,896,332
HIGH POWER QUICK STARTING MAGNETRON

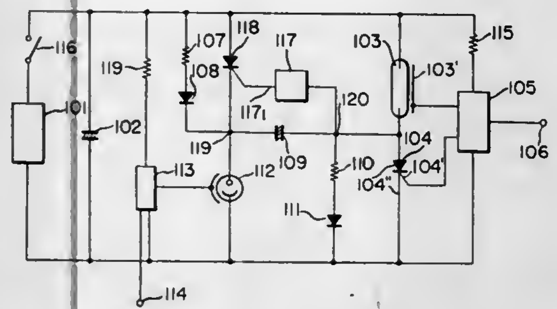
Vincent Albert Heathcote, London, England, assignor to The M-O Valve Company Limited, London, England
Filed May 29, 1974, Ser. No. 474,240
Claims priority, application United Kingdom, June 4, 1973, 26552/73
Int. Cl.² H01J *25/50*
U.S. Cl. 315—39.51 **9 Claims**



1. A magnetron comprising: a secondary electron emissive main cathode; an anode resonator which defines a cylindrical space in which said main cathode is disposed so as to provide an annular space between the anode and cathode; an electron gun employing a thermionic cathode of low thermal inertia disposed at a position outside said cylindrical space defined by the anode and arranged to direct a stream of electrons into said annular space between the anode and said main cathode to initiate operation of the magnetron, whereafter at least the major part of the electron current required for operation of the magnetron is provided by said main cathode due to electron back bombardment; said thermionic cathode being sufficiently remote from said cylindrical space to not be subjected to significant electron back bombardment.

3,896,333
ELECTRONIC FLASH DEVICE

Zenzo Nakamura, Urawa, Japan, assignor to Canon Kabushiki Kaisha, Japan
Filed May 9, 1973, Ser. No. 358,522
Claims priority, application Japan, May 10, 1972, 47-46129
Int. Cl. H05b *37/02*
U.S. Cl. 315—151 **3 Claims**

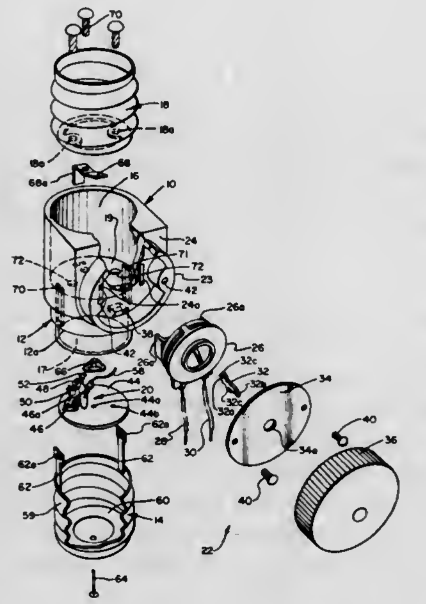


1. An electronic flash device for a photographic camera, operable to control the amount of light emitted by a flash tube by interrupting the discharge of a flash tube after initiation of the discharge thereof, said electronic flash device comprising, in combination, a source of electric potential; a first capacitor connected across said source for charging thereby; a flash tube having one terminal connected to one terminal of said first capacitor; a first switching means connected in series to the other terminal of said flash tube, at a junction point, and to the other terminal of said first capacitor, and operable to

effectively connect and disconnect said flash tube from said first capacitor; trigger means connected to said first switching means and operable to trigger said first switching means conductive for discharging said first capacitor through said flash tube; impedance means; a second capacitor; said impedance means connecting one end of said second capacitor with one terminal of said source of electric potential; the other end of said second capacitor being connected to said junction point of said first switching means and said flash tube, and to the other terminal of said source of electric potential, for charging of said second capacitor through said impedance means; signal generating means operable to generate a signal for interrupting flashing of said flash tube; first means connecting one end of said second capacitor to a terminal of said source of potential and to said first switching means, and connected to said signal generating means for operation responsive to a flash interrupting signal to be conductive for a predetermined time by the flash interrupting signal so as to reverse the potentials at the opposite ends of said second capacitor and to trigger said first switching means non-conductive; whereby said second capacitor is discharged; and a second means connected in parallel with said impedance means and electrically connected to said first means; said second means being triggered conductive for a predetermined time responsive to discharge of said second capacitor, to form a charging circuit for said second capacitor in parallel with said impedance means and bypassing said impedance means; said second means being triggered conductive after said first means has been triggered conductive and then triggered non-conductive responsive to termination of said flash interrupting signal.

3,896,334
MULTIPLE LEVEL LAMP ADAPTER

Edward T. Rodriquez, Winchester, Mass., assignor to Creative Technology Corporation, Salem, Mass.
Filed Aug. 15, 1973, Ser. No. 388,459
Int. Cl.² H05B *37/02, 39/00*
U.S. Cl. 315—194 **4 Claims**

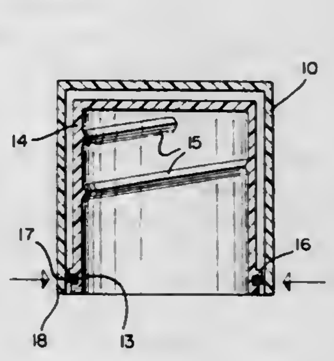


1. A lamp dimmer-adapter comprising

A. a generally cylindrical housing having
  1. first and second cavities at opposite ends and
  2. a partition between said cavities,
B. a lamp socket shell disposed in said first cavity to receive a lamp bulb therein,
C. a lamp base across said second cavity bearing against a transverse surface of said housing and aligned with said socket shell, said base including a lamp base shell,
D. at least one tab fastened to said base shell and extending through said partition, thereby preventing relative rotational movement between said housing and said lamp base,
E. fastening means for fastening said socket shell and said tabs to said partition with said socket shell in contact with said tabs to provide electrical connection between said base and socket shells and to secure said socket shell and said base to said housing,
F. a socket center contact fastened to said partition in said first cavity and extending through said partition into said second cavity,
G. a base center contact extending from the exterior of said base into the interior thereof,
H. an electronic assembly including solid state switching means and
  1. disposed in said base,
  2. connected to control conduction between said center contacts by means of said solid state switching means, and
  3. arranged for closer thermal coupling with said base than with a lamp in said shell,
I. a control section disposed on a side of said housing, said control section comprising
  1. lateral extension of said housing having a third cavity therein,
  2. a variable circuit element disposed in said third cavity,
  3. a control knob for varying said circuit element, and
  J. means connecting said variable circuit element to said electronic assembly for control of the conduction of said solid state switching means by means of said variable circuit element.

3,896,335
PROTECTIVE AND SAFETY CLOSURE FOR CONTAINERS

Clayton Bogert, 118 Lowell Rd., Glen Rock, N.J. 07452
Filed June 14, 1973, Ser. No. 369,893
Int. Cl. B65d *55/02, 55/56;* **A61j** *1/00*
U.S. Cl. 215—219 **8 Claims**



1. A protective safety closure for containers having a neck portion comprising:

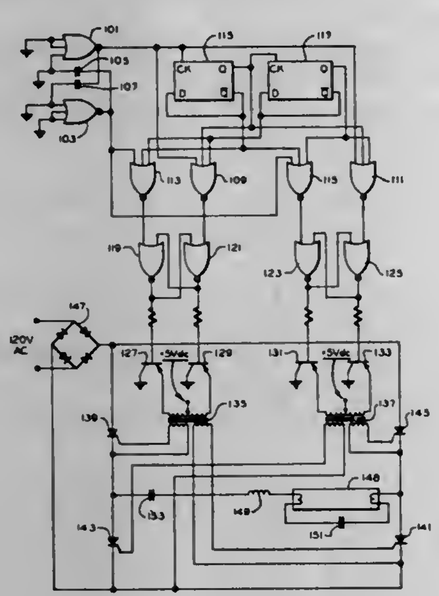
an inner cap adapted to be fitted over the said neck portion and having a base,
a ledge in proximity to said base,
an outer cap adapted to be fitted to said inner cap and having a base,
a ledge in proximity to said base, and,
serrations in proximity to the ledges on said outer and inner cap adapted to interengage with each other under pressure applied to the outer cap to cause the inner cap to rotate with the outer cap.

3,896,336

SOLID STATE FLUORESCENT LAMP BALLAST SYSTEM

Max P. Schreiner, Plano, and Tom M. Hyltin, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 20, 1973, Ser. No. 426,784
Int. Cl. H05b *37/02*
U.S. Cl. 315—226 **14 Claims**



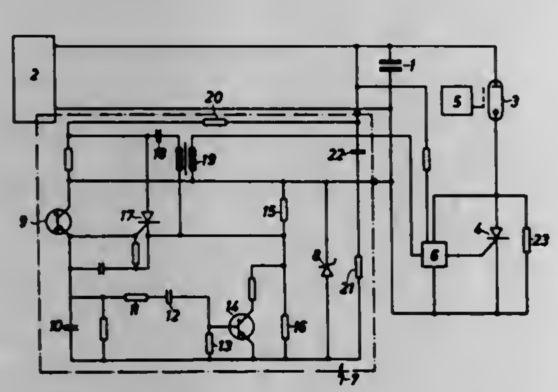
1. A solid-state fluorescent lamp ballast circuit system comprising:
- a gaseous discharge lamp;
- full-wave rectifying means for supplying a pulsating voltage;
  - a first switch coupling one side of the output of said rectifying means to one side of said lamp;
- a second switch coupling said one rectifying means side to the other side of said lamp;
- a third switch coupling the other side of said rectifying means to said one side of said lamp;
- a fourth switch coupling said other side of said rectifying means to said other side of said lamp;
- trigger means for providing first and second complementary pulse trains, said first pulse train being coupled to said first and fourth switches, said second pulse trains being coupled to said second and third switches; and
- reactive means coupling said switching means to said lamp.

3,896,337

ELECTRONIC FLASH APPARATUS

Hans-Heino Decker, Vechelde, Germany, assignor to Rollei-Werke Franke & Heidecke, Braunschweig, Germany

Filed Jan. 22, 1974, Ser. No. 435,582
Claims priority, application Germany, Feb. 2, 1973, 2305046
Int. Cl. H05b *41/30*
U.S. Cl. 315—241 P **5 Claims**



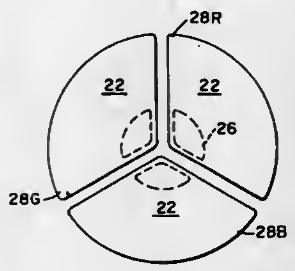
1. Electronic flash apparatus comprising a flash tube for emitting photographic light during discharge of the tube, means for interrupting discharge of said tube to stop emission of light therefrom, and integrating means for integrating light reflected from a subject to be photographed and for providing a signal impulse to said interrupting means when the integrated reflected light reaches a desired value, said integrating means including a photosensitive control member **9, 17** having a control grid and a cathode, said integrating means also including circuit means so arranged that the cathode potential of said photosensitive control member is reduced in accordance with the time change in the voltage prevailing in the control grid, and so that said circuit means emits said signal impulse as soon as said cathode potential falls below said control grid potential, which has been reduced to the extent of the ignition voltage, said circuit means including a voltage divider having two resistors **15, 16** one of which (**16**) is variable in accordance with the time change of the voltage prevailing in the control grid of the photosensitive control member, and wherein the cathode potential of the photosensitive control member is determined by said voltage divider.

3,896,338

COLOR VIDEO DISPLAY SYSTEM COMPRISING ELECTROSTATICALLY DEFLECTABLE LIGHT VALVES

Harvey C. Nathanson, and Jens Guldberg, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 1, 1973, Ser. No. 411,885
Int. Cl. H01j *29/70*
U.S. Cl. 315—373 **11 Claims**



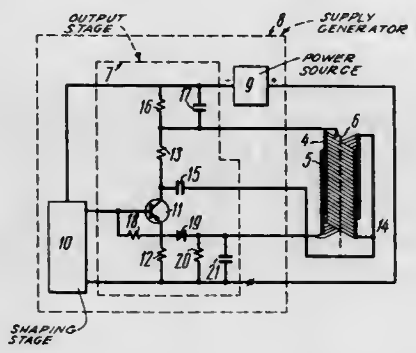
1. A video imaging system comprising:
- a. a cathode ray tube including at least one electron gun;
- b. an electrostatically deflectable light valve array target comprising a light transmissive substrate, a plurality of groupings of three spaced apart generally planar light reflective elements individually supported by a spacer-post member extending from the substrate, the spacer-post member being of substantially less cross-section than the light reflective element, and being located entirely beneath the light reflective element, and a light transmissive potential electrode disposed upon the substrate in the space between reflective elements, with respective reflective elements of each grouping of three being deflectable along three respective symmetrically offset primary color axes of deflection in response to a specific primary color video signal;
- c. optical means and a light source for directing light onto the respective reflective elements and including selective transmissive portions of the optical means for passing light of a specific primary color from the deformed reflective element to permit focusing of a color image upon a screen, which selective transmissive portions are symmetrically spaced about the central optical axis of the optical means in correspondence to the respective primary color axes of deflection;
- d. means for scanning the electron beam from the electron gun and for synchronizing and modulating a video signal to permit sequential activation of respective primary color designated reflective elements.

3,896,339

DEVICE FOR FOCUSSING AND DEFLECTION OF AN ELECTRON BEAM IN A CATHODE-RAY APPARATUS

Ivan Ivanovich Efimov, ulitsa Stroitelei 7, korpus 1, kv. 96, Moscow; Mikhail Lvovich Lifshits, ulitsa Moskovskaya 3, kv. 18, Lobnya Moskovskoi oblasti; Dmitry Dmitrievich Nikiforov, ulitsa Sretenka, 26/1, kv. 2, Moscow; Viktor Pavlovich Ivanov, Putevoi prozed, 8, kv. 56, Moscow; Lev Efimovich Linetsky, ulitsa Metrostroevskaya, 13/12, kv. 13, Moscow; Vadim Georgievich Lazarev, ulitsa Norilskaya 1, kv. 140, Moscow, and Alexandr Ivanovich Brenin, prozed Cherskogo, 11, kv. 63, Moscow, all of U.S.S.R.

Filed July 16, 1973, Ser. No. 379,391
Int. Cl. H01j *29/58, 29/70*
U.S. Cl. 315—403 **2 Claims**



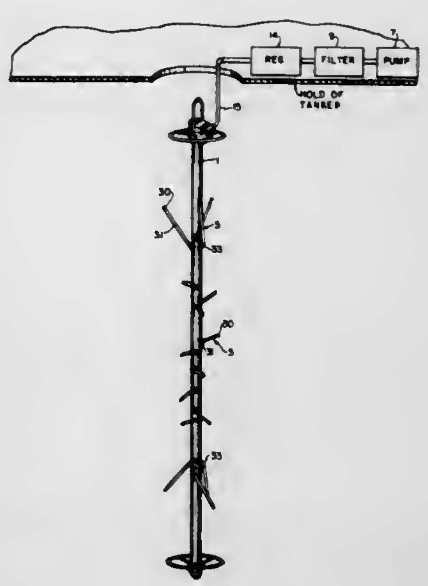
1. A device for focussing and deflecting an electron beam in a cathode-ray apparatus which comprises two windings disposed coaxially in operative relationship with the apparatus to provide focussing and scanning of the electron beam on the operating surface thereof, said device comprising: supply generator means for producing stabilized direct current for focussing said electron beam and alternating current for deflecting said electron beam, said supply generator means having an operatively interconnected shaping stage and output stage, the input to said output stage being coupled to the output of said shaping stage; and a power source for supplying power to the device which includes a negative lead and a positive lead and is operatively coupled with said shaping and output stages; a pair of windings operatively coupled to said output stage, said pair comprising a first winding and a second winding each having a first lead and a second lead and being connected in series by means of said first leads, the two planes defined by the two sets of turns of the windings of said pair of windings being mutually non-parallel, said planes inclined at equal angles relative to the co-axis of said windings; a transistor of said output stage, said transistor having a collector, an emitter and a base; a first resistor of said output stage which has a first lead and a second lead and is connected to said emitter by means of the first lead thereof; a second resistor of said output stage said second resistor having a first lead and a second lead and connected to said collector by means of the first lead thereof; a first capacitor of said output stage, one lead of said capacitor being connected to said collector, the other lead, to a junction point defining the connection of the windings of said pair of windings, the second lead of said second resistor being connected to the second lead of said first winding; a third resistor of said output stage, a first lead of said third resistor being connected to the second lead of said second resistor, and a second lead of said third transistor, to the negative lead of said power source; a second capacitor connected in parallel with said third resistor; a fourth resistor of said output stage which has a first lead and a second lead and is connected to said base by means of the first lead thereof; a diode of said output stage, a first lead of said diode being connected to the second lead of said fourth resistor, the other lead of said diode being connected to the second lead of said second winding; a fifth resistor of said output stage, a first lead of said fifth resistor being connected to the second lead of said second winding, and a second lead thereof, to the positive lead of said power source; a third capacitor of said output stage connected in parallel with said fifth resistor the second lead of said first resistor being connected to the positive lead of said power source.

3,896,340

APPARATUS AND METHOD FOR WASHING AWAY AN ELECTROSTATIC CHARGED MIST IN AN OIL TANKER

Julian H. Dancy, Richmond, Va., assignor to Texaco Inc., New York, N.Y.

Filed Aug. 23, 1973, Ser. No. 390,802
Int. Cl. H05f *3/00*
U.S. Cl. 317—2 R **7 Claims**



1. Apparatus for washing away an electrostatic charged mist in a substantially empty hold in an oil tanker, comprising means for providing a supply of liquid at a predetermined pressure and at a predetermined location in the hold of the tanker, means for converting the liquid to drops of a predetermined size, utilizing the electrostatic charged mist to charge the drops during the converting step to an opposite polarity to the polarity of the electrostatic charged mist, and means for distributing the oppositely charged drops throughout the hold so as to substantially wash away the charged mist.

3,896,341

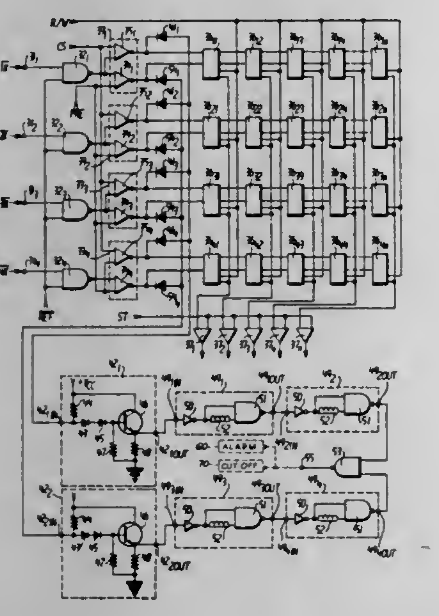
PROTECTING DEVICE FOR A SEMICONDUCTOR MEMORY APPARATUS

Koji Kodama, Tokyo, Japan, assignor to Tokyo Shibaura Electric Company, Ltd., Japan

Filed Apr. 20, 1973, Ser. No. 353,130
Claims priority, application Japan, Apr. 22, 1972, 47-40749
Int. Cl. H02h *7/20*
U.S. Cl. 317—33 R **3 Claims**

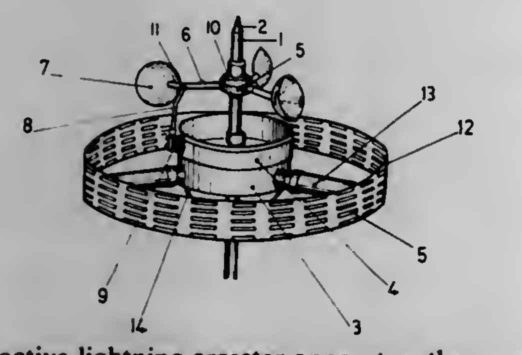
1. Apparatus for protecting the semi-conductor memory elements in a semiconductor device from damage due to abnormal pulses from the driving circuitry thereof, which comprises:
- means for sampling a pulse signal from said driving circuitry;
- means for time-delaying said pulse signal;
- means for comparing said pulse signal with said time-delayed pulse signal and for issuing an output signal indicative of whether said pulse signal exceeds a pre-determined pulse width;
- said time-delaying and comparing means comprising
- a first inverter having an input and an output for receiving as its input the pulse signal from said driving circuitry;
- a second inverter having an input and an output;

a first delay circuit having an input and an output;
a second delay circuit having an input and an output;
a first NAND gate having two inputs and an output;
a second NAND gate having two inputs and an output;
means connecting the output of the first inverter to the input of the first delay circuit and to an input of the first NAND gate;
means connecting the output of the first delay circuit to the other input of the first NAND gate;



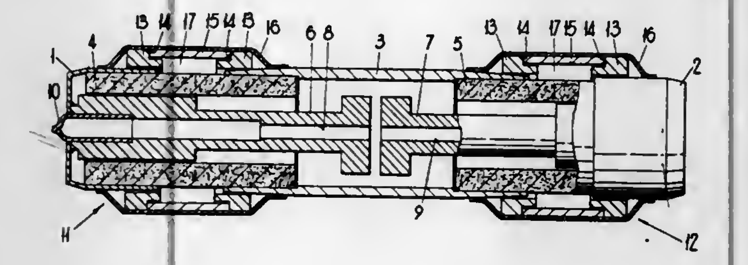
means connecting the output of the first NAND gate to the input of the second inverter;
means connecting the output of the second inverter to the input of the second delay circuit and to an input of the second NAND gate;
means connecting the output of the second delay circuit to the other input of the second NAND gate;
the output of the second NAND gate being indicative of whether said pulse signal exceeds a predetermined pulse width.

3,896,342
CONSTRUCTION OF RADIOACTIVE LIGHTNING ARRESTERS
Enrique Fornes Puget, Madrid, Spain, assignor to Nuclear Iberica S.A., Madrid, Spain
Filed Aug. 7, 1972, Ser. No. 278,446
Claims priority, application Spain, Aug. 7, 1971, 394004
Int. Cl. H02h *9/04*
U.S. Cl. 317—61 **5 Claims**



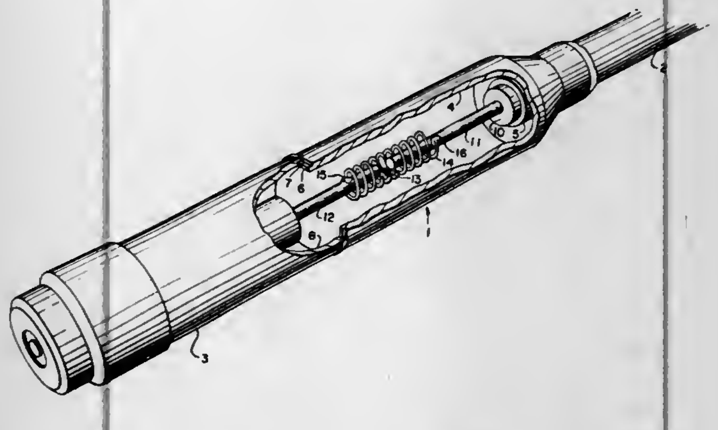
1. A radioactive lightning arrester apparatus, the apparatus comprising: a rod connected to the earth; a support mounted concentrically about the rod; a low energy radioactive source comprising one or more cores or nuclei disposed on said support; rotating means rotatably mounted on said rod; a plurality of arms radially emerging from said rotating means, each arm provided at its free end with a cup against which the wind acts in order to cause said rotating means to continually rotate when the wind blows; at least one link means movable with and extending from said rotating means; and a brush carried at the free end of each link, each brush situated facing the radioactive source so that said brush contacts the radioactive source to clean it as said rotating means rotates.

3,896,343
HEAT-OPERATED SHORT-CIRCUITING ARRANGEMENTS
Basil Offor Baker, Rickmansworth, and John William Ellis Ross, Sidcup, both of England, assignors to The M-O Valve Company Limited, London, England
Filed Mar. 21, 1974, Ser. No. 453,325
Claims priority, application United Kingdom, Mar. 23, 1973, 14137/73
Int. Cl. H02h *3/22*
U.S. Cl. 317—61 **10 Claims**



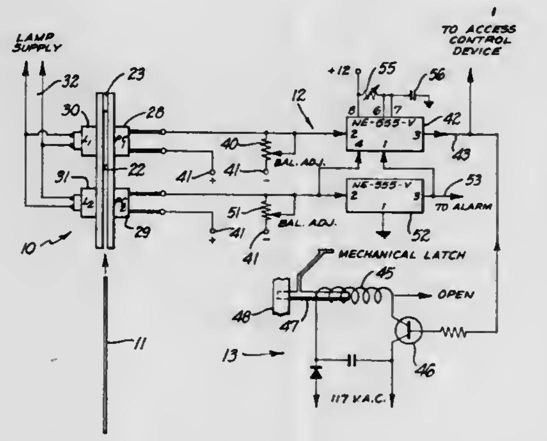
1. A heat-operated short circuiting arrangement comprising: an enclosure formed at least partly of a heat-shrinkable material; a pair of terminals for external connection of the arrangement which provide spaced surfaces within the enclosure; at least one element of a fusible, electrically conductive material housed within the enclosure; and means providing a space within said enclosure between said spaced surfaces through which, on heating of the arrangement, molten material, produced by melting of said fusible material is caused to flow due to shrinking of said heat shrinkable material to establish electrical connection between said spaced surfaces.

3,896,344
ENGINE IGNITER TIP CONNECTOR WITH COMPENSATION FOR DIFFERENTIAL THERMAL EXPANSION
Thomas Parker Haselton, Lynn, Mass., assignor to General Electric Company, Wilmington, Mass.
Filed June 5, 1974, Ser. No. 476,525
Int. Cl. F23q *3/00*
U.S. Cl. 317—96 **1 Claim**



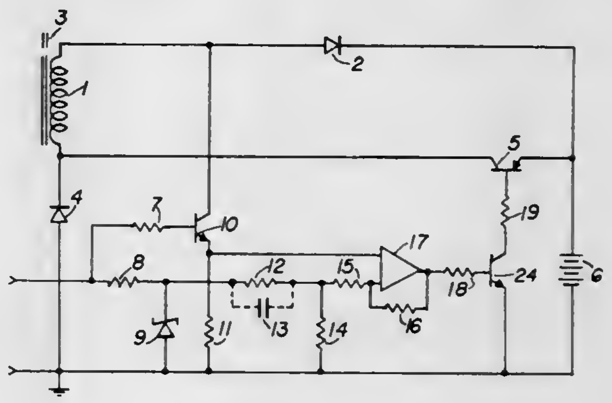
1. In an igniter tip connector, the combination comprising:
a. a metallic outer shell adapted to engage the metallic housing of an igniter at one end thereof and the metallic sheath of a cable at the other end thereof,
b. an igniter electrode extending into said metallic outer shell, said igniter electrode being mounted in insulated relationship with the said igniter housing and the said metallic outer shell,
c. a lead wire from said cable extending into said metallic outer shell, said lead wire being mounted in electrically insulated relationship with said metallic outer shell and the said metallic sheath of the cable, the ends of said electrode and said lead wire being separated by a gap which is greater than the maximum differential, thermal expansion between said metallic outer shell and said wire and electrode,
d. axially extensible coil spring means connected between said lead wire and said electrode extending partially into said coil spring which has a diameter larger than the diameters of said wire and said electrode, whereby said spring means absorbs any differential expansion.

3,896,345
PHOTO LOCK SYSTEM
Henry R. Zink, P.O. Box 459, Lake Arrowhead, Calif. 92352
Filed Sept. 3, 1974, Ser. No. 502,851
Int. Cl.^{2} E05B *47/00*
U.S. Cl. 317—134 **9 Claims**



1. In an access control system, the combination of:
a receptacle having a first station and a second station and including means defining a slot for receiving a key member for movement past said first station to said second station;
a first radiation sensor mounted at said first station;
a second radiation sensor mounted at said second station;
means for directing radiation across said slot to each of said sensors;
a first transparency mounted at said first station; and
a key member having a second transparency which is the complement of said first transparency, with said second transparency positioned on said key member to move past said second station to said first station as said key member is inserted into said slot, and
with at least the portions of said key member which are at said second station during insertion having an average radiation transmission characteristic substantially the same as that of said second transparency.

3,896,346
HIGH SPEED ELECTROMAGNET CONTROL CIRCUIT
Louis A. Ule, Rolling Hills, Calif., assignor to Electronic Camshaft Corporation, Rolling Hills, Calif.
Continuation-in-part of Ser. No. 308,268, Nov. 21, 1972, abandoned. This application July 10, 1973, Ser. No. 377,956
Int. Cl. H01h *47/32*
U.S. Cl. 317—154 **2 Claims**

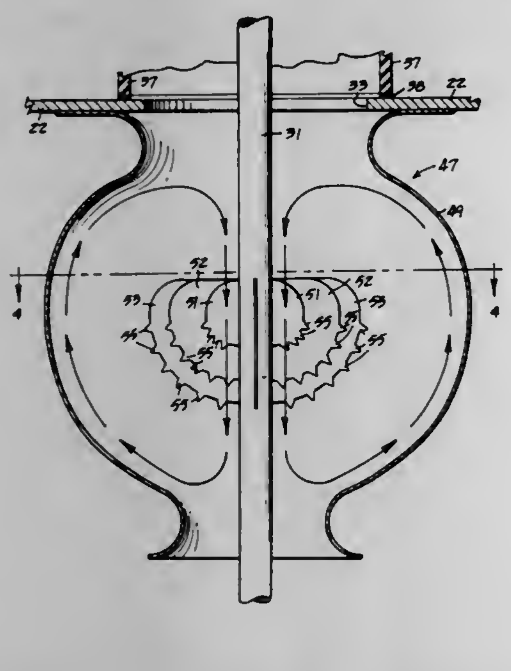


1. In combination with an electromagnetically operated device, a circuit for producing rapid current growth in the coil of said device, and for maintaining a predetermined level of current in said coil, an electrical circuit comprising:
a source of relatively high voltage capable of effecting rapid current growth in said coil;
semiconductor switching means responsive to external control for applying said high voltage source to energize said coil, said semiconductor switching means operating in a switching mode as a substantially non-dissipative element;
first means for sensing the current in said coil to open said semiconductor switching means when a predetermined coil current value is reached, and for closing said switch intermittently thereafter, to maintain said predetermined coil current value;
and second means subject to external control for applying said high voltage source to said coil in opposite polarity, thereby accelerating the rate of current decline in said coil.

3,896,347
CORONA WIND GENERATING DEVICE
Peter Charles Gelfand, Lebanon, Pa., assignor to Envirotech Corporation, Menlo Park, Calif.
Filed May 30, 1974, Ser. No. 474,625
Int. Cl. B03c *3/74*
U.S. Cl. 317—262 E **13 Claims**

1. A device for generating a corona wind comprising:
a. an electrically conductive rod-like member adapted for connection to a high-voltage source;
b. an electrically conductive shell mounted to spacedly surround said rod-like member and having a first open mouth at one end thereof through which said rod-like member passes, said first mouth being relatively large compared to the diameter of said rod-like member;
c. a plurality of thin plate-like members, each fastened on edge in a circumferential series around said rod-like member to extend outwardly therefrom toward said shell; portions of the outer peripheral edges of said plate-like members having a plurality of corona-emitting points formed thereon, said points being generally directed outwardly and toward said first mouth;
d. the surrounding wall of said shell being spaced radially apart from the peripheral edges of said plate-like members, said shell being adapted for connection to an electrical ground so that electrical discharge from said points is

directed toward said shell to cause a gaseous flow within said shell in the space between said shell and said rod-like member when said rod-like member is charged to a high voltage.



3,896,348
CIRCUIT FOR SUPPLYING A DC LOAD FROM AN AC SOURCE THROUGH A RECTIFIER

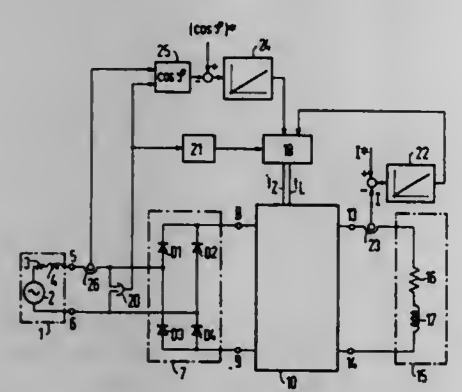
Peter Loderer, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed July 2, 1974, Ser. No. 485,088

Claims priority, application Germany, July 2, 1973, 2333570

Int. Cl. H02p *13/16*; **H02m** *1/12*

U.S. Cl. 318—227 **12 Claims**



1. In a circuit for supplying a DC load from an AC source through an uncontrolled rectifier and a DC control element arranged between the output of the rectifier and the DC load, the control unit of the DC control element being synchronized with the AC source and arranged to keep the power factor at a predetermined value, a capacitor being associated with the DC control element for storing energy, and a by-pass diode bridged across the DC load, an improved arrangement for suppressing unwanted harmonics comprising:

a. a first and second by-pass diodes connected in series in the same direction across the load;
b. a capacitor associated with the DC control element coupled between one input terminal of the DC control element and the center of the two by-pass diodes.

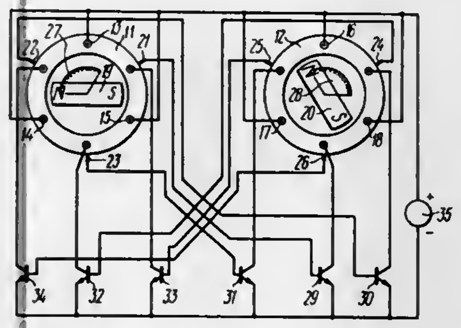
3,896,349
ELECTRIC DRIVE FOR MOTORS INTERCONNECTED TO FORM A RING CIRCUIT

Valery Konstantinovich Lozenko, ulitsa Krasny Kazanets, 19, korpus 1, kv. 258; Vladimir Alexandrovich Morozov, ulitsa Krasny Kazanets, 19, korpus 1, kv. 80; Vladimir Serafimovich Pavlikhin, Aviamotornaya ulitsa, 4, korpus 2, kv. 108; Anatoly Mikhailovich Santalov, Chasovaya ulitsa 14, kv. 23, all of Moscow; Leonid Nikolaevich Negodyaev, ulitsa Volodarskogo, 99a, kv. 5, and Jury Ivanovich Kiryanov, ulitsa Solidarnosti, 11, kv. 61, both of Kirov, all of U.S.S.R.

Filed Feb. 27, 1974, Ser. No. 446,513

Int. Cl. H02p *5/46, 7/68*

U.S. Cl. 318—85 **15 Claims**



1. An electric drive comprising: at least two gatecontrolled electric motors, each of said gate-controlled electric motors comprising a synchronous machine, each of said gate-controlled electric motors having a rotor position sensor mounted on the shaft of said synchronous machine, each of said gate-controlled electric motors being provided with gate switching means, an output of said gate switching means being connected to armature winding sections of said synchronous machine; gates of said gate switching means; gate switch on control circuits for said gate switching means; gate switch off control circuits for said gate switching means, said gate switch on circuit of each of said gate switching means being connected to the first input of said rotor position sensor of each subsequent synchronous machine thereby forming a ring circuit.

3,896,350
ENERGIZATION CIRCUIT FOR DYNAMO ELECTRIC MACHINES DRIVING, OR BRAKING VEHICLE WHEELS

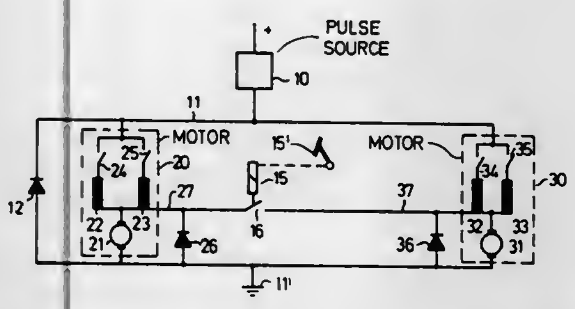
Dieter Kipp, Aurich, Germany, assignor to Robert Bosch G.m.b.H., Gerlingen-Schillerhohe, Germany

Filed Jan. 16, 1974, Ser. No. 433,749

Claims priority, application Germany, Jan. 25, 1973, 2303555

Int. Cl.² H02P *3/00*

U.S. Cl. 318—87 **4 Claims**



1. In a drive system having at least two series-type dynamo electric machines (20, 30) connected to at least two loads, such as vehicle wheels, an energization circuit for said dynamo electric machines arranged to selectively connect said dynamo electric machines to operate in motor mode driving the loads, or to operate in generator mode, effecting dynamic braking of the loads,

means (24, 25; 34, 35) controlling the direction of energization of the fields (22, 23; 32, 33) of the dynamo electric machines to selectively operate in either of said modes;

and switch means (15, 16) selectively directly cross connecting the armatures (21, 31) of the dynamo electric machines so as to place the armatures in a parallel circuit relationship when said mode control means (24, 25; 34, 35) energizes the fields in a direction to operate the dynamo electric machine in a generator-dynamic braking mode, said cross-connecting switch means forming a bypass circuit for circulating currents between the armatures (21, 31) arising due to differences in voltages across said armatures when the dynamo electric machines (29, 30) operate in generator mode, and said switch means selectively interrupting said parallel circuit cross connection of the armatures (21, 31) of the machines (20, 30) when the dynamo electric machines (20, 30) operate in motor mode.

3,896,351
CONTROL ARRANGEMENT FOR A SELF-CONTROLLED SYNCHRONOUS MACHINE

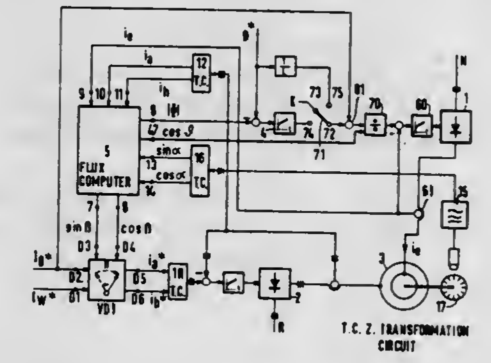
Felix Blaschke, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 19, 1974, Ser. No. 498,751

Claims priority, application Germany, Aug. 23, 1973, 2342653

Int. Cl. H02p *5/28*

U.S. Cl. 318—175 **7 Claims**



1. In a converter fed, self-controlled synchronous machine having an excitation current control, a flux computer having as one output the cosine of the rotor angle and means to establish predetermined field-parallel and field-orthogonal components of the stator current, an improved regulating arrangement comprising; dividing means having its output coupled as a reference input to the excitation control and having as a dividend input a quantity proportional to the desired magnetizing current and as a divisor input, a quantity proportional to the cosine of the rotor angle obtained from the flux computer.

3,896,352
LIGHTNING ARRESTERS AND SURGE DIVERTERS

William Walter James Miles, Buckhurst Hill, England, assignor to Bowthorpe Hellermann Limited, Crawley, Sussex, England

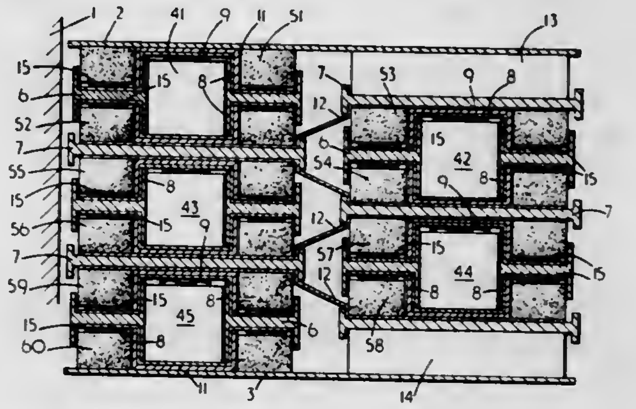
Filed Oct. 23, 1973, Ser. No. 408,636

Claims priority, application United Kingdom, Oct. 23, 1972, 48803/72

Int. Cl. H02h *9/06*

U.S. Cl. 317—68 **4 Claims**

1. A high voltage device comprising a casing housing, a plurality of series connected components arranged in two or more stacks, each component in anyone of the stacks being electrically connected directly to a component in the other or one of the other stacks, said components each comprising a central annular ceramic plate, an annular non-linear resistor located on each side of the central plate, a spark gap unit located in the aperture defined by the central plate, two contact plates, one arranged on each side of the central plate so as to cover its surface and the aperture therein, and a cup-shaped insulation member arranged over the central portion of the contact plate on each side of the central plate,



the components being separated by circular ceramic plates so that the weight of the whole assembly is taken by the cup-shaped insulation members and the central plates.

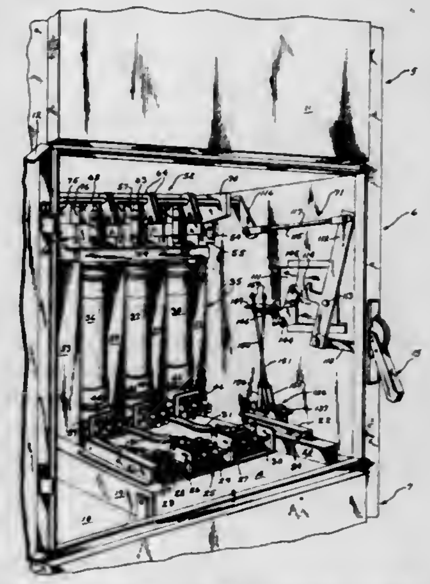
3,896,353
ENCLOSED HIGH VOLTAGE MOTOR CONTROL WITH INTERLOCKING ELEMENTS

Lawrence A. Burton, Oconomowoc, and Gustav W. Doos, Shorewood, both of Wis., assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed Jan. 14, 1974, Ser. No. 433,350

Int. Cl. H02b *11/14*

U.S. Cl. 317—103 **9 Claims**



1. In a high voltage motor control the combination comprising:

an enclosure having a door and a handle which is operable between a locked and unlocked position to allow entry into the enclosure through the door;

a plurality of current conducting paths contained within said enclosure conducting load current between a set of high voltage terminals on the back of said enclosure and a set of load lines;

guide means mounted to the enclosure floor;

a carriage which is slidably received by said guide means and retained thereby in an operating position, said carriage including a contactor which is electrically connected into said current conducting paths when said carriage is in said operating position, said contactor being operable to conduct load current when energized and to interrupt conduction of load current when deenergized; a fuse assembly mounted to the back wall of said enclosure and including a set of fuses which are electrically connected into said current conducting paths;

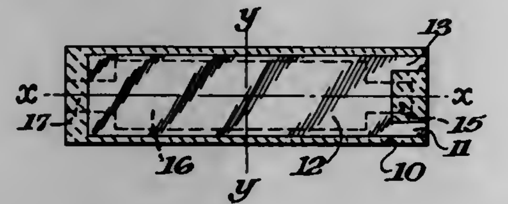
a disconnect assembly mounted to the back wall of said enclosure above said fuse assembly and including a set of disconnect switches which are electrically connected into

said current conducting paths and which are operable between a closed position in which they conduct load current from said high voltage terminals on the back of said enclosure and an open position in which they isolate the high voltage terminals from the interior of the enclosure; and
an interlock mechanism which connects said disconnect assembly to said handle and which is operable to open said disconnect switches when said handle is operated to unlock said door.

3,896,354
MONOLITHIC CERAMIC CAPACITOR

James H. Coleman, and Jyh-Shuey Lo, both of Wichita Falls, Tex., assignors to Sprague Electric Company, North Adams, Mass.

Filed July 2, 1974, Ser. No. 485,187
Int. Cl. H01g ***3/06***
U.S. Cl. 317—258 **5 Claims**



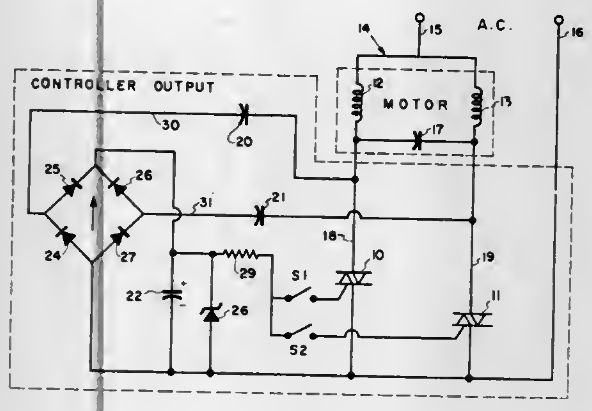
1. A monolithic ceramic capacitor comprising a dielectric ceramic body; a plurality of spaced mutually parallel film electrodes buried in said body, mutually perpendicular X and Y axes of said capacitor defining a plane being parallel to said electrodes, at least one of said electrodes having a common area of overlap with the adjacent of said spaced electrodes, said at least one electrode having co-planar extensions in opposite X axis directions beyond said common overlap area, said extensions in one X axis direction having an accumulated width in the y direction equal to the accumulated width of said opposite X axis extensions, each said adjacent electrode having co-planar extensions in opposite Y axis directions beyond said common overlap area, said extensions of said each adjacent electrode in one Y axis direction having an accumulated length in the x direction equal to the accumulated length of said opposite Y axis extensions; and a connective means at spaced faces of said body for the purpose of connecting a voltage between said at least one electrode and said adjacent electrodes.

3,896,355
SELF-POWERED THYRISTOR TRIGGER CIRCUIT

Eugene H. Guicheteau, Audubon, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed June 13, 1974, Ser. No. 478,944
Int. Cl. H02p ***1/40***
U.S. Cl. 318—207 **6 Claims**

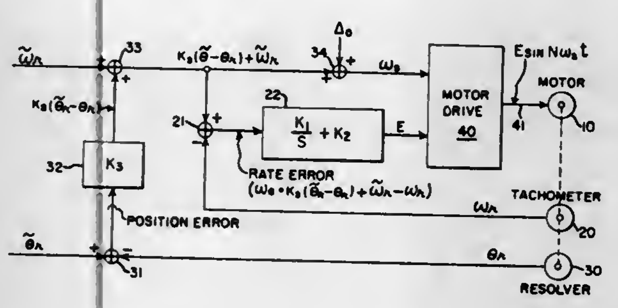
1. A power control circuit including in combination first and second semiconductor load carrying gate controlled conducting devices each having a pair of load terminals connected in series circuit relationship with an individually associated inductive impedance load across a pair of alternating current power supply terminals, and control circuit means coupled to and controlling said gate controlled conducting devices comprising means for providing a unidirectional gating potential, said last mentioned means comprising a filter capacitor having a first terminal connected to the junction of one of said power supply terminals and one of said load terminals of each of said gate controlled conductive devices, said filter capacitor having a second terminal connected by first and second circuits to the other one of said power supply terminals, each of said first and second circuits including a rectifier, a current limiting capacitor and an associated one of said load devices, and gating means operatively coupled to said filter capacitor and selectively operable to be coupled to the control gate of one or the other of said load current carrying gate controlled conducting devices for applying a gating-on signal to said device to cause the same to conduct load current therethrough.



3,896,356
METHOD AND CONTROL SYSTEM FOR IMPROVED STABILITY OF AN INDUCTION MOTOR VIA INDEPENDENT VOLTAGE, SYNCHRONOUS FREQUENCY, AND SLIP FREQUENCY CONTROL AT AN OPERATING POINT

Robert E. Hoffman, Erie, Pa.; John A. Cline, Pittsfield, Mass.; Christopher S. Fuselier, Pittsfield, Mass., and John D. D'Atre, Pittsfield, Mass., assignors to General Electric Company

Continuation of Ser. No. 326,449, Jan. 24, 1973, abandoned. This application June 5, 1974, Ser. No. 476,433
Int. Cl. H02p ***5/40***
U.S. Cl. 318—227 **9 Claims**



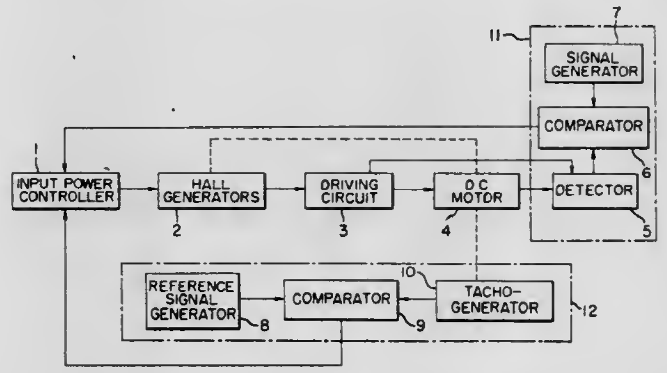
1. In a system for controlling a motor having a stator and a rotor for stable operation over a wide range of rotor speeds wherein motor control is effected by control of the amplitude and frequency components of the drive voltage applied to the motor, apparatus for control of the motor slip frequency comprising the combination of independent:
- a. means for variation of the voltage amplitude responsive to a function of the algebraic sum of the commanded and actual rotor speeds; and
- b. means for variation of the frequency of the said voltage applied to said motor responsive to a function of the algebraic sum of said commanded rotor speed and the desired slip frequency;

said means for variation being independent of each other and said means for variation of the frequency being independent of rotor speed whereby variation of said voltage amplitude will not cause a reactionary change in motor frequency and whereby the actual slip frequency of said motor is free to vary until true rotor speed approaches the desired rotor speed.

3,896,357
DRIVING SYSTEM FOR DC MOTORS WITH HALL GENERATORS

Kinji Tanikoshi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha and Canon Seiki Kabushiki Kaisha, both of Tokyo, Japan

Filed Aug. 23, 1973, Ser. No. 391,025
Claims priority, application Japan, Aug. 31, 1972, 47-87349; Nov. 10, 1972, 47-112626
Int. Cl. H02k ***29/00***
U.S. Cl. 318—254 **15 Claims**



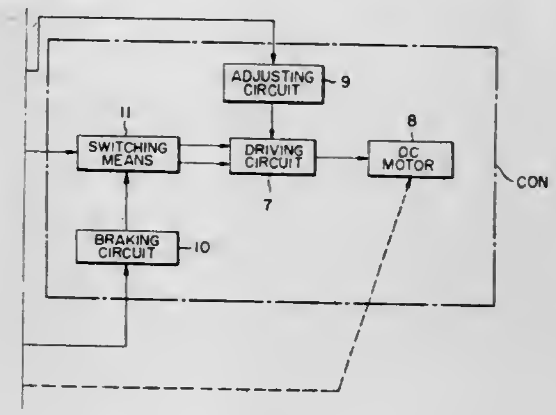
1. A DC motor and driving control system therefor comprising, in combination;
- a. a rotor having magnetic poles of opposite polarities thereon;
- b. a stator having flux-producing windings positioned in torque-producing relation to said rotor;
- c. Hall generators positioned in flux-sensing relationship to said magnetic poles and actuatable to detect the instantaneous rotational speed of said rotor and to generate electrical signals with a frequency responding to the rotational speed of said DC motor;
- d. driving means having transistors for applying an exciting current to said windings in response to the output signals from said Hall generators;
- e. detecting means connected with said transistors in said driving means to detect a saturated state of said transistors;
- f. signal generating means for generating a signal corresponding to a predetermined voltage lower than a saturation voltage of said transistors in said driving means so as not to saturate said transistors;
- g. comparator means for comparing the output signal of said detecting means with the output signal of said generating means so as to generate a signal representing the difference therebetween; and
- h. means for controlling the voltage to be applied to said Hall generators in response to the output signal of said comparator means, thereby controlling the level of the output signals of said Hall generators.

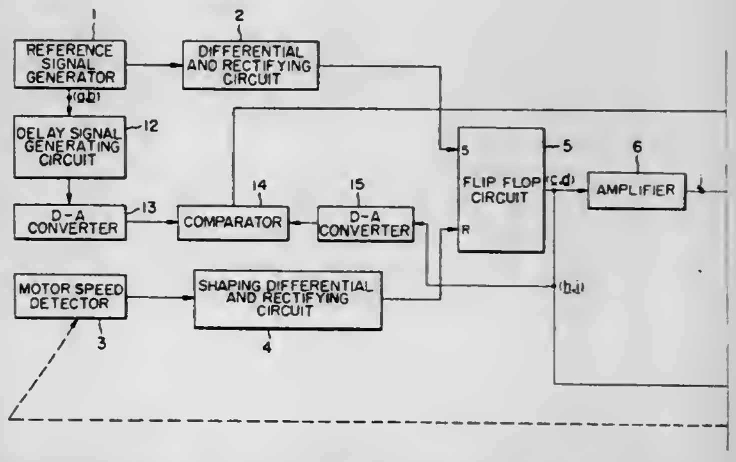
3,896,358
SYNCHRONOUS DRIVE SYSTEM FOR A D.C. MOTOR

Kinji Tanikoshi, Kawasaki, Japan, assignor to Canon Seiki Kabushiki Kaisha and Canon Kabushiki Kaisha, both of Tokyo, Japan

Filed July 17, 1974, Ser. No. 489,088
Claims priority, application Japan, July 24, 1973, 48-83277
Int. Cl. H02p ***5/16***
U.S. Cl. 318—314 **16 Claims**

1. A drive system for a D.C. motor comprising:
reference signal generating means having a predetermined frequency,
motor speed detecting means for generating a signal of frequency corresponding to rotational speed of the D.C. motor,
synchronous drive controlling means for the motor, said controlling means being disposed so as to receive signals from said reference signal generating means and signals from said motor speed detecting means and generating driving signals for the motor corresponding to the phase difference between both said signals,
delaying means connected to said reference signal generating means to delay said reference signal for a predetermined time, and
adjusting means capable of being connected to said delaying means and said synchronous drive controlling means and comparing input signals from both said means so as to adjust the output of said synchronous drive controlling means, said adjusting means controlling duty of driving current for the D.C. motor to the value close to approximately 100%.




1
2
REFERENCE SIGNAL GENERATOR
DIFFERENTIAL AND RECTIFYING CIRCUIT
(g,b)
DELAY SIGNAL GENERATING CIRCUIT
12
5
6
S
FLIP FLOP CIRCUIT
(c,d)
AMPLIFIER
14
15
D-A CONVERTER
13
COMPARATOR
D-A CONVERTER
R
MOTOR SPEED DETECTOR
SHAPING DIFFERENTIAL AND RECTIFYING CIRCUIT
(h,i)
3
4

3,896,359
MULTISPEED CONTROL SYSTEM

Charles C. Olander, Huntington Beach, and Michael J. Caparone, Arcadia, both of Calif., assignors to Robertshaw Control Company, Richmond, Va.

Filed Jan. 19, 1973, Ser. No. 325,182
Int. Cl. H02p ***7/58***
U.S. Cl. 318—334 **1 Claim**

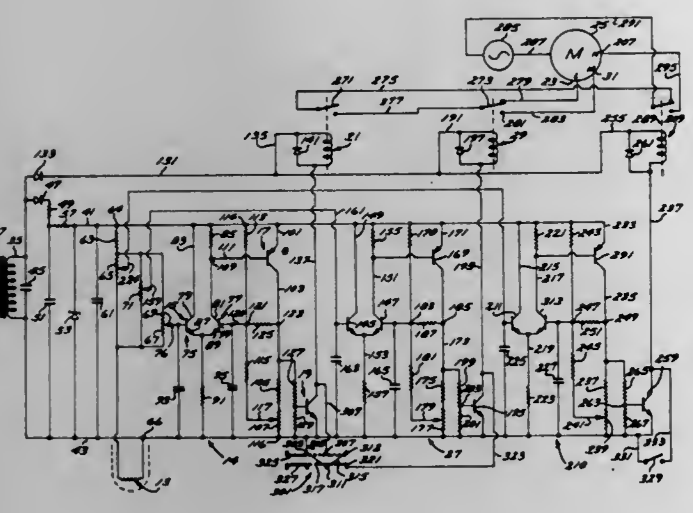
1. A multispeed control system for selecting the number of isolated windings for excitation in a multi-winding electrical motor in response to selected discrete amplitudes of a sensed parameter, comprising:
electrical power supply means for providing a D.C. electrical signal;
parameter responsive means disposed to respond to said

sensed parameter in a predetermined relationship of electrical resistance corresponding to the amplitude of said sensed parameter;

a first and second resistive divider network connected in parallel for excitation across said power supply means and across said parameter responsive means as one element thereof;

a first and second differential amplifier respectively connected between said first and second divider networks and said parameter responsive means for respectively producing a first and second bridge differential signal in response to the corresponding bridge balance formed therebetween; and

a first and second control circuit connected to respectively receive said first and second differential amplifier signal for selectively connecting for excitation said isolated windings of said motor in a predetermined response to said first and second bridge differential signals.



3,896,360

METHOD AND APPARATUS FOR AUTOMATIC FORWARD FEED PROGRAMMED CONTROL OF A MACHINE TOOL

Jurgen Meyer, and Siegfried Waller, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

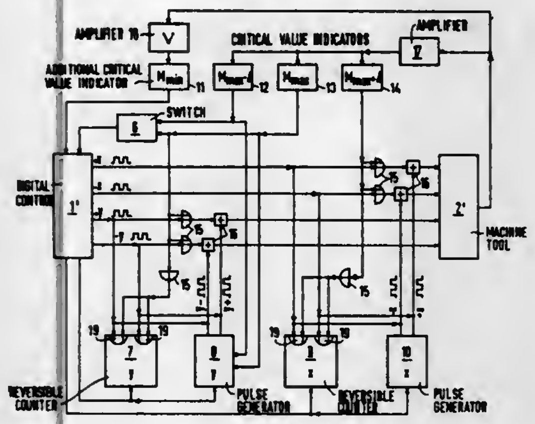
Continuation-in-part of Ser. No. 866,507, Oct. 15, 1969, abandoned. This application May 27, 1971, Ser. No. 147,707

Claims priority, application Germany, Oct. 18, 1968, 1803742

Int. Cl. G05b *19/24*

U.S. Cl. 318—571 **2 Claims**

1. Apparatus for optimum adjustment of a digitally controlled machine tool in the machining process of a workpiece (W) wherein a control system of a programmed contour includes feeding means for transmitting appropriate control commands to the machine tool and for regulating the relative speed of the machine tool to the workpiece in accordance with the forming power applied to the workpiece in a manner whereby the feed speed is decreased when the forming power is increased and the feed speed is increased when the forming power is decreased, said apparatus comprising work feeding means for changing the programmed contour in the direction of decreasing processing depth $(+y)$ when the forming power (M_d) exceeds a predetermined level (M_{max}) and for continuing the process in the direction of increasing processing depth $(-y)$ to a maximum of the programmed contour when the forming power is less than a predetermined lower level $(M_{max} - \Delta)$; reversible counter means for digitally storing deviations from the programmed contour; and additional work feeding means for additionally utilizing the deviations for controlling the movement (x, y) of the machine tool to decrease said deviations in a manner whereby the contour is repeatedly removed until the actual contour of the workpiece coincides with the programmed contour.



3,896,361

METHOD AND APPARATUS FOR COMPENSATING AN ERROR IN NUMERICAL CONTROL

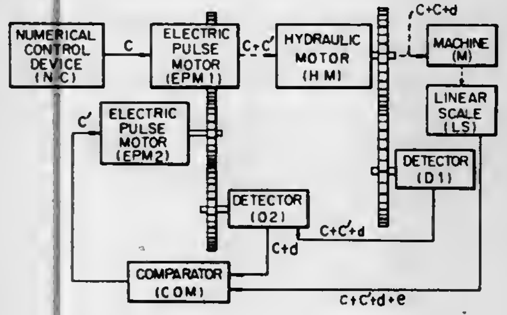
Seiuemon Inaba; Kanryo Shimizu, both of Kawasaki; Yoshihiro Hashimoto, Yokohama; Youichi Amemiya, Tokyo, and Hiroshi Usami, Kawasaki, all of Japan, assignors to Fujitsu Limited, Japan

Filed Oct. 12, 1970, Ser. No. 80,041

Claims priority, application Japan, Oct. 24, 1969, 44-85138

Int. Cl. G05b *5/01;* **G05d** *23/275*

U.S. Cl. 318—616 **2 Claims**



1. In a numerical control system including pulse motor means for driving a movable element of a machine, means for generating pulses in proportion to the actual velocity of said movable element, and means for supplying command velocity input pulses, an improvement for compensating for an error in said numerical control system comprising,

means for applying input signals to said pulse motor means to drive said pulse motor means to control a velocity of movement of said movable element,

deviation signal generating means having an input for application of said command velocity input pulses and having an output for producing deviation signal pulses in proportion to a command velocity determined by said command input pulses,

means for combining said command input pulses, said deviation signal pulses, and said actual velocity pulses to produce compensating pulses,

means for applying said compensating pulses and said command velocity input pulses to said means for applying input signals to said pulse motor means, said means for applying input signals to said pulse motor means including means for applying said command velocity input pulses as an electrical input to said pulse motor means, and pulse responsive means connected to said pulse motor means for supplying a mechanical input thereto in response to said compensating pulses for altering the velocity of said pulse motor means as determined by said command velocity input pulses.

3,896,362

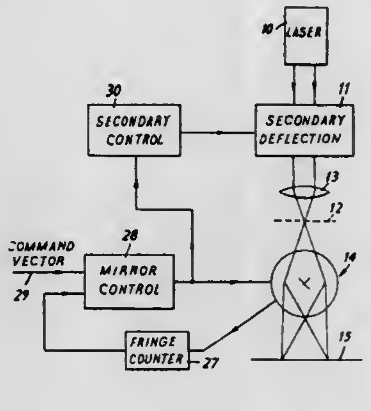
LIGHT-BEAM STEERING APPARATUS

Graham Stewart Brandon Street, 115, Perse Way, Cambridge, England

Continuation-in-part of Ser. No. 82,643, Oct. 21, 1970, abandoned. This application Nov. 30, 1972, Ser. No. 310,679

Int. Cl. G05b *1/06*

U.S. Cl. 318—640 **22 Claims**



1. Light beam steering apparatus, comprising:

a light source generating a light beam to be steered by deflection thereof;

steering mirror means located in the path of said light beam from said source and repositionable at a first speed for deflecting said light beam within a wide range of beam deflectng positions;

servo-control means controlling said steering mirror means and comprising

- a. first input means for receiving command signals corresponding to a required mirror means position,
- b. feed-back input means connected to said mirror means for receiving feed-back position signals representing actual mirror means position,
- c. means connected to said first input means and said feed-back input means for generating error signals representing at each instant the departure of the actual mirror position indicated by the feed-back signals from the mirror position required by the command signals, and
- d. first means connected to said error signal generating means for controlling the movement of said mirror means in dependence upon said error signals;

secondary beam control means simultaneously responsive to the same error signals as said mirror controlling means for simultaneously deflecting said beam before it reaches said steering mirror means, said secondary beam control means including

- a. a secondary deflection system positioned in the path of said light beam between said source and said steering mirror means for accurately deflecting said beam at a faster second speed within a narrower range of beam positions incident on the steering mirror means, and
- b. second means defining a secondary control circuit connected between said error signal generating means and said secondary deflection system and responsive to the same said error signals for causing said secondary deflection system to correct the beam position in accordance with said same error signals;

whereby said secondary beam control means rapidly deflects, within its narrow range, the beam incident on the steering mirror means to dynamically compensate for instantaneous deflection error in the beam emerging from such steering mirror means, simultaneously with at least partial execution by the slower but wider range steering mirror means of moves toward each of a rapidly commanded series of beam deflecting positions.

3,896,363

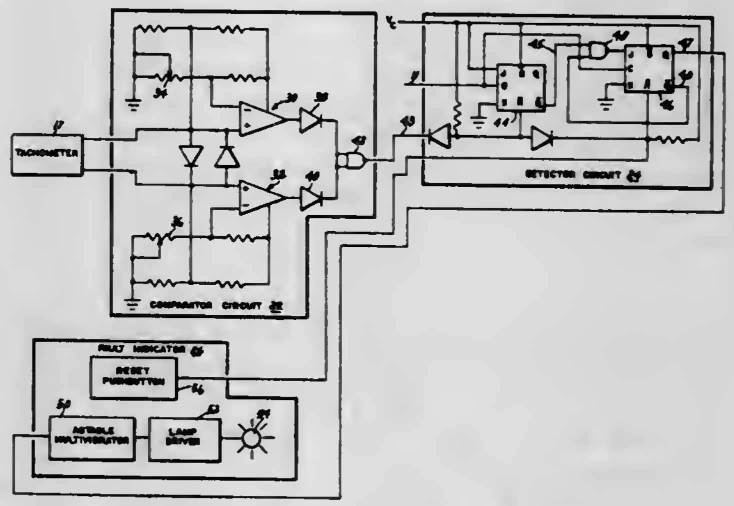
FEEDBACK CIRCUIT FOR DETECTING THE FAILURE OF A STEPPING MOTOR TO RESPOND TO THE CONTROL CIRCUIT

Robert Carl Kinsel, and Robert Nick Magee, both of Cincinnati, Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Mar. 18, 1974, Ser. No. 451,775

Int. Cl.^{2} G05B *19/40*

U.S. Cl. 318—685 **4 Claims**



1. An apparatus for detecting the failure of a stepping motor to respond to input pulses generated by a control circuit, the apparatus comprising:

a. a velocity transducer in mechanical communication with the stepping motor for providing a first output analog signal in response to the stepping motor rotating in one direction and a second output analog signal in response to the stepping motor rotating in an opposite direction;
b. means connected to the velocity transducer for producing an analog feedback signal in response to the output analog signals;
c. means responsive to the input pulses and the analog feedback signal for generating an error signal in response to the presence of the input pulses and the absence of corresponding analog feedback signals; and
d. means responsive to the error signal for producing an indication of an error condition.

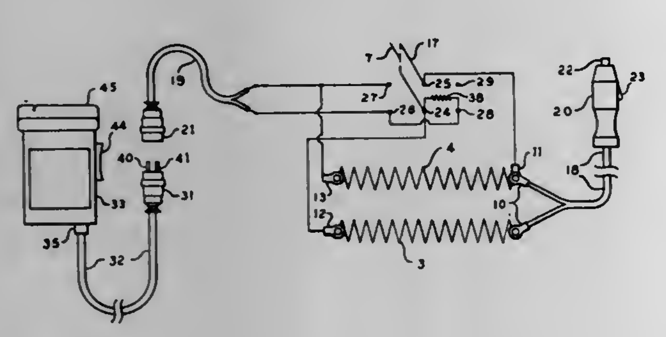
3,896,364
ELECTRIC RAZOR ADAPTER

Richard A. Reister, Box 110, O. W. S. Rd., Yucca Valley, Calif. 92284

Continuation-in-part of Ser. No. 388,572, Aug. 15, 1973, abandoned. This application Oct. 18, 1974, Ser. No. 516,612

Int. Cl. H02j *7/00*

U.S. Cl. 320—2 **30 Claims**



1. An adapter for an electric razor suitable for transportation vehicles wherein said electric razor has a primary self-contained battery source for operation of said electric razor, said adapter comprizing: appropriate electrical resistance means, means to electrically connect the input of said electrical resistance means to a secondary battery source such as in transportation vehicles, said secondary battery source being of higher voltage than said primary battery source, means to electrically connect the output of said electrical resistance means to the input of said electric razor, switching means to electrically connect a first appropriate resistance of said resistance means in series between said secondary battery source and said electric razor to start said electric razor, switching means to further electrically connect a second appropriate resistance of said resistance means in series between said secondary battery source and said electric razor for normal running of said electric razor, switching means to further electrically connect a third appropriate resistance of said resistance means in series between said secondary battery source and said primary battery source to properly recharge said primary battery source from said secondary battery source.

3,896,365
POWER CENTER INVERTER HAVING POWER CENTER COMMUTATION DURING OPERATION INTO SHORT CIRCUITS

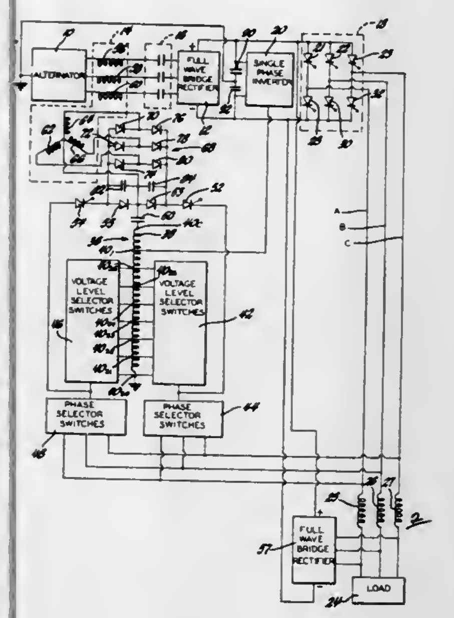
Thomas M. Corry, Goleta, Calif., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 5, 1974, Ser. No. 494,630

Int. Cl. H02m *7/52*

U.S. Cl. 321—5 **2 Claims**

1. A three-phase power center inverter having continued operation into a short circuit load comprising: means for generating an alternating signal referenced to a neutral potential; a full-wave rectifier coupled to the last mentioned means for rectifying the alternating signal and supplying a first unidirectional voltage; a first inverter connected to the rectifying means for producing by controlled rectifier action, three-phase, full-wave, flat-top voltage segments; a three-phase load; three impedance means; a set of three-phase line conductors, each interconnecting the first inverter and the load through a respective one of the three impedance means, each segment of the three-phase, full-wave, flat-top voltage segments being terminated by a commutating voltage on the respective line conductor; a second inverter connected to the rectifying means and operating in synchronism with the first inverter for producing at its output, single-phase, flat-top voltages alternating between the upper and lower potential at a rate three times the frequency of the three-phase voltage segments produced by the first inverter; an inductor having an input tap connected to the output of the second inverter, a low voltage tap connected to the neutral potential, a plurality of intermediate voltage taps between the low voltage tap and the input tap and a step-up tap in voltage multiplying position in relation to the flat-top voltage; a voltage distributor including first and second phase selectors, each having an input and means for selectively coupling said input to the line conductors in synchronism with the first inverter; means for connecting the low voltage and intermediate taps in ascending and descending order in synchronism with the first inverter to the inputs of each of the first and second phase selectors during the period said phase selectors are coupled to a respective line conductor to approximate on the line conductors, in relation to the neutral potential, a balanced and symmetrical voltage; a current sensor for sensing the current output of the means for generating an alternating signal and providing a second unidirectional voltage; first and second series coupled capacitors; means for coupling the second unidirectional voltage across the series coupled capacitors for charging said capacitors; first and second diodes each coupled in parallel with a respective one of the first and second capacitors and being poled so as to prevent discharge of the capacitor parallel coupled therewith; means for coupling the junction between the series coupled capacitors to the step-up tap; and means effective at the beginning of each of the periods the phase selectors are coupled to a line conductor for momentarily coupling a respective one of the high and low voltage sides of the series coupled capacitors to said last mentioned line conductor at a point intermediate the respective impedance means and the first inverter so as to commutate the first inverter, whereby said capacitors function to provide commutating power for commutating the first inverter in the event of a short circuit in the three-phase load.


ALTERNATOR
FULL WAVE BRIDGE RECTIFIER
SINGLE PHASE INVERTER
VOLTAGE LEVEL SELECTOR SWITCHES
VOLTAGE LEVEL SELECTOR SWITCHES
PHASE SELECTOR SWITCHES
PHASE SELECTOR SWITCHES
A
B
C
FULL WAVE BRIDGE RECTIFIER
LOAD
57
24

3,896,366
D.C. TO D.C. CONVERTER WITH CONDUCTIVE ISOLATION

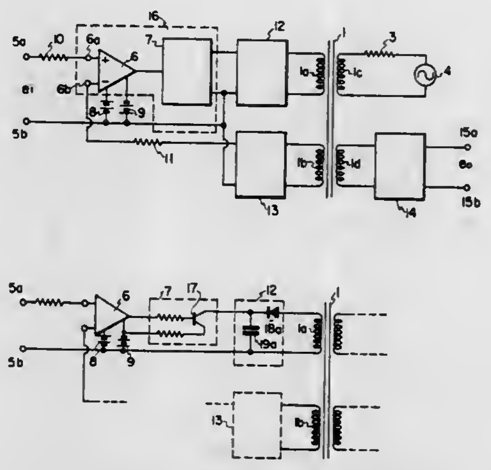
Seiji Onogi, Kamakura, Japan, assignor to Yamatake-Honeywell Company Limited, Tokyo, Japan

Filed Sept. 28, 1973, Ser. No. 401,706

Claims priority, application Japan, Sept. 29, 1972, 47-97801; Sept. 29, 1972, 47-97802; Sept. 29, 1972, 47-97803

Int. Cl. H02p *13/04;* **G05f** *7/00*

U.S. Cl. 321—16 **8 Claims**



1. An isolating signal transducer comprising,
a transformer having at least a control winding and an exciter winding,
a fixed impedance member serially connected with respect to said exciter winding,
means for applying a substantially constant a.c. excitation signal through said fixed impedance member to said exciter winding,
a signal controlled variable impedance means connected across said control winding whereby to control the loading of said transformer windings in accordance with an applied d.c. control signal,
means for applying an input control signal to said variable impedance means to effect a control thereof, and
means for deriving an output signal from said transformer corresponding to the input control signal but conductively isolated thereform,
said means for applying said input control signal to said variable impedance means comprising a differential amplifier.

3,896,367
CIRCUIT FOR REDUCING TURN-ON AND TURN-OFF TIMES OF INDUCTIVE LOADS

Claude Frantz, Kistlerhofstrasse 143, 8000 Munich 70, Germany

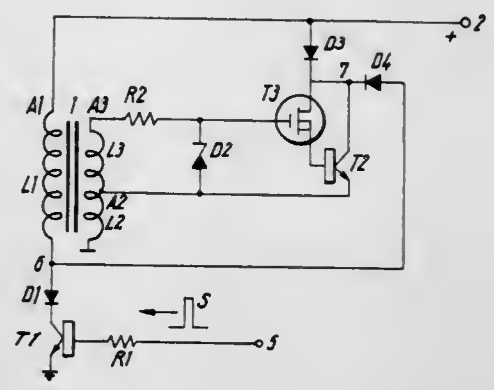
Filed Mar. 1, 1974, Ser. No. 447,152

Claims priority, application Germany, Mar. 7, 1973, 2311340

Int. Cl.^{2} H01H *47/32*

U.S. Cl. 323—6 **1 Claim**

1. A circuit for obtaining a reduced turn-on or turn-off of an inductive load, said circuit comprising, in combination:
a first transistor having a collector, an emitter, and a base and operative to be conductive for a pulse signal applied to its base;
a first diode connected to the collector of said first transistor and operative to be conductive when said first transistor is conductive;
said inductive load including a load winding and a control winding inductively coupled to said load winding;
first connecting means connecting said first diode in series connection with one end of said load winding;
a voltage supply means connected in series with the other end of said load winding;
a pulse signal source connected to the base of said first transistor and operative to make said first transistor conductive;
a MOS-FET having gate, source and drain electrodes and having its gate coupled to one end of said control windings;

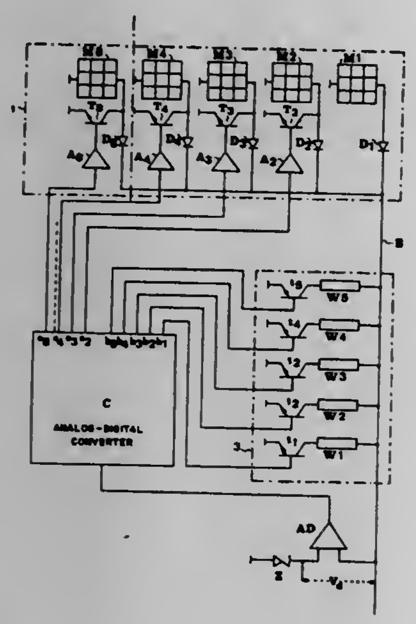


a second transistor having a collector, an emitter, and a base and connected to said MOS-FET in a Darlington connection and connected to the other end of said control winding, whereby said MOS-FET becomes conductive when said first transistor is conductive;
an auxiliary winding inductively coupled to said load winding and said control winding and connected at one end to said second transistor and operative for increasing the current flow in said load winding when said MOS-FET is conductive;
a second diode conductively connecting said voltage supply means to said MOS-FET;
a third diode conductively connected with the other of said load winding to said MOS-FET;
the winding ratio of said load winding to said auxiliary winding being selected for turning on said MOS-FET by the voltage induced in said auxiliary winding by the current flowing in said load winding, during the turning off of said current and to terminate the conduction when said induced transient current is substantially zero;
said auxiliary winding being operative for increasing the current flow in said load winding when said MOS-FET is conductive, whereby the turn-on time of said inductive load is substantially decreased with respect to the normal time.

3,896,368
VOLTAGE REGULATING DEVICE

Christian Rym, Nalinnes, Belgium, assignor to ACEC (Ateliers de Constructions Electriques de Charleroi), Charleroe, Belgium

Filed Oct. 19, 1973, Ser. No. 408,114
Claims priority, application Belgium, Oct. 20, 1972, 4503; Mar. 19, 1973, 4905; Mar. 19, 1973, 4907
Int. Cl. B64g *1/30;* **G05f** *1/46*
U.S. Cl. 323—8 **8 Claims**



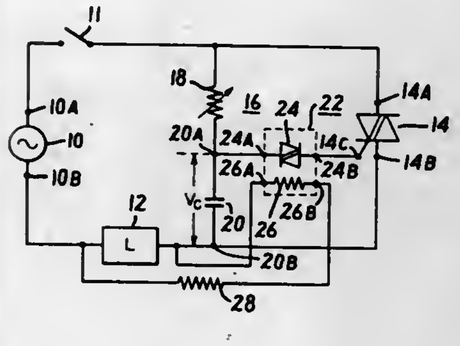
1. A device for regulating the voltage of an energy source constituted of a plurality of solar cells grouped into modules, each module having one terminal connected to a common conductor and another terminal connected through a diode to a distribution conductor, said device comprising:
- an electronic interrupter connected to the common conductor and the diode connected terminal of each module so as to short-circuit the module;
- a proportional shunt connected between the distribution conductor and the common conductor;
- a differential amplifier connected between said distribution conductor and a reference voltage generating device; and an analog-digital converter the input of which is connected to the output of said differential amplifier and a part of the binary outputs of which control said electronic interrupters, the remaining binary outputs controlling said proportional shunt.

3,896,369
CIRCUIT FOR SOFT-STARTING ELECTRIC LOAD COMPRISING TEMPERATURE SENSITIVE DIAC

Josuke Nakata, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Aug. 27, 1974, Ser. No. 500,855
Claims priority, application Japan, Aug. 30, 1973, 48-97651
Int. Cl. G05f *1/44*
U.S. Cl. 323—19 **7 Claims**

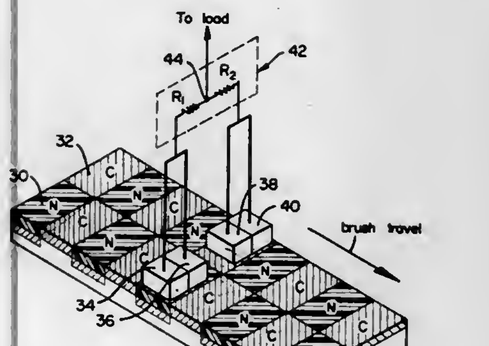
1. A circuit for soft-starting an electric load, comprising, in combination, thyristor means serially connected to an electric load across a source of alternating current, circuit means including a capacitor connected to said source and a semiconductor thermally sensitive switch element having a break-over voltage decreased with an increase in temperature, said circuit means being operative to trigger said thyristor in response to said break-over of said semiconductor thermally sensitive switch element due to a voltage across said capacitor exceeding said break-over voltage of said semiconductor thermally sensitive switch element, and electric heater means thermally coupled to said semiconductor thermally sensitive switch element to be electrically energized during a flow of load current through said load.



3,896,370
VARIABLE TRANSFORMER

August Frederick Manz, Union, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Filed Dec. 3, 1973, Ser. No. 421,330
Int. Cl. G05f *3/04*
U.S. Cl. 323—43.5 R **8 Claims**

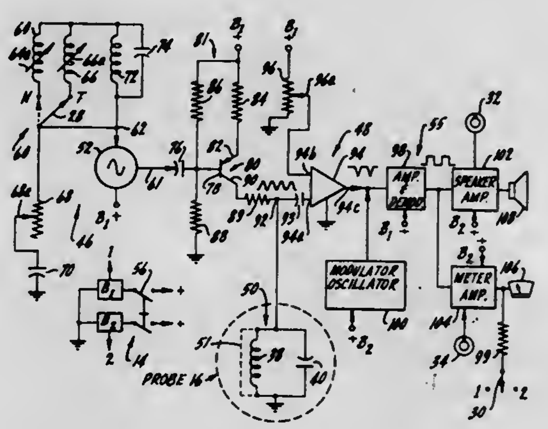


1. A variable output voltage transformer comprising: a core; a coil winding having multiple turns of conductor successively wound around said core and being electrically insulated from one another with each turn having an exposed predetermined area consisting of at least one conductive surface segment and one nonconductive surface segment respectively; at least two electrically conductive members arranged for sliding engagement against said predetermined area of each turn along separate paths transverse to the direction of the winding with each path including one surface segment of each of said predetermined areas, and wherein such surface segments alternate so as to form a checkered geometric pattern of conductive and nonconductive surface segments respectively and circuit means for coupling said electrically conductive members in a series relationship with each other.

3,896,371
METAL DETECTOR WITH A RESONATING CIRCUIT BEING DRIVEN BY A FREQUENCY HIGHER THAN ITS NATURAL RESONANCE FREQUENCY

Allen W. Hametta, 629 Evergreen Pl., Buffalo Grove, Ill. 60090

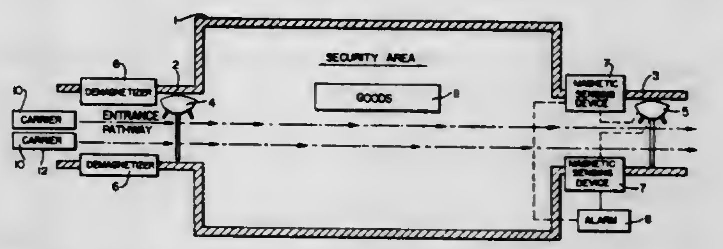
Filed Dec. 17, 1973, Ser. No. 425,520
Int. Cl.² G01V *3/10*
U.S. Cl. 324—3 **5 Claims**



1. A metal detecting device having a discriminating mode in which said device discriminates between different types of metal objects such as, for example, coins like pennies and junk objects like pull tabs, bottle caps, foil, etc., comprising
- a probe containing an induction coil;
- a non-bridge type resonating circuit including said coil and a capacitor;
- an oscillator which during the discriminating mode provides a driving signal which has a predetermined frequency that is significantly higher than the natural resonance frequency of said resonating circuit;
- means coupling the oscillator to the resonating circuit through isolation means which prevent feedback from the resonating circuit to the oscillator so that the frequency of the driving signal remains constant during the discriminating mode;
- said resonating circuit being driven by the driving signal so that it provides three different types of output signals having characteristic amplitudes, namely,
  - a. a first output signal having a predetermined amplitude when the probe is remote from a metal object,
  - b. a second output signal having an amplitude greater then the amplitude of the first output signal when the probe is proximate a metal object having an effect on the electrical properties of the coil generally similar to that of an object such as a coin like a penny,
  - c. a third output signal having an amplitude about the same as or less than the amplitude of the first output signal when the probe is proximate a metal object having an effect on the electrical properties of the coil generally similar to that of junk objects such as a pull tab, bottle cap, foil, etc., and
- means responsive to the second output signal for providing an indication that the probe is proximate a metal object such as a coin.

3,896,372
MAGNETIC SENSING DETECTION SYSTEM AND METHOD

Emmanuel M. Trikilis, 170 Maplewood Ave., Columbus, Ohio
Continuation of Ser. No. 745,729, July 18, 1968, abandoned. This application Dec. 28, 1970, Ser. No. 102,224
Int. Cl. G01r *33/00*
U.S. Cl. 324—41 **20 Claims**

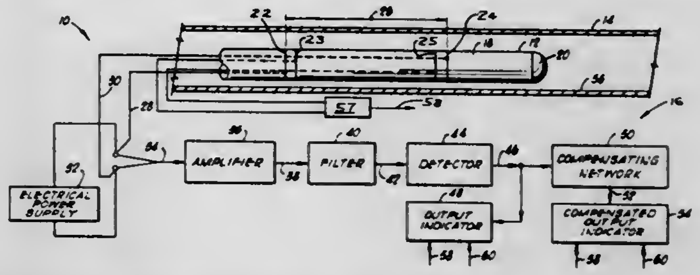


1. A method for preventing the pilferage of goods comprising
- a. providing a security area having an entrance pathway and an exit pathway;
- b. actively supplying said goods located in the security area with a detectable magnetic field;
- c. forming a demagnetizing zone in said entrance pathway;
- d. demagnetizing any items having a detectable magnetic field, passing through said entrance;
- e. forming a magnetic sensing zone in said exit pathway;
- f. sensing the detectable magnetic field of any of said goods passing through the exit; and
- g. preventing removal of said goods from the security area.

3,896,373
METHOD AND APPARATUS FOR DETERMINING CROSS-SECTIONAL AREA OF A BLOOD CONDUIT AND VOLUMETRIC FLOW THERETHROUGH

Leon W. Zelby, Norman, Okla., assignor to Paul D. Stein, Oklahoma City, Okla., a part interest

Filed Nov. 30, 1972, Ser. No. 310,872
Int. Cl. G01r *27/00*
U.S. Cl. 324—57 R **7 Claims**



1. Apparatus for determining parameters of a fluid flowing through a conduit or the like comprising:
- means for insertion within the conduit;
- a pair of electrodes, each electrode secured to the means for insertion within the conduit and the pair of electrodes spaced apart a predetermined distance;
- electrical power source means connected to the pair of electrodes impressing a predetermined electrical energy therebetween;
- circuit means electrically connected to the electrodes of the pair of electrodes measuring and determining the voltage drop between the electrodes of the pair of electrodes impressed with the predetermined electrical energy and providing an output indication indicative of the measured and determined voltage drops, the measured and determined voltage drop being indicative of the internal cross-sectional area of the conduit generally between the electrodes;
- output indicator means, having programmed therein the distance between the electrodes, receiving the measured and determined voltage drop between the electrodes,

receiving a provided input signal indicative of the fluid conductivity, receiving the impressed predetermined electrical energy between the electrodes, and providing an output indication indicative of the internal cross-sectional area of the conduit.

3,896,374
METHOD OF ANALOG MEASUREMENT OF A CAPACITANCE AND A CAPACITANCE METER FOR CARRYING OUT SAID METHOD

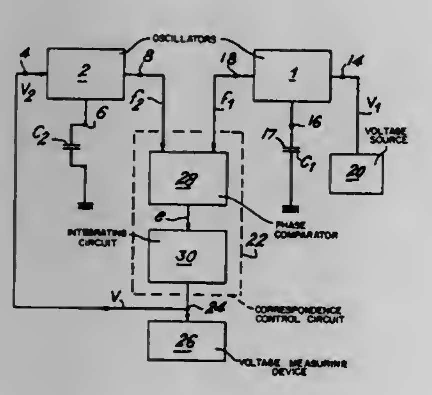
Patrick Delafon, Seyssinet, France, assignor to Commissariat a l'Energie Atomique, Seyssinet, France

Filed Nov. 23, 1973, Ser. No. 418,300

Claims priority, application France, Nov. 29, 1972, 72.42467

Int. Cl. G01r *27/26*

U.S. Cl. 324—60 C **17 Claims**



1. A method of analog measurement of a capacitance and/or a variation of capacitance in which use is made of two electric oscillators whose frequency is dependent on a capacitance connected thereto and in which the unknown capacitance is connected in the circuit of one of the oscillators, wherein:

- two oscillators are selected so as to have a frequency which is dependent both on the capacitance introduced in their circuit and on a control voltage, said capacitance being independent of said control voltage,
- the two oscillators are initially adjusted so as to ensure that their frequencies are equal,
- the capacitance to be measured is connected in the circuit of one of the oscillators, thereby modifying its frequency, the control voltage of either of the two oscillators is modified without changing said capacitance introduced into the circuit of such oscillator so as to reduce the frequency difference between the two oscillators to zero, said control voltage as thus modified is measured and the value of said capacitance is deduced therefrom.

3,896,375
SYSTEM FOR MONITORING AND INDICATING PEAK VALUES OF A TIME VARYING SIGNAL

Philippe Trolliet, Montreal, Canada, assignor to Her Majesty the Queen in Right of Canada as represented by the Secretary of State, Ottawa, Canada

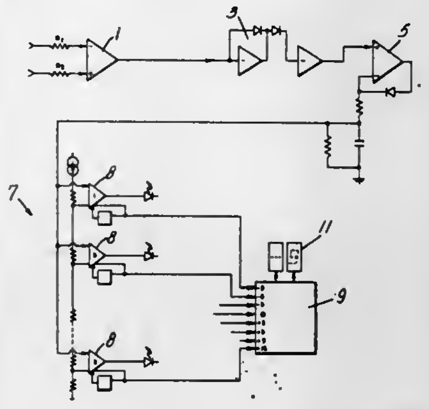
Filed Feb. 6, 1974, Ser. No. 439,919

Int. Cl. G01r *19/16, 13/20*

U.S. Cl. 324—103 P **9 Claims**

1. A system for monitoring and indicating peak values of a time varying signal comprising:

- an input amplifier for receiving and amplifying said signals;
- rectifying means, fed from said input amplifier and providing a rectified output;
- peak detector means, receiving said rectified output and retaining peak values of said rectified output and providing said peak values at its output;
- a voltage source in series with a potential divider having a plurality of output terminals for providing a different reference value at each said output terminal;
- comparator means comprising a plurality of differential amplifiers, each differential amplifier having a first input terminal and a second input terminal and a first output terminal;
- said peak detector means output being connected to all of said first input terminals;



- a different one of said output terminals of said potential divider being connected to a different one of each of said second input terminals;
- the first output terminal of said differential amplifiers providing a display driving signal; and
- display means comprising a numerical display for indicating the highest peak value attained in a series of observations, and a moving dot display for indicating ongoing peak values in said series.

3,896,376
CIRCUIT ARRANGEMENT FOR TESTING INSULATION BY PARTIAL DISCHARGE TECHNIQUE

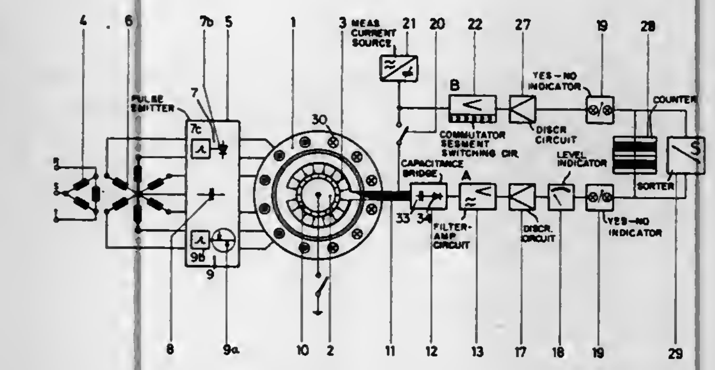
Edgar Sinniger, Zurich, Switzerland, assignor to Micagil A.G., Zurich, Switzerland

Filed Dec. 12, 1972, Ser. No. 314,274

Claims priority, application Germany, Dec. 17, 1971, 2162896

Int. Cl. G01r *31/00, 31/06*

U.S. Cl. 324—158 MG **4 Claims**



1. Apparatus for testing the insulation of a commutator type armature winding and for also separately checking the resistance of the winding which comprises, for insulation testing, an inductor-stator provided with a multi-coil winding and within which the armature is mounted in a non-rotative manner, means producing from test voltage pulses a rotary magnetic field within said inductor-stator including means for sequentially energizing said coils with corresponding test voltage pulses each of which has the configuration of a damped sinusoidal oscillation and which serve to induce corresponding voltage pulses in different portions of the armature winding, contact means engaged with the commutator segments and which connect the different portions of the armature winding with an active filter unit which serves to separate the high-frequency partial discharge components from the fundamental of the damped sinusoidal oscillation, and a discriminator connected to the output of said filter unit for determining whether or not the insulation on the armature winding is satisfactory; and which comprises for resistance testing, a test voltage source connected to successive pairs of the commutator segments through said contact means for effecting corresponding flows of test current through the corresponding parts of the armature winding, means for measuring the magnitude of the test currents which are indicative of the resistance of the winding parts, and a second discriminator connected to the output of said measuring means for determining whether or not the armature winding parts have satisfactory resistance values.

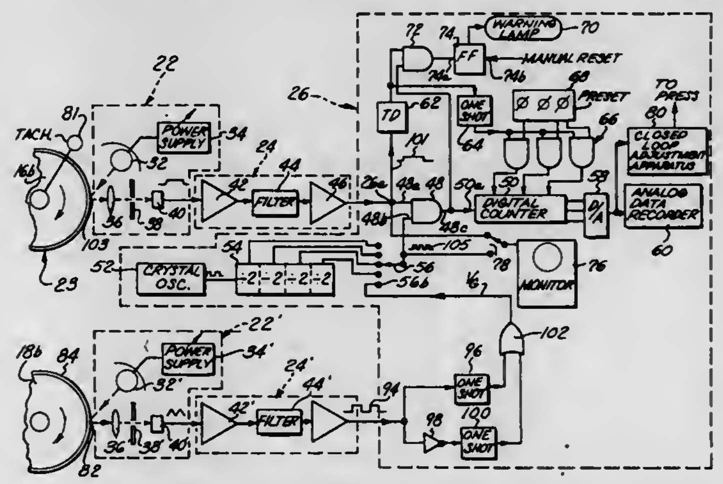
3,896,377
PRINTING PRESS INSTRUMENTATION

James Ivor Richardson, Montville, N.J., assignor to Harris-Intertype Corporation, Cleveland, Ohio

Filed Jan. 2, 1974, Ser. No. 430,196

Int. Cl. G06m *3/02;* **G01p** *3/12*

U.S. Cl. 324—161 **22 Claims**



1. In a printing press having at least two rotatable members, apparatus for making measurements regarding a first rotatable member comprising means for producing a first position-indicating signal when said first member arrives at a first predetermined position; first means for generating a first train of successive clock signals at equally spaced successive times; means for producing a second position-indicating signal when said first member arrives at a second predetermined position including means for ending said first train of signals thereupon; second means for generating a second train of successive signals upon the respective passage of equal successive increments of angular travel of a second rotatable member; means for ending said second train when said second member arrives at a predetermined position; means for selecting one of said first and second means of generating successive signals to provide selectively one of said first and second trains of signals; and means for counting the successive signals of said selected train occurring between said first position-indicating signal and the end of said selected train to produce a final count.

3,896,378
APPARATUS FOR THE MEASUREMENT OF SHORT TIME INTERVALS

John Bedford, Wargrave, England, assignor to Ferranti Limited, Hollinwood, England

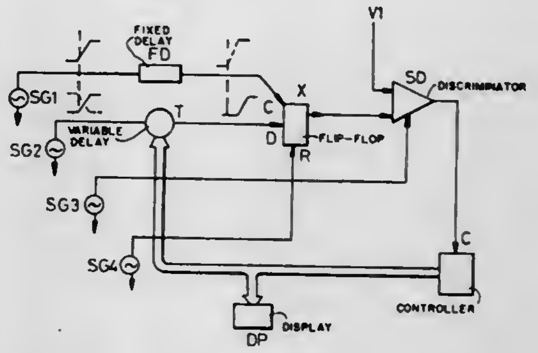
Filed Oct. 26, 1973, Ser. No. 409,878

Claims priority, application United Kingdom, Oct. 28, 1972, 49796/72

Int. Cl.^{2} G04F *8/00, 10/00*

U.S. Cl. 324—188 **12 Claims**

1. Apparatus for the measurement of short time intervals representing the inherent time delays in semiconductor circuits, comprising two signals sources operable to apply input signals to a circuit under test, time delay means operable to apply a time delay to one of said two input signals relative to the other of said two input signals, control means operable to sample the output of the circuit under test at a rate not greater than the repetition rate of the input signals and to develop an output for varying the time delay inserted by said time delay



means in a manner determined by the said output, display means operable to indicate the duration of the inserted time delay in response to said output and means for applying the output of said control means to said time delay means.

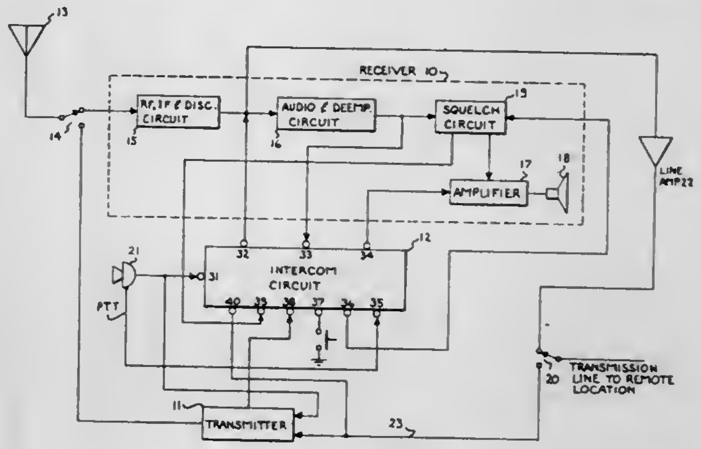
3,896,379
INTERCOM CIRCUIT FOR A RADIO TRANSMITTER AND RECEIVER

Robert A. Voss, Lynchburg, and Larry H. Wohlford, Rustburg, both of Va., assignors to General Electric Company, N.Y.

Filed June 10, 1974, Ser. No. 477,968

Int. Cl. H04b *1/44*

U.S. Cl. 325—21 **2 Claims**



1. Intercom apparatus for use with a radio transmitter and microphone and a radio receiver and speaker at a station location connected by a transmission line to a remote location, said intercom comprising:

a. means adapted to be connected in series with the audio portion of the radio receiver for deriving the audio signals from the demodulator of said radio receiver at a first terminal and for supplying audio signals to the amplifier of said radio receiver at a second terminal;
b. means adapted to be connected to the transmission line for deriving audio signals therefrom at a third terminal and for supplying audio signals thereto at a fourth terminal;
c. first switching means having an input connected to said first terminal, an output connected to said second terminal, and a control terminal;
d. second switching means having an input connected to said third terminal, an output connected to said second terminal, and a control terminal;
e. a control circuit having a plurality of inputs and having an output;
f. means connecting said control circuit output to said control terminals of said first and second switching means for causing said first switching means to disconnect its input

and output and for causing said second switching means to connect its input and output in the absence of signals at said control circuit inputs;

g. means connected to one of said control circuit inputs and adapted to be connected to said radio receiver for sensing receipt of a signal by said radio receiver and for causing said first switching means to connect its input and output and for causing said second switching means to disconnect its input and output in response to receipt of a signal;
h. means connected to one of said control circuit inputs and adapted to be connected to the radio transmitter for sensing the activation of said radio transmitter, and for causing said first switching means to disconnect its input and output and for causing said second switching means to connect its input and output in response to an activation;
i. and means connected to one of said control circuit inputs and adapted to sense operation of the microphone at said station location for causing said first switching means to disconnect its input and output, for causing said second switching means to disconnect its input and output, and for connecting said microphone to said fourth terminal in response to the operation of said microphone.

3,896,380
RADIATING LINE TRANSMISSION SYSTEM

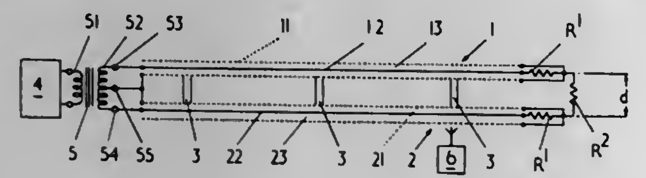
David James Reginald Martin, London, England, assignor to Coal Industry (Patents) Ltd., London, England

Filed May 11, 1973, Ser. No. 359,341

Claims priority, application United Kingdom, May 26, 1972, 24967/72

Int. Cl. H04b *3/00*

U.S. Cl. 325—28 **5 Claims**



1. A radiating transmission line system comprising a source of radiation, a pair of coaxial cables extending from the said source, the cables being parallel to each other along their length, each cable comprising an inner core, a surrounding dielectric material and an apertured continuous outer conductor, and means for applying energy from the source of radiation to both cables whereby the energy in one cable is in phase displacement to the energy in the other cable, wherein the said means for applying energy from the source of radiation to both cables comprises a transformer interposed between the said source of radiation and the pair of coaxial cables, the transformer having an output winding connected to the said cables, the outer conductors of the cables being connected to a common point on the output winding and the inner cores of the cables being connected respectively one to each end of the output winding.

3,896,381
RELIABLE RADIO-TELETYPE CODING

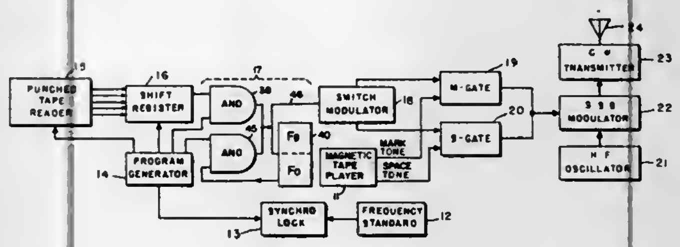
John M. Wozencraft, Boston, Mass., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 2, 1960, Ser. No. 66,886

Int. Cl. H04b *15/00*

U.S. Cl. 325—32 **9 Claims**

1. A communications system for transmitting teletype information comprising: a magnetic tape player having a multichannel output, a program generator for developing timing pulses having a plurality of outputs and controlled by one of said output channels of said magnetic tape player in which control information has been pre-recorded, a teletype tape reader controlled by timing pulses from said program generator, a multiple stage shift register connected to the output of said tape reader for temporarily storing data received from said tape reader, said shift register being controlled by timing pulses from said program generator to commutate said data into binary code trains of time-sequential pulses, a parity counting circuit for receiving said time-sequential pulse trains and adding an appropriate parity checking pulse to each of said trains, a switch modulator having first and second outputs controlled by said time-sequential pulses and said parity checking pulses, first and second gates connected to first and second tone channels, respectively, of said magnetic tape player, said first and second gates being enabled by said first and second outputs, respectively, of said switch modulator, the tones passed by one of said gates being chosen to represent a mark and the tones passed by the other of said gates being chosen to represent a space in said binary code to thereby represent said train of pulses as a sequence of tones, and means for transmitting said sequence of tones.



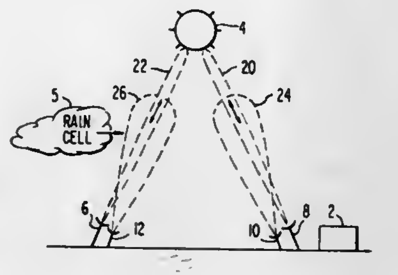
3,896,382
PRECIPITATION ATTENUATION DETECTION SYSTEM

Bertram Magenheim, Bethesda, Md., assignor to Communications Satellite Corporation, Washington, D.C.

Filed Nov. 17, 1972, Ser. No. 307,725

Int. Cl. H04b *7/02*

U.S. Cl. 325—56 **6 Claims**



1. In a satellite communications system including a plurality of earth stations, a precipitation attenuation detection system comprising:

means associated with an earth station for generating a pair of communications beams traversing the space between the earth station and at least one satellite over separate communications links, only one of said beams being active to carry communications signals at any time, the other beam being dormant,

precipitation detecting means for detecting precipitation in a region above said earth station, said region including an area which surrounds the beam width of said active communications beam, and

switch means, responsive to the detection of precipitation by said detecting means, for switching the communications signals to the dormant communications beam, the beam previously carrying communications signals becoming dormant.

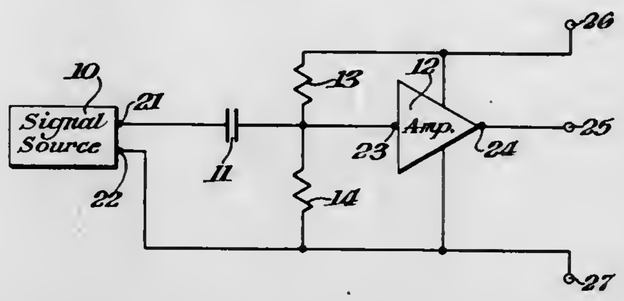
3,896,383
A.C. COUPLING NETWORK

Alberto Bilotti, Buenos Aires, Argentina, and Ronald W. Lutz, Holden, Mass., assignors to Sprague Electric Company, North Adams, Mass.

Filed June 19, 1973, Ser. No. 371,421

Int. Cl. H04b *1/16*

U.S. Cl. 325—347 **4 Claims**



1. A method for coupling an electrical signal from a signal source to the input of an amplifier comprising:

a. providing a signal source having a low output impedance;
b. providing an amplifier circuit with a high input impedance;
c. connecting a d.c. power supply containing an a.c. ripple to said amplifier for providing power thereto;
d. connecting a coupling capacitor between said output of said signal source and said input of said amplifier; and
e. connecting a high impedance d.c. bias circuit directly to and powered by said d.c. power supply for the purpose of providing a bias at said input of said amplifier, said bias circuit, said amplifier and said signal source having a common reference ground connection, said coupling capacitor having a low impedance at the lowest signal frequency to be amplified and having a low impedance at the frequency of ripple in said bias circuit, wherein each said high impedance is at least ten times greater than any of said low impedances, such that any ripple currents present in said bias circuit are substantially shorted to ground through said coupling capacitor and said output impedance of said signal source, and such that essentially only the amplified signal appears at the output of said amplifier.

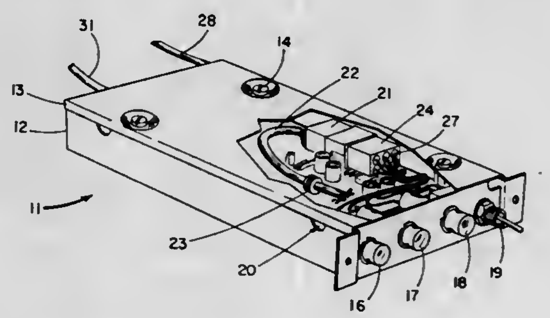
3,896,384
DUAL MOUNT ELECTRONIC DEVICE

Claude L. Henderson, Camby, Ind., assignor to General Aviation Electronics, Inc., Indianapolis, Ind.

Filed Oct. 5, 1973, Ser. No. 403,876

Int. Cl. H04b *1/08*

U.S. Cl. 325—352 **9 Claims**



1. An electronic device adaptable for both remote mounting and panel mounting comprising:

a package having an aperture including first and second electronic circuit sections;

a connector assembly having a first portion which is coupled to the first circuit section and positioned within the package and having a second portion; and

wire means for coupling the second connector portion to the second circuit section and for positioning the second connector portion outside the package when the first and second connector portions are disconnected, the wire means and the second connector portion being positioned inside the package through said aperture when the first and second connector portions are connected.

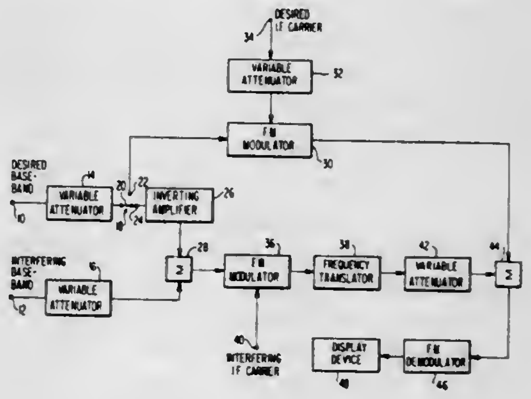
3,896,385
METHOD AND INSTRUMENT FOR MEASURING INTERFERENCE BETWEEN ANGLE MODULATED SYSTEMS

Nand Kishore M. Chitre, Rockville, and Benjamin Anthony Pontano, Gaithersburg, both of Md., assignors to COMSAT, Washington, D.C.

Filed Jan. 29, 1974, Ser. No. 437,562

Int. Cl. H04b *1/00*

U.S. Cl. 325—363 **8 Claims**



1. A method of measuring the interference component resulting from an interfering carrier angle modulated with baseband $\phi_2(t)$ interfering with a desired carrier angle modulated with baseband $\phi_1(t)$ comprising the steps of

a. angle modulating said interfering carrier with a baseband $\phi(T)$ where $\phi(T) + \phi_2(t) - \phi_1(t)$,
b. combining said angle modulated interfering carrier with said desired carrier, unmodulated, and
c. demodulating said desired carrier.

3,896,386
TUNING INDICATOR WITH NOISE SIGNAL DETECTOR

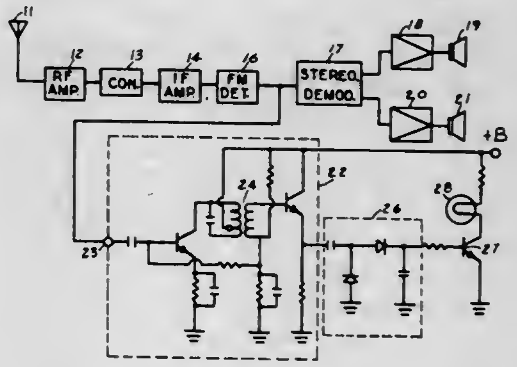
Mitsuo Ohsawa, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sept. 18, 1972, Ser. No. 290,178

Claims priority, application Japan, Sept. 20, 1971, 46-73245

Int. Cl. H04b *1/16*

U.S. Cl. 325—398 **4 Claims**



1. A tuning indicator for use with an FM radio receiver comprising an IF circuit and an FM detector, said indicator comprising:

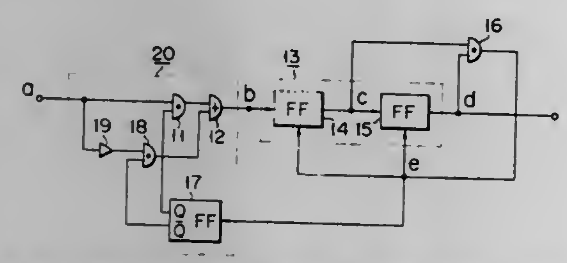
A. a noise signal selector coupled to said FM detector to receive signals therefrom and tuned to a predetermined frequency outside of the band of signal frequencies from said detector to extract a noise signal of said predetermined frequency;

B. a plurality of illuminating devices;
C. a plurality of level detecting circuits connected to said noise signal selector to be energized by said noise signal, each of said level detecting circuits having a different response level and comprising an individual switching means connected to a corresponding one of said illuminating devices whereby each of said illuminating devices will be actuated at a predetermined level of said noise signal corresponding to the relationship between the frequency to which said receiver is tuned and an incoming signal;
D. additional visual indicating means;
E. actuating means connected to said IF circuit, said actuating means being responsive to an IF signal corresponding to a received FM signal and being connected to said additional visual indicating means to thereby energize said additional indicating means in response to reception of said FM signal; and
F. gate means connected to said level detecting circuits to control the operation of said actuating means to permit the latter to energize said additional indicating means only when said receiver is in a tuned-in condition with respect to said FM signal.

3,896,387
FRACTIONAL FREQUENCY DIVIDERS

Naoyuki Kokado, Tokyo, Japan, assignor to Tokyo Shibaura Electric Company Ltd., Kawasaki-shi, Japan

Filed May 8, 1974, Ser. No. 467,855
Claims priority, application Japan, June 19, 1973, 48-68288
Int. Cl. H03k *21/00*
U.S. Cl. 328—39 **22 Claims**



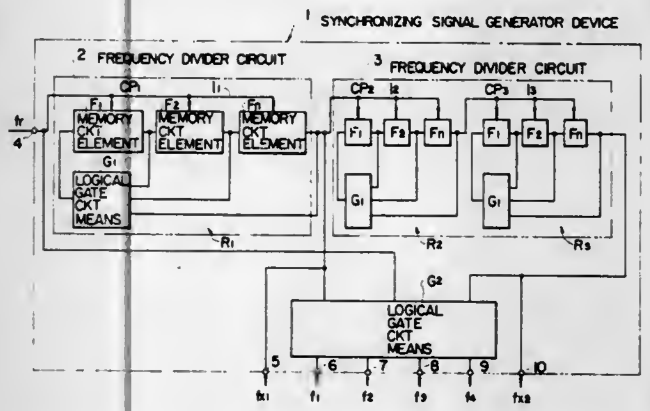
14. A freqeuncy divider which comprises a counter circuit consisting or one or more cascade binary counter units and supplied with an input clock pulse; a device for receiving an output clock pulse from the counter circuit and reversing the polarity of said input clock pulse.

3,896,388
SYNCHRONIZING SIGNAL GENERATOR DEVICE

Yoshikazu Hatsukano, and Shunji Shimada, both of Tokyo, Japan, assignors to Hitachi, Ltd., Japan

Filed June 13, 1973, Ser. No. 369,416
Claims priority, application Japan, June 23, 1972, 47-6242
Int. Cl.^{2} H03K *1/17*
U.S. Cl. 328—63 **3 Claims**

1. A synchronizing signal generator device comprising:
at least a first and a second ring counter, each of which includes a plurality of synchronous delay type memory circuit elements each memory circuit element having a clock input terminal for receiving synchronizing pulses and input and output terminals by which said elements are coupled in cascade; and logic gate circuit means having a plurality of input terminals coupled to said output terminals of a plurality of said elements and an output terminal coupled to the input terminal of the first element;
means for applying a reference signal in common to each clock input terminal of said first ring counter in the form of synchronizing pulses; and
means for connecting the output terminal of the last element of said first ring counter in common to each clock input terminal of said second ring counter in the form of synchronizing pulses;

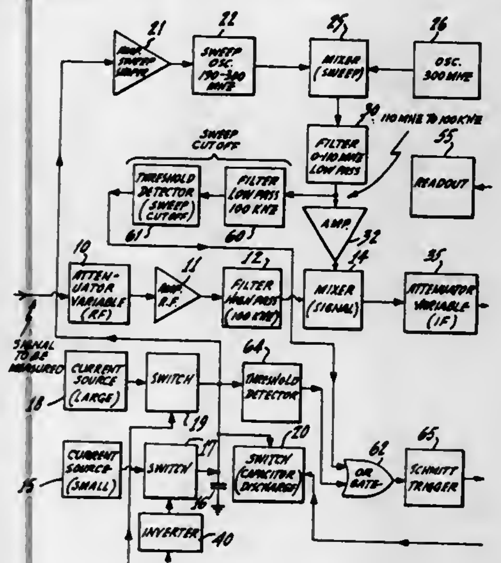


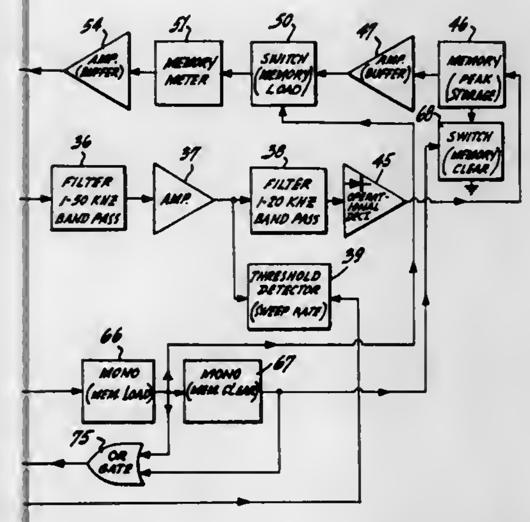
whereby a second signal of a predetermined frequency different from the frequency of said reference signal and having substantially no delay over said reference signal is derived from said second ring counter.

3,896,389
SENSITIVE WIDE BAND VOLTMETERS

Philip Basse, Freeport, N.Y., assignor to Comstron Corporation, Richmond Hill, N.Y.

Division of Ser. No. 243,224, April 12, 1972, Pat. No. 3,810,015. This application Dec. 17, 1973, Ser. No. 425,109
Int. Cl. H03k *5/20*
U.S. Cl. 328—151 **6 Claims**



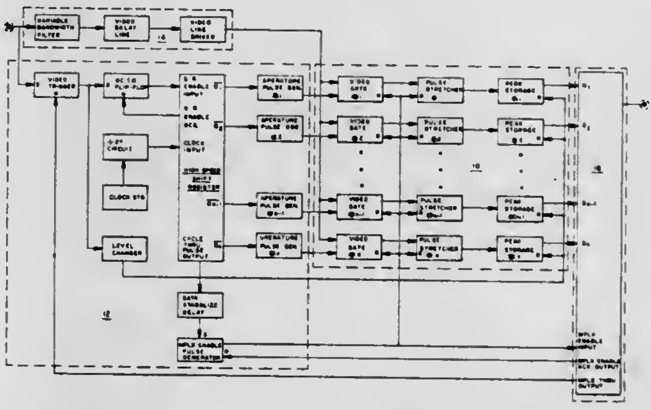


1. Apparatus for measuring the amplitude of an AC signal of the type including a down-converter for producing another signal indicative of said AC signal at a lower frequency in combination therewith apparatus for indicating the magnitude of said signal, comprising:
a. means responsive to said another signal for providing a control signal when said signal is within a predetermined frequency range,
b. memory means coupled to said means and operative to store a value indicative of said another signal during the presence of said control signal.

3,896,390
HIGH-SPEED SAMPLER WITH VARIABLE SAMPLE RATE

Jon H. Bumgardner, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 11, 1974, Ser. No. 441,081
Int. Cl.^{2} H03K *5/00, 5/18*
U.S. Cl. 328—151 **7 Claims**



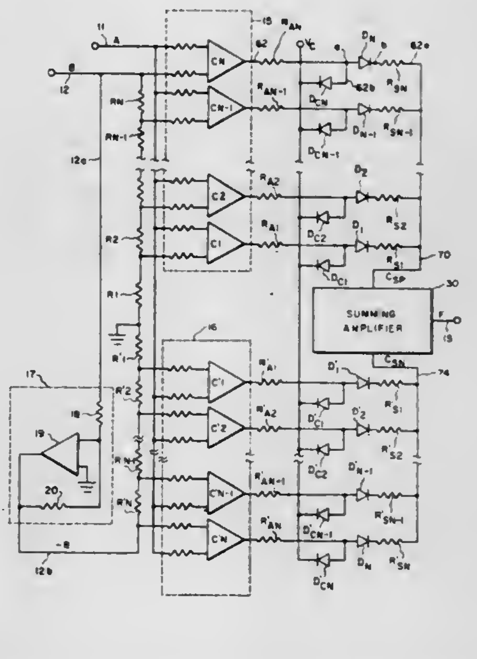
1. A pulse sampler wherein the pulse to be processed is partitioned into segments and the segments are separately stored for retrieval to provide a composite output, comprising:
an input for receiving at least one electrical pulse;
means coupled to said input for electronically partitioning said pulse into a plurality of nominally equal valued, sequential segments;
means coupled to said input for electronically delaying and preparing said pulse for processing;
means having a plurality of electrical channels equal in number to said plurality of segments, coupled to both said partitioning means and said delaying means for electronically sampling said pulse, wherein each channel samples that portion of the pulse that is coupled thereto simultaneously with a said segment;
means coupled to each channel for separately storing the maximum value of each sample; and
means for electronically combining said maximum values from time to time to nominally reconstruct the shape of said pulse such that said pulse can be leisurely examined in detail.

3,896,391
HIGH SPEED VIDEO DIVIDER WITH COMPENSATION FOR NON-LINEAR FUNCTIONS

Frank M. Pelton, Clarence; Joseph A. Bruder, Snyder, and Thomas F. Leney, Elma, all of N.Y., assignors to Calspan Corporation, Buffalo, N.Y.

Filed Feb. 11, 1974, Ser. No. 441,527
Int. Cl. G06g *7/16*
U.S. Cl. 328—161 **8 Claims**

1. A wide - bandwidth divider for dividing signals over a wide frequency range and for compensating a resulting signal including:
means for supplying a first input signal;
means for supplying a second input signal;
first comparator means including a plurality of comparators;
second comparator means including a plurality of comparators equal to the number of comparators in said first comparator means;
first resistor means for dividing said second input signal and supplying a divided second input signal to each comparator in said first comparator means;
inverting circuit means for changing the sign of said second input signal to provide an inverted second input signal;

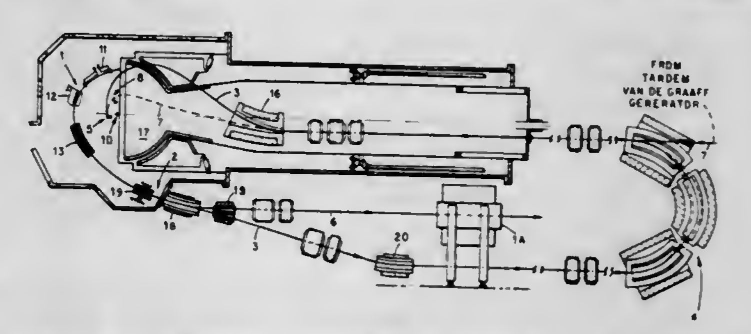


second resistor means for dividing said inverted second input signal and supplying a divided inverted second input signal to each comparator in said second comparator means;
means for supplying said first input signal to each comparator in said first and second comparator means;
circuit means coacting with said first and second comparator means, respectively, to produce a signal which is an indication of the polarity and magnitude of the value of said first signal divided by said second signal.

3,896,392
ALL-MAGNETIC EXTRACTION FOR CYCLOTRON BEAM REACCELERATION

Ed D. Hudson, Knoxville, and Merrit L. Mallory, Oak Ridge, both of Tenn., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Feb. 21, 1974, Ser. No. 444,458
Int. Cl.^{2} H05H *7/04, 7/10, 13/00*
U.S. Cl. 328—234 **4 Claims**



1. In an isochronous cyclotron provided with a magnetic field and a beam deflection assembly for separating a first extracted beam from the circulating beam of said cyclotron, said assembly including a thin current-carrying sheet arcuate conductor as the septum of said beam deflection assembly, means for adjustably holding fast the end points of said sheet conductor, means for passing a desired and selected amount of current through said sheet conductor, and means for providing a compensating magnetic field in the vicinity of said sheet conductor, said conductor assuming the same shape as

the path of a charged particle in said extracted beam as a result of forces induced in said current-carrying conductor by the magnetic field of said cyclotron, the improvement comprising a 180° bending magnet positioned for receiving said extracted beam and thus turning it around, said bending magnet's position also being such as to direct said beam for reinjection back into said cyclotron for a second pass therethrough, thereby substantially increasing the final energy thereof upon its second extraction from said cyclotron by said deflection assembly.

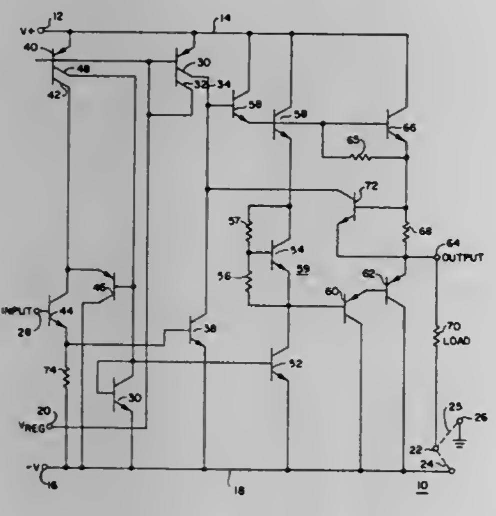
3,896,393
MONOLITHIC POWER AMPLIFIER CAPABLE OF OPERATING CLASS A AND CLASS AB

David L. Cave, Mesa, and Walter R. Davis, Tempe, both of Ariz., assignors to Motorola, Inc., Chicago, Ill.

Filed Dec. 26, 1973, Ser. No. 428,519

Int. Cl. H03f *3/04*

U.S. Cl. 330—22 **10 Claims**



1. A class AB-class A amplifier circuit suitable for providing an output signal having a maximized excursion across a load in response to an input signal having portions of first and second polarities, including in combination:

first electron control means connected to the load, said first electron control means being rendered conductive in response to the portions of the input signal of the first polarity to source current to the load;

second electron control means coupled to the load, said second electron control means being rendered conductive in response to the portions of the input signal of the second polarity;

bias network means connected to said second electron control means;

driver circuit means having an input terminal adapted to receive the input signal and having an output terminal coupled to said first electron control means, said driver circuit means providing a driving signal at said output terminal thereof;

said bias network means being responsive to the magnitude of portions of the driving signal crossing a first threshold to render said second electron control means non-operative so that said first electron control means can drive the output signal across the load to a predetermined level and thereby develop the output signal having the maximized excursion; and

buffer means being connected between said bias network means, said driver circuit means and said first electron control means for severely limiting distortions in the output signal thereof as said bias network means renders said second electron means non-operative.

3,896,394
ARRANGEMENT FOR COMPENSATING THE TEMPERATURE DRIFT OF A POWER AMPLIFIER

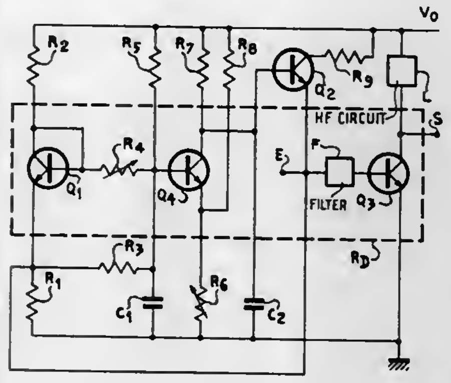
Jose Marie Baro, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Sept. 20, 1974, Ser. No. 507,996

Claims priority, application France, Sept. 25, 1973, 73.34297

Int. Cl.² H03F *3/04*

U.S. Cl. 330—23 **3 Claims**



1. A power amplifier comprising at least one amplifier transistor having a base, an emitter and a collector, said amplifier transistor for amplifying an input signal being arranged in a common emitter configuration at least as far as the bias is concerned and an arrangement for supplying a bias voltage to the base of said amplifier transistor, said arrangement including: an auxiliary transistor having a base, a collector and an emitter, the emitter of said auxiliary transistor being coupled to the base of said amplifier transistor; a regulating transistor having a base, a collector and an emitter, the collector of said regulating transistor being coupled to the base of said auxiliary transistor; a resistor inserted between the base of said regulating transistor and the emitter of said auxiliary transistor; a further transistor, having the same characteristics as said regulating transistor and having a base, a collector and an emitter, the emitter of said further transistor being coupled to the emitter of said auxiliary transistor; a variable resistor inserted between the base of said regulating transistor and the base of said further transistor, the base and collector of said further transistor being coupled; and means for adjusting the emitter voltage of said regulating transistor; said amplifier transistor, said regulating transistor and said further transistor being assembled on one and the same radiator.

3,896,395
LINEAR AMPLIFICATION USING QUANTIZED ENVELOPE COMPONENTS TO PHASE REVERSE MODULATE QUADRATURE REFERENCE SIGNALS

Donald Clyde Cox, New Shrewsbury, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 18, 1974, Ser. No. 489,760

Int. Cl.² H03F *3/60*

U.S. Cl. 330—53 **10 Claims**

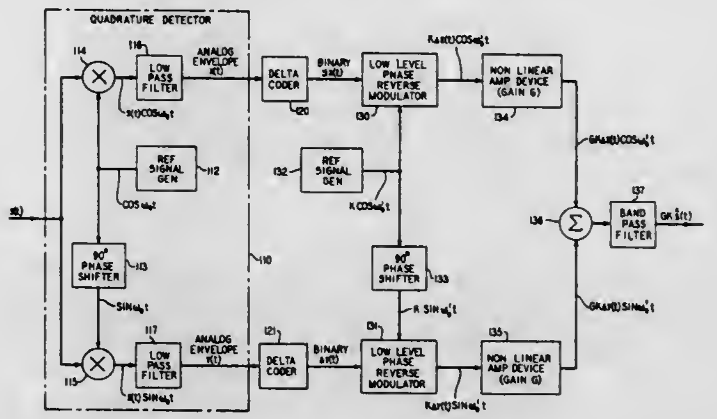
1. A device for amplifying a high frequency bandpass analog input signal having both amplitude and phase variations and having a given maximum amplitude comprising:

quadrature detector means for producing from the input signal a pair of variable amplitude intelligence containing envelopes each said envelope being derived from different ones of the quadrature signal components of the input signal;

means for producing from each variable amplitude envelope a bitstream approximation whose weighted time average is a replica of the respective envelope;

means for generating two quadrature reference signals of equal amplitude;

means for phase reverse modulating the two quadrature reference signals respectively with ones of the two bitstream approximations to produce two constant envelope signals of amplitude greater than the maximum amplitude of the input signal;



means for combining the two constant envelope signals to produce a linearly amplified replica of the original analog input signal.

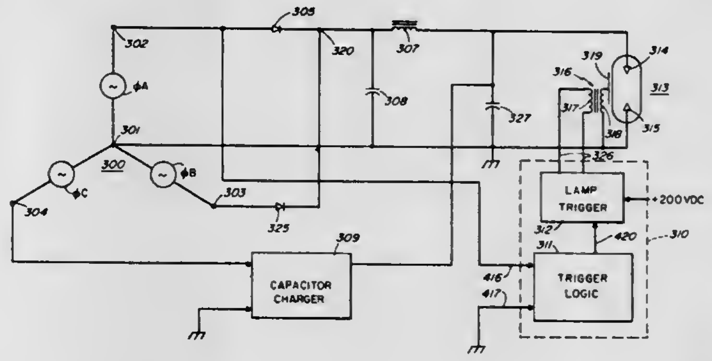
3,896,396
LASER POWER SUPPLY

David R. Whitehouse, Weston, and David W. Hartshorn, Framingham, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed May 14, 1973, Ser. No. 359,827

Int. Cl. H01s *3/09*

U.S. Cl. 331—94.5 PE **11 Claims**



1. In combination:

a laser active medium;

noncoherent light producing means for pumping said laser active medium to produce a coherent beam of radiation therefrom, said noncoherent light producing means producing said noncoherent light in response to an electrical current flowing through said noncoherent light producing means; and

uncontrolled rectifying means, said rectifying means coupling said source of noncoherent light to a source of alternating electrical power, current to said noncoherent light producing means flowing from said source of alternating power through said uncontrolled rectifying means with no substantial energy storing means located therebetween.

3,896,397
ACOUSTO-OPTICALLY Q-SWITCHED LASER

Michiel de Wit, Dallas, and Roddy Fro Hotz, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 12, 1973, Ser. No. 424,115

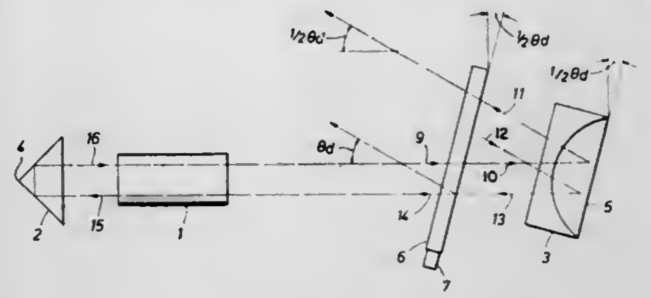
Int. Cl. H01s *3/11*

U.S. Cl. 331—94.5 Q **8 Claims**

1. An acousto-optically Q-switched laser comprising:

a. a laser cavity including a lasing medium, first reflecting means mounted substantially perpendicular to the longitudinal axis of said lasing medium and spaced from one end thereof for reflecting radiation from said lasing medium back to said lasing medium, feedback reflecting means spaced from the other end of said lasing medium, and means for optically pumping said lasing medium to produce a non-uniform population inversion density in said lasing medium;

b. an acousto-optic switch within said laser cavity, said acousto-optic switch being mounted along and tilted at a preselected angle with respect to the longitudinal axis of said lasing medium between said first reflecting means and said feedback reflecting means and being spaced from the other end of said lasing medium for deflecting



a portion of the radiation emitted by said lasing medium;

c. a transducer for introducing acoustic energy into said switch, said transducer being mounted with respect to said switch such that the gradient of the envelope of the acoustic energy introduced into and propagated through said switch approximates the gradient of the non-uniform population inversion directly in said lasing medium; and

d. said feedback reflecting means being positioned along and tilted at a preselected angle with respect to the longitudinal axis of said lasing medium related to the path to be taken by the deflected portion of radiation for reflecting said deflected portion of radiation back to said switch.

3,896,398
DRIVER CIRCUIT FOR PULSE MODULATION OF A SEMICONDUCTOR LASER

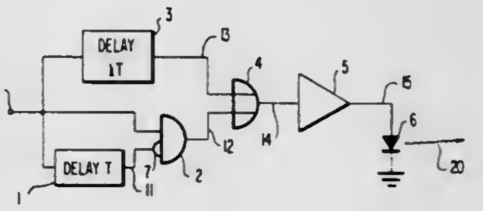
Atsufumi Ueki, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Filed Nov. 5, 1973, Ser. No. 413,152

Claims priority, application Japan, Nov. 10, 1972, 47-113208

Int. Cl. H01s *3/09*

U.S. Cl. 332—7.51 **7 Claims**



1. A pulse modulation driver circuit for a semiconductor laser, comprising:

a. means for receiving input pulse signals composed of binary codes wherein the code for the presence of output light of the laser is 1 while the code for the absence of light is 0;

b. means connected to said receiving means for discriminating among the input pulse signals to detect the occurrence of a pulse having a code of 1 following a pulse having a code of 0;

c. means connected to said receiving means and controlled by said discriminating means for modulating the detected pulse to increase the average driving current to said laser whereby the intensity of an output light pulse of said semiconductor laser corresponding to a pulse signal having a code of 1 is independent of a preceding pulse signal.

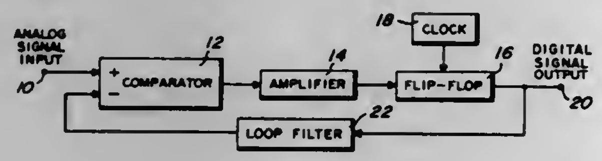
3,896,399
LOOP FILTER FOR DELTA MODULATOR

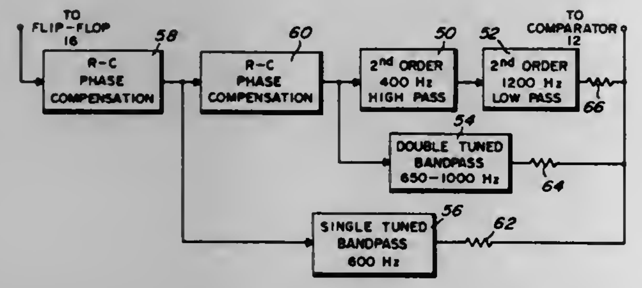
James A. McDonald, Buffalo Grove, Ill., assignor to Motorola, Inc., Chicago, Ill.

Filed July 19, 1973, Ser. No. 380,784

Int. Cl. H03k *13/22*

U.S. Cl. 332—11 D **20 Claims**




TO FLIP-FLOP 16
58
R-C PHASE COMPENSATION
60
R-C PHASE COMPENSATION
50
2nd ORDER 400 Hz HIGH PASS
52
2nd ORDER 1200 Hz LOW PASS
TO COMPARATOR 12
66
54
DOUBLE TUNED BANDPASS 650-1000 Hz
64
56
SINGLE TUNED BANDPASS 600 Hz
62

1. For use in a delta modulator for converting an analog signal having a predetermined band of frequencies into a digital signal having a predetermined clock rate greater than twice the highest frequency in said predetermined band, a loop filter coupled between an input and an output of the modulator, said filter comprising; means for receiving said digital signal connected to the output of the modulator, means coupled to said receiving means for filtering said digital signal to attenuate the frequencies of said digital signal lying above and below said predetermined band relative to the frequencies within said predetermined band to provide a band limited analog signal, and means connected to the input of the modulator for applying the band limited analog signal thereto.

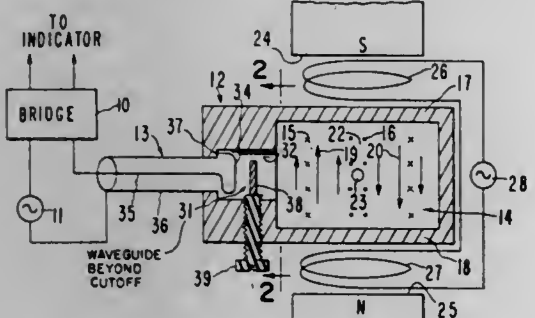
3,896,400
COAXIAL LINE TO MICROWAVE CAVITY COUPLING SECTION COMPRISING A WAVEGUIDE BEYOND CUTOFF

James Stewart Hyde, Menlo Park, Calif., assignor to Varian Associates, Palo Alto, Calif.

Division of Ser. No. 370,177, June 14, 1973, Pat. No. 3,828,244. This application Feb. 28, 1974, Ser. No. 446,843

Int. Cl. H01p *5/04, 5/08*

U.S. Cl. 333—21 R **12 Claims**



1. A variable coupler between a coaxial line and a microwave cavity for supporting electromagnetic energy at a frequency propagating in said line comprising a section connected to and opening into said cavity, said section being dimensioned so that it is a waveguide beyond cutoff for the frequency propagating in said line, a fixedly mounted planar loop in said section connected to be in energy exchange relationship with the energy propagating in said line and rigidly positioned so that its plane is substantially at right angles to a microwave magnetic field coupled into the cavity, an electromagnetic radiator for the energy, said radiator being positioned in the section, said radiator being only inductively coupled with said loop, said radiator being positioned in the section in electromagnetic energy exchange relationship with the cavity so that there is coupling between the cavity and the loop via the radiator of the energy inductively coupled between the loop and radiator, and means for controlling the coupling between the loop and the radiator to control the coupling between the cavity and line.

3,896,401
ELECTROMECHANICAL FILTER COMPRISING ELECTROMECHANICAL RESONATORS AT LEAST ONE OF WHICH HAS DIFFERENT INPUT AND OUTPUT EQUIVALENT INDUCTANCES

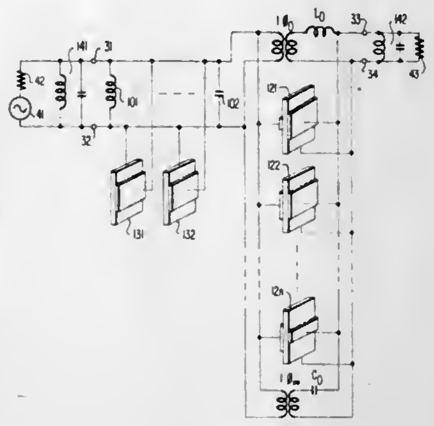
Takeshi Yano; Takehiro Futami, and Mototsugu Ookura, all of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Feb. 26, 1973, Ser. No. 336,123

Claims priority, application Japan, Feb. 25, 1972, 47-19873

Int. Cl. H03h *7/10, 9/00*

U.S. Cl. 333—72 **6 Claims**



1. An electromechanical filter having a plurality of electromechanical resonators electrically connected in parallel, wherein the improvement comprises at least one electromechanical resonator whose equivalent inductance measured from the input side and whose equivalent inductance measured from the output side are different, said at least one electromechanial resonator comprising a piece capable of being set into mechanical vibration in a predetermined mode, first and second piezoelectric ceramic pieces, and means for supplying electric power across each of said ceramic pieces, said ceramic pieces being attached to said piece over predetermined effective areas, respectively, so as to set said piece into said vibration when electric power is supplied thereto, said effective areas being different.

3,896,402
DIELECTRIC WAVEGUIDE FILTERS

Lynden Ashbrooke Jackson, Suffolk, England, assignor to The Post Office, London, England

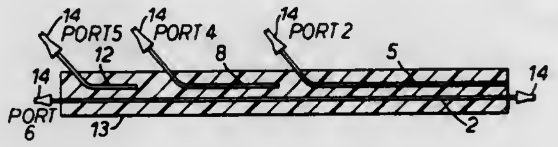
Filed Feb. 19, 1974, Ser. No. 443,429

Claims priority, application United Kingdom, Feb. 19, 1973, 7937/73

Int. Cl.^{2} H01P *1/18, 1/20*

U.S. Cl. 333—73 W **13 Claims**

1. A dielectric waveguide filter assembly comprising in combination a dielectric medium, a plurality of dielectric waveguide regions totally immersed in said medium, each of said regions having an energy input port and an energy output port, a first of said dielectric waveguide regions having a first length that is spaced from and parallel to a first length of a second of said dielectric waveguide regions, the first lengths and the spacing therebetween permitting a transfer from one region to the other of energy lying in a specified frequency band, the said second of said dielectric waveguide regions having a second length spaced from and parallel to a first length of a third of said dielectric waveguide regions, the second length, the first length of said second dielectric waveguide region and the spacing therebetween permitting a transfer between said second dielectric waveguide region to said third dielectric waveguide region of energy lying on another specified frequency band.



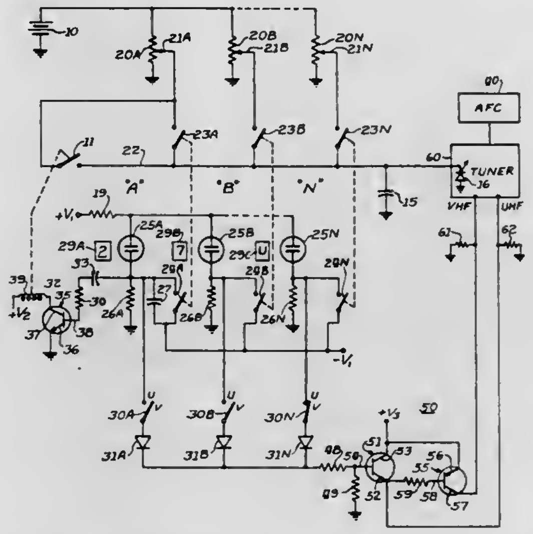
3,896,403
TOUCH-TUNING SYSTEM FOR A TELEVISION RECEIVER

John Ma, Glenview, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed May 3, 1974, Ser. No. 466,593

Int. Cl.^{2} H03J *5/04, 1/04*

U.S. Cl. 334—15 **3 Claims**



1. A touch-tuning system for a television receiver including an AFC circuit and being tunable over both the VHF and UHF frequency bands at each of a plurality of tuning positions comprising; a tuner including a varactor diode tuning element; a source of DC reference potential; a plurality of potentiometers individually located at respective ones of said tuning positions and each coupled across said source of DC reference potential, said potentiometers each having a movable tap; a tuning capacitor coupled to said varactor diode; viewer-operated momentary contact switch means selectively connecting said movable taps to said tuning capacitor for establishing the tuning voltage thereacross in accordance with the setting of the corresponding potentiometer; said momentary contact switch means including a two-pole mechanical switch at each said tuning location, one pole of each switch being connectable to said movable taps; a plurality of neon tube indicators, coupled to a voltage source through a common resistance for precluding energization of more than one of said indicators at the same time, respective ones of said plurality of indicators being individually located at each said tuning position; means, including said second pole on each said switch for selectively energizing said neon indicators by momentary operation of the switch at the corresponding tuning position; bandswitching means normally operating said tuner in said VHF frequency band; and a U/V bandswitch at each said tuning position for conditioning said bandswitching means for operating said tuner in said UHF frequency band.

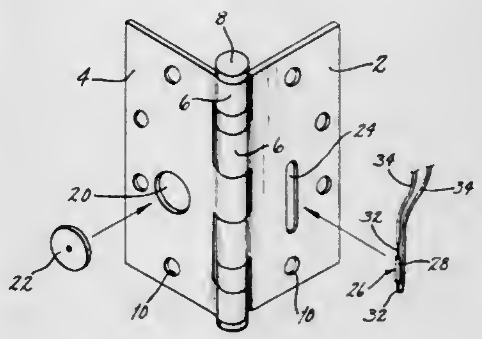
3,896,404
MAGNETIC SWITCH HINGE

Francis C. Peterson, St. Louis County, Mo., assignor to C. Hager & Sons Hinge Manufacturing Company, St. Louis, Mo.

Filed Feb. 4, 1974, Ser. No. 439,132

Int. Cl.^{2} H01H *53/06*

U.S. Cl. 335—205 **9 Claims**



1. A hinge comprising: first and second generally flat hinge leaves, each leaf being provided with a recess therein which opens out of only one face of the leaf and extends only partially through the leaf with an integral portion of the leaf extending beyond the recess so that the opposite face of the leaf is not disrupted and the recess is invisible at that opposite face, means connecting the hinge leaves to enable them to swing relative to each other; a magnet contained substantially entirely within the recess in the first leaf and creating a magnetic field, and a switch contained substantially entirely within the recess of the second leaf, the switch containing overlapping elongated reeds, the longitudinal axes of which are substantially parallel to the faces of the second leaf, and being sensitive to the magnetic field created by the magnet, the magnet and switch being positioned in their respective leaves such that the magnet will acuate the switch and change the condition thereof in response to swinging movement of the one hinge leaf relative to the other hinge leaf.

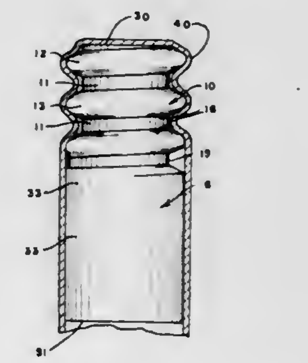
3,896,405
SOLENOID VALVE WITH THREADED CORE TUBE

Jude A. Pauli, Florissant, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Sept. 3, 1974, Ser. No. 502,785

Int. Cl.^{2} H01F *3/00*

U.S. Cl. 335—281 **7 Claims**



1. In a solenoid valve having a core tube and a top plug in an outer end of said core tube, said core tube having a thin, cylindrical side wall, the improvement comprising a screw thread form on a side surface of said top plug and at least one screw thread formed in said core tube side wall, said screw thread having an external aspect and an internal aspect, said external aspect being accessible to internally complementarily threaded nut means from the said outer end of said core tube, and the internal aspect of said screw thread engaging, formed on, and generally conforming to said screw thread form on said side surface of said top plug.

3,896,406
SCREEN FOR CORE LEGS FOR TRANSFORMERS, REACTORS AND THE LIKE

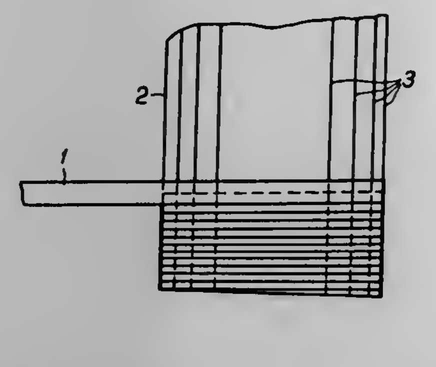
Olle Andersson, and Ellerth Ericsson, both of Ludvika, Sweden, assignors to Allmanna Svenska Elektrika Aktiebolaget, Vasteras, Sweden

Filed Aug. 6, 1974, Ser. No. 495,112

Claims priority, application Sweden, Aug. 23, 1973, 73114639

Int. Cl.^{2} H01F *15/04*

U.S. Cl. 336—84 **3 Claims**



1. A core leg for transformers, reactors and the like formed of a plurality of magnetic sheets with a surrounding tape to prevent the occurrence of glow discharge at sharp corners and edges where there prevail inhomogeneous electric fields and to hold the core sheets together mechanically, said tape (1) comprising a backing having high mechanical strength and impregnated with an impregnant consisting essentially of an electrically semiconducting and thermosetting material, wound around the sheets with high mechanical tension and with overlapping so that a screen surrounding the core leg (2) is formed, said screen being cured by heat treatment and being quite stiff and having good mechanical and electrical contact with the core leg at least along the longitudinal edges (3) of the core leg.

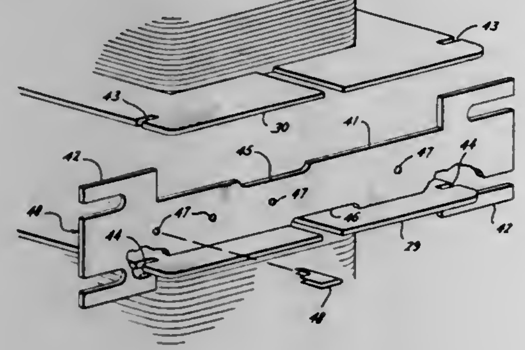
3,896,407
MAGNETIC CORE AND COIL DEVICE

Clifton W. Long, San Marcos, Tex., assignor to Esquire, Inc., New York, N.Y.

Filed Oct. 7, 1974, Ser. No. 512,422

Int. Cl.^{2} H01F *15/10*

U.S. Cl. 336—160 **4 Claims**



1. A device, comprising a magnetic core having side legs, a middle leg intermediate the side legs, end legs connecting the ends of the side and middle legs, and shunts extending between the middle leg and each side leg intermediate the end legs, a pair of coils each wound about a bobbin which is disposed about the middle leg of the core on opposite sides of the shunts, the bobbins having flanges on their adjacent ends, and a terminal strip extending between the flanges, each flange and the strip having parts which interfit to retain said strip in position between said flanges, said interfitting parts extending essentially parallel to axis of the middle leg of the core so as to be moveable into interfitting relation as the bobbins are assembled over the middle leg of the core.

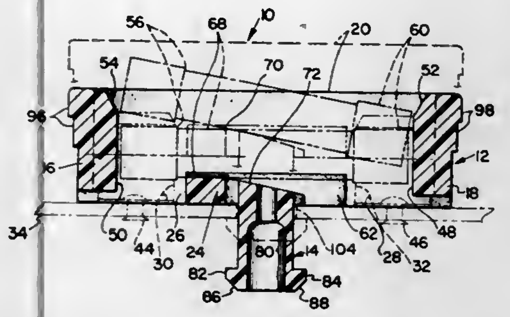
3,896,408
FUSE EJECTOR

Lester R. Leidy, Jr., Oreland, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 31, 1974, Ser. No. 438,370

Int. Cl.^{2} H01H *85/22, 85/54*

U.S. Cl. 337—211 **5 Claims**



1. A fuse ejector/shroud member for use in association with a pair of spaced spring clip contacts for a cartridge type fuse, said clip contacts being mounted on a suitable support base, said member comprising:

a non-conductive shroud body member of a single piece construction and of a substantially rectangular configuration having side and end walls of sufficient height to be at least coextensive with the spring clip contacts;

said shroud body member having a partially open bottom with an integral bridging portion extending transversely between said side walls, said bridging portion and said side and end walls defining a pair of openings through which said clip contacts are adapted to extend;

said bridging portion including a fuse engaging surface, a mounting pedestal integral with said bridging portion and extending in a direction opposite from the direction of the extension of said side walls and adapted to be inserted through a suitable opening in the support base, and

mounting means for loosely securing said pedestal in said opening, said pedestal being of a suitable length to provide a loosely captive mounting of said ejector/shroud member with respect to said support base, whereby to permit a cartridge fuse to be inserted between said clip contacts when said ejector/shroud member is fully seated on said support base and whereby said fuse engaging portion of said bridging portion is operative to eject said mounted fuse from between said clip contacts when said shroud is lifted slightly from said support base.

3,896,409
LIQUID LEVEL SENSOR FOR CORROSIVE BATHS

Adolph L. Micheli, and Dennis F. Dungan, both of Mt. Clemens, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 18, 1974, Ser. No. 515,924

Int. Cl. H01c *7/00*

U.S. Cl. 338—28 **3 Claims**

1. A thermistor assembly for liquid level sensing applications involving corrosive liquids which is easily manufactured and which has a response time that is readily set during said manufacture, said assembly comprising:

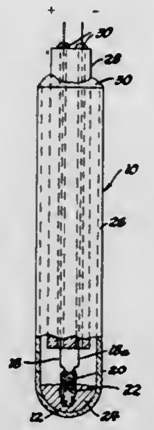
a thermistor element;

at least two electrically conductive wires attached to said thermistor element;

a corrosion resistant tube having a closed end portion with a wall thickness of about 0.5 – 3 mm wherein said tube provides protection for said thermistor from corrosive solutions whose liquid level is to be sensed while serving as a thermal conductor therebetween;

a lead alloy heat exchange member in the closed end portion of said tube and directly contacting the inner walls thereof;

a coating of sintered polytetrafluoroethylene particles between about 0.025 – 0.25 mm thick on said thermistor element and said conductor wires extending from said thermistor element, thereby forming a polytetrafluoroethylene coated thermistor subassembly; and



said polytetrafluoroethylene coated thermistor subassembly being immersed in said lead alloy heat exchange member at a predetermined spacing relative to the walls of said tube wherein the spacing therebetween determines the response of said thermistor element, said polytetrafluoroethylene coating providing an impervious barrier to said lead alloy heat exchange member and electrically insulating said conductor wires from said lead alloy heat exchange member.

3,896,410
ROTARY CONTROL

Benjamin H. Matthews, Peninsula; Jules W. Rhine, Bedford, and Suresh K. Nangia, Bedford Heights, all of Ohio, assignors to Lucerne Products Inc., Hudson, Ohio

Filed Aug. 6, 1973, Ser. No. 386,230

Int. Cl. H01c *9/08*

U.S. Cl. 338—48 **20 Claims**

1. In a compact electrical energy control for controlling the magnitude of electrical energy input into an associated circuit load comprising, a support, a circuit including printed circuit components disposed on said support, and an actuator comprising a member rotatable about an axis disposed substantially perpendicular to the plane of said support, said member having electrical contacts thereon adapted for engaging coaction with certain of said printed circuit components during rotatable movement of said member so as to selectively control the actuation of said circuit and correspondingly variably control the magnitude of electrical energy to said circuit load, and cam means on said support adapted for engaging at least one of said electrical contacts, effective to move said one electrical contact out of engagement with the associated circuit to effectively disconnect it from a source of power.

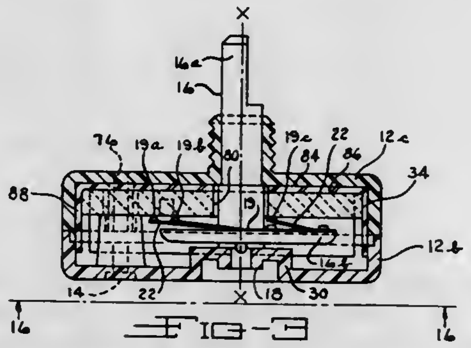
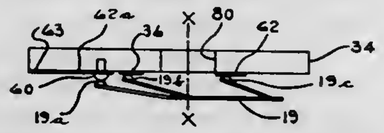


FIG-3



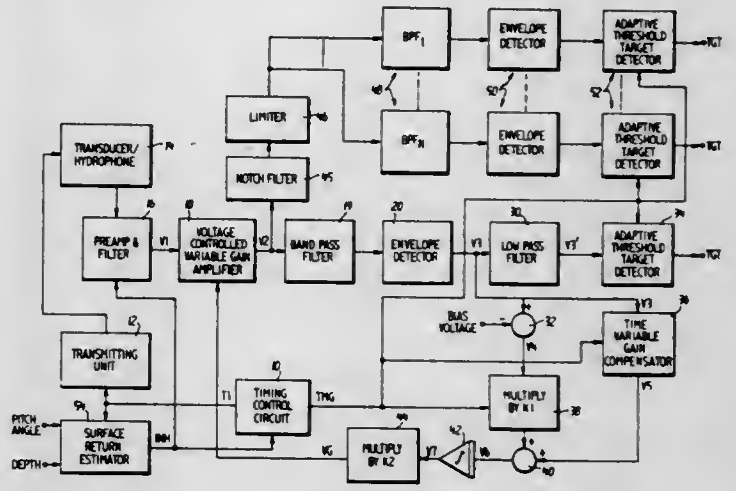
3,896,411
REVERBERATION CONDITION ADAPTIVE SONAR RECEIVING SYSTEM AND METHOD

Larry C. Mackey, Greensburg, Pa., and Dennis C. Kozlowski, Lutherville, Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 19, 1974, Ser. No. 443,874

Int. Cl. G01s *9/66, 7/66*

U.S. Cl. 340—3 R **11 Claims**



1. Apparatus for controlling the gain of a sonar receiving circuit during ping periods between transmitted pulses of acoustic energy to minimize the effects of changing reverberation conditions comprising:

means for detecting the envelope of return acoustic energy during each ping period;

means for storing a first signal representative of the amplitude of the detected envelope at a first predetermined time during a first ping period and for storing a second signal representative of the amplitude of the detected envelope at a second predetermined time during the first ping period subsequent to the first time, the first and second stored signals representing an expected reverberation condition for ping periods subsequent to the first ping period; and,

means for controlling the gain of the sonar receiving circuit during a second ping period subsequent to the first ping period in response both to the amplitude of the detected envelope in the second ping period and to the first and second stored signals.

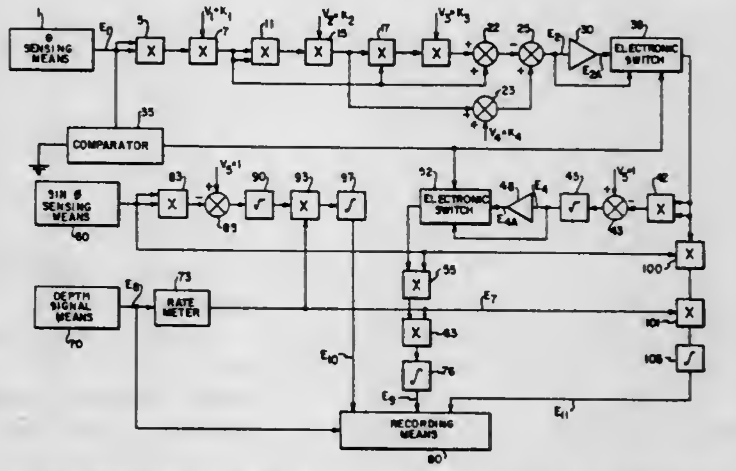
3,896,412
METHOD AND APPARATUS FOR LOGGING THE COURSE OF A BOREHOLE

Ulrich Rohr, Hamburg, Germany, assignor to Deutsche Texaco Aktiengesellschaft, Hamburg, Germany

Filed Nov. 19, 1973, Ser. No. 417,445

Int. Cl. G01v *1/40;* **G01C** *9/14*

U.S. Cl. 340—15.5 BA **5 Claims**



1. A system for logging the course of a borehole comprising a logging tool including means for providing a θ signal corre-

sponding to an azimuth angle θ, and means for providing a ϕ signal corresponding to an angle ϕ of inclination; conduction means connected to all the signal means in the logging tool for conducting the signals to the surface, and surface electronics including means for providing a *dl/dt* signal corresponding to the rate of travel of the logging tool through the borehole; means connected to the conducting means and to the *dl/dt* signal means for providing a T_v signal in accordance with the ϕ signal and the *dl/dt* signal, said T_v signal corresponds to a distance along an axis T_v of a cartesian coordinate system having its reference point at the mouth of the borehole, the axis T_v extends in a vertical direction; means connected to the conducting means and to the *dl/dt* signal means for providing an A_N signal in accordance with the ϕ, θ and *dl/dt* signals, said A_N signal corresponds to a distance along an axis A_N in the coordinate system which extends in a northern direction from the reference point, means connected to the conducting means and to the *dl/dt* signal means for providing an A_o signal in accordance with the ϕ, θ and *dl/dt* signals, said A_o signal corresponds to a distance along an axis A_o in the coordinate system which extends in a direction perpendicular to the directions of the T_v and A_N axes.

3,896,413

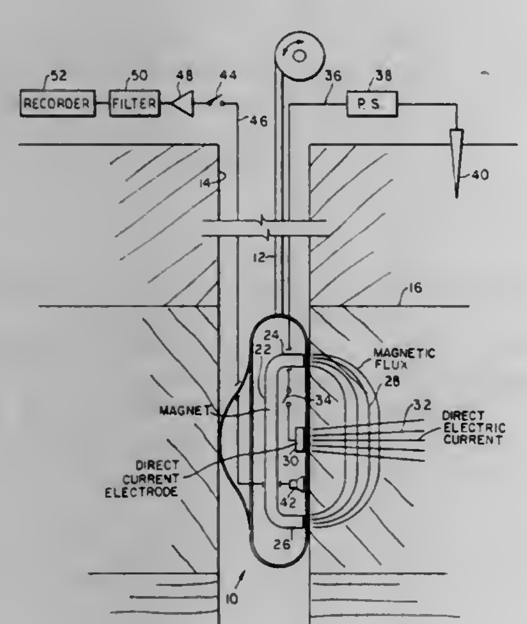
PERMEABILITY LOGGING METHOD USING APPARATUS COMPRISING CURRENT ELECTRODES BETWEEN ELECTROMAGNETS, CURRENT ELECTRODE ON THE SURFACE AND ACOUSTIC LISTENING DEVICES TO DETECT PRESSURE RELATED NOISE

Donald J. Dowling, and John F. Boyd, both of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Jan. 28, 1974, Ser. No. 437,089

Int. Cl. G01v *1/40, 3/08*

U.S. Cl. 340—15.5 BH 14 Claims



1. A method for measuring permeability of a formation adjacent to a borehole comprising the steps of:

forming essentially stable constant magnetic flux lines in a localized region in a formation of interest;

forming direct electric current flow paths in the same localized region of the formation at substantially right angles to said magnetic flux lines; and

listening to the noise of fluid movement in the formation to obtain an indication of formation permeability.

3,896,414

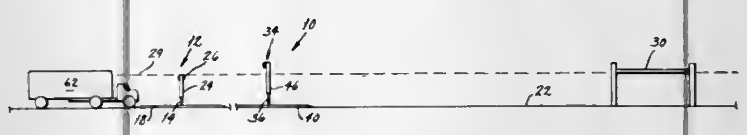
ROADWAY DETOUR SYSTEM FOR VEHICLES

Charles J. Rulo, 2113 Stansbury, St. Louis, Mo. 63118

Filed July 11, 1973, Ser. No. 378,254

Int. Cl. G08g *1/04*

U.S. Cl. 340—31 R 9 Claims



1. A roadway detour system for vehicles comprising means for sensing the height of vehicles in combination with means for providing a detour signal, said height sensing means including means for transmitting a light beam at a predetermined height across said roadway, and light sensing means for receiving the beam of light crossing said roadway, said light sensing means including a collimating member for collimating said light beam, said detour signal means being connected to and operable by said height sensing means and comprising a signal device located between said height sensing means and a roadway exit, and normally inactivated when said light beam is received by said light sensing means, said roadway detour system further including means for activating said signal device to produce said detour signal when reception of said light beam by said light sensing means is interrupted by a vehicle having a height in excess of said predetermined height.

3,896,415

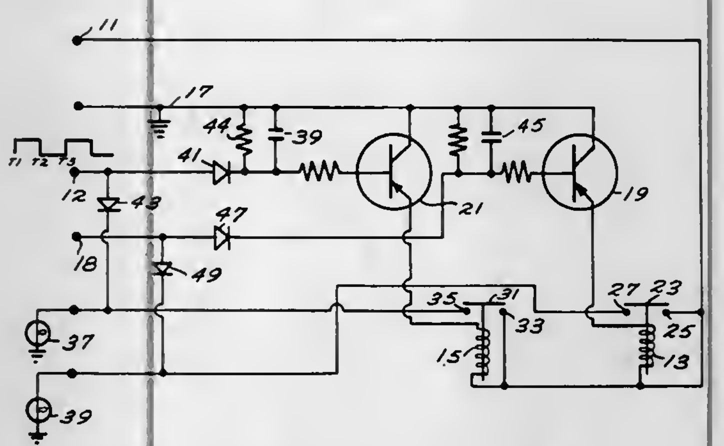
SIGNAL LIGHT CIRCUIT INTEGRATOR

Adolphus J. Carter, III, 205 E. 57th St., Savannah, Ga. 31405

Filed July 6, 1973, Ser. No. 377,014

Int. Cl. B60q *1/38*

U.S. Cl. 340—67 5 Claims



5. A signal light integrator circuit which integrates separate turn signal light and brake light signals generated by a turn signal and brake light system in a vehicle for energizing single filament lamps in a trailer connected to said vehicle wherein said integrator circuit is coupled to said vehicle turn signal and brake light system without modifying said vehicle system and wherein the power for operating said integrator circuit is derived from said vehicle system, the combination comprising, a first switch means for conducting a brake light signal from said vehicle to a first single filament indicator light positioned in said trailer, said first switching means being normally open, second switching means for conducting said brake light signal from said vehicle to a second single filament indicator light positioned in said trailer, said second switching means being normally open, each of said switching means being closed upon the application of a brake light signal from said vehicle thereto,

means for energizing said first single filament indicator lamp with a first turn signal coupled from said vehicle to said trailer,

means for energizing said second single filament indicator lamp with a second turn signal coupled from said vehicle to said trailer,

means for opening said first switching means when a first turn signal and a brake light are simultaneously coupled to said circuit,

means for opening said second switching means when said second turn signal and said brake light are simultaneously coupled to said circuit, wherein said means for opening said first and second switching means comprises a pair of semiconductor switching devices each connected to respective ones of said switching means and each having its control terminal connected to a turn signal light circuit of said vehicle, and

means for storing a turn signal light voltage at said control terminal to thereby maintain said semiconductor switching device in a cut-off state when the turn signal light circuit of said vehicle is energized.

3,896,416

DIGITAL TELECOMMUNICATIONS APPARATUS HAVING ERROR-CORRECTING FACILITIES

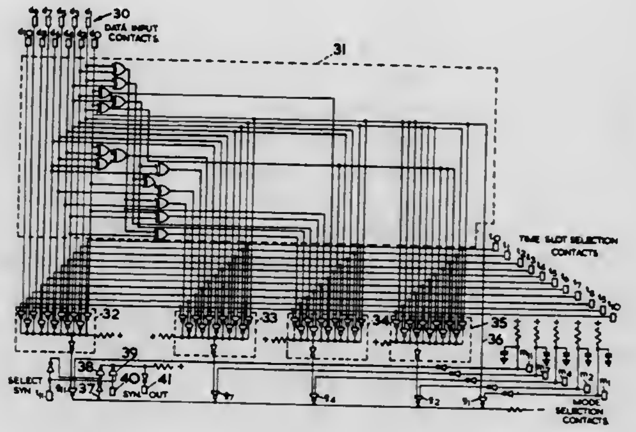
Robert Barrett, Welwyn, and John Ashley Gordon, Hatfield, both of England, assignors to British Secretary of State for Defence, London, England

Filed May 11, 1973, Ser. No. 359,375

Claims priority, application United Kingdom, May 15, 1972, 22705/72

Int. Cl. G06f *11/12*

U.S. Cl. 340—146.1 AL 20 Claims



1. Multiplexing and encoding apparatus which comprises:

input connection means comprising *n* separate input lines for accepting information bit-signals in parallel from *n* distinct channels;

first encoder means connected to a subset of k_1 of the said *n* input lines, for deriving $(n-k_1)$ check-bit signals from any set of k_1 information-bit signals occurring one on each of the lines of the said subset, according to a first predetermined systematic block code;

second encoder means connected to a subset of k_2 of the said *n* input lines, for deriving $(n-k_2)$ check-bit signals from any set of k_2 information-bit signals occurring one on each of the lines of the said subset, according to a second predetermined systematic block code;

and output means for applying the information-bit signals and check-bit signals from any selected encoder means to an output channel;

wherein $n>k_1>k_2>0$, and the said predetermined block codes have a common block length *n*.

3,896,417

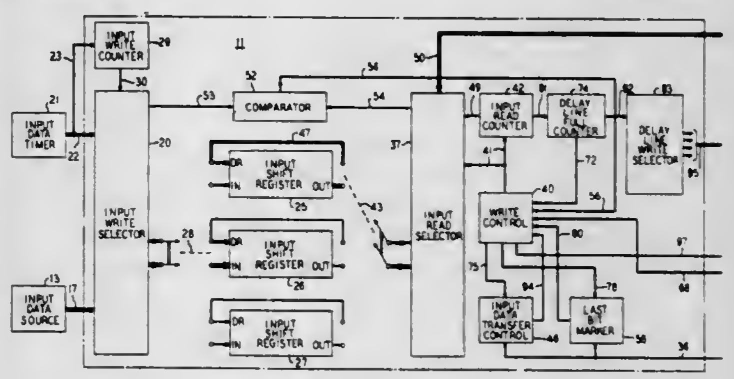
BUFFER STORE USING SHIFT REGISTERS AND ULTRASONIC DELAY LINES

David Beecham, Allentown, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 30, 1973, Ser. No. 420,374

Int. Cl.^{2} G11C *7/00, 9/00, 21/00, 11/23*

U.S. Cl. 340—172.5 8 Claims



1. A buffer store comprising

a plurality of synchronous memory modules,

means including a set of three input shift registers for selectively receiving an asynchronous stream of data signals and time buffering the stream of data signals,

means for synchronously transferring the buffered stream of data signals from the input shift registers into storage in the memory modules on an interleaved time compression basis,

means including a set of three output shift registers for selectively retrieving the stored stream of data signals in sequential order from the memory modules, and

means responsive to asynchronous demand signals for time buffering the retrieved stream of data signals from the output shift registers and forwarding the retrieved stream of data.

3,896,418

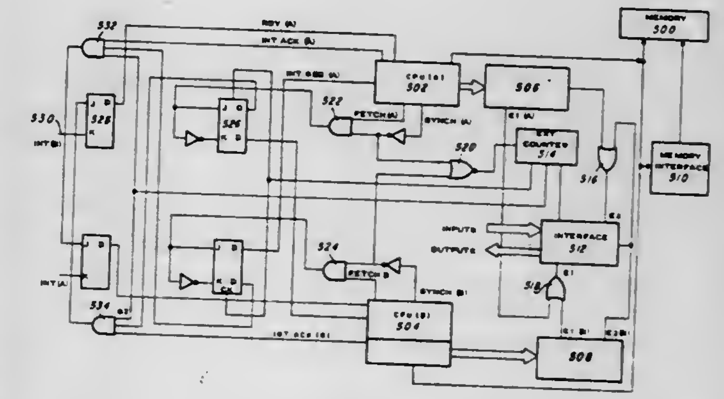
SYNCHRONOUS MULTI-PROCESSOR SYSTEM UTILIZING A SINGLE EXTERNAL MEMORY UNIT

Max W. Brown, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 176,666, Aug. 31, 1971, abandoned. This application Sept. 25, 1973, Ser. No. 400,577

Int. Cl. G06f *5/16*

U.S. Cl. 340—172.5 7 Claims



1. In a computing system having a single external memory, the combination comprising:

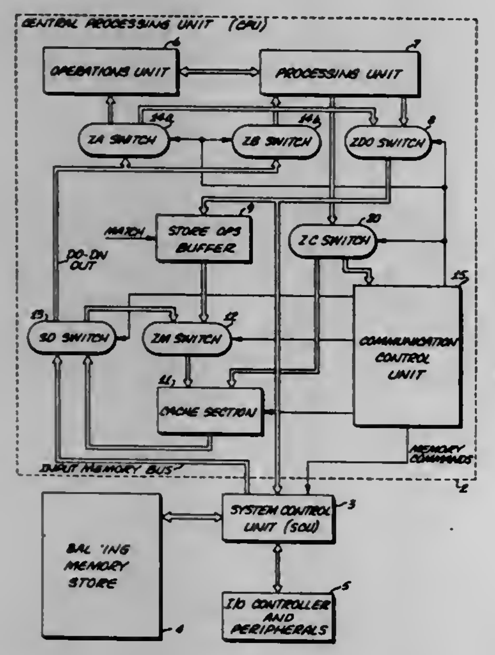
a. first and second central processing units, each processor formed on a single chip of semiconductor material, each processor characterized by an operating cycle that includes a first portion only during which the processor can access a selected portion of said external memory and a second portion during which data is operated on by the CPU, each CPU having an accumulator register for storing the result of data operation;

- b. means operably connected to said first and second processing units for synchronizing operation thereof such that said first portion of said first processor operating cycle occurs only simultaneously with said second portion of said second processor operating cycle; said means for synchronizing including
  - i. switching means for setting one processor to a wait condition is response to a first input signal selecting said one processor for access to said external memory,
  - ii. detector means coupling said first and second processors operable to provide an enabling signal to said other processor in response to said one processor switching to the wait mode and
  - iii. logic means responsive to the termination of the first portion of the operating cycle of said other processor operative to enable said one processor to a ready state during the second portion of the operating cycle of said other processor; and
- c. interface circuitry operably connected to first and second processors for selectively coupling external inputs to said processors and for providing system outputs.

3,896,419
CACHE MEMORY STORE IN A PROCESSOR OF A DATA PROCESSING SYSTEM

Ronald E. Lange; Matthew A. Diethelm, both of Phoenix, and Phillip C. Ishmael, Tempe, all of Ariz., assignors to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Jan. 17, 1974, Ser. No. 434,178
Int. Cl.^{2} G06F *13/06*
U.S. Cl. 340—172.5 **7 Claims**



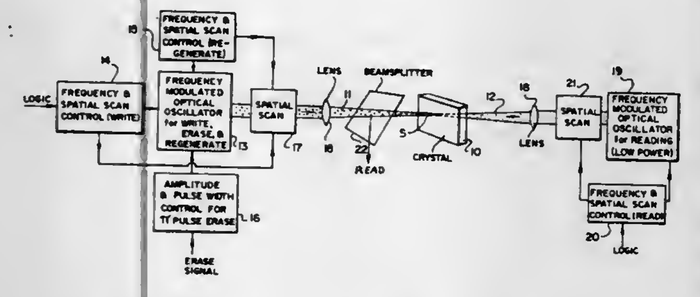
1. A processor in a data processing system including a backing memory store storing data and instructions in addressable storage locations, said processor comprising:

- a. operation means for performing arithmetic and logic functions on data and instructions retrieved from the backing memory store;
- b. processing means for processing data and instructions according to signals generated by said operation means and the data processing system;
- c. a communication control unit for controlling interface functions between the units of the processor and between the processor and the backing memory store in accordance with instructions processed by said processing means;
- d. a buffer register;
- e. a cache section including a cache store and means for storing data and instructions into addressable locations in said cache store;
- f. first switch means controlled by said communication control unit for controlling transfer of data information from said processing means to said buffer register and to said backing memory store;
- g. second switch means controlled by said communication control unit for selectively controlling transfer of data information from said backing memory store or said cache section to a third switch means and to said operations unit and said processing unit; and
- h. said third switch means controlled by said communication control unit for selectively controlling transfer of data information from said second switch means or said buffer register for storage in said cache store of said cache section; said third switch means operable in a store aside configuration to transfer the data information stored in said buffer register into said cache store if the address of the data information is in said cache section.

3,896,420
FREQUENCY SELECTIVE OPTICAL MEMORY

Alexander Szabo, Ottawa, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Canada

Filed Jan. 14, 1972, Ser. No. 217,893
Int. Cl.^{2} G11C *13/04*
U.S. Cl. 340—173 CC **3 Claims**


FREQUENCY & SPATIAL SCAN CONTROL (REGENERATE)
15
14
LOGIC
FREQUENCY & SPATIAL SCAN CONTROL (WRITE)
FREQUENCY MODULATED OPTICAL OSCILLATOR for WRITE, ERASE, & REGENERATE
13
SPATIAL SCAN
17
LENS
BEAMSPLITTER
11
18
22
READ
S
CRYSTAL
10
12
18
LENS
21
SPATIAL SCAN
19
FREQUENCY MODULATED OPTICAL OSCILLATOR for READING (LOW POWER)
AMPLITUDE & PULSE WIDTH CONTROL FOR π PULSE ERASE
16
ERASE SIGNAL
FREQUENCY & SPATIAL SCAN CONTROL (READ)
20
LOGIC

1. A data storage system comprising:

- a. a broad band laser,
- b. an optical memory device in the form of a block of material exhibiting inhomogeneous absorption line broadening and which has a large number of regions that on application of an intense light beam becomes saturated only at a homogeneous linewidth frequency related to the frequency of the applied light pulse in the overall inhomogeneous line band-width and which is positioned in the beam path of the broad-band laser such that a surface is being continuously flooded with the laser light,
- c. a first laser beam positioned to scan a surface of said block and "write" information in the block, and
- d. a second laser beam positioned to scan a surface of said block and "read" information from the block.

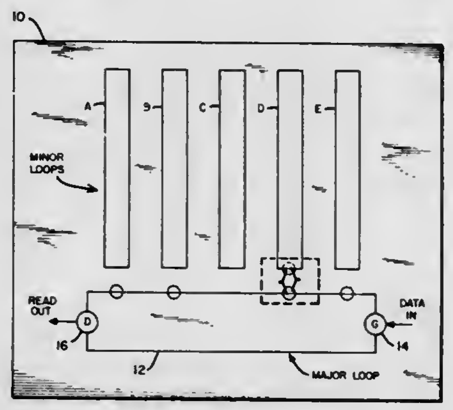
3,896,421
BI-DIRECTIONAL MAGNETIC DOMAIN TRANSFER CIRCUIT

William E. Flannery, Norristown, Pa., assignor to Sperry Rand Corporation, Blue Bell, Pa.

Filed Nov. 9, 1973, Ser. No. 407,675
Int. Cl. G11c *11/14, 19/00*
U.S. Cl. 340—174 TF **6 Claims**

1. In a magnetic arrangement for transferring a single-wall domain in a layer of magnetic material from a first closed-loop to a second closed-loop both defined by magnetically soft elements and utilizing an in-plane rotating magnetic field, the improvement comprising:

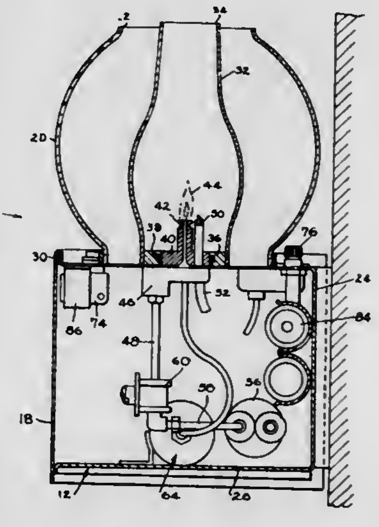
- a. first and second identical, separate linking means arranged between said first and second closed loops and in a directly facing relationship,
- b. a single conductor means positioned directly upon and for forming a magnetic gradient along said linking means, said single conductor being oriented upward and downward repetitively between said first and second closed loops, said conductor being in contact with the elements of said first and second loops and said first linking means when oriented in an upward direction, said conductor being in contact with the elements of said first and second loops and said second linking means when oriented in a downward direction,



said first linking means providing means for transferring a wall domain from said first closed-loop to said second closed-loop, and said second linking means providing means for transferring said wall domain from said second closed-loop to said first closed-loop by rotating said inplane field in conjunction with a timed current signal applied to said conductor.

3,896,422
ALARM SYSTEM OPERATED BY AMBIENT CONDITIONS

Stanley J. Kowalsky, 4 Stan St., Latrobe, Pa. 15650
Continuation-in-part of Ser. No. 848,492, Aug. 8, 1969, abandoned. This application Nov. 5, 1971, Ser. No. 196,035
Int. Cl. G08b *17/06*
U.S. Cl. 340—227 R **7 Claims**

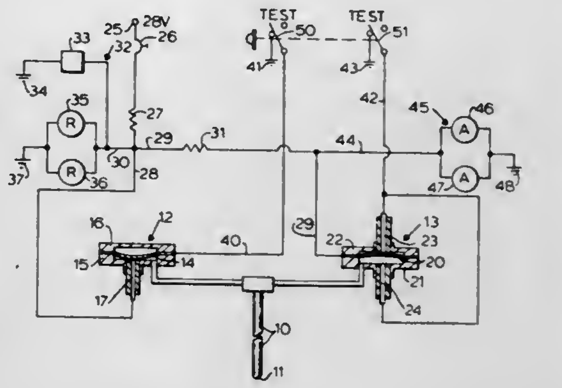


1. A warning device responsive to abnormal ambient atmospheric conditions, especially in a room of a building and comprising: a pilot burner device having an imperforate base member, vertically elongated tubular chimney means open only at the top and at the bottom, said chimney means being sealed at the bottom to said base member of said burner device and protectively enclosing the burner device for limited exposure to ambient atmospheric conditions, regulated means connected to the burner device through said base member and supplying fuel thereto at a controlled rate for maintaining a continuous flame within the chimney means near the lower end thereof under normal ambient atmospheric conditions during which oxygen is supplied to said burner device solely by air which flows downwardly in said chimney means via the open upper end of said chimney means, said chimney means permitting only sufficient air to pass from the upper end of the chimney means downwardly therein in counterflow to the gases rising from said burner device to maintain said flame under normal ambient atmospheric conditions whereby an abnormal ambient atmospheric condition creating an oxygen deficiency will cause said flame to be extinguished, flame detecting means operatively associated with the burner device and operable for sensing extinction of the flame, and normally inactive alarm means operatively connected to said flame detecting means and operable for producing an alerting signal in response to sensing by said flame detecting means of extinction of said flame, said device being adapted to be placed in a room with the upper end of said chimney means near the ceiling of the room whereby the air entering the upper end of the chimney means is taken from near the ceiling of the room.

3,896,423
FIRE AND OVERHEAT DETECTION SYSTEM

John E. Lindberg, 1211 Upper Happy Valley Rd., Lafayette, Calif. 94549

Filed Sept. 14, 1973, Ser. No. 397,441
Int. Cl. H01h *37/40*
U.S. Cl. 340—229 **8 Claims**



1. A fire and overheat detection system including in combination:

tubular sensor means having one end closed and one end open,

a primary responder having a housing and an electrically conductive primary diaphragm dividing said housing into (1) a first chamber connected to an open end of said sensor means, and (2) a closed and sealed second chamber, said first chamber being provided with a first electrode, said primary diaphragm normally being in contact with the electrode, and actuated to move away from it at a pressure which is different from the pressure normally in said sensor means, and

a confirmation responder having a housing and an electrically conductive confirmation diaphragm dividing its said housing into a third chamber and a fourth chamber connected to said open end of said sensor means, and a second electrode in one of said third and fourth chambers against which said diaphragm is normally seated and from which it moves away when said sensor reaches ambient pressure.

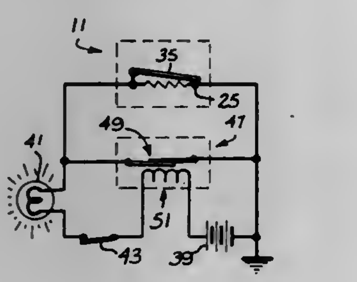
3,896,424
SENSING APPARATUS INCLUDING LATCHING MEANS

John R. Peltz, and Nikolaus A. Szeverenyi, both of Warren, Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Continuation-in-part of Ser. No. 236,149, March 20, 1972. This application Jan. 4, 1974, Ser. No. 430,700
Int. Cl. G08b *21/00*
U.S. Cl. 340—244 R **8 Claims**

1. A sensing apparatus comprising:

a sensor device including a housing member defining a chamber, an electrically conductive tip member adapted for being exposed to a fluid, said tip member secured to said housing and forming a closure for said chamber to prevent fluid entrance into said chamber, an electrically resistive heater means within said chamber having first and second spaced apart electrically conductive portions, said second electrically conductive portion in heat conductive relationship to said electrically conductive tip member, and an electrically conductive heat responsive means secured at one end to said second spaced apart portion of said heater means and having a free end adapted for engaging said first spaced apart portion of said heater means only when the temperature surrounding said electrically conductive heat responsive means exceeds a predetermined level; and



means for sensing when said free end of said electrically conductive heat responsive means and said first spaced apart portion of said heater means are engaged, said sensing means including an electrical circuit comprising a source of electrical potential operatively connected to said electrically conductive heat responsive means and said first spaced apart portion of said heater means, a current indicating means for indicating electrical current in said circuit when said free end and said first spaced apart portion are engaged, and a latching means for providing a steady electrical signal to said current indicating means after the initial engagement of said free end of said heat responsive means and said first spaced apart portion of said heater means.

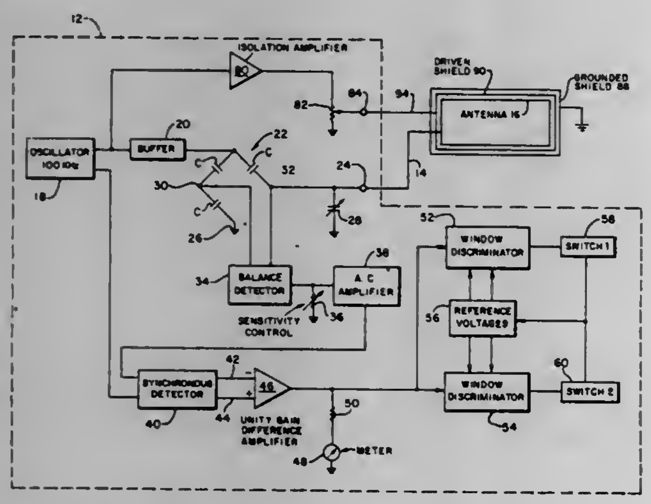
3,896,425
PROXIMITY DETECTOR

Herman W. Erichsen, Medfield, Mass., assignor to Tyco Laboratories, Inc., Waltham, Mass.

Filed Oct. 16, 1973, Ser. No. 406,866

Int. Cl. G08b *13/24*

U.S. Cl. 340—258 B **9 Claims**



9. A protective device comprising:
a conductive member located adjacent an area to be protected;
first shielding means for confining the electric field provided by said conductive member to the area to be protected;
second shielding means for changing the capacitance between said conductive member and said first shield means;
means coupling said second shielding means for exciting said shielding means with alternating electrical energy at a preselected frequency;
a capacitance balancing circuit;
means coupling said conductive member electrically into said balancing circuit;
means coupled to said balancing circuit for exciting said circuit with alternating electrical energy at said preselected frequency and in phase with the energy exciting said second shielding means;
detector means coupled to said balancing circuit for producing a D.C. output indicative of unbalance in said balancing circuit;
a pair of electrical window discriminators having maximum limits coupled to the output of said detector means; and
a pair of switches coupled to said windows for actuation when the maximum or minimum limit of either window discriminators is exceeded by the output of said detector means.

3,896,426
THEFT ALARM EMPLOYING SELF-ADJUSTING DISTURBANCE SWITCH

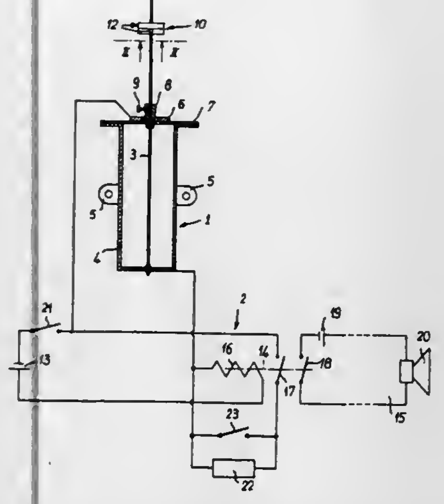
Philippe Laurent, Eaubonne, France, assignor to Klaxon, Neuilly-sur-Seine, France

Filed Jan. 9, 1973, Ser. No. 322,151

Claims priority, application France, Jan. 11, 1972, 72.00714

Int. Cl. G08b *13/02*

U.S. Cl. 340—261 **11 Claims**



1. A disturbance switch for use in an alarm device comprising at least one element sensitive to shocks and vibration, and electric means, said sensitive element comprising at least one rod having a circular cross-sectional contour and one end fitted in a frame structure to assume a generally upright position, said rod having flexibility characteristics at least in the vicinity of its fitted end, and an abutment member disposed on said frame structure for limiting the beat of said rod in at least one direction, said abutment member being remote from the fitted end of said rod, at least one portion of said abutment member and at least one portion of said rod which is adapted to contact said abutment member consisting of electrical conducting material, and electric means comprising said portions of said abutment member and rod consisting of electrical conducting material, a source of current and a relay controlling the release of an alarm circuit, said relay being so connected to said current source that said relay is closed when a contact takes place between said portions of said abutment member and rod, and remains closed even after said contact is discontinued, the improvement in the disturbance switch comprising said abutment member consisting of an annular member surrounding said rod with a certain clearance and said annular member being adapted to move freely radially with respect to said rod whereupon vibration of said flexible rod self-centers the freely radially moveable annular member about said flexible rod.

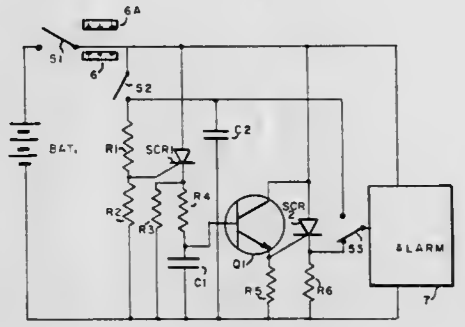
3,896,427
MAGNETICALLY OPERATED ALARM

James P. Campman, 12900 Broadmoor Rd., Silver Spring, Md. 20904

Filed June 27, 1974, Ser. No. 483,827

Int. Cl.^{2} G08B *13/08*

U.S. Cl. 340—274 R **2 Claims**



1. An alarm apparatus responsive to the relative motion between two objects in one of two substantially parallel directions comprising:
an actuating magnet mounted on one of said objects;
a pair of magnetically actuated reed switches mounted on the other of said objects, arranged in parallel to each other and spaced from each other in the direction of motion whereby said reed switches sequentially move into juxtaposition with said actuating magnet and are actuated thereby to their closed positions;
a biasing magnet associated with the reed switch which secondly arrives in juxtaposition to said actuating magnet when the said objects are moved in the other of two substantially parallel directions and arranged to produce a magnetic flux across the reeds thereof insufficient to close said reeds but strong enough when said reeds are closed to hold said reeds closed;
electrically operable switching means actuated into its "on" state when both said reed switches are simultaneously in their closed positions and actuated into its "off" state when said biased reed switch is opened;
means energized by said electrically operable switching means to continually sound the alarm while said electrically operable switching means is in its on state; and
a key magnet, similar to the biasing magnet in polarity which, when placed in juxtaposition with said biasing magnet with its magnetic flux in opposition to the flux of said biasing magnet, for opening said biased reed switch to silence said alarm and to condition said apparatus to again be armed when the objects are moved in the opposite direction relative to each other.

3,896,428
DISPLAY APPARATUS WITH SELECTIVE CHARACTER WIDTH MULTIPLICATION

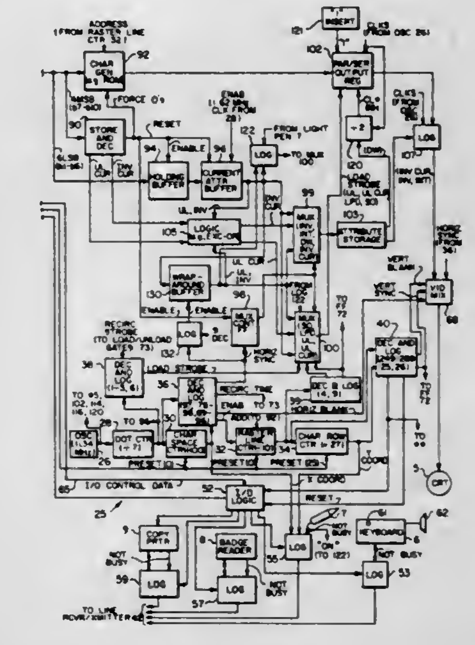
Robert C. Williams, Churchville, Pa., assignor to GTE Information Systems Incorporated, Stamford, Conn.

Filed Sept. 3, 1974, Ser. No. 502,889

Int. Cl.^{2} G06F *3/14*

U.S. Cl. 340—324 AD **7 Claims**

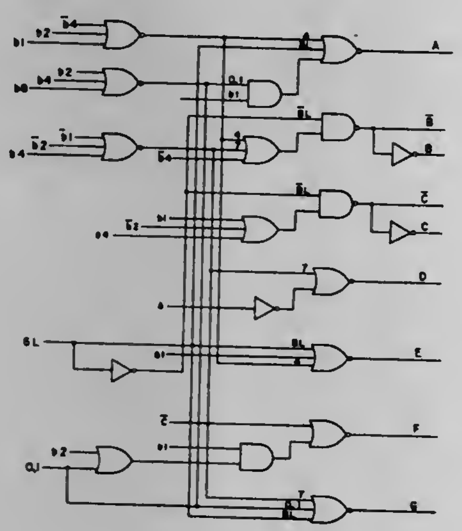
1. Display apparatus for displaying images of data characters having first and second widths, comprising:
display means for displaying images of data characters;
data source means for producing a set of data including a plurality of characters for a predetermined number of times, said characters including data characters the images of which are to be displayed by the display means and attribute characters interspersed with the data characters, each of said attribute characters including width data specifying that the images of data characters following the attribute character are to be displayed with a first width or a second, greater width, each of the data characters specified by the width data of an attribute character to have a display image of the second width being followed in the set of data by *n* additional, successive data characters, where *n* is an integer;
display signal generator means having an input for receiving each data character in the set of data for the predetermined number of times, said display signal generator means being operative in response to receiving each data character at its input for the predetermined number of times to produce a set of display data signals corresponding to the data character, each display data signal comprising a series of bits;



first circuit means for receiving and storing therein display data signals of sets of display data signals produced by the display signal generator means and corresponding to data characters;
second circuit means coupled to the first circuit means and operative to produce clock signals for clocking the bits of display data signals stored in the first circuit means out of the first circuit means at a predetermined first rate;
third circuit means coupled to the data source means and operative to receive and store therein for the predetermined number of times the width data of each attribute character produced by the data source means;
fourth circuit means coupled to the third circuit means and to the first circuit means, said fourth circuit means being operative when the width data of an attribute character stored in the third circuit means for the predetermined number of times specifies that the images of data characters following the attribute character are to be displayed with the first width to enable the first circuit means to be clocked at the predetermined first rate whereby the bits of the sets of display data signals corresponding to these data characters are clocked out of the first circuit means at the predetermind first rate, and said fourth circuit means being operative when the width data of an attribute character stored in the third circuit means for the predetermined number of times specifies that the images of data characters following the attribute character are to be displayed with the second width to cause the first circuit means to be clocked at a second rate of $1/(n+1)$ times the predetermined first rate, whereby the bits of the sets of display data signals corresponding to the first, $[(n+1)+1]$th, $[2(n+1)+1]$th, $[3(n+1)+1]$th, etc., data characters following the attribute character are clocked out of the first circuit means at the second rate and the bits of the sets of display data signals corresponding to the

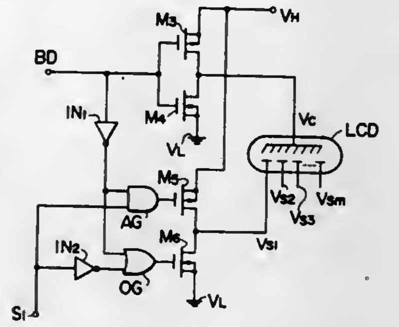
intervening *n* data characters are prevented from being entered into and clocked out of the first circuit means;
said display means being coupled to the first circuit means and operative to receive the bits of the sets of display data signals clocked out of the first circuit means at the first rate or second rate, said display means being operative in response to receiving the bits of each set of display data signals clocked out of the first circuit means at the first rate to provide an image, having a first width, of the corresponding data character, and operative in response to receiving the bits of each set of display data signals clocked out of the first circuit means at the second rate to provide an image, having a second width, of the corresponding data character.

3,896,429
SEGMENT DECODER FOR NUMERIC DISPLAY
Norman E. Moyer, Newport Beach, and Dennis E. Walker, Costa Mesa, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed June 25, 1973, Ser. No. 373,569
Int. Cl.² G09F *9/32*
U.S. Cl. 340—336 **10 Claims**



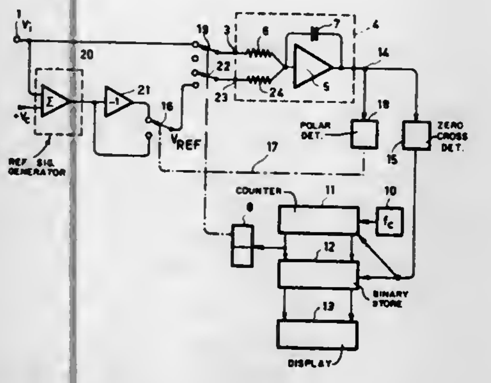
1. A character segment decoder comprising:
an intermediate decoding stage;
a final decoding stage of logical gates having inputs for coded character signals for characters of a group of characters and decoded output signals of the intermediate stage, said gates of the final stage having individual outputs corresponding to segments of a display indicator for visual display of the characters;
said intermediate stage including a plurality of logical gates having inputs for applying coded character signals representing predetermined characters of the group, each of said intermediate gates sensing a particular subcombination included in said character signals to produce intermediate logical output signals also coupled to respective logical gates of said final stage, said logical gates of the final stage being responsive to logical signals at its inputs to produce said individual outputs corresponding to segments of the display indicator for representing predetermined characters of the group of characters; and
said intermediate and final stages including interconnections providing for feedback combining logical signals in final and intermediate stages for producing output signals for segments of character to display a character according to selected subcombinations of coded character signals applied to the character display indicator.

3,896,430
DRIVING SYSTEM OR LIQUID CRYSTAL DISPLAY DEVICE
Yoshikazu Hatsukano, Kodaira, Japan, assignor to Hitachi, Ltd., Japan
Filed Nov. 27, 1973, Ser. No. 419,442
Claims priority, application Japan, Nov. 27, 1972, 47-118074
Int. Cl.² G08B *5/36*
U.S. Cl. 340—336 **6 Claims**



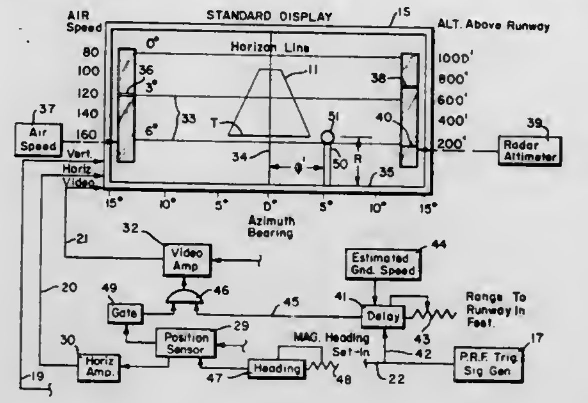
1. A system for driving a liquid crystal display device including a first common electrode and a plurality of second electrodes, each of said second electrodes being spaced apart from said first common electrode through said liquid crystal therebetween, said system comprising:
first means, coupled to said first electrode, for supplying a first drive signal thereto; and
second means, coupled to said second electrodes, for selectively applying each of a plurality of different voltage levels including at least three voltage levels to each of said second electrodes, as a second drive signal, so as to drive said display device together with said first means.

3,896,431
ANALOGUE-TO-DIGITAL CONVERTERS
Brian Arthur Leonard Dickinson, Cambridge, England, assignor to Pye Limited, Cambridge, England
Filed Nov. 15, 1973, Ser. No. 416,038
Claims priority, application United Kingdom, Nov. 29, 1972, 55139/72
Int. Cl. H03k *13/20*
U.S. Cl. 340—347 NT **5 Claims**



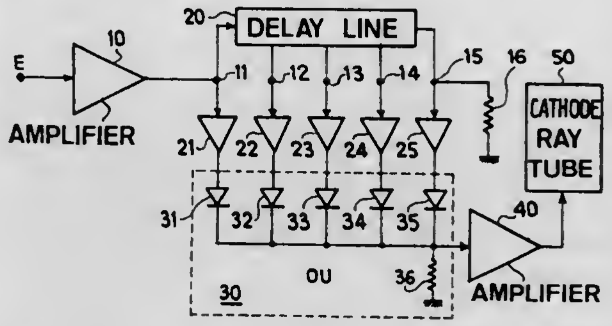
1. In an analogue-to-digital converter of the dual slope integration type having an integrator portion, an analog input signal of one polarity, a reference signal of opposite polarity being supplied thereto and including means for alternately connecting said input signal and reference signal to said integrator portion, said improvement comprising:
means for generating a variable reference signal, the magnitude of said variable reference signal being varied in dependence on the magnitude of the analogue input signal, for producing a predetermined non-linear relationship between the analogue and the digital output of the converter.

3,896,432
PERSPECTIVE RADAR AIRPORT RECOGNITION AND LANDING GUIDANCE SYSTEM
David W. Young, 627 N. Beachwood Ave., North Hollywood, Calif. 91506
Continuation-in-part of Ser. No. 847,121, Aug. 4, 1969, Pat. No. 3,778,821. This application Aug. 3, 1973, Ser. No. 385,534
Int. Cl.² G01S *7/20, 7/22*
U.S. Cl. 343—5 LS **10 Claims**



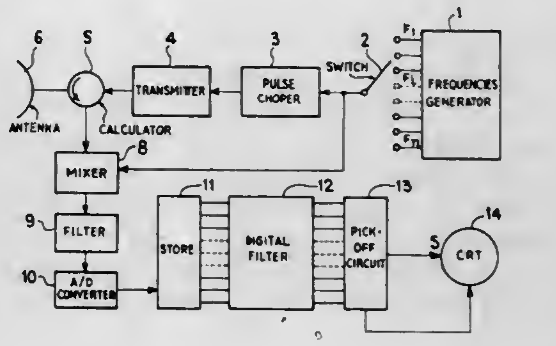
1. An airport recognition and landing guidance system for use in an aircraft as a completely self-contained system within the aircraft operative independently of any landing signals emanating from the airport or other ground areas after a standard FAA Air Traffic Control final fix is established, comprising, in combination:
a. a radar system including a PRF synchronizing trigger signal generator and antenna means, said radar system generating vertical, horizontal, and video radar signals for providing a basic perspective display of actual, not stylized terrain in front of the aircraft when viewed on a display screen; and
b. guidance control means incorporating known information relative to an airport complex for comparison with the perspective radar information in said radar signals of actual terrain.

3,896,433
PROCESSING DEVICE
Roland Carrè, Paris, France, assignor to Thomson-CSF, Paris, France
Filed Jan. 15, 1974, Ser. No. 433,455
Claims priority, application France, Jan. 18, 1973, 73.01748
Int. Cl. G01s *9/00;* **H03k** *5/04*
U.S. Cl. 343—5 R **3 Claims**



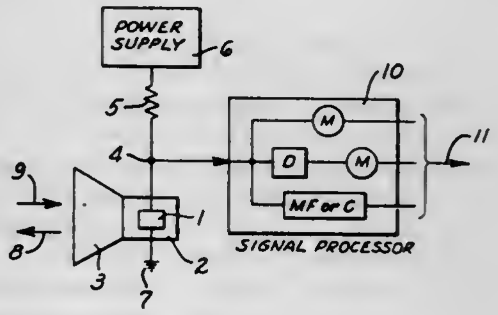
1. A processing device for processing video signals in a pulse radar system, between an output of the radar's receiver which has a determined pass-band width (B) and an input of exploiting means having a narrower bandwidth (*b*), said device comprising:
delay means having an input connected to the output of said receiver and a number of outputs for delivering a plurality of output signals, the number of outputs being equal to the whole number closest to the ratio of the pass band, B/*b*, and
non linear circuit means connected between the outputs of said delay means and said exploiting means, for transmitting, amongst the output signals from said number of outputs, the signal having the greatest amplitude and blocking the other signals.

3,896,434
PULSE TYPE RADAR SYSTEM
Jacques Sirven, Paris, France, assignor to Thomson-CSF, Paris, France
Filed Mar. 4, 1974, Ser. No. 448,011
Claims priority, application France, Mar. 6, 1973, 73.07933
Int. Cl. G01s *9/02*
U.S. Cl. 343—5 SA **8 Claims**



1. A radar system having a high range resolution comprising:
means for transmitting a series of pulses whose carrier frequencies are distributed within a band B and whose time positions are associated with the frequencies in accordance with a linear relationship, said series of pulses being repeated with a given recurrence periodicity,
means for receiving the echo signals from objects in space and for effecting demodulation using the corresponding waves which gave rise to them,
filtering means having a band width substantially equal to the spectral width of the pulses, and
a plurality of filters coupled to said filtering means for producing at different outputs different signals which correspond to separate objects in space.

3,896,435
SIMPLE RADAR FOR DETECTING THE PRESENCE, RANGE AND SPEED OF TARGETS
James Nickolas Constant, 1603 Danbury Dr., Claremont, Calif. 91711
Continuation-in-part of Ser. No. 235,084, March 3, 1972, abandoned. This application June 21, 1973, Ser. No. 372,397
Int. Cl. G01s *9/44*
U.S. Cl. 343—9 **27 Claims**



1. A radar system for determining target characteristics and comprising a transmitter, receiver, signal processor, and power supply,
said transmitter including oscillator and transmitting antenna,

with said oscillator providing the carrier frequency for the transmission of energy,

with said transmitting antenna for launching said carrier frequency to the vicinity of a target,

said receiver including receiving antenna and mixer,

with said mixer for mixing said received signals with a portion of said carrier frequency

and providing a mixer output having a doppler component and a bias component,

said signal processor having the mixer output as its input and providing a first output varying as a function of the bias component of the mixer output, which first output is used to determine target characteristics and

said power supply providing the system power.

3,896,436
DOPPLER RADAR RECEIVER

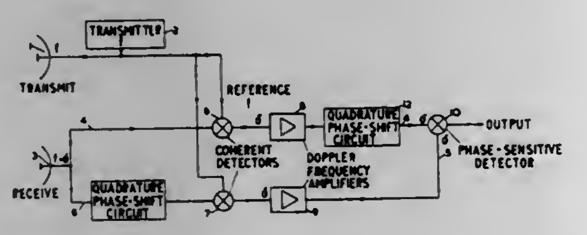
Gerald Frederic Johnson, Malvern, England, assignor to Minister of Aviation, in Her Majesty's Government of the United Kingdom of Great Britain & Northern Ireland, London, England

Filed Nov. 20, 1962, Ser. No. 239,095

Claims priority, application United Kingdom, Nov. 27, 1961, 42401/61

Int. Cl. G01s *9/44, 9/22*

U.S. Cl. 343—16 M **15 Claims**


TRANSMITTER
TRANSMIT
REFERENCE
QUADRATURE PHASE-SHIFT CIRCUIT
COHERENT DETECTORS
DOPPLER FREQUENCY AMPLIFIERS
OUTPUT
PHASE-SENSITIVE DETECTOR
RECEIVE
QUADRATURE PHASE-SHIFT CIRCUIT

1. A Doppler radar system, wherein a phase-sensitive detector demodulates a Doppler signal derived from an incoming signal from a moving target, the detector using a reference signal of the same frequency as the Doppler signal, comprising a transmitter,

a phase sensitive detector for demodulating a Doppler signal,

two coherent incoming signal detectors each fed with reference signal from the transmitter and via divided paths with the same reflected incoming signals from a target,

two Doppler signal feed paths, one feeding a Doppler signal from one coherent detector to the signal input of the phase sensitive detector and the other feeding a Doppler signal from the other coherent detector to the reference input of the phase sensitive detector,

phase shift means connected in the incoming signal path to one of the coherent detectors for introducing a quadrature phase shift between the two incoming signals applied to the coherent detectors and,

further phase shift means connected in one of the feedpaths to the phase sensitive detector for introducing a further quadrature phase shift between the Doppler signals fed to the phase sensitive detector, whereby

unwanted Doppler frequency double sideband signals in the outputs of the coherent detectors due to noise modulated transmitter signals mixed with the incoming signals result in opposing signals in the output of the phase sensitive detector.

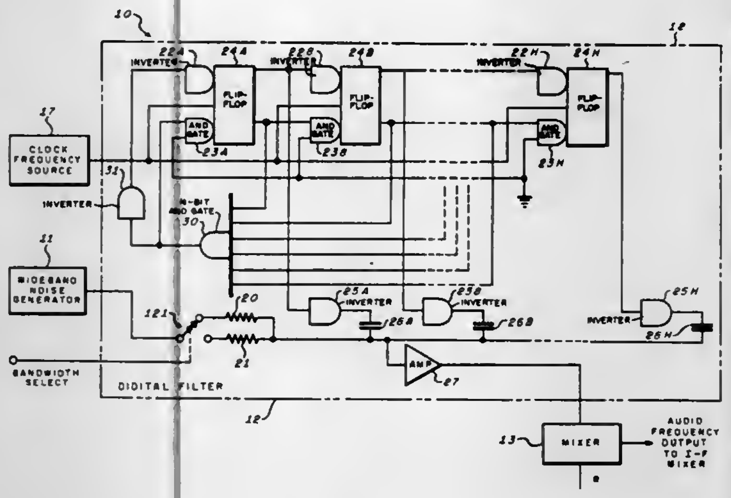
3,896,437
APPARATUS FOR GENERATING PRECISE CROSSOVER FREQUENCY OF TWO INDEPENDENT EQUAL BANDWIDTH SPECTRA

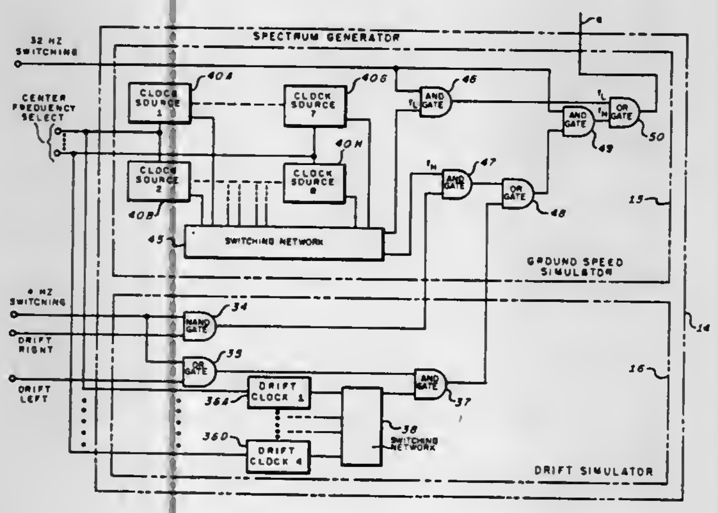
Richard H. Morris, Tampa, Fla., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Oct. 11, 1973, Ser. No. 405,344

Int. Cl.^{2} G01S *7/40*

U.S. Cl. 343—17.7 **7 Claims**





1. A simulated doppler generator comprising

noise generating means for producing wideband noise output signals,

clock source means for producing clock frequency signals at a frequency f_n which may change in value due to drift, digital filter means having a first input terminal coupled to said noise generating means and a second input terminal coupled to said clock source means or producing narrow band noise output signals which are centered about said clock frequency signal, f_n, and may be subject to distortion,

spectrum generating means for alternately providing first frequency signals at a first frequency, f_H, which are higher than said clock frequency signals, f_n, and second frequency signals at a second frequency, f_L, which are lower than said clock frequency signals, f_n, and

mixer means having a first input terminal coupled to said digital filter means and a second input terminal coupled to said spectrum generating means for providing two spectra at the difference output terminals thereof having a crossover frequency of said spectras which remains precisely constant even in the presence of drift in said clock frequency signals, f_n, and distortion in said narrow band noise output signals.

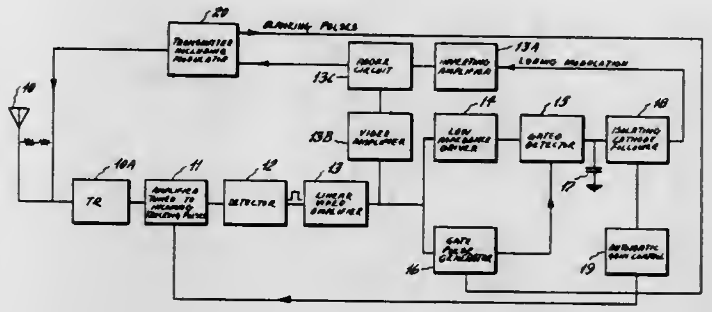
3,896,438
TRACKING RADAR COUNTERMEASURE

Leo W. Schrader, Jr., East Williston, N.Y., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 2, 1959, Ser. No. 817,680

Int. Cl.^{2} G01S *7/38, 7/40*

U.S. Cl. 343—18 E **7 Claims**



5. A device for detecting, at a target, the lobing modulation of tracking pulses arriving at said target from a conical scan radar with time lag on the order of a fraction of the width of the tracking pulses which comprises, at said target, receiving means for intercepting, amplifying and detecting said tracking pulses, a condenser, low impedance gate means connecting said receiving means and said condenser, normally operable for blocking any transfer of energy in both directions between said receiving means and said condenser but operable when opened to connect said condenser and receiving means and thereby adjust the voltage on said condenser according to the amplitude of the detected pulse arriving while the gate is opened, gate pulse generating means connected between said receiving means and said gate means, responsive to said detected pulse and causing opening of said gate means solely during a selected portion of the peak of said pulse, bias creating means having a high imput impedance and low output impedance connected to said condenser for providing a bias voltage varying according to the voltage variations on said condenser and means connecting said bias creating means and said receiving means for providing automatic gain control bias to said receiving means and cause the latter to operate continuously linearly independently of incoming pulse amplitude and preserve lobing modulation of the incoming pulses.

3,896,439
MULTI-SPOT RADAR JAMMING SYSTEM

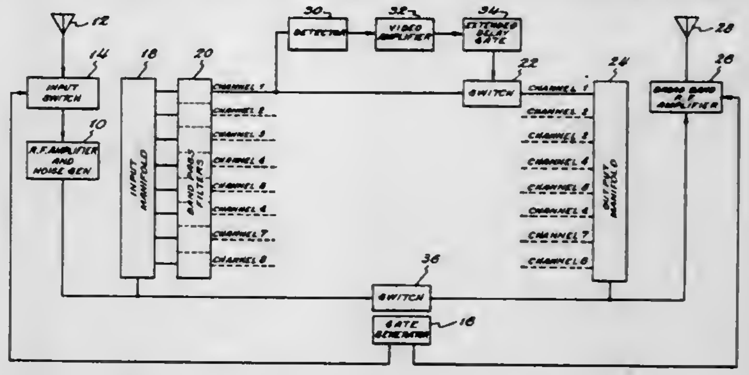
John M. Lester, Garden City; Philip W. Crist, Roslyn Heights, and Charles E. O'Toole, Whitestone, all of N.Y., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Oct. 31, 1955, Ser. No. 543,647

Int. Cl.^{2} H04K *3/00*

U.S. Cl. 343—18 E **8 Claims**

1. Apparatus comprising broad band signal receiving and noise generating means, means for channelizing the output signals of said receiving and generating means according to the frequency content thereof, said channelizing means including a plurality of band pass filters tuned respectively to different frequency channels, means for gating the output of each of said filters including a detector coupled to the output of the associated filter, a switch coupled to the output of said associated filter, and means for closing said switch for a predetermined interval of time in response to an output signal above a predetermined level from the detector, broad band transmitting means, and means for combining and coupling the output signals of said gating means to the transmitting means, whereby the transmitting means produces an output signal having a frequency band coextensive with that of the signal passed by the gating means.



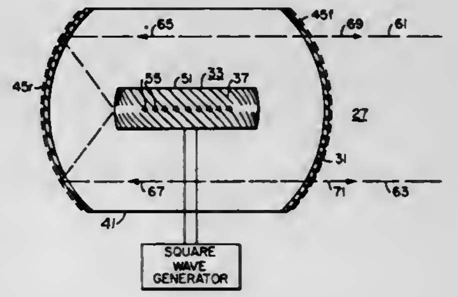
3,896,440
RETRODIRECTIVE PASSIVE BEACON FOR SIMULATING A MOVING TARGET

Myron S. Wheeler, Baltimore, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 26, 1971, Ser. No. 202,470

Int. Cl. H04k *3/00*

U.S. Cl. 343—18 D **17 Claims**



1. A reflector for electromagnetic radiation including an array of conductors of said radiation spaced along a surface by a distance less than one-half wavelength of said radiation, diodes interposed in said conductors at intervals less than one-half wavelength of said radiation, means connected to said diodes for rendering said diodes alternately conducting and non-conducting, said conductors directly reflecting said radiation when said diodes are conducting and transmitting said radiation when said diodes are non-conducting, and means for reflecting the transmitted radiation, said directly reflected radiation and said reflected transmitted radiation being projected in a common beam in which said reflected transmitted radiation and said directly reflected radiation are displaced in phase with reference to each other.

3,896,441
ELECTRIC SIGNALING SYSTEM

Martin R. Richmond, Nashua, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

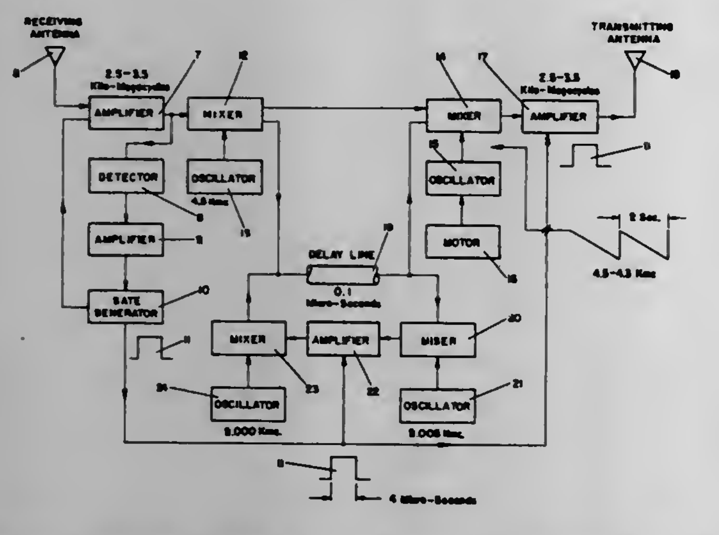
Filed Apr. 14, 1954, Ser. No. 423,178

Int. Cl. G01s *9/56;* **H04k** *3/00*

U.S. Cl. 343—18 E **11 Claims**

1. An electrical apparatus for producing a sequence of pulses of high frequency energy in response to a received pulse, wherein the frequencies of selected produced pulses are successively algebraically increased by a predetermined increment comprising in combination, means for receiving a pulse of high frequency electric energy; means for translating said pulse with a delay of a predetermined time interval; means for converting said delayed pulse into a frequency enhanced pulse having a frequency algebraically increased from that of said delayed pulse by a predetermined increment; means for feed-

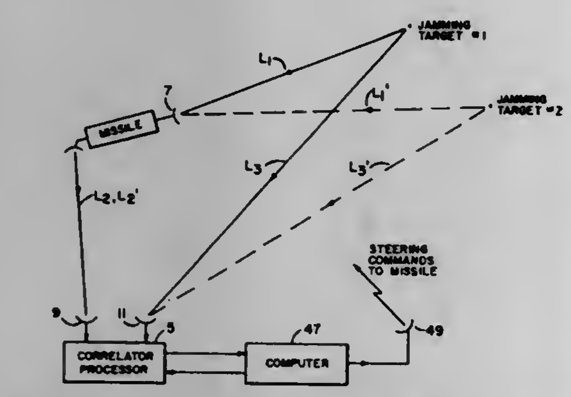
ing back a pulse of a portion of the energy of said frequency enhanced pulse; means for translating said feed-back pulse with a dealy of a predetermined time interval; means for converting said delayed feed-back pulse into a further frequency enhanced pulse having a frequency algebraically increased from that of said delayed feed-back pulse by a predetermined increment; and means for translating the resultant sequence of pulses having successively algebraically increased frequencies.



3,896,442
CORRELATION PROCESSOR

John R. Heminway, Topsfield, and Herbert M. Sanborn, Framingham, both of Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 4, 1973, Ser. No. 392,914
Int. Cl. G01s ***7/36***
U.S. Cl. 343—18 E **6 Claims**

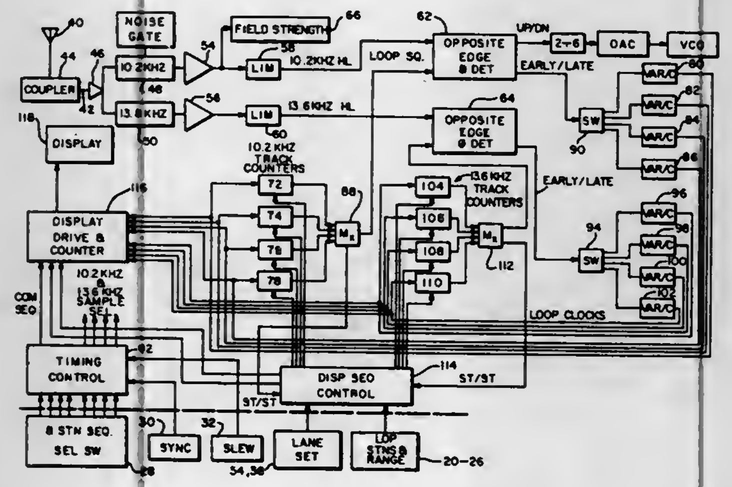


1. Correlator system comprising at least one signal generator means; first, second, and third receiving means; said first receiving means being located spacially from said second and third receiving means; transmitting means on said first receiving means; said first receiving means receiving signals from said signal generating means and transmitting them to said second receiving means; said third receiving means receiving the signals generated by said signal generating means; a variable delay line; first mixer means having first and second inputs and an output; an output of said third receiving means connected through said variable delay line to one of the inputs of said mixer means; an output of said second receiving means being connected to the other input of said mixer means; said variable delay line having a controlled input; further comprising a range control loop connected between the output of said variable delay line and said controlled input; said range control loop comprising first and second channels; each channel having a product detector which has first and second inputs; each product detector having the signal from said second receiving means connected to the first input; a delay line connected between the output of the variable delay line and the other input of said product detector in said first channel; the other input of the product detector in said second channel being connected directly to the output of said variable delay line; a differential amplifier having first and second inputs and an output; the outputs of said product detectors being connected to different inputs of said differential amplifier; and the output of the differential amplifier being connected to the controlled input of said variable delay line.

3,896,443
OMEGA NAVIGATION RECEIVER STATION PAIR SELECTION AND LOP DISPLAY SYSTEM

Harold P. Zitzow, 129 Oak St., Reading, Mass. 01867

Filed June 1, 1973, Ser. No. 366,045
Int. Cl. G01s ***1/30***
U.S. Cl. 343—105 R **7 Claims**



1. In a navigation receiver, a system for providing tracking of a selectable plurality of Omega station broadcasts and determination of phase differences between a plurality of the selected station broadcasts comprising:

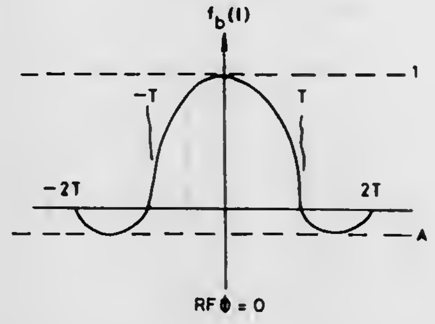
means for receiving the sequence of Omega station broadcasts on at least one frequency thereof;
means for providing operator selection of a plurality of Omega stations which is less than the total in said sequence of broadcasts, the selection being by pairs of said stations;
a plurality of tracking loops for maintaining phase synchronization with received broadcasts;
means for phase synchronizing said tracking loops to said received broadcasts;
means responsive to operator station selection for identifying a separate tracking loop for synchronization to each different, selected station;
single means for detecting the phase difference between two tracking loops; and
means responsive to each station pair selection for sequentially providing phase difference detection of each selected pair by said detecting means.

3,896,444
BLENDING FUNCTION AND BLENDING FUNCTION GENERATOR

Paul Lin, Wollstonecraft, Australia, assignor to Amalgamated Wireless (Australasia) Limited, Australia

Filed Jan. 9, 1974, Ser. No. 432,029
Int. Cl. G01s ***1/40***
U.S. Cl. 343—106 D **2 Claims**

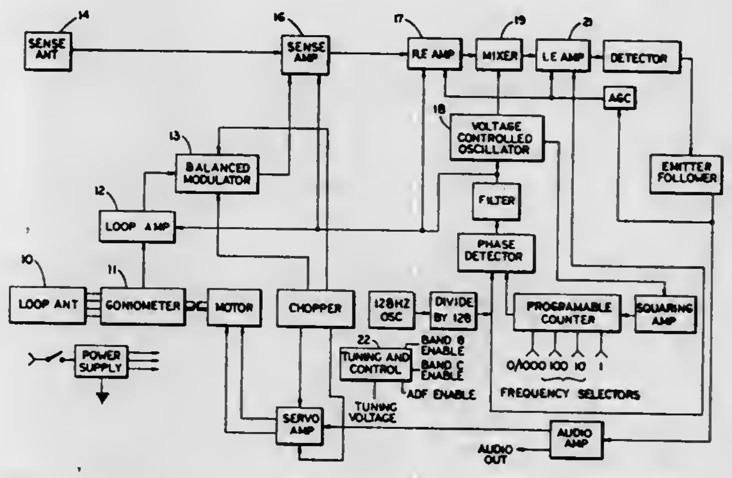
1. A blending function generator as defined herein comprising first means for delivering a cosine-modulated train of radio frequency energy wherein each cosine-modulated lobe has a period 2T seconds where $T = 1/mn$ where m is a number and n is a whole number, second means for delivering a cosine-modulated train of radio frequency energy wherein each cosine-modulated lobe has a period T seconds, wherein the radio frequency energy of the second means has the same frequency as that of the first means but opposite phase and wherein zeros in the cosine-modulated train delivered by the first means coincide with zeros in the cosine-modulated train delivered by the second means, and electronic switching means operative to select and deliver to an output terminal in contiguous successive time intervals a first cosine lobe derived from the second means, a second cosine lobe derived from the first means, and a third cosine lobe derived from the second means.



3,896,445
ELECTRONIC BANDSWITCHING FOR AUTOMATIC DIRECTION FINDER

Lowell G. Atkinson, Indianapolis, Ind., assignor to General Aviation Electronics, Inc., Indianapolis, Ind.

Filed Jan. 2, 1974, Ser. No. 430,241
Int. Cl. G01s ***5/02***
U.S. Cl. 343—117 **5 Claims**



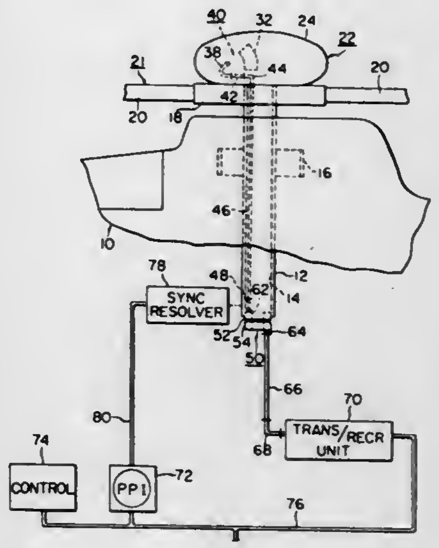
1. An ADF having a plurality of selectable frequency bands and having tuning means for selecting a desired band of the plurality of bands, the tuning means including a plurality of subcircuits connected in parallel, each subcircuit including a capacitor connected in parallel with an inductor, and transistor switching means, in series with certain inductors and capacitors in the plurality of subcircuits, for selectively coupling and decoupling said certain inductors and capacitors in the tuning means, said transistor switching means including:

a transistor switch in series with the capacitor of a first subcircuit of the plurality of subcircuits;
a transistor switch in series with the parallel combination of the capacitor and inductor of a second subcircuit of the plurality of subcircuits; and
for each additional subcircuit, a first transistor switch in series with the capacitor and a second transistor switch in series with the parallel combination of the inductor with the capacitor and first switch.

3,896,446
RADAR MOUNTED ON HELICOPTER

Teruo Kondoh, and Koki Nakatsuka, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed July 13, 1972, Ser. No. 271,526
Int. Cl. H01q ***1/28***
U.S. Cl. 343—705 **6 Claims**



1. A radar apparatus for use with a helicopter having rotor means including a rotary shaft, a rotor head disposed upon the upper end of said rotary shaft, and a plurality of rotor blades radially extending at predetermined substantially equal angular intervals from said rotor head and defining a plane of rotation, said apparatus comprising an antenna system secured on said rotor head above the level of the rotor blades and disposed to have a direction of maximum gain between a selected pair of said adjacent rotor blades and substantially within the plane of rotation, said antenna system being rotatable with said rotor means, an oblate spheroidal radar dome, means mounting said radar dome with said antenna system disposed therein on said rotor head, a transmitter/receiver unit coupled to said antenna system to supply a transmission power to the latter and receive radar signals picked up by said antenna system, means coaxial with said rotary shaft connecting said antenna and said transmitter/receiver, and a rotary joint disposed at the rotor head to connect said antenna system to the lastmentioned means.

3,896,447
ERECTION AND RETRACTION MECHANISM FOR A FOLDABLE ANTENNA AND ITS MAST

Charles P. Majkrzak, Nutley, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

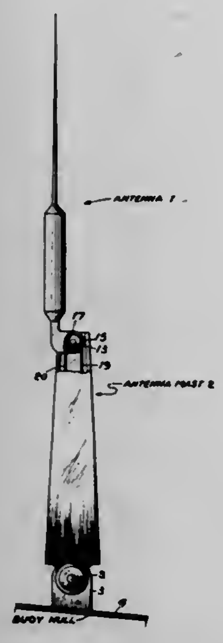
Filed Apr. 22, 1974, Ser. No. 462,825
Int. Cl. H01q ***3/02***
U.S. Cl. 343—709 **46 Claims**

1. A mechanism to erect and retract a foldable antenna and its mast with respect to a base structure comprising:

an antenna;
an antenna mast;
a U-shaped member secured to said base structure, the open end of said U-shaped member extending away from said base structure;
a first shaft extending through the legs of said U-shaped member and the bottom of said mast, said first shaft being connected to the bottom of said mast to prevent said first shaft from rotating relative to the bottom of said mast;
a first pair of disc-like members secured to and non-rotatable upon said first shaft, each of said first pair of disc-like members being connected to a different one of the legs of said U-shaped member;
a second shaft extending through the top of said mast and the bottom of said antenna;

a second pair of disc-like members secured to said second shaft and the bottom of said antenna said second pair of disc-like members being non-rotatable about said second shaft;

a first pair of force transmitting members interconnecting said first and second pair of disc-like members for rotation of said second pair of disc-like members in a first given direction;



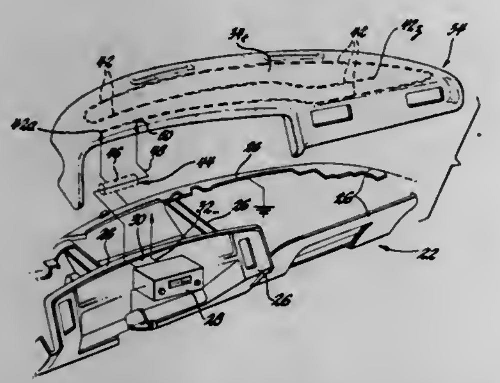
a second pair of force transmitting members interconnecting said first and second pair of disc-like members for rotation of said second pair of disc-like members in a second given direction opposite to said first given direction; and

drive means connected to said first shaft to drive said shaft for control of the erection and retraction of said antenna mast and said antenna.

3,896,448
INSTRUMENT PANEL RADIO ANTENNA

Charles W. Killen, Piqua, and Robert W. Forward, Centerville, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed June 11, 1973, Ser. No. 368,540
Int. Cl. H01q *1/32*
U.S. Cl. 343—713 **1 Claim**

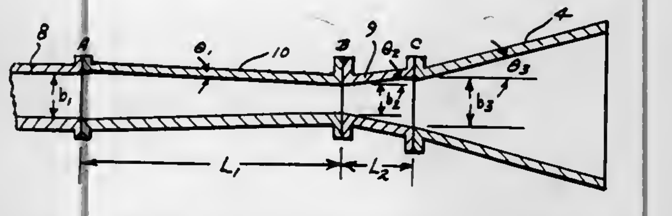


1. In an automotive vehicle, the combination comprising: an instrument panel assembly having a top edge extending approximately horizontally across the interior width of the vehicle body; a conductive body structure forming a shield by which radio waves are normally prevented from entering the vehicle, the body structure including a windshield opening having a lower edge extending approximately horizontally across the exterior width of the vehicle body generally parallel to and spaced forward of the top edge of the instrument panel assembly and having an upper edge extending approximately horizontally across the exterior width of the vehicle body generally parallel to and spaced rearward of the lower edge of the windshield opening so that radio waves directed downward through the windshield opening from outside of the vehicle body pass through an irradiated space defined between the lower edge of the windshield opening and the top edge of the instrument panel assembly; a radio receiver mounted within the instrument panel assembly; a top portion of the instrument panel assembly extending within the irradiated space and including a nonconductive rigid inner layer, a nonconductive pliable outer layer, a nonconductive resilient intermediate layer interposed between the inner and outer layers, and a conductor physically disposed within the intermediate layer between the inner and outer layers for inductively collecting passing radio waves to provide an antenna which is protected from potentially damaging forces outside of the vehicle and which does not detract from the aesthetic appearance of the vehicle; and a transmission line for coupling the radio receiver to a point on the antenna conductor at which the output impedance of the antenna conductor is approximately matched to the input impedance of the radio receiver thereby to maximize the electrical efficiency with which radio waves are transferred from the antenna conductor to the radio receiver and wherein the close proximity of the antenna conductor to the radio receiver minimizes the length of the transmission line such that the amount of signal antennuation and impedance mismatch produced by the relatively small impedance of the transmission line is negligible.

3,896,449
APPARATUS FOR PROVIDING HIGHER ORDER MODE COMPENSATION IN HORN ANTENNAS

Alan E. Blume, Trotwood, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Division of Ser. No. 360,517, May 15, 1973, abandoned. This application Feb. 22, 1974, Ser. No. 445,048
Int. Cl. H01q *13/00*
U.S. Cl. 343—786 **2 Claims**



1. An LSE_{12} mode compensated antenna comprising

a first rectangular waveguide segment having an inward E-plane flare, the input end thereof being adapted for connection to a rectangular waveguide transmission line, a second rectangular waveguide segment having an outward E-plane flare having its nonflared end connected to the output end of a said first waveguide segment, and

a rectangular antenna horn having an outward E-plane flare connected at its input end to the flared end of said second waveguide segment,

said second waveguide segment having length and flare angle values that effect the generation and phase reversal of LSE_{12} mode power.

3,896,450
HARDENED ANTENNA ELEMENT COVER

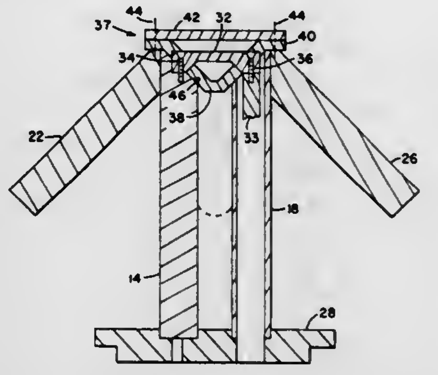
Nancy D. Fitzroy, Schenectady; Ronald L. Mann; Henry B. Gerling, both of North Syracuse, and John D. Reale, Syracuse, all of N.Y., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 23, 1974, Ser. No. 508,584
Int. Cl.^{2} H01Q *1/42*
U.S. Cl. 343—797 **2 Claims**

1. In an antenna element including a pair of dipole assemblies, cover means for protecting said element against rain and thermal radiation comprising:

a. a frusto-conical member mounted on top of said dipole assemblies; and,

b. an upper plate mounted on top of said frusto-conical member;

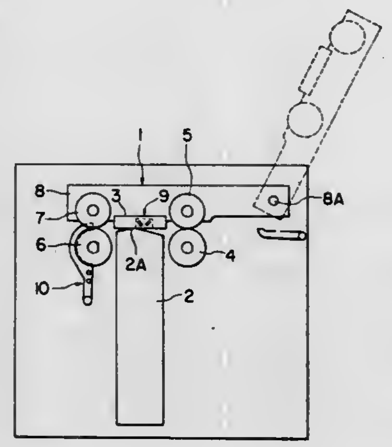


c. said plate and said frusto-conical member comprised of polytetrafluoroethylene filled laminated fiberglass.

3,896,451
ELECTROSTATIC RECORDING APPARATUS WITH AUTOMATIC MOVEMENT OF THE RECORDING ELECTRODES BETWEEN A RECORDING AND A NONRECORDING POSITION

Kyoji Omi, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Mar. 23, 1973, Ser. No. 344,137
Claims priority, application Japan, Apr. 12, 1972, 47-36103
Int. Cl. G01d *15/16;* **G03g** *15/22*
U.S. Cl. 346—74 ES **9 Claims**

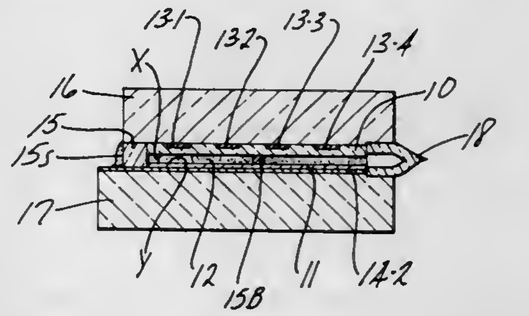


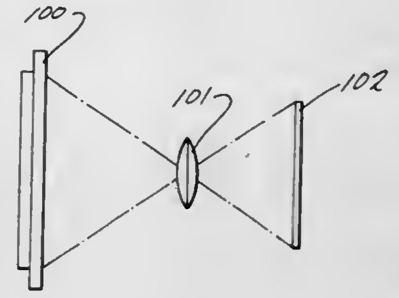
1. An electrostatic recording apparatus comprising means for moving a recording sheet along a defined path, recording electrode means disposed at the other side of the path, means for supporting the electrode means, means for detecting the presence of a recording sheet at a defined portion of said path to provide control signals in response to detecting the presence of a sheet at said defined portion of the path, means responsive to the said control signals from the detecting means for causing the support means to maintain the two electrode means at a recording position adjacent and facing each other across said path when a sheet is present at said defined portion of the path and to maintain the two electrode means at a nonrecording position away from each other when no sheet is present at said defined portion of the path and to move the electrode means between said two positions, said defined portion of the path including the path portion which is between the two electrode means when the electrode means are at their recording position, wherein the detecting means comprises first sensor means disposed in the path of the recording sheet preceding at least one of the electrode means and second sensor means disposed in the path of the recording sheet after at least one of the electrode means, as seen in the direction of movement of the recording sheet along said path, each of said sensor means being actuated by the presence of a recording sheet at its location, said sensor means providing said control signals when actuated.

3,896,452
RECORDING OF INFORMATION FROM GASEOUS DISCHARGE DISPLAY/MEMORY PANEL

Felix H. Brown, Ann Arbor, Mich., assignor to Owens-Illinois, Inc., Toledo, Ohio

Continuation-in-part of Ser. No. 101,102, Dec. 23, 1970, Pat. No. 3,821,748. This application Mar. 11, 1974, Ser. No. 449,891
Int. Cl. H01j *61/33;* **G01d** *15/06;* **H05h** *41/44*
U.S. Cl. 346—74 P **12 Claims**





1. In the operation of an apparatus comprising in combination a gaseous discharge display/memory panel and an image recording device, said panel being characterized by an ionizable gaseous medium in a gas chamber formed by a pair of dielectric material members having opposed charge storage surfaces, which dielectric material members are capable of transmitting light therethrough and are respectively backed by a series of parallel-like electrode members, the electrode members behind each dielectric material member being transversely oriented with respect to the electrode members behind the opposing dielectric material member so as to define a plurality of discrete discharge volumes, each of which constitutes a discharge unit, and wherein the gas is selectively ionized within each discharge unit by operating voltages applied to the transversely oriented electrode members, said image recording device being characterized by a photosensitive surface facing one of said dielectric material members for directly receiving and recording an image, the improvement which comprises generating an image comprised of one or more gaseous discharge units such that image radiation is emitted from the discharge units in opposite directions through both said dielectric material members, said image emerging through said one dielectric material member being received by one side of a photoconductive material thereby causing a charge pattern corresponding to the image to be deposited onto a dielectric-coated, electrically conductive paper positioned on the opposite side of the photoconductor, when an electric field is applied across the array of photoconductor and paper.

3,896,453

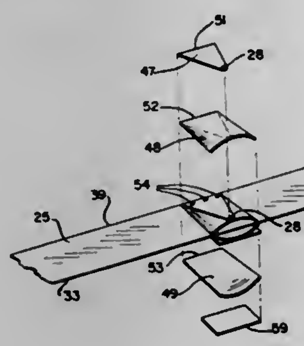
SPRING LOADING FOR THE STYLUS OF A PRESSURE-ENSITIVE CHART RECORDER

Richard S. Kampf, Costa Mesa, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Continuation-in-part of Ser. No. 344,498, March 26, 1973, Pat. No. 3,852,769. This application Oct. 9, 1973, Ser. No. 404,302

Int. Cl. G01d *15/00*

U.S. Cl. 346—139 C **10 Claims**



1. An improved chart recorder of the type having a pressure-sensitive chart longitudinally movable between a backing plate and a transparent front plate and a stylus-carrying strip movable transversely to the direction of chart movement between said chart and one of said plates, wherein the improvement comprises:

upper and lower arch springs secured to opposite sides of the stylus-carrying strip with the stylus means secured to one of said arch springs.

3,896,454

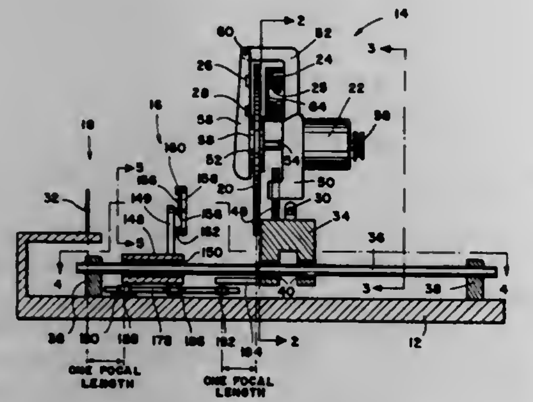
PHOTOTYPESETTING MACHINE

Harry L. Hosterman, Akron, Ohio, assignor to Portage Newspaper Supply Co., Akron, Ohio

Division of Ser. No. 171,941, Aug. 16, 1971. This application Feb. 27, 1974, Ser. No. 446,488

Int. Cl. B41b *15/08*

U.S. Cl. 354—15 **2 Claims**



1. In a phototypesetting machine having:
- a mechanism for holding a sheet of photographic paper in a plane and for advancing the paper along the plane;
- a disc having at least one ring of negative images of type characters and an identifying mark for each image of the ring, the disc being parallel to but spaced from the plane of the paper;
- a motor for rotating the disc;
- a strobe light on the opposite side of the disc from the paper;
- a lens between the paper and the disc and on the optical axis from the strobe light to the paper;
- a light source for illuminating the identifying marks of the disc in sequence as the disc is rotated;
- photoelectric sensing means for translating the illuminated identifying marks into electrical signals;
- means to select an individual character, the means producing an electrical signal identifying the selected character;
- a match detector for comparing the signal produced by the photoelectric sensing means and the signal from the selecting means to indicate when the selected character corresponds to the character on the disc detected by the sensing means; and
- a strobe firing circuit triggered by the match detector whereby the strobe light is fired to illuminate the selected character image of the disc and project the image through the lens to the paper, the improvement comprising:
- a character width indicating mark upon the disc for each character of the ring, an additional photoelectric sensing means being provided to sense each width indicating mark and produce an electrical signal corresponding to the width of the associated character, and circuit means receiving the signal from the additional sensing means for controlling the mechanism for advancing the paper to advance the paper a distance proportional to the width of the projected character,
- said circuit means including an oscillator, an arithmetic updown register, a gate controlled by the additional photoelectric sensing means for supplying a pulse train proportional in length to the character width from the oscillator to the register to cause the register to count up, and a pulse generator responsive to movement of the paper to generate a pulse train proportional in length to the amount of paper advanced, the pulse train from the pulse generator causing the register to count down, wherein the paper advancing mechanism includes a second motor, a drive capstan driven by the motor and engaging the paper to advance the same and an electromagnetically operated brake operative to engage the paper and prevent its movement, the circuit means controlling the brake, the brake being controlled by the register whereby the brake is released while the register is counting down.

3,896,455

APPARATUS FOR CONTROLLING THE EXPOSURE OF PHOTOGRAPHIC FILM

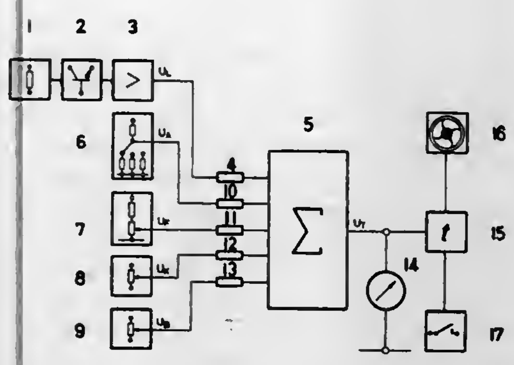
Alfred Steinbatz, Vienna, Austria, assignor to C. Reichert Optische Werke AG, Vienna, Austria

Filed Nov. 29, 1973, Ser. No. 420,355

Claims priority, application Austria, Dec. 1, 1972, 10218/72

Int. Cl.² G03B *7/08, 17/16*

U.S. Cl. 354—24 **2 Claims**



1. A control for determining exposure time for photomicrographic apparatus and operating the shutter of said apparatus responsive to the influence of photographic environment such as camera format, film sensitivity and light flux comprising:
- means for generating an electrical signal responsive to the light flux adjacent a photographic subject including means for detecting light adjacent said subject, means for generating an electrical signal proportional thereto and means for converting said electrical signal to a second electrical signal proportional to the value of an exponent of a predetermined base value of said light value;
- means for generating an electric signal responsive to the format of said photographic apparatus including means for generating an electrical signal proportional to the value of an exponent of said predetermined base value of said format signal;
- means for generating an electric signal responsive to the sensitivity of the film of said photographic apparatus including means for generating an electric signal proportional to the value of an exponent of said predetermined base value of said sensitivity signal;
- means for generating an electric signal responsive to the change of sensitivity of the film of said photographic apparatus including means for generating an electric signal proportional to the value of an exponent of said predetermined base value of said change of sensitivity signal;
- means electrically connected to said exponential electric signal generating means for summing said signals including means for generating an output electric signal proportional to said sum; and
- means for displaying the relative value of said output signal and means connected to said output signal and said shutter for driving said shutter responsive to said output signal.

3,896,456

ELECTRONIC SHUTTER WITH MEMORY FUNCTION

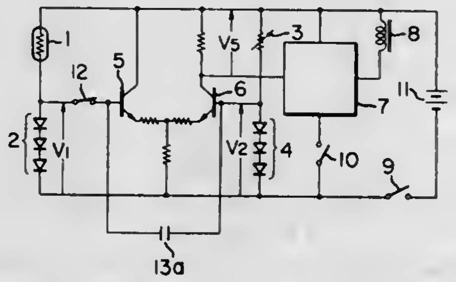
Kenji Toyoda, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Apr. 2, 1974, Ser. No. 457,179

Claims priority, application Japan, Apr. 10, 1973, 48-42902

Int. Cl. G03b *7/08*

U.S. Cl. 354—24 **2 Claims**



1. In an electronic shutter circuit having:
- a light measuring circuit for producing an output voltage in logarithmic proportion to the intensity of light passed from an object through an objective lens;
- a second circuit means for producing an output voltage in logarithmic proportion to at least one exposure factor;
- a memory capacitor for storing a voltage related to said output voltage of said light measuring circuit;
- a memory switch for connecting said memory capacitor to said measuring circuit, and means for opening said memory switch before the shutter is opened;
- a differential amplifier including a first input terminal connected to the output terminal of said measuring circuit through said memory switch and a second input terminal connected to the output terminal of said second circuit; control circuit means for controlling an exposure time in response to the output of said differential amplifier, said control circuit means including a magnet and a further switch for connecting said magnet to a power source, and means for closing said further switch after said memory switch is opened,

said capacitor being connected between said first and second input terminals of said differential amplifier,

whereby said memory capacitor stores the difference between the output voltages of said measuring and second circuits and after said memory switch is opened the output voltage of said differential amplifier is determined solely by the voltage stored in said memory capacitor.

3,896,457

AUTOMATIC FOCUSING DEVICE

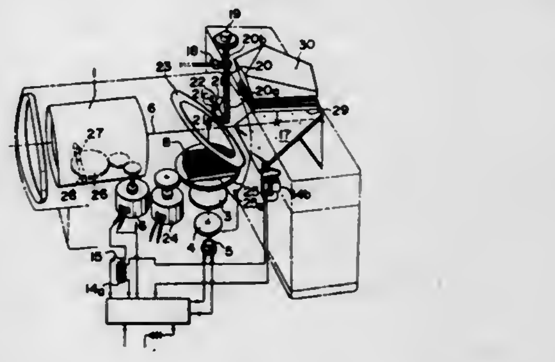
Akio Yamanishi, and Yasuo Yamazaki, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Nov. 29, 1973, Ser. No. 420,337

Claims priority, application Japan, Dec. 7, 1972, 47-122034

Int. Cl. G03b *3/10*

U.S. Cl. 354—25 **15 Claims**



1. An automatic focussing device comprising:
- an objective lens;
- a focus detecting plane for detecting a focus of an image to be formed through said objective lens;
- a focussing prism member disposed at said focus detecting plane including a first area having a light refracting characteristic and a second area having a light refracting characteristic different from that of said first area;
- means for cyclically reciprocating said prism member along said detecting plane in a direction perpendicular to the boundary between said areas to vary the refraction of said image;
- a photoelectric element disposed rearwardly of said focussing prism member on the geometrical extension of the optical axis of said objective lens and having a light receptive surface;
- a relay lens disposed between said focussing prism member and said photoelectric element which are positioned on said extension of optical axis, and focussing light of an image to be formed through said objective lens adjacent to a plane including said light receptive surface; and
- means for shifting said objective lens along the optical axis thereof so as to decrease AC output components from said photoelectric element which are responsive to the light incident thereon.

3,896,458

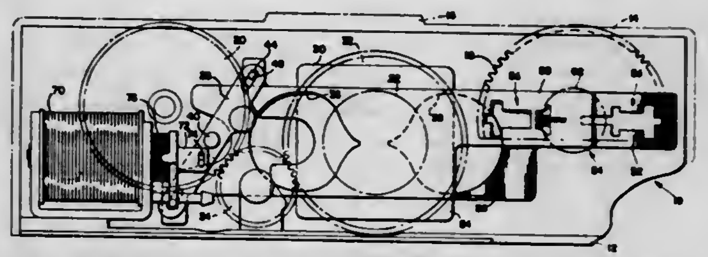
AUTOMATIC EXPOSURE CONTROL SYSTEM

Bruce K. Johnson, Andover, and George D. Whiteside, Lexington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation of Ser. No. 376,513, July 5, 1973, abandoned. This application Aug. 5, 1974, Ser. No. 494,994

Int. Cl. G03b *7/08, 7/16, 9/42*

U.S. Cl. 354—30 **21 Claims**



1. A photographic exposure control system for exposing, during a given flash illumination interval, photographic film located at a given film plane, said system comprising a variable lens assembly for directing image carrying rays from a scene along a given exposure path and for focusing such rays on such

photographic material, and control means for controlling the instantaneous amount of light rays passing from such scene along such exposure path during an exposure cycle and for defining a related time interval during which such instantaneous amount of light is passed along such exposure path so as to provide an exposure interval and thereby determine the total amount of light passed to such film during such exposure cycle and, in response to focusing of said lens assembly, for determining a unique relationship between said instantaneous defining means and said exposure time interval defining means so as to provide an optimized exposure at selected subject distances, such relationship being varied at an intermediate subject distance so as to provide an exposure interval utilizing almost all of the flash interval and greater than the amount of flash interval utilized at focus settings for subject distances at least slightly less than or slightly greater than such intermediate distance so as to preclude over exposure of subjects at this intermediate distance.

8. A photographic exposure control system for exposing with flash illumination photographic material located at a given film plane, said system comprising a variable lens system for directing image carrying rays along a given exposure path from a scene and focusing such rays on such material, selectively operable shutter means for blocking and unblocking such exposure path, means for actuating said shutter means to unblock said path so as to initiate an exposure cycle, a light sensitive element configured for automatically actuating said shutter means to block said exposure path responsive to the brightness of such scene following initiation of an exposure cycle, said shutter means including means for determining a primary aperture opening of given size within a given range for control of the instantaneous amount of light passed to such film and for determining a secondary aperture opening of given size within a given range for control of the instantaneous amount of scene light emitted to said light sensitive element, follow-focus means responsive to selected focusing of said lens for selecting a given size of said main and said secondary apertures, said follow-focus means including means for determining said apertures over a first range of values for near to intermediate subject distances and a second range of values for intermediate to far subject distances.

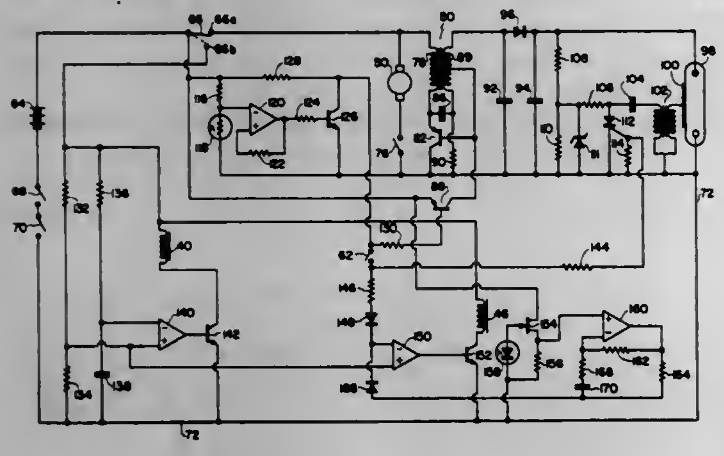
3,896,459
CONTROL CIRCUIT FOR AN AUTOMATIC PHOTOGRAPHIC CAMERA

Francis T. Ogawa, Lakewood, and John D. Wallace, Denver, both of Colo., assignors to Honeywell Inc., Minneapolis, Minn.

Filed May 29, 1974, Ser. No. 474,353

Int. Cl. G03b *15/05, 7/08*

U.S. Cl. 354—31 **5 Claims**



1. In an automatic camera featuring a plurality of automatic control functions including an electronically controlled shutter, an automatic film advance means, an automatic shutter reset means and an electronic flash unit, a control system for controlling the sequence and actuation of said control functions, said control system comprising:

a sequence initiate switch means having a reset condition and an actuated condition, said switch being operable to selectively connect portions of said control system to an energy source means,

an oscillator circuit means for energizing said electronic flash unit, said oscillator circuit means being coupled to the energy source means through said reset condition of said sequence initiate switch means;

a first light sensing circuit for sensing the intensity of ambient light,

first signal means responsive to said first light sensing circuit for producing a signal having a first signal level when said ambient light is below a predetermined value and a second signal level when said ambient light is above said predetermined value,

oscillator control means responsive to said signal from said first signal means, said oscillator control means being operative to enable said oscillator circuit means to be responsive to said first signal level and to block said oscillator circuit means from being responsive to said second signal level,

a shutter opening control circuit operative to introduce a momentary delay in the initiation of opening of the shutter, said shutter opening control circuit being coupled to the energy source means through said actuated condition of said sequence initiate switch means,

a shutter closing control circuit operative to selectively delay the closure of the shutter, said shutter closing control circuit being coupled to the energy source means through said actuated condition of said sequence initiate switch means,

a second light sensing circuit for sensing the amount of light admitted through the opening of the shutter, and

second signal means responsive to said second light sensing circuit to produce a control signal representative that a predetermined amount of light had admitted through the shutter opening, said shutter closing control circuit being responsive to said control signal to effect the closure of the shutter.

3,896,460
ELECTRIC SHUTTER FOR PROGRAMMED EXPOSURE CONTROL

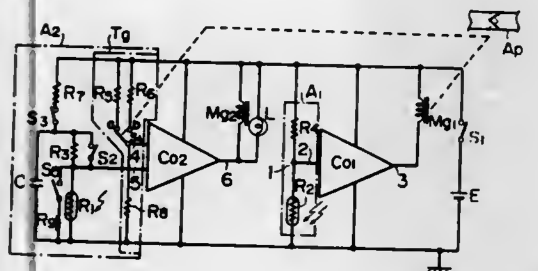
Masayoshi Sahara, and Sinji Tominaga, both of Sakai, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 31, 1973, Ser. No. 393,584

Claims priority, application Japan, Aug. 31, 1972, 47-101939

Int. Cl. G03b *7/08*

U.S. Cl. 354—38 **4 Claims**



1. Exposure control apparatus for programmed exposure control of a camera according to the intensity of scene illumination, said exposure control apparatus comprising:

a. light responsive means responsive to the intensity of the scene illumination for providing first and second output signals corresponding thereto, said light responsive means including means for providing an output level which changes in one direction from an initial level at a ratio determined by said second output signal, from initiation of the exposure;

b. first drive means actuable for facilitating the setting of the lens aperture of the camera between a first relatively large aperture and a second relatively small aperture;

c. first switching means responsive to the first output signal representative of a scene illumination above a predetermined level for actuating said first drive means to set the lens aperture from said first relatively large aperture to said second relatively small aperture and responsive to the first output signal representative of a scene illumination below said predetermined level for actuating said first drive means to set the lens aperture from said second relatively small aperture to said first relatively large aperture;

d. second drive means for terminating the exposure interval of the camera shutter;

e. second switching means for actuating said second drive means, said second switching means actuating said second drive means when said output level from the providing means traverses a variable threshold value, said first drive means setting the variable threshold value of said second switching means to a level relatively near said initial level when the lens aperture of the camera is set at its relatively large aperture opening and setting the variable threshold value to a level relatively far from said initial level when the lens aperture of the camera is set at its relatively small aperture opening.

3,896,461
CAMERA EXPOSURE CONTROL SYSTEM HAVING A DAMPING COIL

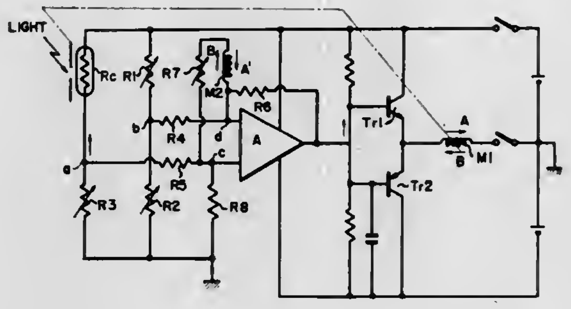
Toyonori Higuma, Tokyo, Japan, assignor to Kabushiki Kaisha Yashica, Tokyo, Japan

Filed Dec. 20, 1973, Ser. No. 426,586

Claims priority, application Japan, Dec. 30, 1972, 47-459

Int. Cl. G03b *7/10, 9/02, 19/18*

U.S. Cl. 354—44 **4 Claims**



1. In a control system for adjusting the size of the aperture of a camera lens diaphragm so as to provide automatic exposure control, the combination comprising:

a servomotor, including a drive coil, for driving the diaphragm to adjust the aperture size under control of a drive signal supplied to the drive coil;

first circuit means for providing first and second voltage signals whose relative magnitude is indicative of whether the aperture size should be increased or decreased for proper exposure, the first circuit means including a bridge circuit having first and second bridge output terminals, the bridge circuit including a photoelectric circuit element connected in one arm of the bridge circuit for sensing light passing through the aperture and, in response thereto, causing the bridge circuit to provide the first and second voltage signals on the first and second bridge output terminals respectively;

a damping coil, magnetically coupled to respond to movement of the diaphragm, for providing a damping signal; and

second circuit means for combining the damping signal and the first and second voltage signals to form the drive signal so as to control the servomotor in driving the diaphragm without substantial vibration;

the second circuit means including an operational amplifier having a non-inverting input terminal coupled to respond to the first voltage signal, an inverting input terminal coupled to respond to the second voltage signal, and an amplifier output terminal coupled to the drive coil; negative feedback circuit means connected to the operational amplifier so that the non-inverting and inverting input terminals operate with virtually no voltage therebetween; and

the damping coil being connected in series-circuit relationship between the non-inverting and inverting input terminals.

3,896,462
EXPOSURE VALUE CORRECTING DEVICE IN AN INTERCHANGEABLE LENS CAMERA PROVIDED WITH A TTL EXPOSURE METER

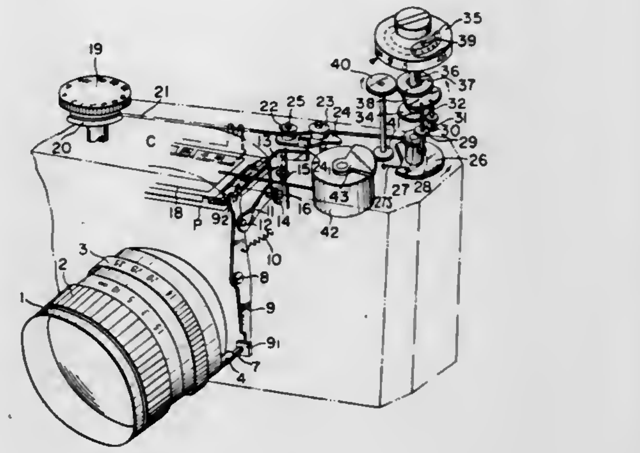
Tatsuya Taguchi, Tokyo, and Yukio Iura, Yokosuka, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 24, 1973, Ser. No. 391,343

Claims priority, application Japan, Sept. 1, 1972, 47-102576

Int. Cl. G03b *7/20*

U.S. Cl. 354—46 **5 Claims**



1. A camera equipped with an interchangeable lens and arranged for viewfinding and photometry at maximum lens aperture, comprising:

an aperture preset control means on said lens coupled with said camera;

an indicating member on said lens having a dimension indicative of the maximum value of the relative aperture of said lens;

a viewfinder;

a through-the-lens photometry system including a meter having a meter body and a pointer and also including means responsive to light received through said lens for actuating the meter in accordance with light quantity so received, the position of said pointer being visible in said viewfinder;

displaceable relative aperture scale means mounted in said viewfinder for indicating with reference to said pointer an aperture preset value to be used;

means responsive to said dimension of said indicating member of said lens for shifting said scale means so that the scale division thereof corresponding to the maximum relative aperture of the lens is at a predetermined position in the camera;

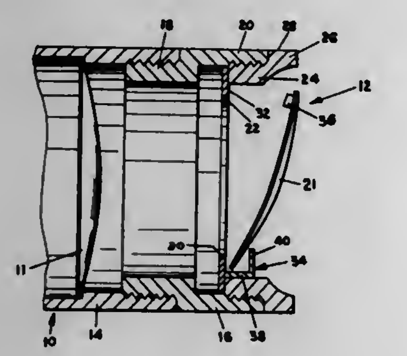
means responsive to the extent of displacement of said scale shifting means beyond a predetermined displacement thereof for applying to said photometry system a correction for the vignetting effect that occurs in lenses having a maximum relative aperture value greater than a a predetermined value.

3,896,463

ACCESSORY MOUNTING APPARATUS FOR CAMERA

Donald M. Laskey, 2143 Wealthy S.E., Grand Rapids, Mich. 49506

Filed Jan. 2, 1974, Ser. No. 429,511
Int. Cl. G03b *17/12*
U.S. Cl. 354—122 **6 Claims**



1. Apparatus for mounting accessories in the form of solid, non-magnetic disc members on the barrel of a camera comprising:

an annular ring formed of magnetically permeable material mounted on the end of the camera barrel;

mechanical retaining means positioned adjacent the outer surface of the annular ring and adapted to engage and hold one side of an accessory next to the ring, the mechanical retaining means comprising pocket means formed adjacent the outer surface of the annular ring and adapted to receive an outer edge of the accessory;

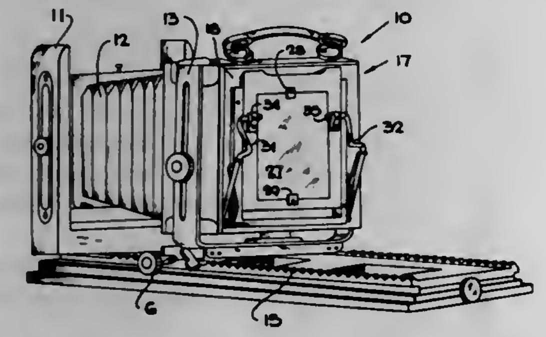
magnetic mounting means affixed directly to each accessory at a point adjacent the outer periphery thereof, such that one side of the accessory is held in place by said retaining means and the other side of the accessory is magnetically attached to the ring by interaction between the magnetic mounting means and the ring, the magnetic mounting means comprising a magnet mounted at a point on the outer periphery of the accessory such that one edge of the accessory fits in the pocket means and the other side of the magnet is held against the annular ring by interaction of the magnet and the annular ring.

3,896,464

HOLDING MEANS FOR HOLDING A ROLL OR SHEET FILM HOLDER IN PRESS AND VIEW CAMERAS

James Murry Galvin, 920-47th St., Sacramento, Calif. 95819

Filed May 13, 1974, Ser. No. 469,077
Int. Cl. G03b *17/44*
U.S. Cl. 354—161 **13 Claims**



1. In a roll, sheet or Polaroid film holder holding means for a press or view camera or the like wherein said holding means includes a back panel, a focusing panel, cooperating means on both the back panel and the focusing panel for connecting said focusing panel to said back panel and urging said focusing panel against said back panel while permitting said focusing panel to be moved away from said back panel to allow the insertion of a roll or sheet or Polaroid film holder between said focusing panel and said back panel wherein said roll film holder is substantially greater in thickness than said sheet or Polaroid film holder, said focusing panel having a ground glass opening therein aligned with an opening in said back panel when said focusing panel is urged against said back panel, the improvement which comprises:

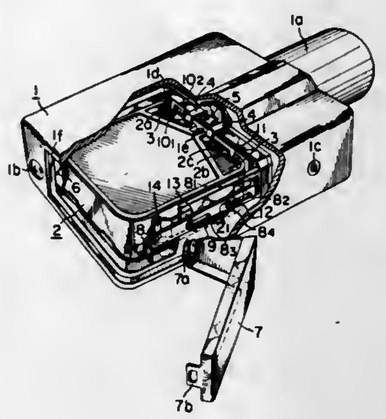
said cooperating means includes a pair of arms, one of said arms being pivotally connected at one end to one side of said back panel and at the other end pivotally connected to said focusing panel on the side opposite the side thereof adapted to abut said back panel, the other of said arms being pivotally connected at one end to the opposite side of said back panel and at the other end pivotally connected to said focusing panel, on the side opposite the side thereof adapted to abut said back panel, and tensioning means associated wiht each of said arms, each of said tensioning means being operatively connected at one end to said back panel and at the other end to said respective arm, wherein said back panel includes a guide having at least a pair of spaced elongated guide members disposed on each side of the opening in said back panel and spaced therefrom, said focusing panel being retained between said elongated guide members when said focusing panel is in abutting engagement with said back panel.

3,896,465

CAMERA USING A FILM MAGAZINE

Tomoshi Takigawa, and Yoshio Komine, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 251,002, May 8, 1972, abandoned. This application Dec. 13, 1973, Ser. No. 424,434
Int. Cl.² G03B *19/10*
U.S. Cl. 354—174 **7 Claims**



1. A camera system comprising:

A. a film magazine accommodating a film therein, said magazine having two face sides and having peripheral sides substantially perpendicular to said face sides and including
  a. an opening for exposing the film provided in a first peripheral side of said magazine,
  b. first and second recesses both provided on a first face side of said magazine, located near its junction with said first peripheral side so as to leave walls respectively between said recesses and said first peripheral side and located on opposite sides of and spaced from the center of said first peripheral side,
  c. at least first and second signal applying portions symmetrically provided on said first peripheral side of said magazine, said first signal applying portion including first cut-away portion means for signaling the sensitivity of the film accommodated in said magazine, and said second signal applying portion including second cut-away portion means for signaling the type of film accommodated in said magazine, said first and second cut-away portion signaling means being respectively cut-away portions of said walls respectively between said first and second recesses and said first peripheral side, but in each case occupying only a part of said wall and leaving a substantial length thereof unaffected, and

  d. an index recess provided in said first peripheral side, constituting also a recess in said first face side and located substantially midway between said first and second recesses; and

B. a camera including,
  a. driving means for feeding the film accommodated in said magazine,
  b. a photographic optical system for focusing light from an object to be photographed on an image forming plane,
  c. a filter selectively disposed across the optical path of said photographic optical system,
  d. a chamber for accommodating said film magazine and having an opening provided at the rear of said camera for loading or unloading said film magazine, said chamber being provided with an opening for permitting the exposure of the film on a first side of said chamber which side corresponds to said first peripheral side of said magazine,
  e. a cover for selectively covering said rear opening of said chamber for loading or unloading,
  f. an index member for positioning in place said magazine within said chamber by engaging with said index recess of said magazine, said index member projecting into said chamber of said camera,
  g. means for sensing the sensitivity of the film accommodated in said chamber, said film sensitivity sensing means being provided with a plurality of switching members for on-off control in response to the sensing of said first cut-away portion means of said magazine for signaling film sensitivity, which members are provided adjacent the location of said first signal applying portion of said magazine when in said chamber,
  h. means for sensing the type of the film accommodated in said magazine, said film type sensing means being provided with a detecting member for controlling said filter in response to the presence or absence of said second cut-away portion signaling means of said magazine,
  i. a film footage counter for indicating the consumption of the film, said counter being selectively mechanically linked with said driving means, and when linked, being placed in operating condition,
  j. means for detecting the presence or absence of said film magazine in said chamber of said camera to actuate said film footage counter, said magazine detecting means being urged into said chamber, and having a detecting member for, when detecting the presence of said magazine accommodated in said chamber, causing said counter to be mechanically linked with said driving means,
  k. a first resilient member for resiliently urging said magazine against said first side of said chamber, said first resilient member having resilient segments for engaging with said first and second recesses of said magazine over the portion of said walls unaffected respectively by said first and second signal applying portions of said magazine,
  l. a second resilient member for cooperating with said first resilient member to hold said magazine within said chamber, said second resilient member being disposed within said chamber and applying a resilient force in the direction substantially perpendicular to that of the second resilient member, and
  m. releasing means for permitting the unloading of said magazine from said chamber through said opening of said chamber provided at the rear of the camera, said releasing means having a sliding member provided with an engaging portion engageable with a portion of said magazine to permit the removal of said magazine and an operating portion for permitting movement of said engaging portion when said cover is opened;

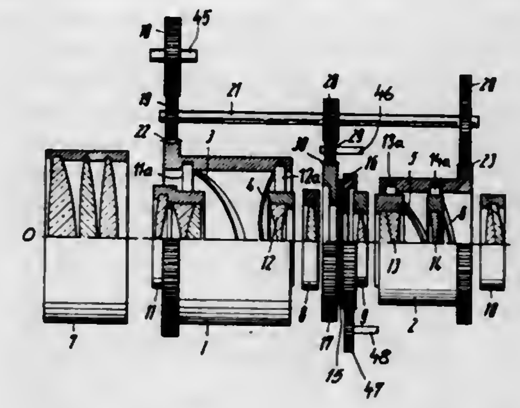
whereby, when said magazine is accommodated within said chamber, said magazine is held in place regardless of the position of said cover, and camera setting corrections responsive to the film sensitivity and control of the filter are automaticallv effected.

3,896,466

CONTROL MECHANISM FOR VARIFOCAL OBJECTIVE

Heinz Korpert, Bad Kreuznach, Rhineland, Germany, assignor to Jos. Schneider & Co., Bad Kreuznach (Rhineland), Germany

Filed Dec. 5, 1973, Ser. No. 421,931
Claims priority, application Germany, Dec. 6, 1972, 2259723
Int. Cl. G03b *5/02*
U.S. Cl. 354—196 **11 Claims**



1. A varifocal objective comprising:

a front lens group centered on an axis including a first pair of shiftable components each movable along said axis at a rate different from that of the other component;

a rear lens group coaxial with said front lens group including a second pair of shiftable components each movable along said axis at a rate different from that of the other component;

a first rotable element;

first cam means operatively connecting said first rotatable element with said first pair of components;

a second rotatable element;

second cam means operatively connecting said second rotatable element with said second pair of components; and

a common control mechanism for all said components including a rotatable drive member mechanically coupled with both said elements for rotating same.

2. A varifocal objective as defined in claim 1, further comprising a diaphragm of variable aperture provided with adjusting means and coaxially interposed between said front and rear lens groups, said control mechanism being operatively coupled with said adjusting means for changing said aperture upon rotation of said second element.

3,896,467

COMPACT PHOTOGRAPHIC CAMERA

Yoichi Hamada, Nishinomiya, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 14, 1973, Ser. No. 388,301
Claims priority, application Japan, Sept. 30, 1972, 47-98311
Int. Cl. G03b *19/04*
U.S. Cl. 354—204 **7 Claims**

1. A compact photographic camera which comprises in combination:

a housing structure including a viewfinder through which an object to be photographed is aimed at, a film chamber adapted to accommodate therein a roll of unexposed film, a film take-up chamber adapted to accommodate the roll of film after said film has been exposed and transferred from said film chamber thereto, said film having a plurality of equidistantly spaced film perforations along a portion adjacent to at least one of the opposite lengthwise edges of said film, and a light passage through which said film is exposed;

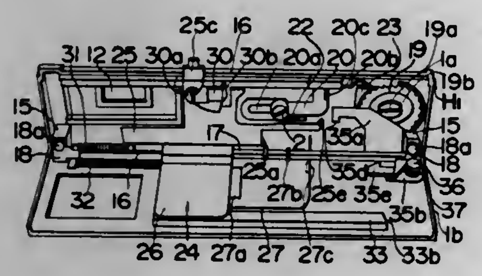
a lens assembly carried by said housing structure in alignment with said light passage;

a first plate means having an exposure aperture and being movable between inoperative and operative positions across the optical axis of said lens assembly with said exposure aperture traversing said optical axis of said lens assembly, said film being exposed only when said first plate means moves from said operative position to said inoperative position with said exposure aperture substantially aligned with said lens assembly;

a first means for biasing said first plate means in one direction to said inoperative position;

a second plate means movable between first and second positions, said first plate means being moved to said operative position in response to movement of said second plate means from said first position when an external force is applied to osaid second plate means;

a second means for biasing said second plate means in one direction to said first position and for returning said second plate means to said first position from said second position when said external force is removed;



a shutter release button;

means operatively associated with said shutter release button for engagement with said first plate means to permit the latter to be held in said operative position against said first biasing means when said first plate means is moved to said operative position, said operatively associated means being, when said shutter release button is depressed, capable of disengaging said first plate means thereby to permit the latter to move to said inoperative position;

means for advancing the film from said film chamber to said film take-up chamber, each time said film has been exposed, in response to the movement of said second plate means from said first position to said second position;

means for holding said second plate means at a position a predetermined distance preceding said first position during the movement of said second plate means from said second position to said first position;

and

means for completely returning said second plate means to said first position after said first plate means has returned from said operative position to said inoperative position.

3,896,468
APPARATUS FOR WET TREATMENT OF PHOTOGRAPHIC MATERIALS OR THE LIKE

Jurgen Muller, Munich, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany

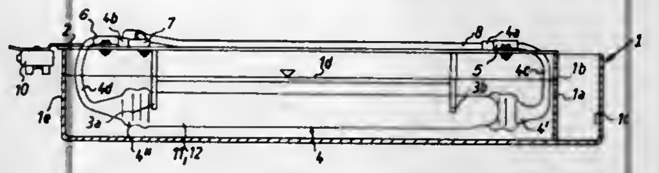
Filed May 23, 1974, Ser. No. 472,899

Claims priority, application Germany, May 25, 1973, 2326679

Int. Cl. G03d *13/00*

U.S. Cl. 354—299 **10 Claims**

1. Apparatus for wet treatment of photographic sheets, webs or the like, comprising a vessel for a body of liquid, said vessel having means for maintaining the upper surface of the body of liquid therein below a predetermined level; and means for heating the body of liquid in said vessel, comprising at least one insulator consisting of brittle material, at least one electric resistance heating element confined in said insulator, a flexible hose sealingly surrounding said insulator and said heating element therein, said hose having at least one end portion extending above said level, and electric conductor means extending through said one end portion of said hose and connected to said heating element.



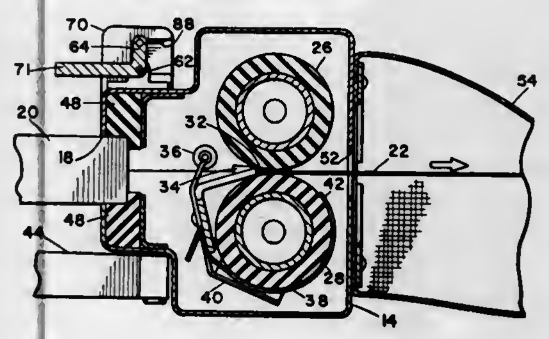
3,896,469
PORTABLE RADIOGRAPHIC FILM PROCESSING APPARATUS

Richard E. Mather, El Cajon, Calif., assignor to Teledyne, Inc., San Diego, Calif.

Filed Nov. 8, 1973, Ser. No. 414,172

Int. Cl.^{2} G03D *9/02*

U.S. Cl. 354—304 **15 Claims**



1. Improvements in combination with a film processing apparatus of the type having a pair of opposed pressure-applying rollers in a housing for effecting distribution of a processing agent between a pair of liquid-confining layers of a film packet having a leading edge portion, an agent reservoir portion, a film accomodating portion, and a trailing edge portion, arranged in that order, said apparatus being adapted to receive the leading edge portion and successive portions of said film packet sequentially in pressure-bearing relationship until said trailing edge portion passes a terminal station just short of the point of entry between said rollers, said improvements comprising:

means movable into physical engagement with at least one of said rollers to positively prevent continued motion thereof upon passage of said trailing edge beyond said terminal station and prior to entry of said trailing edge between said rollers whereby expulsion of the processing agent through said trailing edge portion is prevented.

3,896,470
AUTOMATIC PROCESSOR FOR OFFSET PLATES

John C. Hovekamp, Mansfield, Ohio, assignor to Buckler Industries, Inc., Mansfield, Ohio

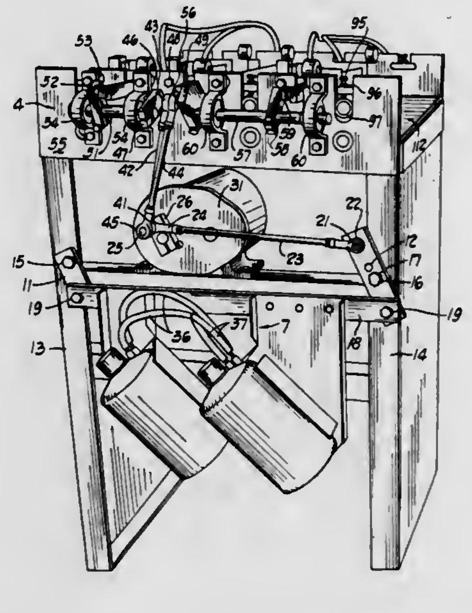
Filed Apr. 11, 1973, Ser. No. 350,129

Int. Cl. G03d *5/00, 3/04*

U.S. Cl. 354—317 **9 Claims**

1. In a self-contained processor for processing an exposed surface of individual photolithographic plates sequentially and essentially continuously through developing, washing and gumming stages wherein conveyor means is adapted to receive and urge each of said plates under rubbing means in frictional contact with said exposed surface, and drive means is disposed in operative relationship with said rubbing means, said drive means including a first crank arm rotatable about a first axis, a stub shaft mounted on said first crank arm in spaced relation

with said first axis and having an axis extending parallel with said first axis, first and second drive shafts, each said drive shaft being mounted in spaced relation with said first and stub shaft axes for rotation about an axis extending transversely of said first and stub shaft axes, each said drive shaft having a crank arm thereon; nonrotatable first and second rubbing means extending parallel with each other and mounted to reciprocate rectilinearly, each on an axis extending in spaced parallel relation with said first and stub shaft axes, first and second direct rod means having ends, one end of each said direct rod means being mounted on said stub shaft, the other end of said first and second rod means being mounted on said crank arm of said first and second drive shafts, respectively, in spaced relation with the said axis thereof whereby rotation of said stub shaft about said first axis oscillates said drive shafts about their axis, respectively, means and providing engagement between said first and second drive shafts and said first and second rubbing means, respectively, said last named means including means whereby each said rubbing means is reciprocated in response to said oscillation of said drive shafts, respectively.



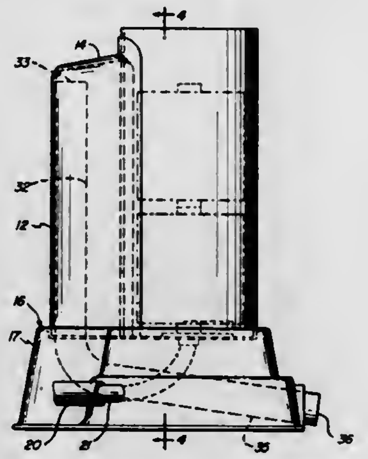
3,896,471
FILM WASHER

George L. Najarian, 6991 Mulberry St., Hanover Park, Ill. 60103

Filed Dec. 6, 1973, Ser. No. 422,177

Int. Cl. G03d *3/02*

U.S. Cl. 354—324 **1 Claim**



1. A washing tank for film on supports which includes, in combination,

an open top water tank member having a size to accommodate a film support means for said film,

an auxiliary water container mounted alongside and to the open top water tank, the wall of said water tank also being a wall for said water container, said auxiliary water container having a closed top adjoining the open top of the tank, a bottom water port communicating the interior of the tank and container,

a base member supporting said water tank and container, said base member having a continuous skirt extending from the bottoms of the water tank and container,

an angular siphon tube, a vertical branch positioned within the auxiliary container, said vertical branch having an open end positioned immediately below the closed top of the auxiliary water container and said vertical branch extending through the bottom of the water container, a horizontal branch of the siphon tube extending through said base member below the water container and the water tank, and said horizontal branch extending through the skirt and having a discharge end outside said skirt,

a bottom fill opening in the water tank, water fill means extending through said skirt for mounting to a water tube to convey water to said bottom fill opening, and

a baffle member water deflector inside the tank positioned over said bottom fill opening, said baffle member having a U-shaped raised wall bordering the bottom fill opening and a cover extending over the top of the wall, the open end of the U-shaped wall serving as a water discharge to direct entering water radially relative to the vertical axis of the tank and along the bottom of the tank to effect agitation of the water whereby the filled tank empties when the water level raises above the top of the siphon tube in the auxiliary water container through siphon action.

3,896,472
AUTOMATIC EXPOSURE CONTROL DEVICE FOR USE IN A PHOTOGRAPHIC CAMERA

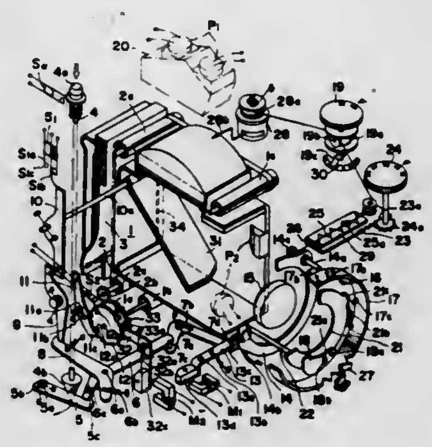
Ichiro Yoshiyama, Kobe; Kayoshi Tsujimoto, Osaka, and Hiroshi Ueda, Nara, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 1, 1974, Ser. No. 456,826

Claims priority, application Japan, Apr. 3, 1973, 48-38083

Int. Cl. G03b *7/00*

U.S. Cl. 354—29 **13 Claims**



1. An automatic exposure control device for use in a photographic camera having an adjustable diaphragm aperture, comprising:

diaphragm aperture adjusting means for presetting said diaphragm aperture;

means for selecting the lowest shutter speed at which an exposure will not be effected by vibration of said camera;

a light measuring circuit including a photoconductive element and producing outputs which vary in response to said diaphragm aperture adjusting means and said means for selecting the lowest shutter speed;

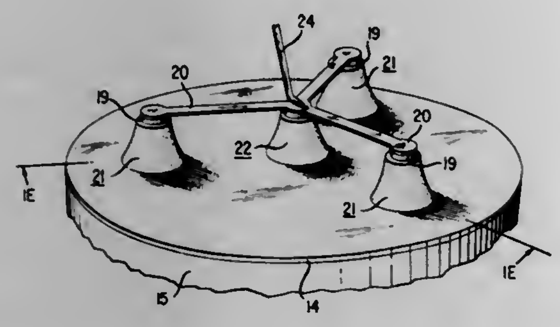
detecting means for comparing the level of outputs produced by said light measuring circuit with the level set for a given output and detecting which level is higher;

an electromagnet actuated in response to said detecting means;
a diaphragm actuating member setting said diaphragm aperture from its fully open position to said preset diaphragm aperture prior to the commencement of exposure in association with the release operation;
means for interrupting operation of said diaphragm actuating member in response to said detecting means to retain the diaphragm in its fully open position; and
means for controlling the termination of exposure according to the scene light through an objective lens and the diaphragm from a photographic object to be photographed upon the commencement of exposure.

3,896,473
GALLIUM ARSENIDE SCHOTTKY BARRIER AVALANCE DIODE ARRAY

James Vincent DiLorenzo, Piscataway; William Charles Niehaus, and Daniel Leon Rode, both of Murray Hill, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 4, 1973, Ser. No. 421,521
Int. Cl. H01l *1/12, 1/18*
U.S. Cl. 357—15 **1 Claim**



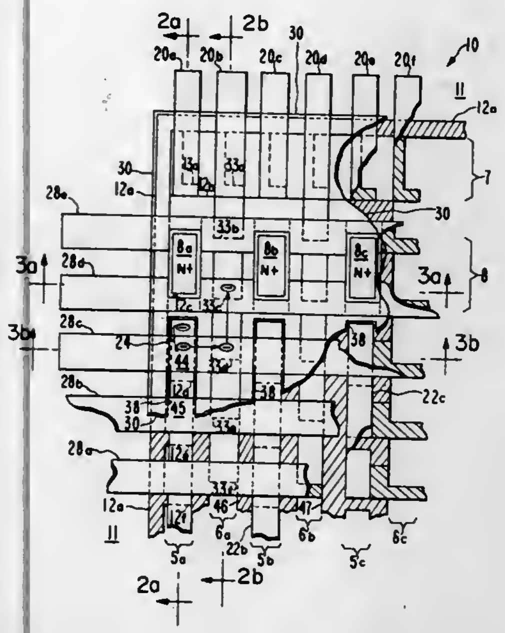
1. A semiconductor power dissipating device consisting of at least three semiconductor bodies, arranged symmetrically around a centrally located inert semiconductor body, all of which semiconductor bodies are fabricated on a planar heat sink and comprise in sequence:
a. a Schottky barrier layer which contacts the heat sink;
b. a GaAs active region having a carrier concentration of about 10^{15} atoms/cm^3 to 10^{17} atoms/cm^3, and which contacts the Schottky barrier;
c. a GaAs buffer region having a carrier concentration of about 10^{17} atoms/cm^3 to 10^{18} atoms/cm^3, and which contacts the active region;
d. a GaAs contact region having a carrier concentration of about 10^{18} atoms/cm^3, and which contacts the buffer region;
e. an ohmic contact layer which contacts the GaAs contact region;
f. planar beam leads extending from the central inert body to each of the remaining bodies; and
g. an electrode bonded to a portion of the beam lead over the central body.

3,896,474
CHARGE COUPLED AREA IMAGING DEVICE WITH COLUMN ANTI-BLOOMING CONTROL

Gilbert F. Amelio, Saratoga, and Rudolph H. Dyck, Palo Alto, both of Calif., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Sept. 10, 1973, Ser. No. 395,663
Int. Cl.^{2} H01L *27/14*
U.S. Cl. 357—24 **10 Claims**

1. A charge coupled area imaging device having anti-blooming control, which device comprises:
a. a semiconductor substrate of a first conductivity type;
b. a plurality of parallel columns of light sensing elements associated with first portions of said substrate;
c. a first corresponding plurality of shift registers associated with second portions of said substrate, said shift regisiters being interdigitated between and parallel to said columns of light sensing elements and each shift register being arranged in a column;
d. means for transferring charge packets accumulated in said light sensing elements to appropriate positions in said first corresponding plurality of shift registers;



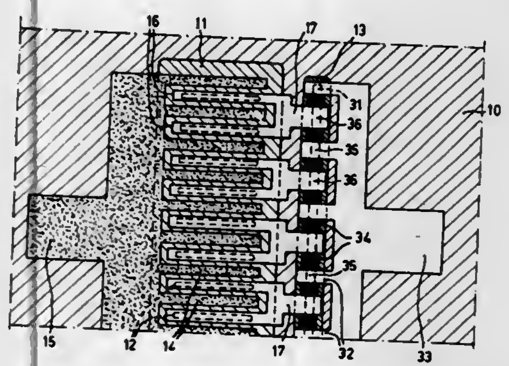
e. an output shift register disposed in a third portion of said substrate for receiving said charge packets from said firsst corresponding plurality of shift registers; and,
f. a second corresponding plurality of charge sink means for receiving excess charge, each of said charge sink means being located only adjacent to one end of a corresponding column of said first corresponding plurality of shift registers and to a corresponding position of said output shift register, whereby spreading of excess charge into said output shift register is controlled.

3,896,475
SEMICONDUCTOR DEVICE COMPRISING RESISTANCE REGION HAVING PORTIONS LATERAL TO CONDUCTORS

Maurice Bonis, Herouville, France, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 323,847, Jan. 15, 1973, abandoned. This application Mar. 15, 1974, Ser. No. 451,528
Claims priority, application France, Jan. 28, 1972, 72.02947

Int. Cl. H01l *5/00, 3/00*
U.S. Cl. 357—35 **10 Claims**



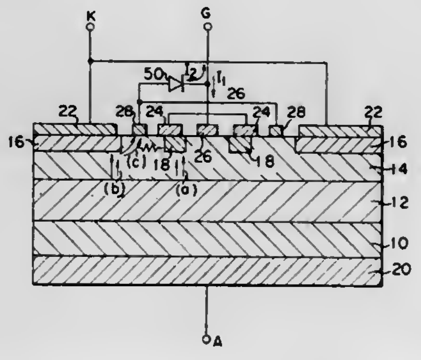
1. A semiconductor device comprising:

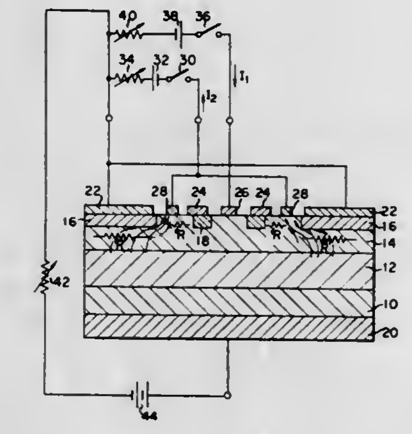
a. a semiconductor body having a first surface;
b. a second conductivity type region located in said semiconductor body;
c. at least two active surface zones of a first conductivity type located at said semiconductor body and adjoining said region, said zones and said region forming respective p,n junctions terminating at said surface;
d. a substantially strip-shaped resistance region located at a portion of said surface removed from said zones and separated from remaining parts of said semiconductor body by a barrier layer, said resistance region comprising plural contact zones and at least one connection zone that are disposed at alternating spaced portions along the longitudinal direction of said resistance region;
e. plural conductive layers extending between and electrically connecting respective said surface zones and said contact zones; and
f. a connection conductor contacting said connection zones.

3,896,476
SEMICONDUCTOR SWITCHING DEVICE

Akira Kawakami, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 23, 1974, Ser. No. 463,412
Claims priority, application Japan, May 2, 1973, 48-49538; May 16, 1973, 48-54478
Int. Cl. H01l *11/10*
U.S. Cl. 357—38 **9 Claims**



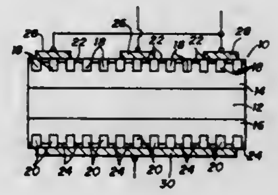


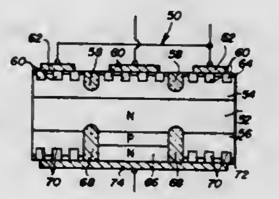
1. A semiconductor switching device comprising: a first emitter layer of a first type conductivity, a first base layer of a second type conductivity disposed on said first emitter layer, a second base layer of said first type conductivity disposed on said first base layer, a second emitter layer of said second type conductivity disposed in a surface adjacent portion of said second base layer, an auxiliary emitter layer of said second type conductivity disposed in a surface adjacent portion of said second base layer and separated from said second emitter layer, an anode electrode disposed in ohmic contact with said first emitter layer, a cathode electrode disposed in ohmic contact with said second emitter layer, a first auxiliary gate electrode disposed in ohmic contact with the both said auxiliary emitter layer and one portion of said second base layer to bridge them, a second auxiliary gate electrode disposed in ohmic contact with said second base layer and interposed between said cathode electrode and said first auxiliary gate electrode, a gate electrode disposed in ohmic contact with said second base layer opposed to said first auxiliary gate electrode, said gate electrode being located on said second base layer on that side of said first auxiliary gate electrode remote from said second auxiliary gate electrode, and circuit means for applying a gate signal said gate electrode to turn the device on and for applying to said second auxiliary gate electrode a gate signal opposite in polarity to the firstmentioned gate signal to turn the device off.

3,896,477
MULTILAYER SEMICONDUCTOR SWITCHING DEVICES

Jearld L. Hutson, 907 Newberry, Richardson, Tex. 75080

Filed Nov. 7, 1973, Ser. No. 413,558
Int. Cl. H01e *11/10*
U.S. Cl. 357—39 **30 Claims**





1. A semiconductor device comprising:
a body of semiconductor material having at least three layers including an internal layer of one conductivity type bounded on opposite sides by two layers of the opposite conductivity type to form a plurality of P-N junctions, said body having first and second opposed outer surfaces of said opposite conductivity type,
an array of discrete regions of said one conductivity type spaced apart over said first and second outer surfaces of said body; the cross sections of said discrete regions parallel to said outer surfaces being symmetrical and said discrete regions extending inwardly from said first and second outer surfaces into the interior of said layers of opposite conductivity type,
each of said discrete regions in said first outer surface being vertically aligned with a discrete region in said second outer surface, in order to substantially eliminate lateral current flow in said device during conduction upon the application of predetermined bias potential,
a first electrode in low resistance ohmic contact with the exposed surfaces of a plurality of said discrete regions and with a portion of said first outer surface,
a second electrode connected to a source of control bias and connected to said first outer surface and contacting a plurality of said discrete regions and spaced apart from said first electrode, and
a third electrode connected to said second outer surface.

3,896,478

MESA TYPE JUNCTION INVERTED AND BONDED TO A HEAT SINK

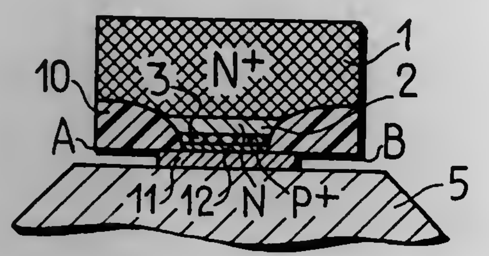
Raymond Henry, Paris, France, assignor to Thomson-CSF, Paris, France

Continuation of Ser. No. 308,334, Nov. 21, 1972, abandoned. This application Feb. 14, 1974, Ser. No. 442,625

Claims priority, application France, Nov. 26, 1971, 71.42472

Int. Cl. H01l *11/00, 15/00*

U.S. Cl. 357—56 **2 Claims**



1. Semiconductor device comprising: one mesa type junction made upon a substrate, said junction having flank, and terminal having a top face, said flank being embedded by a dielectric material having an upper face in the same plane of said top face, said semiconductor device further comprising at least a metallic layer having a first face being integral with said top face and a second face opposite to said first face, said second face being bonded to a heat sink so that said upper face forms a shoulder.

3,896,479

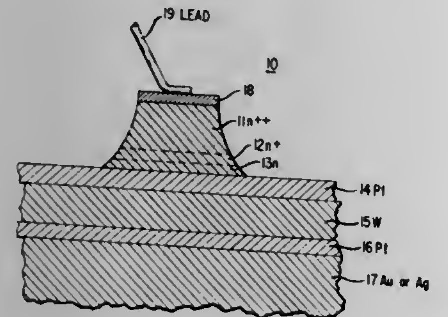
REDUCED STRESSES IN III-V SEMICONDUCTOR DEVICES

James Vincent Di Lorenzo, Piscataway, and George Arthur Rozgonyi, Chatham, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 399,824, Sept. 24, 1973, abandoned. This application Mar. 4, 1974, Ser. No. 447,547

Int. Cl. H01l *5/00*

U.S. Cl. 357—71 **10 Claims**



6. A III-V semiconductor device comprising:

a. a metal layer on a semiconductor surface; and

b. a heat sink layer of gold or silver on the metal layer,

characterized in that a multilayer structure is interposed between the metal layer and the heat sink layer, the multilayer structure comprising:

a. a tungsten layer, under compressive stress, formed and deposited on the metal layer by means of rf sputtering and compensating sufficiently for the stress of the metal layer so that the resultant radius of curvature is greater than 5 meters; and

b. a thin platinum layer formed on the tungsten layer.

3,896,480

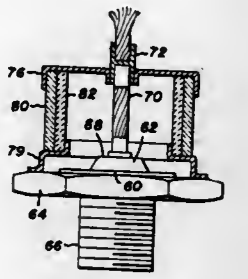
SEMICONDUCTOR DEVICE WITH HOUSING OF VARISTOR MATERIAL

John D. Harnden, Jr., Schenectady, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Continuation of Ser. No. 191,870, Oct. 22, 1971, abandoned. This application May 30, 1973, Ser. No. 365,323

Int. Cl. H01l *3/00, 5/00*

U.S. Cl. 357—80 **7 Claims**



1. In combination with a semiconductor device including a body of PN junction semiconductor material having at least two contacts across which a voltage may be applied,

a housing for said body of semiconductor material, an excess-voltage protection body of metal oxide varistor material having an alpha in excess of 10 constituting an integral part of said housing, respective electrodes located on spaced regions of said varistor body, and means forming electrical connections between said contacts and said electrodes.

3,896,481

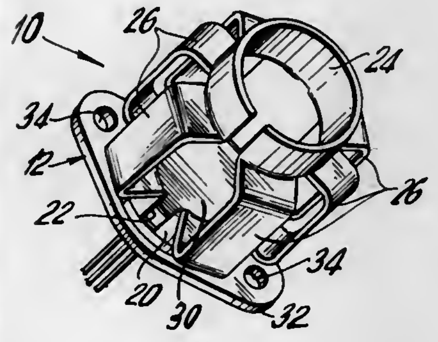
HEAT DISSIPATOR FOR METAL CASE TRANSISTOR

Anthony D. Calabro, 8738 W. Chester Pike, Upper Darby, Pa. 19082

Filed July 2, 1974, Ser. No. 485,070

Int. Cl.² H01L *23/02*

U.S. Cl. 357—81 **12 Claims**



1. A heat dissipator for metal case transistors comprising:

a first annular collar which is split and is made of a metal material for engaging the case of the transistor;

a second split annular collar also made of a metallic material and spaced from said first collar; and

an intermediate array of spaced, U-shaped deflectors disposed between said first and second collars, said deflectors being made of a metallic material and operative to deflect air currents towards the region immediately above the case so as to increase the rate of heat convection from the case upwardly through the second annular collar.

3,896,482

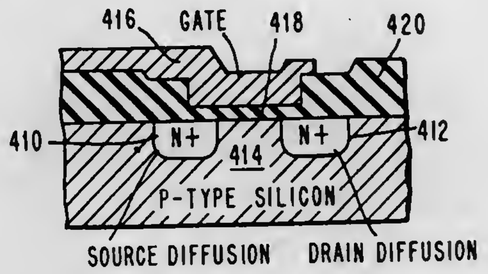
DYNAMIC MOSFET LAYOUT TECHNIQUE

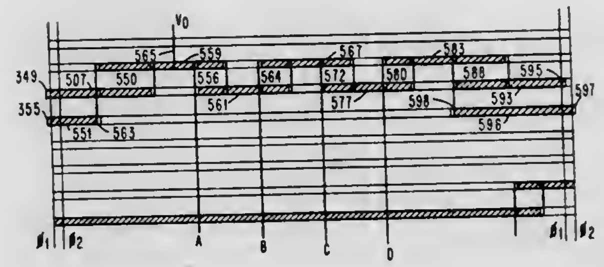
George E. Brechling, Gaithersburg, and John J. Montren, Derwood, both of Md., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 267,869, June 30, 1972, abandoned. This application June 27, 1973, Ser. No. 374,173

Int. Cl. H01l *11/00, 15/00*

U.S. Cl. 357—23 **1 Claim**





1. In an insulated gate field effect transistor integrated circuit logic function layout having a plurality of spaced parallel rows of diffusions of a first conductivity type in a semiconductor wafer of a second conductivity type with portions of said semiconductor wafer between adjacent diffusions defining input channel regions sof field offset transistor devices, selected ones of said parallel diffusion being segmented into reduced lengths, wherein the improvement comprises:

a first and third diffusion segment in a first row,

said first diffusion segment operating as a source diffusion in a first field effect transistor,

said third diffusion segment operating as a drain diffusion in a second field effect transistor,

a second diffusion segment in a second row adjacent to said first row,

said second diffusion segment operating as a drain diffusion in said first field effect transistor and as a source diffusion in said second field effect transistor,

each of said diffusion segments in said first row being partially juxtaposed with each of the nearest diffusion segments in said second row so as to define a sequence of channel regions bounded by an alternating sequence of diffusion segments,

at least one gate electrode formed over the channel region defined by each juxtaposed pair of diffusion segments,

said first and second diffusion segments forming said first field effect transistor whose drain diffusion is series connected by means of said second diffusion to the source diffusion of said second field effect transistor which is formed by said second and said third diffusion segments, whereby a logical function is formed in a two dimensional, alternating series array, providing a high logic power per unit area.

3,896,483

SWITCH

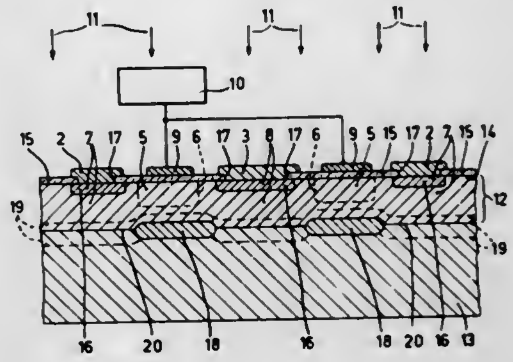
Maurice Vincent Whelan, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 19, 1973, Ser. No. 398,585

Claims priority, application Netherlands, Sept. 23, 1972, 7212912

Int. Cl. H01l *11/14*

U.S. Cl. 357—23 **15 Claims**



1. A time delay device comprising a field-effect transistor having a semiconductor body comprising spaced source and drain regions of one type conductivity defining therebetween a channel region of said one type conductivity and a gate electrode for controlling the conduction level of the channel region, said gate electrode when pulsed establishing a depletion region in the channel reducing the conduction in the channel to a low level, and means for automatically increasing the conduction in the channel to a high level after a controlled time interval, said conduction increasing means including a rectifying junction within the body and means connected to the rectifying junction for at least temporarily biasing same in the forward direction, said biasing value being such that carriers injected by the forward baised junction cause contraction of the depletion region and increased channel conduction at a controlled rate producing the high level channel conduction at the end of the controlled time interval.

3,896,484

INTRINSIC SEMICONDUCTOR CHARGE TRANSFER DEVICE USING ALTERNATE TRANSFER OF ELECTRONS AND HOLES

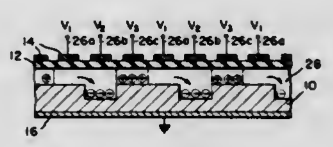
Jun-ichi Nishizawa, No. 6-16, Komegafukuro 1-chome, and Termumoto Nonaka, c/o Mrs. Sadako Goto, No. 14-5, Otamaya-shita, both of Sendai, Japan

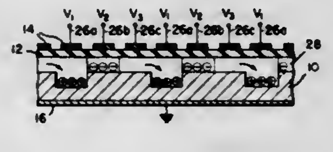
Continuation-in-part of Ser. No. 186,236, Oct. 4, 1971, abandoned. This application Feb. 6, 1974, Ser. No. 439,865

Claims priority, application Japan, Oct. 6, 1970, 45-87649

Int. Cl. H01l *11/14*

U.S. Cl. 357—24 **9 Claims**





1. A semiconductor data transmission device for transmitting groups of carriers each corresponding to digital data comprising: a substrate composed of intrinsic semiconductive material having a pair of opposite main faces; a layer com-

posed of electrically insulating material disposed on one of said main faces of said substrate; a plurality of metallic electrodes disposed in spaced-apart relationship in a predetermined pattern on the surface of the electrically insulating layer; a metallic electrode disposed on the main face of said substrate; means for selectively injecting both groups of positive polarity carriers and groups of negative polarity carriers successively into said intrinsic semiconductive substrate; and time delay means connected to said plurality of metallic electrodes disposed on the surface of said electrically insulating layer and responsive to both positive and negative voltage pulses selectively and successively applied to one end thereof for delaying the voltage pulses to apply each in succession to each of said plurality of electrodes to simultaneously transfer through the substrate those groups of positive polarity carriers and those groups of negative polarity carriers that have been injected into the substrate.

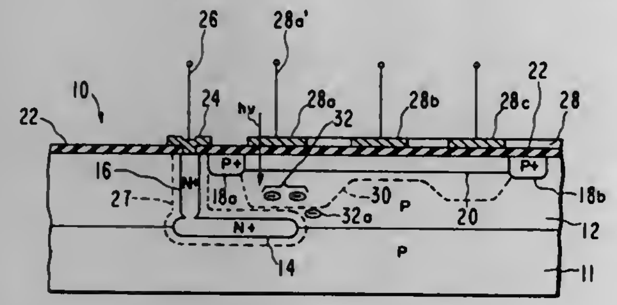
3,896,485
CHARGE-COUPLED DEVICE WITH OVERFLOW PROTECTION

James M. Early, Palo Alto, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Dec. 3, 1973, Ser. No. 421,314

Int. Cl.^{2} H01L *27/14*

U.S. Cl. 357—24 **8 Claims**



1. Structure which comprises:
- a. a light sensing element comprising a first region of semiconductor material overlaid by a first electrode separated from said semiconductor material by insulation, said light sensing element being capable of containing a charge packet;
- b. an adjacent region of said semiconductor material disposed for receiving said charge packet from said light sensing element;
- c. means for controlling the transfer of said charge packet from said light sensing element to said adjacent regions; and,
- d. charge sink means having a contact for applying a bias thereto buried within said semi-conductor material and disposed for receiving excess charge accumulated in said light sensing element, said charge sink means extending laterally from said contact toward said light sensing element while beneath the surface of said semiconductor material.

3,896,486
POWER TRANSISTOR HAVING GOOD THERMAL FATIGUE CAPABILITIES

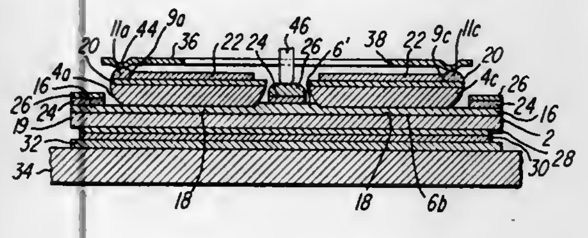
Jerome Edward Wright, Neshanic Station, N.J., assignor to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 726,741, May 6, 1968, abandoned. This application June 3, 1971, Ser. No. 149,615

Int. Cl.^{2} H01L *23/48, 29/46, 29/62, 29/64*

U.S. Cl. 357—67 **5 Claims**

1. A transistor comprising:
- a. a wafer of semiconducting material including emitter, base and collector regions;
- b. said emitter region being of one conductivity type and being disposed adjacent a surface of said wafer, said emitter region being composed of a plurality of separate portions each of which comprises a trunk with pairs of lateral branches extending from a central area of said surface and said branches being of progressively increasing length toward the periphery of said surface;
- c. a bonding pad at the periphery of each said trunk;
- d. a base region of opposite conductivity type also adjacent said wafer surface, said base portion including said central surface area and having branches interdigitated with said emitter region branches;



- e. an emitter contact electrode comprising a metal plate suspended above said wafer surface, said plate being connected only to each of said bonding pads, said plate having a central aperture, and;
- f. a base contact electrode extending through said aperture connected to said central area base region portion.

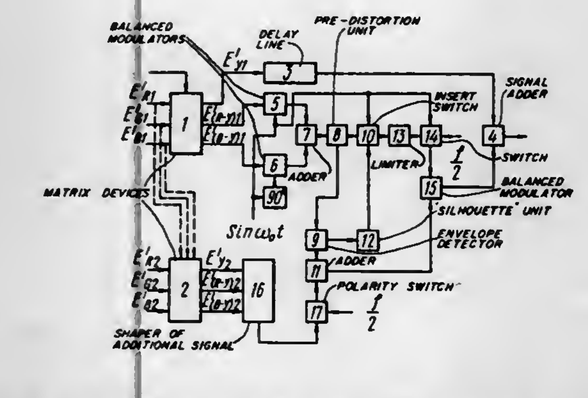
3,896,487
COMPATIBLE STEREOSCOPIC COLOR TELEVISION SYSTEM

Vladimir Efimovich Tesler, prospekt Mira, 91, kv. 120, Moscow, U.S.S.R.

Filed Aug. 2, 1973, Ser. No. 384,978

Int. Cl. H04n *9/00*

U.S. Cl. 358—3 **6 Claims**



1. A compatible stereoscopic color television system with phase-difference quadrature modulation of the color subcarrier in the frequency spectrum of the luminance signal by chrominance signals of the first image of the stereo pair and transmission of the signals of the second image of the stereo pair on the same subcarrier by its additional modulation by the luminance signals of the second image of the stereo pair so that the amplitude of the subcarrier in one line is equal to the sum of the amplitude of the modulating signal and the square root from the amplitude of the quadrature modulated subcarrier, and in the other line it is equal to the difference of said amplitudes, said additional modulation being effected to preserve the difference of the subcarrier phases in adjacent lines, during reception chrominance signals of said first image of the stereo pair being separated by multiplying the delayed and undelayed voltages of the subcarrier directly for one signal and with an additional 90° phase shift therebetween for the other signal, the chrominance signals of the second image of the stereo pair being separated by detecting the delayed and undelayed voltages and obtaining the difference of their envelopes.

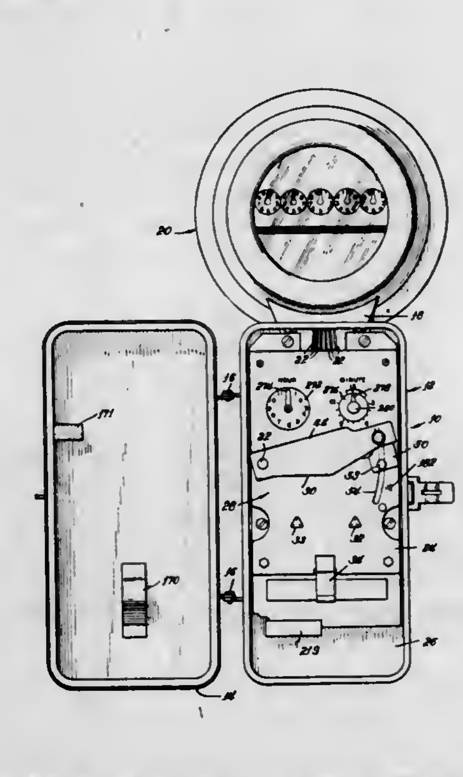
3,896,488
LOAD SURVEY RECORDER INCLUDING TAPE CARTRIDGE RECEPTACLE

Murray C. Carney, and David G. Hart, both of Springfield, Ill., assignors to Sangamo Electric Company, Springfield, Ill.

Filed Apr. 19, 1973, Ser. No. 352,550

Int. Cl. G11b *5/00, 5/54*

U.S. Cl. 360—6 **26 Claims**



1. A load survey recorder comprising a fixedly immovable front plate, a fixed tape cartridge receptacle located on the outer surface of said front plate for receiving a tape cartridge having at least a first and a second guide hole, said receptacle including a capstan, a pair of reel knobs, and at least first and second fixedly positioned aligning pins for engaging said guide holes in said cartridge to position the same along the X and Y axes relative to the recorder head, all of which are supported by and extend perpendicular to said front plate, an elongated arm member extending in close parallel relation to said outer surface and pivotally mounted at one end on said fixedly immovable front plate for movement between an inoperative position and an operative position, spring means for biasing said arm member in the direction of the operative position, a tape recording head unit mounted on said arm member having a recording head extending downwardly from said arm member, and a pressure roller unit mounted on said arm member at its outer end, said pressure roller unit including a roller, and means for resiliently urging said roller downwardly, where said roller is in resilient engagement with said capstan upon said arm member being located at said lower operative position.

3,896,489
ELECTRONIC TAPE EDITING EQUIPMENT

Frithjof Rudert, Darmstadt-Eberstadt; Rolf Muller, Seeheim, and Dietmar Gornott, Darmstadt-Arheilgen, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

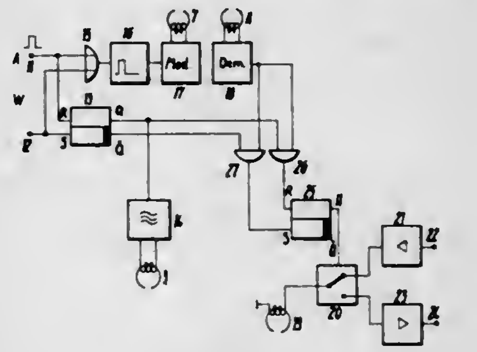
Filed Dec. 19, 1973, Ser. No. 426,360

Claims priority, application Germany, Dec. 30, 1972, 2264326

Int. Cl. H04n *5/78;* **G11b** *27/02, 27/32*

U.S. Cl. 360—14 **12 Claims**

1. In tape recorder equipment having tape, means for transporting said tape along a predetermined path, recording circuits, playback circuits, an erase head mounted in operative proximity to said tape, and at least one record/playback head mounted at a predetermined distance along said predetermined path from said erase head, an electronic editing arrangement for switching said record/playback head from said playback circuits to said recording circuits without creating a gap in the recording on said tape in response to an externally applied record signal, comprising, in combination, additional recording means mounted in operative proximity to said tape for recording a marker signal onto said tape when energized; additional playback means mounted in operative proximity to said tape at a distance from said additional recording means corresponding to said predetermined distance, for sensing said marker signal and furnishing a timing signal in response thereto; means connected to said erase head and said additional recording means for energizing said erase head and said additional recording means substantially simultaneously in response to said externally applied record signal, thereby creating said marker signal and erasing a portion of the recording on said tape; and switch means connected to said additional playback means, said record/playback head and said recording circuits, for connecting said record/playback head to said recording circuits in response to said timing signal and under control of said externally applied record signal, whereby said record/playback head is connected to said record circuitry when the beginning of said erased portion is in operative proximity to said record/playback head.



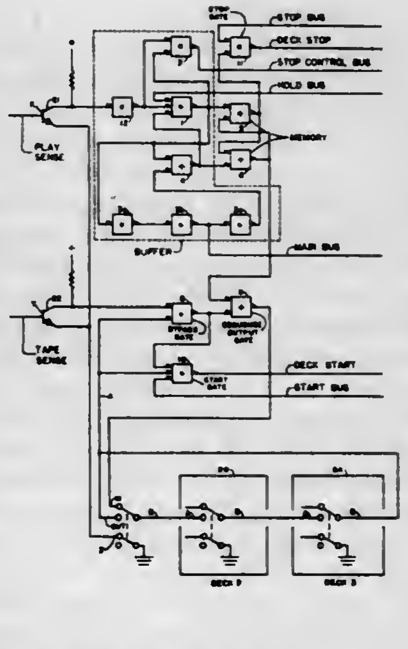
3,896,490
AUTOMATED BROADCAST PROGRAMMER

Andrew M. Rose, 3655 Prune Ridge Ave., Apt. 220, Santa Clara, Calif. 95051, and Geoffrey L. Bryan, 6205 Poe Rd., Bethesda, Md. 20034

Continuation-in-part of Ser. No. 294,786, Oct. 4, 1972, abandoned. This application Aug. 9, 1974, Ser. No. 496,056

Int. Cl. G11b *15/02, 15/18, 27/22*

U.S. Cl. 360—69 **9 Claims**



1. An automated broadcast programmer comprising:
- a. a first machine which is adapted to play recorded information;

- b. a second machine which is adapted to play recorded information;
- c. a control means;
- d. a first signal feedback means coupled between said first machine and said control means for indicating to said control means that said first machine is in a state to become operative;
- e. a second signal feedback means coupled between said first machine and said control means for indicating to said control means that said first machine is operative;
- f. a third signal feedback means coupled between said second machine and said control means for indicating to said control means that said second machine is in a state to become operative;
- g. a fourth signal feedback means coupled between said second machine and said control means for indicating to said control means that said second machine is operative, whereby said second and fourth feedback means cause said control means to generate signals which induces the operation of said first, or alternatively, said second machine.

3,896,491

SETTING MECHANISM FOR THE PICKUP HEAD OF A DISC STORAGE SYSTEM, ESPECIALLY FOR TEACHING PURPOSES

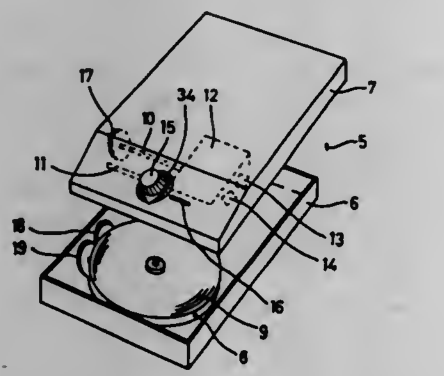
Gerhard Soehring, Dossenheim; Gerhard Kreutze, Bammental, and Guenther Obstfelder, Leimen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

Filed Oct. 16, 1973, Ser. No. 406,973

Claims priority, application Germany, Oct. 21, 1972, 2251786

Int. Cl. G11b *5/54, 21/08, 25/04*

U.S. Cl. 360—86 **5 Claims**



1. In a disc storage apparatus for recording or reproducing electric signals from a disc carrying said signals in a spiral track, said storage apparatus having a recording or reproducing head mounted on a support for radial movement in selective contact with a revolution of the track on said recording disc, a turntable upon which the disc may be placed and a drive means for rotating said turntable and said disc, the improvement which comprises: a spindle threaded along its length and rotatably mounted adjacent to said turntable, said threaded spindle having a thread pitch equal to the distance between two revolutions at the track on the disc; rotation transmitting means interposed between the drive means and said threaded spindle for simultaneously and synchronously rotating the turntable and said threaded spindle; a threaded guide element arranged on said head support for engagement with said threaded spindle; a guide means arranged parallel to the threaded spindle whereon the recording head support is translationally and pivotally mounted, said translational movement being along the axis of said guide means, said pivotal movement being about the axis of said guide means, said pivotal movement resulting in the disengaging of said threaded guide element and simultaneously moving the head out of contact with the disc; a rack on the recording head support, said rack being arranged parallel to said guide means, said rack having teeth of a given size and pitch; a pinion having teeth of said given size and pitch carried by an actuating member, said pinion being arranged for continuous engagement with said rack, said actuating member being connected to the recording head support and being manually operable in two different modes, in the first of said modes the turning of said actuating member effecting rotational movement of the pinion and lateral movement of the rack and head support, while the said movement is guided via the said threaded guide element which cooperates with the said threaded spindle and thereby ensures a movement of the head for selectively accurate contact with a desired one of the tracks and in the second of said modes the depressing and subsequent turning of said actuating member pivoting the support to move the head out of contact with the disc and simultaneously disengaging the threaded guide element from the threaded spindle for free lateral movement of the rack and head support upon turning of said actuating member.

3,896,492

TAPE-CASSETTE HOLDER FOR MAGNETOPHONIC RECORDING AND REPRODUCTION APPARATUS

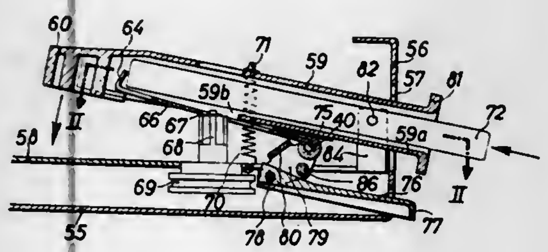
Arturo Socias, Mallorca 33, Barcelona, Spain

Continuation-in-part of Ser. No. 9,904, Feb. 9, 1970, abandoned. This application Apr. 2, 1973, Ser. No. 347,348

Claims priority, application Spain, Feb. 15, 1969, 364085; Nov. 8, 1969, 373622

Int. Cl. G11b *15/24, 23/04*

U.S. Cl. 360—93 **10 Claims**



1. A holder for a tape cassette provided with a reel accessible from without, comprising:

a frame having a front wall provided with a window;

an elongate casing with an open front end projecting through said window, said casing being pivotally mounted on said frame for swinging about a horizontal axis adjacent said window, said casing having a rearwardly located cutout giving access to a reel of a cassette inserted into said casing through said front end;

a slider in said cutout provided with a formation projecting into the interior of said casing for rearward entrainment by a rear edge of a cassette inserted through said front end;

link means articulated to said frame and to said slider in operative engagement with said casing rearwardly of said horizontal axis for swinging said casing from a loading position into a working position upon insertion of a cassette;

drive means on said frame aligned with said cutout for engagement with the accessible reel of the inserted cassette upon a swinging of said casing into said working position; and

restoring means mechanically coacting with said link means for returning said casing to said loading position with concurrent forward shift of said slider to eject the inserted cassette.

3,896,493

RETRACTABLE HEAD FOR TAPE RECORDER

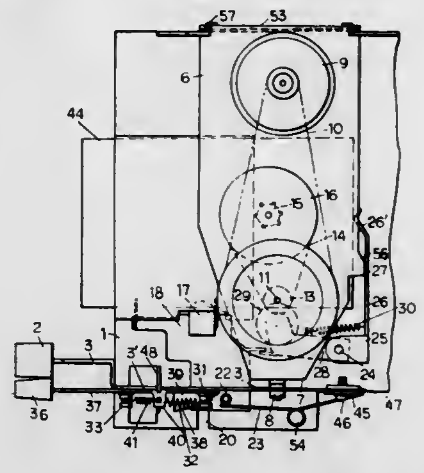
Masatoshi Ando, No. 6-3 Higashigaoka, 2-chome, Tokyo, Japan

Filed Oct. 30, 1973, Ser. No. 411,111

Claims priority, application Japan, Nov. 8, 1972, 47-128768

Int. Cl.^{2} G11B *5/54*

U.S. Cl. 360—96 **8 Claims**



1. In a tape cassette phonograph wherein the cassette is provided with a take-up reel,

said phonograph having a tape transducer head, a capstan and a pinch roller,

driving means operative to drive the take-up reel and capstan,

means mounting the head for movement into and out of operative engagement with the tape,

means mounting the pinch roller for movements toward and from the tape to alternately press it into engagement with the capstan and to relieve such pressure,

means normally biasing the head and pinch roller into engagement with the tape,

control means for rendering the driving means inoperative to drive the take-up reel and capstan and for simultaneously retracting the head and pinch roller from the tape,

means forming part of said control means and independently operable relative thereto to solely retract the head and pinch roller from the tape without rendering the drive means inoperative to drive the take-up reel.

3,896,494

AIR BEARING HEAD SUPPORT DEVICE FOR MULTI-CHANNEL DISC MEMORY APPARATUS

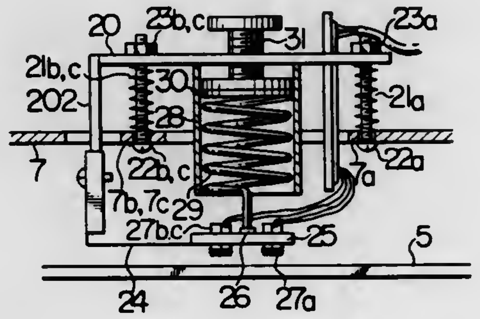
Teizo Tamura, Katsuta, Japan, assignor to Hitachi, Ltd., Japan

Filed Jan. 15, 1974, Ser. No. 433,437

Claims priority, application Japan, Jan. 16, 1973, 48-6651

Int. Cl. G11b *5/60, 21/24, 17/02*

U.S. Cl. 360—103 **7 Claims**



1. An air bearing head support device for multi-channel disc memory apparatus comprising:

a rotatable magnetic storage disc;

a fixedly mounted support plate spaced above said disc;

at least three head base-plates, each base-plate having a downwardly bent portion and a hollow head-base cylinder extending toward said disc, respectively, each of said base-plates being connected to said support plate at three positions defined by apexes of a triangle having at least two equal sides by three indepdendently adjustable members, whereby each of said base-plates is adjustable in position and distance with respect to said support plate;

at least three core holders, each of said core holders being connected to a respective base-plate by a leaf-spring, said leaf-spring having one end connected to said core holder and another end connected to the downwardly bent portion of said base-plate, each core holder having three head cores at positions thereon defined by apexes of a triangle having at least two equal sides, a first and a second core holder being arranged in a pair so that at the time of rotation of the disc the rotation trajectories on the disc produced by the head cores on the first core holder and the head cores on the second core holder are alternately positioned, a third core holder being arranged so that mutually adjacent rotation trajectories on the disc produced by a head core of the third core holder and a head core of one of the first and second core holders are separated by a distance larger than that of mutually adjacent rotation trajectories on the disc produced by the head cores of one of the first, second and third core holders; and

a coil spring and an adjusting element accommodated within the hollow head-base cylinder of each base-plate, said coil spring having a downwardly extending lower end connected to the core holder at the point of gravity of the triangle of the head cores and an upper end connected to the adjusting element, the adjusting element being adjustably mounted to the base-plate at the point of gravity of the triangle of the independently adjustable members, whereby each core holder is maintained apart from an coplanar to the disc surface by at least a portion of the leaf-spring, the coil spring and air bearing force produced due to rotation of the disc.

3,896,495

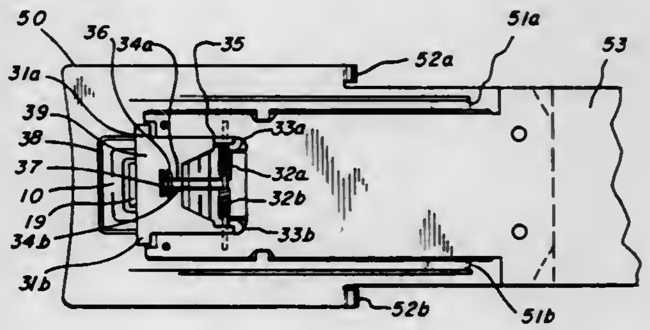
MECHANICALLY ISOLATED TRANSDUCER HEAD WITH SPRING LOADED ARM FOR FLYING

Harold James Beecroft, Minneapolis, Minn., assignor to Control Data Corporation, Minneapolis, Minn.

Filed Feb. 25, 1974, Ser. No. 445,410

Int. Cl.^{2} G11B *5/60, 17/32, 21/20, 5/54*

U.S. Cl. 360—103 **5 Claims**



1. Apparatus for supporting a magnetic head adjacent a recording surface for transcribing thereon, comprising

- a. a rigid cantilevered arm;
- b. a thin resilient gimbal sheet having external shape and interior openings defining a first ring attached to the

cantilevered arm at substantially opposite points on the first ring and a second ring spaced apart from the first and attached to it by a pair of webs intersecting the first ring at opposite interior edges between the points at which the first ring is attached to the cantilevered arm, said second ring attached to the magnetic head at a point between the two webs;

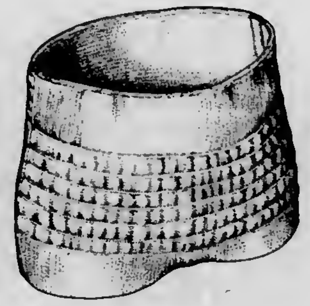
c. a pressure arm mounted for rotation on the cantilevered arm in a position permitting its rotation to a position contacting the head on the side opposite that of the transducing surface of the head; and

d. a spring loaded arm rotatably attached to the cantilevered arm and rotatably pressing against the pressure arm to force it toward the head.

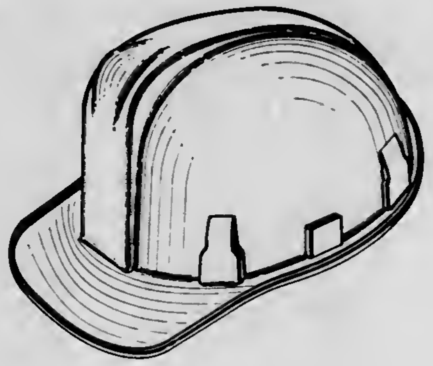
DESIGNS

JULY 22, 1975

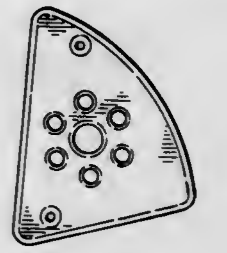
235,937
BABY'S ELASTIC PANTS
Tor Arne Fröidh, Stenungsund, Hans Erik Waldén, Goteborg, and Leif Urban Roland Widlund, Molnlycke, Sweden, assignors to Molnlycke AB, Goteborg, Sweden
Filed Mar. 14, 1974, Ser. No. 451,198
Claims priority, application Sweden Sept. 14, 1973
Term of patent 14 years
Int. Cl. D2—*01*
U.S. Cl. D2—10



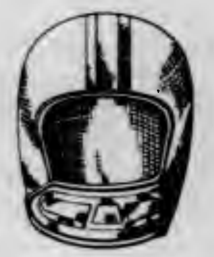
235,938
SAFETY CAP
Frank W. Lindblom, Warwick, R.I., assignor to Textron Inc., Providence, R.I.
Filed June 27, 1973, Ser. No. 373,975
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—231



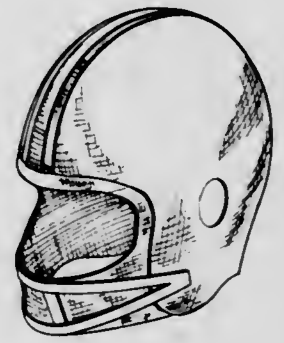
235,939
EARPIECE FOR A PROTECTIVE HELMET
Robert E. Conroy, Park Ridge, Ill., assignor to Servotronics, Inc., Buffalo, N.Y.
Filed June 29, 1973, Ser. No. 374,964
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—233



235,940
KNIT HELMET
Roy E. Stock, 6373 Teller St., Arvada, Colo. 80002
Filed Sept. 6, 1974, Ser. No. 503,974
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—249



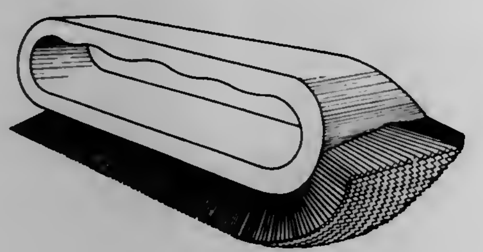
235,941
KNIT HELMET
Roy E. Stock, 6373 Teller St., Arvada, Colo. 80002
Filed Mar. 4, 1974, Ser. No. 447,490
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—249



235,942

CORNER CLEANING BRUSH

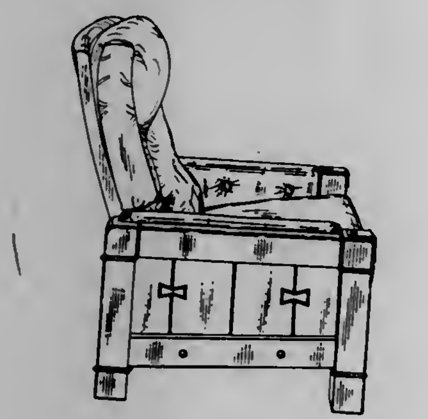
Leonora Rocke, Las Vegas, Nev., assignor to Sam J. Harris, Edward J. Krausnick, and Mary J. Krausnick, fractional part interest to each
Filed Aug. 15, 1973, Ser. No. 388,564
Term of patent 14 years
Int. Cl. D4—*01*
U.S. Cl. D4—3



235,943

SEAT

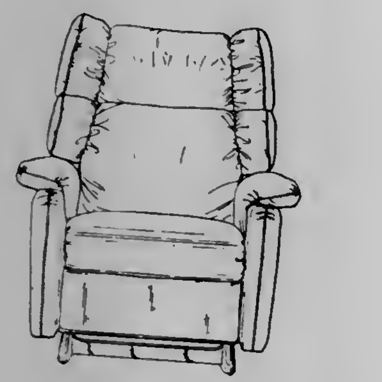
Stapleton Long, Morristown, Tenn., assignor to The Berkline Corporation, Morristown, Tenn.
Filed Sept. 6, 1974, Ser. No. 503,806
Term of patent 7 years
Int. Cl. D6—*01*
U.S. Cl. D6—37



235,944

SEAT

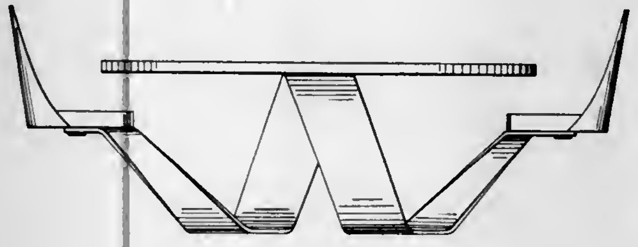
Stapleton Long, Morristown, Tenn., assignor to The Berkline Corporation, Morristown, Tenn.
Filed Sept. 20, 1974, Ser. No. 507,670
Term of patent 3½ years
Int. Cl. D6—*01*
U.S. Cl. D6—37



235,945

COMBINED TABLE AND SEATING UNIT

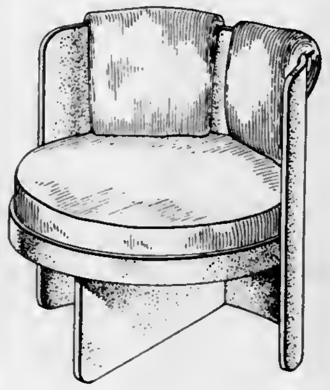
Alan L. Puskar and Linda S. Puskar, both of 5585 Pacific Coast Highway 362, Long Beach, Calif. 90804
Filed Aug. 29, 1973, Ser. No. 392,629
Term of patent 14 years
Int. Cl. D6—*05;* XD6—*03*
U.S. Cl. D6—45



235,946

SEAT

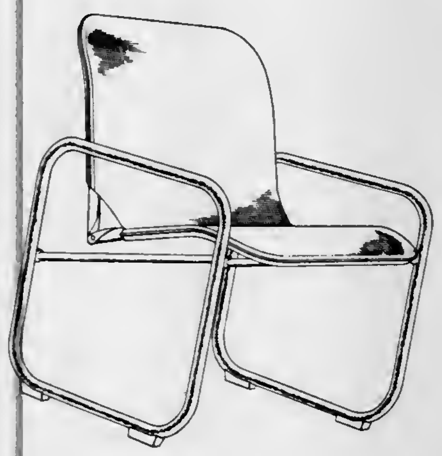
Gordon L. Duern and Donald S. Griffin, Kitchener, Ontario, Canada, assignors to Electrohome Limited, Kitchener, Ontario, Canada
Continuation of abandoned design applications Ser. No. 127,083, Mar. 22, 1971, and Ser. No. 128,646, Mar. 26, 1971. This application Jan. 15, 1973, Ser. No. 323,722
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—47



235,947

LOUNGE CHAIR

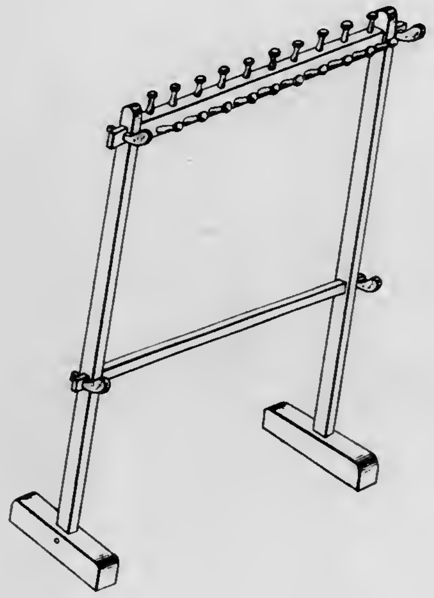
Tim M. Uyeda, South San Gabriel, Calif., assignor to Samsonite Corporation, Denver, Colo.
Filed Mar. 5, 1973, Ser. No. 338,581
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—69



235,948

CREWEL YARN RACK

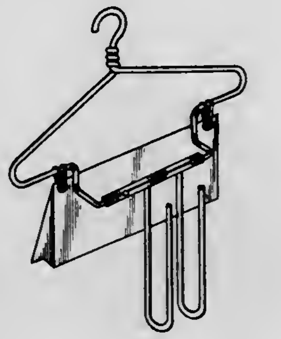
James S. Nerrie, 10 Cherry Tree Lane, Fredericksburg, Va. 22401
Filed Oct. 31, 1973, Ser. No. 411,326
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—85



235,949

SUPPORT FOR TENNIS RACKET AND RELATED ARTICLES

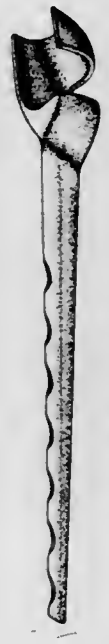
William J. Garvey, Rte. 1, Indian Trail Road, Barrington, Ill. 60010
Filed Nov. 23, 1973, Ser. No. 418,672
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—85



235,950

GARMENT HANGER SUPPORT FOR A SHOWER HEAD

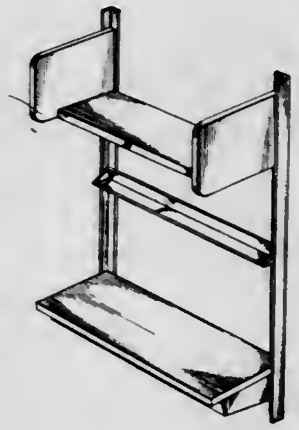
Gerhard Kollitz, 1301 E. Commonwealth Ave., Apt. 111, Fullerton, Calif. 92631
Filed Jan. 28, 1974, Ser. No. 437,752
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—86



235,951

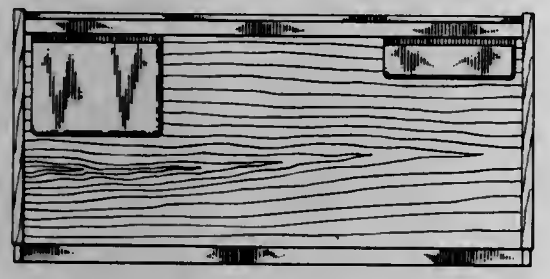
CANTILEVERED DESK AND MULTIPLE SHELF COMBINATION

Juan M. del Castillo, Salamanca 34, 2nd Floor, Mexico City 7, Mexico
Filed Nov. 7, 1973, Ser. No. 413,660
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—128



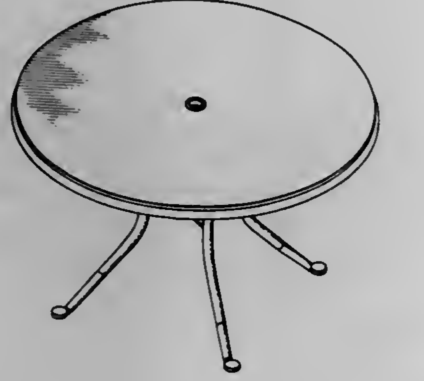
235,952
DESK OR SIMILAR ARTICLE

Douglas C. Ball, Senneville, Quebec, Canada, assignor to Massey-Ferguson Industries Limited, Toronto, Ontario, Canada
Filed Aug. 30, 1973, Ser. No. 393,244
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—162



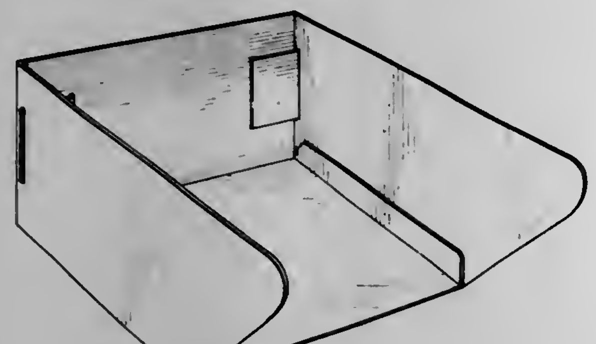
235,953
TABLE

Tim M. Uyeda, South San Gabriel, Calif., assignor to Samsonite Corporation, Denver, Colo.
Filed Mar. 2, 1973, Ser. No. 337,523
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177



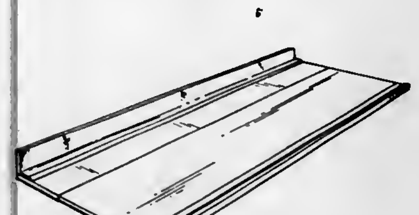
235,954
STUDY CARREL

Gustave T. Holland, Burlington, Ontario, Canada, assignor to Learning Consultants Limited, Belleville, Ontario, Canada
Filed Sept. 24, 1973, Ser. No. 399,811
Term of patent 14 years
Int. Cl. D6—*99;* XD6—*04*
U.S. Cl. D6—181



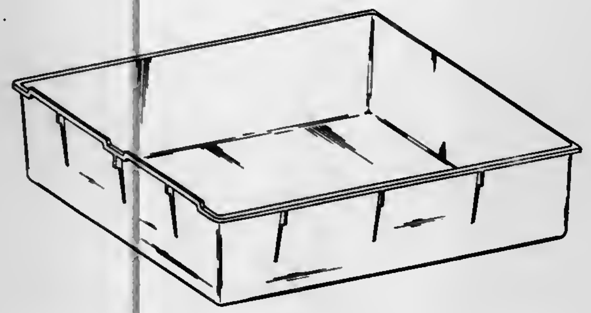
235,955
COUNTER TOP

Joseph P. Shelley, Jr., 614 Webster Ave., New Rochelle, N.Y. 10801
Filed Jan. 24, 1972, Ser. No. 220,555
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191



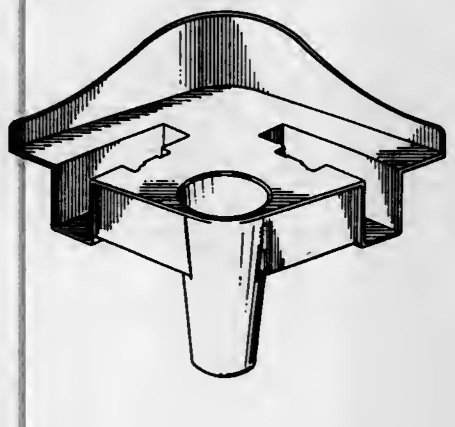
235,956
DRAWER

Thomas S. Noneman, Thomas R. Smith, and John B. Stokes, Bryan, Ohio, assignors to Tomco Plastic Inc., Bryan, Ohio
Filed Aug. 2, 1973, Ser. No. 385,046
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191



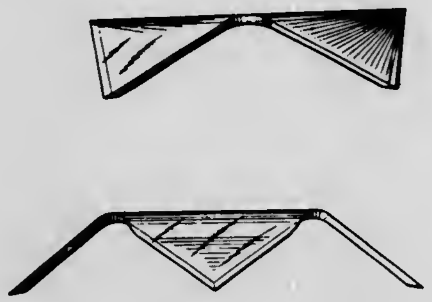
235,957
BED FRAME CORNER

Thomas C. Mills, Wheaton, and Stanley T. Gresens, Downers Grove, Ill., assignors to Sealy, Inc., Chicago, Ill.
Filed Mar. 8, 1973, Ser. No. 339,178
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—198



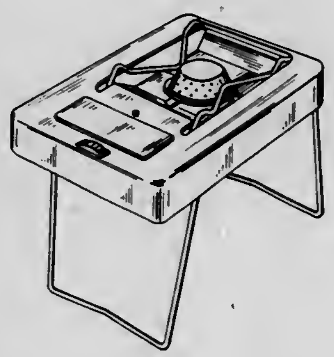
235,958
MIRROR OR SIMILAR ARTICLE

Edwin A. Day, 607 Quackenbos St. NW., Washington, D.C. 20011
Filed Nov. 1, 1973, Ser. No. 411,713
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—235



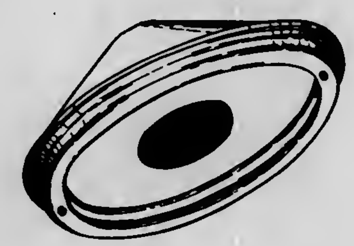
235,959
PORTABLE STOVE

Claes Vilhelm Allander, Stockholm, Sweden, assignor to Aktiebolaget Optimus, Flack, Upplands Vasby, Sweden
Filed July 30, 1973, Ser. No. 384,003
Claims priority, application Sweden Feb. 2, 1973
Term of patent 3½ years
Int. Cl. D7—*02*
U.S. Cl. D7—107



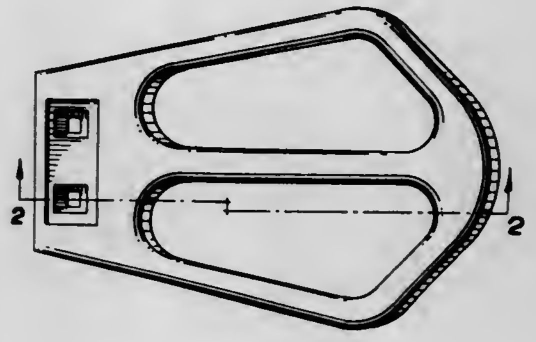
235,960
CONDENSING COVER FOR A SAUCE PAN OR THE LIKE

Robert E. Widdows, 1941 Larkspur Drive, Fort Collins, Colo. 80521
Filed Feb. 1, 1973, Ser. No. 328,838
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—131



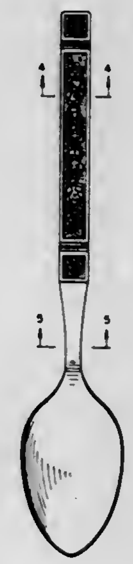
235,961
GRILL HANDLE

Mario Victor Bondanini, 5–7 Rue Neuve, 1020 Renes, Switzerland
Filed Dec. 29, 1972, Ser. No. 319,631
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—132

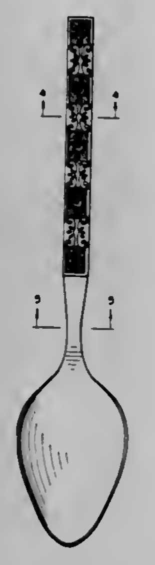


235,962
SPOON OR SIMILAR ARTICLE

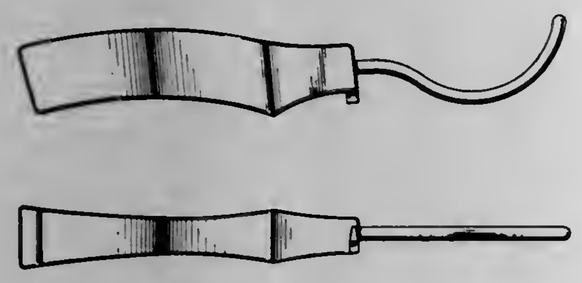
Ellen B. Manderfield, Syracuse, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed May 8, 1974, Ser. No. 467,864
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—137



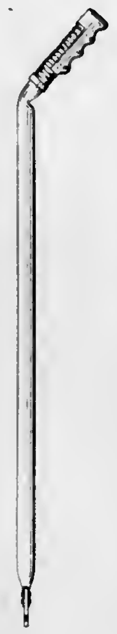
235,963
SPOON OR SIMILAR ARTICLE
Melvin A. Lea, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed May 3, 1974, Ser. No. 466,552
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—137



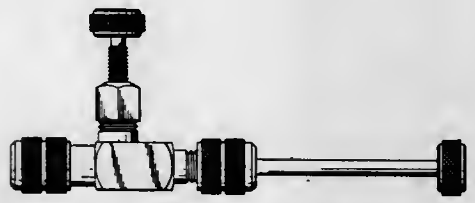
235,964
ORANGE PEELER
Antonio R. Lovato and Victoria C. Lovato, Los Angeles, Calif., assignors to Idex Corporation, Sherman Oaks, Calif.
Filed May 6, 1974, Ser. No. 467,302
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—147



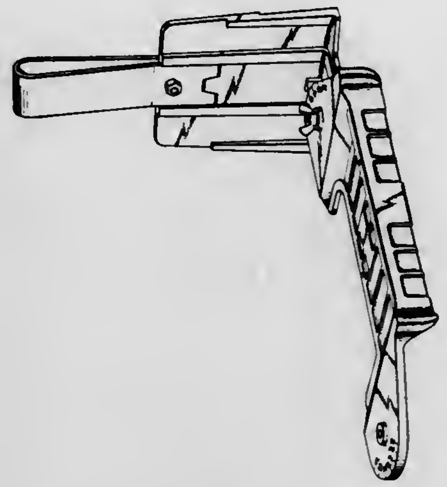
235,965
ICE AND SNOW SCRAPER
Paul H. Grinnell, 9437 Dorothy Ave., Garfield Heights, Ohio 44125, and Carl D. Vajdich, 18801 Waterbury Ave., Maple Heights, Ohio 44137
Filed Sept. 9, 1974, Ser. No. 504,298
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—184



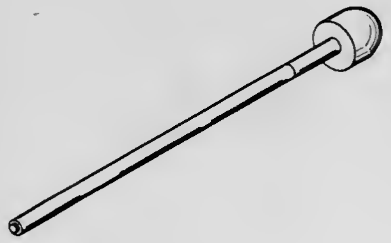
235,966
VALVE CORE REMOVAL TOOL
John W. Olson, Jr., Garland, Tex., assignor to C & D Valve Manufacturing Co., Oklahoma City, Okla.
Filed Apr. 18, 1974, Ser. No. 461,973
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—51



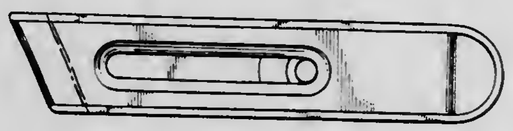
235,967
SAW GUIDE
William John Hildebrandt, West Simsbury, and Laird Fortune Convey, Easton, Conn., assignors to The Stanley Works, New Britain, Conn.
Filed Sept. 12, 1973, Ser. No. 396,394
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D7—71



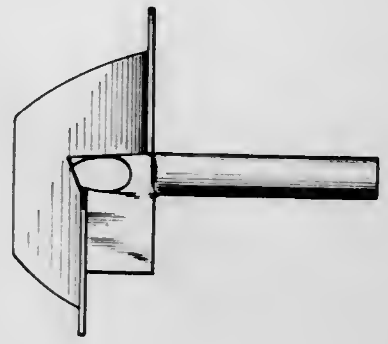
235,968
NAIL DRIVING DEVICE
Edward G. Mein, 6672 Sims Drive, Oakland, Calif. 94611
Filed Jan. 28, 1974, Ser. No. 436,932
Term of patent 14 years
Int. Cl. D8—*02*
U.S. Cl. D8—75



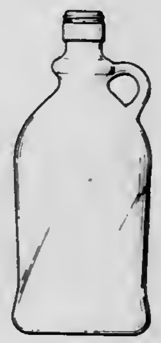
235,969
POCKET KNIFE WITH RETRACTABLE BLADE
William Albert Reaney and Michael Taylor, Woodside, Sheffield, England, assignors to Stanley Tools Limited, Woodside, Sheffield, England
Filed Dec. 21, 1972, Ser. No. 317,395
Claims priority, application Great Britain July 4, 1972
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—99



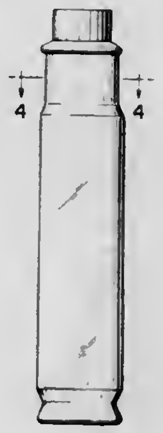
235,970
LATCH FOR ROLLING METAL GATES
Vincent Greco, 195 Huntington Ave., Bronx, N.Y. 10465
Filed Aug. 22, 1973, Ser. No. 390,572
Term of patent 7 years
Int. Cl. D8—*07*
U.S. Cl. D8—127



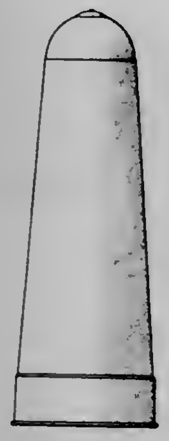
235,971
BOTTLE
Joseph E. Visola, 924 Kevin Court, Modesto, Calif. 95350
Filed Feb. 28, 1974, Ser. No. 446,853
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—48



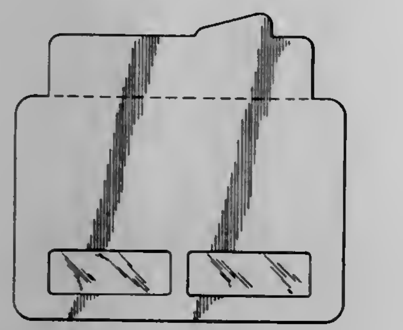
235,972
BOTTLE
Edward J. Kretz, Toledo, Ohio, assignor to Owens-Illinois, Inc.
Filed Sept. 27, 1973, Ser. No. 401,351
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—129



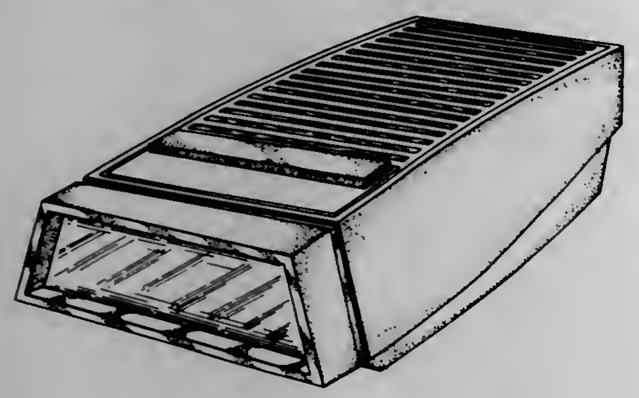
235,973
PLASTIC PREFORM CONTAINER OR THE LIKE
Bryant Edwards, Clarendon Hills, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed May 24, 1973, Ser. No. 363,465
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D9—171



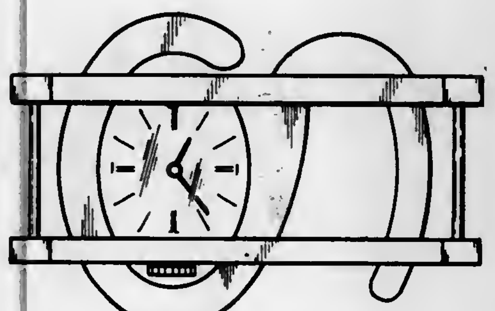
235,974
BACKING BOARD FOR A BACON PACKAGE
Oscar E. Seiferth, Madison, and Glenn M. Austin, Oxford, Wis., and Donald L. Paul, Tokyo, Japan, assignors to Oscar Mayer & Co. Inc.
Filed Feb. 12, 1973, Ser. No. 331,631
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—294



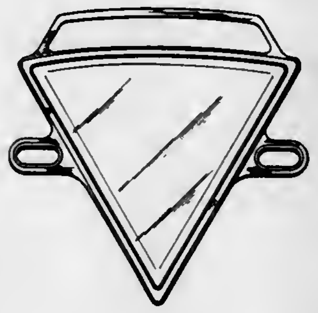
235,975
DIGITAL CLOCK
Eugene J. Sulek, Richardson, Tex., assignor to Texas Instruments Incorporated
Filed Dec. 12, 1973, Ser. No. 424,143
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—15



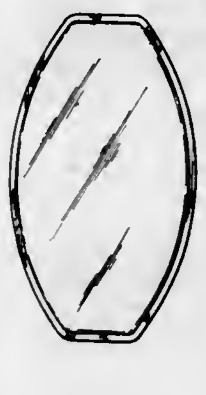
235,976
WRISTWATCH
Paul M. Larvego, 11 Rue de Berne, Geneva, Switzerland
Filed July 24, 1973, Ser. No. 382,114
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—39



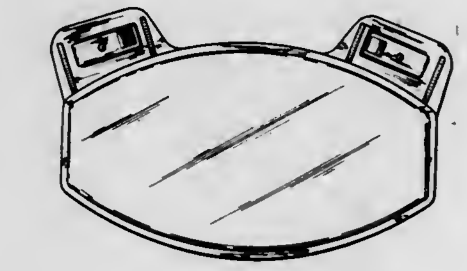
235,977
REFLECTOR
Gerald Golden, Highland Park, Ill., assignor to Beatrice Foods Co., Elgin, Ill.
Filed Apr. 16, 1974, Ser. No. 461,374
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—111



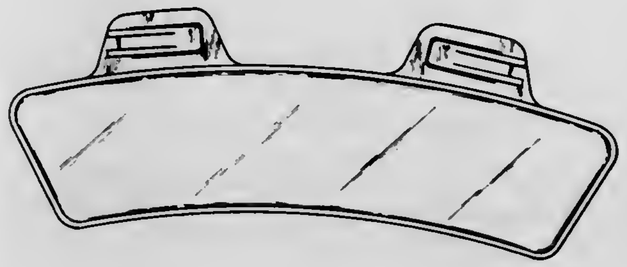
235,978
REFLECTOR
Gerald Golden, Highland Park, Ill., assignor to Beatrice Foods Co., Elgin, Ill.
Filed Aug. 7, 1974, Ser. No. 495,393
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—111



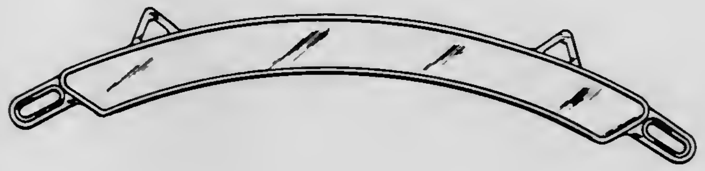
235,979
REFLECTOR
Gerald Golden, Highland Park, Ill., assignor to Beatrice Foods Co., Elgin, Ill.
Filed Aug. 7, 1974, Ser. No. 495,392
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—111



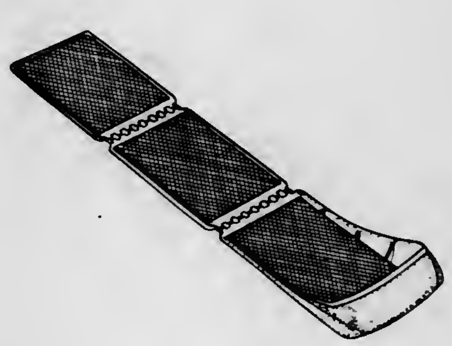
235,980
REFLECTOR
Gerald Golden, Highland Park, Ill., assignor to Beatrice Foods Co., Elgin, Ill.
Filed Aug. 7, 1974, Ser. No. 495,400
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—111



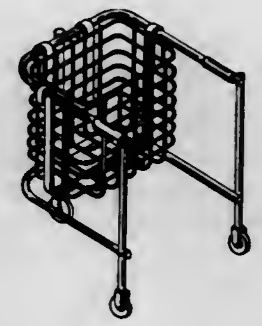
235,981
REFLECTOR
Gerald Golden, Highland Park, Ill., assignor to Beatrice Foods Co., Elgin, Ill.
Filed Apr. 16, 1974, Ser. No. 461,375
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—111



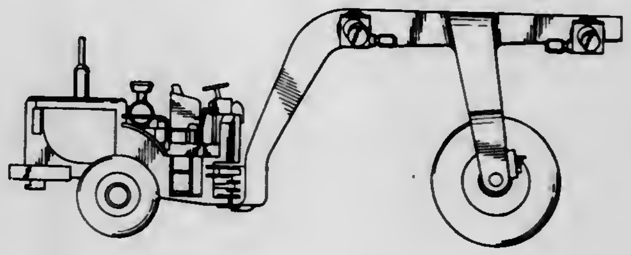
235,982
TOBOGGAN
McKinley W. Thompson, Jr., Detroit, Mich., assignor to Meadowbrook Manufacturing Corporation, Dearborn, Mich.
Filed Dec. 3, 1973, Ser. No. 420,786
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D12—11



235,983
COMBINED WALKER AND SHOPPING CART
Albina M. Dornik, 12555 Bellaire Road, Cleveland, Ohio 44135
Filed Feb. 21, 1974, Ser. No. 444,528
Term of patent 14 years
Int. Cl. D12—*02, 12*
U.S. Cl. D12—26



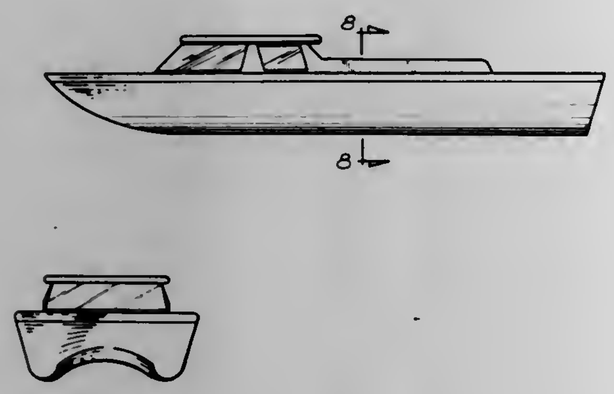
235,984
VEHICLE CARRIER
Dino Crovatto and Georges F. M. P. Etienne, Brussels, Belgium, assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Feb. 7, 1974, Ser. No. 440,463
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—57



235,985

TWIN KEEL BOAT

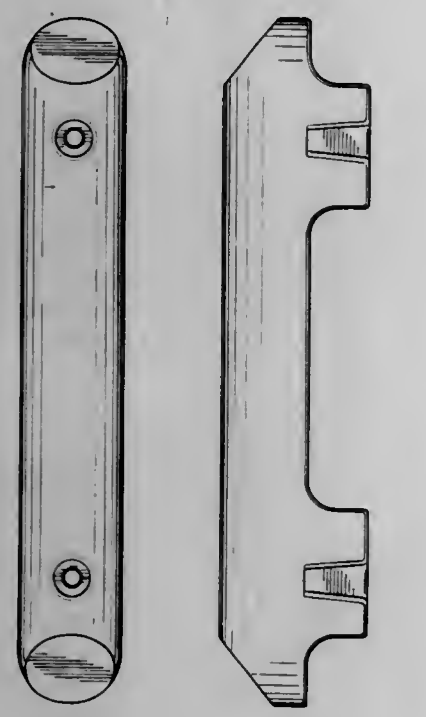
Antone Arruda, 12209 S. Eucalyptus Ave.,
Hawthorne, Calif. 90250
Filed Oct. 12, 1972, Ser. No. 296,771
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—62



235,986

BOAT DOCK BUMPER

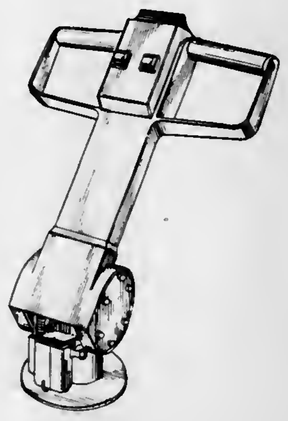
George I. Nielsen, 469 Minnesota Ave.,
Roseville, Minn. 55113
Filed May 28, 1974, Ser. No. 473,433
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—168



235,987

CONTROL HANDLE FOR AN INDUSTRIAL TRUCK

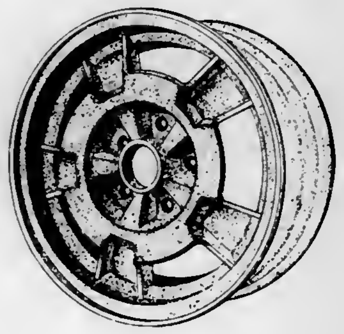
Rune G. Mono, Taby, Sweden, assignor to AB Bygg-och
Transportekonomi (BT), Bromma, Sweden
Filed Dec. 26, 1972, Ser. No. 318,488
Claims priority, application Sweden July 5, 1972
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—174



235,988

WHEEL

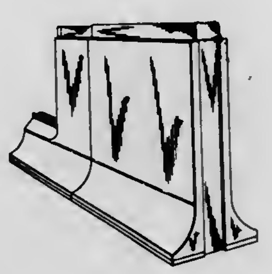
Ulf Angelo Sandberg, Bangatan 35,
414 64 Goteborg, Sweden
Filed June 18, 1974, Ser. No. 480,590
Claims priority, application Sweden Dec. 20, 1973
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—211



235,989

PASSENGER CONVEYOR BALUSTRADE OR SIMILAR ARTICLE

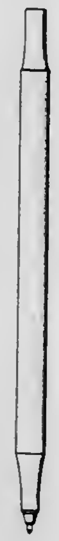
Deane W. Richardson, Worthington, Ohio, assignor to
Westmont Industries, Santa Fe Springs, Calif.
Filed June 25, 1973, Ser. No. 373,107
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—7 R



235,990

BALL POINT PEN

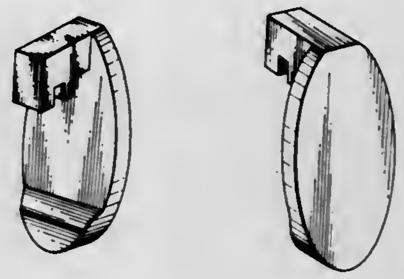
Clarence D. Zierhut, Granada Hills, Calif., assignor to
The Gillette Company, Boston, Mass.
Filed Jan. 18, 1974, Ser. No. 434,412
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—45



235,991

POCKET CLIP FOR WRITING INSTRUMENT

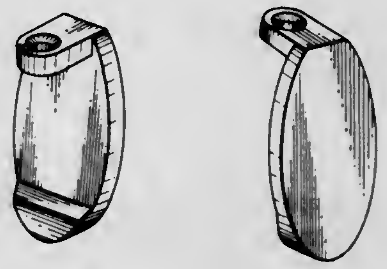
Toshihiro Nakata, Tokyo, Japan, assignor to Platinum
Fountain-Pen Co., Ltd., Tokyo, Japan
Original design application Dec. 3, 1971, Ser. No.
204,790, now Patent No. 232,197. Divided and
this application Nov. 23, 1973, Ser. No. 418,651
Claims priority, application Japan June 5, 1971,
July 22, 1971
Term of patent 14 years
Int. Cl. D19—*99*
U.S. Cl. D19—56



235,992

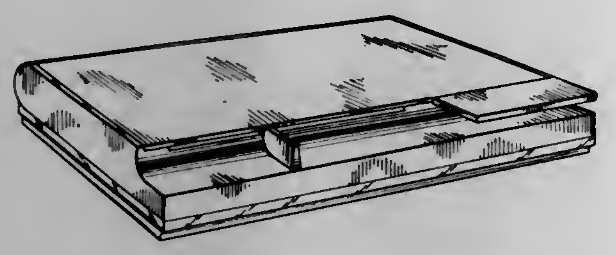
POCKET CLIP FOR WRITING INSTRUMENT

Toshihiro Nakata, Tokyo, Japan, assignor to Platinum
Fountain-Pen Co., Ltd., Tokyo, Japan
Original design application Dec. 3, 1971, Ser. No.
204,790, now Patent No. 232,197. Divided and this
application Nov. 23, 1973, Ser. No. 418,652
Claims priority, application Japan June 5, 1971,
July 22, 1971
Term of patent 14 years
Int. Cl. D19—*99*
U.S. Cl. D19—56



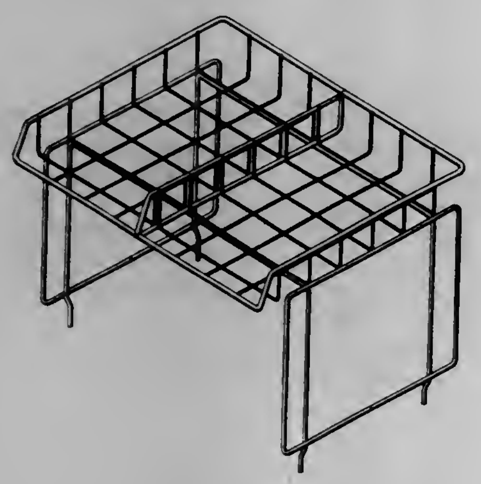
235,993
TELEPHONE INDEX

William Macowski, Caldwell, N.J., assignor to Ketcham & McDougall, Inc., Roseland, N.J.
Filed May 22, 1974, Ser. No. 472,272
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—76



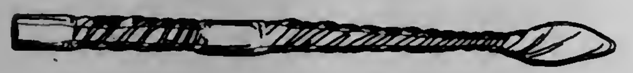
235,994
STATIONERY TRAY

Frank Joseph Stiene, Ridgewood, N.J., assignor to Mercedes-Benz of North America, Inc., Montvale, N.J.
Filed Aug. 21, 1972, Ser. No. 282,578
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—92



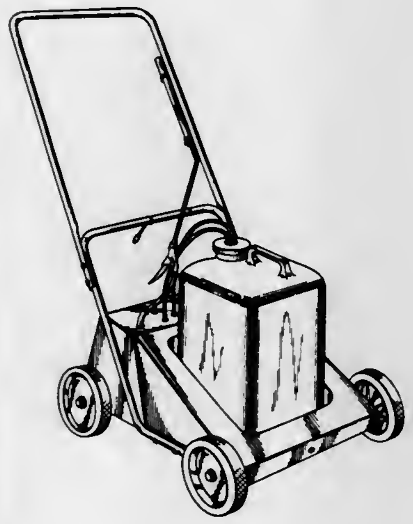
235,995
ARTIFICIAL FISHING LURE

Robert K. Harris, Charlotte, N.C., assignor to Ringley and Crockett, Inc.
Filed Sept. 24, 1973, Ser. No. 399,708
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27



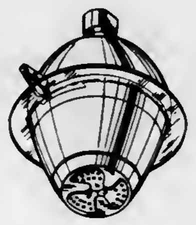
235,996
PORTABLE SPRAYING UNIT

Barry L. Schneider, Crystal Lake, Ill., assignor to Chemtrust Industries Corporation, Franklin Park, Ill.
Filed Mar. 27, 1974, Ser. No. 455,300
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—18



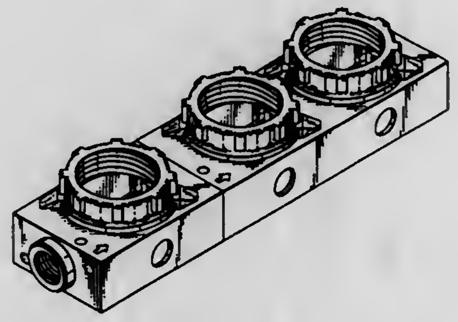
235,997
SHOWER HEAD

Allan B. Johnson, Tarzana, Calif., assignor to Teledyne Industries, Inc., doing business as Teledyne Aqua Tec Co., Fort Collins, Colo.
Filed Feb. 12, 1973, Ser. No. 331,830
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—35



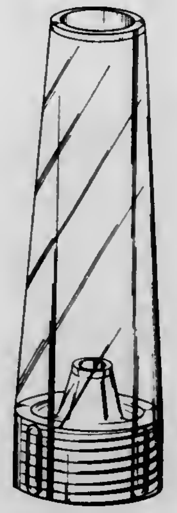
235,998
COUPLING UNIT FOR FLUID CONTROL COMPONENTS

Leslie William Smith, 4 Springfield Close, Shipston-on-Stour, Warwickshire, England; Michael John Wates, 27 Moat Farm Lane, Bishampton, near Pershore, Worcestershire, England; and Robert John Tait, Mount Cottage, Campden Road, Shipston-on-Stour, Warwickshire, England
Filed Jan. 17, 1973, Ser. No. 324,309
Claims priority, application Great Britain July 18, 1972
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—43



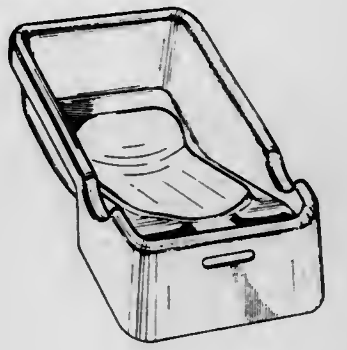
235,999
NOZZLE

Hosey M. Harrell and Clifford H. Ownby, both of P.O. Box 6811, Houston, Tex. 77005
Filed Apr. 30, 1973, Ser. No. 355,801
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—34



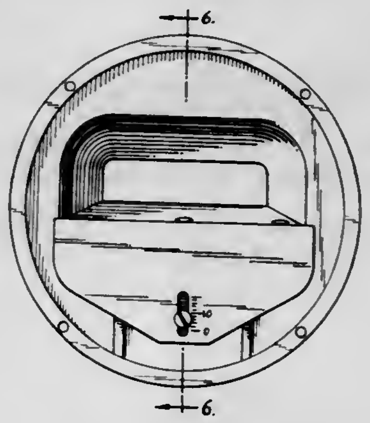
236,000
BATHTUB

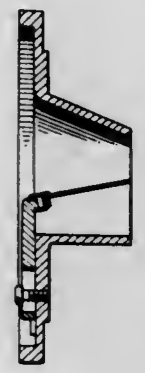
David Harman Powell, Maldon, England, assignor to Pye Limited
Filed Jan. 28, 1974, Ser. No. 437,512
Claims priority, application Great Britain July 26, 1973
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—48



236,001
FLOW REGULATOR

Stellan S. Akesson and Karel E. Pruner, Jonkoping, Sweden, assignors to Aktiebolaget Svenska Flaktfabriken, Nacka, Sweden
Continuation-in-part of abandoned design application Ser. No. 283,636, Aug. 25, 1972. This application Oct. 29, 1974, Ser. No. 518,224
Claims priority, application Sweden Aug. 17, 1972
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—151

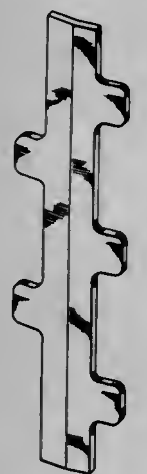




236,002

EMISSION ELECTRODE FOR AN ELECTROSTATIC PRECIPITATOR

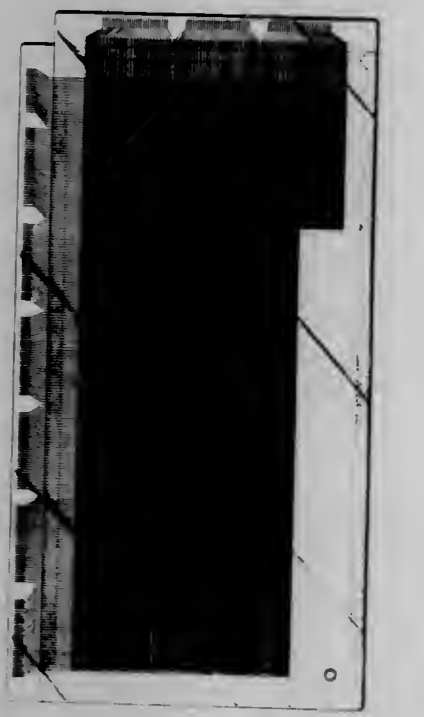
Kjell Porle and Sten Maartmann, Vaxjo, Sweden, assignors to Aktiebolaget Svenska Flaktfabriken, Nacka, Sweden
Filed Oct. 17, 1973, Ser. No. 407,312
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1 L



236,003

LIGHT EMITTING GAS DISCHARGE MATRIX DISPLAY PANEL

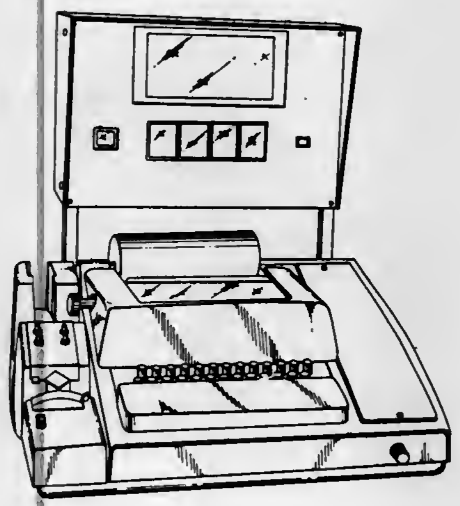
William D. Petty, Perrysburg, and Larry J. Lohmann, Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio
Filed Mar. 21, 1973, Ser. No. 343,589
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



236,004

TAPE PREPARATION SYSTEM

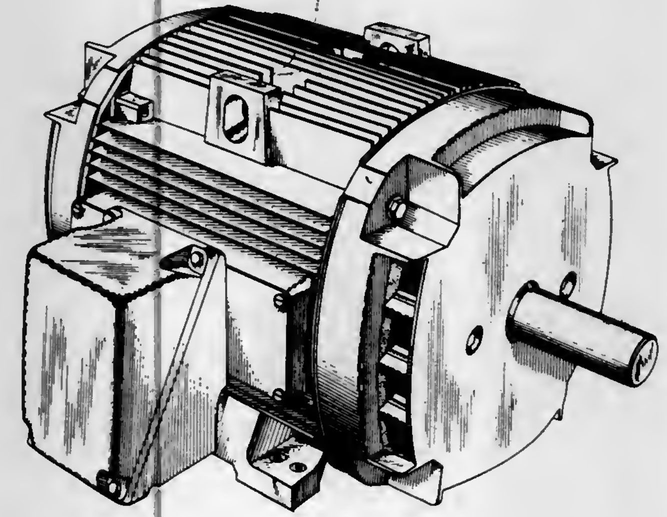
Patrick V. Keene, San Diego, Calif., assignor to Do All Company, Des Plaines, Ill.
Filed Jan. 25, 1974, Ser. No. 436,626
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



236,005

DYNAMOELECTRIC MACHINE

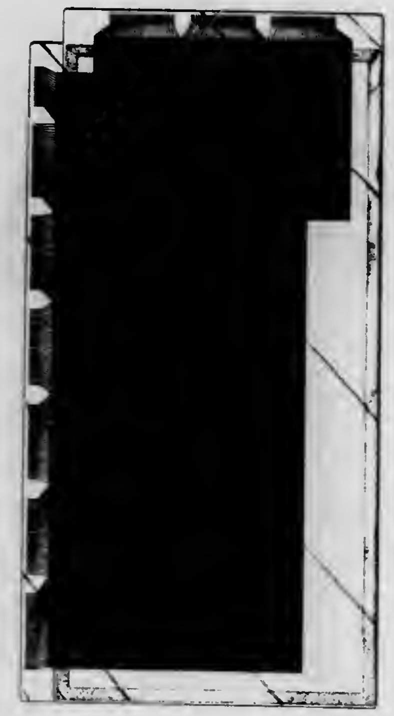
Frederick W. Baumann, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Oct. 24, 1972, Ser. No. 300,019
Term of patent 14 years
Int. Cl. D13—*01*
U.S. Cl. D26—5 A



236,006

LIGHT EMITTING GAS DISCHARGE MATRIX DISPLAY PANEL

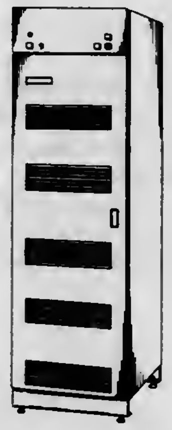
William D. Petty, 524 Clover Lane, Perrysburg, Ohio 43551, and Larry J. Lohmann, 2416 Oak Grove Place, Toledo, Ohio 43613
Filed Aug. 6, 1973, Ser. No. 386,126
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



236,007

REMOTE DATA ACQUISITION AND CONTROL STATION

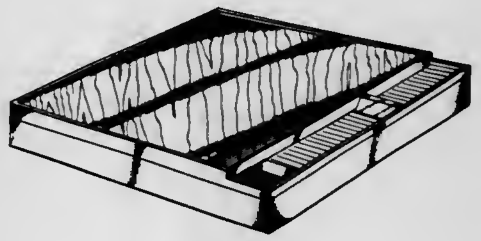
Myron F. Davis, Jr., and Joseph F. Talerico, Boca Raton, Fla., assignors to International Business Machines Corp., Armonk, N.Y.
Filed Dec. 6, 1973, Ser. No. 422,446
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



236,008

AUTOMATIC TELEPHONE DIALER

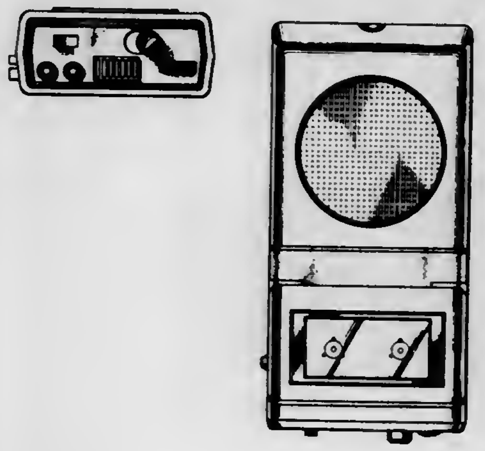
Thomas G. Wixon, 1589 Blackstock Ave., Simi, Calif. 93065
Filed Aug. 8, 1973, Ser. No. 386,726
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A



236,009

MAGNETIC TAPE RECORDER OR SIMILAR ARTICLE

Yasuo Hattori, Tokyo-to, Japan, assignor to Olympus Optical Co., Ltd., Tokyo-to, Japan
Filed Aug. 3, 1973, Ser. No. 385,338
Claims priority, application Japan Feb. 10, 1973
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 B

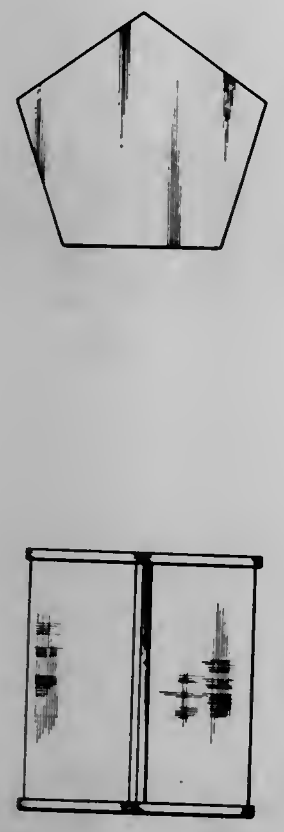


236,010

LOUDSPEAKER CABINET

James C. Carroll, P.O. Box 5301,
Knoxville, Tenn. 37918
Filed Dec. 20, 1972, Ser. No. 316,823
Term of patent 14 years
Int. Cl. D14—*01*

U.S. Cl. D26—14 G

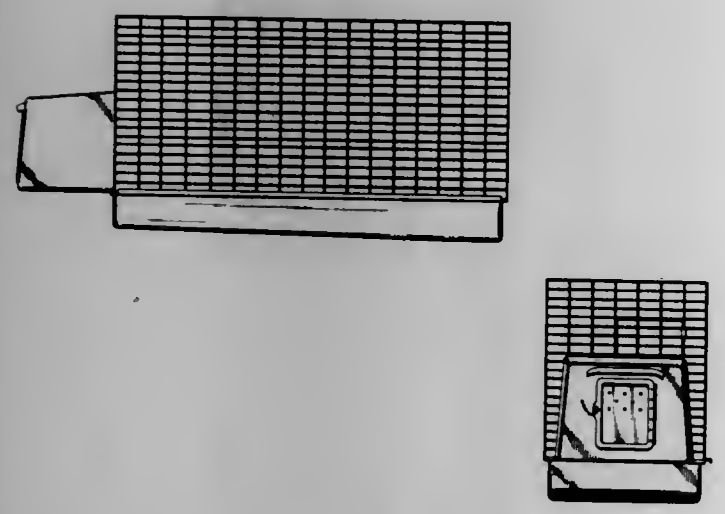


236,011

CAGE FOR DOMESTIC ANIMALS OR SIMILAR ARTICLE

Dwain F. Roche, New Strawn, Kans., assignor to
Herbert R. Amann, Greenwood, Mo.
Filed Aug. 31, 1972, Ser. No. 285,324
Term of patent 14 years
Int. Cl. D30—*02*

U.S. Cl. D30—1

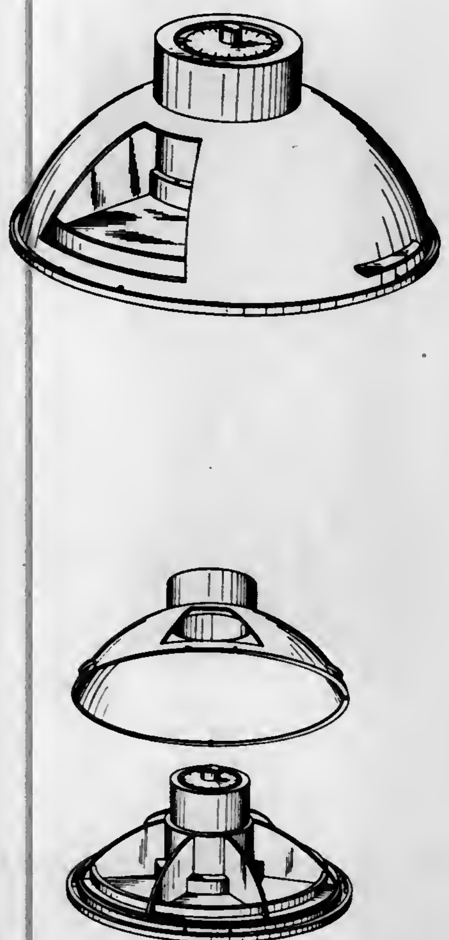


236,012

ANIMAL FEEDER OR THE LIKE

Beverley Crawford, 315 E. 65th St. 10021, and Genelle Jenkins, 107 E. 60th St. 10022, both of New York, N.Y.
Filed July 5, 1973, Ser. No. 376,895
Term of patent 14 years
Int. Cl. D30—*03*

U.S. Cl. D30—13

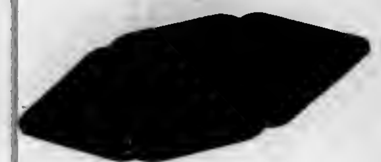


236,013

RESILIENT TOY ARTICLE

Salvatore Lombardi, Jr., 7 Fairview Circle,
Barrington, R.I. 02806
Filed Apr. 15, 1974, Ser. No. 461,166
Term of patent 14 years
Int. Cl. D21—*01*

U.S. Cl. D34—5 GP

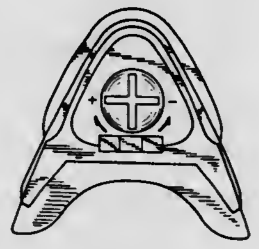


236.014

TOE FIXTURE FOR A SKI SAFETY BINDING

Michio Iizuka, Tokyo-to, Japan, assignor to
Hope Kabushiki Kaisha
Filed Nov. 6, 1973, Ser. No. 413,393
Claims priority, application Japan May 6, 1973
Term of patent 14 years
Int. Cl. D21—*02*

U.S. Cl. D34—14 D

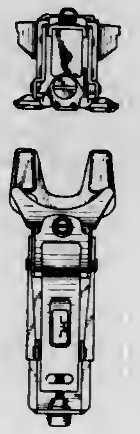


236,015

HEEL UNIT OF A SKI SAFETY BINDING

Masahiro Murata, Tokyo-to, Japan, assignor to
Hope Kabushiki Kaisha
Filed Nov. 5, 1973, Ser. No. 412,984
Claims priority, application Japan May 6, 1973
Term of patent 14 years
Int. Cl. D21—*02*

U.S. Cl. D34—14 D

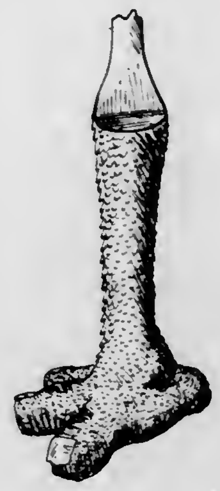


236,016

STILT

Peter F. Boyce, 118 E. Rio Grande Ave.,
Wildwood, N.J. 08260
Original design application Apr. 25, 1972, Ser. No. 247,506, now abandoned. Divided and this application Oct. 3, 1972, Ser. No. 294,542
Term of patent 14 years
Int. Cl. D21—*04*

U.S. Cl. D34—14 E

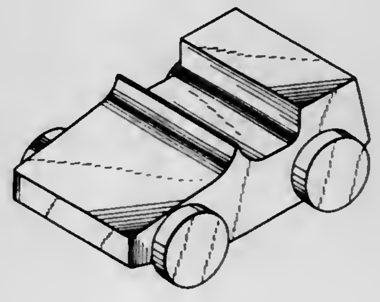


236,017

TOY CAR

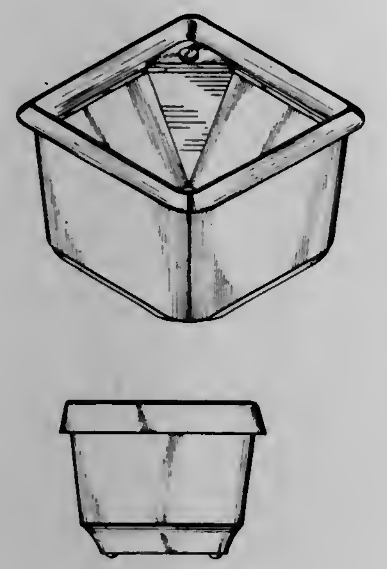
Erkki Pekka Korpijaako, Princeton, N.J., and Jorma Vennola, Corning, N.Y.
Filed Feb. 19, 1974, Ser. No. 443,210
Term of patent 14 years
Int. Cl. D21—*01*

U.S. Cl. D34—15 AJ



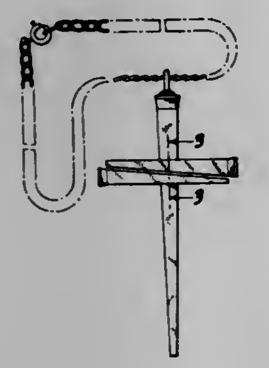
236,018
SELF-WATERING PLANTER

June H. Swift, P.O. Box 28012, and John A. Swift, 2740 Mayhew, both of Dallas, Tex. 75228
Filed May 21, 1973, Ser. No. 362,536
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D35—3 A



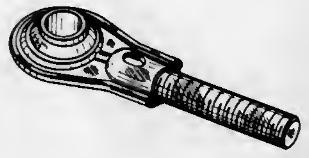
236,019
CROSS PENDANT OR THE LIKE

Robert K. Scott, Jacksonville, Fla., assignor to Abba House, Inc., Jacksonville, Fla.
Original design application Nov. 8, 1972, Ser. No. 304,662, now Patent No. 233,362. Divided and this application Aug. 2, 1974, Ser. No. 494,323
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—16 B



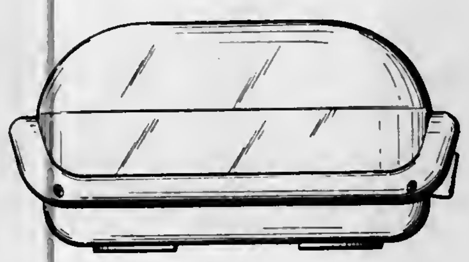
236,020
STAMPED BEARING ASSEMBLY

Vincent C. Wachter, Milford, Joseph R. Keller, Fairfield, and Frederick J. Feldmann, Stratford, Conn., assignors to MPB Corporation, Keene, N.H.
Original design application Aug. 27, 1971, Ser. No. 175,800, now Patent No. 203,030. Divided and this application July 27, 1973, Ser. No. 383,404
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D46—1 R



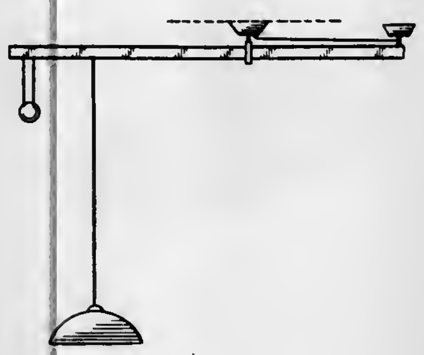
236,021
LIGHTING FIXTURE

Sergio Gandini, Via Tosio 20, Brescia, Italy
Filed June 1, 1973, Ser. No. 366,204
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20 R



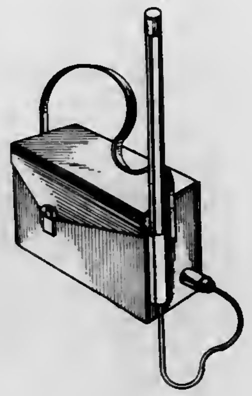
236,022
CEILING LAMP

Lodovico Magistretti, Via Conservatorio 20, Milan, Italy
Filed Mar. 13, 1973, Ser. No. 340,785
Claims priority, application Italy Sept. 19, 1972
Term of patent 7 years
Int. Cl. D26—*05*
U.S. Cl. D48—23 R



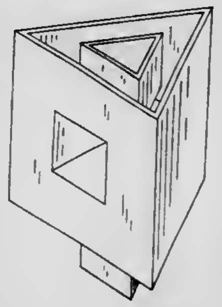
236,023
COMBINED PORTABLE FLUORESCENT LIGHT AND POWER PACK THEREFOR

Thomas N. Zelina, Erie, Pa., assignor to Lighting Systems, Inc.
Filed May 22, 1974, Ser. No. 472,134
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—24 R



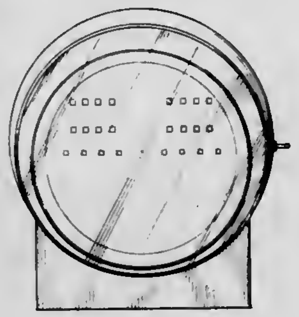
236,024
COMBINED MOLD AND PERMANENT OUTSIDE SHELL FOR EXTERIOR LIGHTING FIXTURE

Howard W. Stentz, 6956 Delmeta Lane, Dallas, Tex. 75240
Filed July 19, 1973, Ser. No. 380,890
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—31



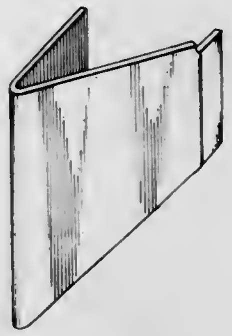
236,025
GASOLINE PUMP INDICATOR HOUSING

Aquilles Alberto Correa De Sa E Benevides, Rio de Janeiro, Brazil, assignor to Texaco Brasil S.A.
Filed Sept. 28, 1973, Ser. No. 401,743
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D52—2 A



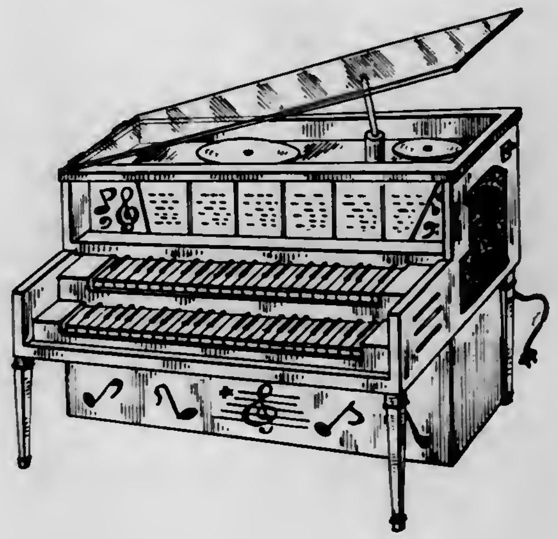
236,026
CORNER BRACE FOR A METAL FORM UNIT

Lyde S. McCracken, Des Moines, Iowa, assignor to Economy Forms Corporation
Filed May 30, 1974, Ser. No. 474,695
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D54—1 R



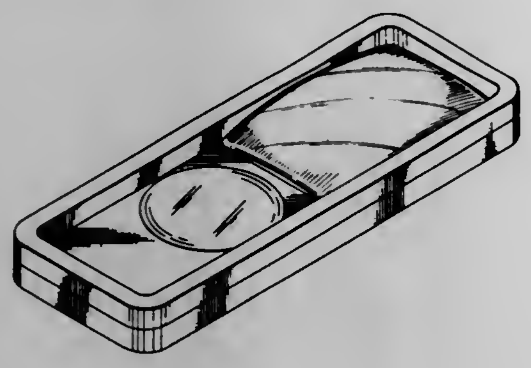
236,027
COMBINED PIANO AND JUKE BOX

James L. Terrell, 704 Clinton St., Waukegan, Ill. 60085
Filed Mar. 20, 1972, Ser. No. 236,550
Term of patent 14 years
Int. Cl. D17—*01;* D14—*01*
U.S. Cl. D56—9



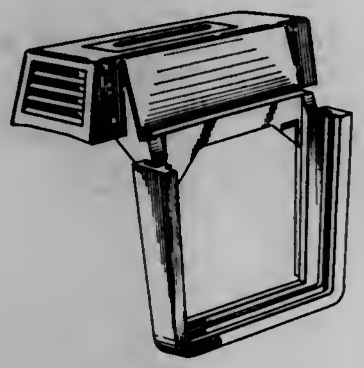
236,028
MAGNIFIER

Philip J. Schroeder, Wellesley, Mass., assignor to Xerox Corporation, Stamford, Conn.
Filed Jan. 26, 1973, Ser. No. 326,906
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 E



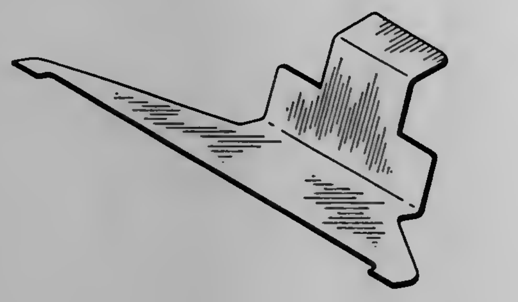
236,029
ACCESSORY MOUNT FOR A CAMERA OR SIMILAR ARTICLE

Edwin H. Land, Cambridge, and John B. Morse, Boston, Mass., assignors to Polaroid Corporation
Filed Aug. 10, 1973, Ser. No. 387,233
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D61—1 E



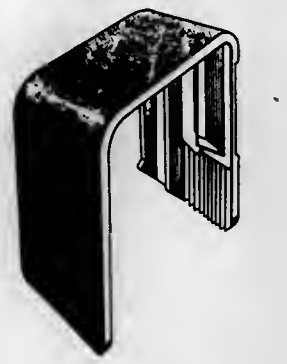
236,030
PAPER TRAY

Denis J. Stemmle, Williamson, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Dec. 29, 1972, Ser. No. 319,834
Term of patent 14 years
Int. Cl. D16—*99;* D18—*99*
U.S. Cl. D61—1 Q



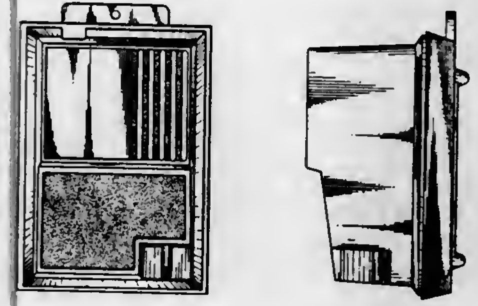
236,031
PHOTOGRAPHIC LENS SHADE OR SIMILAR ARTICLE

Karl H. Aimo, Cambridge, and Philip G. Baker, Peabody, Mass., assignors to Polaroid Corporation
Filed June 1, 1973, Ser. No. 365,830
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D61—1 E



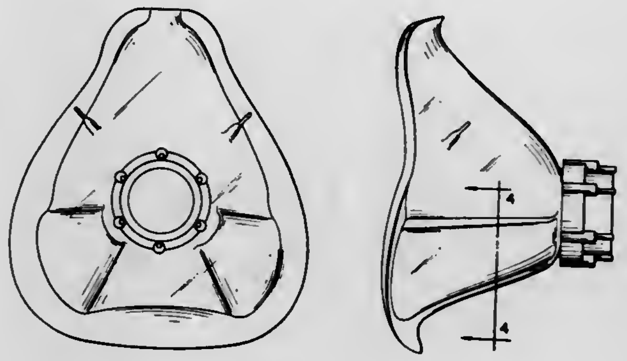
236,032
AQUARIUM AIR PUMP

Marvin A. Goldman, Great Neck, and Jerome N. Goldman, New York, N.Y., assignors to Penn-Plax Plastics, Inc., Garden City, N.Y.
Filed Jan. 9, 1974, Ser. No. 431,899
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D65—1 R



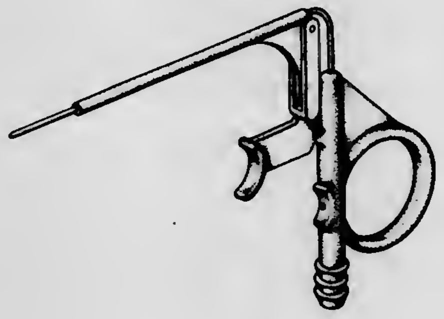
236,033
RESPIRATORY MASK

Gale E. Dryden, 5835 N. Tacoma Ave., Indianapolis, Ind. 46220
Filed Dec. 14, 1972, Ser. No. 315,206
Term of patent 14 years
Int. Cl. D29—*02;* D24—*02*
U.S. Cl. D83—1 K



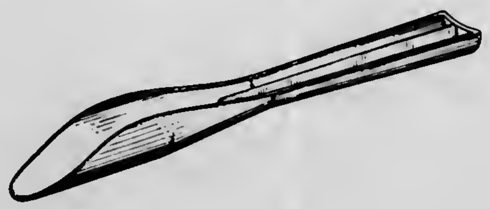
236,034
MYRINGATOME-ASPIRATOR-TUBE INSERTER

James L. Geraci, Cincinnati, Ohio, assignor to Xomox Corporation
Filed Sept. 18, 1973, Ser. No. 398,510
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—12 R



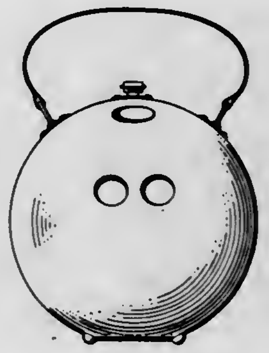
236,035
TAMPON INSERTER

Evelyn Ciencewicki, South River, N.J., assignor to Personal Products Company, Milltown, N.J.
Filed Sept. 10, 1973, Ser. No. 395,474
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—12 A



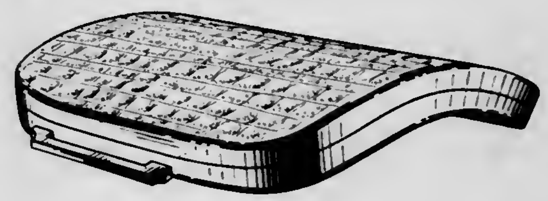
236,036
HANDBAG

Clarence V. Tibbs, Knoxville, Tenn., assignor to Balls 'n' All, Inc., Knoxville, Tenn.
Filed Aug. 24, 1973, Ser. No. 391,301
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—3 F



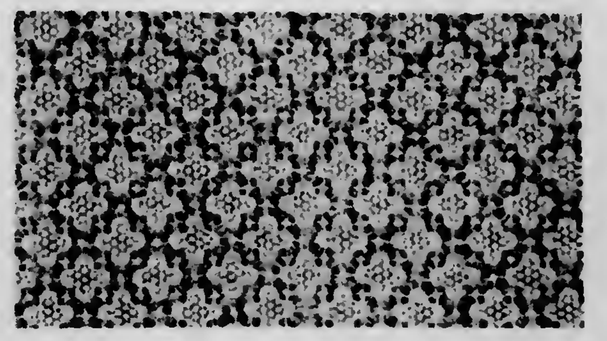
236,037
WRIST PURSE OR SIMILAR ARTICLE

Joseph J. McCarthy, Saugus, Mass.
(21 Berwick, Melrose, Mass. 02176)
Filed May 30, 1973, Ser. No. 365,081
Term of patent 14 years
Int. Cl. D5—*06*
U.S. Cl. D87—3 B

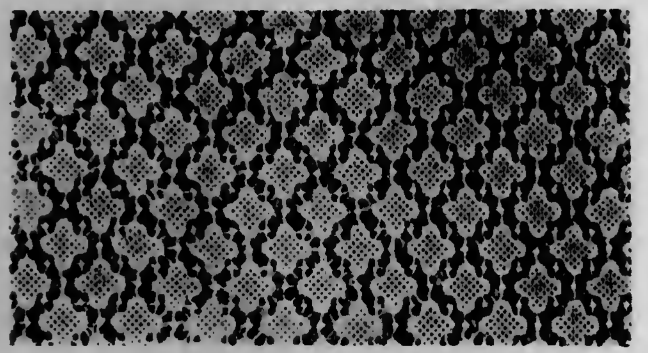


236,038
NONWOVEN LACE FABRIC

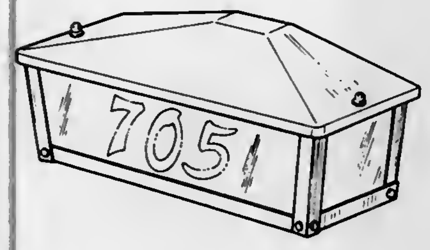
Dale E. Mancuso, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Oct. 9, 1973, Ser. No. 406,648
Term of patent 14 years
Int. Cl. D5—*02*
U.S. Cl. D92—1 PP



236,039
NONWOVEN LACE FABRIC
Dale E. Mancuso, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Oct. 9, 1973, Ser. No. 406,649
Term of patent 14 years
Int. Cl. D5—*02*
U.S. Cl. D92—1 PP



236,040
ILLUMINATED SIGN
Heinz G. Schuette, 26145 Shook Road, Mount Clemens, Mich. 48043
Filed June 4, 1973, Ser. No. 366,328
Term of patent 14 years
Int. Cl. D20—*03*; D26—*05*
U.S. Cl. D96—12 R



LIST OF PATENTEES
TO WHOM
PATENTS WERE ISSUED ON THE 22ND DAY OF JULY, 1975

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A/S Ardal OG Sunndal Verk: *See—*
  Gjosteen, Ole Georg; Terum, Trygve Olavson; and Aarflot, Aksel Ola, 3,895,937.
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  Gjosteen, Ole Georg; Terum, Trygve Olavson; and Aarflot, Aksel Ola, 3,895,937.
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  Fagherazzi, Giuliano; Ferrero, Francesco; and Accattino, Gianfranco, 3,896,216.
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  Hancox, Roger John, 3,895,454.
ACEC (Ateliers de Constructions Electriques de Charleroi): *See—*
  Rym, Christian, 3,896,368.
Adair, Georga Ann. Body encompassing bandage protector for dogs and other such animals. 3,895,628, Cl. 128-171.000.
Adams, George Phillip; Gavin, Frederick David, Jr.; and Natale, Anthony Pete, to Western Electric Company, Incorporated. Assembling electrical connecting device to cordage. 3,895,434, Cl. 29-628.000.
Adams, Phillip: *See—*
  Merianos, John J.; Shay, Edward Griffin; Adams, Phillip; and Petrocci, Alfonso N., 3,895,932.
Adams, Richard C.: *See—*
  Herold, Albert J.; Koch, Paul E.; and Adams, Richard C., 3,895,900.
Adams, Robert E.: *See—*
  Gill, William N.; Doshi, Mahendra R.; and Adams, Robert E., 3,895,958.
Admiral Corporation: *See—*
  Chamberlain, Richard Travers, 3,896,330.
Adolphi, Heinrich: *See—*
  Beutel, Peter; Adolphi, Heinrich; and Kiehs, Karl, 3,896,190.
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  Lewis, Philip S., Jr.; Agee, William A.; Bullock, Jonathan S., IV; and Condon, James B., 3,895,935.
Agfa-Gevaert Aktiengesellschaft: *See—*
  Beuselinck, Marcel Leon, 3,896,029.
  Geiger, Julius; Meinhardt, Gunter; and Wagenknecht, Werner, 3,895,950.
  Riester, Oskar; and Ohlschlager, Hans, 3,895,951.
Ahlgren, Nils Harald. Method of lowering and raising loads by means of a jack assembly and lifting element. 3,895,778, Cl. 254-1.000.
Ahmadjian, Mark: *See—*
  Brown, Christopher W.; Ahmadjian, Mark; and Lynch, Patricia F., 3,896,312.
Air Products and Chemicals, Inc.: *See—*
  Cook, George E., 3,896,287.
Airco, Inc.: *See—*
  Terrell, Ross C., 3,896,177.
  Terrell, Ross C., 3,896,178.
Aisin Seiki Kabushiki Kaisha: *See—*
  Murakami, Noboru, 3,895,547.
  Takeshi, Nakane; and Naoji, Sakakibara, 3,895,684.
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  Welzel, Gunter; and Ajmaletdinov, Dair, 3,895,654.
Akademie der Wissenschaften der DDR: *See—*
  Gruette, Friedrich-Karl; Schulze, Juergen; and Hampel, Heinz-Georg, 3,896,240.
Akamatsu, Kiyoshi; Yokota, Yuzo; Sagami, Hiroshi; and Imai, Isao, to Asahi Kasei Kogyo Kabushiki Kaisha. Photosensitive element comprising photopolymerizable layer and protective layer. 3,895,949, Cl. 96-86.00P.
Akazaki, Shigeru; Endo, Masaaki; and Shinozaki, Mamoru. Pleasure boat for observation in the sea. 3,895,495, Cl. 61-46.000.
Akzo N.V.: *See—*
  de Jongh, Hendrik A. P.; and de Jonge, Cornelis R. H. I., 3,896,099.
Akzona Incorporated: *See—*
  Jacoby, Charles H., 3,896,039.
Albertson, Eleanor M., executrix: *See—*
  Albertson, Victor N., deceased; and Albertson, Eleanor M., executrix, 3,895,701.
Albertson, Victor N., deceased; and by Albertson, Eleanor M., executrix. Transmission system. 3,895,701, Cl. 192-44.000.
Alberty, Joachim; Salomaa, Eero; Saris, Nils-Erik; Sjostrom, Eero; and Zewi, Gabriel, to Orion-Yhtyma OY. Means for isolation and detection of barbituric acid derivatives and glutethimide in biological fluids. 3,895,914, Cl. 23-253.0TP.
Alcorn, Charles Noble; De Filippi, Robert Joseph; Henke, John David; and Liang, Robert Ng, to International Business Machines Corporation. Integrated monolithic switch for high voltage applications. 3,896,317, Cl. 307-254.000.
Alderson Research Laboratories, Inc.: *See—*
  Smrcka, Joseph G., 3,895,451.
Allen-Bradley Company: *See—*
  Burton, Lawrence A.; and Doos, Gustav W., 3,896,353.
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  Schotthoefer, Jerome W.; and Colasanti, Arduino, 3,895,821.
  Stephenson, Robert L., 3,895,823.
Allis-Chalmers Corporation: *See—*
  Haupt, Robert C., 3,895,679.
Alliston, William H.; and Koenig, Rainer H., to Westinghouse Electric Corporation. Method and system of simulating nuclear power plant count rate for training purposes. 3,896,041, Cl. 235-151.210.
Allmanna Svenska Elektrika Aktiebolaget: *See—*
  Andersson, Olle; and Ericsson, Ellerth, 3,896,406.
Allsopp, Peter Stockport, to Wilson and Longbottom Limited. Weft transfer mechanism for looms for weaving. 3,895,656, Cl. 139-122.00N.
Althaus, Earl G. Gate valve. 3,895,777, Cl. 251-203.000.
ALZA Corporation: *See—*
  Buckles, Richard G.; Hoff, Seymour; Kehr, Sharon; and Yum, Su Il, 3,895,631.
Amalgamated Wireless (Australasia) Limited: *See—*
  Lin, Paul, 3,896,444.
Amarantos, John Gust. Expandable protective device. 3,895,396, Cl. 2-2.000.
Amato, Harry. Portable folding seat. 3,895,839, Cl. 297-4.000.
Amchem Products, Inc.: *See—*
  Jacques, Albert M. V., 3,896,163.
Amelio, Gilbert F.; and Dyck, Rudolph H., to Fairchild Camera and Instrument Corporation. Charge coupled area imaging device with column anti-blooming control. 3,896,474, Cl. 357-24.000.
Amemiya, Youichi: *See—*
  Inaba, Seiuemon; Shimizu, Kanryo; Hashimoto, Yoshihiro; Amemiya, Youichi; and Usami, Hiroshi, 3,896,361.
American Associated Cybernetics, Inc.: *See—*
  Dukette, William J., 3,895,729.
American Can Company: *See—*
  Roteman, Jerome, 3,895,954.
  Schlesinger, Sheldon I., 3,895,952.
American Cyanamid Company: *See—*
  Wagner, Frank Albert, Jr., 3,896,144.
American Home Products Corporation: *See—*
  Chai, Sie-Yearl; and Yardley, John P., 3,896,105.
  McCaully, Ronald J., 3,896,170.
  McKinely, Wayne A.; and Sarantakis, Dimitrois, 3,896,104.
  Santilli, Arthur A.; Scotese, Anthony C.; and Tomarelli, Rudolph M., 3,896,129.
  Sellstedt, John H., 3,896,110.
Ammann, Paul R., to Kennecott Copper Corporation. Method for recovering molybdenum from particulate silicate slags. 3,896,210, Cl. 423-56.000.
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Amour, William E. Amphibious vehicle. 3,895,596, Cl. 115-1.00R.
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  Bolton, James Alfred; and Peiffer, Howard Richard, 3,895,851.
  Pass, Raymond Vincent, 3,896,293.
  Wasserlein, Henry George, Jr., 3,895,852.
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  Sujdak, Thomas J.; and Anderson, Douglas W., 3,895,655.
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Ando, Masatoshi. Retractable head for tape recorder. 3,896,493, Cl. 360-96.000.
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- Aoki, Harumi; and Itagaki, Takuo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Automatic focus adjustment means. 3,896,304, Cl. 250-201.000.
- Aoki, Katashi, to Nissei Plastics Industrial Co., Ltd. Resin flow controlling device for injection molding machine. 3,895,747, Cl. 222-494.000.
- Aquarius, Inc.: *See—*
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- Arai, Shinichi: *See—*
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- Arakelov, Mikhail Alexandrovich; Gersamia, Eduard Galaktionovich; Zedgenidze, Tengiz Grigorievich; and Nozadze, Gennady Pavlovich. Mandrel and apparatus for manufacturing multilayer winding. 3,895,423, Cl. 29-205.00D.
- Ariyan, Zaven S.; and Kulka, William A., to Uniroyal, Inc.; and Uniroyal Ltd. Anti-inflammatory thiazole compositions and methods for using same. 3,896,223, Cl. 424-248.000.
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- Armstrong, Donald E.: *See—*
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- Armstrong, John M. Rotary internal combustion engine. 3,895,609, Cl. 123-8.410.
- Arthur D. Little, Inc.: *See—*
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  - Yoshida, Akitoshi; Asahara, Koichi; Yanagida, Koichiro; Maruyama, Tadanobu; Takatsu, Ikue; and Kumagai, Yoshiko, 3,895,956.
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- Atkinson, Lowell G., to General Aviation Electronics, Inc. Electronic bandswitching for automatic direction finder. 3,896,445, Cl. 343-117.000.
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  - Langlois, Christian Charles, 3,895,881.
- Averette, Beauford E., to Raymond Lee Organization, Inc., The, a part interest. Selecting device. 3,895,808, Cl. 273-138.00R.
- Aycock, David F.; and Sliva, Daniel E., to General Electric Company. Process for recycling a cobalt hydroformylation catalyst. 3,896,047, Cl. 252-414.000.
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- Bachman, John A., to Del Mar Engineering Laboratories. Respiratory gas analyzer including a carbon dioxide and respiratory quotient computer. 3,895,630, Cl. 128-2.070.
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- Bahr, Albert. Filter press, particularly for dewatering sludge in sewage treatment plants. 3,896,030, Cl. 210-384.000.
- Baile, Clifton A.; Bender, Paul E.; and Loev, Bernard, to SmithKline Corporation. 8-Alkyl and alkenyl-10-hydroxy-5H[1]benzopyranopyridine derivatives and uses thereof. 3,896,137, Cl. 260-297.00T.
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- Bailey, Henry E. Split piston two-stroke four cycle internal combustion engine. 3,895,614, Cl. 123-67.000.
- Baird, Barbara. Skipping projectile water target. 3,895,801, Cl. 273-95.00R.
- Baker, Basil Offor; and Ross, John William Ellis, to M-O Valve Company Limited, The. Heat-operated short-circuiting arrangements. 3,896,343, Cl. 317-61.000.
- Baker Company, Inc., The: *See—*
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- Barnes, Eldridge. Structural member lifting and releasing device. 3,895,836, Cl. 294-83.00R.
- Barnes, Willard, to Wilson Industries, Inc. Wire line spear mechanism. 3,895,837, Cl. 294-86.100.
- Barnhart, Morris W., to Edax International Inc. Live time correction system. 3,896,296, Cl. 235-92.0EV.
- Baro, Jose Marie, to Thomson-CSF. Arrangement for compensating the temperature drift of a power amplifier. 3,896,394, Cl. 330-23.000.
- Barouh, Victor; and Glenn, Robert. Apparatus for manufacturing correction material. 3,895,603, Cl. 118-50.000.
- Barrett, James; Kirsop, Brian Heys; and Palmer, Godfrey Henry Oliver, to Brewing Patents Limited. Malting processes. 3,896,001, Cl. 195-71.000.
- Barrett, Robert; and Gordon, John Ashley, to British Secretary of State for Defence. Digital telecommunications apparatus having error-correcting facilities. 3,896,416, Cl. 340-146.1AL.
- Barth, Erich: *See—*
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- Barth, Manfred; and Meitinger, Heinz, to Timex Corporation. Synchronizing arrangement for a timekeeping instrument. 3,895,487, Cl. 58-28.00B.
- Bartner, Elliot; Curley, Edward M.; Kaplan, Sheldon; and Sarnoff, Stanley J., to Survival Technology, Inc. Large capacity syringe. 3,895,633, Cl. 128-218.0DA.
- Barton, Ralph D.; and Buchser, William J., to Whirlpool Corporation. Electrical heaters for refrigerators. 3,895,500, Cl. 62-273.000.
- BASF Aktiengesellschaft: *See—*
  - Beutel, Peter; Adolphi, Heinrich; and Kiehs, Karl, 3,896,190.
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- Bashline, John D.; Dravis, Charles A.; and Frye, Richard D., to Hunsche, Donald R. Locking device for threaded fasteners. 3,895,663, Cl. 151-34.000.
- Basse, Philip, to Comstron Corporation. Sensitive wide band voltmeters. 3,896,389, Cl. 328-151.000.
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- Bauer, Stuart M., to Pfizer Inc. Process for preparing pre-moistened antimicrobial towels. 3,895,474, Cl. 53-21.0FC.
- Bauer, William H., to Textron Inc. Positive expulsion tank. 3,895,746, Cl. 222-386.500.
- Baughan, Harry O., III: *See—*
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- Baum, Elliot W., to Berco Industries. Base construction for support of table structure or the like. 3,895,771, Cl. 248-188.700.
- Baumann, Bernard: *See—*
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- Baumann, Emil, to Contraves AG. Rocket launcher mount. 3,895,557, Cl. 89-1.815.
- Baumann, Hans: *See—*
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- Baxter, Gene F.; Freeman, Harlan G.; and Tiedeman, George T., to Weyerhaeuser Company. Rapid curing resin compositions employing aminoplast condensation polymer modified with a di-substituted bis-aryl amine. 3,896,081, Cl. 260-47.00R.
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- BBA Group Limited: *See—*
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- Beal, Philip F., III; Lincoln, Frank H., Jr.; and Pike, John E., to Upjohn Company, The. Dihydroprostaglandin E, analogs. 3,896,156, Cl. 260-468.00D.
- Bear, Fred B., to Victor Comptometer Corporation. Imitation feather fletching and method of making same. 3,895,802, Cl. 273-106.50C.
- Beatrice Foods Company: *See—*
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- Beaver, Guy Daniel; Young, Robert Cleland; and Martin, Donald Theodore, to Babcock & Wilcox Company, The. Method for forming and curing a fiber reinforced hollow epoxy shaft. 3,896,206, Cl. 264-258.000.
- Bechstein, Herbert; Jaenke, Hans-Jurgen; Muller, Rolf; Ritter, Ernst; Staudt, Heinrich; Tomasch, Helmut; and Urlberger, Alois, to Robert Bosch G.m.b.H. Centrifugal rpm regulator for internal combustion engines. 3,895,537, Cl. 73-550.000.
- Beck, Henry Nelson, to Dow Chemical Company, The. Nucleation of isotactic polystyrene. 3,896,100, Cl. 260-93.50A.
- Becker, Klaus H.; Haywood, Fred F.; Perdue, Philip T.; and Thorngate, John H., to United States of America, Energy Research and Development Administration. Fast-neutron solid-state dosimeter. 3,896,306, Cl. 250-392.000.
- Beckman Instruments, Inc.: *See—*
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- Bedford, John, to Ferranti Limited. Apparatus for the measurement of short time intervals. 3,896,378, Cl. 324-188.000.
- Beecham, David, to Bell Telephone Laboratories, Incorporated. Buffer store using shift registers and ultrasonic delay lines. 3,896,417, Cl. 340-172.500.
- Beecroft, Harold James, to Control Data Corporation. Mechanically isolated transducer head with spring loaded arm for flying. 3,896,495, Cl. 360-103.000.
- Behm, Carl M. Apparatus for and method of testing for predetermined unbalance of electric motor rotors and the like. 3,895,536, Cl. 73-462.000.
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- Bell, Richard M., to Penn Central Transportation Company. Railroad car for transporting automobiles. 3,895,587, Cl. 105-368.00R.
- Bell Telephone Laboratories, Incorporated: *See—*
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  - MacRae, Alfred Urquhart; Miller, Paul; Moline, Robert Alan; and Simpson, John, 3,895,965.
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- Beloit Corporation: *See—*
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- Benjamin, Lawrence; and Connor, Daniel S., to Procter & Gamble Company, The. Built detergent composition. 3,896,056, Cl. 252-539.000.
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- Berco Industries: *See—*
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- Berger, Abe: *See—*
  - DeZuba, George P.; Berger, Abe; and Selin, Terry G., 3,896,123.
- Berger, Leo; and Corraz, Alfred John, to Hoffmann-La Roche Inc. Carbazoles. 3,896,145, Cl. 260-315.000.
- Berger, Leonard; and Underhill, Robert A., to Rapid-American Corporation. Tampon inserter. 3,895,634, Cl. 128-263.000.
- Bergfjord, John Alf; Radler, Richard William; and Millonzi, Richard Phillip, to Xerox Corporation. Polymers of benzanthracene as active matrix materials. 3,896,184, Cl. 260-669.0QZ.
- Berkner, Rolf, to Semikron Gesellschaft fur Gleichrichterbau u. Elektronik m.b.H. Coating semiconductor surfaces. 3,896,254, Cl. 428-411.000.
- Berkowitz, Gerard J. Cabinet door alarm device. 3,895,599, Cl. 116-95.000.
- Berkoz, Belig M.; Edwards, John A.; and Fried, John H., to Syntex (U.S.A.) Inc. Process for preparing 3-(4-or-5-azidocarbonylthiazol-2-oxy)-propanediol-1,2-acetonides. 3,896,139, Cl. 260-302.00R.
- Berman, Herbert A.; Campbell, Robert B.; and Loftus, Wallace D., to Westinghouse Electric Corporation. Photodetector apparatus with a zero cut-off response to absolute zero at a specified light frequency. 3,896,313, Cl. 250-372.000.
- Bernauer, Karl; Borgulya, Janos; and Schneider, Fernand, to Hoffmann-La Roche Inc. Process for preparing 1,2,3,8,9,9a-hexahydro-5,6-dialkoxy-1-alkyl-benzo[d,e]quinolin-7-ore compounds. 3,896,132, Cl. 260-289.00R.
- Bernstein, Joseph D. Mounting strip for flexible sheet material. 3,895,468, Cl. 52-222.000.
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- Betz Laboratories, Inc.: *See—*
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  - Shema, Bernard F.; and Brink, Robert H., Jr., 3,896,229.
  - Shema, Bernard F.; Brink, Robert H., Jr.; and Swered, Paul, 3,896,231.
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- Beuselinck, Marcel Leon, to Agfa-Gevaert Aktiengesellschaft. Switching valve for continuous filtering devices. 3,896,029, Cl. 210-341.000.
- Beutel, Peter; Adolphi, Heinrich; and Kiehs, Karl, to BASF Aktiengesellschaft. Sulfurous phosphoric and phosphonic esters. 3,896,190, Cl. 260-945.000.
- BF Goodrich Company, The: *See—*
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- Bickel, Quentin D. Reflective apparatus. 3,895,856, Cl. 350-104.000.
- Bieber, Clarence George, to International Nickel Company, Inc., The. Corrosion resistant high chromium ferritic stainless steel. 3,895,940, Cl. 75-128.00W.
- Biermann, Klaus; Burbach, Jurgen; Gimpel, Horst; and Zirpins, Burckhard, to.Fried. Krupp Gesellschaft mit beschrankter Haftung. Device for generating high pressures and temperatures. 3,895,894, Cl. 425-77.000.
- Bigenwald, John J., to Xerox Corporation. Vacuum sheet stripper. 3,895,793, Cl. 271-174.000.
- Bilek, Jan, to Elitex, Zavody textilniho strojirenstvi generalni reditelstvi. Device for controlling gripper shuttle in looms. 3,895,657, Cl. 139-125.000.
- Bilotti, Alberto; and Lutz, Ronald W., to Sprague Electric Company. A.C. coupling network. 3,896,383, Cl. 325-347.000.
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- Bird Corporation: *See—*
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- Bird, Forrest M.; and Pohndorf, Henry L., to Bird Corporation, a part interest. Method and apparatus for mixing gases. 3,895,642, Cl. 137-7.000.
- Birkner, Hugo E., Jr.: *See—*
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- Bitantis, Edward. Gripping device for accomodating either male or female components. 3,895,828, Cl. 280-493.000.
- Blake, Douglas O., to United States of America, Army. Valve position indicator. 3,896,280, Cl. 200-81.90M.
- Blakeslee, Dirk C.; and Farrell, Thomas C., to Rockwell International Corporation. Pressure and temperature compensated indicating apparatus for fluid meters. 3,895,532, Cl. 73-233.000.
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- Blaschke, Felix, to Siemens Aktiengesellschaft. Control arrangement for a self-controlled synchronous machine. 3,896,351, Cl. 318-175.000.
- Blickle, Karl, to J. M. Voith GmbH. Ship propulsion unit having a variable pitch propeller. 3,895,598, Cl. 115-35.000.
- Bluggel, Erwin: *See—*
  - Bauer, Andrfas; and Bluggel, Erwin, 3,895,824.
- Blum, William A.; and Goltz, Kurt, to Pennwalt Corporation. Sealing rinse for phosphate coatings of metal. 3,895,970, Cl. 148-6.15R.
- Blume, Alan E., to United States of America, Air Force. Apparatus for providing higher order mode compensation in horn antennas. 3,896,449, Cl. 343-786.000.
- Blumenfeld, Samuel M.: *See—*
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- Bobenrieth, Albert, to Thomson-CSF. Apparatus for effecting deposition by ion bombardment. 3,895,602, Cl. 118-49.100.
- Bockau, Gustav; Gormann, Willi; Fernholz, Werner; and Frenyo, Pal, to Gebr. Eickhoff, Maschinenfabrik und Eisengiesserei m.b.H. Scraper chain conveyor. 3,895,705, Cl. 198-109.000.
- Bockowski, Edmund J.; and Stefanelli, Louis J., to Betz Laboratories, Inc. Photometric test method for chelant residual or deficiency. 3,895,913, Cl. 23-230.00R.
- Boehringer Ingelheim GmbH: *See—*
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- Bogert, Clayton. Protective and safety closure for containers. 3,896,335, Cl. 215-219.000.

- Bohusch, Glen O.: *See—*
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- Boissieras, Jean; Ceyzeriat, Louis; and Poy, Guy, to Rhone-Poulenc, S.A. Iminoxyorganosilanes. 3,896,079, Cl. 260-46.50G.
- Bokenkamp, Donald G., to Dolphin International, Inc. Riser pipe stacking method. 3,895,677, Cl. 166-.500.
- Bolling, Gustaf Frederic; and Cisse, Jean, to Ford Motor Company. Aluminum silicon alloys. 3,895,941, Cl. 75-148.000.
- Bolshakov, Alexandr Ivanovich; Mikhailov, Alfa Ivanovich; Barkalov, Igor Mstislavovich; and Goldansky, Vitaly Iosifovich. Copolymers of acetone with unsaturated compounds of aliphatic series and a method for preparing same. 3,896,084, Cl. 260-63.00R.
- Bolton, James Alfred; and Peiffer, Howard Richard, to AMP Incorporated. Brittle-surfaced connector. 3,895,851, Cl. 339-95.00R.
- Bone, Arnold R., to Dennison Manufacturing Company. Fastener attachment system needle constructions. 3,895,753, Cl. 227-67.000.
- Bonis, Maurice, to U.S. Philips Corporation. Semiconductor device comprising resistance region having portions lateral to conductors. 3,896,475, Cl. 357-35.000.
- Borden, George Wayne; and Trecker, David John, to Union Carbide Corporation. Novel esters of alkyloxy and alkaryloxpolyethylene glycols. 3,896,161, Cl. 260-486.00R.
- Borg-Warner Corporation: *See—*
  - Hopkins, Neil E., 3,895,499.
- Borgulya, Janos: *See—*
  - Bernauer, Karl; Borgulya, Janos; and Schneider, Fernand, 3,896,132.
- Bouchard, Robert Joseph; and Rogers, Donald Burl, to du Pont de Nemours, E. I., and Company. Pyrochlore-related oxides containing copper and/or silver and resistor compositions thereof. 3,896,055, Cl. 252-521.000.
- Bouchy, Jean C.; and Hardman, T. J., to McNay Equipment Company, Inc. Electronic control system for fluid measurement of a closed air space. 3,895,519, Cl. 73-149.000.
- Bournham, Gerald E., Sr., to Well Control, Inc. Apparatus for the degassification of drilling muds. 3,895,927, Cl. 55-170.000.
- Bouyoucos, John V., to Hyroacoustics Inc. Acoustic transmitter. 3,895,688, Cl. 181-402.000.
- Bowthorpe Hellermann Limited: *See—*
  - Miles, William Walter James, 3,896,352.
- Boyd, John F.: *See—*
  - Dowling, Donald J.; and Boyd, John F., 3,896,413.
- BP Chemicals International Limited: *See—*
  - Brown, Peter John Nicholas; and Capp, Clifford William, 3,896,181.
  - Cooke, Maurice Dudley, 3,896,006.
- BP Chemicals Limited: *See—*
  - Young, Donald Peter, 3,896,182.
- Bradford, Wesley L.: *See—*
  - Brown, Jack T.; Feduska, William; and Bradford, Wesley L., 3,895,960.
- Brady, William H., Jr., to W. H. Brady Co. Storage card for labels. 3,896,246, Cl. 428-41.000.
- Brandes, George: *See—*
  - Leonard, Fred; and Brandes, George, 3,896,077.
- Brandli, John R.; and Turek, Herbert, to Turek & Heller Machine, Inc. Metal tube buffing and polishing apparatus. 3,895,463, Cl. 51-87.00R.
- Brandstatter, Miroslav, to Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi. Quickly replaced pattern drum. 3,895,504, Cl. 66-156.000.
- Bratzler, Karl; Doerges, Alexander; and Schlauer, Johann, to Metallgesellschaft Aktiengesellschaft. Process for the removal of hydrogen sulfide from a gas stream. 3,896,215, Cl. 423-573.000.
- Braun, Anton: *See—*
  - Cerf, Peter H., 3,895,618.
- Bray Oil Company: *See—*
  - Dickey, Charles R., 3,896,037.
- Brechling, George E.; and Montren, John J., to International Business Machines Corporation. Dynamic MOSFET layout technique. 3,896,482, Cl. 357-23.000.
- Brenin, Alexandr Ivanovich: *See—*
  - Efimov, Ivan Ivanovich; Lifshits, Mikhail Lvovich; Nikiforov, Dmitry Dmitrievich; Ivanov, Viktor Pavlovich; Linetsky, Lev Efimovich; Lazarev, Vadim Georgievich; and Brenin, Alexandr Ivanovich, 3,896,339.
- Brennan, Thomas M.: *See—*
  - Mylari, Banavara L.; and Brennan, Thomas M., 3,896,172.
- Brenner, L. Martin; and Loev, Bernard, to SmithKline Corporation. Pharmaceutical compositions and methods of inhibiting gastric acid secretion. 3,896,233, Cl. 424-248.000.
- Bretschneider, Hermann: *See—*
  - Kaiser, Ado; Bretschneider, Hermann; and Hohenlohe-Oehringen, Kraft, 3,896,166.
- Breveteam S.A.: *See—*
  - Tesch, Guenter Horst, 3,895,981.
- Brewing Patents Limited: *See—*
  - Barrett, James; Kirsop, Brian Heys; and Palmer, Godfrey Henry Oliver, 3,896,001.
- Bridgestone Tire Company Limited: *See—*
  - Komatsu, Tasaaki; and Arai, Shinichi, 3,895,986.
- Brink, Robert H., Jr.: *See—*
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  - Shema, Bernard F.; Brink, Robert H., Jr.; and Swered, Paul, 3,896,231.
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- Bristol-Myers Company: *See—*
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  - Naito, Takayuki; Nakagawa, Susumu; and Toda, Soichiro, 3,896,106.
- British Aircraft Corporation Limited: *See—*
  - Summers, Leo Ewart Arthur; Le Cornu-Rickard, John Fyfe; and Underhill, David Sidney, 3,895,436.
- British Jeffrey-Diamond Limited: *See—*
  - Wall, Christopher; Scaife, Ronald; and Wood, Thomas A., 3,895,843.
- British Secretary of State for Defence: *See—*
  - Barrett, Robert; and Gordon, John Ashley, 3,896,416.
  - Paddison, Denys Ian, 3,895,584.
- Broadt, David R.; and Armstrong, Donald E., to GTE Sylvania Incorporated. Photoflash lamp. 3,895,902, Cl. 431-93.000.
- Brodnitz, Michael H.: *See—*
  - Pittet, Alan O.; Pascale, John V.; Patton, Stuart; and Brodnitz, Michael H., 3,895,640.
- Broecker, Franz Josef; Heners, Juergen; Marosi, Laszlo; Schwarzmann, Matthias; and Laurer, Peter Rudolf, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Nickel-containing hydrogenation catalysts for the selective hydrogenation of fats and oils. 3,896,053, Cl. 252-466.00J.
- Broker, David C.; and Wisniewski, Judith L., to Johnson Service Company. Method for making tubular fluidic resistors. 3,896,205, Cl. 264-251.000.
- Brooks, John A.; and Krenzer, Robert W., to United States of America, Energy Research and Development Administration. Weldable, age hardenable, austenitic stainless steel. 3,895,939, Cl. 75-124.000.
- Brothers, Gene A., to Eltra Corporation. Machine for joining a thermoplastic cap to a thermoplastic tube. 3,895,991, Cl. 156-457.000.
- Brown, Boveri & Cie AG: *See—*
  - de Quervain, Alfred; and Wild, Peter, 3,895,866.
- Brown, Boveri & Company Ltd.: *See—*
  - Dandliker, Rene; Iten, Paul; and Eliasson, Baldur, 3,895,872.
- Brown, Christopher W.; Ahmadjian, Mark; and Lynch, Patricia F. Petroleum identification. 3,896,312, Cl. 250-343.000.
- Brown, Felix H., to Owens-Illinois, Inc. Recording of information from gaseous discharge display/memory panel. 3,896,452, Cl. 346-74.00P.
- Brown, Jack T.; Feduska, William; and Bradford, Wesley L., to Westinghouse Electric Corporation. Diffusion-bonded battery electrode plaques. 3,895,960, Cl. 136-36.000.
- Brown, Max W., to Texas Instruments Incorporated. Synchronous multi-processor system utilizing a single external memory unit. 3,896,418, Cl. 340-172.500.
- Brown, Peter John Nicholas; and Capp, Clifford William, to BP Chemicals International Limited. Process for producing chloroprene. 3,896,181, Cl. 260-655.000.
- Brown & Root, Inc.: *See—*
  - Kolb, Alfred Reeves, 3,895,471.
- Bruder, Joseph A.: *See—*
  - Pelton, Frank M.; Bruder, Joseph A.; and Leney, Thomas F., 3,896,391.
- Bruderlein, Francois T.: *See—*
  - Phillipp, Adolf H.; Humber, Leslie G.; Bruderlein, Francois T.; and Gotz, Manfred K., 3,896,130.
- Brunnmueller, Friedrich; Henkel, Helmut; and Lenz, Johann, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Manufacture of stable urea/formaldehyde resins in a three stage reaction. 3,896,087, Cl. 260-69.00R.
- Brunswick Corporation: *See—*
  - Zimmermann, Ernest H., Jr., 3,895,417.
- Bryan, Geoffrey L.: *See—*
  - Rose, Andrew M.; and Bryan, Geoffrey L., 3,896,490.
- Bryanos, James C.: *See—*
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- Buchanan, George E.; Krone, Donald R.; Krone, Russell R.; and Noyes, James E. Gasoline dispensing system. 3,895,738, Cl. 222-26.000.
- Buchser, William J.: *See—*
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- Buchtel, Dean H., to NuCon, Inc. Dispenser for flush tank. 3,895,739, Cl. 222-57.000.
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- Buckler Industries, Inc.: *See—*
  - Hovekamp, John C., 3,896,470.
- Buckles, Richard G.; Hoff, Seymour; Kehr, Sharon; and Yum, Su Il, to ALZA Corporation. Liquid infusion unit. 3,895,631, Cl. 128-213.000.
- Buckwalter, Frank Harold: *See—*
  - Christie, George Johnstone; and Buckwalter, Frank Harold, 3,896,221.
- Budecker, Ludwig; and Kunze, Lothar, to ITT Industries, Inc. Vane-type machine. 3,895,891, Cl. 418-133.000.
- Buergers, August, to Europatent S.A. Mounting arrangement for doors. 3,895,413, Cl. 16-168.000.
- Bugaut, Andree; and Laudon, Monique, to L'Oreal. Salts of morpholino-(2,3 B) phenox azonium and hair dye and hair setting lotion compositions containing the same. 3,896,117, Cl. 260-242.000.
- Bullock, Jonathan S., IV: *See—*
  - Lewis, Philip S., Jr.; Agee, William A.; Bullock, Jonathan S., IV; and Condon, James B., 3,895,935.

- Bumgardner, Jon H., to United States of America, Navy. High-speed sampler with variable sample rate. 3,896,390, Cl. 328-151.000.
- Bunker Ramo Corporation: *See—*
  - Cakora, Dennis Ronald, 3,895,719.
- Bunn, Dorrance P.: *See—*
  - MacLean, John P.; Bunn, Dorrance P.; and Mager, Adolph S., 3,896,026.
- Bunnell, Arthur K., to Carling O'Keefe Limited. Container cover structure. 3,895,713, Cl. 206-427.000.
- Burbach, Jurgen: *See—*
  - Biermann, Klaus; Burbach, Jurgen; Gimpel, Horst; and Zirpins, Burckhard, 3,895,894.
- Burke, Edward F., Jr.: *See—*
  - Stella, Joseph A.; Burke, Edward F., Jr.; and Mason, Paul B., 3,895,862.
- Burkepile, Ivan H.; and Burkepile, Jimmie J. Styrofoam cutting tool. 3,895,438, Cl. 30-116.000.
- Burkepile, Jimmie J.: *See—*
  - Burkepile, Ivan H.; and Burkepile, Jimmie J., 3,895,438.
- Burlington Industries, Inc.: *See—*
  - Greer, James E., 3,895,909.
- Burns, Henry Knox, III. Shrink-film packaging method. 3,895,476, Cl. 53-26.000.
- Burns, John J., to Lawrence Peska Associates, Inc., a part interest. Holder board for bingo games. 3,895,806, Cl. 273-136.00E.
- Burroughs Corporation: *See—*
  - Przybylek, George J., 3,895,709.
- Burroughs Wellcome Co.: *See—*
  - Harfenist, Morton, 3,896,235.
- Burtelson, Frederick W., to Reliable Electric Company. Combined post tensioning anchor and cable. 3,895,879, Cl. 403-369.000.
- Burton, Lawrence A.; and Doos, Gustav W., to Allen-Bradley Company. Enclosed voltage motor control with interlocking elements. 3,896,353, Cl. 317-103.000.
- Buschbaum, Edwin; Motschmann, Siegfried; and Strenge, Gert, to Veb Polygraph Leipzig Kombinat fur Polygraphische Maschinen und Ausrustungen. Electrochemical metal-removal method. 3,896,012, Cl. 204-129.460.
- Bushey, Albert H.; and McDole, Ewell E., to Kaiser Aluminum & Chemical Corporation. Method of lubricating an aluminum workpiece. 3,895,971, Cl. 148-6.270.
- Butcher, William J.: *See—*
  - Carstens, Ronald A.; and Butcher, William J., 3,896,046.
- BWG-Bergwerk-und Walzwerk Machinenbau G.m.b.H.: *See—*
  - Manthey, Willi; and Deiwick, Horst, 3,895,498.
- C. A. V. Limited: *See—*
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- C. Reichert Optische Werke AG: *See—*
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- Cadiou, Jean, to Societe Anonyme Automobiles Citroen. Shutter-type fluid distributor. 3,895,650, Cl. 137-612.000.
- Cadman, Bernard Victor: *See—*
  - Davies, John Kyffin; and Cadman, Bernard Victor, 3,895,813.
- Cairns, James, to Garlock Inc. Bearing compositions. 3,896,036, Cl. 252-12.000.
- Cakora, Dennis Ronald, to Bunker Ramo Corporation. Supporting device for printed circuit boards. 3,895,719, Cl. 317-101.0DH.
- Calabro, Anthony D. Heat dissipator for metal case transistor. 3,896,481, Cl. 357-81.000.
- Calspan Corporation: *See—*
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- Campbell Chain Company: *See—*
  - Roberts, Alfred M., 3,895,419.
- Campbell, Robert B.: *See—*
  - Berman, Herbert A.; Campbell, Robert B.; and Loftus, Wallace D., 3,896,313.
- Campman, James P. Magnetically operated alarm. 3,896,427, Cl. 340-274.00R.
- Campolong, Joseph, to Pall Corporation. Vortex separator. 3,895,930, Cl. 55-394.000.
- Canada, Her Majesty the Queen in Right of, as represented by the Secretary of State: *See—*
  - Trolliet, Philippe, 3,896,375.
- Canadian Liquid Air Ltd., Air Liquide Canada Ltee.: *See—*
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- Canadian Patents and Development Limited: *See—*
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- Canon Camera Kabushiki Kaisha: *See—*
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  - Nakamura, Zenzo, 3,896,333.
  - Suzaki, Kuniyoshi, 3,895,544.
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  - Takigawa, Tomoshi; and Komine, Yoshio, 3,896,465.
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  - Tanikoshi, Kinji, 3,896,358.
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- Cappel, Bert; Schuhmann, Siegfried; and Wolf, Klaus, to Roland Offsetmaschinenfabrik Faber & Schleicher AG. Metering bar assembly for ink fountain roller. 3,895,575, Cl. 101-363.000.
- Cardinal of Adrian, Inc.: *See—*
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- Carl Freudenberg, Firma: *See—*
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- Carney, Leroy L., to Halliburton Company. Preparation of colloidal solid suspensions in aqueous solutions. 3,896,031, Cl. 252-8.50C.
- Carney, Murray C.; and Hart, David G., to Sangamo Electric Company. Load survey recorder including tape cartridge receptacle. 3,896,488, Cl. 360-6.000.
- Carre, Roland, to Thomson-CSF. Processing device. 3,896,433, Cl. 343-5.00R.
- Carstens, Ronald A.; and Butcher, William J., to Key Chemicals, Inc. Composition for controlling pitch in paper manufacture. 3,896,046, Cl. 252-310.000.
- Cartabbia, Giovanni. Ironing machine for ironing shoulders. 3,895,749, Cl. 223-57.000.
- Carter, Adolphus J., III. Signal light circuit integrator. 3,896,415, Cl. 340-67.000.
- Casida, John E.: *See—*
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- Cassez, Pierre; and Pelisson, Claude, to Benoto-Sam. Hoisting winch, in particular for a boring machine. 3,895,779, Cl. 254-150.0FH.
- Castarede, Armand, to Regie Nationale des Usines Renault; and Automobiles Peugeot. Structure of internal combustion engines. 3,895,868, Cl. 123-195.00R.
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- Cave, David L.; and Davis, Walter R., to Motorola, Inc. Monolithic power amplifier capable of operating class A and class AB. 3,896,393, Cl. 330-22.000.
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- Cerf, Peter H., to Braun, Anton. Differential fuel supply system for internal combustion engines. 3,895,618, Cl. 123-127.000.
- Certain-Teed Products Corporation: *See—*
  - Thiessen, Leo K., 3,895,833.
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- Chabala, Leonard Valentine, to S&C Electric Company. High voltage circuit interrupting device. 3,896,282, Cl. 200-148.00A.
- Chai, Sie-Yearl; and Yardley, John P., to American Home Products Corporation. (N-propionyl) -gly-cys-lys-asn-phe-phe-trp-lys-thr-phe-thr-ser-cys-oh and intermediates. 3,896,105, Cl. 260-112.500.
- Chamberlain, Richard Travers, to Admiral Corporation. Color television degaussing circuit. 3,896,330, Cl. 315-8.000.
- Chambers, Herbert R., to Spencer Industries, Inc. Molded two-part drawer front. 3,895,733, Cl. 220-4.00R.
- Chance, James L.; and Han, Shu Tang, to Beloit Corporation. Air impingement system. 3,895,449, Cl. 34-155.000.
- Chari, Srinivasan V., to Control Data Corporation. Linear motor. 3,896,319, Cl. 310-14.000.
- Charm, Stanley E.; and Wong, Bing Lou, to Research Corporation. Radiommunoassay determining the hepatitis associated antigen content of blood. 3,896,218, Cl. 424-1.000.
- Chechulin, Evgeny Arkadievich: *See—*
  - Feoktistov, Evgeny Ilich; Chechulin, Evgeny Arkadievich; Zonov, Nikolai Semenovich; Prozorov, Leonid Kronidovich; Poskryakov, Jury Maximovich; Kremennoi, Grigory Grigorievich; and Goryachy, Vladimir Mikhailovich, 3,896,281.
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  - Moore, Joseph E., 3,896,225.
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Christian, Hubert E., to Dart Industries Inc. Pour spout lid. 3,895,743, Cl. 222-143.000.
Christie, George Johnstone; and Buckwalter, Frank Harold, to Bristol-Myers Company. Anesthetic composition. 3,896,221, Cl. 424-246.000.
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Coleman, James H.; and Lo, Jyh-Shuey, to Sprague Electric Company. Monolithic ceramic capacitor. 3,896,354, Cl. 317-258.000.
Coleman, Richard L.; Cummins, Billy H.; and Startz, Ambrose J., to Texaco, Inc. Production of improved lubricating oils. 3,896,025, Cl. 208-95.000.
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Cone, Charles N.; and Steinberg, Julius M., to Pacific Adhesives Company. Plywood manufacture using foamed glues. 3,895,984, Cl. 156-79.000.
Conner, Charles James, to United States of America, Agriculture. Turnbull's blue single bath mineral dyeing process (ferri-zirc) for cellulosic textiles. 3,895,907, Cl. 8-52.000.
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Cook, Allen B. Fluid actuated hammer. 3,895,680, Cl. 173-78.000.
Cook, George E., to Air Products and Chemicals, Inc. Direct current arc power supply. 3,896,287, Cl. 219-131.00R.
Cooke, Maurice Dudley, to BP Chemicals International Limited. Mesityl oxide removal from high-purity phenol. 3,896,006, Cl. 203-28.000.
Copal Company Limited: *See—*
Yaginuma, Jusuke, 3,896,277.
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Corraz, Alfred John: *See—*
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Corry, Thomas M., to General Motors Corporation. Power center inverter having power center commutation during operation into short circuits. 3,896,365, Cl. 321-5.000.
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Coursaut, Henri, to Le Bouchage Mecanique. Closure for receptacles. 3,895,731, Cl. 215-218.000.
Court, William A.: *See—*
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Craig, Paul N.; and Zirkle, Charles L., to SmithKline Corporation. Substituted 10-heterocyclicaminoalkyl-9,10-dihydroanthracenes. 3,896,133, Cl. 260-293.620.
Crane, Grant: *See—*
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Cullen, Donald L.; and Moore, Teddy L., to Autech Corporation. Laser dimension comparator. 3,895,870, Cl. 356-1.000.
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Curley, Edward M.: *See—*
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Dainichi Nippon Cable Co., Ltd.: *See—*
Utumi, Atushi; Fujiwara, Yasuaki; Asai, Akira; and Jitsukawa, Masao, 3,896,198.
Dancy, Julian H., to Texaco Inc. Apparatus and method for washing away an electrostatic charged mist in an oil tanker. 3,896,340, Cl. 317-2.00R.
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Danesh, Andre. Detergent composition. 3,896,040, Cl. 252-89.000.
Daniels, Dennis, to U.S. Amada, Ltd. Extendable arm punching apparatus. 3,895,550, Cl. 83-409.000.
Dardano, Frank S.; and Jacobson, Harvey B. Gravity feed, controlled flow rate plant watering system. 3,895,494, Cl. 61-12.000.
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Christian, Hubert E., 3,895,743.
Swett, James B., 3,895,736.
D'Atre, John D.: *See—*
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Davidson, Robert. Speed and/or direction change means. 3,895,540, Cl. 74-800.000.
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Davies & Metcalfe Limited: *See—*
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Davis, Robert L.: *See—*
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Day, Frederick. Container for cassou straws. 3,895,714, Cl. 206-443.000.
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de Delas y de Ugarte, Eduardo, to Servicios de Ingenieria, Proyectos Y Estudios/(SIPE). Procedures and facilities employed for eliminating oxygen in oxides. 3,895,782, Cl. 266-24.000.
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Dehmelt, Klaus H. Sealed, gas-tight electric storage battery. 3,895,959, Cl. 136-6.00R.
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Delafon, Patrick, to Commissariat a l'Energie Atomique. Method of analog measurement of a capacitance and a capacitance meter for carrying out said method. 3,896,374, Cl. 324-60.00C.
Delest, Rene, to S.A. Ulmer Aeronautique. Head protection enclosure. 3,895,625, Cl. 128-142.000.
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DeLong, Robert J., to Spectrol Electronics Corporation. Indicating device. 3,895,600, Cl. 116-115.000.
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Dennison, Allan G.; Bancroft, Martha F.; Smith, Stanley B., Jr.; and Tolkoff, Marc Joshua, to Instrumentation Laboratory, Inc. Spectroscopic analysis apparatus utilizing a tubular heating element and a passive sample holder. 3,895,873, Cl. 356-85.000.
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DePalma, Joseph S. Dry chemical dispersion nozzle. 3,895,759, Cl. 239-498.000.
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Dickey, Clarence A.; and McDaniel, John E., to Glasrock Products, Inc. Method of producing spherical thermoplastic particles. 3,896,196, Cl. 264-6.000.
Dickinson, Brian Arthur Leonard, to Pye Limited. Analogue-to-digital converters. 3,896,431, Cl. 340-347.0NT.
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Digney, Kenneth A.; and Gallauresi, Alfred P. Method of treating sewage to enhance aerobic decomposition. 3,896,027, Cl. 210-14.000.
Dillard, John W.; Tringali, Dominick; Swartz, Richard L.; and Hinson, Ernest M., Jr., to Universal Business Machines, Inc. Automatic article sorting and punching machine. 3,896,300, Cl. 235-153.00R.
DiLorenzo, James Vincent; Niehaus, William Charles; and Rode, Daniel Leon, to Bell Telephone Laboratories, Incorporated. Gallium arsenide Schottky barrier avalance diode array. 3,896,473, Cl. 357-15.000.
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Di Loreto, Edward. Safety tip air nozzle. 3,895,757, Cl. 239-291.000.
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Di Renna, Edmond F. Aquarium water heater. 3,896,289, Cl. 219-523.000.
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Doshi, Mahendra R.: *See—*
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Douglas, Donald J. Flexibly hinged eye piece headgear. 3,895,397, Cl. 2-14.00W.
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Plepys, Raymond A.; and Jezic, Zdravko, 3,896,140.
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Dowling, Donald J.; and Boyd, John F., to Texaco Inc. Permeability logging method using apparatus comprising current electrodes between electromagnets, current electrode on the surface and acoustic listening devices to detect pressure related noise. 3,896,413, Cl. 340-15.5BH.
Drabek, Jozef, to Ciba-Geigy Corporation. O-ethyl-s-m-Propyl-O-(2,6-dichloro-4-bromophenyl)phosphorothiolate. 3,896,191, Cl. 260-964.000.
Drader, Clarence. Nesting-stacking carrier having hinged side walls. 3,895,715, Cl. 206-506.000.
Drake, Charles A., to Phillips Petroleum Company. Two stage catalytic hydrogenation of unsaturated dinitriles employing ruthenium, nickel or mixture thereof as catalytic agent. 3,896,173, Cl. 260-583.00P.
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Dravis, Charles A.: *See—*
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- Dubeck, Michael; and Lech, Leon, to Ethyl Corporation. HCl Treatment of copper sulfide minerals. 3,896,208, Cl. 423-27.000.
- Dukette, William J., to American Associated Cybernetics, Inc. Sensor responsive cybernetics machine. 3,895,729, Cl. 214-152.000.
- Dulux Australia Ltd.: *See—*
  - Gunning, Raymond Harry; and Lubbock, Frederick John, 3,895,826.
- Dumas, Guy H., to Silec-Semi-Conducteurs. Processes for the localized and deep diffusion of gallium into silicon. 3,895,976, Cl. 148-187.000.
- Dungan, Dennis F.: *See—*
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  - Kast, Hellmut; and Dunkelmann, Guenter, 3,896,128.
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  - Larry, John Robert, 3,896,054.
  - Phillips, William Lewis, Jr., 3,896,028.
  - Poirier, Robert Victor, 3,896,071.
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  - Raynolds, Stuart, 3,896,088.
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  - Resnick, Paul Raphael, 3,896,179.
  - Wat, Edward Koon Wah, 3,896,115.
- Dworak, Dennis D., to Atlantic Richfield Company. Method of forming co-precipitated material. 3,896,049, Cl. 252-466.00J.
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  - Gawlick, Heinz; Kuschel, Hans; Marondel, Gunther; Siegelin, Werner; and Spranger, Wolfgang, 3,895,579.
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- Eagleson, John M., Jr., to Baker Company, Inc., The. Air-insulated work station. 3,895,570, Cl. 98-115.0LH.
- Early, James M., to Fairchild Camera and Instrument Corporation. Charge-coupled device with overflow protection. 3,896,485, Cl. 357-24.000.
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- Echida, Nobuhiro: *See—*
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- Eckert, Hans-Werner; Nikolaus, Peter; and Werner, Claus, to Henkel and Cie GmbH. Softening agent compositions. 3,896,034, Cl. 252-8.800.
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- Edwards, Clyde A. Adjustable insole and method. 3,895,405, Cl. 12-146.00M.
- Edwards, John A.: *See—*
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- Edwards, William J., to Honeywell Information Systems Inc. Magnetic ball retaining apparatus. 3,895,846, Cl. 308-10.000.
- Efimov, Ivan Ivanovich; Lifshits, Mikhail Lvovich; Nikiforov, Dmitry Dmitrievich; Ivanov, Viktor Pavlovich; Linetsky, Lev Efimovich; Lazarev, Vadim Georgievich; and Brenin, Alexandr Ivanovich. Device for focussing and deflection of an electron beam in a cathode-ray apparatus. 3,896,339, Cl. 315-403.000.
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- Ehrenberg, Henry; and Hirsch, Mordechai-Gustav, to Snel AG. Hand tool. 3,895,439, Cl. 30-171.000.
- Eichelberger, Charles W.; and Garratt, Philip M., to General Electric Company. Acoustic imaging apparatus for visual display with depth perception. 3,895,525, Cl. 73-67.900.
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- Electronic Camshaft Corporation: *See—*
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- Elfstrand, Stig Olof. Apparatus for spontaneous or artificial respiration. 3,895,626, Cl. 128-145.800.
- El Guindy, Samir, to Spotnails, Inc. Pneumatically powered fastener-driving tool. 3,895,562, Cl. 91-308.000.
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- Ellingson, Erling. Device for supporting a bucket on a ládder. 3,895,772, Cl. 248-210.000.
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- Ellis, Daniel A.; and Luckenbill, Lawrence F., to Mueller Co. Collet compression connection. 3,895,832, Cl. 285-322.000.
- Ellis, John L.; Mal, M. Kumar; and Tarkan, Stuart E., to Chromalloy American Corporation. Method of producing plasma sprayed titanium carbide tool steel coatings. 3,896,244, Cl. 427-34.000.
- Ellis, Samuel B., to Delta Scientific Corporation. Electric Hosecock. 3,895,649, Cl. 137-595.000.
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- Eltra Corporation: *See—*
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- Enck, Richard S., Jr.; and Sackinger, James P., to Varian Associates. Electron optical system. 3,896,331, Cl. 315-17.000.
- Endo, Kunio; Kawarada, Junji; Sueishi, Motoharu; Harada, Susumu; and Norimatsu, Hideaki, to Nippondenso Co., Ltd. Air-fuel ratio feedback type fuel injection system. 3,895,611, Cl. 123-32.0EA.
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  - Akazaki, Shigeru; Endo, Masaaki; and Shinozaki, Mamoru, 3,895,495.
- Enersorb Limited: *See—*
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- England, Will Clarke. Rollable fulcrum balancing board recreational and exercise device provided with non-linear stabilization features. 3,895,794, Cl. 272-1.00R.
- Engle, Thomas H.; Bohusch, Glen O.; and Bogenschutz, Thomas M., to General Signal Corporation. Electropneumatic trainline connector. 3,895,850, Cl. 339-15.000.
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- Erichsen, Herman W., to Tyco Laboratories, Inc. Proximity detector. 3,896,425, Cl. 340-258.00B.
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  - Andersson, Olle; and Ericsson, Ellerth, 3,896,406.
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- Eskeli, Michael. Turbine with dual rotors. 3,895,491, Cl. 60-650.000.
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- Exxon Research & Engineering Co.: *See—*
  - McGowan, H. Christopher; Male, Joseph A.; and McLaren, Malcolm G., 3,895,963.
- Eysn, Manfred, to Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft. Tiltable converter. 3,895,786, Cl. 266-36.00P.
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  - Rosenburg, Charles W., Jr., 3,895,754.
- Fabre, Carlo. Composition assembly comprising constructional elements of plastic material for making free scheme compositions. 3,895,456, Cl. 46-30.000.
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- Fair, Walter R. Auxiliary snow body. 3,895,842, Cl. 298-1.00R.
- Fairchild Camera and Instrument Corporation: *See—*
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- Fannon, Robert D., Jr., to Harsco Corporation. Automatic window washer. 3,895,406, Cl. 15-302.000.
- Fariello, Ettore, to Communications Satellite Corporation. Digital echo suppressor. 3,896,273, Cl. 179-170.600.
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- Fazio, Robert L.: *See—*
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- Fearon, Robert L., to London Concrete Machinery Co. Supplementary wheel set for road vehicles. 3,895,818, Cl. 280-81.00R.
- Fedorovsky, Eduard Fedorovich: *See—*
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- Fegan, Joseph J., to Lawrence Peska Associates, Inc., a part interest. Tie tree. 3,895,750, Cl. 223-65.000.
- Feit, Peter Werner; and Nielsen, Ole Bent Tvaermose, to Lovens Kemiske Fabrick Produktionsaktieselskab. Benzoic acid derivatives. 3,896,165, Cl. 260-517.000.
- Felber, Wilfried: *See—*
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- Felderhof, Jan Frederik; and Westwood, James William Alfred. Fluid activated vibratory device. 3,895,561, Cl. 91-20.000.
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- Feoktistov, Evgeny Ilich; Chechulin, Evgeny Arkadievich; Zonov, Nikolai Semenovich; Prozorov, Leonid Kronidovich; Poskryakov, Jury Maximovich; Kremennoi, Grigory Grigorievich; and Goryachy, Vladimir Mikhailovich. Magnetically actuated liquid level signalling device. 3,896,281, Cl. 200-84.00C.
- Fernholz, Werner: *See—*
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- Fertl, Walter H., to Continental Oil Company. Well logging method using well logging tools run through a drill stem test string for determining in-situ change in formation water saturation values. 3,895,520, Cl. 73-152.000.
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- Finch, Robert A.: *See—*
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- Finike Italiana Marposs, s.a.s.: *See—*
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- Fink, Robert, to Inglis Nurseries, Inc. Roller attachment for trucks. 3,895,880, Cl. 404-86.000.
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- Fischer, Klaus: *See—*
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- Fisher, Edward, to Conax Corporation. Seal assembly providing dual seal zones. 3,895,831, Cl. 285-93.000.
- Fisher, Howard M., to Pennsylvania Engineering Corporation. Cooling assembly for steel converter vessels. 3,895,783, Cl. 266-35.000.
- Fishman, Jack, to Lewinstein, Evalina; Hirsch, Henry; and Rothschild, Stanley. 6-Methylene-6-desoxy dihydro morphine and codeine derivatives and pharmaceutically acceptable salts thereof, and use of the same as a narcotic antagonist. 3,896,226, Cl. 424-260.000.
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- Fitzroy, Nancy D.; Mann, Ronald L.; Gerling, Henry B.; and Reale, John D., to United States of America, Army. Hardened antenna element cover. 3,896,450, Cl. 343-797.000.
- Flannery, William E., to Sperry Rand Corporation. Bi-directional magnetic domain transfer circuit. 3,896,421, Cl. 340-174.0TF.
- Fletcher, Ralph P., Jr.; and Pratt, Ted C., to Wiretech Corporation. Wire coiling system. 3,895,762, Cl. 242-54.00R.
- FMC Corporation: *See—*
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- Fohl, Timothy, to GTE Sylvania Incorporated. Metal halide discharge lamp having expanded section arc tube. 3,896,326, Cl. 313-220.000.
- Fomby, Kenneth A. Applicator brush and method of making same. 3,895,877, Cl. 401-129.000.
- Fontaine, John G., to Fail Safe Brake Corporation. Brake control apparatus. 3,895,698, Cl. 192-3.0TR.
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  - Schubeck, Phillip A., 3,895,615.
- Fornes Puget, Enrique, to Nuclear Iberica S.A. Construction of radioactive lightning arresters. 3,896,342, Cl. 317-61.000.
- Forster, Friedrich; Barth, Erich; and Keller, Heinz-Jochen, to Friedrich Uhde GmbH. Device for the production of a homogenous gas mixture. 3,895,919, Cl. 23-288.00K.
- Forster, Siegfried; Hewing, Gunter; and Quell, Peter, to Kernforschungsanlage Julich, Gesellschaft mit beschrankter Haftung. Power plant. 3,895,492, Cl. 60-659.000.
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- Franke, Hans G., to Chevron Research Company. Process for preparing N-actyl-O-hydrocarbylphosphoroamidothioate metal salts. 3,896,193, Cl. 260-987.000.
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- Galloway, Charles H. Modular kennel building. 3,895,606, Cl. 119-16.000.
- Galves, Jean Pierre; and Reboul, Jean Philippe, to Thomson-CSF. Gas-discharge display panel with matrix of orthogonal insulating layers. 3,896,324, Cl. 313-190.000.
- Galvin, James Murry. Holding means for holding a roll or sheet film holder in press and view cameras. 3,896,464, Cl. 354-161.000.
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- Gerber, Arthur H., to Horizons Incorporated. Heterocyclic polymers from triaminopyradine compounds. 3,896,083, Cl. 260-47.0CP.
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- Gillespie, John Francis, to Saguaro Industries, Inc. Method of making synthetic resin surface covering including use of two heat transfer modes. 3,896,197, Cl. 264-40.000.
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- Goodman, Albert; and Suwyn, Mark A., to du Pont de Nemours, E. I., and Company. Melt-extrusion of acrylonitrile polymers into filaments. 3,896,204, Cl. 264-206.000.
- Goodman, Lawrence Alan; and Carlson, David Emil, to RCA Corporation. Fabrication of liquid crystal devices. 3,896,016, Cl. 204-180.00R.
- Goralski, Christian T., to Dow Chemical Company, The. Morpholine derivatives of 3,4,5-trichloro-2,6-pyridinedicarbonitrile. 3,896,122, Cl. 260-247.50G.
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- Graham, Richard G. Motor driven dolly actuator for semi-trailers and similar vehicles. 3,895,682, Cl. 180-1.00R.
- Grau, Gerhard, to Zinser Textilmaschinen GmbH. Apparatus for cleaning spinning rotors. 3,895,483, Cl. 57-56.000.
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- Greive, Aloys; and Tiemann, Theodor, to Hamel GmbH Zwirnmaschinen. Spinning apparatus. 3,895,484, Cl. 57-58.740.
- Griffin, Colin John; and Griffin, Kerry Charles. Load indicating assembly. 3,895,681, Cl. 177-141.000.
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- Guicheteau, Eugene H., to Honeywell Inc. Self-powered thyristor trigger circuit. 3,896,355, Cl. 318-207.000.
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- Haupt, Robert C., to Allis-Chalmers Corporation. Friction block for lever. 3,895,679, Cl. 172-9.000.
- Hautau, Charles F., to Vulcan Tool Company. Machine tool. 3,895,424, Cl. 29-38.00C.
- Haws, Melburn W., to Armour and Company. Apparatus for removing hides from animal carcasses. 3,895,416, Cl. 17-21.000.
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- Hester, Jackson B., Jr., to Upjohn Company, The. 2,3-Dehydro-1H-1,4-benzodiazepines. 3,896,109, Cl. 260-239.0BD.
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- Howard, James C., to United States of America, General Counsel-Code GP. G-load measuring and indicator apparatus. 3,895,521, Cl. 73-178.00R.
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- Hydroperfect-International H P I: *See—*
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- Industrial Clean Air, Inc.: *See—*
  - Miller, Edward M., 3,895,569.
- Industrial Filter and Pump Mfg. Co.: *See—*
  - Zievers, James F., 3,896,013.
- Industrie Pirelli, S.p.A.: *See—*
  - Tangorra, Giorgio, 3,895,668.
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- Inglis Nurseries, Inc.: *See—*
  - Fink, Robert, 3,895,880.
- Inland Container Corporation: *See—*
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  - Takahashi, Noriyuki; Miyahara, Hiromitsu; and Inoue, Hidehiko, 3,895,820.
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  - Sato, Kikumasa; Inoue, Seiichi; Kijima, Shizumasa; and Hamamura, Kimio, 3,896,153.
- Inoue, Teruo, to Toyo Rubber Industry Co., Ltd., The. Radial pneumatic tire. 3,895,666, Cl. 152-362.00R.
- Inouye, Ken: *See—*
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  - Dennison, Allan G.; Bancroft, Martha F.; Smith, Stanley B., Jr.; and Tolkoff, Marc Joshua, 3,895,873.
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  - Brechling, George E.; and Montren, John J., 3,896,482.

- International Flavors & Fragrances Inc.: *See—*
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- International Nickel Company, Inc., The: *See—*
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  - Gutridge, Ian Paul, 3,895,961.
  - Morse, Jeremy Painter, 3,895,942.
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- Ishida, Yoshihiro: *See—*
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- Ishigaki, Yukinobu; Ohwaki, Isao; Sasamura, Kohei; and Ohba, Masahiro, to Victor Company of Japan, Ltd. System for a multichannel record disc with crosstalk compensation provided during recording. 3,896,271, Cl. 179-100.4ST.
- Ishimaru, Toshiyasu; and Kodama, Yutaka, to Toyama Chemical Co., Ltd. Process for producing 7-aminocephalosporanic acids. 3,896,118, Cl. 260-243.00C.
- Ishmael, Phillip C.: *See—*
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- Isoya, Toshiro; Kakuta, Rinichi; and Kawamura, Chikayuki, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for the preparation of sebacic acid. 3,896,011, Cl. 204-59.00R.
- Itagaki, Takuo: *See—*
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- Iten, Paul: *See—*
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- Ito, Shin: *See—*
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- Ito, Tadao. Spinal column warming treatment apparatus. 3,895,638, Cl. 128-379.000.
- Itoh, Yasuo: *See—*
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- ITT Industries, Inc.: *See—*
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- J. M. Voith GmbH: *See—*
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  - Diepers, Heinrich; Jablonski, Karl-Heinz; and Lamamatsch, Hans, 3,895,432.
- Jackson, Lynden Ashbrooke, to Post Office, The. Dielectric waveguide filters. 3,896,402, Cl. 333-73.00W.
- Jacob, Carlyle W., to United States of America, Navy. Voltage supply for radio proximity fuze. 3,895,581, Cl. 102-70.20P.
- Jacob, Ingolf: *See—*
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- Jacobs, James P.: *See—*
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- Jacobsen, Stephen C. Fluid system and method for coding information. 3,895,641, Cl. 137-1.000.
- Jacobson, Harvey B.: *See—*
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- Jacoby, Charles H., to Akzona Incorporated. Dust entrapment composition. 3,896,039, Cl. 252-88.000.
- Jacques, Albert M. V., to Amchem Products, Inc. Purification of aliphatic phosphonic acids. 3,896,163, Cl. 260-502.40R.
- Jaeger, Ben E. Method and apparatus for cleaning vessels. 3,895,756, Cl. 239-227.000.
- Jaenke, Hans-Jurgen: *See—*
  - Bechstein, Herbert; Jaenke, Hans-Jurgen; Muller, Rolf; Ritter, Ernst; Staudt, Heinrich; Tomasch, Helmut; and Urlberger, Alois, 3,895,537.
- Jager, Gerhard; and Lurssen, Klaus, to Bayer Aktiengesellschaft. Plant growth regulants comprising 2-hydroxyethyl-1-pyridinium-(1) salts. 3,895,933, Cl. 71-94.000.
- Jakob, Peterli Hans: *See—*
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  - Kwatonowski, Frank, 3,895,409.
- Johnson, Bruce K.; and Whiteside, George D., to Polaroid Corporation. Automatic exposure control system. 3,896,458, Cl. 354-30.000.
- Johnson, Dwight N., to JH Industries, Inc. Fluid level control valve. 3,895,645, Cl. 137-403.000.
- Johnson, Gerald Frederic, to Minister of Aviation, in Her Majesty's Government of the United Kingdom of Great Britain & Northern Ireland. Doppler radar receiver. 3,896,436, Cl. 343-16.00M.
- Johnson, Howard R., to Hush Company, Inc. Fire tube furnace. 3,895,607, Cl. 122-156.000.
- Johnson & Johnson: *See—*
  - Shepherd, Robert Carl, 3,895,751.
- Johnson, Larry K., to Lawrence Brothers, Inc. Pivot assembly. 3,895,412, Cl. 16-151.000.
- Johnson, Lavell R., to Summa Corporation. Method and apparatus for radioimmunoassay with regeneration of immunoadsorbent. 3,896,217, Cl. 424-1.000.
- Johnson, Matthey & Co. Limited: *See—*
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- Johnson Service Company: *See—*
  - Broker, David C.; and Wisniewski, Judith L., 3,896,205.
- Johnston, Charles James. Illuminated fishing lures. 3,895,455, Cl. 43-17.600.
- Johnstone, Robert A. W.: *See—*
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- Jonkopings Mekaniska Werkstads AB: *See—*
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- Jonnet, Albert G., to Koppers Company, Inc. Dry coke cooler. 3,895,448, Cl. 34-65.000.
- Jos. Schneider & Co.: *See—*
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- Joshi, Suryakant, to Klockner-Humboldt-Deutz Aktiengesellschaft. Air-cooled injection internal combustion engine with turbulence chamber. 3,895,613, Cl. 123-32.00C.
- Josteit, Heinz, to Rheinische Braunkohlenwerke AG. Process for joining strips of belt along their lengthwise running side edges. 3,895,990, Cl. 156-304.000.
- Joullie, Maurice; Lakah, Lucien; Maillard, Gabriel F.; and Muller, Pierre, to Recherches Pharmaceutiques et Scientifiques. S-(β-substitutedamino-ethyl)-cysteine. 3,896,121, Cl. 260-247.10R.
- Juchniewicz, Romuald, to Politechnika Gdanska. Method of protecting tin-packaging against corrosion and making them glossy. 3,895,910, Cl. 21-2.70R.
- Jureit, John C.; Kushner, Ben; and Castillo, Adolfo, to Automated Building Components, Inc. Connector plate coil. 3,895,708, Cl. 206-53.000.
- Jurovsky, Albert Yakovlevich. Differential pressure gauge. 3,895,524, Cl. 73-393.000.
- Justus, George Junior; Miller, Lowell C.; and Patrick, Charles T., Jr., to NDM Corporation. Electrosurgical grounding cable assembly. 3,895,635, Cl. 128-303.130.
- Jvirblis, Alex E.; and Roth, Walter, to Diagnostic Instruments, Inc. Field control in imaging systems. 3,896,310, Cl. 250-315.000.
- Jysky, Goran; Mardla, Ilmar; and Eriksson, Bjorn, to Ilmeg AB. Device for collecting drill dust. 3,895,929, Cl. 55-334.000.
- Kabushiki Kaisha Komatsu Seisakusho: *See—*
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- Kabushiki Kaisha Ricoh: *See—*
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- Kabushiki Kaisha Taihei Seisakusho: *See—*
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- Kabushiki Kaisha Yashica: *See—*
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- Kaiser, Ado; Bretschneider, Hermann; and Hohenlohe-Oehringen, Kraft, to Hoffmann-La Roche Inc. Formyl-substituted tyrosine. 3,896,166, Cl. 260-519.000.
- Kaiser Aluminum & Chemical Corporation: *See—*
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- Kakuta, Rinichi: *See—*
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- Kamekura, Masahiro; and Onishi, Hiroshi, to Noda Institute for Scientific Research. Halophilic nuclease and a process for producing the same. 3,896,000, Cl. 195-62.000.
- Kamiyama, Seiichi: *See—*
  - Yonemitsu, Eiichi; Kamiyama, Seiichi; Kanada, Toshiaki; and Nagai, Norio, 3,896,185.
- Kampf, Richard S., to Beckman Instruments, Inc. Spring loading for the stylus of a pressure-sensitive chart recorder. 3,896,453, Cl. 346-139.00C.
- Kanada, Toshiaki: *See—*
  - Yonemitsu, Eiichi; Kamiyama, Seiichi; Kanada, Toshiaki; and Nagai, Norio, 3,896,185.
- Kaneda, Tokuzo, to Ricoh Co., Ltd. Automatic separation device for copying apparatus. 3,895,792, Cl. 271-172.000.
- Kapitan, John R. Roof and wall panel system. 3,895,469, Cl. 52-595.000.
- Kaplan, Sheldon: *See—*
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- Kashio, Hidetora: *See—*
  - Toyoda, Yasushi; and Kashio, Hidetora, 3,896,063.
- Kast, Hellmut; and Dunkelmann, Guenter, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Lactones of the diazaxanthene series and dye precursors for copying processes. 3,896,128, Cl. 260-256.40F.
- Kast, Philip J.: *See—*
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- Kastner, Arnold. Apparatus for packaging cigarette tubes. 3,895,479, Cl. 53-148.000.
- Kasuga, Masao: *See—*
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- Katashiba, Yasutada: *See—*
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- Kathawala, Faizulla G., to Sandoz, Inc. Substituted pyrazolyl phenylacetic acid derivatives. 3,896,143, Cl. 260-310.00D.
- Kato, Hajime; and Hayashi, Takao, to Fuji Photo Film Co., Ltd. Recording sheet. 3,896,255, Cl. 428-411.000.
- Kaufman, Burton; and Schneider, Bruce H., to General Computing Corporation. High speed microfilm searching system. 3,895,865, Cl. 353-26.000.
- Kawakami, Akira, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor switching device. 3,896,476, Cl. 357-38.000.
- Kawamoto, Kinji, to Matsushita Electric Industrial Co., Ltd. Sampling modulation system for an electronic musical instrument. 3,895,553, Cl. 84-1.240.
- Kawamura, Chikayuki: *See—*
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- Kawarada, Junji: *See—*
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- Kay, Edward Leo: *See—*
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- Keck, Johannes; and Engelhardt, Gunther, to Boehringer Ingelheim GmbH. 4-(4′-amino-3′,5′-dichloro-phenyl)-3-tertiary butyloxazolidines. 3,896,141, Cl. 260-307.0FA.
- Keeling, Robert Alan; and Priest, John Garrick, to Johnson, Matthey & Co. Limited. Self-adhesive transfers. 3,896,249, Cl. 428-202.000.
- Keely, William Arthur; and Kreger, Merle Manford, Jr., to Bendix Corporation, The. Light activated sequential switching mechanism. 3,895,612, Cl. 123-32.0EA.
- Kehr, Sharon: *See—*
  - Buckles, Richard G.; Hoff, Seymour; Kehr, Sharon; and Yum, Su Il, 3,895,631.
- Kelcey, Raymond Robinson. Covering for recreational areas. 3,895,400, Cl. 4-172.110.
- Keller, Albert G.: *See—*
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- Keller, Heinz-Jochen: *See—*
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- Kellogg, Warren H. Means mounted on a bowstring tensioning device for releasably holding a bowstring. 3,895,621, Cl. 124-24.00R.
- Kelly, Raymond E.; and Lovejoy, Richard E., to United States of America, Navy. Paired cable drag reduction with non-newtonian fluids. 3,895,595, Cl. 114-235.00F.
- Kenna, Fenton L., Jr.: *See—*
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- Kennecott Copper Corporation: *See—*
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- Kenner, George Wallace: *See—*
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- Ker-Train Systems N.V.: *See—*
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- Kernforschungsanlage Julich, Gesellschaft mit beschrankter Haftung: *See—*
  - Forster, Siegfried; Hewing, Gunter; and Quell, Peter, 3,895,492.
- Kerr, John Hugh, to Ker-Train Systems N.V. Worm/worm-wheel overrunning clutch. 3,895,700, Cl. 192-41.00R.
- Kessinger, Orville E., Jr.: *See—*
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- Keuro Maschinenbau Gesellschaft mit beschrankter Haftung & Co.: *See—*
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- Key Chemicals, Inc.: *See—*
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- Keyes, Melvin H., to Owens-Illinois, Inc. Electrochemical potentiometric method for selectively determining alkaline phosphatase content in aqueous fluids. 3,896,008, Cl. 204-1.00T.
- Kheifets, Rafail Efimovich: *See—*
  - Anikanov, Nikolai Ivanovich; Baburin, Evgeny Arkadievich; Grachev, Leonid Pavlovich; Zax, Grigory Iosifovich; Frumkin, Mikhail Evseevich; Radutsky, Grigory Avramovich; and Kheifets, Rafail Efimovich, 3,895,566.
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- Kilbourn, Edward E., to Rohm and Haas Company. 3-Pyridylmethyl carbamate rodenticides. 3,896,134, Cl. 260-295.50C.
- Killen, Charles W.; and Forward, Robert W., to General Motors Corporation. Instrument panel radio antenna. 3,896,448, Cl. 343-713.000.
- Killinger, Karl H., to Singer Company, The. Thread cutting device. 3,895,591, Cl. 112-252.000.
- Kimball, Everett L., to Ronson Corporation. Butane lighter assembly. 3,895,904, Cl. 431-143.000.
- Kimura, Masatoshi: *See—*
  - Kosaka, Yujiro; Uemura, Masaru; Fujiki, Tokio; Kimura, Masatoshi; and Saito, Mitsutaka, 3,896,067.
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- King, Robert E., Jr.; and Terkelsen, Bruce E., to United Aircraft Corporation. Integrated furnace method and apparatus for the continuous production of individual castings. 3,895,672, Cl. 164-60.000.
- King, Toni B., to Raymond Lee Organization, Inc., The, a part interest. Projector and catcher with variable target opening. 3,895,800, Cl. 273-96.00R.
- Kinoshita, Sadamu. Electric arc furnace for melting metals and metal melting method using such furnace. 3,896,257, Cl. 13-33.000.
- Kinoshita, Tuyoshi: *See—*
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- Kinsel, Robert Carl; and Magee, Robert Nick, to Cincinnati Milacron Inc. Feedback circuit for detecting the failure of a stepping motor to respond to the control circuit. 3,896,363, Cl. 318-685.000.
- Kioritz Corporation: *See—*
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- Kipp, Dieter, to Robert Bosch G.m.b.H. Energization circuit for dynamo electric machines driving, or braking vehicle wheels. 3,896,350, Cl. 318-87.000.
- Kirsop, Brian Heys: *See—*
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- Kiryanov, Jury Ivanovich: *See—*
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- Kiser, Fred W., to Timesavers, Inc. Lumber dressing and dimensioning machine. 3,895,464, Cl. 51-137.000.
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- Kitaura, Mashio; Yata, Koutaro; and Yamada, Seiji, to Minolta Camera Kabushiki Kaisha. Digital indicator for cameras. 3,895,875, Cl. 356-226.000.
- Klaxon: *See—*
  - Laurent, Philippe, 3,896,426.
- Klingenberg, George R. No drip suck back units for glue or other liquids either separately installed with or incorporated into no drip suck back liquid applying and control apparatus. 3,895,748, Cl. 222-571.000.
- Klingler, Karl-Heinz, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Xanthines substituted in the 8-position. 3,896,119, Cl. 260-247.20A.
- Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
  - Joshi, Suryakant, 3,895,613.
- Klopping, Hein L., to du Pont de Nemours, E. I., and Company. Fungicidal formulations of 2-benzimidazole-carbamic acid, alkyl esters. 3,896,230, Cl. 424-273.000.
- Klotz, Helmut, to Bayer Aktiengesellschaft. Purification of mercury. 3,895,938, Cl. 75-101.00R.

Klug, Eugene D., to Hercules Incorporated. Derivatized ethyl cellulose. 3,896,107, Cl. 260-211.00R.
Klug, Eugene D., to Hercules Incorporated. Carboxyalkyl modified ethyl cellulose. 3,896,108, Cl. 260-231.00A.
Klyce, Thomas A., to Ranger Tool Co., Inc. Sausage casing breaker. 3,895,414, Cl. 17-1.00F.
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Kobayashi, Torao; and Ninagawa, Chikato, to Kioritz Corporation. Aluminum alloy cylinder. 3,896,009, Cl. 204-26.000.
Koch, Christian, to Siemens Aktiengesellschaft. Gas turbine. 3,895,488, Cl. 60-39.460.
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Kodama, Koji, to Tokyo Shibaura Electric Company, Ltd. Protecting device for a semiconductor memory apparatus. 3,896,341, Cl. 317-33.00R.
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Kohl, Karl. Yarn guides for warp knitting machines. 3,895,503, Cl. 66-86.00R.
Koishi, Hitoshi; and Ishida, Yoshihiro, to Tokyo Printing Ink Mfg. Co., Ltd. Vehicles for printing ink. 3,896,064, Cl. 260-24.000.
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Kondoh, Teruo; and Nakatsuka, Koki, to Mitsubishi Denki Kabushiki Kaisha. Radar mounted on helicopter. 3,896,446, Cl. 343-705.000.
Konishiroku Photo Industry Co., Ltd.: *See—*
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Korn, Hugo, to Motorola, Inc. Reel to reel cartridge tape player system. 3,895,765, Cl. 242-194.000.
Korn, Roland; Seyd, Gunter; and Paulsen, Uwe, to Siemens Aktiengesellschaft. Cleaning contaminated surfaces of nuclear power plants and recovery of removed surface particles. 3,895,465, Cl. 51-320.000.
Korpert, Heinz, to Jos. Schneider & Co. Control mechanism for varifocal objective. 3,896,466, Cl. 354-196.000.
Kosaka, Yujiro; Uemura, Masaru; Fujiki, Tokio; Kimura, Masatoshi; and Saito, Mitsutaka, to Toyo Soda Manufacturing Co., Ltd. Process for preparing polymer compositions having substantial adhesive properties. 3,896,067, Cl. 260-28.5AV.
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Kottmeier, Robert Roy, to Canadian Liquid Air Ltd., Air Liquide Canada Ltee. Heating process and apparatus using oxygen. 3,895,906, Cl. 432-22.000.
Kowalsky, Stanley J. Alarm system operated by ambient conditions. 3,896,422, Cl. 340-227.00R.
Koyama, Akira, to Yamada Dobby Co., Ltd. Card reverting and racing apparatus in a dobby machine. 3,895,653, Cl. 139-1.00E.
Koyama, Akira, to Yamada Dobby Co., Ltd. Paper card reading apparatus in a dobby machine. 3,895,658, Cl. 139-331.000.
Kozhevnikov, Sergei Nikolaevich; Tkachenko, Arkady Semenovich; and Fedorovsky, Eduard Fedorovich. Tube cold rolling mill. 3,895,510, Cl. 72-214.000.
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Kramell, Hans P.; and Hansen, Richard C., to Xerox Corporation. Bottom sheet feeder using separation belt and retard pad. 3,895,791, Cl. 271-35.000.
Kratzer, Otto; and Bipp, Hansjoerg, to BASF Aktiengesellschaft. Production of dicarboxylic acid diesters. 3,896,159, Cl. 260-475.00B.
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Kubotera, Kikuo; Mizuki, Eiichi; and Fujiwara, Tadahiro, to Fuji Photo Film Co., Ltd. Process for producing a lithographic printing plate. 3,895,946, Cl. 96-33.000.
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Lang, Theo O.; and Lane, Thomas A., to Foster Grant Co., Inc. Process of fabricating a plastic net laminate material. 3,895,983, Cl. 156-79.000.
Lang, Thomas J.; Lang, Kenneth G.; Lang, Joseph A.; and Davis, Robert L., to Lang Davis Industries, Inc. Lateral acceleration sensing system. 3,895,683, Cl. 180-103.000.
Lange, K. Robert; Stern, Arthur M.; Gasner, Lawrence L.; and Hsu, Yuan Tsun, to Betz Laboratories, Inc. Beneficiation of lignin solutions and pulp mill wastes. 3,895,996, Cl. 162-16.000.
Lange, Ronald E.; Diethelm, Matthew A.; and Ishmael, Phillip C., to Honeywell Information Systems Inc. Cache memory store in a processor of a data processing system. 3,896,419, Cl. 340-172.500.
Langford, Orville L. Hand cutting tool. 3,895,442, Cl. 30-299.000.
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Larralde, Edward; and Robinson, Glen, to Vetco Offshore Industries, Inc. Cylinder and piston apparatus. 3,895,780, Cl. 254-172.000.
Larry, John Robert, to du Pont de Nemours, E. I., and Company. High adhesion metallizations. 3,896,054, Cl. 106-1.000.
Larsson, Bjorn E.; and Le Sota, Stanley, to Rohm and Haas Company. Emulsion copolymers of acrolein and their use in treating leather. 3,896,085, Cl. 260-67.0UA.
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Laskey, Donald M. Accessory mounting apparatus for camera. 3,896,463, Cl. 354-122.000.
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Le Blanc, Oliver H., Jr., to General Electric Company. Carbon dioxide and pH sensor. 3,896,020, Cl. 204-195.00M.
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- Miller, Ervin W., to Banner Metals Division Intercole Automation, Inc. Heavy duty shipping tray. 3,895,588, Cl. 108-51.000.
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  - Lozenko, Valery Konstantinovich; Morozov, Vladimir Alexandrovich; Pavlikhin, Vladimir Serafimovich; Santalov, Anatoly Mikhailovich; Negodyaev, Leonid Nikolaevich; and Kiryanov, Jury Ivanovich, 3,896,349.
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- Morrison, Howard J.; Keller, Albert G.; and Glass, Marvin I., to Marvin Glass & Associates. Propelled toy device and launcher therefor. 3,895,459, Cl. 46-202.000.
- Morrissey, Richard T., to B. F. Goodrich Company, The. Halogenation of ethylene terpolymers in a water slurry. 3,896,095, Cl. 260-80.780.
- Morse, Jeremy Painter, to International Nickel Company, Inc., The. Strong, high purity nickel. 3,895,942, Cl. 75-200.000.
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  - Kopec, Thomas J.; and Morstadt, Richard A., 3,896,270.

- Motorola, Inc.: *See—*
  - Cave, David L.; and Davis, Walter R., 3,896,393.
  - Korn, Hugo, 3,895,765.
  - McDonald, James A., 3,896,399.
- Motschmann, Siegfried: *See—*
  - Buschbaum, Edwin; Motschmann, Siegfried; and Strenge, Gert, 3,896,012.
- Moy, Henry, to Lawrence Peska Associates, Inc., a part interest. Safety lock device for a stove. 3,895,507, Cl. 70-177.000.
- Moyer, Norman E.; and Walker, Dennis E., to Hughes Aircraft Company. Segment decoder for numeric display. 3,896,429, Cl. 340-336.000.
- Moyer, Robert D. Windmill structure. 3,895,882, Cl. 415-2.000.
- Mueller Co.: *See—*
  - Ellis, Daniel A.; and Luckenbill, Lawrence F., 3,895,832.
- Mueller, James H. High efficiency, thermal regeneration anti-pollution system. 3,895,918, Cl. 23-277.00C.
- Muller, Fritz. Vehicle anti-skid device. 3,895,664, Cl. 152-225.000.
- Muller, Jurgen, to Robert Bosch G.m.b.H. Apparatus for wet treatment of photographic materials or the like. 3,896,468, Cl. 354-299.000.
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  - Joullie, Maurice; Lakah, Lucien; Maillard, Gabriel F.; and Muller, Pierre, 3,896,121.
- Muller, Rolf: *See—*
  - Bechstein, Herbert; Jaenke, Hans-Jurgen; Muller, Rolf; Ritter, Ernst; Staudt, Heinrich; Tomasch, Helmut; and Urlberger, Alois, 3,895,537.
  - Rudert, Frithjof; Muller, Rolf; and Gornott, Dietmar, 3,896,489.
- Mullins, Darrell Dexter, to Monsanto Company. Stable compositions and methods of inhibiting polymerization of unsaturated carboxylic acid esters. 3,896,162, Cl. 260-486.00R.
- Multi-Contact A.G.: *See—*
  - Neidecker, Rudolf, 3,895,853.
- Muntjanoff, John R., to Caterpillar Tractor Co. Grapple snubbing apparatus. 3,895,694, Cl. 188-83.000.
- Murakami, Noboru, to Aisin Seiki Kabushiki Kaisha. Transmission control system. 3,895,547, Cl. 74-867.000.
- Murawski, Stephen; and McKairnes, Bernard J. Freezer monitor thermal responsive switch with gravity actuated plunger contact retained by freezable liquid in open switch position. 3,896,278, Cl. 200-52.00R.
- Murayama, Yukio: *See—*
  - Hara, Takao; and Murayama, Yukio, 3,896,265.
- Murphy Chemical Company Limited, The: *See—*
  - Pianka, Max, 3,896,219.
- Murphy, Preston V.: *See—*
  - Fraim, Freeman W.; and Murphy, Preston V., 3,896,274.
- Mustee, Bernard E., to E. L. Mustee & Sons, Inc. Free-standing shower stalls. 3,895,398, Cl. 4-146.000.
- Mylari, Banavara L., to Pfizer Inc. Preparation of 2 (aryl)-as-triazine-3,5(2H,4H)-diones. 3,896,124, Cl. 260-248.0AS.
- Mylari, Banavara L.; and Brennan, Thomas M., to Pfizer Inc. Preparation of amino-diphenylsulfides. 3,896,172, Cl. 260-578.000.
- Nace, Donald M., to Mobil Oil Corporation. Process for producing light fuel oil. 3,896,024, Cl. 208-74.000.
- Nadella S.A.: *See—*
  - Pitner, Alfred, 3,895,878.
- Nagai, Norio: *See—*
  - Yonemitsu, Eiichi; Kamiyama, Seiichi; Kanada, Toshiaki; and Nagai, Norio, 3,896,185.
- Nagel, Robert L., to Beatrice Foods Company. End-viewable, spoke-mountable reflector. 3,895,855, Cl. 350-99.000.
- Naito, Takayuki; Nakagawa, Susumu; and Toda, Soichiro, to Bristol-Myers Company. Antibiotic Derivatives. 3,896,106, Cl. 260-210.0AB.
- Najarian, George L. Film washer. 3,896,471, Cl. 354-324.000.
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  - Naito, Takayuki; Nakagawa, Susumu; and Toda, Soichiro, 3,896,106.
- Nakamura, Zenzo, to Canon Kabushiki Kaisha. Electronic flash device. 3,896,333, Cl. 315-151.000.
- Nakao, Hisaji; Kurosaka, Akira; Otani, Katsunori; Tsuzuki, Sadaaki; and Honda, Yuzo, to Toyoda-Koki Kabushiki Kaisha. Machine tool with overhead tool module storage magazine. 3,895,427, Cl. 29-568.000.
- Nakata, Josuke, to Mitsubishi Denki Kabushiki Kaisha. Circuit for soft-starting electric load comprising temperature sensitive diac. 3,896,369, Cl. 323-19.000.
- Nakatsuka, Koki: *See—*
  - Kondoh, Teruo; and Nakatsuka, Koki, 3,896,446.
- Nangia, Suresh K.: *See—*
  - Matthews, Benjamin H.; Rhine, Jules W.; and Nangia, Suresh K., 3,896,410.
- Naoji, Sakakibara: *See—*
  - Takeshi, Nakane; and Naoji, Sakakibara, 3,895,684.
- Natale, Anthony Pete: *See—*
  - Adams, George Phillip; Gavin, Frederick David, Jr.; and Natale, Anthony Pete, 3,895,434.
- Nathanson, Harvey C.; and Guldberg, Jens, to Westinghouse Electric Corporation. Color video display system comprising electrostatically deflectable light valves. 3,896,338, Cl. 315-373.000.
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  - Haywood, George Robert, 3,895,997.
  - Haywood, George Robert; and Plumstead, Alan David, 3,895,998.
  - Venables, John Anthony; Pollard, Peter John; and Griffiths, Barrie William, 3,896,308.
- Naumann, Robert J., to United States of America, National Aeronautics and Space Administration. Carbon monoxide monitor. 3,895,912, Cl. 23-255.00E.
- Naylor, Floyd E., to Phillips Petroleum Company. Preparation of polybutadiene. 3,896,102, Cl. 260-94.300.
- NDM Corporation: *See—*
  - Justus, George Junior; Miller, Lowell C.; and Patrick, Charles T., Jr., 3,895,635.
- Necchi Societa per Azioni: *See—*
  - Perlino, Silvano, 3,895,590.
- Negodyaev, Leonid Nikolaevich: *See—*
  - Lozenko, Valery Konstantinovich; Morozov, Vladimir Alexandrovich; Pavlikhin, Vladimir Serafimovich; Santalov, Anatoly Mikhailovich; Negodyaev, Leonid Nikolaevich; and Kiryanov, Jury Ivanovich, 3,896,349.
- Neidecker, Rudolf, to Multi-Contact A.G. Electrical connector. 3,895,853, Cl. 339-272.00R.
- Nekula, Ronald M.: *See—*
  - Hoyer, August; and Nekula, Ronald M., 3,895,790.
- Nesterov, Jury Ivanovich: *See—*
  - Orlov, Petr Nikolaevich; Nesterov, Jury Ivanovich; Kudashov, Vasily Yakovlevich; and Zimnyakov, Alexandr Vasilievich, 3,895,446.
- Neubold, Kurt: *See—*
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- Neville Chemical Company: *See—*
  - Henderson, Albert J.; and Krol, John E., 3,896,183.
- Newman, Jacques, to Thermotics, Inc. Process for removing sulfur dioxide from gases. 3,896,214, Cl. 423-242.000.
- Newsom, Alfred T. Loading apparatus. 3,895,702, Cl. 198-11.000.
- Niehaus, William Charles: *See—*
  - DiLorenzo, James Vincent; Niehaus, William Charles; and Rode, Daniel Leon, 3,896,473.
- Niehus, Gunther; and Voss, Hartwig, to Continental Gummi-Werke Aktiengesellschaft. Railway air spring bellows. 3,895,787, Cl. 267-3.000.
- Nielsen, Ole Bent Tvaermose: *See—*
  - Feit, Peter Werner; and Nielsen, Ole Bent Tvaermose, 3,896,165.
- Nihon Denshi Kabushiki Kaisha: *See—*
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- Nikiforov, Dmitry Dmitrievich: *See—*
  - Efimov, Ivan Ivanovich; Lifshits, Mikhail Lvovich; Nikiforov, Dmitry Dmitrievich; Ivanov, Viktor Pavlovich; Linetsky, Lev Efimovich; Lazarev, Vadim Georgievich; and Brenin, Alexandr Ivanovich, 3,896,339.
- Nikolaus, Peter: *See—*
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- Nims, Jerry Curtis: *See—*
  - Lo, Allen Wah; and Nims, Jerry Curtis, 3,895,867.
- Ninagawa, Chikato: *See—*
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- Nippon Chemiphar Co., Ltd.: *See—*
  - Takahashi, Hidehiko; Suzuki, Yoshio; and Kinoshita, Tuyoshi, 3,896,127.
- Nippon Electric Company, Limited: *See—*
  - Ueki, Atsufumi, 3,896,398.
  - Yano, Takeshi; Futami, Takehiro; and Ookura, Mototsugu, 3,896,401.
- Nippon Gakki Seizo Kabushiki Kaisha: *See—*
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- Nippon Kogaku K.K.: *See—*
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  - Toyoda, Kenji, 3,896,456.
- Nippon Mining Co., Ltd.: *See—*
  - Ozaki, Hiromi; Yamane, Mamoru; and Yoshikai, Haruo, 3,896,023.
- Nippon Steel Corporation: *See—*
  - Noda, Akira; Wakako, Atsuhiro; Kodashima, Tadashi; and Tanaka, Akio, 3,895,549.
  - Watanabe, Shozo; Tanaka, Kiyoshi; and Suga, Yozo, 3,895,974.
- Nippondenso Co., Ltd.: *See—*
  - Endo, Kunio; Kawarada, Junji; Sueishi, Motoharu; Harada, Susumu; and Norimatsu, Hideaki, 3,895,611.
- Nishigaki, Takashi: *See—*
  - Takahashi, Yasunobu; Seko, Maomi; Ide, Akira; Matumoto, Soziro; and Nishigaki, Takashi, 3,896,154.
- Nishizawa, Jun-ichi; and Nonaka, Termumoto. Intrinsic semiconductor charge transfer device using alternate transfer of electrons and holes. 3,896,484, Cl. 357-24.000.
- Nissan Chemical Industries, Ltd.: *See—*
  - Yoshida, Akitoshi; Asahara, Koichi; Yanagida, Koichiro; Maruyama, Tadanobu; Takatsu, Ikue; and Kumagai, Yoshiko, 3,895,956.
- Nissan Jidosha Kabushiki Kaisha: *See—*
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- Nissan Motor Company Limited: *See—*
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- Nissei Plastics Industrial Co., Ltd.: *See—*
  - Aoki, Katashi, 3,895,747.
- Nissen, Warren I., to Gillette Company, The. Lighter. 3,895,905, Cl. 431-254.000.

- Nitschke, Heinz, to Rieter Machine Works, Ltd. Apparatus and method for pre-condensing and pressing fiber material into a bale. 3,895,572, Cl. 100-35.000.
- Nitto Electric Industrial Co., Ltd.: *See—*
  - Noda, Yuzuru; Kojima, Makoto; Mazaki, Shiro; and Katashiba, Yasutada, 3,896,089.
- Noda, Akira; Wakako, Atsuhiro; Kodashima, Tadashi; and Tanaka, Akio, to Nippon Steel Corporation. Apparatus for shearing of steel strip end in hot finish rolling. 3,895,549, Cl. 83-345.000.
- Noda Institute for Scientific Research: *See—*
  - Kamekura, Masahiro; and Onishi, Hiroshi, 3,896,000.
- Noda, Yuzuru; Kojima, Makoto; Mazaki, Shiro; and Katashiba, Yasutada, to Nitto Electric Industrial Co., Ltd. Solution for forming thermal resisting polymers. 3,896,089, Cl. 260-77.5TB.
- Nohara, Akira; Umetani, Tomonobu; and Sanno, Yasushi. Chromone derivatives. 3,896,114, Cl. 260-240.00E.
- Nohira, Hidetaka; and Ito, Shin, to Toyota Jidosha Kogyo Kabushiki Kaisha. Control system for motor vehicle with catalytic convertor and automatic power transmission mechanism. 3,895,541, Cl. 74-844.000.
- Nollen, Bernard, to Obladen, Michael, a part interest. Thermometer. 3,895,523, Cl. 73-356.000.
- Nonaka, Termumoto: *See—*
  - Nishizawa, Jun-ichi; and Nonaka, Termumoto, 3,896,484.
- Norimatsu, Hideaki: *See—*
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- Noriyuki, Nagaoka; and Haruo, Niimi, to Kabushiki Kaisha Taihei Seisakusho. Apparatus for preshaping raw logs. 3,895,662, Cl. 144-209.00A.
- Norris, Richard C., to Arthur D. Little, Inc. Word processor with right-hand margin control. 3,895,704, Cl. 197-19.000.
- Northup, John D. Bottle testing apparatus. 3,895,514, Cl. 73-49.400.
- Norton, Thomas K. Frameless picture hanging. 3,895,775, Cl. 248-476.000.
- Noyes, James E.: *See—*
  - Buchanan, George E.; Krone, Donald R.; Krone, Russell R.; and Noyes, James E., 3,895,738.
- Nozadze, Gennady Pavlovich: *See—*
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- Nuclear Iberica S.A.: *See—*
  - Fornes Puget, Enrique, 3,896,342.
- NuCon, Inc.: *See—*
  - Buchtel, Dean H., 3,895,739.
- Nudenberg, Walter; Harvey, Merlin P.; and Mann, James Urquhart, to Uniroyal, Inc. Cyclic O,O,S-triesters of phosphorodithioic acid. 3,896,186, Cl. 260-927.00R.
- Nudenberg, Walter: *See—*
  - Visser, Harry D.; and Nudenberg, Walter, 3,896,094.
  - Visser, Harry D.; and Nudenberg, Walter, 3,896,096.
- Nugent, Bede Stanislaus, to Bestnu Engineering Pty. Limited. Intravenous fluids administration apparatus. 3,895,741, Cl. 222-103.000.
- Nukui, Shigeru; and Mikazuki, Hideaki, to Nihon Denshi Kabushiki Kaisha. Specimen heating and positioning device for an electron microscope. 3,896,314, Cl. 250-442.000.
- Nyborg, Ralph A., to Maran Manufacturing Corporation. Apparatus for feeding, printing and stacking articles. 3,895,574, Cl. 101-37.000.
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- Oberlinner, Andreas; Baumann, Hans; and Grychtol, Klaus, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. 2-Oxo-3 spiropyran quinoxalines. 3,896,126, Cl. 260-250.00Q.
- Obladen, Michael: *See—*
  - Nollen, Bernard, 3,895,523.
- Obstfelder, Guenther: *See—*
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- Ogasahara, Tunehiko: *See—*
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- Ogawa, Francis T.; and Wallace, John D., to Honeywell Inc. Control circuit for an automatic photographic camera. 3,896,459, Cl. 354-31.000.
- Ogiso, Mitsutoshi: *See—*
  - Ichiyanagi, Toshikazu; and Ogiso, Mitsutoshi, 3,896,315.
- Ogiwara, Yutaka, to Nippon Kogaku K.K. Circuit for generating sync pulses for use in detecting output signals of spectrophotometer or the like. 3,895,874, Cl. 356-93.000.
- Ohba, Masahiro: *See—*
  - Ishigaki, Yukinobu; Ohwaki, Isao; Sasamura, Kohei; and Ohba, Masahiro, 3,896,271.
- Ohi, Reüchi: *See—*
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- Ohlschlager, Hans: *See—*
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- Ohsawa, Mitsuo, to Sony Corporation. Tuning indicator with noise signal detector. 3,896,386, Cl. 325-398.000.
- Ohta, Masafumi: *See—*
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- Ohwaki, Isao: *See—*
  - Ishigaki, Yukinobu; Ohwaki, Isao; Sasamura, Kohei; and Ohba, Masahiro, 3,896,271.
- Okada, Katsuto; Ishibashi, Akichika; and Watanabe, Hirotaka, to Morinaga Milk Industry Co., Ltd. Compound aseptic valve. 3,895,651, Cl. 137-630.220.
- Olander, Charles C.; and Caparone, Michael J., to Robertshaw Control Company. Multispeed control system. 3,896,359, Cl. 318-334.000.
- Olevsky, Walter, to Lawrence Peska Associates, Inc., a part interest. Wind operated amphibious vehicle. 3,895,597, Cl. 115-1.00R.
- Olin Corporation: *See—*
  - Hirdler, Louis C., 3,896,213.
- Olney, Norman Seth; and Dickinson, Timothy, to Suffolk Lawn Mowers Limited. Lawn mowers. 3,895,481, Cl. 56-17.500.
- Olympus Optical Co., Ltd.: *See—*
  - Imai, Toshihiro, 3,895,857.
  - Yoshida, Isamu; and Hayasaka, Toshimi, 3,895,770.
- Omark Industries, Inc.: *See—*
  - Froehlking, Adolf, 3,895,431.
- Omi, Kyoji, to Ricoh Co., Ltd. Electrostatic recording apparatus with automatic movement of the recording electrodes between a recording and a nonrecording position. 3,896,451, Cl. 346-74.0ES.
- Omni Research Incorporated: *See—*
  - Loken, Bjarte, 3,895,999.
- Onishi, Hiroshi: *See—*
  - Kamekura, Masahiro; and Onishi, Hiroshi, 3,896,000.
- Onogi, Seiji, to Yamatake-Honeywell Company Limited. D.C. to D.C. converter with conductive isolation. 3,896,366, Cl. 321-16.000.
- Ookura, Mototsugu: *See—*
  - Yano, Takeshi; Futami, Takehiro; and Ookura, Mototsugu, 3,896,401.
- Orion-Yhtyma OY: *See—*
  - Alberty, Joachim; Salomaa, Eero; Saris, Nils-Erik; Sjostrom, Eero; and Zewi, Gabriel, 3,895,914.
- Orlov, Petr Nikolaevich; Nesterov, Jury Ivanovich; Kudashov, Vasily Yakovlevich; and Zimnyakov, Alexandr Vasilievich. Device for measuring surface profiles. 3,895,446, Cl. 33-174.00L.
- Ostrowsky, Daniel; Reiber, Louis Marcel; and Poirier, Raymond, to Thomson-CSF. Integrated optical device associating a waveguide and a photodetector and for method manufacturing such a device. 3,896,305, Cl. 250-227.000.
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  - Nakao, Hisaji; Kurosaka, Akira; Otani, Katsunori; Tsuzuki, Sadaaki; and Honda, Yuzo, 3,895,427.
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- Otsuka, Hideo; and Inouye, Ken, to Shionogi & Co., Ltd. Azides. 3,896,152, Cl. 260-349.000.
- Otto, William M., to JO-Line Tools, Inc. Electronic torque wrench. 3,895,517, Cl. 73-88.50R.
- Outboard Marine Corporation: *See—*
  - Hale, Gordon B., 3,895,845.
- Owens-Corning Fiberglas Corporation: *See—*
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- Owens-Illinois, Inc.: *See—*
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  - Ernsthausen, Roger E., 3,896,323.
  - Keyes, Melvin H., 3,896,008.
  - Schermerhorn, Jerry D., 3,896,327.
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  - Stark, Lauri Matti Ulrik, 3,895,411.
- Oy Transpak Ab Consulting: *See—*
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- Ozaki, Hiromi; Yamane, Mamoru; and Yoshikai, Haruo, to Nippon Mining Co., Ltd. Process for producing synthetic coking coal. 3.896,023, Cl. 208-46.000.
- Ozutsumi, Minoru; Miyazawa, Yoshihide; and Suzuka, Susumu, to Hodogaya Chemical Co., Ltd. Lactone compounds derived from pyridine-carboxylic acids and process for preparing the same. 3,896,116, Cl. 260-240.00D.
- Pachins, Jean G., to Societe Anonyme: Poclain. Control circuit for a pressurized fluid engine. 3,895,490, Cl. 60-486.000.
- Pacific Adhesives Company: *See—*
  - Cone, Charles N.; and Steinberg, Julius M., 3,895,984.
- Paddison, Denys Ian, to British Secretary of State for Defence. Transportation systems. 3,895,584, Cl. 104-88.000.
- Padrick, James D. Tractor-trailer fifth wheel safety lock. 3,895,827, Cl. 280-432.000.
- Paetzold, Wolf, to Elster, AG. Tubular swirl flow meter. 3,895,530, Cl. 73-194.00B.
- Page, Littleton Dennis. Remotely located apparatus for maintaining the water level within a swimming pool. 3,895,402, Cl. 4-172.170.
- Palau, Alfred. Manufacture of protective footwear. 3,896,202, Cl. 264-154.000.
- Pall Corporation: *See—*
  - Campolong, Joseph, 3,895,930.
- Palmer, Godfrey Henry Oliver: *See—*
  - Barrett, James; Kirsop, Brian Heys; and Palmer, Godfrey Henry Oliver, 3,896,001.
- Panella, Edward A.: *See—*
  - Vetter, Ronald F.; Miller, Ray A.; Panella, Edward A.; and Rosolanka, James J., 3,895,515.

- Panigati, Pier Luigi, to Etablissements d'Occident. Sealing assembly. 3,895,815, Cl. 277-171.000.
- Papsdorf, John W., to Cardinal of Adrian, Inc. Wire stripping method and device. 3,895,426, Cl. 29-427.000.
- Parise, Carl, to Parise & Sons, Inc. Shag rug adapter. 3,895.407, Cl. 15-397.000.
- Parise & Sons, Inc.: *See—*
  - Parise, Carl, 3,895,407.
- Parker-Hannifin Corporation: *See—*
  - Kupfert, Bernard F.; and Bailey, Gerald J., 3,895,814.
- Pascale, John V.: *See—*
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- Pasetti, Adolfo: *See—*
  - Sianesi, Dario; Pasetti, Adolfo; and Corti, Costante, 3,896,167.
- Pass, Raymond Vincent, to AMP Incorporated. Card reader transport mechanism. 3,896,293, Cl. 235-61.11R.
- Patrick, Charles T., Jr.: *See—*
  - Justus, George Junior; Miller, Lowell C.; and Patrick, Charles T., Jr., 3,895,635.
- Patton, Stuart: *See—*
  - Pittet, Alan O.; Pascale, John V.; Patton, Stuart; and Brodnitz, Michael H., 3,895,640.
- Paul, Werner. Air outlet arrangement for air conditioning and ventilating apparatus. 3,895,567, Cl. 98-38.000.
- Pauli, Jude A., to Emerson Electric Co. Solenoid valve with threaded core tube. 3,896,405, Cl. 335-281.000.
- Paulsen, Uwe: *See—*
  - Korn, Roland; Seyd, Gunter; and Paulsen, Uwe, 3,895,465.
- Pavlikhin, Vladimir Serafimovich: *See—*
  - Lozenko, Valery Konstantinovich; Morozov, Vladimir Alexandrovich; Pavlikhin, Vladimir Serafimovich; Santalov, Anatoly Mikhailovich; Negodyaev, Leonid Nikolaevich; and Kiryanov, Jury Ivanovich, 3,896,349.
- Pearson, David E.: *See—*
  - White, Roger B.; Pearson, David E.; and Birkner, Hugo E., Jr., 3,895,896.
- Peddinghaus, Carl Ullrich. Bending machine for rods, wires and other elongated articles of steel, etc. 3,895,509, Cl. 72-21.000.
- Pedersen, James Miller. Propeller pitch indicator. 3,895,883, Cl. 416-61.000.
- Peeters, Karel J. A.; and Van De Voorde, Norbert L. C., to Belgonucleaire S.A. Decontamination process for radio-active liquids. 3,896,045, Cl. 252-301.10W.
- Peiffer, Howard Richard: *See—*
  - Bolton, James Alfred; and Peiffer, Howard Richard, 3,895,851.
- Pelisson, Claude: *See—*
  - Cassez, Pierre; and Pelisson, Claude, 3,895,779.
- Pelton, Frank M.; Bruder, Joseph A.; and Leney, Thomas F., to Calspan Corporation. High speed video divider with compensation for non-linear functions. 3,896,391, Cl. 328-161.000.
- Peltz, John R.; and Szeverenyi, Nikolaus A., to GTE Sylvania Incorporated. Sensing apparatus including latching means. 3,896,424, Cl. 340-244.00R.
- Penn Central Transportation Company: *See—*
  - Bell, Richard M., 3,895,587.
- Penn-Plax Plastics, Inc.: *See—*
  - Goldman, Marvin A., 3,895,605.
- Pennsylvania Engineering Corporation: *See—*
  - Fisher, Howard M., 3,895,783.
- Pennwalt Corporation: *See—*
  - Blum, William A.; and Goltz, Kurt, 3,895,970.
- Perdue, Philip T.: *See—*
  - Becker, Klaus H.; Haywood, Fred F.; Perdue, Philip T.; and Thorngate, John H., 3,896,306.
- Peripheral Dynamics, Inc.: *See—*
  - Schisselbauer, John C.; and Jacobs, James P., 3,896,294.
- Perlino, Silvano, to Necchi Societa per Azioni. Automatic apparatus for sewing pockets on garments. 3,895,590, Cl. 112-121.120.
- Perrott, Lloyd J.; and Stores, Robert D., to Perrott, Lloyd J., a part interest. Tool for installation of flexible ground conduit. 3,895,496, Cl. 61-63.000.
- Persson, Bo Klas Gerhard, to Trelleborgs Gummifabriks Aktiebolag. Wear protection elements for planar or curved surfaces exposed to abrasion. 3,895,982, Cl. 156-71.000.
- Pestalozzi, Iwan. Toy and sports device. 3,895,796, Cl. 272-60.00R.
- Peters, Leo. Butter pat package. 3,896,239, Cl. 426-119.000.
- Peterson, Francis C., to C. Hager & Sons Hinge Manufacturing Company. Magnetic switch hinge. 3,896,404, Cl. 335-205.000.
- Peterson, Richard H.; and Finch, Robert A. Teaching instrument for keyboard music instruction. 3,895,555, Cl. 84-470.000.
- Petro, Claude; and Glise, Andre. Method of making a false tooth. 3,895,443, Cl. 32-8.000.
- Petrocci, Alfonso N.: *See—*
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- Pfizer Inc.: *See—*
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  - McFarland, James W.; and Howes, Harold L., Jr., 3,896,227.
  - Mylari, Banavara L., 3,896,124.
  - Mylari, Banavara L.; and Brennan, Thomas M., 3,896,172.
  - Praglin, Julius; McKie, James E., Jr.; Curtiss, Alan C.; and Longhenry, David K., 3,895,661.
- Philadelphia Quartz Company: *See—*
  - Spencer, Robert W.; and McCready, Newton W., 3,895,995.
- Phillipp, Adolf H.; Humber, Leslie G.; Bruderlein, Francois T.; and Gotz, Manfred K., to Ayerst McKenna and Harrison Ltd. Ocathydrobenzocycloheptapyridoisoquinoline derivatives and process for the preparation thereof. 3,896,130, Cl. 260-286.00Q.
- Phillips, Austin, to McDonnell Douglas Corporation. Ring pad stress coined structure. 3,895,922, Cl. 29-183.000.
- Phillips, Carmen S.; Blanton, Albert G.; and Kenna, Fenton L., Jr., to International Harvester Company. Cylindrical bale forming system. 3,895,573, Cl. 100-88.000.
- Phillips, Otto, to International Tools (1973) Ltd. Child-proof dispensing container and cover assembly. 3,895,737, Cl. 221-82.000.
- Phillips Petroleum Company: *See—*
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  - Drake, Charles A., 3,896,173.
  - Drake, Charles A., 3,896,174.
  - Naylor, Floyd E., 3,896,102.
  - Walker, John H., 3,896,068.
  - Wiley, Fred E.; and Turner, Edward W., 3,896,200.
  - Young, Richard K., 3,895,676.
- Phillips, William Lewis, Jr., to du Pont de Nemours, E. I., and Company. Particulate metal filter medium for polymer melts. 3,896,028, Cl. 210-152.000.
- Phonics Corporation: *See—*
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- Pianka, Max, to Murphy Chemical Company Limited, The. S-chloromethyl diethyl phosphorothiolothionate as a soil insecticide. 3,896,219, Cl. 424-225.000.
- Pike, John E.: *See—*
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- Pinson, Claude M., to Societe Anonyme: Poclain. Circuit for the control of a winch by fluid under pressure including an unwinding position. 3,895,564, Cl. 91-418.000.
- Pioneer Electronic Corporation: *See—*
  - Cho, Mayumi, 3,896,269.
- Pipeline Equipment Company E.P.C.O.: *See—*
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- Pitner, Alfred, to Nadella S.A. Coupling element having a split hub. 3,895,878, Cl. 403-344.000.
- Pittet, Alan O.; Pascale, John V.; Patton, Stuart; and Brodnitz, Michael H., to International Flavors & Fragrances Inc. Compositions and methods utilizing thio derivatives and processes for producing such derivatives. 3,895,640, Cl. 131-17.00R.
- Pittinger, Charles B., Jr. Disk for filament trimmer. 3,895,440, Cl. 30-347.000.
- Pitzalis, Mario: *See—*
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- Plastics Development Corporation of America: *See—*
  - Michaelis, David E., 3,896,199.
- Plepys, Raymond A.; and Jezic, Zdravko, to Dow Chemical Company, The. Iodonium compounds of 3,5-dimethylisoxazole. 3,896,140, Cl. 260-307.00H.
- Ploppa, Jurgen. Electronic counter system with variable counting ranges. 3,896,297, Cl. 235-92.0PD.
- Plowiecki, Leopold, to Technological Supply S.A. Trocar catheter. 3,895,632, Cl. 128-214.400.
- Plummer, Walter A. Powder filled cable splice assembly. 3,896,260, Cl. 174-92.000.
- Plumstead, Alan David: *See—*
  - Haywood, George Robert; and Plumstead, Alan David, 3,895,998.
- Plunguian, Mark; and Cornwell, Charles E. Process for forming foamed unsaturated polyester resin products while under a partial vacuum. 3,896,060, Cl. 260-2.50N.
- Pluntz, Darrell E., to Inland Container Corporation. Box inverting apparatus. 3,895,722, Cl. 214-1.00Q.
- Pohndorf, Henry L.: *See—*
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- Poirier, Raymond: *See—*
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- Poirier, Robert Victor, to du Pont de Nemours, E. I., and Company. Storage stable aqueous dispersion of tetrafluorethylene polymer. 3,896,071, Cl. 260-29.60F.
- Polaroid Corporation: *See—*
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  - Rodgers, Franklin A., 3,896,004.
  - Stella, Joseph A.; Burke, Edward F., Jr.; and Mason, Paul B., 3,895,862.
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- Post Office, The: *See—*
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- Potter, James Charles, to C. A. V. Limited. Governors for fuel pumps. 3,895,619, Cl. 123-140.00R.
- Potter, Roy F., to United States of America, Navy. Dual mode CRT screen. 3,896,328, Cl. 313-463.000.
- Powers, Robert W.; and Owens, Robert S., to General Electric Company. Method of forming beta-alumina articles. 3,896,018, Cl. 204-181.000.
- Powers, Robert W.: *See—*
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- Poy, Guy: *See—*
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- PPG Industries, Inc.: *See—*
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- Praglin, Julius; McKie, James E., Jr.; Curtiss, Alan C.; and Longhenry, David K., to Pfizer Inc. Cuvette apparatus for testing a number of reactants. 3,895,661, Cl. 141-241.000.
- Pratt, Ted C.: *See—*
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- Prins, Antoon Adrianus, to Schiedamsche Werktuigenen Machinefabriek N.V. Cylindrical tank sterilizer. 3,895,911, Cl. 21-98.000.
- Priola, Aldo; Cesca, Sebastiano; and Ferraris, Giuseppe, to Snam Progetti S.p.A. Procedure for the production of polymers and copolymers of isobutylene. 3,896,097, Cl. 260-85.30R.
- Procter & Gamble Company, The: *See—*
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  - Smith, Donald Edward, 3,896,238.
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- Pultrusions Corporation, The: *See—*
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- Pun, John Y. Coil forming apparatus and method. 3,895,425, Cl. 29-205.00D.
- Pye Limited: *See—*
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  - Anikanov, Nikolia Ivanovich; Grachev, Leonid Pavlovich; Radutsky, Grigory Avramovich; and Kheifets, Rafail Efimovich, 3,895,707.
- Ramey, William M.: *See—*
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- Ranck, Ralph Oliver, to du Pont de Nemours, E. I., and Company. Vinylidene chloride coating composition containing an aromatic polyester and polyester substrates coated with the coating composition. 3,896,066, Cl. 260-28.5AV.
- Ranger Tool Co., Inc.: *See—*
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  - Watarai, Syu; and Seoka, Yoshio, 3,895,945.
- Rapid-American Corporation: *See—*
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- Rassieur, Charles L., to Central Mine Equipment Company. Movable auger rack. 3,895,726, Cl. 214-83.240.
- Ravault, Frank Ernest George, to Foseco International Limited. Gas reactors including foam-structured ceramic body with integral internal ceramic baffles. 3,895,917, Cl. 23-277.00C.
- Raymond Lee Organization, Inc., The: *See—*
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  - King, Toni B., 3,895,800.
- Raynolds, Stuart, to du Pont de Nemours, E. I., and Company. Fluorinated oily soil release agents. 3,896,088, Cl. 260-70.00R.
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  - Huang, Ho-Chung; and San-Paolo, Angela, 3,895,429.
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- Reboul, Jean Philippe: *See—*
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- Reidl, Herta Emilie, legal representative: *See—*
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- Rein, Charles R.; and Jones, Charles B., Jr., to United States of America, Navy. Breathing gas heat exchanger. 3,895,675, Cl. 165-164.000.
- Reiser, Donald; and Belcher, Ralph. Long persistence display screen supplement to CRT. 3,896,264, Cl. 178-7.80C.
- Reister, Richard A. Electric razor adapter. 3,896,364, Cl. 320-2.000.
- Reliable Electric Company: *See—*
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- Rengo Co., Ltd.: *See—*
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- Rensmann, Leo; Schulde, Felix; Obendorf, Johann; and Neubold, Kurt, to Veba-Chemie AG. Epoxy powder coatings and method therefor. 3,896,082, Cl. 260-47.0EN.
- Rescalli, Carlo; Rebora, Pierluigi; and Ginnasi, Alessandro, to Snam Progetti S.p.A. pH Control of recycle water in the plural stage distillation of a crude acrylonitrile feed. 3,896,007, Cl. 203-33.000.
- Research Corporation: *See—*
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  - Kupchan, S. Morris; Komoda, Yasuo; Thomas, Gareth J.; and Court, William A., 3,896,111.
- Resnick, Paul Raphael, to du Pont de Nemours, E. I., and Company. Decomposition of unstable isomers. 3,896,179, Cl. 260-616.000.
- Resta, Vincent A., to Bendix Corporation, The. Solid state DC times AC multiplier. 3,896,301, Cl. 235-194.000.
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- Reynard, Kennard A.; Gerber, Arthur H.; and Rose, Selwyn H., to Horizons Incorporated. Polyphosphazenes containing the CF_3CHFCF_2-CH_2O-group. 3,896,058, Cl. 260-2.00P.
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- Rhodes, Melvin H., to Rockwell International Corporation. Trigonometric analog-to-digital conversion apparatus. 3,896,299, Cl. 235-150.530.
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- Rice, David E., to Minnesota Mining and Manufacturing Company. N,N-dialkylalkanolamines. 3,896,158, Cl. 260-472.000.
- Richard, Raymond L., Jr.; and Sampatacos, Peter M., to General Motors Corporation. Face sealing arrangement for automotive waterpumps and the like and face seal assembly therefor. 3,895,811, Cl. 277-22.000.
- Richardson, Brian Peter, to Sandoz Ltd. Method for treating nephrises. 3,896,228, Cl. 424-266.000.
- Richardson, Claude Alan, to Stanhope-Seta Limited. Viscometric apparatus. 3,895,513, Cl. 73-55.000.
- Richardson, James Ivor, to Harris-Intertype Corporation. Printing press instrumentation. 3,896,377, Cl. 324-161.000.
- Richmond, Martin R., to Sanders Associates, Inc. Electric signaling system. 3,896,441, Cl. 343-18.00E.

- Ricoh Co., Ltd.: *See—*
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  - Omi, Kyoji, 3,896,451.
- Riester, Oskar; and Ohlschlager, Hans, to Agfa-Gevaert Aktiengesellschaft. Silver halide emulsion supersensitized with a merocyanine dye and a tertiary phosphine sulfide. 3,895,951, Cl. 96-100.000.
- Rieter Machine Works, Ltd.: *See—*
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- Rigollot, Georges Alfred. Method and plant for the storage and recovery of energy from a reservoir. 3,895,493, Cl. 60-659.000.
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- Rinne, Erik K. Sports game. 3,895,799, Cl. 273-85.00R.
- Rist's Wires & Cables Limited: *See—*
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- Ritter, Ernst: *See—*
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  - Rudert, Frithjof; Muller, Rolf; and Gornott, Dietmar, 3,896,489.
  - Steinke, Leo, 3,895,616.
- Roberts, Alfred M., to Campbell Chain Company. Cross chain hook. 3,895,419, Cl. 24-230.5CR.
- Roberts, Maurice Paul, to TRW Inc. Hydrostatic control unit. 3,895,888, Cl. 418-61.00B.
- Robertshaw Control Company: *See—*
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- Robinson, Richard L.; and Volgyesy, Ivan L., to Indian Head, Inc. Electrical junction and switch boxes. 3,895,732, Cl. 220-3.500.
- Rochling, Hans; and Hartel, Kurt, to Hoechst Aktiengesellschaft. Novel triazino-benzimidazoles. 3,896,120, Cl. 260-249.500.
- Rockwell International Corporation: *See—*
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  - Ehman, Michael F.; and Austerman, Stanley B., 3,895,921.
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- Rodgers, Franklin A., to Polaroid Corporation. Distillation system utilizing a microporous stack. 3,896,004, Cl. 202-167.000.
- Rodler, Hans. Apparatus for producing an interference signal at a selected location. 3,895,639, Cl. 128-422.000.
- Rodriquez, Edward T., to Creative Technology Corporation. Multiple level lamp adapter. 3,896,334, Cl. 315-194.000.
- Rogers, Donald Burl: *See—*
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- Rohm and Haas Company: *See—*
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  - Larsson, Bjorn E.; and Le Sota, Stanley, 3,896,085.
- Rohr, Ulrich, to Deutsche Texaco Aktiengesellschaft. Method and apparatus for logging the course of a borehole. 3,896,412, Cl. 340-15.5BA.
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- Roland, Max, to Roland Mfg. Co. Dental retracting device. 3,895,764, Cl. 242-107.600.
- Roland Offsetmaschinenfabrik Faber & Schleicher AG: *See—*
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- Rollei-Werke Franke & Heidecke: *See—*
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- Ronson Corporation: *See—*
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- Roper Corporation: *See—*
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- Rose, Andrew M.; and Bryan, Geoffrey L. Automated broadcast programmer. 3,896,490, Cl. 360-69.000.
- Rose, Selwyn H.: *See—*
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- Rosen, Harold A.: *See—*
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- Rosenberg, Ira, to Clairol Incorporated. UV Curable polyene-polythiol-surfactant compositions. 3,896,014, Cl. 204-159.230.
- Rosenburg, Charles W., Jr., to F. N. Burt Company, Inc. Tapered carton assembly containing filler carton. 3,895,754, Cl. 229-23.00R.
- Rosner, Kurt, to Hazemag Dr. E. Andreas KG. Composting installation. 3,895,916, Cl. 23-259.100.
- Rosolanka, James J.: *See—*
  - Vetter, Ronald F.; Miller, Ray A.; Panella, Edward A.; and Rosolanka, James J., 3,895,515.
- Ross, John William Ellis: *See—*
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- Roteman, Jerome, to American Can Company. Epoxy resin photoresist with iodoform and bismuth triphenyl. 3,895,954, Cl. 96-115.00R.
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- Rothschild, Stanley: *See—*
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- Rousseau, Robert J.; and Robins, Roland K., to ICN Pharmaceuticals, Inc. 3-Deazaguanine. 3,896,135, Cl. 260-296.00H.
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  - Di Lorenzo, James Vincent; and Rozgonyi, George Arthur, 3,896,479.
- Rucker, Stanley E. Poultry transport system. 3,895,727, Cl. 214-85.000.
- Rudert, Frithjof; Muller, Rolf; and Gornott, Dietmar, to Robert Bosch G.m.b.H. Electronic tape editing equipment. 3,896,489, Cl. 360-14.000.
- Rulo, Charles J. Roadway detour system for vehicles. 3,896,414, Cl. 340-31.00R.
- Russell, Carl D., to Aquarius, Inc. Indexing panel installer. 3,895,721, Cl. 214-1.00H.
- Ryan, John W. Duct coating apparatus. 3,895,604, Cl. 118-306.000.
- Rym, Christian, to ACEC (Ateliers de Constructions Electriques de Charleroi). Voltage regulating device. 3,896,368, Cl. 323-8.000.
- S.A. Ulmer Aeronautique: *See—*
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- S&C Electric Company: *See—*
  - Chabala, Leonard Valentine, 3,896,282.
- Sachs, Reynold; and Cicchiello, Frank, to Phonics Corporation. Telecommunications system for the hearing impaired utilizing Baudot-ASCII code selection. 3,896,267, Cl. 179-2.0TV.
- Sack, Ernest Theodor, to Maschinenfabrik Sack GmbH. Multiple-part machine frame for presses, rolling mills or the like. 3,895,512, Cl. 72-455.000.
- Sackinger, James P.: *See—*
  - Enck, Richard S., Jr.; and Sackinger, James P., 3,896,331.
- Sacrini, Egeo; and Cavallotti, Claudio, to BF Goodrich Company, The. Organic peroxides derived from unsaturated compounds. 3,896,176, Cl. 260-610.00R.
- Sagami, Hiroshi: *See—*
  - Akamatsu, Kiyoshi; Yokota, Yuzo; Sagami, Hiroshi; and Imai, Isao, 3,895,949.
- Saguaro Industries, Inc.: *See—*
  - Gillespie, John Francis, 3,896,197.
- Saguchi, Kenji; and Hiraiwa, Takashi. Spray dryer. 3,895,994, Cl. 159-4.00B.
- Sahara, Masayoshi; and Tominaga, Sinji, to Minolta Camera Kabushiki Kaisha. Electric shutter for programmed exposure control. 3,896,460, Cl. 354-38.000.
- Saines, George S.: *See—*
  - Yamamoto, Roy Isamu; and Saines, George S., 3,896,074.
- Saint-Gobain Industries: *See—*
  - Mabru, Marcel, 3,896,201.
- Saito, Mitsutaka: *See—*
  - Kosaka, Yujiro; Uemura, Masaru; Fujiki, Tokio; Kimura, Masatoshi; and Saito, Mitsutaka, 3,896,067.
- Sakai Chemical Industry Company, Limited: *See—*
  - Kotone, Akira; Hiri, Yoshiyuki; and Masada, Tadashi, 3,896,149.
- Sakai, Takeo: *See—*
  - Shiba, Keisuke; Kubodera, Seiiti; Ohi, Reiichi; Shishido, Tadao; Yamamoto, Nobuo; and Sakai, Takeo, 3,895,948.
- Sakai, Yoshitada: *See—*
  - Tanzawa, Hiroshi; Sakai, Yoshitada; Matsushita, Takao; Fujii, Yoshishige; Sugita, Kouji; and Maekawa, Haruki, 3,896,061.
- Sakamoto, Akira, to Daiden Co., Inc. Storage battery for vehicles. 3,895,964, Cl. 136-182.000.
- Sakamoto, Setsuo: *See—*
  - Yoshida, Fumio; Sakamoto, Setsuo; and Tatewaki, Shoichi, 3,895,859.
- Sakhuja, Ravinder K., to Thermo Electron Corporation. Combustor. 3,895,608, Cl. 122-250.00R.
- Sakurai, Yoshitoshi, to Honda Giken Kogyo Kabushiki Kaisha. Intake manifold device of an internal combustion engine. 3,895,617, Cl. 123-122.0AB.
- Salomaa, Eero: *See—*
  - Alberty, Joachim; Salomaa, Eero; Saris, Nils-Erik; Sjostrom, Eero; and Zewi, Gabriel, 3,895,914.
- Samonov, Valentin Terentievich: *See—*
  - Levin, Solomon Isaakovich; Samonov, Valentin Terentievich; Tsygankin, Nikolai Ivanovich; and Khoroneko, Nadezhda Serafimovna, 3,895,706.
- Sampatacos, Peter M.: *See—*
  - Richard, Raymond L., Jr.; and Sampatacos, Peter M., 3,895,811.
- Sanborn, Herbert M.: *See—*
  - Heminway, John R.; and Sanborn, Herbert M., 3,896,442.
- Sanders Associates, Inc.: *See—*
  - Richmond, Martin R., 3,896,441.
- Sanders, Thomas J., to Harris Corporation. Method of fabricating a bipolar transistor. 3,895,977, Cl. 148-187.000.
- Sandoz, Inc.: *See—*
  - Houlihan, William J.; and Manning, Robert E., 3,896,232.
  - Kathawala, Faizulla G., 3,896,143.
- Sandoz Ltd.: *See—*
  - Lal Kaul, Bansi, 3,896,113.
  - Richardson, Brian Peter, 3,896,228.
- Sangamo Electric Company: *See—*
  - Carney, Murray C.; and Hart, David G., 3,896,488.

Sanno, Yasushi: *See—*
Nohara, Akira; Umetani, Tomonobu; and Sanno, Yasushi, 3,896,114.

San-Paolo, Angela: *See—*
Huang, Ho-Chung; and San-Paolo, Angela, 3,895,429.

Santalov, Anatoly Mikhailovich: *See—*
Lozenko, Valery Konstantinovich; Morozov, Vladimir Alexandrovich; Pavlikhin, Vladimir Serafimovich; Santalov, Anatoly Mikhailovich; Negodyaev, Leonid Nikolaevich; and Kiryanov, Jury Ivanovich, 3,896,349.

Santilli, Arthur A.; Scotese, Anthony C.; and Tomarelli, Rudolph M., to American Home Products Corporation. (2-Pyrimidinylthio) alkanoic acids, esters, amides and hydrazides. 3,896,129, Cl. 260-256.500.

Sarantakis, Dimitrois: *See—*
McKinely, Wayne A.; and Sarantakis, Dimitrois, 3,896,104.

Saris, Nils-Erik: *See—*
Alberty, Joachim; Salomaa, Eero; Saris, Nils-Erik; Sjostrom, Eero; and Zewi, Gabriel, 3,895,914.

Sarka, Albert J., to Harris-Intertype Corporation. Method of making die plates. 3,895,947, Cl. 96-36.000.

Sarnoff, Stanley J.: *See—*
Bartner, Elliot; Curley, Edward M.; Kaplan, Sheldon; and Sarnoff, Stanley J., 3,895,633.

Sasaki, Yoshio, to Toyota Jidosha Kogyo Kabushiki Kaisha. Oil seal means of a rotary engine. 3,895,892, Cl. 418-142.000.

Sasamura, Kohei: *See—*
Ishigaki, Yukinobu; Ohwaki, Isao; Sasamura, Kohei; and Ohba, Masahiro, 3,896,271.

Sato, Kikumasa; Inoue, Seiichi; Kijima, Shizumasa; and Hamamura, Kimio, to Eisai Company, Ltd. Synthesis of quinone derivatives having biological activity. 3,896,153, Cl. 260-396.00R.

Sauve, Delsford B., to Lawrence Peska Associates, Inc., a part interest. Blender packing device. 3,895,548, Cl. 81-1.00R.

Savkar, Sudhir D.; Giles, Walter B.; and Tatge, Robert B., to General Electric Company. Acoustic attenuator providing relatively high insertion loss at low frequencies. 3,895,686, Cl. 181-56.000.

Sawada, Daisaku; and Takeda, Yuji, to Toyota Jidosha Kogyo Kabushiki Kaisha. Spark plug operable with a floating arc. 3,896,322, Cl. 313-142.000.

Sawano, Hiroshi, to Konishiroku Photo Industry Co., Ltd. Lens barrel. 3,895,858, Cl. 350-255.000.

Scaife, Ronald: *See—*
Wall, Christopher; Scaife, Ronald; and Wood, Thomas A., 3,895,843.

Scarpa, Paul E. Tennis marking tape and method of making same. 3,896,248, Cl. 428-172.000.

Scheck, Harold G. Security clamp. 3,895,768, Cl. 248-19.000.

Scheel, Klaus; and Luthe, Wolfgang. Method for cleansing surfaces of buildings and passage-ways. 3,895,957, Cl. 134-34.000.

Schelkmann, Wilhelm. Method of repairing tires and shells used for this method. 3,895,985, Cl. 156-96.000.

Schering Corporation: *See—*
Shapiro, Elliot L.; and Ganguly, Ashit K., 3,896,220.

Schermerhorn, Jerry D., to Owens-Illinois, Inc. Monolithic gas discharge display device. 3,896,327, Cl. 313-220.000.

Schiedamsche Werktuigenen Machinefabriek N.V.: *See—*
Prins, Antoon Adrianus, 3,895,911.

Schimmerling, Michel Gerard. Device for programming and selecting documents. 3,895,717, Cl. 209-80.500.

Schisselbauer, John C.; and Jacobs, James P., to Peripheral Dynamics, Inc. Plural mode card reading apparatus. 3,896,294, Cl. 235-61.11E.

Schittek, Friedrich: *See—*
Willenbrock, Helmut; and Schittek, Friedrich, 3,895,647.

Schlauer, Johann: *See—*
Bratzler, Karl; Doerges, Alexander; and Schlauer, Johann, 3,896,215.

Schlesinger, Sheldon I., to American Can Company. Phototropic compounds as acid catalyst for epoxy materials. 3,895,952, Cl. 96-115.00R.

Schlicht, Raymond C.; and Eckert, George W., to Texaco Inc. Motor fuel composition. 3,895,925, Cl. 44-72.000.

Schluter, Wilhelm: *See—*
Lodige, Wilhelm; Lodige, Fritz; Lucke, Josef; Schluter, Wilhelm; and Beckschulte, Heinrich, 3,895,781.

Schmelow, Harald Martin: *See—*
Weman, Per Olaf; and Schmelow, Harald Martin, 3,895,539.

Schmidt, William. Flexible forceps. 3,895,636, Cl. 128-305.000.

Schmitt, James L.; Castle, Clarence L., Jr.; and Kessinger, Orville E., Jr., to Caterpillar Tractor Co. Combined steering clutch and brake control for crawler tractors. 3,895,703, Cl. 192-13.00R.

Schneider, Bruce H.: *See—*
Kaufman, Burton; and Schneider, Bruce H., 3,895,865.

Schneider, Fernand: *See—*
Bernauer, Karl; Borgulya, Janos; and Schneider, Fernand, 3,896,132.

Schops, Rudolf, to Rheinstahl Aktiengesellschaft. Support system. 3,895,558, Cl. 89-36.00K.

Schotthoefer, Jerome W.; and Colasanti, Arduino, to Allied Chemical Corporation. Inflation apparatus for safety device. 3,895,821, Cl. 280-150.0AB.

Schottler, Henry. Variable displacement fluid transducer. 3,895,565, Cl. 91-492.000.

Schrader, Leo W., Jr., to United States of America, Navy. Tracking radar countermeasure. 3,896,438, Cl. 343-18.00E.

Schreiner, Max P.; and Hyltin, Tom M., to Texas Instruments Incorporated. Solid state fluorescent lamp ballast system. 3,896,336, Cl. 315-226.000.

Schubeck, Phillip A., to Ford Motor Company. Carburetor throttle valve positioner. 3,895,615, Cl. 123-103.00R.

Schudel, Peter: *See—*
Helmlinger, Daniel; Lamparsky, Dietmar; Schudel, Peter; Wild, Jost; and Sigg-Grutter, Trudi, 3,896,175.

Schuhmann, Siegfried: *See—*
Cappel, Bert; Schuhmann, Siegfried; and Wolf, Klaus, 3,895,575.

Schulde, Felix: *See—*
Rensmann, Leo; Schulde, Felix; Obendorf, Johann; and Neubold, Kurt, 3,896,082.

Schultz, William J.; and Smith, Samuel, to Minnesota Mining and Manufacturing Company. Pile fabric treating composition providing soil resistance. 3,896,035, Cl. 252-8.750.

Schulz, Gunter; and Igel, Wolfgang, to Zinser-Textilmaschinen GmbH. Bobbin changing apparatus. 3,895,482, Cl. 57-52.000.

Schulze, Harry O.: *See—*
Mehalchick, Emil J.; Cleveland, Joseph J.; Long, Robert A.; Schulze, Harry O.; and Marshall, Paul K., 3,896,048.

Schulze, Juergen: *See—*
Gruette, Friedrich-Karl; Schulze, Juergen; and Hampel, Heinz-Georg, 3,896,240.

Schwarz, Wilhelm, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Jaw coupling. 3,895,502, Cl. 64-14.000.

Schwarzler, Peter, to Krauss-Maffei Aktiengesellschaft. Two-sided linear induction motor especially for suspended vehicles. 3,895,585, Cl. 104-148.0LM.

Schwarzmann, Gunter: *See—*
Holtschmidt, Ulrich; and Schwarzmann, Gunter, 3,896,171.

Schwarzmann, Matthias: *See—*
Broecker, Franz Josef; Heners, Juergen; Marosi, Laszlo; Schwarzmann, Matthias; and Laurer, Peter Rudolf, 3,896,053.

Schweppes Limited: *See—*
French, John A.; and Turner, John C., 3,895,660.

Scientific Systems, Inc.: *See—*
Stone, Stanley Allan, 3,895,534.

Scotese, Anthony C.: *See—*
Santilli, Arthur A.; Scotese, Anthony C.; and Tomarelli, Rudolph M., 3,896,129.

Secretary of State for Defence in her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, The: *See—*
Sturgeon, John Royal, 3,895,528.

Sedivy, Stanley J., to Zenith Radio Corporation. System for suspending a color selection electrode in a color cathode ray tube. 3,896,321, Cl. 313-404.000.

Seelig, Johann: *See—*
Strutz, Hans-Jurgen; Jacob, Ingolf; and Seelig, Johann, 3,895,420.

Sehring, Richard; and Buck, Wolfgang, to Boehringer Ingelheim GmbH. Process for the preparation of thionophosphoric and thionophosphonic acid esters. 3,896,192, Cl. 260-982.000.

Seidl, Alois: *See—*
Kraemer, Stefan; Seidl, Alois; and Reidl, Hans-Joachim, deceased, 3,895,979.

Seiffert, Ulrich; and Struwe, Burckhard, to Volkswagenwerk Aktiengesellschaft. Safety device. 3,895,822, Cl. 280-150.0SB.

Seiller, Pierre Francois Xavier, to Le Presentroir Seiller. Display stand for eyeglasses. 3,895,718, Cl. 211-13.000.

Sekigawa, Toshihiro: *See—*
Tarui, Yasuo; Hayashi, Yutaka; and Sekigawa, Toshihiro, 3,895,978.

Sekmakas, Kazys, to DeSoto, Inc. Electrodeposition of thermosetting coating at the cathode. 3,896,017, Cl. 204-181.000.

Seko, Maomi: *See—*
Takahashi, Yasunobu; Seko, Maomi; Ide, Akira; Matumoto, Soziro; and Nishigaki, Takashi, 3,896,154.

Selin, Terry G.: *See—*
DeZuba, George P.; Berger, Abe; and Selin, Terry G., 3,896,123.

Sellstedt, John H., to American Home Products Corporation. Process for preparation of 6-aminopenicillanic acid. 3,896,110, Cl. 260-239.100.

Semikron Gesellschaft fur Gleichrichterbau u. Elektronik m.b.H.: *See—*
Berkner, Rolf, 3,896,254.

Sencore, Inc.: *See—*
Streed, Ramer W., 3,896,268.

Seng, Florin; Ley, Kurt; and Metzger, Karl Georg, to Bayer Aktiengesellschaft. Compositions containing a carbonamidoquinoxaline-di-N-oxide and method of using same. 3,896,222, Cl. 424-248.000.

Seoka, Yoshio: *See—*
Watarai, Syu; and Seoka, Yoshio, 3,895,945.

Serrano, Salomon. Entry control device. 3,896,316, Cl. 307-149.000.

Servicios de Ingenieria, Proyectos Y Estudios/(SIPE): *See—*
de Delas y de Ugarte, Eduardo, 3,895,782.

Seto, Kenneth Hon; and Thompson, James Thomas, to Protective Treatments, Inc. Pressure sensitive adhesive strips and sheets. 3,896,245, Cl. 428-7.000.

Seyd, Gunter: *See—*
Korn, Roland; Seyd, Gunter; and Paulsen, Uwe, 3,895,465.

Shapiro, Elliot L.; and Ganguly, Ashit K., to Schering Corporation. Method of treating fungal infections with azido compounds. 3,896,220, Cl. 424-226.000.

Sharp, Larry L., to Illinois Tool Works Inc. Shelf support clip. 3,895,774, Cl. 248-243.000.

Shaw, Graham C.; and Reed, Russell, Jr., to Thiokol Corporation. Flare with adhesive liner. 3,895,578, Cl. 102-37.800.

Shay, Edward Griffin: *See—*
Merianos, John J.; Shay, Edward Griffin; Adams, Phillip; and Petrocci, Alfonso N., 3,895,932.

Shell Oil Company: *See—*
Howard, Colin C.; Johnstone, Robert A. W.; and Entwistle, Ian D., 3,896,002.

Shema, Bernard F.; and Brink, Robert H., Jr., to Betz Laboratories, Inc. Slime control compositions and their use. 3,896,229, Cl. 424-270.000.

Shema, Bernard F.; Brink, Robert H., Jr.; and Swered, Paul, to Betz Laboratories, Inc. 2,2-dibromo-3-nitrilopropionamide and hexachlorodimethylsulfone as a slime control composition. 3,896,231, Cl. 424-304.000.

Shema, Bernard F.; Brink, Robert H., Jr.; and Swered, Paul, to Betz Laboratories, Inc. Slime control compositions and their use. 3,896,236, Cl. 424-329.000.

Shepherd, Robert Carl, to Johnson & Johnson. Method and apparatus for tearing sections from a web. 3,895,751, Cl. 225-3.000.

Sheppard, Robert Charles: *See—*
Hardy, Paul Martin; Kenner, George Wallace; Sheppard, Robert Charles; Morley, John Selwyn; and MacLeod, John Keith, 3,896,103.

Shiba, Keisuke; Kubodera, Seiiti; Ohi, Reiichi; Shishido, Tadao; Yamamoto, Nobuo; and Sakai, Takeo, to Fuji Photo Film Co., Ltd. Silver halide light-sensitive material containing a heterocyclic thione and a polyalkylene oxide. 3,895,948, Cl. 96-76.00R.

Shimada, Shunji: *See—*
Hatsukano, Yoshikazu; and Shimada, Shunji, 3,896,388.

Shimizu, Kanryo: *See—*
Inaba, Seiuemon; Shimizu, Kanryo; Hashimoto, Yoshihiro; Amemiya, Youichi; and Usami, Hiroshi, 3,896,361.

Shimizu, Sadami: *See—*
Mabuchi, Shunsuke; Tsuzuki, Kenji; Matsunaga, Hideaki; Shimizu, Sadami; and Sumita, Makoto, 3,896,051.

Shinozaki, Mamoru: *See—*
Akazaki, Shigeru; Endo, Masaaki; and Shinozaki, Mamoru, 3,895,495.

Shionogi & Co., Ltd.: *See—*
Otsuka, Hideo; and Inouye, Ken, 3,896,152.

Shiraishi, Yoshiaki. Circulative catering table. 3,895,691, Cl. 186-1.00R.

Shishido, Tadao: *See—*
Shiba, Keisuke; Kubodera, Seiiti; Ohi, Reiichi; Shishido, Tadao; Yamamoto, Nobuo; and Sakai, Takeo, 3,895,948.

Shockley, Charles Glenn, to Lawrence Peska Associates, Inc., a part interest. Ball return device. 3,895,809, Cl. 273-182.00R.

Sianesi, Dario; Pasetti, Adolfo; and Corti, Costante, to Montecatini Edison S.p.A. Perfluorinated linear polyethers. 3,896,167, Cl. 260-544.00F.

Sieffert, William G., to Hoerner Waldorf Corporation. Protective container. 3,895,712, Cl. 206-424.000.

Siegelin, Werner: *See—*
Gawlick, Heinz; Kuschel, Hans; Marondel, Gunther; Siegelin, Werner; and Spranger, Wolfgang, 3,895,579.

Siemens Aktiengesellschaft: *See—*
Blaschke, Felix, 3,896,351.
Diepers, Heinrich; Jablonski, Karl-Heinz; and Lamamatsch, Hans, 3,895,432.
Koch, Christian, 3,895,488.
Korn, Roland; Seyd, Gunter; and Paulsen, Uwe, 3,895,465.
Loderer, Peter, 3,896,348.
Meyer, Jurgen; and Waller, Siegfried, 3,896,360.

Sigg-Grutter, Trudi: *See—*
Helmlinger, Daniel; Lamparsky, Dietmar; Schudel, Peter; Wild, Jost; and Sigg-Grutter, Trudi, 3,896,175.

Sigh, Jack F.: *See—*
Kolb, William A.; and Sigh, Jack F., 3,895,784.

Sigmatex A.G.: *See—*
Weman, Per Olaf; and Schmelow, Harald Martin, 3,895,539.

Silec-Semi-Conducteurs: *See—*
Dumas, Guy H., 3,895,976.

Silverman, Elliott; and Cohen, Morton. Adhesive compositions. 3,895,445, Cl. 32-14.00R.

Simpson, John: *See—*
MacRae, Alfred Urquhart; Miller, Paul; Moline, Robert Alan; and Simpson, John, 3,895,965.

Singer Company, The: *See—*
Harvell, Don L., 3,895,710.
Killinger, Karl H., 3,895,591.
Wiedeman, Charles W., 3,896,291.

Sink, Robert L. Exercise cycle. 3,895,825, Cl. 280-234.000.

Sinniger, Edgar, to Micagil A.G. Circuit arrangement for testing insulation by partial discharge technique. 3,896,376, Cl. 324-158.0MG.

Siporex-Francais S.A.R.L.: *See—*
Goransson, Rolf Erik, 3,895,551.

Sirven, Jacques, to Thomson-CSF. Pulse type radar system. 3,896,434, Cl. 343-5.0SA.

Sjostrom, Eero: *See—*
Alberty, Joachim; Salomaa, Eero; Saris, Nils-Erik; Sjostrom, Eero; and Zewi, Gabriel, 3,895,914.

Skvarenina, John A. Sight glass for metal liquid containers. 3,895,522, Cl. 73-323.000.

Sliva, Daniel E.: *See—*
Aycock, David F.; and Sliva, Daniel E., 3,896,047.

Small, Irwin A. Mandibular staple and drill guide. 3,895,444, Cl. 32-10.00A.

Smith, Donald Edward, to Procter & Gamble Company, The. Dermatological compositions. 3,896,238, Cl. 424-358.000.

Smith, John R.: *See—*
Mahlandt, Lavern N.; Smith, John R.; Elliott, Floyd R.; and Greene, Larry D., 3,895,623.

Smith, Samuel: *See—*
Schultz, William J.; and Smith, Samuel, 3,896,035.

Smith, Stanley B., Jr.: *See—*
Dennison, Allan G.; Bancroft, Martha F.; Smith, Stanley B., Jr.; and Tolkoff, Marc Joshua, 3,895,873.

Smith, Thomas Woods, to Lubrizol Corporation, The. Aqueous dispersions of film-forming. 3,896,073, Cl. 260-29.6RW.

SmithKline Corporation: *See—*
Baile, Clifton A.; Bender, Paul E.; and Loev, Bernard, 3,896,137.
Brenner, L. Martin; and Loev, Bernard, 3,896,233.
Craig, Paul N.; and Zirkle, Charles L., 3,896,133.
Loev, Bernard, 3,896,148.
Sutton, Blaine M., 3,896,234.

Smrcka, Joseph G., to Alderson Research Laboratories, Inc. Breakable leg. 3,895,451, Cl. 35-17.000.

Snam Progetti S.p.A.: *See—*
Priola, Aldo; Cesca, Sebastiano; and Ferraris, Giuseppe, 3,896,097.
Rescalli, Carlo; Rebora, Pierluigi; and Ginnasi, Alessandro, 3,896,007.

Snel AG: *See—*
Ehrenberg, Henry; and Hirsch, Mordechai-Gustav, 3,895,439.

Snyder, Elizabeth M. Medical instrument retainer. 3,895,629, Cl. 128-171.000.

Snyder, Francis Henry, to Lone Star Industries, Inc. Method and apparatus for shattering shock-severable solid substances. 3,895,760, Cl. 241-5.000.

Socias, Arturo. Tape-cassette holder for magnetophonic recording and reproduction apparatus. 3,896,492, Cl. 360-93.000.

Societa' Italiana Resine S.I.R. S.p.A.: *See—*
Valoti, GianFranco; and Antonini, Giancarlo, 3,896,093.
Vargiu, Silvio; Berti, Renato; and Pitzalis, Mario, 3,896,080.

Societe Anonyme Automobiles Citroen: *See—*
Cadiou, Jean, 3,895,650.

Societe Anonyme: Poclain: *See—*
Pachins, Jean G., 3,895,490.
Pinson, Claude M., 3,895,564.

Societe de Vente de l'Aluminium Pechiney: *See—*
Cospen, Jean; and Baumann, Bernard, 3,896,207.

Societe Honeywell Bull (Societe Anonyme): *See—*
Delorme, Raymond Louis, 3,896,285.

Societe Industrielle Generale de Mecanique Applique S.I.G.M.A.: *See—*
Leblanc, Jean, 3,895,886.

Soehring, Gerhard; Kreutze, Gerhard; and Obstfelder, Guenther, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Setting mechanism for the pickup head of a disc storage system, especially for teaching purposes. 3,896,491, Cl. 360-86.000.

Solo, Alan J., to Knock-N-Lok International, Inc. Molded wall fastener. 3,895,773, Cl. 248-217.000.

Sommer, Manfred. Rotary piston pump. 3,895,893, Cl. 418-153.000.

Sony Corporation: *See—*
Ohsawa, Mitsuo, 3,896,386.

Southern Illinois University Foundation: *See—*
Meyers, Cal Yale; and Malte, Ashok M., 3,896,164.

Spanheimer, Willi: *See—*
Mengeringhausen, Max; Quenzel, Hermann; Gehrig, Reinhold; and Spanheimer, Willi, 3,895,789.

Spectrol Electronics Corporation: *See—*
DeLong, Robert J., 3,895,600.

Spencer Industries, Inc.: *See—*
Chambers, Herbert R., 3,895,733.

Spencer, Robert W.; and McCready, Newton W., to Philadelphia Quartz Company. Film drying of hydrated alkali metal silicate solutions. 3,895,995, Cl. 159-49.000.

Sperry Rand Corporation: *See—*
Flannery, William E., 3,896,421.
Lester, John M.; Crist, Philip W.; and O'Toole, Charles E., 3,896,439.
Morris, Richard H., 3,896,437.

Sperry-Sun Well Surveying Company: *See—*
McArthur, Billy W., 3,895,527.

Spotnails, Inc.: *See—*
El Guindy, Samir, 3,895,562.

Sprague Electric Company: *See—*
Bilotti, Alberto; and Lutz, Ronald W., 3,896,383.
Coleman, James H.; and Lo, Jyh-Shuey, 3,896,354.
MacDougall, John D.; and Manchester, Kenneth E., 3,895,966.

Spranger, Wolfgang: *See—*
Gawlick, Heinz; Kuschel, Hans; Marondel, Gunther; Siegelin, Werner; and Spranger, Wolfgang, 3,895,579.

Stach, Leonard J., to Velsicol Chemical Corporation. S-(2-methoxyiminoethyl) O-ethyl-N-isopropylthiolo-phosphoramidate. 3,896,189, Cl. 260-944.000.

Standard Oil Company, The: *See—*
Herold, Albert J.; Koch, Paul E.; and Adams, Richard C., 3,895,900.

Stanhope-Seta Limited: *See—*
Richardson, Claude Alan, 3,895,513.

- Stark, Lauri Matti Ulrik, to Oy. Nokia AB. Hinge, in particular for coupled window constructions. 3,895,411, Cl. 16-131.000.
- Startz, Ambrose J.: *See—*
  - Coleman, Richard L.; Cummins, Billy H.; and Startz, Ambrose J., 3,896,025.
- Staudt, Heinrich: *See—*
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- Stayner, Robert A., to Chevron Research Company. Activated soldering flux. 3,895,973, Cl. 148-25.000.
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- Steier, Moshe. Sucking measure. 3,895,533, Cl. 73-409.000.
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- Steinbatz, Alfred, to C. Reichert Optische Werke AG. Apparatus for controlling the exposure of photographic film. 3,896,455, Cl. 354-24.000.
- Steinberg, Julius M.: *See—*
  - Cone, Charles N.; and Steinberg, Julius M., 3,895,984.
- Steinhauer, Ernst Wilhelm; Fischer, Klaus; and Lower, Oskar, to Steinhauer, Ernst Wilhelm. Method for completely filling a cavity in a concrete structure. 3,895,472, Cl. 52-743.000.
- Steinke, Leo, to Robert Bosch G.m.b.H. Ignition contact breaker system for internal combustion engine. 3,895,616, Cl. 123-117.00A.
- Stella, Joseph A.; Burke, Edward F., Jr.; and Mason, Paul B., to Polaroid Corporation. Processing fluid release device and method for multipurpose film cassettes. 3,895,862, Cl. 352-130.000.
- Stephen, John F., to Ciba-Geigy Corporation. 3,5-Dialkyl-4-Hydroxyphenylalkyl substituted tricyclic imides. 3,896,146, Cl. 260-326.00C.
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- Stephenson, Robert L., to Allied Chemical Corporation. Vehicle passenger safety assembly. 3,895,823, Cl. 280-150.0AB.
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- Stoll, Kurt; and Hihn, Gerhard. Valves. 3,895,648, Cl. 137-550.000.
- Stoltman, Donald D., to General Motors Corporation. Hydraulic servomotor. 3,895,563, Cl. 91-384.000.
- Stolzer, Paul, to Keuro Maschinenbau Gesellschaft mit beschrankter Haftung & Co. Apparatus for feeding rod-shaped stock. 3,895,723, Cl. 214-1.00P.
- Stone, Stanley Allan, to Scientific Systems, Inc. Automatic liquid sampling devise. 3,895,534, Cl. 73-422.00R.
- Stone, Thomas W., to Ventrola Manufacturing Company. Ventilator. 3,895,568, Cl. 98-43.000.
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- Strasser, Georg, to Wild Heerbrugg Aktiengesellschaft. Electronic tachymeter. 3,895,871, Cl. 356-4.000.
- Streed, Ramer W., to Sencore, Inc. Circuit for generating a stereo pilot signal. 3,896,268, Cl. 179-15.0BT.
- Street, Graham Stewart Brandon. Light-beam steering apparatus. 3,896,362, Cl. 318-640.000.
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- Stroh, Anton; and Gollwitzer, Leonhard, to Wacker-Chemie GmbH. Diorganopolysiloxane-based lubricant for organic fibers. 3,896,032, Cl. 252-8.600.
- Strutz, Hans-Jurgen; Jacob, Ingolf; and Seelig, Johann, to Hoechst Aktiengesellschaft. Process for crimping filaments and yarns. 3,895,420, Cl. 28-72.140.
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  - Seiffert, Ulrich; and Struwe, Burckhard, 3,895,822.
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  - Powning, Leslie George, 3,895,744.
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- Sugawara, Kiyoshi, to Rank Xerox, Ltd. Toner level detector assembly including magnetically responsive switch actuated by differential loaded blade type rotor carrying magnetic actuator. 3,896,279, Cl. 200-61.210.
- Sugita, Kouji: *See—*
  - Tanzawa, Hiroshi; Sakai, Yoshitada; Matsushita, Takao; Fujii, Yoshishige; Sugita, Kouji; and Maekawa, Haruki, 3,896,061.
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- Summers, Leo Ewart Arthur; Le Cornu-Rickard, John Fyfe; and Underhill, David Sidney, to British Aircraft Corporation Limited. Forming metals. 3,895,436, Cl. 228-157.000.
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  - Goodman, Albert; and Suwyn, Mark A., 3,896,204.
- Suzaki, Kuniyoshi, to Canon Kabushiki Kaisha. Power transmission device between a plural number of rotors of cineprojectors. 3,895,544, Cl. 74-242.15R.
- Suzuka, Susumu: *See—*
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- Suzuki, Kunio, to Nippon Gakki Seizo Kabushiki Kaisha. Method of manufacturing a thin sheet of beryllium or an alloy thereof. 3,895,671, Cl. 164-46.000.
- Suzuki, Yoshio: *See—*
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- Swartz, Elmer L., to United States of America, Army. Apparatus for contour and linear measurement using fluids. 3,895,516, Cl. 73-37.600.
- Swartz, Elmer L., to United States of America, Army. Fluidic flame detector. 3,895,901, Cl. 431-77.000.
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  - Dillard, John W.; Tringali, Dominick; Swartz, Richard L.; and Hinson, Ernest M., Jr., 3,896,300.
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- Szabo, Alexander, to Canadian Patents and Development Limited. Frequency selective optical memory. 3,896,420, Cl. 340-173.0CC.
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  - Peltz, John R.; and Szeverenyi, Nikolaus A., 3,896,424.
- Szurszewski, Dolores. Chair seat adapter. 3,895,840, Cl. 297-230.000.
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- Takahashi, Yasunobu; Seko, Maomi; Ide, Akira; Matumoto, Soziro; and Nishigaki, Takashi, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for producing aliphatic polyisocyanates. 3,896,154, Cl. 260-453.00P.
- Takatsu, Ikue: *See—*
  - Yoshida, Akitoshi; Asahara, Koichi; Yanagida, Koichiro; Maruyama, Tadanobu; Takatsu, Ikue; and Kumagai, Yoshiko, 3,895,956.
- Takeda, Yuji: *See—*
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- Takigawa, Tomoshi: *See—*
  - Hashimoto, Teiji; Takigawa, Tomoshi; and Ichiyanagi, Toshikazu, 3,895,863.
- Tamura, Teizo, to Hitachi, Ltd. Air bearing head support device for multi-channel disc memory apparatus. 3,896,494, Cl. 360-103.000.
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- Tanikoshi, Kinji, to Canon Seiki Kabushiki Kaisha; and Canon Kabushiki Kaisha. Synchronous drive system for a D.C. motor. 3,896,358, Cl. 318-314.000.
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  - Ellis, John L.; Mal, M. Kumar; and Tarkan, Stuart E., 3,896,244.
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- Tedder, Yvonne M., administrator: *See—*
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- Teledyne, Inc.: *See—*
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- Terum, Trygve Olavson: *See—*
  - Gjosteen, Ole Georg; Terum, Trygve Olavson; and Aarflot, Aksel Ola, 3,895,937.
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  - Dowling, Donald J.; and Boyd, John F., 3,896,413.
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- Theysohn, Helmuth. Flat sheet injection head for roller-head installations. 3,895,898, Cl. 425-325.000.
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- Thoden, John, to Kontes Glass Company. Spotter for use in thin layer chromatography. 3,895,758, Cl. 239-296.000.
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  - Ostrowsky, Daniel; Reiber, Louis Marcel; and Poirier, Raymond, 3,896,305.
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- Thomson, Ian M., to Enersorb Limited. Energy absorbing devices. 3,895,835, Cl. 293-71.00R.
- Thomson, Ronald E.; and Kast, Philip J., to Madison-Kipp Corporation. Lubricator assembly with automatic reset. 3,895,690, Cl. 184-15.00A.
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- Trolliet, Philippe, to Canada, Her Majesty the Queen in Right of, as represented by the Secretary of State. System for monitoring and indicating peak values of a time varying signal. 3,896,375, Cl. 324-103.00P.
- Trowe, Neil M., to Wheeler International Inc. Method for automatic differential leukocyte count. 3,896,307, Cl. 250-304.000.
- TRW Inc.: *See—*
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- Wasserfaller, Georg. Door lock. 3,895,505, Cl. 70-111.000.
- Wasserlein, Henry George, Jr., to AMP Incorporated. Slotted plate type electrical connections. 3,895,852, Cl. 339-99.00R.
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- Wurth, Reinhold. Strut for interconnecting reinforcement rods. 3,895,470, Cl. 52-686.000.
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- Yaginuma, Jusuke, to Copal Company Limited. Time switch mechanism with automatic and/or manual actuating assembly. 3,896,277, Cl. 200-38.00R.
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  - Koyama, Akira, 3,895,658.
- Yamada, Seiji: *See—*
  - Kitaura, Mashio; Yata, Koutaro; and Yamada, Seiji, 3,895,875.
- Yamada, Tateo: *See—*
  - Uchidoi, Masanori; and Yamada, Tateo, 3,895,864.
- Yamaguchi, Hiroji; and Ogasahara, Tunehiko. Transfer transmission mechanism. 3,895,546, Cl. 74-695.000.
- Yamamoto, Nobuo: *See—*
  - Shiba, Keisuke; Kubodera, Seiiti; Ohi, Reiichi; Shishido, Tadao; Yamamoto, Nobuo; and Sakai, Takeo, 3,895,948.
- Yamamoto, Roy Isamu; and Saines, George S., to Texaco, Inc. Alkylacrylate-alkanediol methacrylate interpolymers and pour depressed compositions thereof. 3,896,074, Cl. 260-80.810.
- Yamamoto, Toyohiko: *See—*
  - Kondo, Marekata; Fukuda, Seiwa; and Yamamoto, Toyohiko, 3,895,955.
- Yamane, Mamoru: *See—*
  - Ozaki, Hiromi; Yamane, Mamoru; and Yoshikai, Haruo, 3,896,023.
- Yamanishi, Akio; and Yamazaki, Yasuo, to Minolta Camera Kabushiki Kaisha. Automatic focusing device. 3,896,457, Cl. 354-25.000.
- Yamaoka, Shigenori: *See—*
  - Watanabe, Tsutomu; Yamaoka, Shigenori; and Tanaka, Koichi, 3,896,076.
- Yamashita, Kameshiro, to Kabushiki Kaisha Seikosha. Apparatus for advancing and positioning articles. 3,895,477, Cl. 53-59.00R.
- Yamatake-Honeywell Company Limited: *See—*
  - Onogi, Seiji, 3,896,366.
- Yamazaki, Yasuo: *See—*
  - Yamanishi, Akio; and Yamazaki, Yasuo, 3,896,457.
- Yanagida, Koichiro: *See—*
  - Yoshida, Akitoshi; Asahara, Koichi; Yanagida, Koichiro; Maruyama, Tadanobu; Takatsu, Ikue; and Kumagai, Yoshiko, 3,895,956.
- Yano, Takeshi; Futami, Takehiro; and Ookura, Mototsugu, to Nippon Electric Company, Limited. Electromechanical filter comprising electromechanical resonators at least one of which has different input and output equivalent inductances. 3,896,401, Cl. 333-72.000.
- Yardley, John P.: *See—*
  - Chai, Sie-Yearl; and Yardley, John P., 3,896,105.
- Yata, Koutaro: *See—*
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- Yates Industries, Inc.: *See—*
  - Wolski, Adam M., 3,896,256.
- Yeasting, Maynard C., to Reliance Electric and Engineering Company, The. Elevator control. 3,895,692, Cl. 187-29.000.
- Yokota, Yuzo: *See—*
  - Akamatsu, Kiyoshi; Yokota, Yuzo; Sagami, Hiroshi; and Imai, Isao, 3,895,949.
- Yonemitsu, Eiichi; Kamiyama, Seiichi; Kanada, Toshiaki; and Nagai, Norio, to Mitsubishi Gas Chemical Company, Inc. Flame resistant molding resin composition. 3,896,185, Cl. 260-873.000.
- Yoshida, Akitoshi; Asahara, Koichi; Yanagida, Koichiro; Maruyama, Tadanobu; Takatsu, Ikue; and Kumagai, Yoshiko, to Nissan Chemical Industries, Ltd. Water permeability reducing inorganic coating slurry composition. 3,895,956, Cl. 106-193.00R.
- Yoshida, Fumio; Sakamoto, Setsuo; and Tatewaki, Shoichi, to Nissan Motor Company Limited; and Central Glass Company Limited. Glare-reducing window pane and automotive window arrangement using the pane. 3,895,859, Cl. 350-276.00R.
- Yoshida, Isamu; and Hayasaka, Toshimi, to Olympus Optical Co., Ltd. Weight balancing mechanism for use in precision elevating and lowering means. 3,895,770, Cl. 248-123.000.
- Yoshida Kogyo Kabushiki Kaisha: *See—*
  - Ebata, Hiroyuki, 3,895,418.
- Yoshikai, Haruo: *See—*
  - Ozaki, Hiromi; Yamane, Mamoru; and Yoshikai, Haruo, 3,896,023.
- Yoshiyama, Ichiro; Tsujimoto, Kayoshi; and Ueda, Hiroshi, to Minolta Camera Kabushiki Kaisha. Automatic exposure control device for use in a photographic camera. 3,896,472, Cl. 354-29.000.
- Young, David W. Perspective radar airport recognition and landing guidance system. 3,896,432, Cl. 343-5.0LS.
- Young, Donald Peter, to BP Chemicals Limited. Process for preparing vinyl chloride by the pyrolysis of 1,2-Dichloro-ethane. 3,896,182, Cl. 260-656.00R.
- Young, Richard K., to Phillips Petroleum Company. Heat exchanger distributor. 3,895,676, Cl. 165-167.000.
- Young, Robert Cleland: *See—*
  - Beaver, Guy Daniel; Young, Robert Cleland; and Martin, Donald Theodore, 3,896,206.
- Young, William E.: *See—*
  - Wolfelsperger, Robert O., 3,895,475.
- Yum, Su Il: *See—*
  - Buckles, Richard G.; Hoff, Seymour; Kehr, Sharon; and Yum, Su Il, 3,895,631.
- Zach, Roger G. Diametrically expansible coil spring conduit plug. 3,895,652, Cl. 138-89.000.
- Zax, Grigory Iosifovich: *See—*
  - Anikanov, Nikolai Ivanovich; Baburin, Evgeny Arkadievich; Grachev, Leonid Pavlovich; Zax, Grigory Iosifovich; Frumkin, Mikhail Evseevich; Radutsky, Grigory Avramovich; and Kheifets, Rafail Efimovich, 3,895,566.
- Zebree, David T., to Hercules Incorporated. Long burning delay blasting caps. 3,895,577, Cl. 102-29.000.
- Zedgenidze, Tengiz Grigorievich: *See—*
  - Arakelov, Mikhail Alexandrovich; Gersamia, Eduard Galaktionovich; Zedgenidze, Tengiz Grigorievich; and Nozadze, Gennady Pavlovich, 3,895,423.
- Zehr, William J., to Protectoseal Company, The. Automatic door closure for storage cabinets. 3,895,849, Cl. 312-324.000.
- Zelby, Leon W., to Stein, Paul D., a part interest. Method and apparatus for determining cross-sectional area of a blood conduit and volumetric flow therethrough. 3,896,373, Cl. 324-57.00R.
- Zenith Radio Corporation: *See—*
  - Ma, John, 3,896,403.
  - Sedivy, Stanley J., 3,896,321.
- Zenith Time S.A.: *See—*
  - Gerber, Jean-Pierre; and Feller, Rudolf, 3,895,485.
- Zewi, Gabriel: *See—*
  - Alberty, Joachim; Salomaa, Eero; Saris, Nils-Erik; Sjostrom, Eero; and Zewi, Gabriel, 3,895,914.
- Zievers, James F., to Industrial Filter and Pump Mfg. Co. Process for removing metallic ions from an electrolytic solution. 3,896,013, Cl. 204-149.000.
- Ziffer, Garret Francis, to Coulter Electronics, Inc. Chromatic method and apparatus for conducting microscopic examinations at a plurality of magnifications. 3,895,854, Cl. 350-20.000.
- Zima, Herbert: *See—*
  - Tummler, Peter; and Zima, Herbert, 3,896,070.
  - Tummler, Peter; and Zima, Herbert, 3,896,072.
- Zimmer, Horst: *See—*
  - Wiedemann, Wolfgang; and Zimmer, Horst, 3,895,944.
- Zimmermann, Ernest H., Jr., to Brunswick Corporation. Sliver guide. 3,895,417, Cl. 19-288.000.
- Zimnyakov, Alexandr Vasilievich: *See—*
  - Orlov, Petr Nikolaevich; Nesterov, Jury Ivanovich; Kudashov, Vasily Yakovlevich; and Zimnyakov, Alexandr Vasilievich, 3,895,446.
- Zink, Henry R. Photo lock system. 3,896,345, Cl. 317-134.000.
- Zinser Textilmaschinen GmbH: *See—*
  - Grau, Gerhard, 3,895,483.
  - Schulz, Gunter; and Igel, Wolfgang, 3,895,482.
- Zirkle, Charles L.: *See—*
  - Craig, Paul N.; and Zirkle, Charles L., 3,896,133.
- Zirpins, Burckhard: *See—*
  - Biermann, Klaus; Burbach, Jurgen; Gimpel, Horst; and Zirpins, Burckhard, 3,895,894.
- Zitzow, Harold P. Omega navigation receiver station pair selection and lop display system. 3,896,443, Cl. 343-105.00R.
- Znamirowski, Henry; and Fielder, William Vanburen, Jr., to Roper Corporation. Master slide for drapery. 3,895,410, Cl. 16-93.00D.
- Zonov, Nikolai Semenovich: *See—*
  - Feoktistov, Evgeny Ilich; Chechulin, Evgeny Arkadievich; Zonov, Nikolai Semenovich; Prozorov, Leonid Kronidovich; Poskryakov, Jury Maximovich; Kremennoi, Grigory Grigorievich; and Goryachy, Vladimir Mikhailovich, 3,896,281.
- Zuccolotto, Hector M. Filtering and debris removing apparatus for cleaning a sea water stream. 3,896,005, Cl. 202-185.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 22ND DAY OF JULY, 1975

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Celfil Company Establishmant: *See*—
  Muller, Paul Adolf, Re. 28,487.
Chen, Muchuan M.; and Kotheimer, William C., to General Electric Company. Network reclosing relay. Re. 28,490, Cl. 317-23.000.
Farr, Stewart M., to Microlife Technics, Inc. Milk fermenting product. Re. 28,488, Cl. 195-59.000.
General Electric Company: *See*—
  Chen, Muchuan M.; and Kotheimer, William C., Re. 28,490.
Hesse, Ruth L.: *See*—
  Ruben, Henning M., Re. 28,486.
Kotheimer, William C.: *See*—
  Chen, Muchuan M.; and Kotheimer, William C., Re. 28,490.
McEachron, John C.: *See*—
  Schindler, Edgar C.; and McEachron, John C., Re. 28,489.
Microlife Technics, Inc.: *See*—
  Farr, Stewart M., Re. 28,488.
Muller, Paul Adolf, to Celfil Company Establishmant. Crimped flat material for filter plugs. Re. 28,487, Cl. 131-261.00B.
Nelco Corporation: *See*—
  Schindler, Edgar C.; and McEachron, John C., Re. 28,489.
Ruben, Henning M., to Hesse, Ruth L.; and Test-Laboratoruim A/S. Apparatus for artificial respiration or narcosis. Re. 28,486, Cl. 128-145.700.
Schindler, Edgar C.; and McEachron, John C., to Nelco Corporation. Molded electrical junction box. Re. 28,489, Cl. 174-58.000.
Test-Laboratoruim A/S: *See*—
  Ruben, Henning M., Re. 28,486.

LIST OF PLANT PATENTEES

Yonemoto, Takeshi Y. Carnation plant. 3,745, 7–22–75, Cl. 70.
Yonemoto, Takeshi Y. Carnation plant. 3,746, 7–22–75, Cl. 70.
Yonemoto, Takeshi Y. Carnation plant. 3,747, 7–22–75, Cl. 70.

LIST OF DESIGN PATENTEES

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  Mono. Rune G. 235,987.
Abba House, Inc.: *See*—
  Scott, Robert K. 236,019.
Aimo, Karl H., and P. G. Baker, to Polaroid Corp. Photographic lens shade or similar article. 236,031, 7–22–75, Cl. D61—1.
Akesson, Stellan S., and K. E. Pruner, to Aktiebolaget Svenska Flaktfabriken Sickla Alle. Flow regular. 236,001, 7–22–75, Cl. D23—151.
Aktiebolaget Optimus Fork Upplands Vasby: *See*—
  Allander, Claes V. 235,959.
Aktiebolaget Svenska Flaktfabriken: *See*—
  Porle, Kjell, and Maartmann. 236,002.
Aktiebolaget Svenska Flaktfabriken Sickla Alle: *See*—
  Akesson, Stellan S., and Pruner. 236,001.
Allander, Claes V., to Aktiebolaget Optimus Fork Upplands Vasby. Portable stove. 235,959, 7–22–75, Cl. D7—107.
Amann, Herbert R.: *See*—
  Roche, Dwain F. 236,011.
Arruda, Antone. Design for a twin keel boat. 235,985, 7–22–75, Cl. D12—62.
Austin, Glenn M.: *See*—
  Seiferth, Oscar E., Austin, and Paul. 235,974.
Baker, Philip G.: *See*—
  Aimo, Karl H., and Baker. 236,031.
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Balls 'N' All, Inc.: *See*—
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Beatrice Foods Co.: *See*—
  Golden, Gerald. 235,977.
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Boyce, Peter E. Stilt. 236,016, 7–22–75, Cl. D34—14.
Buern, Gordon L., and D. S. Griffin, to Electrohome Ltd. Seat. 235,946, 7–22–75, Cl. D6—47.
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C & D Valve Mfg. Co.: *See*—
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Caterpillar Tractor Co.: *See*—
  Crovatto. Dino, and Etienne. 235,984.
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Crovatto, Dino, and G. F. Etienne, to Caterpillar Tractor Co. Vehicle carrier. 235,984, 7–22–75, Cl. D12—57.
Davis, Myron F., Jr., and J. F. Talerico. Remote data acquistion and control station. 236,007, 7–22–75, Cl. D26.
Day. Edwin A. Mirror or similar article. 235,958, 7–22–75, Cl. D6—235.
Del Castillo, Juan M. Cantilevered desk and multiple shelf combination. 235,951, 7–22–75, Cl. D6—128.
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Dryden, Gale E. Respiratory mask. 236,033, 7–22–75, Cl. D83—1.
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Gandini, Sergio. Lighting fixture. 236,021, 7–22–75, Cl. D48—20.
Garvey, William J. Support for tennis racket and related articles. 235.949, 7–22–75, Cl. D6—85.
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  Baumann, Frederick. 236,005.
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Nakata, Toshihiro, to Platinum Fountain-Pen Co. Ltd. Pocket clip for writing instrument. 235,992, 7–22–75, Cl. D19—56.
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CLASSIFICATION OF PATENTS

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867	3,895,547
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580	3,895,552
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471	3,895,556
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369	3,895,576
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630.22	3,895,651
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223	3,895,987
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42 : 236,023

44 : 235,938
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51 : 235,948
55 : 235,974

Plant Patents

6 : 3,745

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Vol. 936 Number 5

OFFICIAL GAZETTE

of the UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

July 29, 1975

U.S.
DEPARTMENT
OF COMMERCE

Patent
and
Trademark
Office

OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

July 29, 1975 Volume 936 Number 5

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PATENT AND TRADEMARK OFFICE NOTICES

Revised Format for Reissue Patents

The Specimen of the Revised Front Page Format for Reissue Patents published in 935 O.G. 7, June 3, 1975, contained a typographical error. The upper case alpha code "E" with the INID Code [11] (for document number) should have been printed instead of the upper case alpha code "B." The correct designation for Reissue Patents is reproduced below.

United States Patent [19] [11] E **Re. 12,345**
Shook [45] **Reissued Nov. 30, 1972**

Dated: July 7, 1975.

WILLIAM I. MERKIN,
Acting Assistant Commissioner
for Administration.

Express Mail

This notice is in response to a number of inquiries received in the Patent and Trademark Office regarding the notice on Express Mail of February 11, 1975, published in the OFFICIAL GAZETTE of March 11, 1975 (932 O.G. 340).

There are two types of Express Mail delivery offered by the U.S. Postal Service—"Post Office to Addressee" and "Post Office to Post Office." The only type of service which can be used for Express Mail directed to the Patent and Trademark Office is "Post Office to Addressee." This service provides for delivery to one of our employees in Room 1627, Department of Commerce Building, Washington, D.C., no later than 3:00 p.m. of the next workday following its deposit before 5:00 p.m. at any postal facility with an Express Mail window.

The only address that should be used for Express Mail sent to the Patent and Trademark Office is:

"Commissioner of Patents and Trademarks
Washington, D.C. 20231."

"Post Office to Post Office" Express Mail *does not* provide for delivery but instead is retained at the postal facility of the addressee for pickup. The Postal Service *does not* notify the addressee that this type of Express Mail has been received and is awaiting pickup. If not picked up, this mail is held for 15 days and then returned to the sender.

Therefore, since the Patent and Trademark Office does not have resources for picking up any mail, including Express Mail, the "Post Office to Post Office" Express Mail will not reach the Patent and Trademark Office.

WILLIAM I. MERKIN,
Acting Assistant Commissioner
for Administration.

May 15, 1975.

Mail Delays and Conditional Petitions To Revive (Trademarks)

In view of the "Post Office to Addressee" express mail service offered by the U.S. Postal Service, the conditional petition practice as to trademarks, announced in the OFFICIAL GAZETTE (921 O.G. TM 126), is hereby extended to cover this type of service.

Where the addressee is the Patent and Trademark Office, this service provides for the delivery of mail to one of our employees in Room 1627, Department of Commerce Building, Washington, D.C. 20231, no later than 3:00 p.m. on the next workday following its deposit before 5:00 p.m. at any postal facility in the United States with an Express Mail window.

It is suggested that when a communication, complying with the circumstances enumerated below, is mailed to the Patent and Trademark Office by means of the "Post Office to Addressee" express mail service and the communication is deposited at a U.S. Postal Service-Express Mail window by 5:00 p.m. on a day which is at least the day preceding the due date, a conditional petition be attached to the communication.

If the communication is received in the Patent and Trademark Office after the due date and the application becomes abandoned, the conditional petition will become effective, subject to the following requirements. The petition must include (1) an authorization to charge a deposit account for any required fees, including the petition fee, and (2) an oath or declaration signed by the person mailing the communication and also signed by the applicant or his attorney stating that the communication and petition were deposited at an Express Mail window no later than 5:00 p.m. on a day which is at least the day preceding the due date, and were requested to be mailed via the "Post Office to Addressee" Express Mail Service. Since mail handled in this manner may reasonably be expected to reach the Patent and Trademark Office no later than 3:00 p.m. of the next workday following its deposit at an Express Mail window, any mail delays beyond such time will be considered to constitute unavoidable delay to grant a petition to revive (Section 12(b) of the Trademark Act of 1946).

The circumstances under which this procedure may be used are those where the communication, if timely filed, (1) would be a proper and complete response to an action or request by the Patent and Trademark Office, and (2) would stop a period for response from continuing to run. Accordingly, this procedure would be appropriate for:

1. A response to a non-final Office action.
2. A response to a final Office action which places application in condition for publication or issue.
3. A notice of appeal and requisite fee.
4. An appeal brief.

Normal petition practices are not affected in those situations where this procedure is either not elected or not appropriate, nor does this procedure bar the granting of a petition in different fact situations where justified.

A suggested declaration form for the conditional petition is shown below:

Applicant:
Serial No.: Petition to Revive
Date Filed:
Mark:

I hereby declare that the attached communication is being deposited at an Express Mail window in a U.S. Postal Service's facility and intended to be mailed using the U.S. Postal Service's "Post Office to Addressee" Express Mail service in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231, prior to 5:00 p.m. on ----------------------------, which date is at least the day preceding the due date, at ----------------------, by
(Location)

----------------------------.
(Name of Individual)

In the event that such communication is not timely filed in the Patent and Trademark Office, it is requested that this paper be treated as a petition and that the delay in prosecution be held unavoidable.

The petition fee is authorized to be charged to Deposit Account No. ---------- in the name of --------------------

The undersigned declares further that all statements made herein are true, based upon the best available information; and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any registration resulting therefrom.

Date ------------ ----------------------------
(Signature of applicant or applicant's attorney)
And

Date ------------ ----------------------------
(Signature of person mailing, if other than the above)

June 24, 1975.

BERNARD A. MEANY,
Assistant Commissioner
for Trademarks.

Conditional Petitions

In view of the "Post Office to Addressee" express mail service offered by the U.S. Postal Service, the conditional petition practice, announced in the OFFICIAL GAZETTE [910 O.G. 402] and the M.P.E.P. [section 711.03(c)], is hereby extended to cover this type of service.

Where the addressee is the Patent and Trademark Office, this service provides for the delivery of mail to one of our employees in Room 1627, Department of Commerce Building, Washington, D.C. 20231, no later than 3:00 p.m. on the next workday following its deposit before 5:00 p.m. at any postal facility in the United States with an Express Mail window.

It is suggested that when a communication, complying with the circumstances enumerated below, is mailed to the Patent and Trademark Office by means of the "Post Office to Addressee" express mail service and the communication is deposited at a U.S. Postal Service Express Mail window by 5:00 p.m. on a day which is at least the day preceding the due date, a conditional petition be attached to the communication.

If the communication is received in the Patent and Trademark Office after the due date and the application becomes abandoned or the patent lapses, the conditional petition will become effective, subject to the following requirements. The petition must include (1) an authorization to charge a deposit account for any required fees, including the petition fee (35 U.S.C. 41(a) 7), and (2) an oath or declaration signed by the person mailing the communication and also signed by the applicant or his registered representative stating that the communication and petition were deposited at an Express Mail window no later than 5:00 p.m. on a day which is at least the day preceding the due date, and were requested to be mailed via the "Post Office to Addressee" Express Mail Service. Since mail handled in this manner may reasonably be expected to reach the Patent and Trademark Office no later than 3:00 p.m. of the next workday following its deposit before 5:00 p.m. at any postal facility in the United States with an Express Mail window, any mail delays beyond such time will be considered to constitute unavoidable delay to grant a petition to revive (35 U.S.C. 133) or a petition to accept delayed payment of an issue fee (35 U.S.C. 151).

The circumstances under which this procedure may be used are those where the communication, if timely filed, (1) would be a proper and complete response to an action or request by the Patent and Trademark Office, and (2) would stop a period for response from continuing to run. Accordingly, this procedure would be appropriate for:

1. A response to a non-final Office action.
2. A response to a final Office action in the form of an amendment that cancels all rejected claims or otherwise prima facie places the application in condition for allowance.
3. A notice of appeal and requisite fee.
4. An appeal brief, in triplicate, and requisite fee.
5. A base issue fee.
6. A balance of issue fee.

Categories 1–4 would include a conditional petition to revive. Categories 5 or 6 would include a conditional petition to accept the delayed payment of the issue fee.

Examples of which this procedure would not be appropriate include:

1. Application papers.
2. A response to a final Office action other than that indicated in categories 2 and 3, above.
3. Extensions of time.
4. Amendments under Rule 312.
5. Priority documents.

Normal petition practices are not affected in those situations where this procedure is either not elected or appropriate.

A suggested format for the conditional petition is shown below:

Applicant(s) ---------------------- ☐ Petition to revive
Serial No. ---------------------- ☐ Petition to accept delayed payment of issue fee.
Date Filed ----------------------
Title ----------------------

I hereby certify that the attached communication is being deposited at an Express Mail window in a U.S. Postal Service's facility and intended to be mailed using the U.S. Postal Service's "Post Office to Addressee" Express Mail service in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231, prior to 5:00 p.m. on ----------------------------, which date is at least the day preceding the due date, at --------------------, by
(Location)

--------------------------------.
(Name of Individual)

In the event that such communication is not timely filed in the Patent and Trademark Office, it is requested that this paper be treated as a petition and that the:

☐ delay in prosecution be held unavoidable—35 U.S.C. 133.
☐ delayed payment of the fee be accepted—35 U.S.C. 151.

The petition fee required by 35 U.S.C. 41(a) 7 is authorized to be charged to Deposit Account No. -------- in the name of ----------------------.

The undersigned declare further that all statements made herein are true, based upon the best available information; and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date ---------- --------------------------------
(Signature of applicant or signature and registration number of Registered Representative)
And

Date ---------- --------------------------------
(Signature of person mailing, if other than the above)

June 26, 1975.

WILLIAM FELDMAN,
Deputy Assistant Commissioner
for Patents.

Certificates of Correction for the Week of July 29, 1975

D. 233,138
D. 234,579
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3,886,336

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JUNE 21, 1975

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	9-23-74
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-1-74
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	11-1-74
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	10-7-74
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	10-4-74
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	12-4-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	7-2-74
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	10-4-74
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	11-29-74
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-2-74
DESIGNS, GROUP 290—C. D. QUARFORTH, Director Industrial Arts; Household, Personal and Fine Arts.	5-2-74
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	12-13-74
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	10-18-74
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	1-2-75
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	10-8-74
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	12-10-74

Expiration of patents: The patents within the range of numbers indicated below expire during July 1975, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 2,840,821 to 2,845,624 inclusive
Plant Patents	Numbers 1,722 to 1,739 inclusive

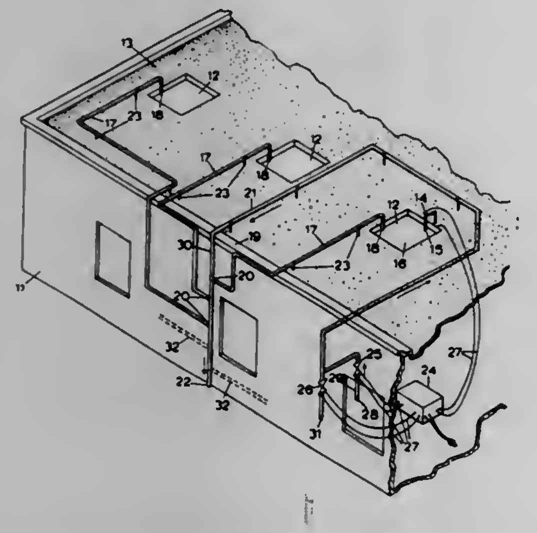
REISSUES

JULY 29, 1975

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 28,491
ROOF DRAINING SYSTEM

Robert L. Kundert, Madison, Wis., assignor to Drain-Away, Inc., Madison, Wis.
Original No. 3,692,040, dated Sept. 19, 1972, Ser. No. 105,322, Jan. 11, 1971. Application for reissue July 3, 1974, Ser. No. 485,715
Int. Cl. F16l *43/00*
U.S. Cl. 137—142 **8 Claims**



1. In combination with a substantially horizontal roof, a roof draining system for draining away water that accumulates on the roof, said roof draining system comprising,

a. at least two sumps installed on said roof, including one of which is a control sump,

b. at least two siphon pipes, each pipe having an intake end and a discharge end, the intake end of one of said pipes extending into said control sump substantially to the bottom thereof and the intake end of each of the other siphon pipes extending into one each of the other said sumps substantially to the bottoms thereof, each of said siphon pipes extending therefrom over the edge of said roof and downwardly to their respective discharge ends,

c. a priming-discharge pipe for initiating the siphoning action of said siphon pipes, said priming-discharge pipe having an inlet end and a discharge end, said priming-discharge pipe extending from said inlet end across said roof and over the edge of said roof downwardly to its discharge end, the discharge end of the siphon pipe associated with said control sump being connected to the downwardly extending portion of said priming-discharge pipe between said roof edge and the discharge end of said priming-discharge pipe, and the discharge end of each of said other siphon pipes being connected to the downwardly extending portion of said priming-discharge pipe at vertically spaced intervals between the connecting point of said first connected siphon pipe and the discharge end of said priming-discharge pipe,

d. means for introducing water into the inlet end of said priming-discharge pipe connected to said means,

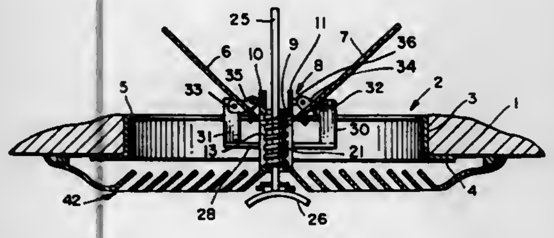
e. a water detecting probe extending into the control sump in spaced relation with the bottom of said control sump, and

f. control means operatively connected to said probe, said control means connected to and actuating said means for introducing water to said priming-discharge pipe when said probe detects water in said control sump.

4. In combination with a roof structure having a plurality of liquid accumulating areas defining sump means, a roof draining system comprising a plurality of interconnecting pipe means coupled individually at least one each to said sump means; a generally vertically located discharge pipe means mounted adjacent to said roof structure, a plurality of interconnecting pipe means connected to said sump means and to said discharge pipe means and being connected to said discharge pipe means in vertically staggered relation to each other to maintain siphon action independently of each other, and initiating means to introduce liquid into said discharge pipe means for initiating a downward flow of liquid through said pipe means from the uppermost of said connecting pipe means to thereby initiate a siphon action for withdrawing water from said several sump means.

Re. 28,492
DAMPER UNIT FOR CONTROLLING AIR FLOW

Warren R. Hedrick, and Henry J. Meurer, both of Holland, Mich., assignors to Allied Thermal Corporation, New Britain, Conn.
Original No. 3,592,240, dated July 13, 1971, Ser. No. 771,835, Oct. 30, 1968. Application for reissue July 12, 1973, Ser. No. 378,394
Int. Cl.² F16K *1/18*
U.S. Cl. 137—316 **9 Claims**



5. In a damper unit for regulating air flow and having a frame member with an opening therethrough for the passage of air, a support extending transversely of the frame member and secured thereto, a pair of opposed damper blades mounted for generally pivotal movement about the adjacent edges thereof upwardly toward each other to open position and downwardly away from each other to closed position, the improvement which comprises:

a. a worm rotatably mounted on the support and extending downwardly therefrom,

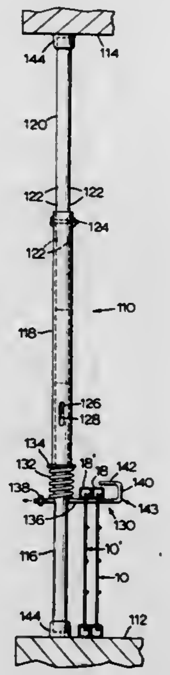
b. an operating member including a relatively flat strip extending transversely of said support below said blades, and engaging at least one of the teeth on said worm and adapted to move axially thereof when said worm is rotated,

c. means including two arms, one on each side of said support [and] rigidly secured [thereto] *to and* extending from said strip upwardly toward said damper blades, for connecting said damper blades with said operating member [and with the support, whereby rotation of said worm will cause said operating member to move axially of said worm, thereby to move said damper blades toward or away from each other], and

d. pivot means connecting each said [worm] *arm* with one of said damper blades [.], *whereby rotation of said worm will cause said operating member to move axially of said worm, thereby to move said damper blades toward or away from each other.*

Re. 28,493
WIRE WALL PARTITION

Robert G. Weeden, Woodbridge, Canada, assignor to Anthes Equipment Ltd., Port Credit, Canada
Original No. 3,734,467, dated May 22, 1973, Ser. No. 144,773, May 19, 1971. Application for reissue Sept. 23, 1974, Ser. No. 508,516
Claims priority, application Canada, Sept. 10, 1970, 92747
Int. Cl.² E04H *17/04*
U.S. Cl. 256—65 **2 Claims**



1. A section for use in a wall partition, safety rail and the like, the section comprising:

a substantially rectangular panel element [having a thickened peripheral portion adjacent each one of its sides;] *of wire mesh comprising a plurality of spaced-apart and parallel wires intersecting other spaced-apart and parallel wires and welded in place, the peripheral portions of the panel element having a maximum thickness constituted by the combined thicknesses of the two intersecting wires at each junction;*

four elongated members [adapted to support] *framing* the panel element, [each] *at least one* of the members being of substantially square cross-section having opposed spaced-apart longitudinal edges defining a slot, having a width less than the *maximum* thickness of [said thickened] *the adjacent and corresponding* peripheral portion [and sufficiently large] *of said panel element but greater than the thickness of each wire of the panel element*, to permit the member to slide longitudinally [over] *along the respective peripheral portion of* the panel element [adjacent an edge thereof and thereby enclose and entrap said thickened] *so that the said at least one member encloses and traps the corresponding* peripheral portion *of the panel element;*

coupling means adapted to couple adjacent ends of the members at all four corners of the panel element in order to lock said elongated members in a rectangular form with the panel element restrained by the [thickened] peripheral portion to prevent separation of the panel element from the elongated members, said coupling means comprising four pairs of brackets and a fastener for engagement in the brackets to draw pairs of brackets together about an adjacent pair of ends of the elongated members, each bracket having a U-shaped portion defining a channel, the U-shaped portion being in two parts at right-angles to one another for receiving respective end parts of adjacent elongated members in the channel, each bracket further comprising a triangular web extending between said parts of said U-shaped portion, the web having at least one opening for receiving the fastener;

telescopic uprights having ends adapted to frictionally engage respective adjacent floors of a building and including spring means applying outward forces to increase the frictional engagement of said ends of the uprights on the floors; and

attaching means adapted to attach said section to said uprights, each attaching means comprising a hook member slidably engaged in said telescopic member and frictionally locked in place by said spring means when the telescopic upright is in position between floors, said hook member being adapted to be positioned about overlapping portions of adjacent sections to hold said sections against the telescopic upright.

Re. 28,494
METHOD OF PROCESSING STAINLESS STEEL STRIPS OR SHEETS

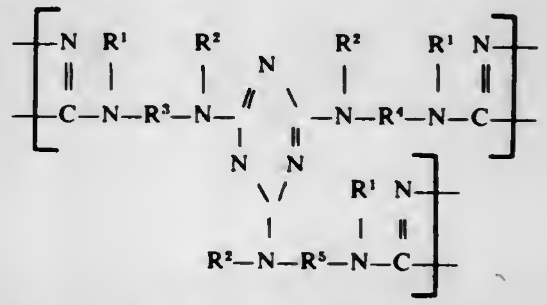
Wilson S. Rowe, Valparaiso, Ind., assignor to United States Steel Corporation, Pittsburgh, Pa.
Original No. 3,776,784, dated Dec. 4, 1973, Ser. No. 271,881, July 14, 1972. Application for reissue May 6, 1974, Ser. No. 447,457
Int. Cl.² C21D *9/46*
U.S. Cl. 148—12 EA **1 Claim**

1. In the process for producing stainless steel sheet and strip containing not more than 19% chromium wherein the steel is hot rolled to hot band gauge of about 0.10-inch, cooled, descaled, then cold rolled to final gauge and continuous annealed [at a temperature of from about 1700 to about 1850°F at a line speed sufficient] to effect substantially complete recrystallization and finally descaled; the improvement comprising eliminating the descaling step after hot rolling so that the steel is cold rolled and annealed with mill scale on the surface thereof thereby permitting a line speed up to 50% faster during said continuous anneal following the cold roll.

Re. 28,495
POLY (HEXASUBSTITUTED MELAMINES)

Bruce A. Langager. St. Anthony Village. Minn., assignor to Minnesota Mining and Manufacturing Company. St. Paul. Minn.
Original No. 3,779,997, dated Dec. 18, 1973, Ser. No. 261,924, June 12, 1972. Application for reissue June 6, 1974, Ser. No. 476,911
Int. Cl. C08g *33/02*
U.S. Cl. 260—77.5 R **13 Claims**

1. Poly(hexasubstituted melamines) consisting of segments having the formula



wherein R^1 and R^2 are each lower alkyl, cyclo-lower alkyl, aryl, and alkaryl, each being optionally substituted by one or two chlorine or one to three fluorine atoms or by lower perfluoroalkyl, lower alkoxy or aralkoxy group; R^3, R^4 and R^5 are the same or different and are divalent alkylene having from 1 to 20 carbon atoms, cycloalkylene having from 3 to 6 carbon atoms, piperidyl and R^1, R^2 and R^3 taken together with the two triazine nitrogen atoms to which they are attached form a divalent 1,3-bis[4-1-piperidyl)] trimethylene radical.

Re. 28,496
CINNAMYL CARBAMATES

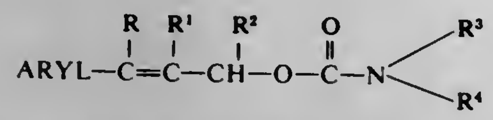
Llewellyn W. Fancher, Orinda, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Original No. 3,697,582, dated Oct. 10, 1972, Ser. No. 719,700, Apr. 8, 1968. Application for reissue Nov. 16, 1972, Ser. No. 307,259

Int. Cl. C07c *25/06*

U.S. Cl. 260—482 C **12 Claims**

[1. A compound having the formula



$$\text{ARYL}-\overset{\overset{\displaystyle R}{|}}{C}=\overset{\overset{\displaystyle R^1}{|}}{C}-\overset{\overset{\displaystyle R^2}{|}}{CH}-O-\overset{\overset{\displaystyle O}{\|}}{C}-N\begin{matrix}\diagup R^3\\ \diagdown R^4\end{matrix}$$

wherein ARYL is selected from the group consisting of phenyl, naphthyl, substituted phenyl and substituted naphthyl in which said substituents are selected from the group consisting of halogen, lower alkoxy, lower alkyl, and provided that when ARYL is substituted phenyl the substituent is also 3,4-oriented-methylenedioxy;

R and R^1 are independently selected from the group consisting of hydrogen, lower alkyl, chlorine and bromine;

R^2 is selected from the group consisting of hydrogen, lower alkyl and phenyl; and

R^3 and R^4 are independently selected from the group consisting of hydrogen, alkyl, lower alkenyl, carbethoxymethyl, phenyl and substituted phenyl in which said substituents are selected from the group halogen, lower alkoxy, lower alkyl and nitro; provided that only one of R^3 or R^4 is phenyl or substituted phenyl; and further provided that when ARYL is phenyl then R^3 or R^4 is not phenyl.]

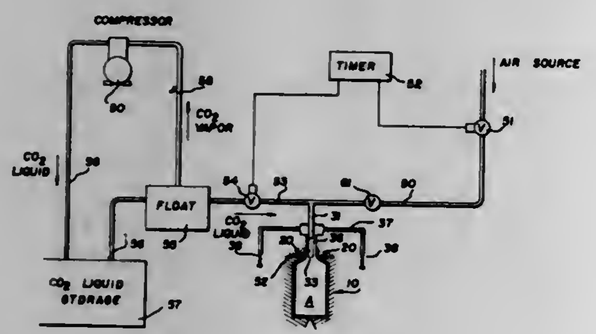
Re. 28,497
METHOD OF AND APPARATUS FOR MAKING A PLASTIC ARTICLE

Richard C. Gasmire, Dallas, Tex., assignor to Owens-Illinois, Inc., Toledo, Ohio

Original No. 3,065,501, dated Nov. 27, 1962, Ser. No. 846,720, Oct. 15, 1959. Application for reissue July 9, 1973, Ser. No. 377,309

Int. Cl. B29c *17/07, 25/00*

U.S. Cl. 264—28 **26 Claims**



23. In a method of making a plastic article the steps of enclosing a heated, extruded tube in a blow mold having interior chill walls, introducing into said tube a gaseous blowing medium at substantially an ambient temperature to expand the tube against the chill walls of the enclosing mold, subsequently introducing into the expanded tube a non-gaseous chilling medium and effecting a change of state in said chilling medium to form a solid vapor mixture internally of the tube to cool the previously expanded tube.

Re. 28,498
METHOD OF PRODUCING A THICK-WALLED CURED PLASTICS MOULDING

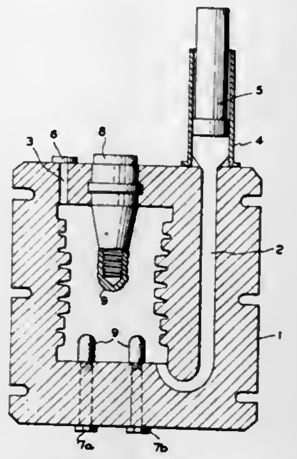
Eugen Kusenberg, Basel; Ernst Hubler, Fullinsdcrf; Hans-Rudolf Aus der Au, Reinach, Basel-Land, and Otto Ernst, Pfeffingen, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Original No. 3,777,000, dated Dec. 4, 1973, Ser. No. 273,171, July 19, 1972. Continuation of Ser. No. 45,123, June 10, 1970, abandoned. Application for reissue Feb. 26, 1974, Ser. No. 446,104

Claims priority, application Switzerland, June 19, 1969, 9385/69

Int. Cl. B29g *7/00*

U.S. Cl. 264—327 **3 Claims**



1. In a method of producing a cured plastic molding which is comprised of the steps of providing a mold having an inlet gate and having a volume of at least several hundred cubic centimeters and at least one compact zone with a volume sufficiently large to contain an inscribed sphere of at least four centimeters and which will produce a thick walled molding, providing a highly reactive crosslinkable resin composition which is capable of setting within a period of from three to sixty minutes and has a setting temperature at which said setting takes place and which has an exothermic curing reaction, preheating the mold to a temperature sufficient to initiate curing of said resin composition, and pouring the resin composition into the mold to form a casting, the improvements comprising:

a. prior to the step of pouring, preheating the resin composition to a pouring temperature at which the resin composition is liquid and which is [at least 10%] *from 10–56* below the temperature to which the mold has been preheated, the temperature to which the mold has been preheated and the pouring temperature being so chosen that, at the rate of pouring, the temperature in the center of the resin composition in the mold will not reach the temperature of the resin composition at the mold wall until the casting has sufficiently set to enable it to be removed from the mold,

b. during the pouring step, maintaining the supply of liquid resin composition into the mold during the gelling phase of the resin composition in the mold and maintaining the temperature of the liquid resin composition flowing through the inlet gate of the mold at least approximately at the pouring temperature, and

c. at least from the point of time at which the mold is substantially filled, exerting pressure on the supply of liquid resin composition for supplying the composition with the mold at a pressure sufficient to compensate for shrinkage, whereby only minor temperature gradients arise in different parts of the casting during the gelling and setting of the resin composition, and the casting can be removed from the mold after short periods of time.

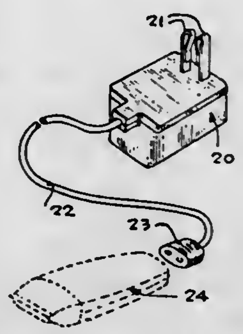
Re. 28,499
POWER PACK

Robert W. Flentge, Roselle, Ill., assignor to A. F. Dormeyer Mfg. Co., Inc., Chicago, Ill.

Original No. 3,711,806, dated Jan. 16, 1973, Ser. No. 215,023, Jan. 3, 1972. Application for reissue Mar. 15, 1974, Ser. No. 451,517

Int. Cl. H01f *27/02*

U.S. Cl. 336—92 **16 Claims**



1. A power pack for use with a small electrical appliance to to reduce line voltage and provide a low operating voltage, said power pack comprising a transformer subassembly enclosed within a case and cover assembly from which project primary terminals for plugging into a wall outlet and a secondary line cord or terminals for connection to the appliance, said transformer subassembly including a bobbin molded for electrical insulating material, primary and secondary windings on the bobbin, secondary soldering lugs anchored to the bobbin and connected to the secondary winding and the secondary line cord, primary terminals carried in channels formed in the bobbin connected to the primary winding, a laminated iron core fastened to the bobbin and surrounding the windings, insulating flanges integrally formed on the bobbin for insulating the laminated core from the primary terminals and the secondary lugs, locating holes in said laminated core, said case and cover assembly including transformer locating pins for engaging said laminated core locating holes to orient the transformer subassembly within the case and cover assembly, said cover including openings for the primary terminals to project therethrough, and means on the cover coacting with the bobbin to lock the terminals in the channels and inhibit movement thereof.

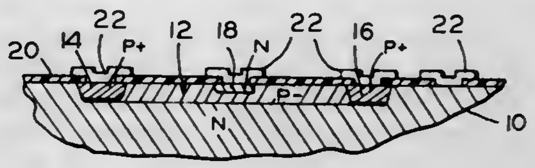
Re. 28,500
LOW NOISE FIELD EFFECT TRANSISTOR WITH CHANNEL HAVING SUBSURFACE PORTION OF HIGH CONDUCTIVITY

Heber J. Bresee, Campbell, Calif., and James L. Bowman, Portland, Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Original No. 3,656,031, dated Apr. 11, 1972, Ser. No. 97,730, Dec. 14, 1970. Application for reissue Dec. 19, 1973, Ser. No. 426,259

Int. Cl. H01l *5/00*

U.S. Cl. 357—22 **10 Claims**



1. In a field effect semiconductor device having a substrate of one conductivity type including source and drain regions of the other conductivity type and a channel portion of the other conductivity type extending between the source and drain regions with a gate electrode disposed thereon, the improvement comprising:

said channel portion having an outer surface on one side of said substrate, *a bottom portion*, and a subsurface portion of higher electrical conductivity relative to and spaced below said outer surface of said channel at an intermediate position between said outer surface and [the] *said* bottom *portion* of said channel for reducing the noise in the output signal of said device [.] , *said subsurface portion having a doping impurity concentration which is several times greater than that of said outer surface and said bottom portion of said channel, said outer surface, said bottom portion, and said subsurface portion being of the same conductivity type.*

PLANT PATENTS

GRANTED JULY 29, 1975

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,748
ROSE PLANT

O. L. Weeks, 926 W. Philadelphia,
Ontario, Calif. 91762
Filed Apr. 16, 1974, Ser. No. 461,403
Int .Cl. A01h *5/00*

U.S. Cl. Plt.—20 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid grandiflora class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of an ideally characteristic grandiflora type plant habit and growth, abundant foliage of good quality which makes the plants attractive as garden plants during the growth cycle between blooming periods, a prolific blooming habit, a large flower size, an ability of the flowers to hold well on the plants for at least 5 or 6 days without fading or shattering, and a distinctive and attractive apple-red flower color which appears as a glowing and fluorescent-like overlay on the petals.

3,749
ROSE PLANT

Roy L. Byrum, Richmond, Ind., assignor to
Joseph H. Hill Company, Richmond, Ind.
Filed May 10, 1974, Ser. No. 468,893
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—18 **1 Claim**

1. A new and distinct variety of rose plant substantially as herein shown and described, characterized by the soft pink color of the flowers and its free growing habits which provide a continuous and abundant year around production of blooms borne on strong erect stems.

3,750
BEGONIA PLANT

Andrew J. Brown, Sr., Cardiff, Calif., assignor to
Mikkelsens Inc., Ashtabula, Ohio
Filed May 15, 1974, Ser. No. 470,024
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of *Begonia elatior* characterized particularly when compared to the present cultivar Bernsteins Gelbe by its darker yellow tepals with slightly ruffled edges; by the frequent occurrence of five tepals rather than four; its deeper yellow anthers; slower plant growth; faster leaf propagation; less flower color fading, with less pinking of the reverse side of the tepals, and by its shorter plant height.

3,751
BEGONIA PLANT

James C. Mikkelsen, Ashtabula, Ohio, assignor to
Mikkelsens Inc., Ashtabula, Ohio
Filed May 31, 1974, Ser. No. 475,199
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of begonia plant characterized particularly by its bright rose colored flowers; improved shoot initiation, with leaf cuttings consistently producing five to seven shoots at base of leaf petiole; fast rooting habit, with leaf cuttings being well established in 21 to 25 days at 22° C.; more floriferous habit, with the flowers being clustered in the truss; the initiation and development of flowers at several nodes at one time thereby presenting greater floral display; relatively small flowers, measuring 4–6 cm. in diameter; relatively short growth habit; relatively small leaf diameter with closer internodes, and by its flower buds which are initially oblong and rolled.

3,752
AZALEA PLANT

Kenneth Frank Fessler, Woodburn, Oreg., assignor to
Geo. J. Ball, Inc., West Chicago, Ill.
Filed July 2, 1974, Ser. No. 485,095
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—56 **1 Claim**

1. The new and distinct variety of azalea plant substantially as herein shown and described, characterized by being a sport of Dogwood (Plant Pat. 3,093), similar to its parent in form, shape and growth habit but being distinguished by the bright pink color of its blossoms.

3,753
BEGONIA PLANT

James C. Mikkelsen, Ashtabula, Ohio, assignor to
Mikkelsens Inc., Ashtabula, Ohio
Filed July 10, 1974, Ser. No. 487,397
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of begonia characterized particularly as to uniqueness when compared to the parent cultivar Krefeld Orange by dark red tepals which quite frequently are six in number, and by its anthers which are a deeper yellow than the anthers of Krefeld Orange.

3,754
BLACK ASH TREE

Ashur L. Cordes, Rte. 1, Box 44,
Beresford, S. Dak. 57004
Filed July 15, 1974, Ser. No. 488,535
Int. Cl. A01h *5/12*

U.S. Cl. Plt.—51 **1 Claim**

1. A new and distinct variety of black ash tree of the species botanically known as *Fraxinus nigra*, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a distinctly upright and narrow habit of growth and columnar tree head, with a width approximately one-third its height when grown in full sunlight, uniform foliage, and sparse seed production.

PATENTS

GRANTED JULY 29, 1975

ERRATA

For CLASS	See PATENT NO.
228–180	3,896,541
228–234	3,896,542
033–300	3,896,619
108–108	3,896,718
128–214 R	3,896,733
114–021 W	3,896,767
164–252	3,896,878
172–004.5	3,896,899
241–005	3,896,984
312–257 R	3,897,103
355–003 P	3,897,143

PATENTS

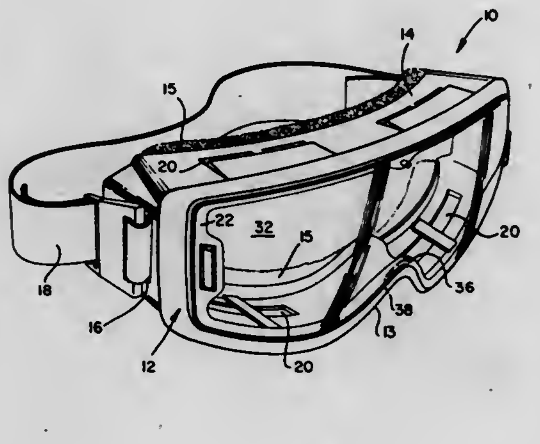
GRANTED JULY 29, 1975

GENERAL AND MECHANICAL

3,896,496
INTERCHANGEABLE LENS SKI GOGGLE

Conrad Leblanc, Leominster, and Vitalino Marchi, Concord, both of Mass., assignors to Foster Grant Co., Inc., Leominster, Mass.

Filed Apr. 29, 1974, Ser. No. 465,401
Int. Cl.² A61F *9/02*
U.S. Cl. 2—14 D **5 Claims**



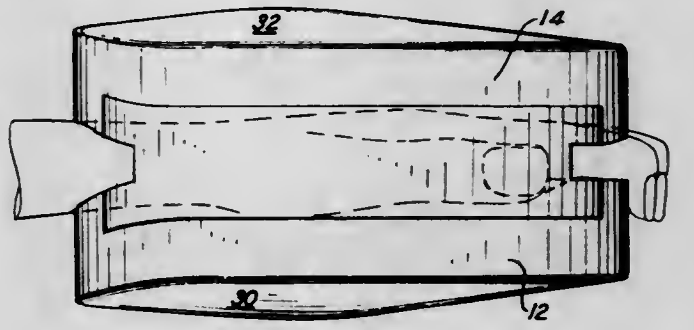
1. A pair of interchangeable lens goggles comprising;
a. a flexible face mask for engaging the wearer's face having a lens opening;
b. a separate rigid plastic mounting member supported by said flexible face mask and extending substantially completely around the periphery of said lens opening therein, a portion of said separate rigid plastic mounting member being embedded in the flexible face mask substantially completely around the periphery of said lens opening, said separate rigid plastic mounting member having a further portion extending inwardly of said lens opening in said flexible face mask providing a continuous rigid supporting surface upon which a lens may be mounted before the wearer's eyes, said rigid member having a locking means thereon for directly engaging a lens and maintaining it in its supported position while allowing removal of the lens when it is desired to interchange the lens with another;
c. a transparent lens having means formed therein to engage said locking means on said rigid member, said lens when locked in its operative position having its entire outer edge portion overlapping and being rigidly supported only by said separate rigid plastic member, and;
d. means engaging the wearer's head for holding said face mask thereagainst.

3,896,497
PROTECTIVE TARGET DEVICE

Jhoon Goo Rhee, 2525 N. Ridgeview Rd., Arlington, Va. 22207

Filed Oct. 25, 1974, Ser. No. 518,047
Int. Cl.² A41B *13/00*
U.S. Cl. 2—20 **10 Claims**

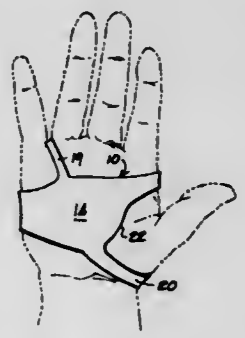
1. A protective device adapted to be worn on and protect the hand of a person for use in developing skills in athletic contents comprising a pair of pad members secured together in spaced parallel relationship thereby providing an open space between said pads, openings on opposite sides of said pad members whereby said hand can be inserted into said open space, each of said pad members comprising pliable, tearresistant casing means having resilient energy-absorbing means disposed therein.



3,896,498
PALM GUARD

Steven L. Pang, Los Angeles, Calif., assignor to Thomas F. Luthi, Los Angeles, Calif.

Filed Oct. 29, 1974, Ser. No. 518,273
Int. Cl.² A41D *13/00;* **A47J** *45/10*
U.S. Cl. 2—20 **10 Claims**



1. A palm guard comprising a palm portion adapted to rest flat against and cover a substantial portion of the palm of a user's hand, first and second strip portions joining to and extending from opposite side edges of said palm portion, said first and second strip portions being doubled back upon themselves to encircle the hand of the user, the ends of the first and second strip portions being permanently joined together to form a continuous back strap, a third strip portion joining to and extending from the upper edge of said palm portion, said third strip portion being adapted to pass between the third and fourth fingers of the user's hand, said third strip portion being doubled back upon itself and its end being permanently joined to said back strap, a fourth strip portion joining to and extending from the lower edge of said palm portion, said fourth strip portion being adapted to pass around the base of the user's thumb, said fourth strip portion being doubled back upon itself and its end permanently joined to said back strap, said palm portion and said strips all being formed from flexible sheet material.

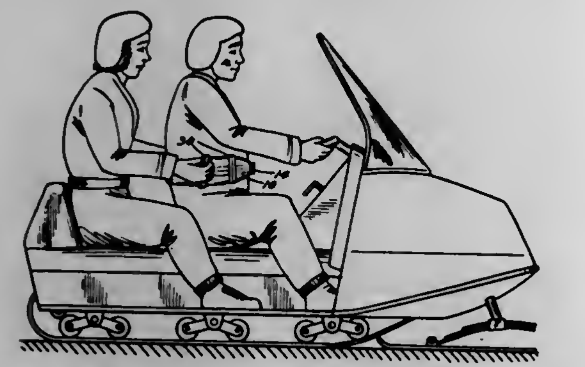
3,896,499
SAFETY BELT FOR SNOWMOBILE AND MOTORCYCLE PASSENGERS

Charles E. Kelly, Rt. 2, Spicer, Minn. 56288

Filed Nov. 18, 1974, Ser. No. 524,411
Int. Cl.² A41F *9/00*
U.S. Cl. 2—311 **9 Claims**

1. A safety belt adapted to be worn by a driver of a vehicle, said belt including:

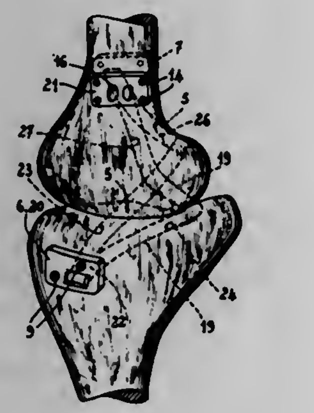
a. a relatively wide, elongated belt band terminating in ends;
b. coupling means releasably interconnecting the ends of the belt band; and



c. right and left vertical loops extending entirely around said belt and extending outwardly therefrom, said loops being fastened to said belt and being of configuration such that a passenger riding in tandem behind a driver wearing such a safety belt may insert portions of her arms including her hands through said loops.

3,896,500
METHOD OF AND PROSTHESIS FOR RESTORING LIGAMENTS OF A JOINT

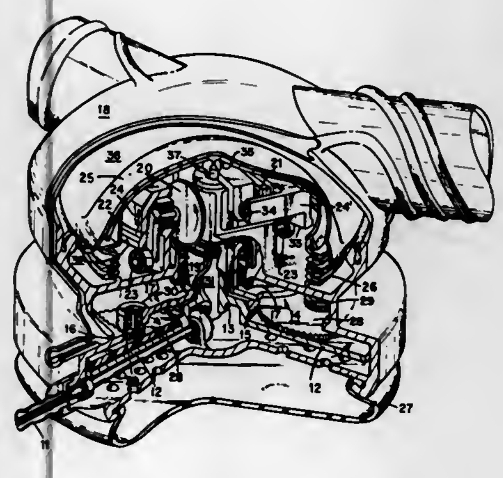
Andre Rambert, Residence Florentine, Ave. Lacassagne, Lyon, and Gilles Bousquet, 19 Ave. Berranger, Ecully, both of France
Filed Jan. 8, 1974, Ser. No. 431,667
Claims priority, application France, Jan. 17, 1973, 73.02342
Int. Cl. A61f *1/24*
U.S. Cl. 3—1 **16 Claims**



2. A prosthesis for restoring ligaments of a joint, comprising at least one artificial ligament constituted, by at least one pair of strands of thread forming, at one of their ends, a loop and covered by a sheath and by two attachment plates comprising a part in the shape of a bridge and each of which is able to be fixed by screws to one of the bones corresponding to an end of a tunnel traversing the respective bone, the bridge-shaped part of one of the plates being previously engaged in the loop-shaped end of the artificial ligament whereas the bridge-shaped part of the other plate is provided with means capable of ensuring the retention of the free end of the artificial ligament.

3,896,501
MECHANICAL DRIVE FOR BLOOD PUMP

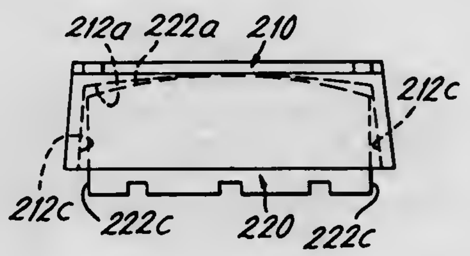
Natale J. Bifano, Pittsburgh, and Walter David Pouchot, Monroeville, both of Pa., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.
Filed Nov. 2, 1973, Ser. No. 412,397
Int. Cl.² A61F *1/24*
U.S. Cl. 3—1.7 **1 Claim**



1. A blood pump of an artificial heart comprising:
a substantially hemispherical pump housing;
a drive shaft extending into said housing;
a rotatable flywheel disposed in said housing and having a diameter slightly less than the maximum inner diameter of said housing;
meshing bevel gears disposed on said shaft and said flywheel for rotating said flywheel;
a compound planetary gear set disposed within housing comprising a sun gear integral with said flywheel, a stationary ring gear affixed to said housing, compound planetary gears meshing with said sun gear and the ring gear, and a spider carrying said planetary gears and rotatable within said housing by said planetary gears at a speed less than the rotational speed of said flywheel;
a single bevel gear secured to and rotatable by said spider; a pair of bevel gears meshing with said single bevel gear having their axis of rotation parallel to one another and rotatable by said single bevel gear;
a rotatable crank arm attached to each of said pair of bevel gears;
a pair of scotch yokes disposed within said housing with each of said yokes in contact with each of said cranks and vertically displaceable in response to the rotation of said cranks;
a diaphragm disposed within said housing above said scotch yokes and defining with said housing a blood receiving chamber; and
a pusher cup disposed intermediate said diaphragm and said scotch yokes and alternately displaceable by said scotch yokes upon the vertical displacement thereof by said crank for moving the diaphragm into said chamber and expelling blood therefrom and by the blood entering the chamber when said scotch yokes are not vertically displaced by said cranks.

3,896,502
ENDOPROSTHETIC BONE JOINT DEVICES

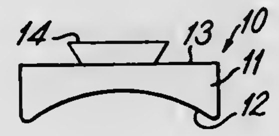
William Murdoch Lennox, Cheltenham, England, assignor to National Research Development Corporation, London, England
Filed Jan. 7, 1974, Ser. No. 431,402
Claims priority, application United Kingdom, Jan. 12, 1973, 1789/73
Int. Cl. A61f *1/24*
U.S. Cl. 3—1.91 **7 Claims**



1. An endoprosthetic ankle joint device comprising:
a tibial component in the form of a trough defining a concave inner surface having a substantially part-cylindrical longitudinal surface portion with curved cross-sectional profile, and two end surface portions respectively longitudinally closing said longitudinal surface portion, and defining a rear outer surface which is located remotely from said longitudinal surface portion and is provided with a low relief configuration; and
a talar component of roller form defining a convex surface having a substantially part-cylindrical longitudinal surface portion and longitudinally opposed end surface portions, said convex surface being substantially complementary to and in mutually articulatory bearing engagement with said concave surface, and defining a rear surface which is located remotely from said convex surface and is provided with a low relief configuration.

3,896,503
ENDOSPHOSTHETIC ANKLE JOINT DEVICES

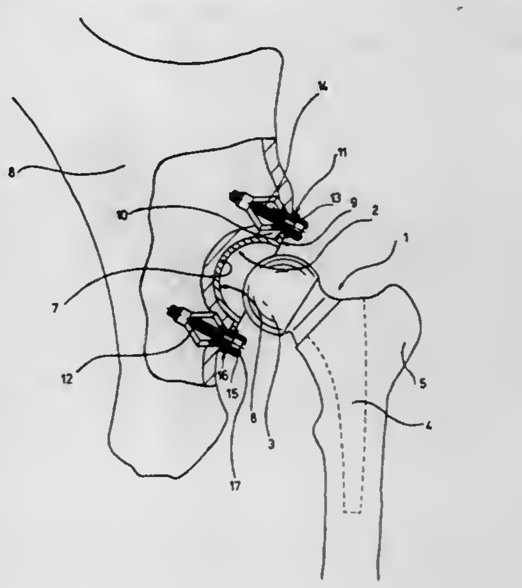
Michael Alexander Reykers Freeman, London; Geoffrey Edward Kempson, Flackwell Heath, and Michael Anthony Tuke, Sutton, all of England, assignors to National Research Development Corporation, London, England
Filed Feb. 6, 1974, Ser. No. 440,274
Claims priority, application United Kingdom, Feb. 9, 1973, 6507/73
Int. Cl. A61f *1/24*
U.S. Cl. 3—1.91 **5 Claims**



1. An endoprosthetic ankle joint device comprising:
a tibial component in the general form of a first rectangular block having one side grooved to define a concave surface of substantially part-circular cylindrical shape, said concave surface opening at its longitudinal ends into two opposed sides of said first block serially adjacent said one side, and the side of said first block opposite said one side being provided with a low relief configuration; and
a talar component in the general form of a second rectangular block having three serially-adjacent sides cut away to define a convex surface of substantially part-circular cylindrical shape complementary to and in mutual articulatory bearing engagement with said concave surface, and the side of said second block opposite said convex surface being provided with a low relief configuration.

3,896,504
HIP JOINT PROSTHESIS

Artur Fischer, Altheimer Strasse 219, Tumlingen, Germany
Filed Oct. 15, 1973, Ser. No. 406,397
Claims priority, application Germany, Oct. 14, 1972, 2250501
Int. Cl.² A61F *1/24*
U.S. Cl. 3—1.912 **4 Claims**



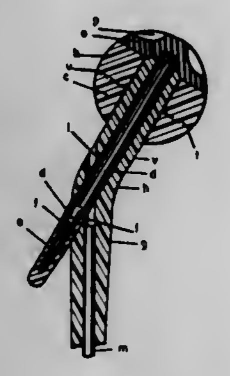
1. A hip joint prosthesis for jointing the femur to the ilium which has an osseous corticalis surrounding a hollow space filled with sponge-like medulla and formed with a concave depression circumferentially surrounded by an osseous bead, comprising a socket member having a convex portion adapted to be received in the concave depression of the corticalis of the ilium, and a flange portion surrounding said convex portion and adapted to overlie and contact the corticalis of the bead when said convex portion is received in the concave depression of the ilium, said flange portion being formed with circumferentially distributed apertures to be aligned with bores which are provided in the corticalis of the bead and extend into the hollow space of the illium; and a plurality of expansion anchors for connecting said socket member to the ilium and including expansion anchor sleeves inserted into the respective apertures of said flange portion so as to extend into the bores in the corticalis of the bead and into the hollow space of the ilium, each of said expansion anchor sleeves including a leading portion of tubular configuration and provided with an internal screw thread, and a trailing portion extending from said leading portion and composed of a plurality of axially extending strips which are arcuately bent in transverse direction; and expander screws in said expansion anchor sleeves inserted through said trailing portion into meshing engagement with said screw thread and exerting an axial compressive force on said sleeve to effect radially outward buckling of said strips in the hollow space behind the corticalis until said expansion anchor sleeves are securely anchored behind the corticalis and said socket member is thus removably connected to the corticalis of the ilium.

3,896,505
ENDOPROSTHESIS FOR THE HIPJOINT

Franz Donatus Timmermans, Brunswiker Strasse 11a, 23 Kiel, Germany
Continuation of Ser. No. 124,431, Aug. 23, 1971, abandoned. This application Aug. 20, 1973, Ser. No. 390,138
Int. Cl. A61f *1/24*
U.S. Cl. 3—1.913 **2 Claims**

1. A femoral head prosthesis including
a. a head portion (*a*) being at least in part of spherical shape and defining a first internal slanting channel;
b. a substantially elbow-shaped member (*g,h*) of polyethylene including a relatively short upper portion (*h*) project-

ing into said first slanting channel of said head portion (*a*) and a relatively long lower portion (*g*) enclosing an obtuse angle with said upper portion (*h*), said upper portion (*h*) and said lower portion (*g*) of said elbow-shaped member (*g,h*) defining at the junction thereof at one side a concave bent and at the other side a convex bent, said upper portion (*h*) defining a second internal channel (*v*) coaxial with said first internal channel of said head portion (*a*) having an entrance situated at the region of said convex bent, and said lower portion (*g*) defining a third internal channel (*l*) extending in a direction longitudinally thereof, intersecting said second channel (*v*) and having an entrance situated at said upper portion (*h*) of said elbow-shaped member (*g,h*);



- c. a first pin (*d*) having an end situated outside said elbow-shaped member (*g,h*) and projecting through said entrance at said region of said convex bent of said elbow-shaped member (*g,h*) into said upper portion (*h*) thereof; and
- d. a second pin (*m*) arranged inside said third channel (*l*) and inside said lower portion (*g*) of said elbow-shaped member (*g,h*).

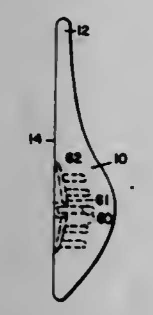
3,896,506
BREAST PROSTHESIS

George Hankin, and Helen A. Hankin, both of Box 32, Foster Rd., Southwick, Mass. 01077

Continuation-in-part of Ser. No. 435,229, Jan. 21, 1974. This application Jan. 13, 1975, Ser. No. 540,681

Int. Cl.² A61F *1/24;* A41C *3/10*

U.S. Cl. 3—36 **2 Claims**



1. The cooperating combination of a prosthetic breast form and a supporting undergarment therefor adapted to restore the human female figure and provide a symmetrical foundation for outer garments after the figure has been subjected to a mastectomy, said combination comprising a prosthetic breast form, a brassiere, means cooperatively formed on said breast form and said brassiere for securing said breast form and said brassiere in their required relative positions the breast form including a distended hermetically-sealed casing of subtantially impervious material containing an elastic gel filling, the casing consisting of a substantially conical substitute breast body portion adapted to fit into and to be worn inside the breast cup of the brassiere and a laterally projecting tongue formed as an integral extension of the substitute breast body portion and a back portion adapted to be worn against the body of the figure, the tongue being of substantially uniform thickness throughout its extent and having a front face curved slightly rearwardly from its inner end to its outer end relative to the body portion and terminating in a substantially straight rearward marginal edge, interrupting means in the form of a plurality of spaced apart projections projecting from a pair of crossed ribs disposed within the substitute breast body portion and adapted for the flow of gel therebetween, the tongue being adapted for tucking into the substitute breast body portion for varying the size and shape of the latter or for fitting the area of the body of the wearer which is below the underarm and from which tissue has been removed as an incident to breast removal.

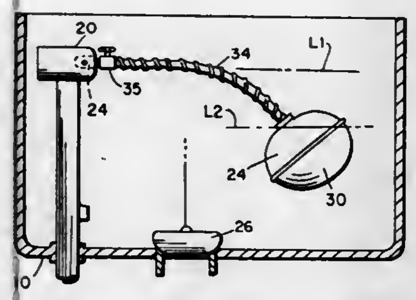
3,896,507
WATER ECONOMIZING FLUSH TANK

Francis M. Scarritt, Sr., 1338 Park St., N., St. Petersburg, Fla. 33710

Filed Feb. 4, 1974, Ser. No. 439,633

Int. Cl.² E03D *1/34*

U.S. Cl. 4—56 **3 Claims**



1. In combination, a flush tank float and a lever arm having one end connected thereto, said lever arm being for connecting the float with the fill valve of a flush tank and comprising a manually bendable undulated tube for receiving a predetermined bend, said lever arm having respective connection means at its ends for connection between a fill valve and said float and being of tubular corrugated construction and having an inherent resistance to bending sufficient to maintain said predetermined bend for transmitting the buoyant force of said float to a fill valve connected at the other end for operating said valve for closure at a selected water level in said flush tank.

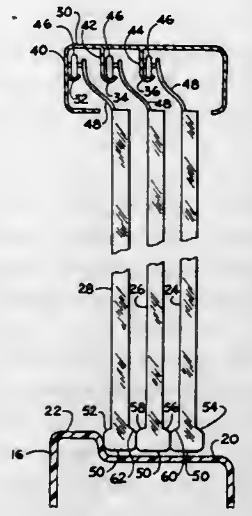
3,896,508
BATHING FACILITY

Troy L. Doan, 2090 Alta Vista Dr., Vista, Calif. 92083

Filed Mar. 22, 1974, Ser. No. 453,778

Int. Cl. E06b *7/02*

U.S. Cl. 4—149 **10 Claims**



1. The improvement in a bathing facility having an outer rim on one side and at least two lapping doors mounted above said rim and a single horizontal rib extending along the outer upper

margin of said rim substantially above the remainder of the top of said rim, each door being hung depending from a track of track means, each door having roller means to travel on the associated tract which supports the door in movement therealong, comprising:

- a. each track being located outwardly of the bathing facility relative to the plane of the associated door so that the lower margins of said doors will tend to swing outwardly and against said rib, and
- b. abutment means acting on said lower margins of said doors, spacing said doors apart.

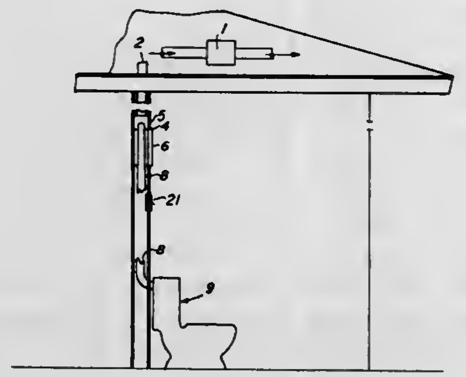
3,896,509
VENTILATING SYSTEM FOR BATHROOMS

Donald Stipp, 1843 Loma Linda St., Sarasota, Fla. 33579, and Hull H. Craven, 4218 Patty Way, Sarasota, Fla. 33580

Filed Apr. 11, 1974, Ser. No. 459,907

Int. Cl. E03d *9/04*

U.S. Cl. 4—209 **8 Claims**



1. In a ventilating system for bathrooms, a fan, means connecting the suction of the fan to the bathroom for withdrawing steam and moist air from the entire bathroom, and means for connecting the suction of the fan to a toilet in the bathroom for withdrawing odorous air from the toilet bowl, said means comprising an air collection box having a plurality of compartments, one compartment of said air collection box opening out into the bathroom to permit entrance of steam and moist air into the compartment from which it is drawn when the fan is operating at full speed, and an electrical system connected to the fan and embodying means for reducing the speed of operation of the fan during the withdrawal of odorous air from said toilet bowl and for operating the fan at full speed when withdrawing moist air and steam directly from the bathroom.

3,896,510
APPARATUS FOR INSTALLING A WATER CLOSET BOWL

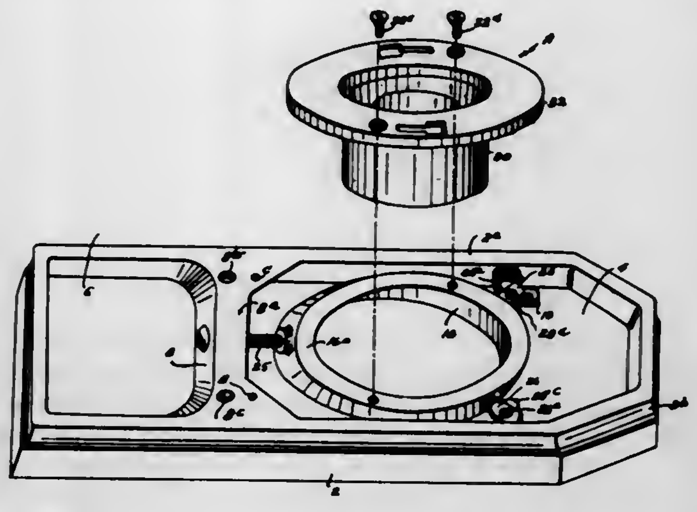
Joseph F. O'Connell, 15 Sylvia St., Lexington, Mass. 02173

Filed Sept. 10, 1973, Ser. No. 395,411

Int. Cl. F16l *55/00*

U.S. Cl. 4—252 R **4 Claims**

1. Apparatus for use with a water closet bowl of the class which is recessed at its underside to provide a tubular waste discharge portion, an outer flat bottom edge extending around the waste discharge portion in spaced relationship thereto, and a bridging section transversely disposed between the tubular waste portion and the front end of the water closet and having a lower bearing surface lying in a plane passing through the bottom surface of the said bearing rim, said apparatus comprising a mounting base for receiving and supporting said outer bearing rim portion of the water closet immediately above the surface of a floor which is formed with an opening for a section of soil pipe projecting upwardly therethrough, said mounting base including an enclosure body having a flat bottom surface constructed and arranged to surround the said soil pipe opening and soil pipe, the upper side of said enclosure body presenting a continuous flat rim portion which is formed of a shape complementary to the bearing rim of the water closet, a reinforcing rib rigidly connected between two opposite sides of the continuous rim portion and being formed with a flat retaining surface arranged to fit against the underside of the said bridging section of the water closet, fastening means located through the said reinforcing rib for solidly anchoring the rib to the said floor, a supporting ring member located inside of the enclosure body, fastening means for holding the ring member in spaced relation to two opposite sides of the enclosure body, screw means located transversely through the reinforcing rib and engaged in the supporting ring for detachably retaining another side thereof and a closet flange element contained within the ring.



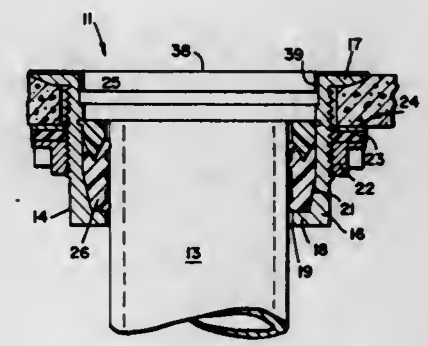
3,896,511
SELF-CAULKING DRAIN

Casper Cuschera, 31650 Medinah St., Hayward, Calif. 94544

Filed Oct. 17, 1973, Ser. No. 407,305

Int. Cl. E03c *1/26*

U.S. Cl. 4—288 **3 Claims**



1. A drain connection for a pipe, comprising:

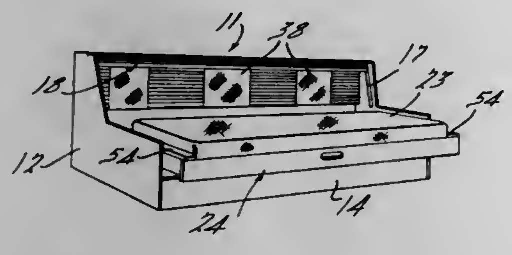
a fitting adapted to receive a pipe therethrough, said fitting providing an annular cavity between the interior of said fitting and exterior of the portion of said pipe received therein;

a resilient gasket of hollow, sleevelike configuration received within said annular cavity and about said portion of said pipe, said gasket including a first annular groove extending axially in one end thereof;

ring means including a second annular groove for forcibly engaging said first annular groove and expanding said gasket to form a watertight seal between said pipe and said fitting; and

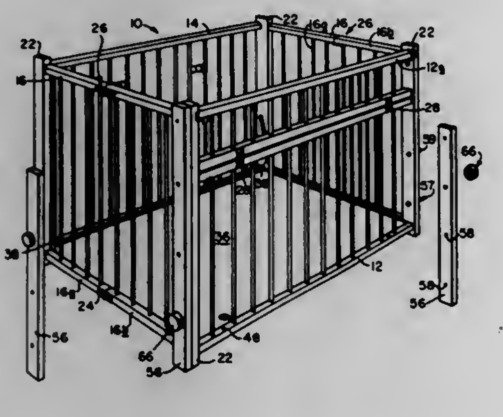
retaining means disposed in said fitting for retaining said ring means in engagement with said first annular groove, said ring means including a ring having a flange for snapping engaging said second annular groove and being retained thereby.

3,896,512
INSTITUTIONAL BED
J. Oliver Black, 18094 Parkside, Detroit, Mich. 48221
Filed Sept. 6, 1974, Ser. No. 503,730
Int. Cl.² A47C *13/38, 17/14*
U.S. Cl. 5—17 **5 Claims**



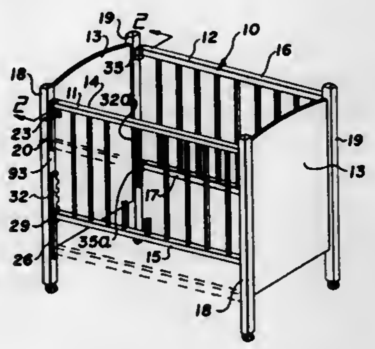
1. In a utility unit, a rectangular frame having side, front and back elements forming bottom forwardly and rear upwardly extending sections, support means within said forwardly extending section, a mattress box on said support means sloping rearwardly thereon, means provided on said support means for permitting said mattress box to be moved to forward position, and a back rest supported on said rear upwardly extending section above said mattress box in a manner which permits said back rest to be moved to a rear position on said section.

3,896,513
FOLDABLE INFANT'S CRIB
Raymond W. Boucher, and Russell D. Hand, both of Dothan, Ala., assignors to Hedstrom Co., Bedford, Pa.
Filed Sept. 3, 1974, Ser. No. 502,794
Int. Cl.² A47C *29/00;* A47D *7/02*
U.S. Cl. 5—99 R **17 Claims**



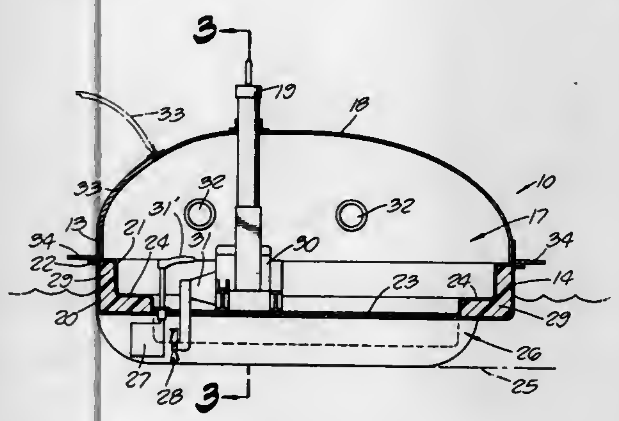
1. A folding infant's crib of the type having front and rear gates and foldable end gates pivotally connected to form a generally rectangular enclosure and a floor panel hinged to the bottom of the enclosure, the improvement comprising a double acting end gate lock for locking each of the end gates in its unfolded position, said lock including a pair of hinged-together lock sections, one lock section having a laterally extending tab and means defining a slot in said tab, said slot extending in a direction generally parallel to the end gate section to which it is attached, a latch pivoted to the other lock section adjacent to the pivot between the two sections, said latch being swingable vertically, a relatively long nose projecting from the latch, said nose being arranged to engage in the slot when the latch is swung down toward the tab with the end gate in its unfolded position, said nose having a portion which projects below the tab, and means for removably engaging the portion of the nose extending below the tab so that the first latch cannot be retracted from the slot.

3,896,514
SECURING APPARATUS FOR A DROPSIDE CRIB
Morris Feldstein, 782 W. 52nd Ave., Vancouver, British Columbia, Canada (V6P 1G6)
Filed July 1, 1974, Ser. No. 484,874
Int. Cl.² A47D *9/02*
U.S. Cl. 5—100 **15 Claims**



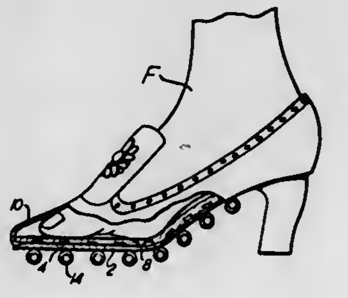
1. Securing apparatus for dropside crib comprising an elongated base element to form part of or to be secured in a vertical position on a crib end near a side thereof, a connector element to be secured to a movable crib side and slidably connected to the base element, a keyhole in the base element and formed with a narrow slot extending downwardly from a relatively large opening, a bore in the connector element substantially normal to the base element and positioned to be aligned with the keyhole, a latch pin extending through said bore and having a head on an inner end thereof adapted to pass through said opening, said pin fitting in said slot when the connector element is moved downwardly after the head has been moved through the keyhole opening, and means biasing the pin in the direction of the base element.

3,896,515
BOAT CONSTRUCTION
Charles E. Otterman, 440 Glorietta Blvd., Coronado, Calif. 92118
Filed June 28, 1973, Ser. No. 374,494
Int. Cl. B63c *9/06*
U.S. Cl. 9—4 R **2 Claims**



1. A boat construction, comprising:
first shell defining the hull including a substantially flat submerged water contacting surface lying substantially in a single plane, side walls interconnecting with said submerged surface defining said surface as an equilateral triangle, one corner of said triangle forming the bow and the side opposite thereof the stern, wall portions of said submerged surface being recessed to form a channel extending from the bow to the stern, and said side walls being upstanding and terminating in a continuous flange;
a second shell received onto the first shell, including a molded decking and seating arrangement with a continuous flange that is coterminous with the flange on said first shell; and
a third generally dome-like means having a peripheral flange that is received on and generally coterminous with the flanges of said first and second shells, forming an enclosure for the boat construction;
propeller and rudder means located entirely within said channel; and
means securing the flanges of said first, second and third shells to one another.

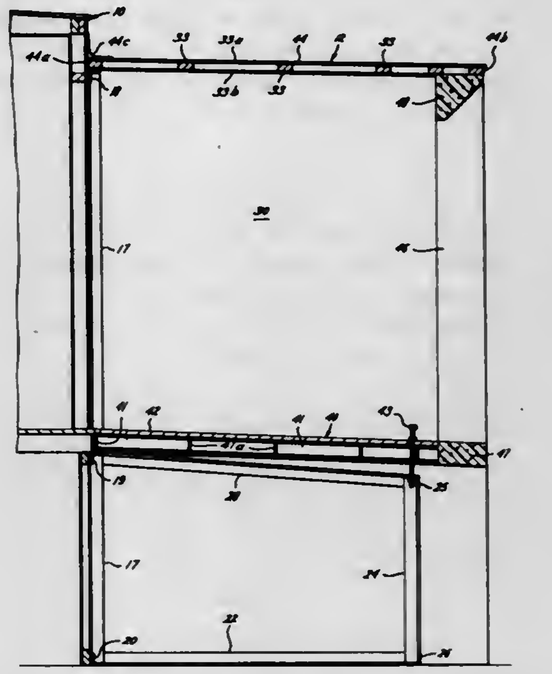
3,896,516
SHOE MOLDED BY INDUCTION HEATING
Elisabeth Von Den Benken, 2212 Centre St., West Roxbury, Mass. 02132
Continuation of Ser. No. 146,312, May 24, 1971, which is a division of Ser. No. 883,952, Dec. 10, 1969, Pat. No. 3,641,688. This application Mar. 29, 1973, Ser. No. 346,428
Int. Cl. A43d *9/00*
U.S. Cl. 12—142 R **2 Claims**



1. A method of shaping the bottom of a shoe according to the contour of a foot, which comprises:
joining a layer of thermoplastic material with an electromagnetic energy absorbing material;
placing the layer of thermoplastic material in the bottom area of a shoe; exposing the shoe to an alternating electromagnetic field of an induction heating machine thereby heating the layer of thermoplastic material to a temperature at which said layer becomes soft and moldable;
stepping into the shoe and pressing the foot on the bottom of the shoe thereby making an imprint of the foot in the bottom of the shoe; and
cooling the layer of thermoplastic material thereby hardening said layer and maintaining the imprint in it.

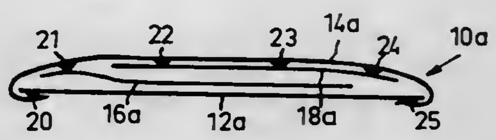
3,896,517
CONNECTING APPARATUS
Floyd E. Bigelow, Jr., 6614 Lindyann, Houston, Tex. 77008
Filed Jan. 30, 1974, Ser. No. 437,777
Int. Cl.² E04H *14/00;* B65G *11/00*
U.S. Cl. 14—71 **3 Claims**

1. A connecting corridor adapted to be connected to a building and to abut a movable vehicle comprising,
a frame connectable to a building,
said frame having spaced standards adapted to be connected to a building,
a pair of short supporting standards arranged with said spaced standards in rectangular fashion,
floor joist connecting said standards,
said floor joist extending at an outwardly and downwardly sloping angle from the spaced standards,
two side walls carried by the standards on opposite sides of the frame,
a roof over the frame and extending between said side walls, means for sealing between said roof and side walls and a building,
a floor supported on said floor joist,
jacking means between the floor and floor joists adjacent to said short standards for changing the angle of the floor to match the height of the floor of a vehicle adjacent the corridor,
resilient sealing means connected to the free end of the two side walls and the floor and roof,



the rectangular opening formed by the resilient sealing means on the two side walls, the floor and roof adapted to encompass the door of a movable vehicle with the wall of the vehicle sealed to the corridor by the resilient sealing means.

3,896,518
IMPREGNATED LAMINATED PAD FOR MOPS
Jan Åke Von Post, Sollentuna, and Gösta Erik Mauritz Petersson, Aneby, both of Sweden, assignors to Landstingens Inkopscentral, Solna, Sweden
Filed Mar. 16, 1973, Ser. No. 342,208
Int. Cl. A47l *13/17, 13/312*
U.S. Cl. 15—104.94 **1 Claim**



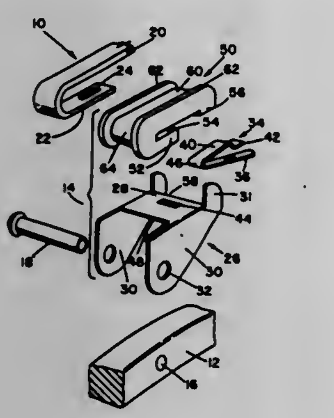
1. A pad or cloth for cleaning floors comprising a rectangular pad member adapted to be fastened to a holder located at the lower end of a handle, the pad comprising first and second outer layers and at least one intermediate layer, said first outer layer which, in use, is intended to abut the floor, being comprised of a sheet of moisture permeable, wear resistant, synthetic, non-woven fiber, such as a mat of non-woven rayon, said second outer layer being comprised of a moisture impervious film of plastic material, such as polyethylene, said intermediate layer comprising cellular material, a dust binding liquid carried by said intermediate layer and adapted to be discharged through said first outer layer to floor surfaces when said floor surface and first layer are brought into contact so as to bind dust to the liquid and surface of said first layer, said second outer layer being sealed to the edges of said first layer, said intermediate layer being secured to said second layer by a number of mutually spaced, longitudinally extending glue lines at spaced transverse positions between the extremities of said intermediate layer to prevent displacement of said intermediate layer relative to said second outer layer, said intermediate layer being comprised of first and second discrete sheets, one said sheet extending from a position immediately adjacent a said marginal edge of said pad across the longitudinal center line of said pad member, the second said discrete sheet extending from the opposite marginal edge of said pad across the longitudinal center line, the width of said sheets being less than the width of said pad whereby there is defined a double

thickness of said sheets in a central area of said pad and a single thickness of said sheets adjacent said marginal edges, said longitudinally extending glue lines bonding said second outer layer to the one of said discrete sheets of said intermediate layer nearest said second outer layer to prevent relative shifting movement between said one of said discrete sheets and said second outer layer.

3,896,519
WINDSHIELD WIPER CONNECTOR

Herbert G. Pankow, Keenesburg, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed Oct. 29, 1974, Ser. No. 518,666
Int. Cl.² B60S *1/40*
U.S. Cl. 15—250.32 **9 Claims**

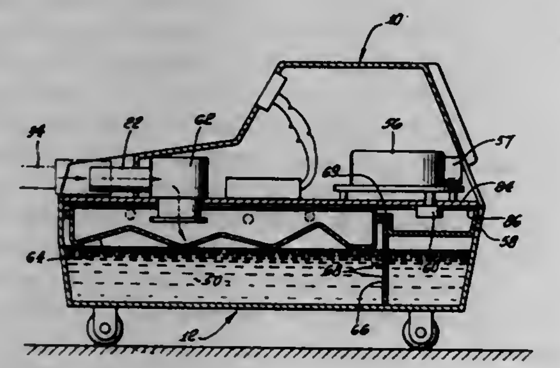


1. An assembly for connecting a windshield wiper adaptably to different sized wiper arms of the shepard's crook type, the wiper arm having an arm body and a reversely turned tip extending beneath the body, the assembly comprising:
- a bracket of generally U-shaped cross-section having a bridge portion from which a pair of legs depend, said legs having means for receivably engaging a windshield wiper; an insert having an upper grooved surface for receipt of the wiper arm body and at least one inturned projection on the bottom of the insert defining an open-ended slot, said bridge portion of the bracket being securely embraced in the slot;
- means carried by the bracket for locking the assembly into engagement with the reversely turned tip of the wiper arm.

3,896,520
WET AND DRY VACUUM CLEANER

William H. Williams, Palos Verdes, Calif., assignor to Spray Brite, La Mirada, Calif.

Filed Oct. 23, 1973, Ser. No. 408,920
Int. Cl. A47l *7/00*
U.S. Cl. 15—320 **4 Claims**

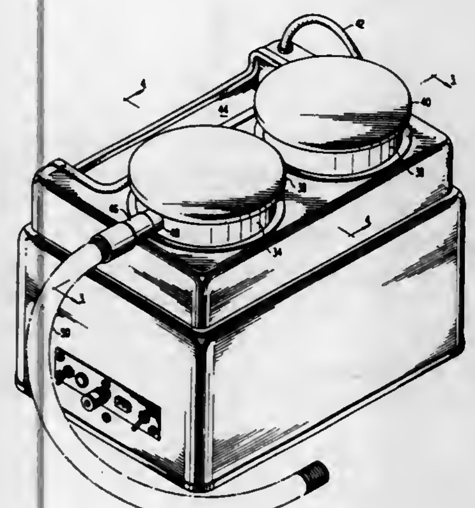


1. A novel vacuum cleaner comprising:
- a rigid vacuum-retaining outer case, the bottom of which is adapted to serve as a liquid reservoir,
- a flaccid dust-retaining container within said case,
- means for creating vacuum within said case in and around said flaccid container including an inlet communicating with said case,
- means communicating with said liquid reservoir for discharging liquid on a surface to be cleaned,
- means communicating with said flaccid container for drawing said liquid and included dirt from said surface to be cleaned into said container under the influence of vacuum, and
- baffle means within said casing for separating said flaccid container from said inlet while permitting said liquid to flow freely therethrough and round the outside of said container whereby said container can fill with used liquid at a volume rate essentially equal to the rate of depletion of the unused liquid.

3,896,521
HOME CLEANING SYSTEM

Carl Parise, Reno, Nev., assignor to Parise & Sons, Inc., Reno, Nev.

Filed Mar. 27, 1973, Ser. No. 345,417
Int. Cl.² A47L *7/00*
U.S. Cl. 15—321 **13 Claims**



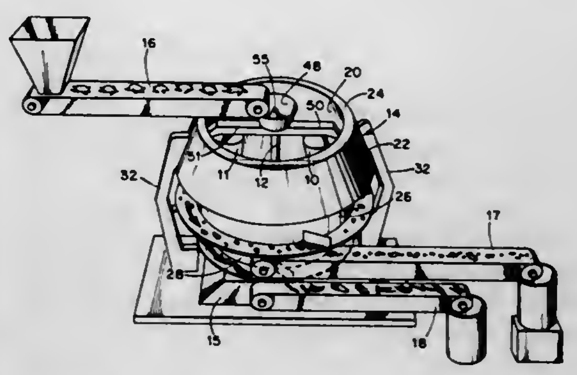
1. A combination vacuum and hot liquid cleaner comprising:
- a. a body;
- b. a vacuum tank mounted in said body;
- c. a hollow riser pipe mounted on the bottom of said vacuum tank and having an opening near the top thereof providing communication between the interior of the said hollow riser pipe and the interior of said vacuum tank;
- d. a vacuum pump capable of operating with very humid air mounted in said body and operatively connected to the bottom of said hollow riser pipe, whereby vacuum from said vacuum pump may be communicated to the interior of said vacuum tank;
- e. a hollow coupling pipe open at either end mounted in the exterior of said vacuum tank near the top thereof and projecting through the exterior thereof to provide a path of fluid communication between the interior and exterior of said vacuum tank, the opening of said coupling pipe within said vacuum tank being pointed toward the bottom of said vacuum tank, whereby vacuum from said vacuum pump may be communicated to the exterior of said vacuum tank;
- f. a deflector divider removably mounted in said vacuum tank between said coupling pipe and said riser pipe and adapted to cause the foreign matter brought into said vacuum tank by the vacuum from said vacuum pump to be dispersed initially on the bottom of said vacuum tank, thereby reducing the amount of foreign matter sucked into said pipe;
- g. a diffuser cap removably attached to the top of said riser pipe and shaped to reduce the amount of foreign matter sucked into said pipe, said diffuser cap comprising
  - i. an inner cup-shaped member having a closed top and an opening in the wall thereof of size and shape approximately equal to the opening in said riser pipe, said opening in the wall of said inner cup-shaped member by an amount sufficient to cause said opening to overlay the opening in said riser pipe and
  - ii. an outer cup-shaped member having a closed top to the inner side of which the top of said inner cup-shaped member is attached and a flat exterior surface parallel to its central axis, the flat exterior surface being adapted to engage a corresponding surface on said deflector divider and being located with respect to the opening in said inner cup-shaped member such that, when it does engage a corresponding surface on said deflector divider, the opening in said inner cup-chaped member is positioned over the hole in said riser pipe;
  - h. means for selectively activating said vacuum pump;
  - i. a liquid tank mounted in said body;
- j. means for heating liquid contained in said liquid tank;
- k. means for selectively activating said means for heating liquid contained in said liquid tank;
- l. a liquid pump mounted in said body;
- m. tube means connecting the inlet of said liquid pump to said liquid tank;
- n. tube means connecting the inlet of said liquid pump to the exterior of said body; and
- o. means for selectively activating said liquid pump.

4. A combination vacuum and hot liquid cleaner comprising:
- a. a body;
- b. a vacuum tank mounted in said body;
- c. a hollow riser pipe mounted on the bottom of said vacuum tank and having an opening near the top thereof providing communication between the interior of the said hollow riser pipe and the interior of said vacuum tank;
- d. a vacuum pump capable of operating with very humid air mounted in said body and operatively connected to the bottom of said hollow riser pipe, whereby vacuum from said vacuum pump may be communicated to the interior of said vacuum tank;
- e. a hollow coupling pipe open at either end mounted in the exterior of said vacuum tank near the top thereof and projecting through the exterior thereof to provide a path of fluid communication between the interior and exterior of said vacuum tank, the opening of said coupling pipe within said vacuum tank being pointed toward the bottom of said vacuum tank, whereby vacuum from said vacuum pump may be communicated to the exterior of said vacuum tank;
- f. a diffuser cap removably attached to the top of said riser pipe and shaped to reduce the amount of foreign matter sucked into said pipe;
- g. a deflector divider removably mounted in said vacuum tank between said coupling pipe and said riser pipe and adapted to cause the foreign matter brought into said vacuum tank by the vacuum from said vacuum pump to be dispersed initally on the bottom of said vacuum tank, thereby further reducing the amount of foreign matter sucked into said pipe, said deflector divider comprising
  - i. a divider plate in height approximately equal to the interior height of said vacuum tank, in width approximately equal to the distance from one inner wall of said vacuum tank to the opposite wall taken along a line touching the exterior of said diffuser cap on the side thereof facing towards said coupling pipe, and having apertures therein near the bottom thereof, whereby said divider substantially inhibits but does not prevent passage of foreign matter from one side to the other of said deflector divider and
  - ii. a deflector plate attached to said divider plate approximately perpendicularly to the surface of said divider plate on the side thereof facing towards said coupling pipe, said deflector plate being mounted at a small angle to the vertical such that it slopes away from said coupling pipe, said deflector plate being closer to a line coincident with the axis of said coupling pipe at the top than at the bottom, said deflector plate being in width approximately equal to the distance from said divider plate to the adjoining wall of said vacuum tank and extending from approximately the top of said divider plate to a short distance above the bottom of said divider plate, whereby foreign matter introduced into said vacuum tank through said coupling pipe is deflected to a segment of the bottom of said vacuum tank defined by the adjoining faces of said divider plate and said deflector plate;
- h. means for selectively activating said vacuum pump;
- i. a liquid tank mounted in said body;
- j. means for heating liquid contained in said liquid tank;
- k. means for selectively activating said means for heating liquid contained in said liquid tank;
- l. a liquid pump mounted in said body;
- m. tube means connecting the inlet of said liquid pump to said liquid tank;
- n. tube means connecting the inlet of said liquid pump to the exterior of said body; and
- o. means for selectively activating said liquid pump.

3,896,522
APPARATUS FOR REMOVING MEAT FROM ANIMAL BONE

James M. Lapeyre, New Orleans, La., assignor to The Laltram Corporation, New Orleans, La.

Filed July 20, 1973, Ser. No. 381,345
Int. Cl. A22c *17/04*
U.S. Cl. 17—46 **14 Claims**



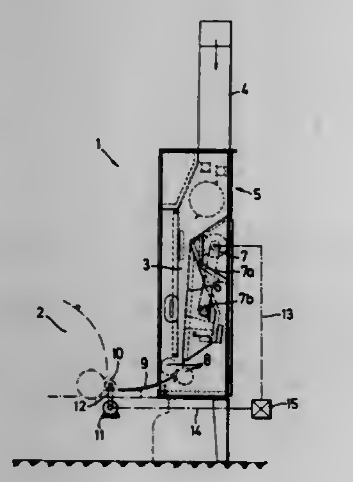
1. Apparatus for removing meat from animal bones comprising:
- at least one generally cylindrical drum formed of a grid of cutting elements;
- means for mounting said at least one drum for rotation about its axis at a first predetermined rate;
- means for revolving said at least one drum about an axis removed from the drum axis at a second predetermined rate higher than said first rate to provide an intended centrifugal force;
- means for supplying meat-containing bone to the upper end of said at least one drum;
- means for removing meat from the outer portion of the grid of said at least one drum; and
- means for collecting bones from the lower end of said at least one drum.

13. A substantially continuous method for removing meat from animal bones comprising the steps of:
- moving a grid of cutting elements along a predetermined continuous closed path to provide unidirectional rotation about its axis;

revolving said grid of cutting elements about an axis removed from said grid axis to produce an intended centrifugal force;
supplying meat-containing bone to said grid of cutting elements to cause relative movement between said meat-containing bone and said grid and engagement of said cutting elements therewith;
removing meat from an outer portion of said grid; and
removing bone from an inner portion of said grid.

3,896,523
DEVICE FOR FEEDING FIBROUS MATERIAL, ESPECIALLY SPINNING MATERIAL, TO A PROCESSING MACHINE

Guntram Beukert, Dulmen, Germany, assignor to Hergeth KG Maschinenfabrik und Apparatebau, Dulmen, Germany
Filed May 22, 1973, Ser. No. 362,686
Claims priority, application Germany, June 16, 1972, 2229438
Int. Cl. D01g *15/40*
U.S. Cl. 19—105 **3 Claims**

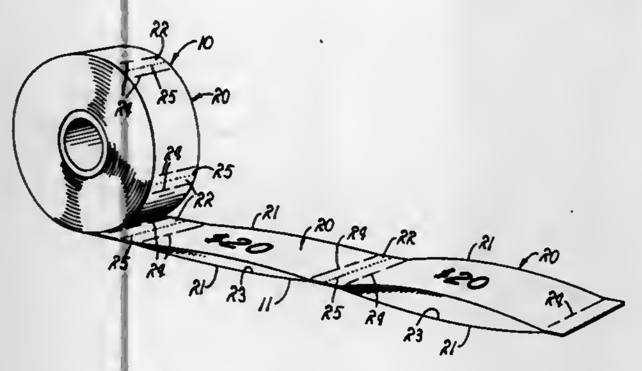


1. The combination of a feeding device and a processing machine comprising first means defining a first path of travel for material between input and output ends of said feeding device, second means defining a second path of travel for material from said feeding device output end to an input end of said processing machine, conveying means at said processing machine input end for feeding material into said processing machine, first motor means for driving said conveying means, means beyond said processing machine input end for processing material therein, means for shaking said material as it moves along said first path, second motor means for driving said shaking means, means for directly controlling the speed of operation of said shaking means proportionally to the speed of operation of said conveying means, and said controlling means include electrical regulating means coupled between said first and second motor means for increasing and decreasing the speed of said second motor means in response to respective increasing and decreasing speed of said first motor means.

3,896,524
BUNDLE BINDING STRAP

Warren D. Parker, 3525 University Ave., Bakersfield, Calif. 93306
Filed Apr. 22, 1974, Ser. No. 462,627
Int. Cl. B65d *63/00*
U.S. Cl. 24—17 B **7 Claims**

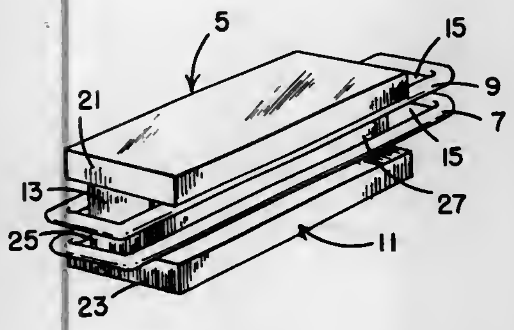
1. A currency bundle binding strap comprising a pair of elongated band segments of flexible sheet material having opposite ends, corresponding ends of the segments being bonded flatly against each other to define a currency receiving opening therebetween and between the segments and said



bonded ends of the segments forming tabs endwardly extended from the segments.

3,896,525
FLOATING STRAP BUCKLE

Alfred H. Stewart, Jr., Media, Pa., and Edmond W. Palmer, Jr., Moorestown, N.J., assignors to FMC Corporation, Philadelphia, Pa.
Filed Apr. 17, 1974, Ser. No. 461,552
Int. Cl.² B65D *63/06;* **A44B** *11/00*
U.S. Cl. 24—21 **10 Claims**

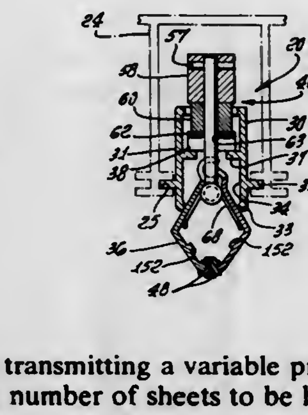


1. A buckle for use in connecting the opposite ends of a binding strap including a pair of superposed rings about and between which bight portions of a strap may be disposed to grip the same and a float which is buoyant in water and which includes a member extending freely through the ring openings, so as to be encircled by said rings, said member serving to maintain such rings in superposed relationship while permitting limited movement thereof relative to each other and said member, and retainers connected to said member for maintaining said rings captive on said member.

3,896,526
FRICTION BINDER HAVING VARIABLE CLAMPING FORCES

Thomas R. Joiner, Los Altos, Calif., assignor to Plan Hold Corporation, Irvine, Calif.
Filed Dec. 26, 1973, Ser. No. 427,692
Int. Cl.² B42F *1/00;* **A47F** *5/08*
U.S. Cl. 24—67.1 **18 Claims**

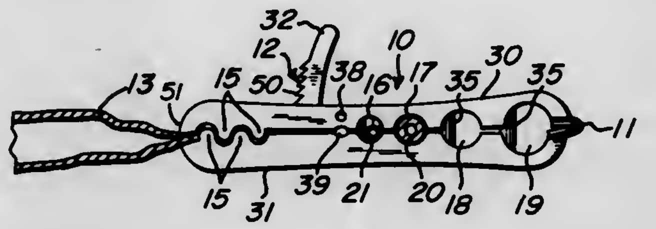
1. In a device for vertical filing of sheet material in which an inverted generally U-shaped channel provides longitudinal edges bearing against longitudinally extending clamp members hinged together within the U-shaped channel, the provision of:
means to apply a variable force to said clamp members to move the clamp members into closed position to secure one or more of said sheets of material,
said force applying means drawing the clamp members further into said channel member,
said force applying means including yieldable resilient



means for transmitting a variable pressure force responsive to the number of sheets to be held.

3,896,527
UNITARY CLAMP

Gale W. Miller, and James L. Geraci, both of Cincinnati, Ohio, assignors to Cincinnati Biomedical, Inc., Cincinnati, Ohio
Filed May 23, 1973, Ser. No. 363,034
Int. Cl. A44b *21/00*
U.S. Cl. 24—81 HS **14 Claims**

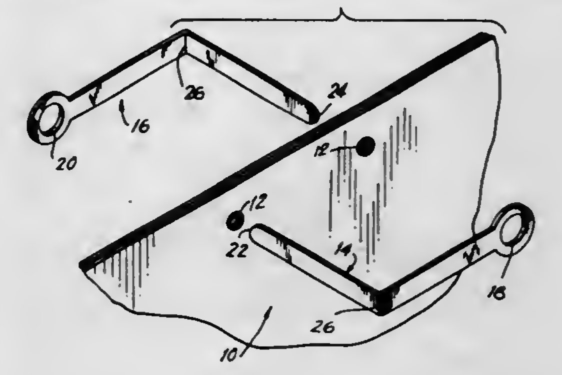


1. A one-piece, plastic clamp for clamping tubing and the like to a support member, comprising a pair of elongate jaws integrally hinged together at one of their ends of pivotal movement to open and closed positions, one of said jaws having an opening therethrough between the ends thereof and spaced from the hinged end, a latch strike on said one jaw at one side of said opening, an upstanding latch member on the other jaw spaced from the hinged end thereof in a position to extend through the opening in said one jaw and having serrations on one side thereof engageable with the latch strike to releasably latch the jaws in closed position, a plurality of transverse arcuate channels in each jaw between the latch and hinged end thereof and extending completely across the width of the jaws, said channels forming a plurality of transverse throughpassageways in the clamp when the jaws thereof are disposed in closed juxtaposition for clamping tubing and the like between the jaws, and an upstanding guide post on one of said jaws at the side of at least one of said channels and projecting into said channel to engage the side of a tube therein to guide the tube into proper registry with the channel during closing movement of the jaws and to lock the tube in proper position in the channel when the jaws are in closed juxtaposition.

3,896,528
FASTENER

Rodman Abeles, 305 E. 40th St., New York, N.Y. 10016
Filed Feb. 15, 1974, Ser. No. 443,148
Int. Cl.² A44B *9/00;* **B42F** *3/00*
U.S. Cl. 24—153 S **4 Claims**

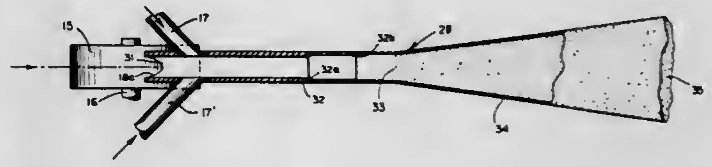
1. In combination, a fastener adapted for holding together a stacked plurality of sheet material, such as paper and the like, the combination comprising: a pair of elongated, substantially flat elements, each of said elements having at one end thereof passage means; said passage means of said elements adapted to be aligned from opposite sides of the stacked sheet material with spaced apart openings in said sheet material; the other end of each of said elements being folded and adapted to pass in opposite directions through said spaced apart openings and the passage means of the opposing element; and said ends being further folded, whereby the interlocking of the



other end of each element with the passage means of the opposing element forms together with said stacked sheet material a reinforced rigid edge portion between at least said pair of spaced apart openings.

3,896,529
STRAND TREATMENT APPARATUS

Robert K. Stanley, Media, Pa., assignor to Textured Yarn Co., Inc., Kennett Square, Pa.
Continuation-in-part of Ser. Nos. 343,644, March 22, 1973, Pat. No. 3,840,950, and Ser. No. 376,890, July 5, 1973, which is a continuation-in-part of Ser. No. 343,644, and Ser. No. 124,213, March 15, 1971, Pat. No. 3,753,275, which is a continuation-in-part of Ser. No. 822,429, May 7, 1969, Pat. No. 3,570,083, which is a continuation-in-part of Ser. No. 678,428, Oct. 26, 1967, Pat. No. 3,462,814, and Ser. No. 302,758, July 31, 1963, Pat. No. 3,376,622. This application Oct. 11, 1973, Ser. No. 405,262
Int. Cl. D02g *1/12*
U.S. Cl. 28—1.6 **2 Claims**



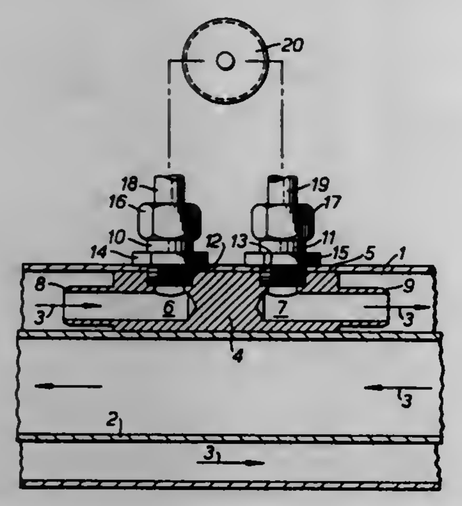
1. In stuffer-crimping apparatus for textile strands, having a laterally confining stuffing chamber with open outlet end and nip-roll means for feeding strand thereinto and jet means for forwarding it at least partially therethrough the improvement comprising an outwardly flaring circumferential screen constituting a terminal portion of the chamber.

3,896,530
APPARATUS FOR HEATING TEXTILE YARNS AND FILAMENTS

Denis Albert Edward Mattingly, 5 Farorna Walk, Enfield, Middlesex, England
Filed Nov. 16, 1973, Ser. No. 416,600
Int. Cl. D02j *13/00, 1/22*
U.S. Cl. 28—71.3 **9 Claims**

1. Apparatus for heating textile yarns and filaments comprising an elongate conduit through which a heating fluid is arranged to be passed in use; a first tubular member defining a first passageway having an end projecting into the conduit and facing, within the conduit, against the direction of flow of the fluid; a second tubular member defining a second passageway having an end projecting into the conduit and facing, within the conduit, with the direction of flow of the fluid; and a hollow yarn heating device connected to the first and second passageways outside the conduit whereby to permit in use the flow of heating fluid from the conduit through the first pas-

sageway, the heating device and the second passageway back into the conduit, said first tubular member being smaller than



said conduit and arranged to permit flow therein of only a part of fluid flowing in said conduit.

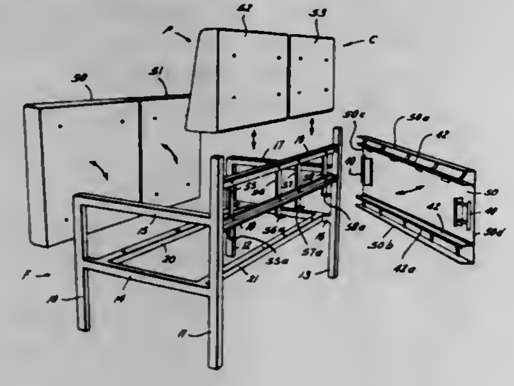
3,896,531
UPHOLSTERY SYSTEM METHOD AND APPARATUS

DeWitt Y. Gorman, P.O. Box 26323, Houston, Tex. 77032

Filed July 26, 1973, Ser. No. 382,702

Int. Cl. B24b *39/00*

U.S. Cl. 29—91.1 **3 Claims**



1. A method of releasably securing a sheet of unformed decorative upholstery covering material to a base member having a cushion portion to form an upholstered cushion, including the steps of:

providing a cushion portion for a base member in a desired shape with the cushion portion forming at least one cushion corner;

arranging the sheet of unformed decorative upholstery covering material by positioning the sheet of unformed decorative upholstery covering material about the cushion portion in a desired manner;

folding the sheet of unformed decorative upholstery covering material at each cushion corner formed by the cushion portion in a manner for forming a sheet of folded decorative upholstery covering material about the cushion portion in a desired manner for viewing;

placing a shield member within a fold to eliminate wrinkles formed in the viewed surface of the sheet of upholstery covering material by the portion of the sheet of upholstery covering folded behind said viewed surface of the sheet of upholstery covering; and

deforming resiliently by engaging with the base member a plurality of clip members also engaging the sheet of folded decorative upholstery covering material without the use of tools for providing a plurality of forces for releasably securing the folded sheet of decorative upholstery covering material with the base member while avoiding piercing or damaging of the sheet of unformed decorative upholstery covering material.

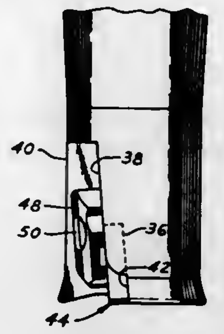
3,896,532
CUTTER INSERT SPINDLE

Norman Darrell Brooks, 6410 Centennial Dr., Toledo, Ohio 43613

Filed Nov. 30, 1973, Ser. No. 420,385

Int. Cl.^{2} B26D *1/12*

U.S. Cl. 29—105 R **5 Claims**



1. A milling cutter for a profile duplicating machine and the like, comprising: a milling cutter body having an intermediate generally cylindrical portion with a centrally located axis of rotation extending therethrough, an upper end chucking portion, and an enlarged lower end tip portion having a sloping bottom surface which extends downwardly and outwardly and having a lateral side surface forming an angle of approximately 60° with said sloping bottom surface, said side surface forming an angle of between approximately 8° and approximately 30° with said axis of rotation, said intermediate and enlarged lower end portions having a generally triangularly shaped pocket therein with the sides of one apex thereof being generally coincident with said bottom and side surface of said tip portion, said pocket having a bottom surface for supporting a generally triangularly shaped cutter with edges of one apex of the cutter generally coincident with said apex of said pocket, said bottom sloping outwardly at an angle between 3° and 12° from the diametral plane when proceeding longitudinally upwardly with respect to said axis of rotation, said bottom of said pocket being constructed and arranged to support the top edge of the insert above said diametral plane, and clamp means for holding the cutter insert in said pocket.

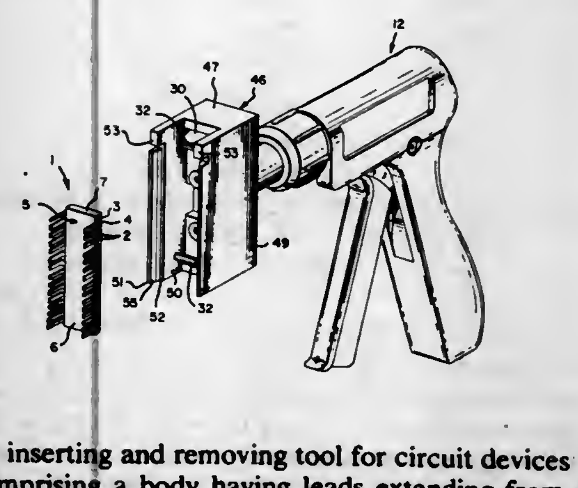
3,896,533
TOOL FOR INSERTING AND REMOVING CIRCUIT COMPONENTS

Robert Ullman, Harrisburg, and Earl William Wagner, Annville, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed July 10, 1974, Ser. No. 487,340

Int. Cl. H05k *3/32*

U.S. Cl. 29—203 B **5 Claims**



1. An inserting and removing tool for circuit devices of the type comprising a body having leads extending from a first pair of parallel sides, said leads extending in one direction substantially normally of the plane of said body and being arranged in two rows, said body having a second pair of sides which extend between said first pair of sides, said leads being insertible into aligned receptacles in a printed circuit board or the like, said tool comprising:

a tool head having an open side and having too opposed sidewalls which are spaced apart by a distance which is substantially equal to the spacing between said rows, said side-walls having free ends which define said open side of said head,

a pair of opposed gripping arms between said sidewalls, said arms having free ends, said free ends being spaced apart by a distance which is always equal to at least the distance between said second pair of sides of said circuit device, actuator means for moving said arms between an extended position through an intermediate position to a retracted position in said head, said free ends of said arms being proximate to said free ends of said sidewalls when said arms are in said extended position, said free ends of said arms being remote from said free ends of said sidewalls when said arms are in said retracted position,

arm closing means, said closing means being effective to move said free ends of said arms relatively towards each other during movement of said arms from said extended position to said intermediate position,

spaced apart end walls extending transversely to and between said sidewalls, said arm closing means comprising opposed surface portions of said end walls, said opposed surface portions being cooperable with said arms to move said free ends of said arms towards each other upon movement of said arms from said extended position to said intermediate position whereby,

a circuit device can be gripped between said arms for the purpose of removing said leads from said aligned receptacles by moving said arms to extended position and locating said device with said second pair of sides between said arms, subsequently moving said arms to said intermediate position so that device is gripped between said arms, and upon subsequent movement of said arms to said retracted position, said device is moved into said tool head.

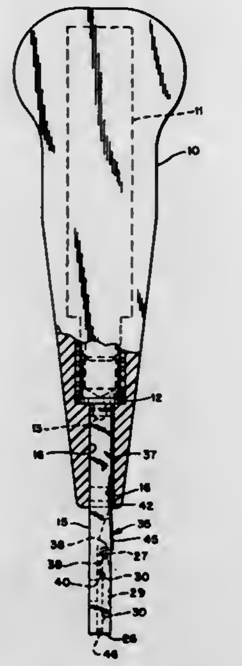
3,896,534
ELECTRICAL WIRE INSERTING TOOL

Harry Kaufman, New Rochelle, N.Y., and Myron K. Gordin, Oskaloosa, Iowa, assignors to O.K. Machine and Tool Corporation, New York, N.Y.

Filed Dec. 16, 1974, Ser. No. 533,284

Int. Cl.^{2} H01R *43/00*

U.S. Cl. 29—203 HC **9 Claims**



1. In a wire inserting tool comprising a housing, an impulse generator within the housing, and a working blade having one end proximal to the impulse generator to receive an impulse and an opposite end distal from the impulse generator and projecting from the housing and having a recess for accommodating a wire-receiving terminal which blade serves for severing and seating the wire in the terminal, the improvement comprising the blade distal end having a channel, a separable tip member having at one end a cutting edge, and means for removably mounting the tip member to the blade at the channel to form between the channel and the tip the terminal-accomodating recess.

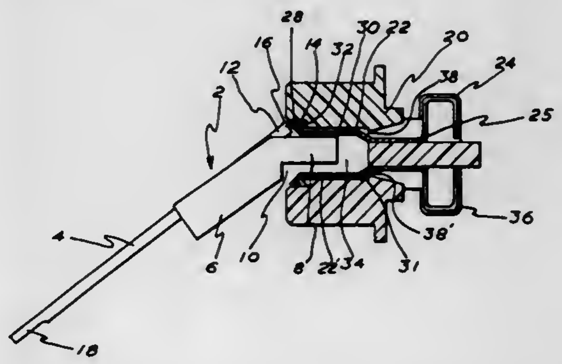
3,896,535
CONTACT TERMINAL EXTRACTION TOOL

John James Tucci, Winston-Salem, N.C., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Sept. 13, 1974, Ser. No. 505,809

Int. Cl. H01r *43/00*

U.S. Cl. 29—206 **4 Claims**



1. A tool for extracting and inserting individual terminals from multi-contact connector housings, said tool comprising: a bar with first and second ends,

guide support means, proximate to said first end and fixed to said bar, said bar extending across one surface of said guide support means, said surface defining the top of said guide support means and the top of said tool,

guide arm means extending from said support means on the end of said guide support means nearest said first end of said bar, said first end protruding slightly above said arm, notch means on said first end of said bar, whereby upon positioning said guide arm means against an appropriate surface on said connector housing and engaging said notch means against one end of a terminal in said connector, said terminal can first be freed from its normally secured position in the connector and can then be pushed partially from the housing.

3,896,536
ORIENTER FOR WOOD STRANDS

Harold A. Keller, Clarkston, Wash., and Robert J. Saunders, Lewiston, Idaho, assignors to Potlatch Corporation, San Francisco, Calif.

Filed July 10, 1974, Ser. No. 486,987

Int. Cl. B23q *7/10*

U.S. Cl. 29—211 R **17 Claims**

1. A device for orienting elongated wood strands and for forming an oriented layer of said strands across the transverse width of a caul surface preparatory to production of a reconstituted wood product, said strands each presenting a nominal length greater than its width and being oriented in a prescribed direction along the transverse width of said caul, said device comprising:

a source of strands;

said caul surface being located below said source of strands;

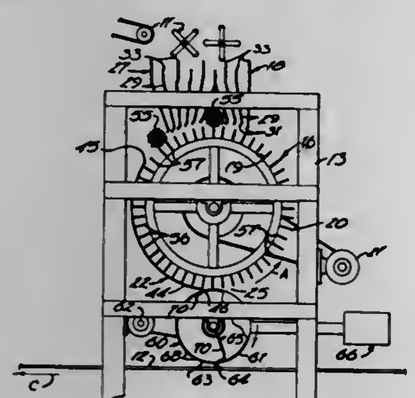
a cylindrical drum interposed between the source of strands and the caul surface and having an axial width substantially equal to the transverse caul surface width;

said cylindrical drum being rotatably mounted about a central drum axis parallel to the caul surface, said drum having an outer peripheral surface extending continuously across the width of the caul surface;

drive means operatively connected to said drum for imparting to the drum rotational motion in a prescribed angular direction about the central drum axis;

delivery means for receiving strands from the source and for directing a substantially-uniform array of strands onto the rotating drum peripheral surface at a loading station located between said drum and said delivery means at a first angular position with respect to the central drum axis;

strand orienting fins on said drum, said fins including a plurality of adjacent fin surfaces facing one another in pairs, said fin surfaces being located across the drum width and extending outwardly to outer fin edges, said fins being spaced apart at said peripheral surface by distances less than the nominal strand length, whereby strands directed onto the drum peripheral surface between said fins are oriented substantially parallel to one another by contact with the fin surfaces; and



means for confining the strands within a plurality of spaces on the drum, each space being bounded by the drum peripheral surface and a pair of said fin surfaces, as the strands are moved about said rotational path to a discharge station at a second angular position displaced about the central drum axis from said first angular position, and for releasing the strands to fall gravitationally onto the caul surface at said discharge station;

said caul surface and central drum axis being movable relative to one another to enable an elongated layer of oriented strands to be formed on the caul surface.

9. A device for orienting elongated wood strands each having a nominal length greater than its width and for forming a layer of directionally-oriented strands on a caul surface preparatory to production of a reconstituted wood product, comprising:

a source of strands;

a receiving caul surface having a prescribed transverse width located below said source of strands;

a first drum interposed between the source of strands and the caul surface having an axial width substantially equal to the width of the caul surface;

said first drum being rotatably mounted about a first central drum axis parallel to the caul surface, said first drum having an outer peripheral surface extending continuously across the width of said caul surface;

first drive means operatively connected to said first drum for imparting to the first drum rotational motion in a prescribed angular direction about the first central drum axis;

delivery means for receiving strands from the source and for directing a substantially uniform array of strands onto the rotating first drum peripheral surface at a loading station between said first drum and said delivery means at a first angular position with respect to said first central drum axis;

strand orienting fins on said first drum, said fins including a plurality of adjacent fin surfaces facing one another in pairs, said fin surfaces being located across the drum width and extending outwardly from the peripheral surface to outer fin edges, said fins being spaced apart at said peripheral surface by distances less than the nominal strand length, whereby strands directed onto the peripheral surface between the fins are oriented substantially parallel to one another by contact with the fin surfaces; first means for confining the strands within a plurality of spaces on the first drum, each space being bounded by the peripheral surface of the drum and a pair of said fins, as the strands are moved about the rotational path from said loading station to a discharge station at a second position displaced about the first central drum axis from said first angular position and for releasing said strands at the discharge station to fall gravitationally from between said fins;

a second drum located between said first drum and caul surface for rotation about a second central drum axis parallel to the first central drum axis, said second drum having a peripheral surface thereon coaxial with said second central drum axis and extending continuously across the width of the caul surface;

second drive means operatively connected to said second drum for imparting to said second drum rotational motion about the second central drum axis in a direction of rotation opposite to that of said first drum;

strand transfer means on said second drum for receiving strands at said discharge station from said first drum and for moving said strands therefrom about said second central axis to an angular displaced final discharge station adjacent said caul surface where said strands are released to fall gravitationally onto said caul surface;

second means for confining the strands on said transfer means as they are moved therewith from said discharge station to said final discharge station; and

said caul surface and said second central drum axis being movable relative to one another so an elongated layer of oriented strands may be formed on the caul surface.

3,896,537

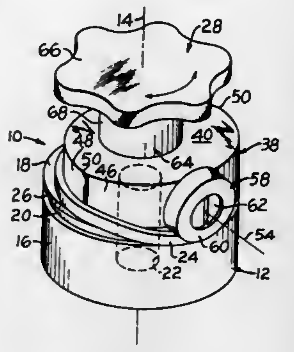
TOOL FOR INSTALLING RESILIENT RINGS ON CYLINDRICAL MEMBERS

William H. Freeman, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 26, 1973, Ser. No. 428,091

Int. Cl.^{2} B23P *19/02*

U.S. Cl. 29—235 **9 Claims**



9. A tool, for installing a resilient seal ring within a peripheral groove in a cylindrical member, comprising;

a tool body endwardly positionable against such cylindrical member;

a cam surface on said tool body engageable with a portion of the inner periphery of such seal ring for positioning said portion of said seal ring peripherally outwardly of said cylindrical member;

an arcuate relief surface on said tool body forming a continuation of said cam surface to contain an adjacent portion of said seal ring in a pre-cam engaging position endwardly against said cylindrical member in a substantially relaxed nonexpanded condition; and

a thrust member on said tool body in edgewardly peripherally overlapping relation to said cylindrical member for movement in an arcuate path upon rotation of said tool body in trailing relation to said cam surface for progressively depressably sliding said portion of said seal ring peripherally onto said cylindrical member and for guiding a trailing portion of said seal ring into said peripheral groove.

3,896,538

PULL TAB FOR CAM LOCK SLIDERS

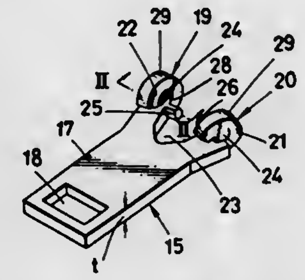
Hirokazu Watanabe, Toyama, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 426,666, Dec. 12, 1973. This application July 25, 1974, Ser. No. 491,809

Claims priority, application Japan, Dec. 14, 1972, 47-125428

Int. Cl. B21d *53/54*

U.S. Cl. 29—409 **1 Claim**



1. A method of making a pull tab for slide fastener sliders which comprises the steps of:

a. swaging a tab forming blank adjacent one end to produce a pair of laterally extending ear portions of reduced thickness;

b. erecting said ear portions so as to project perpendicularly beyond the upper surface of said blank;

c. stamping out said blank to form a polygonal opening adjacent said one end and between said ear portions, resulting in bifurcated tongue portions extending on opposite sides of said opening and now having said ear portions at their respective outer edges, and in inwardly directed opposed trunnions by which the pull tab is connected pivotally to a slider; and

d. bending each of said tongues over backward around said erected ear portion substantially into the form of a roll serving as a cam roll, with said ear portion being held in intimate contact with the inner peripheral surfaces of said tongue.

3,896,539

METHODS FOR ASSEMBLING WASHER MEMBERS WITH ROTARY FASTENER MEMBERS

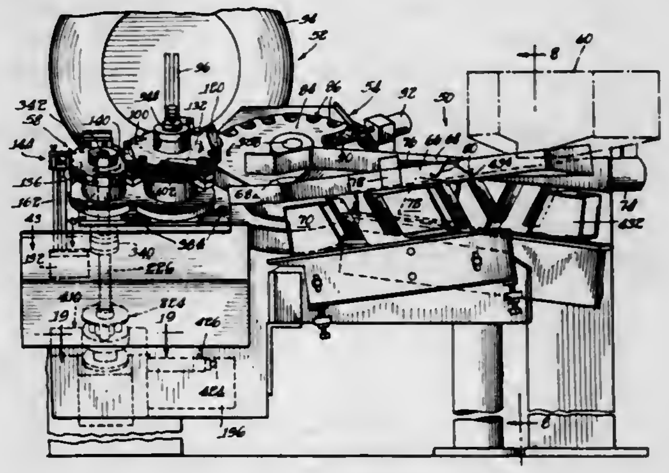
Henry Pomernacki, Northbrook, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Division of Ser. No. 88,942, Nov. 12, 1970, Pat. No. 3,750,206. This application May 25, 1973, Ser. No. 363,842

Int. Cl.^{2} B23P *19/08*

U.S. Cl. 29—430 **12 Claims**

1. The method of assembling rotary fastener members with washer members which comprises feeding a mass of washer members along a given path, cascading washer members from said path downwardly into association with a plurality of washer accommodating pockets moving along an inclined circular path, removing unaccommodated washer members from said circular path, feeding rotary fastener members having a washer receiving shank along a different path into juxtaposition and alignment with washer members from said circular path, telescopically assembling said members, swaging said rotary fastener members to secure washer members against dislodgement therefrom and recirculating unaccommodated washer members along a predetermined path to said first mentioned path.



3,896,540

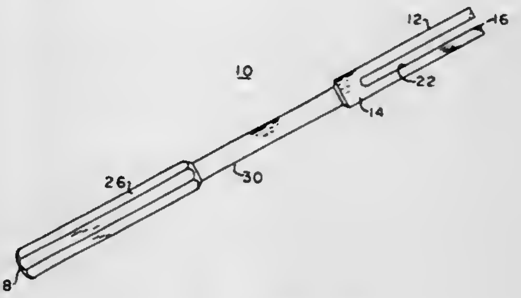
METHOD OF INSERTING SPRING-LOADED BALL AGAINST DETENT

Joseph R. Ellis, 4307 Patton Rd., Apt. 15, Huntsville, Ala. 35805

Filed Dec. 17, 1973, Ser. No. 425,632

Int. Cl. B23q *3/00*

U.S. Cl. 29—468 **1 Claim**



1. The process for installing a ball against the lower end of a spring in a vertical well, which combination of spring and ball are adapted to latch at selected positions a pivoted sector member having at least one cooperating socket, which comprises:

providing a tool including an elongated rod having at one end a curved, ovular cavity approximating the contour of said ball and an elongated slot extending from said one end;

placing the ball in said curved cavity and with the sector member turned out of engagement with and clear of said spring, positioning said tool so that said ball is held up against said spring;

while so holding said ball, rotating said sector member through said slot until said ball rests and is supported by a socket of said sector member and;

removing said tool after said sector engages and holds said ball.

3,896,541

METHOD AND APPARATUS FOR SUPPORTING SUBSTRATES DURING BONDING

Stanley Golinski, La Grange Park, Ill., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Sept. 16, 1974, Ser. No. 506,645

Int. Cl.^{2} B23K *19/00, 37/04;* H01L *21/603*

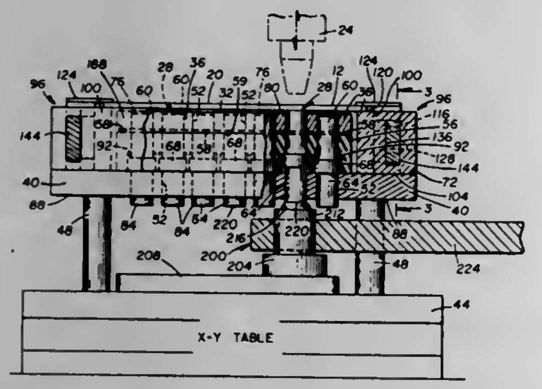
U.S. Cl. 228—180 **12 Claims**

1. In an apparatus for supporting a first article, which is moved to sequentially position selected bond sites on a first

surface thereof at a bonding location, during bonding of second articles to the bond sites at the bonding location:

a plurality of supports, each associated with an individual one of the bond sites and movable in directions toward and away from an area on a second surface of the first article opposite from both the first surface thereof and its associated bond site thereon, and

means, operative upon the positioning of a selected bond site at the bonding location, for moving the support associated with that bond site toward the second surface and into engagement with the area thereof opposite from the bond site to support the first article thereat.



9. In a method of supporting a first article, which is moved to sequentially position individual ones of a plurality of bond sites on a first surface thereof at a bonding location, during the bonding of second articles to the bond sites at the bonding location:

positioning individual ones of a plurality of supports in a spaced relationship with a second surface of the first article opposite from both the first surface and from an associated bond site thereon, and

moving the support associated with a bond site at the bonding location into engagement with the second surface of the first article opposite from the bond site at the bonding location while maintaining the remaining supports in the spaced relationship with the second surface.

3,896,542
METHOD OF SEALING ELECTRICAL COMPONENT ENVELOPES

John Robert Dale, Salfords, near Redhill, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 20, 1973, Ser. No. 352,872

Claims priority, application United Kingdom, May 3, 1972, 20688/72

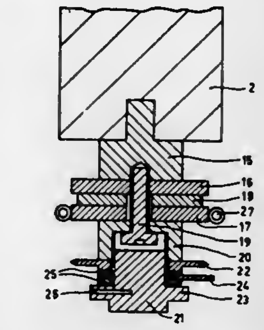
Int. Cl. B23k *35/12*

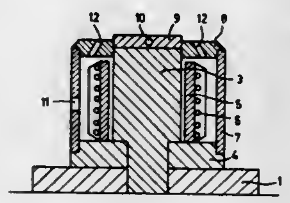
U.S. Cl. 228—234 **18 Claims**

1. A method of forming a bond between and sealing together facing substantially flat peripheral metal surfaces of a semiconductor enclosure via an intermediate layer of malleable metal material, said bond having a bond tensile strength of approximately 20 percent or more of the Ultimate Tensile Strength of said intermediate layer, comprising the steps of:

positioning a layer of malleable metal material between said facing substantially flat peripheral metal surfaces; and

pressing said facing metal surfaces together at a pressure normal to said surfaces of between 1 to 5 tons per square inch at an elevated temperature below the melting point of said malleable metal layer at said pressure and suitably close to but below the lowest temperature at which a liquid phase forms at said pressure between said malleable layer and one of said metal surfaces, said pressing being maintained at said elevated temperature for a period sufficient to achieve sealing between said facing metal surfaces and a bond having a bond tensile strength of approximately 20 percent or more of the Ultimate Tensile Strength of said malleable metal material, the maximum period required for such sealing and bonding being 30 seconds and the maximum required reduction in thickness of said malleable layer resulting therefrom being 5 percent.





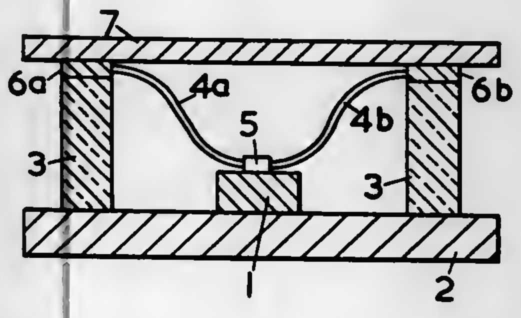
3,896,543
SEMICONDUCTOR DEVICE ENCAPSULATION PACKAGES AND ARRANGEMENTS AND METHODS OF FORMING THE SAME

David John Colliver, and Stephen Edwin Gibbs, both of Malvern, England, assignors to British Secretary of State for Defence, London, England

Division of Ser. No. 253,036, May 15, 1972, abandoned. This application July 23, 1973, Ser. No. 381,657

Int. Cl.² B01J *17/00*

U.S. Cl. 29—580 **5 Claims**



1. A method of encapsulating a high frequency semiconductor device comprising the steps of (*a*) depositing on a piece of conducting material a glass of a kind which is convertible by controlled heat treatment to form a glass-ceramic, (*b*) converting said glass into a glass-ceramic layer of uniform thickness by a controlled heat treatment thereof which comprises heating said glass to the nucleation temperature at which crystal nucleation thereof begins, maintaining said glass at said nucleation temperature for a period of time, heating said glass further to the maximum temperature at which crystallization thereof occurs, maintaining said glass at said maximum crystallization temperature for a period of time, and slowly cooling said glass to produce said glass-ceramic layer consisting of a two-phase medium of a uniformly distributed ceramic mass embedded within a glass binding medium, (*c*) depositing a layer of resist material on said glass-ceramic layer, (*d*) depositing a mask on said layer of resist material, (*e*) changing the solubility of parts of said layer of resist material by exposing said layer of resist material to a solubilitychanging radiation through said mask, (*f*) dissolving away the soluble regions of said resist, (*g*) chemically etching said layer of glass-ceramic through said dissolved away regions to form a plurality of glass-ceramic posts on said piece of conducting material, (*h*) mounting at least one semiconductor device on said conducting material at positions adjacent each of said posts, and (*i*) electrically connecting the parts of said semiconductor devices remote from said conducting material to said posts.

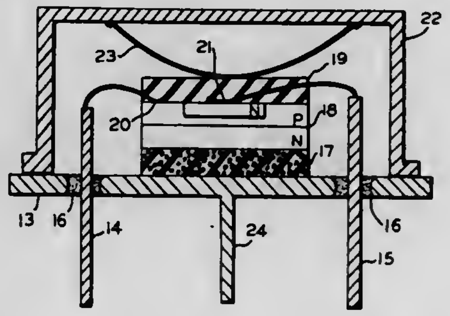
3,896,544
METHOD OF MAKING RESILIENT ELECTRICAL CONTACT ASSEMBLY FOR SEMICONDUCTOR DEVICES

Robert D. Fosnough, Logansport, Ind., assignor to Essex International, Inc., Fort Wayne, Ind.

Division of Ser. No. 323,991, Jan. 15, 1973, abandoned. This application Feb. 4, 1974, Ser. No. 439,366

Int. Cl.² B01J *17/00*

U.S. Cl. 29—588 **4 Claims**



2. A method of making a transistor assembly having a semiconductor chip with emitter, collector and base contact areas, a case member through which contact is made to the emitter and base contact areas of the semiconductor chip and to which said collector contact area is electrically and thermally connected, and a cap attached to said case member to enclose said semiconductor chip, comprising the steps of:

positioning a preformed resilient elastomeric compressible pad of substantially uniform thickness throughout in abutting unbonded contact with said case member and said collector contact area to electrically and thermally connect said case member with said collector contact area, said pad containing a plurality of electrically and thermally conductive particles dispersed therethrough, said particles engaging one another to establish electrically and thermally conductive paths through said pad to render it electrically and thermally conductive;

Compressing said pad to maintain electrical and thermal contact between said collector contact area and said case member;

making electrical connections to said emitter and base contact areas; and

attaching said cap member to said case member to enclose said semiconductor chip.

3,896,545
METHOD OF MAKING A MOLDED WAVEGUIDE FILTER WITH INTEGRAL TUNING POSTS

William L. MacTurk, Claremont, Calif., assignor to General Dynamics Corporation, Pomona, Calif.

Continuation-in-part of Ser. No. 406,058, Oct. 12, 1973, abandoned. This application Aug. 5, 1974, Ser. No. 494,693

Int. Cl.² H01P *11/00*

U.S. Cl. 29—600 **15 Claims**

1. A method of producing a waveguide filter having integral tuning posts comprising the steps of:

molding a substantially U-shaped waveguide filter body having integral tuning posts disposed therein, said integral tuning posts being shorter than the walls of said U-shaped waveguide filter body;

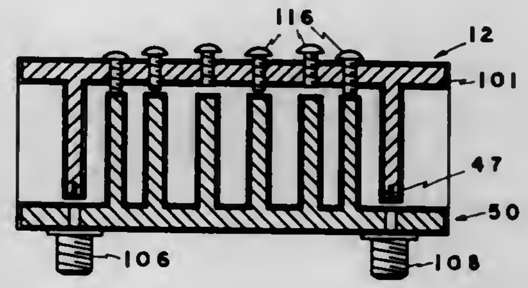
molding a substantially flat waveguide filter cap for the molded waveguide filter body to substantially close the open end of said substantially U-shaped waveguide filter body;

copper plating the waveguide filter body and the waveguide filter cap;

gold plating the copper-plated waveguide filter body and the copper-plated waveguide filter cap;

assembling the plated waveguide filter cap and the plated waveguide filter body to form the waveguide filter; and

providing adjustable metal tuning screws in said waveguide filter cap to extend over the integral tuning posts of said waveguide filter body.



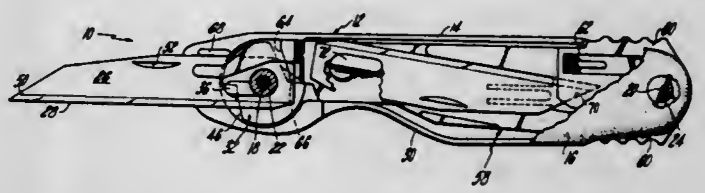
3,896,546
FOLDING KNIFE AND REPLACEABLE BLADE THEREFOR

William John Hildebrandt, West Simsbury, Conn., assignor to The Stanley Works, New Britain, Conn.

Filed Aug. 27, 1973, Ser. No. 391,604

Int. Cl. B26b *1/02, 5/00*

U.S. Cl. 30—157 **8 Claims**



1. In a folding knife having a handle, a pivot on the handle and a replaceable blade including a cutting edge, said blade being mounted on the pivot for pivotal movement through an arc of about 180° between a folded position with the cutting edge housed within the handle and an extended position with the cutting edge exposed, the combination comprising a blade carrier mounted on the pivot and having blade locking means thereon preventing relative rotation between the blade and the carrier whereby the blade and the carrier rotatably move as a unit between said folded and extended positions, said carrier being enclosed within the handle and movable between said positions in response to movement of said blade, said blade having mounting means cooperating with said pivot for pivotably mounting the blade, said mounting means including means asymmetric to said pivot and adapted to cooperate with said blade locking means to mount said blade for pivotal movement of said locking means and said blade as a unit and to prevent reversible mounting of the blade on the carrier.

3,896,547
PROSTHETIC ARTICLE AND METHOD FOR MANUFACTURE

Leonard Kulwiec, Santa Rosa, Calif., assignor to Sterndent Corporation, Mt. Vernon, N.Y.

Filed May 2, 1974, Ser. No. 466,167

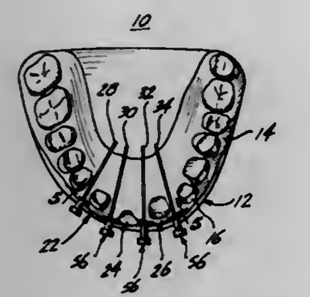
Int. Cl. A61c *13/00*

U.S. Cl. 32—10 A **13 Claims**

1. An article comprising a solid alloy comprising from about 12–20 percent chromium, from about 7–12 percent cobalt, from about 1.5–5 percent of at least one element selected from molybdenum, tungsten, columbium and tantalum, from about 5–9 percent of at least one element selected from aluminum and titanium, from about 0.05–0.2 percent carbon, from about 0.005–0.1 percent boron, from about 0.05–0.2 percent

of at least one element selected from zirconium and hafnium and the balance nickel which is shaped to conform with the shape of bony tissue of a living animal and for attachment to said bony tissue.

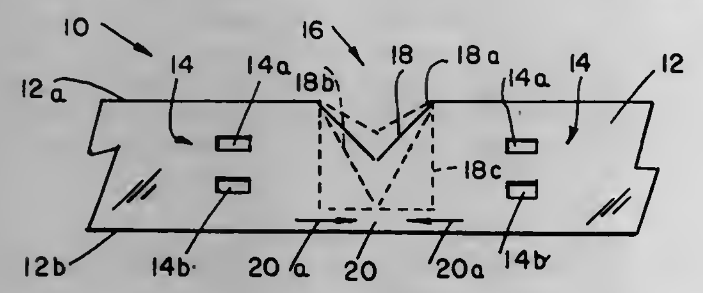
3,896,548
DENTAL MODEL CONSTRUCTION
Eric H. Zahn, 1622 Eastlake Ave. E., Seattle, Wash. 98109
Filed Feb. 4, 1974, Ser. No. 438,998
Int. Cl. A61c *13/00*
U.S. Cl. 32—11 **5 Claims**



1. In a dental model in which a reproduction of tooth and jaw structure of a patient is mounted on a base, and at least one portion of said reproduction is dowelled to and separable from the base and from laterally contiguous non-separable portions of said reproduction by reason of intervening parting lines, the improvement comprising:

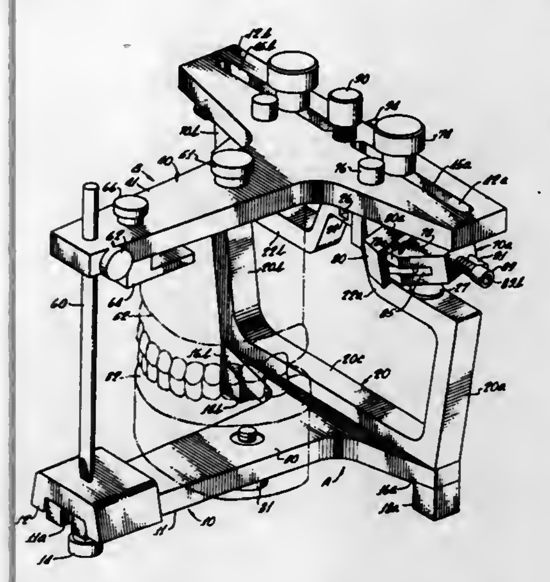
- means forming a pair of opposed recesses in a face of a separable portion and the juxtaposed face of a non-separable portion of said reproduction, said recesses defining an inward extending socket disposed in spanning relation to the intervening parting line; and
- a pin fitted to said socket and cooperable with said recesses to prevent separation of said separable portion from the base.

3,896,549
ORTHODONTIC ELASTIC BAND
Melvin Wallshein, 8645 Bay Pky., Brooklyn, N.Y. 11214
Filed Apr. 22, 1974, Ser. No. 462,658. The portion of the term of this patent subsequent to Apr. 16, 1991, has been disclaimed.
Int. Cl. A61c *7/00*
U.S. Cl. 32—14 A **26 Claims**



1. An orthodontic elastic band for use with orthodontic arch brackets mounted on teeth misaligned from their desired positions, the band comprising a plurality of spaced sections each provided with bracket engaging means for substantially non-rotatably engaging a respective bracket; and elastic connecting means coupling adjacent sections together, said elastic connecting means being located with respect to said adjacent sections and dimensioned for generating and applying generally rotational forces to said adjacent sections and their respective brackets when said connecting means are elastically tensioned.

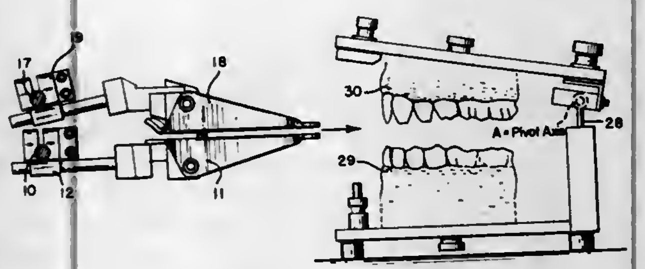
3,896,550
JAW MOVEMENT SIMULATOR
Robert L. Lee, 22937 Grand Terrace Rd., Colton, Calif. 92324
Filed Sept. 17, 1973, Ser. No. 397,946
Int. Cl. A61c *11/00*
U.S. Cl. 32—32 **27 Claims**



1. An instrument for simulating human jaw movements including:

- a mandibular frame;
- means on said frame to define an axis that simulates the hinge axis of a human mandible;
- a maxillary frame; and
- guide means on said maxillary frame cooperating with the mandibular frame to permit rotational movement of the mandibular frame on the maxillary frame about said axis and controlled and limited sliding movement of said axis while simulating right and left jaw movement and preventing direct lateral shifting of the axis means when the frames simulate protrusive movements, said guide means being formed to permit smooth transitional movement from a protrusive position into a right or left lateral position.

3,896,551
METHOD OF TRANSFERRING AXIS-ORBITAL PLANE INFORMATION FROM A PATIENT TO A DENTAL ARTICULATOR
Charles E. Stuart, P.O. Box 1298, Ventura, Calif. 93001
Filed Nov. 15, 1973, Ser. No. 416,018
Int. Cl.² A61c *11/00*
U.S. Cl. 32—32 **1 Claim**

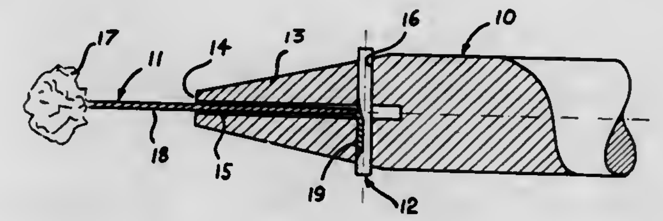


1. A method of transferring axis-orbital plane information with a dental mandibular movement recorder to a dental articulator wherein plaster casts of a patient's lower and upper teeth have been made and are mounted on the articulator with an axis orbital transferring device and centric relation recording, comprising the steps of:

- a. providing lower and upper reference plates coupled to the recorder in place of the usual clutches;
- b. lining the reference plates with impression taking material;

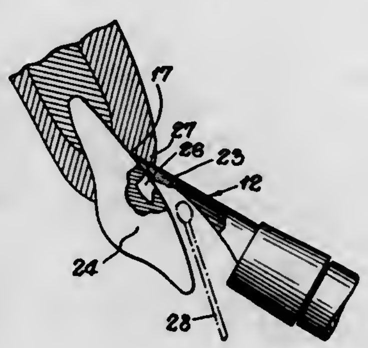
- c. inserting the reference plates in the patient's mouth holding his mandible in a centric position;
- d. adjusting the various recording stylii and recording surfaces of the recorder;
- e. holding the adjustment until the impression material has hardened;
- f. making the various recording traces by the recorder; and,
- g. transferring the hardened indents in the reference plates to the casts on the articulator so that the recorder is positioned on the articulator with correct axis-orbital plane relationship automatically established as a consequence of the casts fitting properly in the hardened impression material.

3,896,552
DENTAL INSTRUMENT
John R. Russell, Walnut Creek, Calif., assignor to E-Z Floss, Palm Springs, Calif.
Filed Mar. 18, 1974, Ser. No. 452,210
Int. Cl. A61c *5/12*
U.S. Cl. 32—34 **4 Claims**



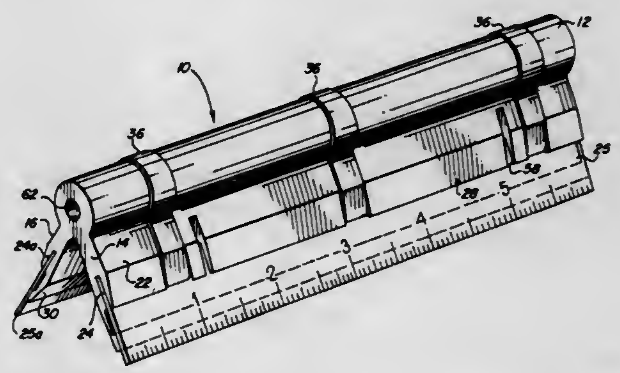
1. An instrument useful for contacting surfaces with soft material comprising an elongated handle having an axial hole in the end thereof and a transverse hole through the side thereof with the transverse hole intersecting the axial hole and being of larger diameter than the axial hole; a swab connected to a stiff, bendable stem with the stem being dimensioned to be insertable into the axial hole and to extend into it far enough to reach the transverse hole; and means extendable into the transverse hole to lock the swab against movement in a direction parallel to the long axis of the handle.

3,896,553
DENTAL INSTRUMENT AND CLAMP
Jacob Fagelman, 1022 E. 23rd St., Brooklyn, N.Y. 11210
Filed Oct. 3, 1973, Ser. No. 395,212
Int. Cl.² A61C *5/12*
U.S. Cl. 32—63 **5 Claims**



1. A dental instrument for carrying and applying a filling material to a cervical cavity of a tooth comprising, in combination, a flexible sheet of non-corrosive metal of arcuate shape in transverse section with an upper concave surface and having a single forward end portion both longitudinally and circumferentially resilient, said flexible sheet being of stainless steel and of a thickness of about 0.002 inch, means for folding said forward end portion of said flexible sheet into a predetermined arcuate form and a rear body portion of said flexible sheet into a coiled form, said forward end portion having a single rounded tip with an arcuate sloping side and an upper concave surface contoured to conform to the surface of a tooth, said folding means being a bushing through which said flexible sheet is inserted and formed thereby into a rounded cervical form at its tip portion and said coiled body portion thereof within said bushing, means for securing said flexible sheet within said bushing, said securing means being a mandrel disposed within said coiled body portion of said flexible sheet for pressing said body portion against an inner wall of said bushing, said forward end portion being adapted to carry and apply said filling material to said tooth cavity and held compressed against said filled tooth a predetermined time interval, and clamping means for holding said flexible sheet against said filled tooth, whereby said filling material upon setting is conformed to the tooth surface by said forward end portion.

3,896,554
HOLDER FOR RULES AND SIMILAR MEASURING INSTRUMENTS
Edwin M. Pacion, 2518 N. 22nd Ave., Phoenix, Ariz. 85009
Filed June 3, 1974, Ser. No. 475,776
Int. Cl.² G01B *3/04*; B43L *7/00*
U.S. Cl. 33—107 **6 Claims**



1. A holder for detachably securing a longitudinally elongate generally flat measuring rule having opposite sides, at least one of said sides carrying indicia along a longitudinal edge, said holder comprising:

- a. a generally elongate body member having a pair of legs laterally projecting from said body defining an acute angle therebetween, at least one of said legs defining a substantially flat mounting surface extending substantially the length of said body, and said surface having a lateral width substantially corresponding to the width of the rule to be secured;
- b. a flange projecting from said body and partially overlying said mounting surface and defining a rule receiving slot therewith, said slot being of a lateral depth to expose a major portion of the indicia carrying side of the rule when said rule is inserted in the slot; and
- c. spring retaining means adapted to engage said body and the exposed indicia carrying sides of the rule to exert a retaining force thereagainst whereby rule can be inserted in said slot and in contact with said retaining means and supported on said mounting surface against undesired flexure.

3,896,555
BUTTON SHANK DEPTH GUIDE
Barbara M. Lutz, 3615 Fleetwood Dr., San Bruno, Calif. 94066
Filed July 31, 1974, Ser. No. 493,448
Int. Cl.² G01B *3/30*
U.S. Cl. 33—168 R **3 Claims**

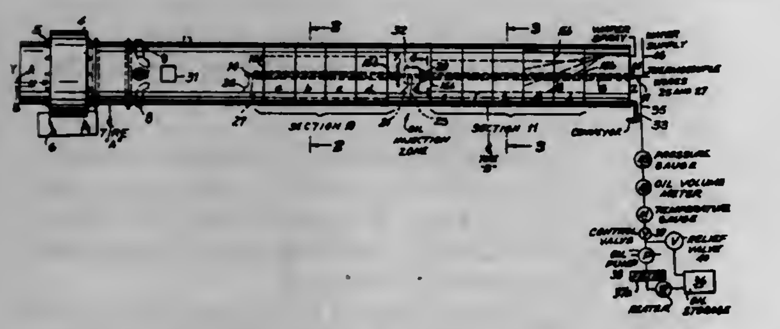
1. A button shank dept guide for guiding sewing of a button to cloth, said guide comprising an elongated tapered strip having two substantially planar opposite surfaces separated by a first thickness at one end of said strip and a second and greater thickness at the other end of said strip such that the

distance between said opposite surfaces continuously increases from said first thickness to said second thickness, said strip having an elongate edge between said opposing surfaces, said edge being interrupted by a plurality of spaced apart notches extending between said opposite surfaces and through said strip, said depth guide adapted to be placed on said cloth with a selected notch positioned between said cloth and said button such that the shank of said button is in said notch, wherein the position of said button with respect to said cloth is determined by the thickness of said selected notch.

3,896,556
COOLING AND DE-DUSTING OF HOT PARTICULATE MATERIAL PARTICULARLY CALCINED PETROLEUM COKE

Franklin H. Welter, Port Arthur, Tex., assignor to Great Lakes Carbon Corporation, New York, N.Y.

Filed June 28, 1973, Ser. No. 374,788
Int. Cl. F26b *7/00*
U.S. Cl. 34—9 **63 Claims**



1. A method of cooling a hot particulate material which comprises the following steps:

- a. Introducing the particulate material into an initial zone of a slightly inclined continuously rotating, cylindrical rotary cooler which is of substantial length and cross-sectional area;
- b. Spraying water onto the material is an entry portion of the initial zone of the rotary cooler, thereby substantially cooling said material;
- c. Further cooling said moistened particulate material by continuously introducing it into a following portion of the initial cooling zone in said cooler, said following portion of the initial cooling zone being of sufficient length that substantial additional cooling of the material is effected, the temperature of the particulate material in said following portion of the initial zone also being sufficiently high that its moisture content becomes substantially reduced;
- d. Further cooling said material and simultaneously also substantially reducing its fines and de-dusting it by passing it through a compartmentalized tumbling zone in said cooler wherein it is intimately coated with a de-dusting agent while it is simultaneously mechanically lifted and rotated, the mechanical lifting and rotation of the material in this tumbling zone being of a nature which provides a substantial amount of free-fall of the particles as they are being coated; and
- e. Finally discharging said coated and substantially cooled material from the rotary cooler.

3,896,557
PROCESS FOR DRYING AND STABILIZING COAL

Walter H. Seitzer, West Chester, Pa., and William S. Bradley, Richardson, Tex., assignors to Sun Oil Company (Delaware), Southland Center, Tex.

Filed May 9, 1974, Ser. No. 468,315
Int. Cl. F26b *3/08, 7/00*
U.S. Cl. 34—10 **5 Claims**

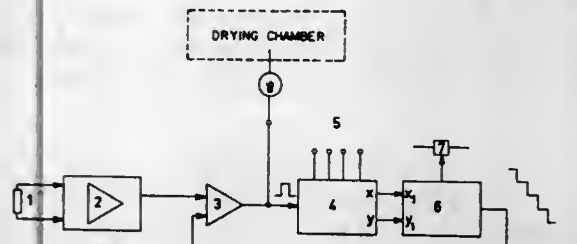
1. A process for drying lignitic and subbituminous coal containing from about 25 percent to about 40% by weight water which comprises heating said coal with a fluidizing combustion gas stream containing from about 7 percent to about 9% by volume of oxygen to reduce the moisture content to a level of from about 8 to about 12% whereby said coal is also stabilized against spontaneous combustion.

3,896,558
METHOD OF CONTROLLING DRYING OF TIMBER IN A CLOSED ROOM

Anders Lovgren, Skelleftea, Sweden, assignor to Alfred Lovgren Byggnads AB, Skelleftea, Sweden

Filed Nov. 5, 1973, Ser. No. 413,131
Claims priority, application Sweden, Nov. 8, 1972, 14458/72

Int. Cl. F26b *7/00*
U.S. Cl. 34—13.8 **6 Claims**



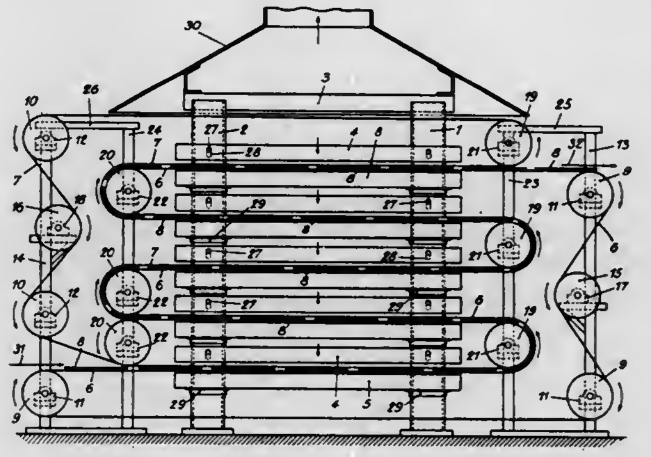
1. A method of controlling the drying of timber which comprises

- a. placing the timber in a closed drying chamber, sensing the humidity in the closed chamber and emitting an electronic signal in proportion to the thus sensed humidity,
- b. feeding the signal generated in step (a) to a comparator means having an upper and lower hysterisis level at its input and comparing the signal generated in step (a), which represents the actual humidity in the drying chamber, with an upwardly and downwardly adjustable nominal value for humidity which must not be greater than the value for the highest allowable humidity in the drying chamber,
- c. initiating ventilation of the drying chamber when the actual value of the humidity exceeds the nominal value valid at the moment in question plus the difference between said nominal value and the upper hysterisis level of said comparator means,
- d. discontinuing ventilation of the drying chamber when the actual humidity value in the drying chamber falls below the nominal value valid at the moment in question minus the difference between said nominal value and the lower hysterisis level of the comparator means,
- e. effecting further ventilation of the drying chamber when the actual value of the actual humidity in the drying chamber exceeds the nominal value at the moment in question plus the difference between said nominal value and the upper hysterisis level of said comparator means,
- f. repeating steps (d) and (e) any desired number of times,
- g. measuring the time elapsed between each cessation of ventilation and each subsequent initiation of ventilation,
- h. changing the aforesaid nominal value when the time measured in step (g) falls outside a certain time interval.

3,896,559
MACHINE FOR DRYING BY CONTACT VENEERS OBTAINED BY PEELING OR SLICING WOOD

Jean-Marie Michel Martin, 23, rue de Turin, 75008 Paris, France

Filed Mar. 26, 1974, Ser. No. 455,001
Claims priority, application France, Mar. 28, 1973, 73.11060; Feb. 28, 1974, 74.06808
Int. Cl. F26b *9/00*
U.S. Cl. 34—162 **6 Claims**



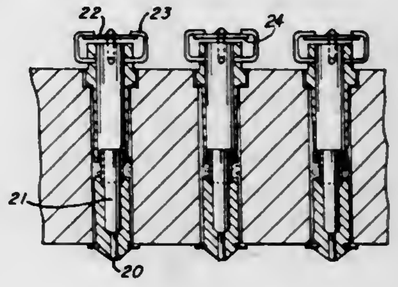
1. A machine for drying by contact veneers obtained from peeled or sliced wood, comprising in combination a frame, a plurality of pairs of heating plates supported on the frame, the plates of each said pair being vertically superposed and said pairs being disposed one above the other, the upper heating plate of each pair being vertically movable on and relative to the frame toward and away from the lower heating plate of each pair, a plurality of endless flexible conveyor belts, means positioning a pair of runs of two said belts between each said pair of heating plates to move between said plates veneers disposed between said runs when said upper plates are raised and to retain said veneers motionless between said plates when said upper plates are lowered into contact with the upper of said runs, and a hood above said heating plates for removing steam emitted by said veneers.

3,896,560
TWO-STAGE FLUIDIZED BED REACTOR WITH NOZZLE TUYERES

William A. Knepper, Franklin Twp., Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed June 18, 1973, Ser. No. 371,107
Int. Cl. F26b *17/10*
U.S. Cl. 34—57 R **4 Claims**

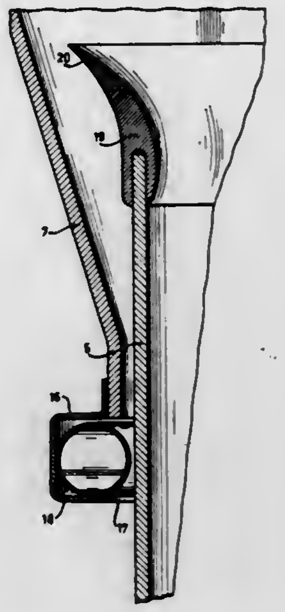
1. A tuyere for use in conveying hot reducing gas through the floor of a fluidized bed reaction chamber comprising a generally tubular member defining a lower restricted vertical orifice, a connecting segment having an internal diameter at least 2 times the orifice diameter and at least 20 times as long as the orifice diameter, a terminal opening having a cross sectional area at least the area of the connecting segment, and a horizontal cap perpendicular to said terminal opening which, together with the terminus of said connecting segment, defines a cylindrical orifice having a cylindrical area no less than that of said terminal opening, said cap protruding around said terminal opening and beyond to at least a point on the angle of repose of the material to be treated, taken from the terminal opening, whereby gas entering said lower restricted vertical orifice at a velocity of from 400 to 500 feet per second is reduced in velocity to from 50 to 100 feet per second and exits transversely through said cylindrical orifice.



3,896,561
VESSEL FOR AN AIRMIXER OR THE LIKE

Robert Jacques Roest, Aerdenhout, and Pieter van Ruitenburg, Uithoorn, both of Netherlands, assignors to Air Process AG, Altdorf, Switzerland

Filed Apr. 30, 1974, Ser. No. 465,628
Claims priority, application Netherlands, May 4, 1973, 7306293
Int. Cl.² F26B *17/00;* **F27B** *15/00*
U.S. Cl. 34—57 A **2 Claims**



1. A vessel for a device for treating a substance which is fluidized by means of a gas blown from below into the vessel, such as air; the vessel comprising a porous member disposed over the bottom, such as a perforated plate; a space in the vessel between said bottom and said porous member serving to supply the gas to be blown into the vessel; a circumferential wall situated above said porous member and consisting of two parts, the cross-section of the lower part being inferior to that of the upper part, means for moving up and down said lower part; a portion of the latter continuously overlapping the lower end of said upper part; and a holder for accommodating an expansible member, such as an inflatable tire, arranged at said lower end of the upper part, so that said expansible member consitutes in an expanded condition a gas-tight closure between portions of at least one of the two wall parts; as well as a flexible flap arranged on the upper edge of said lower wall part above said porous member, said flap consisting of an elastic material, whereas a lip-shaped end portion of said flap, turned away from said upper edge, is outwardly directed.

3,896,562

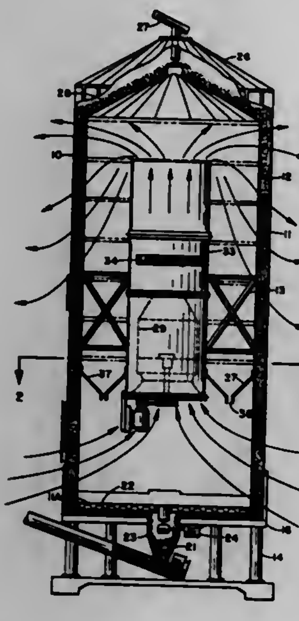
GRAIN CONDITIONING APPARATUS

Walter H. Zimmerman, Litchfield, Ill., assignor to Zimmerman Equipment Co. Inc., Litchfield, Ill.

Filed Feb. 16, 1972, Ser. No. 226,797

Int. Cl. F26b *17/12*

U.S. Cl. 34—174 **6 Claims**



1. Grain drying and conditioning apparatus comprising:
- a. a pair of spaced air pervious walls for confining a column of grain to be heated and dried,
- b. blower and heater means for causing heated air to be forced through a first zone of said column of grain in one direction to heat and extract moisture therefrom and simultaneously causing air for cooling said grain to be forced through a second zone of said grain column in a direction opposite to the flow of said heated air,
- c. means providing a by-pass passage between the discharge side and the intake side of said blower and heater means,
- d. said pervious walls being in the form of concentric circular cylinders of different diameters and spaced to confine a hollow column of grain,
- e. said blower and heater means being in the form of an assembly including a duct having an impervious wall and being mounted within said inner pervious wall for heating and impelling air from said first zone to said second zone,
- f. baffle means between the duct of said blower and heater assembly and said inner pervious wall having a by-pass passage to permit particulate matter discharged from the exhaust side of said blower to pass directly into the inlet side of said duct while permitting restricted air flow therethrough,
- g. said baffle means being in the form of a pair of conical sections in anti-nested relation with the outer edge of one of said sections being in engagement with said duct of said blower and heater assembly and the other of said sections having its outer edge in engagement with the inside of said inner pervious wall, the apices of said sections being adjacent each other but spaced to provide an annular by-pass passage for particulate matter and combustible debris between the exhaust side and the intake side of said blower and burner assembly.

3,896,563

AUDIO-VISUAL TEACHING MACHINE

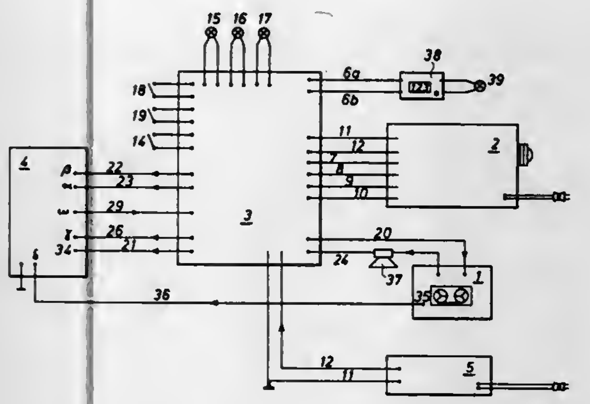
Niels Jensen, Lille Vaerlosevej 49, 3500 Vaerlose, Denmark

Filed Nov. 27, 1973, Ser. No. 419,301

Claims priority, application Denmark, Nov. 29, 1972, 2703/72

Int. Cl.² G09B *7/02*

U.S. Cl. 35—9 A **6 Claims**



1. An audio-visual teaching apparatus comprising a slide projector and a play-back device for a magnetic tape having recorded thereon instructions, questions, and silent periods, said play-back device having means for arresting the tape travel when a silent period has persisted for a predetermined duration considerably longer than the duration of intervals occurring during normal speech, said slide projector including a slide shifting mechanism for successively bringing a number of slides into a viewing position in said projector, each slide having a frame provided with code means to represent which of two possible answers to a given question, recorded on said magnetic tape, is correct, and the apparatus further comprising a sensing means to cooperate with the code means and determine which of the two possible answers to said question is correct, a response means to be actuated by a student to provide his answer to the question, and a control means operative only when the tape is stationary to compare the answer provided by the student with the correct answer as determined by the sensing means, provide an indication of whether or not the answer provided by the student is the same as the correct answer as determined by the sensing means, and start the tape travel one more.

3,896,564

TRUCK DRIVER TRAINING APPARATUS

James W. Dewey, Broken Arrow, and Alvin C. Eaton, Tulsa, both of Okla., assignors to Atkins & Merrill, Incorporated, Tulsa, Okla.

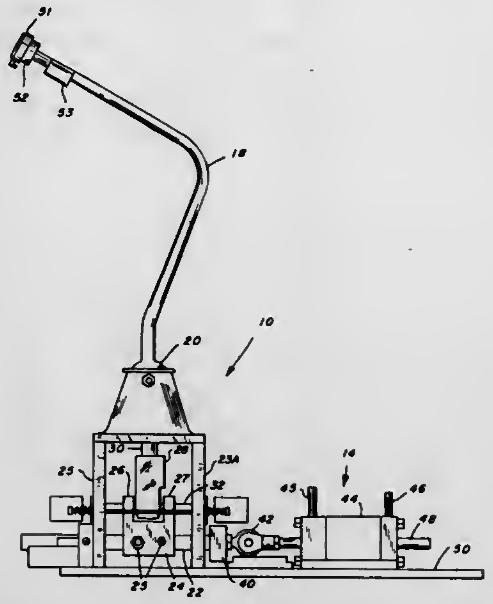
Filed Dec. 3, 1973, Ser. No. 421,434

Int. Cl. G09b *9/04*

U.S. Cl. 35—11 **13 Claims**

1. In a training apparatus for use in training operators of vehicles having manual transmissions, the improved simulator of a gear shift mechanism comprising;
- a. a frame;
- b. a first shaft adapted to rotate and to slide in two axially aligned bearings in said frame;
- c. a second shaft clamped to and parallel to said first shaft;
- d. at least one plate attached to said frame with at least two openings, into which said second shaft can be sequentially inserted by rotating and axially traversing said first shaft;
- e. force indicating means indicative of the axial force acting on said first shaft;

- f. actuator means acting coaxially on said force indicator and said first shaft; and



- g. servo means responsive to said force indicating means for axially traversing said first shaft.

3,896,565

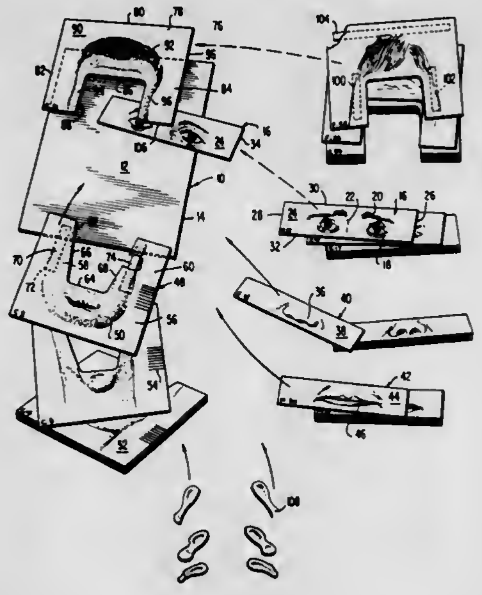
FACIAL IDENTIFICATION SYSTEM WITH RELEASABLY ENGAGED COMPONENTS

William T. Quinn, III, 681 Park Ave., Freehold, N.J. 07728

Filed Dec. 11, 1973, Ser. No. 423,697

Int. Cl. G09b *1/08*

U.S. Cl. 35—28 **1 Claim**



1. In an apparatus for the assembly of correlated front and side facial representations based upon recall, in either order, the apparatus being of the type wherein plural components are arranged in an order to permit selection of recalled characteristics and interchange of components, the improvement comprising: respective backing plates for frontal and side facial components, each plate being of a dimension sufficient to accommodate an assembled facial representation on one surface thereof; each plate being formed of magnetic material; a series of non-magnetic facial component bearing strips, including a plurality of eye strips, a plurality of nose strips and a plurality of mouth strips, selected combinations of said strips being alignable on the surface of each backing plate to form a mid-face representaion; a series of lower face bearing components selectively engageable on the frontal facial backing plate, said lower face bearing components having a main section bearing the jowl portion of the face and having side portions bearing facial side representations; said lower face bearing components having magnetic strips on the side facing the plate supporting the same, on those portions overlying said non-magnetic facial component bearing strips, and being adhered magnetically to the plate in partial overlapping relation to the facial component bearing strips; a series of upper face bearing components selectively engageable on said frontal facial plate, the upper face bearing components having an upper portion bearing a forehead and hair or scalp representation, and having depending side portions extendable over said side portions of the lower face bearing component; the upper face bearing components having magnetic strips on the side facing said plate, along said side portions, with the side portions being adhered magnetically to the plate in partially overlapping relation to the facial component bearing strips and the lower face bearing component side portions; and a series of ear representation members, said ear representation members being magnets and being adhered magnetically in selective position on the depending side portions of the upper face bearing component; whereby, said magnetic strips bearing said non-magnetic facial component bearing strips maintain said strips in proper alignment and in position on said underlying plate, and said ear representation members being held magnetically in position on said depending side portions of the upper face bearing components by magnetic attraction extending therethrough between said magnet ear representation members and said underlying magnetic plate, said side facial plate being likewise formed of magnetic material, and said apparatus further including a series of substantially L-shaped head and neck bearing forms, the head representation being located substantially on a first portion of the form and the neck on a second, perpendicular portion thereof; the forms being magnetic and being magnetically adhered to the side facial plate selectively, a series of eye representation bearing strips for said side facial backing plate, each having an upper side edge adapted for abutment against the first portion of the form, a slant forward edge, and a lower edge; a series of mid-face and nose bearing forms for said side facial plate, each having a first upper edge abutted against the lower edge of the eye representation strip, a slant mid-edge abutted against the slant forward edge of the eye representation strip, and a lower edge; a series of mouth representation bearing strips for said side facial plate with the upper edges of said mouth representation bearing strips engageable with the lower edges of the mid-face and nose forms, and a lower edge; and a series of lower jowl and neck bearing blocks for said side facial plate, said blocks each having an upper edge adapted for abutment against a lower edge of the mouth representation bearing strips; at least the lower jaw and neck bearing blocks being magnetically adhered to the side facial plate; and a series of ear members selectively magnetically adhered to the plate in a selected position relative to the representation and wherein corresponding frontal and side; chin, lip, eye, ear, mouth and upper and lower face bearing components, respectively, having correlated indicia thereon to permit the instantaneous composition of a side facial representation after completion of a frontal facial representation and vice versa.

3,896,566

SUBMARINE DIGGING WHEEL WHICH DISCHARGES MATERIAL IN AN AIR CHAMBER

Cornelis Van der Gaag, Delft, Netherlands, assignor to N.V. Industrieele Handelscombinatie Holland, Rotterdam, Netherlands

Filed Feb. 21, 1974, Ser. No. 444,387

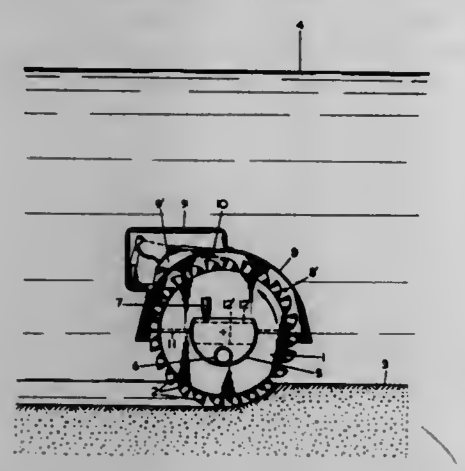
Claims priority, application Netherlands, Feb. 21, 1973, 7302421

Int. Cl. E02f *3/92*

U.S. Cl. 37—56 **3 Claims**

1. A submarine dredge comprising a bucket wheel rotatable about a horizontal axis, a hood surmounting the bucket wheel, means to inject compressed air beneath the hood to drive the water level beneath the hood below the top of the bucket wheel so that the buckets discharge submarine soil into open

air beneath the hood, a hopper within the wheel to catch submarine soil that falls from the buckets through the air into the hopper, and a suction pipe to withdraw submarine soil and water from the hopper.



3,896,567
DREDGING BUCKET HAVING A REINFORCED EDGE

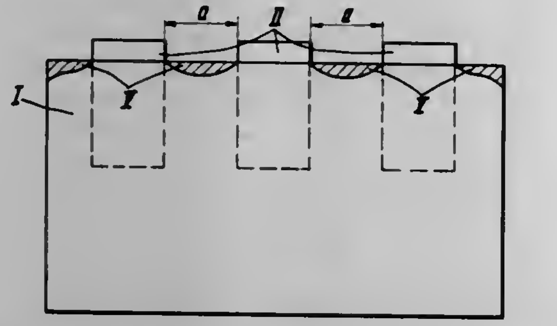
Bernd Kos Leoben, and Alois Kubasa, Mitterdorf, both of Austria, assignors to Gebr. Boehler & Co. AG, Vienna, Austria

Filed Nov. 8, 1973, Ser. No. 414,092

Claims priority, application Austria, Nov. 24, 1972, 10006/72

Int. Cl. E02f *9/28;* **B23p** *3/00*

U.S. Cl. 37—141 R **2 Claims**



1. As an improved article of manufacture, a reinforced dredging bucket of hard manganese steel, the bucket having an edge formed from a plurality of successively alternating, integrally cast first and second regions, each first region consisting by weight of 0.5 – 2 % carbon, 6 – 30 % manganese, up to 3 % of at least one element selected from the group consisting of silicon, chromium, molybdenum, and vanadium, the remainder being iron and steel impurities, each second region consisting by weight of 1.2 – 4 % carbon, 15 – 30 % chromium, 0.2 to 10 % manganese, 0.1 – 5 % silicon, up to 10 % nickel, up to 10 % of at least one carbide-forming or nitride-forming element selected from the group consisting of tungsten, molybdenum, vanadium, tantalum, niobium, and titanium, the remainder being iron and steel impurities.

3,896,568
SCAPER BLADE HAVING ADJUSTABLE SECTION

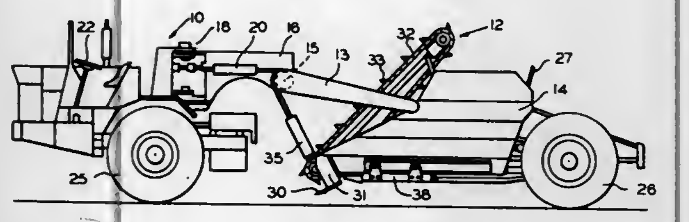
James E. Hancock, Lubbock, Tex., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Feb. 8, 1974, Ser. No. 440,885

Int. Cl. E02f *9/28*

U.S. Cl. 37—141 R **4 Claims**

2. In a mobile scraper having a dirt collecting bowl defined by side walls, a floor and end wall, being open at the front, a scraper blade fixed between the side walls at the lower front portion thereof and inclining forwardly to a cutting edge adapted to be lowered to the ground for digging, said scraper blade comprising a blade frame secured between the side walls having a forwardly inclined upper surface, a plurality of blade sections mounted on the upper surface of the blade frame in side-by-side relationship defining a substantially continuous upper surface with the forward ends thereof defining a substantially continuous cutting edge, one of said blade sections being movable between a retracted position and an extended position for increasing the local penetrating power of the cutting edge, the improvement comprising a shiftable blade platform supporting said movable blade section on the blade frame including, spaced, longitudinally extending runners slidable on the upper surface of the blade frame, transversely extending guide ribs attached to the blade frame and extending laterally between the runners defining parallel guide paths, and an actuator attached to the blade frame operable for extending or retracting said blade section.



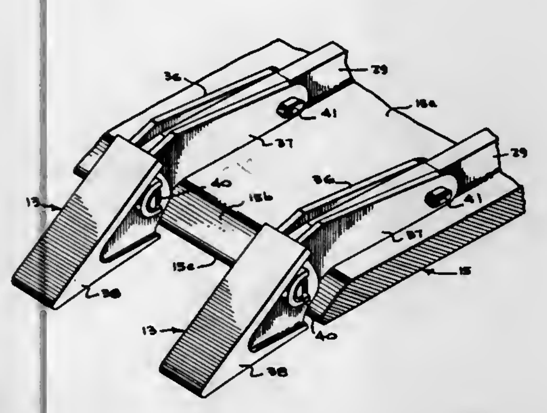
3,896,569
EARTH WORKING IMPLEMENT AND TOOTH ASSEMBLY THEREFOR

George J. Thompson, and Thomas T. Dalrymple, both of Marion, Ohio, assignors to Marion Power Shovel Company, Inc., Marion, Ohio

Filed Apr. 9, 1974, Ser. No. 459,401

Int. Cl. E02f *9/28, 3/40*

U.S. Cl. 37—141 T **39 Claims**



1. An earth working implement comprising a body having a wall provided with a forwardly and transversely disposed lip portion, means for attaching said body to a machine, the lip portion of said bottom wall having a plurality of transversely spaced ribs, each of said ribs having forwardly and rearwardly disposed pin receiving openings, a pair of base plates mounted on the sides of each of said ribs, each of said base plates having pin receiving openings registered with the openings in an adjoining rib, a plurality of tooth points each having a rearwardly opening socket receiving the forward end of a set of rib and adjoining base plates for mounting the tooth point thereon, each of said tooth points having side walls with openings registered with a set of openings in the adjoining set of base plates and rib on which said tooth point is mounted, and pins disposed in said registered openings for securing said base plates on said ribs and said tooth points on adjoining rib and base plate sets.

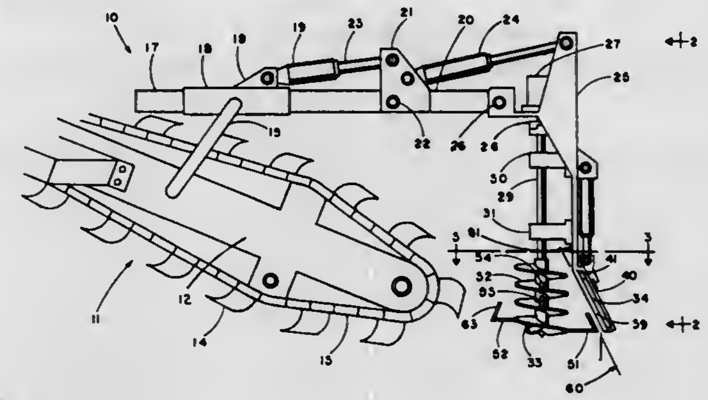
3,896,570
TRENCHING MACHINE ATTACHMENT FOR WIDENING TRENCH BOTTOM WITH DIRT REMOVING AUGER

Russell L. McMurray, R.R. No. 2, Du Quoin, Ill. 62832

Filed Sept. 28, 1973, Ser. No. 401,634

Int. Cl. E02f *5/06*

U.S. Cl. 37—87 **3 Claims**



1. In an attachment to a trenching machine for widening the bottom of a trench wherein the trenching machine includes a driven endless chain with plates mounted thereon to dig said trench and carry dirt out of said trench, said attachment includes a frame mounted to said machine and having an axle with a plurality of blades mounted thereon, said attachment includes first means on said frame and connected to said blades operable to rotate said blades against said trench and widen the bottom of said trench wherein the improvement comprises:
- second means mounted to said frame and positioned adjacent said blades with said blades positioned between said trenching machine and said second means which is operable to engage opposite sides of said trench subsequent to widening and to prevent loose dirt from passing by said second means; and,
- an auger having said blades mounted thereon with said auger mounted on said axle and rotatable simultaneously with said blades;
- said blades each have a cutting edge positioned a fixed radial distance from said axle;
- said radial distance of at least some of said blades is different than said radial distance for at least some of the remaining blades;
- at least some of said cutting edges are located at different axial positions along said axle;
- said second means includes a pair of walls mounted to said frame and means mounted to said frame and connected to said pair of walls operable to retract and extend said pair of walls against sidewalls of said trench; and,
- said pair of walls are positioned at an acute angle with respect to vertical, said cutting edges are each positioned at an acute angle identical to said acute angle of said pair of walls.

3,896,571
MULTI-WHEELED EXCAVATOR AND CONVEYING SYSTEM

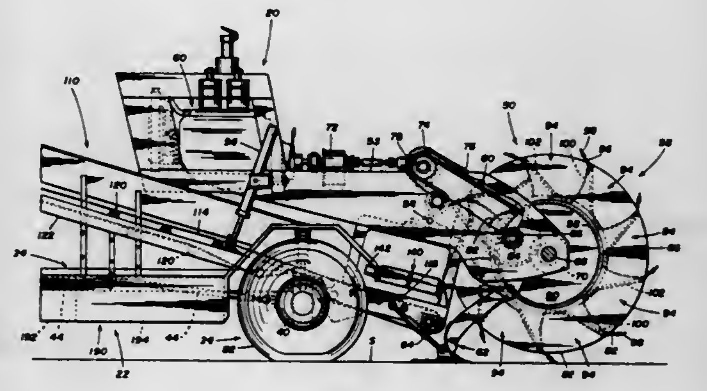
Charles R. Satterwhite, 10031 Venitian Way, Dallas, Tex. 75229

Continuation of Ser. No. 238,089, March 27, 1972, abandoned. This application Jan. 21, 1974, Ser. No. 435,296

Int. Cl. E02f *3/18*

U.S. Cl. 37—190 **44 Claims**

1. An excavating and loading system comprising:
- an excavating wheel assembly comprising axle means and at least two rigid excavating wheels rotatably mounted cantilever on and supported on the axle means, said excavating wheel assembly having a width at least equal to the widest portion of the remainder of the system;
- each of said excavating wheels including a plurality of digging buckets located immediately adjacent one another to define the entire circumference of the excavating wheel, each bucket having a cutting edge which extends to a stationary wall, and a wall mounted for pivotal movement from a material receiving position to a material dumping position;
- supporting and housing means extending between the excavating wheels and connected to the axle means for supporting the excavating wheel assembly;
- each of said digging buckets extending continuously between a side wall thereof located immediately adjacent to the supporting means and a side wall thereof defining one end of the excavating wheel assembly;
- drive means extending through the supporting and housing means for rotating the excavating wheels so that the digging buckets follow a circular path;
- means located within the margins of the excavating wheel assembly and responsive to rotation of the excavating wheels for positively pivoting the movable wall of each digging bucket of the excavating wheels to the material receiving position when the bucket is in the lower and forward portion of the path and for positively pivoting the movable wall to the material dumping position when the bucket is in the upper and rearward portion of the path; a vehicle for supporting and manipulating the excavating wheel supporting means and thereby positioning the excavating wheel assembly in engagement with material to be excavated; and
- conveyor means mounted on the vehicle entirely behind the excavating wheel assembly for movement around a course including a relatively low portion positioned to receive material from the digging buckets of the excavating wheels upon the positioning of the movable walls of the buckets in the material dumping position and a relatively high material delivery portion located rearwardly on the vehicle from the low portion.



3,896,572
FLASH/FLOODED BOILER STEAM IRON

Ronald E. Jeffress, Alta Loma, Calif., assignor to General Electric Company, Bridgeport, Conn.

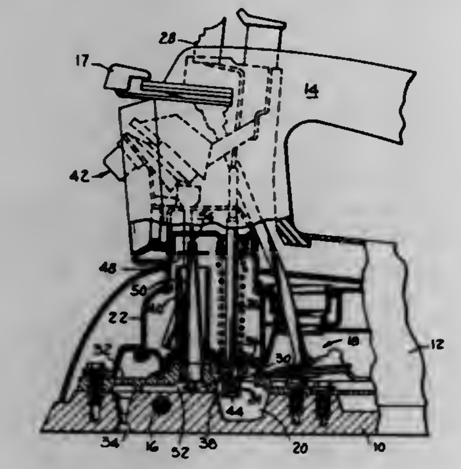
Continuation-in-part of Ser. No. 358,052, May 7, 1973, abandoned. This application May 20, 1974, Ser. No. 471,697

Int. Cl. D06f *75/06*

U.S. Cl. 38—77.83 **17 Claims**

1. In a steam iron having a water tank and a steam generating soleplate having a boiler therein, the improvement comprising;
- metering means intermediate the water tank and the boiler fixedly sized for selectively preventing flow of water therebetween and for selectively permitting flow of water at a plurality of flow rates, said plurality of flow rates including a first rate selected to maintain the boiler in a flooded condition at least during iron operation at a first range of ironing temperatures and a second rate selected to maintain the boiler in a flash steam condition at least

during iron operation at a second range of operating temperatures and distribution means communicating with the boiler for supplying steam generated therein to a point of use.

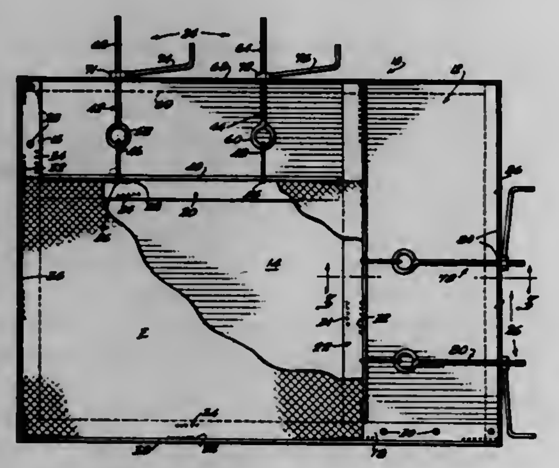


3,896,573
FABRIC STRETCHER DEVICE

Mabel K. Gibby, 4501 Granada Blvd., Coral Gables, Fla. 33146

Filed Sept. 20, 1974, Ser. No. 507,719
Int. Cl.² D06C *3/08*

U.S. Cl. 38—102.5 **9 Claims**



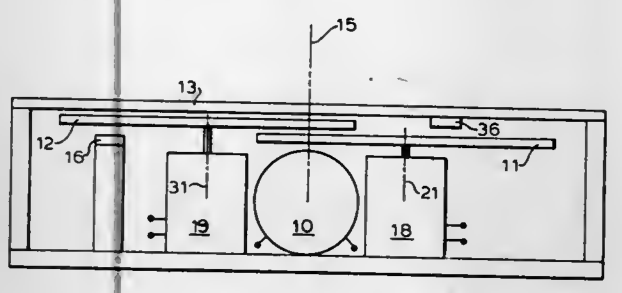
1. An adjustable stretcher device for stretching a generally rectangular piece of fabric comprising;
   - A. a generally rectangular base member providing,
     - 1. a planar top surface;
   - B. a pair of side rails fixed in an angular relation relative to a first pair of adjoining side edges of said planar top surface and including,
     - 1. at least one row of relatively closely spaced barbs along the lengths of both of said pair to engage through and hold corresponding, adjoining edge portions of the piece of fabric to be stretched;
   - C. a third rail similar to said pair, to similarly engage and hold a third edge portion of the piece of fabric;
   - D. a first adjustment and tensioning means connecting between a third edge of said base member and said third rail to adjust said third rail relative to the first of said pair to conform with a first dimension of the fabric piece and to apply tension forces along the length of said first dimension;
   - E. a fourth rail, similar to said pair and third rail, to similarly engage and hold the fourth edge portion of the piece of fabric;
   - F. a second adjustment and tensioning means connecting between the fourth edge of said base member and said fourth rail to adjust said fourth rail relative to the second of said pair to conform with a second dimension of the fabric piece and to apply tension forces along the length of said second dimension;
   - G. adjustable extension means connecting between said first and second adjustment and tensioning means and the respective third and fourth rails.

3,896,574
LIGHT SPOT PATTERN FORMATION AND COLOR CONTROL DISPLAY APPARATUS

Joseph T. McNaney, 8548 Boulder Dr., La Mesa, Calif. 92041

Filed Jan. 3, 1974, Ser. No. 430,478
Int. Cl. G09f *13/36*

U.S. Cl. 40—34 **1 Claim**

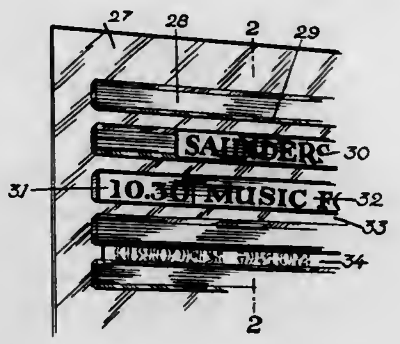


1. Light spot pattern formation and color control apparatus comprising:
   - a. a light source;
   - b. first, second and third light passage control members;
   - c. axle means supporting said first and second members, respectively, for rotation thereof one with respect to the other and each with respect to said third member and to said light source, said first and second members being intermediate said third member and said light source;
   - d. indexing means for indexing said first and second members, respectively, in any one of a plurality of index positions with respect to said third member upon rotation thereof;
   - e. said first member having a plurality of light attenuating means each controlling the color of light upon passing therethrough from said light source;
   - f. said second member having a plurality of predetermined positioned window means therethrough each controlling the pattern of light upon passing therethrough from said light source;
   - g. said third member presenting a display surface and having window means therethrough to said surface;
   - h. said indexing means effecting an optical alignment of an individual one of said light attenuating means of said first member, an individual one of said window means of said second member, and said window means of said third member, whereby the different hue and pattern of light spot formations presented at the display surface of said third member is dependent upon the indexing of said first and second members with respect to said third member, the indexing means of said first member including predetermined arrangement of magnetic material means supported thereby and reference magnetic element means fixedly supported in relation thereto for magnetically influencing the stoppage of said first member and thereupon effecting the optical alignment of one of said attenuating means with the window means of said third member, and the indexing means of said second member including predetermined arrangement of magnetic material means supported thereby and reference magnetic element means fixedly supported in relation thereto for magnetically influencing the stoppage of said second member and thereupon effecting the optical alignment of one of said window means thereof with the window means of said third member.

3,896,575
MECHANICAL MEANS TO FACILITATE CHANGEABLE RECORDS

Sebet Silverman, 31 Mohawk Trl., Westfield, N.J. 07090
Continuation of Ser. No. 156,420, June 24, 1971, abandoned.
This application Sept. 10, 1973, Ser. No. 390,046
Int. Cl.² G09F *11/30*

U.S. Cl. 40—64 R **3 Claims**



1. A display device for showing written information in a changeable manner to be viewed for reading or copying, said device comprising:
   - a. a single plastic transparent flexible sheet having a planar surface lying in a first plane,
   - b. a plurality of spaced elongated rectangular recesses formed along said sheet and from one side thereof, each extending substantially across the sheet,
   - c. the plurality of elongated rectangular recesses are formed substantially parallel to each other and have a trapezoidal cross sections with enlarged flat bottom walls and inclined side walls sloping towards one another in a direction away from said bottom wall,
   - d. said bottom walls of the elongated rectangular recesses normally lie in a second plane,
   - e. elongated rectangular display strips, each being removably insertable into one of said elongated rectangular recesses, respectively, to matingly cooperate therein so as to lie substantially in flat engagement upon the bottom wall thereof by means of the coaction of the opposed side walls, and
   - f. each of the display strips is viewable through one of the respective bottom walls in which it is insertable whereby said bottom wall forms a protective transparent layer over any written information contained on the said display strips.

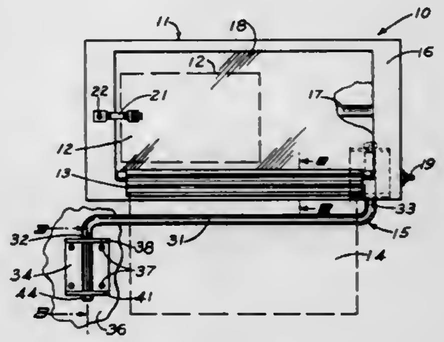
3,896,576
DENTAL X-RAY FILM AND CHART VIEWING APPARATUS

Hugo M. Wolf, 1451 N.E. Glacier Ln., Minneapolis, Minn. 55421 and Leo H. Wolf, 2000 Idaho Ave. So., Minneapolis, Minn. 55426

Filed Aug. 1, 1973, Ser. No. 384,466
Int. Cl.² G09F *13/10*

U.S. Cl. 40—106.1 **11 Claims**

1. An apparatus for displaying information located on transparent media and a sheet member comprising: viewer means providing a light background for viewing information on transparent media, said viewer means having a generally rectangular frame having a lower section, a light transparent sheet member having an outside surface located on a front side of the frame, light source means within the frame providing a light background behind the sheet member, means for holding the transparent media adjacent the outside front surface of the sheet member whereby the information on said media can be visually inspected, holder means attached to the front of the lower portion of the frame for holding a sheet member in substantially co-planar relationship with said transparent media and in position for concurrent visual inspection of the information on the transparent media and sheet member, said holder means comprising a member having a back member extending horizontally along and attached to the lower portion of the viewer means and a front member connected to the back member, said front member inclined downwardly toward the back member, and roller means located between the front member and the back member to hold the sheet member, and support means movably mounting the viewer means on a stationary member, said support means comprising an elongated generally horizontal arm, said arm having a first downwardly directed end at one end thereof and a second upwardly directed end at the other end thereof, first bracket means pivotally mounting said first end on a support for movement about a first generally upright axis, and second bracket means secured to one end of said frame and pivotally accommodating said second upright end of the arm for rotating the viewing means about a second generally upright axis, said second upright axis being generally parallel to said first upright axis.

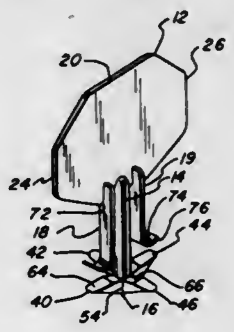


3,896,577
ONE PIECE ANIMAL IDENTIFICATION TAG

Norman J. Hayes, care of Standing Star Simmental Ranch, North of Cody, Park County, P.O. Box 618, Cody, Wyo. 82414

Filed Apr. 29, 1974, Ser. No. 465,285
Int. Cl.² G09F *3/00*

U.S. Cl. 40—301 **21 Claims**



1. A one piece identification tag member of molded resilient plastic material for mounting on the top of the ear of an animal in a vertical attitude comprising:
   - an upper identification portion adapted to be mounted in a vertical attitude above the ear of an animal,
   - a shaft portion downwardly depending from said identification portion and adapted to extend through the ear,
   - a retaining head portion on the lower end of said shaft portion having first upwardly facing inner ear abutting means for engaging an inner surface of the ear and supporting said head portion thereagainst,
   - resilient supporting leg means downwardly depending from said identification portion for supporting said identification portion and said shaft portion relative to the ear, and second downwardly facing outer ear abutting surface means on the lower end of said leg means for engaging an outer surface of the ear to hold the tag member in the vertical attitude while permitting temporary resilient deflected displacement of said identification portion relative to said shaft portion.

3,896,578
SELF-BALLASTING DECOY WATERFOWL

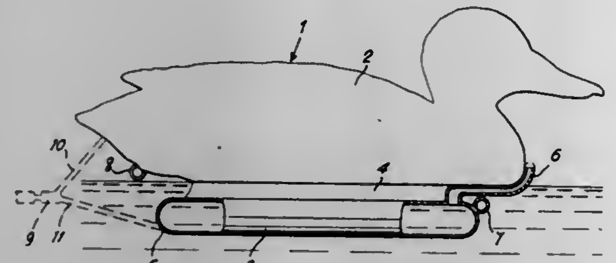
Augusto Franceschini, Via Argine Vecchio Volano, Rero (Province of Ferrara), 44030 Italy

Filed Apr. 22, 1974, Ser. No. 462,633

Claims priority, application Italy, May 3, 1973, 12602/73

Int. Cl. A01m *31/06*

U.S. Cl. 43—3 **3 Claims**



1. A self-ballasting floating decoy waterfowl comprising:
a. a floating body in the form of a closed hollow body representing a waterfowl, having an underside intended to directly rest on the water and a water line located above said underside whenever the decoy is used;
b. a connecting rib depending from the underside longitudinally along said floating body; and
c. a ballast tank attached to said connecting rib and spaced at some distance from the underside of said floating body below the water line thereof, said tank being in the form of a longitudinally elongated hollow tubular body closed at each end and being provided in correspondence to the bottom of said tank at one of said ends with an opening for the passage of the water, and, in correspondence to the top at the opposite end with an upwardly directed air duct, terminating with its free end above the water line of the floating body for the escape of air from said tank.

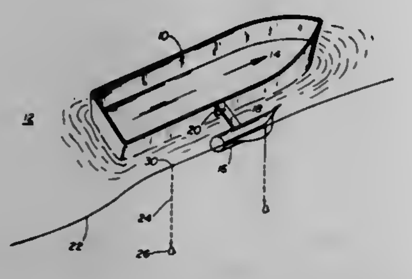
3,896,579
TROTLINE LIFTER

James K. Benne, 1625 E. 54th Pl., Tulsa, Okla. 74105

Filed Dec. 9, 1974, Ser. No. 530,759

Int. Cl.² A01K *79/00*

U.S. Cl. 43—27.4 **4 Claims**



1. In combination with a trotline of the type having a main line which is normally submerged beneath the surface of a body of water, and which is normally fixedly located at its ends, and having a plurality of spaced leaders attached to said main line, said leaders having hooks attached to the free ends thereof; a trotline lifting device wherein the improvement comprises an elongated guide member having a front end and a rear end, an outwardly flared lip spiraling upwardly and rearwardly from said front end to said rear end, means for attaching said guide member to the side of a fishing vessel, said guide member engaging said main line of said trotline therein and said lip engaging said leaders of said trotline thereon, thereby lifting said leaders so that said leaders may be inspected and serviced, said leaders progressing along said lip as said fishing vessel advances along said main line and said leaders disengaging from said guide member as said leaders pass beyond the rear end thereof.

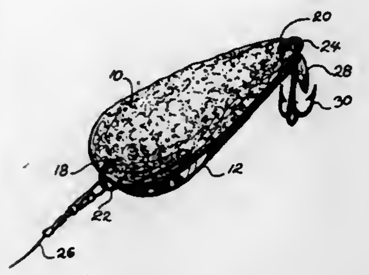
3,896,580
ARTIFICIAL FISHING LURE

William O. Williams, Jr., 1309 Lynhurst Dr., Gastonia, N.C. 28052

Filed Feb. 13, 1974, Ser. No. 442,128

Int. Cl. A01k *85/00*

U.S. Cl. 43—42.31 **10 Claims**



1. An artificial fishing lure associated with hook means for attracting and catching fish, said fishing lure including a pair of extending side pieces, each said side piece being of identical shape and simulating in appearance the side of a fish, said side pieces being arranged in superimposed relation to one another with one extending end of each side piece being joined together by a first connecting means and the other extending end of each side piece being joined together by a second connecting means, said first and second connecting means constituting the sole connection between said side pieces and being arranged to provide a loose connection at said ends of said side pieces that maintain said side pieces in generally parallel relation while permitting limited relative shifting thereof.

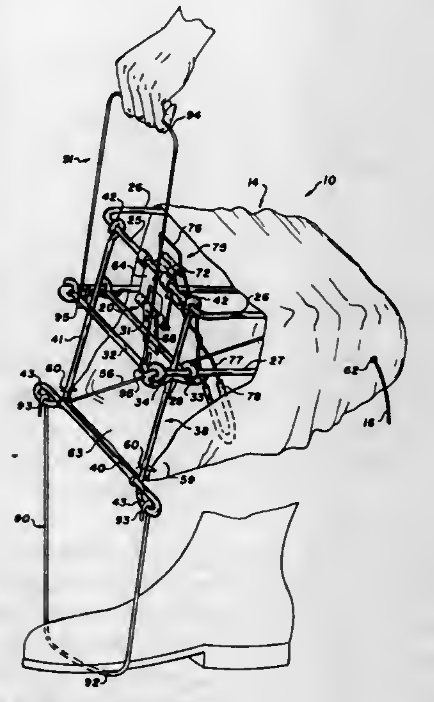
3,896,581
ANIMAL TRAP

William Gabry, Box 10, Vavenby, British Columbia, Canada

Filed Sept. 26, 1973, Ser. No. 400,822

Int. Cl. A01m *23/24*

U.S. Cl. 43—81 **3 Claims**



1. A trap comprising a wire frame having side portions and a bottom portion, said side portions each having front and rear corner bars interconnected by a front bar, a striker jaw interconnecting the front corner bars, said bottom portion having side bars secured at ends thereof to the front bar and connected at opposite ends thereof by a fixed jaw, said striker jaw including upper and lower bars spaced one on either side of the fixed jaw, said front and rear corner bars being connected by loops biasing the striker jaw towards the fixed jaw, stop means on the fixed jaw engageable by a frame part when the trap is sprung, said bottom portion and front bar defining an entrance opening for the head of an animal, a hood covering substantially all of the frame except the entrance opening, a trigger assembly mounted on the front bar to support the striker jaw in a set position across the entrance opening from the fixed jaw, said trigger assembly including a base plate, a sear pivotally mounted on the base plate and having a seat adapted to receive a part of the striker bar when the trap is set, and a bait supporting trigger pivotally mounted on the base plate above the entrance opening to releasably engage the sear.

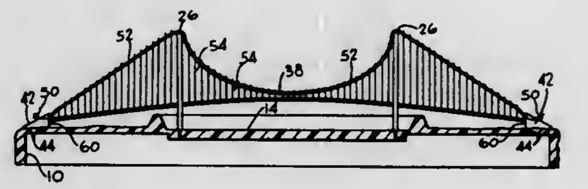
3,896,582
BRIDGE CONSTRUCTION SET

Richard J. Cohen, Brooklyn, N.Y., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed July 18, 1974, Ser. No. 489,808

Int. Cl.² A63H *33/06;* **G09B** *19/00*

U.S. Cl. 46—17 **4 Claims**



1. A kit for constructing toy bridges, comprising a base member having spaced openings therein; at least one roadway element for spanning said base; abutment means adapted for juxtaposition with each end of said base; a plurality of vertical towers fitting in said openings in said base member and intermediate said abutments; a plurality of shaped bridge cables adapted to be stretched between said abutments and to be supported by said towers; and a plurality of vertical wires depending from said cables for holding said roadway in spaced relation with respect to said base member, said kit making possible the erection of models of various bridges when the number, appearance and size of the aforesaid components are changed.

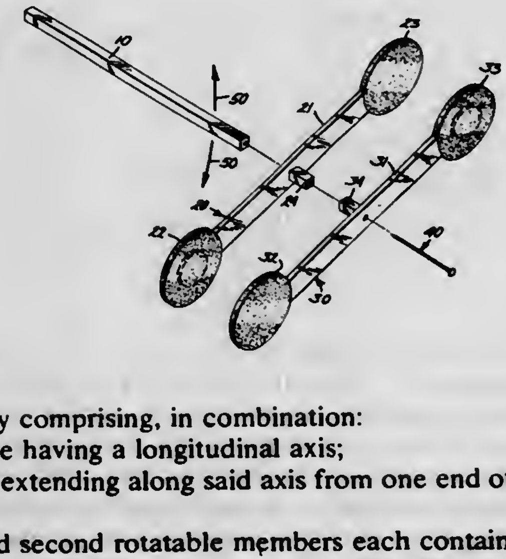
3,896,583
TOY

Walter F. H. Boettcher, Box 8, Cyrus, Minn. 56323

Filed June 11, 1974, Ser. No. 478,235

Int. Cl.² A63H *1/32;* **A63J** *5/00*

U.S. Cl. 46—47 **5 Claims**



1. A toy comprising, in combination:
a handle having a longitudinal axis;
a pivot extending along said axis from one end of said handle;
first and second rotatable members each containing a central portion and at least one visually distinguishable peripheral portion, at least one of said central portions being transparent;
and bearing means mounting said members in axially spaced relationship for rotation about said pivot, the center of gravity of each member being displaced from the center of rotation thereof.

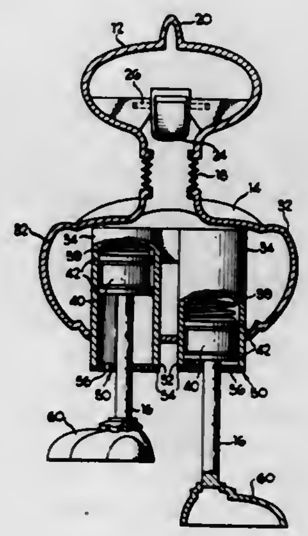
3,896,584
FIGURE TOY WITH VARIABLE SOUNDING MEANS

Rouben T. Terzian, and Marvin I. Glass, both of Chicago, Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Nov. 14, 1973, Ser. No. 415,673

Int. Cl.² A63H *5/00*

U.S. Cl. 46—118 **2 Claims**



1. A sound emitting figure toy, comprising: a torso portion mounted on a plurality of elongated ground supportable legs independently movable in an axial direction relative to the torso portion, each leg including a piston slidably enclosed within an elongated closed cylinder in the torso which defines a sound chamber within the torso and with the legs acting as piston rods extending outwardly of the cylinder for engagement with a supporting surface, at least one vibratory reed mounted on each of the pistons and vibrated by the passage of air across the reed as the piston moves back and forth in the cylinder, and a spring within the closed end of the cylinder and bearing against the piston to urge the piston outwardly relative to the cylinder and thus said legs outwardly relative to said torso portion, whereby the sound emitted is varied as the length of the sound chamber within the cylinder varies and the vibration of the reed is varied depending on the speed at which a user biases either of the legs and pistons into their respective cylinders to cause the air to pass the reed, the legs along with their respective pistons being independent and being positioned to be simultaneously operable by a user biasing said legs against a supporting surface to force said pistons into their respective cylinders whereafter the springs return the respective legs and pistons outwardly relative to the respective cylinder.

3,896,585
FURNACE OR THERMAL BLACK IN DEGRADABLE AGRICULTURAL MULCH

Richard Miller, Belle Mead, and Murray H. Reich, Princeton, both of N.J., assignors to Princeton Chemical Research, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 284,327, Aug. 28, 1972, abandoned. This application Feb. 14, 1974, Ser. No. 442,718

Int. Cl. A01g *7/00*

U.S. Cl. 47—9 **6 Claims**

1. In a degradable agricultural mulch comprising a degradable film of polybutene-1 or polypropylene which is at least about 40% isotactic, which film is about 0.4 to 20 mils thick and has a TALU rating of less than about 75,000 TALU, the improvement which comprises incorporating therein about 0.005 to 2% by weight of a stabilizer and about 0.05 to 5% by

weight of furnace or thermal black having a particle size of about 200 to 800 A.

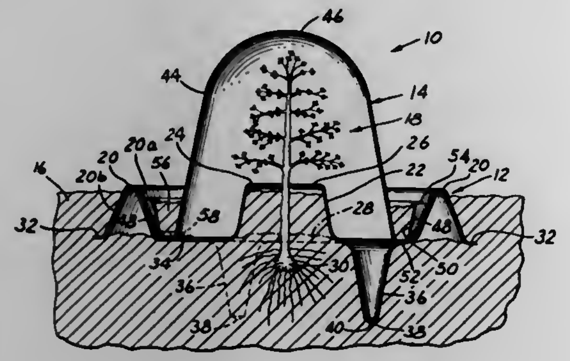
3,896,586
SYSTEM FOR PROMOTING PLANT GROWTH

Edward Neal Caldwell, Rte. 17, Coward Mill Rd., Knoxville, Tenn. 37921

Filed July 30, 1973, Ser. No. 383,965

Int. Cl. A01g *13/04*

U.S. Cl. 47—28 **1 Claim**



1. A system for promoting plant growth, comprising, in combination, a ground engaging member adapted to be secured in a generally fixed position on the ground, said ground engaging member including an upstanding peripheral wall portion and a generally central upstanding wall portion defining with said peripheral wall portion a continuous trough therebetween, said central portion having an opening therein to allow the protrusion therethrough of a plant rooted into the ground in underlying relation to said opening, said trough having at least one depending root feeder element integrally formed therewith adapted to be inserted into the ground so that the lower end thereof is disposed below the level of said trough, said feeder element being hollow and of generally conical geometry with its apex directed downwardly and having an open upper end communicating with said trough and into which plant nutrient may be introduced and through which water in said trough flows to enhance root growth at a level lower than the level of said trough, and a cover member including a raised central portion and a lower peripheral trough defining portion, said trough defining portion of said cover member including a generally transversely disposed channel in the lower surface thereof to provide communication between inner and outer portions of said trough in said ground engaging member when said member is mounted thereon, and being adapted to be received downwardly into said trough in said ground engaging member for cooperation therewith and being adapted to receive a weight substance therein to maintain said cover member mounted on said ground engaging member against the force of winds or the like which would tend to separate said cover from said ground engaging member, whereby said cover member shields said opening in said generally central portion thereof to protect a plant protruding through said opening.

3,896,587
NURSERY POT HAVING IMPROVED DRAINAGE

Charles J. Insalaco, Pigeon Swamp Rd., South Windham, Conn. 06266

Filed June 25, 1973, Ser. No. 373,451

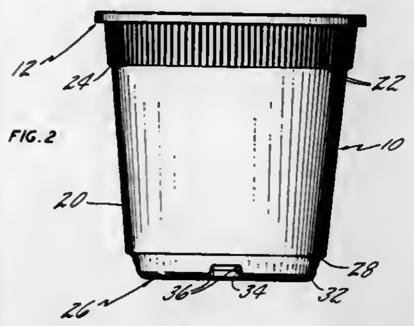
Int. Cl. A01g *9/02*

U.S. Cl. 47—34 **8 Claims**

1. An open topped plastic nursery pot of circular cross section having a substantially vertical sidewall which is tapered slightly from the top thereof so that the top of said pot is of slightly larger horizontal cross section than is the lower portion thereof in order to permit convenient stacking of a plurality of said pots,

a bottom portion of reduced diameter from the remainder of said pot, said bottom portion having a horizontally extending base member and a wall member joining said base member to the lowermost extension of said sidewall, said wall member being shaped so as to be concave with respect to the centerline of the pot adjacent said base member and convex with respect to the centerline of the pot adjacent said sidewall,

a plurality of drainage holes circumferentially spaced about the bottom portion of said pot coextensive with the concave portion of said wall member, said drainage holes extending partially into said wall member above the concave portion thereof and partially into said base member, each of said drainage holes being substantially quadrilateral in shape, the shape of said wall member, and said drainage holes, rendering said bottom portion more readily flexible than the remainder of said pot,



the center portion of said base member being slightly elevated and extending a short distance into the inside of said pot with respect to the radially outer portion of said base member to form a circular dome which is joined to the radially outer portion of said base member by an outwardly sloping circumferential wall,

the junction between the lowermost extension of said sidewall and the convex portion of said wall member forming a circumferential fillet which overhangs said drainage holes and shields said drainage holes from direct sunlight during the time of the day when the sun is near its zenith.

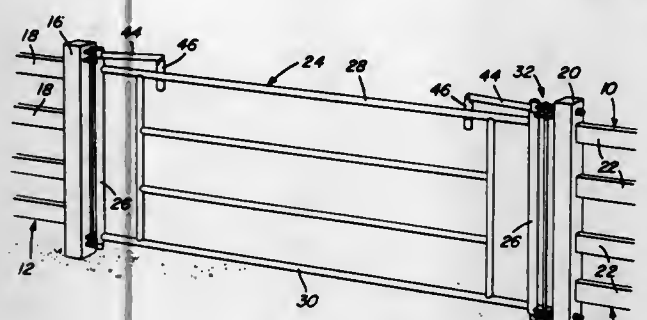
3,896,588
COMBINED GATE HINGE AND LATCH

Richard L. Doffin, P.O. Box 23, Hoskins, Nebr. 68740; Kyle I. Delp, Rt. 1, and Vernon L. Delp, 605 E. Park Ave., both of Norfolk, Nebr. 68701

Filed Jan. 30, 1974, Ser. No. 438,014

Int. Cl.² E05c *19/14*

U.S. Cl. 49—394 **10 Claims**



1. In combination, a gate member including an upstanding tubular member at one end, a first pair of fixed generally parallel and outwardly projecting arms carried by opposite end portions of said end member and having first vertically aligned, horizontally outwardly opening and upstanding notches formed therein, an elongated upstanding latch member projecting through and journaled in said end member, the end portions of said latch member projecting beyond the upper and lower ends of said end member including a second pair of outwardly projecting arms provided with second vertically aligned, horizontally outwardly opening and upstanding notches formed therein, said second arms being oscillatable with said latch member into and out of positions with the inner ends of said first and second notches in registry with each other and said first and second notches opening in different directions, whereby the registered inner ends of said first and second notches define an upstanding passage through which an upstanding pin may be received and the notched first arms may be horizontally displaced away from said pin in the direction opposite to which the notches in said first arms open after the second notched arms having been swung away from said pin in order to completely disengage said gate member from said pin.

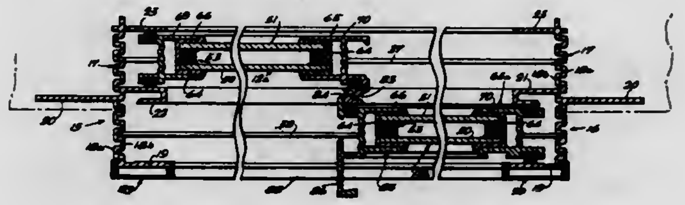
3,896,589
THERMALLY IMPROVED WINDOW FRAME AND SASH

Henry W. Mitchell, Miami, Fla., assignor to Crossley Window Co., Inc., Miami, Fla.

Filed Nov. 30, 1973, Ser. No. 420,606

Int. Cl. E05d *13/02*

U.S. Cl. 49—425 **11 Claims**



1. A thermally-improved window or door comprising, in combination, a frame, a window sash supported in said frame, said frame being of extruded metal and comprising an upper header member, a relatively spaced, parallel lower sill member, and a pair of spaced parallel stile members interjoining the ends of said header and said sill members, said header, sill and stile members each being of uniform cross-sectional shape along their lengths, the cross-sectional shapes of each of said header, sill and stile members being of such sinuous configuration as to define a plurality of projections projecting outwardly to each side, alternately, in accordion-like fashion, whereby the path of conductive heat flowing through the metal of said frame between the inside and outside thereof will be substantially different from the absolute distance between the inside and the outside of said window frame.

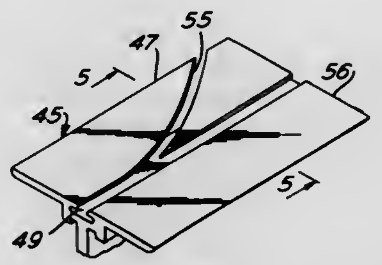
3,896,590
DOOR SAFETY EDGE CONSTRUCTION

Norman K. Miller, Concordville, Pa., assignor to Miller Brothers, Concordville, Pa.

Filed Aug. 9, 1974, Ser. No. 496,113

Int. Cl.² E06B *7/16;* **H01H** *3/16*

U.S. Cl. 49—488 **6 Claims**



1. A door safety edge comprising a door edge plate for longitudinal extension along a door edge and having an outer surface facing away from the door, said door edge plate having its outer surface generally flat, there being at least one longitudinally extending groove in said outer edge plate surface, said groove having opposite internal undercuts, a resiliently compressible pressure sensitive inner body extending longitudinally along said edge plate adjacent to said groove, a casing of flexible sheet material covering said inner body, an attachment member of relatively stiff flexible material secured to said body adjacent to the door, and at least one relatively stiff rib on said attachment member and located in said groove, said rib including lateral extensions engaged in said undercuts for retention against separation from said plate, said attachment member being generally flat and secured in facing relation with said inner body interposed between the latter and said edge plate, said outer edge plate surface having an access passageway communicating with said groove adjacent to and spaced inwardly from one groove end for passing said rib into said groove.

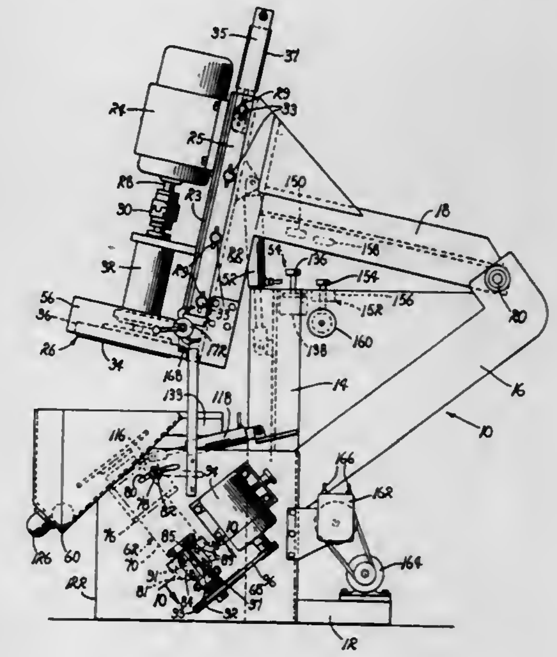
3,896,591
MACHINE FOR SHARPENING DISC BLADES

Lloyd J. Ruble, 225 S. California, Tulare, Calif. 93274

Filed Dec. 27, 1971, Ser. No. 212,482

Int. Cl. B24b *3/60*

U.S. Cl. 51—126 **20 Claims**

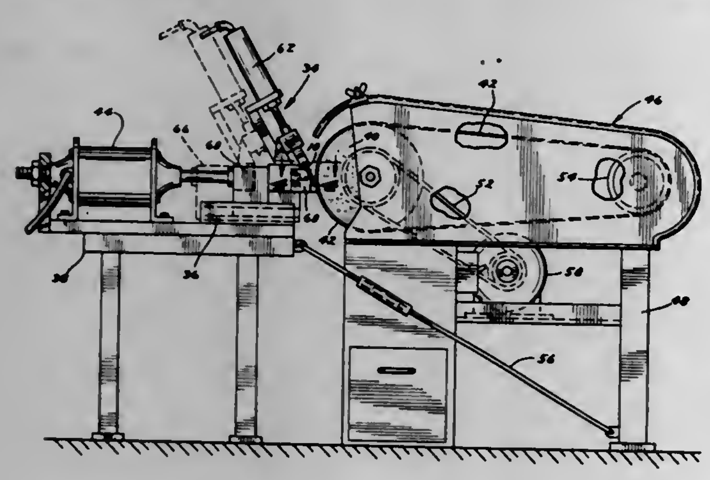


1. A machine for sharpening disc blades comprising:
a frame;
grinder means operatively associated with said frame;
said grinder means having a grinding surface disposable in a generally horizontal grinding plane and rotatable about an axis, said grinder surface having a configuration sufficient to grind the edges of a disc blade;
mandril means operatively associated with said frame and said grinder means, said mandril means includes a mandril housing with a mandril rotatable therein about an axis, said mandril having a proximal end disposed adjacent said frame and a distal end disposed adjacent said grinding plane, and disc blade mounting means on the distal end of said mandril disposed to releasably mount a disc blade for engagement by said grinder means;
grinder mounting means mounting said grinder means in said frame for linear movement in alignment with said grinding surface axis and for pivotal movement to swing said grinder means between a work position with said grinding surface in said grinding plane and a rest position with said grinding surface remote from said grinding plane; and
mandril mounting means mounting said mandril means in said frame with the axis of said mandril means disposed to form an acute angle with said grinding plane, said mandril mounting means having arc adjustment means operable to pivot said mandril means about a pivot point disposed along the axis thereof to vary said acute angle between said grinding plane and said mandril axis, and

axial adjustment means operable to vary the position of said pivot point along said mandril axis, said mandril mount-means including a pivotal mounting mounted on said mandril housing adjacent the proximal end of said mandril and supported in said frame, said pivotal mounting being movable axially with respect to said mandril housing in alignment with said mandril axis and being movable with respect to said frame to vary the distance between said point of support in said frame and said grinding plane.

3,896,592
APPARATUS FOR SHARPENING BLADES

Donald E. Wintz, St. Paul, Minn., assignor to Aladdin Manufacturing Company, Minneapolis, Minn.
Filed May 6, 1974, Ser. No. 467,009
Int. Cl.² B24B *21/12, 3/40*
U.S. Cl. 51—135 R **2 Claims**

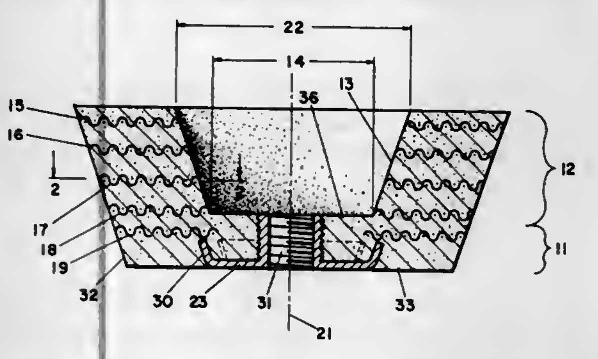


1. Apparatus for grinding a first section only of a work piece having at least first and second contiguous and continuous sections, said apparatus including:
a. a rotationally powered cylindrical contact wheel;
b. an idler pulley;
c. an endless abrasive belt having a first strip operatively mounted for grinding on the idler pulley and on a cylindrical portion of said wheel and having an integral second strip extending beyond an edge of the contact wheel;
d. said cylindrical portion of said contact wheel providing a continuous cylindrical support to the first strip of said endless abrasive belt, said first strip thereby being adapted to grind a straight surface of a first section of a work piece; and
e. means to hold said first section of said work piece against said abrasive belt to force said cylindrical support surface of said wheel against said first strip of said belt;
f. said second strip of said belt, when said first section of said work piece is so held, maintaining a position in spaced relation and out of contact with said wheel and being operative to abrade the work piece from the straight surface of its first section to a second section thereby to form in the work piece a taper from said straight surface to said second section.

3,896,593
REINFORCED BONDED ABRASIVE CUP WHEEL

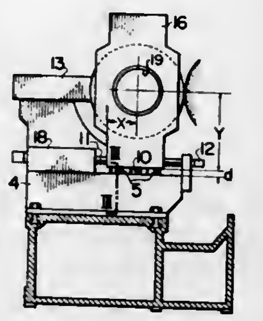
James C. Rine, North Tonawanda, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.
Filed Apr. 8, 1974, Ser. No. 458,969
Int. Cl. B24d *7/04*
U.S. Cl. 51—209 R **12 Claims**

1. A bonded abrasive grinding wheel having a back portion and an annular diverging rim portion, the diverging rim portion being integrally formed with the back portion; the diverging rim portion having a diverging frusto-conical inner surface, the smaller diameter of the diverging frusto-conical inner surface being adjacent the back portion of the grinding wheel; wherein the improvement comprises the provision of at least one substantially flat annular reinforcing strip of woven filamentary material having therein interstices for penetration with binder material of the grinding wheel, within the diverging rim portion of the grinding wheel, the annular reinforcing strip being substantially perpendicular to the axis of the frusto-conical inner surface of the diverging rim portion, and the inner diameter of the annular-reinforcing strip being less than the maximum diameter of the diverging frusto-conical inner surface of the diverging rim portion of the grinding wheel; wherein the annular reinforcing strip includes a pair of end portions, the end portions being disposed in overlapping relationship.



3,896,594
ROLL GRINDING DEVICE INCLUDING CHOCK POSITIONING MEANS

Yasuo Sakai, Numazu, Japan, assignor to Toshiba Machine Co., Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 202,770, Nov. 29, 1971, abandoned. This application Nov. 27, 1973, Ser. No. 419,451
Int. Cl. B24b *41/06*
U.S. Cl. 51—236 **4 Claims**

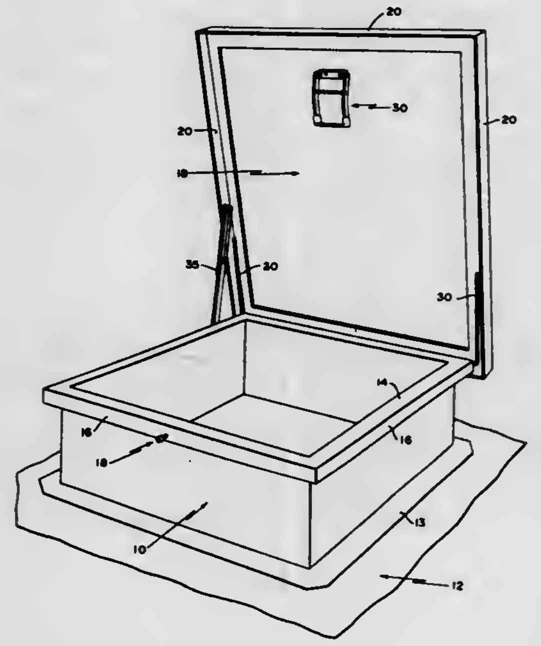


1. A roll grinding device for a roll supported by chocks, said device comprising: a plurality of movable supporting pins for supporting the chocks, said pins having sloped lower faces, a plurality of movable wedges having sloped upper faces adapted to mate with the sloped faces of said supporting pins for determining the vertical positions of said supporting pins, means for moving said wedges and for limiting the moving force to a value less than that which can lift the total weight of the roll and said chocks at said supporting pins, and means for engaging the peripheral face of the roll near said chocks and for urging the roll to a grinding position, thereby fixing the position of the roll within the chocks.

3,896,595
HATCHWAY

Joseph R. Anghinetti, Kennebunkport, and Paul A. Couture, Emery Mills, both of Maine, assignors to Wasco Products, Inc., Sanford, Maine
Filed May 21, 1971, Ser. No. 145,779
Int. Cl. E04d *13/035*
U.S. Cl. 52—19 **3 Claims**

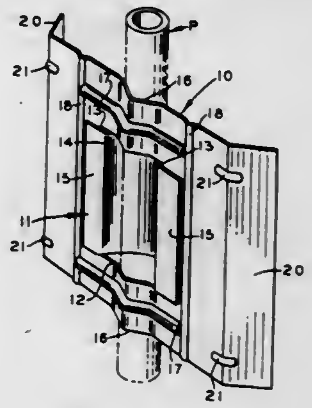
1. A roof access hatch comprising:
side wall means including a curb defining an enclosed hatchway;
a cover hinged to one end of said sidewall means exteriorly of said hatchway for movement between open and closed positions;
means counterbalancing said cover towards said open position;
a latching handle pivotally suspended from the inside of said cover adjacent the unhinged end thereof, said latching handle being adapted to depend freely downwardly therefrom in a substantially vertical direction;
a transversely extending bar secured to said latching handle between the ends of said handle;
catch lug means secured to said sidewall at a location adapted to be engageable with said transversely extending bar when said cover is pivoted to said closed position thereof, said catch lug projecting slightly inwardly from said sidewall, said catch lug including an upper edge located to be engaged by said bar, said edge having a downwardly and inwardly extending configuration thereby to guide said transverse bar inwardly and downwardly over the free end of said lug means while said cover is closing, said catch lug means having a lower surface adapted to enable said transverse bar and latching handle to swing back toward its vertically depending attitude and to enable said transverse bar to be disposed beneath said lower surface of said lug means; and
means forming a hole in said latching handle and said catch lug means respectively, said holes being registerable when said transverse bar is in engagement with the inside of said catch lug means to enable a supplemental lock to be passed through said registered holes.



3,896,596
ANCHOR PLATE FOR FENCE POST

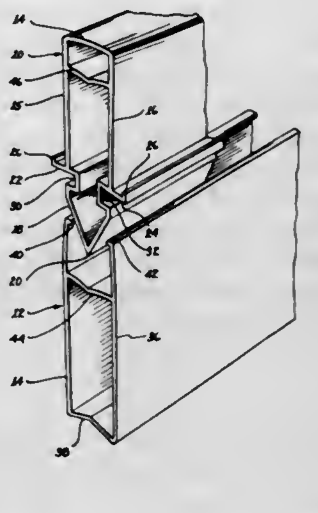
Donald E. Berger, 3004B Barclay Square, N., Columbus, Ohio 43209
Filed May 23, 1974, Ser. No. 472,610
Int. Cl.² E04H *17/22*
U.S. Cl. 52—153 **17 Claims**

1. An anchor plate for posts set in earth comprising
a rigid sheet metal plate adapted to be driven edgewise into the earth in a vertical plane adjacent a side of a post and including a central area having an aperture formed therein, said aperture having side edges spaced apart a distance commensurate with the diametrical dimension of a post disposed in longitudinal alignment therewith; and a U-shaped bracket positionable in said aperture for encircling a post in cooperation with said plate, said bracket having spaced legs that extend through said aperture when said bracket is assembled with said plate and terminate in laterally outward projecting flanges which overlie respective surface portions of said plate adjacent said aperture side edges.



3,896,597
CONCRETE EXPANSION AND CONTRACTION JOINT

Max W. Deason, 5350 N. Estelle Dr., Tucson, Ariz. 85718
Filed Apr. 4, 1974, Ser. No. 457,964
Int. Cl.² E01C *11/10*
U.S. Cl. 52—396 **3 Claims**

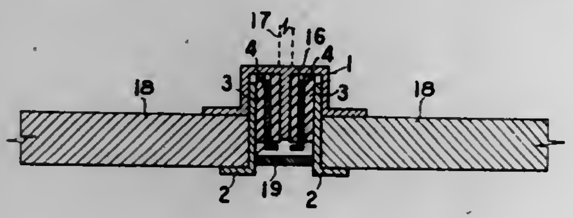


1. A concrete expansion/contraction joint comprising:
a. an elongated upper section having a top wall and two side walls depending from said top wall;
b. a pair of water blocking anchors each extending outwardly from a side wall and longitudinally along said side wall; means forming longitudinally extending channels in each of said side walls beneath said water blocking anchors;
c. a bottom joining said side walls, said bottom including means for inducing a contractual crack; and
d. an elongated lower section having two side walls, a bottom wall and an open top; a pair of longitudinally extending inwardly directed locking flanges positioned adjacent said open top, engaging said longitudinally extending channels to lock said upper and lower sections together and enclosing said contractual crack inducing means to form a unitary structure; said upper and lower sections when embedded in concrete being inseparable.

3,896,598
DEVICE FOR FIXEDLY CONNECTING PANELS FOR USE IN BUILDING

Tsukasa Yoshida, Fuchu, Japan, assignor to Tsukasa Yoshida, Fuchu, Japan

Filed Aug. 8, 1974, Ser. No. 495,871
Int. Cl.² E04B *2/72*
U.S. Cl. 52—498 **10 Claims**

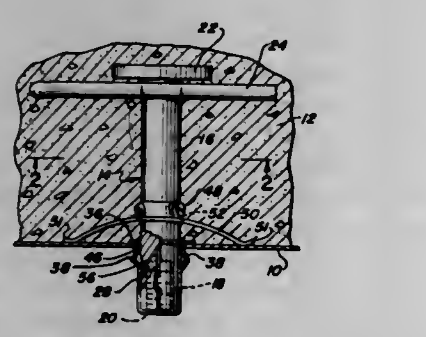


10. An adjustable device for securing panels of varying thickness in a building structure, each of said panels having parallel front and back surfaces and a longitudinal edge surface extending perpendicularly therebetween defining the panel thickness, and longitudinal front and back marginal edge portions on said front and back surfaces, respectively, adjacent said longitudinal edge surface and extending laterally inwardly therefrom, the device comprising: a coupling member having at least one rectangular, smooth-sided longitudinal groove therein and a substantially rigid, flat lateral surface extending laterally from the open end of said longitudinal groove and parallel to the plane of said panel, said lateral surface facially contacting said back panel surface along said back marginal edge portion; and L-shaped holder member having a substantially rigid smooth-sided first leg being adjustable receivable within said groove and a substantially rigid second leg extending normally therefrom parallel to both said front surface of said panel and said flat lateral surface, said second leg having a face portion defined by the inside surface of the normally extending leg, facially contacting said front surface of said panel along said front marginal edge portion, said face portion and said flat lateral surface defining a closely fitting slot, said holder member holdably securing said panel in said slot along said front and back marginal edge portions of said panel; a retaining plug insertable in said groove to a depth below the surface of said panel, and a wedge insertable in said plug to expand said plug against said first leg of said holder member within said groove, thus retaining said holder member in said groove to secure said slot around said panel edge and marginal edge portions.

3,896,599
HANGER INSERT FOR STEEL FLOOR DECK

Frank A. Werstein, Long Beach, and William R. Barnes, Highland, both of Ind., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation of Ser. No. 214,226, Dec. 30, 1971, abandoned. This application Aug. 2, 1973, Ser. No. 384,968
Int. Cl.² G09F *7/18*
U.S. Cl. 52—704 **22 Claims**



1. A hanger insert for installation in decking including a layer of concrete and a sheet member supporting the concrete prior to its being poured, the insert comprising:

A. an elongate metal member having a bottom end and a top end with stop means located therebetween,

B. means for supporting said elongate metal member in a disposition passing through a hole in a sheet member which is adapted to have concrete poured onto the upper surface of the sheet member, with the bottom portion of the elongate metal member protruding below the sheet member and the top portion of the elongate metal member protruding above the sheet member,

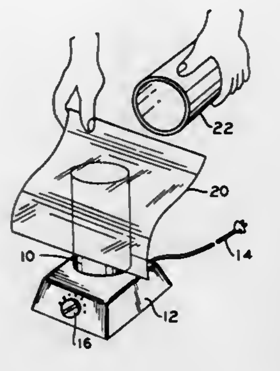
C. said elongate metal member including structure to enable the securement of a structural member from the bottom portion thereof which structural member is adapted to depend from the decking to be formed, and

D. a leaf spring formed of flat spring stock bowed about a central area and loosely mounted through said central area on said elongate member to have its concave surface facing the lower portion of the elongate member, said leaf spring being held between the stop means on said elongate member and the upper surface of said sheet member, said leaf spring providing a yieldable connection between said hanger insert and sheet member prior to the setting of said concrete and enabling the hanger insert to absorb the shock attendent upon the influx of fluid concrete and to restore the elongate metal member to an erect position before the concrete sets.

3,896,600
METHOD OF MAKING AN ADDITIVE PACKAGE

Malcolm Scott C. McVay, Aurora, Ohio, assignor to U.S. Chemicals and Plastics, Inc., Canton, Ohio

Division of Ser. No. 210,018, Dec. 20, 1971, Pat. No. 3,784,005, which is a continuation-in-part of Ser. No. 10,316, Feb. 10, 1970, abandoned. This application Sept. 13, 1973, Ser. No. 397,154
Int. Cl. B65b *43/08*
U.S. Cl. 53—27 **6 Claims**



1. A method of forming a package for additives comprising a sealed envelope of thin synthetic organic polymeric material contained within a rigid container open at one end and having a longitudinal inner surface and an end wall at the other end, including the steps of:

loosely draping a sheet of said polymeric material across the end of a mandrel having a longitudinal outer surface and a cross section complementary to and closely conforming dimensionally with the longitudinal inner surface and cross section of said rigid container, said mandrel end alone supporting said draped sheet,

sliding the open end of said rigid container axially onto said mandrel for said rigid container and mandrel alone to cooperatively randomly fold and form said sheet therebetween into engaging conformity with the longitudinal inner surface and end wall of said rigid container, said sheet being of a size for said forming to produce flaps protruding axially beyond said open end of said rigid container,

removing said rigid container with said formed sheet therein from said mandrel,

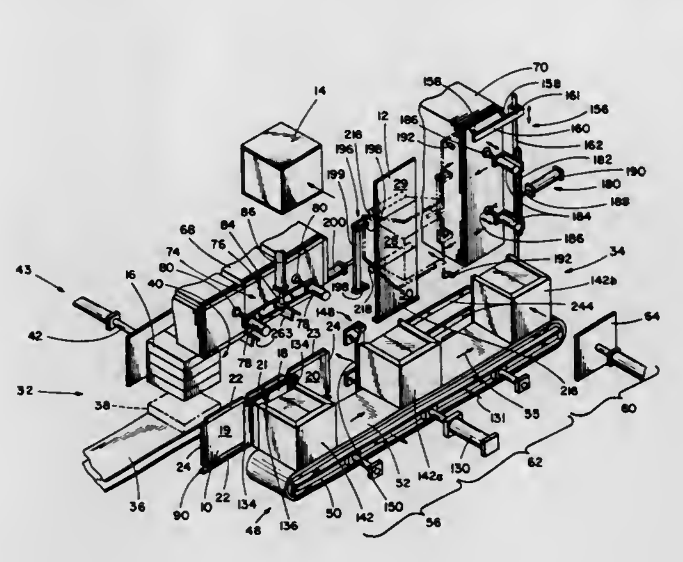
introducing at least one additive into said formed sheet in said rigid container, and

sealing said protruding flaps to close said formed sheet and define said envelope.

3,896,601
PACKAGING MACHINE USING TWO-BLANK CARTON SYSTEM

James L. Vickers, Harbert, Mich., and Edmund A. Waycie, River Forest, Ill., assignors to Stone Container Corporation, Chicago, Ill.

Continuation-in-part of Ser. Nos. 285,211, Aug. 31, 1972, Pat. No. 3,817,018, and Ser. No. 446,124, Feb. 27, 1974, Pat. No. 3,872,650. This application June 17, 1974, Ser. No. 480,160
Int. Cl. B65b *11/18*
U.S. Cl. 53—32 **23 Claims**



23. A method for forming a sealed package containing lading from a generally rectangular body blank of paperboard material and a generally rectangular cover blank of paperboard material, the body blank including a center panel, alternate, hingedly connected side panels and flanges hingedly connected along the longitudinal edges of the center and side panels and along the ends of the side panels, and the cover blank including a center panel and alternate hingedly connected side panels, said method including the steps of positioning the body blank in a generally vertical plane adjacent the outlet of a lading moving station; moving a quantity of lading horizontally in one direction and against the body blank; folding the body blank into a generally U-shaped formation partially surrounding the lading with the panels lying in generally vertical planes and with the center panel forming an end wall and the side panels forming two side walls of the formation as the lading is moved from the lading moving station; folding the flanges along each longitudinal edge of the body blank to positions generally perpendicular to the associated side walls and end wall during movement of the lading against the body blank; folding the end flanges to positions generally perpendicular to the associated side walls; moving the folded body blank and lading in direction laterally of said one direction to a discharge station, positioning the cover blank in a generally vertical plane adjacent the discharge station, moving the folded body blank and lading in a third direction laterally of said second direction and against the cover blank; folding the cover blank into a U-shaped formation partially surrounding the lading with the margin of the cover blank positioned overlying the flanges of the folded body blank as the folded body blank formation is moved against said cover blank and securing the flanges of the body blank to the adjacent facing margin of the cover blank.

3,896,602
METHOD OF MANUFACTURING OF A BARRIER PACKAGE

Tor H. Petterson, 31248 Palos Verdes Dr. West, Palos Verdes Peninsula, Calif. 90274

Continuation-in-part of Ser. No. 180,790, Sept. 15, 1971, abandoned. This application Aug. 1, 1973, Ser. No. 384,738
Int. Cl. B65b *31/00*
U.S. Cl. 53—36 **10 Claims**

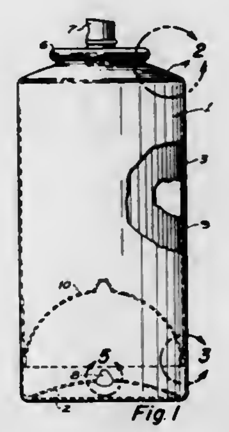


Fig. 1

1. The method of making a barrier package containing a propellant separated from a product to be dispensed, comprising the steps of:

a. forming a container having first and second walls and an intermediate wall extending therebetween;

b. covering at least about one-half of the inner surface of said container, including said second wall, with a substantially impermeable continuous coating in intimate contact with said inner surface;

c. adhesively bonding and sealing said coating to said inner surface, at least throughout substantially all of the area thereof covering said intermediate wall, the strength of said bond being less than the tensile strength of said coating;

d. placing a charge of product, less than the internal volume of said container, through said first wall and inside said coated container;

e. introducing a propellant through said second wall to separate an initial portion of said coating therefrom and push said separated coating toward said first wall, until said product and propellant substantially fill said container while leaving the remainder of said coating bonded to said container whereby permeation of product or propellant through said coating cannot occur through the bonded remainder thereof during shelf storage and whereby progressive release of product through said first wall will progressively strip said remainder of said coating from said intermediate wall and thereby control the permeability potential of said coating.

3,896,603
FILM STRIP JACKET SYSTEM AND EQUIPMENT

Stanley D. Tout, Arcadia, Calif., assignor to Bell & Howell Company, Chicago, Ill.

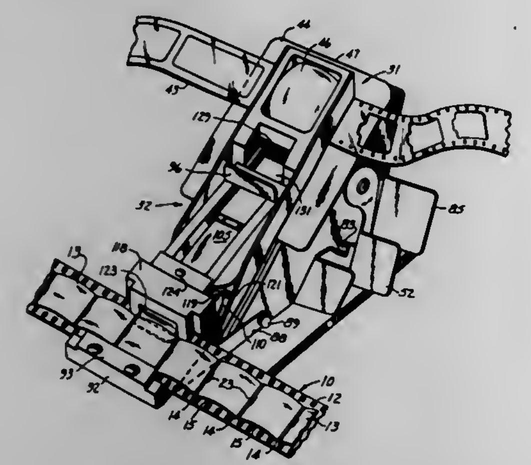
Filed Jan. 8, 1974, Ser. No. 431,644
Int. Cl. B65b *43/26*
U.S. Cl. 53—123 **13 Claims**

1. In apparatus for inserting a transparency at a loading station into a pocket formed by essentially transparent interconnected first and second strips, the improvement comprising in combination:

first means for releasably retaining said strips at said loading station, said first means including means for releasably retaining an edge portion of said first strip;

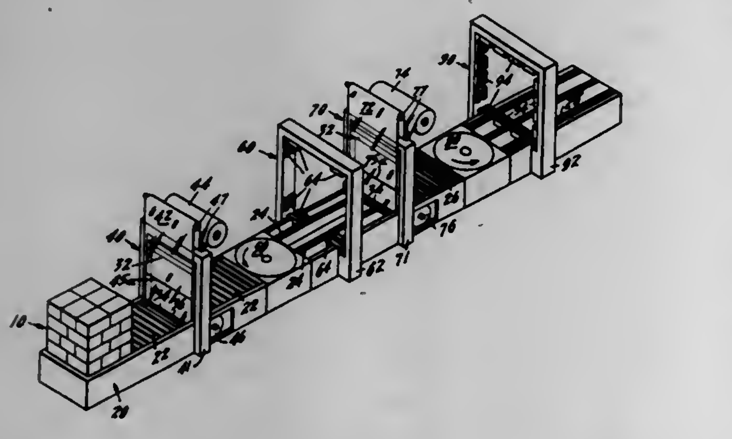
actuable second means for spacing said second strip from said first strip whereby to open said pocket for an insertion of said transparency;

actuable third means separate from said second means for advancing said transparency into said open pocket, said third means including transparency inserting means and means for guiding at least a portion of said transparency inserting means over said edge portion retaining means; and



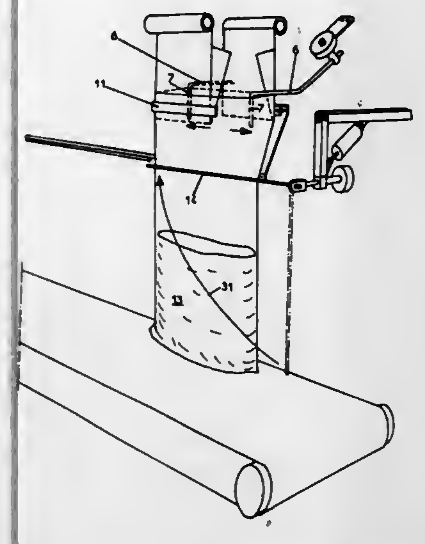
fourth means coupled to said second and third means for actuating said second and third means.

3,896,604
DOUBLE WRAP PACKAGING APPARATUS
Daniel Richard Marantz, Port Washington, N.Y., assignor to American Can Company, Greenwich, Conn.
Filed Mar. 1, 1973, Ser. No. 337,171
Int. Cl.² B65B *11/58, 53/02*
U.S. Cl. 53—176 **10 Claims**



1. Apparatus for wrapping and consolidating a load in the form of a rectangular prismatic stack of cartons comprising means to advance the load, means for establishing a curtain of a first heat sealable, heat shrinkable plastic film in a plane through which plane the load may be advanced to wrap the first film about the leading, top and bottom faces of the load, means to draw the film across the trailing face of the load, means to clamp the first film together across said trailing face, means to heat seal the film in the clamped portion along spaced parallel lines of heat sealing, means to sever the film between the heat sealed lines, means to establish a curtain of a second heat sealable, heat shrinkable plastic film in a plane, means to orient the load with respect to the plane of said second film, means to advance the load through the curtain of said second film to wrap the second film about the top, bottom and the two faces not covered by the first film, means to draw the second film across the now trailing face of the load, means to clamp the second film together across said now trailing face, means to heat seal the second film in the clamped portion along spaced parallel lines of heat sealing, means to sever the second film between the heat sealed lines, at least one of said first and second films extending beyond the edges of the faces of the prism wrapped by that film, and means to heat shrink both films and to heat laminate the films together where they overlap.

3,896,605
AUTOMATIC DEVICE FOR PRESENTING BAGS ONTO A BAGGING MACHINE PREVIOUS TO THE CLOSING OF SAID BAGS
Marcel Chevalier, Uriage, France, assignor to Etablissements M. Chapais, France
Filed Apr. 2, 1973, Ser. No. 347,167
Claims priority, application France, May 12, 1972, 72.17734
Int. Cl. B65b *7/06*
U.S. Cl. 53—266 **9 Claims**



1. An apparatus for guiding and controlling a flexible container to be filled, and then moved to and properly presented to another apparatus for a subsequent operation, comprising, in combination:

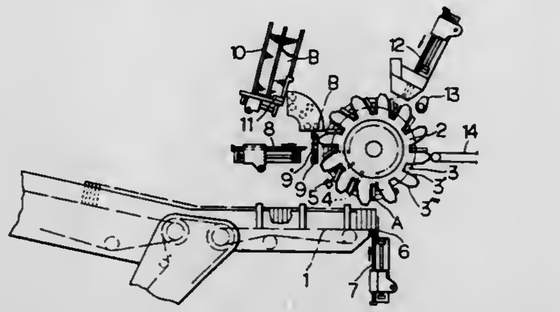
a filling machine machine provided with a spout;
a pair of first means arranged adjacent said spout and adapted to be disposed together with at least a portion of said spout into an aperture of said flexible container;
second means operatively connected to said pair of first means for selectively causing said first means to move toward and away from each other;
third means disposed beneath said pair of first means and adapted for engagement with a predetermined side of said flexible container;
fourth means initially disposed adjacent said predetermined side of aid flexible container and substantially opposite said third means, and adapted to be selectively moved to a position adjacent a side of said flexible container which is substantially opposite to said predetermined side so that said flexible container may be pressed between said third means and said fourth means; and
fifth means operatively connected to said first, second, and fourth means for automatically controlling the motions of said fourth means in synchronism with the motions of said pair of first means,
whereby said aperture of said flexible container is moved and held to a desired open position for filling by said pair of first means, and said flexible container is held and guided between said third and fourth means while said flexible container is being moved toward said other apparatus for said subsequent operation.

3,896,606
DEVICE FOR INSERTING RECORDING TAPE CASSETTES IN CASES
Yoshikazu Utsumi, 47 Higashiura-cho Daigo Misasagi, Fushimi-ku, Kyoto, Kyoto Pref., Japan
Filed July 3, 1973, Ser. No. 376,198
Claims priority, application Japan, July 3, 1972, 47-66790
Int. Cl. B65b *5/04, 7/26, 25/00*
U.S. Cl. 53—266 **4 Claims**

1. A device for inserting cassettes and a description thereof in a casing comprising a lid pivotally mounted on a receptacle

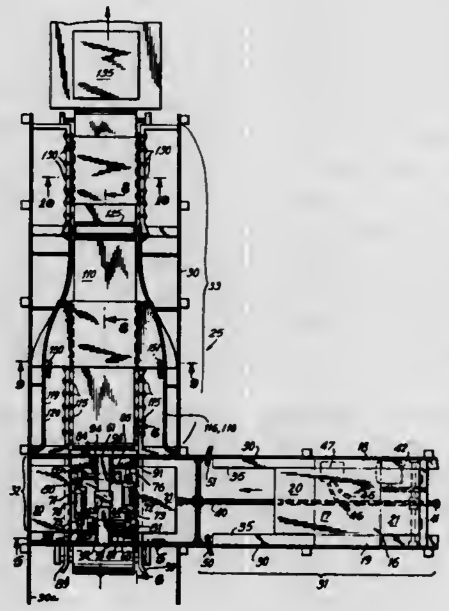
said lid including an end wall and a pocket formed therein and said receptacle including a notch formed therein, said device comprising:

a. turret disc means comprising a plurality of concavities for receiving said casing and for carrying said casings, each concavity comprising a straight wall and an inclined wall;
b. first pusher means for inserting said casings into said turret disc means;
c. keep plate means extending into each of said concavities for engaging the end wall of said casing lid through the notch formed in said receptacle thereby holding said lid against said straight wall of said concavity;



d. opening means positioned with respect to said turret disc means for moving said receptacle against said inclined wall thereby opening said lid;
e. first insertion means positioned relative to said turret disc means for inserting said description into said casing;
f. second insertion means positioned relative to said turret disc means for inserting said cassettes into said casing;
g. closing means, positioned relative to said turret disc means, for closing said lid after said description and said cassette have been inserted into said casing; and
h. discharge means positioned relative to said turret disc means for discharging said casings therefrom.

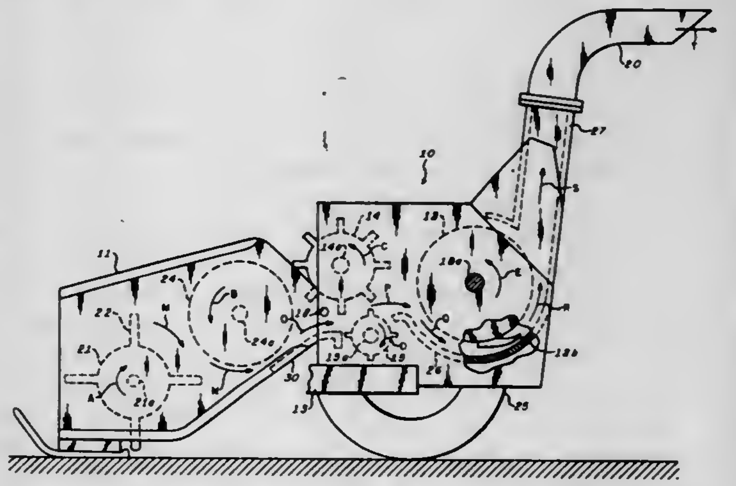
3,896,607
APPARATUS FOR MOUNTING A LID ON A CONTAINER
Thomas B. Royal, Homestead, Fla., assignor to International Paper Company, New York, N.Y.
Filed Jan. 9, 1974, Ser. No. 432,047
Int. Cl. B65b *7/28*
U.S. Cl. 53—287 **8 Claims**



1. An apparatus for applying to a filled container a lid, which includes a central portion having opposed side flaps and end flaps foldably connected to said central portion, which comprises:

a. a frame;
b. a reciprocable mandrel mounted on said frame;
c. means for reciprocating said mandrel;
d. a pair of squeezer plates pivotally mounted on opposite sides of said mandrel;
e. means for positioning a container below said mandrel;
f. means for depositing an adhesive so as to be disposed between said end flaps and the end walls of said container when said lid is mounted on said container;
g. means mounted on said mandrel for moving said squeezer plates into parallel relation with each other whereby downward movement of said mandrel holds said lid on said container while said squeezer plates compress the end flaps of said lid against said container;
h. means for laterally moving said container after the end flaps of said lid have been secured thereto; and
i. means for securing said side flaps to said container while said container is moving laterally.

3,896,608
STATIC MAGNETIC FIELD METAL DETECTOR
William L. Garrott, Gainesville, Fla., assignor to Sperry Rand Corporation, New York, N.Y.
Filed June 25, 1973, Ser. No. 373,565
Int. Cl. A01d *69/10*
U.S. Cl. 56—10.2 **8 Claims**



1. In a crop harvester having rotatable machine elements including crop processing elements susceptible to damage by a tramp metal part moving through a crop input region toward said crop processing elements, the combination comprising:

first and second elongate magnetic field generation means for producing respective first and second unidirectional magnetic fields in discrete portions of said crop input region,
said first magnetic field being opposite in sense to said second magnetic field and of substantially equal strength,
multiple conductor magnetic field pick-up coil means disposed substantially equally in stationary relation in said first and second unidirectional magnetic fields for providing a detection signal in the presence of said object adjacent said first or said second elongate magnetic field generation means while affording substantial cancellation of spurious magnetic field responses, and
utilization means coupled to said multiple conductor magnetic field pick-up coil means.

3,896,609
MOWING MACHINE
Albert Overesch, Rheine, Germany, assignor to Maschinenfabriken Bernard Krone GmbH, Spelle, Germany
Filed Oct. 26, 1973, Ser. No. 410,249
Int. Cl. A01d *35/26*
U.S. Cl. 56—13.6 **16 Claims**

1. A mowing machine adapted to move over the ground, comprising in combination,

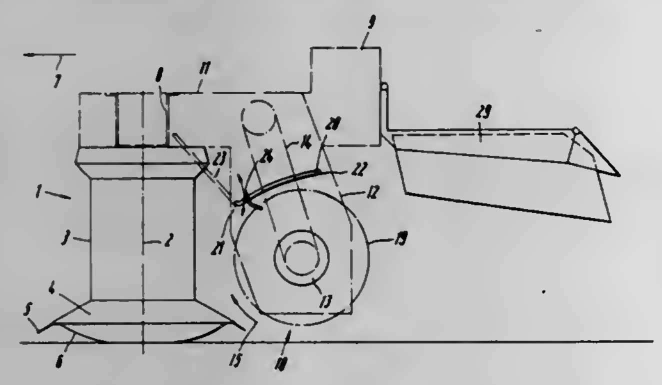
a machine frame;

a supporting beam mounted on said machine frame;

at least two mowing devices operatively mounted on said supporting beam in coacting pairs which are adapted to rotate around general vertical axes in mutually opposite directions; said mowing devices being arranged on said supporting beam transversely relative to the direction of movement of said mowing machine and define feed gaps therebetween;

a post-treatment arrangement for the harvest material which has been cut by said mowing devices is operatively connected behind said supporting beam relative to the direction of movement of said mowing machine;

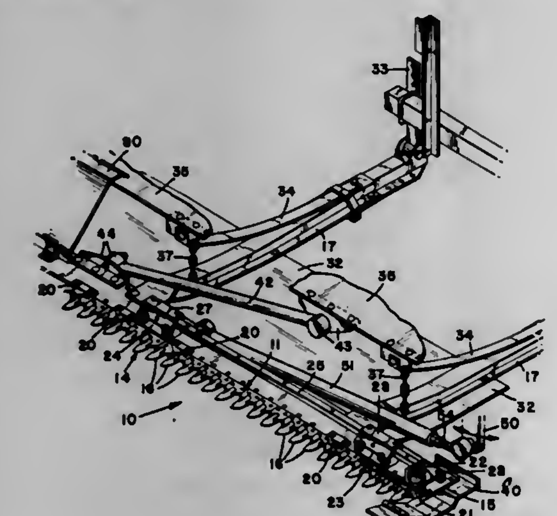
said post-treatment arrangement comprises a substantially horizontal drive shaft rotatably mounted on said machine frame substantially parallel to said supporting beam;



a plurality of flailing members freely pivotally connected to said drive shaft, so that the outer ends thereof describe a maximum operative circumference; and

a fender mounted on said machine frame at a predetermined distance from said drive shaft and extending substantially parallel thereto; said flailing members being adapted to move immediately above said horizontal drive shaft in a direction generally opposite to the direction of movement of said mowing machine and below said horizontal drive shaft in generally the same direction as said mowing machine; said plurality of flailing members are arranged in groups on said drive shaft, so that one group of flailing members is mounted opposite said feed gap between a pair of coacting mowing devices.

3,896,610
FLOATING SICKLE BAR MOWER
Kenneth S. Hiniker, P.O. Box 3044, Mankato, Minn. 56001
Filed Mar. 4, 1974, Ser. No. 447,738
Int. Cl. A01d *55/26*
U.S. Cl. 56—15.8 **1 Claim**



1. In a harvester having a frame, a drive member, and power means for causing transverse oscillatory motion of said drive member with respect to said frame:

a mower structure including a mower bar, a sickle bar having a driving connection at one end thereof and reciprocable with respect to said mower bar, and ground contacting means for normally supporting at least a portion of the weight of said structure;

means connecting said mower structure to said frame for propulsion therewith, while providing for limited generally vertical movement of said mower structure to effectuate said ground support, so that the distance between said drive member and said sickle bar is not constant;

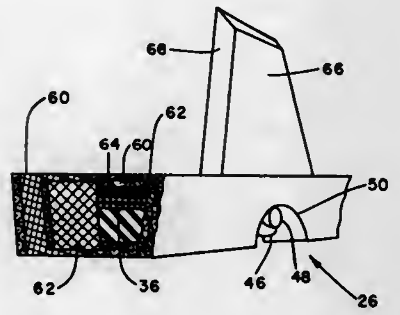
a sliding link connected at one end to said driving connection of said sickle bar and extending along said mower bar;

spaced guide means carried by said mower bar and traversed by said sliding link;

a pitman arm pivotally connected at one end to said drive member;

and means pivotally connecting the other end of said pitman arm to said sliding link at a location between said guide means.

3,896,611
POWER TRANSMISSION BELT HAVING ATTACHED VEGETATION ENGAGING ELEMENTS AND METHOD
Guy E. Lingenfelter, Broomfield, and William M. Haines, Englewood, both of Colo., assignors to The Gates Rubber Company, Denver, Colo.
Filed June 8, 1973, Ser. No. 368,425
Int. Cl.^{2} A01D *45/02, 55/24*
U.S. Cl. 56—119 **16 Claims**



1. A power transmission belt for vegetation processing comprising:

an endless belt operable in a longitudinal direction including a strain-resisting tensile section and a compression section having at least one transversely disposed notch therein and having attached at a plurality of spaced points along the outer surface of the belt vegetation engaging elements which individually comprise:

a protruding element having an upper work portion and a base portion on the outer surface of the belt and a stem rigidly extending downwardly from the base portion of the work portion into the body of the belt below the tensile section of the belt;

said stem having at its lower portion a seat positioned within said transversely disposed notch formed on the undersurface and solely within the compression section of said belt;

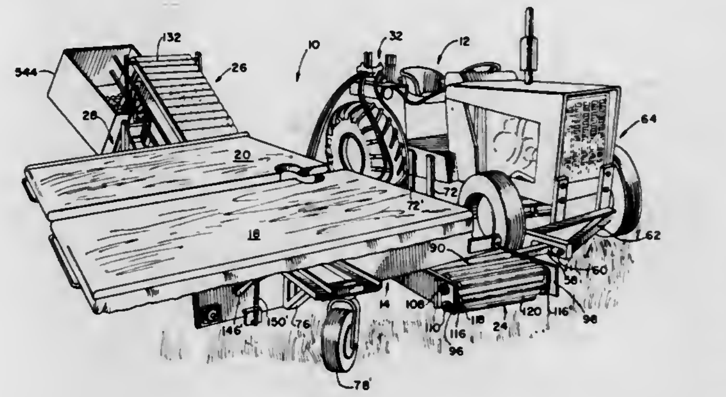
a retention member engaged in the seat and biased against the upper portion of said notch with a force sufficient to place the belt section lying between said base portion of the protruding element and the retention member under substantial compression;

said retention member having a longitudinal dimension small compared with that of the notch measured at its widest point at its opening with the undersurface of the belt, thereby defining a substantial clearance therebetween so as to permit substantially free flexing of the belt about the retention member;

whereby during operation of the belt said vegetation element and said belt at each transverse notch are permitted

to undergo limited relative movement about an effective pivot area transverse of the belt formed at the upper portion of the notch.

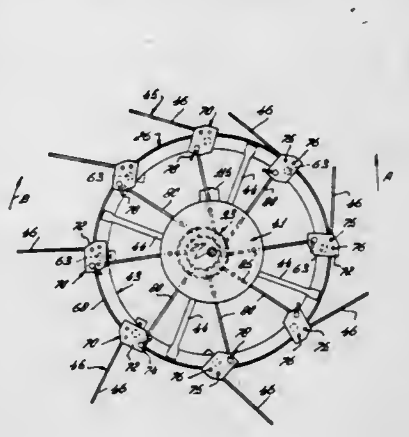
3,896,612
FRUIT HARVESTER
Carl Manning McHugh; Byron Kenneth Webb, and Clarence Elam Hood, Jr., all of Clemson, S.C., assignors to Research Corporation, New York, N.Y.
Filed Nov. 14, 1973, Ser. No. 415,733
Int. Cl. A01g *19/08*
U.S. Cl. 56—329 **6 Claims**



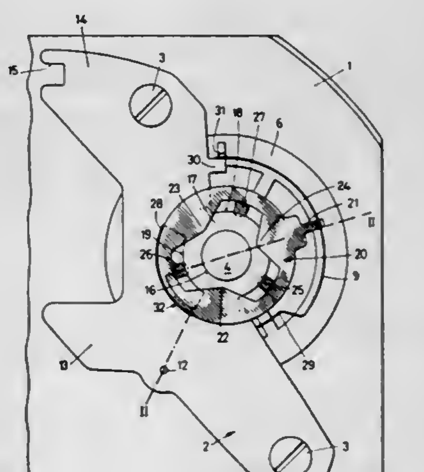
1. A fruit tree harvester comprising a generally quadrangular main frame; a fruit catching and collecting bed carried by said main frame; said catching and collecting bed comprising, a half frame generally coextensive in size to said main frame and attached thereto for limited lateral sliding movement and a pair of quarter frames each extensible laterally in respect to the main frame, each of said quarter frames comprising a bed frame and a catcher bed, said catcher bed of each quarter frame being movable longitudinally in respect to the main frame and the bed frame, means coacting between the main frame and the half frame for laterally moving the half frame and the pair of quarter frames relative to the main frame from a transport position overlying the half frame to an extended outwardly position on either side of a tree to be harvested; further means for moving said pair of quarter frames from the outwardly extended position to a position with the outward edges of the pair of quarter frames pitched upwardly; said means for moving the pair of quarter frames from the transport position to the extended outwardly position includes means for urging the catcher beds longitudinally with respect to their respective bed frames as the quarter frames approach the most extended positions, and means for transporting fruit caught by said half frame and pair of quarter frames to a collection zone.

3,896,613
IMPLEMENTS FOR THE DISPLACEMENT OF CROP OR LIKE MATERIAL LYING ON THE GROUND
Ary van der Lely, 10, Weverskaile, Maasland, Netherlands
Filed July 12, 1973, Ser. No. 378,637
Claims priority, application Netherlands, July 13, 1972, 7209663
Int. Cl. A01d *79/00*
U.S. Cl. 56—370 **44 Claims**

1. A raking implement for displacing crop lying on the ground comprising a mobile frame and at least one rake device supported on the frame, said device being rotatable on shaft means about a non-horizontal axis and having rake elements that are movable into alternative crop working positions with respect to said axis, steering means on said implement connected to said elements to move the same, said steering means being adjustable to a more or less eccentric position relative to said axis, said steering means comprising an adjustable member that is movable to vary the magnitude of its eccentricity relative to said axis and said steering member being turnable to change its angular location around said axis to vary the phase of maximum eccentricity of said steering member during each rotation of the rake device, whereby the working positions of said rake elements can be changed during each revolution, locking means associated with said steering means for maintaining any chosen setting of the magnitude or phase eccentricity of said member.



3,896,614
BALANCE-COCK-AND-REGULATOR ASSEMBLY FOR A TIMEPIECE MOVEMENT
Peter Bachmann, Bettlach, Switzerland, assignor to Ebauches Bettlach S.A., Bettlach, Switzerland
Filed May 21, 1974, Ser. No. 471,989
Claims priority, application Switzerland, June 8, 1973, 8381/73
Int. Cl. G04b *17/14*
U.S. Cl. 58—109 **8 Claims**



1. A balance-cock-and-regulator assembly for a timepiece movement, comprising: a balance cock having an opening for receiving a bearing secured into said opening and arcuate edge portions concentric to said opening, said edge portions having a radius greater than that of said bearing; and a regulator cooperating with a hairspring and having a profiled opening defining several tongues, some of said tongues engaging said edge portions on one side of said cock whereas the other tongues engage said edge portions on the other side of said cock, thus constituting pivoting means for said regulator on said balance cock.

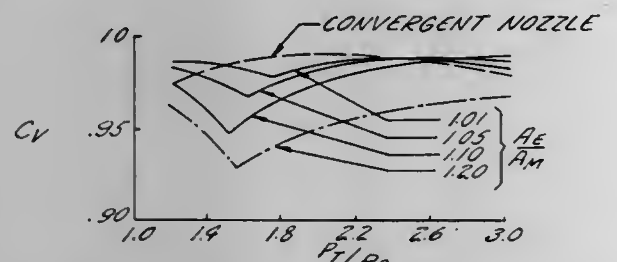
3,896,615
GAS TURBINE ENGINE FOR SUBSONIC FLIGHT

Martin S. Slatkin, Manchester; David L. Motycka, Glastonbury, and Vincent J. Disabato, Southington, all of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Continuation of Ser. No. 330,792, Feb. 8, 1973, abandoned. This application Oct. 4, 1974, Ser. No. 512,286

Int. Cl.^{2} F02K *3/06, 1/24*

U.S. Cl. 60—204 **3 Claims**



3. The method of operating a turbofan engine on takeoff wherein the engine has a fan exhaust nozzle including the steps of:

- maintaining a pressure ratio below the critical pressure ratio across the exhaust nozzle; and
- maintaining an area ratio between the nozzle exit area (A_E) and the nozzle minimum area (A_M) which is greater than 1.0 but less than or equal to 1.1.

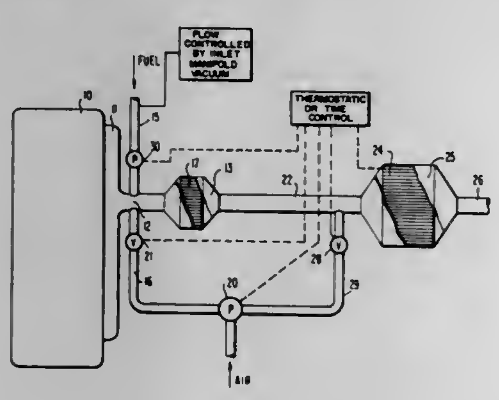
3,896,616
PROCESS AND APPARATUS

Carl D. Keith, Summit, and John J. Mooney, Wyckoff, both of N.J., assignors to Engelhard Minerals & Chemicals Corporation, Murray Hill, N.J.

Filed Apr. 21, 1972, Ser. No. 246,174

Int. Cl. F02b *75/10*

U.S. Cl. 60—274 **10 Claims**


FUEL
FLOW CONTROLLED BY INLET MANIFOLD VACUUM
THERMOSTATIC OR TIME CONTROL
AIR
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1. A method for oxidizing constituents of exhaust gas from an internal combustion engine, said gas containing carbon monoxide, hydrocarbon, and nitrogen oxides which comprises:

- passing during start-up of the engine said gas and an excess of molecular oxygen to a first catalyst;
- passing effluent gases from said first catalyst to a subsequent catalyst in sequential gas flow relationship with respect to said first catalyst, at least until said subsequent catalyst is at a temperature sufficient to promote the oxidation of carbon monoxide in said exhaust gas;
- subsequently passing added fuel, molecular oxygen, and nitrogen oxides-containing exhaust gas from the engine to said first catalyst, the fuel being added only when the engine inlet manifold is at an absolute pressure of less than about 20 inches of mercury, the amount of fuel being in excess of that stoichiometrically required to consume said oxygen by oxidation of the fuel and to reduce the nitrogen oxides in said gas; and
- passing the effluent gases from said first catalyst and molecular oxygen to said subsequent catalyst to reduce the carbon monoxide and hydrocarbon contents of said gases by oxidation.

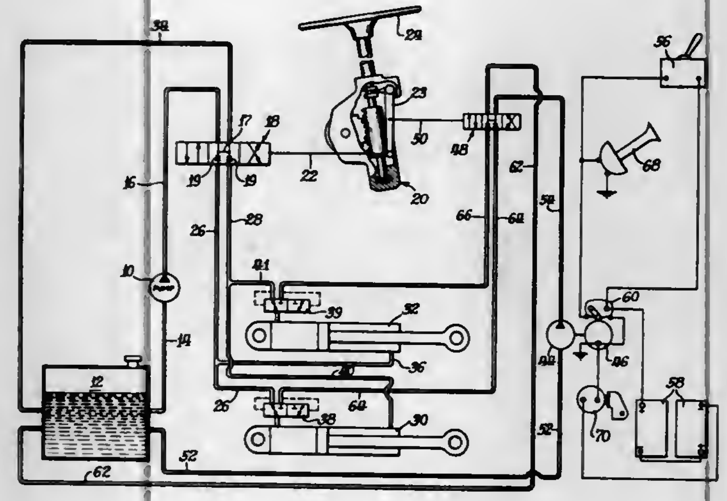
3,896,617
STEERING SYSTEM WITH ELECTRICALLY DRIVEN SECONDARY STEERING MEANS

Jack H. Kraina, Aura, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 1, 1973, Ser. No. 411,775

Int. Cl. F15b *20/00;* **B62d** *5/06*

U.S. Cl. 60—403 **10 Claims**



1. A steering system for an earthmoving vehicle comprising: hydraulic fluid supply means, primary pump means, primary fluid communication means including first conduit means for connecting said supply means and said primary pump means, steering motor means, said primary fluid communication means further including second conduit means for connecting said primary pump means to said steering motor means, primary control valve means in said conduit means between said primary pump means and said motor means for controlling the flow of hydraulic fluid to and from said motor means, steering mechanism means for selectively actuating said primary control valve means, selectively manually activated and deactivated secondary pump means, means for selectively manually activating and deactivating said secondary pump means, secondary communication means including third conduit means for connecting said secondary pump means to said fluid supply means, said secondary communication means further including separate fourth conduit means for connecting said secondary pump means to said steering motor means, secondary control valve means in said separate conduit means for controlling the flow of hydraulic fluid to and from said motor means upon selective manual activation and deactivation of said secondary pump means.

3,896,618
SYSTEM FOR PROVIDING AUXILIARY POWER

William E. Smith, Climax, and Charles J. Bowden, Galesburg, both of Mich., assignors to General Signal Corporation, Rochester, N.Y.

Filed May 31, 1974, Ser. No. 475,212

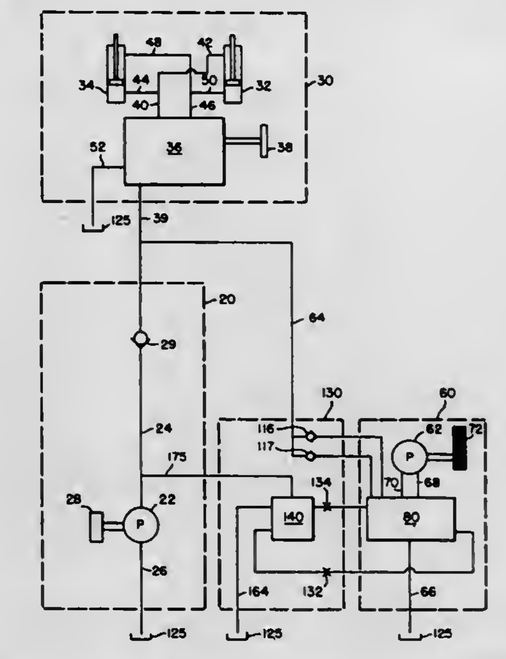
Int. Cl. F15b *20/00, 21/04*

U.S. Cl. 60—405 **7 Claims**

1. A system for providing auxiliary power which comprises: a primary means including a primary pump, an output line to provide primary power to a work function means, and a return line;

- an auxiliary means including an auxiliary pump, an output line to provide said auxiliary power, a return line and a valve means for controlling fluid flow in said output and return lines of said auxiliary means;

- a reservoir connected to said primary return line and said auxiliary return line;
- a controlled leakage means for cooling said auxiliary pump being connected to said auxiliary means, said reservoir and said primary means and being responsive to fluid pressure from said primary means for directing a portion of auxiliary output fluid to said reservoir when the primary means provides a predetermined pressure and directing a desired amount of said auxiliary output fluid to said auxiliary output line when said primary means provides less than said predetermined pressure.



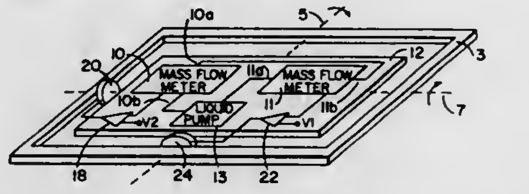
3,896,619
EARTH SPIN AXIS DETECTING PLATFORM USING CORIOLIS ACCELERATION DETECTORS

Joe S. Hunter; Little J. Little, both of Huntsville, and Escar L. Bailey, Athens, all of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 252,789, May 5, 1972, abandoned, which is a continuation-in-part of Ser. No. 94,706, Dec. 3, 1970, abandoned. This application Apr. 30, 1974, Ser. No. 465,641

Int. Cl.^{2} G01C *21/10*

U.S. Cl. 33—300 **5 Claims**



1. An earth spin axis detecting system using a Coriolis acceleration detector system employing two mass flow meter detectors mounted on an earth bound platform, each of said detectors having an input tube and an output tube positioned along a common sensitive axis, with the sensitive axes of each of said detectors being orthogonal; means for causing liquid flow through said mass flow meter detectors in which Coriolis acceleration forces are applied to said liquid circulating in said detectors; a Coriolis acceleration detecting means within each of said two mass flow meter detectors, said detecting means having a signal producing means with an output therefrom whereby an electrical output signal is produced having a magnitude and polarity according to said Coriolis acceleration on each of said detectors; and torquing means having an input electrically connected to said electrical output signal for driving said platform perpendicular to the earth's spin axis and nulling said Coriolis acceleration on said mass flow meter detectors wherein a vector normal to said platform points in a desired north reference direction.

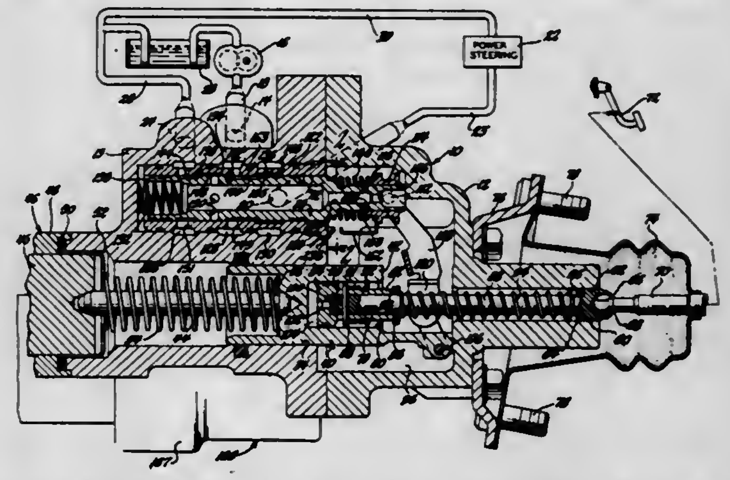
3,896,620
TWO-STAGE ACCUMULATOR VALVE

Donald M. Flory, Arcanum, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 14, 1974, Ser. No. 433,204

Int. Cl. F15b *7/00*

U.S. Cl. 60—547 **3 Claims**



1. In a hydraulic power brake booster assembly including a housing having a pressure chamber therein and a fluid storage accumulator adapted to be connected to a fluid pressure source, an improved valve assembly for controlling the flow of fluid into and out of said accumulator to the pressure chamber comprising: a valve seat member having a valve passage therethrough connecting the accumulator to the pressure chamber; a first valve element normally engaging said valve seat member when in a closed operative position to block fluid flow therebetween and movable against a spring to an open operative position permitting fluid flow; said first valve element having a bleed passage therein extending between the accumulator and the pressure chamber and being aligned with the passage in said valve seat member; a second valve element normally seated against said first valve element to block fluid flow through said bleed passage; operator controlled actuating means supported in alignment with said bleed passage and movable to unseat said second valve element thereby permitting fluid to flow through said bleed passage which flow produces a reaction force on said first valve element tending to move it toward an open operative position.

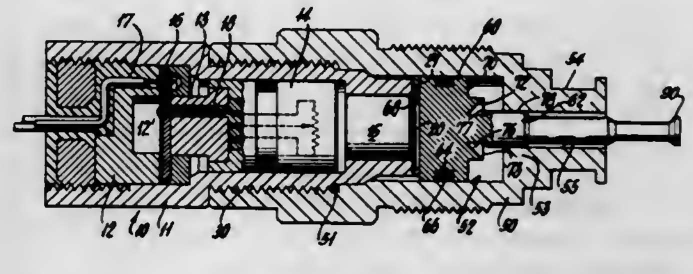
3,896,621
ACTUATING UNIT

Robert H. Sawyer, Bernardsville, N.J., assignor to Cartridge Actuated Devices, Inc., Fairfield, N.J.

Continuation-in-part of Ser. No. 230,837, March 1, 1972, Pat. No. 3,748,413. This application July 20, 1973, Ser. No. 381,321

Int. Cl. F01b *29/08*

U.S. Cl. 60—635 **1 Claim**



1. An actuating unit comprising a piston and cylinder, the piston comprising a head slidable within the cylinder on the interior cylindrical wall thereof and a piston rod projecting from one side of the head and aligned with an opening in an

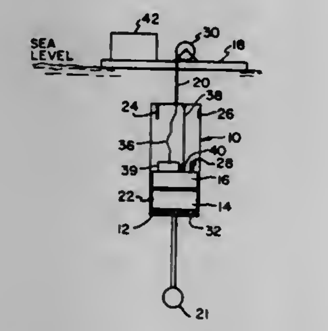
end wall of the cylinder, said opening constituting a guide aperture, said piston rod extending through said aperture and being guided by marginal edges of said aperture, that side of the head remote from the rod constituting a working surface to be subject to a motive force, means for joining said units to an actuating member for producing said motive force, the head of said piston having a metal forming configuration comprising an annular knife edge on that side thereof from which the rod projects, a recess in the rod adjacent said metal forming configuration and defined, at least in part, by a shoulder facing said configuration, deformable means cooperating with said configuration and consisting only of an integral portion of said cylinder end wall, said deformable means being deformable upon impact by said metal forming configuration said configuration including an inclined face leading from the knife edge towards said recess, said interior wall of the cylinder being substantially continuous between said one side of the head and said end wall in an initial position of said head within the cylinder, whereby upon application of motive force to said piston said metal forming configuration deforms said deformable means into said recess whereby said deformable means are constituted as means preventing rebound of the piston.

3,896,622

MOBILE POWER GENERATION DEVICE EMPLOYING TROPICAL WATER THERMOCLINE

George T. Danlello, 15704 Pamela Dr., Silver Spring, Md. 20904

Filed July 22, 1974, Ser. No. 490,845
Int. Cl. F03g *7/06, 7/04*
U.S. Cl. 60—641 **13 Claims**



1. A power generating device comprising:
a medium of variable temperature;
a closed housing in said medium;
energy absorbing means within said housing for absorbing thermal energy from, and rejecting thermal energy to, said medium;
energy conversion means within said housing for converting said thermal energy into useful work; and
means exterior to said housing for relocating said housing within said medium;
whereby said absorbing means absorbs thermal energy from said medium when said housing is in a warm location within said medium and said absorbing means rejects thermal energy to said medium when said housing is in a cool location within said medium and whereupon alternate absorption and rejection of thermal energy by said absorbing means causes said energy conversion means to perform useful work.

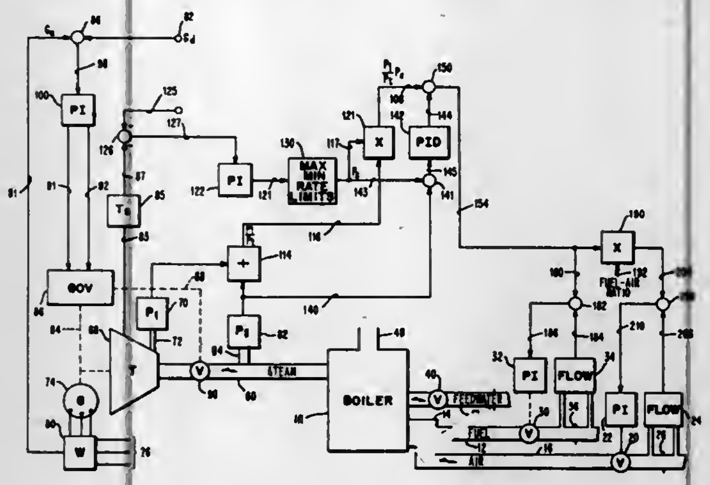
3,896,623

BOILER-TURBINE CONTROL SYSTEM

James H. Daniels, North Wales, Pa., assignor to Leeds & Northrup Company, North Wales, Pa.

Filed Mar. 6, 1974, Ser. No. 448,602
Int. Cl. F01k *13/02*
U.S. Cl. 60—665 **9 Claims**

1. Apparatus for controlling the inputs to a boiler of a boiler-turbine system in response to a demand signal calculated as the product of a signal representing a setpoint for the pressure of steam supplied by the boiler and a signal representing the ratio of a signal representing the steam flow in the turbine to a signal representing the measured value of said pressure with means for modifying said demand signal until said measured pressure returns to said setpoint and with a control valve for controlling the steam flow to the turbine so as to maintain a desired power output from a generator unit driven by said turbine, wherein the improvement comprises; means for measuring the temperature in the first stage of the turbine,



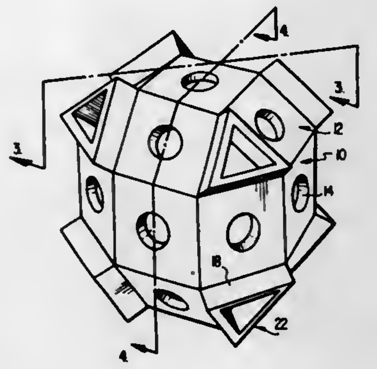
means for establishing a desired value for said first stage temperature, and
means operable to modify said pressure setpoint until the measured first stage temperature corresponds to the desired value for the first stage temperature.

3,896,624

POLYHEDRAL, POROUS, AND HOLLOW BLOCK

Dall Chin Chang, Ko Ho, 85 Block, Suhkyo-dong Mapo-Ku, Seoul, South Korea

Filed May 3, 1974, Ser. No. 466,639
Claims priority, application South Korea, May 3, 1973, 719
Int. Cl.² E02B *3/04*
U.S. Cl. 61—4 **5 Claims**



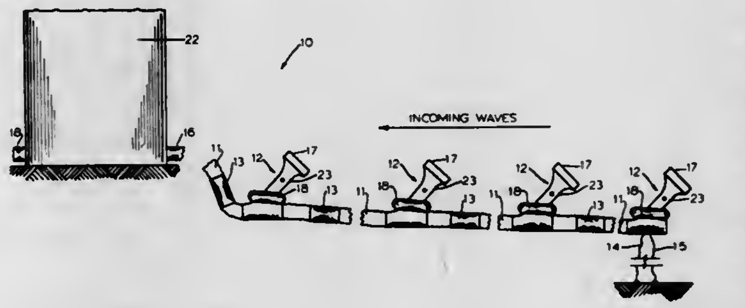
1. A polyhedral structural block suitable for use in constructing underwater foundations, having a hollow core and perforated surfaces, comprising in combination:
a. a plurality of flat rectangular first members;
b. a plurality of flat rectangular second members having a pair of flanges extending outwardly at an obtuse angle from a pair of parallel edges thereof, said plurality being twice the number of flat rectangular first members;
c. a first generally annular ring formed from a plurality of alternating first and second rectangular members, the surfaces of each member being at an acute angle to the surfaces of abutting members and the flanges of said second members extending radially and outwardly along the outer perimeter of said ring;
d. a second generally annular ring disposed at right angles to said first ring and having an imaginary axis which intersects an imaginary axis of the first ring at a point inside said hollow core, said second ring being formed from a plurality of alternating first and second members and having a pair of opposed first members in common with said first ring, the flanges of the second members thereof extending radially and outwardly along the perimeter of the second ring and each flange abutting an adjacent flange on the first ring to form an acute angle therewith;
e. a third generally annular ring disposed at right angles to both said first and second rings and having an imaginary axis which intersects the intersecting axes of said first and second rings, said third ring being formed from a plurality of alternating first and second members and having one pair of opposed first members in common with said first ring and a second pair of opposed first members in common with said second ring, the flanges of the second members thereof extending radially and outwardly along the perimeter of the third ring and abutting adjacent flanges on the first and second rings to form acute angles thereto, whereby a protruberant triangular opening is defined by abutting flanges of the three rings protruding outwardly from said members.

3,896,625

POWER CONVERSION APPARATUS FOR UTILIZING THE FORCE OF WAVES

David K. Lockhart, 805 Watts St., Durham, N.C. 27701

Filed July 5, 1974, Ser. No. 485,956
Int. Cl.² E02B *9/08*
U.S. Cl. 61—20 **2 Claims**



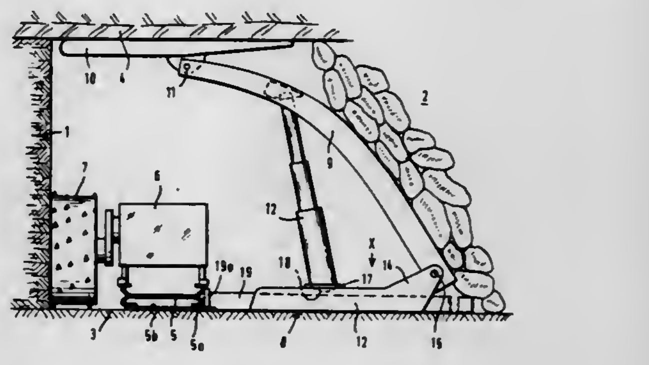
1. An apparatus for utilizing the force of waves comprising, in combination:
a. an elongated flexible pipe adapted for placing in the ocean with one discharge end on the shore and an oceanward end at a predetermined distance offshore;
b. cable means for anchoring the oceanward end of said pipe to the ocean floor;
c. a water receiving chamber on the shore having an inlet connected to said discharge end of the pipe and having an outlet for withdrawal of water;
d. a check valve connected to said inlet to prevent discharge of water therethrough from said chamber;
e. a plurality of funnel means spaced in series at predetermined points along the length of said pipe, said funnel means each having an orifice with its axis angled to face toward the incoming waves, a throat portion communicating with said orifice, an open conduit portion communicating with said throat portion at a point intermediate its length and a check valve in said throat portion, the ends of said conduit portion being connected to form a continuation of said pipe at each location of said funnel means;
f. flotation means connected to each said funnel means and being operative to maintain the same properly positioned with respect to said waves; and
g. a plurality of check valves in said pipe, at least one of which is located on the shore side of each funnel means so as to allow flow along said pipe only in the direction of said chamber;
said pipe, valves and funnel means being operative such that under the force of incoming waves, moving water is collected through such funnel means by increments, transferred to said pipe and to said chamber to develop a pressurized storage of water therein available for withdrawal as desired through said chamber outlet as a source of energy.

3,896,626

MINE LINING AND CONVEYOR COMBINATION

Klaus Spies, Dortmund-Wellinghofen, and Joachim Neeff, Bochum, both of Germany, assignors to Bochumer Eisenhutte Heintzmann & Co., Bochum, Germany

Filed May 18, 1973, Ser. No. 361,623
Claims priority, application Germany, May 19, 1972, 2224438
Int. Cl.² E21D *15/44*
U.S. Cl. 61—45 D **8 Claims**



1. In an excavating arrangement, a combination comprising a roof support having a floor-engaging base, a shield pivoted to said base and extending over the same toward the excavation face, a roof-engaging cap pivoted to said shield and extending beyond the same toward the excavation face, and a pit prop extending between said base and said shield; conveyor means extending along the excavation face underneath said cap and also engaging the excavation floor; means for displacing said roof support and said conveyor means relative to one another and sequentially toward the excavation face; and means connecting said roof support with said conveyor means and limiting said displacement of said roof support and of said conveyor means relatively to each other to linear displacement only in direction towards the excavation face while preventing any other relative displacement of said roof support and conveyor means, so that said conveyor means acts as an extension of said floor-engaging base of said roof support and reduces the tendency of the latter to tilt toward the excavation face about said floor-engaging base.

3,896,627

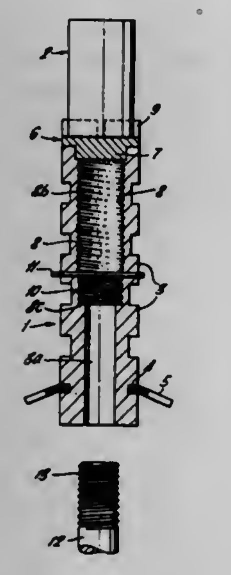
ANCHORING

John Vincent Brown, Granborough, England, assignor to Fosroc A.G., Switzerland

Filed Oct. 23, 1973, Ser. No. 408,688
Claims priority, application United Kingdom, Oct. 31, 1973, 50176/73
Int. Cl. E21d *20/02*
U.S. Cl. 61—45 B **6 Claims**

1. A device for use in the fixing of a bolt or the like in a borehole, comprising a generally tubular sleeve including a bore and formed of a compressible plastic material, said sleeve being adapted to be anchored in the borehole by means of a self-setting composition released into location between the sleeve and the borehole wall, the bore of the sleeve comprising a major portion of a first predetermined diameter and a minor portion of a second, smaller, predetermined diameter, said bore portions forming a shoulder at their junction and intermediate the ends of the sleeve, said minor diameter portion including an open end to receive a threaded end portion of a bolt so that said bolt portion can extend therethrough, thread

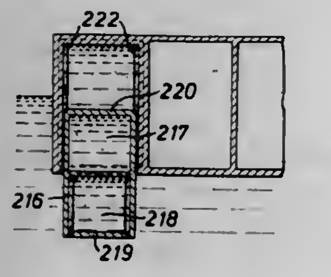
engaging means located in the major diameter portion and in abutment with the shoulder for engagement with the threaded end portion of the bolt extending through the minor diameter portion, and cap means sealing the major diameter portion of



the bore to prevent the ingress of the self-setting mix therein upon its release to thereby preclude contact between said composition and the threaded end of the bolt extending into said major diameter portion.

3,896,628
MARINE STRUCTURES

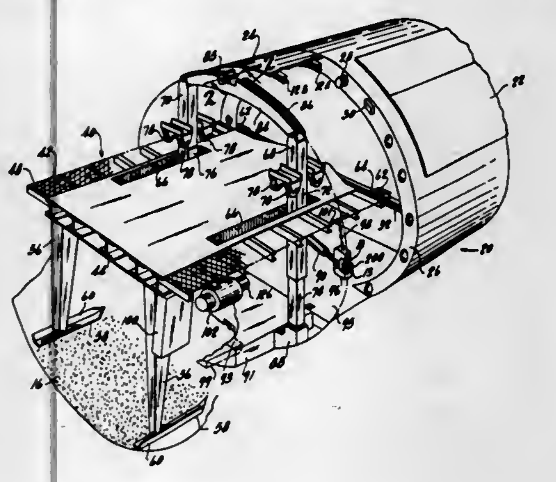
Frode Johan Hansen, Kingswood, England, assignor to Redpath Dorman Long (North Sea) Limited, Bedford, England
Filed Nov. 29, 1973, Ser. No. 420,294
Claims priority, application United Kingdom, Dec. 1, 1972, 55533/72; July 20, 1973, 34679/73; July 20, 1973, 34681/73; July 20, 1973, 34682/73
Int. Cl.² E02B *17/00*; E02D *23/16*
U.S. Cl. 61—46.5 **17 Claims**



1. A maritime assembly for disposal on a sub-aqueous bed, comprising a foundation raft to be founded on the bed, and a tower structure to project upwardly therefrom when founded, in which one of the foundation raft and the tower structure has a socket portion and the other has a corresponding spigot portion for engagememt therewith, and there are on the base of the foundation raft three units, each having two vertically spaced chambers, the lower of which chambers contains particulate material and there are means to remove particulate material from the lower chambers, whereby the raft can be lowered towards the seabed by displacement of the particulate material.

3,896,629
TRAILING SERVICE VEHICLE

Richard W. Stevens, Oconomowoc, Wis., assignor to Milwaukee Boiler Manufacturing Co., Milwaukee, Wis.
Filed July 29, 1974, Ser. No. 492,986
Int. Cl. E01g *5/00*
U.S. Cl. 61—85 **24 Claims**



1. A service vehicle suitable for trailing connection to a tunneling shield within a tunnel having segmented hoop-like ribs forming a portion of a liner, said vehicle comprising:

a horizontal platform positionable within the tunnel, one end of said platform having means for pivotal supportive connection to the rear end of said tunneling shield, the other end of said platform having means for supporting said platform from said tunnel, said platform having a pair of spaced slots lying parallel to the bore to the tunnel;

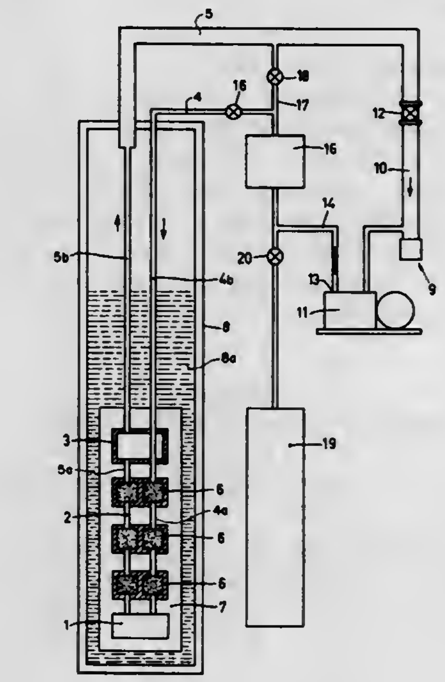
expander means movably mounted in said slots, said means being extensible in a direction perpendicular to the axis of the tunnel; and

means connected between said expander means normal to the bore of the tunnel for receiving the ribs and for expanding same against the interior surface of the tunnel.

3,896,630
METHOD FOR STARTING A ^{3}He-^{4}He DILUTION REFRIGERATOR

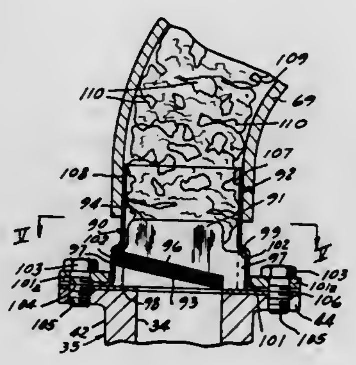
Adrianus Petrus Severijns, and Frans Adrianus Staas, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Mar. 14, 1973, Ser. No. 340,953
Claims priority, application Netherlands, Mar. 17, 1972, 7203556
Int. Cl. F25d
U.S. Cl. 62—56 **2 Claims**

1. A method of starting a device for transporting heat from a lower level to a higher level, both levels being below the λ temperature of helium, this device including: a cryostat whose walls define therein a vacuum space, and surrounding said space a first chamber for liquid helium, and within said vacuum space a mixing chamber with inlet and outlet means, a first evaporation reservoir with inlet and outlet means, a connection duct between the mixing chamber outlet and the evaporation reservoir inlet, and an inlet duct having a first part within said vacuum space in heat exchange with said connection duct and discharging in said mixing chamber inlet, and within said first chamber an outlet duct connected to said evaporation reservoir outlet and a second part of said inlet duct leading to said first part, the device further comprising a second reservoir containing a ^{3}He-^{4}He mixture and pumping means having inlet and discharge means, an auxilliary reservoir intermediate the pump discharge and second part of the inlet duct, and the pump inlet communicating with said evaporation reservoir, the method comprising the steps of: introducing a quantity of liquid helium into said first chamber of said cryostat, communicating said second reservoir with said second part of the inlet duct within said first chamber, and thereby flowing ^{3}He-^{4}He mixture in said second part and condensing said mixture therein, pumping gas from said pump outlet duct to said auxilliary reservoir, communicating gas from said auxilliary reservoir to said second part of the inlet duct for condensation therein according to the condensation step above, repeating the condensation steps, starting the refrigeration process by communicating said pump inlet with said outlet duct and said pump discharge with said second part of said inlet duct, whereby the pump now draws richly concentrated gas mixture and feeds same to the inlet duct where it is subjected to a phase transition in the mixing chamber to ^{3}He-poor phase, and thus produces refrigeration.



3,896,631
CRACKED ICE MAKER AND TRANSPORT SYSTEM

John Franklin Morrison, St. Paul, Minn., assignor to Whirlpool Corporation, Benton Harbor, Mich.
Filed Oct. 7, 1974, Ser. No. 512,526
Int. Cl. F25c *1/14*
U.S. Cl. 62—71 **10 Claims**



1. A cracked ice maker comprising,

an upright auger type ice generating means wherein a rotating auger removes ice flakes formed on an adjoining refrigerated chamber wall and advances the ice flakes axially upward,

a compaction means including an extrusion passage arranged to receive the upward advancing ice flakes and to compress and form said ice flakes into a dehydrated solid column of hard ice,

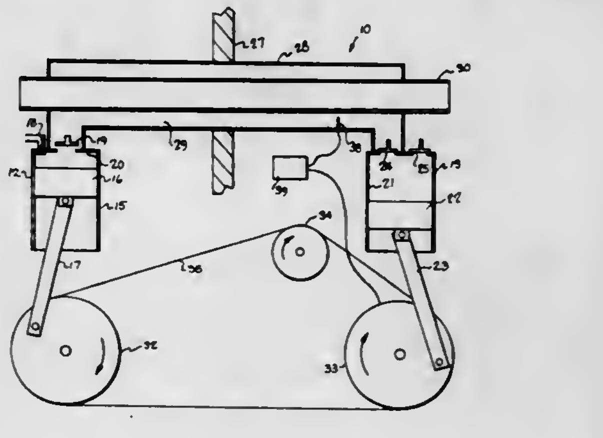
a cracking knife means associated with said extrusion passage and positioned relative thereto to reduce the solid column of hard ice into random cracked ice particles,

a partial-compaction means associated with the extrusion passage and positioned downstream of the knife means, wherein the cracked ice particles are compacted into a loosely-knit cohesive column of ice particles; and

a delivery conduit positioned downstream of said partial-compaction means to afford transport of the cohesive column of ice particles to a point of use.

3,896,632
AIR CYCLE HEATING OR COOLING

Leslie E. Huntley, Rt. 1, P.O. Box 7, Reubens, Idaho 83548
Filed Feb. 11, 1974, Ser. No. 441,406
Int. Cl. F25b *9/00*
U.S. Cl. 62—88 **12 Claims**



1. A method for transferring heat between a first environment and a second environment, comprising: substantially adiabatically compressing gaseous working medium from the first environment by means of a positive displacement compressor, conducting the compressed and, accordingly, heated gaseous working medium from the compressor through a pressure passage of a heat exchanger to a positive displacement expander, conducting exhaust gaseous working medium from the second environment through a second passage of the heat exchanger to the first environment, transferring heat from the heated, compressed gaseous working medium to the exhaust gaseous working medium, adiabatically expanding the compressed gaseous working medium from which heat has been transferred through the positive displacement expander and into the second environment to extract work from and cool the expanded gaseous working medium, applying the work obtained from the expansion of the compressed gaseous working medium from the expander to the compressor, and varying the ratio of the effective swept volume per unit time of the compressor relative to the effective swept volume per unit time of the expander directly as the absolute temperature of the first environment varies, whereby cool gaseous working medium is provided from the expander to the second environment, heated exhaust gaseous working medium is supplied from the heat exchanger to the first environment and energy is conserved by the application of work from the expander to the compressor and by the substantially adiabatic compression and expansion of the compressed gaseous working medium.

3,896,633
COMBINATION AIR DRYING AND CLEANING APPARATUS

Cleo J. Moore, 3338 N.W. 17, Oklahoma City, Okla. 73107
Filed Oct. 15, 1974, Ser. No. 514,701
Int. Cl.² F25D *21/00*
U.S. Cl. 62—272 **4 Claims**

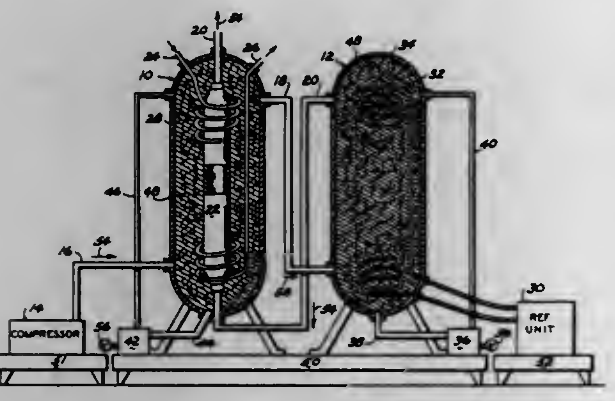
1. An apparatus for dehumidifying compressed air, comprising:

a source of compressed air;

a first elongated container forming a precooling chamber and air passageway for the flow of compressed air;

first heat exchange means including a coil extending through said container and circulating a fluid of known temperature within said first container;

a second elongated container forming a continuation of the air passageway;
second heat exchange means including a closed refrigerating unit having a refrigerant containing coil disposed within said second container; and,



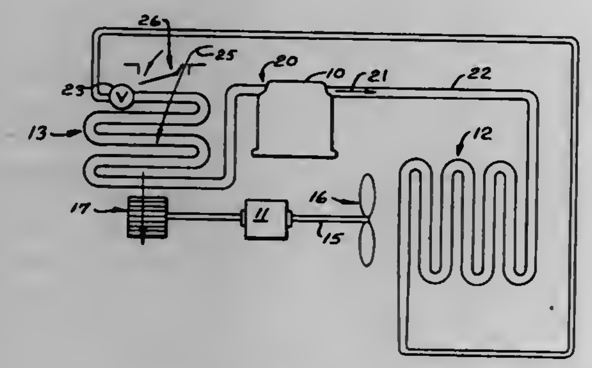
piping means forming a part of the air passageway and connecting said containers with each other and with the source of compressor air,
the downstream end portion of said piping means extending coaxially through said first container.

3,896,634
AIR CONDITIONING SYSTEM

Immanuel P. Nagele, Valley Center; Jerald W. Blakely, and Lloyd B. Vandeventer, both of Wichita, all of Kans., assignors to The Coleman Company, Inc., Wichita, Kans.

Filed Feb. 19, 1974, Ser. No. 443,491
Int. Cl.² F25D *17/04*

U.S. Cl. 62—408 **5 Claims**



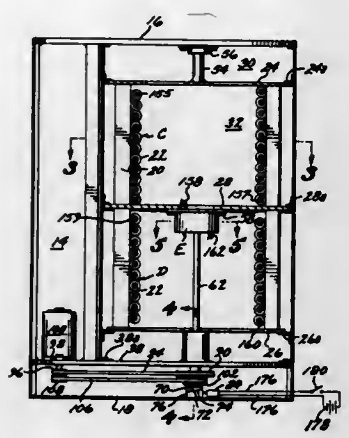
1. In an air conditioning system including a compressor for compressing a refrigerant, a condenser receiving refrigerant from the compressor and an evaporator receiving liquid refrigerant from the condenser and feeding gaseous refrigerant back to the compressor, the combination comprising: a fan motor provided with a shaft; a first condenser fan mounted to said shaft for forcing outside air over said condenser; a second evaporator fan mounted to said shaft for forcing room air over said evaporator through a room air conduit; and settable damper assembly means, a plate; and mounting means for said plate for selectively positioning said plate relative to said room air conduit between a fully closed position and an open position, said control means comprising mechanical link means including a flexible link connected at one end of said damper plate; a jacket slidably receiving said flexible link; first clamp means for anchoring said jacket adjacent said damper plate; a control switch for operating said fan motor and said compressor motor; second clamp means for fastening said jacket adjacent said switch, said second clamp means including a ramp for directing said link such that the axis thereof intersects with the rotatable shaft of said switch; has been inserted, the other end of said link being connected to said control switch and movable therewith in response to the turning on of said fan motor and said compressor motor, said link being actuatable to position said damper plate in the fully closed position to seal against the passage of room air through said room air conduit when said system is turned off and to move said plate through a continuous range of open positions in the "FAN ONLY" state between said closed position and said fully open position, said control switch being further actuatable to energize the compressor when said damper plate is in the fully open position with fan motor energized and being further actuatable to move said damper plate through a continuous range of positions to a relatively closed position while maintaining said compressor and said fan motor energized; whereby as said plate is moved between said relatively open position and said relatively closed position while said compressor is operating, the flow of air through said room air conduit is reduced, and the load on said fan motor is diminished, thereby increasing the speed of said fan motor and providing a greater flow of outside air to said condenser.

3,896,635
HEAT TRANSFER DEVICE AND METHOD OF USING THE SAME

Robert C. Stewart, 121 Twelfth St., Apt. C, Seal Beach, Calif. 90740

Filed Feb. 28, 1973, Ser. No. 336,510
Int. Cl.² F25B *3/00*

U.S. Cl. 62—499 **2 Claims**



1. An apparatus for concurrently forming a mass of air into a first cooled stream and a second heated stream thereof that includes:

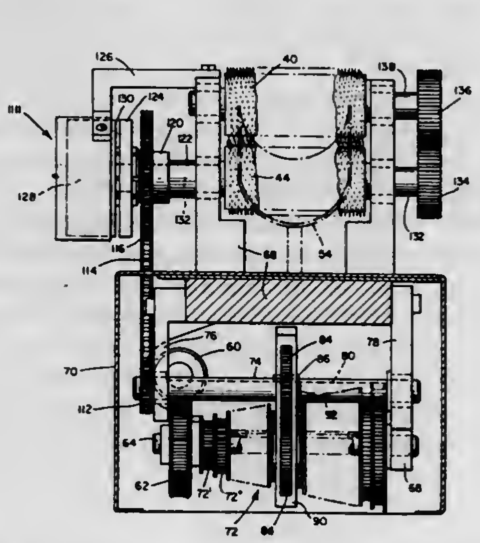
a. an elongated housing that includes a top, bottom and continuous side wall extending therebetween, said housing having first, second, third and fourth longitudinally spaced openings therein;
b. a rotatable assembly disposed in said housing, said assembly including a first upper circular plate, a second lower circular plate, a third circular plate intermediately positioned between said first and second plates, a plurality of elongate, circumferentially spaced, rigid members connected to the peripheries of said first, second and third plates; a tubular evaporator coil supported from said members above said third plate; a tubular condenser coil supported from said members below said third plate; a compressor that includes a housing having an inlet and an outlet, a rotor, and shaft for driving said rotor, said housing secured to said third plate; said evaporator coil having first and fourth ends and said condenser coil second and third ends, said first end connected to said inlet, said second end connected to said outlet; a length of tubing within said evaporator and condenser coils that connects said third and fourth ends; an expansion valve in said length of tubing; and a quantity of refrigerant in said evaporator and condenser coils that liquifies when subjected to a predetermined pressure;
c. first means for rotatably supporting said assembly in a fixed position in said housing; said top, first plate and a portion of said housing defining a first confined space in communication with said first opening; said first plate, third plate, and said evaporator coil defining a second confined space, with said first and second confined spaces at all times being in communication by at least one first port formed in said first plate; said second plate and the portion of said housing therebelow defining a third confined space in communication with said fourth opening; said second and third plates and said evaporator coil defining a fourth confined space that is in communication with said third confined space due to at least one second port formed in said second plate; said second and fourth confined spaces at all times in communication with said second and third openings;
d. first, second and third sealing means that extend inwardly from said housing and slidably engage said first, second and third plates as said assembly rotates;
e. power means for concurrently rotating said assembly and said shaft of said compressor at different rates of rotation, with said refrigerant being subjected to said predetermined pressure by said compressor as said refrigerant discharges into said condenser coil to liquify therein and to subsequently expand back to the gaseous state as it flows through said expansion valve back to said evaporator coil to absorb heat as it expands in said evaporator coi; and air in said second and third confined spaces being concurrently discharged therefrom through openings in said evaporator and condenser coils due to the centrifugal action imposed on said air as said assembly rotates, said air so discharged constituting said first and second streams that flows outwardly from said housing through said second and third openings therein, said first and second streams prior to flowing from said second and third openings being cooled and heated respectively due to heat exchange contact with said evaporator and condenser coils, and said air as it discharges from said second and third confined spaces being replaced by air that flows thereinto from said mass of air through said first openings and said first port and said fourth opening and second port respectively.

3,896,636
SLIVER FEEDING MEANS FOR HIGH PILE FABRIC CIRCULAR KNITTING MACHINES

Thomas J. Thore, Tarboro, N.C., assignor to Glenoit Mills, Inc., New York, N.Y.

Filed Nov. 6, 1972, Ser. No. 304,099
Int. Cl.² D04B *9/14*

U.S. Cl. 66—9 B **9 Claims**



1. In a sliver high pile fabric knitting machine having a circle of needles and a plurality of sliver feeding devices for feeding sliver fibers to the needles, each said sliver feeding device including a doffer, a pair of rotatable sliver feed rolls and drive means for the feed rolls, a plurality of pattern means for controlling individually the rotation of the feed rolls of each sliver feeding device, each such pattern means being operatively associated with one only of the sliver feeding devices, each said pattern means including:

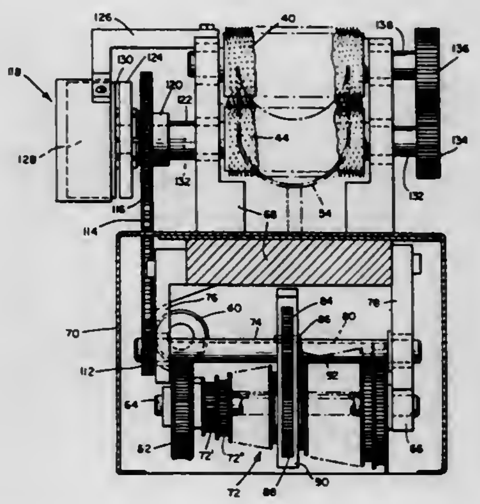
a. an electric clutch engageable selectively with the sliver feed rolls of the sliver feeding device,
b. a first control means for controlling the clutch, to impart intermittent rotation selectively to the feed rolls, said first control means including,
   i. a needle selecting drum disposed adjacent the circle of needles and having a complement of jacks,
   ii. a microswitch mounted adjacent the drum and controlled by the jacks, and connected electrically to the clutch of the sliver feeding device,
   iii. needle selecting means disposed between the drum and the needles, for selecting needles at another sliver feeding device,
c. and a second control means to vary selectively the rate of rotation of the feed rolls, when the clutch is engaged therewith, to vary selectively the rate of delivery of sliver fibers to the needles.

3,896,637
SLIVER FEEDING MEANS FOR HIGH PILE FABRIC CIRCULAR KNITTING MACHINES

Thomas J. Thore, Tarboro, N.C., assignor to Glenoit Mills, Inc., New York, N.Y.

Division of Ser. No. 304,099, Nov. 6, 1972. This application Apr. 18, 1974, Ser. No. 461,908
Int. Cl.² D04B *9/14*

U.S. Cl. 66—9 B **11 Claims**



6. In a sliver feeding means for a high pile fabric circular knitting machine having a rotatable needle cylinder with a complement of needles and a rotatable ring gear, said sliver feeding means including a doffer, a main cylinder, a single pair of sliver feed rolls and drive means for driving the doffer and cylinder from the ring gear at selected constant speeds of rotation, the improvement comprising

a. a separate drive system for the sliver feed rolls, said separate drive system being driven from the ring gear and including
b. fabric density control means interposed between the ring gear and the feed rolls to vary selectively the rate of rotation of the feed rolls, to vary selectively from a sliver roving the rate of delivery of sliver fibers to the needles, said fabric density control means including
   i. a group of individual gears of varying size,
   ii. drive means connecting the group of gears to the feed rolls, to drive the feed rolls rotatably,
   iii. said drive means including a gear selector engageable selectively with one gear of the group of gears for imparting a selected speed of rotation to the feed rolls.

11. Sliver feeding means for a high pile fabric knitting machine having a circle of needles, said sliver feeding means including a pair of rotatable sliver feed rolls and rotatable means for transferring sliver fibers from the

feed rolls to the needles, the combination comprising:
a. sliver shredding means including,
i. a wire covering for each feed roll, each said wire covering including a plurality of circumferentially extending wires, and
ii. a wire covering for the sliver transfer means comprising a plurality of circumferentially extending wires,
iii. each of said wire coverings intermeshing with each of the other wire coverings,
b. drive means for rotating the feed rolls and
c. pattern means for controlling selectively the rotation of the feed rolls comprising
i. a first control means operative to impart rotation to the feed rolls to deliver sliver selectively to the transfer means according to a predetermined pattern and
ii. a second control means to vary selectively the rate of rotational speed of the feed rolls, to vary selectively the rate of delivery of sliver fibers to the transfer means.

3,896,638

PROGRAMME CONTROL DEVICES

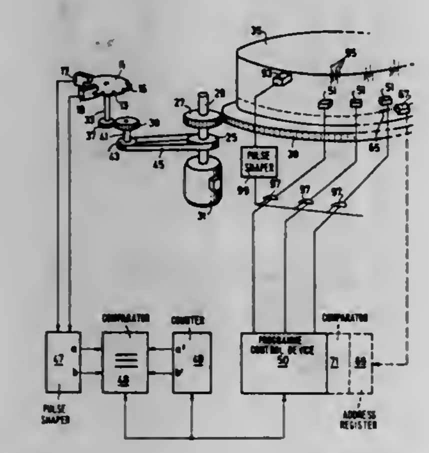
Gernot Gottschall, Boblingen, and Peter Doslik, Bonlanden, both of Germany, assignors to Firma Franz Morat GmbH, Stuttgart, Germany

Filed June 7, 1972, Ser. No. 260,413

Claims priority, application Germany, June 16, 1971, 2129851

Int. Cl. D04b *15/78*

U.S. Cl. 66—50 R **19 Claims**



1. A programme control device for the working parts of a periodically operated machine, said machine having machine operation sequences, each sequence having the same number of machine strokes, comprising in combination: a storage means for storing information for controlling the working parts; reading means for reading out and feeding information words from said storage device to the working parts; reading clock means for producing reading clock signals, said reading clock signals being fed to said reading means such that new information words are only fed to said working parts after feeding a reading clock signal to said reading means; means for generating for each machine stroke of said machine operation sequences a different code signal; and means for deriving different expected code signals from said code signals, said expected code signals having the same code as said code signals but being generated in an order prescribed by the function of said machine; said reading clock means including means for comparing each generated code signal with each generated expected code signal so that a reading clock signal and a new expected code signal are only generated when said code signal corresponds to an expected code signal.

3,896,639

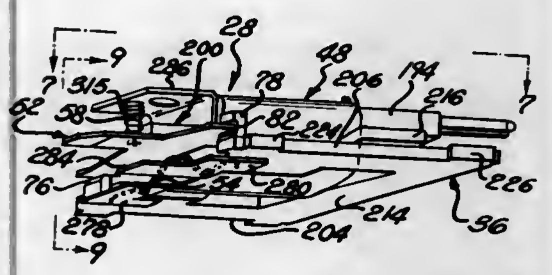
KNITTING MACHINE ACTUATORS

Paul Christiansen, Novelty; Walter A. Hofmann, Lyndhurst, both of Ohio, and Werner Muller, Farmington, Conn., assignors to Hayes-Albion Corporation, Norristown, Pa.

Filed Jan. 9, 1973, Ser. No. 322,132

Int. Cl. D04b *15/78*

U.S. Cl. 66—50 R **40 Claims**



1. A knitting machine comprising needle carrier means for moving a plurality of knitting needles through a knitting station, a plurality of jack means each of which is associated with one of said needles and is operable between knit and nonknit conditions, and a plurality of actuator means disposed at the knitting station for effecting operation of said jack means between the knit and nonknit conditions, each of said actuator means including coil means energizable to provide a magnetic field, a frame member having a plurality of parallel interconnected leg sections including a first leg section extending through said coil means, a second leg section disposed on one side of said first leg section, and a third leg section disposed on a side of said first leg section opposite said one side, an armature member movable under the influence of a magnetic field emanating from said coil means, and mounting means connected with said second and third leg sections for supporting said armature member for pivotal movement between a first position in which said armature member is ineffective to operate one of said jack means between the knit and nonknit conditions and a second position in which said armature member is effective to operate one of said jack means between the knit and nonknit conditions, the magnetic field emanating from said coil means of each of said actuator means being effective upon energization thereof to attract said armature member with a magnetic force which increases at an increasing rate as said armature member moves between the first and second positions, each of said actuator means further including first spring means for providing a first biasing force opposing movement of said armature member between the first and second positions under the influence of the magnetic field emanating from said coil means, and second spring means for providing a second biasing force which is effective to oppose movement of said armature member after said armature member has moved part way between said first and second positions against the influence of said first biasing force, said first and second spring means cooperating during movement of said armature member to provide a total biasing force which increases at a first rate during an initial portion of the movement of said armature member between the first and second positions and which increases at a second rate which is greater than the first rate during a final portion of the movement of said armature member between the first and second positions.

3,896,640

DEVICE FOR THE DETECTION OF EXCESSIVE THREAD TENSION AND THREAD BREAKAGE

Jacques Palencher, Troyes, France, assignor to Lebocey Industrie, Troyes, France

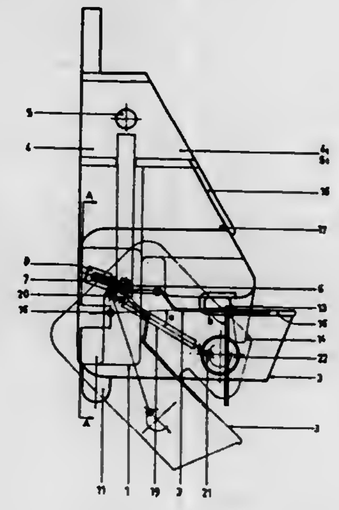
Filed Apr. 9, 1973, Ser. No. 349,014

Int. Cl. D04b *35/12, 35/14*

U.S. Cl. 66—161 **2 Claims**

1. A device for detecting the breakage of, and excessive

tension in, the thread operating in a knitting machine comprising:
a. a case;
b. a first detection lever pivotally mounted to said case, said first detection lever being arranged and configured to detect the breakage of said thread;
c. a second detection lever pivotally mounted to said case, said second detection lever being arranged and configured to slidably support said thread; and
d. a spring means having first and second ends, said first end thereof being connected to said case at a first point and said second end thereof being connected to said second detection lever at a second point thereon, the return force of said spring tending to maintain said second detection lever against an abutment, said first and second points being situated on opposite sides of an imaginary straight



line joining the axis of rotation of said second detection lever and the point at which said thread engages said second detection lever, said first point being situated nearer to the axis of rotation of said second detection lever than to said point at which said thread engages said second detection levėr, and said second point being situated nearer to said point at which said thread engages said second detection lever than to the axis of rotation of said second lever, the length of said spring being approximately equal to the distance between the axis of rotation of said second detection lever and said point at which said thread engages said second detection lever,

whereby, said second detection lever is responsive to excessive tension in said thread by pivoting about its axis of rotation and against the return force of said spring until said thread escapes thereform.

3,896,641

COMBINATION LINT FILTER AND ADDITIVE DISPENSER FOR AUTOMATIC WASHER

Joseph C. Worst, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed July 30, 1973, Ser. No. 384,014

Int. Cl.^{2} D06F *39/02, 39/10*

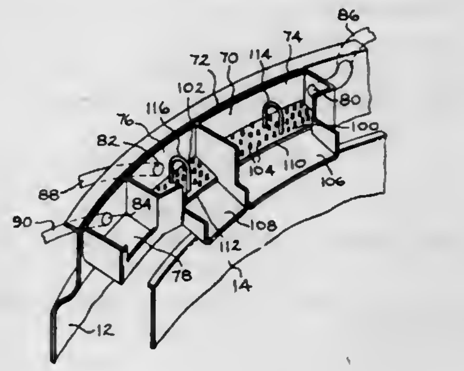
U.S. Cl. 68—17 R **5 Claims**

1. In a washing machine having a container for receiving items to be washed and means for recirculating liquid therein, a combination filter, additive-dispenser comprising:

a receptacle having at least one chamber and arranged for receiving an additive to be introduced into said container; liquid diversion means including a conduit communicating the receptacle with said recirculation means and operable at predetermined times for causing at least a portion of the recirculating liquid to flow into the receptacle for effecting transfer of the additive into said container;

filtration means arranged in the receptacle for removing foreign material from the flow of recirculating liquid before said liquid re-enters said container, said filtration means comprising a plurality of generally parallel, spaced-apart pins projecting from a substrate arranged such that incoming recirculating liquid flows thereover; and

mechanical means for manually cleaning the filtration means comprising a rigid plate having a plurality of holes therein at least corresponding to the pins of the filtration means, the plate normally superimposed over said pins so as to be in close proximity to said substrate such that the incoming liquid flows over the plate, and means for manually gripping the plate, whereby it is removed from its normal position, foreign material removed by the pins



from the flow of recirculating liquid will be stripped from the pins.

3. The invention of claim 2 wherein said lint filter-additive dispenser is adapted for mounting in said washing machine so as to be secured to said container at the top portion thereof, and further comprising cover means for gaining access into said receptacle.

4. The invention of claim 3 wherein access to said cover means is through an aperture in said appearance cabinet adjacent said access cover.

5. The invention of claim 4 wherein said receptacle includes three chambers, two of which are provided with lint filter means.

3,896,642

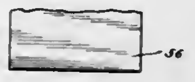
COMMERCIAL LAUNDRY MACHINE

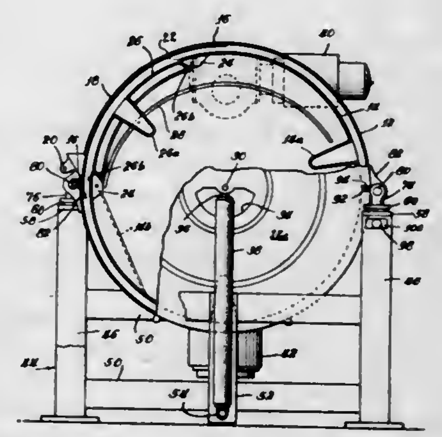
Alex Toth, Lincolnwood, Ill., assignor to Ellis Corporation, Chicago, Ill.

Filed Dec. 13, 1973, Ser. No. 426,952

Int. Cl. D06f *39/00*

U.S. Cl. 68—210 **12 Claims**





1. A commercial laundry machine comprising a support base, a cylindrical casing supported from said base with its longitudinal axis extended horizontally, said casing having a

wall with an opening therein for loading and unloading of laundry material into and out of said casing, first detachable connector means on one side of said longitudinal axis for releasably supporting said casing and permitting pivotal movement about a first horizontal pivot axis on said base in one direction relative to said base, second detachable connector means on an opposite side of said longitudinal axis for releasably supporting said casing and permitting pivotal movement about a second parallel pivot axis on said base in an opposite direction, and means interconnecting said base and said casing at at least one point spaced from said first and second axes for pivoting said casing in said one direction to an elevated eccentric unloading position relative to said base when said second connector means is detached wherein said opening is spaced outwardly of said first pivot axis and for pivoting said casing in said opposite direction to an elevated eccentric loading position relative to said base when said first connector means is detached wherein said opening is between said pivot axes.

3,896,643
LOCKING DEVICE FOR A MOTORCYCLE DRIVER'S HELMET

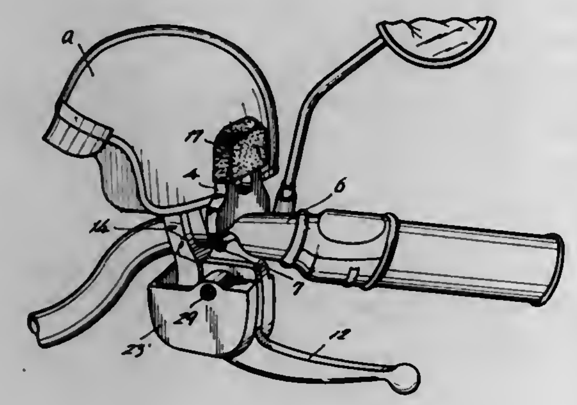
Hideo Kawakami, Hamamatsu, Japan, assignor to Takagi Tekko Kabushiki Kaisha, Japan

Filed Nov. 23, 1973, Ser. No. 418,759

Claims priority, application Japan, Nov. 26, 1972, 47-135713

Int. Cl. E05b *69/00*

U.S. Cl. 70—59 **4 Claims**



1. An apparatus
for selectively securing and releasing a helmet to the handle bar of a vehicle, comprising, in combination:
a body structure adapted to be mounted on said handle bar of said vehicle and having an integral stationary pinch arm extending uprightly on said body structure;
said body structure including an integral mounting plate member depending therefrom;
a pivotal pinch arm pivotably mounted on said mounting plate member for pivotal movement toward and away from said stationary pinch arm for selectively pinching the rear wall of said helmet in co-operation with said stationary pinch arm, and for selectively releasing said helmet;
an operation lever pivoted to said mounting plate member and to said pivotal pinch for pivotably moving said pivotal pinch arm toward and away from said stationary pinch arm so as to increase and reduce the distance between said stationary and pivotal pinch arms; and
a locking mechanism mounted on said mounting plate member for locking said operation lever when said helmet is pinched between said stationary and pivotal pinch arms.

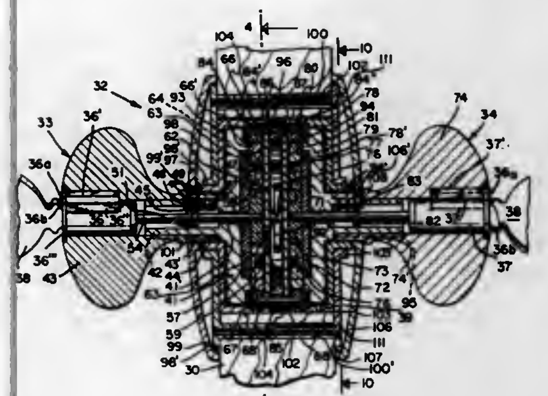
3,896,644
DOUBLE SPIN KNOB DOOR LOCK

Charles E. Nagy, 3221 Benda Pl., Hollywood, Calif. 90068, and John F. Nagy, 785 W. End Ave., New York, N.Y. 10025

Filed Oct. 11, 1974, Ser. No. 514,119

Int. Cl.² E05B *55/06, 3/04*

U.S. Cl. 70—149 **11 Claims**



1. A double spin knob door lock comprising two axially-opposing key-operated hand knob assemblies, assembled casing parts enclosing portion of the hand knob assemblies and adapted to fit within a cutout lock opening in a door, as a unit one of the hand knob assemblies extending from inside of the door and the other hand knob assembly extending from outside of the door, each of said hand knob assemblies having a hand knob and an internal main body part connected to the hand knob to be turnable therewith, radially adjustable key bar means on body part, a key-operated tumbler lock cylinder extending axially through the hand knob and a square operating shaft extending inwardly therefrom and through the main body part and freely turnable therein, a turnable cam-track supporting member connected to the shaft to be driven thereby and having cam-track thereon, said cam-track supporting member turnable relative of the main body part independently thereof to positively radially-adjust the key bar means on the body part, said cam track supporting means having a square opening with which said tumbler lock square operating shaft drivingly engages to turn the turnable cam-track supporting means and the said cam-track operable upon the radially-adjustable key bar means to positively thrust the key bar means radially-outwardly or positively-inwardly as a door key is inserted into the key-operated tumbler lock cylinder and the square shaft turned thereby, an internally-serrated ring lying inwardly of the main body part with serrations with which the key bar means will have drive engagement when the key bar on cam-track supporting means is radially-outwardly adjusted by the turning of the tumbler lock cylinder, a drive plate disposed inwardly of and lying adjacent to the serrated ring, a spacing ring disposed between the drive plates of the two opposing assemblies to provide space therebetween, means for securing together the spacing ring, the serrated rings and the drive plates of the associated hand knob assemblies to provide a common lock bolt operating mechanism, means for mounting the common lock bolt operating mechanism in axial relationship with and between the hand knob assemblies and in said casing parts for rotation with respect thereto, a lock bolt assembly extending laterally from the common lock bolt operating mechanism, and adapted to extend through the side edge of the door for engagement with a door frame keeper plate in the door frame opening, said lateral lock bolt assembly having a vertically-extending slot, a work pin extending between the drive plates of the common lock bolt operating mechanism and through the vertically-extending slot of the lock bolt assembly to retract and extend the same and means for securing the assembled casing enclosing parts and the hand knob assemblies upon the door whereby the door will be locked from both sides thereof by virtue of the key bar means of the hand knob assemblies being

retracted radially-inwardly out of engagement from their serrated rings of the common lock bolt operating mechanism and the hand knobs of both inside and outside knob assemblies left free to spin upon the door.

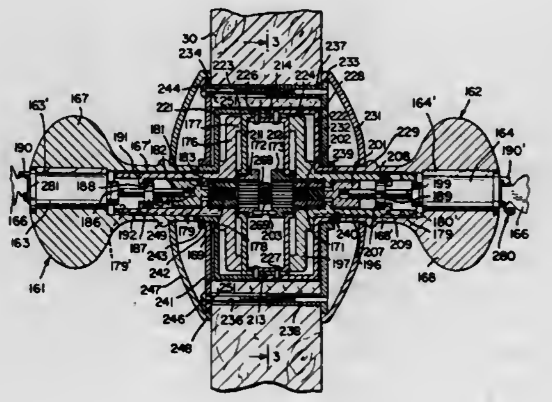
3,896,645
DOUBLE SPIN KNOB DOOR LOCK

Charles E. Nagy, 3221 Benda Pl., Hollywood, Calif. 90068, and John F. Nagy, 785 West End Ave., New York, N.Y. 10025

Filed Oct. 11, 1974, Ser. No. 514,120

Int. Cl.² E05B *55/06, 3/04*

U.S. Cl. 70—149 **10 Claims**



1. A double spin hand knob door lock comprising two axially-opposing hand knob assemblies, a casing assembly for joining the hand knob assemblies together and adapted to be inserted therewith as a unit into a cutout lock opening in the door adjacent the edge thereof, said casing having and opening adjacent the door edge, one of said hand knob assemblies extending from the inner side of the door and the other hand knob assembly extending from the outer side of the door, each of said hand knob assemblies including a body part journaled in the casing assembly and a hand knob extending outwardly from the body part to turn the same, a tumbler lock cylinder fixed within the hand knob and having a drive shaft extending inwardly therefrom, an operating block journaled in the body part and having a fast-threaded projection thereon, an externally-splined nut journaled in the body part and threadedly connected to the fast threaded block projection to be positively thrust inwardly when the lock cylinder and its shaft are turned by the key, an internally-splined ring journaled in the casing assembly and receiving the externally-splined nut when thrust thereinto by the turning of the fast threaded block, a lock bolt assembly laterally-adjustable through the opening in the casing assembly and the door edge between retracted and extended lock positions with respect to the door edge, a crank pin extending between the internally-splined rings of the both assemblies and operatively connected to the lock bolt assembly to positively retract and extend the same, and means for securing the casing assembly in the cutout lock opening of the door, the hand knob of each of the hand knob assmblies, upon the externally-splined fast thread nut being retracted from its cooperating ring by the lock cylinder and its shaft, being free to spin thereby effectively locking the door from the inner and outer sides thereof, the inner side as well as the outer side.

3,896,646
TESTING PROBE FOR NON-DESTRUCTIVE TESTING OF MATERIAL

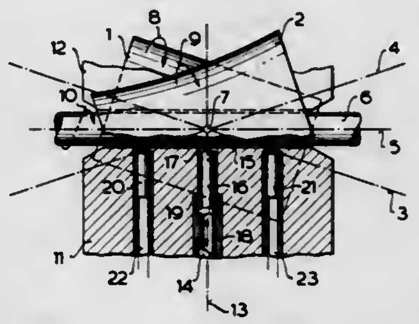
Hans M. Lange, Reutlingen, Germany, assignor to Institut Dr. Friedrich Forster, Reutlingen and Th. Kieserling & Albrecht, Solingen, both of, Germany

Filed Feb. 20, 1974, Ser. No. 444,047

Claims priority, application Germany, Feb. 21, 1973, 2308446

Int. Cl. B21b *19/10*

U.S. Cl. 72—14 **4 Claims**



1. In a material straightening machine having a pair of rolls for forming the material and moving it along a definite path:
a guide rail located at one side of the material as it moves along the path;
first and second material position sensors carried by said guide rail and spaced from one another along the path, said sensors each providing respective electric signals when the material is located immediately opposite thereto;
circuit means responsive to the lack of one or both electric signals from said first and second material position sensors for providing a further electric signal;
a material defect detecting probe carried by said guide rail between said first and second sensors; and
means responsive to the circuit means further signal for moving said probe in a direction away from the material.

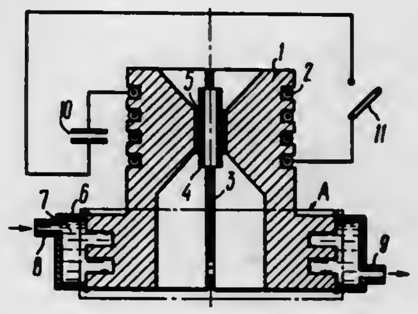
3,896,647
INDUCTOR FOR SHAPING PARTS BY PULSED MAGNETIC FIELD PRESSURE

Valery Mikhailovich Mikhailov, Komsomolsky prospekt 10, kv. 150, and Lev Timofeevich Khimenko, poselok Pokatilovka, ulitsa Ulyanovskaya, 35, both of Kharkov, U.S.S.R.

Filed Mar. 19, 1973, Ser. No. 342,799

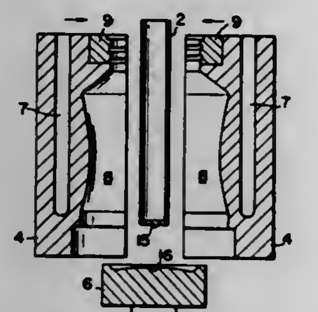
Int. Cl. B21d *26/14*

U.S. Cl. 72—56 **2 Claims**



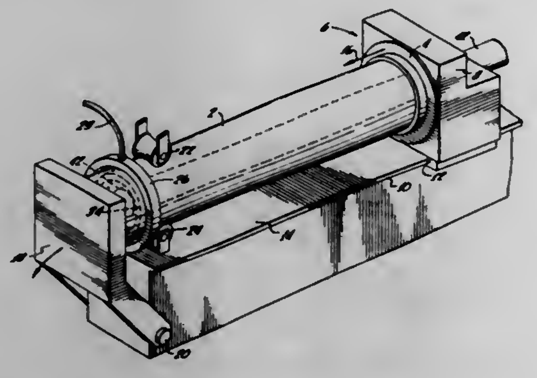
1. An inductor for shaping parts by pulsed magnetic field pressure comprising: a concentrator having an axial opening extending throughout its length, a portion of said opening serving to receive a part to be shaped therein; a winding for inducing current in said concentrator and disposed on a portion of the outer side surface of said concentrator around said part of the axial opening with said part to be shaped placed therein, the other portion of said outer side surface of said concentrator extending in a radial direction, in the form of fins to ensure cooling of the concentrator through contact with cooling means.

3,896,648
BLOW MOLDING PROCESS FOR CONTAINER OF SUPERPLASTIC ALLOY
Francis Schertenleib, Furstentum, Liechtenstein, assignor to Alter Licensing Establishment, Vaduz, Liechtenstein
Filed May 31, 1974, Ser. No. 474,964
Claims priority, application Japan, Oct. 2, 1973, 48-110915
Int. Cl. B21d *26/04*
U.S. Cl. 72—61 **6 Claims**



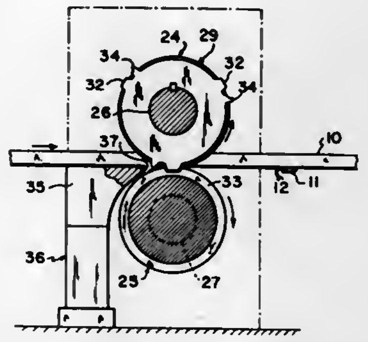
1. A method of manufacturing a blow-molded article of a container made of a superplastic alloy, comprising the steps of:
   - a. forming a bottomed cylinder from a starting material of said superplastic alloy,
   - b. performing a mechanical finish processing for smoothing the surfaces of said cylinder and for enhancing the dimensional accuracy,
   - c. preheating the finish-processed cylinder by holding it in a temperature range of 200° to 300°C for at least two minutes,
   - d. receiving the heated cylinder in a metal mold assembly, and blowing out said cylinder from the port side towards the interior thereof by fluid pressures of an initial pressure of at least 8 atm. and a molding pressure in the range of 7 – 20 atm., and
   - e. cooling said metal mold assembly by air blast before it is opened to take out the inflated product therefrom.

3,896,649
METHOD AND APPARATUS FOR BENDING PIPE
James M. Stuart, Costa Mesa, Calif., assignor to Rollmet, Inc., Santa Ana, Calif.
Filed Mar. 4, 1974, Ser. No. 447,886
Int. Cl. B21d *7/16*
U.S. Cl. 72—128 **13 Claims**



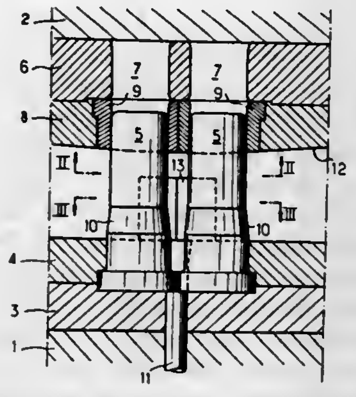
1. A device for bending pipe comprising:
a first burner means through which the pipe is passed to heat a narrow band of the exterior of the pipe to a temperature substantially reducing its yield point;
second burner means around which the tube is passed to heat a narrow band of the interior of the tube to a temperature substantially reducing its yield point, said interior heated band and said exterior heated band being substantially opposite each other;
means for feeding the pipe past said burners; and
means for applying a bending moment to the heated portion of the pipe.

3,896,650
STEEL BUILDING COMPONENTS WITH ATTACHMENT MEANS FOR WALL AND FLOOR SURFACE ELEMENTS AND MANUFACTURE THEREOF
Theodore S. O'Konski, Wheeling, W. Va., assignor to Wheeling-Pittsburgh Steel Corporation, Pittsburgh, Pa.
Division of Ser. No. 168,967, Aug. 4, 1971, Pat. No. 3,802,147. This application Sept. 27, 1973, Ser. No. 401,270
Int. Cl. B21d *13/04*
U.S. Cl. 72—186 **3 Claims**



1. Rolling apparatus by which to form integral wall attachment means in steel studding of the hollow thin wall type, said apparatus comprising:
   - a. a pair of oppositely rotating rolls supported in parallel relation and spaced so as to accomodate the gauge of the steel sheet moving therebetween, one of the rolls having a circumferential groove therein and the other roll having therein a plurality of pairs of closely spaced teeth arranged circumferentially so as to register with the said groove in the said one roll, and
   - b. an anvil stationarily supported in advance of said rolls and having an open-end slot for receiving the trailing tooth of each of said pairs while the leading tooth of the same pair is within the said groove.

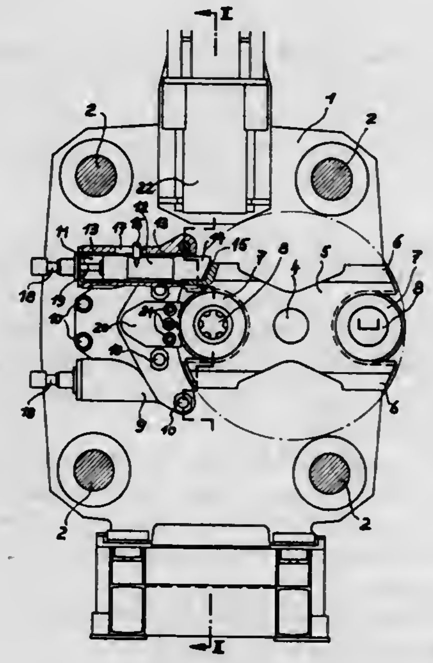
3,896,651
METHOD OF FORGING COMPONENTS HAVING RADIALLY PROJECTING ARMS, E.G. CRUCIFORM COMPONENTS, AND TO PRESS APPARATUS FOR USE IN CARRYING OUT THE METHOD
Hery Starkier, 21, Rue des Petits Champs, Paris, France (75001)
Filed Dec. 28, 1973, Ser. No. 429,137
Claims priority, application France, Jan. 16, 1973, 73.01456
Int. Cl. B21c *25/08*
U.S. Cl. 72—260 **5 Claims**



1. A method of forging parts having radially projecting arms, which method comprises squeezing between two substantially planar surfaces, a metal billet disposed within an arrangement of parallel substantially cylindrical columns which are disposed closely about the billet with their lengthwise axes extending parallel to the direction of the relative movement of the planar surfaces in squeezing a billet, the number of columns corresponding to the number of arms to be provided on the part.

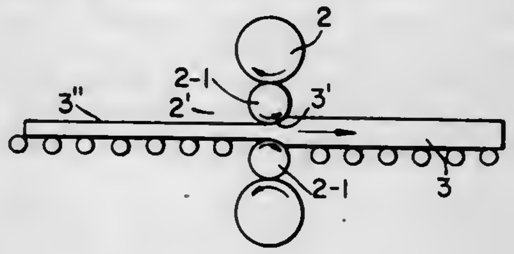
2. Press apparatus comprising two parallel platens each of which carries a die plate and one of which is movable to move the die plates towards and away from each other, and at least three substantially cylindrical columns secured by one end thereof to one of said platens and arranged with their respective lengthwise axes parallel to each other, which columns are disposed about a central region for containing a workpiece and having their lengthwise axes disposed parallel to the direction of relative movement of the platens, the portions of the columns adjacent said central region for containing a workpiece are tapered in a direction towards said other ends, the other of the platens and its die plate having apertures therein through which the other ends of the columns are slidable.

3,896,652
LOCKING SYSTEM FOR A ROTARY DIE CARRIER OF AN EXTRUSION
Horst Hans Groos, and Urban Richardt, both of Metzkausen, Germany, assignors to Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Germany
Filed Sept. 11, 1974, Ser. No. 505,025
Int. Cl. B21c *21/00*
U.S. Cl. 72—263 **10 Claims**



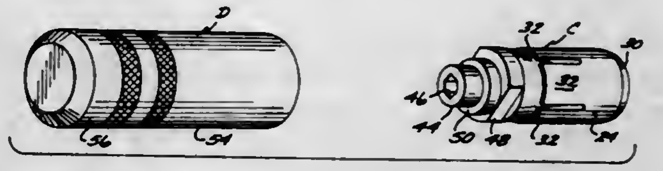
1. In an extrusion press comprising a front platen, a cylinder platen, tie means connecting said front platen to said cylinder platen, a billet container for receiving material to be extruded, means mounting said billet container for movement along a press axis, power means for retracting said billet container, a rotary die carrier mounting a die on said press axis, means mounting said rotary die carrier for rotation about an axis spaced from but parallel to said press axis, extrusion ram means for extruding said material through said die along said press axis to form an extrusion and a billet discard left behind said die, and a cropping device for cropping off said billet discard between said billet container and said die,
 a die carrier locking system comprising:
  two separate locking members defining engagement surfaces for engaging said die carrier to prevent both axial movement of said die carrier during billet discard tear-out or tear-off and rotary movement of said die carrier during billet discard shearing;
  mounting means mounting said locking members for sliding movement in a direction perpendicular to the direction of said press axis, said mounting means being fixed to said front platen and each said locking member having a substantial length thereof which is substantially surrounded on all sides by said mounting means; and
  means for actuating said locking members to engage said die carrier.

3,896,653
METHOD FOR PRODUCING DIFFERENTIAL THICKNESS STEEL PLATE
Kazuo Sakai; Ken Iwanaga; Kazuo Maehara; Tsuyoshi Nakajima, all of Kisarazu; Koki Yotsuya; Humio Ookuma, both of Kimitsu; Takeo Baba, and Toshitaka Yamanaka, both of Himeji, all of Japan, assignors to Nippon Steel Corporation, Japan
Filed Sept. 14, 1972, Ser. No. 289,167
Claims priority, application Japan, Sept. 18, 1971, 46-72886; Sept. 18, 1971, 46-72887; Dec. 3, 1971, 46-97161; June 5, 1972, 47-55868; Sept. 18, 1971, 46-85299
Int. Cl. B21b *1/00*
U.S. Cl. 72—365 **6 Claims**



1. A method for producing a differential thickness steel plate having a step portion at least on one side by hot rolling a steel material through a rolling mill comprising adjusting the rollers of the rolling mill to a preset roll gap, conveying the steel material to the rolling mill, rolling the steel material commencing with an end thereof in the rolling mill, reversing the direction of rolling of the steel material after a specific portion thereof has been rolled, and finishing said rolling with a temperature range of 680° to 1050°C whereby a differential thickness steel plate is formed.

3,896,654
DIESEL INJECTOR TUBE BODY REFORMING TOOL
Timothy R. Mancini, 17319 Horst Ave., Cerritos, Calif. 90701
Filed Apr. 12, 1974, Ser. No. 460,371
Int. Cl.² B21D *41/02*
U.S. Cl. 72—393 **5 Claims**



1. A lightweight portable tool for reforming a ring-shaped flange on a copper injection tube body in a diesel engine head to permit said flange to pressure contact a resilient O-ring and seal therewith without removing said head from said engine, which injection tube body is of a type that includes upper and lower tubular sections of different internal diameter, which at their junction define a circumferentially extending body shoulder that tapers downwardly and inwardly, with said upper section having a machine finished interior cylindrical surface, said upper section having said flange extending outwardly from the upper end thereof, which tool includes:
   - a. a plug of substantially lesser depth than the length of said first section, saiid plug having a transverse cross section such that said plug is snugly and slidably insertable within the interior of said upper section, with said plug having a tapered ring-shaped lower end that is adapted to said body shoulder, which plug includes a plurality of circumferentially spaced fingers that extend upwardly therefrom

to the top of said first section when said injection tube body is disposed in said head with said flange extending over said O-ring that is disposed in a circular recess formed in an upper surface of said head, said plug having a first, centered, longitudinally extending and internally threaded bore therein below said fingers, with said fingers including arcuately curving external surfaces that have substantially the same radius of curvature as said interior surface of said first section, and said fingers having internal surfaces that taper downwardly and inwardly towards one another;

b. a rigid, elongate body that has a longitudinal second bore formed therein of greater transverse cross section than that of said first bore, said body having an external frustoconical surface that tapers downwardly and inwardly at substantially the same angle as said interior surfaces of said fingers;

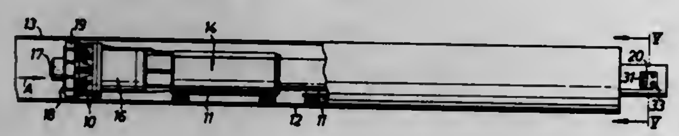
c. a threaded rod that extends downwardly through said second bore and engages said threads in said first bore;

d. a head on said rod for rotating said rod, which head when said rod is rotated in an appropriate direction with said plug being seated on said body shoulder, moves said body towards said plug and forces said external surfaces of said fingers into pressure contact with said interior surface of said first section to prevent said section from deforming when a longitudinally directed force is applied thereto; and

e. first means for concurrently applying a longitudinally directed force to the entire external surface of said flange in a direction towards said head to reform said flange to sealingly pressure contact said O-ring and without deforming said first section.

3,896,655
APPARATUS FOR SIZING AND SHAPING ENDS OF PIPES

Geoffrey Walter Watson, Inverness, Scotland, assignor to A. I. Welders Limited, Inverness, Scotland
Filed July 23, 1973, Ser. No. 381,521
Claims priority, application United Kingdom, July 25, 1972, 35180/72
Int. Cl. B21d *41/02*
U.S. Cl. 72—393 **2 Claims**



1. Apparatus for sizing and shaping the adjacent ends of large heavy duty pipes so as to prepare said ends for welding coaxially to each other, comprising:

a circumferential array of movable forming blocks; means supporting the forming blocks;

guide means serving to guide movement of each forming block along a respective substantially radial path; and

a power plant which includes a piston and cylinder device having a movable piston rod which projects through and is guided for rectilinear movement through an end wall of the cylinder for moving each of the blocks along its respective path and a fluid pressure pump for generating fluid pressure to operate said piston and cylinder device, said fluid pressure pump having a fluid pressure output which is connected to a cylinder space of the piston and cylinder device;

said supporting and guide means being secured detachably to said power plant and including:

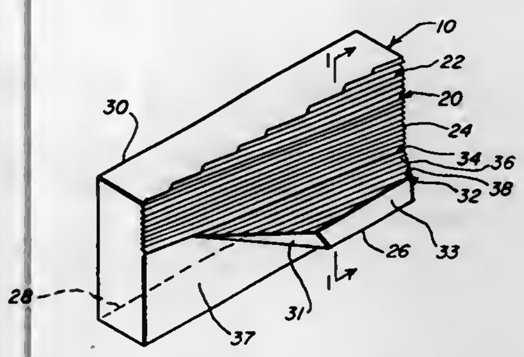
an annular support block which is secured detachably to the piston rod outside the cylinder; and

anchorage means secured detachably to the cylinder;

each forming block being connected to the anchorage means by a linkage and being arranged for sliding movement on a co-operating radially outer surface portion of the support block which is angled with respect to the axis of the piston rod so that rectilinear movement of the rod due to the action of fluid pressure in said piston and cylinder device results in sliding movement between each forming block and the co-operating angled surface portion of the support block so that the forming blocks are moved radially.

3,896,656
CONTOURED THREAD ROLLING DIES

Roger W. Orlomoski, Holden, Mass., assignor to Litton Industrial Products, Inc., Holden, Mass.
Filed Jan. 4, 1974, Ser. No. 430,800
Int. Cl.² B21D *17/00*
U.S. Cl. 72—469 **4 Claims**



1. A thread rolling die for rolling a threaded fastener having a tapered portion from a workpiece having a substantially cylindrical portion, said die comprising a face elongated in the direction of movement, said face cooperating with a similar face on another die upon relative motion therebetween and comprising:

a first planar surface disposed on said face substantially parallel to the axis of the substantially cylindrical portion of the workpiece, said first planar surface having substantially parallel ridges disposed thereon at an included angle with respect to the direction of relative die movement substantially equal to the helix angle of the threaded fastener to be rolled;

a second generally planar surface disposed on said face rising outwardly at an oblique angle to said first generally planar surface having ridges disposed thereon substantially parallel to each of the ridges on said first generally planar surface,

the line intersecting said first and second generally planar surface being parallel to said ridges.

3,896,657
VERTICAL IMPACT TESTER

Neill M. Brandt, Sturbridge; Richard D. Courtemanche, Southbridge, and Bruce D. Johnson, Sturbridge, all of Mass., assignors to American Optical Corporation, Southbridge, Mass.
Filed May 7, 1973, Ser. No. 358,247
Int. Cl.² G01N *3/62, 3/30*
U.S. Cl. 73—12 **4 Claims**

1. Impact testing apparatus comprising:

a. base means arranged to be positioned level,

b. specimen support means for test specimens of frangible material or the like mounted on said base means,

c. upwardly directed frame means depending from said base means,

d. missile directing tubular barrel means mounted on said frame means positioned vertically above said specimen support means,

e. solenoid means mounted on said frame means above said tubular barrel means, including a magnetizable tubular core,

f. non-magnetic adjustable connector means between said tubular barrel means and said tubular core inclusive of a missile supporting internal shoulder, for varying the position of said internal shoulder with respect to the end of said tubular core,

g. gas line means connected to said tubular core,

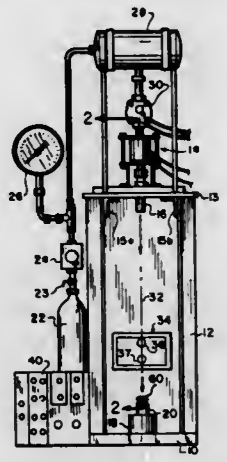
h. valve means for opening and closing said gas line means,

i. an enlarged gas chamber communicating with said valve means providing a volume of gas for propelling a missile held in said tubular barrel toward said specimen support means at a velocity greater than that achieved by a gravity fall of a missile,

j. supply means for said enlarged gas chamber,

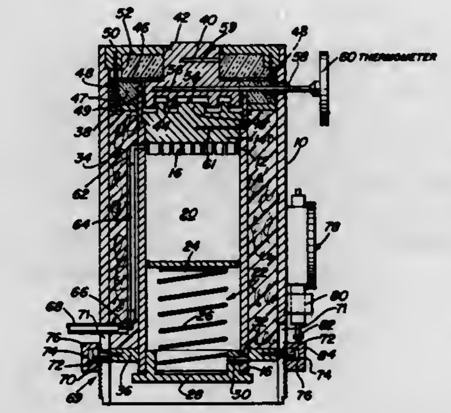
k. means for controlling the pressure of gas from said supply means to said enlarged gas chamber, and

l. means for determining the velocity of a missile propelled toward said specimen support at a predetermined height above said specimen support.



3,896,658
CONTROLLED LOW-TEMPERATURE COOLING APPARATUS

Mahn Hee Hahn, Washington, D.C., assignor to The United States of America as represented by the Secretary of Commerce, Washington, D.C.
Filed Oct. 29, 1973, Ser. No. 410,680
Int. Cl. G01n *25/66*
U.S. Cl. 73—17 A **7 Claims**



1. A device for cooling an object comprising: wall means including side and at least one end wall means defining a housing;

said end wall means having an opening therein;

a first thermally conductive member located within said housing and including a portion extending through said opening for contacting an object to be cooled;

a second thermally conductive member located in said housing in adjustably spaced relation to said first member for creating a gap therebetween;

said first and second members having facing surfaces having mating grooves and projections for increasing the surface area of the gap across which thermal transfer can occur; said mating grooves and projections extending axially of the axis of said housing;

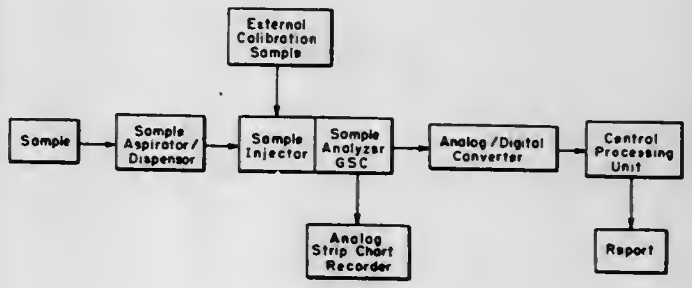
means located within said housing for cooling said second member,

means for effecting relative axial movement between said first and second members for varying said gap;

and means for measuring the temperature of said first member.

3,896,659
METHOD FOR DETERMINING THE ETHANOL CONTENT OF ALCOHOLIC BEVERAGES

Donald E. Goodman, Jacksonville, Fla., assignor to Bacardi and Company, Ltd., Vaduz, Liechtenstein
Continuation-in-part of Ser. No. 391,522, Aug. 27, 1973, abandoned. This application Oct. 4, 1973, Ser. No. 403,413
Int. Cl. G01n *31/08*
U.S. Cl. 73—23.1 **8 Claims**


External Calibration Sample
Sample
Sample Aspirator / Dispensor
Sample Injector
Sample Analyzer GSC
Analog / Digital Converter
Central Processing Unit
Analog Strip Chart Recorder
Report

1. A high-resolution method for determining the proof, P_x, of an alcoholic beverage containing water and ethanol, said method comprising the steps of:

a. forming a solution of a known volume of ethanol and a known volume of water and having a known proof, P_1, wherein the volumetric ratio of ethanol-to-water, R_1, is greater than the volumetric ratio of ethanol-to-water, R_x, in the beverage;

b. forming a solution of a known volume of ethanol and a known volume of water and having a known proof, P_2, wherein the volumetric ratio of ethanol-to-water, R_2, is less than the volumetric ratio of ethanol-to-water in the beverage;

c. subjecting the solutions formed in steps (a) and (b) and the beverage to gas-solid chromatography in a column containing a solid; microporous, hydrophobic organic polymeric absorbent of high surface area derived from the copolymerization of divinyl benzene and a vinyl hydrocarbon monomer;

d. passing the beverage and solutions chromatographed in step (c) through a thermal conductivity detector to generate a signal corresponding to each component of the solutions formed in steps (a) and (b) and the beverage;

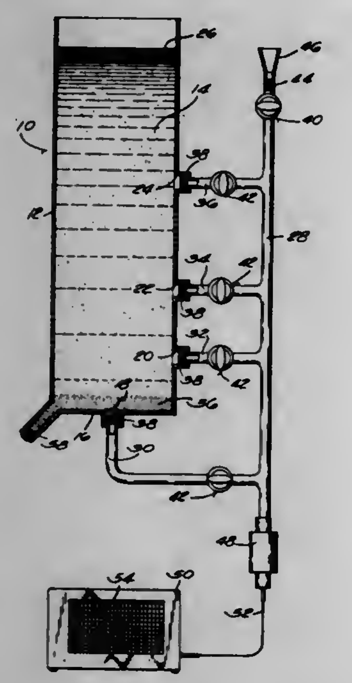
e. converting the signals generated in step (d) to numerical values corresponding to the volumes of water and ethanol in the solutions formed in steps (a) and (b) and the beverage; and

f. subjecting the numerical values obtained in step (e) to mathematical treatment according to the relationship wherein $m=\frac{R_1-R_2}{P_1-P_2}$

$$P_x=P_1-\frac{(R_1-R_x)}{m}$$

3,896,660
SEDIMENTATION DEVICE

Laszlo Valentyik, Houghton, Mich., assignor to Michigan Technological University, Houghton, Mich.
Filed Dec. 26, 1973, Ser. No. 428,206
Int. Cl. G01n ***15/04***
U.S. Cl. 73—61.4 **10 Claims**



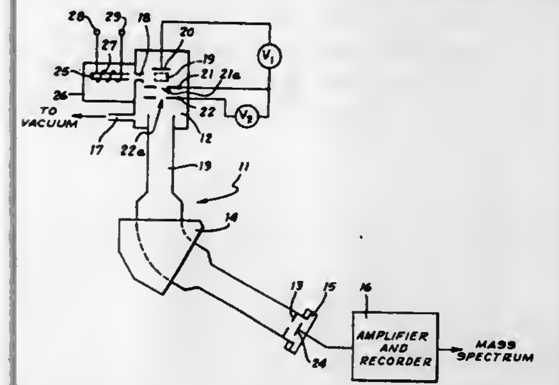
1. A device for measuring the settling rate of solid particles suspended in a liquid medium comprising

- a settling tube for receiving a quantity of the suspension to be measured;
- a pressure sensing port located in said settling tube for liquid communication with the suspension;
- a pressure sensing means located in a liquid communication with said pressure sensing port for sensing the hydrostatic pressure being exerted by the suspension at said sensing port and providing an output signal representative of said hydrostatic pressure;
- means responsive to said output signal for providing an indication indicative of the weight of the solid particles remaining suspended in the liquid medium during settling of the solid particles from the liquid medium; and
- means for isolating the solid particles of the suspension from said pressure sensing means and yet permitting the transmission of said hydrostatic pressure to said pressure sensing means.

3,896,661
METHOD OF COUPLING THIN LAYER CHROMATOGRAPH WITH MASS SPECTROMETER

Robert M. Parkhurst, Redwood City, and James H. McReynolds, Palo Alto, both of Calif., assignors to Stanford Research Institute, Menlo Park, Calif.
Filed Jan. 9, 1974, Ser. No. 431,938
Int. Cl. H01j ***39/34;*** **G01h** ***31/08***
U.S. Cl. 73—61.1 C **6 Claims**

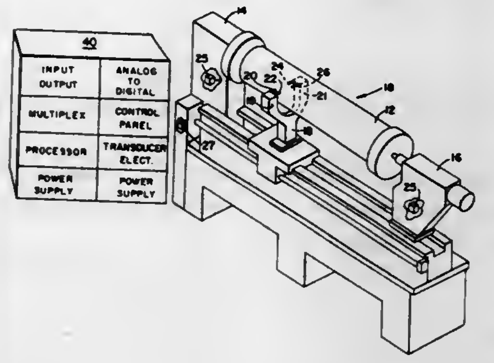
1. A method for analyzing a mixture of chemical substances comprising the steps of forming a thin layer chromatograph of the mixture whereby differential migration of substances in the mixture forms a succession of absorbed zones of the substances along a chromatograph medium to define the thin layer chromatograph, positioning the thus formed thin layer chromatograph in relatively high vacuum adjacent to and communicating with the ion source of a mass spectrometer,



successively heating each of the absorbed zones whereby as each zone is heated the absorbed substance sublimes directly into the ion source, and forming a mass spectrograph of each of the thus subliming substances.

3,896,662
ULTRASONIC MEASURING DEVICE

William S. Camp, Limestone, and Kenneth K. Magnant, Madison, both of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Dec. 27, 1973, Ser. No. 428,951
Int. Cl.² G01N ***29/04***
U.S. Cl. 73—67.8 S **3 Claims**

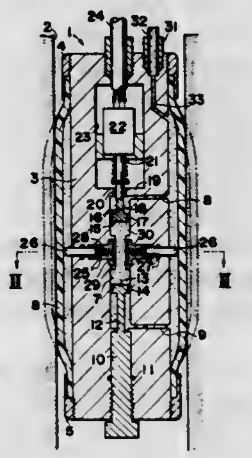


1. A lathe-like machine for checking a tubular member, said lathe-like machine comprising a bed,

- a head stock mounted at one end of said bed,
- a tail stock slideably mounted on said bed adjacent the other end thereof and cooperating with said head stock for supporting the tube to be checked,
- a yoke assembly slideably mounted on said bed for movement between said head stock and tail stock longitudinally of said tube,
- a computer for interpreting data,
- sensing means in said tail stock for sensing the position of said tail stock relative to said head stock and relaying said information to said computer thus indicating the length of said tube,
- sensing means in said head stock for sensing the rotational position of said head stock and relaying said rotational position to said computer,
- sensing means in said bed for sensing the position of said yoke relative to said head stock and continuously relaying said position to said computer,
- ultrasonic transducing means in each arm of said yoke for sensing the distance between said arm and the surface of said tube and continuously transmitting said information to said computer,
- said computer being programmed whereby at certain positions of rotation as sensed by said rotational sensing means a reading is taken of the yoke position relative to said head stock and a distance reading is taken from said ultrasonic transducing means, whereby a series of such reading will indicate the straightness of said tube.

3,896,663
DILATOMETER

Kimio Ogura, Urawa, Japan, assignor to Oyo Corporation, Tokyo, Japan
Filed June 24, 1974, Ser. No. 482,796
Int. Cl. G01n ***33/24***
U.S. Cl. 73—88 E **8 Claims**



1. A dilatometer comprising a sounder body, a flexible tube expansibly mounted to said sounder body, a plurality of detector elements radially extensible through said sounder body and abutting at their respective outer ends against the inside of said flexible tube, a sealed space provided in said sounder body and filled with a liquid therein, said sealed space being radially expansible with extension of said detector elements, a follower member urged toward the liquid filled in said sealed space and displaced by the radial expansion of said sealed space, means for feeding a fluid material inside of said flexible tube, said fluid material being led to said follower member outside of said sealed space, and means for measuring amount of displacement of said follower member.

3,896,664
ENHANCED STABILITY WATER WASHABLE PENETRANT COMPOSITION AND PROCESS

James R. Alburger, 5007 Hillard Ave., La Canada, Calif. 91011
Continuation-in-part of Ser. No. 327,306, Jan. 21, 1973, abandoned. This application June 24, 1974, Ser. No. 482,465
Int. Cl. G01n ***21/16;*** **C09k** ***1/00***
U.S. Cl. 73—104 **1 Claim**

1. In a water-washable inspection penetrant process in which a water-dispersible dyed liquid penetrant is applied to test parts, surface penetrant is removed by washing said test parts with water, and said parts are inspected for residual entrapments of penetrant liquid in surface flaws, the improvement wherein said water-washable penetrant consists essentially of the following formulation, stated in weight percentages:

Low-solubility solvent liquid	30% to 99.8%
Indicator dye	.2% to 30%
Solvent coupler	zero to 40%

said low-solubility solvent liquid being at least one member selected from the group consisting of:

2-ethylbutanol,
2-ethylhexanol,
iso-octanol,
iso-decanol,
decyl alcohol,
2,6,8-trimethyl-4-nonanol,
isopropyl acetate,
butyl acetate,
isobutyl acetate,
primary amyl acetate,
methyl amyl acetate,
phenyl acetate,
ethyl hexyl acetate,
ethylene glycol monobutyl ether acetate,
glyceryl triacetate,
allylidene diacetate,
methyl allylidene diacetate,
ethyl acetoacetate,
methyl vinyl acetate,
diethyl succinate,
2-ethyl-1,3-hexanediol,
methyl isobutyl ketone,
methyl propyl ketone,
isophorone,
mesityl oxide,
methyl-n-amyl ketone,
methyl isoamyl ketone,
ethylbutyl ketone,
di-isobutyl ketone,
1-pentanol,
2-methyl-1-butanol,
3-methyl-1-butanol,
amyl alcohol,
di-isobutyl carbinol,
isobutyl heptyl ketone,
methyl isobutyl carbinol,
propyl acetate,
styrene oxide,
polypropylene glycol (Mol. Wt. 1025),
ethylene glycol monobutyl ether acetate,
diethylene glycol monobutyl ether acetate,
di-(2-ethylhexyl)-adipate,
triethylene glycol di-(2-ethylbutyrate),
triethylene glycol di-(2-ethylhexoate),
polyethylene glycol di-(2-ethylhexoate),
dimethyl phthalate,
dibutyl phthalate,
dioctyl phthalate,
di-isobutyl phthalate,
n-octyl,n-decyl phthalate,
n-hexyl,n-octyl,n-decyl phthalate,
di-(n-hexyl) phthalate,
di-(2-ethylhexyl) tetrahydrophthalate,
aliphatic mineral oils,
low-solubility polyoxyalkylene glycols, and
low-solubility mono and diethers of polyoxyalkylene glycols,
and said solvent coupler being at least one member selected from the group consisting of:

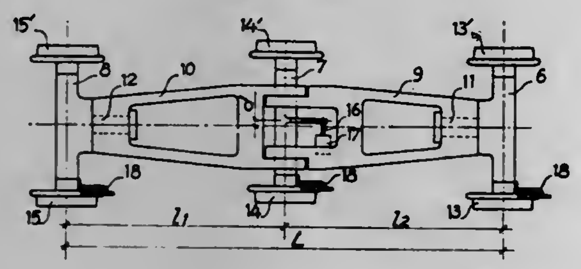
methanol,
ethanol,
butanol,
isopropanol,
1-propanol,
2-butanol,
ethylene glycol monomethyl ether,
ethylene glycol monoethyl ether,

ethylene glycol monobutyl ether,
diethylene glycol monomethyl ether,
diethylene glycol monoethyl ether,
diethylene glycol monobutyl ether,
butoxytriglycol,
methoxytriglycol,
ethoxytriglycol, and
1-butoxyethoxy-2-propanol,
said low-solubility solvent liquids being selectively employed singly and in combination.

3,896,665
RAILWAY INSPECTION METHOD AND VEHICLE

Pierre Goel, Lausanne, Switzerland, assignor to Cannon Inc., Phillipsburg, N.J.

Continuation-in-part of Ser. No. 44,701, June 9, 1970, abandoned. This application Sept. 15, 1972, Ser. No. 289,457
Int. Cl. E01c *23/01*
U.S. Cl. 73—146 **5 Claims**



1. A method for measuring, during high speed travel thereover, the arc deflections in curves and the large faults of short length of at least one line of rails of a railway track, during high speed travel thereover with an inspection vehicle mounted thereon comprising the steps of measuring the relative displacement *d* of a middle feeler means movable relative to a reference line defined by the position of two outer feeler means of a reference means having three feeler means in contact with said line of rails and wherein permanent contact with said line of rails cannot be guaranteed because of their inertia, such method comprising the steps of:
  measuring, by means of non-contacting sensor means in the immediate proximity of each of said three feeler means of said reference means, the eventual respective variations *a*,*b* and *c* between said feeler means and the rail, and thereafter calculating from said measurements the true geometrical characteristics of said track by summing said values *a*, *b*, *c* and *d* according to the formula

$$F = d + (al_1 + cl_2/L - b)$$

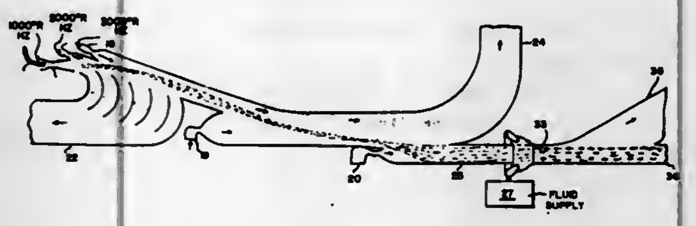
wherein F is the corrected value of the deflection or of the fault, L is the distance between the outer feeler means of said three feeler means reference means, and l_1 and l_2 are respectively distances between said middle feeler means and said outer feeler means.

3,896,666
INDUCED AGGLOMERATION SYSTEM FOR USE IN A SYSTEM FOR SIMULATING REENTRY FLOW CONDITIONS

Elmer G. Johnson, 54 N. Grand Ave., Fairborn, Ohio 45324, and Kenneth R. Cramer, 5596 Hugh Dr., Dayton, Ohio 45459

Filed Mar. 25, 1974, Ser. No. 454,200
Int. Cl. G01m *9/00*
U.S. Cl. 73—147 **2 Claims**

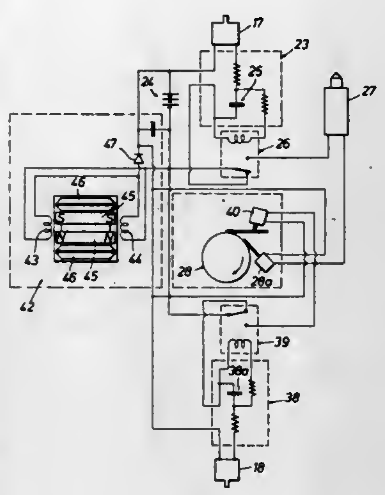
1. An induced agglomeration system in combination with an apparatus for generating ultra high total enthalpy gases having a high pressure ratio expansion nozzle; means for supplying a low molecular weight gas to said expansion nozzle to thereby expand the low molecular weight gas to a high speed; means for introducing solid particles of a solid refractory material into the flow of low molecular weight gas whereby the particles are accelerated to the high speeds of the low molecular weight gas; means for separating the low molecular weight gas from the solid particles to thereby provide a separate high energy solid particle stream; means for supplying high temperature air to the solid particle stream; to thereby transfer the energy from the solid particle stream to the air in an energy transfer region and means for separating the solid particles from said air stream; comprising: means for supplying an agglomeration material to the combined solid particle and air stream near the end of the energy transfer region and prior to said separating means; said means, for supplying an agglomeration material to said combined stream, including a plurality of nozzles for directing a flow of agglomeration material into said combined stream and means for supplying the agglomeration material to said nozzles.



3,896,667
METHOD AND APPARATUS FOR ACTUATING DOWNHOLE DEVICES

John D. Jeter, Midland, Tex., assignor to Texas Dynamatics, Inc., Dallas, Tex.

Filed Oct. 26, 1973, Ser. No. 409,910
Int. Cl. E21b *47/00*
U.S. Cl. 73—151 **18 Claims**



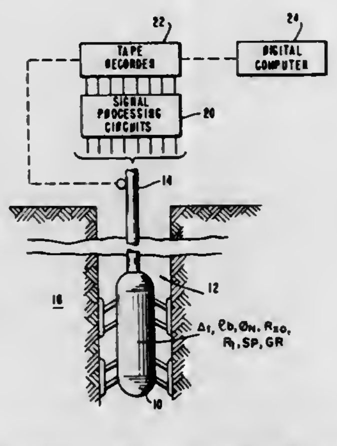
1. A method of actuating a downhole device in a drill string comprising pumping fluid down the drill string at a rate to provide a pressure drop across a flow restriction within a preselected range that is different from the range of pressure drops produced during normal drilling operations, maintaining said pumping rate for a predetermined, finite, period of time and actuating said downhole device at the end of the time period.

3,896,668
METHODS AND APPARATUS FOR DETERMINING CHARACTERISTICS OF SUBSURFACE EARTH FORMATIONS

Ronald A. Anderson, and Maurice P. Tixier, both of Houston, Tex., assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Oct. 5, 1973, Ser. No. 403,786
Int. Cl. E21b *49/00*
U.S. Cl. 73—152 **14 Claims**

1. A machine method of determining elastic constants indicative of the strength of an earth formation traversed by a borehole, comprising the steps of:
- a. providing a plurality of well-logging measurements indicative of a plurality of properties of the formation at selected depth levels;
- b. combining at least some of said measurements to provide a first parameter indicative of the shale content of the formation at selected depth levels;

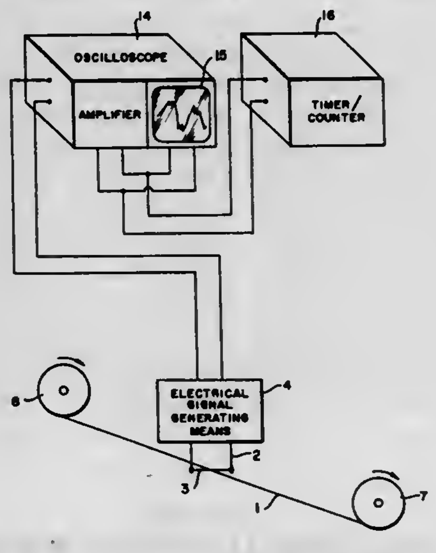


- c. producing a representation of Poisson's ratio at selected depth levels from said first parameter; and
- d. combining at least some of said well-logging measurements with said representation of Poisson's ratio to determine at least one of the elastic constants of the formation surrounding said borehole.

3,896,669
METHOD OF AND APPARATUS FOR TESTING THE SURFACE IRREGULARITIES OF A CARBON MONOFILAMENT

Glenroy H. Stecker, Johnson City, and Michael Baud, Elizabethtown, both of Tenn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 20, 1974, Ser. No. 452,908
Int. Cl.^{2} G01N *19/08*
U.S. Cl. 73—160 **17 Claims**

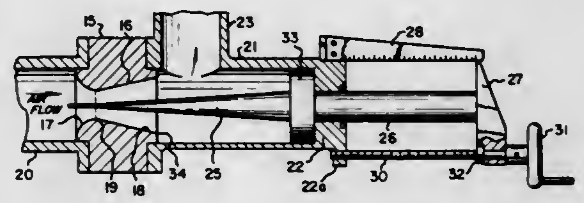


1. Apparatus for continuously testing for surface irregularities of a first carbon monofilament comprising;
- a. a second filament adapted to contact and rest on the first carbon monofilament,
- b. means for linearly moving the first filament relative to the second filament thereby causing vibration of the second filament in the presence of surface irregularities on the first filament,
- c. means responsive to the vibration of the second filament in the presence of said surface irregularities for generating an electrical signal representative of said surface irregularities,
- d. indicating means responsive to the electrical signal generating means,
- e. adjustable means for tensioning the first filament to provide the proper response of the second filament relative to the varying sizes of the surface irregularities on the first filament.

3,896,670
VENTURI METER

Vernon G. Converse, III, Franklin; Robert W. Clayton, Plymouth, and James T. Westervelt, Livonia, all of Mich., assignors to Scans Associates, Inc., Livonia, Mich.

Continuation of Ser. No. 33,185, April 30, 1970, abandoned. This application Mar. 24, 1972, Ser. No. 237,898. The portion of the term of this patent subsequent to Mar. 24, 1989, has been disclaimed.
Int. Cl. G01f *1/00*
U.S. Cl. 73—213 **5 Claims**

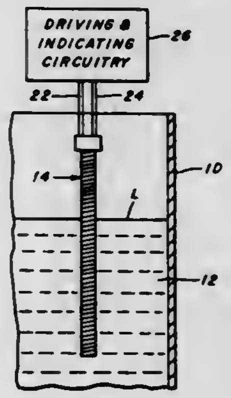


1. A variable area venturi meter adapted to be operated critically at all points of its operating range and comprising a meter body having a venturi passage with a converging section, a diverging section of approximately 12°, and a throat therebetween, a control cone having a straight line generatrix and a cone angle of approximately 3 degrees, said cone operatively mounted within said venturi passage co-axially therewith with the convergence of the cone directed against the flow of the fluid and the thin portion of the cone being located on the converging side of said venturi passage, said cone being selectively movable longitudinally of the venturi passage into and out of the throat to restrict and to enlarge the free area thereof, and consequently of the flow of fluid therethrough.

3,896,671
TEMPERATURE COMPENSATED INDUCTIVE LIQUID METAL LEVEL INDICATOR

Lawrence F. Marinaccio, Big Beaver, Pa., assignor to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed Jan. 10, 1974, Ser. No. 432,151
Int. Cl. G01f *23/26*
U.S. Cl. 73—304 R **6 Claims**



1. In a liquid metal level detector of the type in which two coils are inductively coupled together and the presence of surrounding liquid metal varies the coupling between the two, the combination of a source of alternating current voltage connected to one of said coils, means for deriving a first signal which varies as a function of the voltage across said one coil and the temperature of the surrounding liquid metal, means for deriving a second signal across the other of said coils which

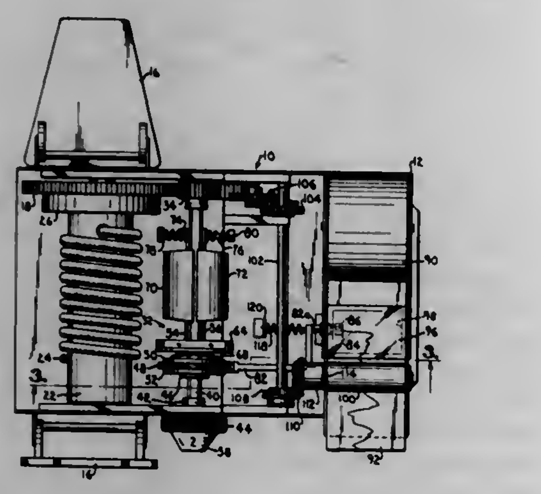
varies as a function of the liquid metal level, and electrical computer means responsive to said first and second signals for electronically synthesizing an output signal proportional to liquid level which is a non-linear function of the magnitudes of the first and second signals.

3,896,672
EXERCISE APPARATUS

Glen E. Henson, Independence, and Milton W. Fisher, Jackson, both of Mo., assignors to Robar Mini-Gym, Inc., Independence, Mo.

Filed July 2, 1973, Ser. No. 375,938
Int. Cl. G01l *5/02*

U.S. Cl. 73—379 **6 Claims**



1. Exercise apparatus comprising: a framework;
rotatable shaft means mounted on said framework;
a first member journaled on said shaft and having first and and second frictional surfaces;
a second member rotatably coupled with the shaft and movable longitudinally of the shaft toward and away from said first surface of the first member for engagement with the latter upon rotation of the shaft;
a third member rotatably coupled with the shaft on the side of said first member opposite said second member and movable longitudinally of the shaft into engagement with said second surface of the first member whereby to sandwich said first member between the second and third members;
means adapted to be acted upon by a user of the apparatus for rotating said shaft;
means for moving said second member in the direction of said first member to engage the second member against the first surface of the first member with increasing force as the speed of rotation continues to increase, and for withdrawing the second member from the first surface of the first member as the speed of rotation decreases;
a roll of marking paper mounted on said framework;
a marking instrument for making a mark on the paper corresponding to the magnitude of the exerted force;
a drive roller in engagement with a length of the paper;
a gear train for driving said roller in response to rotation of the shaft; mean for and
yieldable means supported by the framework and disposed for resisting the pivotal movement of said first member.

3,896,673
CONTINUOUS AUTOMATIC LIQUID SAMPLER

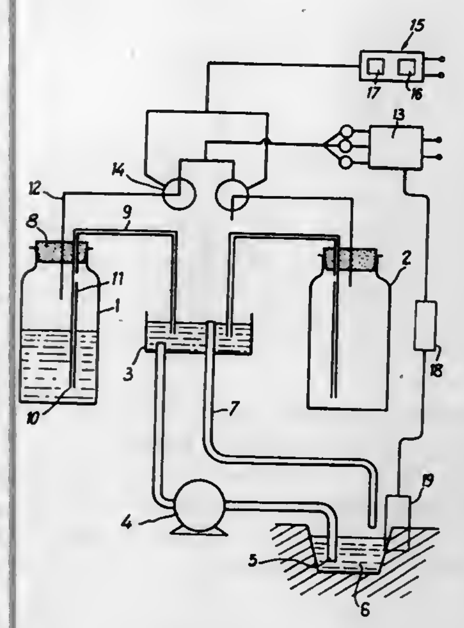
Bernard Audouze, Chateau Latapy a, Lagor (64), and Guy Bonometti, 2, allee Nietce a, Mourenx, both of France

Filed May 22, 1973, Ser. No. 363,176

Claims priority, application France, May 29, 1972, 72.19128

Int. Cl. G01n *1/14*

U.S. Cl. 73—421 B **5 Claims**



1. An apparatus for continuously taking average samples of a fluid flowing in a channel, comprising a container for holding fluid to be sampled, pump means connected to feed fluid to be sampled at a uniform flow rate from a sampling point of said channel to said container, overflow spout means connected to empty fluid from said container back to said channel at a point below said sampling point in the direction of flow of fluid in said channel, a plurality of sampling bottles, an auxiliary fluid in said bottles, said auxiliary fluid having a density lower than the density of said fluid to be sampled and which will not mix with nor effect the fluid to be sampled in any manner, a suction pump having an adjustable uniform flow rate, tube means connected between said suction pump and the upper portion of each bottle, said tube means terminating above the maximum upper level to which the respective bottle is to be filled during a sampling operation, electro-valve means connected to control flow of fluid in said tube means, programmed clock means connected to control said electro-valve means, and separate siphon tubes connecting each of said bottles, at a point near the bottom thereof, to said container, whereby suction applied to each bottle during a filling operation draws fluid to be sampled from said container to the respective bottle, and the auxiliary fluid in the respective bottle consequently occupies the upper portion of the respective bottle.

3,896,674
SENSOR PROBE CONTROL SYSTEM

William A. Kolb, Forest Hills, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

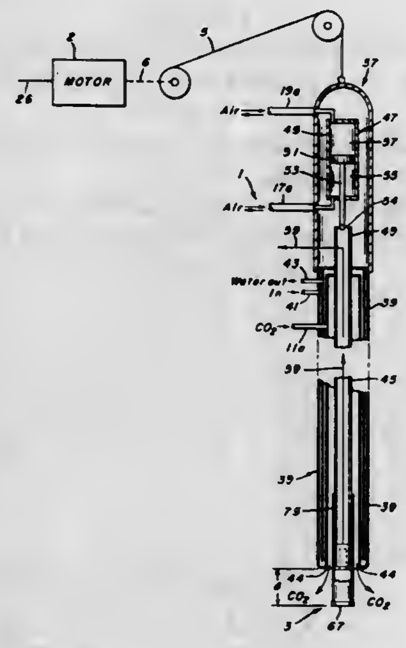
Filed Mar. 1, 1973, Ser. No. 337,250
Int. Cl. G01k *1/14, 7/02*

U.S. Cl. 73—432 R **29 Claims**

1. The method of automatically sensing and recording parameters of a bath in a vessel including the steps of:
a. detecting when good electrical contact has been made between a sensor housed in a probe and a recorder;
b. supplying a sensor protecting gas through said probe and around said sensor when said good electrical contact is detected;

c. detecting the flow of the sensor protecting gas;
d. lowering said probe to a predetermined depth within a vessel when said flow of sensor protecting gas is detected;
e. extending said sensor relative to said probe, to a predetermined depth within a bath in said vessel in order to sense and record the parameters of the bath;
f. retracting said sensor into said probe after said good electrical contact is broken or after a maximum duration of time, whichever condition occurs first; and
g. removing said probe from said vessel.

5. For a vessel containing a molten metal bath, apparatus for sensing parameters in the bath and recording said parameters on a recorder, which comprises:
a. a probe;
b. a sensor housed in said probe and electrically connected to the recorder, said sensor being movable with respect to the probe for transmitting signals to the recorder indicative of said bath parameters;



c. means for supplying a sensor protecting gas about said sensor;
d. means for detecting the flow of the sensor protecting gas;
e. means for moving the probe to a predetermined depth in said vessel relative to the bath;
f. means for moving the sensor relative to the probe and into said bath a predetermined distance; and
g. automatic control means for controlling said probe and sensor moving means, which includes;
selectively openable and closable contact means operable in response to the detection of flow of the sensor protecting gas for enabling said probe moving means to lower the probe to said predetermined depth within the vessel; and
means for enabling said sensor moving means to extend said sensor into the bath when the probe has reached the predetermined depth.

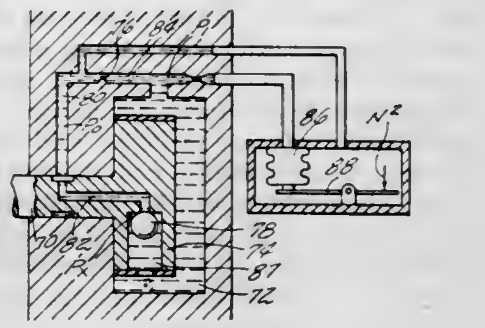
3,896,675
HIGH SPEED HYDRAULIC SENSOR

Charles F. Stearns, East Longmeadow, Mass., and Kenneth P. Hansen, Enfield, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Nov. 23, 1973, Ser. No. 418,633
Int. Cl.² G01P *3/28*

U.S. Cl. 73—497 **6 Claims**

1. A high speed sensor driven by rotating means whose speed is intended to be measured, said sensor including a closed loop fluid circuit having a rotating and nonrotating portion, said rotating portion having fluid pumping means and valve means, a fixed restriction disposed in said nonrotating portion intermediate said valve means and said pumping means in flow relation, said valve means including a ball disposed adjacent an orifice formed in said rotating portion having a preselected buoyancy to impart a force in the direction toward the center of rotation of the rotating portion so as to change the pressure drop across said orifice as a function of fluid density for a given speed of the rotating means, said pumping means varying the flow through said fixed restriction as a function of speed of the rotating means such that the pressure drop thereacross is indicative of said speed and said buoyant ball maintains a constant pressure drop across said restriction for a given speed of said rotating members.

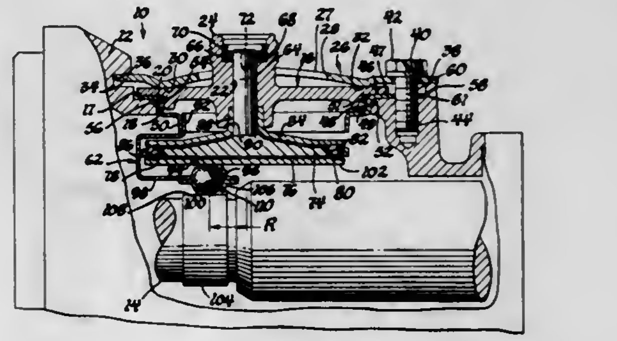


3,896,676
SPEEDOMETER DRIVE CONSTRUCTION

Leslie K. Walters, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed June 17, 1974, Ser. No. 479,782
Int. Cl. F16h *37/00, 15/08, 13/06*

U.S. Cl. 74—12 **2 Claims**



1. A speedometer drive construction comprising a transmission extension housing, a transmission output shaft extending through said extension housing, a circular opening formed in a side of said extension housing, a flat-bottom surfaced counterbore formed in said circular opening, an adapter plate including a body portion having a radial flange formed thereon, said radial flange being seated on the bottom surface of said counterbore and said body portion being confined freely within the inner peripheral surface of said circular opening, a circular speedometer drive housing having a concentric smaller diameter guide ring formed on the inner surface thereof, said circular housing being mounted in said counterbore and seated on said radial flange, with said guide ring being confined freely within said body portion of said adapter plate, a speedometer take-off shaft opening formed through said speedometer drive housing off-set from the center of said housing, means for manually rotating said speedometer drive housing formed in the outer surface of said drive housing in an equally-spaced relationship with said take-off shaft opening, a circular, bowed clamp having a pair of oppositely disposed tabs extending from the outer peripheral edge thereof and a pair of parallel ridges formed at the respective radially inner edges of said pair of tabs, an opening formed in one of said tabs, a slot formed in said extension housing, the other of said tabs being inserted in said slot, a retention tab formed on the outer peripheral edge of said radial flange of said adapter plate, an opening formed therethrough, a threaded opening formed in said extension housing, a bolt mounted through said opening formed in said one of said tabs

of said clamp, through said opening formed in said retention tab of said adapter plate and threadedly secured in said threaded opening in said extension housing, thereby forcing said pair of parallel ridges into abutting engagement with said adjacent outer surface of said speedometer drive housing, a speedometer take-off shaft rotatably mounted in said take-off shaft opening, a flange-type carrier formed on an end of said take-off shaft within said extension housing, a plurality of ball planets mounted circumferentially around said carrier, a belleville spring-type upper race and a rigid bottom race mounted respectively above and below said ball planets, a reaction member secured at one end thereof to said body portion of said adapter plate and having a radially inwardly extending flat support arm extending from the other end thereof in a spaced-parallel relationship with said bottom race, an opening formed adjacent the inner edge of said support arm, and a drive-ball rotatably mounted in said support arm opening and maintained by said belleville spring-type upper race in a traction-drive relationship between said bottom race and said transmission output shaft, the distance between the center of said drive-ball and the axis of said take-off shaft being variable in response to manual rotation of said speedometer drive housing and, hence, of said take-off shaft mounted in said off-set take-off shaft opening formed in said drive housing.

3,896,677

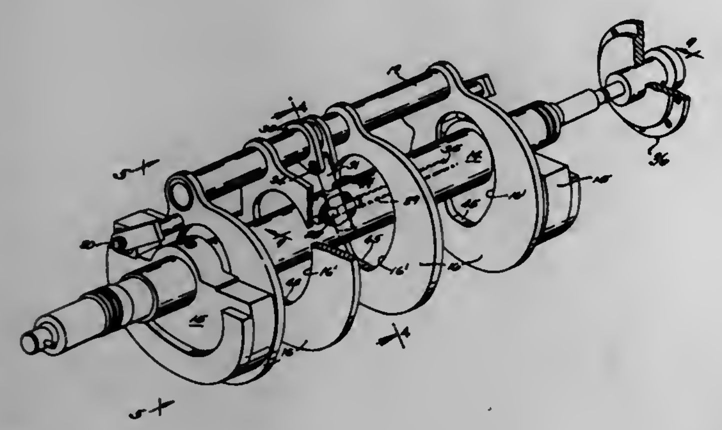
DUAL AMPLITUDE VIBRATION GENERATOR

Roger L. Larson, Waconia, Minn., assignor to Raygo, Inc., Minneapolis, Minn.

Filed Jan. 18, 1974, Ser. No. 434,565

Int. Cl. F16h *33/00*

U.S. Cl. 74—61 **10 Claims**



1. A dual amplitude vibration generator operable to produce vibration in either a high or a low amplitude mode, comprising:

- A. a power driven shaft;
- B. a primary weight fixed with respect to the shaft to rotate therewith, with its center of gravity eccentric to the axis of the shaft;
- C. a secondary weight;
- D. means connecting the secondary weight with the shaft for rotation therewith and for free swinging motion about an axis fixed with respect to and parallel with the shaft, between defined high and low amplitude positions, in the first of which its center of gravity is so located with respect to that of the primary weight that the vibration resulting from its rotation with the shaft augments the vibration produced by the primary weight and in the second of which it partially counterbalances the primary weight,
  the freedom of the secondary weight to swing about said axis making it responsive to centrifugal force and enabling centrifugal force to move it from its high amplitude position to its low amplitude position except when restrained against such movement; and
- E. means for releasably restraining the secondary weight against response to centrifugal force and thereby causing the vibration generator to operate in its high amplitude mode, said means comprising
  1. an axially shiftable control rod carried by the power shaft and constrained to axial movement with respect thereto between operative and inoperative positions; and
  2. means operative when the control rod is in its operative position but not when it is in its inoperative position, to connect the control rod with the secondary weight and by such connection hold the secondary weight in its high amplitude position despite centrifugal force acting thereon, whereby upon shifting of the control rod to its inoperative position the secondary weight is free to respond to centrifugal force and assume its low amplitude position.

3,896,678

DEVICE FOR THE STEPWISE DISPLACEMENT OF WORKING PARTS FOR BRUSH MANUFACTURING MACHINES

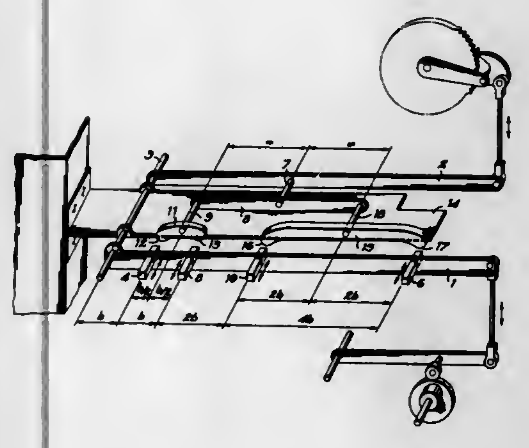
Lionel P. Boucherie, Rumbeke, Belgium, assignor to Firma G. B. Boucherie, Rumbeke, Belgium

Filed Mar. 26, 1974, Ser. No. 454,933

Claims priority, application Belgium, Apr. 13, 1973, 798164

Int. Cl. F16h *29/00*

U.S. Cl. 74—116 **12 Claims**



1. A device for stepped displacement of a working part holder comprising:

- a support plate;
- a spindle mounted on said support plate;
- a first lever rotatably mounted on one end thereof upon said spindle and connected at the opposite end thereof to a means for imparting oscillatory motion to said first lever;
- a second lever rotatably mounted on one end thereof to said spindle substantially adjacent said first lever, and connected at the opposite end thereof to the working part holder;
- a third lever, having first and second ends, rotatably mounted by mounting means to substantially the midpoint of said second lever;
- a fourth lever, having first and second ends, rotatably mounted by mounting means at substantially the midpoint thereof to said first end of said third lever;
- a plurality of independently selectively extensible pins slidably mounted on said first lever to allow axial extension of said pins;
- a contact surface on each said pin; and,
- means, at the second end of said third lever and the first and second ends of said fourth lever, for engaging the support plate and for engaging respective ones of said contact surfaces when selective ones of the said pins are extended and the said first lever is oscillated.

3,896,679

BICYCLE DERAILER

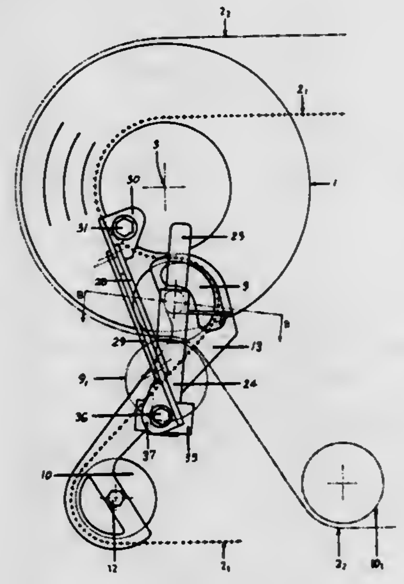
Roger Henri Marius Huret, and Jacques André Huret, both of 60, avenue Felix Faure, Nanterre (Hauts de Seine), France

Filed Nov. 19, 1973, Ser. No. 417,215

Claims priority, application France, Jan. 15, 1973, 73.01344

Int. Cl. F16h *9/24*

U.S. Cl. 74—217 B **7 Claims**



1. A derailer for a bicycle including a driving chain and a free wheel having an axle and an associated plurality of pinions operable to receive said driving chain, comprising a chain-guide roller and a chain-tensioning roller mounted rotatively on spindles carried by a cover-frame, a spindle receiving said cover-frame pivotally and a spring fitted to the cover-frame tending constantly to make it pivot and maintain the driving chain under tension, a control means for controlling the movement of the cover-frame essentially parallel to the axle of the free wheel of the bicycle and for passing the driving chain from one pinion of this wheel to another, the pivot spindle of the cover-frame being mounted on said control means by support means for guiding the free movement of the pivot spindle of the cover-frame toward or away from the axle of the free wheel in a plane essentially perpendicular to said axle in each position of a plurality of positions of the cover frame along the direction essentially parallel to said axle.

3,896,680

TWIST-GRIP CONTROL FOR MOTORCYCLE CLUTCH

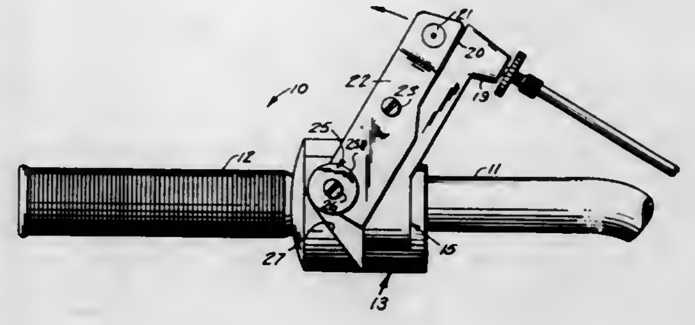
Billy D. Shoemaker, Box 5, Southern Ill. University, Edwardsville, Ill. 62025

Filed July 8, 1974, Ser. No. 486,688

Int. Cl.² F16D *41/24*; **G05G** *11/00*

U.S. Cl. 74—489 **4 Claims**

1. A twist-grip clutch for motorcycles, comprising a handle grip cam combination, a cable holding bar clamp retained within said cam, bolt fastener means secured within said clamp, a pivotable actuated lever secured to said clamp with fastener means and a pivotable roller secured to said actuating lever, the structure moving cable means of the vehicle's clutch.



3,896,681

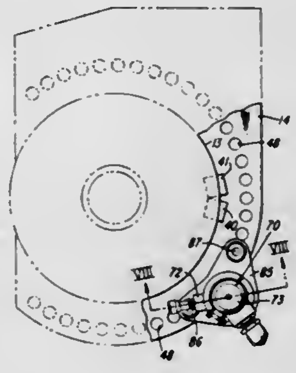
UNIVERSAL TRANSFER DEVICE

Robert F. Boyle, Parchment, Mich., assignor to Prab Conveyors, Inc., Kalamazoo, Mich.

Filed Dec. 26, 1973, Ser. No. 428,181

Int. Cl. G05g *5/04*

U.S. Cl. 74—526 **7 Claims**



1. In a universal transfer device including a structural frame, an upstanding vertical post means affixed to said structural frame, stop plate means integral with said vertical post means and normal to the longitudinal axis thereof, a pair of radial stop arms rotatably mounted on said vertical post means and detachably secured to said stop plate means peripherally spaced from each other, yoke means rotatably mounted on said vertical post means above said radial stop arms, a pair of spaced stop lugs peripherally mounted on said yoke means for engaging said radial stop arms at a predetermined radian displacement of said yoke means, yoke motor means on said frame for rotating said yoke means about said vertical post means, and gripper arm means pivotally mounted on said yoke means, the improvement which comprises

- an intermediate stop means including a base housing mounted on said stop plate means, a peripheral stop arm journaled in said base housing for movement through a predetermined arc from a rest position to an intercept position and adapted to engage one of said stop lugs when at said intercept position, peripheral stop arm motor means drivably engaging the journaled peripheral stop arm for movement through said predetermined arc, and control means operably associated with the peripheral stop arm motor means for energizing said perhipheral stop arm motor means.

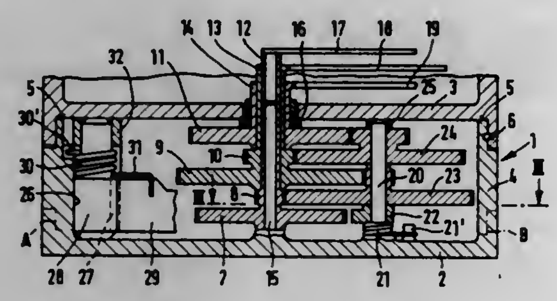
3,896,682
MEASURING/INDICATING INSTRUMENT

Alfred Kreidler, Zurich, Switzerland, assignor to Metall-Invent S.A., Zug, Switzerland

Filed Nov. 7, 1973, Ser. No. 406,171

Int. Cl. F16h *57/02*

U.S. Cl. 74—606 R **16 Claims**



1. A measuring or indicating instrument, such as for example a clock, comprising:

a. a housing including
  a first support plate (2) having three support members on its inner side;
  a second support plate (3) at least generally parallel to said first support plate;
  wall means (24) connected to said plates for joining said support plates together; and

b. transmission system means supported by and within said housing for transmitting movement from a movement source to an indicator system including a first set of wheels (7, 10, 11) having concentric, hollow shafts (12, 13, 14) carrying indicator means at their ends, said ends protruding thorugh an opening in said second support plate, said first set of wheels being concentrically mounted one on top of the other by means of said concentric hollow shafts on one of said support members (15); a second set of wheels (23, 24) in engagement with said first set of wheels mounted on the second of said support members; and movement means (29, 38) serving as a movement source connected to one (7) of said first set of wheels for driving said wheel, said movement means being mounted on the other one of said support members;
  said first and second sets of wheels and said movement means being functionally mounted in the radial direction solely by said support members of said first support plate, and said sets of wheels and said movement means being pushed onto or into said support members and being located in the axial direction by both said support plates; whereby said transmission system means can be readily and easily assembled in or disassembled from said housing without difficulty and without special tools.

3,896,683
PIVOTAL GUARD FOR PUNCH PRESSES

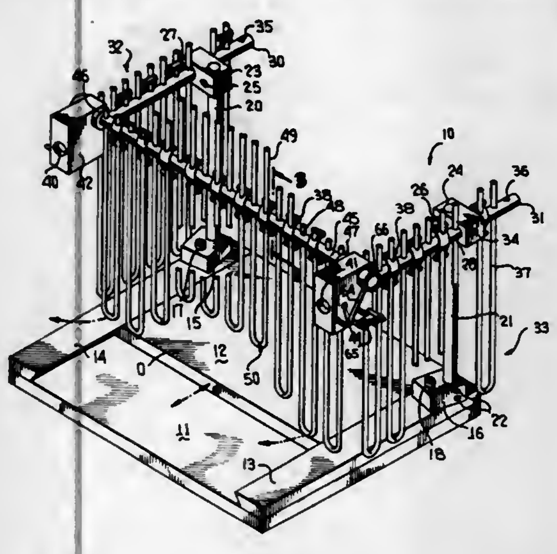
James A. Dopke, Fox River Grove, and Leland J. Brasile, Woodstock, both of Ill., assignors to Union Special Corporation, Chicago, Ill.

Filed Nov. 5, 1973, Ser. No. 412,623

Int. Cl. F16p *1/02*

U.S. Cl. 74—612 **15 Claims**

1. A guard for machinery comprising means for at least partially encompassing an area into which might be placed the hand of a worker, said area encompassing means includes a pivotal section, means mounting said pivotal section for free pivotal movement about a generally horizontal axis, first means for abuttingly stopping the pivotal movement of said pivotal section beyond a certain position during its pivoting movement in a direction toward said area, and second means for abuttingly stopping the pivotal movement of said pivotal section during its pivoting movement in a direction away from said area.



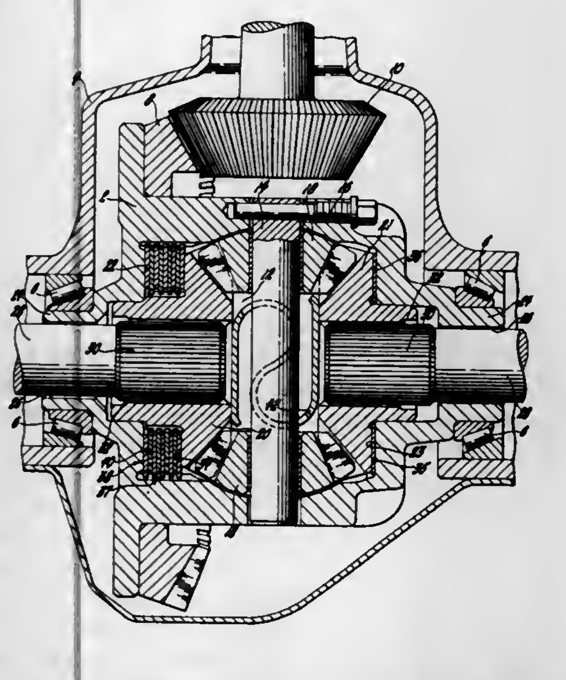
3,896,684
NON-CHATTERING CLUTCH FOR A LIMITED SLIP DIFFERENTIAL MECHANISM

Morris J. Duer, Lansing, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 5, 1973, Ser. No. 412,573

Int. Cl. F16h *1/44;* **F16d** *13/68*

U.S. Cl. 74—711 **1 Claim**



1. A limited slip differential mechanism including a rotatable casing, a pair of output members rotatably received in said casing and adapted to be driven thereby, a gear train comprising intermeshing gears rotatably carried in said casing and interconnecting said output members and said casing for rotation together such that rotation of said output members relative to one another causes rotation of said gear train relative to said casing, and clutch means for frictionally connecting two relatively rotatable parts of said differential mechanism so as to resist relative rotation of said output members, said clutch means including a plurality of frictionally engaged clutch elements arranged alternatively in two groups, the elements of one group being connected for rotation with one of said rotatable parts and the elements of the other group being connected for rotation with the other of said rotatable parts, at least one of said elements comprising a clutch plate having generally annular inner and outer members connected by a neck portion over a small portion of their circumferences, said neck portion being adapted to allow relative movement

between said inner and outer annular members, said clutch plate being connected for rotation with one of said rotatable parts only through one of said annular members, said outer annular member having an indentation in the radially inner edge thereof diametrically opposite said neck portion and said inner member having a tab projecting radially outward therefrom into said indentation, said tab being adapted to abut one of the ends of said indentation upon relative movement of said inner and outer annular members to limit said relative movement.

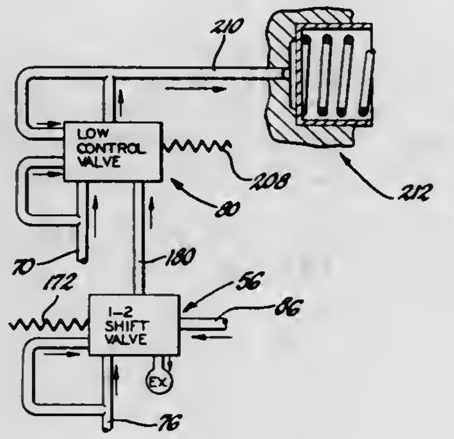
3,896,685
TRANSMISSION CONTROL FOR A TRANSMISSION HAVING ONE DRIVE ESTABLISHING DEVICE FOR TWO INDEPENDENT DRIVE FUNCTIONS

Carl E. Shellman, Livonia, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 12, 1973, Ser. No. 396,569

Int. Cl.^{2} B60K *41/04;* **F16H** *5/64*

U.S. Cl. 74—867 **1 Claim**



1. A hydraulic control for a throttle controlled engine driven transmission having a fluid operated drive establishing device which is selectively engageable for two distinct drive ratios at different engagement pressures, said control comprising; a source of fluid pressure; control valve means for controlling the engagement of said drive establishing means including a valve bore, a valve spool slidably disposed in said bore, first pressure responsive area means formed by said bore and spool, second pressure responsive area means formed by said bore and spool, passage means interconnecting said second pressure responsive area means and said drive establishing means; and manual valve means for selecting said drive ratios and including a movable member, first control passage means in fluid communication with said first pressure responsive area means for directing fluid pressure from said source to said first pressure responsive area means when one of said drive ratios is selected to move said valve spool to provide fluid communication between said first pressure responsive area means and said passage means to pressurize both pressure responsive areas to engage said drive establishing device with full source pressure, and second control passage means for directing fluid pressure from said source to said passage means when the other of said drive ratios is selected and the pressure in said passage means acting on said second pressure responsive area means to move said valve spool to discontinue fluid communication between said second control passage means and said passage means at a predetermined pressure level, less than source pressure, to engage said drive establishing device at the predetermined pressure level.

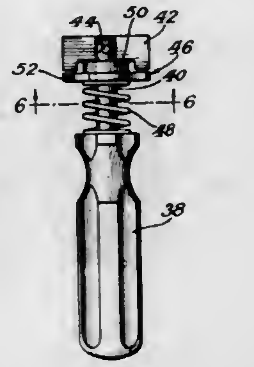
3,896,686
BRAKE SHOE ADJUSTMENT TOOL

Morris E. Swinney, 4511 Shoalwood, Austin, Tex. 78756

Filed May 3, 1973, Ser. No. 356,797

Int. Cl. F16d *65/42*

U.S. Cl. 81—3 R **3 Claims**



1. A tool for use with a pair of brake shoes of the type having a shoe surface, a first end for engagement with a pivot pin of a vehicle hub brake assembly and a second end for engagement with adjustable spacing means, said tool comprising, in combination:
  a mounting shaft;
  a first member fixed to one end of said shaft;
  a second member slidably mounted on said shaft; and
  means for biasing said second member toward said first member, said members including means for engaging at least a portion of said first ends of said shoes, one of said members including a projecting pin portion dimensionally equivalent to said pivot pin and positionable between said first ends to space said ends a predetermined distance.

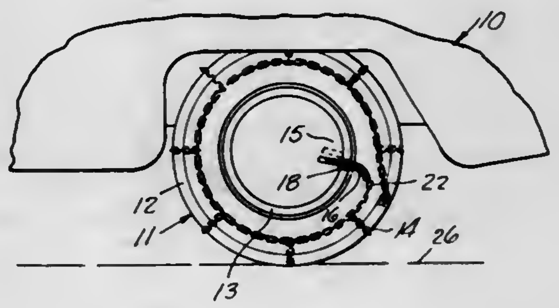
3,896,687
MAGNETIC TIRE CHAIN INSTALLING DEVICE

Sidney C. Cloud, Rt. 1, Box 1834, Shingle Springs, Calif. 95682

Filed Nov. 26, 1973, Ser. No. 418,837

Int. Cl. B60c *27/06*

U.S. Cl. 81—15.8 **4 Claims**



1. A magnetic tire chain installing device, in combination with a wheel having a rim of magnetically susceptable material, an adjustable strap having a hook on one end for engaging a portion of a chain, a magnet having a recessed portion receiving said strap and a portion for engaging said rim, and a securing element in said accessed portion adjustably connecting said strap and magnet together.

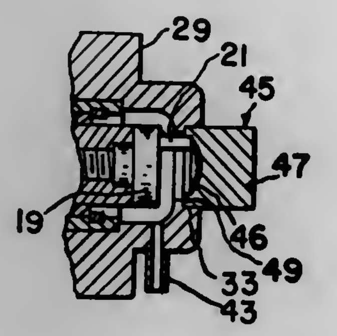
3,896,688
METHOD OF EDGING A NON-RIGID LENS

Richard J. Wrue, Rochester, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Division of Ser. No. 271,431, July 13, 1972, Pat. No. 3,832,920. This application Dec. 17, 1973, Ser. No. 425,414

Int. Cl. B23b *3/00;* **B29d** *11/00*

U.S. Cl. 82—1 C **2 Claims**



1. A method of mechanically working an opthalmic lens with a cutting means while said lens is secured to a mold member and constitutes with said mold member a lens and mold assembly, said lens including a surface which is in engagement with said mold member, an exposed surface and a peripheral edge, said mold including an exposed surface adjacent said edge of said lens, said method comprising:

a. orientating said lens and mold assembly such that said exposed lens surface and said exposed mold surface are both in opposed facing relation to said cutting means;
b. inducing relative rotational movement between said cutting means and said lens and mold assembly;
c. engaging said cutting means with said lens and mold assembly;
d. removing, by cutting away, a portion of said edge of said lens; and
e. removing, by cutting away, the portion of said exposed mold surface adjacent said edge.

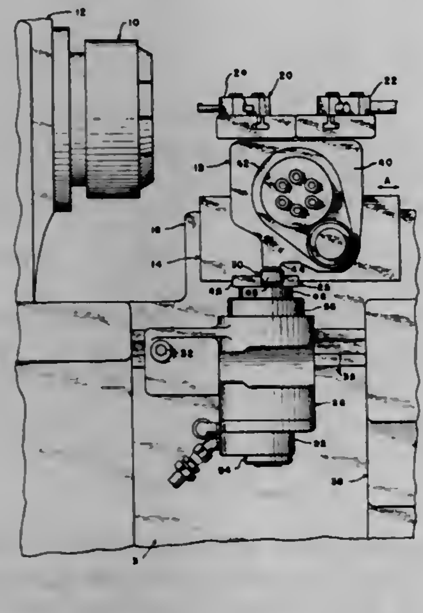
3,896,689
TAPER TURNING ATTACHMENT

Francis D. Catlin, Horseheads, N.Y., assignor to Hardinge Brothers, Inc., Elmira, N.Y.

Filed Aug. 17, 1973, Ser. No. 389,425

Int. Cl. B23b *5/38*

U.S. Cl. 82—17 **19 Claims**



1. A taper turning apparatus for a lathe or the like including stationary support means and spindle means for rotating a workpiece, said turning apparatus comprising:

a. a carriage mounted on the lathe support means for reciprocal movement relative to the spindle,
b. a cross-slide mounted on the carriage for reciprocal movement relative thereto,
c. means for moving said carriage and said cross-slide along a selected one of a plurality of paths in relation to the spindle,
d. template supporting means mounted on the stationary support means,
e. a template being mounted on said template supporting means and including a guide face, and
f. follower means extending from said cross-slide and being constrained to move generally in an operating plane in unison with said cross-slide,
g. said template supporting means including means for moving said template guide face transversely to said operating plane between a first position within said operating plane and a second position outside said operating plane,
h. said template guide face being movable from said first position to said second position independently of the position of said follower in said operating plane,
i. whereby when said guide face is in said first position, said follower means will engage said guide face as said cross-slide moves along certain ones of said plurality of paths.

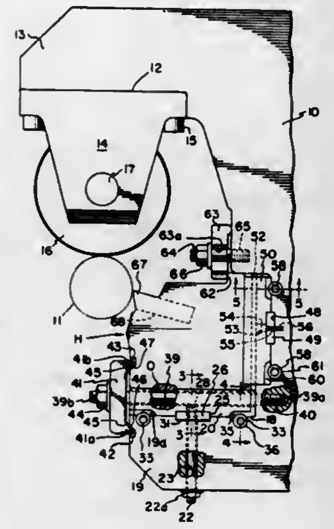
3,896,690
FRONT RELEASABLE, QUICK-CHANGE TOOL HOLDER FOR AN ORBITING CRANKSHAFT LATHE GIRT

Anthony E. Sedlar, and Donald E. Roseberry, both of Saginaw, Mich., assignors to The Wickes Corporation, San Diego, Calif.

Filed Dec. 26, 1973, Ser. No. 428,200

Int. Cl. B23b *29/00*

U.S. Cl. 82—36 B **10 Claims**



1. A tool holder and girt assembly comprising:

an orbital girt providing a support platform on which a tool holder may be mounted;

said platform having a front to rear extending upper exterior way with convergent surfaces thereon;

a tool holder with a tool bit at one end having a bottom mating way part with convergent surfaces, normally received by said way so as to be freely lifted bodily upwardly away therefrom; and

front to rear extending clamp means manipulatable from the tool bit end of the holder to releasably clamp the holder and the way in assembled position.

3,896,691
DEVICE FOR THE SIMULTANEOUS DISPENSING AND SEVERING OF WEBS OF WOUND MATERIAL

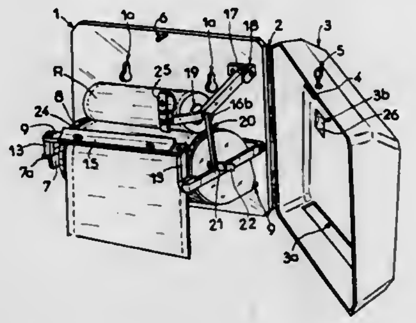
Maurice Granger, 28 Rue Charles de Gaulle, 42000 Saint Etienne, Loire, and Andre Lerond, 174 Rue Leon Blum, 69100 Villeurbanne, Rhone, both of France

Filed Apr. 9, 1973, Ser. No. 349,673

Claims priority, application France, Apr. 27, 1972, 72.15588; Aug. 16, 1972, 72.29761; Dec. 26, 1972, 72.47127

Int. Cl. B65h *35/00*

U.S. Cl. 83—335 **22 Claims**



1. Device for the simultaneous dispensing and cutting of wound materials, comprising a rotatable drum, an articulated roll-carrier adapted for carrying a roll of material and cooperating by friction with said drum to drive the drum in rotation by simple manual traction on the free end of material extending between the drum and roll carrier and projecting from the device; a severing means for severing the material at the end of traction comprising a fixed portion adjustable in position and a mobile portion driven with said drum and progressively severing the material over its entire width, in the manner of a pair of scissors; a stop positioned to engage said mobile portion and hold the same in an inoperative position and energy storage means coupled to said drum to resist rotation thereof in the direction of unwinding when the free end of the material is being pulled and withdrawn from the device until said severing means cuts the material whereafter the drum is continued to be rotated by said energy storage means in said direction of unwinding until said mobile portion of the severing means again contacts said stop and a fresh length of material is fed from said device.

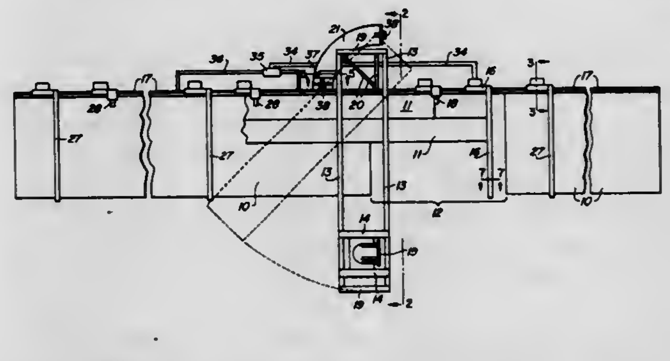
3,896,692
APPARATUS FOR CUTTING ELONGATE ARTICLES

Mayo P. Stubbs, P.O. Box 131, Colorado City, Ariz. 86021

Filed Apr. 16, 1973, Ser. No. 351,152

Int. Cl.² B27B *5/20*

U.S. Cl. 83—471.3 **13 Claims**



1. Apparatus for cutting elongate workpieces comprising and elongate worktable having a substantially horizontal work surface for supporting said workpieces; a guide frame having a pair of parallel track members in a generally horizontal plane above said workpieces on the worktable, said guide frame extending transversely across the worktable at one end of said work surface of the worktable; a support member slidably mounted on said track members, said support member being adapted to mount a power saw thereto, whereby said support member and power saw are movable as a unit along said parallel track members; said worktable having track means extending longitudinally outward from said one end of said work surface in line with one of the sides of said table; an elongate stop member slidably mounted at one of its ends on said track means and extending perpendicularly from said track means whereby workpieces extending longitudinally beyond said one end of said work surface will abut said stop member; and means for releasably securing said adjustable stop member in fixed positions along said track means.

3,896,693
GANG SAW WITH IMPROVED DAMPING MEANS

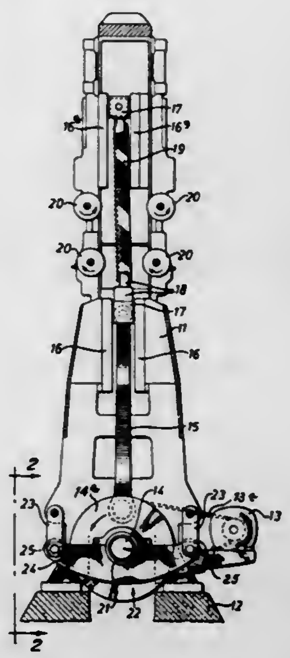
Tage Hjalmar Johansson, Sollentuna, Sweden, assignor to Kockum Industri Aktiebolag, Soderhamn, Sweden

Filed Apr. 5, 1974, Ser. No. 458,358

Claims priority, application Germany, Apr. 13, 1973, 2318820

Int. Cl.² B27B *3/12*

U.S. Cl. 83—748 **4 Claims**



1. In a gang saw having a frame and a driven crankshaft, means for substantially damping out vibrations transferred from the crankshaft to the frame, said damping means comprising:

a. means for operatively journaling said crankshaft said means comprising a cradle
b. means for movably securing said journaling means to said frame wherein said movably securing means allows substantially horizontal displacement of said crankshaft with respect to said frame when said crankshaft has a force applied thereto and,

wherein said movably securing means comprises a plurality of links, each of said links being pivotally connected to said cradle and pivotally connected to said frame,

wherein said links are disposed in substantially parallel relationship to each other which enable said cradle to be displaced in a substantially horizontal direction when a connecting rod imparts a rotational movement to said crankshaft,

said connecting rod is operatively connected at a distal end from said crankshaft to one end of a series of substantially parallel saw blades, said distal end being operatively connected to one end of said saw blades by means of a first sash vertically displaceable within a first vertical guide disposed in said frame, and

wherein said saw blades have their opposite end being operatively connected by means of a second sash vertically displaceable within a second vertical guide disposed in said frame,

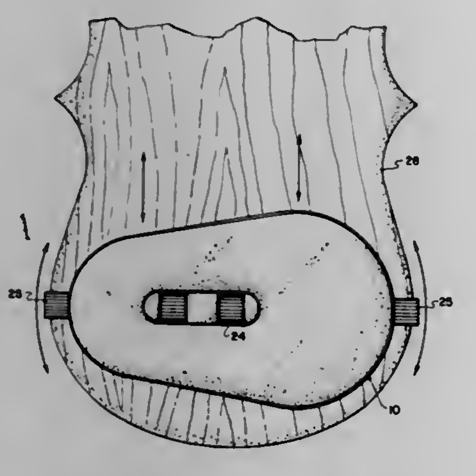
so that when said first sash and said second sash are vertically displaced to a mean vertical position, said

crankshaft will be correspondingly displaced to a substantially horizontal extreme position with respect to said frame, and when said first sash and said second sash are displaced to their extreme vertical positions, said crankshaft will be correspondingly positioned in a horizontal mean position with respect to said frame,
said horizontal mean and extreme positions of said crankshaft resulting from a pendulum-like movement of said cradle caused by forces applied to said saw blades and asid connecting rod from a wood sawing operation.

3,896,694

SHOULDER SUPPORT FOR VIOLIN AND VIOLA

Richard Goldner, 1420 Centre Ave., Pittsburgh, Pa. 15219
Filed July 29, 1974, Ser. No. 492,685
Int. Cl.² G10C *3/18*
U.S. Cl. 84—280 **2 Claims**

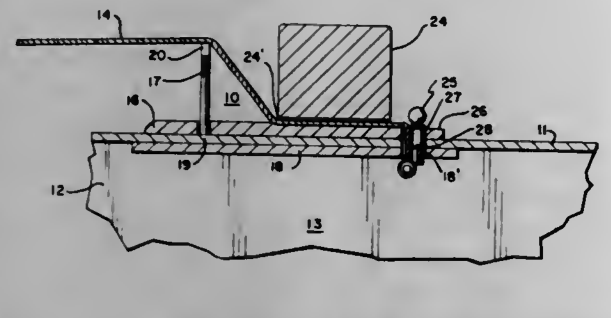


1. A shoulder support for violin and violas comprising a pliable, inflatable member having an air inlet and exhaust means first and second expandable surfaces sealed together about their outer periphery and including at least two slots extending through said surfaces, said slots being sealed about their peripheries, and a pliable, elongatably resilient attachment strap slidably positioned through said slots and including at each of its ends an angular engagement member adapted to engage the sidewalls of the violin or viola to secure said shoulder support thereto and to retain said engagement by resilent tension of said attachment strap.

3,896,695

BRIDGE FOR MUSICAL INSTRUMENT

Lyle Heath Kingsbury, 1010 N. 31st St., Boise, Idaho 83703
Filed Nov. 16, 1973, Ser. No. 416,698
Int. Cl. G10d *3/04*
U.S. Cl. 84—307 **7 Claims**



1. A bridge for a guitar and similar stringed instrument, comprising;
A bridge block fastened transversely to the uppermost terminal side of the soundboard of said guitar; and
bridge saddles being fabricated of a dense, rigid material and being engageable through said bridge block to contact said soundboard, each of said saddles comprising a base portion which is engageable with receptacles in said bridge block and a head portion of the uppermost terminal end of said base portion, said head portion having a pointed, knife-like uppermost terminal edge of which a string may rest

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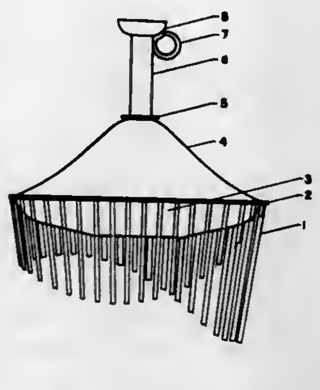
3,896,696

TONAL PERCUSSIVE MUSICAL INSTRUMENT

Richard A. Waters, 1462 Darby Rd., Sebastopol, Calif. 95472
Filed Feb. 15, 1973, Ser. No. 332,564
Int. Cl.² G10D *13/08*
U.S. Cl. 84—403 **8 Claims**

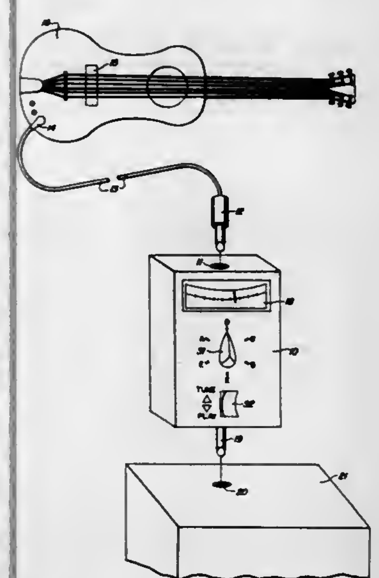


1. A musical instrument, comprising a resonator having a hollow body with a flat flexible bottom surface and a rounded top surface, an aperture formed in said top surface at the apex, liquid contained inside said resonator, a neck including a hollow cylindrical tube open at both ends rigidly attached at one end to said resonator covering said aperture and projecting upwardly, and a plurality of tonal rods of various lengths and diameters rigidly attached at one end around the perimeter of said resonator.

3,896,697

DEVICE FOR TESTING THE TUNE OF MUSICAL INSTRUMENTS

Gary L. Iannone, 1072 28th St., Ogden, Utah
Filed Oct. 17, 1973, Ser. No. 407,190
Int. Cl. G10g *7/02*
U.S. Cl. 84—454 **5 Claims**

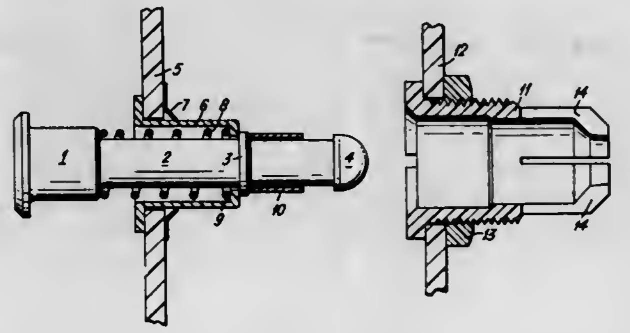


1. A device for testing the tune of musical instruments comprising a precalibrated, stepwise adjustable, active, band-pass filter for transmitting at any given time an electrical signal of substantially predetermined frequency blocking other signals; indicating means arranged to be operated in response to signals transmitted by said band-pass filter; means for feeding to the band-pass filter electrical signals corresponding in frequency to the pitch of a tone produced by a musical instrument; by-pass circuitry interconnectable with the feeding means; means for connecting said by-pass circuitry with an output amplifier; and switching means for connecting either said band-pass filter or said by-pass circuitry with said feeding means; and means for providing power to the band-pass filter.

3,896,698

QUICK RELEASE FASTENER

John F. Aylott, Camberley, England, assignor to Dzus Fastener Co. Inc., West Islip, N.Y.
Filed June 13, 1974, Ser. No. 478,834
Claims priority, application United Kingdom, June 29, 1973, 31116/73
Int. Cl.² F16B *19/00, 21/00*
U.S. Cl. 85—7 **3 Claims**

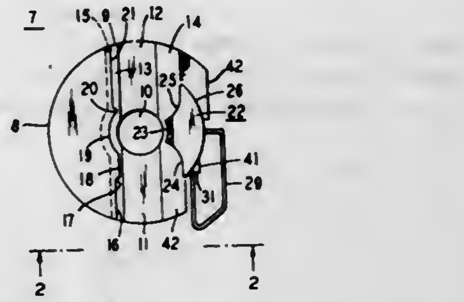


1. A quick release fastener useful in releasably connecting two members together which comprises:
a fastener receptacle provided with a base portion for mounting it on one of said members and having an aperture extending therethrough with a tubular cluster of leaf springs surrounding the aperture and projecting outwardly from the base portion and terminating in an inwardly turned end portion with an inner camming surface and an outer locking edge;
a fastener stud assembly including means for mounting it on the other of said members with a stud carried by said mounting means for axial reciprocation and formed with an operating head and a shank portion projecting therefrom for engagement between the tubular cluster of leaf springs in the receptacle, the shank portion terminating in an enlarged knob at the end thereof formed with a rounded camming outer surface to engage the inner camming surface of the leaf springs to spread them apart as the stud is projected into the receptacle and also with a locking shoulder on the inner edge of the knob for engagement with the locking edge of the leaf springs after the knob has been projected therethrough, the shank portion also having a flange projecting outwardly therefrom located between the head of the stud and the knob; and,
a collar slideably mounted on the shank between the flange and knob and being shorter in length than the distance between the knob and flange so that it can slide with respect thereto, the outside diameter of such collar being at least approximately as great as the diameter of such knob so that when the knob is locked beyond the locking edge of the leaf springs and the stud is projected further inwardly to cause the flange to shift the collar to a position between the inwardly turned end portions of the leaf springs, the knob is released from engagement with the locking edge of the leaf springs to permit withdrawal of the fastener stud from the receptacle.

3,896,699

SHELL HOLDER ACCESSORY DEVICE

Daniel Anthony Cerro, 6 Williamson Ln., Chester, N.J. 07930
Filed Mar. 11, 1974, Ser. No. 449,768
Int. Cl. F42b *5/26, 9/26*
U.S. Cl. 86—44 **10 Claims**

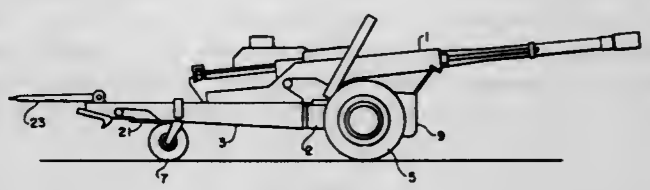


1. A loading device for a shell having a rim and a neck and comprising
a base member having
a pair of planar surfaces for supporting said shell rim,
means defining shell primer slots between said pair of surfaces and being depressed in a plane below said surfaces,
means providing a shell primer access hole and an arcuate wall projecting in a plane above a portion of a first one of said surfaces for embracing a portion of said neck for aligned registration of a shell primer and said access hole, and
jaw means pivotally and retractably mounted on said base member and having another arcuate wall projecting in a plane above a portion of a second one of said surfaces for embracing another portion of said neck and retaining said aligned registration of said shell primer and said access hole for loading operations.

3,896,700

DRIVING AND STEERING SYSTEM FOR A MOTOR VEHICLE

Stig Arthur Johnsson, and Karl Sten Rudolf Hultgren, both of Karlskoga, Sweden, assignors to AB Bofors, Bofors, Sweden
Filed Dec. 21, 1973, Ser. No. 427,189
Claims priority, application Sweden, Jan. 17, 1973, 7300599
Int. Cl. F41f *23/24*
U.S. Cl. 89—40 C **3 Claims**



1. A wheeled motor-driven artillery piece comprising a carriage supporting a gun thereon, a pair of horizontally spaced driving wheels supported for rotation on shafts at opposing sides of said carriage respectively, a pair of carriage trails extending from said carriage rearwardly of said driving wheels, a pair of horizontally spaced, freely rotatable wheels pivotally mounted on said pair of carriage trails respectively at positions rearward of said driving wheels, the horizontal spacing between said pair of freely rotatable wheels being substantially equal to the horizontal spacing between said pair of driving wheels, and means for driving and steering said artillery piece comprising a pair of individually reversible hydraulic motors separately coupled to said pair of driving wheels respectively, a pair of hydraulic pumps connected to said pair of hydraulic motors respectively, each of said pumps including a manually operable control for individually controlling the output of each pump independently of the other pump

thereby to permit individual control of the speed and direction of rotation of each of said driving wheels, and an engine for driving said pumps, said engine being located below said gun at substantially the level of said driving wheel shafts at a position adjacent to and forward of said shafts.

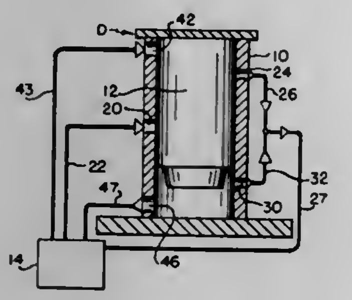
3,896,701
IMPACTOR-VIBRATOR

John L. Crewse, Parma Heights, Ohio, assignor to The Cleveland Vibrator Company, Cleveland, Ohio

Filed Sept. 17, 1973, Ser. No. 397,973

Int. Cl. F01b *21/02*

U.S. Cl. 91—7 **2 Claims**



1. An impact-vibrator device comprising a single cylinder closed at one end and a single piston reciprocal therein, the other end of said cylinder being normally open and adapted when in use to be closed by a plate; there being an inlet port through the walls of said cylinder at an intermediate portion of its length adapted for connection to a source of compressed gas; there being two vibrator exhaust ports through the walls of said cylinder, one nearer each end of said cylinder respectively, connecting passageways arranged to establish connections between said inlet port and one end of said cylinder when said piston is at said one end; connecting passageways arranged to establish connections between said inlet port and the other end of said cylinder when said piston is at said other end; and means for connecting said compressed gas source to said inlet port, thereby effecting vibrator operation of said device; a combined inlet and exhaust port near said closed cylinder end; a normal impact exhaust port near said open end of said cylinder; and means for connecting said compressed gas source to said combined inlet and exhaust port, while blocking said inlet port and said two vibrator exhaust ports, thereby effecting impact operation of said device; means effective when said piston in use is at said normally open end of said cylinder for connecting said compressed gas source to said normal impact exhaust port, while connecting said combined inlet and exhaust port to exhaust for causing return of said piston to said closed end of said cylinder; and means to select either vibrator or impact operation of said device.

3,896,702
POWER STEERING GEAR WITH RELIEF VALVE ON POWER PISTON

Mahendrakumar Bhogilal Shah, West Lafayette, and Uwe Frank Grossmann, Lafayette, both of Ind., assignors to TRW Inc., Cleveland, Ohio

Filed July 27, 1973, Ser. No. 383,392

Int. Cl. F15b *9/10*

U.S. Cl. 91—375 A **4 Claims**

1. A vehicular power steering system utilizing pressurized fluid for actuating a hydraulic piston against varying supply pressure and pressure surges generated in response to road shock so long as the pressure does not exceed a predetermined value comprising:

an integral power steering gear including

a housing,

means defining a power cylinder in said housing having first and second ports located respectively at the opposite ends thereof,

an axially bored power piston slidably carried in said cylinder and rack teeth carried on said power piston,

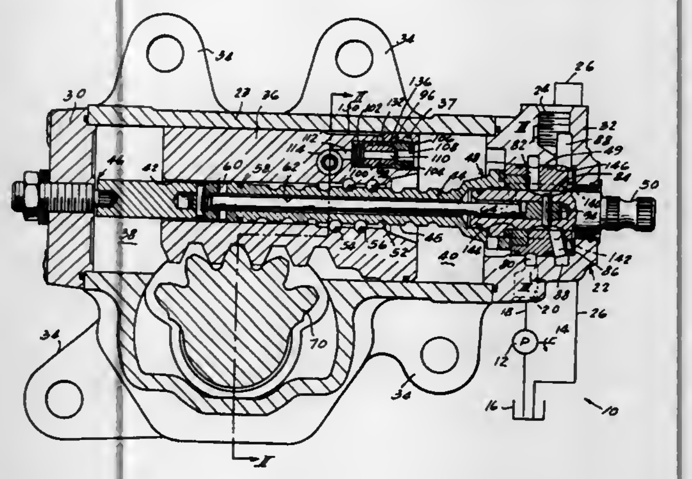
a cross shaft journaled on said housing for rotating about an axis which extends transversely to the axis of said power cylinder and a sector gear carried on said cross shaft in meshing engagement with said rack teeth,

a worm extending in axial alignment into said bore of said piston,

cooperating drive means interconnecting said worm and said power piston for rotating said worm in response to axial movement of said power piston,

a steering shaft journaled on said housing in axial alignment with said worm,

means interconnecting said worm and said steering shaft for rotating said worm in response to rotation of said steering shaft,



steering valve means in said housing operably connected to said steering shaft and movable in response to relative rotation of said steering shaft and said cross shaft in excess of a predetermined relative angle of rotation, and

means defining an inlet port and an outlet port in said housing;

a power fluid pump having a high pressure side and a low pressure side;

a fluid supply header connecting said inlet port to said high pressure side of said power fluid pump;

a fluid return header connecting said outlet port to said low pressure side of said power fluid pump;

first fluid passage means formed in said housing connecting said inlet port to said steering valve means;

second fluid passage means formed in said housing connecting said outlet port to said steering valve means;

third fluid passage means connecting said steering valve means to said first power cylinder port;

fourth fluid passage means connecting said steering valve means to said second power cylinder port;

said fluid supply header and said first fluid passage means constituting high pressure circuits and said fluid return header and said second fluid passage means constituting low pressure circuits,

said steering valve means being movable between a normal position at which fluid communication between said first and second fluid passage means and said third and fourth fluid passage means is open and first and second operating positions at one of which said first fluid passage means is connected to said third fluid passage means and said second fluid passage means is connected to said fourth fluid passage means, and at the other of which said first fluid passage means is connected to said fourth fluid passage means and said second fluid passage means is connected to said third fluid passage means,

said neutral position of said steering valve means obtaining when said predetermined relative angle of rotation between said steering shaft and said cross shaft is not exceeded,

said first operating position obtaining when said steering shaft is rotated in one direction and said predetermined relative angle of rotation between said steering shaft and said cross shaft is exceeded and said second operating position obtaining when said predetermined relative angle of rotation between said steering shaft and said cross shaft is exceeded;

means defining fifth fluid passage means through said piston for fluid communication between the opposite ends of said cylinder; said fifth fluid passage means including

an arcuate peripheral groove in and extending about a portion of said piston in communication with one end of said cylinder;

first bore means extending from said groove to the other end of said cylinder; and

pressure relief valve means disposed in and normally closing said fifth fluid passage means and arranged so as to be subjected to the fluid pressure between the ends of said power piston and the respective ends of said power cylinder and operable to open in response to said predetermined value of pressure to permit fluid flow between the ends of said power cylinder to relieve excess pressure, said pressure relief valve means including

a first valve disposed in said first bore means and normally closing said first bore means and having an axial bore aligned with said first bore means for communication therethrough;

and

a second valve disposed in said first bore means in an opposite flow direction to that of said first valve and normally closing said first bore means.

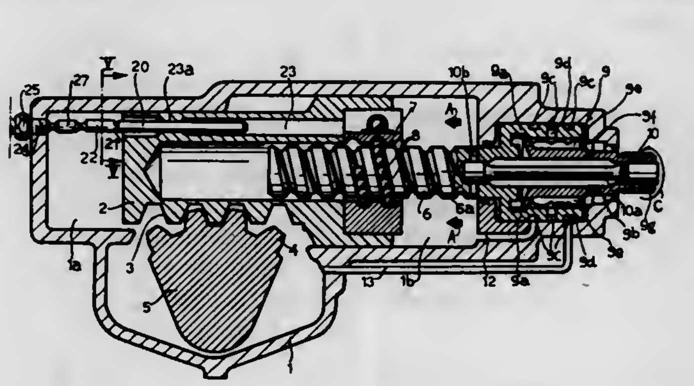
3,896,703
ARRANGEMENT FOR RELIEVING THE MECHANICAL STRESSES IN POWER ASSISTED STEERING FOR VEHICLES IN THE FULL-LOCK STEERING POSITIONS

Battista Bertanza, Segrate (Milan), Italy, assignor to Powersteering Trust Reg., Yriesenberg, Liechtenstein

Filed June 24, 1974, Ser. No. 482,718

Int. Cl. F15b *15/22*

U.S. Cl. 91—401 **6 Claims**



1. An arrangement for reducing the stresses on mechanical parts of an hydraulic power-assisted steering system for motor vehicles at the full-lock steering positions during hydraulic operation, comprising a hollow body defining an hydraulic cylinder having an end wall, a piston mounted displaceably within the said cylinder and defining therein two chambers, and hydraulic distributor means responsive to the steering direction for connecting said chambers selectively to a source of fluid under pressure and to a discharge outlet, wherein the improvement consists in the provision of at least two conduits traversing the piston parallel to its direction of movement, said conduits connecting the two chambers defined by the piston within the hollow body, respective rods secured to and projecting from said end wall, said rods being slidably located within the conduits, the said rods each having a narrow part the transverse cross section of which is less than the internal cross section of the respective conduit whilst the remainder of each rod has a cross section equal to that of the respective conduit to seal the latter, the said narrow part on one of the said rods being positioned on its associated conduit in one end of stroke position of the piston and the narrow part in the other of the said rods being positioned in its associated conduit in the other end of stroke position of the piston whereby in these respective end of stroke positions of the piston the respective conduits are at least partially open.

3,896,704
OPERATIONAL TABLE FOR MEDICAL PURPOSES

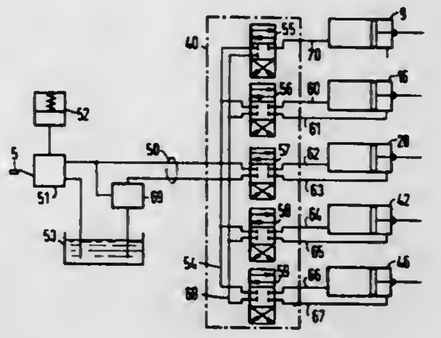
Sigvard Barud, Jarfalla, and Bengt Sedell, Nacka, both of Sweden, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Apr. 10, 1973, Ser. No. 349,810

Claims priority, application Sweden, Apr. 18, 1972, 5044/72

Int. Cl. F15b *11/20*

U.S. Cl. 91—413 **4 Claims**



1. An operational table for medical purposes, having a hydraulic operating system, said operating system having a pressure-producing device comprising a pump, a foot pedal actuating said pump and a central valve actuating unit comprising a valve casing having the shape of a hollow cylinder, a dividing member located piston-like in said casing and rotatable about the axis of said casing, a tubular outwardly extending shoulder carried by said dividing member, a cylindrical flange fixed to said casing upon the side opposed to said shoulder, said dividing member and said flange having concentrical passages, an axially movable pin extending through said passages, said flange having an inwardly radially extending working surface, a plurality of working cylinders having flow channels, said flow channels opening in pairs into said working surface and being uniformly divided over its circumference, said dividing member also having a radial working surface extending toward the first-mentioned working surface and sealed relatively thereto, means forming the other flow channels opening into the second-mentioned working surfaces, the openings of said other flow channels being alined with a pair of the first-mentioned flow channels, one of said other flow channels having a channel extension opening into one of said passages, the other one of said other flow channels having a fork-like extension with two side channels, said side channels extending at equal distances from and on opposite sides of said channel extension and opening into one of said passages, said pin having two grooves surrounding the pin and spaced at a distance corresponding to two openings, said pin also having two axial channels communicating with said grooves and extending to an outwardly projecting part of said pin, pressure means connection for the supply and withdrawal of pressure means, said axial channels being connected with said pressure means connection, an axially swingable lever mounted upon the tubular shoulder of the dividing member, said lever swinging said dividing member relatively to said casing about a common axis of symmetry, and means pivotally connecting said lever with said pin and transmitting the axial movement of said lever to make the axial movement of said pin equal to the distance between the two axial channels of the pin, whereby, in the two end positions of said lever, the pressure means connection is crosswise connected with said other flow channels.

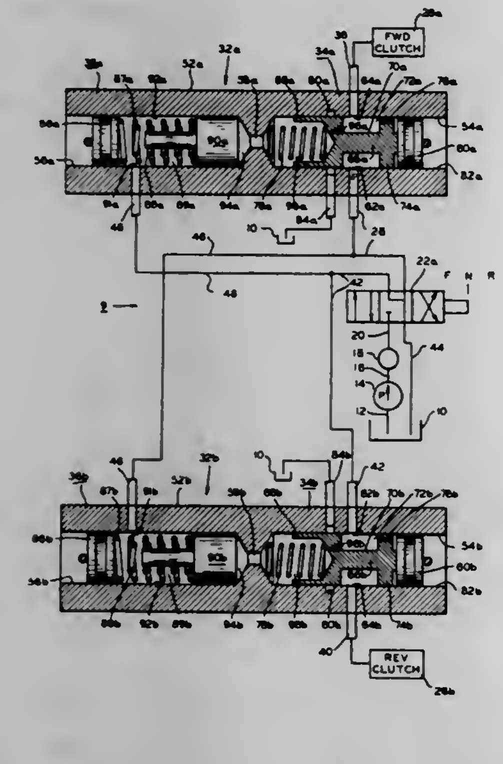
3,896,705
PRESSURE FEEDBACK SYSTEM

Jon R. Patton, Jackson, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Jan. 21, 1974, Ser. No. 435,402

Int. Cl. F15b *11/22*

U.S. Cl. 91—413 **6 Claims**



1. In combination with a pair of fluid-pressure-operated devices, a system for actuating said pair of fluid pressure operated devices including fluid-conducting circuit means connecting both of said devices to both a source of fluid under pressure and to tank, a selector valve connected in said circuit means to include the selective admission of pressurized fluid from the source, via said circuit means, into one of said devices and the admission of fluid from the other of said devices, via said circuit means, to tank, a first modulator in said circuit means controlling fluid to said one device, a first accumulator including pressure responsive means dividing said accumulator into two expansible chambers, means connecting said first modulator in series with said first accumulator and providing fluid communication between one of said expansible chambers of said first accumulator and said first modulator, a second modulator in said circuit means controlling fluid to the other of said devices, a second accumulator including pressure responsive means dividing said second accumulator into two expansible chambers, means connecting said second modulator in series with said second accumulator and providing fluid communication between one of said expansible chambers of said second accumulator and said second modulator, each of said modulators including means for bleeding off a portion of the pressurized fluid passing through the said modulator during actuation of its respective device, with each of one of said expansible chambers of said accumulators being charged by said portion of the pressurized fluid and gradually increasing the pressure for actuating its respective device, each of said accumulators also alternately being resettable to a rest position by said pressurized fluid, wherein the improvement comprises the addition of further fluid-conducting circuit means for directly connecting the circuit means passing fluid through said first and second modulators with the other of said expansible chambers of said second and first accumulators, respectively, so as to permit concomitant charging of the accumulator associated with one of said devices while resetting the accumulator associated with the opposite one of said devices to rest position by means of said pressurized fluid.

3,896,706
BRAKE ACTUATOR UNITS

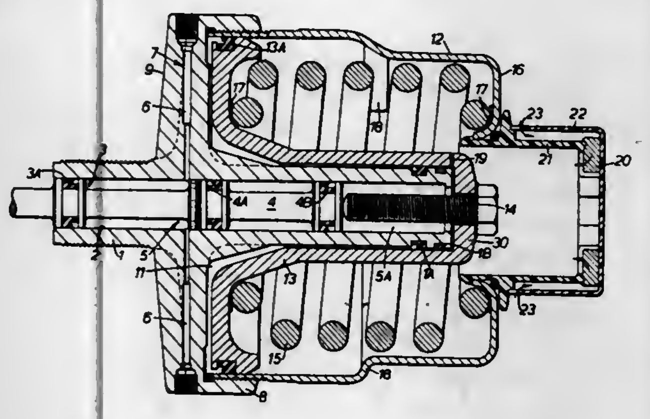
Charles Newstead, and Andrew Charles Wright, both of Birmingham, England, assignors to Girling Limited, Birmingham, England

Filed Feb. 26, 1973, Ser. No. 335,897

Claims priority, application United Kingdom, Mar. 1, 1972, 9538/72; May 31, 1972, 25404/72

Int. Cl. F01b *7/00*

U.S. Cl. 92—63 **3 Claims**



1. An actuator unit for a vehicle wheel brake comprising a pair of fixed, coaxial, radially spaced inner and outer cylinders surrounding an inner and outer chamber, respectively, the inner cylinder extending into the outer chamber and having an outer cylindrical surface, the outer cylinder having an inner cylindrical surface, inner and outer fluid pressure responsive means in the respective cylinders and moveable between first and second positions, said outer pressure responsive means comprising a piston having inner and outer peripheries respectively sealingly engaging and being slideably guided by the outer cylindrical surface of said inner fixed cylinder and by said inner cylindrical surface of said outer fixed cylinder, spring means biassing said piston towards its second position, means for admitting fluid pressure from a first source to said inner cylinder for controlling the movement of the fluid pressure responsive means therein between its first and second positions, means for admitting fluid pressure from a second source to said outer cylinder to effect movement of said piston to its first position in opposition to the biassing force of said spring means when the pressure is above a predetermined level, and means for transmitting the biassing force of said spring means to the inner pressure responsive means to move it to its second position when the pressure in said outer cylinder is below said predetermined level, said inner fluid pressure responsive means comprising an hydraulically operable piston, and said inner chamber including a working space subject to hydraulic pressure and a non-working space subject to ambient air, a third piston in said inner cylinder separate from said inner piston positioned between said working and non-working spaces, said force transmitting means operating on said third piston to transmit a force to said inner fluid pressure means, a pressure seal and a wiper seal carried by said third piston, said wiper seal being interposed between the non-working space and said pressure seal.

3,896,707
FILLED PISTON RETAINING MEANS WITH EROSION PROTECTION

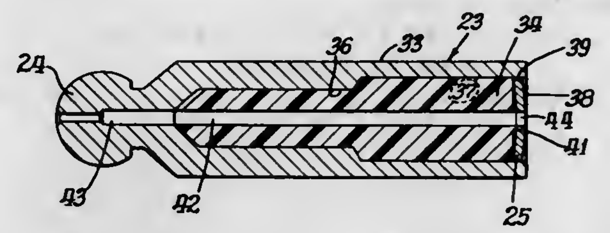
William L. Holmstrom, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 24, 1973, Ser. No. 391,337

Int. Cl. F16j *1/00*

U.S. Cl. 92—172 **3 Claims**

1. In a piston of the type used in hydraulic translating units, wherein said piston has a base portion for engaging said piston to said unit, and an attached skirt portion with a trailing end, said piston defining a hollowed out cavity extending axially from a plane rearward of said base to an opening in the trailing end, and a core of filler material within said cavity and essentially filling the same; means for retaining the core of filler material within said cavity including concavo-convex disc core-retaining means press-fitted within said cavity, said disc core-retaining means having a press-fit outer edge surface defining an acute angle with respect to said cavity, and said disc core-retaining means having its concave face in contact with an annular protrusion on an end portion of said core filler material positioned within said cavity.



3,896,708
PLASTIC BLOCK BAG WITH A VALVE

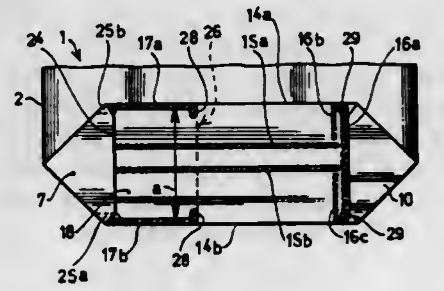
Jan Roelof Jochum Hendrik De Vries, Hardenberg, Netherlands, assignor to Industriele Onderneming Wavin N.V., Zwolle, Netherlands

Division of Ser. No. 153,474, June 18, 1971, Pat. No. 3,785,547. This application Oct. 23, 1973, Ser. No. 408,306

Claims priority, application Netherlands, June 17, 1970, 7008908; Jan. 10, 1971, 7101739; Mar. 5, 1971, 7103404

Int. Cl. B31b *1/84*

U.S. Cl. 93—35 R **4 Claims**



1. A method of manufacturing a plastic block bag with a filling valve from a tubular foil comprising the steps of making from one end of the tubular foil two longitudinal incisions one on each side of the longitudinal center line of the tubular foil to form a first corner flap between one longitudinal incision and the longitudinal edge of the tubular foil situated closest thereto, a second corner flap between the other longitudinal incision and the longitudinal edge of the tubular foil situated closest thereto and a pair of bottom flaps between the two longitudinal incisions; folding outwardly the first corner flap and the second corner flap together with the bottom flaps along folding lines extending at angles toward the one end of the foil from the longitudinal edges to the ends of the longitudinal incisions to form a bottom square with the first corner flap and the second corner flap; folding inwardly the bottom flaps along lines transverse to the longitudinal center line of the tubular foil such that the bottom flaps are in overlapping relationship; inserting a removable partition member between the remaining portion of the first corner flap and the inwardly folded bottom flaps and between the remaining portion of the second corner flap and the underlying portions of the tubular foil; forming first seals to connect the edges of the bottom flaps to each other, forming second seals immediately underneath the bottom flaps to connect the first corner flap with the bottom flaps to form a valve flap; the width of that portion of the removable partition member at least along the effective length of the second seals being smaller than the width of the distance between the bottom flap folding lines of the finished bag with a flattened bottom; and removing the partition member from under the bottom flaps after the seals have been formed.

3,896,709
PROCESS AND APPARATUS FOR MANUFACTURING BLOCK BOTTOM BAGS FROM HEAT-SEALABLE MATERIAL

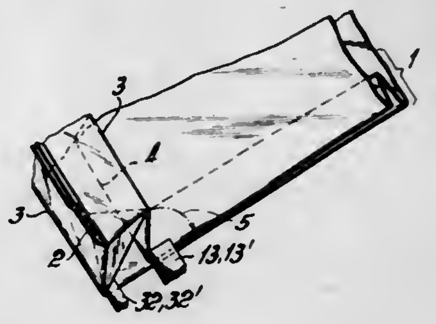
Friedhelm Brinkmeier, Ladbergen, Germany, assignor to Windmoller & Holscher, Lengerich, Germany

Filed Nov. 14, 1973, Ser. No. 415,514

Claims priority, application Germany, Nov. 14, 1972, 2255768

Int. Cl. B31b *31/26*

U.S. Cl. 93—35 SB **2 Claims**



1. A process of forming block bottom bags from heat-sealable material including the steps of:

providing a segment of heat-sealable gusseted tubular material;

supporting said segment on a surface to define top and bottom segment faces;

forming short seam welds on one end of said segment by welding said top and bottom segment faces together for a distance approximately equal to the width of said gussets while maintaining an air flow passage between said top and bottom faces extending between said gussets;

forming a pair of transverse score lines on said segment extending across the width thereof spaced apart and from the bottom of said bag;

holding the segment onto said support by engaging said segment along said score lines;

separating the top and bottom walls extending between said short seamed end and the score line remote from said seamed end;

backfolding said separated top and bottom walls;

flattening said backfolded walls whereby the flat bottom of said bag is formed; and

completing the seam between said short seams by welding the top and bottom segment faces extending between said gussets.

3,896,710
FOLDABLE TUBULAR PACKAGE APPARATUS

George Henry Holoubek; David Edward Ales, and Harland Elmer Harms, all of Muscatine, Iowa, assignors to Dart Industries Inc., Los Angeles, Calif.

Division of Ser. No. 397,460, Sept. 14, 1973, Pat. No. 3,851,568, which is a continuation-in-part of Ser. No. 376,725, July 5, 1973, Pat. No. 3,823,850, which is a continuation of Ser. No. 214,654, Jan. 3, 1972, abandoned. This application June 10, 1974, Ser. No. 477,939

Int. Cl.² B29F *1/10;* **B31F** *1/00*

U.S. Cl. 93—36.8 **5 Claims**

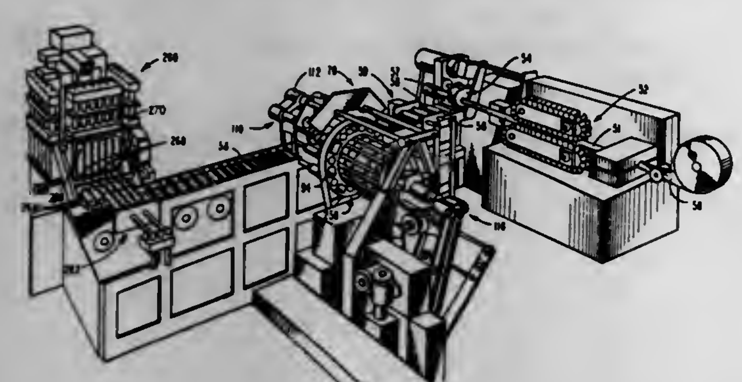
1. An apparatus for producing a collapsible container from tubular blanks comprising:

transportation means for sequentially moving said blanks to a series of operating stations;

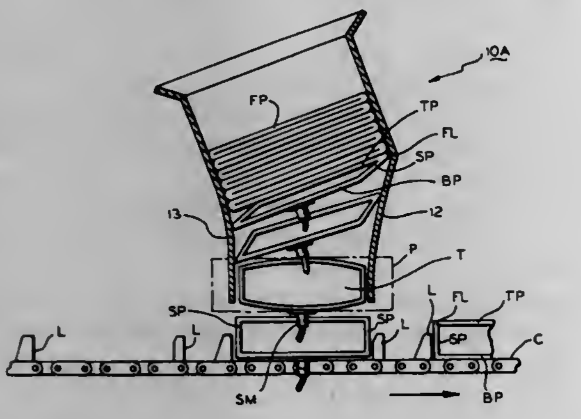
a first operating station located along said transportation means for crimping and folding an end of said tubular blanks including a revolving carriage frame having a plurality of mandrels projecting therefrom and including indexing means connected thereto and drive means operating in conjunction with said indexing means to intermittently rotate said frame to predetermined positions whereby individual mandrels will become located directly opposite each of said shaping assembly means;

a reciprocating support means adjacent said frame, said support means having mounted thereon a tube end shaping assembly comprising a crimping means, a twisting means, and a frusto-conical pressing means each located directly opposite to and concentric with a separate mandrel so that when said support means moves toward said carriage frame, each of the assembly shaping means will engage a blank on said mandrel opposite thereto;

a second station downstream from said first station in the direction of travel of said blanks for shaping the folded end of said tubular blanks into a shoulder and neck portion.



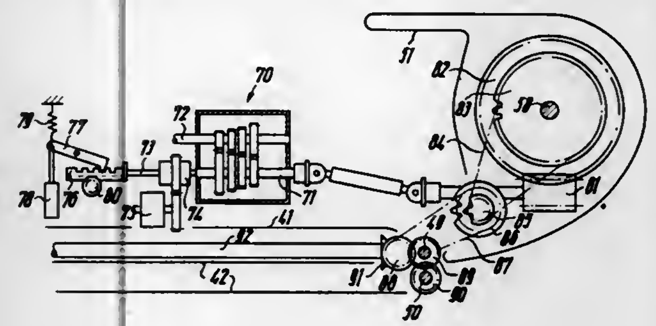
3,896,711
APPARATUS FOR ERECTING CARTON TUBES
Ralph O. Vuilleumier, Malvern, Pa., assignor to Container Corporation of America, Chicago, Ill.
Filed Mar. 13, 1974, Ser. No. 450,556
Int. Cl.^{2} B31B *1/80*
U.S. Cl. 93—53 SD **1 Claim**



1. In a machine for erecting carton tubes having foldably connected panel elements and arranged in a flattened condition thereof;

a. a hopper for holding a stack of flattened carton tubes;
b. said hopper having converging sides defining a throat through which a tube must pass and be constrained in direction corresponding generally to the plane of a certain of said panel elements to cause the tube to be erected;
c. means engageable with a panel element of said carton tubes and operable to move said carton tube through said throat and maintain the constraint thereon to cause partial erection of said tube;
d. plenum means extending along at least one side of said hopper at the throat thereof for applying positive air pressure in the form of a blast of air to complete the erection of said carton tube as it moves through said throat.

3,896,712
APPARATUS FOR MACHINES FOR THE AUTOMATIC PRODUCTION OF POSTAL ENVELOPES
Gunter Ehlscheid, Neuwied, Germany, assignor to Winkler & Dunnebier Maschinenfabrik und Eisengiesserei KG, Neuwied am Rhine, Germany
Filed Dec. 20, 1973, Ser. No. 426,740
Int. Cl. B31b *1/08*
U.S. Cl. 93—61 AC **2 Claims**

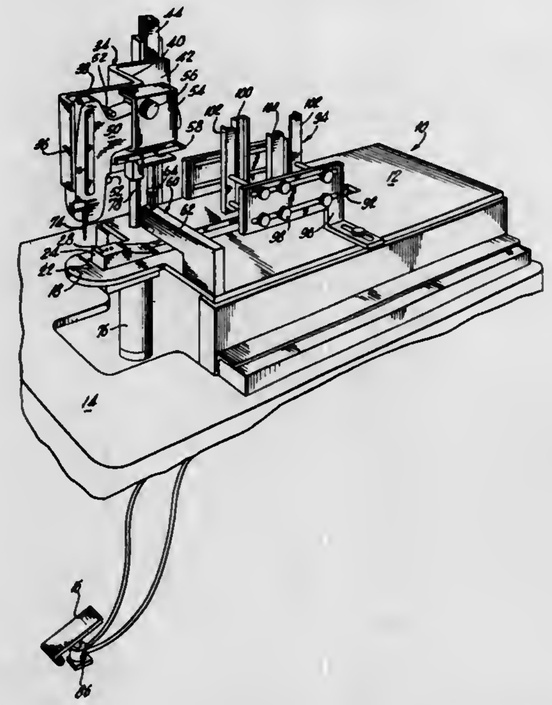


1. In a machine for the automatic production of postal envelopes of the type including an echeloning station, a closure flap gumming station, a blank drawing station, and a drying station through which envelope blanks are successively moved by conveyors, means for varying the echelon unit width of the blanks in each of the stations and for varying the speed of the envelope blank conveyors through the stations with the same relative variance of echelon width, the means comprising: a drive shaft connected to drive the blank conveyor at one of the stations; mechanical drive connections from the conveyor at the drive shaft connected station to one of the other stations and from that station to the conveyor at the next station through all of the stations in a predetermined speed ratio so that the conveyor at each station provides a desired echelon width which may vary from the echelon width at another station, a draw key speed change gear in the drive shaft having an axially movable adjusting spindle to effect a speed change in the drive shaft, a controllable motor connected to drive the adjusting spindle, and means for locking the adjusting spindle in desired position.

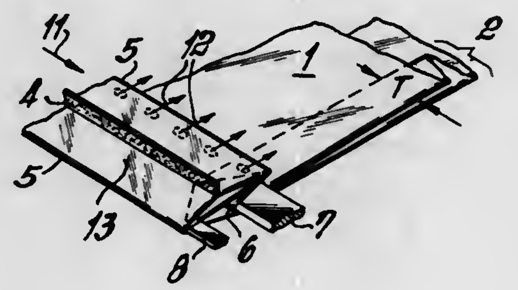
3,896,713
TOP-FEEDING AUTOMATIC TAG-ATTACHING MACHINE
Laszlo Mato, Paramus, N.J., assignor to Ben Clements & Sons, Inc., New York, N.Y.
Filed Dec. 27, 1973, Ser. No. 429,007
Int. Cl. B31f *5/00*
U.S. Cl. 93—88 **13 Claims**

1. In a machine for attaching a tag to an article by means of a bar-lock fastener, support means having an upwardly directed supporting surface on which an article is adapted to be placed in preparation for having a tag attached to the article with a bar-lock fastener, positioning means located adjacent said supporting surface of said support means for positioning a tag at a location situated over and spaced from said supporting surface so that part of the article can be situated on the supporting surface beneath part of the tag between the tag and said supporting surface, carriage means situated at an elevation higher than said supporting surface for carrying a bar-lock dispenser which when triggered upon reaching a dispensing location will dispense a bar-lock fastener and introduce the same downwardly through a tag and article situated therebeneath on said supporting surface, guide means carried by said support means and operatively connected with said carriage means for guiding the latter for downward movement from an upper retracted position to a lower end position situating a dispenser carried by said carriage means at said dispensing location, trigger means carried by said support means and situated in the path movement of a dispenser carried by said carriage means for triggering the dispenser when the latter is situated by said carriage means at said dispensing

location, fluid-pressure means operatively connected with said carriage means for moving the latter along said guide means along a working stroke downwardly from said upper retracted position to said lower end position and along a return stroke upwardly from said lower end position to said upper retracted position, and operator-actuated control means accessible to the operator and operatively connected with said fluid-pressure means for controlling the latter to carry out an operating cycle during which said carriage means is moved along its working and return strokes, whereby after an article is placed on said supporting surface and a tag is positioned by said positioning means over the article the operator can actuate the operator-actuated control means to bring about an operating cycle where the tag will be attached to the article by way of a bar-lock fastener.



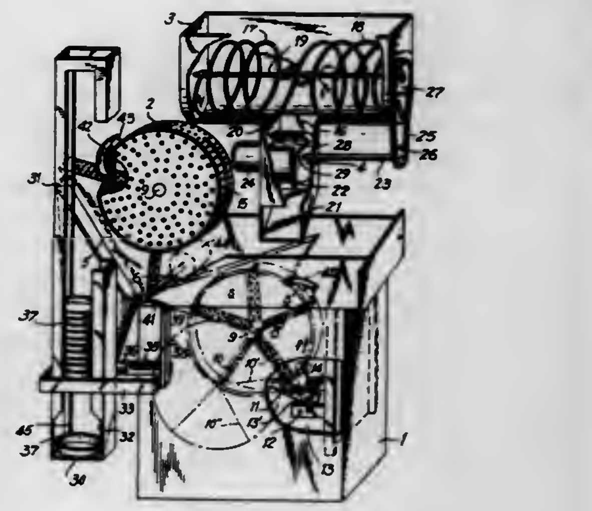
3,896,714
PROCESS OF MANUFACTURING BLOCK BOTTOM BAGS
Frank Bosse, Ibbenburen-Dorenthe, Germany, assignor to Windmoller & Holscher, Lengerich, Germany
Filed Nov. 14, 1973, Ser. No. 415,513
Claims priority, application Germany, Nov. 20, 1972, 2256913
Int. Cl. B31b *31/26*
U.S. Cl. 93—35 SB **1 Claim**



1. A process of forming block bottom bags from thermoplastic material including the steps of:

forming a simple bottom seamed, side-gusseted, open mouthed flat bag;
forming a pair of transverse score lines on said bag extending across the width thereof spaced apart and from the bottom of said bag;
supporting said bag on a flat surface to define top and bottom faces of said bag;
holding the bag against the flat surface by engaging said top face at positions adjacent said side gussets and along the score line remote from the bottom seam;
opening said side gussets while the portions of the top and bottom faces extending between said opened side gussets remain in engagement with each other;
holding the bottom part of each said side gusset adjacent said score line nearer said bottom seam;
moving the top face of said bag while in engagement with the bottom face of the bag tangentially with respect to said bottom face in a direction toward the open end of said bag, and in substantially the same plane as said bottom face to effect a peeling of said top face from said bottom face and causing said faces to slip relative to each other;
stopping the tangential movement of said top face when said wall portions are moved into a predetermined position by said tangential movement whereby the flat bottom of said bag is formed.

3,896,715
AUTOMATIC APPLIANCE FOR COOKING AND DISTRIBUTING MEASURED QUANTITIES OF HOT FOOD PRODUCTS
Albert Mascret, 84 rue Voltaire, 02100 Saint Quentin, France
Filed Nov. 22, 1972, Ser. No. 308,845
Claims priority, application France, Nov. 12, 1971, 71.41395
Int. Cl. A47j *37/12*
U.S. Cl. 99—356 **12 Claims**



1. Apparatus for cooking and distributing measured quantities of hot food products, the apparatus comprising a tank for containing a hot cooking liquid; a basket and chute unit consisting of a perforated basket having an aperture and a chute in communication with the aperture for introducing food products into the interior of the basket and for removing food products therefrom; means for moving the unit between a first position in which the basket is immersed in the cooking liquid and a second position in which the basket is withdrawn from the tank; means for partitioning the interior of the basket into sectors each intended to contain one measured quantity of food product, said partitioning means being mounted so as to be rotatable in the basket; a device for imparting rotation to said partitioning means to cause the partitioning means to rotate through one sector each time the basket-and-chute unit moves towards one of said positions of the basket; a magazine for containing a reserve of the food product to be cooked and provided with an aperture through which said product can pour and including means for driving the product towards said aperture; a two-position productmeasuring member which, in a first position, takes from the aperture of the magazine a predetermined portion of product, and in its second position allows said portion to pour into the chute of the basket, a driving mechanism for moving the measuring member in

synchronism with the movement of the basket-and-chute unit; means for receiving a stack of receptacles each intended to receive a cooked portion of product which is tipped from one of the sectors of the basket; and a mechanism for distributing said receptacles in synchronism with the movement of the basket-and-chute unit and operable to bring an end receptacle from the stack into a position accessible to the consumer.

3,896,716
APPARATUS FOR EXPANDING FOOD PRODUCTS

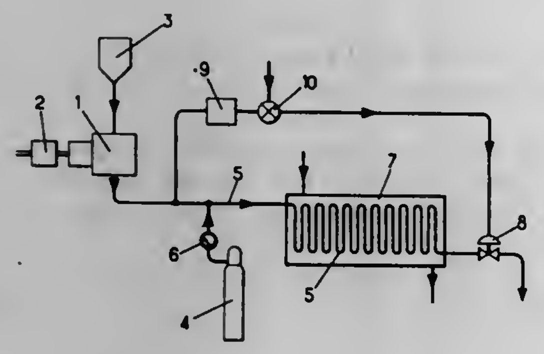
Daniel Carasso, Neuilly-sur-Seine, France, assignor to Compagnie Gervais-Danone, Levallois-Perret, France

Continuation of Ser. No. 227,771, Feb. 22, 1972, abandoned. This application Mar. 19, 1974, Ser. No. 452,533

Claims priority, application Luxemburg, Feb. 19, 1971, 62640

Int. Cl. A23c *9/00*

U.S. Cl. 99—452 **8 Claims**



1. In an apparatus for expanding a food product comprising means for mixing said food product with a gas; pump means connected to supply said food product to said mixing means under pressure; means for introducing said gas into said mixing means downstream of said pump means at a pressure greater than that at which said pump supplies said food product; and pressure-regulating outlet valve means downstream of said mixing means through which a mixture of said food product and said gas emerges from said mixing means; the improvement which comprises pressure responsive control means responsive to the pressure of said food product upstream of said gas introducing means but downstream of said pump means, said control means being connected to said pressure-regulating valve means to control the opening of said valve means in dependence on said food product pressure and thereby maintain a substantially constant pressure drop between said pump and outlet valve.

3,896,717
ROOF TRUSS MACHINE

Jack N. Schmitt, 64 Park St., Troy, Mich. 48084

Filed Aug. 13, 1973, Ser. No. 387,735

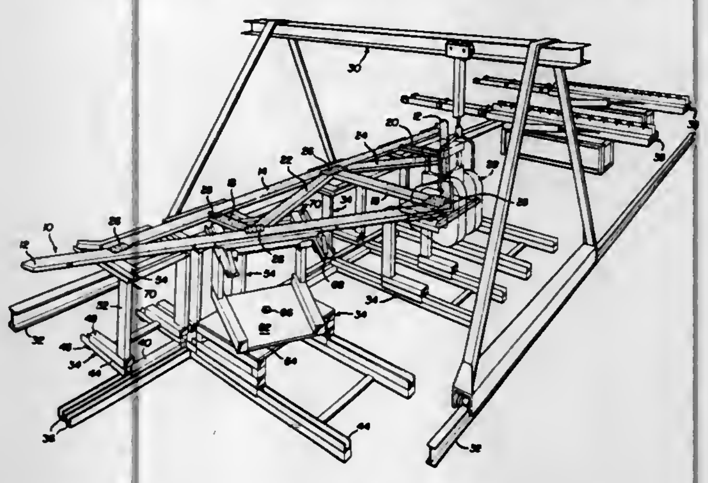
Int. Cl. B30b *15/04*

U.S. Cl. 100—100 **2 Claims**

1. In a machine for assembling wooden trusses from individual abutting structural members joined together by spiked connector plates, wherein the machine is of the type having a plurality of support tables adjustably positioned along a floor track means and arranged to support the horizontally arranged structural members at their points of abutment, and further having a wheeled gantry supporting a C-clamp type press for movement along the outer periphery of the truss to join the truss members together by embedding connector plates into the members at each of the table-supported abutment points, the improvement in said support tables comprising;

a lower frame adapted to slidably engage the floor track means for adjustable positioning therealong; said lower frame including a downwardly opening channel slidably mounted on said floor track means for adjustment of said support table in a first direction, a pair of spaced apart upwardly opening U-shaped lower frame members each having a first end attached to said channel, and a pair of parallel box frames, each slidably superimposed on one lower frame member for adjustment of said support table transversely of said first direction;

an upper support surface adapted to support individual truss members at their point of abutment; said upper support surface including a pair of horizontal legs each parallel to a box frame and interconnected at one end by a third horizontal leg parallel to said downwardly opening channel, said support surface being open on one side; and



a pair of vertical legs rigidly securing said pair of horizontal legs to said lower frame at said one end of said pair of legs so that said upper support surface is cantilevered to said lower frame;

said upper support surface being rigidly secured to said lower frame with the space immediately beneath the one open side of said upper support surface being otherwise completely open and free of any obstruction, whereby the, C-clamp type press can freely move from table to table in a straight path along and parallel to the outer periphery of the truss, without having to move perpendicularly to the sides of the truss to clear tablesupporting legs.

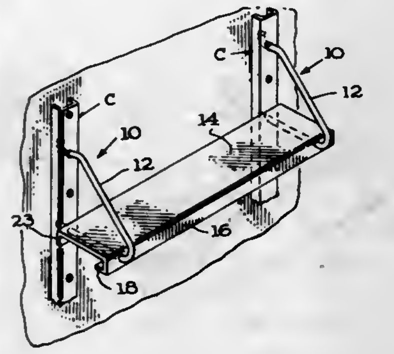
3,896,718
SHELF ARRANGEMENT AND BRACKET THEREFOR

Joseph Giambalvo, 1118 Willoughby Ave., Brooklyn, N.Y. 11237

Filed June 30, 1972, Ser. No. 268,028

Int. Cl.^{2} A47G *57/24*

U.S. Cl. 108—108 **11 Claims**



1. A shelf arrangement, comprising:

supporting means having vertically spaced perforations therein;

at least two open triangle brackets, each consisting of two sides, one of said sides comprising an upper extension terminating in a hook having a depressed portion therein, and the other of said sides comprising a generally horizontally extending lower extension connected at one end to the end of said upper extension opposite said hook and terminating at the other end thereof without the axis thereof departing from said generally horizontal line, the terminal end thereof having a downwardly directed notch therein, said upper extension extending from said horizontally extending lower extension at an acute angle, said upper and lower extensions being resiliently biased to a rest position at which said hook and the end of said lower extension are farther apart than the vertically spaced perforations of said supporting means in which said brackets are engaged; and

a shelf member having at least two apertures through which said lower extensions of respective ones of said brackets extend to support said shelf member in a horizontal position, thereby positively connecting said brackets with said shelf member, the depressed portion of said hook and the notch in the terminal end of said lower extension of each of said brackets lockably engaging the said vertically spaced perforations in said supporting means.

3,896,719
MOUNTING DEVICE

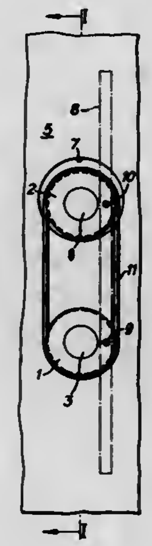
Charles Clifford Owen Goodall, and Edward George Amery, both of Essex, England, assignors to Ilford Limited, Essex, England

Filed May 8, 1974, Ser. No. 468,156

Claims priority, application United Kingdom, May 16, 1973, 23346/73

Int. Cl. B30b *3/04;* **D06f** *45/00*

U.S. Cl. 100—169 **10 Claims**



1. In an apparatus which comprises at least one pair of driven nip rollers a mounting means for the said pair of nip rollers which comprises at each end of the pair of rollers an external mounting plate and an apertured plate, each roller of the said pair having at each end a spindle mounted in a spindle bearing, the bearings passing through one of apertured plates and being connected to one of the mounting plates, the bearing connected to one roller being a fixed pair and the bearing connected to the other roller being a movable pair, the movable pair being biassed towards the fixed pair, each apertured plate having an aperture in which one of the fixed bearings is located and an aperture in which one of the movable bearings is located which is greater in area than the diameter of the movable bearing, each movable bearing being connected to one of the mounting plates by a peg mounted thereon which locates in an aperture which is eccentric with regard to its centre so that the bearing is able to rotate about the peg in a direction towards or away from the fixed bearings, the amount of rotation being limited by the shape of the aperture in the apertured plate in which it is located.

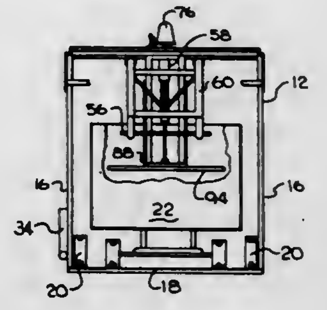
3,896,720
SEEDCOTTON COMPACTER

Charles Don Rhodes, Rt. 2, Petersburg, Tex. 79250

Filed Nov. 8, 1973, Ser. No. 413,926

Int. Cl. B30b *1/32, 15/06*

U.S. Cl. 100—226 **12 Claims**



1. A seedcotton compacter comprising:
a. a skeleton including
  i. two rectangular parallel side frames,
  ii. connected together at top and bottom, and
  iii. open at top, bottom, back, and front,
b. a top side panel for each side frame
  i. each of said top side panels being formed of sheet material with
  ii. the top edge of the top panel pivoted to the side frame near the top edge thereof,
c. a main panel for each side,
  i. each of said main panels being formed of sheet material with
  ii. the top edge of each main panel pivoted to the top panel at the bottom edge of the top panel,
d. spacer means on each side frame for spacing the main panels inside and inward of the side frames, and
e. packer means mounted on the top of the side frames for packing seedcotton between the side frames,
f. so arranged and constructed
  i. that with the main panels depending downward from the top edge of side frames, then a trailer may be positioned within the side frames and seedcotton dumped therein and packed in the trailer by the packer means, and
  ii. that with the main panels spaced inward of said side frames, then seedcotton may be dumped therein and formed into a rick by packing between the main panels by said packer means.

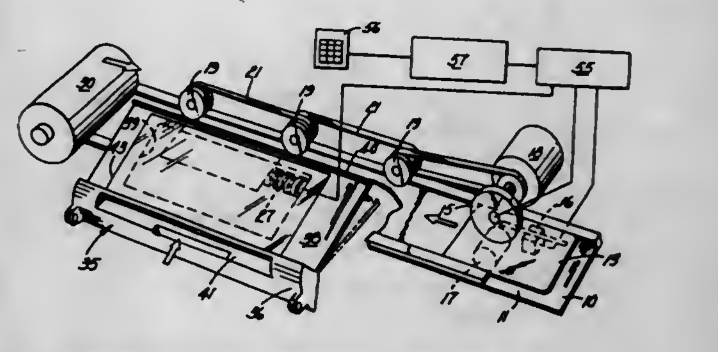
3,896,721
ELECTRONIC DATA RECORDER

Gary G. See, Chagrin Falls, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed June 26, 1973, Ser. No. 373,822

Int. Cl. B41f *3/04*

U.S. Cl. 101—45 **3 Claims**



1. An automated data recorder, comprising:

a data recorder bed;

a card conveyor having means to move a printing token along a transport path;

said conveyor having a path extending between entrance and exit areas;
a reading means at said entrance area of said conveyor for sensing data from a token conveyed thereby;
a print wheel set mounted with the axis of the wheel set stationary with respect to said bed and with the wheel set in printing alignment with said bed for printing variable information on a recording form placed on said bed;
said conveyor transport path extending over said print wheel set for conveying the print token to said bed adjacent said print wheel set;
a movable form carrier having a first position generally above said conveyor and spaced therefrom, and having a second position in contact with said bed;
a roller platen movable from a park position across said bed to a terminus and return for applying imprint pressure to token, wheels, and form on said carrier; and
drive means for moving said carrier into contact with said bed in response to platen movement from said park position and for separating said carrier from said bed to said first position in response to return of said platen to said park position.

3,896,722

MULTI-COLOR PRINTING

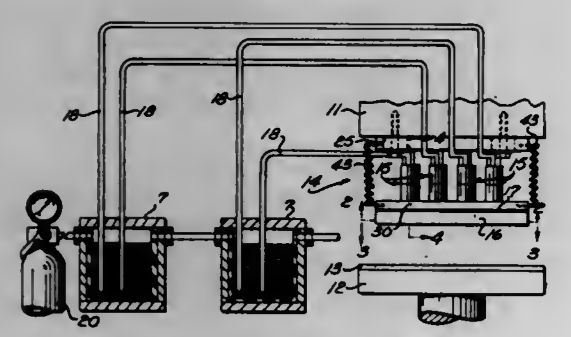
Harold Frederick Farrow, Hitchin, England, assignor to Colorflo Limited, London, England

Filed Aug. 4, 1971, Ser. No. 168,990

Claims priority, application United Kingdom, Apr. 22, 1971, 10883/71

Int. Cl. B05c *3/02*

U.S. Cl. 101—115 **27 Claims**



1. Apparatus for depositing fluid on material in a predetermined design, said apparatus comprising an intaglio plate having at least one recess in one surface thereof corresponding with the design, passage means in said plate connecting the opposite surface of said plate with said recess to deliver fluid into said recess, a fluid injector unit having a housing with a fluid outlet and means for directing fluid under pressure from said outlet into said recess, and means interposed between said fluid injector unit housing and said intaglio plate and having a portion thereof in sealing contact with said housing of said injector unit and another portion in sealing contact with said plate, said means interposed between the fluid injector unit housing and said intaglio plate comprises a resilient gasket member having a projecting portion, said fluid injector unit housing having an opening therein for receiving said projecting portion of said resilient gasket, said opening in said housing and said projecting portion of said resilient gasket having corresponding converging surfaces in sealing contact.

3,896,723

APPARATUS FOR PUMPING FLUID THROUGH A DIE PLATE TO A RECESSED DESIGN

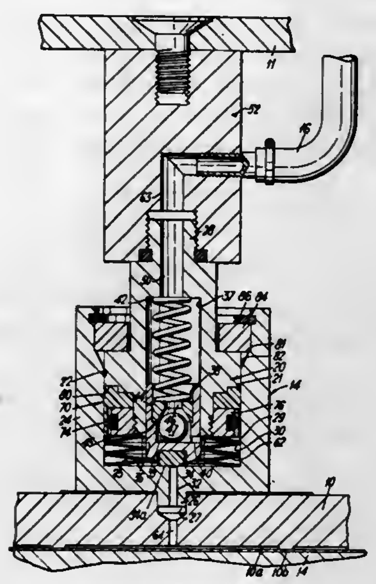
Harold Frederick Farrow, Hitchin, and William Henry Chudley, Henlow, both of England, assignors to Colorflo Limited, London, England

Filed Oct. 16, 1972, Ser. No. 297,863

Claims priority, application United Kingdom, Oct. 14, 1971, 47955/71

Int. Cl. B41f *1/40*

U.S. Cl. 101—150 **7 Claims**



1. A mechanism for use in applying a fluid design onto material comprising, a plate having a recessed design therein in accordance with the fluid design to be applied to the material and at least one passage through the thickness of the plate communicating with said recessed design, a fluid injector unit for delivering a charge of fluid under pressure through said passage to said recessed design, said fluid injector unit including means defining a chamber for the fluid, an inlet valve for controlling fluid flow into said chamber, a normally closed outlet valve which opens upon pressurization of said chamber, a piston member movable to pressurize said chamber to open said outlet valve and force fluid through said passage and into said recessed design, means for relieving the pressure of the fluid in said recessed design, said means for relieving the pressure solely comprising, a pressure relief piston, means biasing said pressure relief piston inwardly against the pressure of fluid in said chamber, and means enabling movement of said pressure relief piston outwardly to relieve the pressure in the chamber when it exceeds a magnitude predetermined by the bias, and said outlet valve comprising one end of said pressure relief piston.

3,896,724

APPARATUS FOR THE ADJUSTMENT OF A FORM CYLINDER

Miloslav Muselik, Hlavni, Czechoslovakia, assignor to Adamovske Strojirny Narodni podnik, Adamov, Czechoslovakia

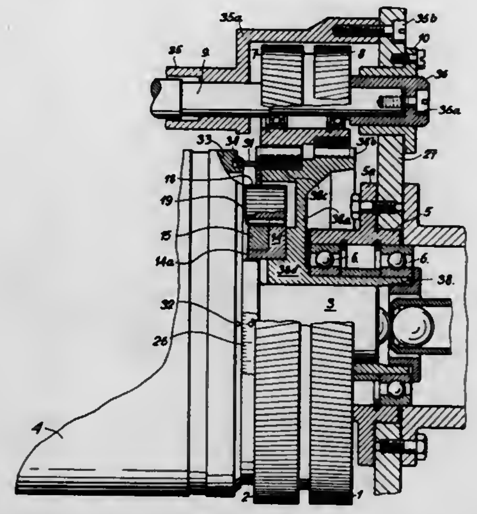
Filed Jan. 28, 1974, Ser. No. 436,910

Claims priority, application Czechoslovakia, Jan. 26, 1973, 645-73

Int. Cl. B41f *13/24*

U.S. Cl. 101—248 **10 Claims**

1. In a multicolor offset printing machine having a printing cylinder and a perfecting cylinder, apparatus for circumferentially adjusting the perfecting cylinder for register printing comprising a supporting shaft extending axially from one end of the perfecting cylinder, first gear means comprising an annular helical main gear having a hub rotatably arranged about said supporting shaft and an annular helical drive gear coaxially mounted on a first shoulder of said hub and rotatable with respect to said main gear, second gear means adapted to mesh with and coact respectively with said main and drive gears, said second gear means being rotatably mounted about an axially movable axle, third gear means secured to said main gear on a second shoulder thereof adjacent the end of the perfecting cylinder, a pinion engaging said third gear means and fixedly mounted on a rod extending into the end of said perfecting cylinder and secured thereto, said helical drive gear being adapted to be driven during operation of said printing machine to effect conjoint rotation of said helical main gear and said perfecting cylinder, whereby axial shifting of said axle would cause relative angular displacement of said helical main gear and said helical drive gear consequently causing said third gear means to angularly displace said pinion causing said rod to angularly displace said perfecting cylinder relative to the helical main gear.



3,896,725

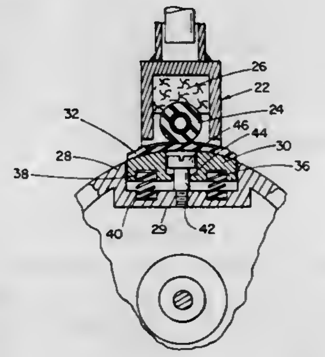
ROTATABLE MARKING DEVICE FOR MARKING PREDETERMINED INTERVALS

Bruce C. Grover, Greenville, N.H. 03048

Filed Oct. 11, 1973, Ser. No. 405,284

Int. Cl. B41k *1/22*

U.S. Cl. 101—330 **10 Claims**



1. In a layout device comprising a roller defining a peripheral surface for rolling along a workpiece for applying position markings at measured positions on the workpiece, an interrupted segment of said peripheral surface and an arcuate stamp body member carrying an ink stamp disposed in said interruption, associated with a supply of marking medium for marking said workpiece upon revolution of said roller, the improvement wherein said stamp body member is resiliently biased outwardly beyond said peripheral surface, but is radially yieldable to move inwardly under pressure of said workpiece, and a fixed member relative to said roller disposed in said interruption, exposed to bear against said ink stamp and thereby through the thickness of said ink stamp upon said workpiece with rotation of said roller, when said interruption reaches said workpiece, said fixed member and the peripheral surface of said roller defining a fixed circumferential length about said roller enabling the avoidance of cumulative error with respect to any indefiniteness in the position of said ink stamp.

3,896,726

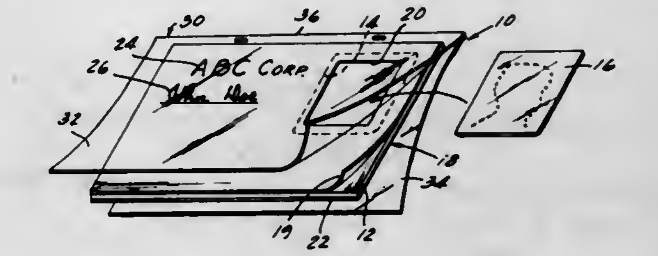
EMBOSSED MONOLITHIC IDENTIFICATION CREDIT CARD

Henry N. Staats, Deerfield, Ill., assignor to General Binding Corporation, Northbrook, Ill.

Division of Ser. No. 263,934, June 19, 1972, Pat. No. 3,855,033. This application May 31, 1974, Ser. No. 475,111

Int. Cl. B41n *1/12*

U.S. Cl. 101—369 **4 Claims**



1. A monolithic embossed identification credit card having a protected photograph and signature thereon, said card comprising:
a. a metal plate having an opening with a photograh inserted therein;
b. a folded paper data sheet laminated to both sides of said metal plate and to the edges of said photograph, said data sheet having a cut-out portion overlying said photograph and a signature thereon;
c. a clear pouch having a heat-reactivatible adhesive thereon laminated to said data sheet over said photograph and signature; and
d. embossed indicia impressed into said card with the deformation thereof extending through all layers of said card.

3,896,727

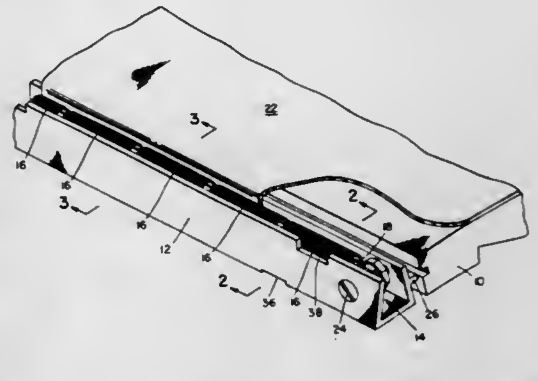
SADDLE LOCK-UP FOR TAB-LESS FLEXIBLE PRINTING PLATES

Charles Bernard Ruckdeschel, Jr., Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Feb. 27, 1974, Ser. No. 446,454

Int. Cl.^{2} B41F *27/00, 27/06*

U.S. Cl. 101—415.1 **2 Claims**



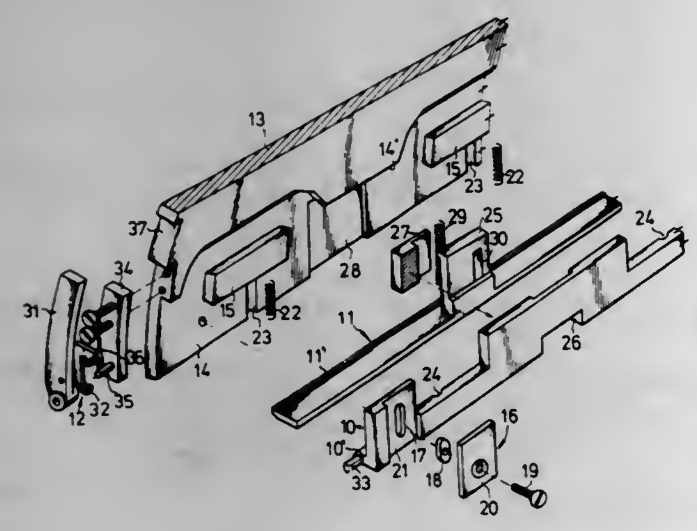
1. A saddle lock-up for flexible printing plates comprising: a semi-cylindrical saddle body having a leading edge and a trailing edge;
leading edge clamping means connected to the leading edge of said saddle to positively grip one end of a flexible printing plate;
a transverse channel member moveably connected to the trailing edge of said saddle body to move toward and away from said saddle body, said channel member having

an upwardly facing inverted wedge-shaped opening therein;

resilient means biasing said channel member away from said trailing edge; and

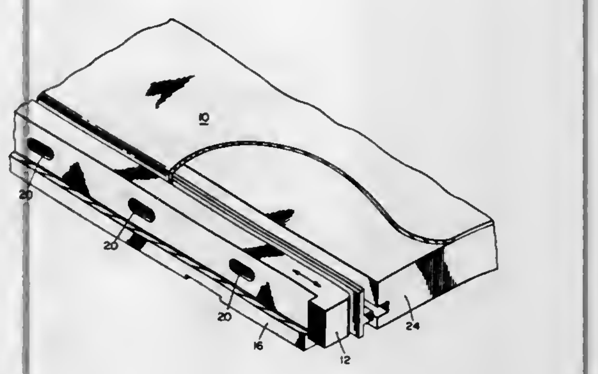
means mounted within said channel to positively grip a flexible printing plate and to allow lateral adjustment of a printing plate, said means comprising a plurality of transversely spaced sleeves within said channel member, said sleeves radially and axially independently mounted with respect to each other and defining a gap between said sleeves and one side of the inside of said channel member to positively grip the other end of the flexible printing plate in said gap, said sleeves conforming to the thickness of a flexible printing plate independent of each other and allowing lateral movement of the flexible printing plate for purposes of color registration.

3,896,728
PRINTING SHEET GRIPPING DEVICE FOR USE WITH PRINTING SADDLE
Hiroyuki Nakagawa, Tokyo, Japan, assignor to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Mar. 21, 1974, Ser. No. 453,475
Claims priority, application Japan, Mar. 22, 1973, 48-32958; June 1, 1973, 48-62276
Int. Cl. B41f *27/06, 27/12*
U.S. Cl. 101—415.1 **9 Claims**



1. A printing sheet gripping device affixed to a printing saddle comprising:
  a. a holding member slidingly attached to one end of said printing saddle,
  b. a gripping member slidingly attached to the same end of said printing saddle as said holding member;
  c. a first biasing means between said holding member and said printing saddle to bias said holding member away from said end of said printing saddle and toward said gripping member;
  d. a second biasing means between said gripping member and said holding member to bias said gripping member toward said holding member, and
  e. gripper opening means engaging said holding member such that movement of said gripper means overcomes said first biasing means and moves said holding member toward said end of said printing saddle and away from said gripping member.

3,896,729
POSITIVE BACKING SHEET PLATE LOCK-UP
Richard Leroy Moyer, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.
Filed Feb. 27, 1974, Ser. No. 446,455
Int. Cl.² B41F *27/00, 27/06*
U.S. Cl. 101—415.1 **3 Claims**



1. A saddle lock-up for flexible printing plates comprising: a semi-cylindrical saddle body having a leading edge and a trailing edge;

leading edge clamping means connected to said leading edge to positively secure one end of a flexible printing plate;

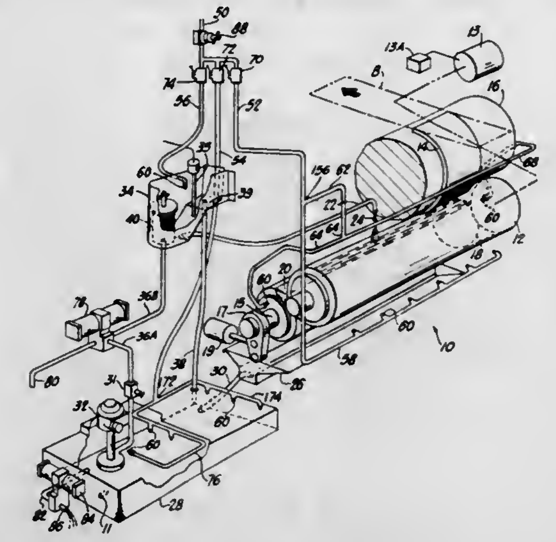
trailing edge clamping means moveably connected to said trailing edge to move toward and away from said trailing edge to positively secure the other end of a printing plate, said trailing edge comprising a transverse U-channel parallel and adjacent to said trailing edge of said saddle, a slide bar transversely slideably mounted within said U-channel, said slide bar and said U-channel defining a gap therebetween for one end of a printing plate, said slide bar having camming surfaces thereon on the side opposite said gap and having printing plate gripping means on the side within said gap, and cam adjustment members connected to said U-channel through the side of said U-channel, said cam adjustment members engaging said camming surfaces to move said gripping means within said U-channel to close said gap and positively clamp a flexible printing plate; and

resilient means biasing said trailing edge clamping means away from said trailing edge to tension a flexible printing plate when clamped.

3,896,730
WASH-UP SYSTEM FOR FLEXOGRAPHIC PRINTERS
Clyde Barner Garrett, Mauldin, S.C., and William Stansbury Thayer, Lutherville, Md., assignors to Koppers Company Inc., Pittsburgh, Pa.
Filed Feb. 22, 1974, Ser. No. 445,005
Int. Cl.² B41F *31/20, 35/04;* **B41L** *27/22, 41/04*
U.S. Cl. 101—425 **8 Claims**

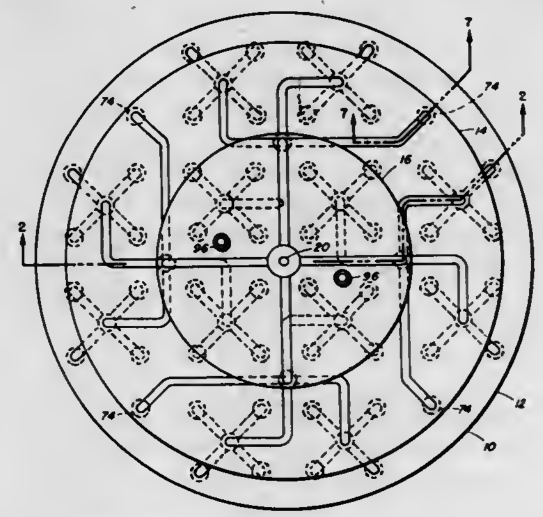
1. A method of cleaning a flexographic printing system comprising the steps of:
  a. stopping the printing function of said printing system;
  b. draining residual printing ink from said system including: draining ink from a gravity tank in said system to an ink reservoir beneath said gravity tank; and draining ink from a trough beneath an ink roller in said system to said reservoir;
  c. pumping ink drained into said reservoir therefrom into an ink storage container for removal from said system;
  d. spraying wash water into said gravity tank and thereafter, spraying wash water onto said ink roller and draining the same into said trough;

  e. draining said water from said gravity tank and said trough into said reservoir; and



  f. draining said wash water from said reservoir to outside of said system.

3,896,731
EXPLOSIVE INITIATOR DEVICE
Earl E. Kilmer, College Park, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Sept. 22, 1970, Ser. No. 83,260
Int. Cl. F42c *19/08;* **F42d** *1/04*
U.S. Cl. 102—22 **3 Claims**



1. An explosive initiating device comprising:

a plurality of contacting, superjacently stacked plate members;

a plurality of arrangements of commonly joined mutually perpendicular mild detonating cords positioned within slots in said members, said arrangements disposed in progressively increasing numbers on all but the lowermost one of said superjacent plate members,

each of said detonating cords having a first explosive charge and a base charge connected to opposite ends thereof,

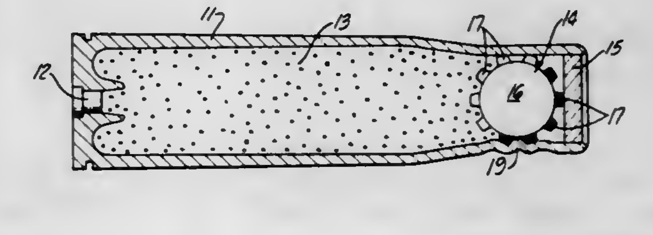
each of said first explosive charges being disposed at a juncture of each said arrangements formed by said commonly joined detonating cords and each of said base charges being disposed in a through bore formed in all but said lowermost one of said plate members,

each of said junctures of each of said detonating cord arrangements on all but the uppermost and lowermost ones of said plate members being located subjacent of the respective ones of said base charges of a superjacent one of said plate members; and

a plurality of second explosive charges disposed on equidistantly spaced through bores formed in said lowermost plate member, the majority of said through bores in said lowermost plate being positioned immediately subjacent of the base charges of a superjacent one of said plate members;

wherein the overall length of the respective paths from a point of initiation on the uppermost one of said plate members to each of said second explosive charges is equal, thereby affording a simultaneous initiation of said second explosive charges in said lowermost plate member in response to the initiation of the intersecting mild detonating cord of said uppermost plate member.

3,896,732
MULTI-SECTION PROJECTILE AND MEANS FOR FIRING THE SAME
Marvin B. Schaffer, Pacific Palisades, Calif., assignor to R & D Associates, Santa Monica, Calif.
Filed Nov. 24, 1972, Ser. No. 309,225
Int. Cl. F42b *5/02*
U.S. Cl. 102—38 **3 Claims**



1. A multi-section bullet and cartridge assembly, comprising:

a cartridge casing including a primer and propellant and having portions thereof defining an opening;

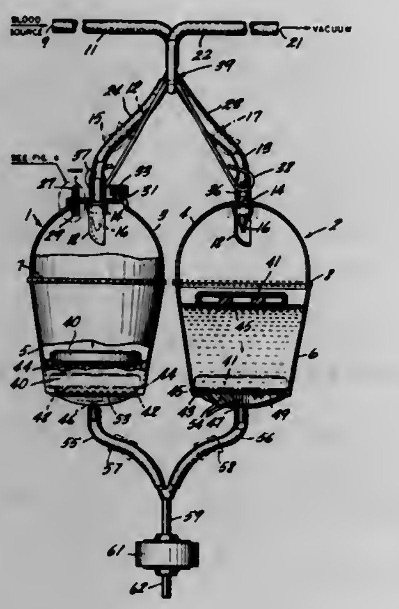
a plurality of flat elements arranged in a face-to-face stack secured within the casing opening with the element edges facing outwardly of the opening; and

said casing portions defining the opening being formed into at least one line of crimp along one side only of the stack and interacting with said elements to impart a spin to said elements in a common direction as said elements leave said casing.

3,896,733
AUTOTRANSFUSION APPARATUS
David J. Rosenberg, Glen Cove, N.Y., assignor to Pall Corporation, Glen Cove, N.Y.
Filed Oct. 18, 1973, Ser. No. 407,720
Int. Cl. A61m *05/00, 01/03*
U.S. Cl. 128—214 R **15 Claims**

1. An autotransfusion apparatus shaving two chambers with simplified control of the cycling of the flow of fluid between the chambers and safeguards to prevent cross-flow between the chambers and passage of air to a patient from an empty chamber, comprising, in combination, first and second fluid chambers each having a fluid inlet, a fluid outlet, a line connection to a source of vacuum, and a vent connection to atmospheric pressure; the vent being provided with a flow-resistant filter having a pore size such that bacteria cannot pass through it, and restricting flow into the chamber from the atmosphere so that a vacuum can be drawn on the chamber without closing the vent, while allowing the chamber to reach equilibrium with atmospheric pressure when vacuum is not applied; the filter not being wetted by the liquid in the system so as not to accept blood or other medicament in its pores and thus block the passage of air therethrough; a check valve at the fluid inlet restricting flow through the inlet line to flow towards the chamber at fluid pressures within the chamber below the pressure in the inlet line; and means for alternately

opening and closing the vacuum line to each chamber, so that when the vacuum line is open to the first chamber it is closed to the second; and when the vacuum line is closed to the first chamber, it is open to the second.



3,896,734

APPARATUS FOR CONTINUOUSLY LAYING TRACK

Franz Plasser, and Josef Theuter, both of Johannesgasse 3, Vienna 1, Austria

Division of Ser. No. 785,477, Dec. 20, 1968, abandoned. This application Feb. 8, 1971, Ser. No. 113,758

Claims priority, application Austria, Dec. 29, 1967, A 11824/67

Int. Cl. E01b *29/16*

U.S. Cl. 104—2 **13 Claims**

1. In apparatus for continuously laying successive sections of continuous lengths of track rails, comprising means for placing said successive sections on successive ties and for securing each of said rail sections to said ties, the improvement of mobile means subjecting the successive rail sections to temperature conditioning, said temperature conditioning means preceding the means for placing and securing the rail sections to the ties, and being spaced from the point at which the track rail sections are placed on, and secured to, the ties a distance sufficient to maintain substantially uniformity of the predetermined temperature at said point.

3,896,735

TRACK-TYPE TOY

Artur Fischer, Altheimer Strasse 219, 7741 Tumlingen, Germany

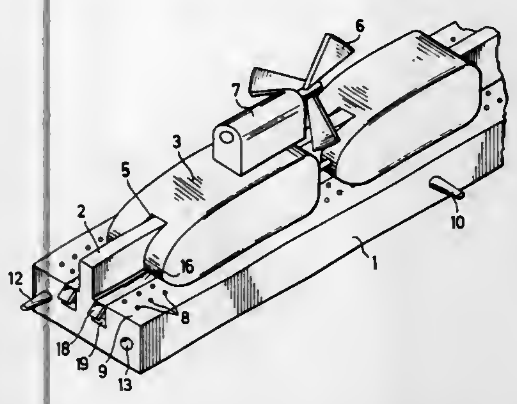
Filed Jan. 16, 1974, Ser. No. 433,981

Claims priority, application Germany, Feb. 19, 1973, 2301893; Feb. 19, 1973, 2308089; Jan. 8, 1973, 2300645

Int. Cl. B61b *13/08*

U.S. Cl. 104—23 FS **15 Claims**

1. In a track-type toy, a combination comprising a toy vehicle; and a track for guiding said toy vehicle, said track being composed of track components forming a guide surface for said vehicle and each having two longitudinally spaced end faces, a conduit adapted for connection with a source of gas under pressure and being composed of conduit sections each associated with a track section and having one projecting end portion extending outwardly beyond one of said end faces, the other end face of each track section being provided with a recess which communicates with the associated conduit section and into which said projecting end portion of the conduit section of another track section is insertable for connecting said track sections and conduit sections together, and a plurality of at least substantially uniformly distributed openings communicating said conduit with said surface so that the compressed gas escaping through said openings forms above said surface a gas cushion on which said toy vehicle can slide.



3,896,736

ELEVATOR STRUCTURE

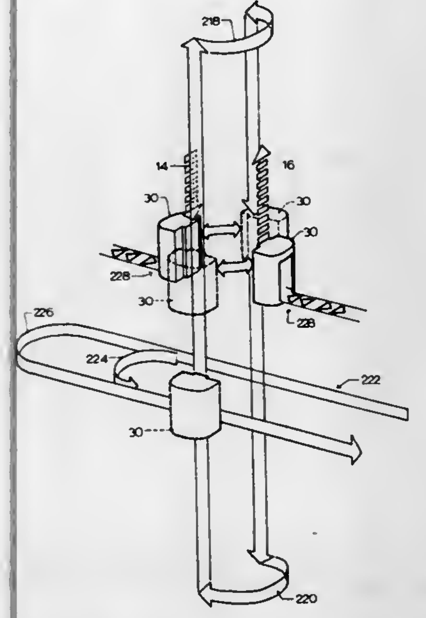
Norbert Hamy, Beaconsfield, Quebec, Canada, assignor to Trebron Holdings Ltd., Regina, Canada

Filed July 6, 1972, Ser. No. 269,453

Claims priority, application United Kingdom, July 7, 1971, 31821/71

Int. Cl. B61j *3/00*

U.S. Cl. 104—88 **17 Claims**



1. A service transport system for use in facilities having a plurality of access stations, said system comprising continuous flow guide rail means, alternate rail means spaced from and cooperating with said guide rail means and being located proximate to said access stations, a plurality of service capsules independently drivable on said guide rail means in a flow direction, selectively operable means for directing a capsule between said flow guide rail means and said alternate rail means, whereby capsules on said flow guide rail means may pass capsules on said alternate rail means, first frame means for supporting said capsules for movement on one of said rail means and for permitting relative shifting movement therealong in the direction of said rail means, and second frame means operatively associated with and cooperating with said first frame means for permitting rotational movement of said capsules about an axis which is relatively perpendicular to said rail means.

3,896,737

SWITCH FOR A SUSPENSION RAILROAD

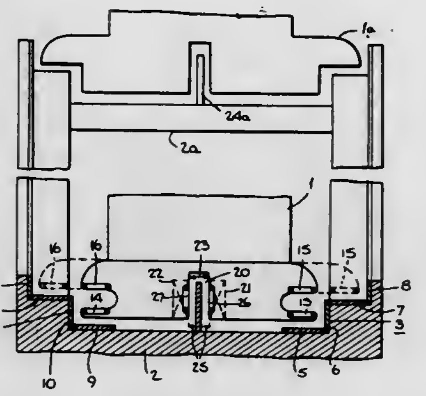
Jurgen Miericke, Nurnberg, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed May 1, 1974, Ser. No. 465,751

Claims priority, application Germany, May 5, 1973, 2322150

Int. Cl. E01b *25/12*

U.S. Cl. 104—130 **13 Claims**



1. In a suspension railroad system wherein vehicles are suspended using the electrodynamic repulsion principle, an improved switch for switching a vehicle from the main roadway lying in a first horizontal plane to a branch roadway lying in a horizontal plane vertically displaced from the first plane comprising:

a. a first electrodynamic suspension system including first means mounted in the vehicle and second means mounted on the main roadway cooperating with said first means;

b. a second electrodynamic suspension system comprising third means located on the roadway outwardly of said first means, and third means extending from said main roadway to the branch roadway in a different horizontal plane and fourth means in the vehicle for cooperating therewith, said fourth means being mechanically movable between a retractd position where they are clear of said third means on the roadway and an extended position where they are above said third means on the roadway to cooperate therewith.

3,896,738

STAGING AND LOADING DEVICE FOR CHAIR LIFTS

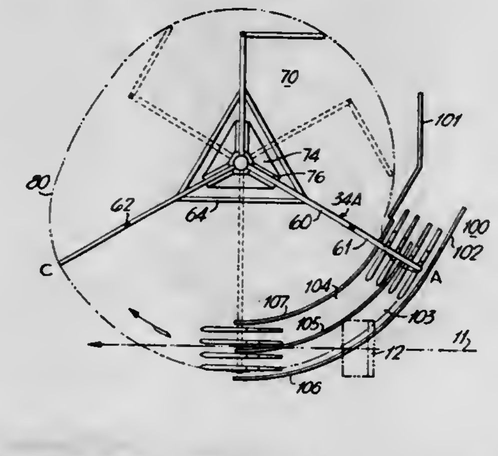
David J. Dubeta, 204-1230 Jasper Ave., and Robert J. Papirnyk, 11313-103 St., both of Edmonton, Alberta, Canada

Filed Apr. 3, 1974, Ser. No. 457,651

Claims priority, application Canada, Apr. 13, 1973, 168748

Int. Cl. B61b *11/00*

U.S. Cl. 104—173 **12 Claims**



1. A ski tow system including

a. a ski tow for moving skiers in sequence up-hill from one position to another by members spaced from one another and movable in sequence along a selected path; and

b. transport means for positively moving the skiers in sequence from the leading end of a line of skiers located at a predetermined pick-up position to a tow line loading zone,

said transport means comprising a central support having at least one arm radiating horizontally outwardly and rotatable about a vertical axis horizontally offset from said predetermined path and positioned to intersect such path in a tow line loading zone, drive means for rotating said arm about said vertical axis, and means momentarily interrupting movement of said arms at each of said skier pick-up position and tow line loading zone during each revolution of the arm about said vertical axis.

3,896,739

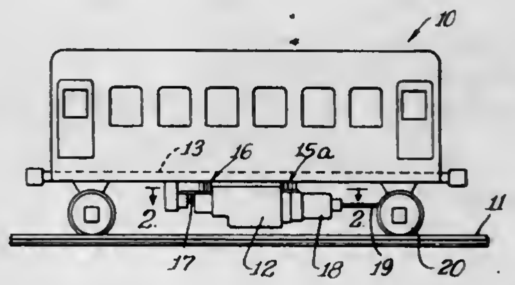
FRANGIBLE RESILIENT ENGINE MOUNTING

John G. Crofts, Columbus, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Filed Dec. 10, 1973, Ser. No. 423,052

Int. Cl. B61c *3/00, 7/00, 17/00*

U.S. Cl. 105—133 **9 Claims**



1. Mounting apparatus for supporting an engine from and below a frame of a vehicle, comprising a plurality of vertical supports, each vertical support being fastened to the engine and being adapted to be suspended from the vehicle frame, each of said vertical supports including rigid means preventing any substantial amount of movement of said engine at shock loads less than a severe impact but collapsing at shock loads above such a severe impact, and a horizontal support fastened to the engine and adapted to be fastened to the frame, said vertical supports being spaced around the center of gravity of the engine to substantially equally distribute the weight of the engine, and said horizontal support being sufficiently rigid in the horizontal fore and aft direction to prevent fore and aft swaying of the engine.

3,896,740

PNEUMATIC BOGIE STABILIZER

Ernst Florian Kreissig, Seuzach, Switzerland, assignor to Schweizerische Lokomotiv-und Maschinenfabrik, Winterthur, Switzerland

Filed Dec. 27, 1973, Ser. No. 428,778

Claims priority, application Switzerland, Jan. 9, 1973, 253/73

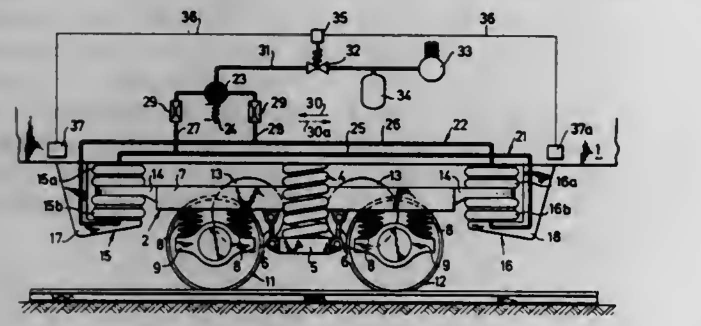
Int. Cl. B61f *3/04, 5/24, 5/50*

U.S. Cl. 105—164 **10 Claims**

1. In combination with a vehicle body and a bogie supporting said vehicle body thereon; an axle load compensator comprising

a pair of force transmitting means for imposing a coupling moment on said bogie, one of said means being disposed on one side of said bogie relative to a vertical plane through said bogie and the other of said means being disposed on an opposite side of said bogie, each said means including a pair of opposed pressure elements disposed in vertical relation to each other; and

a pair of connecting lines, each said line communicating an upper pressure element of one force transmitting means with a lower pressure element of the other force transmitting means whereby pressure medium in one force transmitting means is transmitted to the other to impart an upwardly directed compensating force in said other force



transmitting means to oppose a bucking torque imposed on said bogie.

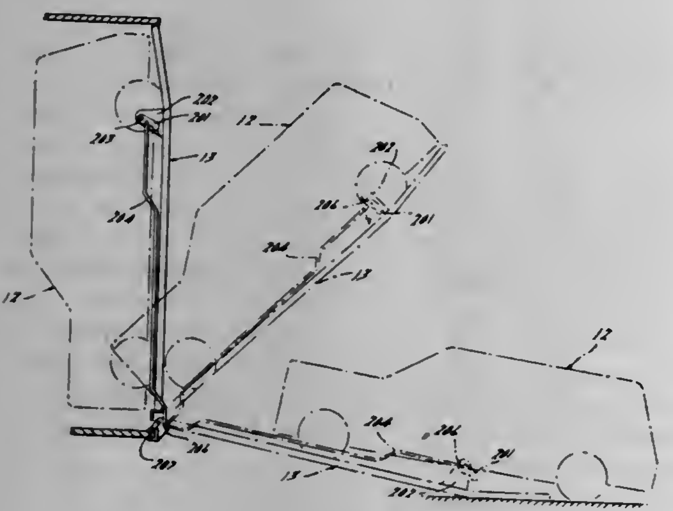
3,896,741
FREIGHT CARRYING DEVICE

Harvey W. Chapman, Detroit, Mich., assignor to Evans Products Company, Plymouth, Mich.

Division of Ser. No. 29,866, April 20, 1970. This application July 6, 1973, Ser. No. 377,097

Int. Cl. B60p *3/06, 7/08;* **B61d** *45/00*

U.S. Cl. 105—368 R **10 Claims**



1. A freight carrying door pivotally supported about a horizontally disposed axis between a loading position in which said door forms a loading ramp onto which an automobile may be driven and a load carrying position in which the transported automobile is oriented in a substantially vertical position, a fixed member affixed to said door and adapted to cooperate with a cooperating member on the automobile for supporting the automobile upon said door when said door is in its load carrying position, hold-down means supported by said door for movement between a disengaged position in which an automobile may be driven onto or off of said door and an engaged position in which said hold-down means cooperates with said fixed member for precluding disengagement of said automobile from said fixed member, and means responsive to movement of said door for moving said hold-down means automatically from its disengaged position to its engaged position upon movement of said door from its loading position to its load carrying position and for automatically moving said hold-down means from its engaged position to its disengaged position upon movement of said door from its load carrying position to its loading position.

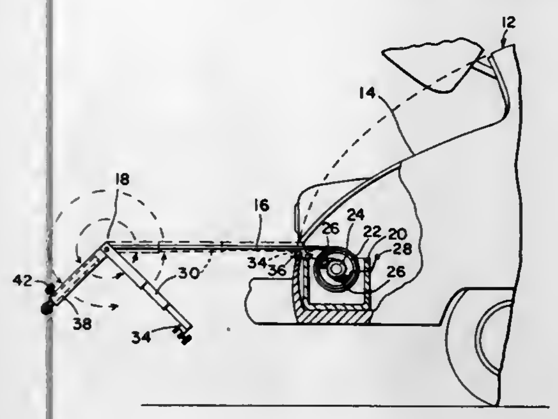
3,896,742
ROLLABLE AND FOLDABLE TABLE FOR AUTOMOBILE TRUNK

Jack E. Ferraro, South Hackensack, N.J., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed July 22, 1974, Ser. No. 490,774

Int. Cl.^{2} A47B *23/00*

U.S. Cl. 108—44 **3 Claims**



1. A folding and rollable table assembly for automobile vehicles, comprising a retractable table top displaceable between a rolled up storage position and an outwardly extended use position; means secured to one end of said top for urging said top to said rolled up position; and support means fastened to the other end of said top and to said vehicle for temporarily maintaining said top in said outwardly extended position and for supporting same while in use, said support means including a pair of channel members and a pair of legs; said legs being pivoted at one end thereof to said top; said channel members including telescoped portions and clamp means at one end thereof for fastening to said vehicle.

3,896,743
ASSEMBLY DEVICE FOR ELEMENTS CONSTITUTING FURNITURE AND FURNITURE COMPRISING SUCH DEVICES

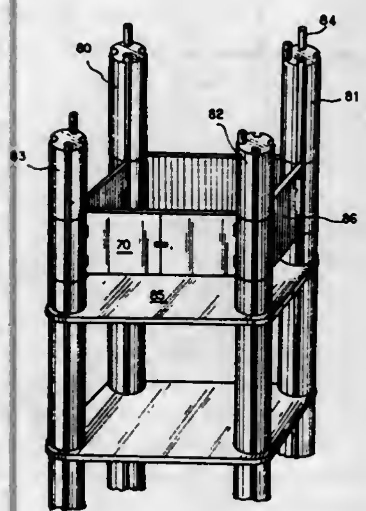
Roger Pariente, 21 Blvd. du Montparnasse, 75006 Paris, France

Filed Dec. 10, 1973, Ser. No. 423,427

Claims priority, application France, Dec. 13, 1972, 72.44271

Int. Cl. A47b *47/04*

U.S. Cl. 108—111 **4 Claims**



1. A piece of furniture, comprising in combination
- a. a plurality of parallel posts adapted to provide vertical support for said piece of furniture,
- b. at least one panel adapted to be mounted in a horizontal position to said posts and supported thereby,

- c. said panel being formed with at least one opening at each post,
- d. each post comprised of at least two coaxially aligned portions of similar cross-section, one portion on each side of each of said panels,
- e. the cross-sectional dimension of each portion being greater than that of said opening,
- f. each portion being formed with a plurality of parallel longitudinal grooves C-shaped in cross-section,
- g. an elongated solid cylindrical rod mounted in at least one groove of all portions of each post to join said portions, said rod passing through the opening at each post, and
- h. at least one wall mounted vertically between a pair of said posts,
- i. said wall being formed with connecting elements along opposite edges thereof and of circular cross-section for engagement with grooves in said posts.

3,896,744
HEIGHT-ADJUSTABLE DESK

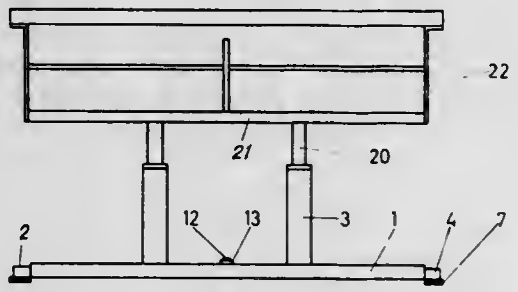
Adolf Otto Goebl, Hirslandenstrasse 44, 8032 Zurich, Switzerland

Filed June 8, 1973, Ser. No. 368,313

Claims priority, application Switzerland, June 12, 1972, 8689/72

Int. Cl.^{2} A47B *9/08*

U.S. Cl. 108—146 **5 Claims**



1. A height-adjustable desk comprising a base portion and a top portion, a pair of support tubes mounted on the base portion, a sliding tube concentrically mounted for telescoping movement with respect to each of the support tubes and connected to the top portion of the desk, a clamping tube located between said sliding and support tubes and mounted for movement between a clamping position and a release position, clamping means mounted on each of said clamping tubes for gripping the sliding tube to hold it in place when the clamping tube is in clamping position and for releasing the sliding tube when the clamping tube is in release position, spring means for biasing each of the clamping tubes toward clamping position, lever means for moving the clamping tubes toward release position so that the top portion can be adjusted to the desired height, said moving means comprising a pair of lever arms pivotally mounted on the base portion of the desk, each of said arms having a portion disposed to engage the associated clamping tube to push it upwardly and disengage the clamping means.

3,896,745
INCINERATOR FOR RAW SEWAGE

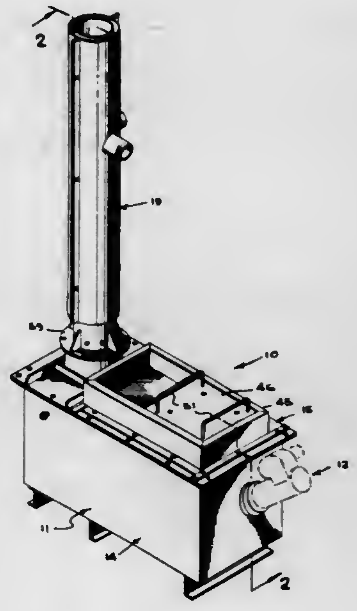
Christian M. Mainka, New York, and George A. Nash, Pleasantville, both of N.Y., assignors to Morse Boulger, Inc., Flushing, N.Y.

Filed Oct. 10, 1974, Ser. No. 513,922

Int. Cl.^{2} F23G *5/12*

U.S. Cl. 110—8 C **12 Claims**

1. An incinerator for the thermal disposal of raw sewage such as human waste and the like comprising a housing having a primary combustion chamber, a secondary combustion chamber and a mixing chamber intercommunicating said primary and secondary combustion chambers, said housing having means for charging waste material into said primary combustion chamber, a burner mounted on said housing, said burner including means for injecting a flame through said primary combustion chamber and toward said mixing chamber whereby said flame functions to ignite said waste material producing combustion gases, vaporize any liquid constituents of said waste material, produce an induced draft in said primary combustion chamber causing the flow of said combustion gases and said vapor toward and through said mixing chamber, into said secondary combustion chamber, and igniting said mixture of said vapopr and combustion gases for secondary combustion in said secondary combustion chamber, and a flue mounted on said housing for conducting residual combustion gases from said secondary combustion chamber to the ambient atmosphere.



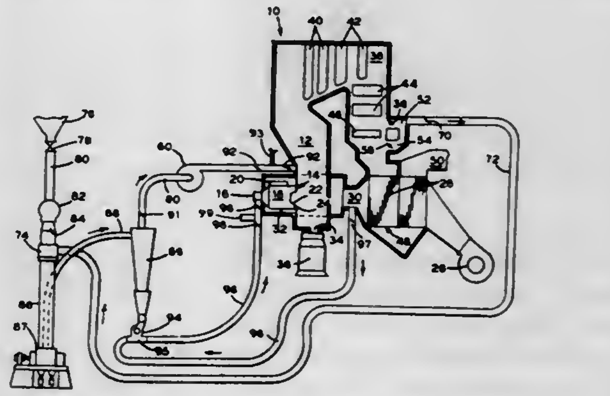
3,896,746
FUEL PREPARATION SYSTEM

Edward A. Pirsh, Akron, Ohio, assignor to The Babcock & Wilcox Company, New York, N.Y.

Filed June 13, 1974, Ser. No. 479,067

Int. Cl.^{2} F23K *1/04*

U.S. Cl. 110—104 R **3 Claims**



1. In combination with a vapor generator, walls defining a secondary furnace and a passageway in gas flow receiving communication therewith, a cyclone furnace discharging heating gases to the secondary furnace, means supplying heated combustion air and fuel to the cyclone furnace, said air supply means including a windbox communicating with the cyclone furnace and delivering thereto a major portion of the required combustion air, an air duct leading to the windbox, said fuel supply means including a source of high moisture

content solid fuel, a crusher for comminuting the fuel, a first conduit for delivering the fuel to the crusher, said first conduit including a mix chamber, a second conduit for conveying heating gases from the passageway to said chamber for mixing with the fuel to evaporate moisture therefrom, a fan for promoting the flow of heating gases through said fuel supply means, a centrifugal separator receiving the outflow from said crusher and separating the moisture laden gases from the comminuted fuel, a third conduit for venting the moisture laden gases from the separator to said secondary furnace, and a fourth conduit receiving the fuel from the separator, said fourth conduit having an outlet discharging to the cyclone furnace and an inlet communicating with the air duct to receive heated air therefrom for further drying of and for conveying the comminuted fuel to the cyclone furnace, said last named heated air comprising the remainder of the required combustion air.

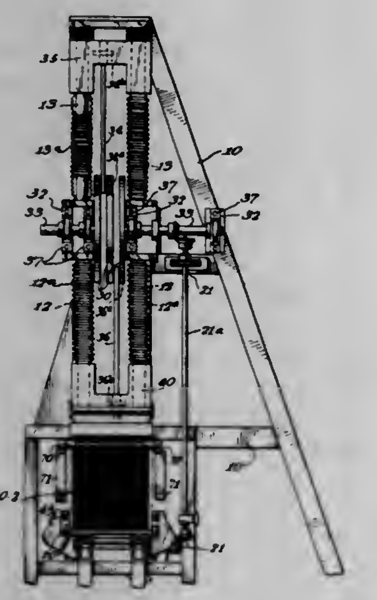
3,896,747
MACHINE FOR PRODUCING A THREE DIMENSIONAL LATTICE

Homer C. Amos, Palm Springs, Calif., assignor to Brunswick Corporation, Skokie, Ill.

Division of Ser. No. 272,736, July 18, 1972, Pat. No. 3,822,463. This application May 6, 1974, Ser. No. 466,974

Int. Cl.^{2} D05B *23/00*

U.S. Cl. 112—2 **30 Claims**



1. A machine capable of using a three dimensional grid structure to arrange strands into a preselected three dimensional lattice array, comprising:
- a. a frame having a grid structure support;
- b. transporting means for moving the grid structure in a preselected series of cycles, each cycle comprising a move period and a dwell period, the transporting means being mounted on the frame;
- c. introducing means for feeding multiple strands into the grid structure to form a three dimensional lattice array, the introducing means being mounted on the frame;
- d. reciprocating means for reciprocating the introducing means relative to the support during the transporting means' dwell period; and
- e. strand tensioning means mounted on the reciprocating means.

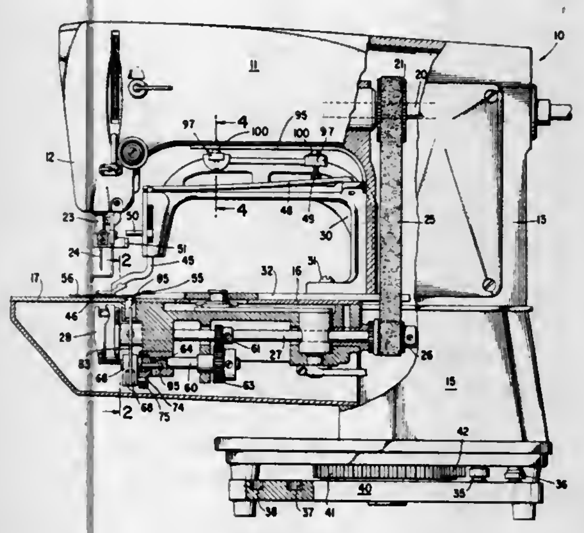
3,896,748
LOW FRICTION MEANS FOR SEWING MACHINE WORK CLAMP

Stanley Kostenowczyk, Cranford, N.J., assignor to The Singer Company, New York, N.Y.

Filed Oct. 4, 1974, Ser. No. 512,795

Int. Cl. D05b *3/04*

U.S. Cl. 112—70 **5 Claims**



1. In a sewing machine having a frame, a sewing needle, means for reciprocating said sewing needle upwardly out of work material and downwardly through work material, said frame including a bed with an aperture for accommodating said reciprocation of said sewing needle, work clamp means for supporting and transporting work material on said bed, said work clamp means including an upper clamp member and a lower clamp member, and means for supporting and transporting said work clamp means when said sewing needle is out of work material, the improvement comprising: at least one ball and bearing means effective between said bed and said work clamp means, said bearing means including a socket for receiving said ball; means for shifting said bearing means to position said ball in a space between said bed and said work clamp means lower clamp member in synchronism with said upward needle reciprocation to elevate said work clamp means by said ball impinging on said lower clamp member prior to transport of said work clamp means.

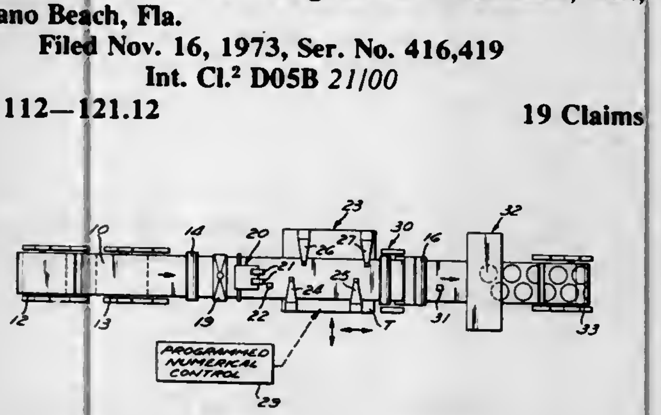
3,896,749
AUTOMATED SEWING APPARATUS

Frank Brauns, Deerfield Beach, and James B. Jones, Lighthouse Point, both of Fla., assignors to Novatronics, Inc., Pompano Beach, Fla.

Filed Nov. 16, 1973, Ser. No. 416,419

Int. Cl.^{2} D05B *21/00*

U.S. Cl. 112—121.12 **19 Claims**



1. In an apparatus for sewing together webs of material, said apparatus including sewing machine means, and means for supplying webs to be sewed together, the improvement which comprises the combination of:

means for moving said sewing machine means along a predetermined two-dimensional stitching pattern;

and means for advancing the webs in overlapped relationship continuously at substantially constant speed and under substantially uniform tension past said sewing machine means while the latter are moved through said two-dimensional pattern to sew corresponding stitch patterns in the overlapped webs.

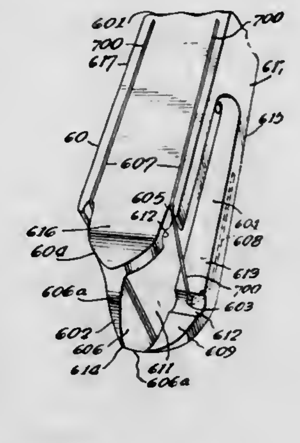
3,896,750
MACHINE AND METHOD FOR PRODUCING A THREE DIMENSIONAL LATTICE

Homer C. Amos, Palm Springs, Calif., assignor to Brunswick Corporation, Skokie, Ill.

Division of Ser. No. 272,736, July 18, 1972, Pat. No. 3,822,463. This application May 6, 1974, Ser. No. 467,064

Int. Cl.^{2} D05B *85/00*

U.S. Cl. 112—222 **1 Claim**



1. A needle comprising:
1. an elongated shank having a pointed distal end and a proximal end;
2. a hole and a slot substantially the same distance from the distal end, the slot's open end being directed towards the distal point; and
3. an axial groove placed between the hole and the slot so that a thread through the hole and the slot spans the groove.

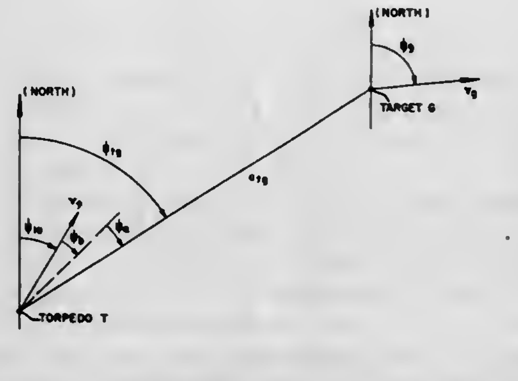
3,896,751
NAVIGATION METHOD

Werner Ammon, Frankfurt am Main, Germany, assignor to Licentia-Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Sept. 20, 1971, Ser. No. 182,198

Int. Cl. F42b *19/06, 19/01, 19/10*

U.S. Cl. 114—23 **5 Claims**



1. In a method for advancing the impact point of a projectile equipped with a passive search head, which projectile is steered by controlling the rate of change of the projectile-to-target heading and, during the autonomous phase, by proportional navigation, wherein, in the vicinity of the barget, there is a switch-over from proportional navigation to navigation along a deviated pursuit course wherein the squint angle is such that the first point of intersection of the spiral path with the track being made good by the target is approximately amidship of the target, the improvement comprising the steps of setting the amplification of the control circuit to unity gain at the instant of switch-over from proportional navigation to navigation along a deviated pursuit course, and applying to the control circuit a constant d.c. voltage throughout a predetermined, finite time interval, with the magnitude of said d.c. voltage and said time interval being selected to produce the desired squint angle.

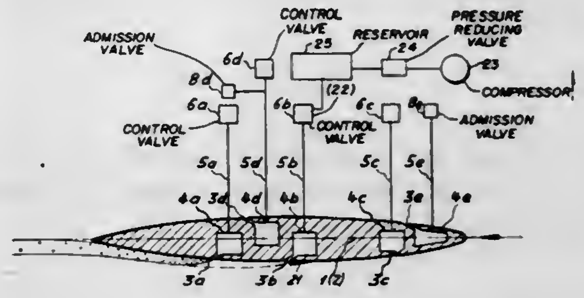
3,896,752
HYDROFOIL FOR WATERCRAFT WITH LIFT GENERATION THROUGH AIR SUPPLY OF THE FOIL UNDERSIDE

Hanns von Schertel, Hergiswil, Switzerland, assignor to Supramar AG, Lucerne, Switzerland

Filed June 4, 1973, Ser. No. 366,796

Int. Cl. B63b *1/24*

U.S. Cl. 114—66.5 H **8 Claims**



1. System for generating lift at a hydrofoil for watercraft, the hydrofoil having air exit openings extending in the span width direction thereof, the lift of said hydrofoil being influenced by the admission of a controllable quantity of air to the negative pressure region of the hydrofoil through said air exit openings, the improvement comprising said hydrofoil profile having an approximately linear mean line such that chord parallel flow generates insufficient lift to support the weight of said watercraft, means for generating sufficient lift to support the weight of said watercraft, said lift generating means comprising said air exit openings being located on the underside of the foil profile, a wedge positioned forwardly of said air exit openings and extending to a point below the profile of said hydrofoil, said wedge having a rearwardly directed blunt edge, means for continuously supplying a quantity of air to said air exit openings and means for varying the quantity of air admitted to said air exit openings for regulating the lift.

3,896,753
HYDROPHILIC POLYMER COATING FOR UNDERWATER STRUCTURES

Thomas H. Shepherd, Hopewell, and Francis E. Gould, Princeton, both of N.J., assignors to National Patent Development Corporation, New York, N.Y.

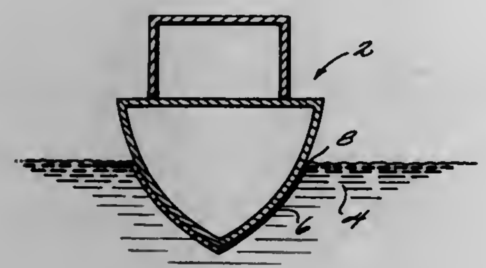
Continuation-in-part of Ser. No. 838,269, July 1, 1969, Pat. No. 3,575,123, which is a continuation-in-part of Ser. No. 654,044, July 5, 1967, abandoned, which is a continuation-in-part of Ser. No. 650,259, June 30, 1967, abandoned, which is a continuation-in-part of Ser. No. 567,856, July 26, 1966, Pat. No. 3,520,949. This application Jan. 14, 1971, Ser. No. 106,374. The portion of the term of this patent subsequent to Apr. 13, 1988, has been disclaimed.

Int. Cl. B63b *1/34*

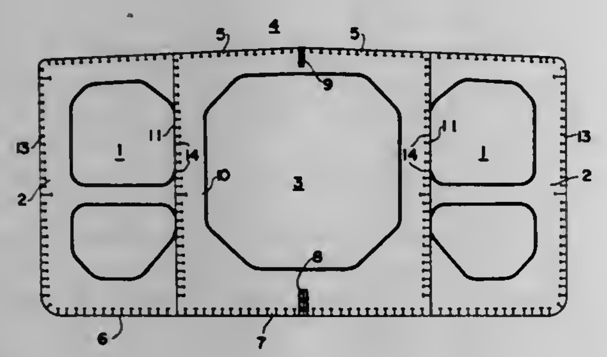
U.S. Cl. 114—67 R **12 Claims**

1. A marine structure which is a watercraft having an adherent continuous exposed coating consisting essentially of a member of the group consisting of (1) a water insoluble hydrophilic polymer which is swellable to an extent of at least 10% in water and contains vinyl pyrrolidone units, wherein said vinyl pyrrolidone units contribute significantly to the water swellability, wherein the coating is sufficient to reduce

the drag of the watercraft when in water and, (2) said hydrophilic polymer having releasably entrapped therein at least one member of the group consisting of antifouling agents and pigments.

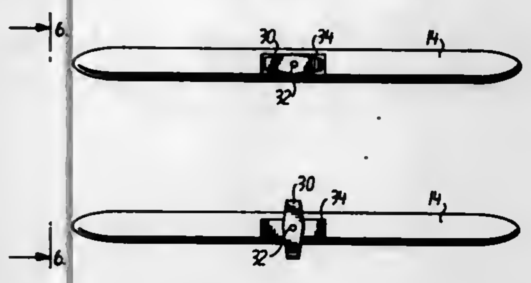


3,896,754
STRUCTURE OF CARGO OIL TANKS OF A TANKER
Minoru Tanaka, Kamakura, Japan, assignor to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 2, 1974, Ser. No. 429,826
Int. Cl.² B63B *25/02*
U.S. Cl. 114—74 R **1 Claim**



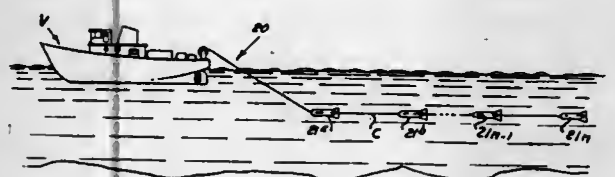
1. Cargo oil tank structure of a tanker comprising a support structure for a center tank and for two outboard wing tanks one on each side of the center tank, said support structure including a deck transverse web under the deck, a bottom transverse web at the bottom, and transverse webs on either side of the center tank, said deck web, bottom web and transverse webs defining an integral ring shaped web structure surrounding the entire circumferential wall of the center tank, longitudinal bulkheads to which each of said side transverse webs are connected, lateral transverse webs secured to said bulkheads and extending outboard thereof to support said outboard wing tanks, said lateral transverse webs for the support of the outboard wing tanks extending partially around said wing tanks and being secured to said longitudinal bulkheads to leave a section without lateral transverse web at said bulkheads, center line girders disposed at the center of the center tank support structure and connected respectively to said deck transverse web and said bottom transverse web, first longitudinal stiffeners at the periphery of said deck and bottom transverse webs of the center tank support structure and at the inner wall of the longitudinal bulkheads on the side of the center tank, and second longitudinal stiffeners at the top and bottom of the lateral transverse webs of the wing tank support structure and the outboard lateral edges of said transverse webs of the wing tank support structure.

3,896,755
HEAVE DAMPING DEVICE FOR SHIPS
Fendall Marbury, North Chevy Chase, Md., assignor to Litton Systems, Inc., Beverly Hills, Calif.
Filed Jan. 21, 1974, Ser. No. 434,893
Int. Cl.² B63B *39/06*
U.S. Cl. 114—126 **6 Claims**



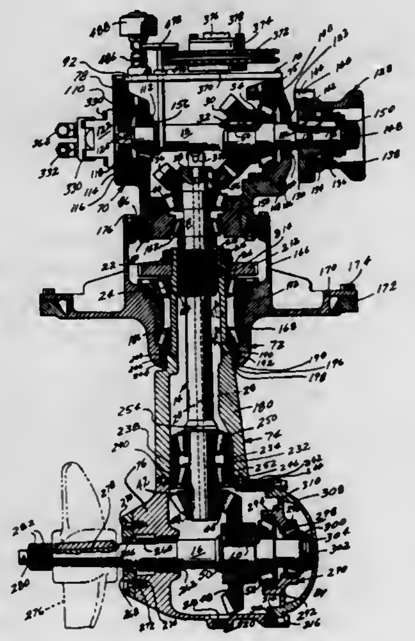
1. Fin means for stabilizing a ship in water comprising at least one fin disposed connected to said ship in relatively horizontal relationship with the hull of said ship, said fin being selectively operable for rotation beneath water level about a vertical axis relative to said ship, said fin including relatively smooth, flat, horizontally disposed blades balanced about the connection of said fin with said hull of said ship, wherein said balanced fin is so balanced that the sum of the moments of the vertical water forces acting on said horizontally disposed flat blades equal zero at any given moment, when the ship is stationary.

3,896,756
DEPTH CONTROL APPARATUS FOR TOWED UNDERWATER CABLES
Raymond H. Pearson; Thomas E. White, both of Richardson, and James R. Perkins, Dallas, all of Tex., assignors to Whitehall Electronics Corporation, Dallas, Tex.
Filed Feb. 2, 1971, Ser. No. 112,002
Int. Cl. B63b *21/56*
U.S. Cl. 114—235 B **8 Claims**



1. A depth controller device for a tow cable including: a body securable to the tow cable; diving planes mounted on the body for pivotal movement about a pivot axis; operator means on said body comprising a cylindrical housing and a piston movable reciprocally in said housing; biasing means in said cylindrical housing biasing said piston for movement in one direction; said piston having a surface exposed to the pressure of the water in which said controller device is immersed whereby said piston is biased by the pressure of the water for movement in a second direction opposite said one direction; connector means connecting said operator means to said diving planes whereby said diving planes are pivoted in one direction when said piston moves in said one direction and are pivoted in a second direction when said piston moves in said second direction; said biasing means comprising spring means and compression means for compressing said spring means, said spring means being disposed in said cylindrical housing between said compression means and said piston; moving means comprising driving means for moving said compression means toward and away from said piston to vary the force with which said spring means yieldably resists movement of said piston toward said compression means, said driving means comprising reversible motor means in said body and a drive screw engaged with said compression means for moving said compression means selectively in opposite directions along said drive screw, control means for controlling operation of said motor means, and transducer means in said body operatively associated with said drive means providing an electric quantity which varies in accordance with the longitudinal position of said compression means relative to said drive screw.

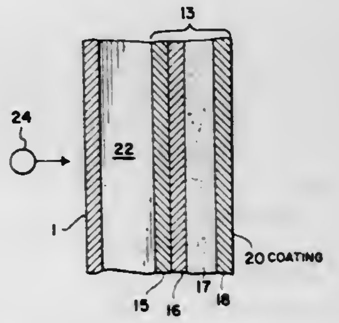
3,896,757
ROTATABLE DOWNWARDLY DIRECTED DRIVELINE
Robert C. Kucher, Seattle, Wash., assignor to Rendell Tractor & Equipment Co., Ltd., Vancouver, Canada
Filed Oct. 7, 1970, Ser. No. 78,814
Int. Cl. B63h *25/42*
U.S. Cl. 115—35 **25 Claims**



1. A combination of a boat and a substantially vertical downwardly directed drive unit for said boat, said combination comprising:

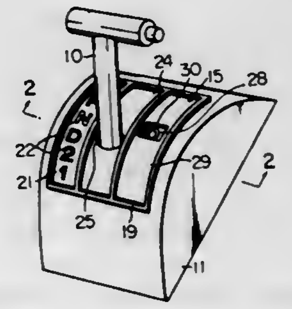
a. said boat having a bottom;
b. said boat having an opening in said bottom;
c. said drive unit fitting into said opening;
d. said drive unit comprising an input shaft;
e. a single downwardly directed drive shaft;
f. a propeller shaft;
g. a first driving means between said input shaft and said drive shaft;
h. a second driving means between said drive shaft and said propeller shaft;
i. a casing for said input shaft, said drive shaft and said propeller shaft;
j. said casing comprising a central housing for the upper part of said single drive shaft; said central housing extending below said bottom;
k. said casing comprising a vertical housing for the lower part of said single drive shaft;
l. two sets of lower tapered roller bearings;
m. the lower end of said single drive shaft being positioned in said tapered roller bearings of said drive shaft;
n. said lower tapered roller bearings being positioned with respect to the lower end of said vertical housing and inside of said vertical housing;
o. two sets of upper tapered roller bearings;
p. said two sets of upper tapered roller bearings being positioned between the upper part of said vertical housing and said central housing to allow relative rotation between said vertical housing and said central housing; at least one set of said two sets of upper tapered rollers bearings being positioned in said central housing below said bottom;
q. said input shaft being in said boat;
r. said drive shaft being in said boat and below the bottom of said boat; and,
s. said propeller shaft being outside said boat.

3,896,758
METEROROID IMPACT POSITION LOCATOR AIR FOR MANNED SPACE STATION
John D. Di Battista, Newport News, Va., assignor to The United States of America as represented by the United States National Aeronautics and Space Administration Office of General Counsel-Code GP, Washington, D.C.
Filed Oct. 2, 1973, Ser. No. 402,867
Int. Cl. G01d *21/00;* **G01w** *1/00*
U.S. Cl. 116—114 AH **6 Claims**



1. A method of locating meteoroid impacts in manned space vehicles which comprises the steps of: providing a space vehicle; coating the interior wall of the space vehicle with a layer of coating material of a preselected thickness having contrasting color to that of the vehicle interior wall said layer being of the preselected thickness so as to be capable of flaking or chipping off when an impacting meteoroid deforms said wall subjecting the space vehicle to meteoroid impact, and observing the vehicle interior wall for flaking or chipping thereby locating the point of meteoroid impact.

3,896,759
SHIFT LEVER POSITION INDICATOR FOR MOTOR VEHICLE AUTOMATIC TRANSMISSION SYSTEM
Hisateru Ogura, Yokohama, Japan, assignor to Nissan Motor Company Limited, Japan
Filed Apr. 26, 1974, Ser. No. 464,672
Claims priority, application Japan, May 31, 1973, 48-63361
Int. Cl. G09f *9/00*
U.S. Cl. 116—124 R **2 Claims**



1. A shift lever position indicator for a motor vehicle automatic transmission system having a manual selector valve spool movable to different control positions, which comprises: a shift lever adapted to be connected to the manual selector valve spool so that the valve spool is positioned when said shift lever is placed at one of the control positions;

a casing including upper and bottom walls and having at the upper wall thereof a first central slot, and first and second elongated side windows extending along said first central slot and having at the bottom wall thereof a second central slot coextensive with said first central slot, said casing being so positioned as to allow said shift lever to be inserted into said first and second central slots and to be

movable along the longitudinal direction of said first and second central slots;
- an opaque patterned plate member snugly fitted with said first elongated side window, said patterned plate member having first transparent patterned portions representing the respective control positions, said first transparent patterned portions being ordered along the moving direction of said shift lever;
- guide means formed on said the inner surface of the bottom wall of said casing and extending along said second central slot;
- a blind and slide member slidably mounted on said guide means and connected with said shift lever so that said blind and slide member slides along the direction of said shift lever in accordance with the movement of said shift lever, said blind and slide member having such an extent as to blind said first central slot;
- an opaque indicating plate member connected with said blind and slide member and having second transparent patterned portions representing the respective control positions, said second transparent patterned portions being arranged beneath said second elongated side window in a direction inverse to that of said first transparent patterned portions;
- an opaque apertured plate member snugly fitted with said second elongated side window and having an aperture having substantially the same extent as that of each second transparent patterned portion and formed at such a portion as to allow one of said second transparent patterned portions to be exposed outside of said casing;
- and at least one energizable light source positioned within said casing so that said light source irradiates light rays emitted from it when it is energized.

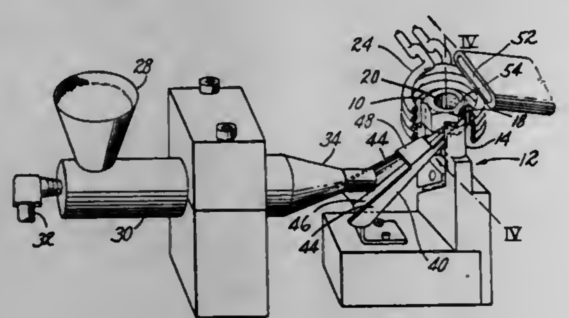
3,896,760
APPARATUS FOR MAKING SELF-LOCKING INTERNALLY THREADED ARTICLES

Richard J. Duffy, Salem, Mass., assignor to USM Corporation, Boston, Mass.

Division of Ser. No. 400,502, Sept. 25, 1973, which is a continuation-in-part of Ser. No. 314,854, Dec. 13, 1972, abandoned. This application Sept. 16, 1974, Ser. No. 506,576

Int. Cl.^{2} B05B *7/00*

U.S. Cl. 118—308 **6 Claims**



1. An apparatus for applying locking patches of normally hard, tough, resilient thermoplastic resin to internally threaded articles having openings at both ends of the threaded portion of the articles, comprising means for heating said articles to a temperature above the softening point of said resinous material, support means for holding said articles with the openings at the ends of the threaded portions substantially free, means providing a stream of fine particles of said resin entrained in a gaseous jet, guide means disposed to direct said jet and resin particles of said stream through a first opening of said threaded portion toward a selected area of the surface of said threaded portion and in a direction including a component toward the other of said openings for passage through said threaded portion and exit through said other opening and vacuum exhaust means adjacent said other opening in operative relation to draw air through said threaded portion to reduce deposition of resin particles in undesired areas of said articles and to draw off resin particles which have passed through said threaded portion.

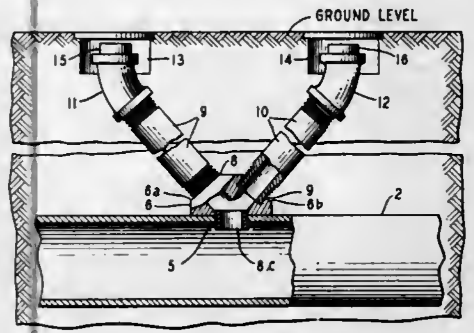
3,896,761
ACCESS AND COUPLING APPARATUS FOR MACHINE COATING THE INTERIOR OF PIPES

Gerardo Di Mura, 459 Mountain Ter., Dunellen, N.J. 08812

Filed Oct. 2, 1974, Ser. No. 511,283

Int. Cl.^{2} B05B *15/06*

U.S. Cl. 118—317 **8 Claims**



1. Apparatus for coupling a buried pipeline toward ground level for machine spray coating and the interior of the pipeline and its joints and without a need for an excavation to the pipeline after installation of the coupling apparatus and comprising
- a base fixture fastenable to said pipeline, and
- a pair of conduits secured to said base fixture and angularly disposed from one another for extending upward from said fixture toward ground level to enable a hose and spray nozzle to be sequentially admitted through each of said conduits and said base fixture in opposite upstream and downstream directions of said pipeline for spray coating operations.

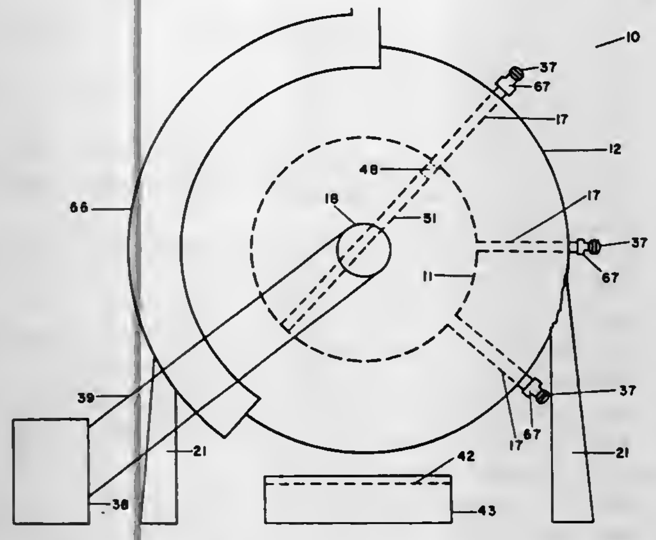
3,896,762
COATING APPARATUS

Gilbert S. Banker, West Lafayette, Ind., assignor to Purdue Research Foundation, West Lafayette, Ind.

Continuation-in-part of Ser. No. 422,679, Dec. 7, 1973, abandoned, which is a continuation-in-part of Ser. No. 316,037, Dec. 18, 1972, abandoned. This application June 17, 1974, Ser. No. 479,890

Int. Cl. B05c *3/10*

U.S. Cl. 118—30 **12 Claims**



7. A rotary coating apparatus comprising in combination, a frame, a vacuum drum rotatably mounted on the frame, end walls sealing the vacuum drum to the atmosphere, vacuum means communicating with the vacuum drum through one of the end walls, a plurality of rows of vacuum tubes in vacuum sealed rotatable communication with the vacuum drum, the vacuum tubes being affixed to a plurality of interconnected gears, which gears are in engagement with a rotatable gear on the frame, whereby to effect the rotatable movement of the vacuum tubes, a vacuum shut-off means in slidable engagment with the inner surface of the vacuum drum, and means to move the shut-off means whereby to select either shut-off or establish vacuum communication between the vacuum drum and the vacuum tubes at a predetermined time during the apparatus rotation.

3,896,763
IMPREGNATING CORRUGATED CARDBOARD

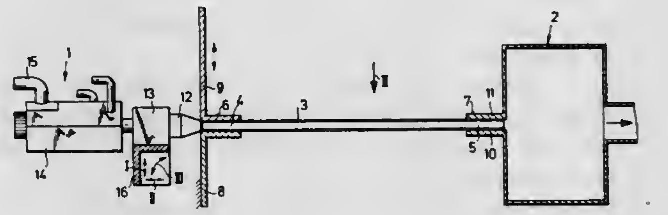
Günther Lau, Glogauerstr. 22, 8541 Katzwang; Edmund Bradatsch, Huttenwerkstr. 5, 8481 Weiherhammer; Hermann J. Brandl, Virchowstr. 33, 85 Nurnberg, and Georg Niggel, Rothenbachstr. 11, 8481 Weiherhammer, all of Germany

Filed Jan. 8, 1973, Ser. No. 321,840

Claims priority, application Germany, Jan. 14, 1972, 2201744

Int. Cl.^{2} B05C *7/02*

U.S. Cl. 118—50 **3 Claims**



1. Apparatus for impregnating corrugated board including a serpentine fibrous intermediate layer, and a top and bottom planar fibrous outer layer having a predetermined height therebetween and cooperating with the serpentine layer to define a succession of transversely extending open-ended flutes having said predetermined height, comprising
- a. means for longitudinally feeding said board with said flutes and said planar outer layers being arranged horizontally and with said flutes extending normal to the longitudinal direction of feed;
- b. stationary impregnant supply means arranged adjacent one longitudinal edge of said longitudinally travelling board for supplying to one end of the flutes adjacent thereto an impregnating material, said impregnant supply means including
  - 1. nozzle means for injecting a concentrated jet of said impregnating material, substantially devoid of air into said flutes, said concentrated jet having a height less than said predetermined height of said flutes, between said top and bottom layers
  - 2. said nozzle means being provided with a bore hole and an exit aperture having a cross-section taken in a vertical plane through the bore hole which is substantially triangular when viewed perpendicular to the cross section, and a cross-section taken in a horizontal plane through the bore hole which is substantially semicircular when viewed perpendicular to the cross section;
- c. said nozzle means and longitudinally feeding means being positioned such that said one longitudinal edge is positioned away from said nozzle means for allowing a gaseous medium entry to the flutes adjacent said nozzle means and concentrated jet as said concentrated jet is injected into said flutes for sheathing said jet as it enters said flutes, and
- d. stationary suction means disposed adjacent the other longitudinal edge of said board opposite said impregnant supply means for establishing a vacuum in said flutes to draw the impregnating material in said jet and said surrounding gaseous medium therethrough.

3,896,764
EXTRUSION APPARATUS FOR COATING BOTH SURFACES OF TUBULAR MATERIAL

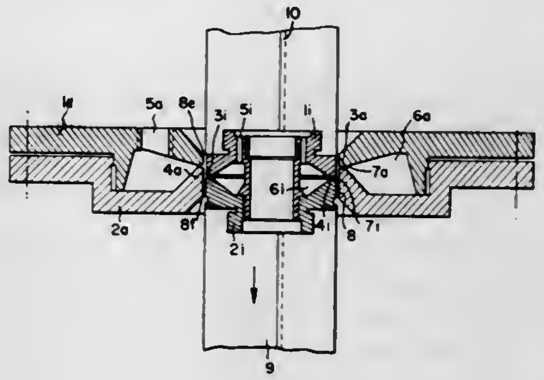
Erwin Kindl, Wiesbaden-Biebrich, and Gunter Gerick, Oberursol, both of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Continuation of Ser. No. 193,524, Oct. 28, 1971, abandoned, which is a division of Ser. No. 100,916, Dec. 23, 1970, Pat. No. 3,709,720. This application July 18, 1973, Ser. No. 380,274

Claims priority, application Germany, Dec. 27, 1969, 1965130

Int. Cl. B05c *3/12*

U.S. Cl. 118—408 **4 Claims**



1. An apparatus for use in the continuous coating of a tube of fiber material with viscose which comprises a cylindrical passage having a width of about 0.3 to 1.0 mm, first annular slot die means having the slot thereof directed inwardly toward said cylindrical passage and in open communication therewith, second annular slot die means having the slot thereof directed outwardly toward said cylindrical passage and in open communication therewith, said first and second slot die means being offset from one another along said cylindrical passage such that a tube of fiber material conveyed through said cylindrical passage is coated with viscose, first on the exterior thereof and then on the interior thereof, first viscose feed means in open communication with said first slot die means and second viscose feed means in open communication with said second slot die means, the distance between the first and the second slot die means, the distance of said first slot die means from the entry opening of the cylindrical passage for the tube and the distance of said second slot die means from the exit opening of said cylindrical passage for said tube being not more than 50 mm.

3,896,765
APPARATUS FOR LIQUID-PHASE EPITAXIAL GROWTH

Kozo Ariga, Kadoma, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Oct. 6, 1972, Ser. No. 295,554

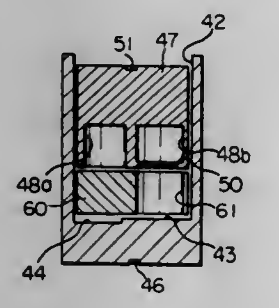
Claims priority, application Japan, Oct. 6, 1971, 46-79052; Dec. 10, 1971, 46-100523; Sept. 11, 1972, 47-91536

Int. Cl. B05c *3/18*

U.S. Cl. 118—412 **9 Claims**

1. In an apparatus for liquid-phase epitaxial growth of a semiconductor, the improvement comprises:
- An outer member having therein a cylindrical large bore opened at the upper end thereof and at least one substrate-carrying recess at the bottom wall of said large bore;
- a cylindrical basic inner member snugly and slidably accommodated in said large bore and having at least two solution-containing bores at the lower end portion thereof excluding the central axis thereof, and opening toward said bottom wall of said large bore;
- a cylindrical intermediate inner member accommodated in said large bore and interposed between said basic inner member and the bottom wall of said large bore, said intermediate inner member having a communication bore

extending from upper to lower ends for establishing communication between one of said two solution-containing bores and said substrate-carrying recess; and



a barrier plate with a plurality of openings mounted at the open end of one of said solution containing bores.

3,896,766

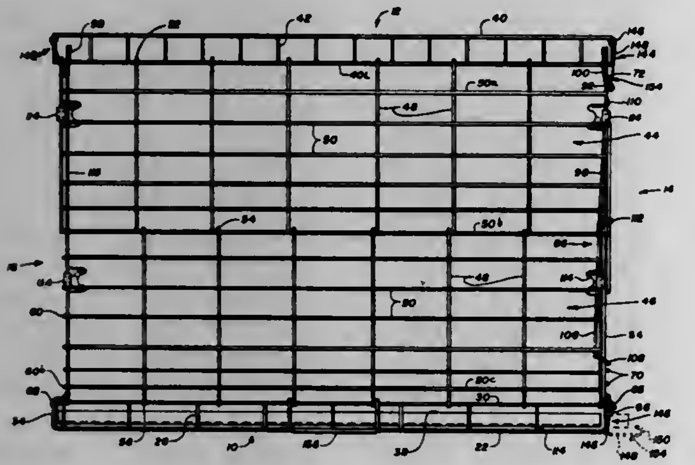
COLLAPSIBLE ANIMAL CAGE OR THE LIKE

Harlan W. Martin, Earl Township, Pa., assignor to Favorite Manufacturing, Inc., New Holland, Pa.

Filed Mar. 25, 1974, Ser. No. 454,266

Int. Cl.^{2} A01K *1/02*

U.S. Cl. 119—17 **11 Claims**



8. A collapsible animal cage or the like comprising:
a rectangular floor structure having upwardly extending peripheral edge portions;
a litter tray or the like mounted on said floor structure in such a manner that its upper surface lies below the upper periphery of the side portions, said litter tray or the like being slidable through an opening in said peripheral edge portions of the floor structure;
a rectangular top structure;
front and rear rectangular end wall structures hingedly interconnected at their bottoms to the peripheral edge portion of the rectangular floor structure and swingable between an upright erected position wherein they are vertically disposed above the ends of the rectangular floor structure and a lowered collapsed position where they are horizontally disposed over the litter tray or like object;
right and left hand rectangular side structures hingedly interconnected at their top to said top structure and also hingedly interconnected at their bottom to the peripheral edge portions of said floor structure, each of said structures having horizontal hinge means between the top and bottom, said side structure being swingable between an upright erected position wherein they are vertically disposed above the side edges of the floor structure and a lower collapsed position wherein they are horizontally disposed in a folded position over said litter tray; and
means operable to hold said sides and ends in their erected position.

3,896,767

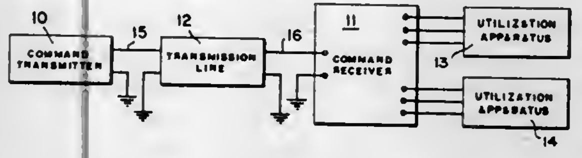
APPARATUS SELECTIVELY RESPONSIVE TO BILEVEL BIPOLAR PULSES

John T. Martin, Frederick, Md.; Robert E. Lay, Jr., Medway, Mass.; Edward L. Stene, Linthicum Hts., and Anthony J. Muscante, Baltimore, both of Md., assignors to United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 5, 1964, Ser. No. 365,571

Int. Cl. F41g *7/02;* F42b *17/10*

U.S. Cl. 114—21 W **4 Claims**



1. In a wire guided torpedo system of the type comprising a torpedo, a remote command transmitter for generating low and high-pulse D.C. command signals, a guidance receptor carried by the torpedo and having a pair of input terminals, a transmission line comprising a guidance wire and seawater return for communicating said command signals to said terminals and imposing distortions upon said command signals as received at said terminals, and utilization apparatus controllable by said guidance receptor,
the improvements, in combination, wherein said guidance receptor is constructed and arranged to be selectively responsive to said command signals despite said distortions, comprising:
a. a first command signal channel connected to said input terminals and comprising a first relay, and a zener breakdown diode for effecting energization of said relay only upon reception of a high-pulse command signal;
b. a second command signal channel comprising a second relay, and means for effecting energization of said second relay upon reception of a low-pulse command signal;
c. said second command signal channel being connected to said input terminals through a normally closed switch controlled by said first relay; and
d. means for preventing operation of said second relay during pulse rise time of said high-pulse command signal.

3,896,768

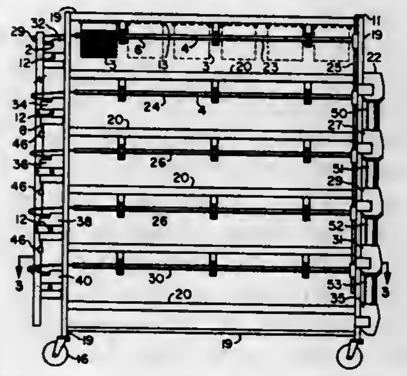
AUTOMATICALLY FLUSHING ANIMAL CAGE RACK

Charles H. Galloway, 2203 Franklin, Bryan, Tex. 77801

Filed June 5, 1974, Ser. No. 476,729

Int. Cl. A01k *1/00, 31/04*

U.S. Cl. 119—22 **7 Claims**



1. An animal cage rack with flush system adapted to automatically clean animal waste from the vicinity of animal cages, comprising:
a plurality of supports for receiving animal cages, the cages constructed to permit waste to pass through the bottom of said cages;

a shelf situated beneath said cages for receiving animal waste;
a flush tank with bottom, side, front and back walls, said front wall disposed adjacent one end of said shelf, said tank being pivotally mounted at one end of said cage rack;
a piping system for delivering a suitable fluid to said tank, said piping system including a water inlet, lateral distribution pipes and an orificed valve for controlling the flow of said fluid to said tank;
a counterbalance attached to said tank for inhibiting pivotal motion of said tank; and
drinking valves situated on said lateral distribution pipes adjacent said cages for supplying continuously freshened water to the cages.

3,896,769

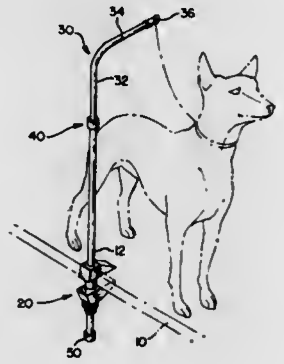
ANIMAL GROOMING DEVICE

Bobby L. McGehee, Seattle, Wash., assignor to Design Technology Corporation, Seattle, Wash.

Filed Sept. 7, 1973, Ser. No. 395,295

Int. Cl. A01k *1/04*

U.S. Cl. 119—122 **3 Claims**



1. An animal grooming device comprising:
a hollow, tubular, open-ended support;
clamping means secured to the lower end of the support for securing the grooming device to a horizontal support;
a grooming post having an upright portion and a laterally extending portion, with the upright portion telescoping into the hollow support;
clutch and collet means designed for one-hand operation for adjustment of the height of the grooming post, including (1) an annular clutch ring surrounding the grooming post where it telescopes into the housing threaded for vertical movement to the upper terminating end of the housing, the annular clutch ring including a flange at its upper end having an inner sidewall portion spaced away from the outer wall of the grooming post providing an annular space therebetween, (2) a bushing resting against the upper terminating end of the hollow support held in place by the clutch ring, and (3) a flexible, annular collet ring substantially filling the annular space held in place within the annular space by the clutch ring, the clutch ring, on turning in one direction, pressing the flange of the clutch ring against the collet ring, constricting and forcing the collet ring against the grooming post, preventing movement thereof, and, on turning of the clutch ring in the opposite direction, releasing the grooming post for vertical adjustment; and
damping means restricting the downward stroke of the grooming post boom on release of clutch and collet means for vertical adjustment.

3,896,770

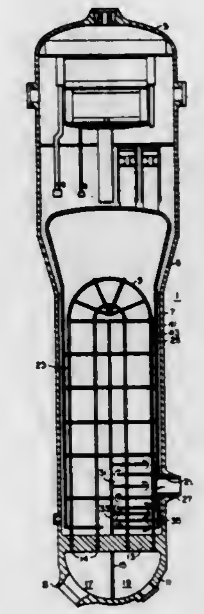
STEAM GENERATOR WITH SPLIT FLOW PREHEATER

Wilbur M. Byerley, and Robert R. Bennett, both of Tampa, Fla., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 24, 1972, Ser. No. 274,698

Int. Cl. F22b *1/06*

U.S. Cl. 122—32 **2 Claims**



1. A vapor generator having a plurality of U-shaped tubes forming a tube bundle for providing the heat transfer service required to transfer heat from a first fluid to vaporize and superheat a second fluid, said tube bundle being so disposed within said vapor generator that the first fluid flows through the tubes creating a hot leg portion and a cold leg portion, said vapor generator comprising a tube sheet for receiving the ends of the tubes; a shell portion cooperatively associated with said tube sheet; a wrapper disposed within the shell portion and generally enclosing said tube bundle; a dividing plate cooperatively associated with said wrapper to form an evaporator enclosure incorporating at least a portion of the cold leg portion of the tube bundle and a vapor enclosure incorporating at least a portion of the hot leg portion of the tube bundle; a plurality of baffles disposed within said vapor enclosure causing the fluid flowing therethrough to follow a sinuous path over the outer surface of said portion of the hot leg; a preheater enclosing at least a portion of the cold leg portion of said tube bundle; a fluid inlet nozzle for the second fluid disposed in fluid communication with said preheater; and a fluid outlet nozzle for the second fluid disposed in fluid communication with the vapor enclosure, whereby the second fluid entering the preheater is heated to approximately saturation temperature, flows through the evaporator portion, wherein the second fluid is vaporized, and enters the vapor portion, wherein the vaporized fluid is superheated prior to being discharged through said second fluid outlet nozzle.

3,896,771

SPACER AND GUIDE ASSEMBLY FOR VERTICAL SUPERHEATER TUBES

Norman Chanine Chayes, Bloomfield, and Edward Leslie Kochey, Jr., Colebrook, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

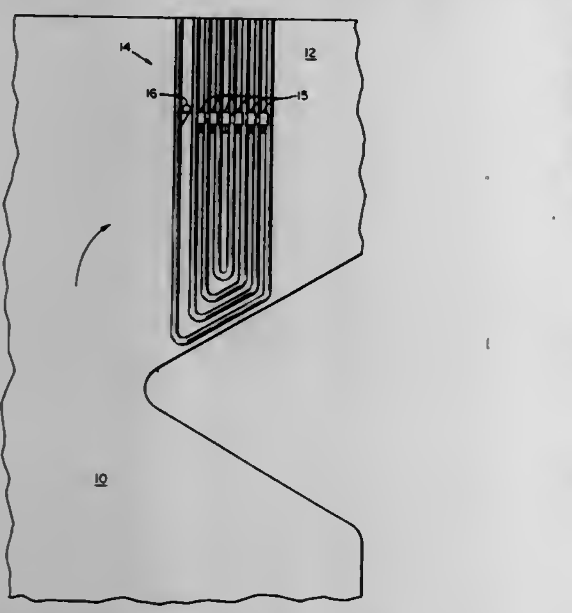
Filed Aug. 1, 1974, Ser. No. 493,795

Int. Cl.^{2} F22B *37/24*

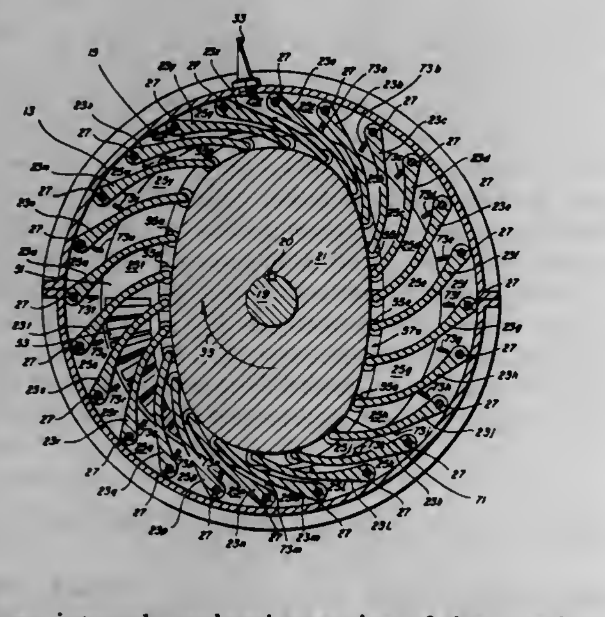
U.S. Cl. 122—510 **1 Claim**

1. In combination a plurality of spaced, vertical tubes, a spacer and guide assembly positioned between two of the vertical tubes, the spacer and guide assembly including a horizontal tube, guide lug means integral with one of the

vertical tubes, spacer lug means integral with the horizontal tube and coacting with the guide lug means so as to permit limited relative movement of the vertical and horizontal tubes, said guide lug means including a horizontal portion extending outwardly from the vertical tube, said spacer lug means being an inverted U-shaped lug fastened at the top to the bottom of the horizontal tube, the two legs of the U-shaped lug extending downwardly on opposite sides of the horizontal portion of the guide lug means, a pair of spaced stop means secured to the horizontal portion of the guide lug means, one on either side of the legs of the U-shaped lug, the stop means being positioned such that they permit limited horizontal movement of the vertical tube relatively towards or away from the horizontal tube, but relative movement beyond this limit causes the U-shaped lug to contact one or the other of the stop means.

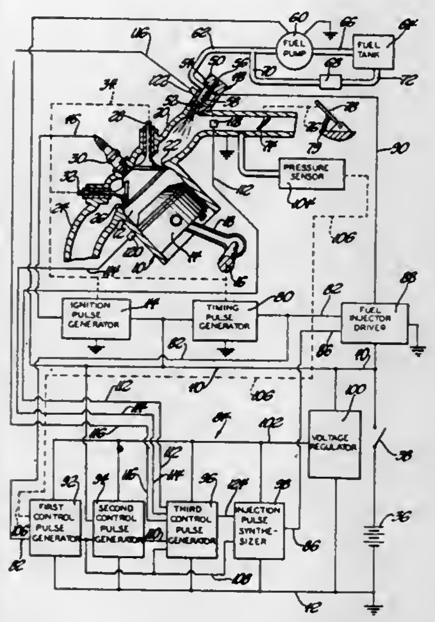


3,896,772
OVERLAPPING SWINGING PLATE INTERNAL COMBUSTION ENGINE
Samuel P. Lyle, 218 Spring St., Huntingdon, Tenn. 38344
Filed Aug. 24, 1973, Ser. No. 391,138
Int. Cl. F02b *53/00*
U.S. Cl. 123—8.47 **17 Claims**



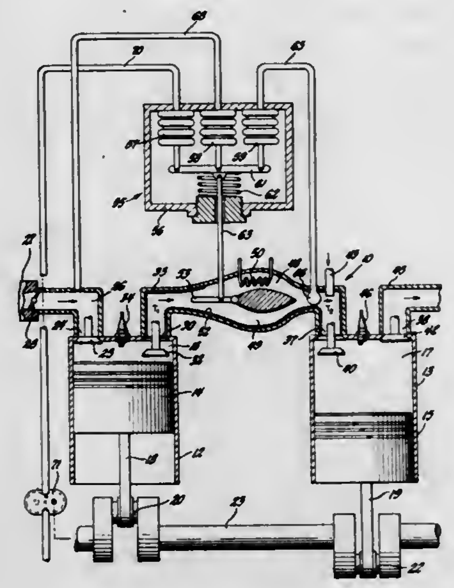
1. In an internal combustion engine of the type having a stationary cylindrical case member provided with a circular chamber, intake manifold means for delivering fuel and air to said chamber, and a shaft disposed concentrically of said chamber and being journaled to said case member; the improvement which comprises hub means attached to said shaft, a plurality of overlappingly arranged plate means engaging said hub means and said case member for separating said chamber into a plurality of variable volume combustion cells, said plate means each being swingably attached to said case member establishing a free swinging end thereof; guide means for coupling each of said plate means to said hub means, for guidingly constraining said free swinging ends of said plate means, and for sequentially swinging said plate means as said shaft rotates; and means for providing internal combustion cycles of said combustion cells in rotational succession and for causing forces to be exerted respectively on said plurality of plate means to impart a continuous rotary force to said shaft; said shaft being straight, said hub means including an elliptical shaped portion which engages said plurality of plate means, said guide means being elliptical in shape, and said hub means being keyed to said straight shaft whereby rotation of said shaft is effective to cause said guide means to sequentially swing said plurality of plate means.

3,896,773
ELECTRONIC FUEL INJECTION SYSTEM
Lamonte R. Edison, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 27, 1972, Ser. No. 301,423
Int. Cl. F02b *3/00*
U.S. Cl. 123—32 EA **5 Claims**



1. In an internal combustion engine, the combination comprising: means for defining a first time period initiated in synchronization with the operation of the engine and terminated at the expiration of a time duration determined as a preselected function of a first engine operating parameter; means for defining a second time period initiated in response to the initiation of the first time period and terminated before the termination of the first time period at the expiration of a time duration determined as a preselected function of a second engine operating parameter; means for defining a third time period initiated in response to termination of the second time period and terminated after the termination of the first time period at the expiration of a time duration determined by the time duration of the first time period less the time duration of the second time period and determined as a preselected function of a third engine operating parameter; and means for applying fuel to the engine in an amount directly related to a composite time period defined between the initiation of the first time period and the termination of the third time period so that the total quantity of fuel delivered to the engine is defined in relation to the preselected function of the first engine operating parameter by a linear fuel control curve having an offset determined by the preselected function of the second engine operating parameter and having a slope determined by the preselected function of the third engine operating parameter.

3,896,774
STAGED INTERNAL COMBUSTION ENGINE WITH MODULATING INTERSTAGE TEMPERATURE CONTROL
Robert M. Siewert, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed July 5, 1974, Ser. No. 485,940
Int. Cl. F02b *75/20*
U.S. Cl. 123—59 EC **4 Claims**

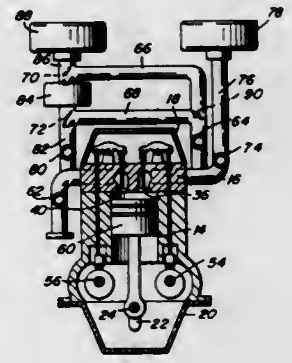


1. A staged combustion engine including means defining first and second stage expansible combustion chambers each having an inlet port and an exhaust port,

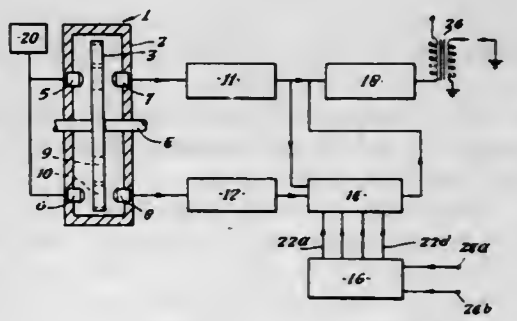
- means connected with an output shaft to cyclically expand and contract said chambers and control said ports whereby to cause consecutive admission and combustion of combustible mixtures therein and subsequent exhaust of burned mixtures from said chambers, with a resultant delivery of power to said output shaft,
- an inlet conduit connected with said first stage inlet port for supplying a rich combustible air-fuel mixture to said first stage combustion chamber,
- an interstage conduit connecting the exhaust port of ssaid first stage chamber to the inlet port of said second stage chamber, said interstage conduit including a first gas flow path containing a heat exchanger and a second gas flow path connected in parallel with said first flow path and bypassing said heat exchanger,
- valve means in said interstage conduit and movable between a first position blocking said first flow path and a second position blocking said second flow path to proportion the flow of interstage gas through and around said heat exchanger, and
- automatic control means connected with said valve means and responsive to at least one variable condition of engine operation to regulate the position of said valve means so as to control the flow of gases through and around said heat exchanger and thereby the temperature of the interstage gases supplied to said second stage combustion chamber in a predetermined manner with respect to said at least one engine operating condition.

3,896,775
SUPERCHARGED SIX-STROKE CYCLE COMBUSTION ENGINE
Raymond C. Melby, Box 395, Hinsdale, Mont. 59241
Filed Aug. 21, 1974, Ser. No. 499,350
Int. Cl.² F02B *75/02*
U.S. Cl. 123—64 **8 Claims**

1. In combination with an engine including a cylinder, a piston reciprocal in said cylinder, primary induction passage means including charge forming means operative to admit measured quantities of liquid fuel with air inducted through said primary induction passage means, primary exhaust passage means, secondary air induction passage means and secondary exhaust passage means, said engine further including means operative to (1) seal said cylinder from all of said passage means during a first stroke of said engine, (2) communicate said cylinder with said primary exhaust passage means during the second stroke of said piston, (3) communicate said cylinder with said secondary induction passage means during the third stroke of said piston, (4) communicate said cylinder with said secondary exhaust passage means during the fourth stroke of said piston, (5) communicate said cylinder with said primary induction passage means during the fifth stroke of said piston and (6) seal said cylinder from all of said passage means during the sixth stroke of said pistoh, said secondary exhaust passage means including jet-type outlet means therefor opening into said primary induction passage means in a downstream direction.



3,896,776
IGNITION TIMING FOR INTERNAL COMBUSTION ENGINES
Eric Harold Ford, London, England, assignor to Lumenition Limited, London, England
Filed June 11, 1973, Ser. No. 368,622
Claims priority, application United Kingdom, Apr. 6, 1973, 16680/73
Int. Cl.² F02P *5/04*
U.S. Cl. 123—117 R **12 Claims**



1. An electronic ignition system for an internal combustion engine including means for initiating a spark at a crank-shaft angle whose position between two given limits is determined at any instant in accordance with engine requirements and means for extinguishing the spark at the spark plug at a predetermined crank-shaft angle irrespective of the crank-shaft angle at which the spark is initiated.

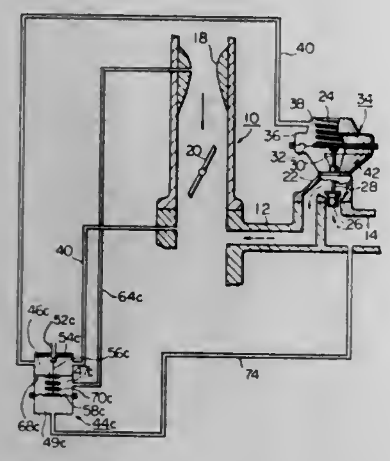
3,896,777
EXHAUST GAS RECIRCULATION CONTROL DEVICE
Kenji Masaki, and Shuya Nambu, both of Yokohama, Japan, assignors to Nissan Motor Company Limited, Yokohama, Japan

Filed Aug. 27, 1973, Ser. No. 391,533

Claims priority, application Japan, Aug. 31, 1972, 47-86711

Int. Cl. F02m *25/06*

U.S. Cl. 123—119 A **1 Claim**



1. In an exhaust gas recirculation system having a recirculation conduit to recirculate a portion of exhaust gases from the exhaust system of an internal combustion engine to the intake system thereof having a carburetor, a vacuum actuated exhaust gas flow metering valve normally closing the recirculation conduit; a diaphragm device operatively connected to the metering valve and a vacuum conduit connecting the spring loaded side of said diaphragm device to the intake manifold for actuation of the diaphragm device by the intake manifold vacuum to operate the metering valve, a modulating device comprising a casing interposed in and having a chamber forming part of said vacuum conduit, said chamber having an air bleed port opening to the atmosphere; an air bleed valve for closing said air bleed port; a spring loaded diaphragm having its spring loaded side connected to the venturi of the carburetor and the opposite side connected to the exhaust system, said spring loaded diaphragm being operatively connected to said air bleed valve such that said air bleed valve is urged toward such air bleed port to decrease air flow through said air bleed port as the magnitude of the venturi vacuum increases.

3,896,778
APPARATUS IN A COMBUSTION ENGINE INCLUDING A DEVICE FOR CONTINUALLY MEASURING AND INDIVIDUALLY DISTRIBUTING TO A PLURALITY OF FUEL INJECTION VALVES THE AMOUNTS OF FUEL APPROPRIATE TO THE AMOUNTS OF COMBUSTION AIR
Johannes Zeyns, Krauler Elbdeich, Pappelhof, 2 Hamburg-Kirchwerder-4, and Heinz Enneking, Hegholt 32, 2 Hamburg 71, both of Germany

Filed May 11, 1973, Ser. No. 359,445

Claims priority, application Germany, May 15, 1972, 2223593

Int. Cl. F02m *39/00*

U.S. Cl. 123—139 AW **31 Claims**

1. In combustion engines having a plurality of working cylinders, an air intake channel and a plurality of injection valves associated therewith, an apparatus comprising:

a. a device arranged in the air intake channel to be exposed to the flow of combustion air for continually measuring the amounts of combustion air drawn in and for continually measuring and individually distributing to the plurality of injection valves the amounts of fuel appropriate to the amounts of combustion air;

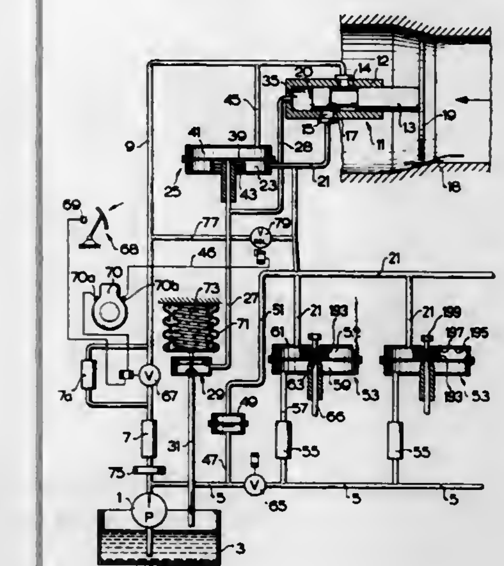
b. a fuel tank;

c. a fuel control pipe connected between said fuel tank and said device, said fuel control pipe having an opening, the flow cross section of said opening being altered by said device proportionally to the amount of air flowing in the air intake channel;

d. a fuel pump for delivering fuel through said fuel control pipe to said device;

e. an amplifying resistance connected within the flow path defined by said fuel control pipe with a control pressure being built up in said fuel control pipe downstream of said amplifying resistance by the alteration of said opening, thus bringing about a controlled flow of fuel to said device;

f. a differential pressure regulator connected to said fuel control pipe, said device and said fuel tank;



a plurality of parallel-connected metering regulators each including a membrane and an adjustable additional force-exerting member on one side of said membrane, said metering regulators being connected to said device and said fuel control pipe, wherein a reduced control pressure is abstracted downstream of said opening which acts as a common force on one side of each of said membranes, said reduced control pressure being supplemented by said forceexerting members; and

h. a plurality of metering resistances, one for each of said metering regulators, each said metering resistance being connected to its respective metering regulator to the other side of the membrane of that metering regulator and to said fuel control pipe, said other side of each metering regulator being subjected to pressure by fuel which is fed thereto by said fuel pump and through a respective metering resistance, said fuel passing from this side of said membranes downstream of the metering regulators for injection.

3,896,779
FUEL INJECTION PUMP FOR AN INTERNAL COMBUSTION ENGINE
Norio Omori, Kariya, and Katsuhiko Oiwa, Handa, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 20, 1973, Ser. No. 342,983

Claims priority, application Japan, Mar. 30, 1972, 47-32021

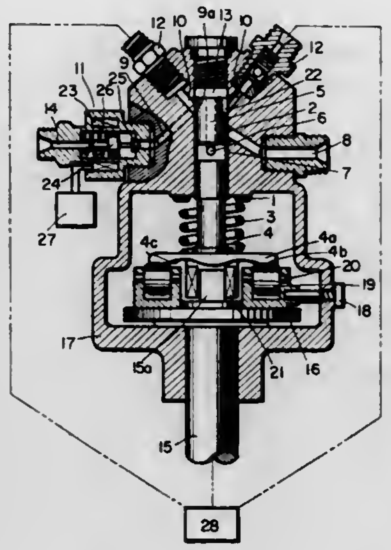
Int. Cl. F02m *63/02*

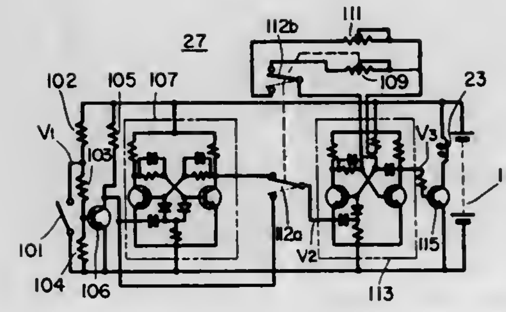
U.S. Cl. 123—139 E **2 Claims**

1. A fuel injection pump for an internal combustion engine having a cylinder provided with a suction passage and a suction port, a piston rotatably and reciprocally received in the cylinder, a compression chamber enclosed by the cylinder and the piston, and the suction port being open during the suction stroke to the compression chamber and being closed during the compression and injection stroke of the piston, the improvement comprising:

an electromagnetic valve installed in said suction passage leading to the suction port for controlling the fuel supply into the compression chamber, and

a controller connected to said valve for controlling said valve to open during idling operation of the engine at a lower frequency than that in ordinary operation and for a longer period of time to supply enough fuel to keep the temperature of the combustion chamber high to thereby decrease the stimulus odor of the exhaust gas, said controller including means for generating a signal corresponding to a suitable fuel injection time for each cylinder of the engine in accordance with the engine revolution, a flip-flop circuit connected to said signal generating means for dividing the frequency of said generated signal by one-half, a monostable multivibrator connected to said valve for controlling the energization of said valve, a variable resistor connected to said multivibrator for varying the output pulse width of said multivibrator in accordance with the position of the accelerator, a second variable resistor connected to said multivibrator for varying the output pulse width of said multivibrator by manual operation, a switch for connecting said generating means to said multivibrator directly in ordinary operation of the engine and through said flip-flop circuit in idling operation thereof, and a second switch for connecting said multivibrator to said variable resistor in ordinary operation of the engine and to said second variable resistor in idling operation of the engine.





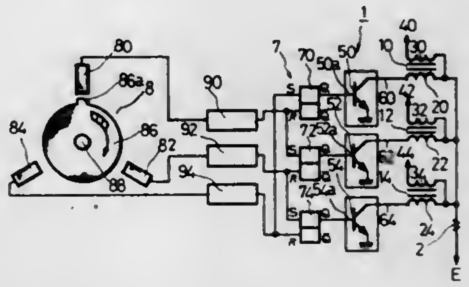
3,896,780
BREAKERLESS IGNITION SYSTEM FOR A MULTICYLINDER INTERNAL COMBUSTION ENGINE
Tetsuya Kondo, Numazu, Japan, assignor to Kokusan Denki Co., Ltd., Numazu, Japan

Filed Apr. 3, 1974, Ser. No. 457,600

Claims priority, application Japan, Apr. 5, 1973, 48-40536[U]

Int. Cl.^{2} F02P *3/02*

U.S. Cl. 123—148 E **4 Claims**



1. A breakless ignition system for a multicylinder internal combustion engine comprising a plurality of ignition circuits each including an ignition coil and solid state switching means to control said ignition coil so as to allow a primary current to flow through said ignition coil and to cut off said primary current so that a high voltage is established across said ignition coil and a control circuit to control each of said solid state switching means of said ignition circuits, said control circuit associated with a signal generator rotating in time with a multicylinder internal combustion engine for generating signals to operate said control circuit, the improvement wherein said control circuit comprises a corresponding number of flip-flop circuits to that of said ignition circuits, said flip-flop circuits each having one of the output terminals connected to the control terminal of the corresponding solid state switching means so that it interrupts said solid state switching means with one of the adjacent flip-flop circuits signaling the other flip-flop circuit to cause conduction of the corresponding solid state switching means with said other flip-flop circuit when said one flip-flop circuit interrupts the corresponding solid state switching means, said signal generator including a corresponding number of signal coils to that of said ignition circuits, which control said flip-flop circuits.

3,896,781
DUAL ROTARY VALVED INTERNAL COMBUSTION ENGINE
George O. Smith, Ferndale, Mich., assignor to General Motors Corporation, Detroit, Mich.

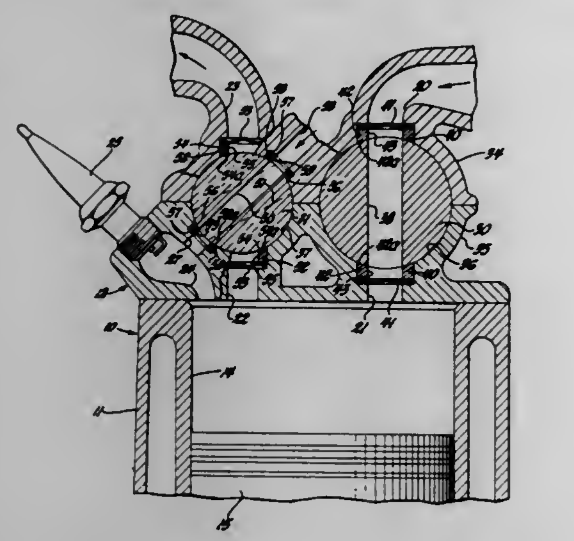
Filed July 10, 1974, Ser. No. 487,139

Int. Cl. F01l *7/00*

U.S. Cl. 123—190 BD **4 Claims**

1. In an internal combustion engine, a housing means having at least one cylinder arrangement therein comrpising a combustion chamber and a pre-combustion chamber in communication with said combustion chamber, said housing means having a first fuel and air supply passage means extending to said combustion chamber, a second fuel and air supply passage means extending to said pre-combustion chamber, and an exhaust passage means extending to said combustion chamber, a first valve shaft rotatably journalled in said housing in position to intersect said first fuel supply passage means whereby to control the flow of fluid therethrough and having at least one radial extending passage therethrough axially positioned therein for alignment with said first fuel supply passage means, a second valve shaft rotatively journalled in said housing means in position to intersect said second fuel supply passage means and said exhaust passage means, said second shaft having a radially extending first passage therethrough and a radially extending second passage therethrough axially spaced from said first radially extending passage, said

first passage being positioned for alignment with said second fuel supply passage means and said second passage being positioned for alignment with said exhaust passage means and,



drive means operatively connected to said first valve shaft and to said second valve shaft to effect synchronous rotation of said first valve shaft relative to said second valve shaft in timed relation to the operation of said engine.

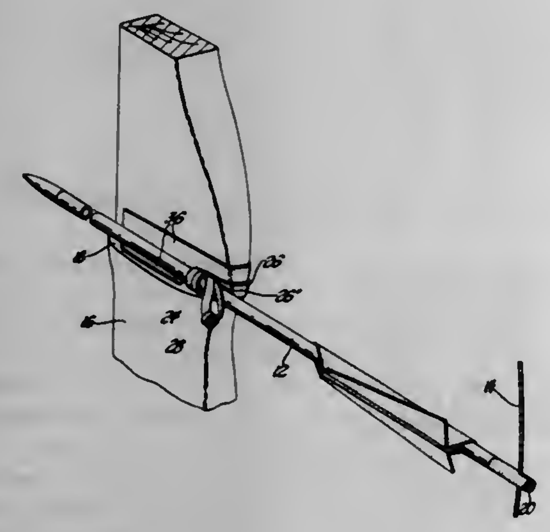
3,896,782
ARROW HOLDER

Richard F. Carella, 35572 Strathcona, Mt. Clemens, Mich. 48043

Filed Oct. 30, 1973, Ser. No. 411,045

Int. Cl. F41b *5/00*

U.S. Cl. 124—41 A **13 Claims**



1. An archery assembly for holding an arrow in a nocked position on a bowstring of a bow and comprising; support means for gripping an arrow and adapted for attachment to a bow, said support means including arrow gripping means having an exposed elastic surfact strip stretched while being wrapped around an arrow in overlapping convolutions engaging itself as an arrow is in a nocked position and to grip an arrow in the overlapping convolutions as an arrow is allowed to move forward and to release an arrow upon rearward longitudinal movement of an arrow, said support means further including means connected to said arrow gripping means and adapted to be secured to the handle area of a bow.

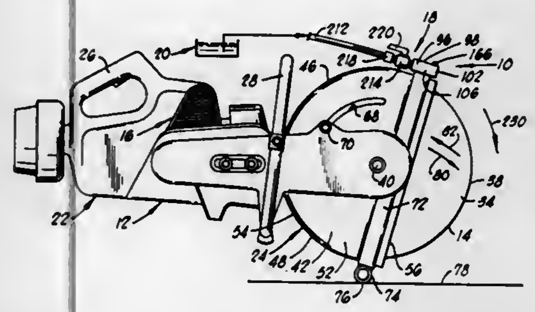
3,896,783
CUTTING APPARATUS FOR CUTTING CONCRETE MATERIAL AND THE LIKE

Artie L. Manning, 3740 N.W. 26, Oklahoma City, Okla.

Filed May 23, 1973, Ser. No. 362,892

Int. Cl. B28d *1/04*

U.S. Cl. 125—13 R **10 Claims**



1. A cutting appratus, having a portion for applying a fluid from a fluid source in one position, comprising:

- frame means;
- a cutting blade supportedly connected to the frame means; drive means connected to the cutting blade drivingly moving the cutting blade in an on position thereof;
- a support head connected to the frame means, having a fluid port formed through portion thereof, the fluid port including a channel formed through a portion of the support head and a tube opening formed through a portion of the support head extending at an angle to the channel, one end of the tube opening intersecting the support head forming a fastener inlet and the opposite end of the tube opening intersecting another portion of the support head forming a tube outlet and the channel intersecting and fluidically communicating with the tube opening, a stop surface being formed in the support head and positioned within a portion of the tube opening;
- a hollow tube removably disposed and supported within a portion of the tube opening in the support head having an extended portion extending a distance from the support head and disposed near the cutting blade in an assembled position of the tube, a fluid opening formed through a portion of the extended portion of the tube intersecting and fluidically communicating with the hollow portion of the tube and the hollow portion of the tube fluidically communicating with the fluid port in an assembled position of the tube in the support head, a tube stop surface and an engaging surface being formed on a portion of the tube, the tube stop surface engaging the stop surface formed in the support head limiting the movement of the tube in one direction in the tube opening;
- means removably connected to a portion of the support head having a portion engaging a portion of the tube limiting the movement of the tube in a directions, opposite the direction limited via the stop surface in the support head and securing the tube in an assembled position in the support head, said means comprising:
- a plug removably disposed through the fastener inlet in the support head having a stop surface formed on a portion thereof and a plug opening formed therein, the stop surface formed on the plug engaging the engaging surface of the tube and securing the tube in an assembled position, the plug opening fluidically communicating with the hollow portion of the tube and fluidically communicating with the channel in the support head for providing fluidic communication between the channel in the support head and the hollow portion of the tube via the plug opening in an assembled position; and
- means connecting the support head and the fluid source establishing fluidic communication between the fluid source and the channel, the fluid source being in fluidic communication with the fluid opening in the tube via the fluid port in one position, the fluid from the fluid source being applied to the cutting blade via the fluid opening.

3,896,784
CAMPING STOVE

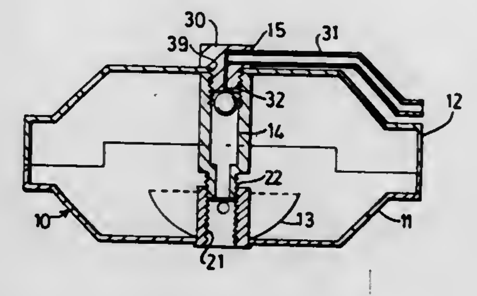
Allan Baxter, Bromley, England, assignor to Allanter Instruments Limited, Bromley, England

Filed Aug. 14, 1973, Ser. No. 388,166

Claims priority, application United Kingdom, Aug. 23, 1972, 39162/72; Sept. 21, 1972, 43663/72; Dec. 19, 1972, 58530/72

Int. Cl. F24c *5/20*

U.S. Cl. 126—38 **13 Claims**



1. A camping stove comprising, in combination:

- a. a pan support;
- b. a base member having an aperture;
- c. a burner unit attached to said pan support;
- d. an air/gas mixture tube;
- e. a gas jet fitment extending through said base member aperture;
- f. first co-operating connection means on said air/gas mixture tube and said gas jet fitment clamping said base member between said air/gas mixture tube and gas jet fitment and enabling said mixture tube and said gas jet fitment to be connected together; and
- g. second co-operating connection means on said air/gas mixture tube and said burner unit enabling said mixture tube and said burner unit to be connected together in alternatively arrangeable conditions of said stove parts in which in an assembled condition, said burner unit and said pan support are mounted by said air/gas mixture tube on said base member for supporting and heating an article to be heated, and, in a demounted condition said pan support and said base member together form a closed casing for containing and protecting from damage said gas jet fitment, said air/gas mixture tube and said burner unit, said first and second co-operating connection means enabling said gas jet fitment, said mixture tube and said burner unit to be interconnected with each other and the casing when the stove is demounted to prevent said gas jet fitment and said mixture tube from being displaceable from within the casing.

3,896,785
FIREPLACE HEATING CHANNEL

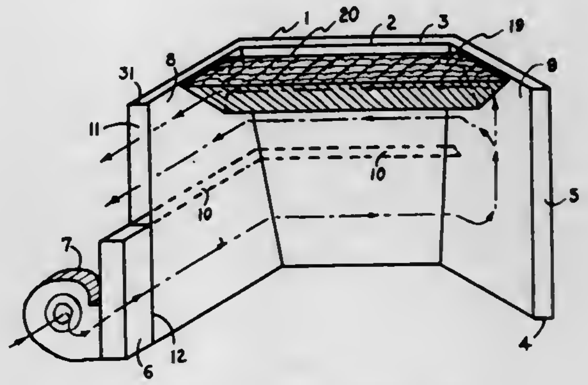
Clifford H. Nelson, 9 Merry Point Ter., Newport News, Va. 23606

Filed Jan. 21, 1974, Ser. No. 434,978

Int. Cl. F24b *7/00*

U.S. Cl. 126—121 **7 Claims**

1. A free standing fireplace heating channel comprising a hollow metal air conveying channel in combination with a flame guide vane, insertible into an existing conventional fireplace without requiring modification to the fireplace structure, said channel having a center panel and at least one forward facing channel arm adapted to fit against multiple inside walls of a fireplace, said air channel having adjoining walls exposed to the heat from the fire with corresponding rear walls spaced therefrom and connected by spacer means so as to form a suitable air channel for conveying room air to be heated by the fire, means for forcing room air into a lower portion of said forward facing channel arm by a single blower, and baffle means to direct the forced circulating room air to make multiple horizontal passes through said channel prior to exiting back into a room from an upper portion of a forward facing channel arm as useful heating air, said guide vane being attached to an upper inside portion of said forward facing arm of said air channel and extending horizontally to a symmetrical position on an opposite side, said hollow metal guide vane having a triangular cross section with the base horizontal and the apex pointing downward toward the fire and positioned forward of the center panel of the air channel so as to form an upward converging passageway for the hot fire gases, said passageway being formed by the upper portion of a near vertical surface of the center panel and the opposing rearward slanting surface of the guide vane wherein the width of the horizontal base of the guide vane is constructed wide enough to almost block the remainder of the fireplace throat leaving only a small gap between the forward facing edge of the vane and the inside front surface of the fireplace throat, and insulation means for reducing heat losses from the horizontal base of said vane.



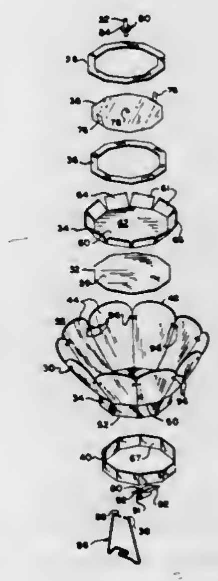
3,896,786
SOLAR STOVE

Merton L. Clevett, Englewood, Calif., assignor to Solar Products Corporation, Denver, Colo.

Filed May 29, 1973, Ser. No. 364,366

Int. Cl. F24j *3/02*

U.S. Cl. 126—270 **9 Claims**



1. A solar stove apparatus comprising in combination:

- a plurality of identical solar-reflective panel means, each of said panel means being generally in the form of a concave petaloid,
- a base assembly having an open topped box-like oven portion, said solar-reflective panel means including common inner portions adapted to be seated in said base assembly and outer portions pivotally attached to the oven portion

for movement between a folded position overlying the top of the oven portion in stacked relationship with each other and an unfolded position in which said panel means radiate outwardly from the open top of the oven portion each petaloid being concave in the direction of radiation away from said open top,

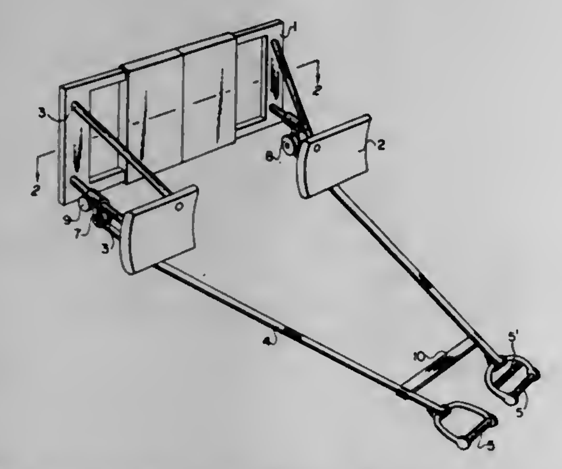
a retention band of non conductive material defining a ring tightly fitting and conforming to the outside of the inner portions of the said reflective panel means,

attachment means releasably attaching the said solar-reflecting panel means in edge-to-edge relationship to one another in the unfolded position,

a transparent window element removably covering the open top of the oven portion to selectively enclose the oven portion, said panel means in the unfolded position being adapted to reflect solar radiation through the window element and into the oven portion of the apparatus, and support means operative to support said base assembly such that said base assembly can be selectively positioned and retained in a desired directional orientation with respect to the sun.

3,896,787
THERAPEUTIC APPARATUS

Ronald L. Withers, 6710 Harwood Pl., Springfield, Va. 22152
Filed Dec. 18, 1973, Ser. No. 425,929
Int. Cl. A61b *19/00*
U.S. Cl. 128—1 R **9 Claims**

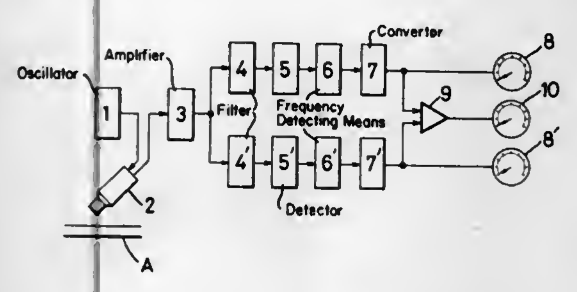


1. An apparatus for therapeutically assisting the conjugal relationship between a man and woman which comprises a supporting framework and shoulder stops, structural means connected to said supporting framework and said shoulder stops for extending the shoulder stops a distance from the supporting framework, straps extending from said structural means, said straps being provided with foot-engageable stirrups, adjusting means associated with said structural means for changing the length of the straps, said adjusting means comprising spool means which are adapted to receive or discharge the straps and hand-operated knob means operatively associated with the spool means for winding the straps thereon or unwinding the straps therefrom.

3,896,788
DOPPLER EFFECT BLOOD FLOW METER

Yutaka Sato, Nara, Japan, assignor to Hitachi Medical Corporation, Tokyo, Japan
Filed Dec. 28, 1973, Ser. No. 429,293
Claims priority, application Japan, Jan. 22, 1973, 48-10671
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 F **5 Claims**

1. An improved Doppler effect blood flow meter for determining velocity and blood flow direction comprising a high frequency oscillator which generates a high frequency signal, a probe means coupled to said high frequency oscillator for transmitting the high frequency signal toward blood vessels and for receiving said high frequency signal after reflection thereof by blood corpuscles, said received signal being Doppler shifted in frequency, two filter means operatively coupled in parallel to said probe means, said filter means having sharp filtering characteristics capable, respectively, of dividing the high frequency waves reflected from blood corpuscles into frequency ranges above and below the frequency of said transmitted signal, indicative of blood flow toward and away from said probe means, means operatively coupled to each said filter means for producing an output wave indicative of the frequency of the received signal, and output means coupled to said output wave producing means for indicating the velocity and direction of blood flow.



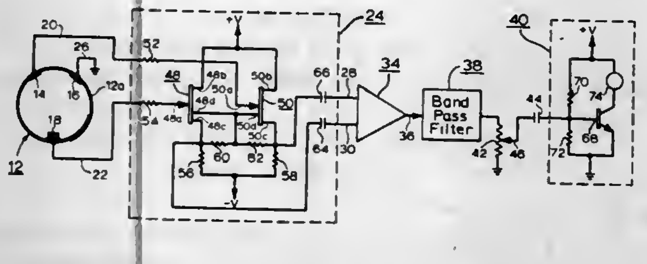
3,896,789
RETINOIC ACID DIPENSING PRESSURE SENSITIVE DERMOTOLOGICAL TAPE

Ronald J. Trancik, White Bear Lake, Minn., assignor to Riker Laboratories, Inc., Northridge, Calif.
Filed June 10, 1974, Ser. No. 477,689
Int. Cl. C09j *7/02;* **A61f** *7/02*
U.S. Cl. 128—2 R **8 Claims**

1. A pressure-sensitive adhesive tape defining a means for applying a dermatological substance comprising a backing member with a layer of pressure-sensitive adhesive attached thereto, and a pharmacentically effective and stable concentration of retinoic acid and retinoic acid stabilizer homogeneously contained in said pressure-sensitive adhesive layer, said adhesive being dermatologically compatable and being compatable and substantially non-reactive to said retinoic acid and retinoic acid stabilizer.

3,896,790
ALPHA BRAIN WAVE SENSOR

Ned Dikmen, Chicago, Ill., assignor to Neuronics, Incorporated, Chicago, Ill.
Filed May 1, 1972, Ser. No. 249,166
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.1 B **1 Claim**



1. An alpha brain wave sensor including an electrode system and adapted to be operative independently of an electrode cream for developing an audible reproduction of alpha frequency brain waves from a human subject, comprising:

electrode means for effecting electrical contact with a human subject independently of an electrode cream including a reference electrode adapted for positioning in direct contact with the forehead of said subject, a signal electrode comprising an electrically conductive, non-apertured electrode base plate means and a plurality of electrically conductive rod members on the order of one-half inch in length disposed in spaced parallel relation and each having one blunt end portion adapted for extending through the hair of said subject to effect electrical non-penetrating contact with the scalp in the region above the occipital lobes and an opposite end portion affixed to said electrode base and a ground electrode adapted to be coupled to said subject, said reference and ground electrodes comprising planar metal discs,

said base plate means, comprising a rigid, non-apertured, planar metal disc fixedly secured to said opposite end portion of each of said rod members with said rod members for electrically interconnecting and for physically supporting said rod members in a predetermined spaced relation relative to one another to permit free hair flow intermediate the prongs,

signal amplifying means comprising a pair of impedance matched field effect type transistors having individual inputs coupled to said reference and signal electrodes by respective electrical signal conductors, with each of said transistors having an input impedance substantially greater than the surface contact resistance between said reference and signal electrodes and said subject and further having individual outputs, and a differential type transistor amplifier coupled to said individual outputs for developing an amplified difference of said signal outputs of said field effect transistors;

band pass filter means included within said amplifying means for attenuating signals outside of the eight to thirteen cycle per second alpha frequency range;

sound developing means coupled to said amplifying means for converting the alpha frequency signals developed by said amplifying means and said band pass filter means into audible sounds, said sound developing means comprising an oscillator having a natural oscillation frequency within the lower portion of the audible range,

said amplifying means being coupled to said sound developing means through a potentiometer for permitting manual adjustment of the threshold sensitivity level of said sound developing means,

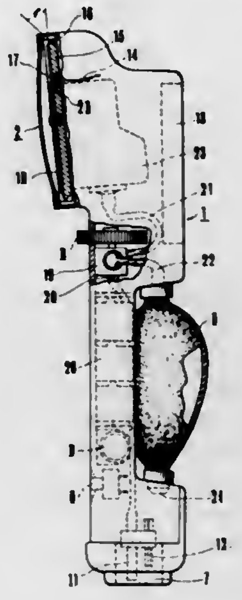
said electrode means including a support band for fitting about the head of said subject and carrying said reference and ground electrodes thereon in spaced relation for contact with the forehead of said subject and further carrying said signal electrode, spaced relative to reference and ground electrodes, for contact with the scalp in the region above the occipital lobes,

said support band having aperture means therein, said reference electrode, ground electrode and signal electrode having conductor means associated therewith and extending in said aperture means in said support band.

3,896,791
ELECTRONIC BLOOD PRESSURE METERS

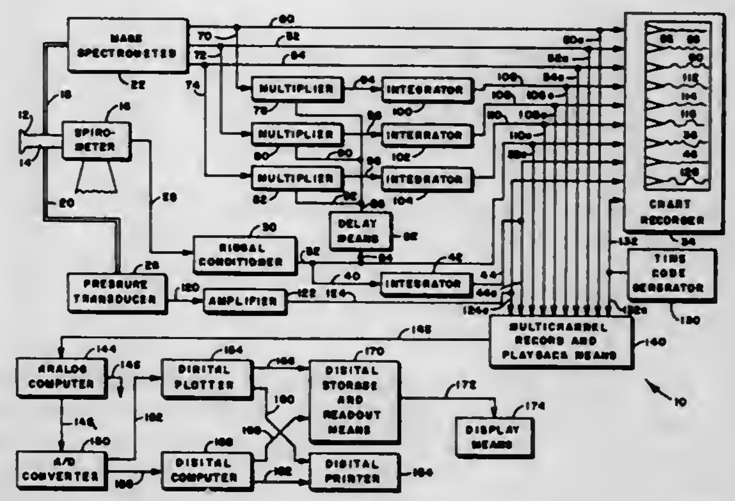
Kazuaki Ono, Tokyo, Japan, assignor to Seiwa Me Laboratories, Inc., Osaka, Japan
Filed Nov. 21, 1973, Ser. No. 417,962
Claims priority, application Japan, Nov. 27, 1972, 47-135393; Apr. 24, 1973, 48-49090
Int. Cl. A61b *5/02*
U.S. Cl. 2.05 G **10 Claims**

1. In a portable hand held electronic blood pressure meter of the class wherein air is admitted into an inflatable bag of an arm band from an air bulb and the blood pressure measured with the assistance of a microphone carried by the arm band and displayed by a blood pressure meter, the improvement which comprises an elongated hollow casing capable of being held in the hand of a human being, a blood pressure meter having a calibrated scale mounted on one end of said casing, an air pressurizing bulb connected to said blood pressure meter secured on one side of said casing and capable of being hand actuated by a holder of the casing, an arm band including an inflatable bag and a microphone secured to said inflatable bag, a connecting pipe including an integral air supply pipe interconnecting said air bulb and said inflatable bag, electric circuit means for amplifying electric signals produced by said microphone, light means for lighting the calibrated scale of said blood pressure meter and energized by said electric circuit means, and an electric cable interconnecting said microphone and said electric circuit means, said electric circuit means synchronously illuminating the calibrated scale of said blood pressure meter instantaneously with the occurrence of the blood pulses being measured.



3,896,792
REAL-TIME CYCLIC PULMONARY FUNCTION TEST SYSTEM

Edwin G. Vail, Lynn Haven; Maxwell W. Lippitt, Jr., Panama City, and Phillip D. Seymour, Lynn Haven, all of Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed May 15, 1974, Ser. No. 470,255
Int. Cl. A61b *5/08*
U.S. Cl. 128—2.07 **3 Claims**



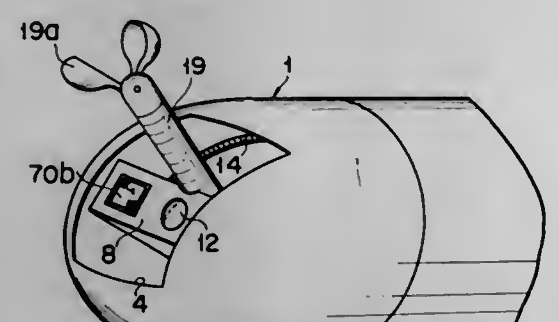
1. A pulmonary function testing system comprising in combination:

valveless conduit means adapted to conduct respiratory gases to and from a subject during pulmonary maneuvers; valveless spirometer means, connected to said conduit means, for generating first analog signals representative of flow rates of said respiratory gases;

mass spectrometer means, connected to said conduit means, for generating second analog signals representative of partial pressures of constituents of said respiratory gases, said second analog signals being characterized by being out of phase in time a predetermined amount relative to corresponding occurrences of flow rate fluctuations in said respiratory gases;

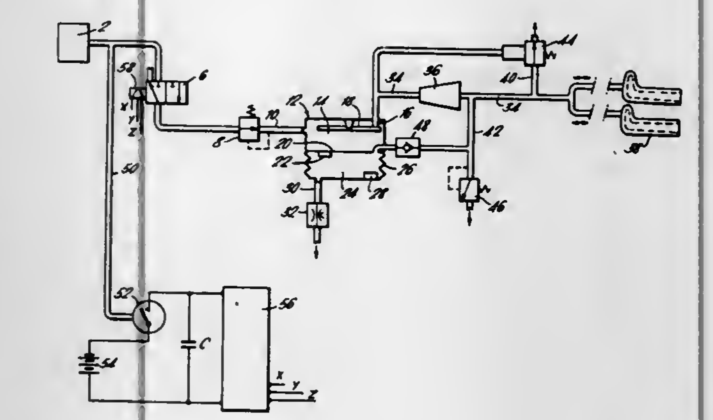
- pressure transducer means, connected to said conduit means, for generating third analog signals representative of oral pressures in said respiratory gases;
- time delay means, connected to receive said first analog signals, for providing delayed first analog signals that are retarded in time by said predetermined amount;
- multiplier means, connected to said mass spectrometer means and to said delay means, for providing fourth analog signals as products of said delayed first analog signals and said second analog signals and representative of volumes of said respiratory gas constituents per breath; and
- multiple channel chart recorder means, coupled to said spirometer means, to said mass spectrometer means, to said pressure transducer means and to said multiplier means, for concurrently providing individual graphic traces of said first, second, third, and fourth analog signals with reference to time, whereby the simultaneous effects of physiological events on said flow rates, said oral pressures, said partial pressures, and said volumes of said respiratory gases are depicted in substantially real time and with time parity existing between traces of said flow rate fluctuations and of said partial pressures of constituents of said respiratory gases.

3,896,793
ENDOSCOPE WITH VIEW FIELD ALTERING MEANS
Kazuhiko Mitsui, and Katsuyuki Kanehira, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Filed June 17, 1974, Ser. No. 479,992
Claims priority, application Japan, June 19, 1973, 48-69007; June 19, 1973, 48-69008
Int. Cl.² A61B *1/06*
U.S. Cl. 128—6 **7 Claims**



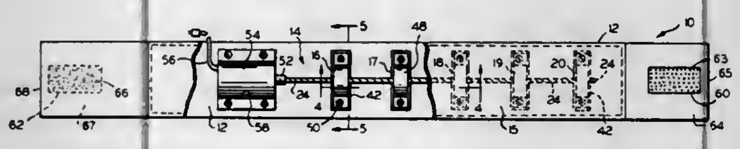
1. In an endoscope having a distal end section formed with a window opening, a flexible tube section having one end connected to said distal end section in order to insert and guide the end section into the body cavity of a human being, and a control unit connected to the other end of the flexible tube section, said endoscope comprising a flexible fiber bundle disposed lengthwise within the distal end section and the flexible tube section in a manner extending thereover and having a forward end portion extended up to the window opening of the distal end section and an end plane formed in said forward end portion for allowing light to pass therethrough, said end plane being directed to a view field of the body cavity through the window opening; a movable member mounted onto the forward end portion of said fiber bundle; and movable member actuating means having one end connected to said movable member for moving the movable member within the distal end section upon operation thereof at the control unit thereby to direct the end plane of the forward end portion of the fiber bundle to a different view field of the body cavity.

3,896,794
VENOUS FLOW STIMULATOR
John Alan McGrath, Harlow, England, assignor to The British Oxygen Company Limited, London, England
Filed Dec. 14, 1973, Ser. No. 424,813
Int. Cl. A61h *1/00*
U.S. Cl. 128—24 R **12 Claims**



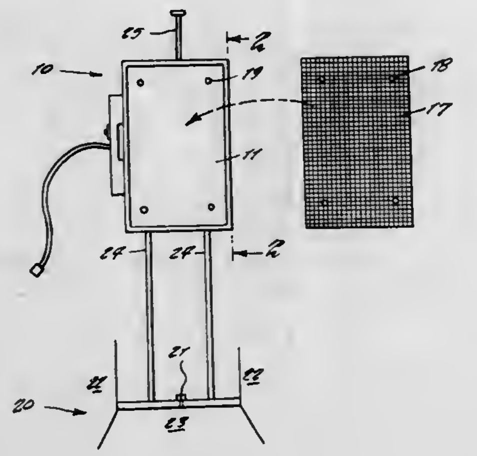
1. An apparatus useable in conjunction with a source or pressurized gas for stimulating venous blood flow in the legs of patients undergoing surgery, said apparatus including at least one double-walled pneumatic boot positioned on and completely enclosing a patient's leg and foot; said boot having an operating space defined between the walls thereof; a supply valve operative to control the supply of gas at a suitable pressure from a pressurized source to the operating space; means responsive to the gas pressure in the operating space for closing the supply valve when the pressure reaches a chosen maximum valve; a timer means adapted to produce a series of successive set and reset pulses, and an inlet valve means, controlled by the timer, for supplying gas to the supply valve upon receipt of a set pulse, and for discontinuing the supply of gas upon receipt of a reset pulse.

3,896,795
VIBRATOR BELT
Nariman Solhkhah, 2320 W. Pratt Ave., Chicago, Ill. 60645
Filed Feb. 21, 1974, Ser. No. 444,520
Int. Cl. A61h *1/00*
U.S. Cl. 128—32 **15 Claims**



1. A vibrator belt comprising:
- a belt for positioning around a part of the body;
- a plurality of spaced apart movable means secured to the belt;
- means for securing each of the movable means at a fixed location on the belt; and
- a shaft associated with said movable means whereby the revolving of said shaft causes movement of said movable means.

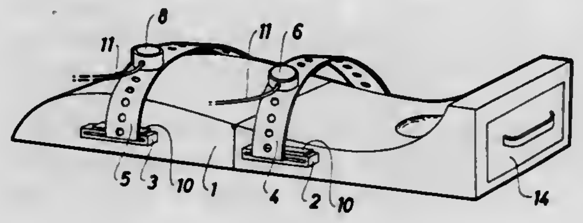
3,896,796
BACK VIBRATOR AND WASHER
Daniel W. Soderblom, 205 N. Locke, Farmington, N. Mex. 87401
Filed July 26, 1973, Ser. No. 382,665
Int. Cl. A61h *1/00*
U.S. Cl. 128—36 **4 Claims**



1. In a back vibrator and washer, the combination of a base panel, a pad upon the front side of said base panel, and said base panel incorporating a plurality of vibrator motors for developing a vibrating motion;

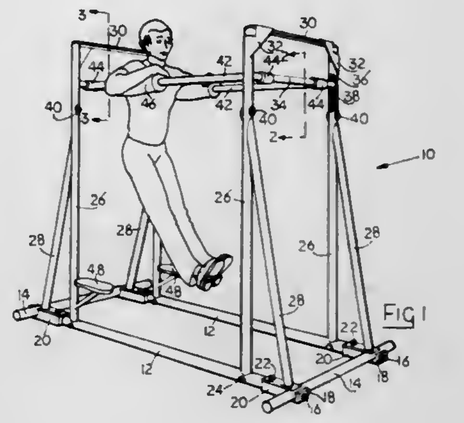
Said base panel having a plurality of openings extending from a side edge thereof, each one of said openings extending into a center of said base panel, and each one of said openings receiving a vibrator motor, said vibrator motor being connected by a water-proof wiring to a switch and an electric source.

3,896,797
APPARATUS FOR MECHANICAL STIMULATION OF THE HEART
Ionel Bucur, Lund, Sweden, assignor to Bengt O. Petersson, Hisings Backa, Sweden
Filed Apr. 8, 1974, Ser. No. 458,789
Claims priority, application Sweden, Apr. 10, 1973, 7305030
Int. Cl.² A61H *7/00*
U.S. Cl. 128—53 **6 Claims**



1. Apparatus for mechanical stimulating of the heart comprising a girdle provided to be stretched over the chest of a human body and carrying power means arranged to mechanically treat said chest in a rhythmical sequence thereby stimulating the heart in said body, which apparatus comprises a further girdle provided to be stretched over the body in the level of the abdomen and provided with means arranged to be extended thereby exerting a thrust against the abdomen intended to cause a compression of aorta abdominalis of the body.

3,896,798
THERAPEUTIC TRACTION APPARATUS
Peter J. Simon, 1065 Talbot St. North, London, Ontario, Canada
Filed June 11, 1973, Ser. No. 368,759
Int. Cl. A61h *1/02*
U.S. Cl. 128—75 **2 Claims**



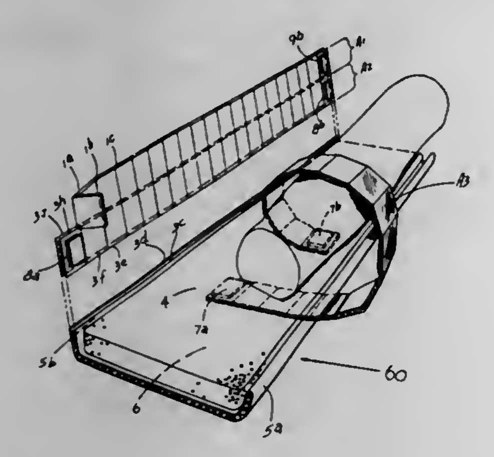
1. Apparatus to provide traction to the spine of the body of a user comprising a first and second pair of spaced apart upwardly extending members secured in fixed relationship, first spring means individual to said first pair, second spring means individual to said second pair, a pair of horizontally disposed spaced apart bars, at least one bolster means providing a padding to each horizontal bar intermediate of its length, each horizontal bar being supported at a corresponding one end by one of said first spring means with the other end supported by one of said second spring means at a height whereby the feet of the body of a user will clear the ground when the body of a user is supported by the user's arms located on said bolster means, the ratio of the strength of the said first spring means to the strength of said second spring means increasing with the distance of said bolster means from said second spring means.

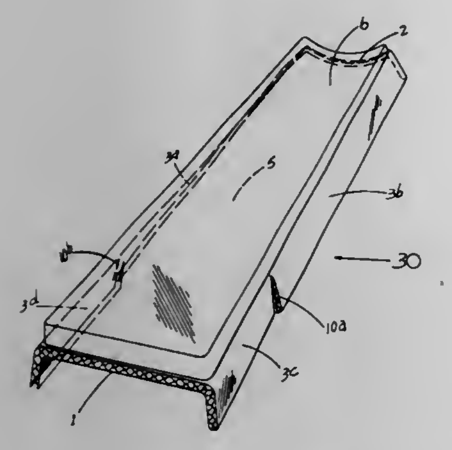
3,896,799
ARM BOARD
Wayne C. Seeley, 238 Pleasant Acres Rd., York, Pa. 17402
Filed June 10, 1974, Ser. No. 477,635
Int. Cl. A61f *5/04*
U.S. Cl. 128—87 R **8 Claims**

1. An arm board having an arm supporting surface; a cushion affixed to said supporting surface; and depending flexible side walls extending away from said arm supporting surface, said side walls each comprising at least a front section and a rear section separated by a substantially vertical slot, a portion of said side walls being capable of outward movement whereby the front and rear sections of each wall may move different distances laterally.

4. A device for supporting an arm or other limb comprising:
- a. a main body portion having opposing side walls;
- b. one of said side walls being a one-piece integrally formed extension and having a detachable section comprising detachable strap means including cooperating fastening

means thereon; said detachable strap means being detachable and sufficiently flexible to be wrapped around the arm or limb to secure the same to the main body portion.





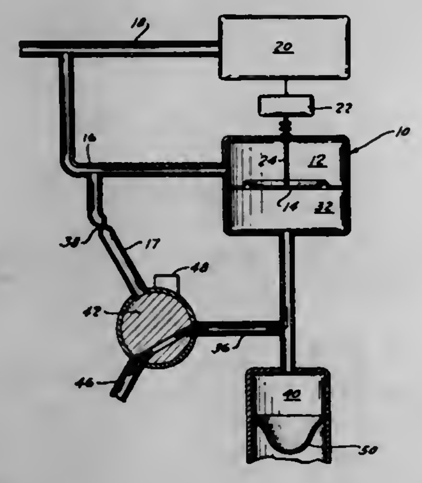
3,896,800
METHOD AND APPARATUS FOR TRIGGERING THE INSPIRATORY PHASE OF A RESPIRATOR

Anthony B. Cibulka, Poynette, Wis., assignor to Airco, Inc., Montvale, N.J.

Filed July 27, 1973, Ser. No. 383,422

Int. Cl.² A61M *16/00*

U.S. Cl. 128—145.8 **13 Claims**



8. In a respirator for supplying gas to a patient and having inspiratory and expiratory phases, the respirator being adapted to retain a predetermined positive gas pressure within the patient at the end of the expiratory phase and having switching means to switch the respirator from the expiratory phase to the inspiratory phase, the improvement comprising: a patient breathing line for supplying gas from the respirator to the patient;

means to monitor the pressure in the patient breathing line during the expiratory phase,

means to sense the pressure in said patient breathing line during a period which commences a predetermined time period after commencement of the expiratory phase; and means to trigger the respirator into the inspiratory phase upon said patient's attempting to breathe, said means preventing triggering due to pressure declines generated by leaks from said system by effecting said triggering where a drop in said sensed pressure over a sub-interval of said period exceeds a minimum predetermined value; and said means further, disabling said triggering irrespective of the level of said sensed pressure where the average rate of pressure decline over said sub-interval is less than a second predetermined value.

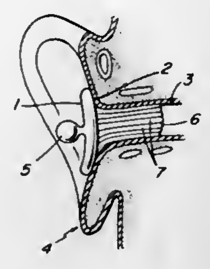
3,896,801
EAR PLUG

Kenneth M. Grout, P.O. Box 621, Littleton, N.H. 03561

Filed May 29, 1973, Ser. No. 364,378

Int. Cl. A61f *11/00*

U.S. Cl. 128—152 **1 Claim**



1. An ear plug comprising:

a. a flat, imperforate, flexible plate adapted to provide an imperforate sound barrier, having a bottom surface adapted to contact the external surfaces surrounding the entrance to the auditory canal of the human ear, the flexibility of said plate to follow the contours of said surfaces when brought into contact therewith;

b. an elongated thin walled hollow flexible tubular member having one end secured to said bottom surface, the walls of said flexible member being substantially thinner than the thickness of said plate and having substantially no resiliency, the other end of said flexible member being closed;

c. said thin walled member being adapted to be inserted into said auditory canal to retain said bottom surface of said plate in contact with said external surfaces;

d. said bottom surface extending beyond the walls of said thin walled member around the entire periphery of said thin walled member, thus providing a portion of said bottom surface for contacting said external surfaces along the entire periphery of the entrance to said auditory canal;

e. the walls of said hollow member being provided with a plurality of folds extending longitudinally along the length of said hollow member from said one end to said other end.

3,896,802
FLEXIBLE FLOCKED DRESSING

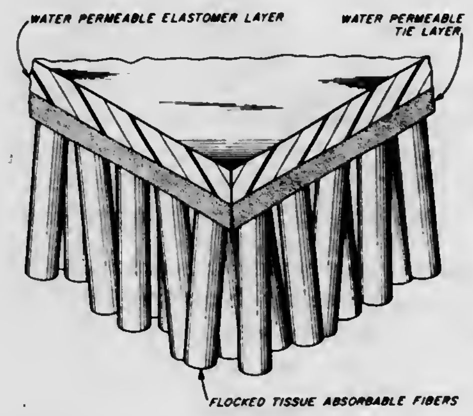
Bernard Leo Williams, Martinville, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Apr. 19, 1974, Ser. No. 462,471

Int. Cl.² A61L *15/00*

U.S. Cl. 128—156 **9 Claims**

1. A wound dressing for the surface of living tissue from which at least part of the skin has been removed and which tissue is subject to moisture loss, and bacterial contamination, which dressing is sufficiently flexible that it will conform and adapt to the surface of the tissue to minimize pools of fluid or air between the dressing and the tissue surface, which pools generate problems of infection, and which has a permeability to moisture of the order of that of the intact human skin (approximately 2.2 mg/sq. cm./hr.) which comprises: an elastomeric layer which elastomeric layer has adhesively flocked to its surface a layer of fibers and which fibers are of a tissue compatible material which is substantially absorbed by living tissue within about 90 days, and which fibers maintain their integrity for at least about 3 days.


WATER PERMEABLE ELASTOMER LAYER
WATER PERMEABLE TIE LAYER
FLOCKED TISSUE ABSORBABLE FIBERS

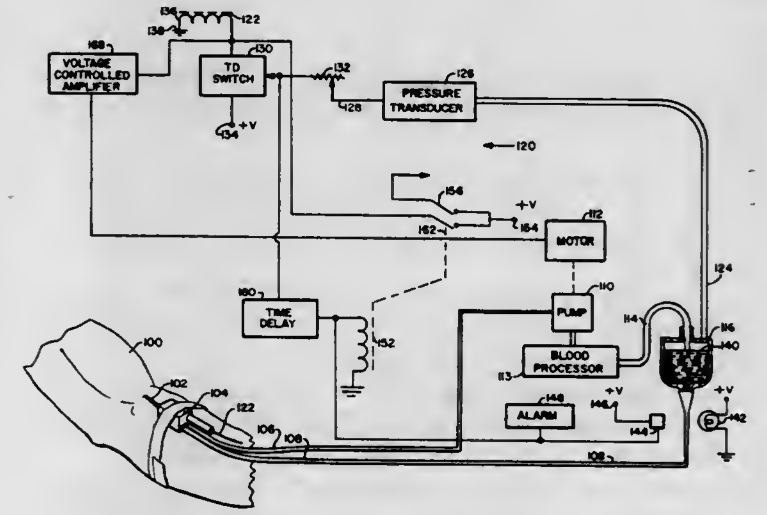
3,896,803
VALVE CONTROLLED SINGLE NEEDLE BLOOD PROCESSING SYSTEMS

Barry Mason, Burbank, Calif., assignor to Betamite Electronic Devices, Culver City, Calif.

Filed Aug. 20, 1973, Ser. No. 389,892

Int. Cl. A61m *5/00, 1/03*

U.S. Cl. 128—214 R **7 Claims**



1. A blood access apparatus including:

a needle body portion having a pair of holes drilled in one end thereof and a round bore drilled partially through on side thereof intersecting said pair of holes;

a hollow needle in said needle body portion the end opposite said pair of holes and communicating with said round bore in said body portion;

switching needle means in said round bore in said needle body portion including direction channels for switching through access from said needle to said pair of holes;

a switching body portion having a channel therein which has a matching configuration of the needle body portion;

means in said switching body portion to switch said switching means;

said switching means including a protruding tongue;

said switching body portion including a hole in one end thereof and a round bore in said channel which intersects with said hole;

a rack and gear arrangement, said rack being disposed in said bore in said channel and engages said rack; and

a grooved member engaging said gear having a groove which engages the protruding tongue on said switching means.

3,896,804
CATHETER FOR SUBMUCOUS ADMINISTRATION OF LOCAL ANESTHETICS IN OBTAINING PARACERVICAL BLOCK

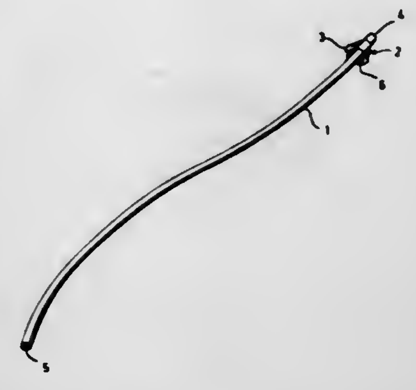
Fred Vage Gunnar Ekbladh, Saro, and Sven Lennart Steen, Kullavik, both of Sweden, assignors to Astra-Sjuco AB, Goteborg, Sweden

Filed Nov. 13, 1973, Ser. No. 415,352

Claims priority, application Sweden, Nov. 24, 1972, 15320/72

Int. Cl. A61m *5/00, 25/00*

U.S. Cl. 128—215 **4 Claims**



1. An improved catheter the forward end of which is adapted to be inserted submucously into the cervix for administration of a local anesthetic agent in obtaining paracervical block, said catheter comprising a tube which is provided near its forward end with a collar extending away from the tube and toward the rear of the tube, said collar encircling the whole circumference of the tube and being provided with axially directed slits, the distance from the forward end of the catheter to the collar being such that the catheter can be mounted submucously in the cervix with the collar imbedded therein.

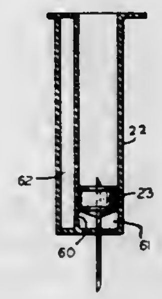
3,896,805
MULTI-CHAMBER SYRINGE

Charles Z. Weingarten, Evanston, Ill., assignor to The Kendall Company, Walpole, Mass.

Continuation-in-part of Ser. No. 255,099, May 19, 1972, abandoned. This application Nov. 2, 1973, Ser. No. 412,164

Int. Cl. A61

U.S. Cl. 128—218 R **17 Claims**



1. A multi-chamber syringe, comprising: a cylinder having a cavity, a plunger having one end received in the cavity, at least one floating barrier means in said cavity forming at least first and second fluid chambers first and second liquids in said first and second chambers, needle means communicating with the first chamber and projecting into said cavity a sufficient distance to puncture said barrier means and communicate with the second chamber when said barrier means nears the

end of its travel as said syringe is emptied, openable port means for selectively relieving back pressure on said barrier means without mixing said liquids in said first and second chamber, whereby said barrier means may continue to settle after having relieved said pressure and means for selectively opening said port means.

3,896,806
IMPLANT FOR DIRECTED INFUSION OF BIOLOGICALLY ACTIVE SUBSTANCES

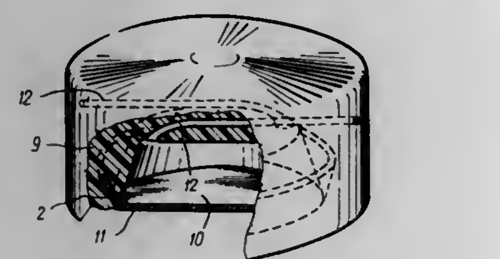
Otto Wichterle, Prague, Czechoslovakia, assignor to Ceskoslovenska akademie ved, Prague, Czechoslovakia

Filed Dec. 21, 1971, Ser. No. 210,420

Claims priority, application Czechoslovakia, Jan. 8, 1971, 114-71

Int. Cl. A61m *31/00*

U.S. Cl. 128—260 **30 Claims**



1. An implant for the infusion of efficient substances comprising a hollow body formed of a physiologically inert elastic hydrophilic material, said body being formed of a cupped portion comprising a continuous substantially impermeable thick wall defining an interior chamber for receipt and storage of said substance and an opening, a permeable membrane integrally secured to said body and covering said opening to enclose said chamber, said membrane permitting directed diffusion of said substance stored within said chamber outwardly of said opening and at least one channel extending through said thick wall portion from said interior chamber to the outside of said body for access to said interior chamber for supplying said substance to said chamber.

3,896,807
ARTICLE IMPREGNATED WITH SKIN-CARE FORMULATIONS

Gilbert Buchalter, 555 Mt. Prospect Ave., Newark, N.J. 07014

Filed June 13, 1974, Ser. No. 478,924

Int. Cl. A61m *35/00*

U.S. Cl. 128—261 **26 Claims**

1. An article to place in contact with the body for use in applying a cosmetic or therapeutic substance to the skin, comprising a substrate and a therapeutic or cosmetic composition carried by said substrate and comprising the oil phase of a cream formulation, said oil phase being a dry emulsifiable solid, which upon addition of moisture thereto forms an oil in water or water in oil emulsion.

3,896,808
DISPENSING AND APPLICATING DEVICE AND PRODUCTION OF SAME

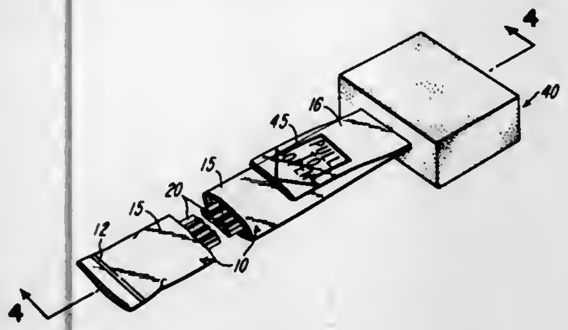
Roman Szpur, 2685 Culver Ave., Kettering, Ohio 45429

Filed July 8, 1974, Ser. No. 486,463

Int. Cl. A61m *35/00*

U.S. Cl. 128—269 **24 Claims**

1. A device adapted for dispensing a fluid into an applicator, comprising a flexible bag forming a container portion adapted to receive the fluid, a handle member extending within said container portion of said bag and providing said bag with increased rigidity, means for sealing said bag to confine the fluid and said handle member within said container portion, means for attaching said bag to said applicator, and said handle member including means for piercing at least one hole in said container portion of said bag adjacent said applicator in response to relative movement between said bag and said handle member to provide for dispensing the fluid from said container portion to said applicator.



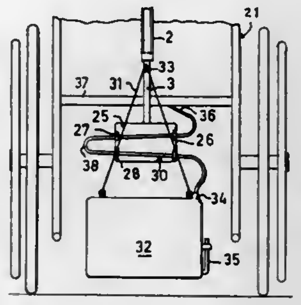
3,896,809
SUPPORT FOR A CONTINUOUS DRAIN UNIT CONNECTED WITH A CATHETER

Carl A. Samuel, and Euphemia Samuel, both of 5404 Broadway, Live Oak, Calif. 95953

Filed Sept. 24, 1973, Ser. No. 400,210

Int. Cl.² A61F *5/44*

U.S. Cl. 128—275 **3 Claims**



1. In combination with a chair having a seat elevated above a floor and a back extending upwardly from one edge of said seat:

a. a continuous, flexible drainage tube having a catheter at one end for fitting on a person seated on said seat;
b. a receptacle connected with the other end of said drainage tube;
c. a portion of said tube between said catheter and said receptacle being flexed to form horizontally extending lengths one above the other connected at one of their ends by a return bend and the other end of the upper length connected with said catheter with the other end of the lower length connected with said receptacle;
d. means removably supported on the back of said chair supporting said drainage tube including the lengths of said portion thereof extending downwardly from said seat to said receptacle and supporting said receptacle in a position rearwardly of said seat and below the level thereof.

3,896,810
ASPIRATOR FOR REMOVAL OF THE CONTENTS OF CYSTIC TUMORS

Hiroshi Akiyama, No. 2-5-12 Honkomagome Bunkyo-ku, Tokyo, Japan

Filed Dec. 21, 1973, Ser. No. 427,070

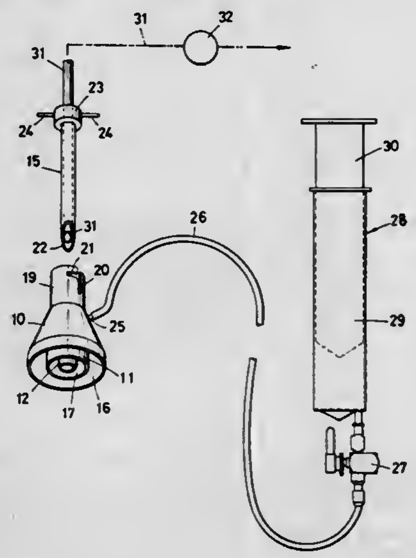
Claims priority, application Japan, Dec. 27, 1972, 47-130142

Int. Cl. A61m *1/00*

U.S. Cl. 128—276 **6 Claims**

1. An aspirator for particular use in removing the contents of a cystic tumor comprising in combination:

a. a hollow suction structure having a closed top and an open bottom for engaging the tumor for defining therewith a vacuum chamber therein for attachment of the structure to the tumor;
b. a first source of negative pressure connectable to said vacuum chamber, said first source of negative pressure being of the type adapted to create a selectable degree of vacuum in said vacuum chamber;
c. a guide sleeve fixedly supported by and within said suction structure along the vertical axis thereof, said guide sleeve including a portion extending through said closed top of said suction structure;
d. a reciprocably movable puncture tube open at both ends and slidable in said guide sleeve and having a length greater than said guide sleeve, the lower end of said puncture tube being cut biaswise to define a cutting edge for making a puncture in the cystic tumor;



e. stop means acting between said puncture tube and said suction structure for supporting said puncture tube within said guide sleeve in such a position that said lower end of said puncture tube projects beyond said guide sleeve; and
f. a drainage tube slidable in said puncture tube for extending through said puncture tube and having a lower open end sized smaller than said puncture forming edge for being inserted into the cystic tumor through the puncture formed by said puncture tube, the other end thereof being connectable to a second source of negative pressure for draining the cystic tumor of its fluid contents, whereby the puncture tube may be retracted from the tumor during such drainage.

3,896,811
ULTRASONIC SURGICAL INSTRUMENT

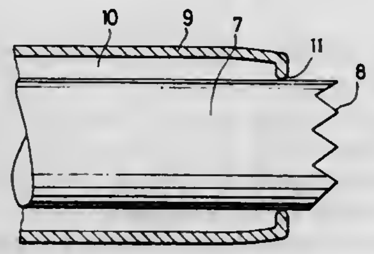
Karl Storz, Mittelstr. 8, 7200 Tuttlingen, Germany

Filed Aug. 30, 1973, Ser. No. 393,198

Claims priority, application Germany, Aug. 31, 1972, 2242863

Int. Cl. A61b *17/22;* A61h *23/02*

U.S. Cl. 128—328 **4 Claims**



1. An ultrasonic surgical instrument adapted to be mounted within an endoscope for inserting within an internal body organ, comprising an elongated probe, a transducer for inducing oscillation therein, means for connecting said transducer to one end of said probe, and a unitary jacket surrounding said probe and said transducer, said jacket being in cross section larger than said probe and transducer and having a pair of axially spaced radially inwardly directed bearing means for supporting said jacket on said transducer and on the probe at the end opposite said transducer spaced uniformly from said probe and said transducer to provide a radial air gap enveloping said probe and transducer.

3,896,812
SUTURES HAVING LONG-LASTING BIOCIDAL PROPERTIES

Leonard D. Kurtz, Woodmere, N.Y., assignor to Sutures, Inc., Coventry, Conn.

Continuation-in-part of Ser. No. 648,247, June 23, 1967, abandoned, and a continuation-in-part of Ser. No. 851,739, Aug. 20, 1969, abandoned, and a continuation-in-part of Ser. No. 243,425, April 12, 1972. This application Apr. 25, 1972, Ser. No. 247,469. The portion of the term of this patent subsequent to Feb. 15, 1989, has been disclaimed.

Int. Cl. A61l *17/00*

U.S. Cl. 128—335.5 **8 Claims**

1. A surgical suture having long-lasting bactericidal properties comprising a suture strand having incorporated substantially uniformly within the body thereof throughout its length an effective amount of a substantially water-insoluble salt of a cephalosporin and a basic antibiotic selected from the group consisting of gentamicin and a polymyxin, said substantially water-insoluble salt being held tenaciously in said suture strand to provide a long-lasting source of both said antibiotics.

3,896,813
SUTURES HAVING LONG-LASTING BIOCIDAL PROPERTIES

Leonard D. Kurtz, Woodmere, N.Y., assignor to Sutures, Inc., Coventry, Conn.

Continuation-in-part of Ser. No. 851,739, Aug. 20, 1969, abandoned, which is a continuation-in-part of Ser. No. 648,247, June 23, 1967, abandoned. This application Apr. 12, 1972, Ser. No. 243,425. The portion of the term of this patent subsequent to Feb. 15, 1989, has been disclaimed.

Int. Cl. A61l *17/00*

U.S. Cl. 128—335.5 **8 Claims**

1. A surgical suture having long-lasting bactericidal properties comprising a suture strand having incorporated substantially uniformly within the body thereof throughout its length an effective amount of a substantially water-insoluble salt of a penicillin and a basic antibiotic selected from the group consisting of gentamicin and a polymyxin, said substantially water-insoluble salt being held tenaciously in said suture strand to provide a long-lasting source of both said antibiotics.

3,896,814
COLLAGEN BASED THREADS

Daniel Vivien, 128 Avenue Georges Clemenceau, Nanterre, and Georg Schwartz, 9 Rue F. Joliot Curie, Goussainville, both of France

Filed Oct. 31, 1972, Ser. No. 302,437

Int. Cl. A61l *17/00*

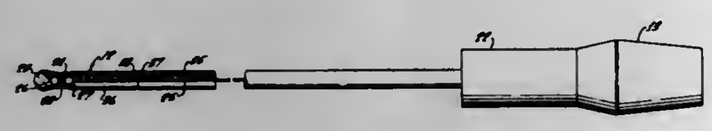
U.S. Cl. 128—335.5 **4 Claims**

1. A collagen based suture comprising a collagen surgical thread containing therewithin from about 10 to 50 percent of water based on the weight of the thread and about 10 to 70 percent by weight of at least one hygroscopic agent for retaining the water and selected from the group consisting of glycerols, glycols and polyalkylene oxides, said hygroscopic agent having a low volatility and a molecular weight of up to about 400, and a hydrophobic lubricating agent on the surface and selected from the group consisting of lipoids and silicones, whereby said suture retains its suppleness in dry form.

3,896,815
EXPANSIBLE TIP CATHETERS

Bruce E. Fettel, Diamond Bar, and Samuel Burd, Long Beach, both of Calif., assignors to Shiley Laboratories, Inc., Santa Ana, Calif.

Filed June 6, 1974, Ser. No. 477,167
Int. Cl.² A61M *25/00*
U.S. Cl. 128—348 **3 Claims**



1. In an expansible tip embolectomy catheter of the type which is so constructed and arranged as to be inserted distal end first into blood passages in the body which comprise an elongate flexible tube sealed at the distal end and connected at the proximal end to a pressurized fluid source connector for supplying fluid under pressure into said tube during use, the improvement wherein:

said tube has an outside diameter from about 0.026 inches to about 0.092 inches;

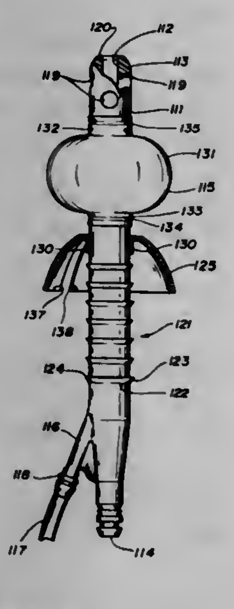
an elongate portion of the tube adjacent the distal end is pre-stretched to be less resistant to lateral expansion than the remainder of the tube such that upon injection of fluid under pressure into said tube said elongate distal end portion expands laterally first, said lateral expansion beginning initially in and progressing along said elongate distal end portion in preference to lateral expansion of the remainder of said tube; and

including an elongate flexible wire secured to the connector and the distal end of the tube, extending through the tube to prevent extension and to guide the tube during insertion.

3,896,816
DISPOSABLE CATHETER

Martin Mattler, 24575 Franklin Pk. Dr., Franklin, Mich. 48025

Continuation-in-part of Ser. No. 139,725, May 3, 1971, abandoned. This application May 14, 1973, Ser. No. 360,363
Int. Cl. A61m *25/00*
U.S. Cl. 128—349 B **1 Claim**



1. A catheter comprising:

an elongated hollow tube having a forward end and a rearward end, the forward end being provided with a plurality of apertures to facilitate fluid delivery to a body cavity,

a first opening in the tube wall proximate the forward end thereof,

a sealing cuff mounted upon the tube over the area including the first opening, the sealing cuff comprising a thin walled, air impervious, resilient rubber-like material, the tube extending through the cuff and the cuff end portion being sealed to the tube such that the cuff may be inflated to an enlarged ring-shape co-axial with the tube for sealing a body cavity within which the tube is inserted;

a second opening in the tube wall near the rearward end thereof;

means disposed within the tube for interconnecting the first and second openings,

a rearwardly and outwardly curved shield mounted below the cuff for sealing the body cavity, the shield including a central opening and having a rearwardly directed hub portion through which the tube is fitted,

a plurality of fingers integrally formed with the hub and extending rearwardly therefrom, the fingers permitting forward sliding of the shield while resisting rearward movement of the shield,

means for mounting the shield on the tube, the mounting means including an elongated slot provided through the shield and a coupling means for closing the slot,

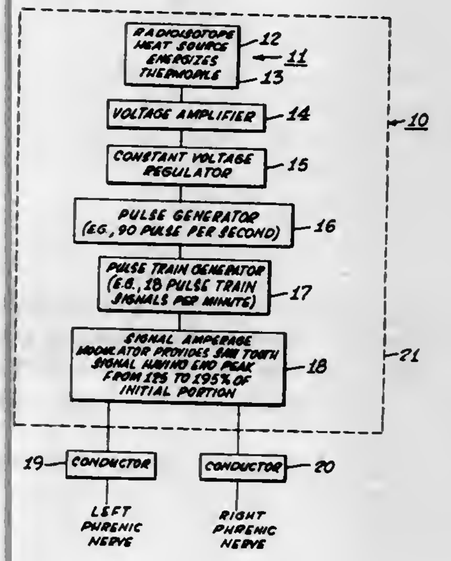
positive stop positioning means formed on the exterior of the tube, the means comprising at least one forwardly directed bead tapering outwardly from the tube, and wherein

the openings and the means for interconnecting the openings cooperate to define an air inlet for flowing pressurized air into and for discharging air from the cuff to inflate and deflate, respectively, the cuff after the tube is inserted into the body cavity.

3,896,817
IMPLANTABLE NERVE STIMULATOR

Thomas F. Hursen, Monroeville, and Steve Andrew Kolenik, Leechburg, both of Pa., assignors to Arco Nuclear Company, Leechburg, Pa.

Filed Aug. 4, 1972, Ser. No. 277,963
Claims priority, application United Kingdom, Aug. 6, 1971, 37151/71
Int. Cl. A61n *1/36*
U.S. Cl. 128—419 R **6 Claims**


RADIOISOTOPE HEAT SOURCE ENERGIZES THERMOPILE
12
11
13
VOLTAGE AMPLIFIER
14
10
CONSTANT VOLTAGE REGULATOR
15
PULSE GENERATOR (E.G., 90 PULSE PER SECOND)
16
PULSE TRAIN GENERATOR (E.G., 18 PULSE TRAIN SIGNALS PER MINUTE)
17
SIGNAL AMPERAGE MODULATOR PROVIDES SAW TOOTH SIGNAL HAVING END PEAK FROM 125 TO 195% OF INITIAL PORTION
18
21
19
CONDUCTOR
CONDUCTOR
20
LEFT PHRENIC NERVE
RIGHT PHRENIC NERVE

1. In a respiratory pacer, the combination of:

a nuclear battery providing several years of useful life;

electrical means converting electrical power from said battery to a series of signals having a frequency per minute corresponding approximately to the desired breathing rate, each signal comprising a plurality of direct current pulses, one output terminal being a connector and the other output terminal for said electrical means being the hereinafter recited casing adapted to contact liquids between organs within the body, some such liquids being where the pacer is implanted, said electrical means including means for modulating the amperage of a signal so that its maximum amperage is within the range from about 125 per cent to about 195 per cent of the minimum amperage of such signal;

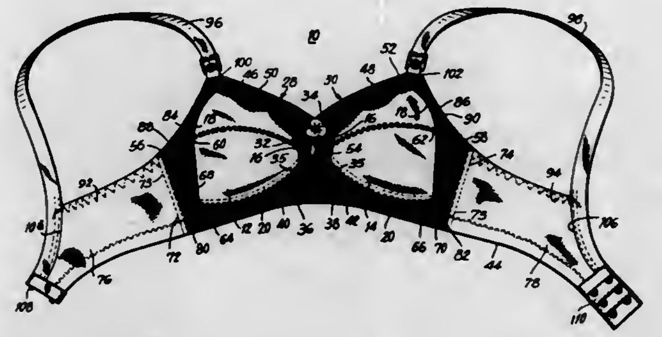
at least one conductor transmitting signals from said connector toward a phrenic nerve; and

a casing containing said battery, electrical means, and said connector for said conductor, said casing hermetically sealing its contents from adverse effects attributable to said liquids, whereby the respiratory pacer may be implanted within a living body.

3,896,818
FOUNDATION GARMENT

Jack J. Locascio, Bayonne, N.J., assignor to Rapid-American Corporation, New York, N.Y.

Continuation of Ser. No. 359,934, May 14, 1973, abandoned. This application July 15, 1974, Ser. No. 488,618
Int. Cl.² A41c *3/00*
U.S. Cl. 128—494 **17 Claims**



1. A brassiere comprising:

a frontal portion;

body encircling means affixed laterally outward of said frontal portion and shoulder straps extending upward of said frontal portion including:

first and second breast receiving cups, each of said cups having a lower inner edge, an upper inner edge, an outer edge and a bottom edge; and breast cup framing means; said breast cup framing means including a distensible inner panel extending along the respective upper and lower inner edge of each of said breast cups, said distensible inner panels juxtaposed and secured to one another along a vertical medial line between the lower inner edges of said cups;

and means to selectively restrict the distensibility of said distensible inner panels as they extend along the upper inner edges of said cups;

said restricting means including a layer of non-stretchable material which spans in overlaying relationship and is secured to at least a portion of the respective inner distensible panel which extends along the upper inner edge of such cup such that the distensibility of said inner panels along said lower inner cup edges is retained.

3,896,819
IUD HAVING A REPLENISHING DRUG RESERVOIR

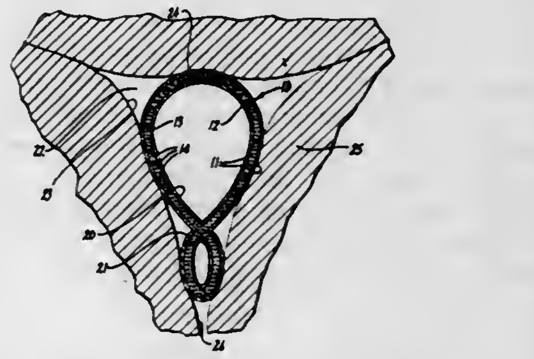
Alejandro Zaffaroni, Atherton, Calif., assignor to Alza Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 42,786, June 2, 1970, Pat. No. 3,854,480, which is a continuation-in-part of Ser. Nos. 812,116, April 1, 1969, Pat. No. 3,598,122, and Ser. No. 864,175, Oct. 6, 1969, abandoned. This application Sept. 30, 1971, Ser. No. 185,208
Int. Cl. A61f *5/46;* **A61m** *31/00*
U.S. Cl. 128—130 **12 Claims**

1. An intrauterine device comprising means having a configuration exerting an anti-fertility effect when placed in the uterine cavity and drug delivery means for providing programmed delivery of drug at a rate of delivery characterized by substantially zero order time dependence for a prolonged period of at least one month, said drug delivery means comprising:

a. reservoir comprising dissolved drug and undissolved replacement drug in a liquid carrier material having limited solubility for the drug and permeable to the passage of the drug, the replacement drug being present in an amount sufficient to maintain the dissolved drug in an amount substantially equal to the amount of dissolved drug originally present in the carrier material during said prolonged period; and

b. a shaped wall surrounding said reservoir, said shaped wall being capable of maintaining its integrity during said prolonged period and being formed at least in part of a substantially homogeneous drug release rate controlling material permeable to the passage of the drug but having a lower permeability to the drug than the permeability thereto of the liquid carrier material;



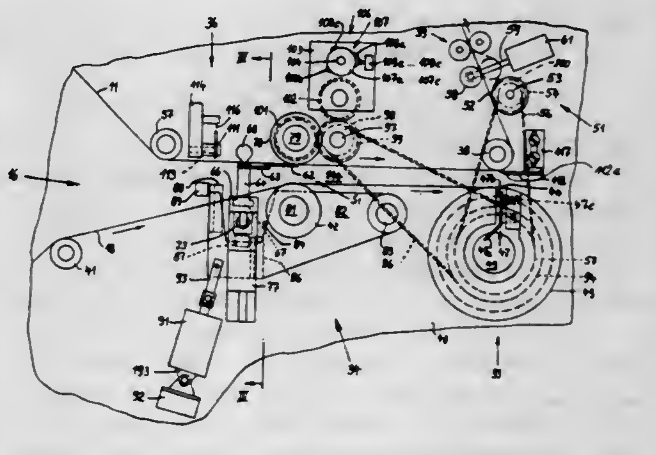
said means having a configuration exerting an antifertility effect comprising the outer configuration of said shaped wall; said shaped wall being of such size and shape to contact the sides of the uterus when said device is placed in the uterine cavity;

said device when placed in the uterine cavity continuously releases drug from the reservoir at a controlled contraceptively effective rate by metered passage through the wall, the dissolved drug so released being replaced by the continuous dissolving of replacement drug in the carrier material.

3,896,820
APPARATUS FOR SPLICING WEBS OF CIGARETTE PAPER OR THE LIKE

Dieter Ludszeweit, Hamburg, Germany, and Joachim Buchegger, Richmond, Va., assignors to Hauni Werke Korber & Co. KG, Hamburg, Germany

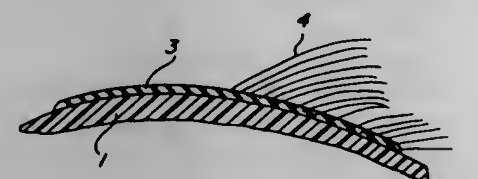
Filed Dec. 18, 1972, Ser. No. 316,295
Claims priority, application Germany, Dec. 17, 1971, 2162707
Int. Cl. B65h *19/10;* **A24c** *5/34*
U.S. Cl. 131—21 R **11 Claims**



1. In a cigarette rod making or analogous machine wherein a running web of cigarette paper or the like which is being

withdrawn from an expiring roll is transported lengthwise along a predetermined path extending toward, through and beyond spaced-apart first and second stations and is converted into wrappers of discrete rod-shaped articles not later than at said second station, and wherein the leading end of a fresh web which is stored in the form of a fresh roll is maintained in readiness at said first station, a combination comprising means for advancing the running web along said path and a splicing apparatus, said splicing apparatus including means for accelerating the leading end of the fresh web and signal generating means having a first portion, drive means for transmitting motion to said first portion from said advancing means in response to acceleration of the leading end of the fresh web and a second portion for furnishing a plurality of signals in response to movement of said first portion, said signals including a first signal and said splicing apparatus further comprising means for uniting portions of the running web and the accelerated fresh web in response to said first signal so that said portions of the running and fresh webs form at said first station a splice which is thereupon transported along said path at the speed of the running web, said splicing apparatus also comprising means for severing the running web between said splice and the expiring roll in response to one of said plurality of signals to thereby separate the splice from the expiring roll, said severing means being adjacent to said path.

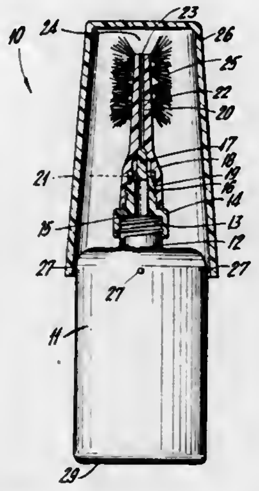
3,896,821
REPRODUCTION OF THE ORIGINAL HAIR
June G. Clark, 11 N. Park St., Belleville, Ontario, Canada
Filed Mar. 8, 1974, Ser. No. 449,538
Int. Cl. A41g *3/00*
U.S. Cl. 132—5 **12 Claims**



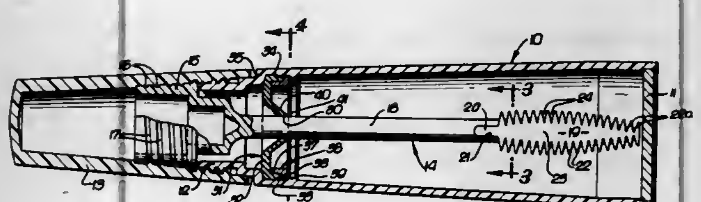
1. A method of making a hairpiece for the top of a wearer's head comprising: coating a portion of a mold corresponding to the shape of a wearer's head with a single layer of liquid elastomeric material which hardens on exposure to air; inserting a plurality of hairs all at the same time into said elastomeric material while it is in a liquid state; repeating the inserting of a plurality of hairs a number of times until a desired area is covered with hair; and allowing said elastomeric material to harden in order to secure the implanted hairs therewithin.

3,896,822
BRUSH APPLICATOR DEVICE
Eli Zimmerman, 159 W. 76th St., Apt. 5A, New York, N.Y. 10023
Continuation-in-part of Ser. No. 131,275, April 5, 1971, Pat. No. 3,734,106. This application Apr. 30, 1973, Ser. No. 355,962
Int. Cl. A45d *40/00*
U.S. Cl. 132—79 B **10 Claims**

1. A brush device comprising in combination: a squeezable bulb means having an outlet opening, an adapter member connected to the squeeze bulb means and extending outwardly from the opening thereof and having a hole at a substantially distal end of the adapter through which liquid can be forced with the hole being structured such that the hole extends in a direction facing substantially transversely to the longitudinal axis of the extended portion of the adapter member such that liquid spray is directable laterally to the elongated adapter member, and a brush means carried on the outwardly extending member in flow-non-alignment with the hole and spaced from the hole, said outwardly extending adapter member being of a resilient semi-rigid composition and having a portion thereof at a point distant from said adapter member shaped such that the bulb means includes a supporting base supportable of the adapter member and of the brush mounted on the adapter member substantially above the supporting base when said bulb means is set on a substantially flat horizontal surface whereby the brush means is held in a position free of contact with the horizontal surface.



3,896,823
COSMETIC APPLICATOR
Walter B. Spatz, Pacific Palisades, Calif., assignor to Spatz Corporation, Venice, Calif.
Filed Feb. 1, 1974, Ser. No. 438,578
Int. Cl. A45d *40/26*
U.S. Cl. 132—88.7 **14 Claims**

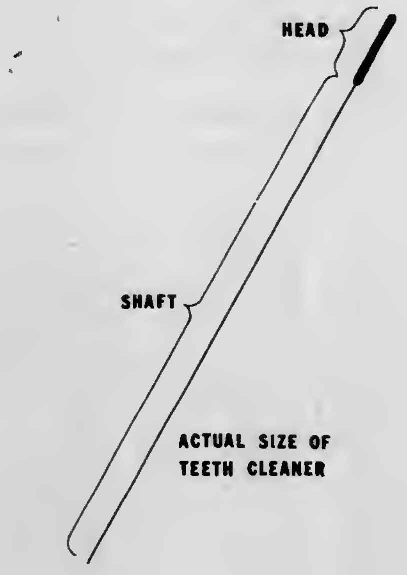


1. A cosmetic applicator: comprising a container for cosmetic material; an elastic deformable wiper having an opening; an applicator member movable through said opening into and from said container, said member including an inner portion adapted to be coated by the cosmetic material and having longitudinally spaced tines, said inner portion and its tines being of oval shape in cross-section and convex around their entire perimeter, whereby said wiper engages and wipes the entire perimeter of said inner portion and its tines as said inner portion is moved longitudinally through said wiper opening.

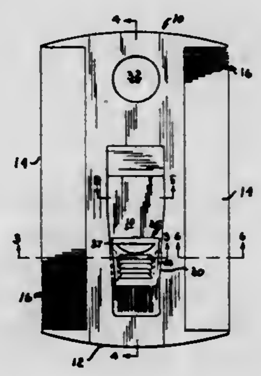
3,896,824
TEETH CLEANING
Thomas F. Thornton, 221 Mill Rd., New Canaan, Conn. 06840
Continuation-in-part of Ser. No. 138,501, Aug. 27, 1971, abandoned. This application May 17, 1973, Ser. No. 361,237
Int. Cl.² A61C *15/00*
U.S. Cl. 132—89 **8 Claims**

1. A teeth cleaner for passage through a crevice formed between adjacent teeth comprising an elongate flexible string portion and an elongate brush portion secured to the string portion, said brush portion being of spongy, elastic material formed to have a cross-sectional extent normally substantially larger than the cross-sectional extent of the string portion and formed of a plurality of textured commingled filaments that

have been permanently deformed and crinkled and in which the string portion is formed of a plurality of essentially straight filaments that are unitary with the filaments of the brush portion.



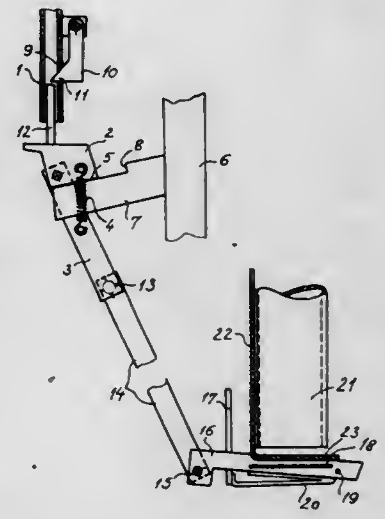
3,896,825
COMB-CLEANING PICK CONSTRUCTION
Emil P. Norman, 339 Concord Ave., Bronx, N.Y. 10454
Filed Nov. 8, 1973, Ser. No. 413,904
Int. Cl. A45d *24/42*
U.S. Cl. 132—119 **6 Claims**



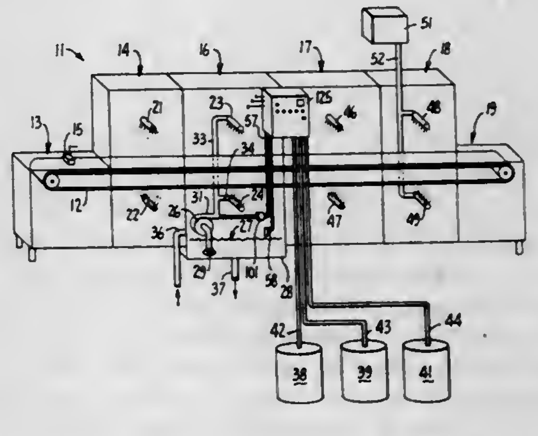
1. A combination comb-cleaning pick comprising: a comb having a comb body; a plurality of spaced combing teeth extending from said comb body; a pick member selectively separable from said comb, said pick member having a plurality of pick teeth spaced and dimensioned to fit between the combing teeth of said comb; said comb body formed with a pick retaining recess dimensioned to accommodate said pick member in said recess for detachably retaining said pick member; said recess formed with a pick seating bed having a flat portion spaced from the top surface of said comb body to seat said pick member in said recess; and an overhang lying over said bed, said overhang engaging said pick to detachably retain same in said recess.

3,896,826
COIN CHANGER
Evy Petersen, Ostervangsvej 23, Gjesing DK-6700 Esbjerg, Denmark
Filed Oct. 19, 1973, Ser. No. 407,846
Int. Cl. G07d *1/04*
U.S. Cl. 133—4 **2 Claims**

1. Coin changer of the type, in which by insertion of a coin, by way of example a 5-crown piece and by operating a release mechanism, one can release a definite number of coins for change, e.g. five 1-crown pieces, from a coin changing magazine in the changer, which magazine comprises a number of mainly vertical columns of coins, from the bottom of which the lowest coin or coins of each column can be pushed out horizontally by means of a pushing mechanism, characterized in that two mainly horizontal guide flaps (18) are situated on the same level and at a certain distance under each column (21), said flaps forming a split-like opening under the column in question, a horizontally displaceable pusher (16) operably associated with said split-like opening with the direction of displacement of said pusher being influenced by the release mechanism (1–14) of the changer through a linkage (15), said pusher (16) having two sideways extending guide pins (19) for cooperation with the flaps (18), a tongue-like spring (20) being located under the pusher (16), said spring stressing the pusher by an upwards directed pressure, and said guide flaps (18) being limited in extension in the direction of displacement to the extent that in the end positions of the pusher the guide pins (19) pass beyond the end edges of the flaps (18) with the guide pins moving along the under sides of said flaps on retracting to a change ejecting condition and above the upper sides of said flaps during change ejection, and said guide pins (19) being vertically adjustable in relation to the top side of the pusher (16) in question.



3,896,827
DISH MACHINE MONITORING OF TIME, TEMPERATURE, ALKALINITY, AND PRESSURE PARAMETERS
Norman R. Robinson, 6902 Brighton Dr., Dublin, Calif. 94566
Filed Aug. 31, 1973, Ser. No. 393,345
Int. Cl. B08b *3/10*
U.S. Cl. 134—10 **13 Claims**



1. In a method of controlling continuous automatic dishwasher operation wherein the dishes are transported through a device comprising at least a washing station and a rinse station and dishwashing additives are automatically introduced into circulating dish washing liquid which contacts

dishes at said washing station, the improvement comprising commencing washing operation by mechanically sensing presence of dishes to be washed, stopping operation of the device at the conclusion of rinsing, measuring and recording the duration of operation of the device, continuously sampling the circulating dish washing liquid during operation of the device to automatically determine:

1. the temperature and signalling when a temperature is determined to be below a predetermined value,
2. alkalinity and adding dish washing additives to the circulating water when alkalinity is determined to be below a predetermined value, and
3. pressure and signalling when pressure falls below a predetermined value.

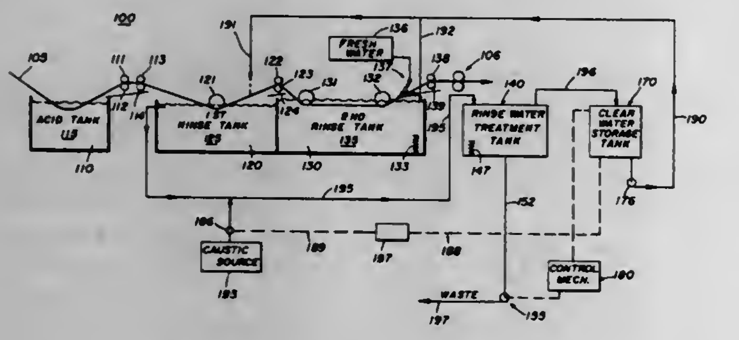
3,896,828
TREATMENT OF PICKLE LIQUOR RINSE WATER

James J. Foster, Homewood, Ill.; Richard J. Sittema, Munster, Ind., and Russell E. Nelson, Riverdale, Ill., assignors to Interlake, Inc., Chicago, Ill.

Filed Oct. 23, 1973, Ser. No. 408,654

Int. Cl. B08b *3/10*

U.S. Cl. 134—57 R **15 Claims**



1. A system for rinsing metal strapping emerging from a hydrochloric acid pickling bath, said system comprising a first rinse bath and a second rinse bath in communication with said first rinse bath, a rinse water treatment tank in communication with said first rinse bath, a clarified water storage tank in communication with said rinse water treatment tank and with said first rinse bath and said second rinse bath, means for passing the metal strapping emerging from the hydrochloric acid pickling bath through said first rinse bath and said second rinse bath, means for rinsing the metal strapping emerging from said first rinse bath with clarified water from said clarified water storage tank, means for rinsing the metal strapping emerging from said second rinse bath with fresh water, mechanism for adding a sodium hydroxide solution to the rinse water from said first rinse bath, and means for removing precipitated magnetite from said rinse water treatment tank to maintain the liquid level in said rinse water treatment tank within predetermined limits, whereby a continuous system for rinsing metal strapping is provided with the introduction of fresh water thereto and the removal of waste material therefrom being limited.

3,896,829
APPARATUS FOR SPRAYING AND OTHERWISE TREATING PIECES IN A VAPOR

Winston E. Sabatka, Minneapolis, Minn., assignor to Finishing Equipment, Inc., Minneapolis, Minn.

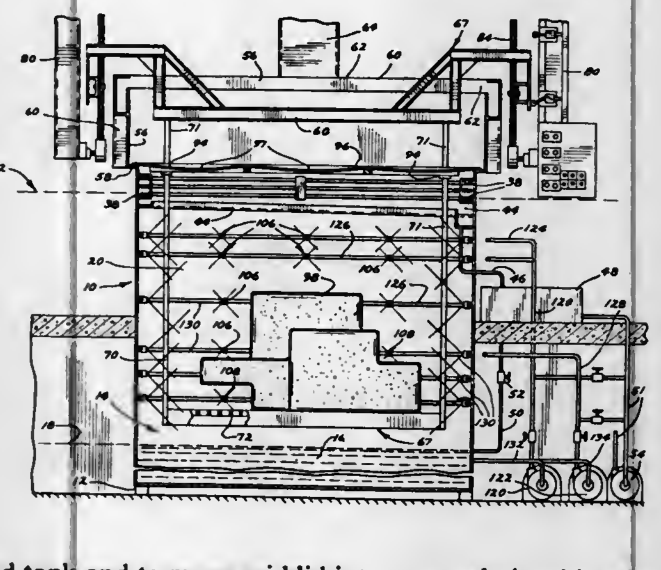
Continuation-in-part of Ser. No. 171,129, Aug. 12, 1971, abandoned. This application July 2, 1973, Ser. No. 375,763

Int. Cl. B08b *3/02, 3/10, 15/02*

U.S. Cl. 134—58 R **12 Claims**

1. In an apparatus for treating work pieces in a vapor, including an open top tank, a treatment fluid having a liquid phase and a heavier-than-air vapor phase, means for applying heat energy to a bottom portion of said tank to cause said fluid to boil to form in said tank a layer of vapor phase and a layer of liquid phase, cooling means at the top of said tank to condense said vapor phase reaching said cooling means to limit the upper level of vapor in said tank, a stage for receiving work pieces to be processed, and means for lowering said stage into and raising said stage out of said tank through the open top thereof, the improvement comprising:

a. a tank lid of configuration to completely close the open top of said tank;
b. means for bringing said lid into closing relationship to said open tank top when said work is positioned within said tank and to move said lid into open relationship with said tank as the work leaves the tank;
c. said means for moving said lid including means for carrying said lid on an upper portion of said stage in alignment with said treatment tank opening; and
d. said tank being provided with a tank lid receiving shoulder around the entire periphery thereof to receive the entire outer edge portion of said tank lid and a vertical upstanding collar constituting part of said tank and extending upwardly from the outer periphery of said lid receiving shoulder.



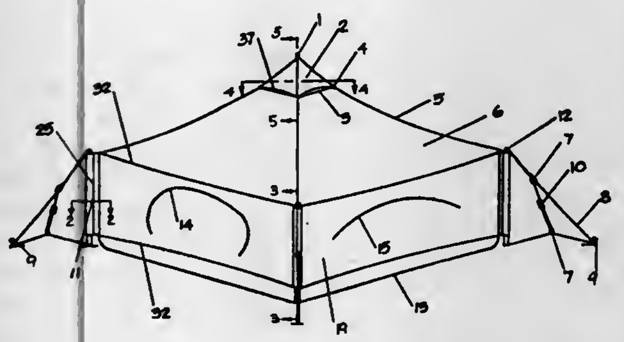
3,896,830
TENT STRUCTURE AND SUSPENSION MEANS

Paul Robert Sharick, P.O. Box 16053, Sacramento, Calif. 95816

Continuation of Ser. No. 278,034, Aug. 4, 1972, abandoned. This application Nov. 12, 1973, Ser. No. 414,920

Int. Cl.² A45F *1/18*

U.S. Cl. 135—1 R **7 Claims**



1. A tent comprising a plurality of sidewalls, a top and bottom joined together in a continuous surface of flexible material, the sidewalls being formed from a continuous closed loop of flexible material, a plurality of rigid members of sufficient length to span the vertical width of the sidewall, securing means attaching the rigid members to the sidewall material at the corners of the tent, the securing means attaching the rigid members to the sidewall material uniformly over the full vertical widt of the material, anchor means positioned outside each corner, and tensioning means linking both ends of each of the rigid members to a corresponding one of the anchor means, the tension means pulling on each of the corners in an outward direction in relation to the center of the tent, the tension means being resisted substantially only by lateral tension in the closed loop of material forming the sidewalls, the later tension being distributed essentially uniformly over the full vertical width of the sidewall material by virtue of the distribution of the attachment of each rigid member to the sidewall material uniformly over the vertical width of the sidewall material.

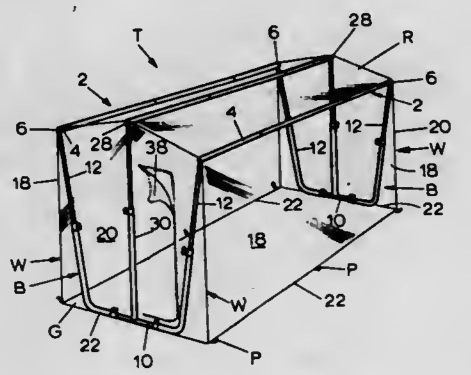
3,896,831
TENT

Benjamin L. Feldman, 35 Canyon Ave. No. 201, Downsview, and Frederick M. Gaby, 100 Rosedale Height Dr., Toronto, Ontario, both of Canada

Filed Oct. 4, 1973, Ser. No. 403,570

Int. Cl. A45f *1/16*

U.S. Cl. 135—3 R **9 Claims**



1. A tent comprising:

a roof and framing for supporting said roof at an elevation and for applying tension thereto to maintain it in outstretched condition; said framing including:

eaves poles attachable to said roof at opposite margins thereof, said roof including tunnels extending along opposite margins thereof into which said eaves poles are removably insertable to attach them to said roof as aforesaid, said eaves poles having ends which are exposed at the corresponding ends of said roof margins when said eaves poles are inserted in said tunnels, and said framing also including bows disposable on the ground between said margins for engaging and applying a spreading force to the eaves poles to tense the roof between them and to prop it at an elevation, each said bow being installable and removable independently of the other bow and including an elongated sill positionable on the ground and a prop interconnectible between said sill and an exposed end of each said eaves pole; the props and eaves poles having means for readily engaging and disengaging each eaves pole with and from the upper ends of the respective props, the props being in fixed angular relationship with said sill and diverging therefrom towards said eaves poles to apply spreading and propping forces thereto as aforesaid, each sill having opposite end portions from which the respective props are integral extensions, and each bow having means for manually adjusting its length to a selected fixed length for manual adjustment of said spreading and propping forces.

3,896,832
CANOE TENT

Thomas Montoya, 106 Illinois Ave., Auburndale, Fla. 33823

Filed Oct. 24, 1973, Ser. No. 409,308

Int. Cl. B63b *17/02*

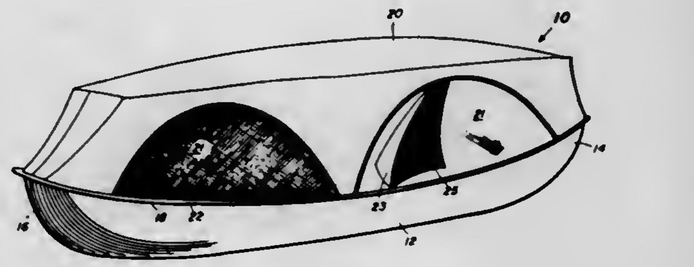
U.S. Cl. 135—6 **13 Claims**

1. A tent for watercraft having a tapered bow, comprising:

a shroud;

means for joining the periphery of said shroud along the gunwale of said craft;

a removable bow member adapted for mounting on said tapered bow, said bow member comprising;
  a tapered member adapted to engage the gunwale on opposite sides of the craft,
  a support shaft holding member pivotably joined at one edge to said tapered plate, and



  a support shaft carried by said holding member;

resilient means fixed between said tapered member and the extremity of said holding member for supporting said shroud at said bow; and

means for adjusting said shroud for watercraft of different lengths.

3,896,833
TELESCOPIC UMBRELLA

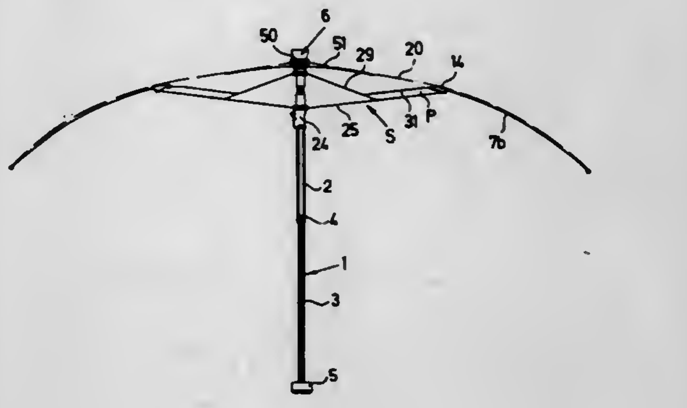
Heinz Weber, Hilden, Germany, assignor to Telesco Brophey Limited, Montreal, Canada

Filed Dec. 5, 1973, Ser. No. 421,953

Claims priority, application Germany, Dec. 7, 1972, 2259874

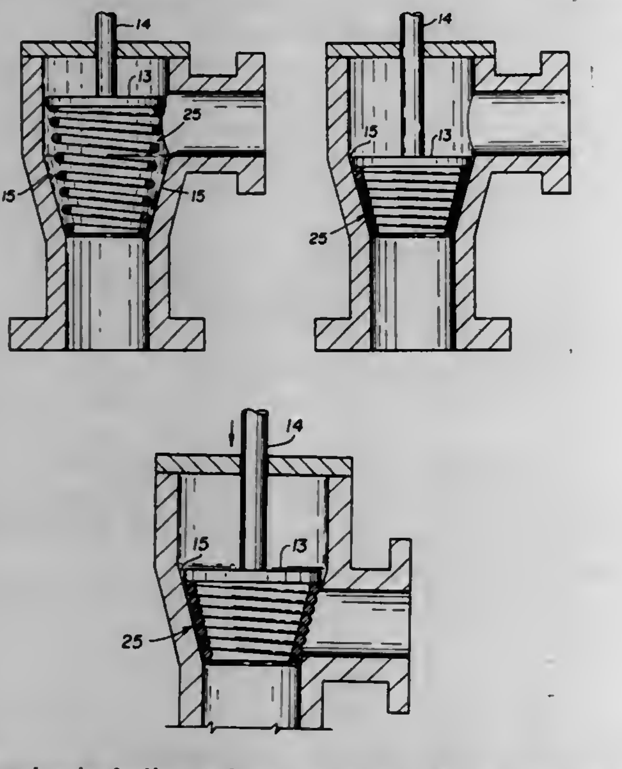
Int. Cl.² A45B *19/00*

U.S. Cl. 135—25 R **9 Claims**



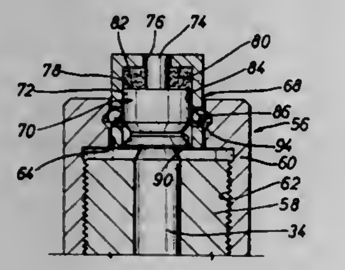
1. In a telescopic umbrella including a telescopic shaft, a crown at one end of the shaft, spokes adapted to pivot relative to the crown a cover attached to the crown and the spokes, at least a main runner mounted on the shaft, support means operatively connected between said main runner and said spokes for effecting pivoting movement of said spokes relative to said shaft, and a system of resilient stays on said shaft adjacent said crown for effecting folding of the cover as the umbrella is telescopically collapsed and forming a mushroom shape from the cover adjacent the crown, the improvement in that said resilient stays comprise helical coil springs terminally connected to the shaft beneath said crown, said stays being bendable about a wire forming a coil attached to the shaft, said coil springs being connected to said shaft in an area within an axial projection of said crown and bendable substantially parallel to the shaft when collapsed for providing a minimum cross-section adjacent the crown when the umbrella is collapsed.

3,896,834
VALVES WITH SPRING VALVE MEMBERS
Herman L. Paul, Jr., 720 Old Mill Rd., Wyomissing, Pa. 19610
Filed Oct. 9, 1973, Ser. No. 404,591
Int. Cl.² F16K *11/04*
U.S. Cl. 137—625.28 **3 Claims**



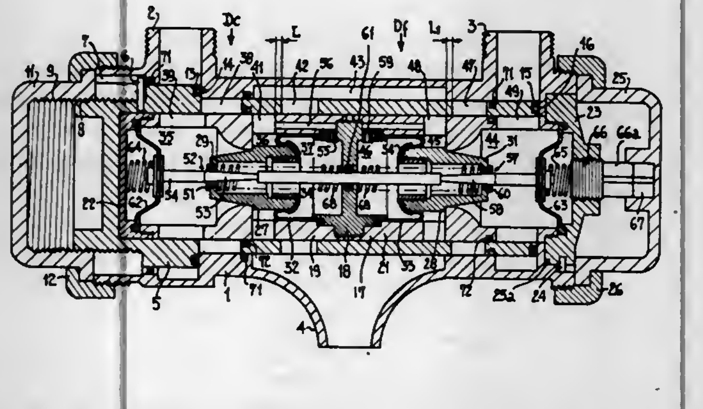
1. A valve including, a body provided with an internal cavity, inlet and outlet passages extending from the exterior of said body into communication with said internal cavity, a valve element located within said internal cavity for controlling fluid flow from one of said passages to the other thereof, said internal cavity including a portion of inverted frusto-conical configuration adjacent to and in alignment with one of said passages for receiving said valve element, said valve element comprising a coiled spring of frusto-conical configuration complementary to the frusto-conical portion of said internal cavity when the coils of said spring are in a mutually contacting condition, and means operable from without said body and extending into said internal cavity for operating upon said coiled spring valve element in an axial direction whereby to cause the coils thereof to be brought into or out of mutually contacting relation.

3,896,835
HEAT RESPONSIVE SAFETY DEVICE FOR GATE VALVES
Charles H. Wicke, Richmond, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.
Filed Dec. 29, 1972, Ser. No. 319,123
Int. Cl.² F16K *17/38*
U.S. Cl. 137—75 **2 Claims**



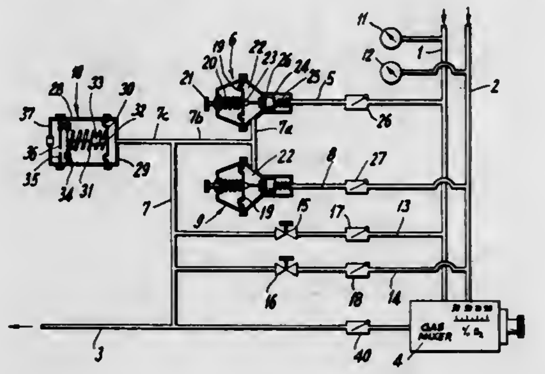
1. A heat responsive release assembly for an outwardly biased valve stem, the assembly being mounted on a threaded extension of a cylinder for a valve actuator and comprising, an internally threaded sleeve threaded on said extension, an inverted cap detachably mounted within said sleeve, a plug movably mounted within said cap and engaging said stem, a fusible material positioned within the inverted cap between the plug and the adjacent end surface of the inverted cap, said plug being urged by the thrust of the valve stem against the fusible material, said assembly having at least one metering opening for the fusible material provided adjacent the fusible material and upon a predetermined temperature being reached the fusible material melting and flowing through said metering opening to reduce the volume of fusible material adjacent said plug to permit outward movement of the plug under the bias of the valve stem, a plurality of spherical ball elements for releasably locking the inverted cap to the sleeve, a plurality of radially spaced openings in the wall of said inner cap receiving the ball elements therein with said ball elements being of a diameter greater than the wall thickness of said inner cap, said sleeve having an inner annular groove therein adjacent said radially spaced openings and receiving a projecting portion of the ball elements for releasably holding the inner cap within said sleeve, said plug having an annular groove therein spaced inwardly of said ball elements when said inner cap is releasably locked in position by said spherical ball elements, said plug groove upon outward movement of said plug being disposed adjacent and receiving said spherical ball elements to permit disengagement of said ball elements from the groove of said sleeve and release of said cap from said sleeve, said cap having a central end opening therein and said plug having a reduced diameter cylindrical extension thereon fitting within said end opening, and said fusible material being ring shaped and fitting about said cylindrical extension between said plug and the end surface of said cap.

3,896,836
HOT AND COLD WATER MIXING DEVICE
Claude Labarre, Vernier, Switzerland, assignor to Kugler Fonderie et Robinetterie S.A., Geneva, Switzerland
Filed Sept. 27, 1973, Ser. No. 401,361
Claims priority, application Switzerland, Oct. 4, 1972, 14467/72
Int. Cl. G05d *11/02, 23/13*
U.S. Cl. 137—98 **10 Claims**



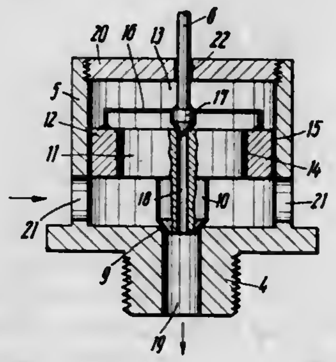
1. In a device for mixing hot and cold water, said device having a housing, a hot water inlet and a cold water inlet disposed to the housing, an outlet on the housing for a mixture of hot and cold water passing from said hot and cold water inlets, two upstream chambers disposed within the housing, one each in communication with the hot water inlet and the cold water inlet, two downstream chambers disposed within the housing, one each in communication with said upstream chambers, said downstream chambers disposed in communication with a hot and cold water mixing chamber within the housing, said mixing chamber being in communication with said water outlet, and a hot water distributor and cold water distributor each positioned intermediate an upstream and downstream chamber, the improvement which comprises, the hot water distributor and cold water distributor, each distributor including a valve, a membrane supporting the valve, a seat whereon the membrane supports the valve, the valve seat being arranged between an upstream chamber and a downstream chamber, the membrane delimiting a counterpressure chamber, a nozzle mounted for movement with the valve, and a tapering central rod passing through the nozzle and defining therewith a variable passage in communication with the upstream chamber and with a feed opening in the membrane for interconnecting the upstream and counterpressure chambers, said counterpressure chamber communicates with the downstream chamber through a calibrated outlet channel the central rod being axially movable, and a compensating piston mounted in the upstream chamber and biasing the rod for axial movement under the pressure in the upstream chamber.

3,896,837
GAS MIXING APPARATUS PARTICULARLY FOR RESPIRATORS AND MEDICAL DEVICES
Holmer Rohling, Reinfeld, Germany, assignor to Dragerwerk Aktiengesellschaft, Germany
Filed Oct. 3, 1973, Ser. No. 402,886
Claims priority, application Germany, Oct. 13, 1972, 2250174
Int. Cl. F16k *19/00*
U.S. Cl. 137—110 **8 Claims**



1. A gas mixing apparatus for gases under pressure, particularly for respirators and medical devices, comprising a gas mixer device, a plurality of compressed gas supply lines connected to said gas mixer device, at least one mixed gas delivery line extending out of said gas mixer device for the discharge of a mixture of gases from said compressed gas supply lines from said gas mixer device, and at least one by pass line connected from a compressed gas supply line to said delivery line and having an automatic pressure operated shutoff valve therein responsive to a drop in pressure in said delivery line to feed gas through said by pass line to said delivery line whenever the pressure therein drops below a predetermined value, said at least one by pass line comprising a by pass line connected to each of said supply lines each having an automatically operable pressure operated shutoff valve.

3,896,838
VALVE
Werner Foller, Heiligenrode, Germany, assignor to Gestra-KSB Vertriebsgesellschaft, Bremen, Germany
Filed Oct. 7, 1974, Ser. No. 512,596
Claims priority, application Germany, Oct. 15, 1973, 235176
Int. Cl.² F17T *1/20*
U.S. Cl. 137—195 **5 Claims**



1. A float controllable valve responsive to a level of fluid comprising:

a housing having an internal chamber including an input supply opening and a discharge opening;

a cylinder disposed above the discharge opening within the internal chamber of said housing, said cylinder having at least one side open and communicative to the housing chamber;

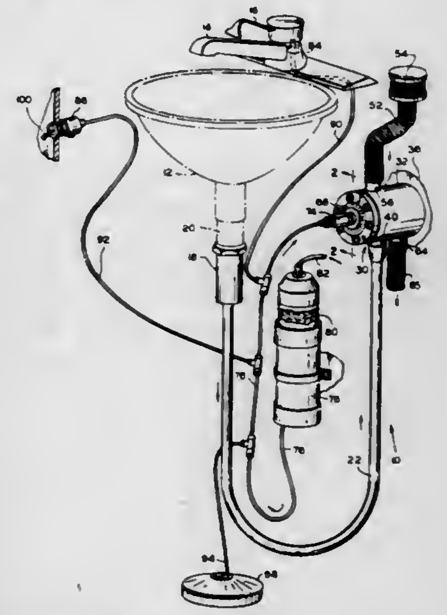
a control piston moveably disposed in said cylinder and having a main locking member in sealing contact with the discharge opening, said piston and locking member having a connecting channel formed therethrough and connecting the inner cylinder chamber with the low pressure side of the valve;

an auxiliary piston moveably disposed in said cylinder and adjacent to said control piston, and defining a first annular throttle opening between said auxiliary and said control pistons and a second annular throttle opening between said auxiliary piston and said cylinder, said throttle openings connecting the cylinder chamber to the housing chamber;

an auxiliary locking member disposed in said inner cylinder chamber and coupled to said auxiliary piston and sealing said connecting channel; and

a float disposed within the housing chamber and coupled to said auxiliary locking member.

3,896,839
VACUUM DRAIN
George K. Austin, Jr., P.O. Box 209, Rt. 2 Box 254, Newberg, Oreg. 97132
Filed Mar. 18, 1974, Ser. No. 451,988
Int. Cl. F16k *45/00*
U.S. Cl. 137—216.1 **11 Claims**



1. In a vacuum drain,

trap means,

a valve unit having closure means and a body provided with a first inlet connected to the trap means, a second inlet connected to the atmosphere, and an outlet,

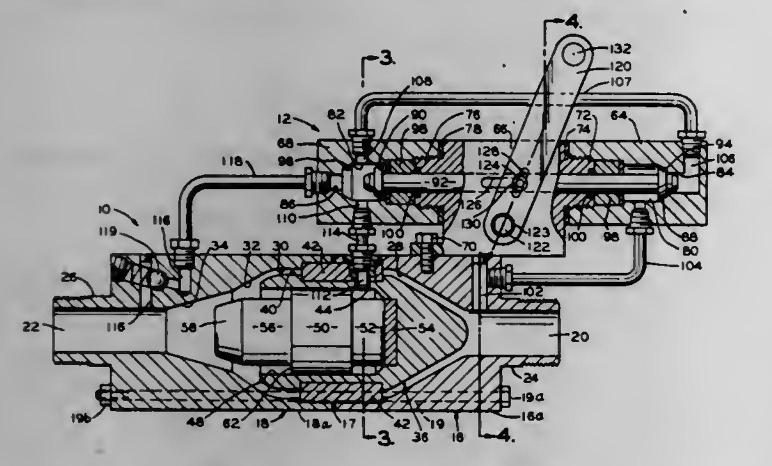
vacuum means connected to the outlet for withdrawing liquid from the trap means and air from the second inlet, the valve having a closure member movable between a closed position closing the inlets from the outlet and an open position opening the inlets to the outlet,

and control means for moving the closure member selectively to one or the other of its positions.

3,896,840
PILOT OPERATED FLOW CONTROL VALVE
Sven E. Andersson, 138 Lakeview Ln., Chagrin Falls, Ohio 44022
Filed May 1, 1974, Ser. No. 465,844
Int. Cl.² F16K *31/42*
U.S. Cl. 137—219 **14 Claims**

14. A fluid pressure operated flow control valve comprising, housing means having a main fluid flow passageway there-

through having upstream and downstream ends with respect to the direction of fluid flow therethrough, a main valve seat in said main passageway between said upstream and downstream ends a main valve element reciprocable axially of said seat and movable into engagement therewith in the direction of fluid flow to close said main passageway, piston means for reciprocating said main valve element, means defining a piston chamber in said main passageway receiving and reciprocably supporting said piston means, said housing means including first and second valve element chambers laterally spaced from said main passageway and axially aligned and spaced apart from one another, said valve element chambers having aligned outlet passageways opening into the axially opposite ends thereof, a reciprocable actuator rod coaxial with said valve element chambers and having opposite ends extending into said valve element chambers through the axially adjacent ends thereof, first and second valve elements respectively in said first and second valve element chambers and connected to the corresponding end of said rod for reciprocating movement therewith, each said first and second valve elements being adapted to engage and close the corresponding outlet passageway, said rod axially spacing said first and second valve elements a distance less than the axial space between said outlet passageways, whereby movement of either of said first and second valve elements to close the corresponding outlet passageway moves the other to open the corresponding outlet passageway, first flow path means for delivering upstream fluid into said first valve element chamber at a location behind said first valve element when said first valve element closes the corresponding outlet passageway, second flow path means for delivering upstream fluid to said second valve element chamber and said piston chamber, said second flow path means including a portion extending from the outlet passageway of said first valve element chamber and opening into said second valve element chamber at a location behind said second valve element when said second valve element closes the corresponding outlet passageway, third flow path means for delivering upstream fluid from said piston chamber and second valve chamber through the outlet passageway of said second valve chamber to a location downstream from said main valve seat, and means to reciprocate said rod to alternatively move said first and second valve elements to close the outlet passageway of the corresponding valve chamber.



3,896,841

CONSTANT WEIGHT-CONSTANT DIMENSION COUPLING ASSEMBLY FOR MARINE LOADING ARMS

Allan R. Bahlke, Placentia, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Mar. 21, 1974, Ser. No. 453,653

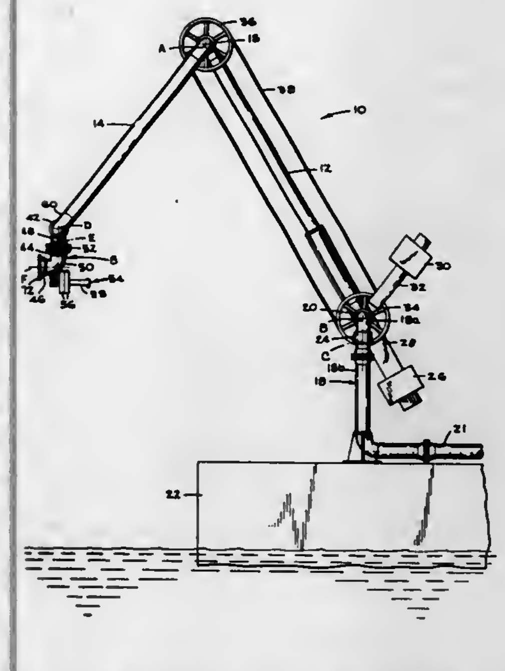
Int. Cl. F16l *3/00;* **B65g** *67/00*

U.S. Cl. 137—271 **18 Claims**

1. In a fluid loading arm having at least one fluid conducting pipe section supported for pivotal movement about a first generally horizontal axis, and having an outer end for coupling the arm to a fluid conduit of a transport vessel, the improvement comprising a constant weight-constant dimension coupling assembly at the outer end of the arm, said coupling assembly including

- a. a plurality of pipe swivel joints oriented on mutually perpendicular axes,
- b. at least one curved pipe section interconnecting the swivel joints, and
- c. a simulator for a flow control valve, the simulator positioned in the coupling assembly and releasably interconnected therewith at a location that will affect the moment load exerted by the assembly on the loading arm, said simulator comprising a flow conduit whose weight is equal to the total weight of said flow control valve and whose axial dimension is equal to the corresponding dimension of said valve,

whereby interchanging the simulator and the complete flow control valve results in no change in the existing conditions that have an effect on pivotal movement of the arm about the first generally horizontal axis.



3,896,842

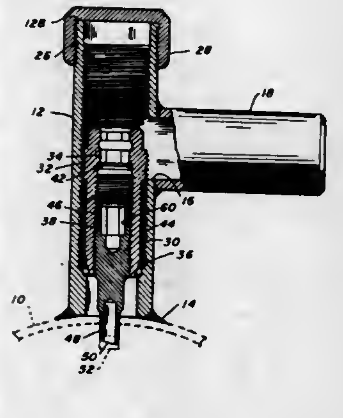
COMBINATION PUNCH AND VALVE TEE FITTING

Judson C. Cole, Tulsa, Okla., assignor to Continental Industries, Inc., Tulsa, Okla.

Filed May 13, 1974, Ser. No. 469,101

Int. Cl. B23b *41/08;* **F16e** *41/04*

U.S. Cl. 137—318 **5 Claims**



1. A self-punching tee-fitting for providing communication with the interior of a pipe main, comprising:

a tubular body having means at the lower end thereof for affixing to a pipe main, and having an outlet opening intermediate the ends encompassed by a tubular outlet adaptable to receive the connection of a distribution pipe thereto, the tubular body having internal threads, and an internal valve seat below the threads and below the outlet opening;

a tubular plug valve member having external threads threadably received in said tubular body, the upper end of the plug valve member having wrench engaging means whereby the plug valve member may be threadably positioned in said body, the plug valve member having a seat portion sealably engagable with said body valve seat when the plug member is threadably downwardly advanced, the plug member having internal threads in the lower portion thereof and an internal valve seat above the threads; and an externally threaded cylindrical punch threadably received in said plug valve member, the lower end of the punch having a punching surface thereon, the upper end of the punch having wrench receiving means, the punch having a sealing surface sealably engagable with the said plug member internal valve seat when the punch is threadably upwardly positioned relative to said plug member, whereby when the punch is downwardly threadably advanced it punches a hole in a pipe main to which the body is affixed, and wherein free communication is provided for gas flow out said body outlet opening when the plug valve member is upwardly threadably positioned.

3,896,843

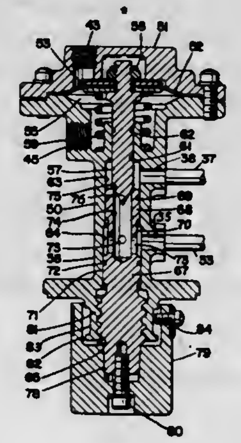
PILOT VALVE FOR CONTROLLING A FLUID PRESSURE OPERATED VALVE

James S. Millar, Fountain Valley, and Glenn W. Henderson, Tustin, both of Calif., assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Division of Ser. No. 359,464, May 11, 1973, Pat. No. 3,820,556. This application Dec. 13, 1973, Ser. No. 424,199

Int. Cl. G05d *7/03;* **F16k** *31/363*

U.S. Cl. 137—486 **2 Claims**



1. A pilot valve comprising a housing having first and second chambers connected by a bore, a movable wall dividing the first chamber into high and low pressure compartments, a high pressure port for introducing fluid to the high pressure compartment and a low pressure port for introducing fluid to the low pressure compartment, a valve plug member connected to the movable wall and extending through said low pressure compartment and the bore into the second chamber, sealing means in said bore sealing the low pressure compartment from the second chamber, a counterbore in said housing, a valve seat member in said counterbore having a passage therethrough connectable to the second chamber and in constant communication with a third port that intersects said counterbore, a fourth port connected to the second chamber, manually operable means directly connected to the valve seat member and axially movable within said counterbore for positively adjusting the axial position of the valve seat member in said counterbore, said valve plug member and said valve seat member being cooperable for controlling flow of fluid between said passage and said second chamber, said means having a threaded connection directly with said housing for accomplishing said adjustment, another sealing means in contact with said valve seat member and the wall of said counterbore between said third port and said threaded connection that seals said threaded connection relative to said third port in the adjusted positions of said valve seat member.

3,896,844

FLUID FLOW REGULATING APPARATUS

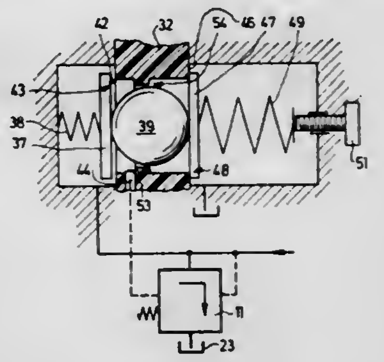
Werner Schumacher, Asperg, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Apr. 1, 1974, Ser. No. 457,124

Claims priority, application Germany, Apr. 4, 1973, 2322421

Int. Cl. F16k *17/00*

U.S. Cl. 137—488 **9 Claims**



1. In a fluid flow regulating apparatus, a combination comprising a master valve having a body provided with a fluid admitting inlet opening and a fluid discharging outlet opening, the pressure of fluid in one of said openings being variable, said master valve including further a valve member movable in said body between a plurality of positions to thereby change the rate of fluid flow between said openings and means for biasing said valve member in a first direction, said valve member having a first surface which is subjected to fluid pressure in said one opening so that the fluid in said one opening tends to move said valve member in a second direction counter said first direction, said biasing means including a plenum chamber and said valve member having a second surface which is subjected to the pressure of fluid in said chamber; first channel means connecting said one opening with said chamber; a tank; second channel means connecting said chamber with said tank; first adjustable flow restrictor means provided in said first channel means and comprising a portion which is movable between a plurality of positions to thereby change the rate of fluid flow in said first channel means; adjustable pilot valve means provided in said second channel means and comprising a portion which is movable between a plurality of positions including a closed position to thereby change the rate of fluid flow in said second channel means; and second flow restrictor means provided in said second channel means between said chamber and said pilot valve means, and comprising a first portion and a second portion movable with respect to said first portion to thereby change the rate of fluid flow through said second flow restrictor means, said second portion of said second flow restrictor mans being arranged to move said portion of said first flow restrictor means in response to movement of said portion of said pilot valve means and vice versa, said second flow restrictor means providing a maximum throttling action and said first flow restrictor means a minimum throttling action when said pilot valve means is in said closed position and said second portion of said second flow restrictor means being constructed and arranged to increase the throttling action of said first flow restrictor means at a first rate and simultaneously reduce the throttling action of said second flow restrictor means at a lower second rate when said pilot valve means moves away from said closed position in response to variations of fluid pressure in said one opening.

3,896,845

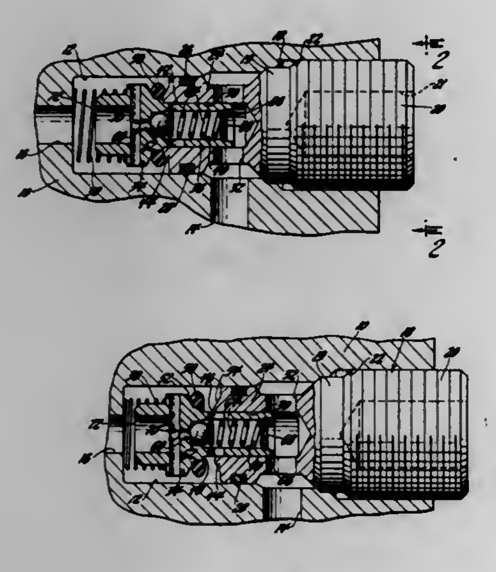
ACCUMULATOR CHARGING AND RELIEF VALVE

Donald L. Parker, Middletown, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed June 13, 1974, Ser. No. 479,035

Int. Cl. F16k *17/26*

U.S. Cl. 137—493.3 **2 Claims**



1. In a charging valve adapted to be removably attached to a brake booster housing for controlling the introduction of pressurized fluid to an accumulator, a valve body having an enlarged cylindrical head with a threaded portion adapted to be removably attached in a corresponding threaded bore in said housing, said valve body having an elongated end portion extending into a cavity in the brake booster housing between a first passage fluidly connected to a fluid pressure source and a second passage fluidly connected to an accumulator; annular seal means encircling said end portion and engaging the surrounding surface of the housing to prevent fluid communication therebetween; said end portion having passage means therein including an axially directed cylinder bore and a radially directed port connected to said first passage; a movable valve member having an elongated cylindrical portion extending into said bore for reciprocal movement therein, and having a passage including an axially directed portion fluidly connected to said first passage and a radially directed portion normally covered by the surrounding end of said valve body when in a closed operative position and moved with said movable valve member to an open operative position away from said end portion of said valve body to interconnect said first and second passages, said end portion of said movable valve member having a valve seat formed thereabout, a corresponding valve seat formed on the end of said valve body adapted to be engaged by the valve seat of the movable valve member when in a closed operative position thereby providing a primary metal-to-metal seal therebetween, a spring biasing said movable valve member toward its closed operative position with the valve seats engaged, an annular resilient seal member encircling said valve seats when in a closed operative position, inclined surfaces on said movable valve member and on said valve body contacting opposite sides of said seal member when in a closed operative position and thereby compressing portions of said seal member to provide a secondary seal about said primary metal-to-metal seal.

3,896,846

DIRECT-FLOW VALVE

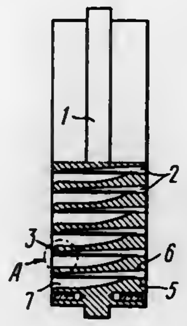
Georgy Leonidovich Zakharzhevsky, ulitsa Chkalova 125, kv. 14, Sumy, U.S.S.R.

Filed May 14, 1973, Ser. No. 360,169

Claims priority, application U.S.S.R., Dec. 10, 1969, 1383604

Int. Cl. F16k *15/16*

U.S. Cl. 137—512.1 **1 Claim**



1. A direct-flow valve comprising: an integrally formed body; a system of slots made in said body on the delivery side narrowing toward the suction side and having bottom walls, one of the walls of said slots functioning as valve seats; rows of through openings made in said body on the suction side, said openings extending adjacent said walls of said narrowing slots, which function as the valve seats, flat resilient plates each having one of their edges fastened to the bottom portions of said slots so as to abut against said bottom walls of the slots so as to bias said plates into contact with said valve seats, said plates functioning as the valve members for respectively separating the cavities formed by said slots and said openings, said plates being deflected during the suction period from contact with said slot walls which function as the valve seats, and abutting against the opposite walls of said slots which function as members limiting the bending of said resilient plates.

3,896,847

LAMELLAR VALVES

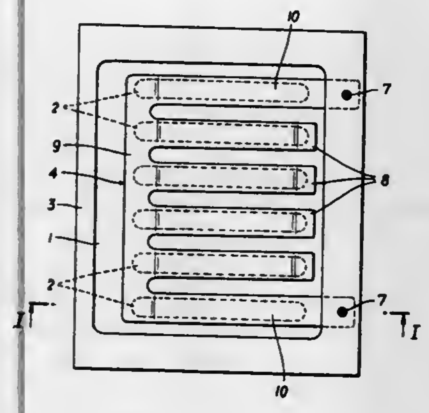
Friedrich Bauer, and Hans Hrabal, both of Vienna, Austria, assignors to Hoerbiger Ventilwerke Aktiengesellschaft, Vienna, Austria

Filed Dec. 17, 1973, Ser. No. 425,349

Claims priority, application Austria, Dec. 22, 1972, 10971/72

Int. Cl.^{2} F16K *15/16*

U.S. Cl. 137—512.15 **4 Claims**



1. A lamellar valve for compressors, comprising: a seating plate with throughflow channels; a closure plate supported by flexible guide rods for covering said throughflow channels and including elastic tongues with free ends, said tongues being connected by a transverse joining web; and said flexible guide rods extending from the ends of said joining web and being clamped at locations spaced therefrom.

3,896,848

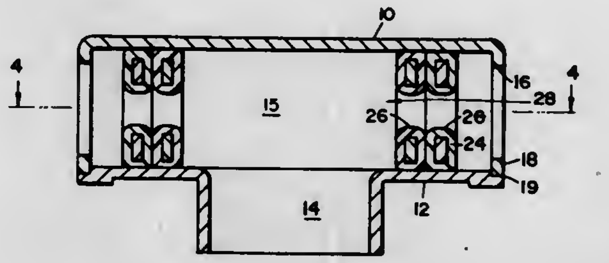
PRESSURE RESPONSIVE CHECK VALVE

James R. Sypitkowski, Clawson, Mich., assignor to The Carborundum Company, Niagara Falls, N.Y.

Division of Ser. No. 292,561, Sept. 27, 1972, Pat. No. 3,844,947. This application Mar. 25, 1974, Ser. No. 454,635

Int. Cl. F16k *15/14*

U.S. Cl. 137—512.15 **6 Claims**



1. A fluid pressure responsive check valve wherein the improvement comprises: means forming a chamber having parallel inner surfaces connected by a side provided with one of an inlet and an outlet, the other of which communicates with one of said inner surfaces; and fluid pressure responsive sealing means disposed in said chamber and normally preventing fluid flow from said inlet to said outlet, said sealing means having sealing surfaces in sliding relationship with said inner surfaces and each other and being movable in response to fluid pressure exerted against said sealing means through said inlet to permit fluid flow to said outlet.

3,896,849

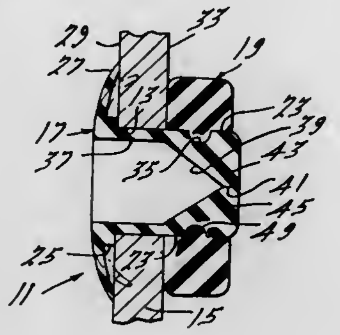
PRESSURE RELIEF VALVE

Paul R. Ervin, Milford, and George H. Muller, Ann Arbor, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 385,921, Aug. 6, 1973, abandoned, which is a division of Ser. No. 234,227, Feb. 13, 1972, abandoned. This application Aug. 5, 1974, Ser. No. 494,654

Int. Cl.^{2} F16K *15/14*

U.S. Cl. 137—525.1 **2 Claims**



1. The combination of an elastomeric pressure relief valve and a relatively rigid fluid enclosure wall, said enclosure wall having a circular opening formed therein,

said valve including an elastomeric insert received within said opening,

said insert including a passage extending from the interior of said enclosure toward the exterior thereof and

closure means separating said passage from the exterior of said enclosure when the enclosure contains a fluid of a pressure less than a predetermined magnitude,

said closure means being elastically deformable to open said passage to the exterior of said enclosure when the pressure within the enclosue exceeds the predetermined magnitude,

said insert including a head having a cross sectional dimension greater than that of the opening in the wall of said enclosure,

resilient means positioned about said insert constricting said closure means to a more tightly closed position,

said resilient means comprising an elastomeric annulus,

said insert and said resilient means including annular groove means and cooperating annular bead means to retain said resilient means in a predetermined position about said insert,

said elastomeric annulus when in position about said insert being engaged with the exterior of the enclosure wall adjacent said opening, said insert head and said elastomeric annulus sandwiching the enclosure wall to retain said insert in position within said opening.

3,896,850

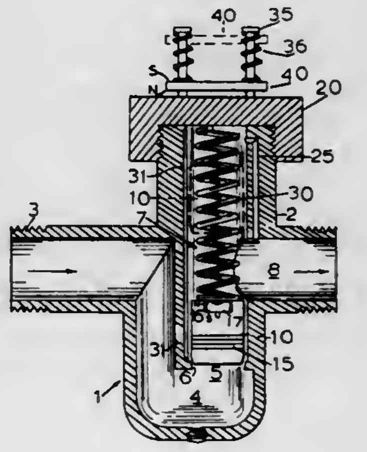
CHECK VALVE AND LEAK INDICATOR

Hobart Waltrip, 3444 Bonnie Lea Ct., Louisville, Ky. 40216

Filed July 16, 1973, Ser. No. 379,803

Int. Cl. F16k *21/04*

U.S. Cl. 137—554 **1 Claim**



1. A high pressure steam valve including

A. a valve body comprising:

1. an elongated valve chamber, including:

a. an inlet port at one end of said chamber,

1. an annular valve seat surrounding said inlet port

b. an outlet port opening in the side wall of said valve chamber at a point in spaced relation to said inlet port and extending through the side wall of said valve body,

B. an elongated valve closure in the form of a cylindrical plug, and a circular compression ring surrounding said cylindrical plug, said cylindrical plug being fitted in said valve chamber for axial reciprocating movement in said chamber between

1. full closed position seated against said annular valve seat

2. full open position at a point past said outlet port,

3. a leaking position wherein said compression ring surrounding said cylindrical plug is past the level of the lowest part of said outlet port thereby allowing a small leak to occur, and at

4. intermediate points therebetween

C. a spring, mounted in said valve chamber and biased at the top against the top of said valve chamber and at the bottom against said cylindrical plug for urging said cylindrical plug toward said full closed position,

D. the further combination therewith of indicator means responsive to the axial movement of said cylindrical plug to indicate the position of said cylindrical plug and visibly indicate the position of said cylindrical plug at said leaking position.

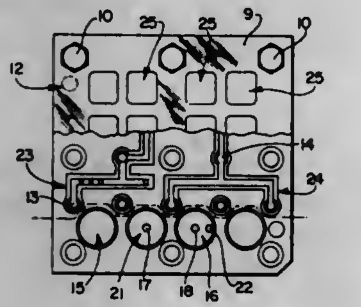
3,896,851
INTEGRATED MODULAR FLUID LOGIC ARRAYS DISPLAYING DYNAMIC CIRCUIT OPERATING CONDITIONS

Charles William Brouwer, East Greenwich, R.I., assignor to Leesona Corporation, Warwick, R.I.

Filed Jan. 28, 1974, Ser. No. 436,941

Int. Cl.² G06D *1/12*

U.S. Cl. 137—557 **10 Claims**



1. A fluid logic system comprising in combination, a plurality of fluid logic elements of the flexible diaphragm type laid out in a modular circuit sandwich array with a common elastically deformable diaphragm held between two opposed apertured logic plates defining respectively two mating cavity wells for each of said logic elements on opposite sides of the diaphragm and with said logic plates holding said diaphragm tautly therebetween, a manifold plate defining a plurality of fluid flow paths for conveying fluid to said wells of the logic elements disposed on the opposite side of at least one said logic plate and including a display plate disposed as an outer element in said sandwich array for visual observation, said display plate comprising a plurality of pressure indicators each connected by a fluid conveying passageway to a different one of the fluid paths on said manifold plate, to thereby present a set of visible indicia of the pressure conditions of predetermined circuit monitoring points.

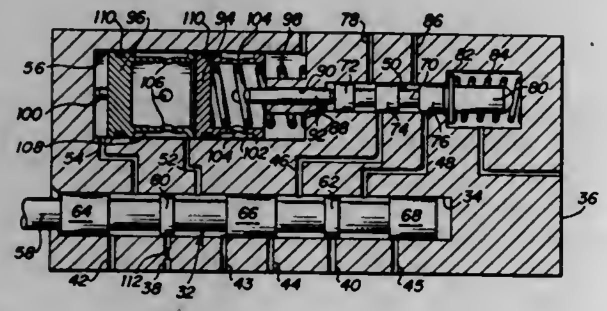
3,896,852
TIME DELAY VALVE

Lloyd H. Holmes, Salt Lake City, Utah, assignor to E-Systems, Inc., Dallas, Tex.

Filed Dec. 6, 1973, Ser. No. 422,332

Int. Cl. F15b *13/042, 21/10*

U.S. Cl. 137—596.18 **9 Claims**



4. A time delay mechanism for controlling a fluid flow in a fluid control system, comprising in combination:
- a secondary slider valve movable between an open position and a closed position for controlling a fluid flow from input lines to output lines as part of the fluid control system;
- actuator means responsive to a fluid pressure for activating said slider valve to move from the closed position to the open position;
- a selectively operable primary slider valve for controlling a fluid flow to the input lines of the secondary slider valve from a fluid source and also for controlling a fluid flow to said actuator means from the fluid source; and
- means defining an orifice in a line from the source to said actuator means to establish a time delay between the movement of the primary slider valve and the movement of the secondary slider valve, said actuator means further comprising first and second piston means, said first piston means being independently movable with respect to said second distinct piston means, said first piston means being movable to open said secondary slider valve in response to said fluid pressure when said primary slider valve moves in a first direction, said second piston means being movable to open said secondary slider valve in response to said fluid pressure when said primary slider valve moves in a second direction.

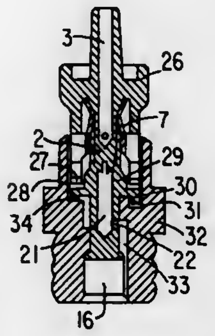
3,896,853
COUPLING MEANS FOR USE WITH BLOOD SAMPLING APPARATUS

Johann Bernhard, Nacka, Sweden, assignor to Pro Medical Engineering AB, Lidingo, Sweden

Division of Ser. No. 270,312, July 10, 1972, Pat. No. 3,838,843. This application July 23, 1974, Ser. No. 490,982

Int. Cl. F16l *37/28;* **A61b** *5/14*

U.S. Cl. 137—614.05 **7 Claims**



1. A coupling device for use with blood sampling apparatus comprising a needle carrier portion, a junction portion, and means for fitting said portions to one another into an operative unit, said needle carrier portion comprising:
- a. valve means having an axial duct and a vent hole,
- b. a resilient valve sleeve surrounding said valve means, and including means for sealing said vent hole,

said junction portion having an axial bore open at the lower end thereof, and comprising:
1. a junction sleeve disposed in said bore, means for turning the junction sleeve in the bore of the junction portion to a first position, said junction sleeve having an axial duct and a lateral hole,
2. means associated with the needle carrier portion and the junction sleeve for fitting one to another, said last means enabling the turning of the needle carrier portion and the junction sleeve as one unit relative to the junction portion for closing said lateral hole,
3. said junction sleeve having an orifice portion at the upper end of said axial duct,
4. said orifice portion being slightly wider than said valve means, and
5. said junction sleeve being removably coupled to said valve means,

whereby in connecting the two portions of the device no air is forced into the first portion by reason of the junction sleeve lifting part of the resilient valve sleeve thereby opening the vent hole to enable escape of air to the atmosphere.

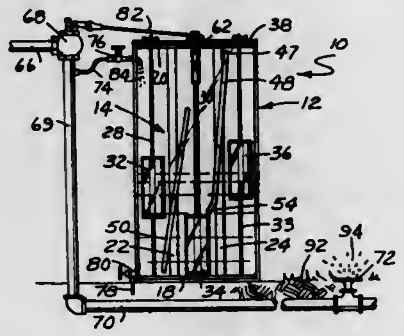
3,896,854
MEANS FOR AUTOMATICALLY TIMING INTERMITTENT CYCLES OF LIQUID FLOW

James A. Utchell, 7749 Golondrina, San Bernardino, Calif. 92410

Filed Aug. 7, 1974, Ser. No. 495,324

Int. Cl. A01g *27/00*

U.S. Cl. 137—624.14 **10 Claims**



1. Flow control means for quickly and automatically starting and stopping the flow of liquid, in accordance with a sequence of alternating flow and non-flow cycles of respectively equal duration, from a pressurized source through a valve fitted with a control lever adapted to maintain the valve in normally open position but movable in a way to close said valve, and into a conduit in downstream communication with the valve, said flow control means comprising:
- a tank having a upper opening and a lower opening for the flow of said liquid into and out of the tank, respectively, said tank being connectable with said conduit in a way to receive a portion of the liquid flowing through said conduit through said upper opening by means including a first adjustable valve, said tank also being adapted to permit the attachment thereto of drainage means, including a second adjustable valve, in communication with said lower opening, whereby some of the liquid can be routed into said tank from said conduit and drained from the tank through said lower opening at desired flow rates, during operation of said flow control means, through appropriate adjustment of the first and second valves;
- float means including three separate floats and guide means therefor adapted for installation in said tank so that the floats are confined to fixed paths of travel under the influence of changing liquid levels in the tank, said three separate floats including, in the installed flow control means, a first float, a second float disposed outwardly in one direction from the first float and a third float disposed outwardly in a second direction from said first float;
- said float means including, additionally, first pivoted lever means and mounting means therefor adapted for normal disposition in the installed float means in a way to physically restrain said first float when the latter is at substantially its lowest point of travel in the tank and thereby hold the first float at that position, and being pivotally movable by said second float, when the latter arrives at substantially its highest point of travel in the tank, in a way to free the first float from its physical restraint and permit upward movement thereof;
- said float means also including second pivoted lever means and mounting means therefor adapted for normal disposition in the installed float means in a way to physically restrain said first float when the latter is at substantially its highest point of travel in the tank and the reby hold the first float in that position, and being pivotally movable by said third float, when the latter descends to substantially its lowest point of travel in the tank, in a way to free the first float from its physical restraint and permit downward movement thereof;
- the installed float means including valve actuating means adapted, when upward force is applied thereto, to move said control lever in a way to close said valve;
- the valve actuating means and first float being adapted and relatively positioned in the installed float means so that said first float induces said valve actuating means to close said valve under the influence of upwardly exerted force thereon when the first float reaches substantialy its upper limit of travel within said tank;
- whereby the operating flow control means serves to automatically effectuate alternating cycles of flow and nonflow of said liquid into said conduit from said pressurized source at fixed flow and nonflow time periods through adjustment of the first and second adjustable valves so that filling time of the tank from a fixed lower level to a fixed upper level, with the second adjustable, or drainage, valve open at its adjusted setting, corresponds to a predetermined time period cycle for flow of the liquid into said conduit, and drainage time of the tank from said fixed upper level to said fixed lower level corresponds to a predetermined time cycle period for nonflow of the liquid into said conduit;
- and whereby, when the flow control means is operating, the second and third floats rise with the rising liquid level in said tank during the tank-filling cycle of operations while said first pivoted lever means holds said first float at its lowermost position of travel until said liquid level reaches said fixed upper level, whereat said second float causes the first pivoted lever means to move and free said first float for upward travel, which float then bobs rapidly upwardly through the liquid to its uppermost position of travel and causes the valve actuating means to rapidly close the valve and thereby terminate said tank-filling cycle of operations, after which the second pivoted lever means assumes its normal position and holds said first float at said uppermost position whereat that float maintains said valve closed, by the steady application of upwardly directed force to said valve actuating means, so that the liquid drains from the tank through said adjustable second valve and the second and third float descend with the falling liquid level in the tank until said fixed lower level is reached, whereat the third float forces said second lever means to move and thereby free the first float for descent, which latter then drops rapidly out of contact with said valve actuating means to the cushioning liquid at said fixed lower level and permits the valve actuating means to allow the control lever to move in a way to quickly open said valve and recommence the tank-filling cycle of operations.

3,896,855
MULTIPORTED VALVE

Cecil C. Grieger, Houston; Roy W. Benefield, Magnolia; Alton D. Oliver, and Clyde H. Chronister, both of Houston, all of Tex., assignors to Chronister Development, Inc., Houston, Tex.

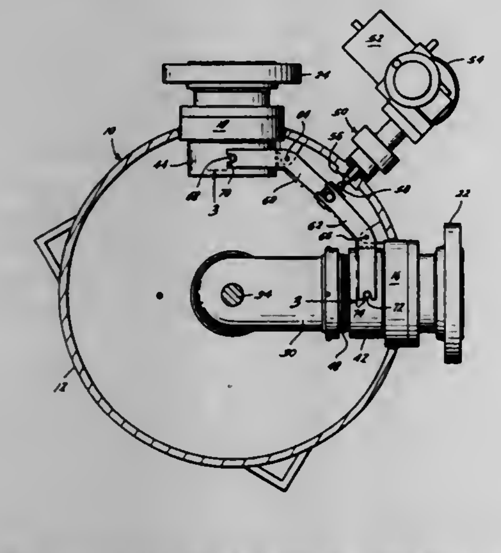
Filed Mar. 12, 1974, Ser. No. 450,302

Int. Cl.² F16K *11/02*

U.S. Cl. 137—625.11 **4 Claims**

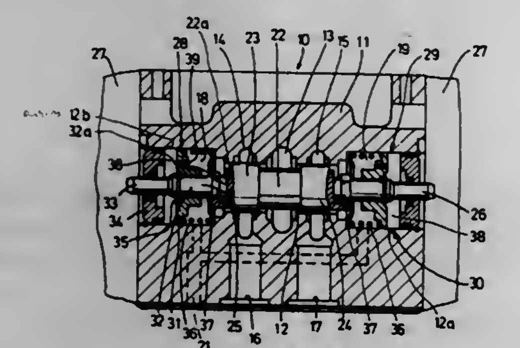
1. A multiported valve comprising,
- a housing having first, second and third conduits extending therein,
- a pipe bend in said housing having first and second ends, the first end thereof being pivotally sealable to the first conduit,
- means connected to the bend and extending outside of said housing for rotating said bend about the first end for moving the second end into and out of alignment with the second and third conduits,
- a movable collar positioned in said housing and telescopically and sealably engaging each of the second and third conduits for telescopically engaging and sealing with the second end of the pipe bend when the second end is aligned with one of the second and third conduits, and
- means connected to both of said collars and actuated exteriorly of the housing for simultaneously retracting said

collars allowing the second end of the bend to be moved between the second and third conduits, and extending the collars to bring the collars into engagement with the second end of the bend when the second end is aligned with one of the second and third conduits, said means connected to said collars including,



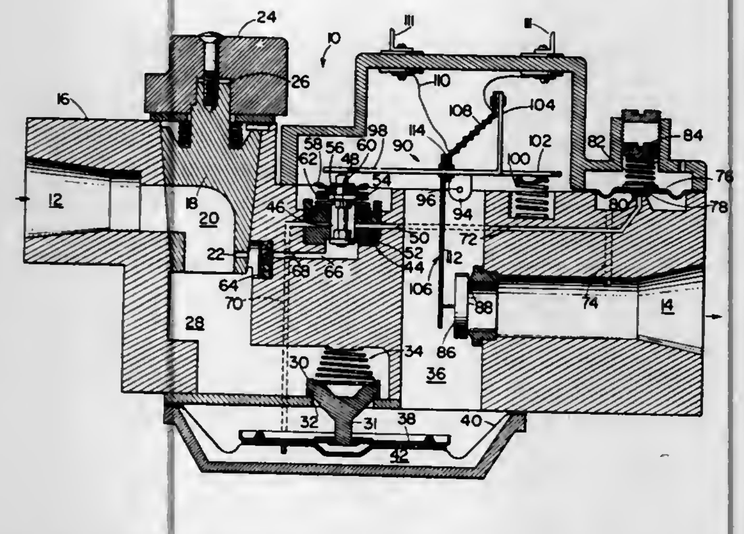
first and second levers in the housing, one end of each of the levers connected to one of the collars,
said levers pivotally connected to the housing,
a single actuator actuated exteriorly of the housing and connected to the second ends of the first and second levers for axially moving both of the collars.

3,896,856
DAMPED CONSUMER VALVE ARRANGEMENT
Werner Schumacher, Asperg, and Eugen Mayr, Stuttgart, both of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany
Filed Aug. 8, 1973, Ser. No. 386,738
Claims priority, application Germany, Sept. 11, 1972, 2244493
Int. Cl.² F16K *31/02, 11/00*
U.S. Cl. 137—625.65 **6 Claims**



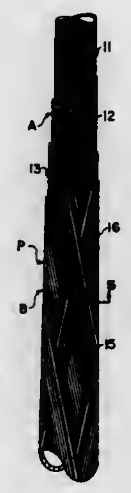
1. Damped consumer valve arrangement comprising a valve body having a bore and including supply conduit means, consumer conduit means, and return conduit means communicating with a supply bore portion, first and second consumer bore portions, and first and second return bore portions of said bore, respectively; valve means movable in said bore between a neutral position, and first and second operative positions for connecting in said first operative position said supply bore portion with said first consumer bore portion and said second consumer bore portion with said second return bore portion and for connecting in said second operative position said supply bore portion with said second consumer bore portion and said first consumer bore portion with said first return bore portion; damping means arranged in at least one of said return bore portions and including spring means, a damping piston movably mounted on said valve slide means and engaging one end of said spring means, and an annular spring washer also movably mounted on said valve slide means and engaging the other end of said spring means; first stationary abutment means on one end of said at least one return bore portion, and second stationary abutment means on the opposite end of said at least one return bore portion, said damping piston being spaced from said first abutment means and said spring washer engaging said second abutment means in said neutral position of said valve slide means; and a pair of engaging means on said valve slide means, one of said engaging means engaging said damping piston during movement of said valve slide means in one direction from said neutral position, while said spring washer remains in abutment with said second abutment means and moves relative to the other of said pair of engaging means, and the other engaging means engaging said spring washer during movement of said valve slide means in the opposite direction from said neutral position, while said damping piston moves relative to said one engaging means to engage said first abutment means.

3,896,857
CONTROL DEVICE HAVING A BLEED VALVE AND AN AUTOMATIC VALVE OPERATED SEQUENTIALLY BY A SINGLE BIMETAL ELEMENT
Jess H. Turner, Riverside; Elmer E. Wallace, Fullerton, and Frank Fiedler, Jr., Rowland Heights, all of Calif., assignors to Essex International, Inc., Fort Wayne, Ind.
Filed Feb. 20, 1974, Ser. No. 444,092
Int. Cl.² F16K *31/42;* **G05D** *23/185*
U.S. Cl. 137—628 **6 Claims**



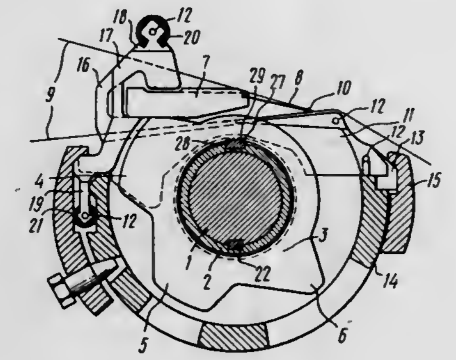
1. A control device for controlling the flow of fuel to a burner apparatus, comprising:
a casing having inlet and outlet means;
a differential pressure operated diaphragm mounted in said casing and defining an operating pressure chamber between a portion of said casing and said diaphragm;
main valve means operatively connected to said diaphragm for controlling the flow of fuel between said inlet and said outlet means;
a bleed flow path communicating with said inlet and said outlet means and said operating pressure chamber;
a bleed valve means situated in said bleed flowpath for causing operation of said main valve means when actuated;
a bleed valve actuating member pivotally mounted in said casing, said bleed valve actuating member having a portion adapted to actuate said bleed valve means;
first biasing means for normally urging said bleed valve actuating member to a bleed valve actuating position;
an automatic valve means for controlling fuel flow from said main valve means to said outlet means; and
thermally responsive means connected to said bleed valve actuating member and said automatic valve means for operating said bleed valve means and said automatic valve means sequentially.

3,896,858
UTILITY POLE
William J. Whatley, 631 S. Pontiac St., Denver, Colo. 80222
Filed Feb. 28, 1973, Ser. No. 336,724
Int. Cl. F16l *11/02*
U.S. Cl. 138—130 **6 Claims**



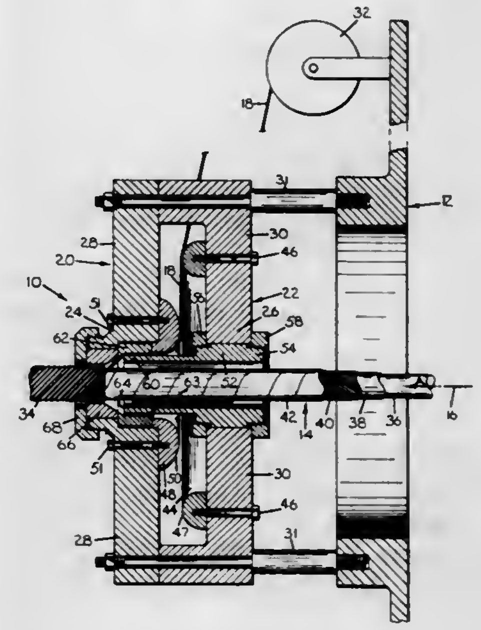
1. A hollow tapered pole comprising:
an inner core section tapered inwardly toward the upper end and made up of a plurality of layers of glass filaments treated with a bonding resin, the filaments of each layer being arranged at an angle to the longitudinal axis of the pole from about 65° to 85° with alternate of said layers crossing one another in opposite directions; and
an outer cover section wrapped on said inner core section made up of bands of filaments treated with a bonding resin, the bands of filaments being continuous between the ends of the pole and arranged at an angle to the longitudinal axis of the pole from about 3 degrees to 15° with alternate bonds crossing each other in opposite directions, the weight of the outer cover section being from about 55 percent to 85 percent of the entire weight of the pole.

3,896,859
REED STRUCTURE FOR PROGRESSIVE SHEDDING LOOMS
Dmitry Vladimirovich Titov, 13 Parkovaya ulitsa, 27, korpus 2, kv. 49, Moscow, U.S.S.R.
Filed Feb. 4, 1974, Ser. No. 439,613
Claims priority, application U.S.S.R., Feb. 9, 1973, 1880958
Int. Cl. D03d *47/26*
U.S. Cl. 139—12 **5 Claims**



1. A reed structure for a progressive shedding loom, comprising a drive shaft; key means associated with said drive shaft; a plurality of bosses received about said drive shaft and connected each with said shaft by said key means, said bosses snugly fitted together throughout the length of said shaft to define a substantially continuous peripheral surface identical to the surface of said shaft; a plurality of discs having teeth adapted for cooperation with weft thread carriers, said discs being mounted on said bosses in a successively angularly staggered relationship, so that said teeth thereof form a helical surface and are adapted to beat up a weft thread to the fell of the cloth being woven.

3,896,860
ASSEMBLY FOR PREFORMING WIRE DURING HELICAL WINDING
Vincent A. Iannucci, West Lawn, Pa., assignor to Rockwell International Corporation, Pittsburgh, Pa.
Filed Mar. 13, 1974, Ser. No. 450,930
Int. Cl.² B65H *81/08*
U.S. Cl. 140—149 **15 Claims**



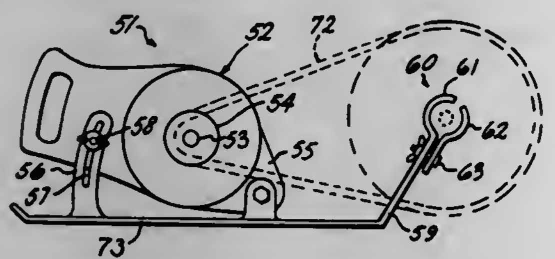
1. A preforming assembly for preforming wire being wound on an elongated member, said wire being supplied from a source being relatively rotated about and relatively displaced along the longitudinal axis of said elongated member to cause said wire to be wound on said elongated member in a helical shape, said preforming assembly comprising:
means for guiding said wire around an outside surface of a cylindrical tube which is coaxially aligned with said elongated member and has a diameter greater than the diameter of said helical shape to cause said wire to slide along said outside surface through a substantially helical path, and
means for bending said wire toward said elongated member as it leaves said helical path and said outside surface of said cylindrical tube through a curved path having a radius less than the effective radius of said helical shape.

3,896,861
AUXILIARY TOOL ADAPTER FOR ELECTRIC HAND SAWS HAVING FORWARDLY MOUNTED AUXILIARY HANDLES
Clarence J. Heisler, 28007 S Dr., North, R.R. No. 2, Springport, Mich. 49284
Continuation-in-part of Ser. No. 107,292, Jan. 18, 1971. This application Apr. 30, 1973, Ser. No. 356 ,050. The portion of the term of this patent subsequent to July 24, 1990, has been disclaimed.
Int. Cl. B27e *9/2*
U.S. Cl. 144—1 E **11 Claims**

1. A hand-held electric power-operated circular saw adapted to be utilized for operating power tool attachments comprising:
a. an integral base,
b. a motor mounted on said base having a rotatable shaft,
c. a handle mounted on said saw,
d. mandrel supporting means comprising an integral extension of said base directed upwardly therefrom and termi-

nating in a mandrel-engaging recess, and means adjustably mounted on said mandrel supporting means cooperating with said mandrel-engaging recess to engage and support a mandrel,

e. a mandrel mounted in said mandrel engaging recess and secured by said means adjustably mounted on said mandrel supporting means and having a shaft rotatably journaled therein,



f. a first pulley mounted on said mandrel shaft,

g. means at the end of said shaft for securing tool attachments thereto,

h. a second pulley affixed to the shaft of said motor, and

i. a flexible endless belt operatively coupling said first and second pulleys.

3,896,862

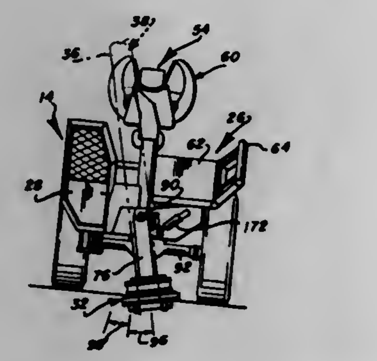
TREE HARVESTING APPARATUS

Robert N. Windsor, Brisbane, Australia, assignor to Eaton Yale Ltd., Canada

Filed Mar. 7, 1974, Ser. No. 449,045

Int. Cl. B27c *9/00*

U.S. Cl. 144—3 D **15 Claims**



1. An apparatus for use in harvesting trees, said apparatus comprising a base, delimbing means connected with said base for delimbing a felled tree, said delimbing means extending longitudinally with respect to said base, felling head means for clamping and severing the trunk of a standing tree, articulated boom means connected with said felling head means for moving said felling head means relative to said delimbing means, means for supporting said articulated boom means for pivotal movement relative to said base about a first axis longitudinally oriented with respect to said base, and first motor means for pivoting said articulated boom means about said first axis.

3,896,863

DEBARKING METHOD AND APPARATUS

Raimond J. Smiltneek, 12906 W. Fairmount Ave., Butler, Wis. 53007

Filed July 3, 1974, Ser. No. 485,500

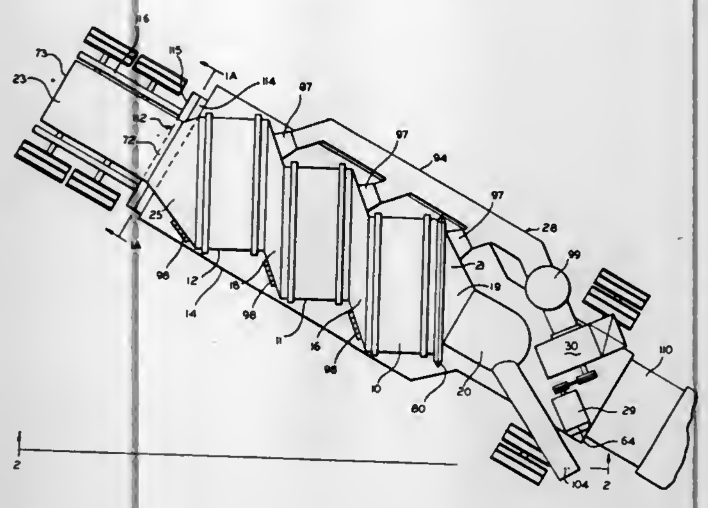
Int. Cl. B27l *1/00*

U.S. Cl. 144—311 **26 Claims**

18. A method of removing undesirable material from wood sections comprising the steps of:

providing a plurality of interconnected impact zones, placing in the first of said impact zones a plurality of unconnected impact means having higher specific gravity than the wood sections to be debarked, introducing into a first impact zone at least one of said wood sections,

rotating each of said impact zones for continuously separating said impact means and said wood sections and randomly moving said plurality of impact means relative to said wood sections and into impacting engagement therewith,



moving said wood sections and impact means successively through each of said zones while rotating the same to randomly move the impact means relative to the wood sections and into impacting engagement therewith,

removing the wood sections and impact means from the last of said zones, recycling said impact means to the first of said zones,

and introducing additional wood sections into the first of said zones.

3,896,864

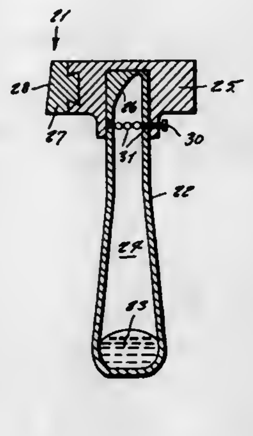
TIRE HAMMER

Frank D. Green, and George Spector, both of 3615 Woolworth Bldg., 233 Broadway, New York, N.Y. 10007

Filed Jan. 15, 1974, Ser. No. 433,514

Int. Cl. B25d *1/00*

U.S. Cl. 145—36 **2 Claims**



1. A tire hammer, comprising a handle and a head mounted removably on one end of said handle, wherein the long axis of said head is at right angles to the longitudinal axis of the handle, said head comprising a contact member rotatably mounted about the long axis of the head, said member having an external face inclined relative to the handle axis whereby rotation of said member will vary the orientation of the inclination relative to the handle axis, wherein the member has a wedge shaped projection fitted in a receiving bore in the head and wherein the handle is hollow with means for increasing the impact shock at the face upon delivering a blow, said means including an inclined interior surface and a freely moving weight in said handle which impinges on the interior surface upon impact.

3,896,865

PROPELLANT WITH POLYMER CONTAINING NITRAMINE MOIETIES AS BINDER

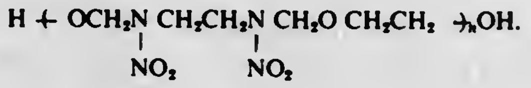
Theodore F. Comfort, Cumberland, Md.; Richard J. Legare, Salt Lake City, Utah, and Ronald Rosher, Cumberland, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 219,183, Jan. 19, 1972, Pat. No. 3,808,276. This application Jan. 21, 1974, Ser. No. 435,073

Int. Cl.² C06D *5/06*

U.S. Cl. 149—19.4 **13 Claims**

1. A solid propellant composition which contains a cured polymer as a binder component therefor, said polymer being of the formula:



$$H \left(OCH_2\underset{NO_2}{N}\,CH_2CH_2\underset{NO_2}{N}\,CH_2O\,CH_2CH_2 \right)_n OH.$$

3,896,866

SHEATH FOR UMBRELLA

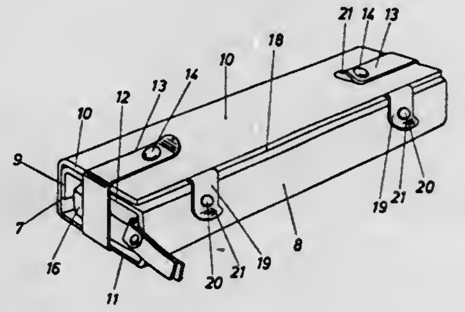
Hans Hoffmann, Essen, Germany, assignor to Telesco Brophey Limited, Montreal, Canada

Filed Sept. 26, 1972, Ser. No. 292,347

Claims priority, application Germany, Sept. 29, 1971, 2148472

Int. Cl.² B65B *11/00*

U.S. Cl. 150—52 R **2 Claims**



1. A wrap-around, umbrella sheath in combination with a foldable-flat collapsed umbrella, said sheath comprising a single, rectangular blank having a length and width, a plurality of linear hinge portions extending the length of said blank and defining six adjacent rectangular panels therealong, detachable fastening means on said blank assembling and retaining said blank as a tubular sheath having a rectangular cross-section in circumposed relation about the collapsed umbrella with at least two of the six panels respectively in juxtaposed relation with two others of the panels for rigidifying and substantially maintaining the rectangular cross-Section of the sheath in wrapped relation about the collapsed, foldable-flat umbrella, said detachable fastening means for assembling said blank comprising strap elements anchored at one end to respective opposite ends of the sheath and extending transversely across open ends of the rectangular sheath retaining the collapsed umbrella therein and including means detachably connecting the straps to an opposite side of the rectangular sheath, the straps preventing the folded umbrella from movement out of the rectangular sheath and retaining the folded sheath in a rigid, rectangular assembled relation, said strap elements being narrower in width than the open ends of the rectangular sheath and exposing the ends of the collapsed umbrella, said umbrella including a carrying-strap projecting from and accessible between one of the detachable fastening means straps and the inner surface of one panel of the rectangular sheath.

3,896,867

FASTENER FOR PANELS

Peter John Gill, and Dennis Joseph O'Donnell, both of Walsall, England, assignors to G.K.N. Screws & Fasteners Limited, England

Filed June 8, 1973, Ser. No. 368,317

Claims priority, application United Kingdom, June 8, 1972, 26711/72

Int. Cl. F16b *39/286, 43/00*

U.S. Cl. 151—69 **2 Claims**

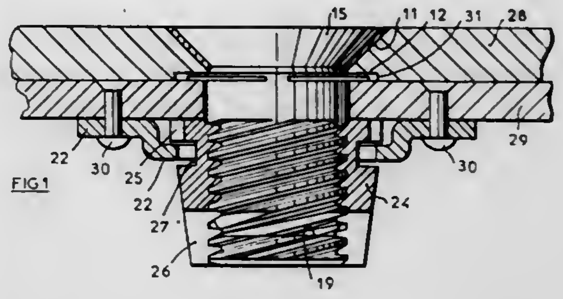


FIG 1

1. A quick operating fastener for securing two panels in face to face relationship comprising a stud sub-assembly for captive mounting on one panel, and a complementary nut sub-assembly for captive mounting on the other panel, wherein said nut sub-assembly comprises:

a yoke having a pair of spaced apart attachment lugs for securing it to such other panel, and a part extending between said lugs and having an opening therethrough bounded by a pair of opposed flanges; and

an internally threaded sleeve having at one end a radially extending noncircular flange with a transverse dimension greater than the spacing between said opposed flanges of said yoke, the wall of said sleeve being provided with at least one slit extending from the other end thereof at least part of the way to the one end thereof, said sleeve having a reduced internal diameter at the other end thereof to cause said sleeve to act as a self-locking nut, said sleeve being provided with a cylindrical groove adjacent said noncircular flange and defining an annular shoulder facing toward said noncircular flange and having a diameter greater than that of said opening;

said sleeve being retained captive in said yoke with said annular shoulder and said noncircular flange engaging loosely on opposite sides of said opening, the outer surface of said sleeve, adjacent said annular shoulder, being tapered inwardly away from said annular shoulder to permit said sleeve to be sprung through said opening, and said noncircular flange being prevented from rotation by virtue of its engagement between said attachment lugs;

and said stud sub-assembly comprises:

an externally threaded shank having a head at one end and provided with a multi-start thread of high helix angle and of trapezoidal form extending to the other end of said shank, said thread having a reduced portion close to, but spaced from, said other end of said shank, said reduced portion having a diameter less than the thread major diameter and tapering inwardly away from said head, with said shank presenting an abutment shoulder bordering the smaller diameter end of said reduced portion and extending radially outwardly therefrom; and

a resilient spring retaining washer on said stud shank between said head and said abutment shoulder, the inner diameter of said washer in its untensioned state, being less than the diameter of said abutment shoulder, whereby said washer can close into said reduced portion of said shank and retain said stud in place in a hole in the one panel.

3,896,868

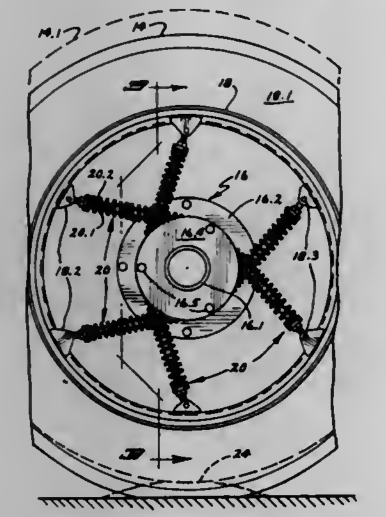
RESILIENTLY MOUNTED AUXILIARY WHEEL FOR A TRACTOR

Ambrose Leo Molitor, 530 N. Elm St., Sauk Center, Minn. 56378

Filed Jan. 17, 1974, Ser. No. 434,245

Int. Cl. B60b *1/06*

U.S. Cl. 152—13 **10 Claims**



1. Resiliently mounted auxiliary wheel for mounting exteriorly of a tractor wheel and comprising a hub axially connectable to the hub of a tractor tire, a rim upon which is mounted an auxiliary tire, and a plurality of elongated, elastically compressible supports held in compression between the hub and the rim, each support being mounted at one end to the rim and at the other end to the hub and spaced axially along the hub with respect to another support, each support being oriented with respect to the hub to exert force on the hub tangentially of the hub axis, the supports being separated into pairs of coacting parallel supports, the pairs being equally spaced about the circumference of the rim and each support pair being interleaved with another support pair, the supports being oriented with respect to each other to collectively exert a balanced compressive force radially inwardly of the hub and along the axis of the hub to elastically retain the hub coaxially of the rim and permit the hub to elastically deviate from its coaxial orientation, as when the auxiliary tire is displaced with respect to a tractor tire by striking a rock or the like.

3,896,869

RADIAL PNEUMATIC TIRE HAVING A COMPENSATING CORD LAYER

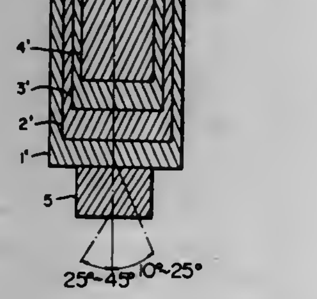
Hiroyasu Fujishima; Kensei Aoe, and Masahiro Ishigaki, all of Ibaraki, Japan, assignors to The Toyo Rubber Industry Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 133,025, April 12, 1971, abandoned. This application Nov. 15, 1973, Ser. No. 416,307

Claims priority, application Japan, Apr. 13, 1970, 45-31698

Int. Cl. B60c *9/18*

U.S. Cl. 152—361 DM **3 Claims**



1. A pneumatic tire having a tread comprising a carcass having at least one rubber-coated cord layer intersecting the equator line of the tire at an angle of 60° to 90°, two rubber-coated inextensible belt cord layers adjacent to the carcass and beneath the tire tread intersecting the equator line of the tire at an angle of 15° to 35° and arranged symmetrically with respect to the equator line of the tire in opposite directions with respect to each other, and means for compensating for lateral deviating forces including a single additional rubber-coated low extensible cord layer interposed between said carcass and said inextensible belt cord layers, said additional layer intersecting the equator line of the tire at an angle of 10° to 30° and at an opposite direction to the adjacent layer of said inextensible belt cord layers, and said angle of said additional layer is at least 5° smaller than said angle of said inextensible belt cord layers.

3,896,870

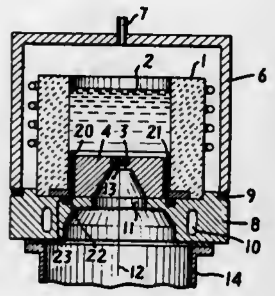
APPARATUS FOR PROJECTING A MOLTEN MATERIAL INTO A COOLING MEDIUM

Jean Marie Massoubre, Clermont-Ferrand, France, assignor to Compagnie Generale des Etablissements Michelin, raison sociale Michelin & Cie, Clermont-Ferrand, France

Filed June 25, 1974, Ser. No. 483,008

Int. Cl. C21c *7/00*

U.S. Cl. 164—281 **17 Claims**



1. Apparatus for projecting a molten raw material into a cooling fluid to form a solid finished product therein, comprising

a crucible for holding the raw material,
nozzle means mounted for contact with the molten raw material in the crucible,
a pressurization enclosure for maintaining the raw material in the crucible under pressure,
gasket means formed of a material which is gas-tight and compatible with the molten raw material mounted for contact with the raw material and having a portion extending away therefrom,
the raw material facilitating a hot seal between (a) the portion of the gasket means in contact therewith and (b) the crucible and nozzle means, and
means facilitating a cold seal between (a) the portion of the gasket means extending away from the raw material and (b) the pressurization enclosure.

3,896,871

COMPUTER CONTROLLED AUTOMATED BUILDING SYSTEM HAVING A MANUAL CONTROL MODE

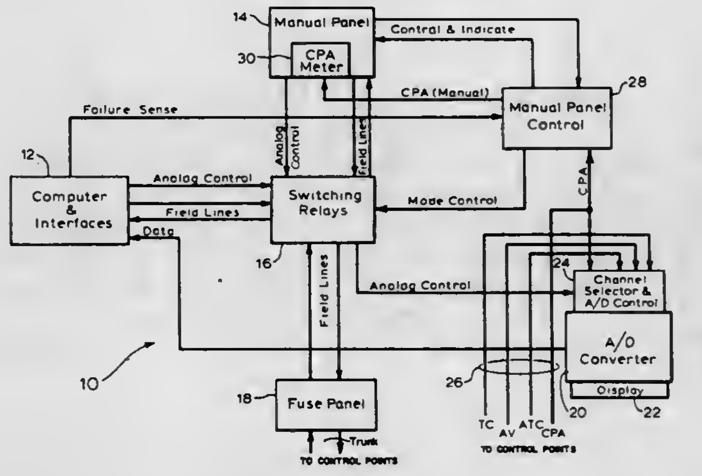
Joseph K. Pecoraro, Buffalo Grove; Philip A. Deckowitz, Des Plaines, and Norman E. Brunner, Barrington, all of Ill., assignors to Powers Regulator Company, Skokie, Ill.

Filed Jan. 23, 1973, Ser. No. 325,973

Int. Cl. G05d *23/22;* **F24f** *11/00;* **G05b** *11/32*

U.S. Cl. 165—22 **15 Claims**

1. An automated building system for controlling the environmental conditions in a building comprising:
a plurality of control points, said control points having environmental conditioning equipment for maintaining environmental conditions at a desired level in a building and data sensors for sensing environmental conditions associated therewith;
a computer for generating control signals to operate environmental conditioning equipment associated with said control points and for receiving data from said control points;
manual control means for generating control signals to operate environmental conditioning equipment associated with said control points and to obtain data from said control points;



switching means for receiving control signals generated by said computer and control signals generated by said manual control means, said control points being coupled to said switching means, said switching means transferring control signals from said computer to said control points in a computer mode and transferring control signals from said manual control means in a manual mode.

3,896,872

TEMPERATURE-CONTROL SYSTEM FOR AUTOMOTIVE VEHICLES

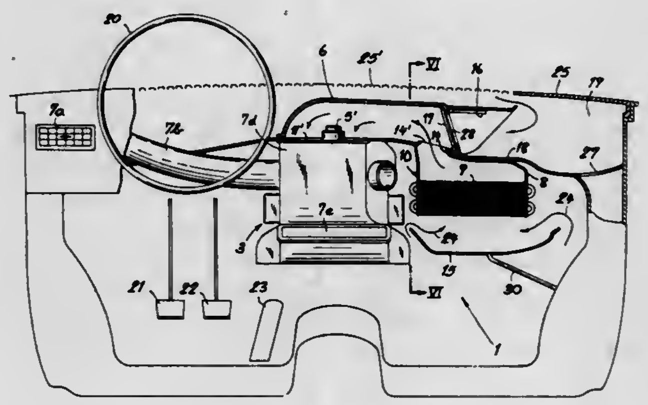
Hans Georg Pabst, Gaimersheim, and Siegfried Mildner, Affalterbach, both of Germany, assignors to Audi NSU Auto Union Aktiengesellschaft, Ingolstadt, Germany

Filed Oct. 29, 1973, Ser. No. 410,318

Claims priority, application Germany, Oct. 27, 1972, 2252706

Int. Cl. B61d *27/00*

U.S. Cl. 165—42 **8 Claims**



1. A temperature-control system for the interior of an automotive vehicle, comprising:
an air-circulation structure having an upstream section and a downstream section, said structure forming a channel with an entrance end at said upstream section, an exit end at said downstream section and an intake port at an intermediate location between said sections, said entrance and exit ends being open to the interior of the vehicle, said intake port being open to the surrounding atmosphere;
a blower in said downstream section for generating an air stream in said channel;
an air cooler in said upstream section traversed by at least a portion of said air stream;
an air heater in said downstream section traversed by said air stream; and
flow-control means on said structure at said intermediate location for selectively varying the proportion of ambient and recirculated air admitted into said channel through said intake port and through said entrance end, respectively.

3,896,873

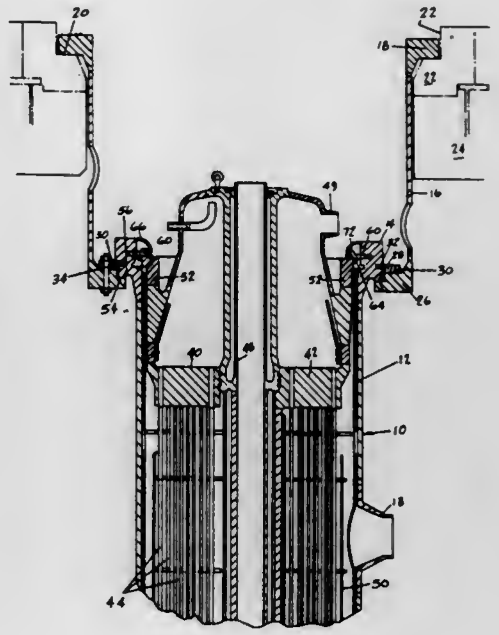
HEAT EXCHANGER WITH A REMOVABLE TUBE SECTION

Walter Wolowodiuk, New Providence, and John Anelli, Parsippany, both of N.J., assignors to The United States of America as represented by the United States Atomic Energy Commission, Richland, Wash.

Filed May 1, 1972, Ser. No. 248,922

Int. Cl. F28b *7/00*

U.S. Cl. 165—76 **5 Claims**



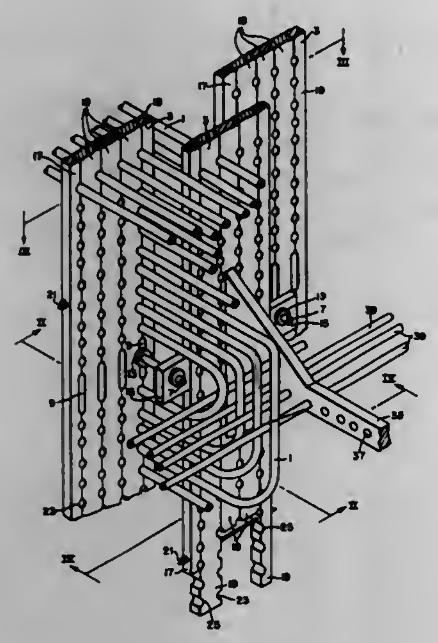
1. A heat exchanger comprising:
an outer shell of circular cross-section;
a fluid inlet in said outer shell;
a fluid outlet in said outer shell below said fluid inlet;
an annular slot extending around the inside of said shell adjacent to the top of said shell;
an inner core positioned within said shell, said inner core comprising a tube sheet, a plurality of tubes extending down from said tube sheet so that fluid from said inlet flows over the outside of said tubes and out through said outlet, and an annular bearing surface immovable with respect to said tube sheet, facing upward and disposed adjacent to said slot; and
a plurality of shear blocks disposed in a circle with a portion of each block engaging said bearing surface and a portion of each block extending into said slot and the inner edges of said blocks being free of engagement with any structure so that each of said blocks can be moved inward and out of said slot;
whereby said shear blocks prevent said inner core from moving upward but can be moved inward and out of engagement with said slot so that said inner core can be lifted out of said shell.

3,896,874

SUPPORT SYSTEM FOR SERPENTINE TUBES OF A HEAT EXCHANGER

Donald J. Bongaards, Seminole, Fla., and A. Robert Giardina, Broomall, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 31, 1972, Ser. No. 240,145
Int. Cl. F28d *7/00;* **F28f** *9/00*
U.S. Cl. 165—82 **4 Claims**



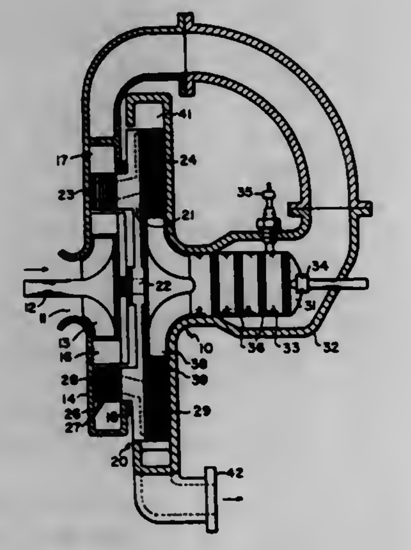
1. A heat exchanger having a tube bundle of closely packed serpentine tubes and a support system for the tubes, said support system comprising a plurality of support strips, which are disposed to repeatedly support each serpentine tube, means for fastening each support strip to an adjacent support strip in such a manner that the strips can only move lengthwise with respect to each other, and a plurality of lateral support sheets disposed normal to the strips, said support sheets having a plurality of openings spaced lengthwise along the sheet, the openings in adjacent support sheets registering and being adapted to receive a spacer which fits between adjacent rows of tubes.

3,896,875

HEAT EXCHANGER FOR GAS TURBINE ENGINES

Stephen R. Bolger, 920 S. Aiken Ave., Pittsburgh, Pa. 15232

Filed May 14, 1973, Ser. No. 359,968
Int. Cl. F28d *11/00*
U.S. Cl. 165—86 **15 Claims**



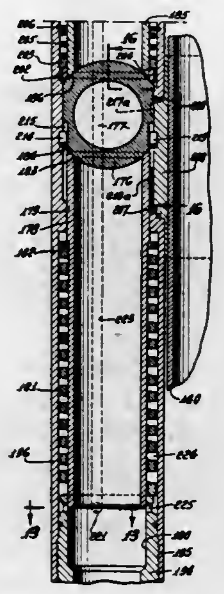
1. A heat exchanger for gas turbine engines comprising: a first and second matrix mounted for rotation about a main shaft of said turbine, said first matrix being in contact with gas from the compressor of said turbine and said second matrix in contact with exhaust gas, each of said matrices including a plurality of passageways for passage therethrough of the respective contacting gases, and at least one fluid chamber, said fluid chamber being in communication with an associated chamber of the other matrix and having a thermal transfer fluid contained therein vaporizable at below exhaust gas temperature.

3,896,876

SUBSURFACE TUBING SAFETY VALVE WITH AUXILIARY OPERATING MEANS

Talmadge L. Crowe, Houston, Tex., assignor to Baker Oil Tools, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 275,910, July 28, 1972, which is a division of Ser. No. 243,806, April 13, 1972, abandoned. This application Sept. 12, 1974, Ser. No. 505,348
Int. Cl. E21b *33/00*
U.S. Cl. 166—224 A **17 Claims**



1. In a shutoff valve for wells, said valve including an elongated valve body having a flow passage therethrough, valve means in said body including a valve element shiftable between a first position closing said passage and a second position at which said passage is open, means for shifting said valve member from said second position to said first position, and control fluid pressure responsive means for shifting said valve member from said first position to said second position, said control fluid pressure responsive means including means defining a control fluid pressure chamber, valve operating means having an actuator sleeve having a piston exposed to control fluid pressure in said chamber, and auxiliary shifting means operable by a shifting tool moveable into said passage for shifting said actuator sleeve to move said valve element to said second position from said first position.

3,896,877

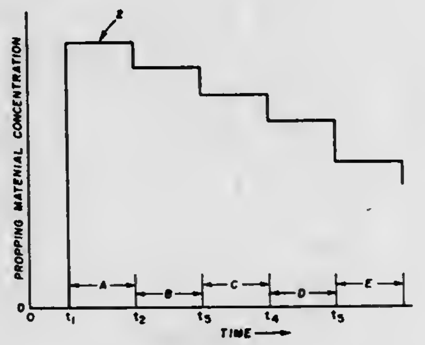
METHOD OF SCHEDULING PROPPING MATERIAL IN HYDRAULIC FRACTURING TREATMENT

Thomas C. Vogt, Jr., Duncanville, and John L. Fitch, Dallas, both of Tex., assignors to Mobil Oil Corporation, New York City, N.Y.

Filed Jan. 28, 1974, Ser. No. 437,106
Int. Cl.² E21B *43/26*
U.S. Cl. 166—250 **6 Claims**

1. A hydraulic fracturing technique for generating a vertical fracture in a subterranean formation that is penetrated by a well wherein a fracturing fluid containing propping material is injected into said formation, comprising the steps of:

a. determining the initial proppable fracture volume that is generated per initial incremental volume of fracturing fluid injected into said formation as a function of time;
b. determining the initial amount of propping material that is required to fill said initial proppable fracture volume to a height of at least 60 percent of the height of said vertical fracture;



c. iterating steps (a) and (b) for the time required to complete said hydraulic fracturing technique to determine as a function of time the amount of propping material required to fill said vertical fracture to a height of at least 60 percent of the height of said vertical fracture; and
d. scheduling the propping material concentration of said fracturing fluid in accordance with the determinations of steps (a), (b), and (c).

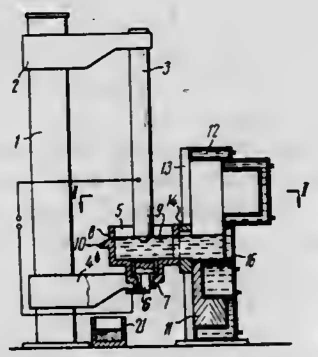
3,896,878

APPARATUS FOR ELECTROSLAG SMELTING OF SHAPED INGOTS

Boris Izrailevich Medovar, Bulvar Lesi Ukrainki, 2, kv. 8; Rudolf Solomonovich Dubinsky, Politekhnicheskaya ulitsa 5, kv. 209; Georgy Alexandrovich Boiko, ulitsa Vladimiro-Lybedskaya, 16, kv. 106; Georgy Sergeevich Marinsky, ulitsa Tatarskaya 1, kv. 19, and Sergei Petrovich Egorov, ulitsa Nevskaya 34, kv. 1, all of Kiev, U.S.S.R.

Continuation of Ser. No. 301,509, Oct. 27, 1972, abandoned. This application Mar. 5, 1974, Ser. No. 448,224

Claims priority, application U.S.S.R., Jan. 13, 1972, 17323522
Int. Cl. B22d *27/02*
U.S. Cl. 164—252 **3 Claims**



1. An apparatus for electroslag melting of shaped ingots comprising: a split cooled mould with a longitudinal slot formed in a side wall thereof; a slide mounted in said slot of said split cooled mould; a smelting vessel rigidly secured to said slide and communicated through the latter with said split cooled mould; a non-consumable electrode electrically insulated from said smelting vessel mounted in the hearth of said smelting vessel; a gauge for determining the level of liquid metal mounted on such slide in said split cooled mould; and drive means for moving said slide with said smelting vessel in a vertical direction.

3,896,879

STIMULATION OF RECOVERY FROM UNDERGROUND DEPOSITS

Sarvajit S. Sareen, Cambridge; Lucien Girard, III, Boxboro, and Robert A. Hard, Still River, all of Mass., assignors to Kennecott Copper Corporation, New York, N.Y.

Division of Ser. No. 422,233, Dec. 6, 1973, Pat. No. 3,865,435. This application Oct. 24, 1974, Ser. No. 517,677
Int. Cl.² E21B *43/26*
U.S. Cl. 166—308 **5 Claims**

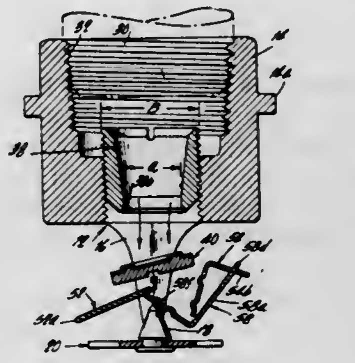
1. A method for increasing the permeability of a subterranean formation penetrated by at least one well which extends from the surface of the earth to the formation comprising the steps of injecting an aqueous hydrogen peroxide solution containing a stabilizing agent therefor through said well into the subterranean formation whereby said solution diffuses into the fractures of the formation surrounding said well, the stabilizing agent reacts with metal values in said formation resulting in a substantial reduction of said agent in said solution, and the resultant substantially unstabilized hydrogen peroxide decomposes to form a gaseous medium which causes additional fracturing of the formation.

3,896,880

AUTOMATIC SPRINKLER HEAD

Ingemar B. Asp, Beach Rd., Ossining, N.Y. 10562

Filed Feb. 11, 1974, Ser. No. 441,411
Int. Cl. A62c *37/30, 37/12;* **B05b** *15/08*
U.S. Cl. 169—39 **13 Claims**



1. A sprinkler head adapted to be attached to a supply of fluid under pressure comprising a body having an internal thread, an orifice extending therethrough to allow said fluid to pass through said body, means for connecting said body to said fluid supply, an externally threaded nozzle having an orifice, said nozzle being constructed and arranged to be threaded within said internal thread of said body with said nozzle orifice in communication with said body orifice, valve means for closing said nozzle orifice, a support member extending downwardly from said body and forming a central bearing point, said valve means and said bearing point defining a central axis, temperature-responsive means supported between said valve means and said bearing point and being offset from said central axis, said temperature-responsive means including a strut member, a spring member and an intermediate member connecting said strut member and said spring member, one end of said strut member engaging said valve means and the other end of said strut member bearing against said spring member and said bearing point at a point offset from said central axis, said nozzle and said body being constructed and arranged for adjustment of said nozzle to apply tension to said temperature-responsive assembly between said valve means and said bearing point, said strut member and said intermediate member including faces forming a gap therebetween for receiving fusible material in said gap for connecting said strut member and said intermediate member, said fusible material adapted to fuse at a predetermined temperature and disconnect said strut member and said intermediate member thereby releasing said tension on said temperature-responsive assembly and on said valve means to

allow the fluid under pressure to pass through said body and said nozzle orifices.

3,896,881
AUTOMATIC FIRE EXTINGUISHER FOR A STORAGE TANK WITH FLAMMABLE CONTENTS

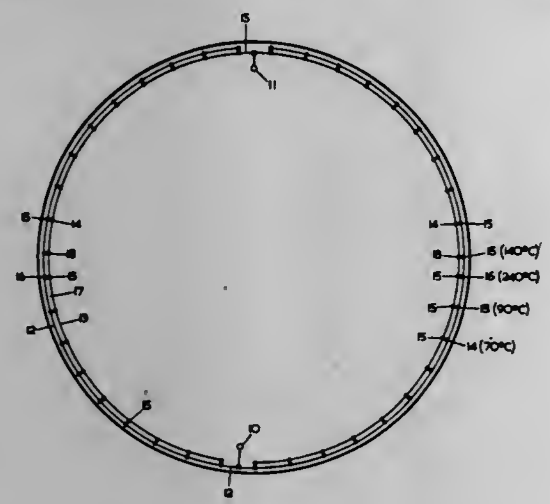
Jan A. De Boer, Hoeven, Netherlands, assignor to Saval B.V., Breda, Netherlands

Filed Feb. 25, 1974, Ser. No. 445,565

Claims priority, application Netherlands, Feb. 27, 1973, 7302725

Int. Cl. A62c *35/54*

U.S. Cl. 169—66 **4 Claims**



1. A fire extinguisher for a storage tank with flammable contents, said tank comprising a roof movable relative to a wall, and said extinguisher comprising a number of reservoirs with fire-extinguishing fluid arranged on said roof, said reservoirs each being connected to a fire-extinguishing pipe provided with heat operated sprinklers for defining a section, said section covering part of the edge of the roof, and chracterized in that said sections overlap each other and that the sprinklers in the overlapping part of said one section have a higher operating temperature than the sprinklers in said other section for first operating the sprinklers in said other section to the exhaustion of said fireextinguishing fluid in said connected reservoir and then operating the sprinklers in said one section.

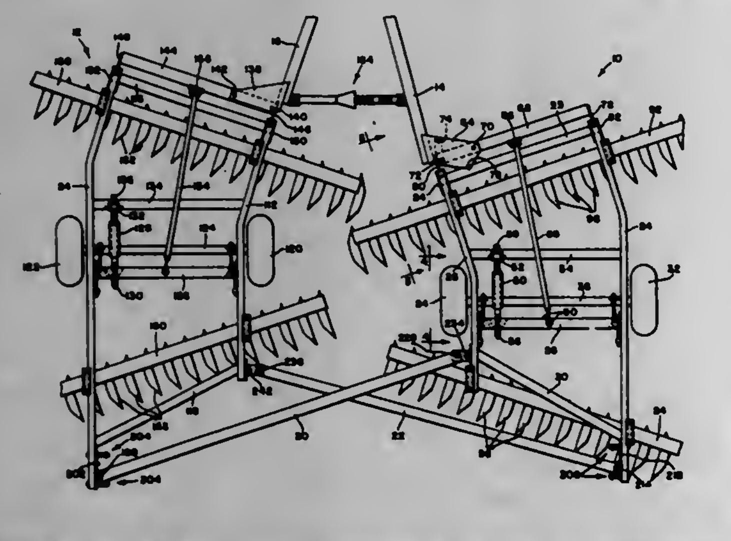
3,896,882
IMPLEMENT FRAME

William Rudolph Frank, Moline, Ill., assignor to Deere & Company, Moline, Ill.

Filed June 1, 1971, Ser. No. 148,555

Int. Cl. A01b *49/00;* **B62d** *53/00*

U.S. Cl. 172—311 **12 Claims**



1. An implement frame comprising: a pair of subframes disposed in side-by-side relation for normal operating purposes, each of said subframes being supported relative to the ground by a pair of transversely spaced wheel means and rockable vertically about an axis passing through said pair of wheel means; a pair of crossed links interconnecting the rear portions of said subframes, said links being articulately connected to said subframes for relative horizontal and vertical pivotal movement; resilient means connecting at least one of said links to at least one of said subframes for yieldably maintaining said link in a preselected vertical position relative to said subframe; hitch means on the forward portion of at least one of said subframes for attaching said subframe to a towing vehicle; and means interconnecting the forward portions of said subframes, said means being releasable to permit one of said subframes, in response to a moving force acting on the other of said subframes, to swing around to a transport position behind the other subframe wherein it is turned 180 degrees relative to its operating position, said crossed links forming a steering connection between the subframes when disposed in their transport position.

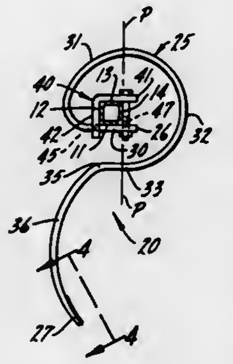
3,896,883
CULTIVATOR TOOTH ASSEMBLY

John N. Howes, Alton, Ill., assignor to Varlen Corporation, East Alton, Ill.

Continuation of Ser. No. 323,309, Jan. 12, 1973, abandoned. This application Sept. 30, 1974, Ser. No. 510,767

Int. Cl. A01b *23/02*

U.S. Cl. 172—707 **1 Claim**



1. A spring tooth assembly for mounting on the tool bar of an agricultural cultivator or the like, comprising:

a. a flexibly resilient strip member formed substantially of a single piece of spring steel in a flat, substantially uniform cross-section from an upper end attachment section to a lower end tip,

b. said attachment section adapted to be clamped to a tool bar and extend rearwardly thereof,

c. said strip member including a first working section curved upwardly and rearwardly and then upwardly and forwardly from said attachment section, around and over the tool bar, said first working section then extending downwardly and rearwardly around and under the tool bar until it has passed the horizontal and is inclined at least slightly upwardly,

d. said strip member then being bent sharply downwardly at a point substantially in vertical alignment with the trailing surface of the tool bar into a section of the strip member which provides a stiffening of the resilient strip member in this area,

e. said strip member further including a second working section curved downwardly and rearwardly from said stiffening section and then downwardly and forwardly to said tip,

f. said tip terminating in substantial alignment with or only slightly behind the trailing surface of said tool bar.

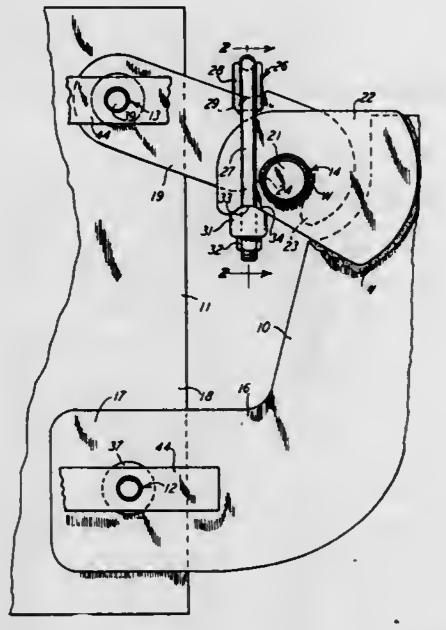
3,896,884
ANTI-BACKLASH ATTACHMENT MOUNTING

Thomas P. Casey, Burlington, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed May 10, 1974, Ser. No. 468,820

Int. Cl. A01b *15/14*

U.S. Cl. 172—776 **7 Claims**



1. An anti-backlash attachment mounting for an implement on a tractor or the like, comprising an attachment mounting piece having two bolt holes spaced apart therein, two arms with one thereof being affixed to a tractor and with each of said arms having a conically-shaped opening in one end of each of said arms, a bushing disposed in each of said conically shaped openings and having a conically shaped exterior for respective snug axial positioning of said bushings in said conically shaped openings and with said bushings having axially disposed openings of the diametrical size of said bolt holes, said arms being respectively aligned on said mounting piece with said bushing axially disposed openings respectively axially aligned with said bolt holes, a bolt snugly disposed in each of the aligned pairs of said bolt holes and said bushing axially disposed openings, a nut tightened on each of said bolts for securing said arms to said mounting piece through the conical shape of said bushings, said arms extending from their respective locations of securement by said bolts on said mounting piece and extending to a location overlapping each other in their extending portions, a horizontally disposed pin extending into respective upper and lower contact with respective ones of the overlapping portions of said arms for joining said arms together, and a clamp connected between said arms overlapping portions for forcing the latter against said pin in their respective upper and lower contact with said pin, and thereby attach said implement to said tractor.

3,896,885
SYSTEM FOR AUTOMATICALLY ALIGNING AND/OR MOVING IN A PARALLEL MOVEMENT PATH A GUIDE SEATING STRUCTURE ADAPTED FOR GUIDING THE MOVEMENT OF A TOOL MOUNTED THEREON

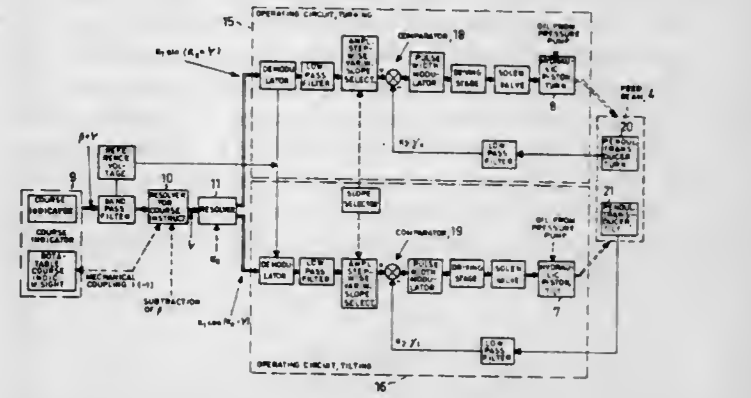
Carl Lennart Dahlstrom, Savedalen, and Tord Richard William Ponton, Molndal, both of Sweden, assignors to AB Skanska Cementgjuteriet, Sweden

Continuation of Ser. No. 206,480, Dec. 9, 1971, abandoned. This application Sept. 10, 1974, Ser. No. 504,702

Claims priority, application Sweden, Dec. 11, 1970, 16811/70; Apr. 21, 1971, 5181/71

Int. Cl. E21c *11/02*

U.S. Cl. 173—2 **21 Claims**



1. A system for automatically aligning at least one guide seating structure for parallel positions at different locations, said structure being adapted for guiding the movement of a tool mounted thereon as a feed beam for rock drilling machines and the like; said system comprising a movable support unit, jib means supported on said support unit, a seating structure pivotally mounted on said jib means, for movement in two planes disposed at an angle to each other, means for pivoting said seating structure in each of said two planes, means for predetermination of the desired angle of said seating structure with respect to the vertical and the desired bearing of said structure with respect to the coordinates of the earth, means for emitting signals responsive to the actual bearing and angle of said seating structure to the vertical when said support unit is moved to a different location, comparator means for comparing the departure of said signals from the predetermined desired bearing and angle of said seating structure and means responsive to the departure of said signals for pivoting means in said two planes for aligning said at least one seating structure to a position parallel to the desired bearing and angle.

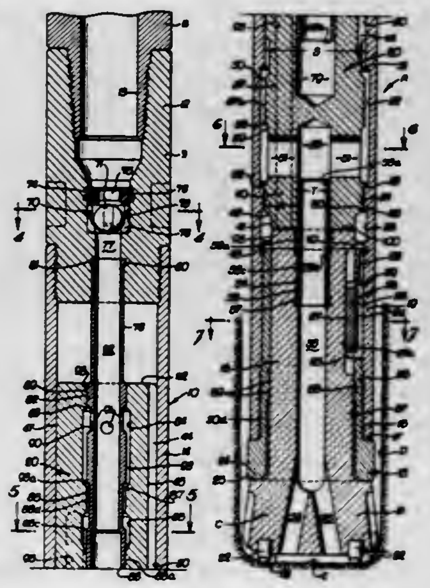
3,896,886
BORE HOLE HAMMER DRILL

Theodore J. Roscoe, Jr., Houston, Tex., assignor to Bakerdrill, Inc., Spartanburg, S.C.

Filed Aug. 10, 1973, Ser. No. 387,481

Int. Cl. E21b *5/00;* **E21c** *7/00*

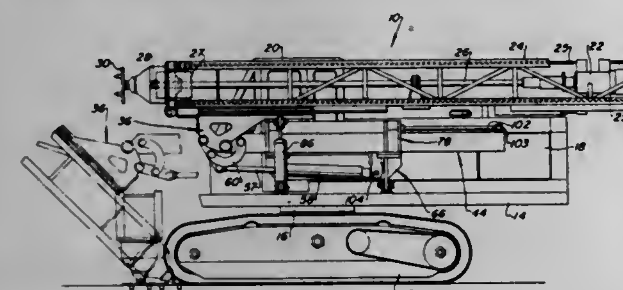
U.S. Cl. 173—17 **19 Claims**



1. In percussion drilling apparatus: a housing structure connectable to a drill string; an anvil in the lower portion of said housing structure and operatively connectable to a drill bit; said anvil having an exhaust passage; a hammer piston reciprocable in said housing structure for intermittently impacting against said anvil, said piston having an upper passage; inlet means for directing a fluid medium under pressure into said upper passage; first passage means for directing the fluid

medium from said upper passage into said housing structure above said piston upon upward movement of said piston in said housing structure for driving said hammer piston downwardly toward said anvil; second passage means for directing the fluid medium from said upper passage into said housing structure below said piston upon downward movement of said piston in said housing structure; means for alternately exhausting the fluid medium from the housing structure above and below said piston; stop means for supporting said anvil in a lower position in said housing upon elevation of said housing; means defining a fluid circulating path from the interior of said inlet means to the exterior of said housing structure when said anvil is supported by said stop means; said circulating path including the region of said housing structure around said inlet means above said piston and also said anvil exhaust passage; and valve means for closing off said second passage means when said anvil is supported by said stop means to prevent flow of the fluid medium from said upper passage into said second passage means and into said housing structure below said piston.

3,896,887
MOUNTING FOR DRILL RIG MAST
Malcolm N. Council, Richardson, Tex., assignor to Gardner-Denver Company, Dallas, Tex.
Filed Dec. 26, 1973, Ser. No. 427,610
Int. Cl.^{2} E21C *5/11*
U.S. Cl. 173—43 **4 Claims**



1. In a mobile drill rig including an undercarriage, a frame mounted on said undercarriage, and an elongated mast including a drill motor mounted for movement along said mast for driving a drill stem, an improved mounting for said mast comprising:

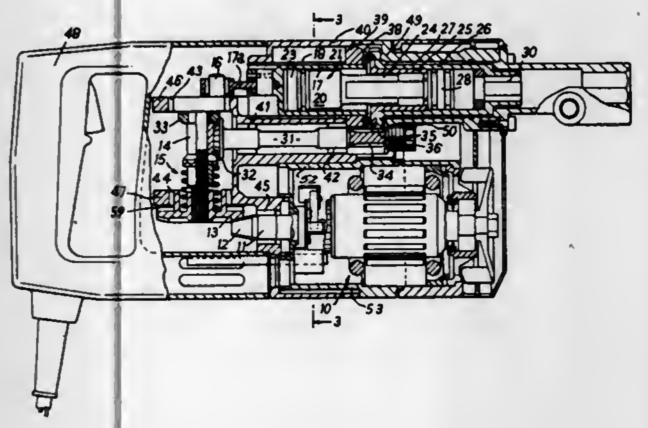
a support mounted on said frame and comprising a cradle member including a pair of spaced apart legs pivotally connected to said frame for limited movement about a horizontal pivot axis formed by said pivotal connection, said support being disposed between a pair of extensible hydraulic cylinders connected to said frame and said support for positioning said support about said horizontal pivot axis;

an elongated boom mounted on said support for linear movement substantially parallel to said horizontal pivot axis; and,

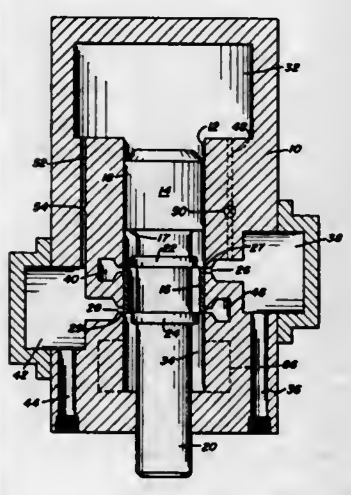
a positioner bracket pivotally mounted on one end of said boom and connected to said mast whereby said mast may be pivoted with respect to said boom.

3,896,888
ELECTRIC HAMMER
David Norman William Badcock, London, England, assignor to Kango Electric Hammers Limited, London, England
Filed Apr. 3, 1974, Ser. No. 457,561
Claims priority, application United Kingdom, Apr. 5, 1973, 16458/73
Int. Cl.^{2} E21C *3/04*
U.S. Cl. 173—109 **2 Claims**

1. A portable percussion tool comprising a casing incorporating a cylinder, a driver and a striker disposed for reciprocating motion in the cylinder, an air chamber being formed axially between the driver and striker in which chamber a quantity of air is trapped, a rotary tool holder mounted for rotary movement in alignment with the striker, an anvil carried in said holder arranged to be struck directly or indirectly by the striker, an electric motor including a stator and stator enclosure and a motor shaft extending therethrough and disposed parallel to the axis of the cylinder, a driving shaft disposed parallel to the motor shaft and the cylinder and arranged to rotate the tool holder, and a crankshaft which is disposed at right angles to the motor shaft and which has a crankpin connected to reciprocate the driver, first meshing bevel gears mounted on the crankshaft and the motor shaft respectively, second meshing bevel gears mounted on the crankshaft and the drive shaft respectively, means for locating the drive shaft against movement axially of itself in a direction away from the crankshaft, said means being adjustable to permit the drive shaft to be moved axially of itself to move the bevel gear thereon radially clear of the associated second bevel gear on the crankshaft during assembly and dismantling of the tool, and said casing including a member moulded in one piece and which carries an end portion of the cylinder, said member providing bearing supports for the crankshaft and drive shaft and a bearing support adjacent the crankshaft for the motor shaft, and said member having a bore in which is received and radially located an end portion of the stator enclosure of the motor adjacent the crankshaft.



3,896,889
HYDROACOUSTIC APPARATUS
John V. Bouyoucos, Brighton, N.Y., assignor to Hydroacoustics, Inc., Rochester, N.Y.
Filed Aug. 31, 1971, Ser. No. 285,240
Int. Cl. F01l *17/00;* **F01b** *7/18*
U.S. Cl. 173—120 **40 Claims**



1. A hydroacoustic oscillator comprising

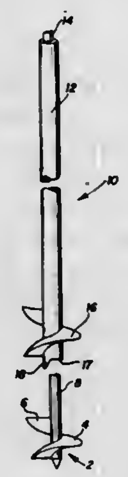
a. a movable mass having first and second sides,

b. means for continuously applying pressurized fluid to said first side to drive said mass in one direction and for storing energy due to the motion of said mass,

c. a valve mechanism having a valve element, said valve element being disposed in a path for said pressurized fluid which extends from a region of high pressure to a region of low pressure, said path being in communication with said second side, said valve element being movable in opposite directions for alternately opening said high pressure region to said second side while closing said low pressure region to said second side and then opening said low pressure region to said second side while closing said high pressure region to said second side for establishing alternating fluid pressures upon said mass to produce periodic oscillations of said mass at a frequency and over a displacement determined by said mass and the energy storage characteristics of said fluid communicating therewith, and

d. means for coupling said valve element and said mass for actuating said valve element by said means during a substantial portion of the displacement of said mass with said valve element travelling over a displacement of at least one half of the displacement of said mass so as to enable said valve to attain high velocity at the instants of the opening and closing of said second side to said high and low pressure regions.

3,896,890
EXTERNAL HELIX TUBE FOR INSTALLING SCREW-TYPE EARTH ANCHOR
Jack D. Gale, Rt. 1, Crowley Rd., Crowley, Tex. 75229
Filed Jan. 21, 1974, Ser. No. 435,224
Int. Cl. E02d *5/80*
U.S. Cl. 175—19 **10 Claims**



1. An installation tool for placing a screw-type anchor into the earth, said anchor having a shank and a flight secured thereto near that end of the shank which is to be buried in the earth, comprising:

a. a tube having an inside diameter large enough to envelop the shank;

b. means on the tube for engaging the anchor near its flight end and rotating the same in a first direction to cause the flight to burrow into the earth; and

c. means affixed to the exterior of the tube to cause it to be pushed out of the earth as a result of the tube being rotated in a direction opposite to said first direction.

3,896,891
MODULAR MOTORIZED WHEEL CHAIR
Edward W. Miltenburg, Newport Beach; Donald L. Whetstine, and Howard Carson, both of Costa Mesa, all of Calif., assignors to Stainless Medical Products, Inc., Santa Ana, Calif.
Filed Aug. 31, 1973, Ser. No. 393,449
Int. Cl. A61g *5/04*
U.S. Cl. 180—6.5 **3 Claims**

1. A wheelchair comprising:

a left side module including a left frame, a left rear drive wheel having a horizontal axis of rotation and a castor mounted front wheel;

a first motor and a means for connecting the output of said first motor to said left rear drive wheel;

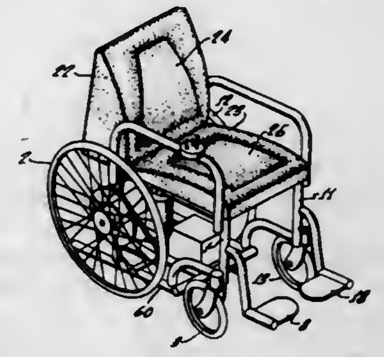
a right side module including a right frame, a right rear drive wheel having a horizontal axis of rotation and a castor mounted front wheel;

a second motor and a means for connecting the output of said second motor to the right rear drive wheel;

a seat comprised of a bucket shaped back module and a bucket shaped bottom module;

means for attaching said seat to said left and right frames so as to enable said seat to be easily and quickly detached from said frames said means comprising:

a pair of substantially vertical elongated projections on the bottom of said bucket shaped back module, said projections being spaced apart so as to be substantially coplanar with said left and right frames, and;



a member of said left frame having an opening adapted to receive one of said bucket seat back projections, and;

a member of said right frame having an opening adapted to receive the other of said bucket seat back projections;

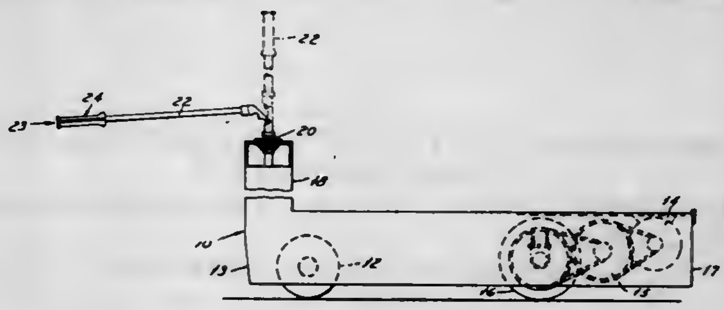
at least one pair of substantially vertical elongated projections on the bottom of said bucket shaped bottom, said projections being spaced apart so as to be substantially coplanar with said left and right side frames, and;

a member of said left frame having an opening adapted to receive one of said bucket seat bottom projections;

a member of said right frame having an opening adapted to receive the other of said bucket seat back projections;

a battery support platform and means for attaching said battery support platform to said left and right frames so as to permit said battery support platform to be easily and quickly removed from said frames.

3,896,892
MANUAL CONTROL FOR A SELF-PROPELLED VEHICLE
James P. Kohls, Petoskey; Robert J. Borgman, Harbor Springs, and Frederic W. Campbell, Cross Village, all of Mich., assignors to Jervis B. Webb Company, Detroit, Mich.
Filed Sept. 20, 1973, Ser. No. 398,960
Int. Cl. B62d *51/04*
U.S. Cl. 180—19 H **10 Claims**



1. A manual control for a self-propelled vehicle having a steerable wheel, a driving motor operable in reverse and forward speeds, and a tiller extendable forwardly of the vehicle for manually controlling the steerable wheel, the tiller being provided with a movable handgrip for regulating the operation of the driving motor, wherein the improvement comprises:

means mounting the handgrip on the tiller for movement generally longitudinally thereof in directions which extend rearwardly and forwardly from a neutral position, said mounting means including a cam and a follower, one of which is connected to the handgrip and the other of which is connected to the tiller, said follower engaging said cam which defines said movement of the handgrip and includes a portion extending longitudinally of the tiller and a second portion extending angularly to said longitudinally extending portion to define a sensible transition in said movement of the handgrip between at least one speed of the vehicle driving motor and another speed thereof;

means normally urging the handgrip to said neutral position; and,

control means responsive to said rearward movement of the handgrip for operating the vehicle driving motor in the reverse direction of movement of the vehicle, and responsive to said forward movement of the handgrip for operating the vehicle driving motor in the forward direction of movement of the vehicle.

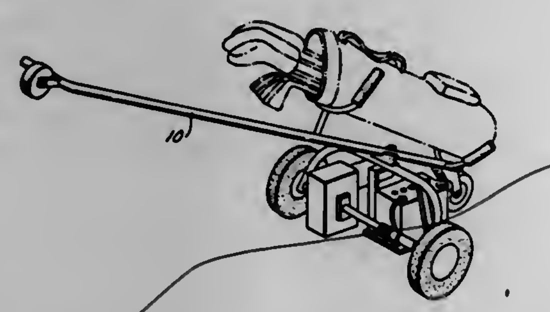
3,896,893
DIFFERENTIAL TORQUE RESPONSIVE AXLE FOR SMALL VEHICLES

Henry Paul Willis, deceased, late of Palm Springs, Calif., and by Norman E. Decker, executor, 1122 Wilshire Blvd., Los Angeles, Calif. 90017

Filed Oct. 1, 1973, Ser. No. 402,391

Int. Cl. B60k *23/06*; **B62d** *51/06*

U.S. Cl. 180—19 R **5 Claims**



1. A driven axle for a vehicle having a pair of coaxially mounted wheels, comprising

a first shaft, said first shaft being rotatably mounted to the vehicle;

a second shaft, said second shaft being rotatably mounted to the vehicle and being coaxial with said first shaft;

a sleeve, said sleeve being positioned over said first and said second coaxial shafts, said sleeve being tightly held to said first shaft and having a radial slit through the wall thereof adjacent said second shaft; and

means for exerting pressure on said sleeve about said second shaft in order that a predetermined level of applied torque is required to twist said second shaft relative to said sleeve.

3,896,894
MEANS TO TRANSMIT POWER ACROSS ARTICULATED VEHICLE HITCH POINT

David S. Vinton, Morton, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 24, 1973, Ser. No. 326,418

Int. Cl. B60k *17/34*

U.S. Cl. 180—51 **3 Claims**

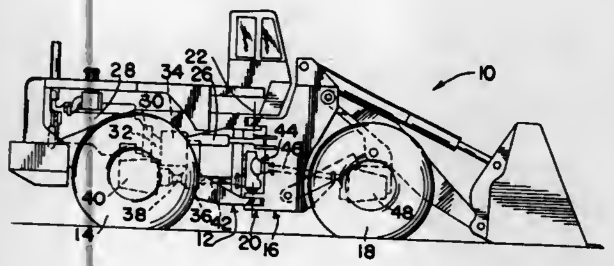
1. In an articulated vehicle having one wheel-mounted frame portion connected to another wheel-mounted frame portion, the frame portion being pivotable relative to the other frame portion about a generally vertical axis, and power means for driving the one frame portion and for rotating a first shaft associated with the one frame portion, power transfer means for driving a second shaft associated with the other frame portion to drive said other frame portion comprising:

a power transfer casing comprising a first casing portion connected to the one frame portion for movement therewith and defining a passage into which the first shaft extends, and a second casing portion, resilient means connecting said second casing portion to the other frame portion for movement therewith and pivotably connected to the first casing portion so as to be pivotable about an axis generally along the pivot axis of one and the other frame portions, and defining a passage into which the second shaft extends, lubricating oil disposed in said power transfer casing;

seal means/interconnecting and disposed between the first and second casing portions for providing sealing therebetween upon pivotal movement of the second casing portion relative to the first casing portion confining said lubricating oil within said power transfer casing;

means for rotatably supporting the first shaft within the passage of the first casing portion;

means for rotatably supporting the second shaft within the passage of the second casing portion;



a substantially vertical shaft supported totally within the power tranfer casing and positioned with its longitudinal axis generally along the pivot axis of the one and the other frame portions and rotatable about its longitudinal axis;

a first bevel gear connected to one end of the substantially vertical shaft for rotation therewith;

a second bevel gear connected to the other end of the substantially vertical shaft for rotation therewith;

a third bevel gear connected to the first shaft for rotation therewith and in engagement with the first bevel gear;

a fourth bevel gear connected to the second shaft for rotation therewith and in engagement with the second bevel gear, so that the power means rotate the first shaft and, through the first and third bevel gears, the substantially vertical shaft, and, through the second and fourth bevel gears, the second shaft to drive the other frame portion, meanwhile allowing articulation of the one frame portion relative to the other frame portion, and said resilient means comprising substantially vertically disposed trunnion means on opposite sides of said second casing portion, resilient bushings disposed on the other frame portion receiving said trunnion means and said trunnion means being substantially parallel to and spaced from said vertical shaft.

3,896,895
AXLE ARRANGEMENT FOR VEHICLES

Otto Wilhelm Oswald Schultz; Hilmar Feutlinske, and Kurt Gentzsch, all of Hamburg, Germany, assignors to Hamburger Hochbahn Aktiengesellschaft, Hamburg, Germany

Filed Nov. 15, 1973, Ser. No. 416,084

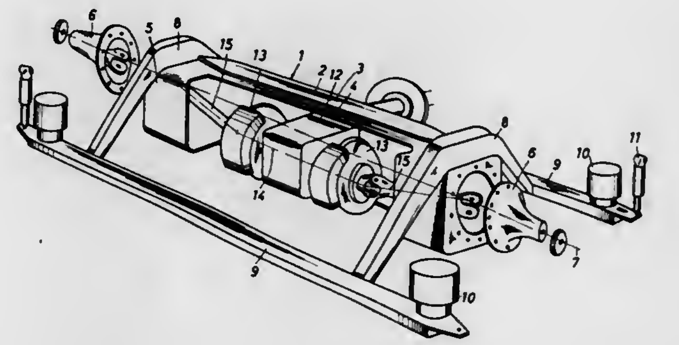
Claims priority, application Germany, Nov. 16, 1972, 2256121

Int. Cl. B60b *35/16*

U.S. Cl. 180—75 **2 Claims**

1. An axle arrangement for a pair of driven wheels of a vehicle such as a bus comprising a transverse bracket member, said bracket being substantially U-shaped in cross-section and with a generally straight transversely extending side wall and with opposed top and bottom walls extending forwardly of

said side wall to define an open portion therein, a pair of opposed end walls intergrally connecting said side wall and said top and bottom walls, opposed coaxial wheel bearings secured to said opposed end walls of said bracket member for supporting said driven wheels, a differential gear secured to the central portion of said bracket, said gear being disposed forwardly in a longitudinal direction from said side wall and having opposed output shafts, braking devices cooperating with said output shafts adjacent said differential gear for braking said driven wheels, said braking device being receivable in the open portion of said bracket, the axis of the output shafts of said differential gear being offset downwardly from and parallel to the axis of said coaxial wheel bearings and externally of said bracket member, universal-jointed drive shafts connecting each of the offset output shafts with each of the driven wheels of the vehicle whereby the floor level of the vehicle may be lowered.



3,896,896
MULTI-PROFILED CROSS MEMBER

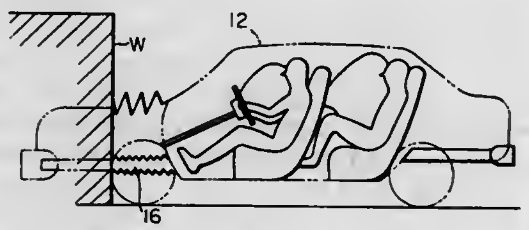
Shigeru Saitoh, Yokohama, Japan, assignor to Nissan Motor Company Limited, Yokohama, Japan

Filed May 22, 1973, Ser. No. 362,843

Claims priority, application Japan, May 23, 1972, 47-60181

Int. Cl. B60r *19/00*

U.S. Cl. 180—82 R **4 Claims**



1. In a motor vehicle having a chassis, the improvement comprising at least one pair of laterally spaced elongated deformable side rails which extend longitudinally of the motor vehicle; and at least one plate cross member having at least two spaced fixing portions at each of the opposite ends thereof, said at least one plate cross member being secured to said deformable side rails only at said at least two spaced fixing portions, said spaced fixing portions, when so secured, being longitudinally spaced apart along the length of the side rails only at the positioof the fixing portions and in contact with a single wall surface of said side rails, each of said opposite ends having at least one recess at this position extending longitudinally between said two spaced fixing portions, whereby each of said opposite ends has reduced strength in the longitudinal direction of the motor vehicle.

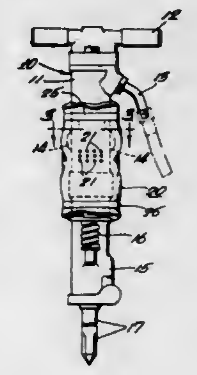
3,896,897
EXHAUST MUFFLER

Edward O. Hilbush, Jr., West Chester, Pa., assignor to West Chester Chemical Company, Inc., Pa.

Filed Oct. 11, 1973, Ser. No. 405,401

Int. Cl. F01n *3/06*

U.S. Cl. 181—36 A **5 Claims**



1. A sound-deadening laminated article of manufacture for use in the muffling of exhaust gas noises comprising an inner first sheet of fabric, an intermediate second sheet of open cell, elastomeric material secured to the surface of said inner first sheet, a third sheet of flexible lead of a thickness in the range 0.0075 inch to 0.015 inch secured to the surface of the sheet of elastomeric material, and an outer sheet of fabric secured to the surface of said flexible lead sheet.

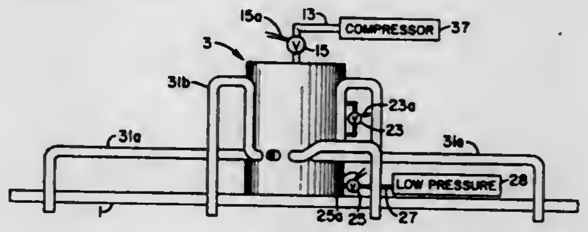
3,896,898
HIGH FREQUENCY SEISMIC SOURCE USING COMPRESSED AIR

Robert Andrew Kirby, and Joseph Frank Bayhi, both of Houston, Tex., assignors to Exxon Production Research Company, Houston, Tex.

Filed June 6, 1973, Ser. No. 367,672

Int. Cl. G01v *1/02*

U.S. Cl. 181—120 **3 Claims**



1. A system for producing seismic energy in a liquid medium including means for compressing gas in a reservoir to a high pressure and valve means for quickly releasing the gas from the reservoir into said liquid medium, the improvement comprising a plurality of elongated conduit means of substantially equal length connected to a common valve means for conducting pressurized gas from said common valve means into said liquid medium and wherein the inner diameters of the plurality of conduit means are of a plurality of different magnitudes.

3,896,899
BLADE STABILIZER FOR EARTH WORKING APPARATUS

Rolland D. Scholl, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

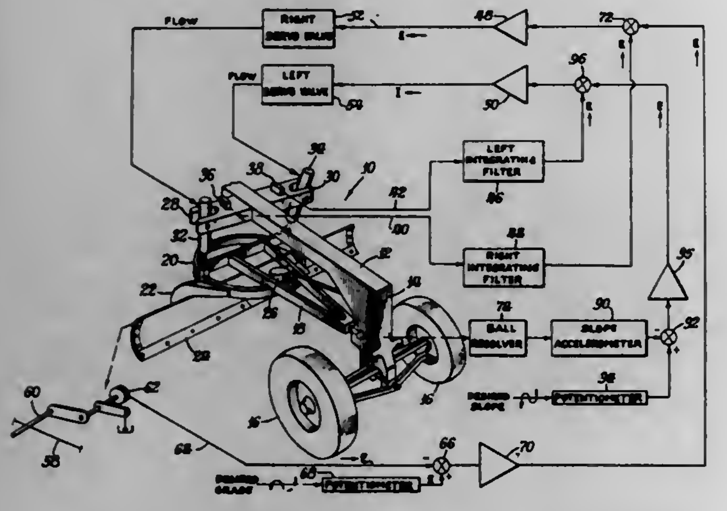
Filed Jan. 21, 1974, Ser. No. 434,982

Int. Cl. E02f *3/76*

U.S. Cl. 172—4.5 **7 Claims**

1. A system compensating both for roll and pitch in an earth working apparatus with respect to a reference plane, the apparatus being of the type having an elongated frame, support means at the fore and aft ends of the frame for supporting

the frame for movement over an earth surface along its longitudinal axis, an earth working blade located between the fore and aft support means, and first and second spaced apart means extending between the blade and the frame for adjustably supporting corresponding spaced apart points of the blade on the frame, said spaced apart means located transversely to the longitudinal axis of the elongated frame so one is on each side thereof, said stabilizing system comprising first and second accelerometers mounted on said frame at transversely spaced apart sites associated with respective said bladee supporting means, each said accelerometer including

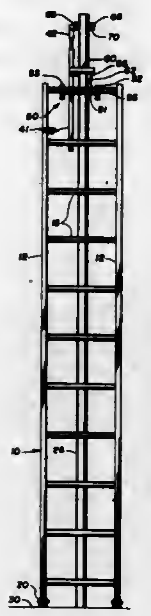


means for generating an electric signal proportional to the magnitude and direction of the vertical acceleration of the associated frame site, and means operatively connected to said blade supporting means and responsive to respective said electric signal generating means for adjusting respective said points of the blade in a direction opposite the direction of movement of the associated frame site by an amount corresponding to displacement of the associated site so that the position of the blade relative the reference plane remains substantially constant and independent of movement of said frame relative the reference plane.

3,896,900
LADDER ATTACHMENT

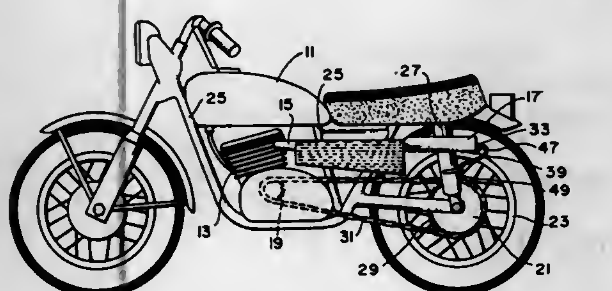
Warren S. Hunter, Battle Lake, Minn. 56515
Filed Nov. 5, 1974, Ser. No. 520,990
Int. Cl.² E06C *7/48*
U.S. Cl. 182—206 **7 Claims**

1. A ladder attachment for clamping the end of a ladder to an upright pole member, the ladder having a pair of side rail members and a plurality of spaced steps extending therebetween comprising, a rod-like member having a transversely extending mounting flange connected to and extending to either side of said rod-like member, connection means mounted on the ends of the mounting flange and adapted to encircle and secure the mounting flange to the top step of a ladder, said rod having one extremity extending beyond the mounting flange and beyond the next adjacent step of the ladder, a pair of spaced flange members positioned on the rod-like member and secured thereto remote from the mounting flange and beyond the end of the ladder, said flange members extending to one side of the rod-like member, pole gripping means mounted on the spaced flange members and extending perpendicular to the rod and in opposite directions, said pole gripping means respectively being adapted to be positioned on opposite sides of the pole member to which the attachment is to secure the ladder with a pole gripping means binding on the pole member.



3,896,901
AUTOMATIC CHAIN LUBRICATOR FOR MOTORCYCLES AND THE LIKE

Alvino J. Ango, 1252 Elliot, Madison Heights, Mich. 48071
Filed Feb. 21, 1974, Ser. No. 444,527
Int. Cl.² F16N *7/30*
U.S. Cl. 184—15 R **26 Claims**

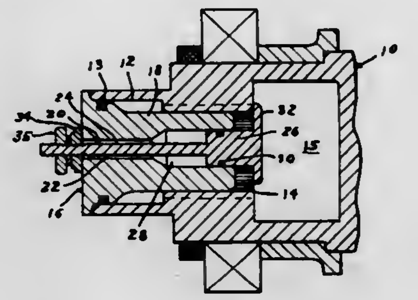


17. In a machine having a supporting structure, at least one rotatable output member, a first sprocket associated with said output member, a two cycle gasoline engine for rotating said output member, a second sprocket associated with said engine, an endless drive chain coupling said first sprocket and said second sprocket, and an engine discharge pipe for accommodating the forcible discharging of the combustion emissions generated by the operation of said engine, said emissions including a residual of oil from the mixture thereof with the gasoline utilized in the operation of said engine, the improvement comprising:

a. a collector means communicably coupled to said engine discharge pipe and effective for captively collecting a portion of said emissions discharged therefrom, and
b. a diverter means coupled to said collector means and to said supporting structure and effective for directing the captively collected forcibly discharged emissions onto the endless drive chain such that dirt particles that may have collected thereon are displaced therefrom and the residual of oil forming a part of said emissions is distributed therealong as said drive chain and said first and second sprockets are rotated by said engine, whereby the operating efficiency of said drive chain and said first and second sprockets is enhanced and prolonged without regularly and periodically attending to their cleaning and spray lubrication.

3,896,902
PLUG FOR DRIVE SHAFT WITH INTERNAL DRIVE SPLINE

Charles C. Queen, Jr., Cookeville, Tenn., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed May 30, 1974, Ser. No. 474,564
Int. Cl. F16n *31/00*
U.S. Cl. 184—88 R **1 Claim**

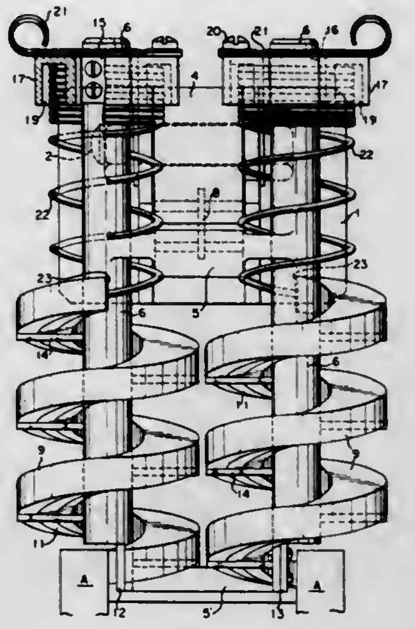


1. In combination with a drive shaft having a central opening; an internal lubricated spline within said opening and spaced from the end of said shaft, with said opening extending beyond the spline to form a central cavity within the shaft; a plug assembly, comprising: a plug member having a portion positioned within the spline of said drive shaft and substantially conforming to the inner diameter of the spline; said plug member having a flange member engaging the end of said shaft, a circumferential groove in the plug member adjacent the flange member near the outer end of said opening; an O-ring in said groove, for sealing said plug within said drive shaft; a cylindrical hole through said plug member; said hole being offset from the center of said plug member; a rotatable bolt member having a cylindrical shaft passing through said hole in said plug member; said bolt member having an off-center head member extending into said central cavity and engaging the inner edge of the spline; a circumferential groove in the portion of said bolt member within said plug; an O-ring in the circumferential groove in said bolt member for sealing the bolt member in said plug; said bolt member having a threaded portion on the end remote from said head member; a pair of lock nuts threaded onto the threaded end of said bolt member for retaining the off-center head member in engagement with the inner edge of the spline, to thereby retain said flange in engagement with the end of said shaft; said off-center head member being adapted to pass through said spline in one angular position of said bolt member in said plug member.

3,896,903
SOLID LUBRICANT FEED DEVICE

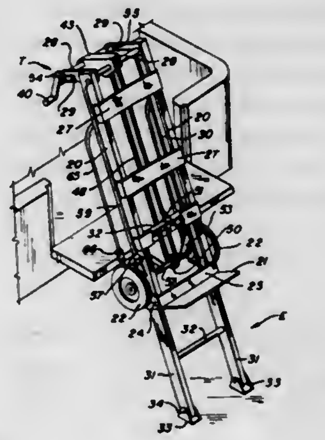
Kiyotaka Takimoto, No. 16-2, Asahi-cho 2-chome, Fuchu, Tokyo, Japan
Filed Mar. 8, 1974, Ser. No. 449,460
Claims priority, application Japan, Mar. 20, 1973, 48-32464
Int. Cl.² F16N *15/00*
U.S. Cl. 184—99 **5 Claims**

1. A device, for applying one end of a spiral shape strip of solid lubricant to a surface to be lubricated, comprising, in combination, means forming a support axis; a spiral guide supported on and surrounding said means, and having one end adapted to be positioned adjacent the surface to be lubricated, said spiral guide having a constant pitch and radius and being formed to have supporting and guiding engagement with a spiral strip of solid lubricant when disposed therealong; and means on said device for imparting a spiral force along said spiral guide in the direction of said one end and operable to engage the opposite end of a spiral strip of solid lubricant when supported on said spiral guide and apply pressure thereto to maintain the one end thereof engaged with the surface to be lubricated, and to impart a spiral motion to a spiral strip of solid lubricant when supported on said spiral guide to advance the solid lubricant along said spiral guide as the one end of the solid lubricant is worn away by the surface to be lubricated.



3,896,904
TWO-WHEEL HAND TRUCK WITH ELEVATOR

Bruce A. Walker, 13581 Sable Blvd., Brighton, Colo. 80601
Filed Apr. 29, 1974, Ser. No. 464,805
Int. Cl.² B66B *9/20*
U.S. Cl. 187—9 R **12 Claims**

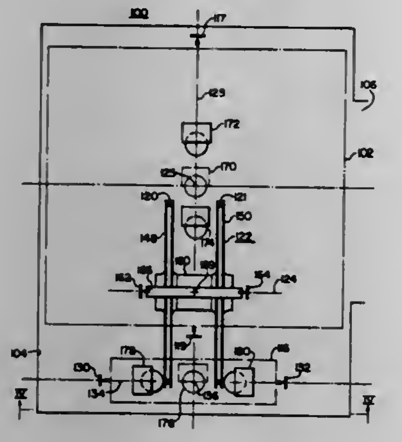


1. A two-wheel hand truck having an elevator mechanism to facilitate raising and lowering the hand truck to and from an elevated deck and comprising:

a. a hand truck structure including a pair of longitudinally extended tubular rails open at their bottom ends, a transverse pickup lip outstanding from the bottom front edge of the rails, a pair of spaced wheels mounted upon a transversely disposed wheel shaft adjacent to the bottom back edge of the rails and a handle at the top of the rails, all in an arrangement which permits a load to be picked up by the lip and lie against the front side of the rails when the truck is tipped rearwardly onto the wheels;
b. said elevator mechanism including a leg telescopically carried in each rail; and
c. a means to extend and to retract a substantial portion of the legs from the bottom of the rails in unison to raise and lower the truck with a load thereon.

3,896,905
ELEVATOR SYSTEM

Frederick Solymos, Glenridge, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Sept. 30, 1974, Ser. No. 510,828
Int. Cl. B66b *11/00*
U.S. Cl. 187—22 **8 Claims**

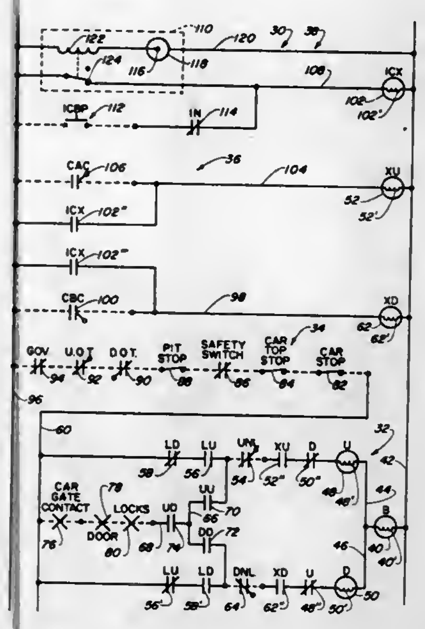


1. An elevator system, comprising:
an elevator car,
a counterweight,
means including traction drive means and hoist roping mounting said elevator car and counterweight for movement in a predetermined travel path,
means guiding the movement of said elevator car including first and second guide rails,
a compensator sheave disposed below the travel path of said elevator car,
and compensating rope means interconnecting said elevator car and counterweight via said compensator sheave, said compensator sheave including first and second rims interconnected and spaced via a hub portion with said compensator sheave being disposed such that its first and second spaced rims straddle one of the first and second guide rails.

3,896,906
SEISMIC SENSING APPARATUS

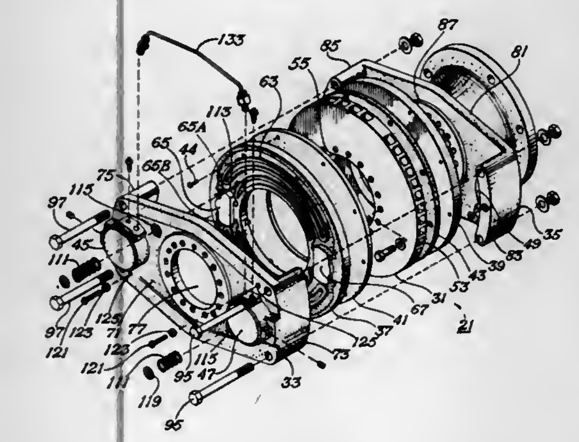
William M. Shrum, Miraleste, Calif., assignor to Maxton Manufacturing Company, Los Angeles, Calif.
Division of Ser. No. 191,281, Oct. 21, 1971, Pat. No. 3,815,710. This application Jan. 23, 1974, Ser. No. 435,808
Int. Cl. H01h *35/14*
U.S. Cl. 187—29 R **2 Claims**

1. A seismic sensing apparatus comprising:
sensing circuitry including a seismic sensitive contact to be activated by a seismic disturbance of predetermined magnitude;
first means to be actuated by said contact, said first means being coupled to a first circuit path and a second circuit path, upon activation of said first means de-energization occurs of either said first path or said second path;
second means coupled within said first circuit path, third means coupled within said second circuit path, said second means to either transmit or non-transmit energy within said first circuit path, said third means to either transmit or non-transmit energy within said second circuit path, with said second means positioned so as to effect transmission of energy said third means being positioned to not transmit energy, with said third means being positioned to transmit energy said second means being positioned to not transmit energy, said first means being located in parallel with respect to each of said second means and said third means.



3,896,907
HYDRAULIC DISC BRAKE

Charles L. Baxendale, Burleson, Tex., assignor to Mechanics, Inc., Tex.
Filed Aug. 16, 1974, Ser. No. 498,139
Int. Cl. F16d *55/228*
U.S. Cl. 188—72.5 **8 Claims**

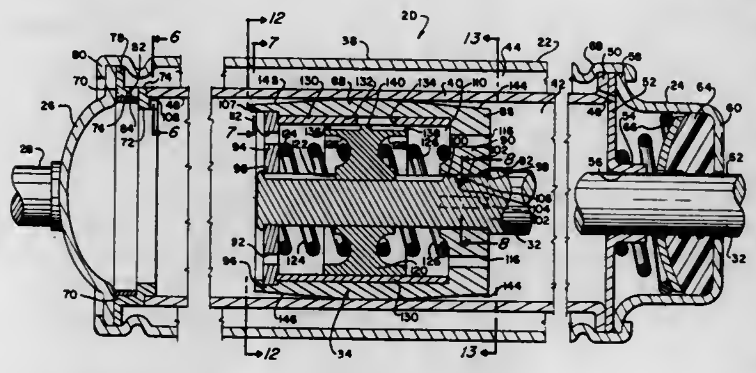


1. In a disc brake assembly for a wheel of a vehicle comprising:
a rotatable disc means adapted to be coupled to a wheel for rotation with the wheel about its axis,
frame means adapted to be fixedly secured to the vehicle and including inner and outer housing means adapted to be located on opposite sides of said disc means with said outer housing means located on the outer side of said disc means and said inner housing means located on the inner side of said disc means,
brake shoe means adapted to be supported on opposite sides of said disc means between said disc means and the walls of said inner and outer housing means respectively, said brake shoe means being supported for axial movement toward and away from said disc means for effectively engaging and disengaging said disc means,
each housing means having at least two cylindrical bores formed therein,
each cylindrical bore of said inner housing means being located opposite a cylindrical bore of said outer housing means,

a piston assembly slidably located in each cylindrical bore and adapted to engage its associated brake shoe means, and
means for admitting fluid under pressure to said cylindrical bores to move said piston assemblies and hence said brake shoe means toward said disc means for engaging said brake shoe means with said disc means,
an improved piston assembly, comprising:
a cylindrical piston member having a front side and opposite rear side to which fluid pressure is applied for moving said piston member toward its associated brake shoe means,
a groove formed in the periphery of said piston member, a resilient O-ring located in said groove,
a flexible, closed, ring-shaped support member located in said groove between said O-ring and the front side of said piston member,
a thin disc wiper member formed of soft metal located in front of said piston member and having a diameter slightly greater than the diameter of said piston member,
a disc shaped heat shield located in front of said disc wiper member, and
a protective metallic disc located in front of said heat shield for engaging the associated brake shoe means when said piston member is moved by fluid pressure toward its associated brake shoe means.

3,896,908
SHOCK ABSORBING APPARATUS

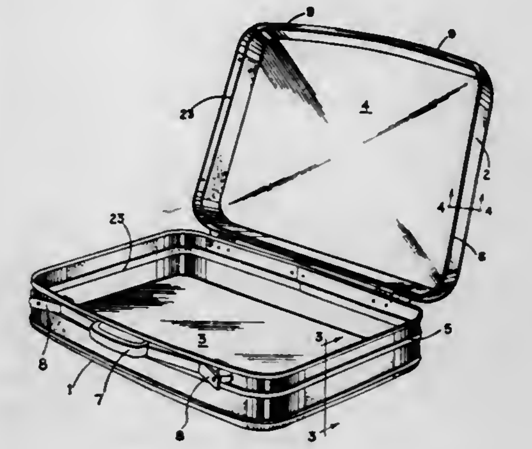
Harry A. Petrak, Boulder, Colo., assignor to Triple S Industries, Inc., Boulder, Colo.
Filed May 4, 1973, Ser. No. 357,452
Int. Cl. F16f *9/19*
U.S. Cl. 188—280 **21 Claims**



1. A fluid flow control apparatus having a hollow cylinder provided with end walls at opposite ends thereof, a quantity of fluid in the cylinder, and a piston assembly having a piston member slidable axially within the cylinder, said piston member having an internal chamber in fluid communication with the fluid within said cylinder at opposite ends of said piston member, slide valve means disposed in said internal chamber movable axially with respect to said piston member, fluid by-pass passage means located within said internal chamber having a plurality of spaced openings each defining a selectively variable cross-sectional opening size and configuration for establishing fluid communication between opposite sides of said slide valve means when traversed by said slide valve means, resilient means associated with said slide valve means yieldingly resisting axial movement of said slide valve means in opposite axial directions, said slide valve means movable through said internal chamber in response to fluid pressure to traverse said fluid by-pass passage means for selectively controlling the rate of flow of fluid past said slide valve means within said internal chamber, the cross-sectional opening size and configuration of each of the openings of said fluid by-pass passage means being varied in accordance with preselected pressure resistance levels in the direction of movement of said slide valve means thereacross, said fluid by-pass passage means thereby cooperating with said resilient means in establishing changes in resistance pressure of the fluid on opposite sides of said slide valve means notwithstanding changes in the speed of movement of said piston through said cylinder when said slide valve means moves axially with respect to said piston member to traverse said by-pass passage means.

3,896,909
TRAVEL CASES

Richard Edward Kellett, Manchester, England, assignor to Antler Limited, Bury, England
Filed Feb. 27, 1974, Ser. No. 446,316
Int. Cl.^{2} A45C *13/02*
U.S. Cl. 190—53 **12 Claims**



1. A lined travel case comprising two hollow shells each of which has a mouth to its interior and which are hingedly connected together with their said mouths towards one another, a pre-formed lining of soft material fitted into one of said shells being of substantially bag form corresponding to the internal shape of said one shell and having a mouth of corresponding shape to said mouth of said one shell, a continuous edging of relatively stiff material secured to said lining around said mouth thereof, a continuous formation on said edging which extends along said edging externally of said mouth of said lining, and a complementary continuous formation fixed with respect to said one shell and extending around the interior of said mouth of said one shell, said formation and complementary formation being adapted for resilient interconnection and comprising in respect of one of them an undercut channel having a longitudinally extending opening thereinto and in respect of the other a projection having an enlarged portion which is wider than said opening and engages with snap-action in said channel through said opening, thereby providing a joint between said formations which retains said lining in said one shell, a part on said one shell extending around said mouth thereof outwardly beyond said complementary formation, and said edging having a self-supporting trim projection which extends outwardly away from said mouth of said lining to said part of said one shell and conceals said joint.

3,896,910
INTERRELATED CONTROL FOR A SLIPPING CLUTCH AND ASSOCIATED TRANSMISSION

Sidney J. Audiffred, Washington; David W. Bump; Raymond N. Erkkila, both of Morton; Lowell E. Johnson, and Shalryl I. Pearce, both of East Peoria, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Division of Ser. No. 212,206, Dec. 27, 1971, Pat. No. 3,822,771. This application July 26, 1973, Ser. No. 382,717
Int. Cl. B60k *29/00*
U.S. Cl. 192—3.57 **3 Claims**

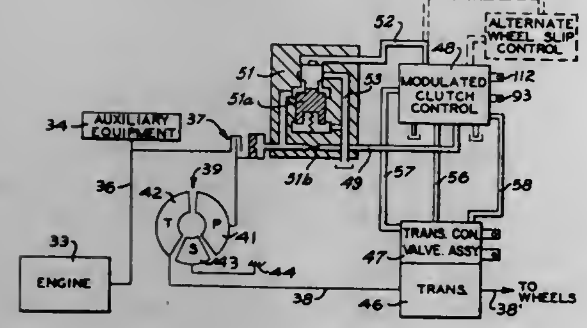
1. A hydraulic control system for a power train, the power train proportioning power from a prime mover to auxiliary equipment and a primary output shaft, the power train including an input means coupling the prime mover with the auxili-

ary equipment, an output means operatively coupled with the primary output shaft and a slipping clutch providing a variable coupling between the input and output means and a transmission having directional and speed range gears respectively controlled by hydraulically operable clutch means is arranged between the power output means and the primary output shaft, a transmission control valve assembly being in communication with the transmission to selectively pressurize the transmission clutch means, comprising

a valve assembly for hydraulically varying engagement of the slipping clutch, the valve assembly including an input valve means for communicating actuating fluid through an inlet conduit to the slipping clutch, and

a regulating valve being adjustable to selectively vary pressure of the actuating fluid communicated to the slipping clutch from the input valve means,

a conduit means including a restriction,



the input valve means being in connection with the control valve assembly through the conduit means for delivering actuating fluid pressure to the slipping clutch in delayed proportion to engagement of the hydraulically operable clutch means in the transmission,

manual control means coupled with the regulating valve for adjustment thereof, and

slip indicating means operatively associated with the manual control means for providing a feedback signal when a selected level of torque is being transferred through the slipping clutch, the slip limiting means including resilient abutment means for contacting and resisting operation of the manual control means only after the manual control means has been moved a predetermined distance for the selected level of torque transmission, and manually adjustable means operatively coupled with the resilient abutment means for varying the effective position of the resilient abutment means and thereby adjusting the selected level of torque transmission.

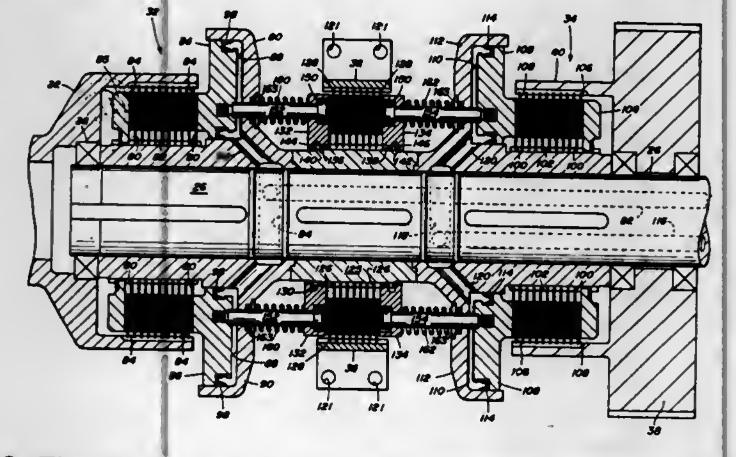
3,896,911
TWO-SPEED CLUTCH AND BRAKE SYSTEM

Jene A. Beneke, Parker, Tex., assignor to Verson Allsteel Press Co., Dallas, Tex.

Filed Mar. 25, 1974, Ser. No. 454,271

Int. Cl. F16d *67/04*

U.S. Cl. 192—18 A **10 Claims**



8. The clutch system of claim 7 wherein said stationary housing comprises:

a circular housing surrounding said fifth friction surfaces and including gear teeth for keying with the periphery of said fifth friction surfaces.

3,896,912
HYDROSTATIC CLUTCH

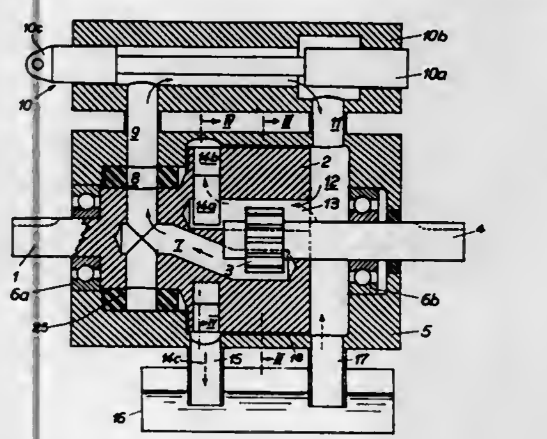
Ivan Jaroslav Cyphelly, Neuhaus, 8128 Hinteregg, Switzerland

Filed May 17, 1974, Ser. No. 471,031

Claims priority, application Switzerland, June 29, 1973, 9530/73

Int. Cl. F16d *31/04*

U.S. Cl. 192—61 **10 Claims**



1. A hydrostatic clutch comprising:

a. an input shaft;

b. an output shaft;

c. a positive displacement pump including a casing element having a cavity, an intake port and a discharge port communicating with said cavity, and a pumping element movable in said cavity,

1. said elements being connected to said shafts respectively for pumping a fluid from said intake port to said discharge port when one of said shafts rotates at a speed different from the speed of rotation of the other shaft;

d. conduit means constituting a pumping circuit connecting said ports;

e. valve means in said circuit;

f. a body of liquid in said circuit and in said casing element;

g. actuating means for moving said valve means between a first position in which said valve means blocks said circuit, whereby said clutch is engaged for transmitting torque between said shafts, and a second position in which said liquid is free to be pumped through said circuit by said pump, whereby said clutch is disengaged; and

h. temperature control means responsive to said moving of said valve means for withdrawing thermal energy from said liquid in said casing element at a higher rate when said valve means is in said first position than when said valve means is in said second position.

3,896,913
THROTTLE AND IGNITION TIMING CONTROLLED BY CLUTCH AND TRANSMISSION

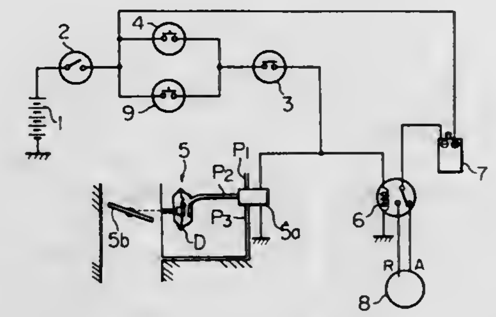
Hiroyuki Maruoka, Yokohama, and Giichi Shioyama, Yokosuka, both of Japan, assignors to Nissan Motor Company Limited, Yokohama, Japan

Filed Apr. 5, 1973, Ser. No. 348,027

Claims priority, application Japan, Apr. 28, 1972, 47-43185; Sept. 12, 1972, 47-106283

Int. Cl. F02p *5/04;* **F16d** *23/00*

U.S. Cl. 192—.062 **3 Claims**



1. A ignition timing change-over system for a vehicle internal combustion engine having an intake manifold, a throttle valve, an acceleration control member, a gear shift lever and a pedal actuated clutch the system comprising, in combination:

an ignition coil,

a distributor provided with an ignition spark advancing point and ignition spark retarding point for advancing and retarding spark in dependence on engine speed,

a relay switch, the coil of which is normally de-energized for the switch to connect said ignition spark advancing point to said ignition coil,

a dc power source,

an ignition change-over circuit arranged to close when said engine is idling under given conditions for connecting said relay switch coil through an ignition switch to said dc power source to energize said relay switch coil causing said relay switch to switch and connect said ignition spark retarding point with said ignition coil, said ignition change-over circuit including in series a thermostatic switch which is adapted to close at an engine temperature below a predetermined level, a neutral switch which is adapted to close when said gear shift lever is in neutral position, and a clutch switch which is connected in parallel with said neutral switch and adapted to close when said clutch pedal is depressed, and

a throttle valve opener comprising solenoid means connected in parallel with said relay switch coil for opening said throttle valve when said ignition change-over circuit is closed and said ignition spark retarding point is connected to said ignition coil.

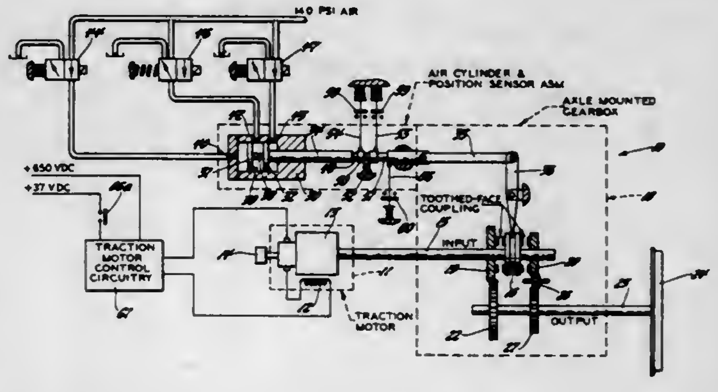
3,896,914
VEHICLE DRIVE WITH CLUTCH ENGAGEMENT CONTROL

Robert H. Konsbruck, Palatine, and Robert T. Scott, Joliet, both of Ill., assignors to General Motors Corporation, Detroit, Mich.

Filed May 31, 1974, Ser. No. 474,968

Int. Cl. B60k *21/00*

U.S. Cl. 192—.098 **3 Claims**



2. A vehicle drive comprising

a drive motor operable in one direction of rotation,

an output member operable in both directions of rotation, mechanical drive means operable to connect said drive motor and said output member and including a toothed coupling movable to extreme forward and reverse engaged positions, in which said drive motor and output member are operably connected, and to intermediate positions including neutral, forward abutment and reverse abutment positions in which said drive motor and output member are operably disconnected,

electrical motor control means operative to permit application of power to said drive motor when said coupling is in either of its engaged positions or when said coupling is in either of its abutment positions and operated below a predetermined speed suitable for engagement, said motor control means being further operative to cut off power to said drive motor when said coupling is in its neutral position or when said coupling is in either of its abutment positions and said motor is operated above said predetermined speed, and

means selectively operable to move said clutch to its forward, neutral and reverse positions.

3,896,915
VENDING MACHINE

Yukichi Hayashi; Yutaka Yokoda, both of Tokyo; Masayuki Tamura, Sakado; Shinichi Kobayashi, Kamihukuoka; Kazuyuki Akai, Tokyo, and Seiu Sakai, Yamato, all of Japan, assignors to Nippon Coinco Co., Ltd., Tokyo, Japan

Filed Jan. 14, 1974, Ser. No. 432,977

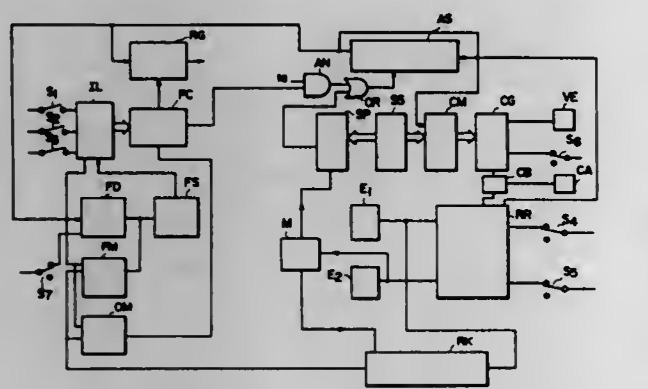
Claims priority, application Japan, Jan. 17, 1973, 48-7549; Feb. 13, 1973, 48-17721; July 24, 1973, 48-83328; July 24, 1973, 48-83329; July 27, 1973, 48-84684; Aug. 22, 1973, 48-94078; Aug. 22, 1973, 48-94079; Aug. 23, 1973, 48-98931

Int. Cl.^{2} G07F *5/20*

U.S. Cl. 194—1 N **7 Claims**

1. A vending machine comprising means for producing pulses corresponding in number to the value of a deposited coin and a coin paid out, addition and subtraction counter means for making addition by said pulses produced upon insertion of the coin and making subtraction by said pulses produced upon paying out of the coin, a temporary retention mechanism for temporarily retaining a coin of large denomination among coins to be inserted, means for storing the inserted coins except the retained coin to corresponding change coin stacking tubes, coin memories respectively storing the numbers of coins of particular denominations among the inserted coins, electromagnetic control means for directing the temporarily retained coin to a cash box upon receipt

of a vend instruction signal and directing the coin to a return outlet upon receipt of a return signal, means for producing a signal corresponding to a set vend price, means for obtaining a count corresponding to the value of the required change by making subtraction upon application of the signal corresponding to the set vend price to said addition and subtraction counter means, detection means for detecting whether the change can be paid out in coins of a plurality of denominations, coin return means for reading the contents of said coin memories and returning coins of the same denominations as the inserted coins from the temporary retention mechanism and the change coin stacking tubes when the inserted coins should be returned, and change pay out means for reading the contents of said coin, memories and delivering a least possible number of coins as change upon said detection when change should be paid out.



3,896,916
MECHANISM FOR SENSING THE THICKNESS AND DIAMETER OF COINS IN COIN OPERATED DEVICES

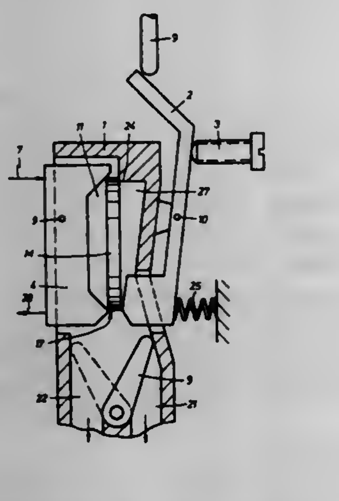
Hugo Ruzic, Leonberg; Robert Scholpp, Stuttgart, and Paul Gerhard Vomel, Moglingen, all of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Feb. 22, 1974, Ser. No. 444,638

Claims priority, application Germany, Mar. 16, 1973, 2313241

Int. Cl. G07f *3/02*

U.S. Cl. 194—102 **7 Claims**



1. A mechanism for sensing the thickness and diameter of coins in coin operated devices comprising:

a housing including a coin entrance slot;

a first coin sensing member adjacent said entrance slot pivotably attached to said housing, said first sensing member having top and bottom projections, said top projection being spring loaded relative to said housing; and

a second coin sensing member pivotably attached to said housing and cooperating with said first coin sensing member to form two movably separable coin transfer surfaces, said second sensing member being spring loaded relative to the bottom projection of said first member, said bottom projection of said first member forming coin transfer surfaces in cooperation with said second sensing member so that a coin of particular thickness in diameter will pass between the top projection of said first member and said housing and provide a stop for said spring loaded top projection preventing said bottom projection coin transfer surface from moving away from said second member coin transfer surface thereby preventing said coin of particular thickness and diameter from falling through the opening therebetween said coin transfer surfaces.

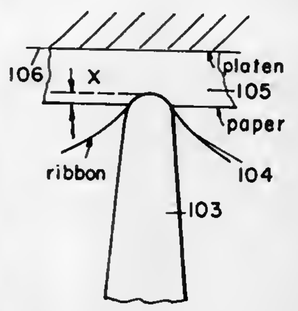
3,896,917
BINARY BAR CODE PRINTING DEVICE AND BINARY BAR CODE PRINTED MATTER

John F. Taplin, West Newton, Mass., assignor to Taplin Business Machines Incorporated, Burlington, Mass.

Filed June 23, 1972, Ser. No. 265,637

Int. Cl. B41j *3/00;* **B41b** *1/02;* **G06k** *19/06*

U.S. Cl. 197—1 R **11 Claims**



1. A printing device for printing information simultaneously in form of man readable characters and in binary bar form, said printing device including a set of types having the same size and having different bar symbols of equal height on the faces thereof, the constituent bar symbols of said set being members of a group including 128 possible combinations each formed by four bars and three inter-bar spaces, each of said bar symbols forming a pattern of alternating bars and inter-bar spaces, and each of said bar symbols beginning with a bar and ending with a bar, each of said bars having either of two different fixed widths and each of said inter-bar spaces having either of two different fixed widths so that the possible number of said bar symbols of said set complies with the equation $128=2^{(b+s)}$, wherein b is the number of said bars of each of said bar symbols on the faces of said types of said set and s is the number of said inter-bar spaces of each of said bar symbols on the faces of said types of said set, said two different fixed widths of said bars including a wide and a narrow bar width, and said two different fixed widths of said inter-bar spaces including a wide and a narrow inter-bar space width, said wide inter-space width exceeding said wide bar width and said narrow inter-space width exceeding said narrow bar width.

3,896,918
MOSAIC PRINTING HEAD WITH ELECTROMAGNETICALLY ACTUATED NEEDLES WITH A COMMON YOKE FOR ALL ELECTROMAGNETS

Winfried Schneider, Alderweg 16, Schloss Neuhaus, Germany

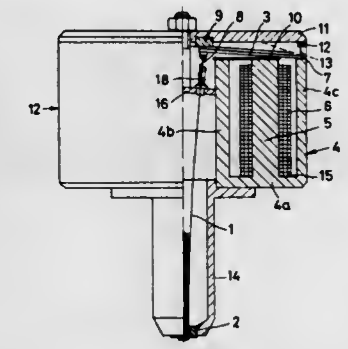
Continuation of Ser. No. 227,515, Feb. 18, 1972, abandoned. This application Aug. 20, 1973, Ser. No. 389,509

Claims priority, application Germany, Mar. 4, 1971, 2110410

Int. Cl. B41j *3/04*

U.S. Cl. 197—1 R **4 Claims**

1. An electromagnetic drive for the operation of printing needles of a mosaic printing head, comprising a housing having a tubular support portion with a guide for a plurality of needles, a plurality of needles in said guide arranged for substantially axial movement for printing, an annular common magnetic yoke for all of said needles made of magnetic material and being connected to said support portion, said yoke including an outer and an inner annular wall portions located exteriorly of and generally concentric to said needles, said yoke also including a pole piece of magnetic material for each needle arranged in circumferentially spaced locations between said outer and inner wall portions and each having a coil winding, said pole pieces and said outer and inner walls having outer end faces terminating in substantially the same plane, an armature having an outer end pivoted on said outer annular wall portion and overlying said pole piece and the end face of said inner annular wall portion and having an inner end connected to a respective needle, and spring means biasing said armature away from engagement with said pole piece.



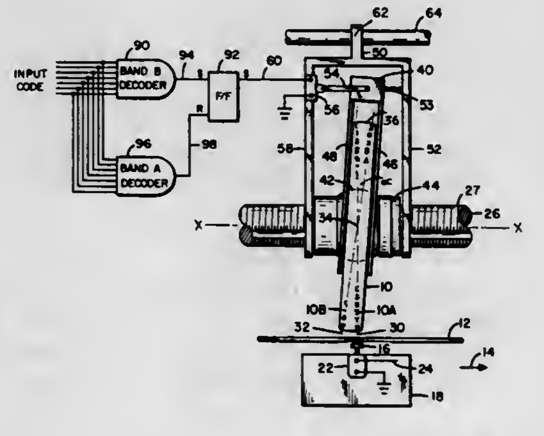
3,896,919
DOUBLE BAND TYPE CARRIER

Ronald W. F. Hutley, Lansdale, Pa., assignor to Sperry Rand Corporation, Blue Bell, Pa.

Filed Dec. 21, 1973, Ser. No. 427,386

Int. Cl. B41j *1/34*

U.S. Cl. 197—49 **5 Claims**



1. An impact printer for representing characters on a record medium, comprising: a continuously rotating typewheel having an axis of rotation and having a generally spherically shaped face section perpendicular to the radii of said typewheel, said typewheel having first and second bands of type characters, at least some of the type characters on said first band being different in type than the type characters on said second band, each band being arranged on the face of said typewheel in a circular path extending about the periphery of said typewheel, said circular path defining a type plane, said type planes intersecting each other at two points on the wheel and crossing a projection of the axis of the typewheel at a predetermined angle when its typeband is in printing position and at an angle other than said predetermined angle when its typeband is not in printing position; a hub keyed to said typewheel, said typewheel being deflectable about the axis of said hub, print actuator means aligned with said typewheel; means for translating said typewheel and said print actuator means across a row of said record medium, and means for deflecting said typewheel to align a selected one of said bands with said print actuator means in response to a control signal signifying that a desired character on said selected band is to be imprinted on said record medium.

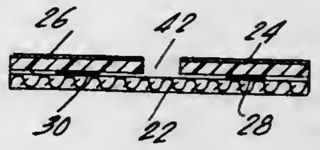
3,896,920
TYPEWRITER RIBBON FOR TYPING AND CORRECTING

Victor Barouh, 935 Plum Tree Rd. West, Westbury, N.Y. 11552, and Robert Glenn, 70-20 108th St., Forest Hills, N.Y. 11375

Continuation-in-part of Ser. No. 187,947, Oct. 12, 1971, Pat. No. 3,752,291. This application Apr. 2, 1973, Ser. No. 347,359. The portion of the term of this patent subsequent to Aug. 14, 1990, has been disclaimed.

Int. Cl. B41j *31/02*

U.S. Cl. 197—172 **1 Claim**



1. A typewriter ribbon comprising a base strip of thin woven plastic light transmitting non-inked material, spaced paralled coatings of adhesive on said base strip, a correction strip comprising an elongated strip of material coated with a correction material and a transfer strip of fluid impervious thin plastic material coated with a transfer material, said correction strip and said transfer strip being bonded to said base strip by said adhesive coatings, said transfer strip and said correction strip being arranged in spaced paralled relationship with said tranfer strip and said correction strip each being arranged along a respective edge of said base strip with a central light transmitting window therebetween for facilitating proper alignment for correction of typewritten impressions, said transfer strip and said correction strip being of the same thickness so that said typewriter ribbon can be wound and rewound flatly and evenly, said transfer strip and said correction strip being substantially wider than said adhesive coatings with said adhesive coating medially disposed between the edges of said correction strip and said transfer strip forming cushions for the central portions of said correction strip and said transfer strip so that the impressions therefrom are enhanced.

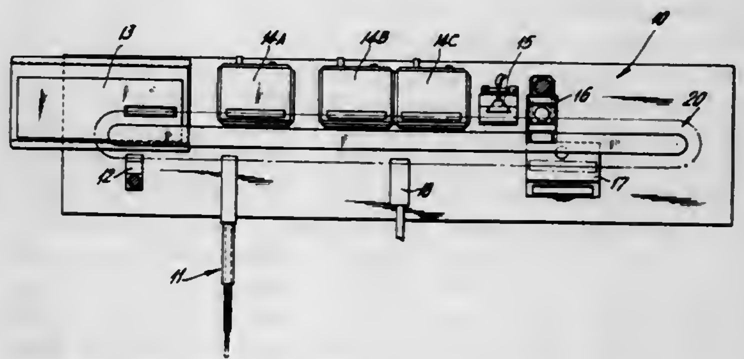
3,896,921
CONVEYOR SYSTEM FOR TRANSPORTING WORKPIECES THROUGH A PROCESSING CYCLE

William Sund, Luc; George Khouzam, Candiac, both of Canada, and Hani Tawil, River Vale, N.J., assignors to Electrovert Manufacturing Co. Ltd., Mount Vernon, N.Y.

Filed Oct. 11, 1973, Ser. No. 405,285

Int. Cl.^{2} B65G *25/00*

U.S. Cl. 198—19 **6 Claims**



1. A conveyor system, for receiving, transporting and discharging workpieces to be processed at processing stations, comprising, in combination, an elongated guide rail arranged to extend substantially horizontally past a series of workpiece processing stations; a driven chain extending in laterally confined relation along and guided in said guide rail; runners engaged with said guide rail for guided movement therealong past the processing stations; respective workpiece supports

mounted on each runner; respective latch means on each runner operable to couple the associated runner to said chain and to uncouple the associated runner from said chain; said guide rail having idling portions extending therealong at certain of said processing stations; means operable, as each runner reaches an idling portion to disengage the associated latch means from said chain to idle the associated runner; each runner being moved along an idling portion by succeeding runners moved into the idling portion by said chain; and means operable, as each runner reaches the end of an idler portion, to re-engage the associated latch means with said chain to couple the runner to said chain for movement along said guide rail thereby; said guide rail is an elongated metal extrusion having formed therein an elongated slot receiving said chain and confining said chain both laterally and vertically of said guide rail; a guide rail cover which is an elongated metal extrusion arranged to be secured to said guide rail and defining, with said guide rail, a guiding channel for said runners; said guide rail having a depending portion extending therealong and forming a substantially vertically oriented guiding surface; each runner having a first guide engageable with a surface of said channel and a second guide engageable with said substantially vertical guiding surfaces.

3,896,922
PROOFING BOX PLANT

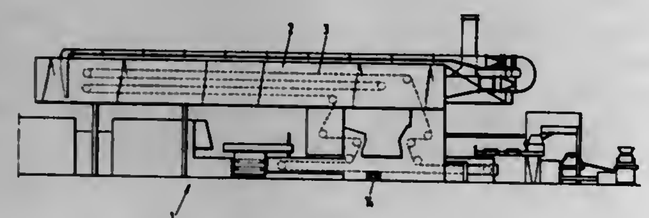
Frank Cornelis De Jong, Dordrecht, Netherlands, assignor to Winkler-Den Boer, N.V., Dordrecht, Netherlands

Continuation of Ser. No. 267,036, June 28, 1972, abandoned. This application Dec. 3, 1973, Ser. No. 421,264

Claims priority, application Netherlands, July 29, 1971, 7110470

Int. Cl. B65g *15/28*

U.S. Cl. 198—155 **3 Claims**



1. In a proofing box plate for raising dough products, a conveyor comprising two transversely spaced parallel endless conveyor chains, a plurality of carrying plates arranged in the space between the chains, pivot pins connecting each of the carrying plates to the chains and defining a tilting axis for the respective plate, a stationary guiding rail extending along at least one of said chains, forward and rear guiding elements disposed on said plates at opposite sides of said tilting axis and in a common level therewith to cooperate with said guiding rail for defining the angular position of said plates, said conveyor having a first and a second straight conveyor section and therebetween a tilting section to invert said plates when moving from said first to said second section, said tilting section comprising a recess in said guiding rail at said tilting section, a hinged plate mounted for swinging movement between a first position in which the plate occupies said recess and a second position in which the lower surface of the plate positively forces the forward guiding element of each carrying plate into the recess during travelling motion of the plates from the first section into said tilting section, said tilting section also comprising a deflecting rail having a first inclined portion extending downwardly from said hinged plate, said first portion joining with a second inclined portion extending upwardly to a second recess in said guiding rail and means at the location where said first and second inclined rail portions are joined for guiding said forward guiding element from said first portion into said second portion during movement of said chains.

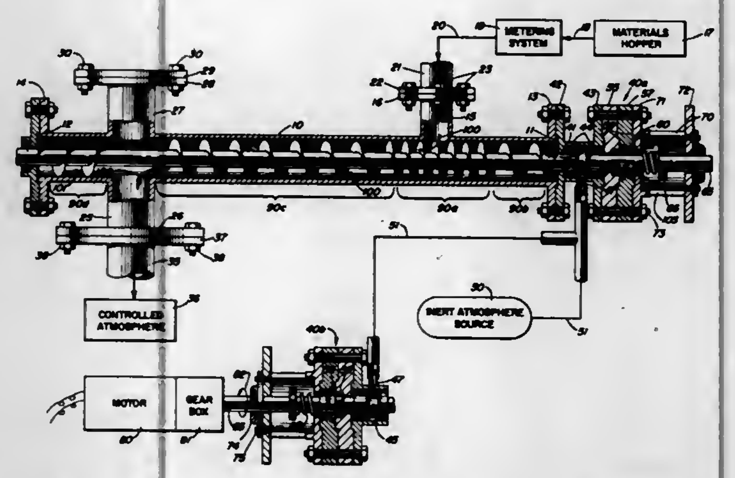
3,896,923
SCREW FEEDER

John M. Griffith, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Feb. 6, 1974, Ser. No. 440,100

Int. Cl. B65g *33/14*

U.S. Cl. 198—214 **6 Claims**



1. An apparatus for feeding a powdered compactible material into a system which is under controlled atmosphere comprising:

a. an elongated tube having first and second ends;
b. a shaft positioned axially inside said elongated tube between said first and second ends;
c. first and second sealed bearing means attached respectively to said first and second ends and rotatably supporting said axially positioned shaft;
d. an input formed through said tube and over said shaft near said first end;
e. an output formed through said tube and under said shaft near said second end; and
f. first and second screw flight means formed along said shaft, said first screw flight means having a selected pitch at said first end and extending into a lesser pitch beneath said input to further extend to said selected pitch at said output and said second screw flight means having selected pitch and extending from said second end to said output, said second screw flight means having a reverse pitch with respect to said first screw flight means.

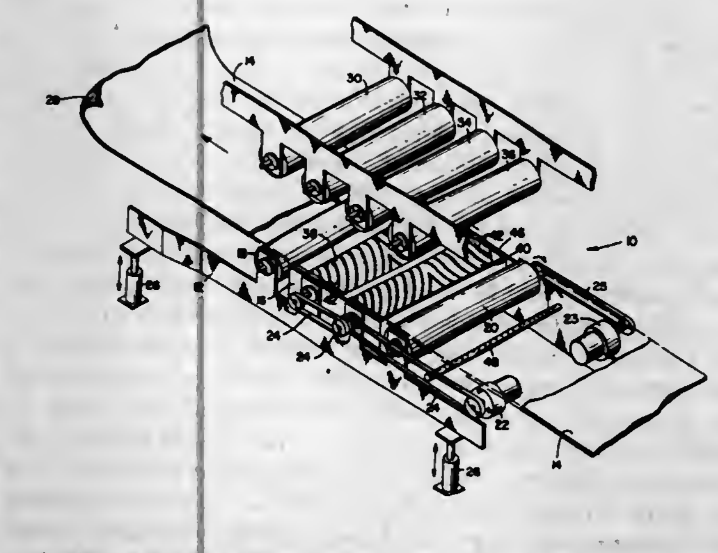
3,896,924
METHOD AND APPARATUS FOR REMOVING FIBROUS PARTICLES FROM A CONVEYOR BELT

Michael A. Sbarra, 95 Narrangansett Ave., Ossining, N.Y.

Filed Sept. 14, 1973, Ser. No. 397,286

Int. Cl. B65g *45/00*

U.S. Cl. 198—230 **9 Claims**



1. A method of dislodging and removing fibrous particles from a resilient conveyor belt surface while the belt is moving comprising the steps of:

a. juxtaposing a body of liquid comprising substantially water beneath said belt surface at a location along the path traversed by said moving belt;
b. introducing a foam agent into said liquid body to form a wash solution;
c. generating a foam at the surface of said wash solution;
d. scrubbing the surface of said belt as it passes over said wash solution;
e. applying said foam to said belt surface substantially concomitantly with step (d);
f. removing a residue of said foam from said belt surface after it leaves said location.

3,896,925
BRAKING SYSTEM FOR AN ELECTRICALLY-OPERATED ROAD SUCH AS AN ESCALATOR

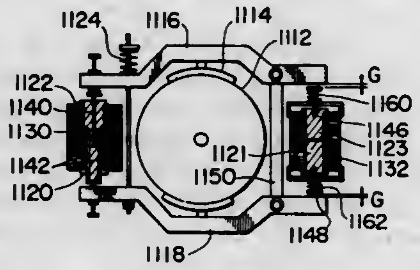
Tsuyoshi Mitsui; Takeji Hiramoto, and Mitio Imanaka, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 1, 1973, Ser. No. 402,280

Claims priority, application Japan, Sept. 29, 1972, 47-96993; Mar. 28, 1973, 48-34574

Int. Cl. B65g *43/06*

U.S. Cl. 198—232 **23 Claims**



1. A braking system for a power-operated road means for transporting passengers along a vertical component of running, comprising: first means for producing a running direction signal correlated to the running direction of said power-operated road means; emergency switching means for automatically generating an emergency signal when an emergency condition occurs when said road means should be secured against movement; braking means for generating braking force acting to stop said power-operated road means in response to said emergency signal from said emergency switching means; and said braking means including brake force control means, providing an ascent braking force in response to the running direction signal from said first means indicating an ascent road running and providing a descent braking force substantially greater than said ascent braking force in response to the running direction signal from said first means indicating a descent road running.

3,896,926
MOTION TRANSLATING APPARATUS AND CONTROLS THEREFOR

Mario Cuniberti, Columbus, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

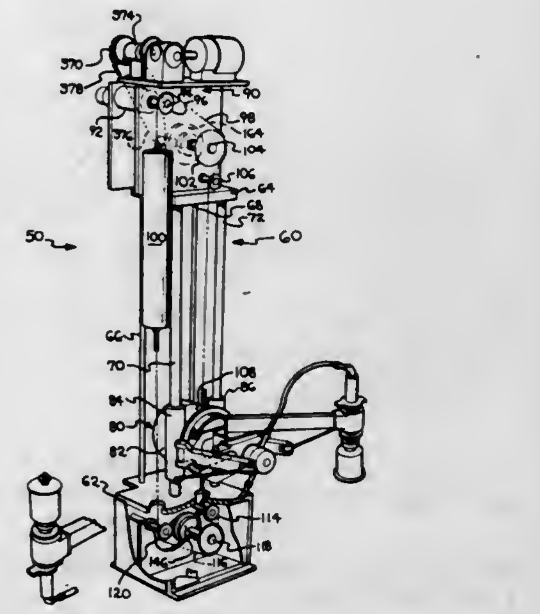
Division of Ser. No. 295,530, Oct. 6, 1972, Pat. No. 3,841,497. This application Nov. 23, 1973, Ser. No. 418,553

Int. Cl. B65g *47/24*

U.S. Cl. 198—241 **9 Claims**

1. Apparatus for controlling relative motion of a plurality of components, comprising

a. an element to be selectively rotated;
b. carrier means for journally supporting said element;
c. means for moving said carrier means to cause said element to travel along a predetermined linear path, said path having a first portion along which said element is not to be rotated and a second portion along which said element is to be rotated;
d. means for rotating said element;
e. means for sensing the position of said element on said linear path and providing a signal when said element is on one of said portions;
f. means responsive to said sensing means signal for connecting said element rotating means to rotate said element when said element is traveling along said second portion of said path;
g. an indexing hub means journally supported in said carrier means;
h. clutch means for selectively connecting said indexing hub means to said element to be selectively rotated;
i. means for actuating said clutch means to selectively connect said indexing hub means to said element to be selectively rotated when said element is traveling in a first direction along said linear path;



j. said element rotating means being connected through said rotatable element to rotate said indexing hub means a predetermined angular amount;
k. means for maintaining said indexing hub means at its angularly rotated position when said element is traveling in a second direction along said linear path;
l. at least one arm extending from said indexing hub means;
m. article grasping means carried on said arm;
n. means for successively supply articles to an article pickup station to be grasped by said article grasping means; and
o. means for synchronizing said article supplying means and the movement of said carrier means to enable the disposition of said article grasping means at said article pickup station when an article has been supplied at said station by said article supplying means.

3,896,927
DISPLAY CARTON FOR TUMBLERS AND THE LIKE

Daniel P. Dutcher, Shoreview, Minn., assignor to Hoerner Waldorf Corporation, Saint Paul, Minn.

Filed July 2, 1973, Ser. No. 375,779

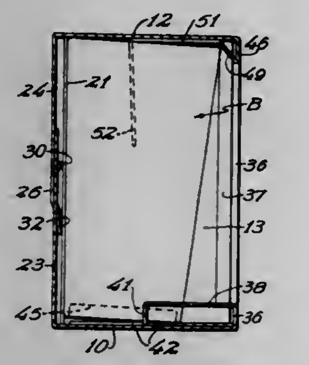
Int. Cl.² B65D *5/50*

U.S. Cl. 206—45.14 **4 Claims**

1. A generally rectangular carton for tumblers including:

a bottom panel, side walls extending upwardly from opposite ends thereof, and a top panel connecting the upper ends of said side walls,
a short front flange extending upwardly from said bottom panel along the forward edge thereof,
a false bottom panel extending into said carton from the upper edge of said front flange,
means supporting said false bottom panel in spaced relation to said bottom panel,

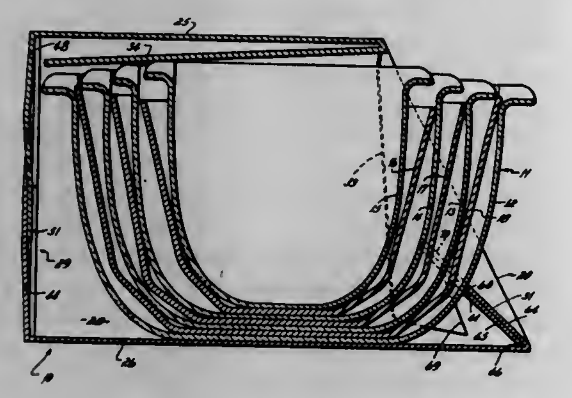
said false bottom panel having spaced notches therein engaging the outer surfaces of said tumblers in spaced relation to the lower ends thereof,
said false bottom panel holding said tumblers from forward movement through the open front side of said carton,
a top liner panel hingedly connected to the front edge of said top panel and folded to underlie said top panel,



tabs foldably connected to said top liner panel extending downwardly into the open upper ends of said tumblers and frictionally engaging the inner walls of said tumblers to hold said tumblers from movement relative to said top panel, and
means forming a rear wall on said carton to prevent said tumblers from moving rearwardly away from said false bottom panel.

3,896,928
BOX FOR CONTAINING AND DISPLAYING ARTICLES OF MERCHANDISE

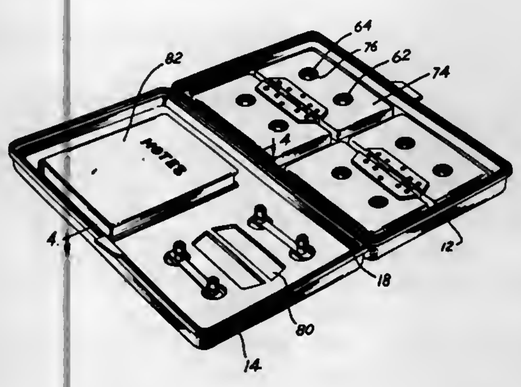
Robert L. Forté, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio
Filed Aug. 24, 1973, Ser. No. 391,291
Int. Cl.^{2} B65D *5/04, 5/50, 85/62*
U.S. Cl. 206—45.14 **4 Claims**



1. A box for containing and displaying a product comprising:
top, side and bottom walls forming a rectangular sleeve having a front and rear end;
end flaps connected to said walls to close the rear end of said sleeve;
a retaining flap hinged to the front end of said bottom wall and projecting at an acute angle to said bottom wall inwardly into said sleeve;
and side flaps hinged to the front end of said side walls, each projecting at an acute angle to said side walls and inwardly into said sleeve;
each said side flap having a slot which receives and locks a side edge portion of said retaining flap;
said product being retained by engagement between said end flaps and the inwardly projecting edge of said retaining flap.

3,896,929
MOLDED CASE FOR CASSETTES

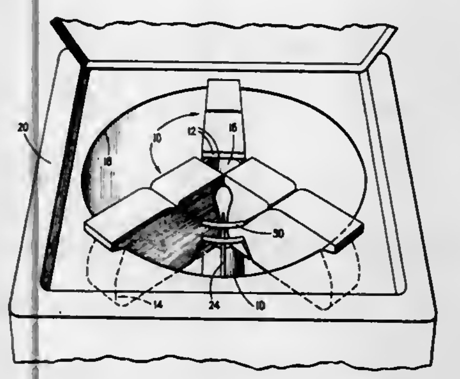
Thomas C. Mills, 827 Golf Ln., Wheaton, Ill. 60187
Filed Feb. 14, 1973, Ser. No. 332,367
Int. Cl. B65d *85/672*
U.S. Cl. 206—387 **9 Claims**



1. A container for tape cassettes comprising, in combination:
a first wall of flexible material, at least one slot in said wall with a wide end portion connected to a relatively narrow intermediate portion;
a second wall opposed to and spaced from the first wall and the slot; and
a separate cassette mounting bracket in said slot, said bracket including an elongated member with a bottom surface, said elongated member having a width intermediate the width of said wide end portion and said intermediate portion of said slot, said elongated member being inserted in said slot through said wide portion for maintenance between said walls by the intermediate portion of said slot, said elongated member having a length less than the length of the slot, said bracket also including a cassette reel engaging stud projecting outwardly from said elongated member and extending from said slot for engagement with a tape reel.

3,896,930
WASHING MACHINE AGITATOR BRACE

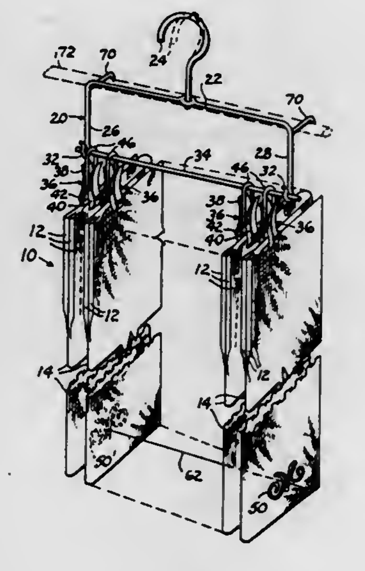
Herbert S. Collin, 56 Bristol St., Newton, Mass. 02118
Continuation-in-part of Ser. No. 209,551, Dec. 20, 1971, abandoned. This application Aug. 28, 1972, Ser. No. 284,208
Int. Cl. B65d *81/06, 85/00*
U.S. Cl. 206—320 **13 Claims**



1. A bracing device for a top-loading clothes washing machine having an agitator element comprising:
an elongate member formed from a relatively rigid foam plastic material, said member having an inner end and an outer end, said inner end being adapted to engage said agitator and the outer end being adapted to engage the rim of the opening in said washing machine so that when said brace is used it extends radially and outwardly from said agitator; and
means forming a lip at at least one end of said brace, said lip having an undersurface for engaging an edge of a portion of said machine, said undersurface being formed at an incline to the horizontal and being of a configuration which does not conform to the configuration of said edge of a portion of said machine, said foam plastic material being relatively crushable whereby said inclined undersurface of said lip may be wedged downwardly against said edge portion of said machine to permanently deform said undersurface and form a permanent pocket receptive to and engaged with said edge portion of said machine, said pocket having a configuration conforming to said edge portion of said machine.

3,896,931
DRAPERY HOLDER

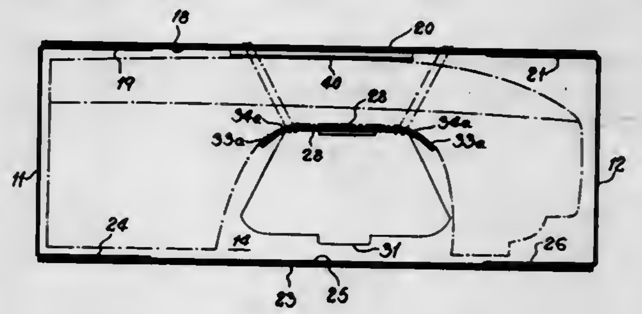
Edna M. Franklin, 1500 N.W. 35, Oklahoma City, Okla. 73118
Filed Aug. 9, 1973, Ser. No. 387,085
Int. Cl. B65d *85/00*
U.S. Cl. 206—326 **2 Claims**



1. In a hanger for a drapery panel having a plurality of pleated folds formed in one marginal edge portion and having the pleat folds arranged vertically in juxtaposition, the improvement comprising:
a downwardly open vertically planar wire loop frame including a pair of depending legs defining the opening;
a pair of support arms connected with said frame legs in horizontal laterally projecting parallel relation;
a J-shaped suspension hook pivotally connected by its shank portion with said frame opposite the opening;
a shaft extending horizontally across the opening of said frame;
means, including a J-shaped loop formed on the depending end of each said leg and projecting laterally of the frame plane, removably connecting said shaft with said frame;
a plurality of drapery pleat fold gripping clamp means supported by said shaft,
said clamp means including a spring clamp clothespin comprising a pair of cooperating clamp members movable at their respective ends toward and away from each other and having the intermediate portion of a spring helically wound and transversely interposed between the clamp members intermediate the ends of the latter, and,
a closed wire loop projecting through the helical portion of said spring and loosely slidably surrounding said shaft;
a pair of frabric retainer plates respectively contacting the outermost surface of the depending end portion of said drapery panel and cooperating with said clamp means in maintaining said drapery panel folds juxtaposed; and,
a thread extending through the material of said drapery panel between and connected at its respective ends with said pair of retainer plates.

3,896,932
FENDER CARTON

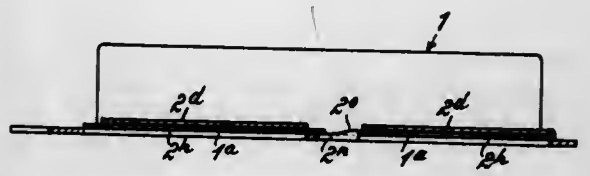
Ernest W. Giebel, Monroe, Mich., and Robert W. McCormick, Columbus, Ohio, assignors to Union Camp Corporation, Wayne, N.J.
Filed Nov. 12, 1973, Ser. No. 414,758
Int. Cl.^{2} B65D *85/68, 81/02, 85/30*
U.S. Cl. 206—335 **2 Claims**



1. A carton for packaging a fender comprising:
a bottom;
side and end panels secured to the bottom;
a cut out in each side panel which is hinged along a score line to said side panel and folded normal to said side panel;
said cut outs being superimposed on each other and extending to the opposite side panel to form a saddle of double thickness;
said saddle being scored at the ends to form a saddle of arcuate form and being locked in position for supporting the fender; and,
top closure means for closing the top of the carton.

3,896,933
DISPLAY PACKAGING UNIT FOR PACKAGING AND DISPLAYING SMALL PARTS

Ulrich Bockemuhl, Ludenscheid, Germany, assignor to Spritzguss-Werk Ludenscheid G.m.b.H., Ludenscheid, Germany
Filed June 29, 1973, Ser. No. 375,232
Claims priority, application Germany, July 1, 1972, 2232494
Int. Cl.^{2} B65D *73/00*
U.S. Cl. 206—469 **6 Claims**



1. A packaging unit of synthetic resin for storing small parts including a transparent prismatic container having integral outwardly projecting flanges and a substantially plate-shaped cover for said container having parallel slide guide ribs engaged by said flanges of said container and allowing a relative rectilinear motion of said cover and said container, said cover having a perforation outside the area thereof encompassed by said container to allow suspension of said unit by means of said perforation, and said cover having abutment means limiting the extent of said relative motion of said cover and said container, wherein the improvement comprises a flexible tab adapted to form a latch and a tab-receiving aperture adapted to be engaged by said latch-forming tab when said container is closed by said cover and said tab-receiving aperture and said latch-forming tab are in registry, said latch-forming tab and said tab-receiving aperture being formed by portions of said slide guide ribs of said cover and by portions of said flanges of said container, and said latch-forming tab being arranged in such a way that it snaps into said tab-receiving aperture incident to closing of said container by said cover and is fractured

incident to a rectilinear opening motion of said cover relative to said container.

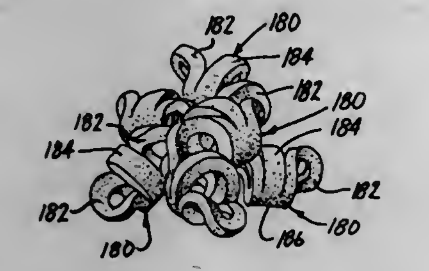
3,896,934
FREE FLOW, INTERLOCKING PACKING MATERIAL OF LOW BULK DENSITY

Arthur Graham, Palo Alto, Calif.; Alexander G. Makowski, Wilmington, Del., and Gunter G. Fuss, Daly City, Calif., assignors to Free-Flow Packaging Corporation, Redwood City, Calif.

Continuation-in-part of Ser. No. 82,697, Oct. 21, 1970, abandoned, which is a continuation-in-part of Ser. No. 815,302, April 11, 1969, abandoned. This application Nov. 24, 1972, Ser. No. 309,459

Int. Cl. B65d *81/12, 85/30*

U.S. Cl. 206—523 **14 Claims**



5. As an article of manufacture, a shipping carton for frangible items, such carton being substantially completely filled with a packing mass comprised of a plurality of individual packing units formed of a foamed substantially rigid expanded plastic material, said plastic material possessing sufficient internal strength to be self-sustaining under normal handling but capable of substantial crushing in response to external force, each of said individual packing units consisting of a central substantially cylindrical annular portion and two outwardly curling annular portions substantially permanently secured to said central portion and to one another at a peripheral portion thereof, said portions being characterized by a foam structure which has been expanded substantially greater in a radial direction than in an axial direction so as to provide enlarged wedge-shaped openings between said portions, the foam structure of said packing units at said peripheral portion being relatively stronger in the axial direction and sufficiently rigid to prevent articulation between said outwardly curling portion and said central substantially cylindrical portion, the positioning of said annular portions providing wedge-shaped openings adapted to interlock with at least one of the other said individual packing units, said interlocking extending throughout the said packing mass to cooperatively prevent migration of an article packed therein, said respective curling and cylindrical annular portions presenting a shape configuration wherein outermost portions thereof are substantially equidistant from the geometric centers of said individual packing units.

3,896,935
INTEGRATED CIRCUIT HANDLER

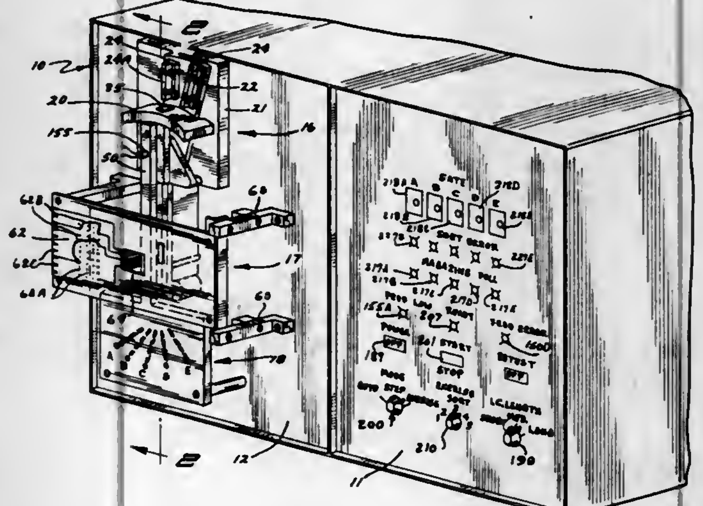
Harold N. Hjelle, New Brighton, and Jack S. Soebbing, St. Paul, both of Minn., assignors to Ramsey Engineering Company, St. Paul, Minn.

Filed Nov. 26, 1973, Ser. No. 418,990

Int. Cl. B07c *5/344*

U.S. Cl. 209—73 **6 Claims**

1. An integrated circuit handling machine for handling and sorting integrated circuit chips, including means for supplying circuit chips to be tested in an upright column, first means to retain said column by retaining the lower chip in a holding position, a plurality of selectively operable second means each being operable to selectively retain from downward movement a second chip in said column and all chips in the column above the second chip, means to select and render operable one of said second means, each of said selectively operable second means being positioned to engage a second chip of a stack of chips of different length than the chips used with the other second means means to selectively release said first means while one of said second means is retaining a second chip to permit said lower chip to move, a chip testing station on said machine and guide means on said machine positioned to guide a released lower chip to the testing station.



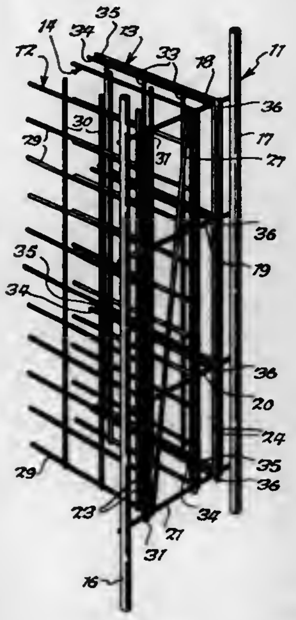
3,896,936
WINE BOTTLE RACK

Burton Notarius, Williamsville, N.Y., assignor to Premier Party Goods, Inc., Buffalo, N.Y.

Filed Apr. 1, 1974, Ser. No. 456,559

Int. Cl.² A47B *73/00;* **A47F** *5/10*

U.S. Cl. 211—74 **4 Claims**



1. In a rack for wine bottles and the like, a pair of end members each comprising front and rear vertical posts and a plurality of vertically spaced cross rods welded at their ends to said posts to form a unitary end member, a plurality of laterally extending grid members engageable at their side edges with said end members, said grid members comprising a front member, a rear member and an intermediate member, said members each comprising a vertical series of spaced horizontal rods and a lateral series of vertical rods welded at the rod intersections to form a rigid grid arrangement, the rods of the front and intermediate members forming spaces for receiving individual bottles, the vertical rods of the rear grid members being staggered with respect to the vertical rods of the front and intermediate members whereby the bottoms of bottles stop against said rear member vertical rods, certain of the horizontal rods of said grid members having laterally projecting downwardly opening hook formations formed integrally therewith for engagement over the cross rods of the end members, the vertical rods at the ends of said grid members being disposed inwardly of said hook formation at such distance that the hook formations and the end vertical rods fit over the cross rods to prevent lateral movement of the end members, and means on said end members comprising abutting surfaces at each side of each hook formation for preventing substantial movement of said hook formations relative to said end members in a fore and aft direction.

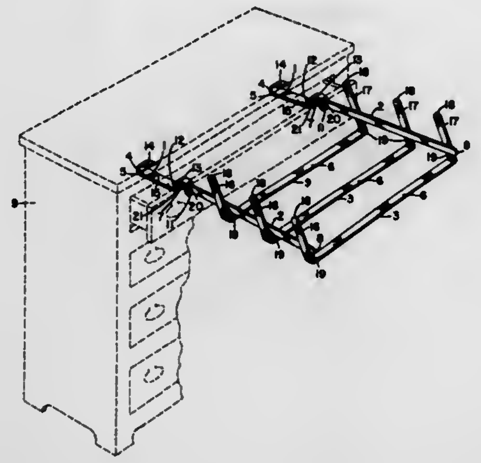
3,896,937
MULTI PURPOSE BEDROOM HANGER

Anthony J. Christian, 100-Parker Rd., Rochester, N.Y. 14617

Filed Oct. 1, 1973, Ser. No. 402,274

Int. Cl.² A47F *5/00;* **A47J** *51/142*

U.S. Cl. 211—86 **2 Claims**



1. A lever type hanger whose short lever arms include integral U shaped fulcrums with protective linings on the inside faces of said U shaped fulcrums and extending from said fulcrums paralell to one another, also being on the same plane as the short lever arms, are long lever arms connected transversely to the closed portion of elongated U shaped crossbars positioned with the sides of the U extending angularly from the long lever arms 2 as prongs.

3,896,938
DEVICE FOR COMPENSATING CARRIAGE WEIGHT ON GANTRY OR CANTILEVERED MACHINE TOOLS

Edmund Eich, and Gunter Briesofsky, both of Coburg, Germany, assignors to Werkzeugmaschinenfabrik Adolf Waldrich Coburg, Coburg, Germany

Filed Feb. 1, 1973, Ser. No. 328,863

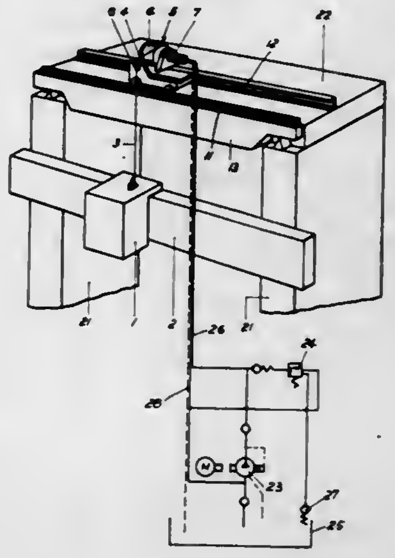
Claims priority, application Germany, Feb. 11, 1972, 2206641

Int. Cl. B66c *19/00*

U.S. Cl. 212—26 **4 Claims**

1. A device for compensating for the weight of a carriage movably mounted on a transverse beam mounted on and extending between a pair of horizontally spaced uprights to maintain said transverse beam and said carriage at a predefined vertical level, comprising:

- stationary support means mounted on and extending between said pair of uprights parallel to said transverse beam;
- trolley means mounted on said support means for movement back and forth parallel to said transverse beam in synchronism with said carriage;
- cable means and winch means therefor mounted on said trolley means, said cable means being secured to and extending between said winch means and said carriage and is always under a constant tension force;
- hydraulic motor means drivingly connected to said winch means;
- hydraulic pump means connected in fluid circuit to said hydraulic motor means for supplying pressurized hydraulic fluid to said hydraulic motor means; and
- adjustable pressure controlling means connected in fluid circuit to said fluid circuit between said hydraulic pump means and said hydraulic motor means to maintain a constant pressure in said fluid circuit and thence on said hydraulic motor means, whereby said constant pressure on said hydraulic motor means effects a constant torque on said winch means and, consequently, said cable means, said hydraulic motor means also defining a sensing means for sensing rotational movement of said winch means occurring when said transverse beam is moved from said predefined vertical level and producing a fluid flow signal, said adjustable pressure controlling means controlling said pressure in response to said fluid flow signal, whereby said carriage will be maintained at said predefined vertical level as said trolley means and said carriage move between said uprights.



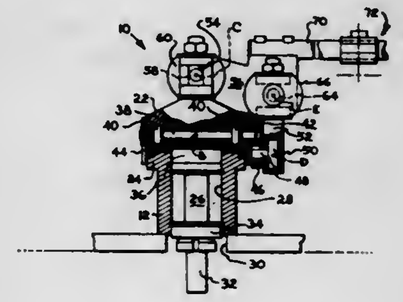
3,896,939
TRANSFER MECHANISM

William O. Harris, 414 Bristol Dr., Harrisburg, Pa. 17109

Filed Apr. 24, 1974, Ser. No. 463,437

Int. Cl.² B65G *29/00*

U.S. Cl. 214—1 BH **8 Claims**



1. A transfer mechanism including work piece transfer means for moving a work piece along a surface, said means including holding means for the work piece during motion on said surface; and control means for limiting the movement of said holding means to movement along a curve on the surface having a cusp so that all motion of the holding means is smoothly brought to an instantaneous stop at the cusp.

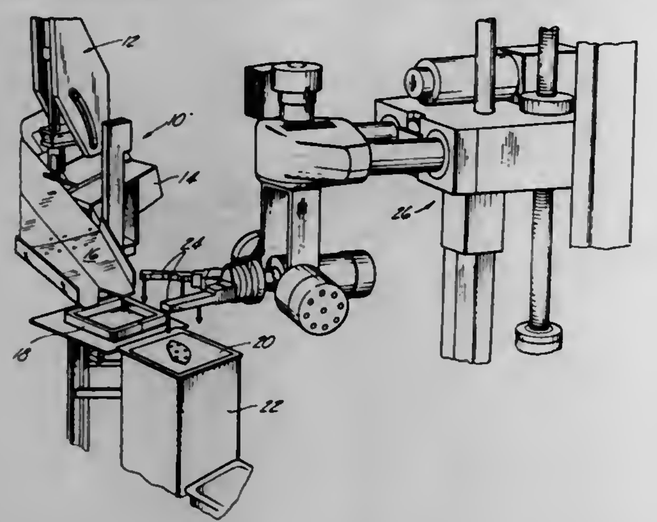
3,896,940
PART PRESENTER

Kirk E. Birrell, Bellbrook, Ohio, assignor to The Bendix Corporation, Southfield, Mich.

Filed Jan. 30, 1974, Ser. No. 438,075

Int. Cl.² B65G *59/04*

U.S. Cl. 214—8.5 D **14 Claims**



1. Appparatus for presenting selected parts from a plurality of storage locations to a terminal location comprising: part conveyance means directing parts received to said terminal location; support means; a plurality of storage bins removably disposed on the support means at spaced points adjacent said part conveyance means; a plurality of part transfer devices disposed on said support means over said bins and separately actuable for transferring parts from said bins to said conveyance means, each of said transfer devices including part pickup means and an actuator means for selectively displacing the pickup between a first position within a storage bin for part pickup and a second position over said part conveyance means for part release thereinto and control means for causing the pickup means to automatically cycle from the second position to the first position and back immediately after releasing a part onto said part conveyance means; said apparatus further including means maintaining each of said pickup means in said second position until a release signal is received from said control means to release a selected part onto said part conveyance means.

3,896,941
MULTISTORY BUILDING WITH A MATERIAL HANDLING ELEVATOR APPARATUS HAVING FIXED AND MOVABLE TRACKS

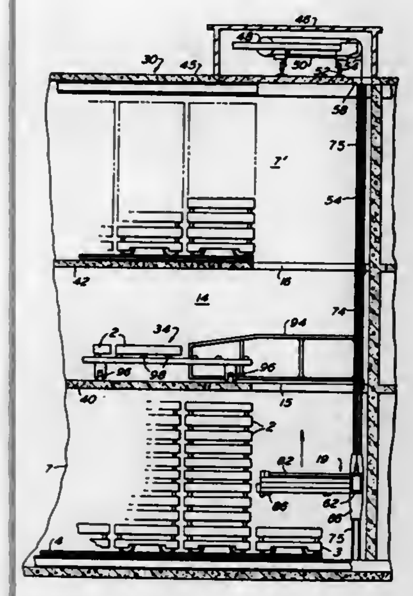
Jorg Kuhn, Alpsteinstrasse 56, Herisau, Switzerland, and Elmar Sohm, Vorarlberg, Lauterach, Austria

Division of Ser. No. 197,432, Nov. 10, 1971, Pat. No. 3,717,953, and a continuation-in-part of Ser. No. 4,918, Jan. 22, 1970, abandoned. This application May 18, 1972, Ser. No. 254,556

Int. Cl. B65g *1/06*

U.S. Cl. 214—16.4 A **5 Claims**

1. Apparatus comprising a multistory building having at least first and second elevations, said building including a horizontal floor between said elevations, said floor having spaced openings, said building at its first elevation having a plurality of parallel chambers each communicating with said second elevation by way of at least one of said spaced openings in said floor, a conveyor on the second elevation generally parallel to the chambers for processing items stored in the chambers, and an elevator frame for moving items between the first and second elevations, vertically disposed tracks, said elevator frame being guided for vertical movement by said tracks, said frame having a gripper means, motor means on said frame for moving said gripper means between an extended and retracted horizontal position, said gripper means including elements movably supported for movement from an inoperative retracted position to an operative extended position wherein the elements can embrace and support a receptacle in each of said positions and as the receptacle is moved vertically by the frame, said floor supporting the elevator frame for movement in a horizontal direction at said second elevation so that the frame may be juxtaposed to and enter through different ones of the openings in the floor between the first and second elevations, said conveyor being supported by said floor for movement in a transverse direction, guard rails, a portion of said tracks being connected to said guard rails and movable with the conveyor when the elevator frame is between the guard rails, said tracks include stationary portions at said first elevation in each chamber, and said movable portion of said tracks being adapted to be aligned with each set of stationary tracks.



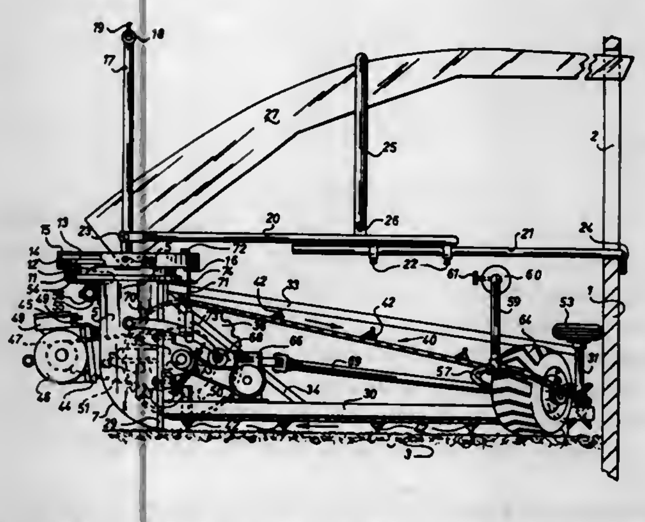
3,896,942
SILO UNLOADER

Gérard Couture, Danville, and Gratien Houle, Wickham, both of Canada, assignors to Wic Inc., Wickham, Canada

Filed Aug. 22, 1973, Ser. No. 390,606

Int. Cl. A01f *25/16*

U.S. Cl. 214—17 DB **6 Claims**



1. A silo unloader for use in a silo having an upright silo wall with a side opening therein, comprising in combination an impeller duct means having a silage inlet, a silage outlet and an interior silage passage extending from said silage inlet to said silage outlet, frame means fixed to said impeller duct means and extending away therefrom, a first rotary member mounted adjacent said silage inlet, a second rotary member mounted onto said frame means on an axis parallel to the axis of said first rotary member and spaced laterally therefrom, endless conveyor means engaging around said first and second rotary members and arranged to rotate therewith, a series of scoops attached to said endless conveyor means in spaced-apart relationship relative to each other and forming part of said endless conveyor means and constructed and arranged to scoop and scrape silage towards said silage inlet and to describe a circumferential path around the axis of said first rotary member and to impel the scooped silage in said interior silage passage towards said silage outlet, drive means connected to one of said rotary members and arranged to rotate the latter and said endless conveyor means, impelling blades operatively connected to said first rotary member for bodily rotation therewith in circumferentially spaced-apart relationship corresponding to the spaced relationship of said scoops, and in side-by-side registry with the latter when travelling along said circumferential path, whereby to increase the impelling action on the scooped silage, said frame means further comprising a remote frame portion relative to said impeller duct means, said second rotary member is rotatably mounted onto said remote frame portion and a traversing bogey frame is articulately attached to said remote frame portion and is arranged to traverse the latter and said endless conveyor means over the silage in the silo, wherein said blades are fixed against the opposite sides of said first rotary member and extend radially therefrom in transversely aligned pairs arranged to register and to straddle the scoops which are actually travelling along said circumferential path, and

wherein said first and second rotary members are a first and a second sprocket wheel respectively, said impeller duct means is constructed and arranged to be used in upright position and defines an upright side wall, said silage inlet is a silage inlet opening extending through the bottom portion of said side wall, said first sprocket wheel is rotatably mounted into said silage inlet opening, said silage outlet is a silage outlet opening provided above said silage inlet opening, said circumferential path extends upwardly into said interior silage passage from said silage inlet opening towards said silage outlet opening, said endless conveyor means includes an endless chain, and the latter and said sprocket wheels are rotatably mounted in an upright plane intersecting said impeller duct means.

3,896,943
APPARATUS FOR UNLOADING MATERIAL SUCH AS CHIPS OR THE LIKE FROM THE BOTTOM OF A SILO

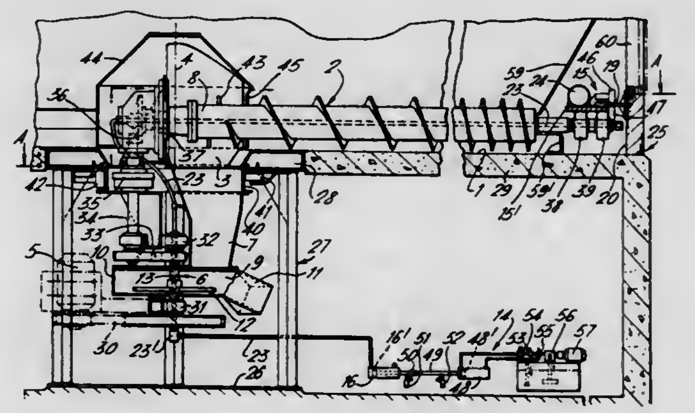
Roald Willies Knutsen, Arendal, Norway, assignor to Saxlund A/S, Risor, Norway

Filed Sept. 25, 1973, Ser. No. 400,513

Claims priority, application Norway, Sept. 27, 1972, 3459/72

Int. Cl. B65g *65/46*

U.S. Cl. 214—17 DA **8 Claims**



1. In apparatus for unloading material such as chips or the like from the bottom of a silo having a bottom outlet orifice, comprising a conveyer screw, an annular frame surrounding the outlet orifice in the bottom of the silo and having said screw mounted thereon, said frame being arranged for rotation about the central axis of the silo for allowing swinging of said screw along the bottom of the silo,

a motor mounted stationarily independently of said rotary frame for rotating said screw about its longitudinal axis for conveying material to said outlet orifice,

a drive shaft extending along said central axis for effecting power transmission between stationary motor and the rotary screw,

a hydraulic device provided at the outer end of said screw and cooperating with the inner circumference of the silo, a stationary source of hydraulic motive fluid outside the silo, said source communicating with said hydraulic device,

the improvement comprising:

an outlet funnel carried by said rotary frame and located beneath the inner end of said screw and offset from its central axis,

a stationary container through which said shaft extends centrally and down to which said rotary outlet funnel is leading, the walls of said container having an increasing distance from the central axis to a substantially tangential lateral outlet, and said shaft having a central bore through which said source of hydraulic fluid communicates with said hydraulic device for supplying motive fluid to the latter for driving the screw along the bottom of the silo.

3,896,944
APPARATUS FOR TRANSFERRING WASTE MATERIAL FROM REFUSE COLLECTING TRUCKS TO A TRANSPORT VEHICLE

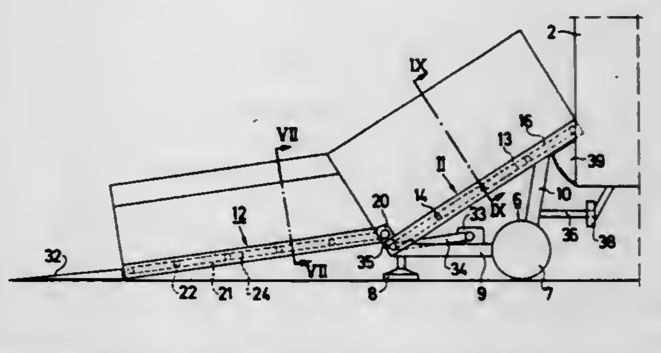
Sten Esse Torgild Idoffsson, Kovlinge, S-310 26 Vallberga, Sweden

Filed Feb. 6, 1974, Ser. No. 439,881

Claims priority, application Sweden, Feb. 7, 1973, 7301659; Dec. 7, 1973, 7316559

Int. Cl. B65g *67/08*

U.S. Cl. 214—41 **13 Claims**



1. Apparatus for transferring waste material from refuse collecting trucks to a transport vehicle having a container for compressing the waste material and for transporting the waste material to a dumping-ground, said apparatus comprising a conveyor for transferring the waste material from the refuse collecting trucks into the container of the transport vehicle, said conveyor having:

A. a first conveyor section mounted on a wheeled stand and connectable to the transport vehicle, said first conveyor section having:
  1. a first motor driven endless conveyor element, and
  2. two substantially vertical side walls pivotably connected to fixed structure of the first conveyor section so as to be foldable over said first conveyor element.
B. a second conveyor section pivotably mounted to the first conveyor section and having:
  1. a second motor driven endless conveyor element, and
  2. two substantially upwardly and outwardly directed side walls pivotably connected to fixed structure of the second conveyor section so as to be foldable over said second conveyor element, said second conveyor section with its side walls folded over the second conveyor element being also foldable over said first conveyor

section so as to form a small trailer towable by the transport vehicle.

3,896,945
BOTTOM DUMPING RAILWAY HOPPER CAR

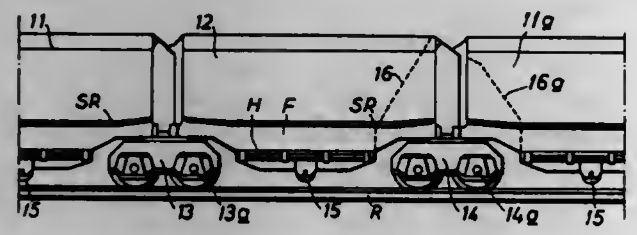
Anders Bjorklund; Bert Frelin, and Sven Scott, all of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed June 19, 1973, Ser. No. 371,549

Claims priority, application Sweden, June 26, 1972, 008361/72

Int. Cl. B61d *7/18, 7/30;* **B61f** *3/12*

U.S. Cl. 214—63 **1 Claim**



1. A railroad bottom-dumping gondola car comprising a rectangular frame, a gondola body supported by said frame and having a bottom closed by a downwardly swinging door, and railroad wheels normally supporting said frame on railroad tracks, said frame having sides from which longitudinally extending side rails laterally project for running on rollers supporting said frame with said wheels free from railroad tracks during downward swinging of said door for dumping operation; wherein the improvement comprises said side rails being positioned along the upper edges of the frame's said sides so that the frame is suspended by the side rails while they run on said rollers.

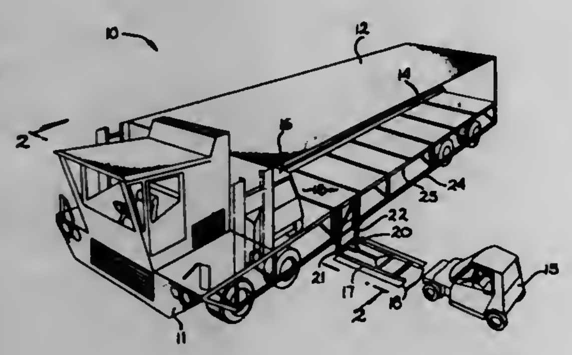
3,896,946
TRANSPORTATION APPARATUS

Robert W. Forsyth, and John P. Forsyth, both of 1517 N. 3rd Ave., Upland, Calif. 91786

Filed Oct. 2, 1972, Ser. No. 293,797

Int. Cl. B60p *1/44*

U.S. Cl. 214—75 G **14 Claims**



1. In a carrier apparatus for transportation of a plurality of passenger vehicles or the like comprising the combination of: a roadable vehicle including an elongated deck having a cab disposed on the forward end thereof and a storage compartment disposed immediately behind said cab and extending to the aft end thereof;

loading means carried on the side of said deck including a pair of spaced-apart vertical members movably carried on a pair of longitudinally disposed vertically spaced-apart side rails depending from said deck;

a platform pivotally carried on said vertical members;

powered means for extending said platform outward so as to cantilever from said vertical members and for folding said platform so as to be adjacent said vertical members; means operatively carried beneath said deck for moving said loading means along said deck adjacent said storage compartment;

means operably carried on said loading means for elevating said loading means from ground level to the level of said deck;

said storage compartment includes a curb extending the full length of said storage compartment of said deck dividing said compartment into a pair of storage areas and wherein each storage area includes a plurality of laterally elongated storage spaces;

said moving means includes means for aligning said loading means with a selected one of said storage spaces for accommodating transfer of a load from said loading means to said selected storage space;

said load constitutes said passenger vehicle and wherein said vehicle includes means for extending and shortening its overall length of said selected storage space;

said last mentioned means includes a front extendable portion of said passenger vehicle having steered wheels mounted thereon and a rear non-movable portion having a steering wheel mounted thereon;

a slidable connection means operable between said steering wheel and said steered wheels allowing steering at any position of said front steered wheels;

means for limiting the extension and retraction of said front portion; and

said limiting means being shearable under excessive predetermined load impact.

2. A transportation system adapted to use combined or independently in common existing highways, freeways, expressways, and surface streets comprising the combination of: a self-propelled, self-loading carrier apparatus adapted to the transportation of a plurality of variable-wheelbase passenger vehicles including the occupants thereof;

said self-propelled, variable-wheelbase passenger vehicles adapted to independent operation and to conveyance with their occupants in a combined grouping on said carrier apparatus;

said self-propelled, self-loading carrier apparatus comprises the combination of:

a roadable vehicle including an elongated deck having an operator's cab disposed on the forward end thereof and a storage compartment disposed immediately behind said cab and extending to the aft end of said deck;

loading means carried on the side of said deck;

means operatively carried beneath said deck for moving said loading means along aforesaid deck adjacent said storage compartment; and

means operably carried on said loading means for elevating said loading means from ground level to the level of said deck; and

one of said self-propelled, variable-wheelbase passenger vehicles adapted to be loaded and carried on said self-propelled, self-loading carrier apparatus comprising the combination of:

a roadable vehicle including an elongated frame having an enclosed passenger space disposed thereupon and wheels depended therefrom;

said elongated frame having rear portion operably supporting the rear pair of said wheels of said vehicle and a movable forward portion operably supporting the front pair of said wheels of said vehicle; and

power means operably interconnected between said rear portion and said forward portion of said elongated frame of said vehicle for selectively moving said forward portion away from and toward said rear portion so as to extend and shorten the wheelbase and overall length of said vehicle.

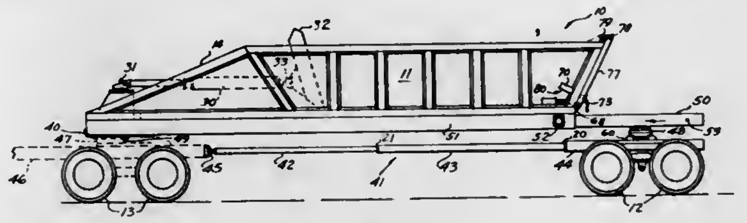
3,896,947
SPREADING AND END SPILL DUMP TRAILER

Arthur W. Pearce, 275 Lk. Desire Dr. North, Renton, Wash. 98055

Division of Ser. No. 275,058, July 25, 1972, Pat. No. 3,847,405. This application Nov. 23, 1973, Ser. No. 418,268

Int. Cl.^{2} B60P *1/00*

U.S. Cl. 214—82 **3 Claims**



1. An improved trailer for highway hauling and dumping materials, comprising:

a. a main load bearing frame member;

b. a sliding frame member telescopically engageable with said main frame member;

c. a set of rear bogies;

d. means connecting said rear bogies to said sliding frame member;

e. means for locking said sliding frame member with respect to said main frame member in at least two preselected positions;

f. a load carrying box having side walls, a tailgate and a floor mounted on said main frame member so that the bottom of said tailgate is substantially coincident with the rearmost portion of said main frame member;

g. hydraulically actuated rejection gate means for rejecting at least a portion of said load out of said box through said tailgate, said tailgate being hinged to the sides of said box and extending downwardly and frontwardly at an acute angle with respect to the vertical; and

h. tailgate flow regulation means comprising adjustment chain means, spring loaded tension means mounted on said box sides connected to said chain means for imparting tension to said chain means, and means mounted on said tailgate having passage means through which said chain means passes for selectively locking said chain under a desired amount of tension.

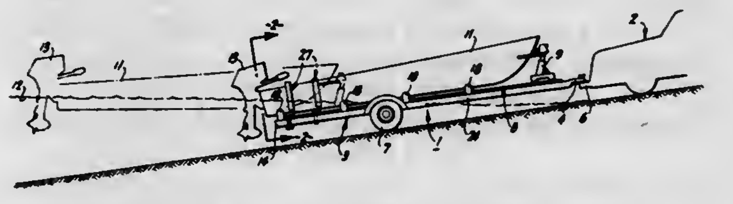
3,896,948
BOAT TRAILER ADJUSTABLE GUIDE STRUCTURE

Kelly D. Finney, Rt. 2, Box 531-A, Chico, Calif. 95926

Filed Oct. 26, 1973, Ser. No. 409,870

Int. Cl.^{2} P60P *1/00*

U.S. Cl. 214—84 **7 Claims**



1. Adjustable guide structure for a boat trailer which includes a chassis having laterally spaced frame members extending longitudinally thereof, said guide structure comprising

A. a pair of laterally spaced opposed generally upright guide posts positioned adjacent the rear end of said trailer, and

B. means mounting each of said guide posts on an associated frame member, comprising

1. mounting structure adjustably securing each said post to its associated frame member so that the lateral spacing of said posts relative to each other may be selectively varied in accordance with the width and contour of the hull of the boat to be carried on said trailer, said mounting structure comprising

a. a mounting plate engaged with one side of said associated frame member,

b. a pair of U-bolt and nut fasteners traversing said associated frame member and passing through said mounting plate,

c. an end portion of said post being positioned through said U-bolts and held thereby against the opposite side of said frame member, and

d. a shim member interposed between said side of said frame member and said post end whereby the axis of said post is inclined relative to the vertical.

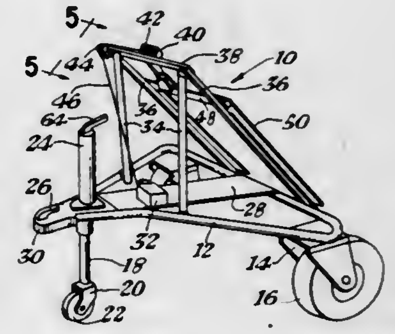
3,896,949
HOISTING AND TOWING DOLLY

Michael T. Shipley, 125 N. Riverside Dr., Pompano Beach, Fla. 33062

Filed Dec. 5, 1973, Ser. No. 421,803

Int. Cl. B60p *3/12*

U.S. Cl. 214—86 A **2 Claims**



1. A hoisting and towing dolly comprising:

a frame;

a plurality of wheels coupled to said frame for supporting said frame in a substantially horizontal position;

a pair of vertical support members connected to said frame; a pair of inclined guide rails connected at their upper ends to respective vertical support members and at the lower ends to the frame;

a cross-brace connected between the upper ends of said vertical support members;

a first pair of pulleys connected substantially centrally to said cross-brace and lying in a plane parallel to the inclined guide rails;

a pair of flexible sling members moveably connected to said guide rails;

a sling cross-bar connecting said flexible sling members together at one end;

a second pair of pulleys disposed centrally of and connected to said sling cross-bar, said second pair of pulleys lying in the same plane as said first pair of pulleys and substantially in line therewith;

a cable disposed through said first pair of pulleys and said second pair of pulleys and connected at one end to said vertical support cross-bar;

means connected to said frame for moving said cable, said cable connected at its other free end to said cable moving means;

a vehicle connecting means disposed at one end of said frame; and

a third pulley connected to one of said guide rails, said cable engageable through said pulley, the plane of said third pulley lying in a substantially vertical plane relative to the frame.

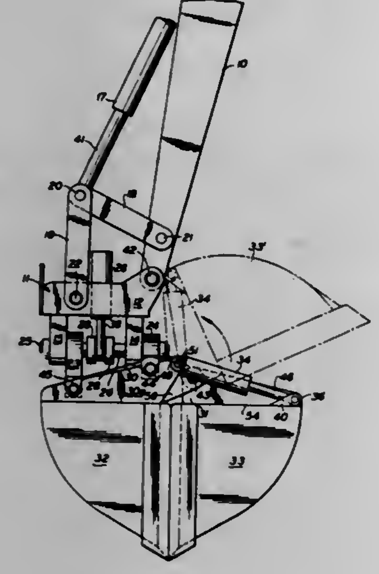
3,896,950
EXCAVATING MACHINE

Willard E. McCain, 6431 W. Heidlier Rd., Fairview, Pa. 16415

Filed Jan. 2, 1974, Ser. No. 429,533

Int. Cl.² E02F *3/30*

U.S. Cl. 214—138 R **10 Claims**



1. In combination, a dipper stick and a clamshell bucket,
said clamshell bucket being made up of a first bucket member and a second bucket member,
a bucket support,
said dipper stick being swingably connected to said bucket support,
means to swing said bucket support relative to said dipper stick,
axially spaced downwardly extending lugs fixed to said bucket support,
said first bucket member having two first spaced axially extending flanges fixed thereto and two second spaced axially extending flanges fixed thereto and disposed between said first axially extending flanges,
said second bucket member having two spaced lugs fixed thereto,
and two third spaced axially extending flanges fixed to said second bucket member and disposed between said lugs on said second bucket member and,
upwardly extending lugs fixed to said first bucket member and disposed between said second axially extending flanges,
means connecting said lugs on said second bucket member to said second flanges on said first bucket member,
king pin means extending through said downwardly extending lugs and through said upwardly extending lugs,
said king pin means being fixed to said upwardly extending lugs,
crank means fixed to said king pin means and
first hydraulic cylinder means connected to said bucket support and said crank means for swinging said bucket about said king pin means,
means swingably connecting said first flanges and said third flanges whereby said second bucket member is swingably connected to said first bucket member,
and second hydraulic cylinder means connected to said first flanges and to said lugs on said second bucket member for swinging said second bucket member relative to said first bucket member.

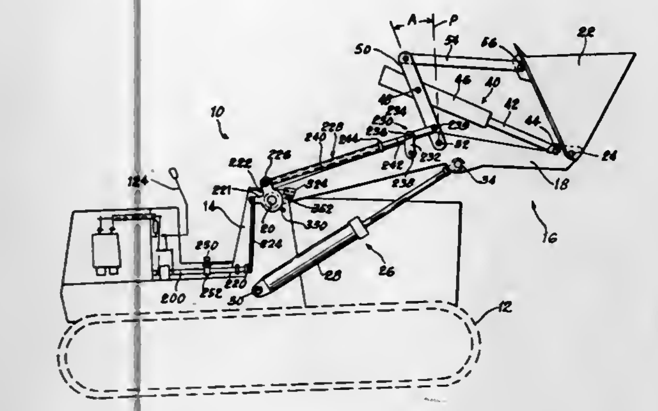
3,896,951
METHOD FOR POSITIONING BUCKET LOADER

David H. Seaberg, Burlington, and Paul J. Purdy, New London, both of Iowa, assignors to J. I. Case Company, Racine, Wis.

Division of Ser. No. 58,588, July 27, 1970, Pat. No. 3,713,557. This application Mar. 31, 1972, Ser. No. 239,876

Int. Cl. E02f *1/00*

U.S. Cl. 214—152 **3 Claims**



1. A method of controlling the angular orientation of a material handling unit relative to a fixed reference plane while the unit is pivotally supported on a boom and the unit is raised and lowered by swinging the boom about a fixed pivot axis and in which the unit is pivoted on a boom by moving a control valve in opposite directions from a neutral condition to supply fluid from a source to a ram located between the unit and boom and movement of the control valve is controlled by a manually controlled lever operatively connected to the valve and a sensing mechanism interposed between the valve and unit, comprising actuating said control valve by said manual control lever to supply fluid to said ram while simultaneously disconnecting the sensing mechanism from the control valve so that said control valve is controlled by said lever independent of the sensing mechanism, returning said control valve to a neutral condition with said lever and simultaneously setting the sensing mechanism to maintain the unit at one of a plurality of angular orientations relative to the fixed reference plane, sensing any deviations of the unit from the selected angular orientation with the sensing mechanism which results from swinging the boom; and actuating the control valve with the sensing mechanism to supply fluid to said ram and maintain the unit at the selected angular orientation.

3,896,952
METHOD FOR UNLOADING AN IRON ORE BEING IN A STATE OF A CONSOLIDATED AND HARDENED BODY AND A GRAB-BUCKET FOR USE IN THE SAME

Tsuyoshi Yokota, Tokyo; Koetsu Asai, Chiba; Hisamitsu Harada, and Hiroshi Kominami, both of Kobe, all of Japan, assignors to Mitsubishi Heavy Industries, Ltd., Tokyo, Japan

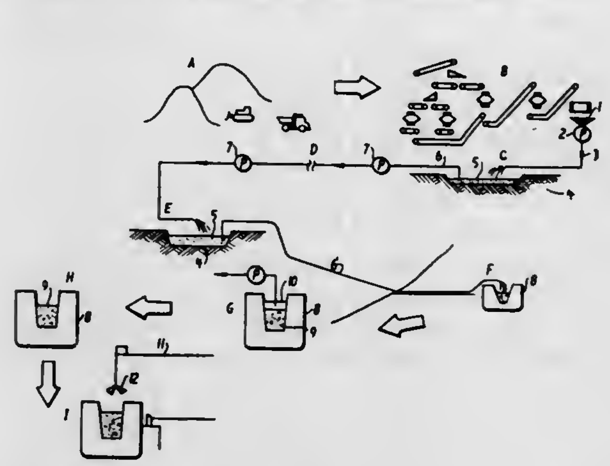
Filed June 19, 1973, Ser. No. 371,461

Claims priority, application Japan, June 19, 1972, 47-61241

Int. Cl. B63b *27/24*

U.S. Cl. 214—152 **12 Claims**

1. A method for unloading iron ore from the hold of a shipping vessel, comprising the steps of:
loading said iron ore into said hold of said shipping vessel while in a slurry state;
permitting said iron ore to consolidate and become a dry and hardened body;
dropping a grab-bucket having a pair of shells held in their opened position, utilizing its gravity, onto said consolidated and dried hardened body contained in the hold of said vessel so as to thereby demolish said body;
closing said pair of shells to grab a portion of said body thus demolished, and thereafter lifting said grab-bucket so as to unload the dried demolished body thus grabbed within said pair of shells in their closed position; and



transferring said unloaded demolished body to a suitable transport medium whereby said demolished body may be further processed.

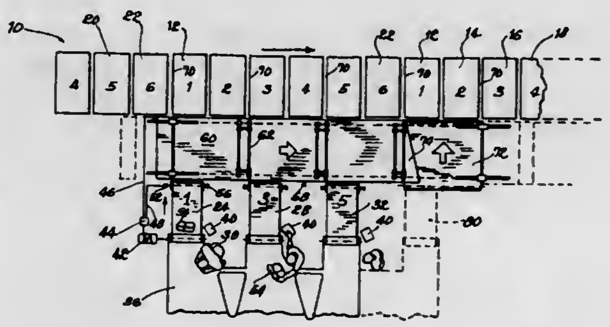
3,896,953
METHOD OF LOADING ARTICLES ON A CONVEYOR

John Harrison, Lincolnwood, Ill., assignor to The Spra-Con Company, Chicago, Ill.

Division of Ser. No. 266,320, June 26, 1972, abandoned, which is a continuation of Ser. No. 45,174, June 9, 1970, abandoned. This application Oct. 4, 1973, Ser. No. 403,481

Int. Cl. B65g *43/00*

U.S. Cl. 214—152 **4 Claims**



1. In a method for conveying articles from one position to another including a conveyor, a plurality of separate, individually defined, article carrying areas defined by the conveyor, a plurality of loading stations, a plurality of article transfer means positioned for receiving articles from loading stations, said transfer means including an article supporting surface, and article engaging means for contacting the articles and for moving the articles along the supporting surface to a transfer position for movement thereat of the articles from the supporting surface to the article carrying areas of the conveyor, said method comprising the steps of:

- a. locating said loading stations in at least two groups and positioning each group at a separate location relative to each other group, each group including at least two loading stations;
- b. transferring articles from each loading station to a specific position on a transfer means whereby each loading station transfers articles to a different surface portion of a transfer means;
- c. moving said article engaging means over said surfaces of said transfer means at the same speed as said article carrying areas of said conveyor whereby each article placed on the transfer means is moved by an article engaging means at the same speed as an article carrying area;
- d. said article carrying areas being divided into sets with each set receiving articles from a particular group of loading stations, and locating the article carrying areas designated for the loading stations of one group in regular, alternating positions with respect to article carrying areas designated for loading stations of each other group;
- e. controlling the spacing between article engaging means for each transfer means to a distance substantially equal to the spacing between center points of succeeding article carrying areas in a set whereby said spacing between article engaging means is at least about equal to or greater than the distance between center points of the first and third areas of a group of three adjacent article carrying areas;
- f. moving the article engaging means associated with one group of loading stations whereby articles passed from each loading station of that group are moved in synchronized timed relationship only with respect to article carrying areas designated for that group; and,
- g. aligning each article engaging means of a group with a particular article carrying area designated for that group whereby each article engaging means is in a pair with a particular article carrying area with the respective members of each pair arriving substantially simultaneously at the transfer point whereby articles moved by the article engaging means for that group are moved only to article carrying areas in the set designated for loading stations in that group.

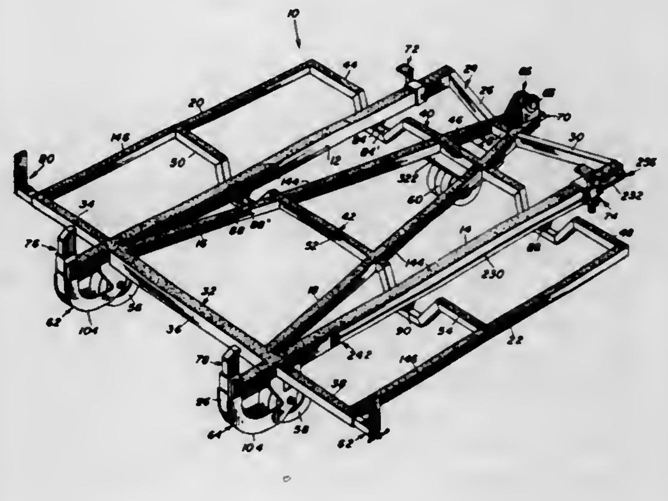
3,896,954
METHOD OF HANDLING LOOSE GLASS PLATES

Boyd S. Dawson, Cumberland, Md., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 289,205, Sept. 14, 1972, Pat. No. 3,838,779. This application Jan. 18, 1974, Ser. No. 434,480

Int. Cl. B65g *57/28*

U.S. Cl. 214—152 **8 Claims**



4. A method for handling loose glass plates, comprising:
locating a portable transporter having a receiving surface adjacent a glass plate producing line with the receiving surface in its loading position;
sequentially removing individual glass plates from the glass plate producing line;
positioning the individual glass plates onto the receiving surface to provide a glass pack;
engaging the glass pack by securing means mounted on the transporter (1) to prevent longitudinal and lateral movement of the individual glass plates relative to the receiving surface and (2) to prevent movement of the glass plates away from the receiving surface when the transporter is being positioned in its unload position; and
moving the transporter to a glass storage area.

3,896,955

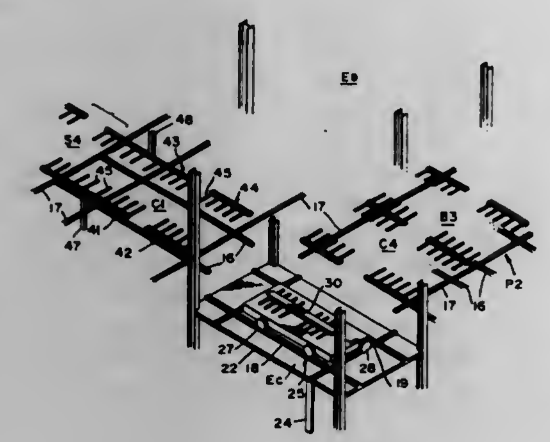
AUTOMATED MULTI-LEVEL VEHICLE PARKING SYSTEM

Earl R. Collins, La Canada, and Marshall E. Alper, Pasadena, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Oct. 3, 1974, Ser. No. 403,154

Int. Cl. E04h *6/06*

U.S. Cl. 214—16.1 CB **5 Claims**



1. A multi-level garage for parking automobiles or the like comprising:

a multi-level structure including a plurality of parking levels, each level defining a plurality of adjacent rectangularly shaped parking stalls, the length of each stall extending along a longitudinal axis and the width along a transverse axis with all the stalls' longitudinal axes being parallel to one another and their transverse axes being parallel to one another, each stall comprising four spaced apart units in the shape of multifinger combs with all the fingers of each stall being parallel to one another in a horizontal plane with fingers of opposite combs pointing toward one another with all the fingers of all the stalls at each parking level being in a common horizontal plane;

a grid of stall rails extending along each parking level at a plane below the horizontal plane of said stalls' fingers, with at least one pair of spaced apart parallel rails extending below the combs of each stall;

potential means for applying an electrical potential difference to the pair of spaced apart rails extending below the combs of each stall;

a plurality of rectangular elevators each movable vertically between said parking levels in a well thereof, each elevator comprising a top plate and a set of first and second pairs of elevator rails thereon;

said two pairs of elevator rails including a pair of spaced apart elevator rails which extend along the elevator longitudinal axis and defining elevator longitudinal rails and a pair of spaced apart elevator rails which extend along the elevator transverse axis, and which define elevator transverse rails, whereby when an elevator is at a parking level its longitudinal rails are aligned and in contact with rails which extend along the longitudinal axes of the two stalls at opposite ends of the elevator, and the elevator's transverse rails are aligned and in contact with rails extending across stalls on opposite sides of the elevator along the stalls' transverse axes with the elevator rails being at the potentials of the stall rails with which they are in contact only when the elevator is at one of said parking levels; and a movable transfer cart supported on the elevator's rails and including first energizable means in engagement with said rails and in electrical contact therewith and responsive to the potential difference between said rails for moving said cart between the elevator and any stall along the rails aligned with the elevator's rails, said transfer cart including a top horizontal transfer plate defining four multifinger combs at the ends thereof, the fingers of each comb being adapted to support a wheel of an automobile supportable on said cart, the fingers of the combs of the transfer plate being parallel to one another pointing outwardly and in a common horizontal plane, said cart further including second energizable means for raising said transfer plate to a first position above the horizontal plane of the stalls' fingers and for lowering said plate to a second position below the horizontal plane of the stalls' fingers, with said transfer cart being movable to any stall with the transfer plate in either of said positions, with the fingers of the transfer plate and each stall being aligned whereby when a transfer cart is at any stall the fingers of the transfer plate and those of the stall intermesh freely to enable the transfer plate to be moved between said first and second positions.

3,896,956

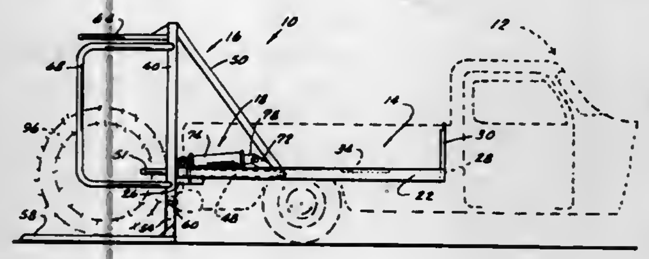
ROUND BALE LOADER FOR PICKUP TRUCK

Dewey L. Hostetler, R.R. 2, Box 4, Harper, Kans. 67058

Filed Dec. 12, 1973, Ser. No. 426,645

Int. Cl. B60p *1/16*

U.S. Cl. 214—501 **8 Claims**



1. A cylindrical bale loader for a truck or the like, comprising:

a. a frame means pivotally mountable on the bed portion of a truck or the like, said frame means having mounting means constructed and adapted to pivot said frame means when mounted on said bed portion from a generally vertical position at the rear portion of said bed portion to a generally forwardly tilted position overlying said bed portion,
b. said frame means in one end portion having a fork portion extending therefrom, said fork portion being constructed and adapted to receive a cylindrical bale in lifting position with a portion of said fork portion underneath said bale,
c. said loader has means connectable with said mounting means and said truck or the like to pivot said frame means,
d. said means to pivot said frame means being a power means mounted on said bed portion and,
e. the opposite end portion of said frame means having a bale retaining portion constructed and adapted to guide, hold and retain a cylindrical bale thereon as said bale rolls by gravity forwardly on said frame means when said frame means is moved from said vertical position to said forwardly tilted position or vice versa,

said loader when said frame means is mounted on said bed portion of said truck is constructed and adapted to receive a cylindrical bale, lift same when said frame means is pivoted, and retain same on said frame means when said frame means is in said forwardly tilted position overlying said bed portion of said truck.

3,896,957

ROLL CLAMP

Stuart Wallace Sinclair, Houston, Tex., assignor to Anderson, Clayton & Co., Houston, Tex.

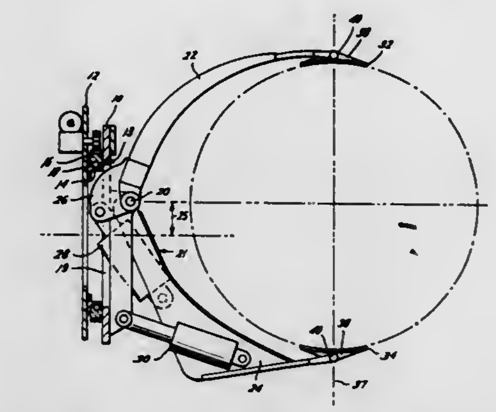
Filed May 8, 1974, Ser. No. 468,021

Int. Cl.² B66C *1/42*

U.S. Cl. 214—652 **5 Claims**

1. An apparatus for use on a lift truck elevator, which is attached to a truck or other suitable means of transportation, to lift and manipulate a cylindrical load comprising:

a. a rotating frame,
b. a first clamp arm,
c. a second clamp arm,
d. a pin for attaching the clamp arms to the rotating frame and about which the clamp arms are rotatable, where the pin is located adjacent to, and less than the diameter of one cylindrical load from, the rotating frame and is offset from the centerline of rotation of the rotating frame,



e. a first piston and cylinder assembly connected between the clamp arms for rotating the clamp arms with respect to each other about the pin, and
f. a second piston and cylinder assembly connected to the rotating frame and one of the clamp arms for simultaneous rotation of the clamp arms about the pin.

3,896,958

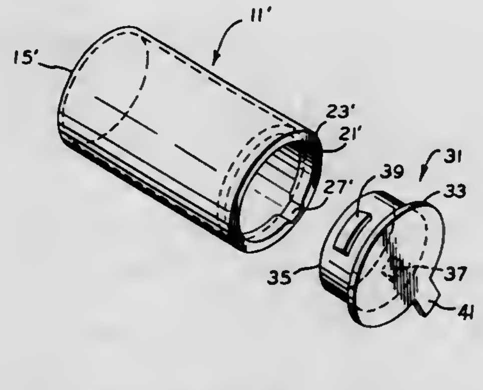
SAFETY VIAL AND CAP THEREFOR

Douglas R. Robbins, 37 W. Minster, and Samuel B. Robbins, Jr., 19 Beechview, both of Jamestown, N.Y. 14701

Continuation-in-part of Ser. No. 413,922, Nov. 8, 1973, Pat. No. 3,845,874. This application Feb. 1, 1974, Ser. No. 438,778

Int. Cl.² B65D *55/02*

U.S. Cl. 215—211 **3 Claims**



1. A safety vial and cap therefor, comprising in combination:

a hollow container having generally uniform wall thickness, the top of said container being open and including an inner depending rim shaped portion of a given depth around the inner diameter thereof, said inner depending rim shaped portion having a slot therein;

a plug type cap comprising an upper portion having a diameter approximately equal to the outer diameter of said container and a lower portion depending from said top portion and having an outer diameter approximately equal to the inner diameter of the inner depending rim shaped portion of said container, further including a first protuberance on the outside of the lower portion of said plug type cap, said first protuberance having a dimension equal to or less than the dimension of the slot in said inner depending rim shaped portion of said container, and a second protuberance on the lower portion of said plug type cap, oppositely disposed with respect to said first protuberance and having a dimension greater than the dimension of the slot in said inner depending rim shaped portion of said container.

3,896,959

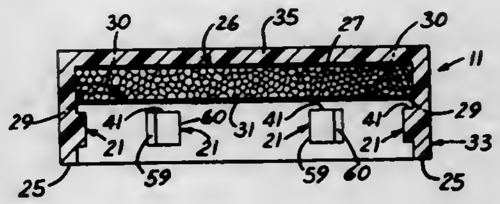
CHILD SAFETY CLOSURE

Gerald L. Roy, Lancaster, Pa., assignor to Kerr Glass Manufacturing Corporation, Los Angeles, Calif.

Filed Dec. 3, 1973, Ser. No. 421,340

Int. Cl. B65d *55/02, 85/56;* **A61j** *1/00*

U.S. Cl. 215—222 **7 Claims**



1. A combination comprising a container having a closed bottom wall and an upwardly extending wall terminating in an upper cylindrical end wall, a plurality of circumferentially spaced projections on said upper cylindrical end wall extending radially outwardly, each projection being formed with a downwardly opening notch and having surfaces defining said notches, a closure for securing to said container and closing the upper end of said container and to be child-resistant to opening, said closure including a one-piece plastic cap having a top wall and an integrally depending cylindrical skirt wall, a plurality of radially extending lugs on inner side of said depending skirt wall being spaced circumferentially about said skirt wall, said lugs having upper portions for fitting into said notches in said projections and for abutting said surfaces with attempted turning of said cap while in said notches, and a discrete foam disk means disposed between the inner side of said top wall of said cap and top portions of said lugs, said foamed disk means being resilient and being compressed between said container rim and said top end wall to within 50 to 80 percent of its uncompressed thickness, said foam disk means being free for further compression to shift said lugs axially downwardly from said notches with a compressive force of between 4 to 14 pounds to allow turning of said lugs to positions free of said notches for axially upward movement of the closure for removal from the container, said disk means comprising a flat foam disk body having an outer impermeable non-cellular skin layer for engaging the said upper cylindrical end wall and an integral closed cell foam layer for compression and resilience and having a low compression set.

3,896,960

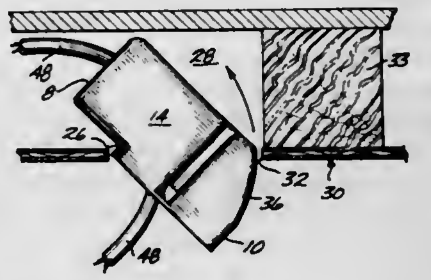
ELECTRICAL JUNCTION BOX FOR EXISTING WALL CONSTRUCTIONS

Edgar C. Schindler, Seattle, and John C. McEachron, Tacoma, both of Wash., assignors to Nelco Corporation, Orting, Wash.

Filed Aug. 23, 1971, Ser. No. 174,065

Int. Cl. H02g *3/08*

U.S. Cl. 220—3.5 **21 Claims**

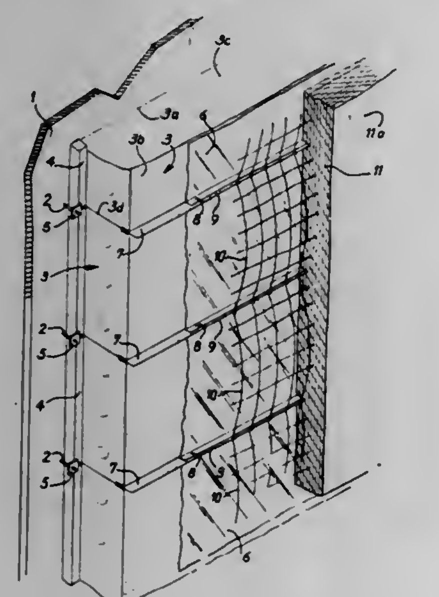


1. A wall-mounting electrical outlet box which can be inserted for mounting through an opening in the front panel of a wall that has a rear panel spaced from the front panel, where

the width of the opening and the wall panel spacing are materially less than the width of the box, said box comprising a back, enclosing sides joined to and projecting forwardly from said back, and a front which includes a closed area portion adjacent to one side and an adjoining open area portion affording frontal access to the interior of said box located between the opposite side and said closed area portion, said opposite side converging inwardly toward the first side over substantially a major portion of the depth of the box to join the back, such inward convergence reducing the width of the box at the back by an amount of the same order of magnitude as the extent of said depth major portion and forming a chamfered relief corner enabling the box to be swung about an axis at the box front intermediate said one side and opposite side for clearing a side edge of the front wall panel opening during sidewise insertion of the box through said wall opening, and means adapting the box for mounting the same with its front open area portion in registry with such a wall opening and its closed area portion offset laterally from such wall opening behind the front panel.

3,896,961
INSULATED STORAGE TANK FOR LIQUID OR LIQUEFIED PRODUCTS

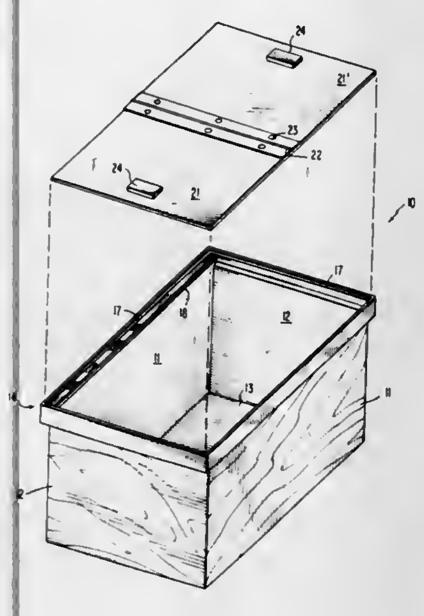
Jacques Gullhem, and Michel Bourgeois, both of Le Havre, France, assignors to Gaz Transport, Paris, France
Filed Apr. 5, 1973, Ser. No. 348,152
Claims priority, application France, Apr. 5, 1972, 72.11927
Int. Cl.^{2} B65D *87/24;* **B63B** *3/68, 25/08*
U.S. Cl. 220—9 LG **1 Claim**



1. A leakproof and isothermal tank for the storage or the transportation of a liquid or of a liquefied product, said tank comprising two assemblies of leakproof and thermal insulation barriers, in succession, including a primary assembly in contact with the product contained in the tank, and a secondary assembly located between the primary barrier and the tank carrying structure, the secondary assembly comprising boxes filled with a heat-insulating material and held directly against said carrying structure by means of threaded pins which are fastened to the walls of said structure and a secondary leakproof barrier of metallic sheets with edges projecting toward the inside of the tank, the height of which is approximately equal to the height of said boxes of heat-insulating material, said sheets being secured together edge to edge at their projecting edges on the two faces of a metallic flange, said metallic flanges being inserted in the planes of horizontal joints of said boxes of heat-insulating material and extending toward the inside of the tank, and a metallic grid hooked on said metallic flanges, said grid being entirely contained within the thickness of a layer of plastic foam which has a low thermal contraction or expansion coefficient within the range of the temperature of use, said layer being inserted between the product contained in the tank and said secondary leakproof barrier.

3,896,962
PORTABLE FILE BOX WITH FILE SUSPENSION AND CARRYING MEANS

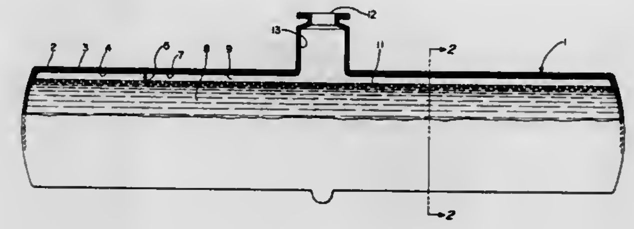
Lee M. Smith, Memphis, Tenn., assignor to Trav-L-File, Inc., Memphis, Tenn.
Filed Oct. 23, 1973, Ser. No. 408,421
Int. Cl. B65d *57/00*
U.S. Cl. 220—22 **4 Claims**



1. A portable file box for suspending file folders of the type having downwardly projecting tabs on the ends of laterally projecting support arms, comprising:
- a pair of opposing side walls;
- a pair of opposing end walls;
- a bottom;
- said side walls, end walls and bottom being integrally formed to provide a unitary box interior;
- the upper ends of said side walls having outwardly extending gripping flanges and vertically extending offset continuations of the walls projecting upwardly from the outer edge of the flanges, said flanges and vertical continuations being integrally formed with said side walls;
- a groove on the inside upper surface of each of said flanges formed by the inner surface of the respective vertical offset continuation of the side wall and an inner vertically extending projection of the side all, the inner surface of which projection is substantially flush with the inner surface of said side wall, said projection having less vertical extension from said upper surface of said flange than said offset continuation so as to provide clearance between the tops of said file folders being suspended within said box and the upper edges of said side and end walls, and said groove providing a track for said downwardly extending tabs of said lateral support arms of said file folders;
- a shoulder integrally formed on the inside surface of the upper edges of said vertical offset continuations of said side walls for supporting a cover;
- pivotable cover means for said file box and receivable on said shoulder for covering the interior of said box; and handle means for raising said cover.

3,896,963
LININGS FOR CONTAINERS FOR HANDLING CORROSIVE CHEMICALS AND THE METHOD OF PREPARING SAID CONTAINERS

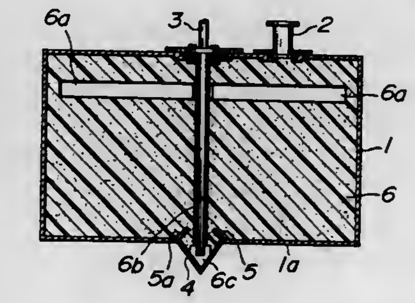
Robert C. Schisler, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed May 21, 1973, Ser. No. 362,607
Int. Cl. B65d *25/14*
U.S. Cl. 220—63 R **20 Claims**



1. In a container suitable for the handling of corrosive fluids including an outer rigid shell having a flexible corrosion-resistant lining attached to the inwardly facing surface thereof, a protective cover of rubbery polymeric material attached only to that portion of the inwardly facing surface of the lining which confronts the corrosive substances in the vapor zone of the container with the remainder of the lining being free of said cover, said cover comprising a rubbery face layer disposed inwardly of the container, said face layer having resistance to cracking caused by the corrosive substances in the vapor zone.

3,896,964
SAFETY FUEL TANK HAVING HIGH SUCTION ABILITY

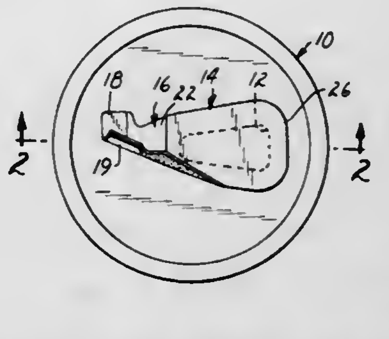
Atsuo Takei, Fujisawa; Isao Nagaoka, and Shozo Tsunoda, both of Yokohama, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan
Filed Nov. 7, 1973, Ser. No. 413,741
Claims priority, application Japan, Nov. 16, 1972, 47-131102
Int. Cl. B65d *25/14, 25/34*
U.S. Cl. 220—88 R **2 Claims**



1. A safety fuel tank comprising, (a) a tank body, (b) a foamed body having open-cells disposed in said tank body; (c) a collector tank projecting downwardly from the bottom of the tank body, said collector tank extending across the width of tank body, and communicating with the interior of said tank body so as to allow fuel to collect in said collector tank, (d) a suction pipe extending vertically through said foamed body and terminating in said collector tank, and (e) a baffle plate secured to each joint between the tank body and collector tank, said baffle plates inclined upwardly and extending into said tank body and having passages therethrough for passing fuel along the bottom of the tank body into said collector tank.

3,896,965
TAMPER INDICATOR TAPE

Lew Wallace Cornell, Mound, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Sept. 17, 1973, Ser. No. 397,797
Int. Cl. G09f *3/03*
U.S. Cl. 220—359 **7 Claims**

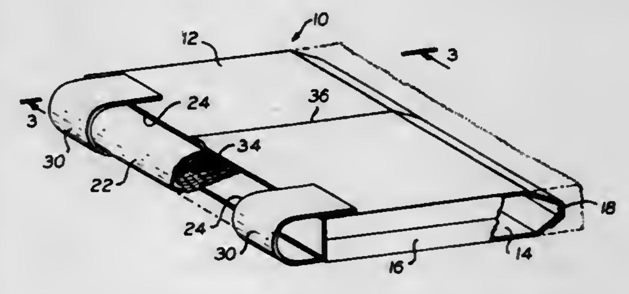


1. In a hermetically sealed container which encloses pourable material within a rigid wall having a preformed aperture therein, said aperture being covered and said container being hermetically sealed by a closure comprising a sheet material removably adhered directly to the portion of said wall which surrounds said aperture, said closure having a free end not attached to said wall, said closure being capable of being grasped by said free end and pulled back on itself without rupture to expose the underlying aperture and permit removal of the pourable material, the improvement which comprises: on the outer surface of said closure an indicator layer comprising a strong, flexible binder matrix having a Young's modulus at 2% elongation of at least about 125,000 pounds per square inch containing, dispersed throughout, a solid color-forming substance and capsules containing a liquid dye precursor reactable with said color-forming substance, at least a portion of said indicator layer being intermediate said free end and the nearer edge of said aperture,

whereby, when said closure is flexed by force applied to said free end, said capsules rupture and the color-forming substance and dye precursor react to form a colored dye indicating that said can closure has been at least partially removed.

3,896,966
BAG DISPENSING PACKAGE

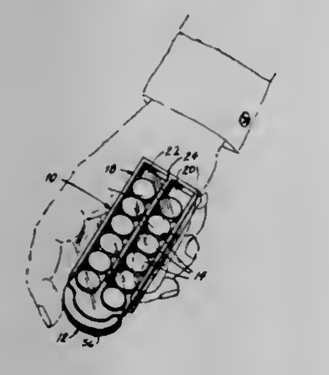
Leonard E. Canno, New York, N.Y., assignor to Equitable Bag Co., Inc., Long Island City, N.Y.
Filed Dec. 10, 1973, Ser. No. 423,570
Int. Cl. B65h *1/04*
U.S. Cl. 221—63 **3 Claims**



1. A bag dispensing package including a stiff panel, a bag assembly comprising a plurality of bags folded around a front edge of the panel along their mid-regions, and folded only at their mid-regions, whereby the bags beyond said mid-regions are substantially parallel to one another, a container having top, bottom and side walls, and a rear wall surrounding the bag assembly on all sides of the respective sides thereof except the front of said bag assembly, the front of the container having a front wall open for an area that exposes the folded end of the bag assembly across the center of the front of the assembly and for a part of the front of the assembly beyond the center

thereof, and the front of the container being also open for a limited distance extending rearwardly from the exposed foremost end of the folded assembly far enough to permit an operator to grip the mid-region of the outside bag of the assembly adjacent to the back end of the fold of said assembly to pull the most forward bag of the assembly from the container as a single unit, the container having its front closed across a part of the bag assembly for a distance inward from the sides of the container, and characterized by the container being a paper bag of the self-opening type with side gussets and with the bottom of the bag forming the back wall of the container, and with the edges of the mouth of the bag substantially equidistant from the back wall and constituting the rearward limits of the open front of the container, and straps secured to the front and back of the bag, which constitute the top and bottom walls of the container, and adjacent the front of the container and extending beyond the mouth of the bag to form abutments that hold the bag assembly in the container.

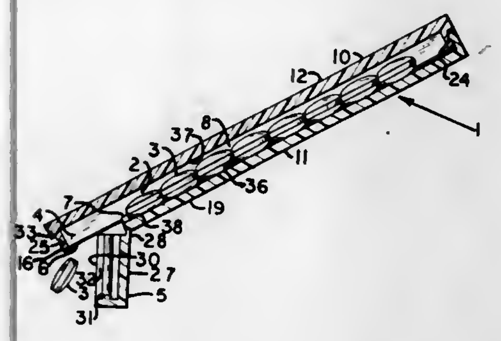
3,896,967
ARTICLE HANDLING APPARATUS AND METHOD
John J. Doolittle, 209 N. 29th St. West, Bradenton, Fla. 33505
Filed Feb. 12, 1973, Ser. No. 331,516
Int. Cl. B65h *3/44*
U.S. Cl. 221—95 **9 Claims**



1. Article handling apparatus comprising, first means including a supply area for articles, a receiver having first and second receiving locations, one for receiving each of two of said articles from the supply area, means mounting said receiver for movement between a first position for receiving one of said articles from the supply area and a second position, and yieldable means on said receiver between said receiving locations for moving another of said articles in said supply area and adjacent said receiver, in a direction generally away from the receiver responsive to the receiver moving toward at least one of said positions.

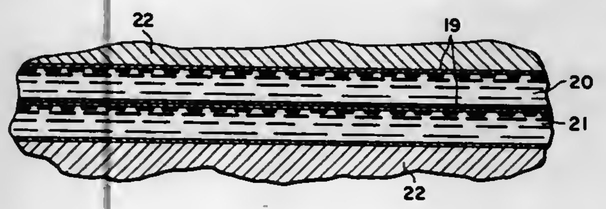
3,896,968
DISPENSING PILL BOX
Harold T. Pehr, 3920 W. 96th St., Overland Park, Kans. 66207
Filed Apr. 29, 1974, Ser. No. 465,179
Int. Cl. B65d *83/04*
U.S. Cl. 221—288 **5 Claims**

1. A container for dispensing and storing small objects such as pills and the like comprising:
- a. an elongate bottom portion having a flat bottom wall and an upstanding continuous peripheral wall of uniform height, said peripheral wall having parallel side portions; b. an elongate cover portion having a flat top wall and a depending peripheral wall;
- c. cooperating interengaging means on the upstanding and depending peripheral walls removably securing the cover portion onto the bottom portion, said walls defining an elongate chamber adapted to store a plurality of objects therein with said objects being sized to be movable longitudinally but substantially immovable laterally in said chamber;
- d. said cover portion top wall having a transverse hinge and the depending wall having separations in line therewith providing a hingedly connected closure portion at one end of the container, said closure portion being swingable away from the bottom portion to an open position providing a dispensing opening between the hinge and the adjacent end of a size for passage of one object therethrough when the container.is in an inverted position;



- e. lug means on said cover portion adjacent said hinge forming a shoulder facing away from the dispensing opening and having a spacing from said bottom wall to permit passage of objects therebetween when the container is in normal position and to engage a proximate one of said objects when the container is in inverted position for dispensing one of said objects at the dispensing opening and returning the remaining objects in the chamber between said shoulder and the end remote from said dispensing opening.

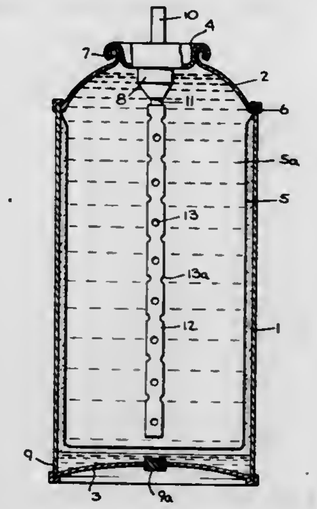
3,896,969
WATER SEALING CONSTRUCTION
Mario J. Basile, 8512 Fifth Ave., Brooklyn, N.Y. 11209
Filed May 2, 1973, Ser. No. 356,338
Int. Cl. B32b *3/12*
U.S. Cl. 222—54 **2 Claims**



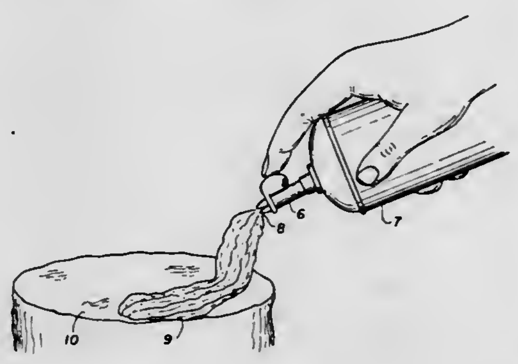
1. A water barrier structure comprising solid matrix having embedded therein a fluid sealant composition enclosed in a water soluble envelope, said sealant composition comprising a liquid resin curable to a solid state enclosed in water soluble microcapsules, defining said envelope and a curing agent enclosed in other water soluble microcapsues.

3,896,970
AEROSOL PACKAGE OF PRODUCT CONTAINING LIQUIFIED GAS
Robert H. Laauwe, Franklin Lakes, N.J.
Division of Ser. No. 270,560, July 10, 1972, Pat. No. 3,788,521. This application Oct. 26, 1973, Ser. No. 409,689
Int. Cl.^{2} B65D *35/24*
U.S. Cl. 222—94 **8 Claims**

1. An aerosol package comprising a substantially rigid container having a dispensing valve, a collapsible flexible container inside of said rigid container and internally fluid connected to said valve and containing an extrudable product in which liquified compressed gas is intimately dispersed or dissolved, said product being adapted to be dispensed through said valve, and liquified compressed gas propellant between said containers and applying fluid pressure to said flexible container and which is transmitted therethrough to said product to extrude said product upon operation of said valve, said propellant having a vapor pressure substantially greater than the vapor pressure of said gas in said product while intimately dispersed or dissolved therein, said liquified gas in said product normally tending to form gas bubbles interfering with a uniform extrusion of said product and the vapor pressure of said propellant being great enough to apply enough compression to said product through said flexible container to prevent formation of said bubbles, said package including a flexible tube by which said flexible container is connected to said valve, said tube extending from said valve a substantial distance within said flexible container and said tube having a lengthwise series of openings in its wall, said flexible container collapsing as said product is extruded therefrom and said openings preventing blockage of said tube by said collapsing container.

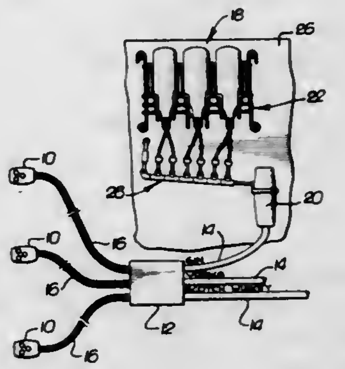


3,896,971
COLOR DISPENSER FOR USE WITH PRESSURIZED CANS OF WHIPPED TOPPING
William Schwede, 40 Woodmar Ter., West Seneca, N.Y. 14224
Filed May 30, 1974, Ser. No. 474,720
Int. Cl. B65d *37/00*
U.S. Cl. 222—106 **3 Claims**



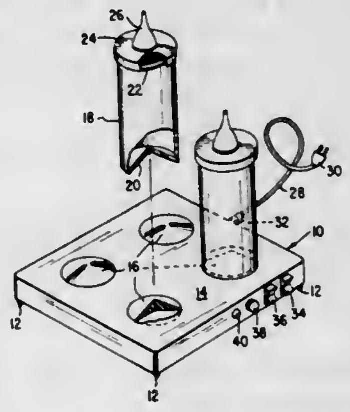
1. A color dispenser designed to be filled with food coloring and adapted for use with a presurized can of whipped topping having a slitted discharge nozzle, said dispenser comprising:
- a hollow ring having a chamber, the inner circumference of the ring defining the periphery of an opening through which the nozzle of the can can extend, said ring having a plurality of nozzles disposed symmetrically about said inner circumference and connecting said chamber to said opening;
- a flexible hollow pouch having a chamber and contiguous to said ring, the ring and pouch chambers communicating with each other; and
- a retaining loop detachably secured to and pressing against said ring nozzles, said loop being disposed in said opening.

3,896,972
REMOTE LIQUID DISTRIBUTION SYSTEM
Samuel W. Neidore, 4615 Rubio Dr., Encino, Calif. 91316, and Howard K. Arnold, 221 Ruth Ave., Venice, Calif. 90291
Filed July 9, 1973, Ser. No. 377,219
Int. Cl. B67d *5/60*
U.S. Cl. 222—136 **5 Claims**



1. In a remote liquor distribution system for supplying a bar dispenser mechanism from a plurality of individual liquor bottles:
- a. a fluid motor for supplying liquor under pressure to a conduit cooperable with a dispenser mechanism;
- b. said fluid motor having an inlet;
- c. a vented manifold having a feeder channel and a series of upwardly extending inlet ducts each communicating with the feeder channel;
- d. means connecting the feeder channel to the motor inlet; e. means separate from the manifold for supporting a plurality of liquor bottles in an inverted position; and
- f. a plurality of flexible conduits for connecting the inlet ducts to the bottles with the bottles in spaced relationship thereto, each conduit being detachably connected both to the bottle and the inlet duct;
- g. said supporting means relieving said conduits from the entire weight load of said bottles;
- h. each flexible conduit being telescopically received in the corresponding inlet duct, each conduit carrying a stop engageable with the end of the inlet duct to determine the vertical position of the end of the flexible conduit in the manifold correspondingly to determine the order in which the bottles are placed on-line relative to said feeder channel.

3,896,973
HEATED DISPENSING APPARATUS
Fred Morgan, 1 Forest Rd., Glen Burnie, Md. 21061
Filed Apr. 8, 1974, Ser. No. 458,892
Int. Cl.^{2} F27D *11/00*
U.S. Cl. 222—146 HE **14 Claims**



1. Heated dispensing apparatus comprising
a base member having a substantially planar upper surface;
a plurality of protrusions formed as an integral part of said surface and extending above the plane thereof, each

of said protrusions defining a generally horizontal, unbroken, aplanar support surface having a circular periphery; means inbedded in said base member and disposed directly below said protrusions for exclusively heating the same over substantially the entire exposed surface area thereof; and

at least one unitary, resilient, cylindrical container removably disposed directly atop said base member for heating fluid within said container, said container having a diameter substantially equal to the diameter of said at least one protrusion and having ar recessed bottom conforming to said aplanar support surface for direct heat transfer contact therewith over the entire bottom surface of said container.

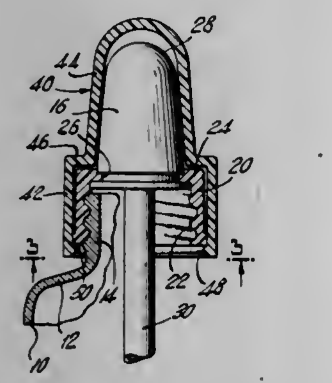
3,896,974
CONTAINER AND CLOSURE THEREFOR

James A. McIntosh, Upper Montclair, N.J., assignor to Mack-Wayne Plastics Company, Wayne, N.J.

Filed June 7, 1974, Ser. No. 477,228

Int. Cl. B65d *83/14*

U.S. Cl. 222—182 **11 Claims**



1. A container and closure combination comprising a container with a threaded neck, a first cap having a correspondingly threaded skirt engaged on said neck to close the container and an overcap having a resilient skirt covering said first cap and preventing removal of said first cap without first removing said overcap, said resilient skirt having an internal latching surface disposed at a first circumferential location thereon and engaging the downwardly facing latching surface of said first cap to prevent the axial removal of said overcap from said first cap without first disengaging said latching surfaces, said overcap being dimensioned to be axially removable from said first cap without relative rotation therebetween upon disengaging said latching surfaces to expose the first cap for removal of the first cap from the container, an outer surface of said first cap and an inner surface of said overcap defining a clearance therebetween in a circumferential region spaced from said internal latching surface of said overcap to accommodate flexing of said cap into said clearance which results in the outward flexure of the skirt in the region of said latching surface thereof whereby said latching surface of the overcap is disengaged from said downwardly facing latching surface of said first cap to permit the axial removal of said overcap from said first cap.

3,896,975
NON FOAMING LECITHIN EMULSION COOKWARE LUBRICANT

Dan W. Follmer, 5230 Coruna Ct., Santa Barbara, Calif. 93111

Continuation-in-part of Ser. No. 267,070, June 28, 1972, abandoned. This application July 26, 1974, Ser. No. 492,258

Int. Cl.² C08L *91/00;* **C09K** *3/30;* **B65D** *83/14*

U.S. Cl. 222—192 **22 Claims**

1. Cookware lubricant composition adapted to be dispensed under aerosol propellant pressure from a suitable container onto a cookware surface without foaming while temporarily marking the surface coverage, said composition comprising an aqueous component having a pH between 3 and 9.8 and comprising a water in oil emulsion of 0.5 to 25% by weight of lecithin consisting essentially of P-inositol, P-choline and P-cephalin phosphatides in a ratio such that said composition has an HLB number of not more than 7, said P-inositol comprising not less than 10% of the total weight of said phosphatides.

18. Cookware lubricant aerosol package comprising a pressure resistant container having a dispensing valve, and disposed therein:

		% by Weight
A)	Lecithin phosphatides comprising at least 10% by weight P-inositol	4
B)	Soybean Oil	3
C)	Aliphatic Solvent	7
D)	Water	50
E)	Propellant	
	(1) Isobutane	9
	(2) Difluorodichloromethane	26
F)	Glyceryl palmitate	1

to 100 percent.

3,896,976
DEVICES FOR DISCHARGING MEASURED AMOUNTS OF A FLUID MATERIAL

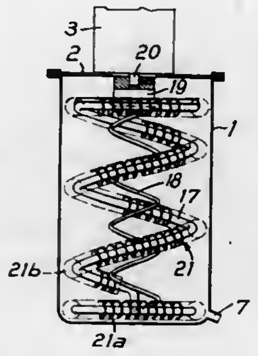
Pierre Ligouzat, 49, rue des Tartres, 92 Rueil, France

Continuation-in-part of Ser. No. 299,467, Oct. 20, 1972, abandoned. This application Apr. 18, 1974, Ser. No. 461,845

Claims priority, application France, Oct. 26, 1971, 71.38484

Int. Cl.² G01F *11/00*

U.S. Cl. 222—228 **3 Claims**



3. A device for discharging measured amounts of a fluid material comprising:

a container having a bottom wall, having a cylindrical, inner side wall portion adjacent the bottom wall thereof and having at least one discharge orifice through said portion, said cylindrical wall portion having an axis extending transversely to said bottom wall;

motor means mounted on said container at the upper end thereof and having a rotatable output shaft substantially co-axial with said axis;

at least one helically wound element having a predetermined winding axis; and

means mounting said helical element from said shaft with the winding axis thereof extending at least once around and spaced from said axis of said cylindrical portion, with the outer periphery of said helical element immediately adjacent said wall portion and said orifice and with the winding axis thereof in a plane substantially perpendicular to the axis of said cylindrical portion whereby upon rotation of said shaft said helical element is moved around said axis of said portion in a circular path adjacent to said discharge orifice and said wall portion to thereby discharge said material through said orifice, said mounting means comprising a spring wound helically around said axis of said cylindrical portion and secured to said output shaft, said spring having an annular portion adjacent said bottom wall, said helical element having an annular portion around said annular portion of said spring and having another portion around the helical portion of said spring.

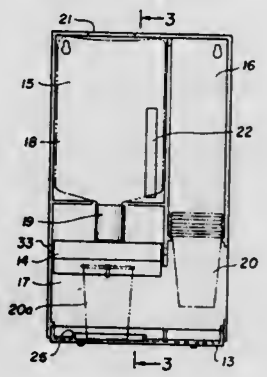
3,896,977
LIQUID DISPENSER

Thomas G. Bergstrom, 1312 Appeal Ave., Elmont, N.Y. 11003

Continuation-in-part of Ser. No. 243,691, April 13, 1972, abandoned. This application Apr. 2, 1973, Ser. No. 346,967

Int. Cl. G01f *11/10*

U.S. Cl. 222—353 **15 Claims**



1. A dispenser for extracting predetermined amounts of liquid from a substantially air-tight container, comprising an independent trough mounted below said container for tilting about a horizontal axis, said trough normally residing at a predetermined angle; conduit means adapted to communicate with the inside of said container below the liquid level and having an open end extending into said trough; a walled area within said trough surrounding the region into which said conduit means extends having a liquid access to the remainder of said trough below the trough walls, the level of liquid retained in said walled area at all times being sufficient to make contact with said conduit means; and a dispensing aperture outside of said region located above the lowermost internal portion of said trough when it resides at said predetermined angle.

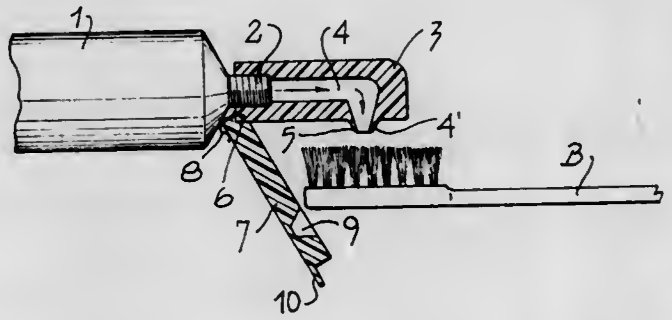
3,896,978
CLOSURE FOR COLLAPSIBLE TUBES

Raphael Sahar, No. 3 Palmach St., Tiberias, Israel

No Drawing. Filed July 23, 1973, Ser. No. 381,608

Int. Cl.² B67D *3/00*

U.S. Cl. 222—517 **4 Claims**



1. A closure for collapsible tubes consisting of:

an elongated body having a flat side and first and second ends and a main portion therebetween, said body having a bore extending therethrough, said bore having internal screw threads at the end thereof corresponding to said first end of said body, the opposite end of said bore being bent off the direction of the main portion of said bore and opening into said flat side;

a lid hingedly attached at one end thereof to said body at said first end thereof, said lid closing to cover only said flat side, and sealing the opening of said bore in said flat side, the only surface of said lid contacting said body being a flat surface corresponding to said flat side of said body;

spring means for urging said lid into the shut position; and a nose extending from the other end of said lid to beyond said second end of said body.

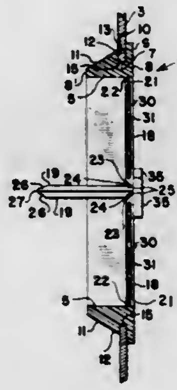
3,896,979
DISPENSING SPOUT

Harold T. Pehr, 3920 W. 96th St., Overland Park, Kans. 66207

Filed Oct. 1, 1973, Ser. No. 402,114

Int. Cl. B67d *3/00*

U.S. Cl. 222—528 **7 Claims**



1. A dispensing container comprising:

a. a container body having side, top and bottom walls defining a compartment for flowable materials;

b. means in one of said body walls having edges defining a dispensing opening, said edges including side edges and a top edge;

c. a dispensing spout carried by said one of said body walls and having operable portions movable relative to said dispensing opening between container closing and material dispensing positions;

d. said dispensing spout having a plurality of hingedly connected panels and including a pair of intermediate panels and a pair of side panels, said side panels having inner and outer side edges with said outer edges hingedly and sealingly connected to said side edges of the dispensing opening for the length thereof, said intermediate panels having adjacent edges directly hingedly and sealingly connected to each other along the length thereof and opposite edges hingedly and sealingly connected to the inner side edges of the side panels along the length thereof;

e. said dispensing spout being foldable to a position wherein the side panels close the dispensing opening and the intermediate panels each fold flat against the other and extend inwardly through the dispensing opening.

3,896,980
DEVICE FOR HANGING CLOTHES, SUCH AS TROUSERS OR SKIRTS

Tullio Campagnolo, 36100 Vicenza, Corso Padova; 168, Italy

Filed July 17, 1973, Ser. No. 380,055

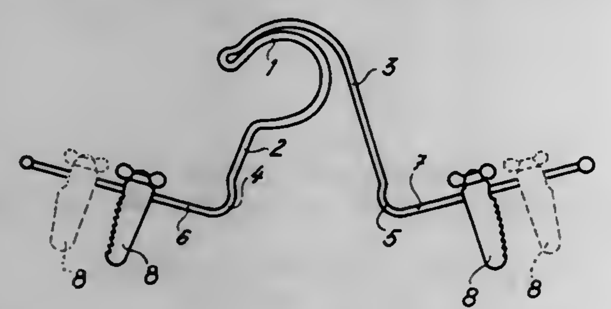
Claims priority, application Italy, July 31, 1972, 27682/72

Int. Cl. A47j *51/12*

U.S. Cl. 223—95 **3 Claims**

1. A device for hanging clothes comprising a hanging deformable wire structure defining two slanting branches diverging downwardly and extending into two arms pointing in opposite directions which lie in the same plane and gripping means slidably mounted and lockable on each of said arms, each said gripping means comprising an element outwardly notched, a head attached to said element having a transverse through

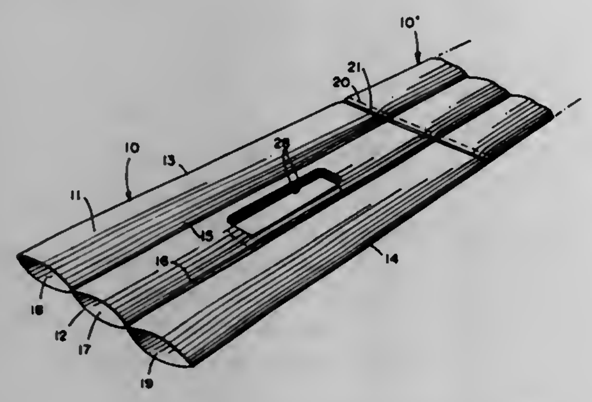
hole for receiving one of said arms and a longitudinal threaded dead hole, an outwardly threaded pin fitting within said dead



hole having a transverse hole for receiving one of said arms and a winged nut threadably mounted on said threaded pin.

3,896,981
PROTECTIVE SKI TRANSPORT BAG

Edward B. Purple, 147th St.-Forest Hills, Lockport, Ill. 61603
Filed Feb. 14, 1974, Ser. No. 442,668
Int. Cl. B65d *71/00*
U.S. Cl. 224—45 S **7 Claims**



1. A protective ski transport bag formed of thin foldable sheet material selected from the group consisting of plastic film and paper, said bag having a pair of flat elongated walls joined together along their longitudinal side edges and also sealed together along a pair of longitudinal inner lines, said inner lines being spaced apart to define a central pocket open at one end of the bag for receiving a pair of ski poles, said inner lines also being spaced from the longitudinal side edges of said bag to define a pair of side pockets open at said one end of said bag for receiving a pair of skis, each side pocket being adapted to receive a single ski, said side pockets being substantially longer than the skis receivable therein and all of said pockets being substantially equal in length, said bag and its contents having handle means formed by manually gripping intermediate portions of the poles to hold said poles together within said central pocket and thereby form a sling for suspending the side pockets and the skis therein in balanced condition, said walls being permanently joined together to close said pockets at the end of said bag opposite from said one end.

3,896,982
WIRE SOLDER FEEDER

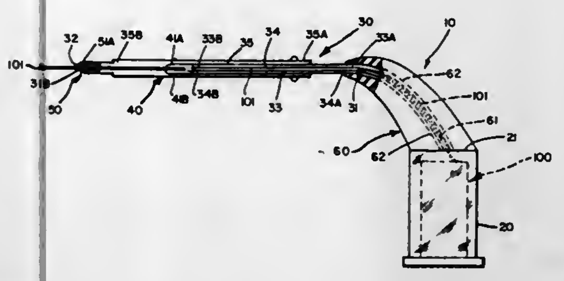
Glen R. Redman, 1303 Maple Dr., Alamogordo, N. Mex. 88310
Filed Mar. 28, 1974, Ser. No. 455,767
Int. Cl. B65h *17/36*
U.S. Cl. 226—128 **5 Claims**

1. A wire feeder assembly, adapted for feeding coiled wire-type solder to a work area, comprising:

a. a transparent container, for housing a supply of coiled wire-type solder, having an outlet for permitting the free passage of the wire-type solder therefrom;

b. a holding, guiding, and dispensing subassembly having a first end and a second end, with said first end of said subassembly being removably connected to said outlet of said container, wherein said subassembly is adapted to receive the wire-type solder and to permit the free passage of the wire-type solder therethrough, and wherein said subassembly includes:

1. a stationary hollow metallic tube having a first end and a second end;
2. a hollow tube liner of non-abrasive material, having a first and a second end, and disposed internal of, and adjacent to, said stationary hollow metallic tube;
3. a hollow metallic tube, having a first end and a second end, with said tube disposed external of, adjacent to, and slideably movable on, said stationary hollow metallic tube;
4. means for gripping said wire-type solder, and for pulling said solder wire from said container and through said stationary hollow metallic tube, and for preventing the return of said solder wire to said container, wherein this said means is removably positioned at said second end of said stationary hollow metallic tube, and wherein this said means includes two oppositely disposed complementary jaws;



5. and, means for gripping said wire-type solder, and for pulling said solder wire through said movable hollow-metallic tube, and also for preventing the return of said solder wire to said stationary hollow metallic tube, and further for holding said solder wire ready for, and during, use, wherein this said means is removably positioned at said second end of said movable hollow metallic tube, and wherein this said means includes two oppositely disposed complementary jaws;

c. and, means for releasably connecting said holding, guiding, and dispensing subassembly to said container, wherein this said means is located intermediate of said holding, guiding, and dispensing means and of said outlet of said container, and wherein said releasably connecting means permits the free passage therethrough of said solder wire.

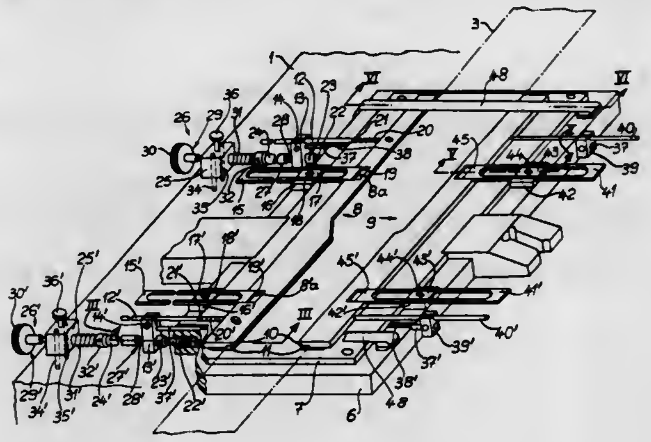
3,896,983
GUIDING SYSTEM FOR A STRIP OF MATERIAL PASSING THROUGH A MACHINE WHICH PROCESSES THE STRIP

Othmar Welnguni, Renens, Switzerland, assignor to J. Bobst & Fils S.A., Switzerland
Filed Mar. 4, 1974, Ser. No. 447,858
Claims priority, application Switzerland, Mar. 9, 1973, 3474/73
Int. Cl. B65h *23/32*
U.S. Cl. 226—198 **11 Claims**

1. A guiding system for a strip of flexible material passing through a machine which processes the strip and which includes a work station having a lower bed and an upper platen which carry tool holder plates between which the strip is processed and between which the strip may arch vertically, said guiding system comprising:

a first laterally adjustable guide between the tool holders;
a second laterally adjustable guide between the tool holders, spaced from and parallel to said first laterally adjustable guide,

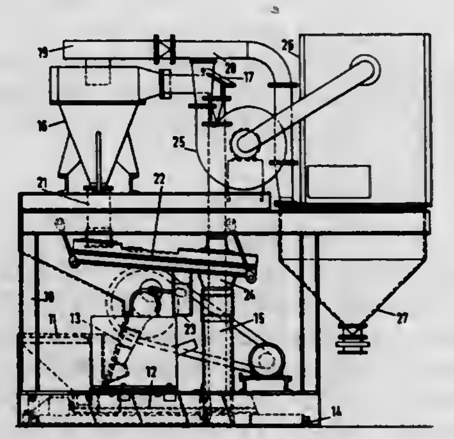
said first and second guides receiving the strip therebetween and extending substantially the length of the platen in the direction of strip movement;
first support means mounting said first laterally adjustable guide in the space between the upper platen and the lower bed;
second support means mounting said second laterally adjustable guide in the space between the upper plate and the lower bed;



resilient means connected between one of said laterally adjustable guides and its respective support means to permit momentary lateral movement of that guide in response to width variations of the flexible strip;
a transverse guide at the input end of and spaced above the lower tool holder plate;
a second transverse guide at the output end of and spaced above the lower tool holder plate;
each of said transverse guides comprising a metal band secured at its ends under tension; and
said transverse guides limiting vertical distortion of the strip as it moves between the tool holders.

3,896,984
PNEUMATIC CONVEYANCE SYSTEM FOR PARTICULATE MATERIAL

Albert Edwards, Peterborough, England, assignor to Baker Perkins Holding Limited, Peterborough, England
Filed Mar. 25, 1974, Ser. No. 454,707
Claims priority, application United Kingdom, Mar. 28, 1973, 14979/73
Int. Cl.² B02C *19/06*
U.S. Cl. 241—5 **7 Claims**

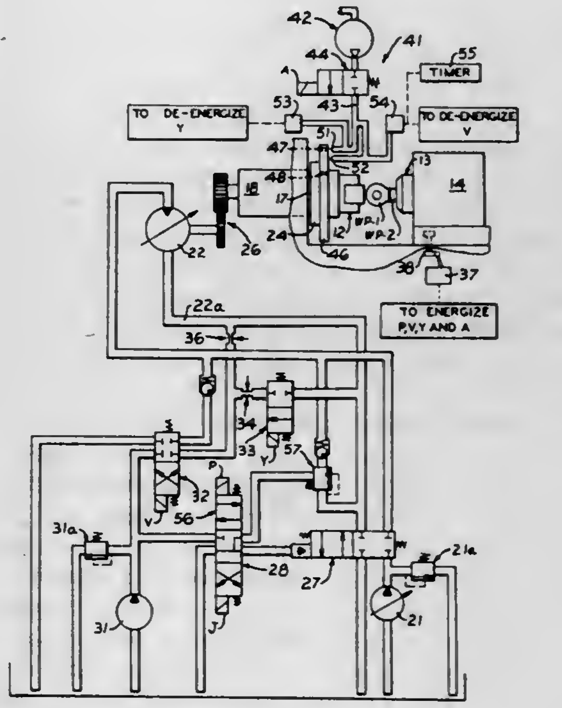


1. A method of treating particulate material, said method comprising

using suction means to receive and convey agglomerated particulate material,
breaking down, in a separator means, the particulate material conveyed from the suction means,
screening the particulate material after the latter has been broken down, and
returning the non-screen material to the suction means, said receiving and conveying step including disposing an internal surface member, having peaks and depressions formed thereon, within the suction means, in the path of flow of the particulate material, so that the particulate material is broken down and scrubbed by collision with the internal surface member during conveyance through said suction means.

3,896,985
INDEXING APPARATUS FOR ROTARY MACHINE TOOL

Jozef Kiwalle, Peoria, Ill., assignor to Production Technology Inc., Peoria, Ill.
Filed Oct. 25, 1972, Ser. No. 300,482
Int. Cl.² B23K *27/00*
U.S. Cl. 228—2 **10 Claims**



1. In a rotary machine tool having a chuck which is rotatable by a variable speed hydraulic motor, indexing apparatus for locating the chuck in a selected angular position, comprising

a source of fluid under pressure,
hydraulic control means for regulating operation of the hydraulic motor and including means for communicating selectively variable hydraulic fluid pressure to the hydraulic motor,
first signal means to which the hydraulic control means is responsive for commencing operation of the hydraulic motor at a relatively high speed,
second signal means to which the hydraulic control means is responsive, the second signal means including means for sensing a first angular position of the chuck and thereupon causing the hydraulic control means to operate the hydraulic motor at a reduced speed,
third signal means associated with the hydraulic control means and including means for sensing approach of the chuck towards its selected angular position, and
a valve included within the hydraulic control means and being responsive to the third signal means for closing a fluid outlet of the hydraulic motor and thereby braking the hydraulic motor to accurately stop the chuck in the selected angular position.

3,896,986

METHODS OF AND APPARATUS FOR PRODUCTION OF WHEELS AND OTHER ARTICLES BY FRICTION OR OTHER WELDING

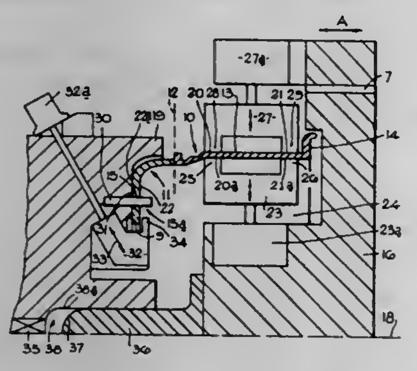
Michael Frederick Edwards, Wolverhampton, England, assignor to GKN Sankey Limited, Bilston, Great Britain

Division of Ser. No. 218,899, Jan. 19, 1972, Pat. No. 3,805,371. This application Nov. 28, 1973, Ser. No. 419,598

Claims priority, application United Kingdom, Jan. 25, 1971, 3110/71; Jan. 26, 1971, 3111/71

Int. Cl. B23k *19/00*

U.S. Cl. 228—2 **8 Claims**



1. In frictional welding apparatus comprising a body, workpiece supports thereon movable relatively to each other in a mode to produce rubbing engagement between workpieces at contact faces thereof when held in said supports, means associated with each of said supports for holding a workpiece concentrically with an axis of said support, driving means for effecting said relative movement, and force applying means for engaging said contact faces under pressure, the improvement comprising:

mutually-engageable pilot means on each of said supports for controlling the relative positions of the supports at least after cessation of said relative movement and during operation of said force applying means, said pilot means including a first pilot part on one of said supports and a second pilot part on another of said supports, said first and second pilot parts having mutually opposed bearing surfaces, the bearing surface of each said part including a radially facing surface portion and being of a form to define the axis of its associated support, said bearing surfaces being brought into mutual contact during engagement of said pilot means, whereby coincidence of said axes is achieved.

3,896,987

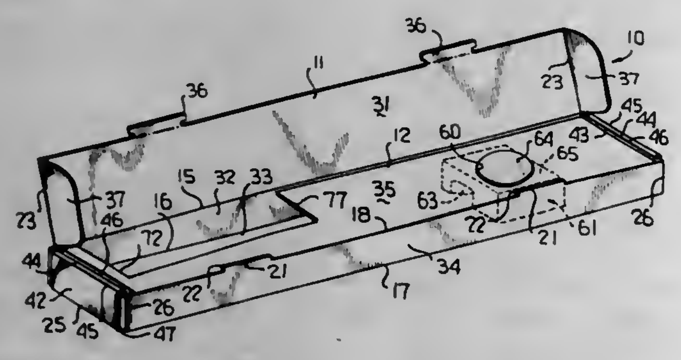
GUN BOX

Joseph J. Soja, Portland, Conn., assignor to Continental Can Company, Inc., New York, N.Y.

Filed July 13, 1970, Ser. No. 54,254

Int. Cl. B65d *5/20, 85/00*

U.S. Cl. 229—33 **19 Claims**



1. A carton blank particularly adapted for packaging articles such as rifles, shotguns, hand guns and the like, comprising a sheet material blank provided with a plurality of fold lines about which said blank is adapted to be folded into a generally tubular configuration, at least one of said plurality of fold lines in part sets off a locating panel, means defined by said locating panel for interlockingly engaging an insert profiled in accordance with the contour of at least a portion of an article adapted to be packaged in said blank whereby undesired relative movement of the blank and packaged article is precluded by the interlocking engagement provided by said interlocking means, and an insert having means for interlockingly engaging the interlocking means of said locating panel.

3,896,988

MAILING CARTON

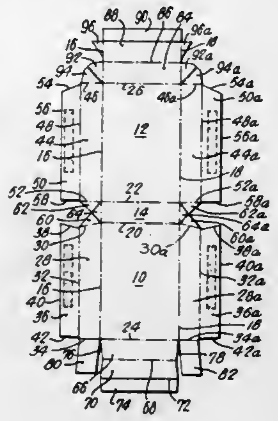
Edward C. Mayled, 5245 Provence St., Pierrefonds, Quebec, Canada

Filed Mar. 5, 1973, Ser. No. 337,882

Claims priority, application Canada, Mar. 8, 1972, 136732

Int. Cl. B65d *3/22*

U.S. Cl. 229—33 **3 Claims**



1. A one piece blank for a hinge carton comprising a first rectangular panel and a second rectangular panel defined by a pair of common, parallel, longitudinal fold lines and connected by an intermediate panel defined by said longitudinal fold lines and by a pair of transverse fold lines, with said first and second panels, respectively; side panels adjoining each of the first and second panels along said longitudinal fold lines, the transverse fold line bordering the intermediate panel and the second panel projecting beyond the longitudinal fold line along the fold axis thereof and defining the end of the side panel adjoining the second panel; a gusset forming panel adjoining the intermediate panel and the ends of the side panels adjoining the first and second panels, a fold line defined between said gusset panel and the end of the side panel adjoining the first panel, said latter fold line being at an acute angle to the projection of the transverse fold line between the first panel and the intermediate panel, such that when the carton is made up with the side panels upright, the so-formed gusset panel forces the side panels adjoining the first panel to converge inwardly providing suitable nesting for the side walls of the second panel.

3,896,989

PAVEMENT GROOVING MACHINE INCLUDING A CUTTING BLADE GUIDANCE SYSTEM

Stafford M. Ellis, Kent, England, assignor to Engelhard Minerals & Chemicals Corporation, Murray Hill, N.J.

Continuation-in-part of Ser. No. 261,360, June 9, 1972. This application June 5, 1974, Ser. No. 476,461

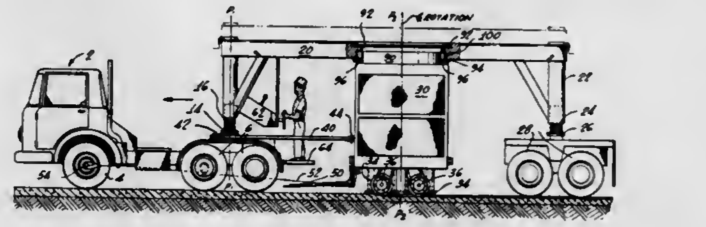
Int. Cl.^{2} E01C *23/09*

U.S. Cl. 299—39 **22 Claims**

1. In a pavement grooving machine including a truck provided with steerable front wheels and at least one set of rear wheels located adjacent a horizontal rear transverse axis of the truck; a trailer connected to the truck for articulated motion about a vertical first pivot axis intersecting the rear transverse axis of the truck, the trailer having at least one set of rear wheels located adjacent a horizontal rear transverse axis of the trailer spaced rearwardly from the rear transverse axis of the truck; and at least one assembly of spaced, rotary cutting blades mounted on a generally horizontal drive shaft; a blade guidance system operable during movement of the pavement grooving machine around a curve in the pavement to maintain the cutting blades in substantially parallel relation to the curve, the guidance system comprising:

a module mounted on the trailer for rotational motion about a vertical second pivot axis positioned between the rear wheels of the truck and the rear wheels of the trailer, said module supporting the cutting assembly with the blades in cutting engagement with the pavement and with the drive shaft extending in a generally transverse direction relative to the trailer; and

linkage means connecting the truck with said module for rotating said module relative to the trailer during relative turning motion between the trailer and the truck in such relation that the drive shaft and the rear transverse axes of the truck and the trailer are all substantially aligned with a common turning center.



3,896,990

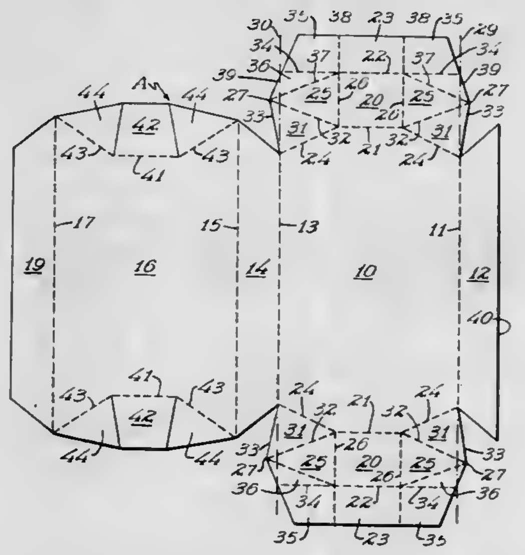
BOOK FOLDER WITH CUSHIONING END

William G. Sieffert, Joliet, Ill., assignor to Hoerner Waldorf Corporation, St. Paul, Minn.

Filed Sept. 16, 1974, Ser. No. 506,522

Int. Cl.^{2} B65D *5/02*

U.S. Cl. 229—40 **10 Claims**



1. A book folder end closure for a book folder having a bottom panel, a first side wall panel, a top panel, and a second side wall panel secured in tubular relation, the bottom panel having an extension flap end structure,

a rectangular end wall secured to the center portion of said bottom panel along a line of fold terminating short of the side edges of said bottom panel,

a substantially rectangular cushioning panel connected to said end wall along a fold line,

said rectangular end wall extending upwardly and inwardly from the end of said bottom panel at an acute angle thereto,

said cushioning panel extending downwardly into edge abutting contact with said bottom panel and at substantially right angles thereto,

said end wall cushioning panel, and bottom panel forming a hollow right triangular cushioning member,

isosceles triangles having their bases foldably connected to the sides of said end wall, the distance between the apexes of said isosceles triangles being greater than the width of said bottom panel so as to lie in vertical planes through the side walls and against said side walls,

fold lines extending angularly from the ends of said line of fold connecting said end wall to said bottom wall to the ends of the fold lines connecting said bottom panel to said side wall panels, said fold line connecting said bottom panel to said end walls being located beyond the ends of the fold lines connecting said bottom panel to said side walls,

triangular flaps between said angularly extending fold lines and one equal length side of said isosceles triangles whereby the one side of said isosceles triangles extend on substantially a vertical plane through the fold line connecting said bottom panel to said end wall,

extension fold lines aligned with said the fold line connecting said end wall to said cushioning flap extending across said said extension flap structure,

right triangular flaps between said extension fold lines and the other equal length sides of said isosceles triangles, said right triangular flaps extending parallel to said bottom panel and underlying said top panel, and

the portions of said extension flap structure beyond said extension fold lines and connected to said cushioning panel extending downwardly into edge contact with said bottom panel.

3,896,991

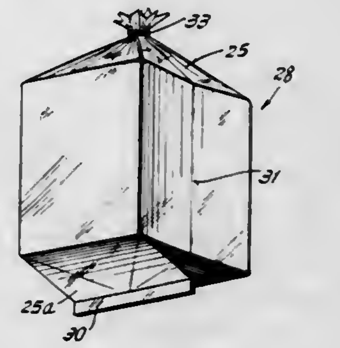
COMPOSITE FLEXIBLE, SEMI-RIGID MATERIALS AND PROCESS FOR MAKING SAME

Edward C. Kozlowski, 74 Columbine Dr., Trumbull, Conn. 06611, and Matthew D. Chamlin, 322-A Hailman St., Pittsburgh, Pa. 15206

Filed Feb. 28, 1973, Ser. No. 336,722

Int. Cl. B65d *33/02*

U.S. Cl. 229—55 **7 Claims**



1. A container formed from a laminate comprising a self-supporting strip of determinate length and width, a first relatively thin, flexible, inner plastic strip adhered to the inner surface of said support strip and a second thin, flexible, outer plastic strip adhered to the outer surface of said support strip, said first and second plastic strips being of the same length as the support strip at the opposed edges of the laminate but being substantially wider than said support strip and having continuous projecting marginal portions extending substantially beyond each surface of the support strip and being completely adhered together in face-to-face relation at the ends of the laminate, the opposed edges of the laminate being secured together by means of a unitary plastic-to-plastic seal to form a tubular container in which the rigid support sheet is completely enveloped and sealed between the inner and outer plastic strips, the projecting marginal portions of the plastic strips of the tubular container being continuous and sufficiently wide to be folded inwardly along the edges of the support strip at the ends of the laminate to form end closures

for the container whereby the encased rigid support strip constitutes the support of the container.

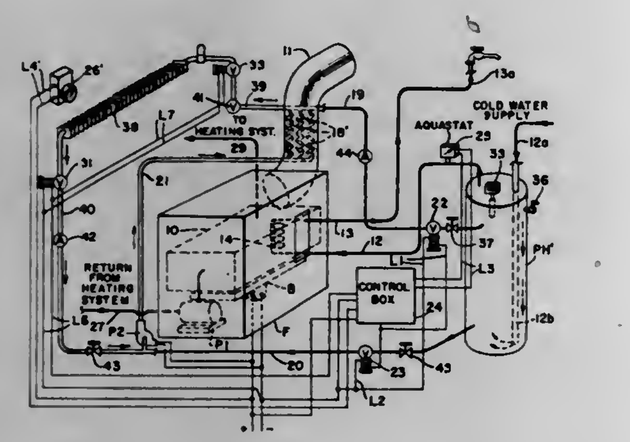
3,896,992
HEAT RECOVERY SYSTEM FOR SPACE HEATING AND FOR POTABLE WATER HEATING

Anton Borovina, 67 Columbia St., Port Jefferson Station, N.Y. 11152, and Henry E. Grattan, Conscience Clr., Setauket, N.Y. 11103

Filed July 18, 1974, Ser. No. 489,700

Int. Cl.² F24D *3/08;* **F24H** *1/22*

U.S. Cl. 237—19 **11 Claims**



1. A hot water heating system for both space heating and potable water heating, comprises a furnace having heat generating means therein and a flue for carrying hot, gaseous products of combustion away therefrom, a plurality of space heating pipes connected at one of their ends in heat exchange relationship with the heat generating means in the furnace and adapted to be connected to a plurality of space heating means to circulate hot water from the furnace to the space heating means and back to the furnace, a plurality of potable water pipes connected with a source of potable water and with the heat generating means in the furnace to heat the potable water and circulate it to a point of use, a separate heat recovery means in the flue exposed to the heat of flue gases in the flue, a first plurality of heat recovery pipes connected to the heat recovery means and to the space heating pipes, and a second plurality of heat recovery pipes connected with the said heat recovery means and the potable water pipes, to reclaim at least part of the heat of the flue gas and to heat water in both the space heating means and the potable water pipes, and control means responsive to temperature in a space being heated and to the temperature of the hot potable water to alternately effect heat exchange between the heat recovery pipes and the space heating pipes, and between the heat recovery pipes and the potable water pipes, said control means including means to first effect supply of heat from the heat recovery pipes to the space heating pipes in response to demand and when the demand is satisfied to effect supply of heat to the potable water pipes, whereby the efficiency and economy of operation of the hot water heating system is greatly enhanced.

3,896,993
PROCESS FOR LOCAL MODIFICATION OF THE STRUCTURE OF FOG AND CLOUDS FOR TRIGGERING THEIR PRECIPITATION AND FOR HINDERING THE DEVELOPMENT OF HAIL PRODUCING CLOUDS

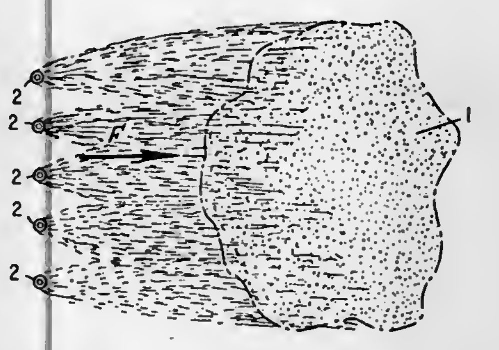
Roger Rene Serpolay, Brest, France, assignor to Etat Francais, Paris, France

Filed Sept. 10, 1973, Ser. No. 395,758

Claims priority, application France, Sept. 15, 1972, 72.32687

Int. Cl.² E01H *13/00*

U.S. Cl. 239—2 R **2 Claims**



1. A method for locally triggering the precipitation of fog and clouds which comprises dispersing in the fog or clouds, particles of sodium alginate having a viscosity of 100 to 400 centipoises in 1.2 percent by weight aqueous solution at 18°C.

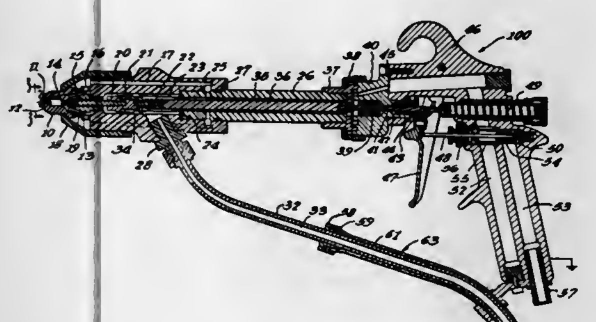
3,896,994
ELECTROSTATIC DEPOSITION COATING SYSTEM

Arvid C. Walberg, Lombard, Ill., assignor to Arvid C. Walberg & Co., Downers Grove, Ill.

Division of Ser. No. 237,523, March 23, 1972, Pat. No. 3,774,844, which is a continuation-in-part of Ser. No. 24,104, March 31, 1970, abandoned. This application July 30, 1973, Ser. No. 384,128

Int. Cl. B05b *5/02*

U.S. Cl. 239—3 **13 Claims**



1. A coating system comprising:
a spray gun for atomizing and ejecting coating material into the atmosphere having a forward end provided with a passage therein said passage having an intake,
a container for holding coating material,
a high voltage supply connected between coating material in said container and work to be coated,
an electrically nonconductive fluid conduit having an internal cross sectional area and connecting said container and said intake to transport coating material from said container to said spray gun body passage, said conduit being sufficiently long in relationship to said cross sectional area to prevent arcing at the spray gun, and
means applying an electrostatic field to the atomized coating material ejected from said spray gun connected to said coating material at said spray gun.

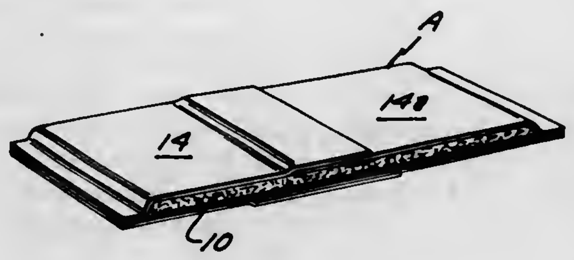
3,896,995
FLYING INSECT REPELLANT ASSEMBLY

Jhon Lelicoff, 966 Heap Åve., San Mateo, Calif. 86301

Filed Apr. 12, 1974, Ser. No. 460,300

Int. Cl.² A61L *9/04;* **A01M** *1/20;* **B32B** *7/06*

U.S. Cl. 239—36 **7 Claims**



1. A device for use in maintaining a quantity of a volatile insect repellant adjacent a desired portion of the human body without said insect repellant being in contact with said portion, said device comprising:
a. a first sheet of pliable material that is impervious to said insect repellant, said sheet having first and second sides;
b. a pad of absorbent material secured to a first side of said first sheet, said pad being of sufficient volume to absorb said quantity of insect repellant;
c. first adhesive means that cover at least a portion of said second side of said first sheet to permit said first sheet to be removably secured to said desired portion of the human body on the exterior surface of clothing covering said portion;
d. a hollow frame of a material impervious to said insect repellant that extends completely around said pad and with said frame secured to said first side of said first sheet;
e. at least one second pliable sheet that extends over said adhesive means and is lightly bonded thereto, said second sheet being removable from said adhesive means to permit said first sheet to be removably secured to said desired portion of the human body;
f. at least one third sheet of a material impervious to said insect repellant that extends across said frame outwardly from said pad, said first sheet, frame and third sheet cooperating to define a confined space in which said pad is disposed; and
g. means for removably sealing said third sheet to said frame to prevent said pad in said confined space from communicating with the ambient atmosphere until said third sheet is removed from said frame.

3,896,996
INJECTOR WITH HOLDER FOR AN AIR MIXER OR THE LIKE

Robert Jacques Roest, Bloemendaal, and Pieter van Ruitenberg, Hithoorn, both of Netherlands, assignors to Airprocess A.G., Altdorf, Switzerland

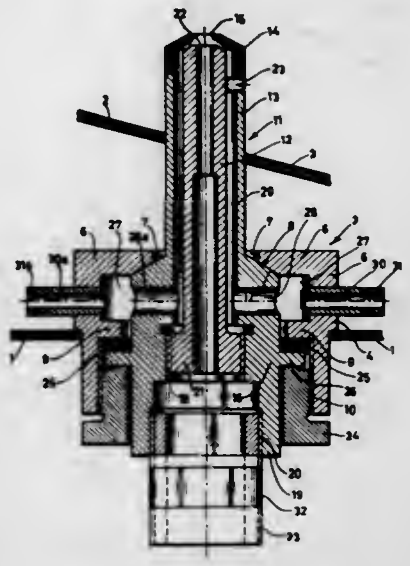
Filed Apr. 19, 1974, Ser. No. 462,539

Claims priority, application Netherlands, Apr. 25, 1973, 7305793

Int. Cl. B05b *7/00*

U.S. Cl. 239—424 **4 Claims**

1. Injector with a holder for detachably disposing the injector in the bottom of a vessel receiving material to be treated by being introduced into the vessel and fluidified by blowing a gas from below into said vessel, the injector comprising an injector tube and an injector casing situated at some distance about the injector tube, said casing having at its upper end a closure with an opening corresponding to the outlet of said injector tube situated under said opening, the end portion of the wall of said casing turned away from the closure being outwardly thickened, the face of the thicker wall part turned towards the closure having a conically extending slant, the thicker wall part having at least one transverse channel connecting the outer peripheral surface of the injector casing with the space between injector tube and injector casing, said holder being hollow and comprising further a circumferential wall and on one side a transverse wall with a central opening having a cross-section smaller than the cross-section of the hollow space in the holder, the edge of the transverse wall encircling said central opening and turned towards said hollow space having a conically extending slant so that after fitting the injector in the holder the conically extending faces of the injector casing and of the transverse wall of the holder, respectively, contacting each other at least at one location.



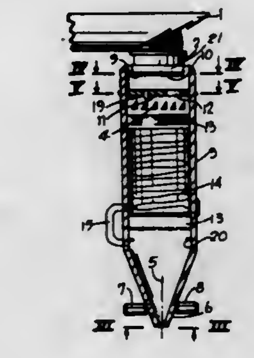
3,896,997
SPRINKLER DEVICE

William Sallows, Penticton, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed June 21, 1974, Ser. No. 481,679

Int. Cl. B05b *3/04, 3/16*

U.S. Cl. 239—102 **4 Claims**



1. A sprinkler device, comprising
a feeder pipe for supplying water;
a coupling member opening into the feeder pipe and extending downward therefrom; and
a sprinkler housing rotatably mounted on the coupling member and having fins mounted circumferentially therein for rotating the housing about its axis when water from the feeder pipe impinges upon the fins, said housing tapering substantially conically to its bottom end and having a pair of nozzles extending substantially diametrically therefrom.

3,896,998
APPARATUS FOR SPRAYING PARTICULATE MATERIAL

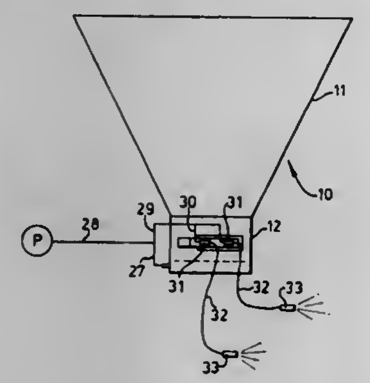
Charles F. Vertue, Cooksville, Canada, assignor to Volstatic of Canada Limited, Canada

Continuation-in-part of Ser. No. 314,737, Dec. 13, 1972, abandoned. This application Feb. 1, 1974, Ser. No. 438,617

Claims priority, application Canada, Sept. 25, 1972, 152412; Dec. 18, 1973, 188393

Int. Cl.² B05B *15/02, 5/02;* **B65G** *53/42*

U.S. Cl. 239—106 **15 Claims**



1. Particulate material spraying apparatus comprising:
a container for particulate material;
an extractor device for extracting particulate material from said container;
a particulate material discharge device for discharging the particulate material;
an outlet duct connecting said extractor device to said discharge device;
said extractor device having an inlet nozzle and means defining an inlet passage extending through said nozzle, said nozzle defining a mouth at one end of said inlet passage, said nozzle having an outer surface which tapers towards said mouth and converges with said inlet passage at said mouth;
a gas discharge passage extending past the other end of said inlet passage;
means for discharging compressed gas through said gas discharge passage past said other end into said outlet duct, whereby particulate material is entrained from said inlet passage and driven through said outlet duct to said discharge device; and
a vibrator for vibrating said nozzle to counteract accumulation of the particulate material on said nozzle.

3,896,999
ANTI-CLOGGING DRIP IRRIGATION VALVE

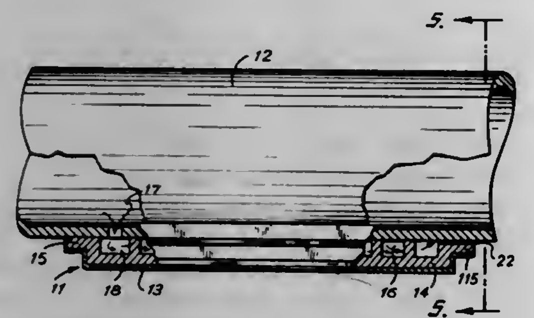
Jaime Sahagun Barragán, Calle del Teco 287, Michoacan, Mexico

Filed Sept. 23, 1974, Ser. No. 508,631

Claims priority, application Mexico, Sept. 28, 1973, 146470

Int. Cl. B05b *1/32, 15/02*

U.S. Cl. 239—107 **10 Claims**



1. An anti-clogging drip irrigation valve which comprises a flat relatively thick elongated assembly having a flexible film cover member, a relatively thick highly flexible member laminated to said cover member, at least one elongated channel means opening towards one of the faces of said highly flexible member opposite to the face laminated to said cover member, a plurality of partition means integrally formed with said highly flexible member and located within said elongated channel means in order to form labyrinth conduit means with a first cavity means formed at one of the ends of said elongated channel means and a second cavity means formed at the opposite end of said elongated channel means; complementary cover means attached to said opposite face of said highly flexible member and to said partition means at their free ends, so as to form a labyrinth passage means from said labyrinth conduit means and a first and a second respective chamber means from said first and second cavity means; fluid entrance means at one of said chamber means; and fluid outlet means at the other of said chamber means.

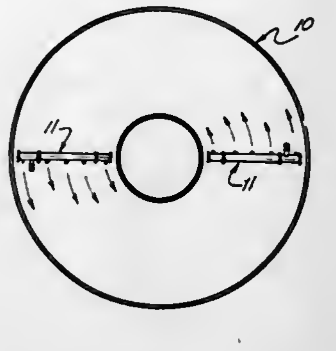
3,897,000
MULTIPLE JET AERATOR MODULE

Mikkel G. Mandt, Prophetstown, Ill., assignor to Houdaille Industries, Inc., Buffalo, N.Y.

Filed Nov. 8, 1973, Ser. No. 413,824

Int. Cl. E03c *1/084;* **B05b** *3/12, 7/32*

U.S. Cl. 239—177 **17 Claims**



1. A multiple jet aerator module comprising a liquid duct including a tubular sheet-form member and a plurality of longitudinally spaced circumferentially aligned liquid nozzles, and an air duct including a sheet-form member mounted on said liquid duct to form a passage therebetween and including a plurality of longitudinally spaced circumferentially aligned liquid-air nozzles,
said liquid-air nozzles corresponding in number to and being disposed respectively in radial alignment with said liquid nozzles.

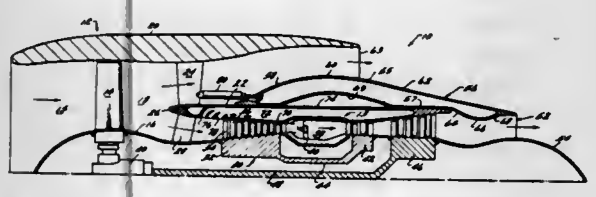
3,897,001
NOZZLE AND AUXILIARY INLET ARRANGEMENT FOR GAS TURBINE ENGINE

Augustus Mason Helmintoller, Jr., Loveland, and Robert Gerald Beavers, Mason, both of Ohio, assignors to General Electric Company, Lynn, Mass.

Filed June 12, 1974, Ser. No. 478,702

Int. Cl. B64d *33/04*

U.S. Cl. 239—265.13 **5 Claims**



1. A gas turbine engine of the bypass type comprises:
a core engine comprising a compressor, combustor and turbine in serial flow relation and a core exhaust nozzle;
a bypass duct around the core engine with a bypass exhaust nozzle, and
translating shroud means disposed intermediate the bypass duct and core engine for simultaneously varying the exit areas of the core and bypass exhaust nozzles.

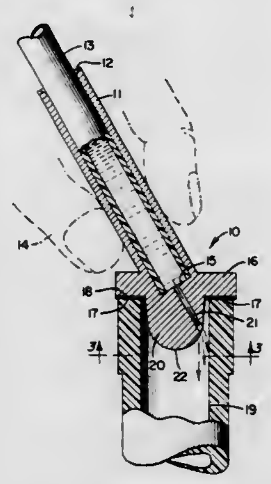
3,897,002
LIQUID WASH INJECTOR

Michael E. Witty, El Toro, Calif., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed Aug. 14, 1974, Ser. No. 497,419

Int. Cl. B05b *1/28, 15/04*

U.S. Cl. 239—288 **4 Claims**



1. A device for introducing liquid into an open mouthed elongated receptacle comprising an elongated tubular means adapted and constructed to have attached thereto at the proximal end a liquid carrying conduit, said tubular means terminating at the distal end with an outwardly extending annular flange for seating on the mouth of said receptacle, said tubular means being inclined with respect to said flange, said flange having at the other side thereof a projecting means having an axis normal to the flange, said projecting means having a bore therethrough communicating internally with said tubular means and in axial alignment therewith, for liquid impingement on the upper part of the inner side-wall of said receptacle.

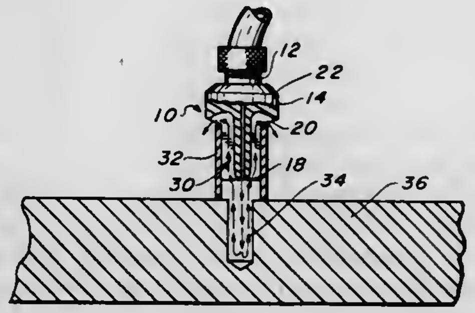
3,897,003
BLOWOUT NOZZLE

William J. Zehr, Des Plaines, Ill., assignor to The Protectoseal Company, Bensenville, Ill.

Filed Feb. 19, 1974, Ser. No. 443,214

Int. Cl. B05b *1/10, 1/28*

U.S. Cl. 239—288.5 **6 Claims**



1. A blowout nozzle comprising a cylindrical housing having upper and lower walls, an upwardly extending, axially positioned shank integrally formed on the upper wall of said housing, an axial core extending downwardly from said housing, equi-distantly spaced vanes extending outwardly from said core and downwardly from the lower wall of said housing and inwardly of the periphery of said housing, the lower wall of said housing between each of said vanes having a cutout to form a dome-like shape, the diameter of the housing being greater than the width of the vanes, an axial aperture extending through said shank, housing and core, and a cylindrical sleeve covering said vanes and extending below the lower ends of said vanes.

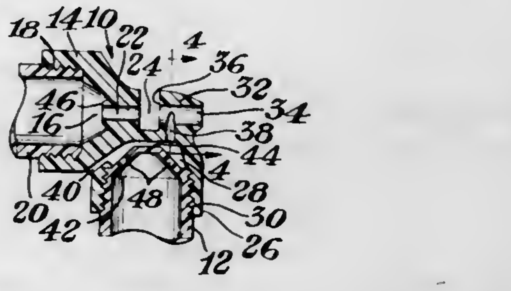
3,897,004
SPRAY NOZZLE BOTTLE CAP

Floyd R. French, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed July 16, 1973, Ser. No. 379,864

Int. Cl. B05b *7/30*

U.S. Cl. 239—318 **4 Claims**



1. A one-piece spray nozzle for mixing a second fluid with a first carrier fluid comprising a first extension adapted for connection with a source of first carrier fluid, a dip tube free second extension adapted for connection with a source of second fluid and a discharge nozzle having an aspirator chamber therein, said first extension and discharge nozzle having an air gap therebetween, said first extension having a jet passageway communicating with the source of first carrier fluid and the air gap, said aspirator chamber having an inlet opening disposed adjacent the air gap and an exit opening to the exterior of said spray nozzle, said inlet opening being larger than the exit hole of the jet passageway and being disposed in line therewith, said second extension having a dip tube free feed passageway in communication with the source of second fluid and the aspirator chamber and adapted to educt the second fluid into the aspirator chamber as the first carrier fluid passes through the aspirator chamber, said first extension and said second extension having like sockets so that the first extension can be connected to the dispensing end of a container of second fluid as a sealing closure and alternatively to the source for said first carrier fluid, said first extension including a sealing edge adapted to engage a sealing portion at the dispensing end of the container extending further into the socket portion than the comparable portion of the second extension such that when the socket of the second extension is engaged with the container a gap is formed, said gap communicating with an opening in the second extension and forming an air bleed hole.

3,897,005
CONVENIENCE SPRAY DISPENSING PACKET

George Reiner, 527 Madison Ave., New York, N.Y. 10022

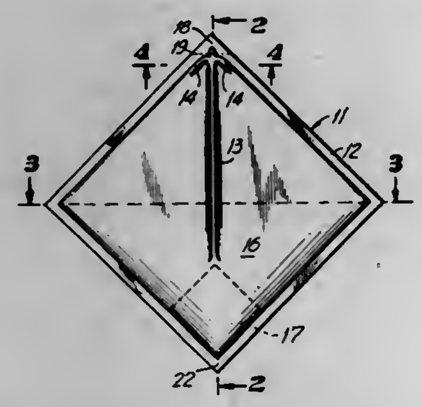
Continuation-in-part of Ser. No. 305,747, Nov. 13, 1972, abandoned. This application Aug. 31, 1973, Ser. No. 393,380

Int. Cl. B65d *1/32*

U.S. Cl. 239—327 **18 Claims**

1. A convenience packet of relatively small weight and volume for dispensing a fluid in spray-form, comprising two oppositely disposed flexible walls, said walls being sealed together at the peripheral edges thereof, resilient means for normally holding said walls apart, and a branched tube within said packet, said branched tube consisting of a main stem having two ends, one of said ends being proximate one edge of said packet defining a corner and the other of said ends being within the body of said packet, and at least one side-tube joining said main stem at an angle and proximate said one end, said corner being adapted for easy removal to expose said one

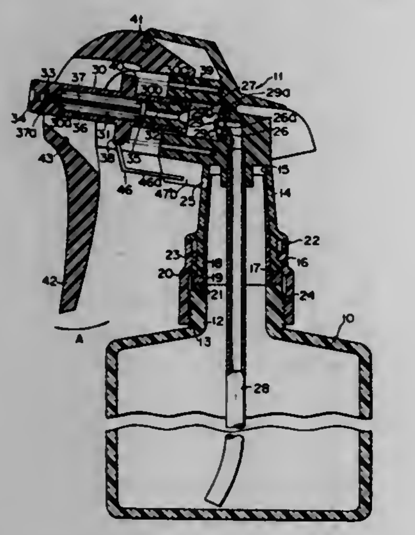
end, the lengths of said main stem and said branched tube being such that said other end of said main stem is immersed



in such fluid as may be within said packet and said side-tube is above said fluid when said corner is uppermost.

3,897,006
SPRAYER

Tetsuya Tada, 1339 Nishitakadomari, Onoda-shi, Yamaguchi-ken, Japan
Filed Dec. 20, 1974, Ser. No. 534,891
Claims priority, application Japan, Sept. 9, 1974, 49-103637
Int. Cl.² B05B *1/32, 11/02*
U.S. Cl. 239—333 **7 Claims**

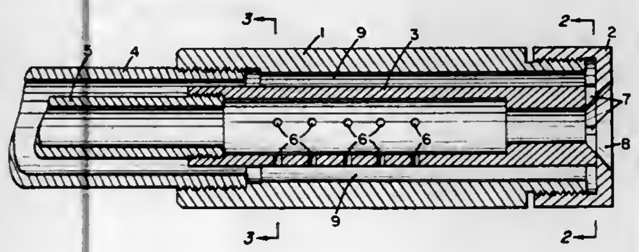


1. In a sprayer including a sprayer head having a cylindrical bore, a piston slidably inserted into said cylindrical bore and a container for receiving a spray liquid therein, whereby, when operated, the piston permits the spray liquid to be sucked from the container into the cylindrical bore through pipe means and subsequently ejected from a nozzle at the tip end of the piston, the improvement comprising a neck portion formed in integrity with said sprayer head and coupled to said container, said neck portion having a vent for permitting the interior of the container to communicate with the open air, flexible closing means for normally closing said vent, operating means for deforming said closing means in accordance with the sliding movement of the piston to open said vent.

3,897,007
APPARATUS FOR ATOMIZING LIQUID FUELS FOR THE COMBUSTION PROCESS

Joseph G. Roy, 1204 Shelter Way, South Charleston, W. Va. 25309
Filed Sept. 10, 1973, Ser. No. 395,703
Int. Cl. B05b *7/10, 7/06*
U.S. Cl. 239—403 **2 Claims**

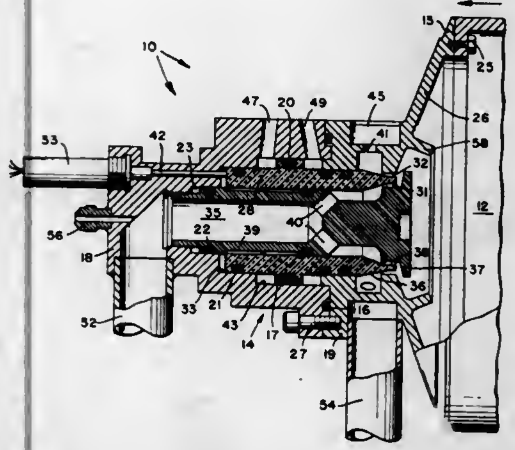
1. In combination with a steam, air or other conventional atomizing medium/liquid fuel burner nozzle capable of passing large volumes of liquid fuel, having a liquid supply conduit to an inner body at its forward end, having means to supply and introduce atomizing medium into the inner body for the purpose of decreasing the fuel density and producing a rotary action to the fuel and having means to impinge atomizing medium tangentially onto and into the exiting stream to externally atomize the liquid with a resultant pattern in the shape of a solid cone, the improvements comprising:



a. a singular fuel passage through said inner body with a flow area that is larger than that of the fuel supply conduit and having an exit portion that is between about one half and about one times that of the supply conduit.
b. a plurality of ports extending inwardly from said atomizing supply means and in communication tangentially with the internal volume of said inner body in advance of the exit portion,
c. a plurality of ports extending inwardly from said atomizing supply means and in communication tangentially with the exit of said singular fuel passage.

3,897,008
LIQUID FUEL INJECTOR SYSTEM

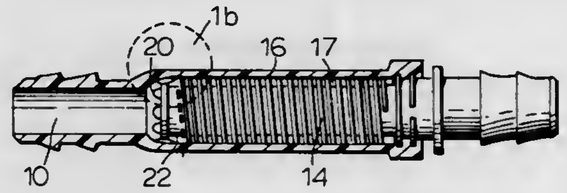
Ronald F. Dettling, China Lake, Calif., and Donald G. Nyberg, Burton, Wash., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Sept. 24, 1969, Ser. No. 862,641
Int. Cl.² B05B *7/12*
U.S. Cl. 239—410 **1 Claim**



1. Metering and injecting apparatus for bireactant gas generator comprising, in combination:
a body member having a bore and a counterbore;
pintle means in said bore and forming, with said counterbore, an annular cylindrical chamber defined by inner and outer opposing surfaces and an annular opening;
a valve member surrounding said pintle means and axially movable within said chamber;
said valve member having a tapered portion defined by inner and outer isogonic frustum surfaces;
said tapered portion mating with a cylindrical end piece;
said end piece protruding into said annular opening;
said valve member forming with said opening an inner annular metering channel and an outer annular metering channel, each of said channels having a receiving end and a discharge end;
said metering channels being parallel to each other for a distance along said end piece so that fluid will be discharged therefrom in a first path defined by parallel concentric cylindrical streams;
said channels being opened or closed under positioning of said valve member for metering reactant flow rate;
means for controllably moving said valve member; and
first and second conduit means conveying first and second liquid propellants at substantially constant supply pressure to the receiving end of one and the other of said channels, respectively; said valve member with said frustoconical surfaces in cooperation with the edges of said annular opening constituting the sole means for metering the liquid propellants; and
said pintle means including a flange member having a conical surface which extends across the path of both fluid streams; so that said streams will impinge individually and separately on said conical surface and be deflected substantially coincidentally along a second path.

3,897,009
TRICKLE IRRIGATION SYSTEM

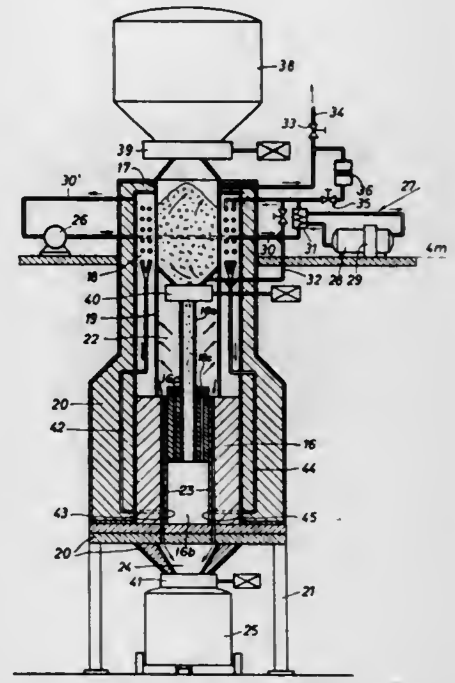
Javier Rangel-Garza, and Jaime Leal-Diaz, both of Escobedo 733, Sur Suite 316, Monterrey, Nuevo Leon, Mexico
Continuation of Ser. No. 159,663, July 6, 1971, abandoned.
This application Apr. 2, 1973, Ser. No. 346,997
Int. Cl. B05b *15/00*
U.S. Cl. 239—542 **2 Claims**



1. A trickle irrigation system comprising in combination, two pieces of tubing and an in line trickler of substantially the same size as said tubes affixed therebetween, said trickler having a generally cylindrical male member with a friction fir coupling member on one end for engaging the inner wall of one piece of the tubing to frictionally hold it therein in a fluid tight connection, said male member defining by helical ridges extending therefrom on the outer periphery, a longitudinal central aperture therethrough in which fluid may flow from said tubing, a generally hollow cylindrical mating female member with a smooth interior surface adapted to rest on said ridges and thereby establish a water flow path through the helical path formed by said ridges and further including structure to receive and hold said male member therein at one end and having at the other end a friction fit coupling member to engage the inner wall of the other piece of tubing to frictionally hold it therein in a fluid tight connection and defining a longitudinal aperture therethrough mating with that of the male member so that fluid will flow through said trickler from one tube to the other, and wherein said male and female members have structure disposed therebetween when mated for defining a passageway permitting a portion of the fluid flowing through said tubes to trickle out between the two members comprising, a feeding chamber insuring the continuous flow of water between the two members formed by structure on the butt end of said male member forming a cavity for receiving fluid passing through said tubes and directing it into said helical ridges wherein said ridges have a longitudinal regulating duct disposed therethrough over a portion of said ridges to define a water conveying passageway bypassing said helical path.

3,897,010
METHOD OF AND APPARATUS FOR THE MILLING OF GRANULAR MATERIALS

Josef Weishaupt, Pullach, and Jakob Oberpriller, Baierbrunn, both of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Germany
Continuation of Ser. No. 268,134, June 30, 1972, abandoned.
This application Feb. 7, 1974, Ser. No. 440,446
Claims priority, application Germany, July 2, 1971, 2133019
Int. Cl. B02c·*19/06*
U.S. Cl. 241—5 **1 Claim**



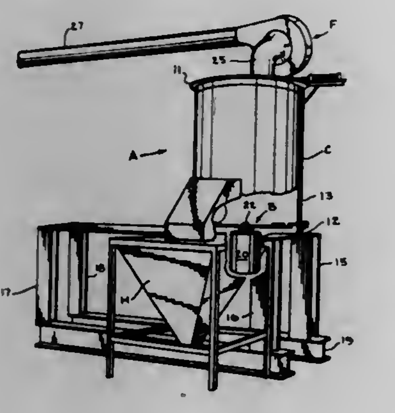
1. A method of comminuting pieces of a material comprising the steps of:
a. confining a supply of said material with a wall and cooling said supply of material by heat exchange with a gas through said wall;
b. compressing said gas after psssing it in heat exchange with said supply of said material through said wall;
c. cooling the gas compressed in step (b) by passing it in heat exchange with a recirculated external coolant to produce a cold fluid;
d. expanding a portion of the cold fluid produced in step (c) and passing the expanded portion of said fluid through said supply in direct contact with said material whereby water and other vapor is entrained with said portion;
e. passing the remainder of the cold fluid produced in step (c) in indirect heat exchange with the gas cooling said supply of material in step (a);
f. metering said material into a jet mill after said material is contacted with said portion of said cold fluid in step (d);
g. pulverizing said material to a powder in said jet mill by entrainment of said material in the fluid passed in indirect heat exchange with said gas in step (e);
h. separating the fluid used to pulverize said material in step (g) from the resulting powder; and
i. feeding the fluid separated in step (h) as the gas employed in step (a).

3,897,011
THERMOPLASTIC WASTE CONVERTER

Bob P. Gray, and James A. Gray, both of 503 Summit Ave., Gainesville, Tex. 76240
Filed Nov. 12, 1973, Ser. No. 414,742
Int. Cl. B02c *1/00*
U.S. Cl. 241—15 **2 Claims**

1. A method of processing thermoplastic film material to convert it into granular form, comprising the steps of:

a. placing a first batch of approximately thirty pounds of thermoplastic foil material into a container having a cutting blade rotating therein at a speed of approximately 1800 r.p.m.;
b. placing a second batch of approximately seventy to eighty pounds of thermoplastic foil material in said container approximately one minute after said first batch is placed in said container with said blade continuing to rotate in said container;
c. rotating said blade in said container for a period of approximately 22 seconds after said second batch is placed in said container;



d. thereafter, spraying approximately sixteen ounces of water into said container and continuing to rotate said blade for another period of approximately 23 seconds;
e. injecting approximately one quart of water into the container with the blade continuing to rotate;
f. rotating said blade for an additional period of approximately 5 seconds following the addition of the quart of water;
g. spraying approximately 16 to 32 ounces of water into said container to cool the batches of thermoplastic material therein;
h. applying a negative pressure to the container to exhaust moisture and gases therefrom;
i. discharging the dry, granulated, processed material from the container.

3,897,012
PULPING MACHINES

Johannes Daniel Malan, Stellenbosch, South Africa, assignor to Tobacco Research and Development Institute Limited, Zug, Switzerland

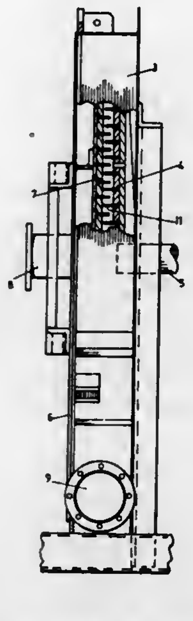
Filed Dec. 27, 1973, Ser. No. 428,913

Claims priority, application South Africa, Jan. 17, 1973, 73/0336; May 7, 1973, 73/3072; Aug. 31, 1973, 73/5997

Int. Cl.² B02C *1/06*

U.S. Cl. 241—27 **8 Claims**

1. A fruit pulping machine comprising a rotatable surface and a stationary surface located at a fixed distance apart, a series of pegs projecting from each surface, an inlet for fruit at a first position where fruit is fed between the surfaces, and an outlet for pulp at a second position spaced from the first and so located that fruit moving from the first to the second positions intersect the line of movement of the pegs, the distance between the pegs and the distance between the tips of the pegs and the opposed surface being so chosen that the pips of the fruit are not damaged in passing between the pegs and between the pegs and the opposed surface and wherein the pegs are inclined to the surfaces, those on the rotatable surface being inclined towards the periphery of the surface and against the direction of rotation and those on the stationary surface being inclined towards the periphery of the surface and in the direction of rotation of the rotatable surface.



3,897,013
DISINTEGRATED DEVICES

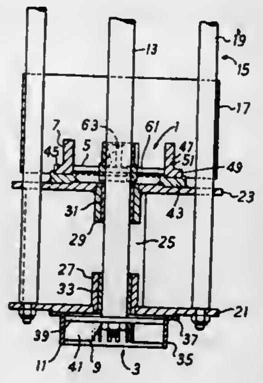
Gordon David Love, Chesham, England, assignor to Silverson Machines Limited, Chesham, England

Filed Dec. 15, 1972, Ser. No. 315,309

Claims priority, application United Kingdom, Dec. 17, 1971, 58880/71

Int. Cl. B02c *18/08*

U.S. Cl. 241—46.11 **9 Claims**



1. A disintegrating device comprising a rotor and a cooperating stator,
wherein the rotor comprises an elongated shaft, a rotor plate mounted on the shaft, and a plurality of blades outstanding from the rotor plate,
the stator comprises a base member and a plurality of stator elements extending outwardly from the base member towards an inlet to the stator, the stator elements being disposed at locations angularly spaced about the rotor shaft and each stator element having a cutting edge formed by the intersection of a radially inner face of the stator element and an adjacent side face, at least part of which side face extends away from the base member towards the stator inlet in a direction outwardly of the stator element so that the width of said part of the side face increases away from said base member and inclined to the rotor shaft, and
the rotor is arranged with the rotor blades within the stator, on the side of the rotor plate facing the stator inlet, and is adapted, upon rotation, to draw material in which the device is immersed in a generally axial direction towards the stator inlet, whereby lumps of the material are reduced in size by impinging against the stator elements and, upon such reduction in size, are able to move further into the spaces between adjacent stator elements and to spend an increased time in contact with a cutting edge, such movement being assisted by the inclination of the said at least part of each adjacent side face.

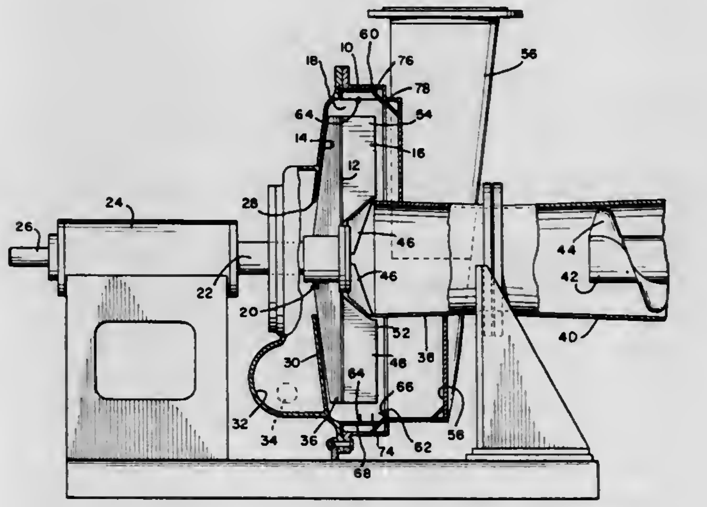
3,897,014
MATERIAL DISINTEGRATING-AND-BLOWING APPARATUS

Oscar Luthi, Nashua, N.H., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed May 13, 1974, Ser. No. 469,448

Int. Cl.² B02C *13/10, 13/288*

U.S. Cl. 241—56 **21 Claims**



1. Material disintegrating-and-blowing apparatus comprising housing means, dividing means dividing said housing means into a material chamber on one side of said dividing means and a gas chamber on the other side thereof, rotatably driven vane means in said material chamber having inner end means and outer end means, said housing means having material inlet means for supplying material to said material chamber between said inner end means of said vane means whereby, during driven rotation of said vane means, such material passes outwardly between said vane means and is discharged from between said outer end means of said vane means, means in said housing means intermediate said inner end means and said material inlet means for breaking-up compacted material supplied through said material inlet means prior to the supply of such material to said inner end means, said housing means having blowing gas inlet means for supplying blowing gas into said gas chamber separately from the material supplied to said material chamber, material disintegrating means in said material chamber spaced outwardly from said outer end means of said vane means and in the path of material discharged from between said outer end means, said vane means being rotatable relative to said material disintegrating means, said housing having material outlet means communicating with said material chamber for discharging material from the space between said outer end means and said material disintegrating means, means including passage means peripherally of said dividing means for causing blowing gas supplied by said blowing gas inlet means to flow from said gas chamber through the space between said outer end means and said material disintegrating means for blowing the disintegrated material through said material outlet means, and ramp means intermediate said material disintegrating means and said material outlet means for restraining heavier material from passing to said material outlet means.

3,897,015
CRUSHER PLATE

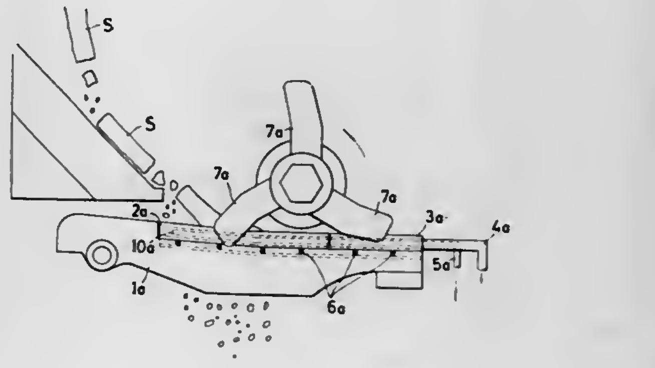
Masao Suzuki, and Masayuki Oguni, both of Tokai, Japan, assignors to Nippon Steel Corporation, Japan

Continuation of Ser. No. 238,852, March 28, 1972, abandoned. This application Mar. 7, 1974, Ser. No. 448,950

Claims priority, application Japan, Apr. 1, 1971, 46-23153; Aug. 9, 1971, 46-71091

Int. Cl. B02c *11/08, 13/02*

U.S. Cl. 241—66 **5 Claims**



1. In a crushing apparatus for crushing hot sintered materials, said apparatus including a crusher plate formed with a plurality of spaced elongated crushing members and a rotary member having projecting blades rotating in intermeshing relationship with said crusher plate to effect therebetween crushing of said sintered materials, said blades extending to between said crushing members, the improvement comprising, in combination, means defining a jacket chamber interiorly of said crushing members said jacket chamber being formed by structuring said crushing members in a hollow box-like configuration, means for supplying a fluid cooling medium to said jacket chamber, means for exhausting said cooling medium from said jacket chamber, and liner means integrally bonded with said crushing members and covering said crushing members at least along portions thereof at which said sintered material is brought into contact with said crusher plate.

3,897,016
GRANULATOR WITH NOISE ABATEMENT AND SAFETY MEANS

Sunil Chunilal Shah, Cranston, R.I., assignor to Cumberland Engineering Company, Inc., South Attleboro, Mass.

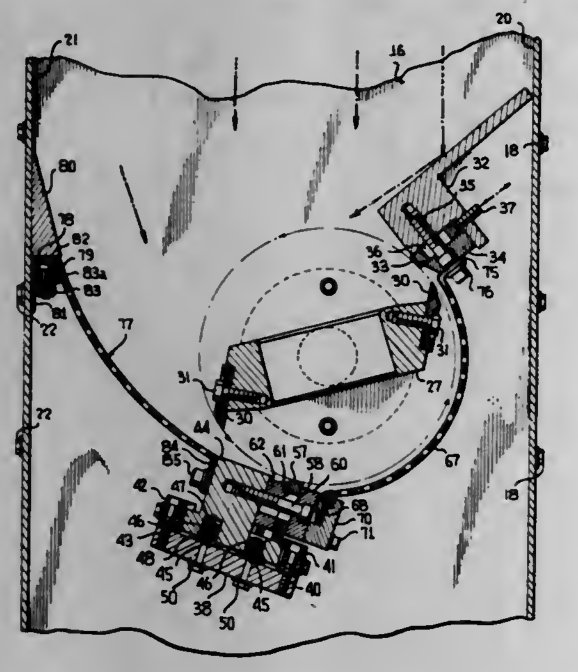
Filed Mar. 27, 1974, Ser. No. 455,125

Int. Cl.² B02C *18/06, 18/44*

U.S. Cl. 241—73 **7 Claims**

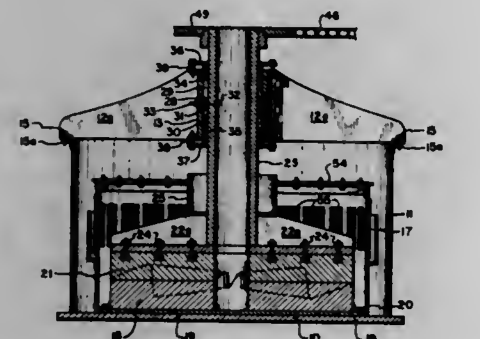
1. Apparatus for comminuting plastics and like materials wherein said mechanism includes a rotating cutter element and a cooperating fixed cutter element, the combination comprising, mounting means for mounting said fixed cutter element, fixed support means for holding said mounting means, said mounting means being movable in said support means in a first direction corresponding generally to the direction of rotation of said cutter element and in a second direction generally perpendicular to said first direction, and resilient means interposed between said support means and said

mounting means and operable to insulate said mounting means from said support means while affording limited movement of said mounting means in said first and second directions.



3,897,017
GRINDING MILL

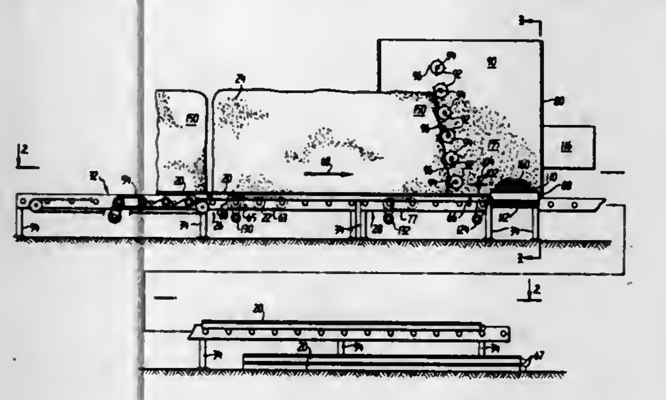
Leo R. Rogers, 1182 Browning Ave., Salt Lake City, Utah 84105, and Leo A. Rogers, 217 Oleander Way, El Paso, Tex. 79922
Continuation of Ser. No. 271,289, July 13, 1972, abandoned. This application Mar. 29, 1974, Ser. No. 456,038
Int. Cl. B02c *1/00*
U.S. Cl. 241—205 **10 Claims**



3. A grinding mill having
a fixed lower grinding shoe with a plurality of asymmetrical camming surfaces on an upper face thereof;
a movable upper grinding shoe positioned above the fixed lower grinding shoe and having a plurality of asymmetrical camming surfaces on a lower face thereof, in mating relationship to the camming surfaces on the lower grinding shoe and a hole centrally through said upper shoe;
a bearing housing;
a cylindrical drive shaft fixed to and extending above the upper grinding shoe on the face opposite to the camming surfaces thereof and surrounding the hole therethrough, said shaft extending upwardly through the bearing housing;
drive means for rotating said drive shaft and the upper grinding shoe affixed thereto about a vertical longitudinal axis through the drive shaft, said drive means being fixed to the drive shaft above the bearing housing; and
flexible means extending at least partially around the means for rotating said drive shaft to rotate said shaft while allowing for reciprocation thereof.

3,897,018
METHOD AND APPARATUS FOR THE CONTINUOUS FEEDING OF PALLETIZED FIBER MATERIALS

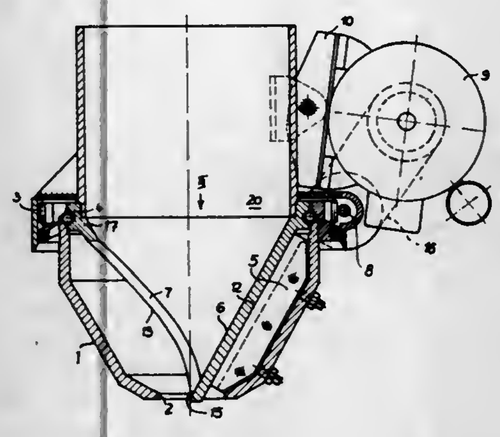
Lambert H. Wilkes; Gary L. Underbrink, both of College Station, Tex., and Joseph K. Jones, Raleigh, N.C., assignors to Cotton, Incorporated, New York, N.Y.
Filed Feb. 6, 1974, Ser. No. 439,846
Int. Cl. B65b *69/00*
U.S. Cl. 241—223 **11 Claims**



1. Apparatus for removing fibers stacked on a pallet comprising:
a generally horizontal bed means having a supporting surface for at least one pallet, having a loading zone at one end thereof and having a discharge zone;
breaker means for breaking loose fibers stacked on a pallet, said breaker means disposed above said bed means to allow pallets on said supporting surface to pass under said breaker means;
means supported by said bed means for supporting and translating a pallet from said loading zone to a position on the opposite side of said breaker means, whereby fibers stacked on the pallet are engaged by said breaker means and broken away from the rest of the fibers carried on the pallet as the pallet passes under and beyond said breaker means; and
discharge means above said bed means, said discharge means for conveying fibers removed from a pallet by said breaker means to subsequent fiber handling apparatus.

3,897,019
MACHINE FOR CRUSHING AND CUTTING LARGE OBJECTS

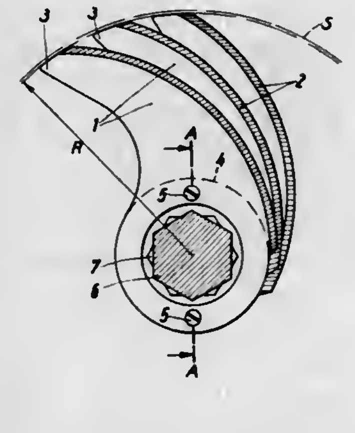
Georg Klein, Morfelder Str. 40, Walldorf; Kurt Rössler, Ringstr. 28, Belm; Karl Brockschmidt, Brockhagerstr. 70, Gutersloh, and Horst Rettweiler, Zum Mussenbach 3, Everswinkel, all of Germany
Filed May 23, 1973, Ser. No. 362,965
Int. Cl. B02c *7/08*
U.S. Cl. 241—257 R **14 Claims**



1. A machine for crushing large objects comprising:
a housing having a downwardly convergent, conical interior wall surface, said interior wall surface comprising an inwardly protruding helical rib and defining upper and lower openings in said housing;
a conical funnel segment mounted within said housing between said upper and lower openings, said conical funnel segment having a downwardly convergent, conical exterior wall surface, said exterior wall surface comprising an outwardly protruding helical rib of opposite hand relative to said inwardly protruding helical rib; and
means for causing relative rotation between said housing and said conical funnel segment, whereby objects placed in said conical funnel segment through said upper opening are caught between said conical funnel segment and said housing, crushed by said helical ribs and forced toward said lower opening.

3,897,020
CUTTER KNIFE FOR THE PREPARATION OF MEAT

Fritz Knecht, Heissen, Germany, assignor to Firma Techmed AG, St. Margrethen, Switzerland
Filed Aug. 31, 1973, Ser. No. 393,483
Claims priority, application Germany, Aug. 31, 1972, 2242778; July 27, 1973, 2338145
Int. Cl. B02c *18/18*
U.S. Cl. 241—292.1 **5 Claims**

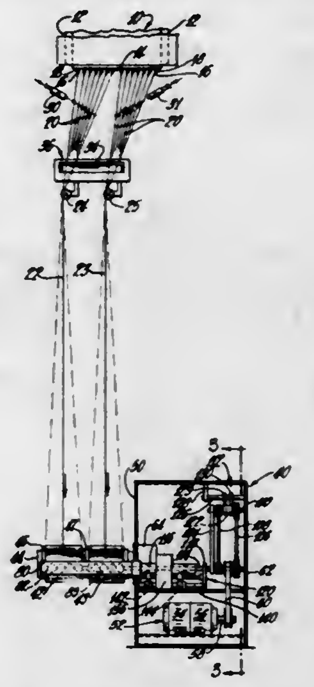


1. A cutter for the comminution of meat, comprising:
a knife shaft having a polygonal configuration;
a plurality of holding discs mounted on said shaft, each of said holding discs having a polygonal hole in form-fitting engagement with the polygonal shaft; and
a plurality of knife blades each carried by a respective one of said discs and having a convex cutting edge, a concave trailing edge, and an outer edge defining with said trailing edge a tip, said cutting edge terminating ahead of said tip whereby resharpening of the cutting edge is limited to the face of the blade and the radial distance between said tip and the axis of said shaft remains unchanged upon resharpening; each of said discs being provided with four bores spaced apart along a common circle centered on the axis of said shaft and oriented diametrically in two pairs with the lines connecting the centers of each pair of bores including angles of 75° and 105° with each other, said knife shaft being of hexagonal configuration and said holes of said discs being of decahedral configuration.

3,897,021
METHOD OF AND APPARATUS FOR SIMULTANEOUSLY PACKAGING GLASS STRANDS INTO INDIVIDUAL PACKAGES

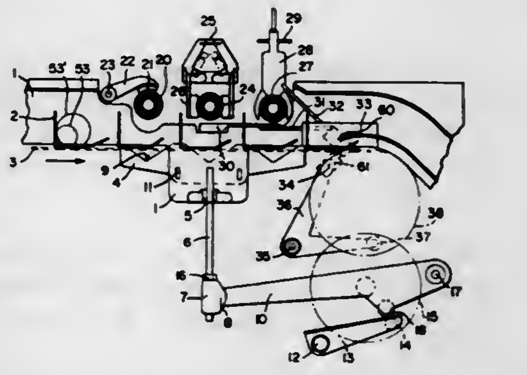
Norman R. Shape, Pataskala, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio
Filed June 21, 1974, Ser. No. 481,607
Int. Cl. B65h *54/30, 59/38*
U.S. Cl. 242—18 G **14 Claims**

1. The method of simultaneously winding linear elements into more than one package comprising:
supplying at least two linear elements;
forming the advancing linear elements into more than one wound package each rotated at the same angular speed;
intermittently supplying an indication of the size of the largest among all of the packages during their formation; and
modifying the angular speed of all of the packages together during their formation in response to the intermittently supplied indication of the size of the largest package.



3,897,022
ELIMINATE TAIL-ENDS OF YARN AND TO PICK UP THE END OF THE END OF THE WOUND YARN

Luciano Savio, Pordenone, Italy, assignor to Officine Savio, S.p.A., Udine, Italy
Continuation of Ser. No. 143,480, May 14, 1971, abandoned. This application Sept. 17, 1973, Ser. No. 397,868
Claims priority, application Italy, May 18, 1970, 83331/70; Apr. 8, 1971, 83329/70
Int. Cl. B65h *67/08*
U.S. Cl. 242—35.6 E **18 Claims**



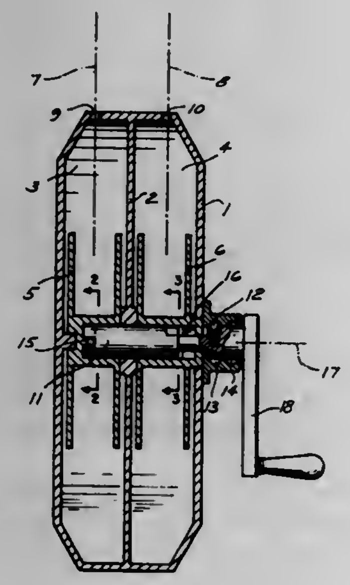
1. An apparatus for eliminating the tail-end winding at the base of a bobbin to thereby release the starting end of yarn in spinning cops, comprising:
a. a first operative station having means for supporting and rotating a bobbin and means adapted to cooperate with the rotating bobbin for loosening the tail-end winding at the base of the bobbin;
b. a second operative station having means for supporting and rotating a bobbin and means adapted to cooperate with the rotating bobbin for separating the tail-end from the cop;
c. a third operative station having means for supporting and rotating a bobbin and means adapted to cooperate with

the rotating bobbin for forcefully removing the tail-end from the cop;
- d. means for picking up the thread end from either of the second and third operative stations and means for cutting from either of the second and third operative stations the tail-end removed; and
- e. conveyor means in operative relationship to the operative stations, and driven in steps for positioning a bobbin in sequence in the first, second and third station.

3,897,023
CHALK LINE HOLDER

Cecil Couch, and Wayne Hix, both of Macon, Ga., assignors to The Raymond Lee Organization, Inc., New York, N.Y.; a part Interest

Filed Oct. 4, 1973, Ser. No. 403,553
Int. Cl. B65h *75/34*
U.S. Cl. 242—100.1 **1 Claim**

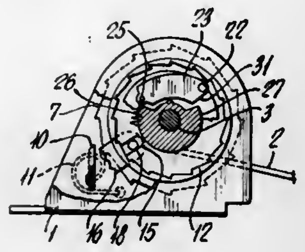


1. A chalk line holder, comprising
- a housing having a partition dividing the housing into two compartments, the housing having an aperture formed therethrough in each compartment for passage of a corresponding chalk line;
- a shaft;
- a pair of susbstantially coaxially mounted spools each rotatably mounted on said shaft in a corresponding one of the compartments, said shaft being axially slidable relative to said spools;
- chalk line of a first desired color wound on one of the spools;
- chalk line of a second desired color wound on the other of the spools;
- coupling means for selectively coupling the shaft to a desired one of the spools for separate rotation by said shaft, the coupling means comprising a spline connection for each of said spools, said spline connection being coaxially positioned with the shaft and angularly displaced from each other in planes perpendicular to the axis of the shaft whereby axial displacement of the shaft in a predetermined direction engages a corresponding one of the spline connections with a corresponding one of the spools for rotation of such spool; and
- handle means outside the housing coupled to the shaft for manually rotating the spools.

3,897,024
AUTOMATIC LOCKING ACCELERATION ACTUATED VEHICLE SAFETY BELT RETRACTOR

Takezo Takada, deceased, late of Tokyo, Japan, and by Juichiro Takada, legalized authorized heir, Tokyo, Japan, assignors to Takata Kojyo Co., Ltd., Tokyo, Japan

Filed Feb. 11, 1974, Ser. No. 441,534
Claims priority, application Japan, Feb. 12, 1973, 48-16530
Int. Cl. B65h *75/48*
U.S. Cl. 242—107.4 **8 Claims**



1. An automatic locking safety belt retractor comprising a shaft, a take-up reel mounted on and rotatable with said shaft and spring biased to in a belt rewind direction, a safety belt connected to and retractable by and withdrawable from said reel, a first ratchet wheel rotatable with said reel, a first pawl mounted for movement between positions engaging and disengaging said first ratchet wheel, a second ratchet wheel mounted on and rotatable relative to said shaft, a fly wheel rotatably mounted on said shaft, a second pawl mounted on said fly wheel and movable therewith and movable relative to said fly wheel between positions engaging and disengaging said second ratchet wheel, a cam member mounted on and rotatable with said shaft and engagable with said second pawl whereby rotation of said cam member a predetermined angle in advance of said fly wheel by the rotation of said shaft in response to a predetermined pull on said belt effects the actuation of said second pawl by said cam member into engagement with said second ratchet wheel to forwardly rock said second ratchet wheel, and actuating means drive coupling said second ratchet wheel and said first pawl whereby forward rocking of said second ratchet wheel advances said first pawl into engagement with said first ratchet wheel to lock said reel against belt withdrawal rotation, said first and second ratchet wheels having equal numbers of ratchet teeth.

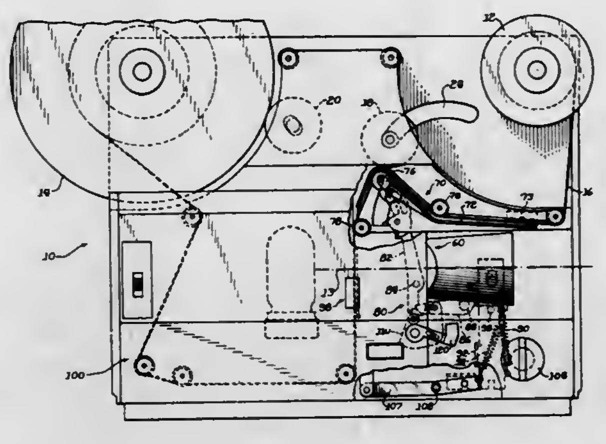
3,897,025
AUTOMATIC REWIND MECHANISM FOR A MOTION PICTURE PROJECTOR

Nicholas Mischenko, Mount Prospect, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed May 31, 1974, Ser. No. 474,995
Int. Cl.² B65H *59/38, 63/02;* **G03B** *1/04;* **G11B** *15/32*
U.S. Cl. 242—189 **6 Claims**

1. In combination with a motion picture projector having a supply reel with one end of a film attached thereto, a take-up reel, a forward projection mode, a rewind mode, a projection axis, a shuttle for moving said film across said projection axis; a mechanism for automatically rewinding said film across said projection axis comprising:
- a motor driving means;
- a first roller supported for movement from an ineffective position to an effective position for engaging the flanges of the supply reel, said first roller in said effective position being rotatable by said motor drive means for winding film on the supply reel;
- a second roller supported for movement from an ineffective position to an effective position for engaging the flanges of the take-up reel, said second roller in said effective position being rotatable by said motor drive means for winding film on the take-up reel;

- sensing means for sensing an increase in film tension incident to an end of run condition upon completion of forward projection of said film; and

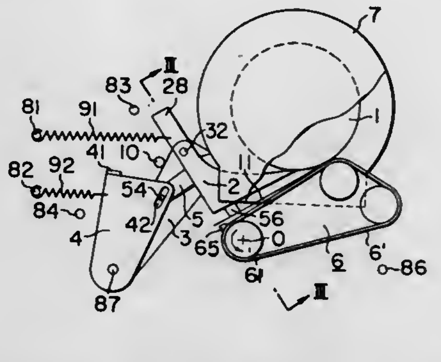


- control means responsive to said sensing means for automatically moving said second roller into said ineffective position and for moving said first roller into said effective position thereby rewinding said film from said take-up reel across said projection axis to said supply reel.

3,897,026
CINE PROJECTOR HAVING APPARATUS FOR REMOVING FILM FROM A CARTRIDGE

Kuniyoshi Suzaki; Yoshihiro Shigeta, both of Tokyo, and Torakiyo Yamanaka, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 3, 1969, Ser. No. 863,650
Claims priority, application Japan, Oct. 4, 1968, 43-87021[U]; Oct. 4, 1968, 43-87022[U]; Nov. 27, 1968, 43-103509[U]; Feb. 8, 1969, 44-10961[U]
Int. Cl. G03b *1/56, 23/02*
U.S. Cl. 242—192 **7 Claims**

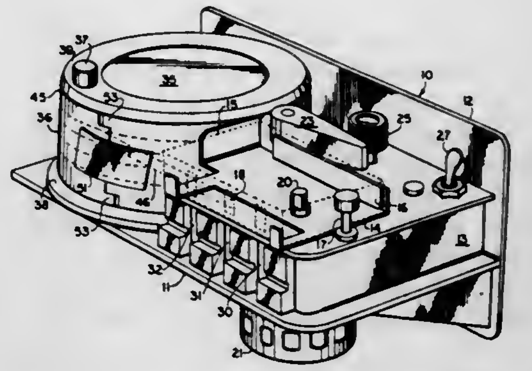


1. An apparatus for removing film from a cartridge in combination with a cine projector comprising:
- a film means pivotally mounted to said cine projector;
- an initiating lever means pivotally mounted to said cine projector and having an elongated slot formed therein;
- an intermediate lever pivotally mounted to said cine projector;
- a switch lever having a pin protruding therefrom, said switch lever being pivotally mounted to said intermediate lever and said pin being slidably engaged in said elongated slot;
- a stripper means pivotally mounted to said intermediate lever whereby rotation of said initiating lever in a first direction initiates rotation of said intermediate lever and said switch lever in said first direction to cause rotation of said stripper means in a second direction to engage thereby said film in said cartridge and to cause said switch lever to engage said film drive means to move said film drive means into engagement with the film in said cartridge.

3,897,027
TAPE WINDING APPARATUS

Fred C. Bolick, Jr., Atlanta, Ga., assignor to Lanier Electronic Laboratory, Inc., Atlanta, Ga.

Division of Ser. No. 193,860, Oct. 29, 1971, Pat. No. 3,860,190. This application Aug. 27, 1973, Ser. No. 391,825
Int. Cl. G03b *1/04*
U.S. Cl. 242—195 **7 Claims**

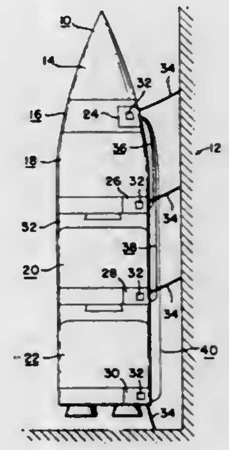


1. Apparatus for selectively dispensing and winding a length of a flexible information recording tape wound on a tape winding member disposed within a tape package, comprising: support means;
- receptacle means disposed on said support means to releasably receive a tape package;
- tape receiving means rotatably mounted on said support means in close proximity to said receptacle means; and
- said tape receiving means having a peripheral tape receiving surface of width substantially greater than the width of such tape wound on the tape winding member within such tape package.

3,897,028
OPTICALLY LINKED MISSILE

O. Leonard Doellner, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sept. 10, 1973, Ser. No. 396,039
Int. Cl. F42b *15/00*
U.S. Cl. 244—3.1 **2 Claims**



1. In a missile composite structure comprising a re-entry system/payload, a missile guidance subsystem, and at least one power stage assembly all enclosed in a missile skin, apparatus for transmitting control signals and data between the missile guidance subsystem and the power stage assembly comprising:
- a. first transformation means operably connected for responding to said control signals and data as first electrical signals and for transforming said first electrical signals into corresponding light signals;
- b. fiber optic means operably disposed with one end adjacent to said first transformation means for receiving and transmitting said light signals between the missile guidance subsystem and the power stage assembly;

c. first shielding means for passing said fiber optic means through the skin of the missile adjacent to said first transformation means, said first shielding means containing a first hole for the passage of said fiber optic means;

d. a fiber optic raceway disposed adjacent to said first shielding means so as to receive said fiber optic means from said first shielding means, said fiber optic raceway being a conduit containing and protecting said fiber optic means, said fiber optic raceway being so shaped as to hold said fiber optic means adjacent to the external surface of the skin of the missile, said fiber optic raceway containing said fiber optic means being contained within an ablative coating covering the skin of the missile;

e. second shielding means for passing said fiber optic means through the skin of the missile adjacent to second transformation means, said second shielding means being disposed to receive said fiber optic means emerging from the end of said fiber optic raceway opposite the end of said fiber optic raceway adjacent to said first shielding means, said second shielding means containing a second hole for the passage of said fiber optic means; and,

f. second transformation means operably connected for responding to said light signals and for transforming said light signals into control signals and data as second electrical signals.

3,897,029

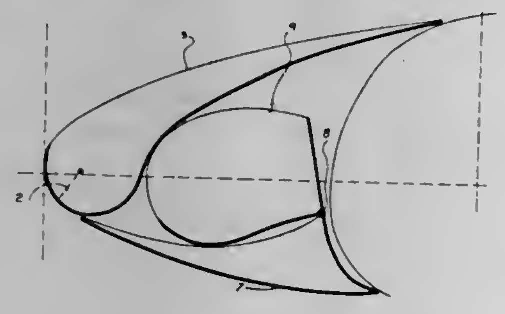
VARIABLE CAMBER MULTI-SLOTTED FLAPS

Alberto Alvarez Calderon, Avenida Salaverry 3465, Orrantio del Mar, Lima, Peru

Filed July 9, 1973, Ser. No. 377,621

Int. Cl. B64c *3/44*

U.S. Cl. 244—42 CA **8 Claims**



1. A variable geometry leading edge flap for a wing capable of modulated airflows to establish two slow speed aerodynamic regimes having different drag and lift characteristics and different angles of attack for maximum lift attained by varying the number of slots and the efficiency of the flap's chord comprising

a. an upper flap member which in a cruise disposition defines a leading edge and a forward upper surface portion of the wing's contour,

b. a lower flap member at least a portion of which in a cruise disposition contributes to define a forward lower surface portion of the wing's contour,

c. said leading edge flap having a landing disposition in which two slots are operative with aerodynamic flows being modulated with said lower flap member inverted from said cruise disposition downwardly and forwardly to a position increasing the camber and chord of said wing ahead of said wing and ahead of said upper member, with the trailing edge of said lower member being spaced from the leading edge of said upper member to define converging walls of a first upstream slot therebetween; and with the trailing edge of said upper member being spaced in said landing disposition from said wing's upper surface to define the walls of a second slot downstream of said first slot, and with said lower flap member inclined at a steep angle and modulating the flow on top of said upper member with the aid of flow through said first upstream slot, and modulating the flow on top of said wing by the combined beneficial effects of both said first upstream slot and said second slot,

d. with said leading edge flap being further characterized in that at least one of said upper flap member and said lower flap member is hinged so as to close one of said slots, defining a slow speed climb disposition of lower drag than said landing disposition with only one slot operative, in which the gap of one of said first and second slots extending over a portion of said wing is adapted to be reduced substantially towards a closed position with the other remaining slot constituting the aerodynamically effective slot.

3,897,030

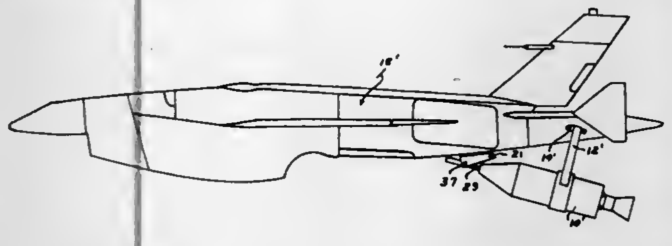
SYSTEM FOR CONTROLLING THE PITCH ATTITUDE OF A ROCKET MOTOR BOOSTED AIRCRAFT

John T. Cors, 1008 Beatrice Dr., Dayton, Ohio 45404, and Virgil B. Battenberg, 600 Grants Trl., Dayton, Ohio 45459

Filed Mar. 28, 1974, Ser. No. 455,816

Int. Cl. B64c *15/14;* **B64d** *41/00*

U.S. Cl. 244—63 **4 Claims**



1. In combination with a zero-length launch aircraft including a rocket motor; means for releasably supporting the rocket motor on said aircraft and means, connected between the rocket motor and the aircraft, for applying the thrust of the rocket motor to the aircraft; a rocket motor thrust vector pitch attitude control system, comprising: means, forming part of said supporting means for the rocket motor, for pivotably supporting the rocket motor, in pitch, on the aircraft; said means for applying the thrust of the rocket motor to the aircraft including a thrust frame secured to the aircraft; means, on said aircraft, for providing a pitch control signal; a linear actuator, responsive to said pitch control signal; means supported on said thrust frame and connected to said linear actuator for moving the rocket motor in pitch in response to movements of said linear actuator.

3,897,031

APPARATUS FOR PROVIDING SELECTED NAVIGATIONAL SYSTEM ENGAGE LOGIC

Willy B. Moses, Teaneck, and Nathaniel N. Moore, Bergenfield, both of N.J., assignors to The Bendix Corporation, Teterboro, N.J.

Filed Mar. 15, 1974, Ser. No. 451,409

Int. Cl. B64c *13/20*

U.S. Cl. 244—77 B **9 Claims**

1. Apparatus for providing a signal which engages an aircraft navigational system selected by the pilot of the craft from systems of the type which transmit and receive navigational beams, comprising:

receiver means for providing a signal corresponding to the displacement of the aircraft from the centerline of the beam transmitted by the selected system;

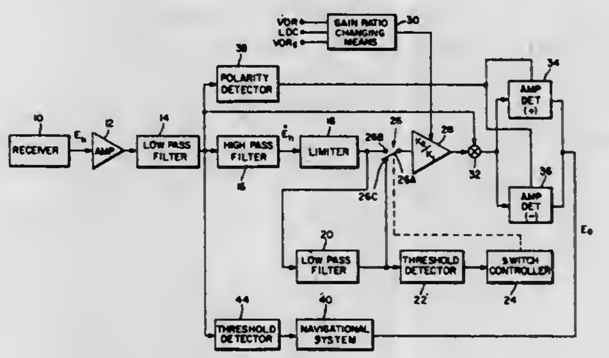
means for providing a signal corresponding to the rate of change of the displacement;

means for limiting the displacement rate signal;

means connected to the limiter for adjusting the gain of the limited displacement rate signal in accordance with a predetermined ratio of displacement rate signal gain to selective navigation system displacement signal gain;

means for changing the gain adjustment in accordance with the selected navigational system;

means for combining the limited, gain adjusted displacement rate signal and the displacement signal; and



means connected to the combining means and responsive to the combined signal for providing a signal for engaging the selected navigational system.

3,897,032

METHOD FOR OPERATING AIRSHIPS, PARTICULARLY BY MEANS OF HYDROCARBON GAS OR HYDROGEN

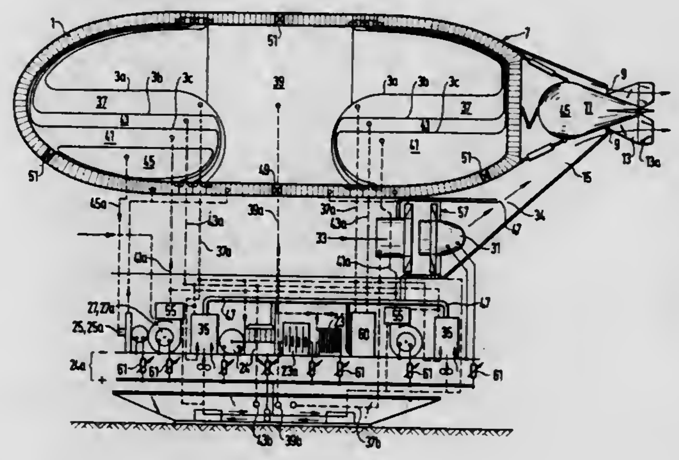
Hermann Ernst Robert Papst, Karl-Maier-Strasse 1, D7742 St. Georgen, Germany

Continuation of Ser. No. 227,887, Feb. 22, 1972, abandoned, which is a continuation-in-part of Ser. No. 119,335, Feb. 26, 1971, abandoned. This application Nov. 13, 1973, Ser. No. 415,321

Claims priority, application Germany, Feb. 26, 1970, 2009088

Int. Cl.^{2} B64B *1/58*

U.S. Cl. 244—96 **11 Claims**



1. A method of operating an airship which is maintained buoyant in air by an original lifting gas which is inflammable and which is lighter than air, said method comprising carrying said original lifting gas in said airship as the sole fuel for generating driving power for the airship, consuming at least a part of the original lifting gas as fuel for supplying driving power for use by the airship thereby effecting a reduced buoyancy of the airship and restoring the reduced buoyancy by chemically converting a portion of the original lifting gas to a different gas species which has at least the same buoyancy effect as the gas which was consumed for supplying power and storing said gas species whereby all said lifting gas may be used for power production while maintaining buoyancy.

3,897,033

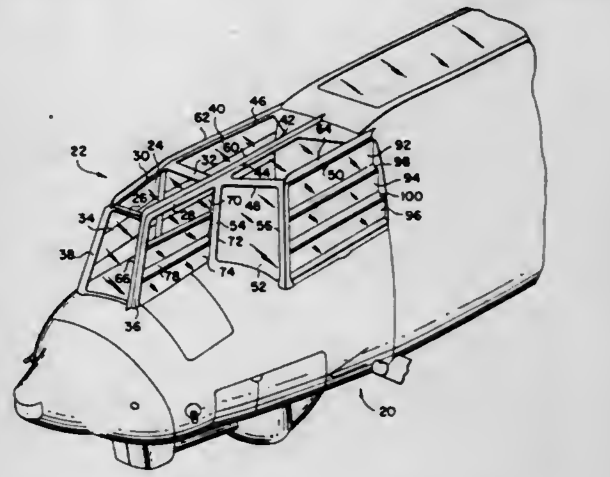
LOW GLINT HELICOPTER CANOPY STRUCTURE

David G. Harding, Brookhaven; John J. Schneider, Media, both of Pa., and Lawrence M. Mead, Jr., Huntington, N.Y., assignors to The Boeing Company, Seattle, Wash.

Filed Jan. 30, 1974, Ser. No. 438,092

Int. Cl. B64c *1/00*

U.S. Cl. 244—121 **15 Claims**



1. A low glint canopy structure for a helicopter, comprising:
a substantially flat top window;
a plurality of spaced, elongated fences extending longitudinally along said top window to screen said top window from low angle sunlight and block reflection of the sunlight from said top window;
a substantially flat windshield inclined downwardly and forwardly from said top window;
a fence located adjacent to said windshield to screen said windshield from low angle sunlight and block reflection of the sunlight from said windshield; and
a pair of side windows extending downwardly from said top window and rearwardly from said windshield.

3,897,034

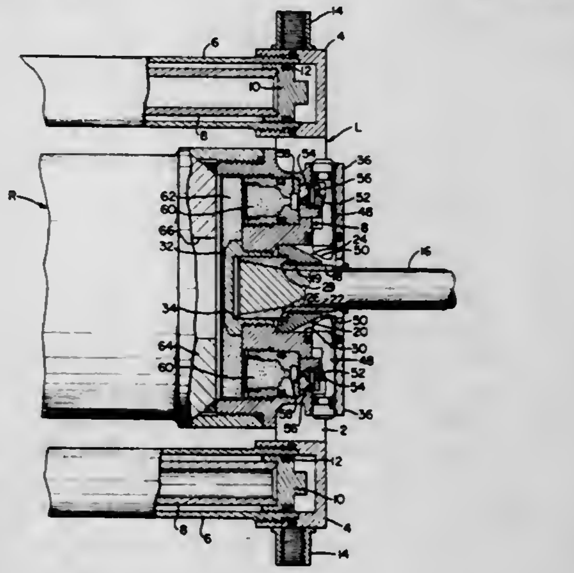
ROCKET ACTUATION DEVICE

Robert M. Stanley, Denver, Colo., assignor to Stanley Aviation Corporation, Denver, Colo.

Filed Oct. 15, 1973, Ser. No. 406,197

Int. Cl. B64d *25/10*

U.S. Cl. 244—122 AD **11 Claims**



1. Apparatus including ignition means for igniting a rocket of the tractor type wherein the rocket, having an elastic pendant having one end attached to the base of the rocket and the other end attached to the towed object, is catapulted so that the force exerted by the pendant after being pulled taut between the rocket and the towed object activates the rocket to pull the tow line, said apparatus comprising:

camming means surrounding the one end of the pendant and movable thereby longitudinally of the rocket from a first position to a second position;

force releasable securing means connecting the base of the rocket and said camming means to hold said camming means in its first position until a force is exerted upon said pendant of sufficient magnitude to release said securing means and permit said camming means to move from its first position to its second position;

at least one ignition actuation means mounted for lateral movement between a first position and a second position along an axis extending perpendicular to the longitudinal axis of said rocket and in the base thereof, said ignition actuating means being engagable by said camming means for movement of said ignition actuating means by camming action from its first position in a direction away from said camming means toward the ignition means for said rocket to its second position upon movement of said camming means from its first position to its second position; and

ignition means for said rocket located laterally outward from said camming means moved by movement of said ignition actuating means from its first position to its second position to ignite said rocket.

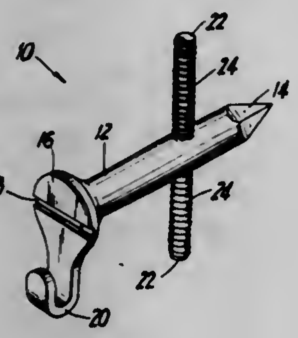
3,897,035
WALL FASTENER

Alan J. Solo, Brooklyn, N.Y., assignors to Knock-N-Lok International, Inc., Brooklyn, N.Y.

Continuation-in-part of Ser. No. 469,666, May 14, 1974, which is a continuation-in-part of Ser. No. 463,820, Apr. 24, 1974, which is a continuation-in-part of Ser. No. 454,393, March 25, 1974. This application May 31, 1974, Ser. No. 474,872

Int. Cl. F16b *15/04*

U.S. Cl. 248—217 **11 Claims**



1. A wall fastener for use in relatively brittle penetrable walls comprising an elongate shank, said shank having one end thereof pointed and suitable for being driven into a penetrable wall; an engageable head at the other end of said shank suitable for being hammered to advance the pointed end of said shank through the penetrable wall and for being engaged to permit turning of said shank about the axis thereof; at least one transverse projection extending from said shank proximate to the pointed end, said projection being integrally formed with said shank and being flexible and resilient to permit the same to be deformed and at least partially wrapped about the axial length of said shank, whereby hammering the fastener into a penetrable wall causes the wall material to flex said projection to a position substantially coextensive with said shank, and engagement of said head and turning of the latter, to thereby cause simultaneous rotation of said shank about the axis thereof, causes said projection to flex and become twisted about said shank, the resiliency of said projections causing the same to tend to flare radially outwardly from the axis of said shank to become wedged between the latter and the wall material to thereby secure the fastener in place and resist the same from becoming removed from the wall.

3,897,036
VEHICLE CHAIR HAVING A RESILIENTLY SUPPORTED SEAT

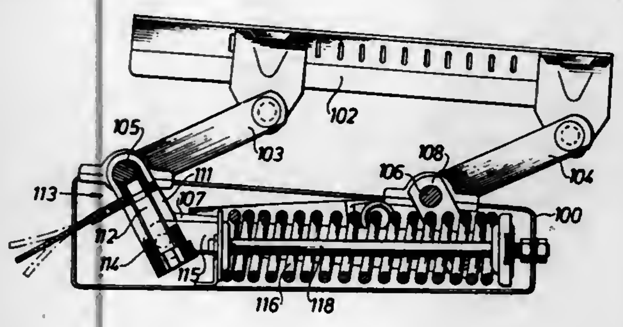
Karl Gösta Nystrom, Skeppargatan 13, Umea 902 52, Sweden

Continuation of Ser. No. 86,256, Nov. 2, 1970, abandoned. This application Feb. 5, 1973, Ser. No. 329,951

Claims priority, application Sweden, Oct. 31, 1969, 14971/69; Apr. 20, 1970, 5425/70

Int. Cl. B60n *1/02*

U.S. Cl. 248—399 **3 Claims**



1. A vehicle air comprising in combination:

a. a seat,

b. a support structure for the seat,

c. at least one pair of parallel supporting arms pivotally connected at one end to the seat and at the other end to the support structure, said arms forming opposite parallelogram links,

d. a pivot arm rigidly secured to one of said supporting arms to move in unison therewith,

e. spring means interconnecting said pivot arm and said support structure to counteract downward movement of the seat,

f. means for varying the attack point of said spring means on the pivot arm to permit an adjustment of the effective length of said arm and, hence, an adjustment of the resultant spring forces acting on the seat,

g. said spring means including at least one helical spring having a winding pitch varying along the length thereof so that said spring means will have a progressive spring coefficient,

h. said spring means being connected to said pivot arm by a non-rotatable nut mounted on a threaded bolt extending lengthwise of the pivot arm and arranged upon rotation thereof to cause an axial displacement of the nut.

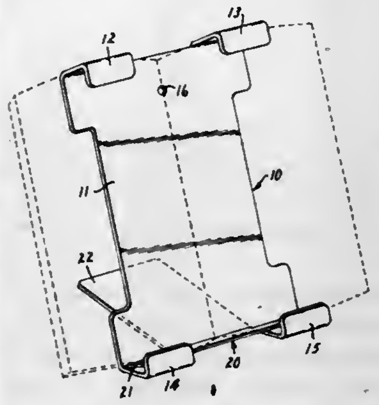
3,897,037
PAPERBACK BOOK HOLDER

Gary L. Johnson, and Michael W. Maki, both of Minneapolis, Minn., assignors to Dimason, Inc., St. Paul, Minn.

Filed Apr. 30, 1973, Ser. No. 355,729

Int. Cl.^{2} A47B *97/04*

U.S. Cl. 248—460 **7 Claims**



1. A holder for maintaining a paperback book in an open position, permitting the pages to be turned without removing the book from the holder, comprising in combination:

a. a generally flat body portion having top and bottom ends and having substantially the same width and height dimensions as said paperback book, formed of rigid sheet material, and

b. integral with said body portion,

i. at the top end thereof, turned outwardly therefrom for a fixed distance and then turned inwardly thereover so as to be parallel thereto, a first pair of laterally spaced claws, and

ii. at the bottom end thereof, turned outwardly therefrom for a fixed distance and then turned inwardly thereover so as to be parallel thereto, and lying parallel to said first pair of claws, a second pair of laterally spaced claws, each of said pairs of claws having inner and outer edges and the distance between the outwardly extending portions of said first and second pairs of claws slightly exceeding the height of said paperback book and the distance between the outer edges of each of said pairs of claws approximating the width of said paperback book, at least one pair of claws, before turning outward, extending slightly beyond the edge of the body portion with which said one pair of claws is integral, said one pair of claws and edge thereby defining a notch, and

c. a generally T-shaped support member having an upright and a cross bar, the cross bar of said T-shaped support member resting within said one pair of claws and the upright of said T-shaped support member extending through the notch so as to rest on a horizontal surface, thereby maintaining said holder at a predetermined angle.

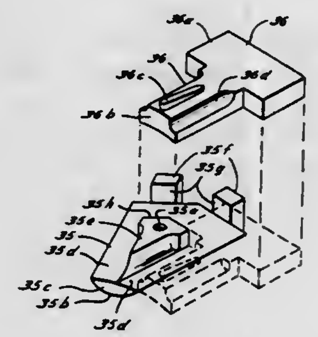
3,897,038
BLOWOUT PREVENTER WITH VARIABLE INSIDE DIAMETER

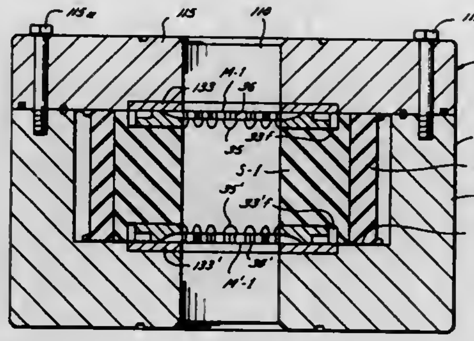
Robert K. Le Rouax, Houston, Tex., assignor to Hydril Company

Continuation-in-part of Ser. No. 325,529, Jan. 22, 1973, abandoned. This application Nov. 5, 1973, Ser. No. 412,538

Int. Cl. E21b *33/06*

U.S. Cl. 251—1 **12 Claims**





1. A blowout preventer adapted to seal with a pipe or other object in a well bore or to close same in the absence of any object in the well bore, comprising:

a resilient sealing member having an inner surface adapted to engage a pipe of the like in a well bore;

a rigid retainer plate mounted with the sealing member and having an inner surface generally conforming with the inner surface of said sealing member;

means for urging said sealing member radially inwardly relative to said inner surface of said plate for effecting a seal with a pipe or the like in a well bore or with itself for closing a well bore; and

first anti-extrusion means mounted with said plate and movable radially relative thereto in response to radial inward movement of said sealing member for preventing extrusion of the sealing member longitudinally in the area radially inwardly of said plate when fluid pressure acts on said sealing member, said anti-extrusion means including: a first set of anti-extrusion members spaced from each other and mounted for radial movement relative to said plate;

a second set of anti-extrusion members, each mounted alternatively with respect to two anti-extrusion members in said first set; and

interlocking means on said adjacent members for locking said adjacent members for radial movement together while premitting circumferential relative movement therebetween.

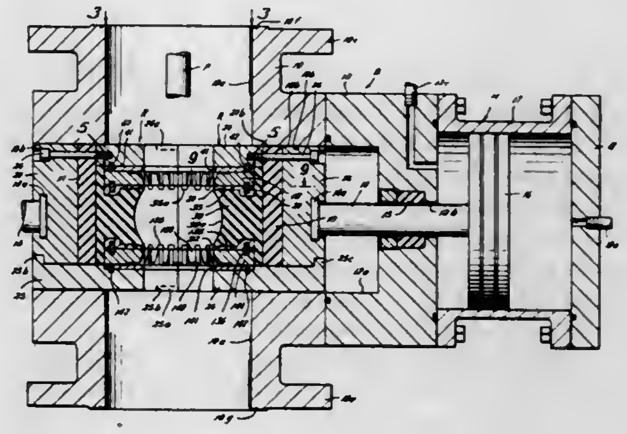
3,897,039
VARIABLE INSIDE DIAMETER BLOWOUT PREVENTER

Robert K. Le Rouax, Houston, Tex., assignor to Hydril Company

Continuation-in-part of Ser. No. 190,972, Oct. 20, 1971, abandoned. This application Nov. 5, 1973, Ser. No. 412,677

Int. Cl. E21b *33/06*

U.S. Cl. 251—1 **20 Claims**



1. A blowout preventer ram, comprising:

a ram carrier having an internal longitudinally extending ram sealing means recess;

yieldable sealing means adapted to fit in said ram sealing means recess and having an inner bore opening with a curved inner surface adapted to engage a well pipe or the like extending longitudinally and disposed inwardly of the sealing means,

a variable inner diameter upper anti-extrusion means disposed at the upper end of said yieldable sealing means; and

said anti-extrusion means including pipe engaging means secured to said sealing means and movable radially with said sealing means for providing a variable inner diameter thereof for engagement with the external surfaces of well pipes of varying diameters to prevent upward extrusion of said sealing means at each of the varying diameters of the pipes.

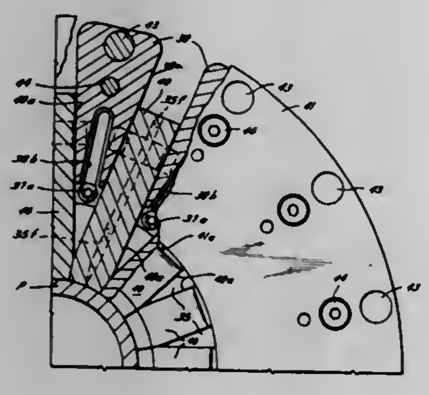
3,897,040
ANNULAR BLOWOUT PREVENTER WITH VARIABLE INSIDE DIAMETER

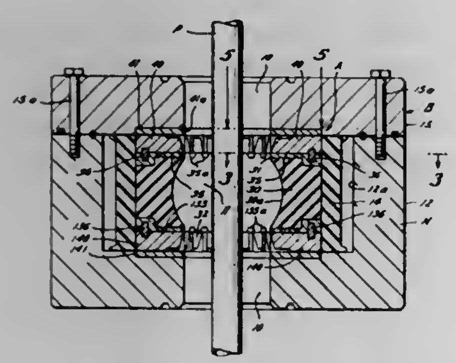
Robert K. Le Rouax, Houston, Tex., assignor to Hydril Company

Continuation-in-part of Ser. No. 359,443, May 11, 1973, abandoned, which is a division of Ser. No. 248,119, April 27, 1972, abandoned. This application Nov. 16, 1973, Ser. No. 416,376

Int. Cl. E21b *33/06*

U.S. Cl. 251—1 **12 Claims**





1. An annular blowout preventer, comprising:

an annular yieldable sealing means having an inner bore therethrough through which a well pipe or the like is adapted to extend;

a variable inner diameter upper anti-extrusion means disposed at the upper end of said yieldable sealing means;

said anti-extrusion means including plural pipe engaging means with said sealing means and overlapping adjacent ones of said pipe engaging means;

said plural pipe engaging means being movable radially with said sealing means for providing a variable inner diameter thereof for engagement with the external surfaces of well pipes of varying diameters to prevent upward extrusion of said sealing means at each of the varying diameters of the pipes; and

means for urging said sealing means and said pipe engaging means therewith radially inwardly to various inner diameters for sealing and engaging the pipe engaging means with the pipe.

3,897,041
FLUID FLOW CONTROL ELEMENTS WITH AREA DIVIDING INSERTS

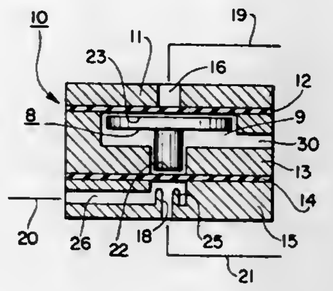
Larry C. Cowan, Saunderstown, R.I., assignor to Leesona Corporation, Warwick, R.I.

Filed Aug. 20, 1973, Ser. No. 390,123

Int. Cl.^{2} F16K *31/365*

U.S. Cl. 251—61.1 **15 Claims**

1. A fluid logic amplifying control device for controlling a fluid flow path in response to a fluid pressure control force, comprising in combination, a movable control member having two opposing ends thereof presenting two surface contact areas, a fluid flow valve structure disposed for control by one of said ends and presenting a nozzle with contact surface structure thereabout smaller in surface contact area than that of one said end, whereby that end will overlap the nozzle contact surface, said nozzle structure including means for retaining between said one end and the valve a flexible diaphragm configuration that prevents fluid from distorting the diaphragm shape to extend into the nozzle under influence of fluid pressure, a pair of impervious flexible diaphragms disposed to contact the opposite said ends of said control member thereby to move it when flexed thereagainst, a first one of said diaphragms and its contact surface thereof with one end of said control member being relatively movable with respect to each other, said first one of said diaphragms being disposed between said control member and said valve structure, a pair of pressure control chambers disposed adjacent each diaphragm to receive fluid flow under pressure for flexing said diaphragms against respective ends of said control member to thereby move it in opposite directions as a sole function of differential fluid pressures in said two control chambers on said diaphragms, a fluid flow path through said valve of an extended larger area permitting greater fluid flow volume in a first said chamber than in the second whereby in response to a smaller flow of fluid said one end of said control member may squeeze said first diaphragm against said nozzle to control a greater flow therethrough in response to differential pressure on said diaphragms in said pressure control chambers to effect amplification, and a housing holding said movable control member between said diaphragms for movement in and out of contact with said nozzle.



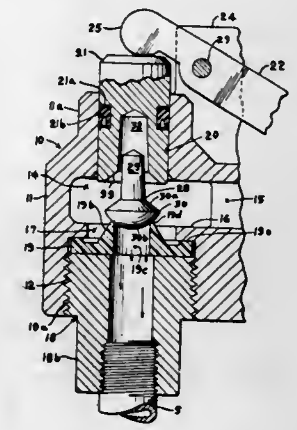
3,897,042
BALL COCK VALVE

Henry J. Kachergis, 335 Washington St., Waterbury, Conn. 06706

Continuation-in-part of Ser. No. 209,595, Dec. 20, 1971, abandoned. This application July 9, 1973, Ser. No. 377,398

Int. Cl.^{2} F16K *33/00*

U.S. Cl. 251—77 **6 Claims**



1. A ball-cock valve comprising in combination a valve casing having a discharge chamber, an inlet port and an outlet port, a valve gasket member secured to said casing and having a portion extending upwardly into the discharge chamber, a boss projecting upwardly from said casing and having a cylindrical bore, a slide plunger slidably fitted in said bore, means for actuating said plunger in said bore, wherein the improvement comprises the structure of the slide plunger having an axial closed-end socket opening through the base of said plunger and presenting an inner conical wall and a lower beveled seat, and a plunger seal member comprising a guide pin of frusto-conical shape and an enlarged head at its lower end, said guide pin being dimensioned to be spaced at all times from the conical wall of said socket whereby said pin will have a relatively loose free fit within said plunger socket, which loose free fit allows said seal member to fall freely and quickly into sealing engagement with said gasket member independently of the position and movement of said plunger, and when the valve is in open position said plunger seal member is held up within said plunger socket with its enlarged head seated against the adjacent face of said plunger by the force of water striking against said head.

5. A ball cock valve comprising in combination a valve casing having a discharge chamber and an outlet port, a threaded opening provided in the base of said casing, a hollow bushing member fitted into said threaded opening and having means for connecting with a supply pipe, said casing having an upward boss provided with a central axial bore, a plunger slidably fitted in said bore, said improvement consisting in providing a partition wall between said threaded opening and said discharge chamber, said wall having an opening forming in fact a downward extension of said discharge chamber, a valve disc gasket held secure within said casing by being clamped between said partition wall and said bushing, said disc gasket having an upward hollow extension projecting into said chamber, said plunger having an axial closed end socket opening through its base end, and a valve stem dimensioned and positioned to provide a relatively loose free fit in said plunger socket, said stem having an enlarged head outwardly of said socket and cooperating with the extension of said valve gasket to effect a leak-proof seal when the valve is in a closed position, the loose free fit of said valve stem allowing said stem to fall freely and quickly independently of the position and movement of said plunger and cause the enlarged head to seat against the gasket upward extension.

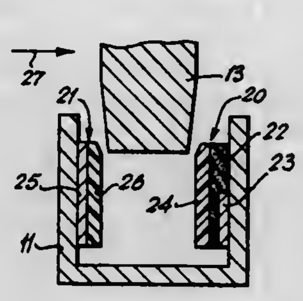
3,897,043
FLUID FLOW CONTROL VALVES

Charles McBain, Stratford-on-Avon, and Francis Richard Need, Smethwick, both of England, assignors to Coplastix Limited, Cheshire, England

Filed Apr. 19, 1974, Ser. No. 462,409

Int. Cl. F16k *3/02*

U.S. Cl. 251—328 **12 Claims**



1. A valve comprising a sliding closure member slidable across an opening defined within a frame to control the flow of liquid through said opening, and a seal arranged between co-operating surface portions of said frame and said closure member respectively, said seal comprising a portion of resilient material bonded to one of said surface portions, and a bearing portion bonded to said resilient portion and adapted to bear on said other surface portion thus to slide thereon as the closure member is moved between its closed and open positions in operation of the valve, characterized in that a rigid insert is disposed between said bearing portion and the surface portion to which said resilient portion is bonded, whose thickness is less than that of said resilient portion, and adapted thus to limit the maximum compression of the resilient portion when the valve is closed, and said bearing portion has a lower co-efficient of friction than said resilient portion, with respect to said other surface portion.

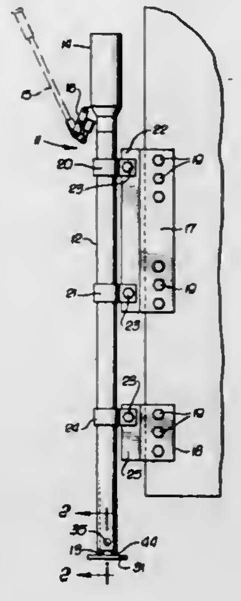
3,897,044
CAMPER JACK

Erven Tallman, 15934 S. Figueroa St., Gardena, Calif. 92643

Filed May 15, 1974, Ser. No. 470,129

Int. Cl. B66f *7/26;* **B60s** *9/02*

U.S. Cl. 254—45 **5 Claims**



1. A jack for attachment to a vehicle and adapted to be carried thereby at a location in readiness for lowering to extended position, said jack comprising an inner hollow tubular rod and an outer hollow tubular rod in telescoping relationship, a free end of the outer of said tubular rods having a cylindrical walled hole in the wall of the tubular rod at a location spaced from and adjacent a free end of said outer tubular rod, the inner of said tubular rods having a cylindrical walled hole at a location spaced from and adjacent a free end thereof of substantially the same size as said first identified cylindrical walled hole, and a button having a diameter providing a free sliding fit of said button in said holes, the button having a length about equal to the aggregate depth of said two holes, and spring means biased in a direction adapted to extend the button into said holes when the holes are in alignment in retracted position of the inner of said tubular rods, and spring means comprising a flat spring member having a convex outer face parallel to the longitudinal axis of said inner tubular rod and having a width greater than the diameter of said button and an arcuate length slightly less than the inside circumference of said inner tubular rod, said button having an inward extension thereon anchored to the flat spring intermediate its ends, portions of said spring member on opposite sides of said button being substantially equal in length and extending for substantially equal distances around the inside wall of said inner tubular rod.

3,897,045
RISER PIPE AND GUIDE LINE TENSIONING APPARATUS

Bryan V. Butler, Ventura, Calif., assignor to Vetco Offshore Industries, Inc., Ventura, Calif.

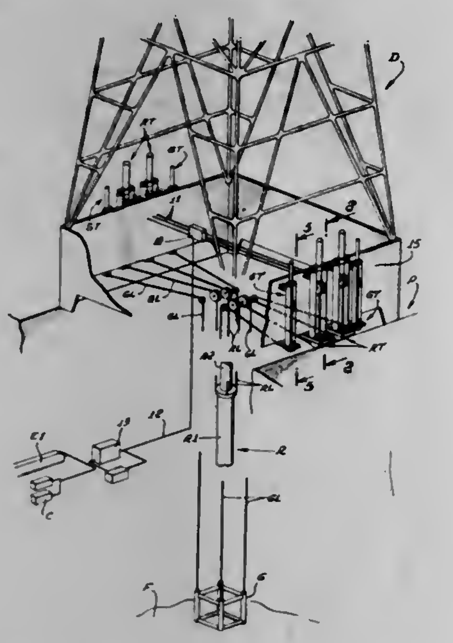
Filed Sept. 12, 1973, Ser. No. 396,493

Int. Cl. B66d *1/50*

U.S. Cl. 254—172 **21 Claims**

1. In tensioning apparatus for maintaining tension on a line: a support adapted to be fixed to a floating platform block means secured to said support, elongate accumulator cylinder means fixed to and carried by said support, traveling block means, both of said block means being adapted to receive a line to be tensioned, elongate tensioning cylinder means including a cylinder and piston, one of said cylinder and piston

being carried by said accumulator cylinder means to be supported thereby, whereby longitudinal load applied to said tensioning cylinder means is transmitted to and places said accumulator cylinder means in longitudinal compression, the other of said cylinder and piston being connected to said



traveling block means for movement therewith, and means forming a passageway between said accumulator cylinder means and said tensioning cylinder means, whereby fluid displaced from said tensioning cylinder means by said piston is transferred to said accumulator cylinder means for biasing said traveling block to tension said line.

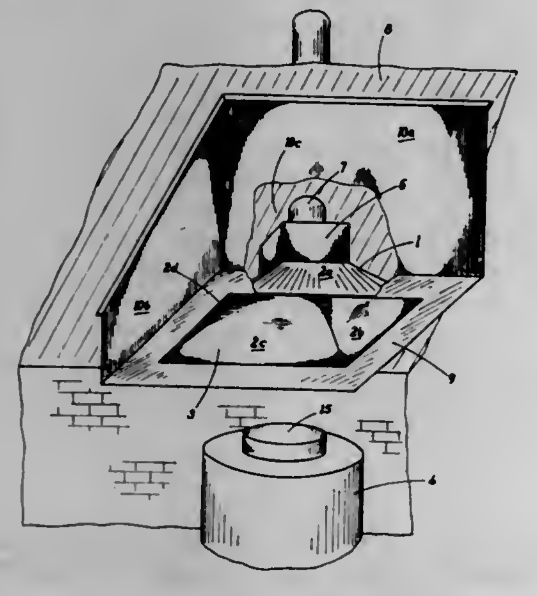
3,897,046
FUME HOOD

Daniel P. De Weese, Prospect, Ky., and Nicholas J. Brozenick, Clarksville, Ind., assignors to American Air Filter Company, Inc., Louisville, Ky.

Filed Apr. 23, 1974, Ser. No. 463,293

Int. Cl.^{2} F27D *17/00*

U.S. Cl. 266—16 5 Claims



1. In combination with a furnace, a fume hood for exhausting gases and fumes escaping from said furnace comprising: a housing having a flow through inlet and a flow through outlet therein; a vertically extending baffle skirt surrounding and in fluid tight communication at its lower extremity with the outer periphery of said flow through inlet and in fluid tight communication at its upper extremity with a roof, said roof having an opening therein in fluid communication with said housing outlet with a fluid tight seal being disposed between said opening and said outlet whereby particulate matter entrained in circulating fumes which is not exhausted through said fume hood is prevented from circulating over and settling on said housing.

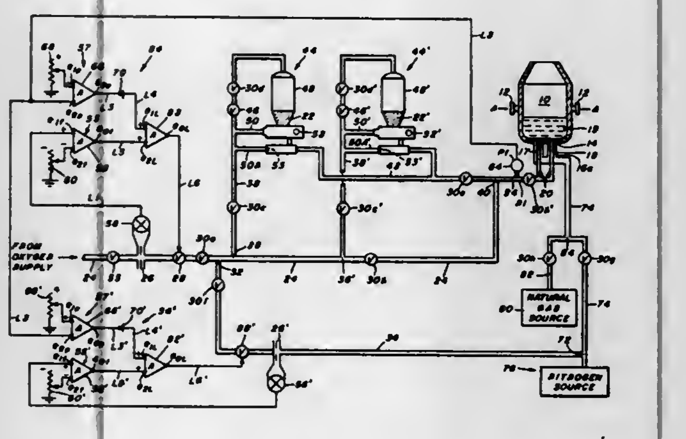
3,897,047
APPARATUS FOR AND METHOD OF REFINING AN IRON BASE MELT

William A. Kolb, Forest Hills Borough, and Jack F. Sigh, Crafton Borough, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 275,848, July 27, 1972, abandoned. This application Nov. 24, 1972, Ser. No. 309,037

Int. Cl. C21c *5/48*

U.S. Cl. 266—35 22 Claims



1. Apparatus for refining an iron base melt by blowing a gas stream at a predetermined flow rate and containing a suspended particulate solid into said iron base melt through a tuyere located in a vessel containing said iron base melt and having a tuyere inlet, said apparatus having:

a. a gas supply source at super atmospheric pressure;
b. a main oxygen supply line connecting said gas supply source to said tuyere inlet for supplying said gas stream to said tuyere inlet at said predetermined flow rate for refining said iron base melt;
c. injection means for suspending said suspended particulate solid in said gas stream and for injecting said suspended particulate solid at a particulate injection point in said main oxygen supply line prior to entry of said gas stream and said suspended particulate solid into said tuyere inlet thereby increasing said pressure drop of said gas stream from said gas supply source to said tuyere inlet as a result of the passage of said gas stream and said suspended particulate solid through said injection means and said main oxygen supply line;
d. flow control means connected to said main oxygen supply line prior to said particulate injection point for sensing the flow of said gas stream through said main oxygen supply line;
e. valve means connected to said flow control means and in communication with said main oxygen supply line prior to said particulate injection point for controlling the flow of said gas stream through said main oxygen supply line; and
f. said flow control means being operable to adjust said valve means in said main oxygen supply line to maintain substantially constant said predetermined flow rate of said gas stream and said suspended particulate solid to said tuyere inlet.

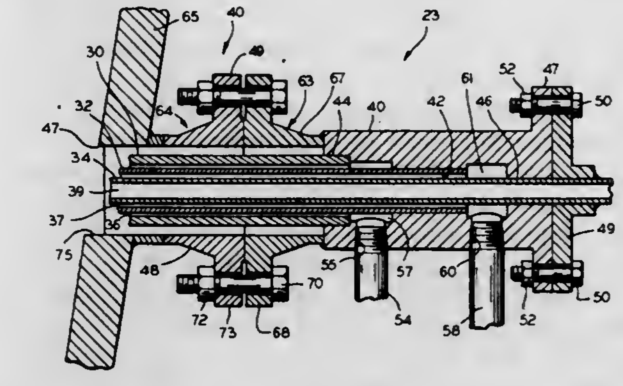
3,897,048
METALLURGICAL VESSEL AND METHOD OF OPERATING SAME

Jai K. Pearce; Eberhard G. Schempp, both of Pittsburgh, and Walter Sieckman, Bridgeville, all of Pa., assignors to Pennsylvania Engineering Corporation, Pittsburgh, Pa.

Filed June 15, 1973, Ser. No. 370,547

Int. Cl. C21c *5/48*

U.S. Cl. 266—35 6 Claims



1. A metallurgical vessel constructed and arranged to receive a metallic charge,

a tuyere assembly including first means defining a first tuyere passage for delivering oxygen to the interior of said vessel and beneath the level of said charge,

second means for defining a second tuyere passage in surrounding relation to the first tuyere passage for providing a hydrocarbon shielding fluid around the oxygen, third means for subdividing the first tuyere passage into a pair of tuyere passages to permit an increase in the quantity of shielding gas provided to the tuyere for preheating a metal charge in the vessel,

a source of hydrocarbon fluid and a source of oxygen,

first valve means for selectively coupling said oxygen source to one of said pair of tuyere passages and said hydrocarbon fluid source to said second tuyere passage and second valve means for selectively coupling one of said sources to the other of said pair of tuyere passages.

3,897,049
MIXER FOR METAL SUPERHEATING

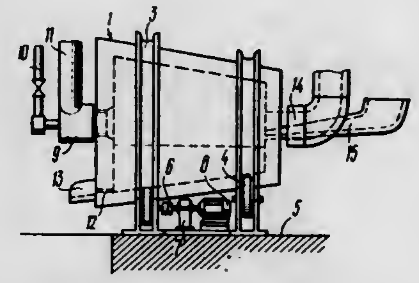
Anatoly Alexeevich Cherny, ulitsa Slavy, 7, kv. 40; Vladimir Alexandrovich Grachev, ulitsa Odesskaya 6, kv. 54; Evgeny Mikhailovich Kirin, ulitsa Suvorova, 166, kv. 9; Nikolai Andreevich Gorelov, Ulyanovskaya 8, kv. 65, all of Penza, and Nikolai Vasilievich Boriskin, ulitsa Gorodok 114, Penzenskaya oblast, Bessonovka, all of U.S.S.R.

Filed Mar. 21, 1974, Ser. No. 453,371

Claims priority, application U.S.S.R., Mar. 27, 1973, 1899192

Int. Cl. F27b *7/16*

U.S. Cl. 266—39 1 Claim



1. A mixer for metal superheating, which comprises; a casing in the form of a truncated cone, arranged horizontally with the capability of rotation around its axis; a refractory lining arranged inside said casing; a gas burner mounted on said casing on the side of the larger base of said truncated cone; a discharge spout for discharging metal, mounted on said casing on the side of the larger base; an exhaust pipe for evacuating combustion products, mounted on said casing from the side of the smaller base of said truncated cone; a feeding chute for feeding molten metal, mounted on said casing on the side of the smaller base; radially inwardly extending spaced lugs of a rectangular section, axially extending within said casing along its circumference and adjoining said lining, said lugs having a height of about 0.1 to 0.3 of the average diameter of said lining; channels formed by the spaces between said lugs and the inner surface of said lining; and a ring channel provided in said casing lining on its portion adjoining the larger base of the casing and combining said channels.

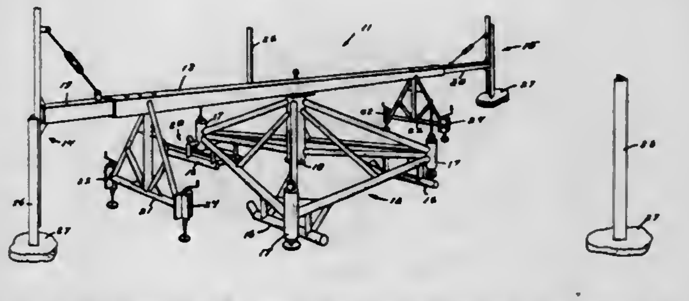
3,897,050
STUB SETTING FIXTURE

Richard E. Maloblocki, 103 Burr Ridge Club Dr., Burr Ridge, Ill. 60521

Filed July 20, 1973, Ser. No. 380,994

Int. Cl. B25b *11/02*

U.S. Cl. 269—17 4 Claims



1. In a stub setting fixture, the combination comprising:

a frame, said frame provided with an alignment arm support pedestal extending upwardly therefrom;

a horizontally extending alignment arm rotatably mounted on said support pedestal, said alignment arm adapted to rotate in a horizontal plane upon said support pedestal;

a cross-support assembly provided proximate to each end of said alignment arm, said cross-support assembly provided with a support leveling jack at each end thereof; and

stub member retaining means positioned at each end of said alignment arm, each of said stub member retaining means adapted to alignably position and retain a stub member in its end use position at an erection site.

3,897,051
METHOD AND APPARATUS FOR MAKING STACKS OF PRINTED SHEETS FOR A BOOKBINDING MACHINE

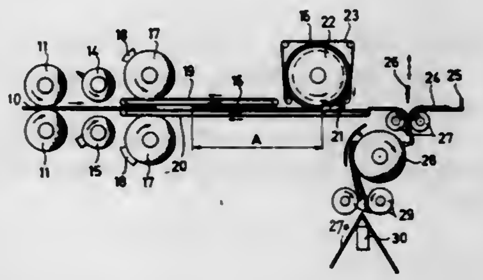
Hans Müller, Zofingen, Switzerland, assignor to Grapha Maschinenfabrik Hans Muller AG, Zofingen, Switzerland

Filed Mar. 8, 1972, Ser. No. 232,824

Claims priority, application Switzerland, Mar. 10, 1971, 3490/71

Int. Cl.^{2} B41L *43/10*

U.S. Cl. 270—43 9 Claims



9. Apparatus for continuously transforming a plurality of bands into bound booklets, comprising means for transporting said bands in the longitudinal direction thereof and at a first

speed; means for cutting successive leading portions of said bands at predetermined equal distances to form sheets; means for transporting each cutoff sheet in said direction and at a second higher speed so that each cut-off sheet separates from the following leading portion of said bands; means for stacking successive cut-off sheets for forming a stack; means for folding each stack along a fold line normal to said direction at which said bands and said sheets are transported so that a booklet is formed; means for opening said folded booklets; and means for transporting said opened folded booklets in the direction of said fold line and in a position for being bound along said fold line by a book binding machine.

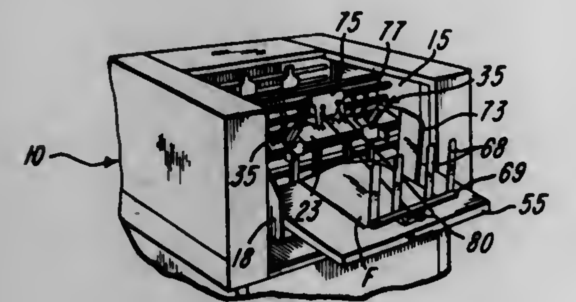
3,897,052
APPARATUS FOR STACKING BUSINESS FORMS

McKinley B. Turman, Dayton, and Gerald D. Hall, West Carrollton, both of Ohio, assignors to The Standard Register Company, Dayton, Ohio

Filed Sept. 4, 1973, Ser. No. 394,055

Int. Cl. B65h *29/26*; B26f *3/00*; B65h *29/52*

U.S. Cl. 271—188 **7 Claims**



1. In apparatus for bursting a continuous succession of business forms and including a set of upper and lower burst rolls, an improved device for stacking the individual business forms being fed from said burst rolls in a successive manner along a generally horizontal path, said device comprising a set of elongated form curving members spaced from said burst rolls across said path of the forms and having longitudinally extending opposing curving surfaces, means supporting said curving members for independent lateral adjustment and in a position with said opposing curving surfaces sloping upwardly and forwardly relative to said path and on opposite sides of the path for engaging the corresponding opposite marginal edges of each form, the spacing between said opposing curving surfaces being less than the width of the forms, means forming a set of ramp surfaces extending to said curving members and adapted to guide the corresponding edges of each form to said curving surfaces, said ramp surfaces and said curving surfaces cooperating to produce upward curving of the marginal edge portions of each form as the form travels along the path, a generally horizontal platform positioned forwardly and below said curving members for supporting a generally vertical stack of forms, and means for guiding each form with upwardly curving marginal edge portions into a stack on said platform.

3,897,053
SHEET FEEDING APPARATUS AND METHOD

George Victor Guy, London, England, assignor to Metal Box Limited, Reading, England

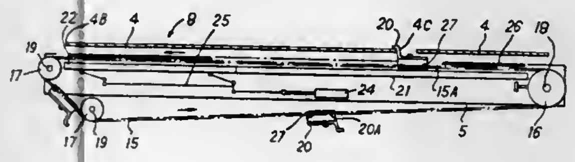
Filed Apr. 25, 1973, Ser. No. 354,343

Claims priority, application United Kingdom, Apr. 25, 1972, 19158/72

Int. Cl. B65h *9/10*

U.S. Cl. 271—238 **6 Claims**

1. Apparatus for feeding a succession of sheets of rigid or semirigid material to associated sheet-receiving equipment in predetermined orientation and alignment, said apparatus comprising a conveyor which comprises a main frame; sheet advancing means disposed longitudinally on said main frame for moving a succession of said sheets along a path on the conveyor in predetermined orientation; at least one pair of side lays, each side lay being disposed transversely opposite the other side lay of the same pair with the sheet advancing means disposed intermediately between the side lays of each pair; means, carrying said side lays and mounted on said main frame, for advancing the side lays along the conveyor simultaneously with said sheet advancing means; and side lay guide means carried on said main frame for gradually converging the appropriate side lays towards and into engagement with opposite side edges of each sheet when the side lays are so advancing, whereby each sheet may be brought by the side lays gradually into a predetermined transverse register, the sheet advancing means including pusher means for engaging rear edges of the sheets, a plurality of endless flexible carrying members engageable with the undersides of the sheets, first means for advancing the pusher means, and second means for advancing said flexible carrying members, said second means being movable at a speed less than that of said first means whereby the flexible carrying members urge the sheets continuously backwards against the pusher means, said first means for advancing the pusher means comprising a plurality of flexible drive members of the pusher means, said pusher means also comprising pusher dogs carried by said flexible drive members and arranged to engage the rear edges of said sheets, said apparatus comprising tension-adjusting means mounted on the main frame for adjusting the tension in the said flexible drive members during operation, the flexible drive members being endless and arranged to define a longitudinal top run thereof supported from below by longitudinal guides, the said tension-adjusting means comprising a movable said guide extending along at least part of the length of said top run of each flexible drive member, and actuating means for moving said movable guides into and out of frictional engagement with the pusher means of said flexible drive members so as to control the tension in said flexible drive members.
2. Apparatus for feeding a succession of sheets to associated sheet receiving apparatus, said apparatus comprising sheet advancing means for advancing sheets along a sheet path, said sheet advancing means including a flexible drive member and a plurality of pusher members for engaging rear edges of sheets, connecting means connecting said pusher members to said flexible drive member at spaced intervals for movement along a predetermined path a portion of which generally corresponds to a portion of the sheet path, said connecting means being of the pivotal mounting type and mounting said pusher members for pivotal movement generally normal to the sheet path, guide means underlying a part of said predetermined path portion for engagement by said pusher members to control the tilting thereof and support means resistingly supporting said guide means for limited movement in response to pivoting of said pusher members in response to the resistance of a pushed sheet engaging sheet receiving apparatus to absorb the shock thereof.



3,897,054
CAROUSEL MECHANISM

Barton A. Riggs, 6018 Drexel Rd., Philadelphia, Pa. 19131

Filed Jan. 30, 1974, Ser. No. 437,895

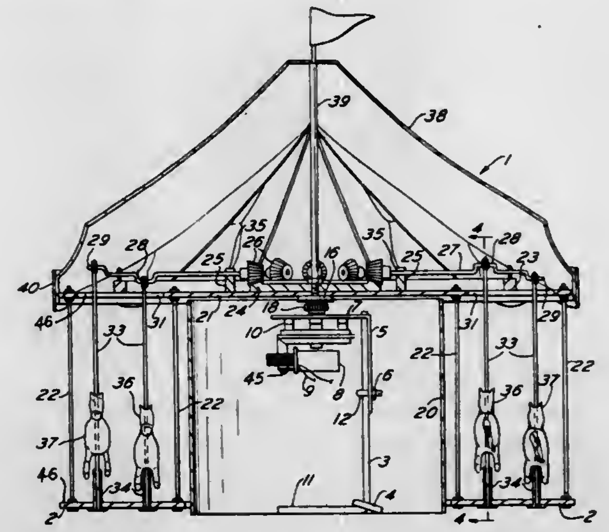
Int. Cl. A63h *13/20*

U.S. Cl. 272—31 R **15 Claims**

1. A carousel mechanism for concurrently rotationally displacing a plurality of figurines about a circuitous path in a

horizontal plane and reciprocally in a vertical direction, comprising:

a. a support base member positionally located central said carousel mechanism;
b. drive means secured to an upper section of said support base member for rotationally actuating a drive gear member;
c. a driven gear member rotationally moveable with respect to and mounted on a vertical shaft secured to said upper section of said support base member, said driven gear being mated with said drive gear;
d. a chassis having an upper and lower disk connected each to the other by column members and having said figurines secured thereto on vertically reciprocating rods;
e. friction coupling means between said driven gear and said upper disk of said chassis for support of said chassis; and,
f. bellcrank members rotatably secured to the upper surface of the upper disk of said chassis each having a bevel gear on a first end for mating with a stationary ring gear fixed on said vertical shaft above the upper surface of said chassis upper disk, said bellcranks connected on their second ends to said vertically reciprocating rods for reciprocally displacing said figurines in said vertical direction when said chassis is rotationally actuated by said drive means.



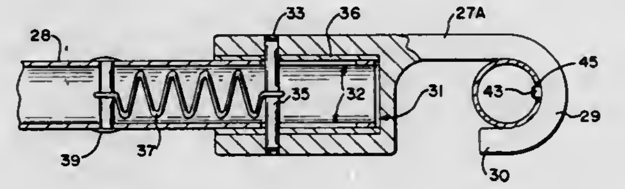
3,897,055
ADJUSTABLE CLIMBING APPARATUS

Douglas Caldow, 3108 Carlsen St., Berkeley, Calif. 94602

Filed Mar. 1, 1974, Ser. No. 447,317

Int. Cl. A63b *9/00*

U.S. Cl. 272—60 R **13 Claims**



1. An adjustable climbing apparatus for children comprising a rigid frame having a plurality of vertical support posts and a series of horizontal stationary bar members interconnecting said vertical support posts, and

a plurality of adjustable bar members of different lengths positionable between and releasably connectable to said stationary bar members, or other of said adjustable bar members, or one stationary bar member and one adjustable bar member, whereby different combinations of play structures can be assembled by suitably arranging said adjustable bar members within the rigid frame, each of said adjustable bar members having a gripping means disposed at each end thereof, said gripping means having a curved end portion at the outwardly projecting end thereof, the inner surface of which conforms to the outer surface of the bar member to which it is connected, said curved portion being formed to surround the bar member to which it is connected in such a manner that vertical forces applied to the adjustable bar member will not cause the connections to disengage, and at least one of said gripping means being secured in telescoping relation with respect to the end of the bar portion of said adjustable bar member and being spring loaded for biasing in a foreshortened position whereby, when said spring loaded gripping means is axially extended by overcoming the tension of the spring loading, said adjustable bar member can be connected in captured relation between any suitably positioned bar members.

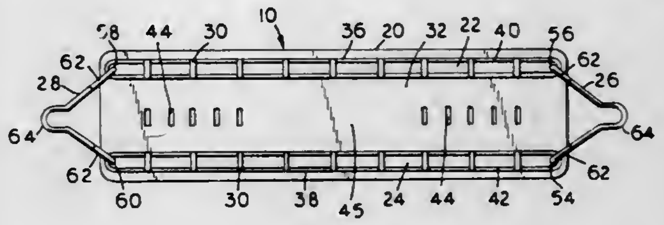
3,897,056
SAFETY STRAP SWING SEAT

Donal D. Hock, Herrin; Raymond J. Douglas, and William R. Baynes, both of Du Quoin, all of Ill., assignors to Turco Manufacturing Company, Du Quoin, Ill.

Filed Oct. 16, 1973, Ser. No. 406,894

Int. Cl. A63g *9/00*

U.S. Cl. 272—85 **8 Claims**



1. A safety strap swing seat comprising a flexible rectangular seat portion made of a flexible molded plastic, at least one resilient and bendable spring steel reinforcing strap formed separately from said seat portion and disposed parallel to the longitudinal edges of said flexible rectangular seat portion, attachment means for attaching said reinforcing strap to said flexible rectangular seat portion with said strap extending flat against the lowermost surface of said seat portion and in a plane parallel thereto, said strap being bendable with said seat portion under the weight of a person, and hanger means disposed along transverse edges of said flexible rectangular seat portion for the purpose of attaching said safety strap seat to supporting means.

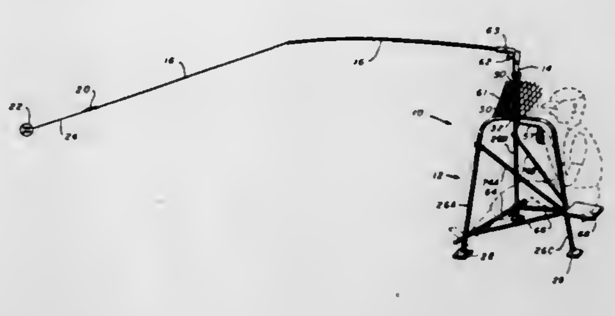
3,897,057
TETHERED BALL BASEBALL PRACTICE DEVICE

Donald D. Pennington, 5340 E. 47th Pl., Tulsa, Okla. 74135

Filed Mar. 18, 1974, Ser. No. 451,895

Int. Cl. A63b *69/40*

U.S. Cl. 273—26 E **5 Claims**



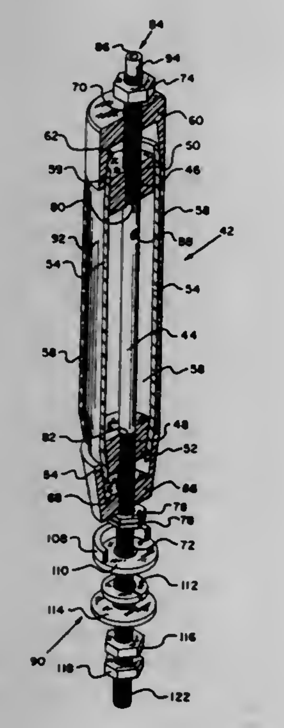
1. A batting practice device for presenting a suspended ball to a batter comprising:

a supporting frame having three legs, one of which is detachably secured to the other two whereby, when one leg is detached, the frame may be compactly arranged for storing or shipping;

a shaft freely rotatably carried by said frame and extending vertically upwardly therefrom;
a tubular boom having a first end vertically pivotally affixed to the upper end of said shaft;
a cord extending through said tubular boom and secured at one end thereof to said boom first end, said cord extending out a second end of said boom, a ball being affixed to the outer end of said cord;
handle means secured to the lower end of said shaft for facilitating the rotation thereof; and
seating means supported to said tripodal frame and located rearwardly of said shaft whereby an operator seated thereon by rotating said handle rotates said boom to cause said ball affixed to said cord to rotate to present said ball through a large diameter arc to said batter.

3,897,058
ATHLETIC TESTING DEVICE

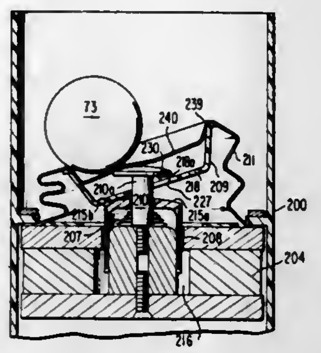
Alvin F. Koch, 109 Oak Clr., Monroe, La. 71201
Filed Mar. 22, 1974, Ser. No. 453,791
Int. Cl.² A63B *69/36, 69/38, 69/00*
U.S. Cl. 273—26 B **25 Claims**



1. An athletic club handle for an athletic club which is normally used for playing a game requiring a controlled force application on the club handle by the users fingers and hand or hands as the club is swung, comprising:
a. a shaft positioned in the central portion of the handle;
b. an elongated pressure-responsive grip, surrounding and sealably mounted on said shaft and spaced apart from said shaft for a major portion of its length, said spaced apart grip forming a fluid receiving reservoir between said shaft and said grip, said reservoir being normally responsive to the controlled force exerted by the users fingers and hand pressure on the grip regardless of the position of the fingers along the length of the grip; and
c. means, associated with said reservoir and the exterior of the club handle, for forming a passageway from said reservoir to the exterior of the club handle.

3,897,059
GOLF BALL PUTTING CUP

Robert P. McCulloch, 555 Perugia, Los Angeles, Calif. 90024, and Stephen H. Smith, 30526 LaVista Verde, San Pedro, Calif. 90732
Continuation of Ser. No. 186,289, Oct. 5, 1971, abandoned. This application Nov. 16, 1973, Ser. No. 416,448
Int. Cl. A63b *69/36, 57/00*
U.S. Cl. 273—34 A **3 Claims**

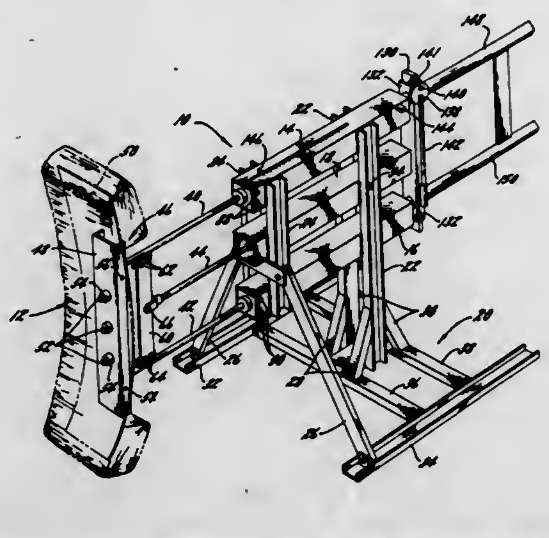


1. A golf cup apparatus comprising:
golf cup means including a housing operable to be positioned at least partially below ground level, and open upwardly and receive a downwardly moving golf ball;
generally concave, upwardly opening, ball impacting means positioned generally interiorly of said housing and including
base means extending generally transversely of a vertical axis of said golf cup, and
rim means extending upwardly from said base means and operable to exert laterally directed, ball restraining force on a golf ball disposed above said ball impacting means in force receiving cooperation therewith;
pivot means pivotally supporting said ball impacting means for random tilting movement relative to said golf cup axis; and
impact force applying means operable to transmit ball impacting force to said base means operable to tilt said ball impacting means about said pivot means, with said ball impacting force being operable to be transmitted through said ball impacting means to a golf ball which is laterally restrained by said rim means and disposed in force receiving cooperation with said ball impacting means;
said generally concave, ball impacting means being operable to
tilt downwardly on one side thereof in response to the weight of a golf ball acting thereon, with said rim means exerting a restraining force on said golf ball, causing it to be supported on said one side, and with said downward tilting being random in nature in accordance with the location on said ball impacting means where the weight of said golf ball is applied, and
tilt upwardly on said one side, in response to said transmission of said impacting force thereto, and impart golf ball ejecting force to said golf ball during said upward tilting directed upwardly and transversely of said golf cup means.

3,897,060
FOOTBALL BLOCKING APPARATUS

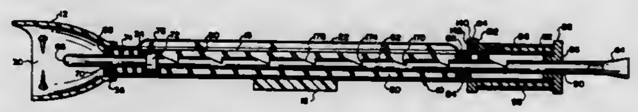
Ralph Earnest Jennings, 227 Newton, Glen Ellyn, Ill. 60137
Filed Jan. 12, 1973, Ser. No. 323,291
Int. Cl. A63b *67/00*
U.S. Cl. 273—55 R **8 Claims**

1. A football blocking apparatus comprising, in combination, a base for supporting the apparatus, a plurality of horizontally extending tubes mounted above said base, a rod slidably mounted for axial movement within each of said tubes and having a forward portion which extends beyond each tube, a pad supporting assembly connected to the forward ends of said rods coil spring means located within at least one of said tubes for providing resistance to the backward movement of said rods under a force applied to said pad supporting member and for urging said rods in the forward direction on removal of the applied force, means for synchronizing the axial movement of said rods within said tubes in a substantially linear fashion, shock absorbing means located within at least one of said tubes for damping the movement of said rods in the forward direction after removal of the applied force, and manually releasable locking means for holding said rods in a position of maximum backward movement achieved in response to a given force applied to said pad supporting assembly, said locking means including a vertical shaft having a blade detent for engaging a serrated portion of at least one of said rods, said shaft being engaged and released from said rod upon vertical movement relative to said rods.



3,897,061
VARIABLE FORCE PROJECTOR AND CATCHER

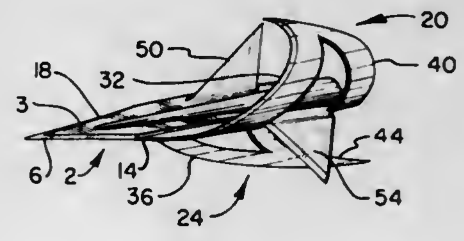
Donald J. Grattan, 3430 N. Elaine, Chicago, Ill. 60657
Filed June 11, 1973, Ser. No. 369,105
Int. Cl. A63b *71/02*
U.S. Cl. 273—96 R **8 Claims**



1. A toy projectile shooter comprising:
an elongated tubular barrel having a projectile-receiving muzzle end and a breech end; a projectile;
said muzzle end being flared and defining an open-ended cup larger than said projectile and includes:
a series of circumferential spaced flexible members extending radially inward from the wall thereof;
the axial distance of said flexible members from said muzzle end of said barrel being substantially equal to the diameter of said projectile and the length of said flexible members in relation to the diameter of said walled cup being such that said projectile passes therethrough with said flexible members retaining said projectile in spaced relationship aligned with said plunger rod by tangential contact with said projectile;
a trigger assembly at said breech end;
a spring-loaded plunger rod reciprocatably mounted within said tubular barrel;
one end of said plunger rod being forcefully extendable through said muzzle end of said barrel;
the other end of said plunger rod extending in operable relationship with said trigger assembly and having a handle end extending beyond said breech;
stop means at each end of said barrel to contain said spring-loaded plunger rod therein;
longitudinally spaced catch means along said plunger rod and each being registerable with said trigger mechanism at selected cocked positions of bias of said spring-loaded plunger rod;
means along said tubular barrel to indicate said selected biased positions of said plunger rod therein whereby the force applied to a projectile contained in said muzzle end is controlled upon release of said trigger assembly;
a gravity-sensitive member carried by said tubular barrel;
means connected to said gravity-sensitive member to indicate the longitudinal angular elevation of said barrel;
said trigger assembly includes a detent extending radially into said tubular barrel for registry with said catch means on said plunger rod to hold said plunger rod at selected positions of bias; and
means to move said detent circumferentially independent of said plunger rod to and from said positions of registry.

3,897,062
ARROWHEAD

Lawrence B. Christensen, 1222 E. 3rd South, Bountiful, Utah 84010
Filed June 6, 1974, Ser. No. 476,793
Int. Cl. F41b *5/02*
U.S. Cl. 273—106.5 B **7 Claims**



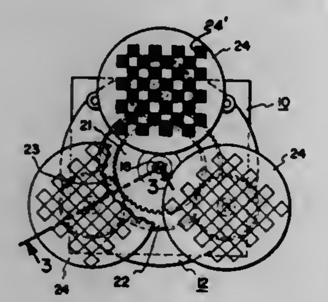
1. An arrowhead comprising
a longitudinal body section, a front end of which is formed into a point and a rear end of which is formed to define a socket for receiving an arrow shaft,
a pair of arcuate blades extending from either side of said body section and each curving up and over a different one of the faces of said section in a generally semicircular fashion, each of said blades having a sharp leading edge and a trailing edge, said leading edge extending from a corresponding side of said body section upwardly and away from the pointed end to join the trailing edge, and said trailing edge extending to and joining the rear end of said body section, and
a pair of second blades, each cut from a different one of said arcuate blades to extend from a different side of said body section in a direction generally opposite the direction of extension of the arcuate blade from which it is cut.

3,897,063
GAME BOARD APPARATUS

Heinz E. Lehwalder, 1792 Emigration Canyon, Salt Lake City, Utah 84104
Filed Mar. 18, 1974, Ser. No. 452,198
Int. Cl. A63f *3/02*
U.S. Cl. 273—131 B **4 Claims**

3. Game board apparatus including, in combination, a horizontal support member having a central, fixed, upstanding post, a revolvable support plate horizontally disposed above said support member and centrally journaled about said post, said support plate having a pre-determined pattern of shaft-receiving apertures, horizontal bull gear means centrally keyingly affixed to said upstanding post above said support plate, plural playing boards having fixed depending shafts respectively disposed in said apertures and respective, horizontal, planetary gears centrally fixed to and keyed with said shafts and meshing with said bull gear means, said playing boards thereby being revolvable with respective ones of said plane-

tary gears as said support plate carrying said planetary gear shafts is rotated about said post, and wherein said bull gear means comprises a small upper sun gear and a larger lower sun gear, said shaft-receiving apertures being positioned such that said planetary gears will mesh with a selected one of said sun gears.



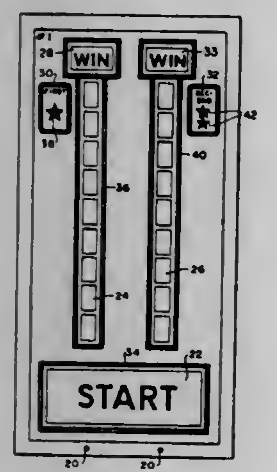
3,897,064
CHILDREN'S BOARD GAME APPARATUS

Nancy L. Sonnabend, 24 Greenhill Rd., Brookline, Mass. 02146

Division of Ser. No. 119,674, March 1, 1971, Pat. No. 3,714,722, which is a continuation of Ser. No. 707,681, Feb. 23, 1968, Pat. No. 3,566,484. This application Sept. 11, 1972, Ser. No. 287,760

Int. Cl. A63f *3/00*

U.S. Cl. 273—134 AD **10 Claims**



1. Game apparatus having incrementally movable playing pieces and having a playing surface bearing segmented path means along which play proceeds by means of said playing pieces, said apparatus providing each of at least two players with a uniquely-identified portion of a playing surface along said path means in accordance with the relative order in which the players take their turns, and further comprising

A. first and second identifying indicia marked along said path means for distinguishing, respectively, first and second side-by-side portions of said path means, said portions being of equal segment length on said path means, B. first and second start pieces, each of which has a configuration different from that of said playing pieces, said first and second start pieces being identifyingly marked respectively with said first and second identifying indicia, and the first of which carries further indicia identifying a unity value and the second of which carries further indicia identifying a second number value, and

C. first and second start piece locations on said playing surface, each location being associated with and disposed proximal to the same-numbered path portion and being configured to have placed thereon the same-numbered start piece, so that upon selection of a start piece and placement of that start piece on the same-numbered location by a player, that player is thereby assigned an order of play and a path portion for use in playing games with said game apparatus.

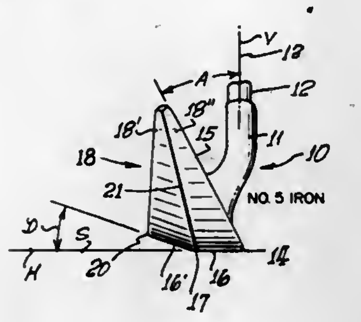
3,897,065
GOLF CLUB HEAD WITH IMPROVED SOLE AND TOE PORTIONS

Karsten Solheim, 10412 N. 37th St., Phoenix, Ariz. 85028

Filed Jan. 31, 1974, Ser. No. 438,281

Int. Cl. A63b *53/04*

U.S. Cl. 273—167 A **1 Claim**



1. An improved club head for golf clubs of the type commonly referred to as irons used for hitting a ball into an airborne trajectory from a fairway comprising a metal blade having a striking face between a toe and heel, and having a hosel to receive a shaft at said heel, and a relatively wide sole between said toe and heel, said sole connecting with said striking face at a leading edge, a trailing portion of said sole most remote from said leading edge being beveled rearwardly relative to said striking face and upwardly relative to a horizontal plane, said horizontal plane passing through the central portion of said leading edge in a position normal to a vertical plane, said vertical plane passing through the axis of said shaft in a position parallel to said central portion of said leading edge, said sole bevel leaving a ridge extending from said heel to said toe, said club head having a trailing surface portion of said toe most remote from said striking face beveled rearwardly relative to said striking face and inwardly relative to a plane tangent to said toe and normal to said vertical plane, and wherein a surface portion of said toe between said trailing surface portion thereof and said striking face is beveled forwardly relative to said trailing surface portion and inwardly relative to said plane tangent to said toe to leave a toe ridge, said toe ridge blending in with said sole ridge, said toe ridge being located on said toe approximately midway between leading and trailing edges thereof and said sole ridge being located on said sole at least half way from said leading edge of said sole to a trailing edge of said sole.

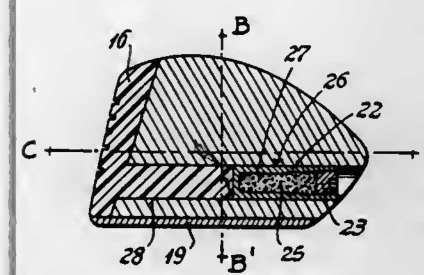
3,897,066
GOLF CLUB HEADS AND PROCESS

Peter A. Belmont, 7 White Birch Ridge, Weston, Conn. 06608

Filed Nov. 28, 1973, Ser. No. 419,797

Int. Cl. A63b *53/08*

U.S. Cl. 273—171 **6 Claims**



1. Wooden head for a golf club comprising a wooden body having a core comprising its center of gravity, heel and toe sections on opposite sides of said core and separated by a central vertical axis plane which intersects said core, face and rear sections on opposite sides of said core and separated by a transverse vertical axis plane which intersects said core at an angle perpendicular to said central axis, sole and upper sections below and above said core and separated by a horizontal axis plane which intersects said core, and at least two hollow tubular openings in said wooden body extending from the surface of said face section to the surface of said rear section, each of said hollow tubular openings having cemented therein adjacent the surface of the rear section a self-contained capsule comprising a hollow tubular walled element adapted to contain variable amounts of weight material for purposes of adjusting the balance of the club head, the remaining portions of said tubular openings being filled with plastic material, the interior wall of each capsule being threaded for engagement with a threaded cover forming the closure means therefor, an equal number of said tubular openings being located within said wooden body on opposite sides of said central vertical axis plane in said heel and toe sections, behind said core and behind said transverse vertical axis plane in said rear section and beneath said core and horizontal axis plane, said tubular openings extending parallel to each other and to the central vertical and horizontal axis planes and having the closure means of the capsules exposed and removable through openings in the rear surface of the wooden body.

3. Process for producing a wooden head for a golf club comprising a wooden body having a core comprising its center of gravity, heel and toe sections on opposite sides of said core and separated by a central vertical axis plane which intersects said core, face and rear sections on opposite sides of said core and separated by a transverse vertical axis plane which intersects said core at an angle perpendicular to said central axis, sole and upper sections below and above said core and separated by a horizontal axis plane which intersects said core, comprising the steps of boring an equal number of hollow tubular openings through said wooden body extending from said face section to said rear section in each of the heel and toe sections of said wooden body, on opposite sides of said vertical axis plane, beneath said core and horizontal axis plane and parallel to each other and to the central vertical and horizontal axis planes of said wooden body, inserting self-contained tubular walled elements into said tubular openings comprising capsules and securing said capsules at the rear sections of said openings behind said core and behind said vertical axis plane, said capsules being adapted to receive variable amounts of weight material and provided with closure means which are exposed and removable through openings in the rear surface of the wooden body, and filling the remaining portions of said tubular openings with a plastic material.

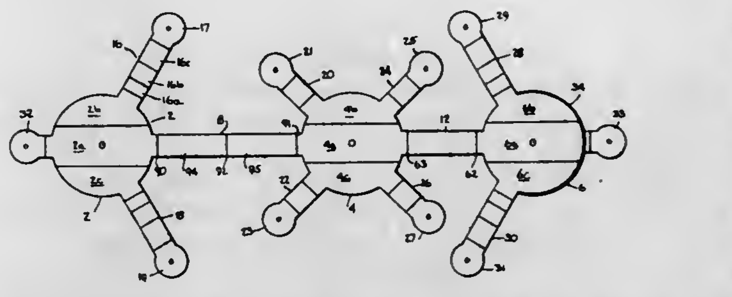
3,897,067
PORTABLE GOLF COURSE

Alvin H. Smith, 8940 Eastwood Rd., Pittsburgh, Pa. 15235

Filed June 13, 1974, Ser. No. 479,108

Int. Cl. A63b *67/02*

U.S. Cl. 273—176 G **17 Claims**



1. A portable golf course comprising a tee, at least three separate fairways, means for detachably connecting one end of each of said fairways to said tee, a plurality of greens each having a hole adapted to receive a golf ball and means for detachably connecting one of said plurality of greens to the other end of each of said fairways.

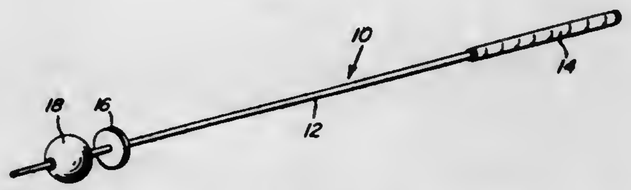
3,897,068
GOLF SWING TRAINING DEVICE

William N. Staples, 2 Howard Ct., Newport News, Va. 23601

Filed Aug. 16, 1974, Ser. No. 498,244

Int. Cl. A63b *69/36*

U.S. Cl. 273—186 A **2 Claims**



1. A straight elongated shaft having a handgrip on one first end portion thereof, the second end portion of said shaft being cylindrical, tapering toward the terminal end thereof and free of enlargements throughout at least a predetermined length thereof, a generally spherical weight member having a substantially constant diameter cylindrical passage formed therethrough on a diameter of said weight member and of a size to snugly receive said tapering second end portion therethrough with a larger diameter portion of said tapered second end portion lightly frictionally seated in the end of said passage remote from the terminal end of said second end portion, the length, weight and lengthwise balance of said shaft, with said weight member thereon, closely approximating the length, weight and lengthwise balance of a conventional golf driving club, said weight member being lightly frictionally retained in position on said tapered second end portion at a point spaced a predetermined distance from the terminal end thereof, but being freely slidable thereon upon slight shifting of said weight member toward the terminal end of said second end portion.

3,897,069
DEVICE FOR REMOVING DUST FROM A GRAMOPHONE RECORD

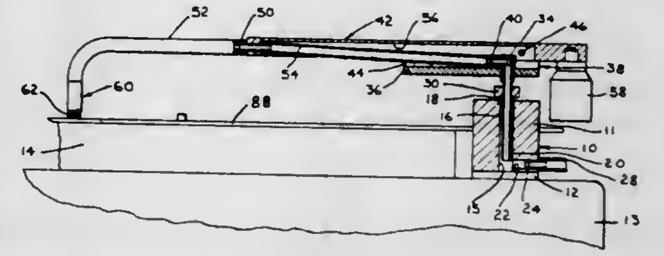
Michael Adrain Lee, Loenoweth, Feock, Truro, Cornwall, England

Filed Apr. 4, 1974, Ser. No. 457,792

Claims priority, application United Kingdom, Apr. 19, 1973, 18897/73

Int. Cl. G11b *3/58*

U.S. Cl. 274—47 **8 Claims**



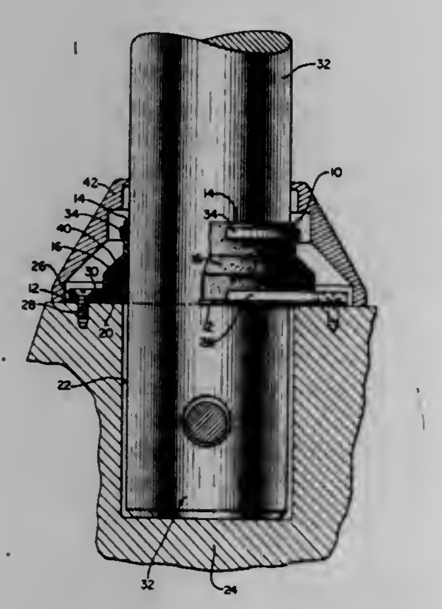
1. A device independent of a tone arm for removing the dust from a gramophone record during the playing thereof, said device comprising a support means adapted to have its bottom removably attached to a reproduction apparatus for the record, a downwardly directed dust pick-up nozzle, a brush mounted on the end of said nozzle, which brush is arranged to bear in operation against the upper surface of the record to support the nozzle, means for creating a vacuum, air duct means extending from said pick-up mozzle into and through said support means and thence from above the bottom of the support means to the vacuum creating means so as not to interfere with the removable attachment of the device to the reproduction apparatus, said air duct means being mounted on said support means in such a manner as to permit movement of said pick-up nozzle across the upper surface of the record while the nozzle is being supported by the brush, and the fibres of said brush being of such cross-section that in

operation of said device the tips thereof engage in the groove of the upper surface of the record and thereby bring about tracking movement of said pick-up nozzle across the record as the record is played, said vacuum creating means serving during such tracking movement to suck dust from said surface of the record via said air duct means.

3,897,070
BANBURY TYPE MIXER

Gerald E. Anderson, Kent, and Paul R. Kennedy, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed May 17, 1974, Ser. No. 470,785
Int. Cl. F16j *15/16*
U.S. Cl. 277—1 **12 Claims**



1. The method of improving service time availability of a Banbury-type mixer for processing rubber compounds and the like by mixing dry powders thereinto, which mixer comprises a ram-weight ram and a ram-weight having a socket receiving an end of said ram, said ram-weight being connected to said ram by means providing limited relative movement of the weight with respect to the ram, said method comprising filling said socket about said ram with a suitable fill of lubricant, and excluding said dry powders by closing said socket to retain said lubricant therein with an annular boot having a highly flexible heat-resistant wall extending circumferentially around said ram and axially of said ram outwardly of said socket.

3,897,071
ANNULAR BLOWOUT PREVENTER WITH VARIABLE INSIDE DIAMETER

Robert K. Le Rouax, Houston, Tex., assignor to Hydril Company

Continuation-in-part of Ser. No. 248,119, April 27, 1972, abandoned. This application Nov. 16, 1973, Ser. No. 416,584
Int. Cl. E21b *33/06*
U.S. Cl. 277—185 **14 Claims**

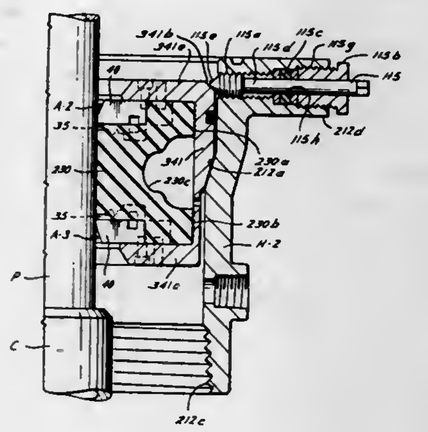
1. An annular blowout preventer, comprising:

an annular yieldable sealing means having an inner bore therethrough through which a well pipe or the like is adapted to extend;

a variable inner diameter upper anti-extrusion means disposed at the upper end of said yieldable sealing means; and

said anti-extrusion means including plural pipe engaging means with said sealing means and overlapping adjacent ones of said pipe engaging means;

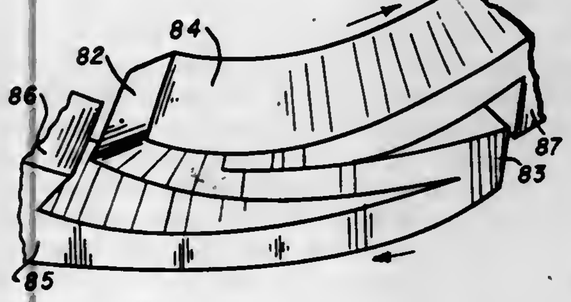
said plural pipe engaging means being movable radially with said sealing means for providing a variable inner diameter thereof for engagement with the external surfaces of well pipes of varying diameters to prevent upward extrusion of said sealing means at each of the varying diameters of the pipes.



3,897,072
SLIT RING WITH CONNECTING MEMBRANE

Egons Inka, Chicago, and Raymond O. Shurson, Niles, both of Ill., assignors to Crane Packing Company, Morton Grove, Ill.

Filed Feb. 12, 1973, Ser. No. 331,866
Int. Cl. F16j *9/00*
U.S. Cl. 277—215 **10 Claims**



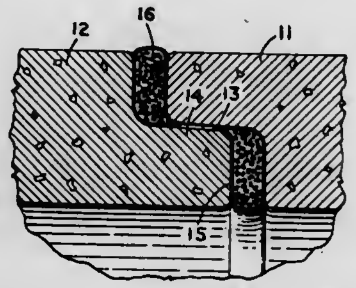
1. An endless sealing ring of compliant material having a transversely disposed slit therein extending from one surface thereof toward and spaced from an oppositely disposed surface thereof and forming with said oppositely disposed surface a flexible membrane; at least a portion of said slit having a component of direction parallel to said oppositely disposed surface the portions of the ring adjacent said membrane being relatively movable to bend said membrane upon itself and thereby change the diameter of the ring, whereby to facilitate assembly of the ring into an annular groove.

3,897,073
JOINT OF UNDERGROUND PIPE

Harold V. Swanson, Morris Plains, and Robert E. Bald, Roseland, both of N.J., assignors to Interpace Corporation, Parsippany, N.J.

Division of Ser. No. 414,144, Nov. 9, 1973, which is a continuation-in-part of Ser. No. 359,967, May 14, 1973. This application Nov. 4, 1974, Ser. No. 520,803
Int. Cl.^{2} F16V *15/38*
U.S. Cl. 277—229 **13 Claims**

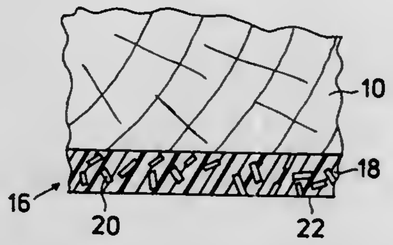
1. A joint between first and second continuous successive lengths of pipe made of a nonmetallic earthen material, wherein a bell formed on an end of the first length is engaged by a spigot formed on an end of a second length, the joint characterized by a distortable band of a cellular water invadable material impregnated with a dry hydratable cement which is reactive with water to hydrate thereby forming a hard water impervious substance, the band positioned between the spigot and the bell and engaged by said engagement of the spigot into the bell.



3,897,074
SKI WITH MICROPOROUS BOTTOM SURFACE

Antti-Jussi Tiitola, Tampere, Finland, assignor to Karhu-Titan oy, Helsinki, Finland

Filed Feb. 22, 1974, Ser. No. 444,876
Int. Cl. A63c *5/04*
U.S. Cl. 280—11.13 L **9 Claims**

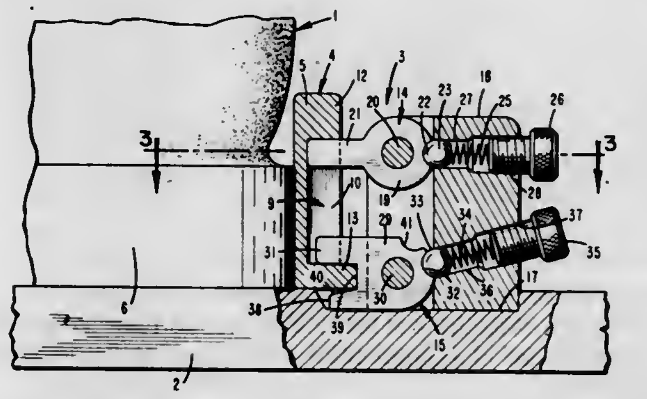


1. In a ski, an elongated narrow strip having one surface which is normally directed upwardly to be engaged by a ski boot and an opposed surface which is normally directed downwardly toward the ground, and a bottom layer fixed to said strip and engaging and covering said opposed surface thereof, said bottom layer being comprised for the most part of a plastic material in which short tubular fibers are embedded with random orientations, said tubular fibers having internal capillary passages and including at a surface of said bottom layer which is normally directed downwardly away from said strip a number of fibers which are flush with and have their passages exposed at said surface of said bottom layer to provide the latter surface with a microporous structure.

3,897,075
RELEASABLE BINDER

Robert C. Cutter, Box 1074, Glenwood Springs, Colo. 81601

Filed Nov. 7, 1972, Ser. No. 304,483
Int. Cl.^{2} A63C *9/08*
U.S. Ci. 280—11.35 T **4 Claims**



1. A device for releasably binding a boot to a ski, comprising:

a projection engagement member secured to said boot;

a first cam means pivotally mounted on said ski and having an integral projection means thereon for engaging said engagement member and releasing said engagement after pivoting through a first angle;

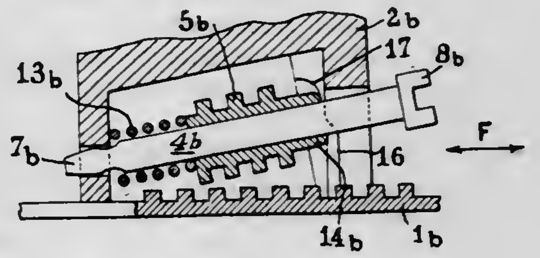
a second cam means pivotally mounted on said ski and having a second integral projection means thereon for releasably engaging said engagement member after said releasing by said first cam means; and

pressurizing means bearing on said first and second cam means and applying pressure to said first and second cam means for hindering the pivoting thereof.

3,897,076
LONGITUDINAL ADJUSTMENT DEVICE NOTABLY FOR SKI BINDINGS

Jean Joseph Alfred Beyl, 10, Blvd. Victor Hugo, 58 Nevers (Nievre), France

Filed Nov. 5, 1973, Ser. No. 412,658
Claims priority, application France, Nov. 20, 1972, 72.41180
Int. Cl.^{2} A63C *9/22*
U.S. Cl. 280—11.35 T **8 Claims**



1. A ski binding comprising an adjustment section member means adapted to be fixedly mounted on a ski; a fastening element means for releasably retaining one end of a ski boot on the ski, said fastening element means being adapted to be mounted on the adjustment section member means, said fastening element means being relatively moveable along a selected direction with respect to said adjustment section member means; said fastening element means further comprising a bearing and an adjustment member means, said adjustment member means being carried by said fastening element means and mounted for free movement in said bearing; complementary fine adjustment means on said adjustment member means and on said adjustment section member means for permitting fine adjustment, in said selected direction, of the position of said fastening element means with respect to the adjustment section member means, said complementary fine adjustment means being disconnectable from each other to permit relative coarse adjustment of the relative positions of said fastening element means and said adjustment section member means, said adjustment member means being moveable between a first position in which said complementary fine adjustment means are operatively interconnected for permitting relative fine adjustment of the said fastening element means and said adjustment section member means, and a second position in which said complementary means are disconnected from each other and inoperative; and locking means releasably and firmly retaining the said adjustment member means in the first position and the second position.

3,897,077
SAFETY SKI BINDING HAVING CABLE HELD SOLE PLATE

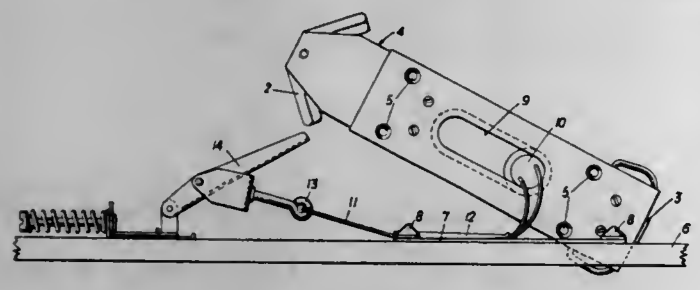
Gottfried Schweizer, Vienna, Austria, assignor to Gertsch AG, Zug, Switzerland

Filed Jan. 25, 1974, Ser. No. 436,544

Claims priority, application Austria, Feb. 6, 1973, 1053/73

Int. Cl. A63c *9/08*

U.S. Cl. 280—11.35 K **4 Claims**



1. A safety ski binding arrangement for securing a ski boot to a ski, comprising:

a sole plate having means thereon for securing said ski boot thereto, said sole plate including guide means thereon;
carriage means reciprocably mounted in said guide means for movement in the plane defined by the sole plate;
releasable securing means for releasably securing said sole plate to said ski, said releasable securing means comprising nonelastic cable secured at one end to the underside of said carriage means, lever operated tensioning and release means secured to said ski, the opposite end of said cable being secured to said lever operated tensioning and release means, cable guide means for guiding said cable downwardly from said sole plate and in the plane between the sole plate and the ski to said lever operated tensioning and release means; and
stop means for engaging and positioning said sole plate on said ski prior to a tensioning of said cable, whereby a tensioning of said cable by said lever operated tensioning and release means will tighten said cable and draw said sole plate into tight engagement with said stop means.

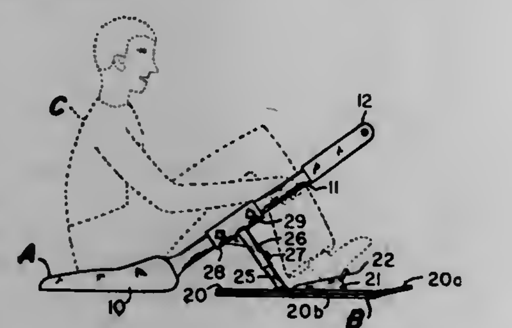
3,897,078
SKI SHOVEL

Dennis M. Melnick, RD 1, and Mark Kubick, Brookside Dr., both of Baden, Pa. 15005

Continuation of Ser. No. 248,034, April 27, 1972, abandoned. This application July 9, 1973, Ser. No. 377,417

Int. Cl. B62b *13/16*

U.S. Cl. 280—15 **19 Claims**



1. In a ski device employing a shovel having a relatively planar scoop part that is to serve as a seat for a rider and a rounded upwardly extending and inclined handle that is to serve as a hand-gripping means for the rider, a ski attachment for the shovel which comprises, a relatively narrow longitudinally forwardly extending ski runner part, an upwardly projecting cross-extending foot-receiving abutment part mounted in a secure relation on the upper side of said runner part adjacent its front end, a backwardly upwardly inclined arm secured on the upper side of said runner part in a backwardly spaced relation with respect to said abutment part and having a mount at its upper end adapted to fit over the handle of the shovel, and means cooperating with said mount for securing said arm on the handle and for positioning said runner part in a spaced-apart forward relation with respect to the scoop part of the shovel.

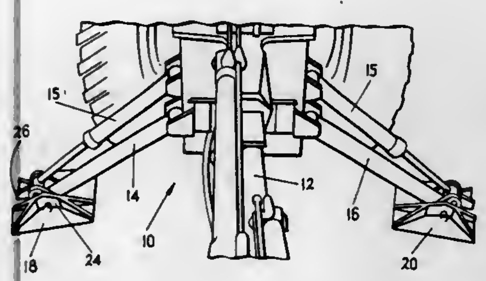
3,897,079
STABILIZER PAD FOR EARTHMOVING APPARATUS

Robert A. MacKenzie, 181 Morton St., Stoughton, Mass. 02072, and Andry Lagsdin, 63 Chard St., Weymouth, Mass. 02189

Filed Mar. 19, 1973, Ser. No. 342,684

Int. Cl. B60s *9/02*

U.S. Cl. 280—150.5 **19 Claims**



1. For an earthmoving apparatus having at least one support arm, a stabilizer comprising a plate-like piece having alternate surfaces one of which is resilient and the other of which includes a flanged web, and means pivotally supporting said piece to an end of said arm, one of said supporting means and said piece being provided with a cut-away section, said piece being revolvable through at least 180° relative to said support means between alternate positions wherein either said resilient surface is facing downwardly or said flanged web is engaging the ground.

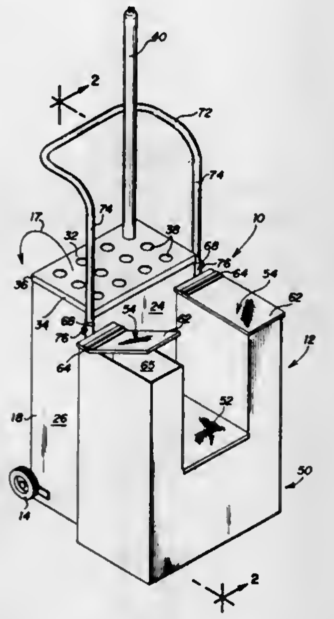
3,897,080
ELECTRIC LIGHT CART

William C. Isom, 9430 Folkstone, Dallas, Tex. 75220

Filed Oct. 15, 1973, Ser. No. 406,478

Int. Cl. B62b *1/12*

U.S. Cl. 280—47.19 **11 Claims**



1. A cart for servicing elevated lights comprising:

a wheeled housing having a first section for receiving a plurality of elongated fluorescent light bulbs in vertical positions,
said housing having a second section attached to a wall of said first section with upper and lower steps formed thereon, said lower step being located in the center of said second section and said upper steps being located on either side of said lower step.

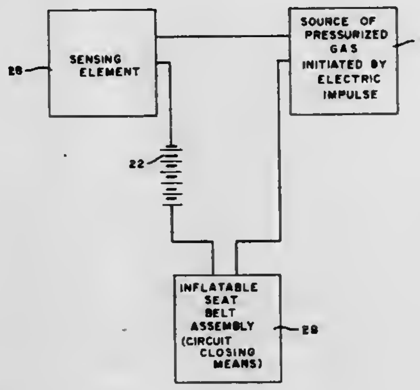
3,897,081
VEHICLE SAFETY SYSTEM

Donald J. Lewis, Troy, Mich., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Nov. 29, 1972, Ser. No. 310,284

Int. Cl. B60r *21/08*

U.S. Cl. 280—150 AB **6 Claims**


SENSING ELEMENT
28
SOURCE OF PRESSURIZED GAS INITIATED BY ELECTRIC IMPULSE
20
22
INFLATABLE SEAT BELT ASSEMBLY (CIRCUIT CLOSING MEANS)
28

1. A vehicle safety system comprising:

a. an inflatable seat belt assembly including a fastening device having a latched and an unlatched condition;
b. circuit means connected to said seat belt assembly;
c. circuit closing means for closing said circuit means in response to said latched condition of said fastening device;
d. a source of electrical power connected to said circuit means for supplying an electrical impulse;
e. a gas source connected to said circuit means for supplying pressurized gas through said fastening device to said inflatable seat belt assembly upon receipt of said electrical impulse; and
f. sensing means connected to said circuit means, responsive to collision of the vehicle and operating, with said circuit means closed, to transmit said electrical impulse to said gas source upon collision of said vehicle,

whereby said electrical impulse can only be transmitted to said gas source when said fastening device is in said latched condition.

3,897,082
VEHICLE SAFETY BELT APPLYING MECHANISM

Takezo Takada, deceased, late of Tokyo, Japan, and by Juichiro Takada, legal authorized heir, Tokyo, Japan, assignors to Takata Kojyo Co., Ltd., Tokyo, Japan

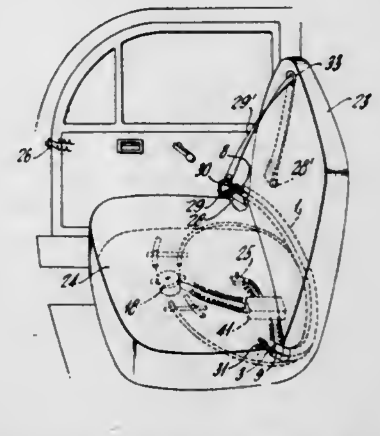
Filed Dec. 14, 1973, Ser. No. 424,968

Claims priority, application Japan, Dec. 16, 1972, 47-125815

Int. Cl. B60r *21/10*

U.S. Cl. 280—150 SB **9 Claims**

1. A mechanism for automatically applying restraint to the occupant of a seat, including a seat portion and a back portion comprising a first belt, first connecting means, including a spring biased belt retractor connecting said belt proximate a first side of said seat, a first coupling member located on said first belt proximate the free end thereof, a second coupling member releasably engageable with said first coupling member, second connecting means connecting said second coupling member proximate a second side of said seat opposite to said first side, a first arcuate transfer arm, first guide means supporting said first transfer arm for movement along the arcuate length of said first transfer arm between a retracted position with the distal end of said transfer arm proximate the rear of said seat portion first side and a position toward said seat second side, a first transfer member mounted on said first transfer arm distal end portion and engaging said first belt to advance the free end thereof with the advance of said first transfer arm and means for advancing said first transfer arm, including a drive wheel, a motor drive coupled to said drive wheel, a first elongated flexible member connected at a first end to the proximate end portion of said transfer arm and engaged and driven by said drive wheel, and guide means leading said elongated member from said drive wheel to said first transfer arm proximal end along a path through a point forward of said proximal end when said transfer arm is rearward of its advanced position.



3,897,083
SUPPORT LEG FOR A TRAILER BODY

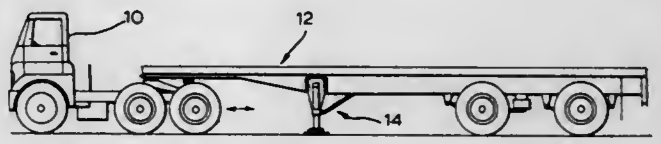
Neil Pickering, 16 Lesbury Ave., Brampton, Canada

Filed Nov. 1, 1974, Ser. No. 519,937

Claims priority, applicat on Canada, Mar. 13, 1974, 194903

Int. Cl.^{2} B60S *9/02*

U.S. Cl. 280—150.5 **5 Claims**



1. A support leg construction for supporting a trailer body comprising

a support leg,
a shoe for said leg having longitudinally extending track means therein,
a foot on said support leg,
said foot engaging in said track means for forward movement therein as the forward end of the trailer supported by said leg in use moves forwardly, means for normally urging said foot towards the rearward end of said track means, said track means sloping downwardly from back to front of said shoe.

3,897,084
STAND-OUT

Robert C. Bergskoog, R.R. No. 2, Holdrege, Nebr. 68949

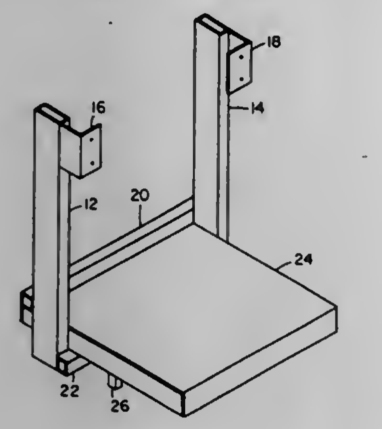
Filed Jan. 22, 1973, Ser. No. 315,177

Int. Cl. B60r *3/02*

U.S. Cl. 280—166 **8 Claims**

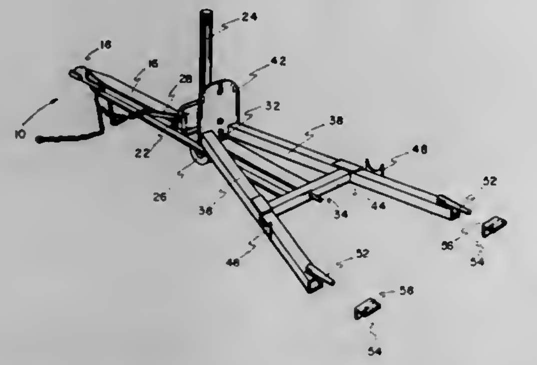
1. A truck box access apparatus adapted to be mounted along the inside of the lower sill of the truck comprising a pair of spaced parallel support members [12, 14 means [16, 18 at one end of each of said support members for mounting said apparatus along the inside of the lower sill, a first [20 and a second [22 cross bar disposed at the other end of each said support members, said first and said second cross bars extending between said support members and being spaced from each other, both longitudinally and transversely with respect to the longitudinal direction of the support members, a step platform [24 slidably supported between said first and said second bars and between first and second extreme positions,

said step platform in its first extreme position extending outwardly from said support members and at a right angle thereto



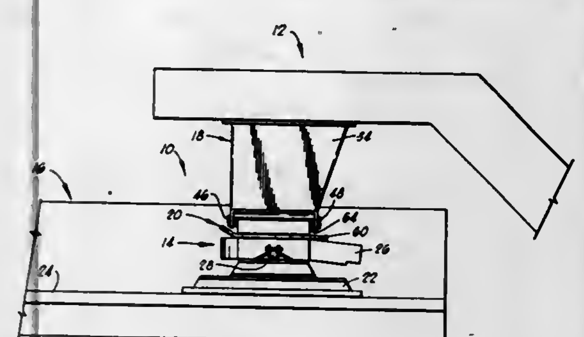
and said step platform in its second position being nested flush between said support members.

3,897,085
VEHICLE TOWING ASSEMBLY
Roy E. Hawkins, 6905 Falls of Neuse Rd., Raleigh, N.C.
Filed Oct. 22, 1974, Ser. No. 516,979
Int. Cl.² B62D *53/04*
U.S. Cl. 280—402 **10 Claims**



1. A vehicle towing assembly for interconnecting two vehicles one behind the other, said vehicle towing assembly comprising:
- a. an elongated tongue adapted to attach to a front towing vehicle;
- b. an A-frame vehicle support structure extending rearwardly from said tongue for engaging a rear towed vehicle and supporting the same while being towed by the front towing vehicle;
- c. said A-frame vehicle support structure including a pair of rearwardly projecting legs having rear terminal ends that terminate in lateral spaced apart relationship relatively to each other;
- d. a mounting pin fixed about the rear terminal end of each leg and projecting therefrom such that when said vehicle towing assembly is interconnected between vehicles each of said mounting pins project through an opening associated with a pin receiving structure fixed to the frame of the towed vehicle about the underside thereof;
- e. cradle means disposed on said A-frame vehicle support structure and generally U-shaped for receiving the front axle of the towed vehicle; and
- f. means for detachably securing said A-frame vehicle support structure to said tongue such that said tongue may be separated from said A-frame vehicle support structure for convenient transport or storage.

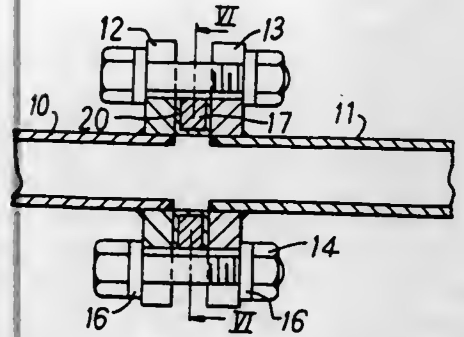
3,897,086
PIN BOX
Glenn H. Breford, Holyrood, Kans., assignor to Midway Industries, Inc., Holyrood, Kans.
Filed Sept. 10, 1973, Ser. No. 395,566
Int. Cl.² B62D *53/08*
U.S. Cl. 280—438 R **2 Claims**



1. A tractor-trailer towing connector, comprising:
- a. an appreciably elongated, cross-sectionally rectangular, substantially hollow, normally vertically positioned upper member rigidly mountable on its upper end portion on a tongue portion of a trailer and extending downward from said tongue portion, said upper member having two opposed sides tapering inwardly from said upper end portion to said lower end portion, and being larger in cross-sectional area at the top than at the bottom,
- b. said upper member having means to pivotally mount a hitch engaging member on the lower end portion thereof,
- c. a hitch engaging member pivotally mounted on said means to mount same, said hitch engaging member having a shoe on an upper portion thereof, and a coupler pin rididly mounted on said shoe and depending therefrom, said hitch engaging member pivotable on an axis generally aligned with the longitudinal axis of said trailer, and
- d. said means to mount has a yoke mounted on said lower end portion of said upper member, a shaft mounted in said yoke, a sleeve mounted on said shaft and brace members rigidly secured to said sleeve and rigidly secured to said hitch engaging member,

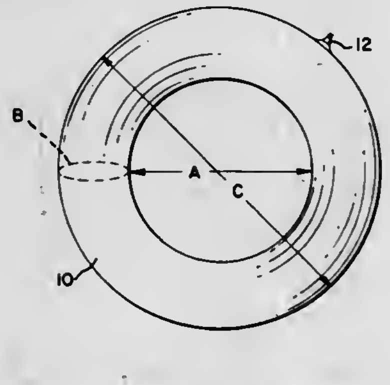
said connector is constructed and adapted to be mounted on a trailer tongue to connect it in towing relation to a tractor having a fifth wheel type hitch.

3,897,087
METHOD OF FASTENING APPARATUS ELEMENTS
David Neilson, Skelmorlie, Scotland, assignor to Imperial Chemical Industries Limited, London, England
Filed Aug. 13, 1973, Ser. No. 387,728
Claims priority, application United Kingdom, Sept. 1, 1972, 40674/72
Int. Cl.² F16L *35/00*
U.S. Cl. 285—18 **10 Claims**



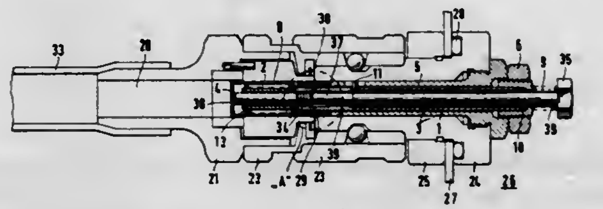
5. A clamped joint comprising at least two apparatus elements each having slots with open ends disposed at an edge of the element, said elements being clamped and held in fixed relative positions by at least one fastening device which is disposed in the slots in apparatus elements and which is separable from said apparatus elements through said open end of said slots and which applies clamping forces to said apparatus elements and which is held in its operative position with respect to said apparatus elements solely by said clamping forces, at least one metal element which is fusible below 150°C in said joint through which the clamping device transmits the clamping pressure required to hold said clamping device in its operative position relative to said apparatus elements, whereby upon subsequently heating and melting said fusible metal element the clamping pressure is relieved from said apparatus elements and from said clamping device so that the latter may be separated from said apparatus elements through said open end of said slots.

3,897,088
SEALING BOOT
Ernest Lloyd Beinhaur, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Dec. 12, 1973, Ser. No. 423,943
Int. Cl.² F16L *17/00, 33/16*
U.S. Cl. 285—97 **7 Claims**



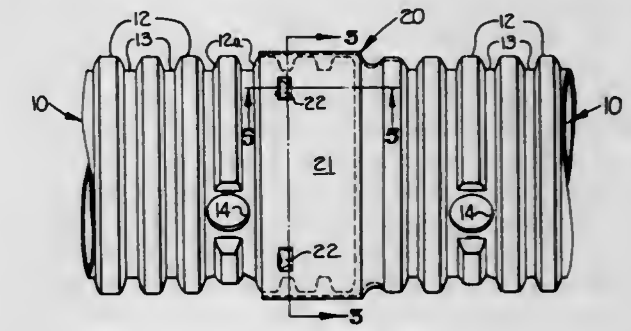
1. A sealing boot for effecting an environmental tight seal on members, such as cables, conduits, and the like, said boot comprising:
- a closed annular unit of inflatable material capable of withstanding low internal pressures, said unit in a normal, relaxed, deflated state having an inner diameter less than the external diameter of said members;
- reinforcement means restricting the transverse cross-sectional inflation of said unit; and
- means to inflate and deflate said unit whereby said unit is initially inflated and subsequently deflated into sealing engagement with said member.

3,897,089
DEVICE FOR THE RELEASABLE CONNECTION OF A DUAL HOSE SYSTEM TO A CLOSED CONTAINER
Carl Hans Leichsenring, Graben-Neudorf, and Gustav Kunz, Bruchsal, both of Germany, assignors to Gesellschaft fur Kernforschung m.b.H., Karlsruhe, Germany
Filed Dec. 5, 1973, Ser. No. 421,995
Claims priority, application Germany, Dec. 5, 1972, 2259429
Int. Cl. F16l *39/02*
U.S. Cl. 285—158 **4 Claims**



1. For use with a coupling for the releasable connection of a dual hose, composed of an inner hose inside an outer.hose, to a closed container, the coupling defining an axially extending passage for such inner hose and being composed of an inner coupling part fastened to the outer hose of the dual hose system and an outer coupling part detachably connected to the inner part and fastened to the closed container, the two parts being connected together tc meet along a separating plane, a two-part plug arranged to be inserted into the passage defined by the coupling in the direction from the container, said plug being composed of an inner part and an outer part, said inner and outer parts being separable from one another and meeting along a separating plane coincident with the separating plane of the coupling when said plug is fully inserted into the coupling, each said part of said plug comprising two members which are axially movable relative to one another and an annular seal of a resiliently deformable material, said seal having a pair of opposed axial end surfaces, each bearing against a respective one of said members, and an external circumferential surface arranged to face the surface of the coupling which defines the axially extending passage, with the end of one of said members and the associated end of said seal being arranged to lie on said separating plane when said plug is fully inserted and that portion of said one member against which the associated end surface of said seal bears having the form of an oblique surface sloping radially outwardly relative to the body of said seal, whereby relative movement of said two parts in a direction to move said axial end surfaces of said seal toward one another causes said seal to deform radially outwardly to form a sealing connection with the surface of the coupling which defines the axially extending passage.

3,897,090
CORRUGATED PLASTIC PIPE WITH INTEGRALLY FORMED COUPLER
Ernest J. Maroschak, Roseboro, N.C., assignor to Plastic Tubing, Inc., Roseboro, N.C.
Filed May 19, 1972, Ser. No. 254,934
Int. Cl.² F16L *31/00*
U.S. Cl. 285—260 **8 Claims**



1. An elongate corrugated resilient plastic drainage pipe having spaced-apart successive annular ribs with annular valley portions therebetween extending from adjacent one end portion of the pipe and throughout the remainder of the pipe, and coupling means integrally formed with said pipe and defining said one end portion thereof and adapted for releasable connection with the opposite end of another like pipe, said coupling means comprising an annular collar having an inner diameter greater than the outer diameter of said ribs and having an inwardly extending annular shoulder defining the inner end of the collar and serving as an abutment stop for a connecting pipe, said collar being of a length so as to receive therein at least one rib of a connecting pipe, a plurality of spaced latching members integrally formed with said collar and extending inwardly around the interior of said collar, the radial distance from the inner end of each latching member to the axis of the collar being less than the radius of said ribs, each of said latching members having at least a first pair of opposing uninterrupted walls integrally formed with said collar, one of said walls sloping inwardly away from the outer end of the collar and toward the axis of the collar and serving as a cam surface for facilitating interconnecting of pipes, and the opposing wall extending substantially normal to the axis of the

collar and adapted to engage the side of a rib of an interconnected pipe for resisting the releasement thereof.

3,897,091

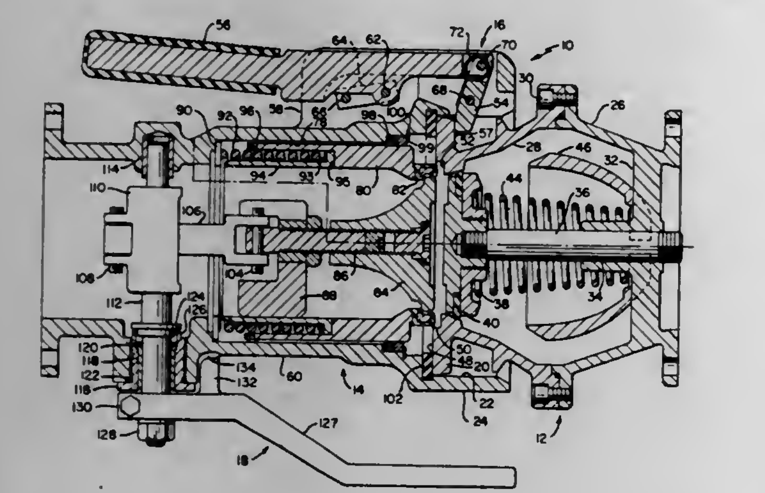
DRY-BREAK COUPLER

Jack A. McMath, Ft. Thomas, Ky., and Charles W. Taylor, Batavia, Ohio, assignors to Dover Corporation, New York, N.Y.

Division of Ser. No. 261,094, June 8, 1972, abandoned. This application Sept. 14, 1973, Ser. No. 397,597

Int. Cl. F16l ***37/20***

U.S. Cl. 285—311 **7 Claims**



1. In combination a dry-break coupler for use in a fluid system in which a coupler and an adapter are each connected to a fluid system and cooperate one with the other to form a dry-break coupling device, the coupler comprising a housing having a bore in the terminal end portion, an annular surface extending radially inward of said bore, said adapter having a terminal end portion adapted to be received within said bore in butting relation with said annular surface, at least a pair of handles, means double pivotally connecting each handle to said housing, said double pivot connecting means comprising a pair of stationary pivot points and a moveable pivot point positioned therebetween so that when the handles are in closed position the moveable pivot point is beyond a line extending between the two stationary pivot points to provide a locking effect on the handles, a clamping rigid pawl pivotally connected at one end of each handle, pivot means fixedly connecting each clamping pawl to said housing, each pawl having a contoured surface to provide clearance for receiving the terminal portion of said adapter and being cooperatively engageable with the terminal portion of the adapter to fasten the coupler and adapter together upon movement of each of said handles from an open to a closed position wherein each pawl is pivoted about said pivot means from a non-clamping condition to a clamping condition.

3,897,092

LEVER OPERATED DOOR LATCH OPENER

Norman C. Atkins, Franklin Park, Ill., assignor to The Citation Companies, Inc., Grand Rapids, Mich.

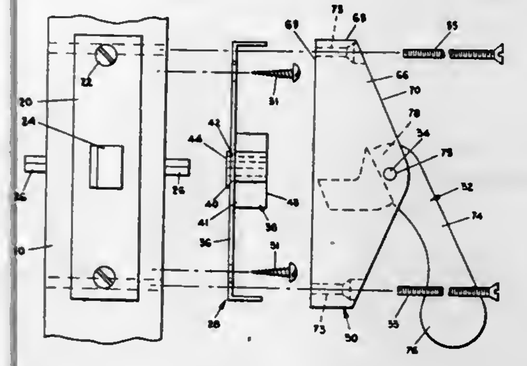
Filed Jan. 14, 1974, Ser. No. 433,355

Int. Cl. E05c ***9/00***

U.S. Cl. 292—92 **4 Claims**

1. In a door latch mechanism, wherein a door latch is actuated by the rotation of a spindle extending out of a door, a lever operated door latch opener comprising:

- a cam mechanism comprising:
  - a cam plate having a circular cam opening formed in the middle thereof, said cam plate being mounted as a separate unit against the door, with the cam opening fitting over the spindle; and
  - a cam rotatably attached to the cam plate for rotation about an axis perpendicular to the cam plate, said cam including a body that engages an outer side of the cam plate and a cylindrical collar extending from the body that fits through said cam opening, said cam including means on the inner side of the cam plate for holding the collar in the cam opening, said cam having an axial spindle opening formed therein that non-rotatably fits over the door latch spindle such that rotation of the cam rotates the door latch spindle, said cam further having a lever engaging arm having symmetrical upper and lower cam surfaces facing away from the lever engaging arm, said cam surfaces permitting engagement of the cam from the top or bottom of the cam;



- a hollow casing separately mounted on the door over the cam mechanism, said casing having a handle opening therein; and
- a lever arm pivotably mounted in the apparatus at an inner end extending through the handle opening of the casing, said lever arm having an outer end extending out of the casing, said inner end having cam actuating finger means thereon adapted to engage and rotate the one of the cam surfaces on the cam sufficiently to open the door latch when the lever arm is pivoted from a deactuated to an actuated position.

3,897,093

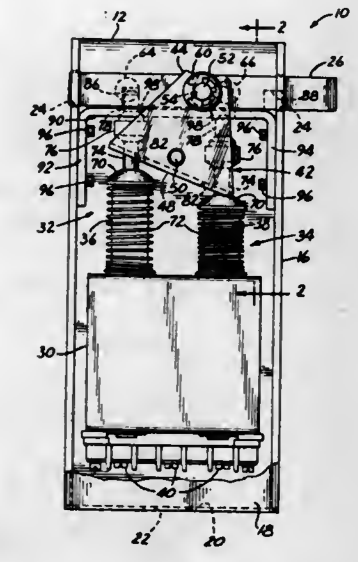
ELECTRICAL DOOR LOCK

Max Wiczer, Skokie; Vahram K. Sarrafian, Morton Grove, and Djordje R. Popovic, Chicago, all of Ill., assignors to Wico Corporation, Niles, Ill.

Filed May 9, 1974, Ser. No. 468,451

Int. Cl.² E05C ***1/06***

U.S. Cl. 292—144 **10 Claims**



1. An electrically actuated mechanism for use in locking doors and the like, comprising:

- a frame having side walls with at least one aperture therein for receiving a lockbolt;
- a lockbolt mounted for reciprocal movement along a path and extending through at least one of said side wall apertures for cooperative interaction with a keeper plate or the like, said lockbolt being movable between first and second positions along said path;
- lever means having one end portion pivotally mounted to said frame, said lever means being connected to said lockbolt so that pivoting said lever means moves said lockbolt between first and second positions;
- first and second electrically actuated solenoids, each having plungers engaging said lever means whereby actuation of one of said solenoid causes said lever means to move said lockbolt to said first position, and actuation of the other solenoid causing said lever means to move said lockbolt to said second position;
- said lockbolt having at least one locking aperture adapted to receive the end portion of one of said solenoid plungers and thereby restrain said lockbolt from movement until said one solenoid is actuated.

3,897,094

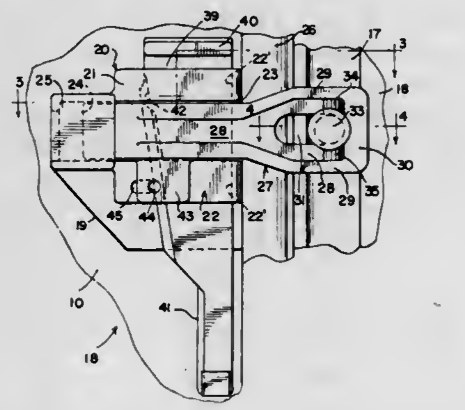
LOCK ARRANGEMENT FOR BOX CAR DOORS

James J. Schuller, Crete, Ill., assignor to Pullman Incorporated, Chicago, Ill.

Filed Sept. 23, 1974, Ser. No. 508,500

Int. Cl.² E05C ***19/08***

U.S. Cl. 292—283 **5 Claims**



1. In a railway car side having a door opening, a device for locking a sliding door in a closed position over said opening, comprising:

- a keeper including a housing mounted on said side adjacent said door opening,
- said housing having upper and lower vertically aligned open end wedge receiving chambers,
- said portions being separated by a horizontal hasp receiving entry slot terminating at one end in a hasp cam receiving pocket and said slot being open at its other end, the improvement comprising:
  - a hasp including a relatively flat body terminating at one end in an enlarged cam having a tapering cam surface, said cam in the closed and locked position of said door being seated in said hasp cam receiving pocket with a portion of said hasp body being disposed in said entry slot,
  - a wedge locking pin seated within said chambers and including a bevel portion in said locked position engaging said tapering cam,
- said wedge pin being adapted to be vertically forced into and out of seated relation with respect to said chambers,
- said hasp body including at its other end a slot,
- a connecting pin rigidly secured to said second door and projecting outwardly from said second door through said slot,
- said pin having an enlarged head disposed outwardly over said slot and said slot permitting limited horizontal movement of said hasp relative to said pin,
- said hasp having a flat surface adjacent said slot,
- said surface terminating in ramp portion means, with said ramp portion means extending from said flat surface diagonally outwardly relative to vertical plane of said door whereby during horizontal movement of said hasp relative to said pin during wedging locking of said hasp by said wedge pin,
- said head of said pin engages said inclined ramp portion means thereby forcing said hasp end adjacent said slot inwardly into substantially contiguous relation relative to said door.

3,897,095

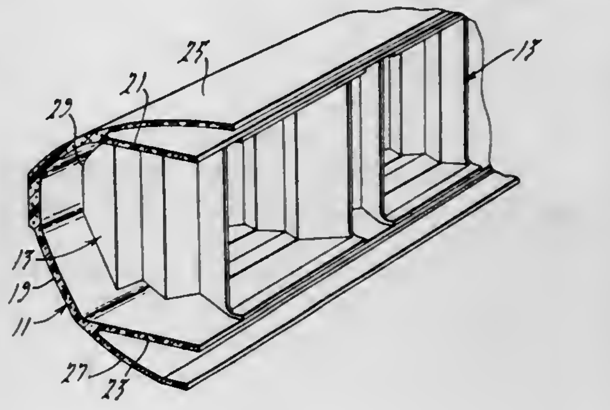
RESILIENT BUMPER ASSEMBLY

Patrick M. Glance, Plymouth, and Marvin A. Maten, Jr., Orchard Lake, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 7, 1973, Ser. No. 422,946

Int. Cl.² B60R ***19/10***

U.S. Cl. 293—71 P **3 Claims**



1. A resilient bumper assembly for an automotive vehicle including:

- a rigid elongate backing member extending transversely of the vehicle,
- an elastomeric outer shell,
- means securing said outer shell to said backing member,
- energy absorbing means fully received within the outer shell and abutting the backing member,
- said energy absorbing means including a plurality of elastomeric bellows elements having axes positioned essentially parallel to the direction of travel of the vehicle,
- said energy absorbing means comprising separate, individual bellows members, said bellows member being positioned side-by-side within said outer shell,
- said bellows members being essentially square in transverse cross section.

3,897,096

STEEL BARREL HANDLING APPLIANCE

Harry F. Garrison, 7470 Gerald Ave., Warren, Mich. 48092, and Billy T. Kiser, 542 S. Manitou St., Clawson, Mich. 48017

Filed Mar. 18, 1974, Ser. No. 452,776

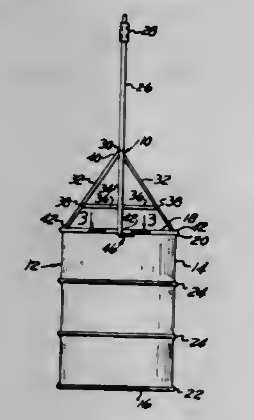
Int. Cl.² B65G ***65/24***

U.S. Cl. 294—4 **5 Claims**

1. A handling appliance for rolling on one of its ends a barrel or drum having an outwardly projecting annular end rim, said appliance comprising

- a substantially vertical handle,
- three substantially rigid barrel-handling arms having upper and lower ends thereon,
  - said upper ends of said arms being connected to said handle,
  - said arms being inclined downward and outward away from their connections to said handle in a substantially rigid tripod formation extending substantially to the rim of the barrel or drum,
  - said lower ends of said three arms being disposed in circumferentially spaced relationship upon a circular arc exceeding a semicircle,

and a rim-gripping element secured to each of said lower ends of said arms,



at least one of said elements being adjustably mounted on the lower end of its respective arm for motion toward and away from the elements on the other arms.

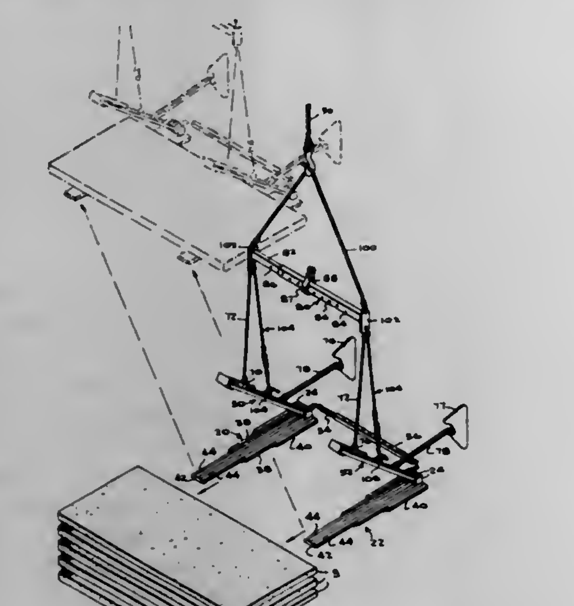
3,897,097
FLYING FORK-TYPE LIFTING MEMBER

Howard G. Davis, Jr., Hillside Manor B-12, Franklin, Tenn. 37064

Filed Jan. 7, 1974, Ser. No. 431,313

Int. Cl. B66c *1/22*

U.S. Cl. 294—67 R **6 Claims**



1. A flying fork-type lifting means capable of being suspended from a crane or the like for engaging and lifting structural slabs, pipe or similar materials, said lifting member comprising first and second elongated generally horizontal parallel load support arms, each of said horizontal parallel load support arms having a free outer end and a supported end, first and second lift arms respectively having one end supportingly connected to the supported end of said first and second load support arms and extending upwardly at an acute angle above said first and second load support arms, spacer frame means connected between said load support arms for maintaining a fixed spacing between the supported ends of said first and second load support arms and hoisting means supportingly connected to said lift arms for enabling a unitary vertical balanced movement of said load support arms, said lift arms and said spacer frame means along with any items supported by said load support arms while maintaining said load support arms in general horizontal orientation, wherein said spacer frame means comprises first and second spacer frame components telescopically associated with each other and means connecting said spacer frame components in adjusted position for achieving a desired overall length for said spacer frame means, wherein said hoisting means includes a transverse horizontal spacer lift bar having first and second ends respectively positioned above said first and second lift arms, said transverse horizontal spacer lift bar comprising first and second telescopic bar members and means for fixedly connecting said first and second telescopic bar members in fixed positions of adjustment for providing a desired length for said lift bar, first and second heavy-load supporting sling members respectively connected between said first and second ends of said horizontal spacer lift bar and outer portions of said first and second lift arms, the lower ends of said heavy-load supporting sling members being connected to said first and second lift arms in a vertical plane extending substantially through the center of gravity of said lifting member and any heavy-load supported on said load support arms, first and second light-load sling members respectively connected to said first and second ends of said horizontal spacer lift bar and having lower ends connected respectively to said first and second lift arms at a location on said lift arms between the connection of said heavy-load slings to said lift arms and the juncture of said lift arms and said load support arms in a vertical plane extending substantially through the center of gravity of said lifting member when there is no load on said load support arms wherein said first and second light-load sling means each comprises a relatively non-stretchable portion and a spring portion connected thereto, said spring portion being of such strength as to resist elongation when said load support arms are not supporting a work load, but elongating upon the application of a work load to said load support arm so that the end of said load support arm connected to said lift arm pivots downwardly a small amount to result in a positioning of the center of gravity of said lifting member and work carried thereby in a vertical plane in which said heavy load bearing slings are substantially positioned so that said heavy-load bearing sling provides balanced support for said load support arms and airfoil means mounted on said lifting means and being reactive with air flow over said lifting means for providing a torsional positioning force for orienting said lifting means in a desired rotational position about a vertical axis.

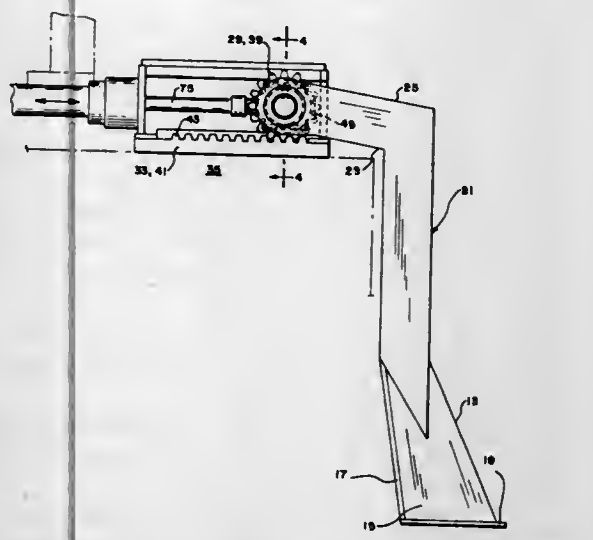
3,897,098
CORNER GUIDES

William Milton Haertig, 173 Vernal Dr., Alamo, Calif. 94507

Filed Apr. 15, 1974, Ser. No. 460,796

Int. Cl.² B66C *1/66*

U.S. Cl. 294—81 SF **1 Claim**



1. Improved retractable corner guides for a lifting spreader each comprising,

an inverted funnel section which in operative position depends down from a corner of the lifting spreader,

an L-shaped connecting arm secured to said funnel section and having a pinion gear secured to the other end thereof in fixed relation thereto, one leg of said L-shaped connecting arm being formed by two parallel pivotal leg members disposed on opposite sides of said pinion, said pivotal leg members having slotted co-axial holes formed in the ends thereof perpendicular to the plane of said L-shaped connecting arm, and said pinion having a keyed shaft disposed along its axis and extending beyond the sides thereof for engagement with said slotted holes formed in the ends of said pivotal leg members of said connecting arm whereby said connecting arm is keyed to said pinion gear to rotate therewith,

a flat rack gear mounted on said lifting spreader at the top thereof generally on a line which bisects the 90° angle formed by the corner of the lifting spreader, said flat rack gear being formed to mesh with said pinion gear secured to said connecting arm,

a guide means for maintaining said pinion gear in engaged relation with said rack gear as it rotates therealong, and a hydraulic cylinder secured to said spreader and engaged in journalled relation with said pinion, said hydraulic cylinder being adapted to power the pinion gear for combined rotational and translational movement of said pinion gear along said rack gear whereby said inverted funnel section can be rotated in a vertical plane by means of said connecting arm while concurrently being translated on a line coincident with the alignment of the rack gear for rotation and translation from the operative position to a position above and retracted from the perimeter of the lifting spreader.

3,897,099
TONG APPARATUS OPERATED OLEOPNEUMATICALLY FOR LIFTING A SUBMERGED PIPELINE

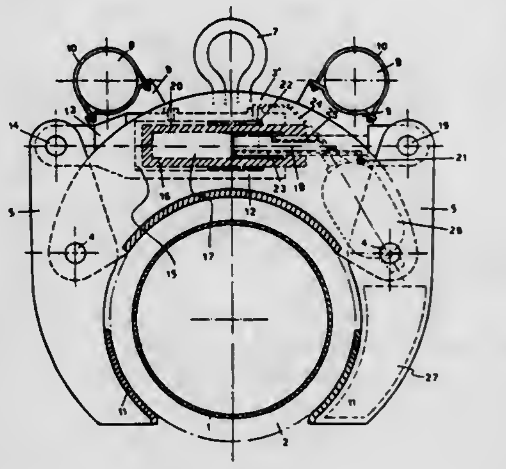
Ambrogio Scodino, San Donato Milanese, and Adalberto Raimondi, Nerviano, both of Italy, assignors to Saipem S.p.A., Milan, Italy

Filed Dec. 19, 1973, Ser. No. 426,129

Claims priority, application Italy, Dec. 20, 1972, 33279/72

Int. Cl.² B66C *1/30*

U.S. Cl. 294—88 **6 Claims**



1. Tong apparatus operated oleopneumatically for lifting a submerged pipeline, comprising a central body having a curvilinear shape adapted to the outer diameter of the pipeline to be lifted, at least one pair of jaws for grasping and lifting the submerged pipeline which is connected to the side ends of said body and normally maintained in an open position while the tong apparatus is lowered about the submerged pipeline, a double acting cylinder for controlling said jaws which includes two pistons, said cylinder having a body pivotally connected to the upper end of one of said jaws with an active chamber wherein the first piston with a wide cross-section slides, while the second piston has a small-cross section and is pivotally connected to the upper end of the other of said jaws and slides coaxially with respect to the first said piston in a second active chamber in the wide cross-section of the first said piston, oleopneumatic means operatively connected to said active chambers for providing oil thereto for causing said pistons to move said normally open jaws to first close and approach the pipeline and then to grasp the pipeline for lifting thereof by the use of small quantities of oil, and control means connected to said oleopneumatic means which controls the flow of oil from said oleopneumatic means first to said second active chamber where the oil acts against the piston having a small cross-section to effect the relatively wide shifting required for the jaws to approach the pipeline with the use of small quantities of oil, and then to said first active chamber where the oil acts against the piston having a wide cross-section to effect the relatively small shifting required to have the jaws grasp the pipeline for the lifting thereof, also with the use of small quantities of oil.

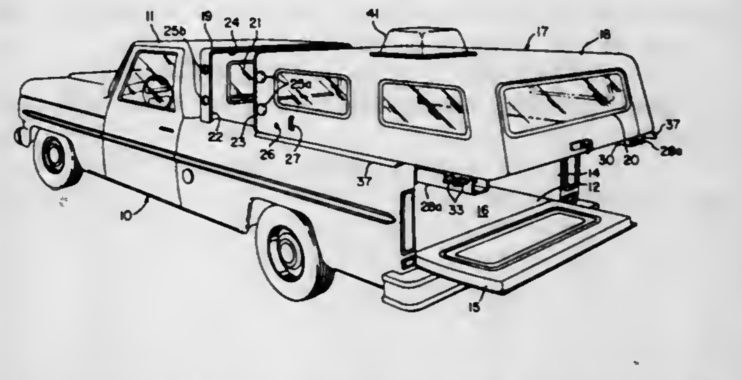
3,897,100
TRUCK BODY COVER AND MOUNTING MEANS THEREFOR

Tom Gardner, 5907 Swiss Ave., Dallas, Tex. 75214

Filed Nov. 23, 1973, Ser. No. 418,278

Int. Cl. B60j *7/02*

U.S. Cl. 296—10 **6 Claims**



1. Apparatus for retractably covering in a substantially weathertight sealing configuration an open topped cargo space portion of a pick-up truck body of the kind having the truck cab forward of the cargo space, said cargo space being formed by upstanding side and front walls having generally straight top edges and enclosable by a tailgate section along a backwall, and said apparatus providing selective access to the frontal portion of said cargo space and comprising:

a generally rigid elongate cover of length and width substantially equivalent to that of said cargo space and having first and second longitudinal side sections forming an open ended U-shape frontal portion contiguous to and extending generally upwardly with respect to a longitudinally extending open bottom portion and adapted for substantially covering the cargo space of the truck;

a bulkhead mounted to and upwardly extending from the front wall of said cargo space and having an upwardly extending height and width substantially equivalent to the height and width of the open ended frontal portion of said cover and the upwardly extending cab of the truck adjacent thereto, said bulkhead being adapted for abuttingly receiving on the face thereof the frontal edge of said open ended U-shaped frontal portion of said cover;

means associated with said bulkhead for sealingly engaging the open ended frontal edge of said cover in abutting engagement therewith, and forming a frontal wall thereto, whereby said cargo space may be substantially enclosed by positioning said cover atop said cargo space and adjacent said bulkhead;

first and second rail members, each mounted at the top edge of one of the side walls in parallel spaced relationship with the other and having rearwardly extensible telescoping portions adapted for bilateral movement rearwardly from and forwardly to said bulkhead for supporting the rearward portion of said cover when positioned thereon in a generally horizontal plane rearwardly extending from the truck;

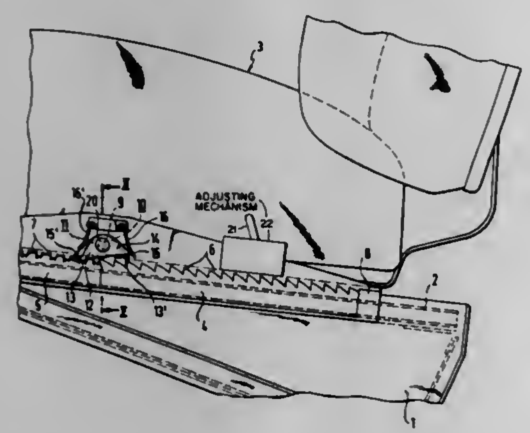
antifriction means mounted along the bottom edges of said first and second side sections of said cover in position to run in said rails and said rearwardly extensible telescop-

ing portions thereof for providing a bilateral movement of said cover over the open topped portion of the truck rearwardly from and forwardly to said bulkhead for providing access to the frontal portion of said cargo space;
lock means for releasably securing said cover in sealable engagement with said bulkhead whereby said cover will selectively maintain its engagement with said bulkhead in a substantially weathertight sealing configuration;
means for sliding said cover along said rails rearwardly from and forwardly to said bulkhead to provide access to the frontal portion of said cargo space adjacent to the cab of the truck; stop means on said rails limiting rearward travel of said antifriction means and said cover mounted thereto, whereby the distance of movement of said cover over said cargo space is defined by said bulkhead for movement forwardly thereto, and by said stop means for movement rearwardly from said bulkhead.

3,897,101

DRIVER'S SEAT WITH INERTIA-RESPONSIVE LOCKING ARRANGEMENT

Peter Hess, Coburg, Germany, assignor to Metallwerk Max Brose & Co., Coburg, Germany
Filed May 7, 1974, Ser. No. 467,625
Claims priority, application Germany, May 18, 1973, 2325292
Int. Cl.² B60N *1/08*
U.S. Cl. 296—65 A **8 Claims**

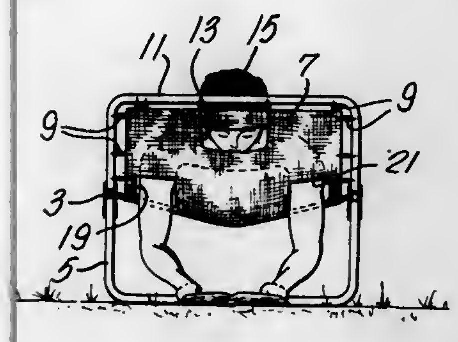


1. A seat arrangement for a motor vehicle comprising:
a. a base member and main locking system;
b. a seat member mounted on said base member for adjusting movement in a predetermined direction;
c. an inertia operated auxilary locking system comprising a row of alternating teeth and gaps extending in said direction on one of said members, said teeth being fixedly secured to said one member;
d. a two-armed lever mounted on the other member for pivoting movement about an axis transverse to said direction,
  1. one arm of said lever having a terminal pawl portion shaped for being lockingly received in said gaps in a first angular position of said lever,
  2. the other arm of said lever having a terminal contact portion shaped to prevent said contact portion from being received lockingly in said gaps; and
e. biasing means biasing said lever toward a second angular position,
  1. said contact portion sequentially engaging said teeth during said movement of said seat member while said lever is in said second position,
  2. said pawl portion clearing said teeth in said second position of said lever, and
  3. said pawl portion being spaced from said contact portion in said direction, the auxilary locking system further comprising a pivot pin on said other member, said lever being mounted on said pivot pin for pivoting movement about said axis, guide means on said other member for guiding said pivot pin transversely to said direction and said axis between an operative position remote from said row and a locking position adjacent said row, said pawl portion clearing said teeth in said second angular position of the lever and said contact position clearing said teeth in said first angular position of said lever when the lever is in said operative position, said pawl portion being received in one of said gaps and said contact portion abuttingly engaging one of said teeth in said locking position of said pivot pin.

3,897,102

CHAIR OR THE LIKE

Gerald Lemaire, 248 Elgar, Apt. 405, Ile des Soeurs, Montreal 201, Quebec, Canada
Filed Apr. 8, 1974, Ser. No. 459,105
Int. Cl. A47c *7/62, 31/00*
U.S. Cl. 297—191 **13 Claims**

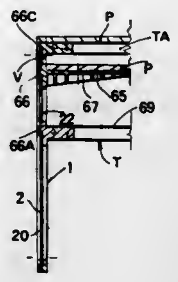


1. A chair or the like comprising a frame, a relatively thin flexible material associated with said frame for supporting the body of a person, said chair including a pivotally connected back portion, said back portion formed with a first aperture above said pivotal connection, said aperture being shaped to enable a person who lies flat on his stomach to rest his head on a portion of said flexible material surrounding said first aperture while being able to see through said first aperture, said pivotally connected back portion also including second and third apertures adjacent said pivotal connection adapted to permit passing the arms of the person therethrough.

3,897,103

ARTICLE OF OFFICE FURNITURE

Alberto Rosselli, c/o Dr. Ing. Misitano A.G., Via Padova, 217, 20127 Milan, Italy
Filed May 21, 1973, Ser. No. 362,272
Claims priority, application Italy, June 5, 1972, 956147/72
Int. Cl. A47b *47/00*
U.S. Cl. 312—257 R **1 Claim**



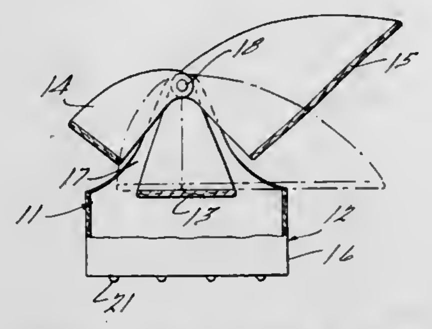
1. An article of office furniture comprising at least two frames of aluminum alloy each having a quadrilateral profile and including a pair of uprights, each upright being provided with two opposite grooves delimiting a core, said core having a plurality of spaced recesses for the engagement of first hook-shaped components, each upright having a notch in said core at the terminal ends thereof, and a transverse hole in said

core adjacent to said notch, said transverse hole having an axis extending parallel to the axis of said recesses, a second hook-shaped component having a hook of U-shape and provided with two opposite holes arranged to be aligned with, and on opposite sides of, said transverse hole when the second hook-shaped component is mounted astride one of said notches, and a connection means engagable in the holes in said second hook-shaped component and in the aligned transverse hole in the core to secure the second hook-shaped component to the frame, each upright being provided with a peripheral step to receive a covering panel to be secured to the frame.

3,897,104

CONVERTIBLE SWINGABLE CHAIR

John O. Black, 18094 Parkside, Detroit, Mich. 48221
Filed May 1, 1974, Ser. No. 465,834
Int. Cl.² A47C *3/00*
U.S. Cl. 297—353 **10 Claims**

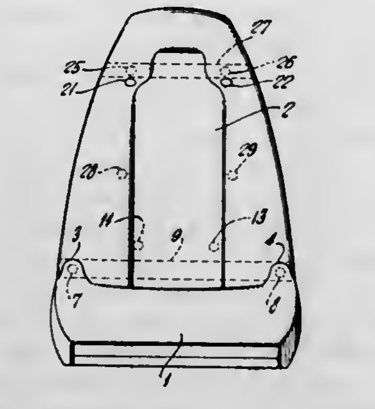


1. In a swingable chair, a base having a continuous band forming a bottom supporting portion from which two upstanding oppositely disposed pedestals extend, a chair unit made of a central and two end sections of U-shape having a central portion and oppositely disposed upstanding arms located between said pedestals, and a pair of pivots for securing the arms of said sections together and to the upper portion of said pedestals.

3,897,105

VEHICLE SAFETY BELT SYSTEM

Takezo Takada, Hikone, Japan, assignor to Takata Kojyo Co., Ltd., Tokyo, Japan
Filed Apr. 4, 1973, Ser. No. 347,986
Claims priority, application Japan, Apr. 17, 1972, 47-37810
Int. Cl.² A62B *35/00*
U.S. Cl. 297—389 **7 Claims**

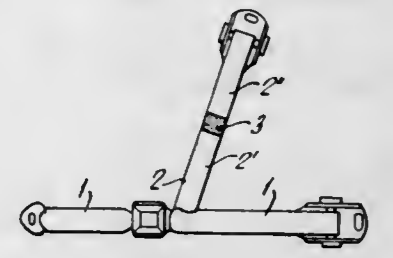


1. In combination with a vehicle seat having a back portion including a front face and a reinforcing frame provided with upper and lower cross members extending for substantially the width of said back portion, a guide roller mounted on each of said cross members proximate a side of said back portion, a pair of seat belts extending rearwardly from forward of said seat back portion about respective guide rollers and fixedly anchored at their rear ends to stationary points on said seat back portion remote from said respective guide rollers, the front ends of said belts being interconnected, and a separable coupling member attached to the front portion of at least one of said belts.

3,897,106

VEHICLE SAFETY BELT

Takezo Takada, 1742 Hikotomi-cho, Hikone, Japan, assignor to Takata Kojyo Co., Ltd., Tokyo, Japan
Filed July 16, 1973, Ser. No. 379,294
Claims priority, application Japan, July 22, 1973, 48-73030
Int. Cl.² A47D *15/00;* B60R *21/10*
U.S. Cl. 297—389 **7 Claims**

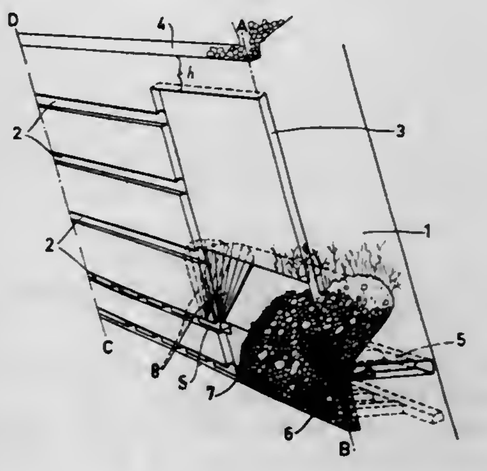


1. A vehicle safety belt of the three point type for restraining an occupant in a seat comprising a shoulder belt including upper and lower sections joined in series at an elongation transition section which is disposed at the normal position of the shoulder of said seat occupant when said shoulder belt is in applied position, and a lap belt coupled to said shoulder belt to form a three point safety belt system, said shoulder belt upper section having a greater elongation per unit length at a predetermined load than said shoulder belt lower section and than said lap belt and further characterized in that said belt upper section possesses an elongation versus load characteristic wherein said belt upper section recoverably extends with increasing load up to a predetermined value and then non-recoverably extends under little load increase for a predetermined elongation and thereafter further recoverably extends with increased load to a predetermined point, release of the stress thereafter on said belt upper section resulting in its contraction to a length greater than its original length by substantially said non-recoverable elongation.

3,897,107

METHOD OF MINING

Mats Torbjorn Haglund, Malmberget, Sweden, assignor to Luossavaara-Kiirunavaara Aktiebolag, Stockholm, Sweden
Filed June 1, 1973, Ser. No. 365,854
Claims priority, application Sweden, June 28, 1972, 8480
Int. Cl. E21c *37/14*
U.S. Cl. 299—13 **1 Claim**



1. A method of mining ore fron an ore body (1) which comprises driving a number of drifts at suitable vertical distances along the footwall (2) of the body; drilling blast holes from said drifts through an arrangement of a fan-shaped pat-

tern (8) of said blast holes partly in such a manner that, after blasting, a slot-shaped opening (3) is obtained in the ore body along the footwall and partly in such a manner that as large part as possible of the ore body is undercut whereby a lowermost heading and an associated heading (5) with connecting crosscuts (6) are utilized as main discharging level, which main discharging level is supplemented with an additional underlying discharging level.

3,897,108
LONG-WALL MINING APPARATUS

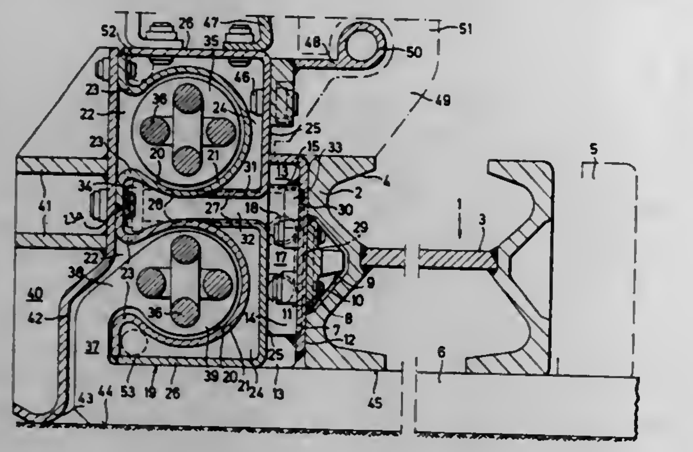
Reinhold Krohm, Herne, and Karl Bahre, Gladbeck, both of Germany, assignors to Klockner-Werke AG, Duisburg, Germany

Filed Oct. 24, 1974, Ser. No. 517,841

Claims priority, application Germany, Nov. 7, 1973, 2355558

Int. Cl.² E21C *27/35*

U.S. Cl. 299—34 **31 Claims**



1. In a long-wall mining apparatus, a combination comprising an elongated conveyor adapted to extend along a mine face and having a bottom, one longitudinal side facing towards and another longitudinal side facing away from said mine face; an elongated casing, mounted on said conveyor at said other side and extending therealong upwardly of said bottom, said casing having two vertically spaced longitudinally extending cylindrical guide tracks each formed with a longitudinal slot at a side of said casing; a plurality of mounting members spaced along said casing and each fixedly embracing the respective guide tracks, said mounting members extending downwardly to substantially the level of said bottom; a ground-engaging support structure carried by said mounting members and projecting downwardly of said bottom adjacent said casing; an endless reciprocating drive chain having an upper and a lower run received in the respective guide tracks; and a coal plough located at said one side of said conveyor and having a rigid connecting portion extending beneath said bottom face to said casing and connected with one run of said chain, so that said connecting portion and coal plough are reciprocated lengthwise of said conveyor when said chain reciprocates in said guide tracks, and said connecting portion is in part relieved of the weight of said conveyor and casing due to the ground-engagement by said support structure.

3,897,109
MULTI-WHEELED EXCAVATING AND LOADING SYSTEM

Charles R. Satterwhite, Dallas, Tex., assignor to Southwest Equipment Developers, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 238,089, March 28, 1972, abandoned. This application Sept. 24, 1973, Ser. No. 400,043

Int. Cl. E02f *3/24*

U.S. Cl. 299—39 **45 Claims**

1. An excavating and loading system comprising:

an excavating wheel assembly comprising axle means and at least two rigid excavating wheels rotatably mounted cantilever on and supported on the axle means, said excavating wheel assembly having a width at least equal to the widest portion of the remainder of the system;

each of said excavating wheels including a plurality of digging buckets located immediately adjacent one another to define the entire circumference of the excavating wheel, each bucket having a cutting edge which extends to a stationary wall and a wall mounted for pivotal movement from a material receiving position to a material dumping position;

supporting and housing means extending between the excavating wheels and connected to the axle means for supporting the excavating wheel assembly;

each of said digging buckets extending continuously between a side wall thereof located immediately adjacent to the supporting means and a side wall thereof defining one end of the excavating wheel assembly;

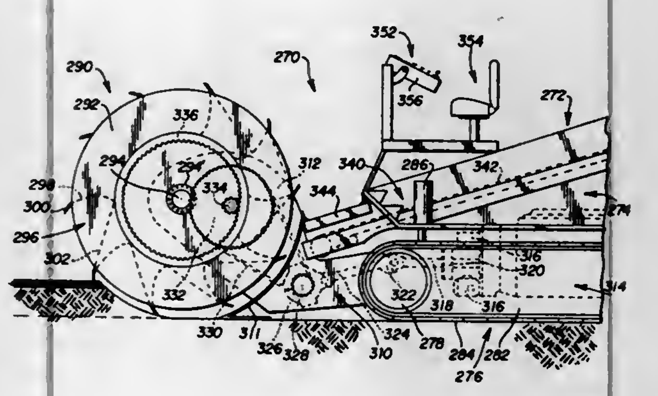
drive means extending through the supporting and housing means for rotating the excavating wheels so that the digging buckets follow a circular path;

said digging buckets being oriented and said drive means operating to move each digging bucket downwardly during the forward portion of its rotation such that the digging buckets are sequentially moved downwardly into engagement with material to be excavated whereby the material engaged by the digging buckets is supported by the ground below thereby allowing the digging buckets to cut off relatively small pieces of the material;

means located within the margins of the excavating wheel assembly and responsive to rotation of the excavating wheels for positively pivoting the movable wall of each digging bucket of the excavating wheels to the material receiving position when the bucket is in the lower and forward portion of the path and for positively pivoting the movable wall to the material dumping position when the bucket is in the upper and rearward portion of the path;

a vehicle for supporting and manipulating the excavating wheel supporting means and thereby positioning the excavating wheel assembly in engagement with material to be excavated; and

conveyor means mounted on the vehicle entirely behind the excavating wheel assembly for movement around a course including a relatively low portion positioned to receive material from the digging buckets of the excavating wheels upon the positioning of the movable walls of the buckets in the material dumping position and a relatively high material delivery portion located rearwardly on the vehicle from the low portion.



3,897,110
MINING EQUIPMENT

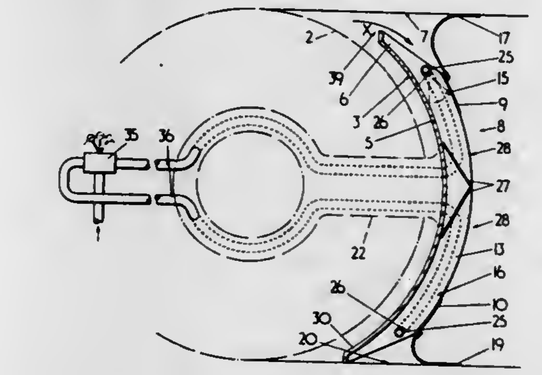
James Malcolm Agnew, Burton-on-Trent, England, assignor to Coal Industry (Patents) Ltd., London, England

Filed June 18, 1974, Ser. No. 480,512

Claims priority, application United Kingdom, July 11, 1973, 33043/73

Int. Cl. E21c *35/20*

U.S. Cl. 299—45 **10 Claims**



1. A loading member for mounting adjacent to a cutter on a mining machine, including a first component assembly having a loading surface which in use when the loading member is mounted on the machine is adjacent to the cutter, a second component assembly associated with the said first component assembly to define an air flow passage having an air flow inlet positioned adjacent to one margin of the said first component assembly, and air flow inducing means including a nozzle for directing an air flow inducing spray along the said passage.

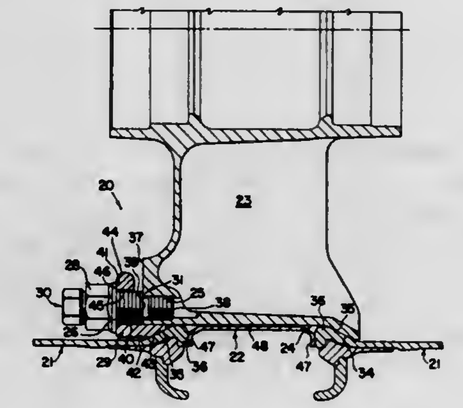
3,897,111
RIM MOUNTING

William D. Walther, Dayton, and Robert A. DeRegnaucourt, Centerville, both of Ohio, assignors to Dayton-Walther Corporation, Dayton, Ohio

Filed Jan. 22, 1973, Ser. No. 325,510. The portion of the term of this patent subsequent to Oct. 22, 1991, has been disclaimed.

Int. Cl. B60b *23/10*

U.S. Cl. 301—12 R **8 Claims**



1. An assembly for mounting of at least one rim having a mounting flange on the felloe of a wheel,

said assembly comprising a series of support bolts, fastening nuts and clamp elements,

said wheel having a series of axially directed bores adjacent said wheel felloe for rotatably receiving the axially inner portion of a support bolt,

each support bolt having a medial portion with external threads for rotatably mounting a fastening nut,

each fastening nut having a radially oriented flange surface for engaging a clamp element,

each clamp element having an axially directed bore for housing said support bolt and an axially directed portion for engaging the rim mounting flange,

the axially outer portion of a support bolt having a cap head thereon which when rotated will cause a fastening nut on said bolt threads to engage said clamp element and move said clamp element axially toward the rim mounting flange,

there being stop means on the medial portion of a support bolt to limit the extent of axially inward movement of a fastening nut and clamp element,

whereby, subsequent rotation of a fastening nut away from said cap head will fully seat the rim on the wheel.

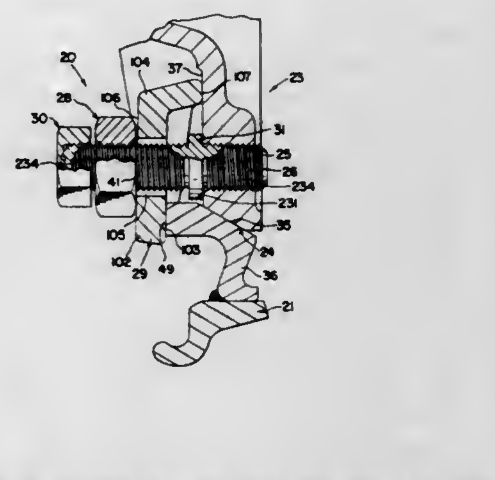
3,897,112
RIM MOUNTING

William D. Walther, Kettering, and Robert A. DeRegnaucourt, Centerville, both of Ohio, assignors to Dayton-Walther Corporation, Dayton, Ohio

Continuation-in-part of Ser. No. 325,510, Jan. 22, 1973. This application Dec. 26, 1973, Ser. No. 428,088. The portion of the term of this patent subsequent to Oct. 22, 1991, has been disclaimed.

Int. Cl. B60b *23/10*

U.S. Cl. 301—13 SM **10 Claims**



1. An assembly for mounting at least one rim with a mounting flange on the felloe of a wheel,

said assembly comprising a series of threaded support bolts, fastening nuts and clamp elements,

said wheel having a series of axially directed bores adjacent said wheel felloe for rotatably receiving threads on the axially inner end of a support bolt,

each fastening nut being rotatably mounted on threads on the medial portion of a support bolt and having a radially oriented flange surface for engaging a clamp element,

each clamp element having an axially directed bore for housing a support bolt and an axially directed portion for engaging the rim mounting flange,

each support bolt having a stop collar formed integrally thereon between the threads received in a wheel bore and the threads mounting a fastening nut,

said stop collar being formed at a precise location according to predetermined functional dimensions and tolerances of said rim flange and said wheel and having an effective outer diameter greater than the inner diameter of said bore in a clamp element,

the axially outer portion of a support bolt having a cap head secured thereon after insertion of said axially outer portion through the bore of a clamp element and then through a fastening nut,

said cap head when rotated causing a fastening nut on said bolt threads to engage a clamp element and move said clamp element axially toward the rim mounting flange until said stop collar contacts said wheel,

whereby, subsequent rotation of a fastening nut away from said cap head will move a clamp element to fully seat the rim on the wheel.

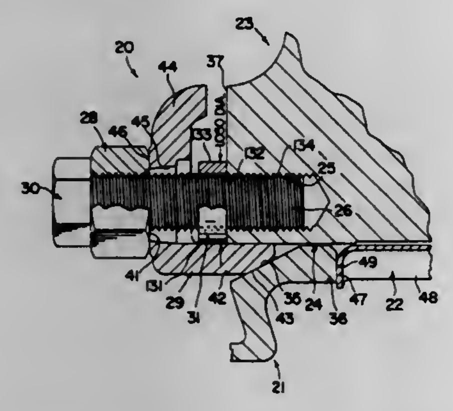
3,897,113
RIM MOUNTING

William D. Walther, Kettering, and Robert A. DeRegnaucourt, Centerville, both of Ohio, assignors to Dayton-Walther Corporation, Dayton, Ohio

Continuation-in-part of Ser. No. 325,510, Jan. 22, 1973. This application Dec. 10, 1973, Ser. No. 423,310. The portion of the term of this patent subsequent to Oct. 22, 1991, has been disclaimed.

Int. Cl. B60b *23/10*

U.S. Cl. 301—13 SM **5 Claims**



1. An assembly for mounting at least one rim with a mounting flange on the felloe of a wheel,
said assembly comprising a series of support bolts, fastening nuts, clamp elements, and ring collars,
each support bolt having external threads of uniform diameter for rotatabley mounting a fastening nut and a ring collar,
said wheel having a series of axially directed bores adjacent said wheel felloe for rotatably receiving the threads of a support bolt,
each fastening nut having a radially oriented flange surface for engaging a clamp element,
each clamp element having an axially directed bore for housing a support bolt and an axially directed portion for engaging said rim mounting flange,
each ring collar being secured on a support bolt axially inwardly of a clamp element in a precise location according to predetermined functional dimensions and tolerances of said rim flange and said wheel and having an effective outer diameter greater than the inner diameter of said bore in said clamp element,
the axially outer portion of a support bolt having a cap head thereon which when rotated will cause a fastening nut on said bolt threads to engage a clamp element and move said clamp element axially toward the rim mounting flange until a ring collar contacts said wheel,
whereby, subsequent rotation of a fastening nut away from said cap head will move a clamp element to fully seat the rim on the wheel.

3,897,114
SKID CONTROL SYSTEM

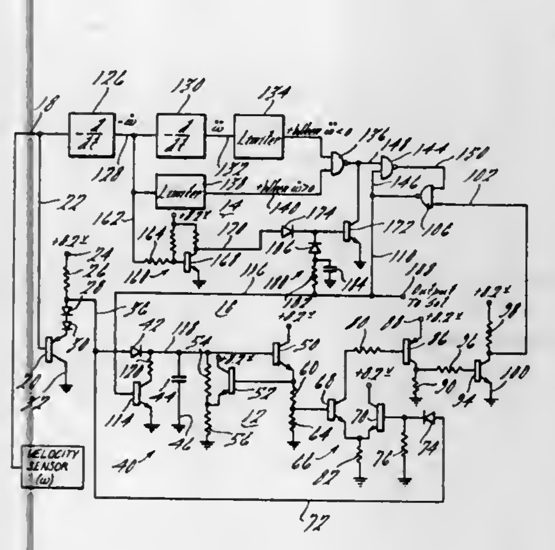
Ronald S. Scharlack, San Antonio, Tex., assignor to Kelsey-Hayes Company, Romulus, Mich.

Filed Sept. 3, 1969, Ser. No. 854,876

Int. Cl. B60t *8/08*

U.S. Cl. 303—21 BE **9 Claims**

1. In a skid control system for controlling the application and release of brake pressure to at least one wheel of a vehicle, the improvement comprising sensing means for sensing the wheel angular velocity, generating means for generating a signal which is an approximation of the vehicle velocity from said wheel velocity signal and comparator circuit means for deriving a slip signal in response to said wheel and vehicle velocity signals, said generating means including means connected to said wheel velocity sensing means for establishing a characteristic of said vehicle velocity curve including establishing a starting point for said signal from said wheel velocity sensing means and means for decreasing said vehicle velocity signal independently of the actual vehicle velocity in accordance with a preselected curve when said curve is below said starting point by a preselected amount, said comparator circuit including differential circuit means for comparing the vehicle velocity signal with the wheel velocity signal during the braked portion of the cycle for stopping the vehicle and deriving an output signal when said wheel velocity signal bears a preselected relationship to the vehicle velocity signal, said vehicle velocity signal being a linearly decreasing ramp, said system further including a charge storage device, said charge storage device being supplied with electrical energy when said wheel velocity signal bears a preselected relationship to the charge on said storage device, said preselected relationship occurring when the wheel velocity signal exceeds the charge on said storage device, said system further including a circuit for discharging said storage device when said wheel velocity signal is less than the charge on the storage device, the discharge circuit causing the discharge of said storage device in accordance with a preselected deceleration relationship to approximate the deceleration of the vehicle, means for giving greater effect to said vehicle velocity signal as compared to said wheel velocity signal to create a differential between said signals, said differential creating circuit means including a fixed voltage drop circuit in said vehicle velocity signal generating circuit and a fixed voltage drop circuit in said wheel velocity signal generating circuit, the fixed drop of said vehicle velocity circuit exceeding that of said wheel velocity circuit, means for generating an output signal when said wheel velocity signal falls a preselected magnitude below said vehicle velocity signal to create a critical slip signal, an output circuit for controlling the application of brake pressure, said critical slip signal providing an output signal to release brake pressure when a critical value is obtained, and slip circuit disabling means connected in responsive relationship to said output circuit, said disabling means operating to disable the slip circuit when said output signal is generated, said critical slip signal causing a brake relieving condition which relieves brake pressure on the vehicle wheels, said skid control system further including pressure applying circuit means including first signal generating circuit means responsive to said wheel velocity signal for generating a rate of change of wheel acceleration signal and second circuit means for generating a wheel acceleration signal and output gate means correlating said rate of change of wheel acceleration signal and said wheel acceleration signal to control the reapplication of brake pressure to the wheels.



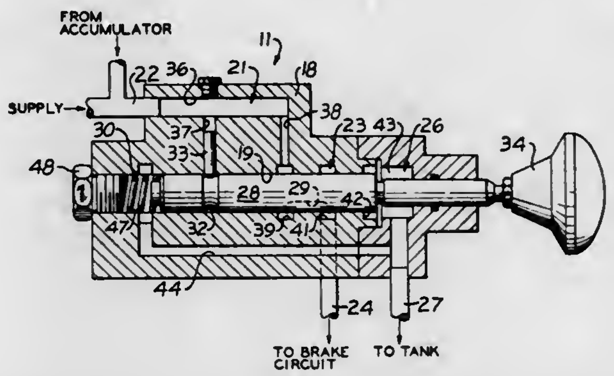
3,897,115
CONTROL VALVE FOR HYDRAULIC CIRCUIT

Robert L. DeGeeter, and George E. Schubert, both of Aurora, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 14, 1973, Ser. No. 415,721

Int. Cl.² B60T *15/16*

U.S. Cl. 303—71 **11 Claims**



1. Control valve means for controlling a hydraulic circuit supplying fluid to an automatically actuated-pressure released brake including; a valve body having a bore means therein, first passage means in said valve body for communicating said bore means with a fluid supply source for said hydraulic circuit, second passage means in said valve body for communicating said bore means with said pressure released brake, third passage means communicating said bore means with a drain means, valve member means disposed within said bore means positionable in a first position for communicating fluid between said first passage means and said second passage means while concurrently preventing fluid flow between said second passage means and said third passage means, said valve member means being further positionable in a second position for communicating fluid between said second passage means and said third passage means while concurrently preventing fluid flow between said first passage means and said second passage means, said valve member means including means for allowing said valve member means to be automatically positionable in said second position upon the attainment of a predetermined low level of fluid pressure in said hydraulic circuit, said valve member means being further manually movable to said second position and said first position, said valve member means in said first position communicating said fluid supply source with said pressure released brake to release said brake and said valve member means in said second position communicating said brake with said drain means for automatically engaging said brake.

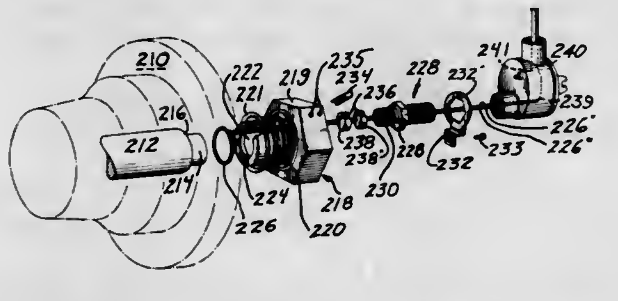
3,897,116
BEARING WEAR DETECTOR

Richard G. Carpenter, Horsham Township, Montgomery County, Pa., assignor to Crane Co., New York, N.Y.

Continuation-in-part of Ser. No. 187,266, Oct. 7, 1971, abandoned. This application Mar. 19, 1973, Ser. No. 342,663

Int. Cl. F16c *41/00*

U.S. Cl. 308—1 A **5 Claims**



1. In combination with a bearing and rotating shaft assembly, a wear detector, said wear detector comprising a closed electrically conductive wire loop, an insulated covering on said wire loop, a holder, said holder including a mounting shank terminating in a recessed end positioned about an end portion of the shaft in outwardly spaced relation thereto, the covered loop being positioned within said recessed end for mounting thereby in outwardly spaced surrounding relation to the end portion of the shaft, said insulated covering insulating said loop from the shaft completely thereabout for abrasion by the shaft upon radial displacement of said shaft in any direction upon a wearing of the bearing to effect an electrical connection between the shaft and wire loop, conductor leads extending from said loop, and alarm means electrically engaged with said leads.

3,897,117
CENTERING DEVICE FOR A RAIL BRAKE MAGNET

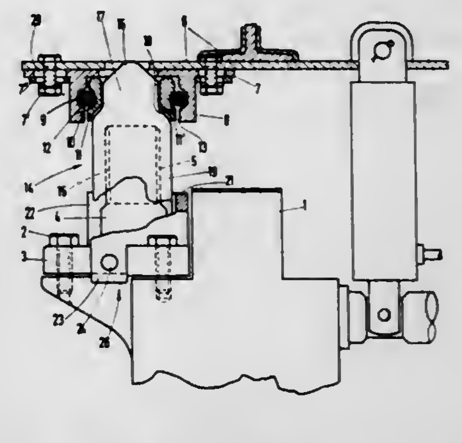
Ernst Katzer, Munich, Germany, assignor to Knorr-Bremse GmbH, Munich, Germany

Filed July 12, 1974, Ser. No. 488,258

Claims priority, application Germany, July 20, 1973, 2336999

Int. Cl.² F16C *29/02;* **F16d** *65/34*

U.S. Cl. 308—3 R **8 Claims**



1. A device for aligning a rail brake magnet in the raised inoperative position with respect to the vehicle structure from which it is suspended, comprising a guide element on said vehicle structure and having a centering bore with a first conical surface around said bore, a centering pin having a conical surface on one end thereof and its other end mounted on said magnet, a first cylindrical surface on said centering pin adjacent said conical end surface and having a diameter approximately equal to that of said centering bore so as to be received therein, and a second conical surface diverging from said first cylindrical surface and engageable with said guide element conical surface when the magnet is in its raised position.

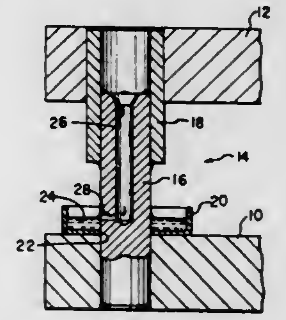
3,897,118
ANTI-FRICTION DIE SET

Maurice Wolfthal, Ossining, N.Y., assignor to Stewart Stamping Corporation, Yonkers, N.Y.

Filed Oct. 15, 1973, Ser. No. 406,387

Int. Cl.² F16C *1/26*

U.S. Cl. 308—4 C **6 Claims**



4. A die guide set including a vertically mounted lower leader pin, an upper guide bushing telescopically associated

around said leader pin, an anti-friction bearing positioned between said leader pin and said guide bushing for reducing friction between said pin and said guide bushing, said bearing including a longitudinally movable frame housing a plurality of bearing surfaces, said pin having an interior passaged formed therethrough having one end opening from the top edge surface of said pin, said passage extending at least partially within and along the length of said pin, a lubricant reservoir mounted around said pin, said pin and bushing being located so that the free end of said bushing is adapted to be within said lubricant reservoir at intervals during operation of the die guide set whereby a coating of lubricant is adapted to be applied between said pin and said bushing, said interior passage extending through said pin and having its other end opening into said reservoir defining an unimpeded passage through said pin.

3,897,119

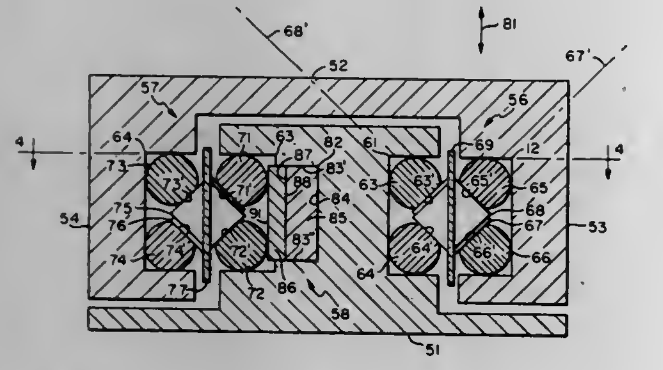
LINEAR BEARING SLIDE

Thomas McMurtrie, Medfield, Mass., assignor to Design Components, Inc., Medfield, Mass.

Continuation of Ser. No. 194,133, Nov. 1, 1971. This application Nov. 23, 1973, Ser. No. 418,368

Int. Cl. F16c *17/00*

U.S. Cl. 308—6 R **6 Claims**



1. A slide bearing support apparatus including one member slidable on another member, the combination comprising:

a pair of parallel slide bearing assemblies disposed between said members and each comprising;

a pair of elongated, rectilinear rods having central axes parallel to each other, the longitudinal surfaces of each of said rods including an elongated curved portion and an oppositely directed coextending flat portion, said flat portions of said rods being spaced apart and facing each other to define an elongated rectilinear raceway;

a plurality of rollers disposed in said raceway and contacting the flat portions on said rods; and

rod support surfaces defined by each of said members, said support surfaces defined by said one member contacting the curved portion on one of said rods and said support surfaces defined by said another member contacting the curved portion on the other of said rods, and wherein said support surfaces are shaped so as to restrict movement of said rods in directions transverse their axes and to allow unrestrained rotational movement of the entire rods thereabout without creating torsional stresses in said rods.

3,897,120

TILTABLE CONVERTER SELF-ALIGNING BEARING

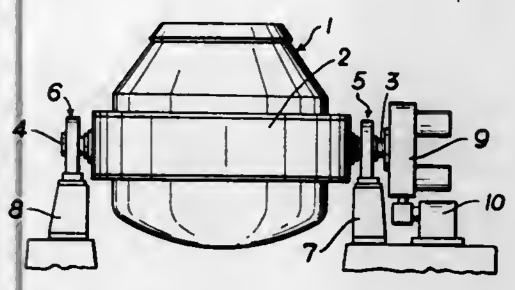
Ernst Riegler, Enns, and Manfred Schmidt, Linz, both of Austria, assignors to Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft, Linz, Austria

Filed Oct. 31, 1973, Ser. No. 411,456

Claims priority, application Austria, Jan. 30, 1973, 777/73

Int. Cl. F16c *1/24, 23/04, 33/72*

U.S. Cl. 308—36.1 **7 Claims**



1. A support arrangement for a tiltable converter comprising a plurality of trunnions secured to the converter and a plurality of bearing assemblies that mount and support the trunnions, each bearing assembly mounting a different trunnion and at least one of the bearing assemblies including:

a. a bearing adapted to accommodate angular and wobbling movements of one of the trunnions and having an inner ring encircling said one trunnion and an outer ring encircling the inner ring;

b. two spacer ring assemblies encircling said one trunnion and located adjacent different ends of the inner ring of the bearing to maintain the inner ring in position axially of said one trunnion;

c. a bearing housing encircling the bearing and including annular portions that depend radially inwardly adjacent each end of the bearing; and

d. annular resilient means for sealing the bearing housing, at least one of the spacer ring assemblies including

  i. two arcuate spacer ring parts that have complementary circumferential extents and are juxtaposed with the inner ring of the bearing and with said one trunnion, the two spacer ring parts being disposed opposite each other about said one trunnion so that adjacent ends of the two spacer ring parts are spaced apart circumferentially of said one trunnion from each other, and

  ii. a retaining ring that closely encircles the two spacer ring parts, the outer circumferential surface of said one trunnion in a region adjacent said spacer ring parts having a conical shape and the inner circumferential surfaces of the spacer ring parts having complementary, conical shapes so that the conical surfaces of the spacer ring parts cooperate with the conical surface of said one trunnion to maintain said at least one spacer ring assembly in position axially of said one trunnion.

3,897,121

TILTABLE CONVERTER SELF-ALIGNING BEARING

Ernst Riegler, Enns, and Manfred Schmidt, Linz, both of Austria, assignors to Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft, Linz, Austria

Filed Oct. 31, 1973, Ser. No. 411,428

Claims priority, application Austria, Jan. 30, 1973, 776/73

Int. Cl. F16c *1/24, 23/04, 33/72*

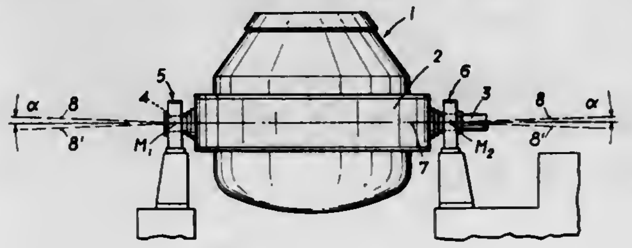
U.S. Cl. 308—36.1 **5 Claims**

1. A bearing assembly for supporting a carrying trunnion of a tiltable converter comprising:

a. bearing for journaling a carrying trunnion and being adapted to accommodate angular and wobbling movements of the trunnion;

b. a bearing housing enclosing the bearing and including (i) two annular, radially inwardly depending flange portions located at different ends of the housing and (ii) sealing means including an annular, axially extending sleeve portion located at a radially inward end of each flange portion of the housing;

c. at least one spacer ring located adjacent each end of the bearing, the spacer rings being adapted to encircle a carrying trunnion and to be secured on the trunnion so as to fix the bearing in position axially of the trunnion, a recess being formed in the radially outer periphery of said at least one spacer ring at each end of the bearing to extend axially and circumferentially of said spacer ring and a sleeve portion of the housing being received in each recess, the sleeve portions and the recesses being dimensioned and located such that the sleeve portions are adapted to be spaced both radially and axially of adjacent surfaces of the spacer rings; and



d. a pasty sealing agent filling spaces between the sleeve portions and the spacer rings;

each sleeve portion having at least one flange projecting radially inwardly of the sleeve portion and the recesses of the spacer rings being correspondingly configured to receive the flanges of the sleeve portions so that said flanges are spaced from adjacent surfaces of the spacer rings, at least one flange on each sleeve portion being located between opposite ends of the sleeve portion, radially extending lateral surfaces of the flanges of the sleeve portions and adjacent radially extending surfaces of the spacer rings having spherical configurations all generated from a common center point located adjacent the center of the bearing.

3,897,122

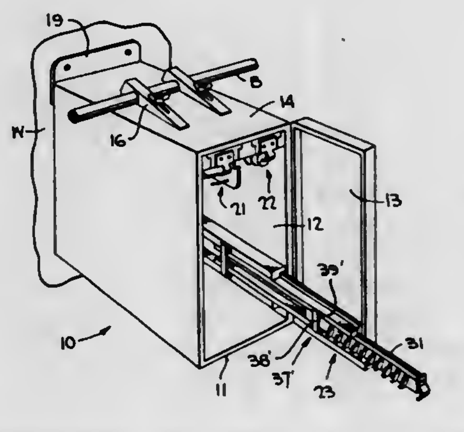
NECKWEAR CABINET

Wilber C. McEvers, 655 Ave. C, S.W., Winter Haven, Fla. 33880

Filed May 14, 1973, Ser. No. 360,072

Int. Cl. A47b *88/00, 95/00*

U.S. Cl. 312—321 **2 Claims**



1. A neckwear support and display cabinet comprising a plurality of guideways mounted in said cabinet, a plurality of telescoping bars slidably mounted in said guideways, each of said bars including at least two interfitting sections, means for supporting neckwear connected to said bars, said supporting means comprising at least a first set of hangers connected to one bar for hanging a first type of neckwear and a second set of different hangers connected to another bar for a second different type of neckwear, and mounting means for said cabinet, the neckwear supporting sections of said telescoping bars being individually extendable outside said cabinet whereby a relatively large volume of diverse neckwear may be stored and neckwear types individually displayed for selection, wherein said mounting means includes at least one mounting bracket for engaging a clothes rod in a closet, said mounting bracket being elongated and including a transverse cutout to receive said clothes rod, said bracket containing a longitudinal slot, and fastening means extending through said slot for adjustably attaching said cabinet to said brackets.

3,897,123

DEVICE FOR CONTROLLING THE LOCKING OF CONTAINERS ON AN ORBITABLE CARRIER OF AN ARTICLE STORAGE DEVICE

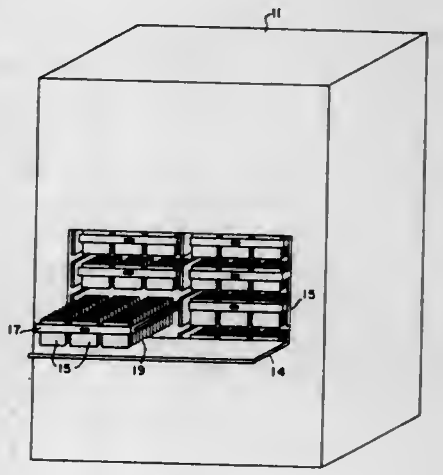
Gerhard Ludwig Schmitt, Bellheim, Germany, assignor to Sperry Rand Corporation, Blue Bell, Pa.

Filed Apr. 23, 1974, Ser. No. 463,330

Claims priority, application Switzerland, Apr. 25, 1973, 5860/73; Germany, June 7, 1973, 2329127

Int. Cl.^{2} A47B *88/00*

U.S. Cl. 312—333 **3 Claims**



1. Apparatus for controlling the locking of a container or the like on an orbitable carrier of an article storage device, said apparatus comprising:

locking means including a pair of lock bolts mounted on the front of the container and movable relative to the associated carrier for engagement therewith when the container is in a fully closed position so as to lock the container to the carrier,

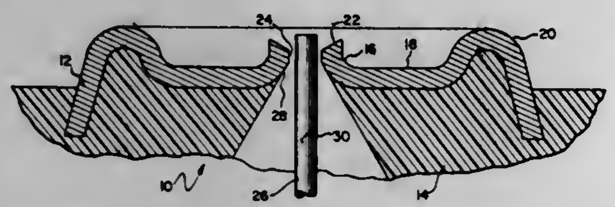
means including a pair of spring actuated members each affixed to the carrier adjacent a respective side of the container for acting against the container as it approaches the fully closed position so that if the container does not lock to the carrier, the spring actuated members force the container outward to protrude from the front of the carrier a predetermined distance, and

light barrier means including a light source and a light detector disposed on opposite sides of the carrier adjacent the front of the article storage device, the light detector normally receiving light from the light source in a locked condition of the container to enable orbital motion of the carrier but the container acting when protruding from the carrier to block the light path from the light source to the detector and thereby inhibit orbital motion of the carrier.

3,897,124
LAMP BASE ASSEMBLY

Gasper Pagnotta, Schenectady, and William G. Moffatt, Ballston Lake, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 14, 1973, Ser. No. 415,628
Int. Cl. H01r *11/06*
U.S. Cl. 339—145 T **16 Claims**

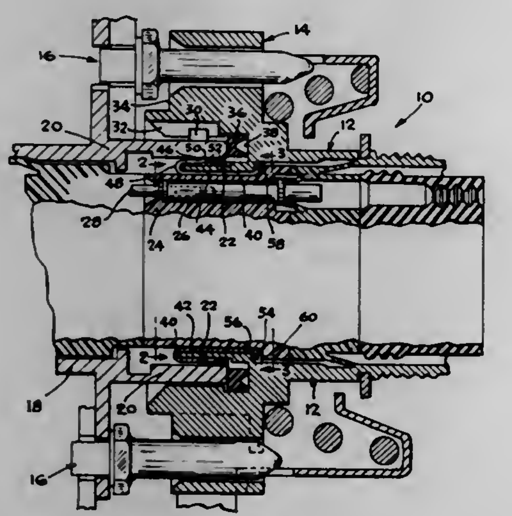


1. An electrically conductive ferrule comprising:
a. an electrically conductive material;
b. two major opposed surfaces substantially parallel to each other;
c. a raised boss having a wall member extending from one of the two major surfaces, the wall member having a re-entrant portion located remote from the one major surface and an interior wall surface defining an aperture extending entirely through the ferrule and the boss;
d. a raised rim encircling the raised boss and extending from the one major surface,
e. an electrical lead disposed in the aperture and extending upwardly through the raised boss, and
f. a substantially sound electrically conductive weld nugget joining together the electrical lead and the re-entrant portion of the ferrule, the material of the weld nugget consisting essentially of material of the raised boss and material of the electrical lead.

3,897,125
CAPTIVATED GROUNDING SPRING

Norman R. Anderson, Cicero, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed July 12, 1974, Ser. No. 488,176
Int. Cl. H01r *3/06*
U.S. Cl. 339—14 L **13 Claims**

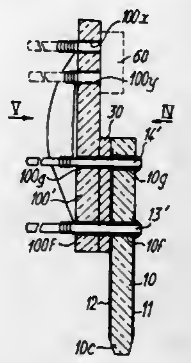


11. A grounding spring and connector shell assembly comprising;
a connector shell having an annularly shaped front end with a radially outwardly extending shoulder formed in the internal surface of said shell spaced rearwardly of said front end and a key extending axially rearwardly of said shoulder;
an annularly shaped portion of resilient conductive material having an axial passageway therein extending between opposite axial ends of said portion for enabling reduction in the circumferential dimension of said portion for receipt in said front end;
a plurality of cantilever spring fingers formed at one axial end of said portion and folded back in overlapping radially outwardly spaced relationship to said portion for receiving front end of said shell between said fingers and said portion;
an annularly shaped radially outwardly extending lip formed at the other axial end of said portion and engaging said shoulder on the internal surface of said shell for preventing axial movement of said portion toward said front end; and passageway means in said lip for receiving said key to hold said portion against rotational movement relative said shell.

3,897,126
DOUBLE-SIDED PRINTED CIRCUIT CONNECTION BOARD WITH INSERTABLE MALE CONNECTOR PLUG

Andre L. Frances, 1, Allee des Ajoncs, 22300 Lannion, and Jack E. Brochon, Rue Surcouf, 22700 Perros-Guirec, both of France

Filed May 14, 1974, Ser. No. 469,773
Claims priority, application France, June 8, 1973, 73.21024
Int. Cl.² H05K *1/04*
U.S. Cl. 339—17 LC **1 Claim**

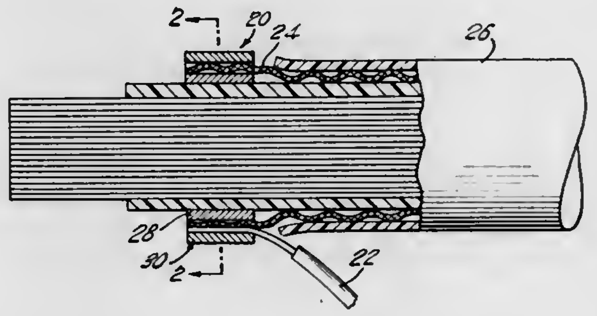


1. A connecting device comprising:
a rectangular board having at its upper part a plurality of rows of holes parallel to the upper edge of said board and at its lower part two rows of holes parallel to said upper edge;
first conductive pins inserted in the holes of the upper part of the board and projecting from the front side of said board which are adapted at their rear ends for connecting electrical components set near the back side of said board by soldering the terminals of said components to said pins;
a printed circuit connecting plate which is parallel to said board and faces the lower part thereof, said printed circuit connecting plate having equally spaced parallel conductive strips on each side extending from the lower edge of said plate and which are drilled at their ends remote from said edge with holes forming two spaced rows of holes opposite to the rows of holes of the lower part of said board;
said printed circuit connecting plate having a part extending below the lower edge of said board;
an insulating plate;
said insulating plate being sandwiched between said lower part of said board and said printed circuit plate which is drilled with holes having the same pattern as on said printed circuit connecting plate and said rectangular board;
second conductive pins adapted for passing through selected associated holes of said board, said insulating plate, and said printed circuit connecting plate perpendicularly with respect to said connecting device and which are soldered with corresponding conductive strips of said printed circuit connecting plate and which project from the front side of the lower part of the board; and,
conductive wires wrapped around projecting parts of said first and second pins adapted for connecting a selected first pin and a selected second pin so that a selected conductive strip of said printed circuit plate is connected to a terminal of a selected component of said connecting device.

3,897,127
MEANS FOR GROUNDING A SHIELDED CABLE

Louis F. Haitmanek, Florham Park, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.

Filed Mar. 8, 1974, Ser. No. 449,270
Int. Cl.² H01R *11/08, 11/20*
U.S. Cl. 339—97 C **3 Claims**



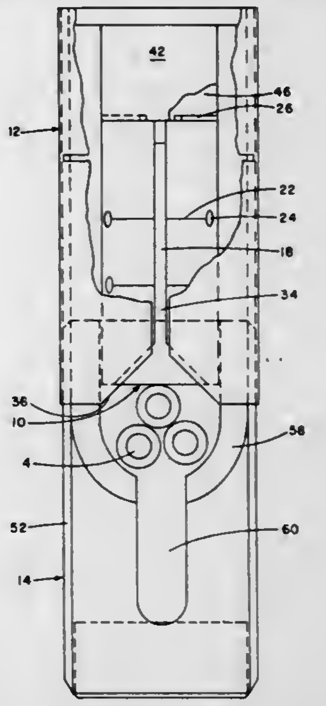
1. Means for joining an external conductor to the sheath of a metallically sheathed cable comprising: a first hollow metallic sleeve member having an inner surface and an outer surface; a second hollow metallic sleeve member having an inner surface and an outer surface, said first sleeve member being arranged to fit coaxially within said second sleeve member while providing a predetermined annular gap therebetween for receiving a portion of the sheath of a metallically sheathed cable within said gap; and insulation piercing sheath engaging means selectively positioned about at least one of said first member outer surface and said second member inner surface; said second sleeve member being compressible about said first sleeve member so as to cause said sheath engaging means to engage such cable sheath portion and an external conductor interposed within said gap to electrically join such external conductor to such cable sheath portion at least through one of said first sleeve member and said second sleeve member upon the compression of said second sleeve member about said first sleeve member, said first sleeve member outer surface having at least one generally longitudinally extending recess arranged to at least partially accommodate a given length of such external conductor therewithin.

3,897,128
PRE-INSULATED CONNECTING DEVICE FOR A PLURALITY OF WIRES HAVING INSULATION DISPLACING FEATURES

Robert Philmore Reavis, Jr., Statesville, N.C., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 25, 1974, Ser. No. 454,182
Int. Cl. H01r *11/20*
U.S. Cl. 339—98 **6 Claims**

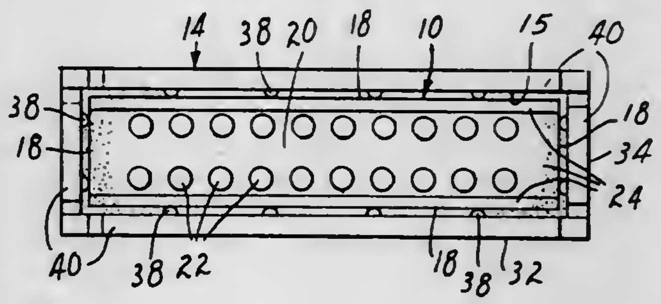
1. A connecting device for electrically connecting at least two insulated wires to each other, said connecting device comprising:
a formed tubular metallic terminal member having an axially extending open seam, said seam constituting a wire-receiving and insulation displacing slot extending therein from one end thereof,
a two-part insulating housing comprising a first generally tubular housing part having an open end, said tubular terminal member being concentrically contained in said first housing part with said one end of said terminal member proximate to said open end, said first housing part having a first housing slot extending therein from said open end, said first housing slot being in registry with said wire-receiving slot,
said housing comprising a second generally tubular housing part having an open end which extends into, and is telescopically slidable into, said open end of said first housing part, said second housing part having a wire receiving recess proximate to its open end and having a wire aligning slot extending axially from said recess, said wire aligning slot being in axial alignment with said wire receiving slot and said first housing slot and having a width which is substantially equal to the diameter of one of said wires and a length which is at least equal to the combined diameters of said wires whereby, upon locating the ends of said wires in said recess and telescopically moving said second housing part into said first housing part, said wires move relatively into said wire aligning slot and upon further movement of said second housing part into said first housing part, said wires will be moved into said wire receiving slot and into said first housing slot whereby the edges of said wire receiving slot penetrate the insulation of said wires and establish electrical contact with the cores thereof.



3,897,129
CONNECTOR ENCAPSULATING DEVICE AND METHOD

John A. Farrar, Jr., Atlanta, Ga., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sept. 26, 1973, Ser. No. 400,951
Int. Cl. H01r *7/04, 13/52*
U.S. Cl. 339—116 C **5 Claims**



1. A method for encapsulating a connector having side walls extending between first and second ends which connector electrically interconnects a plurality of wires projecting from its first end, said method including the steps of:
providing a housing having a socket with a bottom opposite an unrestricted open end, the socket being adapted to closely fit around and completely receive the side walls and second end of the connector with its first end facing the open end of the socket and the wires extending there-

through, said housing having a plurality of projections defining, when a connector is within the socket, passageways extending from the bottom of the socket to the open end, and having a quantity of viscous, water restricting electrically insulating encapsulating material in the socket, the quantity being at least sufficient to fill the socket for a predetermined distance over the connector after the second end of the connector is positioned at the bottom of the socket;

positioning the connector in the socket with its second end adjacent the bottom thereof and in contact with the encapsulating material;

pressing the positioned connector into the open end of the socket with sufficient pressure to force the encapsulating material into and through the passageways to deposit a portion of the encapsulating material at the first end of the connector; and

spreading the portion of the encapsulating material at the first end of the connector around the wires and over the first end of the connector.

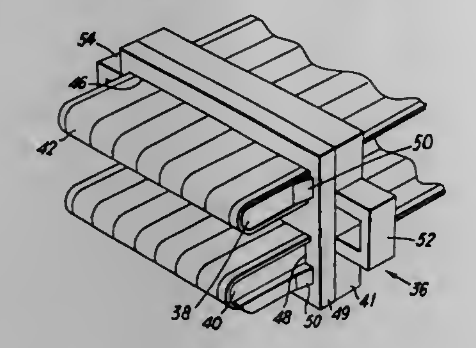
3,897,130
FLAT CABLE CONNECTOR

Robert William Donnelly; Anthony John Damoisiaux, both of Basingstoke, and Raymond George Evans, Kingsclere near Newbury, all of England, assignors to ITT Industries, Inc., New York, N.Y.

Filed Dec. 3, 1973, Ser. No. 421,256

Int. Cl.^{2} H01R *13/54;* H05K *1/02*

U.S. Cl. 339—176 MF **5 Claims**



4. An electrical connector for flat cable having conductive tracks comprising:

a. plug and receptacle connector members;

b. said plug connector member comprising a generally rectangular one-piece body of an electrically insulating material having a front face and a rear face with two elongated slots extending from said front face to said rear face, each slot being parallel to a first pair of parallel sides of the body, two parallel finger-like portions each having its base between said slots and each projecting forwardly from said front face of said body toward said receptacle connector member, said finger-like portions being parallel to said two slots, and two hooked arms one on each of the other two sides of said body and extending forwardly from said front face of said body toward said receptacle connector member, wherein in use flat cable is threaded through each of said slots and is wrapped around each of said finger-like portions with the tracks of the cable bared at least on the outside of each said finger-like portion, a retainer being placed between said finger-like portions to urge the cable against the inner faces of the finger-like portions, the resilience of the finger-like portions holding the cable in place;

c. said receptacle connector member comprising a generally rectangular one-piece body of an electrically insulating material having a front face and a rear face with two elongated slots extending from said front face to said rear face, each slot being parallel to a first pair of parallel sides of said body, two parallel finger-like portions each having its base between said slots and each projecting forwardly from said front face of said body toward said plug connector member, said finger-like portions being parallel to said two slots and being spaced apart slightly greater than the distance between the opposite facing surfaces of said plug connector member finger-like portions, outwardly-projecting tines on the narrow sides of said finger-like portions, a generally rectangular frame formed with two parallel slots each of which slidably receives one of said finger-like portions when a flat cable is mounted on it, and two lugs one on each of the other two sides of said body, wherein in use flat cable is threaded through said slots on said body and wrapped around each said finger-like portions, the ends of the flat cable then being adjacent to said front face of said body between said finger-like portions, the tracks on the cables being bared at least on the portions thereof on the inner faces of said finger-like portions, said frame being fitted over said two finger-like portions and urged against said body to hold said flat cables in place, said frame being held in place by said tines; and

d. said finger-like portions of said plug connector member are forced between said finger-like portions of said receptacle connector member with said hooked arms engaged in said lugs on said receptacle connector member.

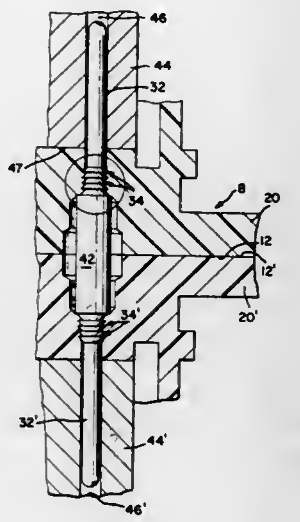
3,897,131
SEALED ELECTRICAL CONNECTING MEANS

Larry Ronald Stauffer, Camp Hill, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 333,241, Feb. 16, 1973, abandoned. This application May 13, 1974, Ser. No. 469,157

Int. Cl. H01r *9/16*

U.S. Cl. 339—220 R **6 Claims**



6. A sealed multi-contact electrical connector intended for use on a bulkhead, said connector comprising:

a housing comprising first and second housing parts,

each of said parts comprising a body portion having a mating face and a rearward face, a plurality of contact receiving cavities extending through each of said housing parts, each of said cavities having an enlarged portion extending inwardly from said rearward face and having a constricted portion adjoining said enlarged portion,

said first and second parts having said rearward faces against each other with said mating faces facing in opposite directions and with said cavities in axial alignment,

an electrical contact terminal member in each of said cavities, each of said contact terminal members having a central enlarged diameter portion, adjacent sealing portions on each side of said enlarged portion, and a contact portion of reduced diameter at each end thereof extending from said sealing portions,

said enlarged portions of each terminal member being in said enlarged cavity portions of said housings, and said sealing portions being driven relatively into said constricted portions of said cavities and being in sealing relationship whereby, said connector is sealed between said mating faces.

3,897,132
METHOD AND APPARATUS FOR CORRECTING PYRAMIDAL ERROR IN AN OPTICAL SYSTEM WITH A MIRROR WHEEL

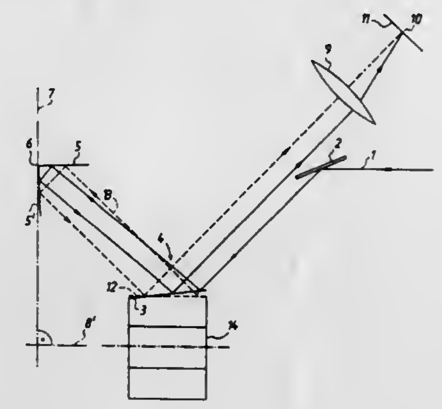
Louis Achilles Meeussen, Mortsel, Belgium; Josef Helmberger, Munich, and Klaus Staddler, Irschenhausen, both of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Germany

Filed Feb. 5, 1974, Ser. No. 439,761

Claims priority, application Germany, Feb. 8, 1973, 2306185

Int. Cl.^{2} G02B *17/00*

U.S. Cl. 350—7 **9 Claims**



1. A method for correcting pyramidal errors in an optical system including a mirror wheel having an axis and a plurality of light-reflective planar surfaces disposed about the circumference of said wheel, each of said planar surfaces being only substantially parallel to said axis and thereby producing respective pyramidal errors, comprising the steps of directing a primary beam of light from a light source onto one of said planar surfaces requiring correction of its pyramidal error so as to produce a first reflected beam; receiving said first reflected beam and at least twice reflecting the latter to direct a second reflected light beam back towards said same one planar surface so as to produce a final reflected beam; and focussing respective ones of said final reflected beams from said planar surfaces at a focal point.

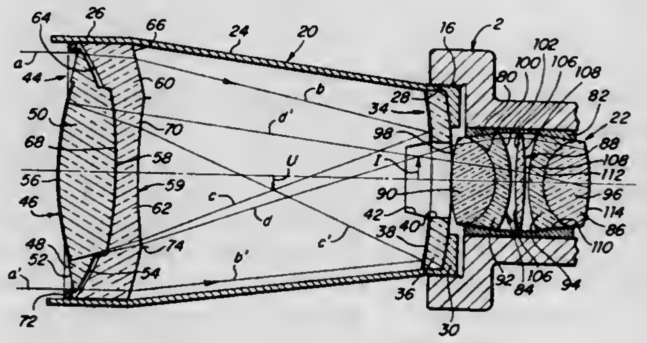
3,897,133
TELESCOPIC OPTICAL SYSTEM

David A. Warner, 100 Memorial Dr., Cambridge, Mass. 02142, and Irving M. Levin, 39 Lewis St., Needham, Mass. 02192

Continuation of Ser. No. 338,102, March 5, 1973, abandoned. This application Oct. 29, 1974, Ser. No. 518,500

Int. Cl. G02b *23/06*

U.S. Cl. 350—55 **13 Claims**



1. A catadioptric system comprising:

a concave main mirror having a central light aperture;

a first plural element correcting refractor positioned to intercept and refract light passing to said main mirror from outside said system, said first refractor comprising a first annular positive lens and a second annular negative lens positioned adjacent to said first lens and between said first lens and said main mirror, said first and second lenses being centered on the axis of said main mirror and said second lens being spaced from said main mirror with an air space therebetween;

a second plural element correcting refractor positioned to intercept and refract light reflected from said main mirror and to reflect said light back to said light aperture, said second correcting refractor being positioned centrally of said first refractor and comprising a third negative lens and a Mangin-type secondary mirror, said secondary mirror comprising a fourth positive lens and a concave reflector in contact with said fourth lens, said secondary mirror being positioned so that light reflected from said main mirror will pass through said fourth lens and be reflected back by said concave reflector, said third lens being positioned between said fourth lens and said main mirror so as to intercept and refract light passing to and from said secondary mirror; and

an air space between said third lens and said main mirror; said third lens being made of a material having a different index of refraction than the material of which said fourth lens is made, and said third lens and said secondary mirror coacting to direct light reflected by said reflector back toward said central aperture and being adapted to form an erect real image between said third lens and said main mirror light aperture.

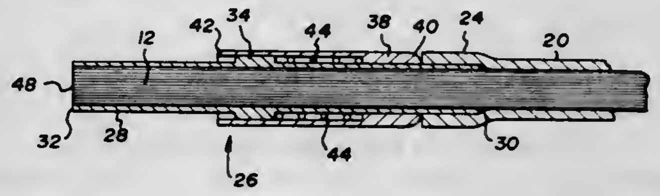
3,897,134
FIBER OPTICS ELEMENT AND DENTAL HANDPIECE CONTAINING THE SAME

Leonard Scrivo, Tuckahoe, and Warren Charles Vetter, Glendale, both of N.Y., assignors to Vicon Products Corporation, Pelham Manor, N.Y.

Filed May 16, 1973, Ser. No. 360,919

Int. Cl. G02b *5/16*

U.S. Cl. 350—96 B **2 Claims**

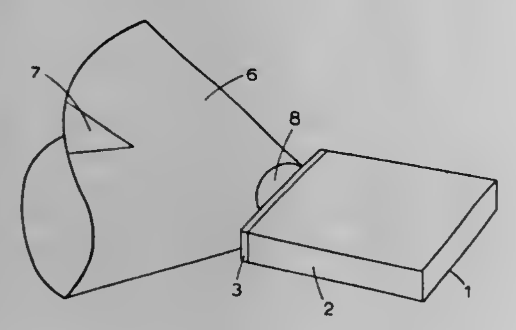


1. A fiber optics element comprising a fiber optics bundle having first and second end portions, each terminating in an optical face, a first tubular guide member disposed about a first portion of said fiber optics bundle, a flexible tubular member disposed about a second portion of said fiber optics bundle disposed adjacent to said first portion thereof, and a plunger assembly comprising a tubular plunger member disposed about a third portion of said fiber optics bundle disposed adjacent to said second portion thereof, said third portion including said second end portion of said fiber optics bundle, said plunger assembly further including a second tubular guide member comprising first and second end portions and being disposed about said tubular plunger member, said plunger member including a stop element disposed between said plunger member and said second tubular guide member, said first end portion of said second tubular guide member being of a diameter such that it cannot pass over said stop element, and said plunger assembly further comprises spring means disposed about said tubular plunger member and between said stop element and said first end portion of said second tubular guide member, and said flexible tubular member includes an overlapping end portion thereof which is disposed about said tubular plunger member such that said second tubular guide member is biased by said spring member into engagement with said overlapping end portion which

overlapping end portion thus serves as a stop for said second tubular guide member such that said fiber optics element comprises a self-supported plunger assembly whereby the second end portion thereof can be depressed into said second tubular guide member and held under compression.

3,897,135
OPTICAL COMMUNICATIONS SYSTEMS

Richard Burnaby Dyott, London, England, assignor to The Post Office, London, England
Filed July 26, 1973, Ser. No. 382,865
Claims priority, application United Kingdom, July 28, 1972, 35372/72
Int. Cl. G02b *5/14*; **H01s** *3/00*
U.S. Cl. 350—96 C **8 Claims**

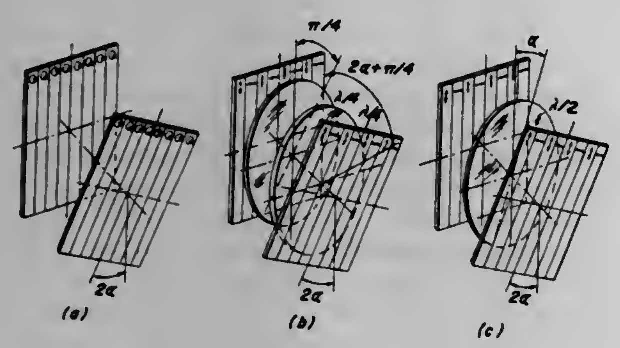


1. A method of launching optical energy, from an element including a GaAs laser having one of its reflective surfaces bloomed, into a dielectric optical waveguide including a tapered length terminating in an end section of minimum cross-sectional area, said method comprising the steps of:

- a. energizing the element so that it is capable of lasing only when an at least partially reflective surface is placed adjacent said bloomed surface; and
- b. positioning the dielectric optical waveguide with its end section of minimum cross-sectional area adjacent the bloomed surface so that lasing action is induced in the element.

3,897,136
POLARIZATION-GRATING MOIRE

Olof Bryngdahl, Cupertino, Calif., assignor to Xerox Corporation, Stamford, Conn.
Filed Mar. 9, 1973, Ser. No. 339,676
Int. Cl. G02b *5/30*
U.S. Cl. 350—159 **16 Claims**



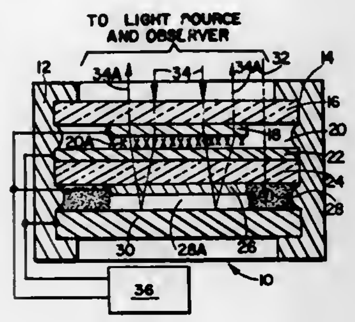
1. Apparatus for the formation of moire-fringe patterns comprising a first grating structure having a periodic variation of polarization,

at leat a second grating structure having a periodic variation of polarization positioned in superposition with said first grating structure in a defined optical path, and

means for illuminating said grating structures whereby a moire-fringe pattern is formed.

3,897,137
DISPLAY DEVICE CONTAINING A LIQUID-CRYSTAL CELL AND A SUSPENDED-CRYSTAL CELL ARRANGED IN SERIES

John P. Dobbins, San Marino, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.
Filed Jan. 28, 1974, Ser. No. 437,594
Int. Cl.² G02F *1/13*
U.S. Cl. 350—160 LC **13 Claims**



1. In combination,

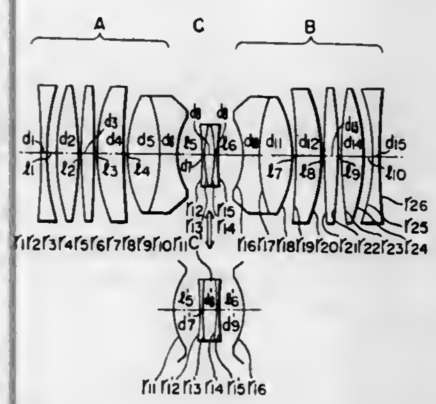
a liquid-crystal cell, which becomes transformed from a transparent state to a turbid state upon being energized

a suspended-crystal cell which becomes transformed from an absorptive state to a transparent state upon being energized disposed adjacent to and overlying said liquid-crystal cell, and

means for selectively energizing each of said cells concurrently to produce a display effect by the combined operation of the respective cells in response to the energizing thereof.

3,897,138
PROJECTION LENS FOR MASK PATTERN PRINTING

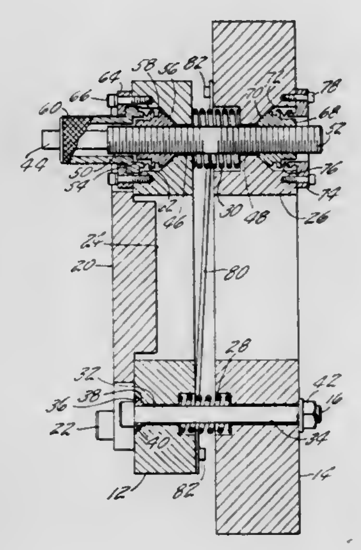
Ichiro Kano, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Japan
Continuation of Ser. No. 307,389, Nov. 17, 1972, abandoned. This application Aug. 16, 1974, Ser. No. 498,286
Claims priority, application Japan, Nov. 24, 1971, 46-93709
Int. Cl. G02b *9/64*, *13/24*
U.S. Cl. 350—183 **7 Claims**



1. A projection lens for mask pattern printing comprising a photographic lens arrangement which is interposed between an image plane and an object plane and used for both the alignment and the printing, and including at least one group of fixedly spaced lenses corrected for chromatic aberrations with respect to at least four wavelengths, and a pair of interchangeable lens elements which are interchangeably inserted into said arrangement at identical axial positions therein, one of said interchangeable lens elements being corrected for chromatic aberrations for at least two of said wavelengths and being designed for the alignment and inserted during alignment; the other of said interchangeable lens elements being corrected for chromatic aberrations for at least the other two wavelengths and being designed for the printing and inserted during printing; the axial spacing between said photographic lens arrangement and the image plane remaining the same during both alignment and printing, and the axial spacing between the object plane and the image plane remaining the same during both alignment and printing.

3,897,139
ADJUSTABLE MOUNTING APPARATUS

Antonio B. Caruolo, Vernon, and Allan P. Walch, Manchester, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed Apr. 15, 1974, Ser. No. 461,193
Int. Cl. G02b *5/08*
U.S. Cl. 350—288 **12 Claims**

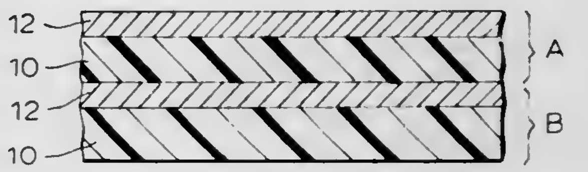


1. Apparatus for adjusting a planar mounting surface, comprising:

- a support structure having a conical socket;
- a mounting plate positioned adjacent to the support structure and having a conical socket;
- a fixed connecting means joining the mounting plate to the support structure including means for spacing apart the mounting plate from the support structure;
- a first adjustable connecting means joining the mounting plate to the support structure comprising,
  - a screw shaft penetrating both the support structure and the mounting plate and having a first screw thread at one end of the shaft and a second screw thread at the other end of the shaft,
  - a first nut engaging the first screw thread, the first nut having a spherical surface which cooperates with the conical socket in the support structure,
  - a second nut engaging the second screw thread, the second nut having a spherical surface which cooperates with the conical socket in the mounting plate,
  - a first bellows attached to the first nut, the first bellows being fixedly positioned with respect to the support structure,
  - a second bellows attached to the second nut, the second bellows being rotatably positioned with respect to the mounting plate,
  - a spring member concentric with the screw shaft and located between the support structure and the mounting plate, the spring member being in compressed state thereby applying a preload to the first and second nuts.

3,897,140
MULTILAYER SOLAR FILTER REDUCING DISTORTIVE DIFFRACTION

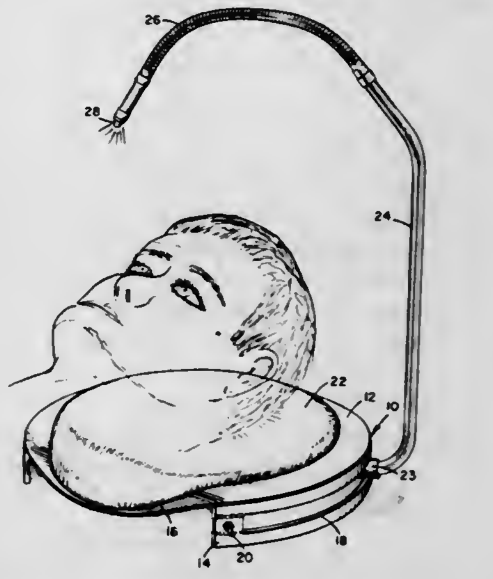
Roger W. Tuthill, 11 Tanglewood Ln., Mountainside, N.J. 07092
Continuation of Ser. No. 317,811, Dec. 22, 1972, abandoned. This application June 14, 1974, Ser. No. 479,508
Int. Cl.² G02B *5/26*, *5/20*
U.S. Cl. 350—314 **13 Claims**



1. A solar filter for an astronomical optical instrument, the solar filter consisting essentially of a plurality of flexible, transparent resin film layers each having a metal coating, the metal coated film layers overlying each other, the film layers having a total thickness not more than approximately 0.002 inch and the metal coatings having a total thickness to provide an opaqueness to allow passage of approximately 0.01 percent sunlight, each of the film layers being of a thinness so that there are pinholes therein, whereby the possibility of a pinhole in one film layer being aligned with a pinhole in another film layer is minimized thus reducing the distortive diffraction effect of said pinholes.

3,897,141
OPHTHALMIC FIXATION DEVICE

Stanley S. Schocket, 3307 Woodvalley Dr., Pikesville, Md. 21208
Filed Sept. 22, 1972, Ser. No. 291,378
Int. Cl. A61b *3/00*
U.S. Cl. 351—36 **15 Claims**



1. An ophthalmic fixation device for examining the eyes of a patient, the device comprising a substantially planar base sized and shaped to enable a patient to rest his head thereon; an elongated rigid supporting arm extending substantially perpendicular to the plane of said base; mounting means for attaching one end of said supporting arm to said base for movement around the periphery of said base in a predetermined arc while at all times remaining perpendicular to the plane thereof; an elongated flexible cable fixed at one end to the end of said supporting arm remote from said base; a light attached to the end of said flexible cable remote from said supporting arm; power means for providing electrical energy to said light; wherein said mounting means attaches said supporting arm to said base in such a manner as to enable said

light to rotate above the face of a patient whose head is resting on said base through an arc of approximately at least 270° in a plane substantially parallel to the plane of said base without altering the orientation of said light relative to said supporting arm; and wherein said flexible cable enables said light to complete a full 360° arc above the face of the patient.

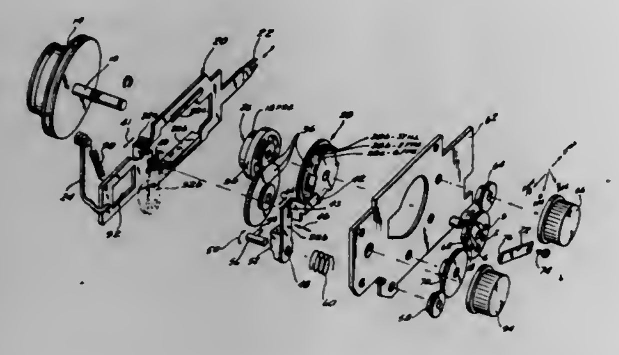
3,897,142
MOTION PICTURE PROJECTOR WITH STEP MOTION PROJECTION

Frank E. Ravese, Brooklyn, N.Y., assignor to DeJur-Amsco Corporation, Long Island City, N.Y.

Filed June 13, 1974, Ser. No. 478,897

Int. Cl.² G03B *1/22*

U.S. Cl. 352—194 **13 Claims**



1. In a motion picture projector, a film transport means intermittently operable at a normal run film transport cyclic speed, mechanism for changing the speed of movement of the film driven by said film transport means between (*a*) a film movement corresponding to said normal run cyclic speed and (*b*) a film movement which is less than said normal cyclic speed, said mechanism comprising a first rotatable in-and-out cam member active on said transport means for effecting an in-and-out movement of the transport means for film engagement for the normal run film transport cycle, a second separately rotatable in-and-out cam member active on the transport means for effecting an in-and-out movement of the transport means for film engagement at a speed which is less than said normal run cyclic speed, an up-and-down cam operable at said normal run cyclic speed active on said transport means for effecting up-and-down movements of said transport means, said first and second in-and-out cam members and said up-and-down cam being mounted for rotation about a common axis, a cam follower connected to said film transport means, and mechanism for shifting the said cam follower for selective engagement thereof with said in-and-out cam members for changing the speed of movement of the film transport means between said normal run cyclic speed and a speed less than said normal run cyclic speed.

3,897,143
IMAGING SYSTEM

Leonard M. Carreira, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 12,366, Feb. 18, 1970, Pat. No. 3,791,823, which is a continuation of Ser. No. 808,921, March 20, 1969, abandoned, which is a continuation of Ser. Nos. 677,706, Oct. 24, 1967, abandoned, Ser. No. 677,707, Oct. 24, 1967, abandoned, and Ser. No. 459,860, May 28, 1965, abandoned.

This application Aug. 20, 1973, Ser. No. 389,917

Int. Cl. G03g *15/22*

U.S. Cl. 355—3 P **2 Claims**

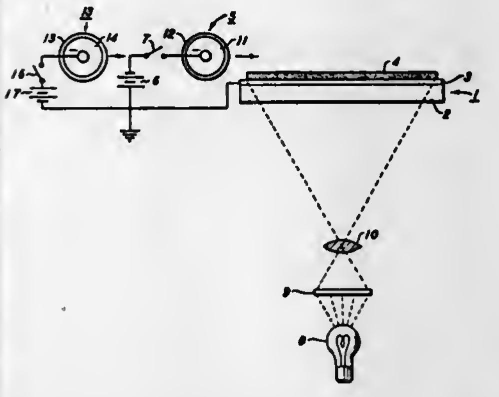
1. Photoelectrophoretic imaging apparatus comprising:

a. a pair of closely spaced apart electrodes at least one of which is partially transparent, said electrodes adapted to have an imaging suspension comprising a mixture of electrically photosensitive particles in a substantially insulating liquid introduced therebetween;

b. means to project a light image on an imaging suspension between and in contact with said electrodes through said partially transparent electrode;

c. means to apply an electric field across an imaging suspension that may be between said electrodes;

d. means to separate said electrodes from said closely spaced relationship leaving an image corresponding to said projected image on one of said electrodes;



e. a transfer sheet comprising a water tackifiable material;

f. means to moisten said transfer sheet with water;

g. means to bring said transfer sheet into firm contact with said image on said one electrode; and

h. means to separate said transfer sheet from said one electrode and remove residual moisture therefrom so that said particles become fixed in and on the surface of said transfer sheet.

3,897,144
MOVABLE OPTICAL SCANNING FOR N-S MOVEMENT IN A MAP DISPLAY NAVIGATIONAL APPARATUS

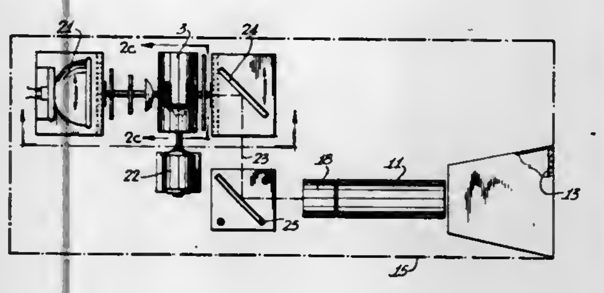
Terrence Albert Hicks, Stittsville, Canada, assignor to Control Data Canada, Ltd., Ottawa, Canada

Filed Apr. 8, 1974, Ser. No. 458,736

Claims priority, application Canada, June 15, 1973, 174123

Int. Cl.² G03B *21/00, 25/00, 23/00*

U.S. Cl. 353—11 **7 Claims**



1. A navigational apparatus for use in a piloted craft, comprising:

a frame;

a light projector, including means for mounting said light projector for translational movement at one end of said frame, and a display screen mounted at the other end of said frame, having an optical light path therebetween;

a film transport means mounted on said frame, including means for moving a film back and forth longitudinally in a plane perpendicular to light from said projector and in said light path;

a light passing aperture fixedly mounted on said frame in said light path in a plane adjacent and parallel said plane of said film;

optical scanning means and means for mounting said scanning means on said frame in said light path;

means interconnected between said scanning means and said light projector for effecting synchronous translational movement thereof in a plane parallel with said

movement of said light projector and transversely to said plane of said film to thereby scan across said film; and

focussing means between said scanning means and said display screen to focus a film image on said screen.

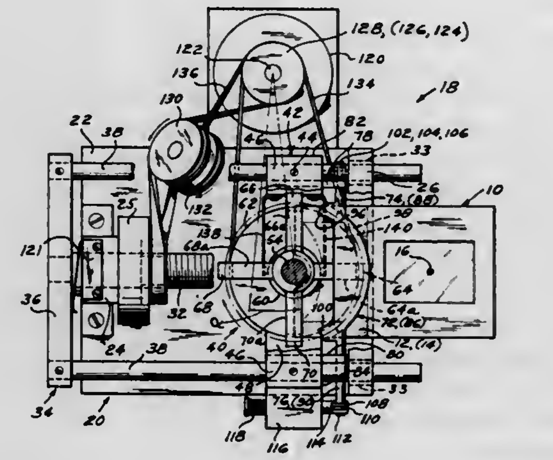
3,897,145
RECORDING AND SCANNING MECHANISM FOR A SOUND SLIDE PROJECTOR

Morris Schwartz, Plainville, Conn., assignor to Kalart Victor Corporation, Plainville, Conn.

Filed Oct. 1, 1973, Ser. No. 402,168

Int. Cl.² G03B *31/06*

U.S. Cl. 353—19 **16 Claims**



1. A playback and recording assemblage of a sound-slide projector, said assemblage comprising in combination:

a sound-slide including a frame having a first portion defining a window for accommodating therein a transparency to be projected and a second portion constituting a sound track carrier, said carrier being coated on opposite sides with layers of magnetic material for recording thereon sound tracks and scanning said sound tracks; and

a recording and playback mechanism including a pair of sound heads for recording sound tracks on said layers and scanning recorded sound tracks, carrier means supporting said heads in circumferentially spaced relationship, said carrier means being linearly displaceable and rotatable, each of said heads being movable into and out of a position coacting with one of said layers, reversible first drive means coupled with said carrier means for linearly displacing the same parallel to the magnetic layers between a starting position and an end position, said displacement moving the heads across said layers, rotary second drive means coupled to said carrier means for rotating the carrier means when and while the same are driven from the starting position toward the end position, the combined movements imparted to the carrier means by the first and the second drive means causing the heads to move along predetermined paths relative to said layers, actuating means coacting with said heads for alternately moving the same into and out of coacting relationship with said layers when and while the carrier means are displaced toward the said end position for respectively reocrding on each of said layers sound tracks corresponding to said paths and scanning sound tracks thus recorded on said layers, and for moving both heads out of coacting relationship with the layers when and while the carrier means are displaced toward said starting position, said actuating means including elastic means for each head, each of said elastic means biasing the respective heads into a position disengaged from the layers, and means coacting with said elastic means for movement of the heads into and out of coaction with the layers at predetermined positions of the heads relative to the layers when and while the carrier means supporting the heads are rotated; and

stationary holder means for releasably holding said slide in a position for said coaction with said heads.

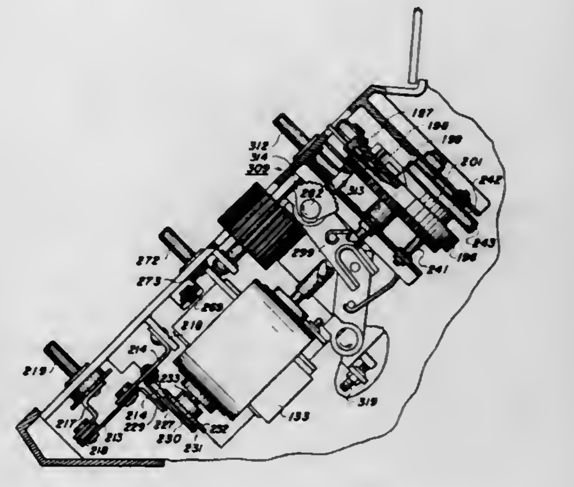
3,897,146
FILM TRANSPORT MECHANISM

Charles E. Smith, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sept. 18, 1970, Ser. No. 73,569

Int. Cl. G03b *21/11, 21/30*

U.S. Cl. 353—26 **22 Claims**



1. Film viewing apparatus comprising;

housing structure;

a viewing screen in one wall of said housing structure; means for projecting an image onto said screen;

means for supporting film for movement past said projecting means;

differential speed means for imparting movement to said support means for causing movement of said film past said projecting means;

a first reel and drive means therefor;

a second reel and drive means therefor;

motion transfer means operably coupled to said speed differential means for imparting a driving motion to one or the other of said drive means;

said speed differential means comprising a pair of motors and associated output shafts cooperating with means for producing a differential output representative of the difference between the speeds of said motors.

3,897,147
LAMPHOUSE ASSEMBLY FOR PHOTOGRAPHIC PRINTERS AND ENLARGERS

Murray H. Simon, Northglenn, Colo., assignor to Peter Simon, Sumner, Md., a part interest

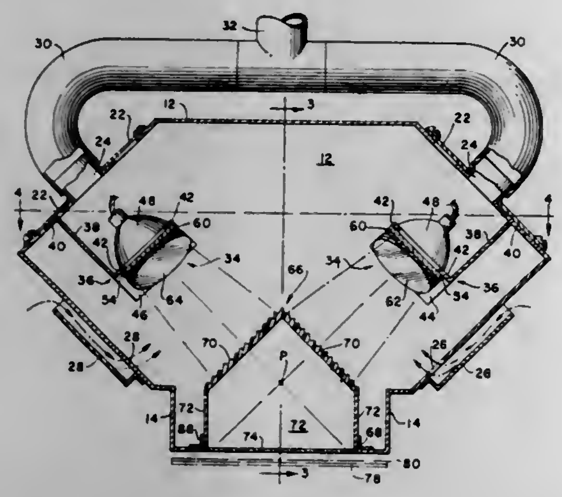
Filed Mar. 20, 1974, Ser. No. 453,109

Int. Cl.² G03B *27/54, 27/76*

U.S. Cl. 355—37 **11 Claims**

1. A lamphouse assembly for photographic printers and enlargers, comprising first illuminating means for directing light energy in a plurality of different colors, second illuminating means for directing light energy in a plurality of different colors, a closed light mixing chamber having a roof-shaped upper portion formed by two translucent roof panels joined at an angle, a plurality of side portions each having a reflective diffusing interior surface and a bottom portion directly below said upper portion formed by a translucent diffusing plate, first mounting means for aiming said first illuminating means at one of said translucent roof panels and second mounting means for aiming said second illuminating means at the other translucent roof panel, whereby said colors of light are dif-

fused through said translucent roof panels, blended by reflection and diffusion within said mixing chamber and further

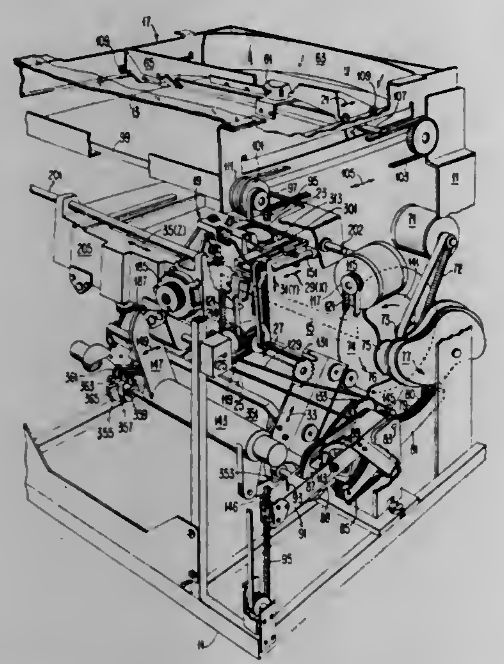


diffused through said bottom diffusing plate to provide evenly distributed, mixed light.

3,897,148
OPTICAL SCANNING SYSTEM

Robert T. Ritchie, Lexington, Ky., and James C. Rogers, Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 29, 1973, Ser. No. 420,338
Int. Cl. G03b *27/36*
U.S. Cl. 355—57 **19 Claims**



1. An optical scanning system for scanning a stationary object located on a planar object supporting surface and including a lens for projecting an image of the object to a moving photoreceptive surface moving at a constant velocity, and located at an image plane, said image being projected at a selected one of a plurality of magnifications and wherein the image is located at a fixed position with respect to the image plane regardless of the magnification selected comprising:

a first carriage for supporting a second carriage and positionable with respect to the image plane in at least a first direction to a selected one of a plurality of positions and including at least one guide member positionable therewith;

a second carriage movably mounted on said first carriage for reciprocal motion over a course defined by said guide member and positionable with respect to said first carriage in at least a second direction perpendicular to said first direction to a selected one of a plurality of positions, said second carriage supporting a subcarriage movably mounted thereon, said subcarriage supporting said lens and movable to a selected one of a plurality of positions in at least a third direction perpendicular to said first direction and to said second direction, one of said first, second and third directions being along the optical axis of the lens,

conjugate path compensating means positionable to a selected one of a plurality of positions to maintain the projected image of the object at the same image plane for each of the positions of said lens along its optical axis;

magnification selection control means for selecting one of a plurality of magnification settings;

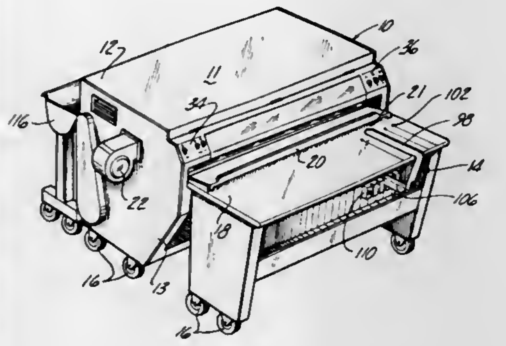
first drive means responsive to said magnification selection control mean for positioning said first carriage, said second carriage and said conjugate path compensating means in accordance with the magnification selected;

second drive means responsive to the motion of the photoreceptive surface and to the position of the lens along the optical axis for reciprocating said second carriage and said lens over said course at a linear velocity dependent upon said lens position and the velocity of said photoreceptive surface.

3,897,149
PHOTOGRAPHIC EXPOSURE APPARATUS

Barthel Zeunen, Clarkston; Rex C. Grace, Troy, and Alvie R. Dunn, Madison Heights, all of Mich., assignors to Capitol Reproductions, Inc., Madison Heights, Mich.

Continuation-in-part of Ser. No. 213,398, Dec. 29, 1971. This application Feb. 22, 1974, Ser. No. 445,023
Int. Cl. G03b *27/04*
U.S. Cl. 355—97 **18 Claims**



1. An apparatus for making a direct photographic reproduction from a loft drawing and the like, comprising:

a light exposure unit;

a support platform extending into said unit;

a feed system including a drive roller and a driven roller, said drive roller having formed about its periphery a plurality of longitudinally extending lands;

a continuous drive belt movable between said rollers for simultaneously advancing a sheet of film and drawing over said platform through said unit, said system further including means defining an opening to receive the forward edge of the film and drawing;

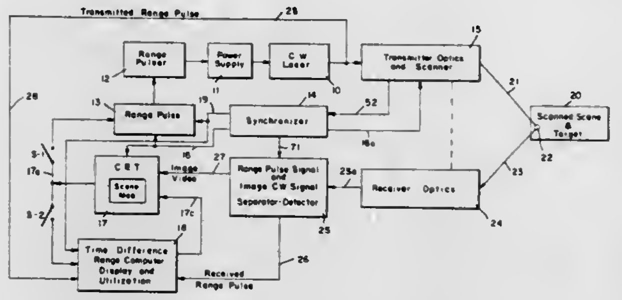
an upper transparent plate in parallel fixed relationship to the platform; and

a lower multiple layer support mounted on the upper surface of said platform for providing a yieldable upward force to maintain the film and drawing together and in driven relationship with the continuous drive belt, said multiple layer support including an intermediate resilient member and an upper layer of relatively low coefficient of friction adapted to facilitate movement of the drive belt over it.

3,897,150
SCANNED LASER IMAGING AND RANGING SYSTEM

William B. Bridges, Thousand Oaks; William O. Edlun, Pacific Palisades, and James C. Hill, Playa Del Rey, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Apr. 3, 1972, Ser. No. 240,854
Int. Cl. G01c *3/08*
U.S. Cl. 356—5 **14 Claims**



1. In a scanned laser radar imaging system of the type utilizing a gas laser to generate an output of continuous wave radiant energy which is reflected from a scanned scene to produce an image thereof, the improvement comprising:

a. first means to pulse said laser during predetermined discrete time intervals to vary a characteristic of said laser output during said discrete intervals to thereby produce output pulses distinguishable from said continuous wave output during said time intervals in terms of said varied characteristic;

b. second means to separate said reflected radiant energy into first and second portions;

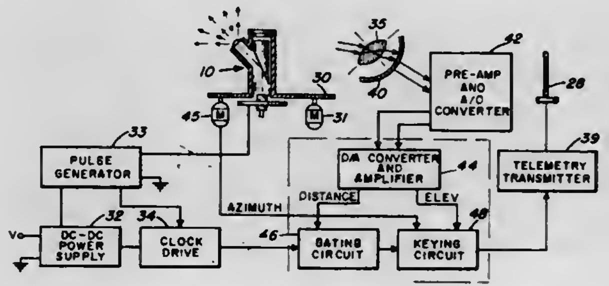
c. third means to utilize said first portion of said reflected energy from said continuous wave output to produce said image of said scene; and

d. fourth means to simultaneously utilize said second portion of said reflected energy from said output pulses of varied characteristic to determine the range to a predetermined portion of said imaged scene.

3,897,151
LASER MISS DISTANCE INDICATOR

James F. Lecroy, 6406 Charnwood St., Springfield, Va. 22152

Filed Jan. 29, 1973, Ser. No. 329,261
Int. Cl.² G01C *3/08*
U.S. Cl. 356—5 **10 Claims**



2. A non-cooperative miss distance indicator for measuring and indicating missile-to-target miss distance comprising:

a clock drive for generating trigger and reference pulses;

means for emitting a beam of pulsed monochromatic light synchronized with said trigger pulses;

means for scanning the beam into a hemispherically shaped envelope of radiation around the target;

means for receiving monochromatic light pulses reflected from the missile and converting them into electrical pulses corresponding to the distance, azimuth and elevation of the missile from the target;

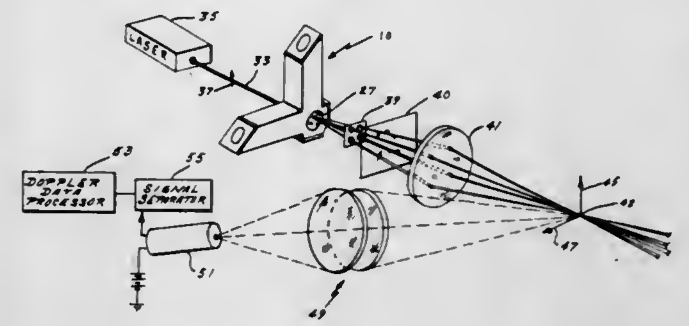
means for comparing said electrical pulses to said reference pulses to generate distance points; and,

means for receiving a plurality of distance points and computing the miss distance therefrom.

3,897,152
LASER DOPPLER VELOCIMETER

William M. Farmer, and James O. Hornkohl, both of Tullahoma, Tenn., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 4, 1974, Ser. No. 439,663
Int. Cl. G01p *3/36*
U.S. Cl. 356—28 **1 Claim**



1. A laser doppler velocimeter system comprising:

a. a laser beam source;

b. means for generating four output light beams from the laser beam with each light beam having a different frequency, the generating means including:
   1. a housing containing first and second intersecting columns of water,
   2. a pair of transparent members on opposite surfaces of the housing at the intersecting points of the water columns for passage of light from the laser beam source,
   3. a pair of Bragg crystals positioned one each in the first and second intersecting columns of water, and
   4. a pair of oscillators having different frequencies activating one each of the pair of Bragg crystals;

c. a collimating lens intersecting the four output beams to focus upon a test point;

d. four polarization rotation plates interposed between the beam generating means and the collimating lens with one each of the rotating plates positioned to intercept one each of the output light beams for eliminating predetermined velocity components; and

e. means for collecting scattered light from the test point including
   1. a lens system intercepting the scattered light from the test point,
   2. a photomultiplier tube positioned to receive the light from the lens system,
   3. a carrier frequency separator fed by the photomultiplier tube, and
   4. a doppler data processor fed by the carrier frequency separator.

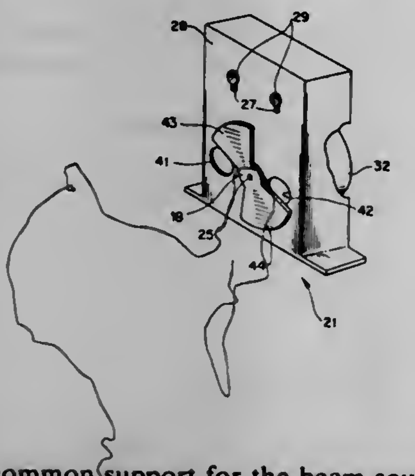
3,897,153
PHASE AND AMPLITUDE BALANCE ADJUSTMENT FOR A DUAL BEAM INFRARED GAS ANALYZER

Charles A. Keenan, Irvine, and Carl N. Cederstrand, Brea, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed July 23, 1973, Ser. No. 382,005
Int. Cl. G01n *21/34, 21/22*
U.S. Cl. 356—51 **5 Claims**

1. In a fluid analyzer of the twin beam type having a pair of beam sources and means for passing one beam through a sample and the other through a standard, a detector for comparing absorption by the standard and the sample, a moving shutter with a pair of vanes for intermittently interrupting the

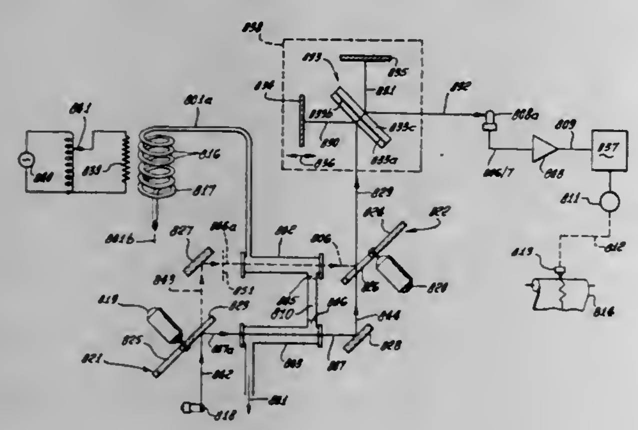
beams and means for varying the phase relationship between the beams with respect to the time of interruption, the improvement in phase adjustment means comprising:



a common support for the beam sources and
means for varying the relative position transversely to the beams of the common beam support and the shutter mounting for simultaneously, transversely varying the positions of the beams with respect to the shutter mounting.

3,897,154
SAMPLE-BACKGROUND AUTOCANCELLATION IN FLUID-SAMPLE ANALYZERS

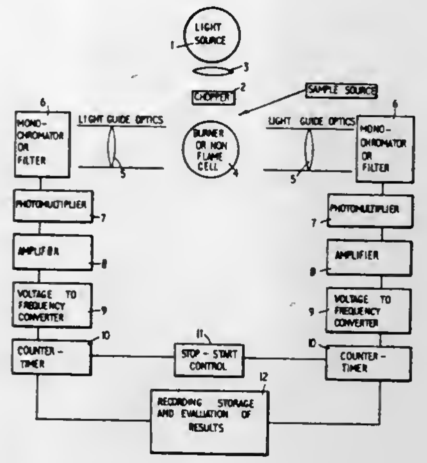
Roland C. Hawes, 771 Oakglade Dr., Monrovia, Calif. 91016
Filed Nov. 15, 1973, Ser. No. 416,233
Int. Cl. G01n *21/34;* **G01j** *3/42*
U.S. Cl. 356—51 **17 Claims**



11. A process for determining the constituent makeup of a fluid sample, comprising:
  causing the sample to flow through a medium which differentially disperses the constituents in time but which characteristically contains one or more contaminants, such contaminants being subject to gradual emission from the medium in use, whereby the medium adds one or more interfering contaminants to the sample;
  subjecting the dispersed sample to substantially continuous spectral analysis at two points along the sample flow path downstream of the dispersive medium;
  deriving a combination analysis by combining the spectral analyses from the two points, by a subtractive process so that the effects of the contaminant tend to cancel out while spectral analysis information for the fluid sample is retained in the combination analysis;
and
  comparing the combination analysis with known spectral-analysis characteristics of suspected constituents.

3,897,155
ATOMIC FLUORESCENCE SPECTROMETER

Lloyd Earle Smythe, Paddington, Australia, assignor to Unisearch Limited, Kensington, Australia
Filed Aug. 1, 1973, Ser. No. 384,723
Claims priority, application Australia, Aug. 4, 1972, 9975/72
Int. Cl. G01j *3/38*
U.S. Cl. 356—85 **6 Claims**



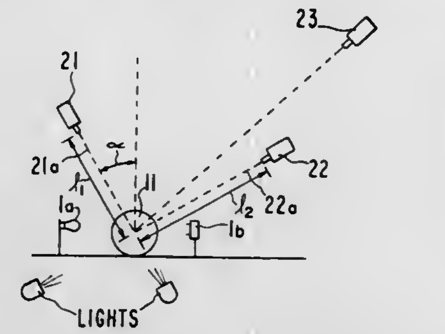
1. An apparatus for atomic fluorescence spectrometry in which a true correlation between the output signal and the concentration of an element in a sample under analysis is obtained, substantially free of the effects of scattering, emission and background radiation, comprising:
  a. means for producing and modulating a sample light beam and directing the same to atomic vapor containing the element to be analyzed;
  b. means for producing an atomic vapor of an element to be analyzed and for receiving said sample light beam;
  c. two means, each for receiving and measuring light signals from said atomic vapor, one said means detecting and measuring light intensity at a wavelength at which the element under analysis flouresces, and the other said means detecting and measuring scattered light intensity at a wavelength at which said sample light beam has a strong flux but at which said element does not fluoresce;
  d. and means for subtracting from said detected and measured light representing fluorescent and scattered light, the detected and measured light representing scattered light.

3,897,156
STRUCTURE FOR MEASURING THE AVERAGE DIAMETER OF AN APPROXIMATELY CIRCULAR CROSS-SECTION OF AN OBJECT

Leon H. Chasson, Santa Clara, Calif., assignor to Atmospheric Sciences, Incorporated, Sunnyvale, Calif.
Division of Ser. No. 166,418, July 27, 1971, Pat. No. 3,787,700. This application Nov. 14, 1973, Ser. No. 415,565
Int. Cl.^{2} G01B *11/10, 11/28*
U.S. Cl. 356—157 **11 Claims**

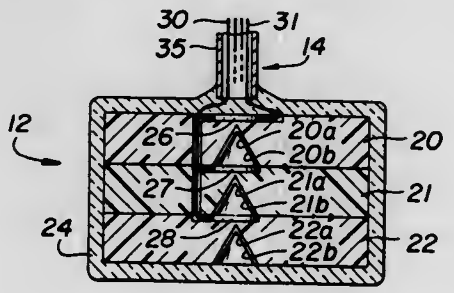
7. Structure to produce a measure of the average diameter of a selected, approximately circular, cross-section of an object, which comprises:
  means for producing a first set of signals representing a first diameter of said object at said selected cross-section;
  means for producing a second set of signals representing a second diameter of said object at said selected cross-section; and
  means for processing said first set of signals and said second set of signals to produce said measure of said average diameter;
  wherein said means for producing a first set of signals is oriented substantially perpendicular to said means for producing a second set of signals; and

  wherein said means for producing a first set of signals has a first center line, said means for producing a second set of signals has a second center line, and said means for producing a first set of signals and said means for producing a second set of signals are located such that said first center line and said second center line each make an angle of approximately 45° with the vertical.



3,897,157
COLORIMETER FOR FISH LURE SELECTOR

Mano McLaughlin, Geneva, and Andrew M. Wohlert, St. Charles, both of Ill., assignors to Enertron Corporation, Geneva, Ill.
Filed Apr. 11, 1974, Ser. No. 459,912
Int. Cl. G01j *3/48;* **G02b** *5/22*
U.S. Cl. 356—186 **7 Claims**

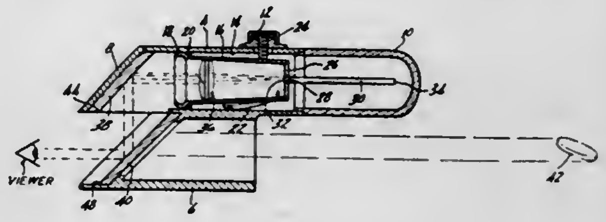


1. A color analyzer for determining the presence of predetermined colors of light at varying depths in a body of water, comprising
  a hermetically sealed housing
  a plurality of light responsive photocells mounted within said housing,
  each of said photocells having a resistance which varies with the intensity of light impinging thereon,
  a plurality of light filters mounted within said housing and each constructed and positioned to direct light from 360° of the ambient onto a respective one of said cells,
  each of said cells and the associated one of said filters being selected to provide an electric signal in response to the presence of a respective one of said colors in the ambient light,
  a control circuit including visual readout means responsive to electric signals supplied thereto, and
  a watertight cable including a plurality of conductors donnected between said cells and said control unit.

3,897,158
SIGHTING DEVICE

William F. Steck, III, El Paso, Tex., assignor to W. R. Weaver Company, El Paso, Tex.
Continuation-in-part of Ser. No. 34,665, May 5, 1970, Pat. No. 3,645,635. This application June 11, 1971, Ser. No. 152,337
Int. Cl.^{2} G02B *23/10*
U.S. Cl. 356—251 **6 Claims**

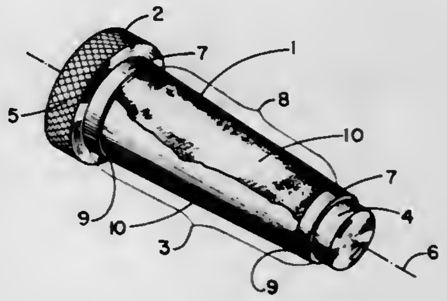
1. A sighting device comprising:
  a. reticle means operative to convert ambient light into a first colored light of a first predetermined relatively narrow wavelength range, said reticle means having an end wall which is illuminated by said first colored light to provide a colored aiming point for said device;
  b. transparent means operative to transmit and convert ambient light into a second colored light of a second predetermined relatively narrow wavelength range different from said first wavelength range, said transparent means being arranged to provide a background of said second colored light by which said end wall having said first colored light is surrounded;
  c. means providing a field of view in which a target can be sighted;



  d. collimating means operative to collimate an image of said aiming point; and
  e. image deflecting means including dichroic beam splitter means, said image deflecting means being operative to deflect said image of said aiming point into said field of view, and said dichroic beam splitter means being operative to reflect colored light in said first wavelength range toward a viewer's eye and transmit colored light in said second wavelength range away from a viewer's eye whereby said aiming point appears to a viewer looking at the field of view through said beam splitter means as a colored area in said field of view and said background is not seen by the viewer in said field of view.

3,897,159
MACHINE TOOL TAPER PROTECTION DEVICE

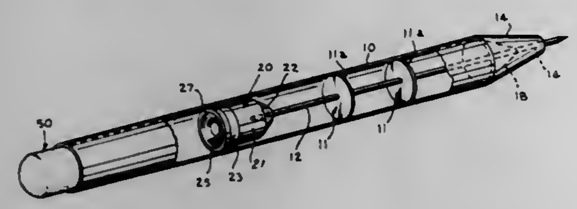
Randell D. Ball, 2122 Statler Dr., Carrolton, Tex. 77713, and Rhoderic D. Buser, 2007 Cedar Ln., Ponca City, Okla. 73160
Filed Dec. 18, 1973, Ser. No. 389,798
Int. Cl. A46b *15/00*
U.S. Cl. 401—9 **6 Claims**



1. A device for temporarily closing, cleaning and lubricating the tapered bore of a machine tool comprising:
  a. an elongated generally frusto-conical body means having a first end of larger diameter than a second end, a major portion of the frusto-conical surface being at a radius about 0.02 inches less than that which would be defined by a true frusto-cone based on the balance of said surface;
  b. a soft oil-absorbing coating comprising an adhesive-bonded floc on at least a portion of said major portion; and,
  c. a gripping means attached to said first end, said gripping means comprising a cylindrical enlargement of diameter greater than that of said first end, oriented coaxially with respect to said body means.

3,897,160
PENCIL APPARATUS

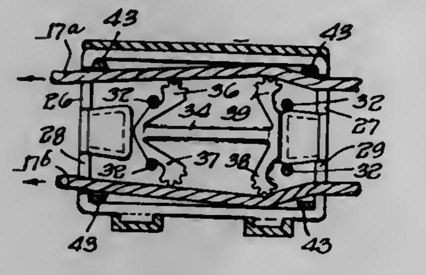
Charles J. Chaudoir; True E. Cousins, both of Houston, and Kornel Nagy, Channelview, all of Tex., assignors to Bill B. Berryhill, Bellaire, Tex. and Carlos A. Torres, Houston, Tex., part interest to each
Continuation-in-part of Ser. No. 238,326, March 27, 1972, Pat. No. 3,806,262. This application Sept. 7, 1973, Ser. No. 395,137. The portion of the term of this patent subsequent to Apr. 23, 1991, has been disclaimed.
Int. Cl. B43k *21/16*
U.S. Cl. 401—56 10 Claims



1. A pencil comprising: a flexible tubular barrel; a stick of writing material longitudinally disposed in said barrel; support means within said barrel centrally supporting said stick of writing material therein; and resilient translating means engaging said stick within said barrel responsive to radial deformation forces applied to said barrel around said translating means to axially advance said stick and said translating means through said barrel in one direction only.

3,897,161
ROPE LOCK DEVICE

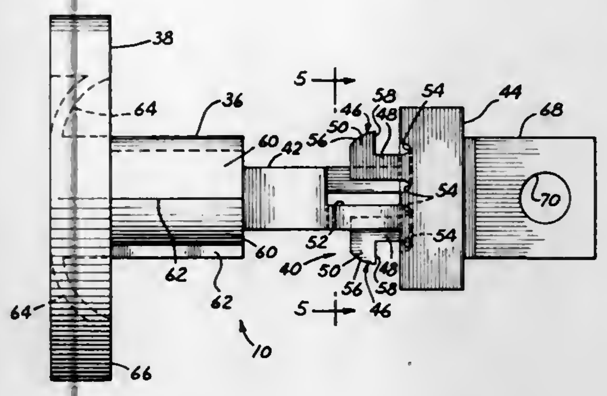
Ernest William Reinwall, Jr., McHenry, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Jan. 16, 1974, Ser. No. 433,777
Int. Cl.² F16G *11/04, 11/10*
U.S. Cl. 403—211 19 Claims



1. A rope lock device comprising: a body having spaced apart top and bottom wall-forming portions and diametrically opposed side wall-forming portions, a first pair of spaced apart apertures formed at one end of said body and a second pair of spaced apart apertures formed at the other end of said body with apertures closest to said side wall-forming portions adapted to receive a length of rope therethrough, a pair of movable arm means positioned within said body and including gripping means to engage the rope and urge the rope firmly against one of said side wall-forming portions at each end of said body and restraining the rope against movement in either direction, and selective release means having a first portion within said body and engageable selectively with said movable arm means, and a second portion extending outwardly of said body to be manually operated to effect selective release of said movable arm means from the rope, whereby the rope can be pulled through said rope lock assembly in either direction.

3,897,162
NONRELEASABLE CONNECTING DEVICE

Steven Havark, 5415 W. Barry, Chicago, Ill. 60641
Filed Nov. 4, 1974, Ser. No. 520,488
Int. Cl.² B25G *3/00;* F16D *1/00*
U.S. Cl. 403—353 14 Claims

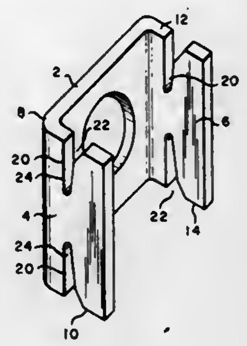


1. A connecting device comprising first and second members, each having elongated shaft means and head means, said members being interconnectable and lockable together;

said first member having an elongated shaft with a number of radially directed surfaces extending along the length thereof, the innermost portion of one radial surface being connected to the outermost surface of an adjacent radial surface by a curved generally continuous surface, said first member having a locking end portion attached to the end of said shaft for connection to said second member; said second member having an elongated split shaft with a central opening therein adapted to receive the shaft of said first member in cooperative engagement and a slot in the head means thereof through which said locking end portion of said first member passes, said second member having recesses on opposite sides of said slot for receiving cooperating portions of said locking end portion when said locking end portion is inserted a predetermined distance and rotated about one fourth turn relative to said second member and moved into locking engagement with said recesses, said rotation causing said first member shaft to radially expand said split shaft of said second member.

3,897,163
WIRE STRAND CONNECTING CLEAT

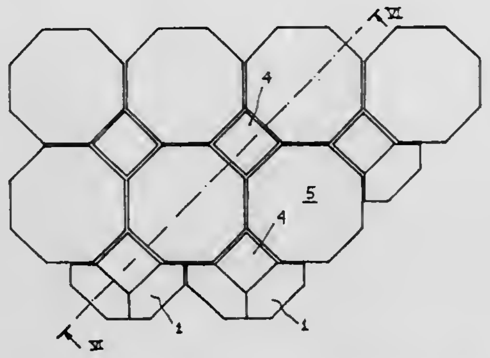
Stannard D. Holmes, Box 331, Narajito, P.R. 00719
Filed June 11, 1974, Ser. No. 478,257
Int. Cl.² F16G *11/00*
U.S. Cl. 403—406 3 Claims



1. A device for connecting the ends of two wire strands or the spaced parts of a single wire strand, comprising a unitary device having a rectangular flat back part having end and side edges, two rectangular flanges extending in the same direction from the side edges of the back part and at right angles thereto and each having end edges aligned respectively with each other and with the end edges of the back part, each of said flanges having an inwardly tapered opening therein extending inwardly from each of its end edges to receive a strand of wire.

3,897,164
SYSTEM OF SELF-TAMPING PAVEMENT FORMED BY TWO RECIPROCALLY PENETRATED SETS OF BLOCKS SUBSTANTIALLY OF TRUNCATED PYRAMID SHAPE

Carlo Dodino, Via G. B. Gaulli 21, Genoa, Italy
Filed Nov. 14, 1973, Ser. No. 415,792
Claims priority, application Italy, Nov. 20, 1972, 13022/72
Int. Cl. E01c *5/00*
U.S. Cl. 404—41 1 Claim

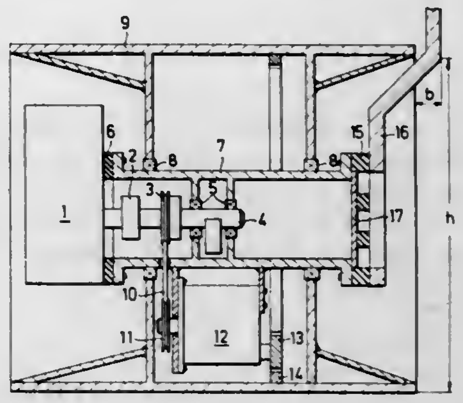


1. A system of articulated pavement comprised of a pair of sets of identical prefabricated blocks, each block being in the form of a regular octagonal base prism and a square base prism separated by a square base truncated prism having a larger base toward the octagonal base and a smaller base toward the square base prism, the sides of the larger base of said truncated pyramid being equal to twice the apothem of the base of the octagonal prism, the sides of the smaller base of the truncated pyramid being equal to the sides of the base of said octagonal prism, whereby four edges of the larger base of said truncated prism are parallel to and join four faces of said octagonal prism, the trihedrons of the larger base of said truncated prism being removed which extend beyond the vertical secant planes of the four faces of the octangonal prism which are not parallel to edges of the larger base of said truncated pyramid, said square base prism having sides equal to the sides of the smaller base of said truncated pyramid and heights equal to the height of said octagonal prism, one set of said blocks having its octagonal bases extending downwardly and the other set of blocks being arranged with its octagonal bases facing upwardly, the blocks of said sets being inserted one into the other, whereby the upper and lower surfaces of the blocks of one set are parallel with the lower and upper surfaces respectively of the blocks of the other set, the blocks of the two sets being vertically overlapped whereby each square surface of a block at the surface of the pavement is surrounded by four octagonal surfaces of the blocks of the other set and vice versa.

3,897,165
VIBRATORY ROLLER

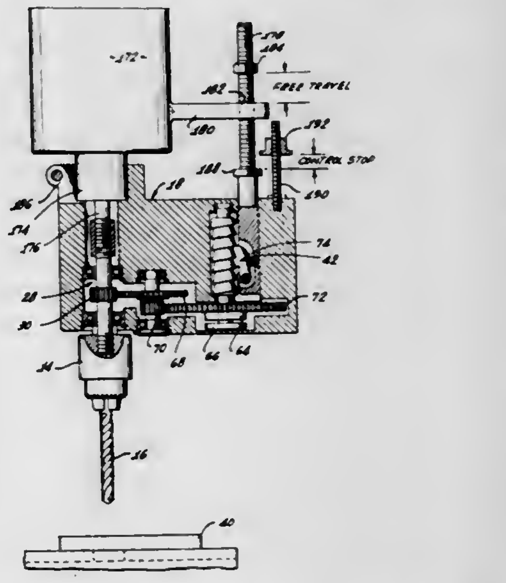
Gulertan Vural, Emmelshausen, Germany, assignor to Koehring GmbH, Boppard (Rhine), Germany
Filed July 19, 1974, Ser. No. 489,883
Claims priority, application Germany, July 24, 1973, 2337532
Int. Cl.² E01C *19/38*
U.S. Cl. 404—117 15 Claims

1. In a ground compacting machine including a vibratory compacting roller having a roller drum, an oscillation exciter located within said roller drum for causing said drum to vibrate, means for driving said oscillation exciter to vibrate said drum, and means for driving said roller drum over the ground to be compacted, the improvement wherein said means for driving said oscillation exciter and said means for driving said roller drum are both located completely within the region enclosed by the periphery and axial extremities of said drum, and include a single common drive motor having an output shaft and coupling means operatively connecting said motor shaft to said oscillation exciter and said roller drum.



3,897,166
DRILL FEED CONTROL

Ralph D. Adams, 1210 Portola Ave., Escondido, Calif. 92025
Division of Ser. No. 213,683, Dec. 29, 1971, Pat. No. 3,804,544. This application Apr. 15, 1974, Ser. No. 460,810
Int. Cl.² B23B *47/20*
U.S. Cl. 408—14 6 Claims



1. In a drill press for driving a drill bit to bore a hole in a workpiece, said drill press having a stationary spindle housing, and a spindle guide axially slidable therein, a feed control comprising:

- a frame attached to said axially slidable spindle guide,
- a drive shaft for said drill bit rotatably supported by said spindle guide and journalled in said frame, said drill bit being chucked to said drive shaft,
- a lead screw rotatably supported in said frame and being slidably supported therein for limited axial movement without rotation of the lead screw,
- a guide shaft axially slidable in said frame parallel to said lead screw,
- a stop fixed on said guide shaft and a stationary cooperating reference stop engageable thereby mounted on said drill press in a position fixed relative to said spindle housing to establish an approximate starting position with the tip of the drill in proximity to the workpiece,
- a detent fixed on said guide shaft and engaging the threads of said lead screw to prevent axial advancement of said frame and drill bit in response to axial pressure exerted on the frame, in absence of rotation of the lead screw, and drive means between said drive shaft and said lead screw to cause rotation of said lead screw in response to rotation of the drive shaft, said lead screw cooperating with

said detent means engaged therewith to allow said axial advancement of said frame and said drill bit on said drive shaft to occur under such axial pressure exerted on said frame.

3,897,167
HYDRAULIC MACHINE

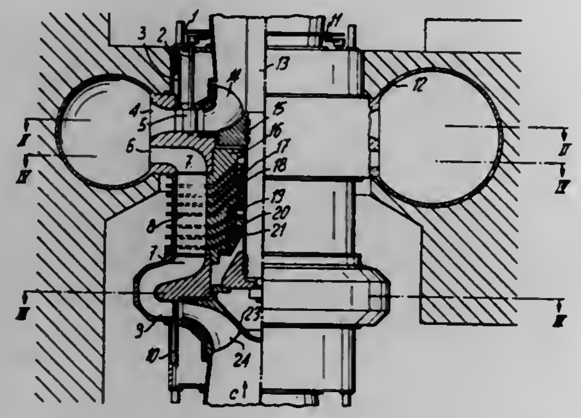
Michel Fauconnet, Geneva, Switzerland, assignor to Ateliers des Charmilles S.A., Geneva, Switzerland

Filed Dec. 5, 1973, Ser. No. 421,789

Claims priority, application Switzerland, Dec. 14, 1972, 18191/72

Int. Cl. F03b *3/10*

U.S. Cl. 415—95 **6 Claims**



1. In a hydraulic machine, including a frame, a fixed element on said frame, a turbine and a pump each including a wheel, said turbine and pump both shaped for rotation in the same direction, a vertical shaft, said turbine wheel and the pump wheel each connected to said shaft, said turbine including a distributor, said pump including a diffuser, said turbine and pump each including a draft tube, said draft tubes disposed in opposite directions to one another, a single spiral casing connected to the distributor of the turbine and to the diffuser of the pump, valve means permitting the selective separation of the internal space of the spiral casing from the space in which the turbine rotates and the space in which the pump rotates, a bearing for said vertical shaft, said bearing mounted on said fixed element of said frame and disposed between the turbine wheel and the pump wheel whereby only one of said wheels is disposed substantially in the central plane of said spiral casing and the other said wheel is thus spaced apart from said one wheel, direct conduits connecting said spiral casing to said one wheel and reversing conduits longer than said direct conduits connecting said spiral casing to the other wheel for progressive reversal of the direction of the tangential component of flow of the water between the spiral casing and said other wheel, or vice versa.

3,897,168
TURBOMACHINE EXTRACTION FLOW GUIDE VANES

David J. Amos, Wallingford, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 5, 1974, Ser. No. 448,310

Int. Cl. F01d *25/08*

U.S. Cl. 415—144 **5 Claims**

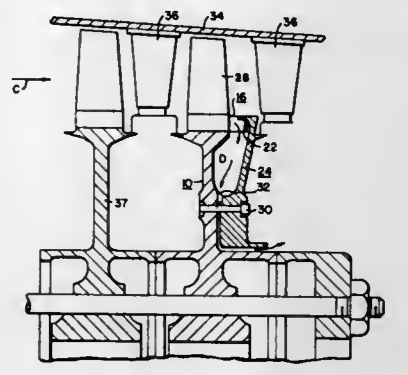
1. An axial flow compressor having a continuous fluid bleed system including:

at least one rotor disc in said compressor;

a plurality of generally axially directed grooves on the periphery of said rotor disc;

an annular array of radially directed airfoil blades supportively disposed in said grooves;

extraction flow guide vane means attached to the side of said rotor disc, said extraction flow guide vane means comprising generally channel shaped members directed radially inwardly, said channel shaped members being attached to the downstream side of said rotor disc, adjacent the periphery of said disc, and disposed between adjacent turbine blades, said generally channel shaped members having generally parallel leg portions, one leg of each channel shaped member being restrained from dislocation by being attached to a wall of one groove on said disc, the other leg of each of said channel shaped members being attached to an adjacent wall of an adjacent groove on said disc, said legs of said channel shaped members being additionally restrained from dislocation by the wedging action of said blades holding said legs between themselves and said walls of said grooves;



a coolant flow guide disc attached to the downstream side of said rotor, said coolant flow guide disc guiding the extracted fluid generally radially inwardly adjacent said rotor disc.

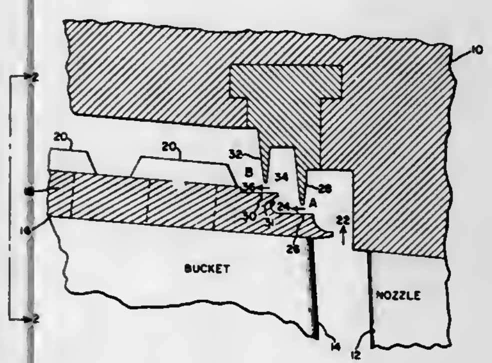
3,897,169
LEAKAGE CONTROL STRUCTURE

Jackson E. Fowler, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 19, 1973, Ser. No. 352,569

Int. Cl. F01d *5/20*

U.S. Cl. 415—172 A **6 Claims**



1. An improved leakage control structure for use in the fluid flow path of a turbine comprising:

a diaphragm including a stationary nozzle ring upstream from an adjacent bucket wheel, the bucket wheel including a plurality of radially extending buckets; the buckets connected at their tip portions by at least one bucket cover circumferentially disposed about the bucket tips;

a fluid leakage path defined by a pair of axially extending boundaries including the radially outer circumferential surface of the bucket cover and a radially inner, annular diaphragm portion downstream from the nozzle ring;

first and second axial stepped portions formed on one of the pair of boundaries upstream of the connections and further including an annular radially extending side surface therebetween;

a first annular fin extending radially from the other of said boundaries toward the first stepped portion and terminating in a tip portion closely adjacent the first stepped portion to form a clearance therebetween;

a second annular fin extending radially from the other of said boundaries toward the second stepped portion and terminating in a tip portion closely adjacent the second stepped portion; and,

the first and second annular fins axially positioned substantially upstream from the mid-point between the bucket leading and trailing edges.

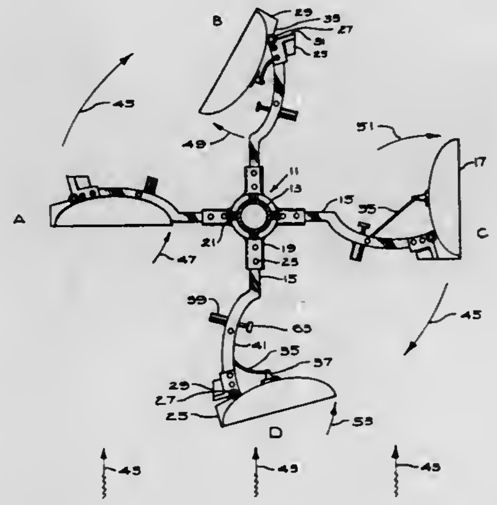
3,897,170
WIND MOTOR

Arthur Darvishian, 5314 Sheridan Dr., Williamsville, N.Y. 14221

Filed Jan. 9, 1974, Ser. No. 432,031

Int. Cl. F03d *3/06*

U.S. Cl. 416—119 **16 Claims**



1. A self-adjusting wind motor with a wind receptor that moves substantially in a plane of the wind, which automatically presents the wind receptor to the wind in a position of high wind resistance when moving in the direction of the wind and moves it into a position of low wind resistance when moving against the wind, said automatic self-adjustment of position or feathering being caused by the action of the wind and centrifugal force on the receptor, which comprises a rotatable shaft, an arm operatively connected to said shaft and extending from it and a wind receptor of curved or hollowed shape with the open face of the curve or hollow facing the wind in the position of high wind resistance, said wind receptor being held to the arm by pivot means at or near an end of said arm away from the shaft and said arm being of a shape to conform with the shape of the receptor when the receptor is in said position of high wind resistance and against the arm.

3,897,171
CERAMIC TURBINE ROTOR DISC AND BLADE CONFIGURATION

William F. Stahl, Media, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 25, 1974, Ser. No. 482,913

Int. Cl. F01d *5/16*

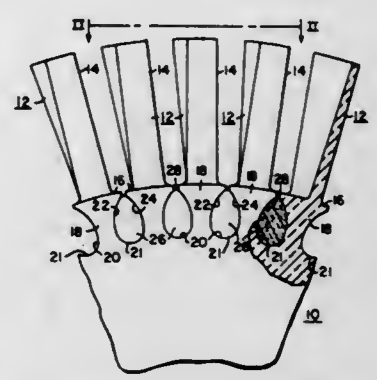
U.S. Cl. 416—244 **4 Claims**

1. A ceramic rotor disc for gas turbines including:

ceramic airfoil blades integral with said ceramic rotor disc; each of said airfoil blades having an airfoil portion on their radially outer section an intermediate platform portion, and an elongated shank portion on their radially inner section,

an elongated cavity being disposed between adjacent blade shanks,

each of said cavities having wall portions, said wall portions being coated with a parting material, said cavity being filled with a ceramic plug, said ceramic plug serving as a centrifugal force pin to help reduce vibratory motion of the airfoil blades during rotor disc rotation.



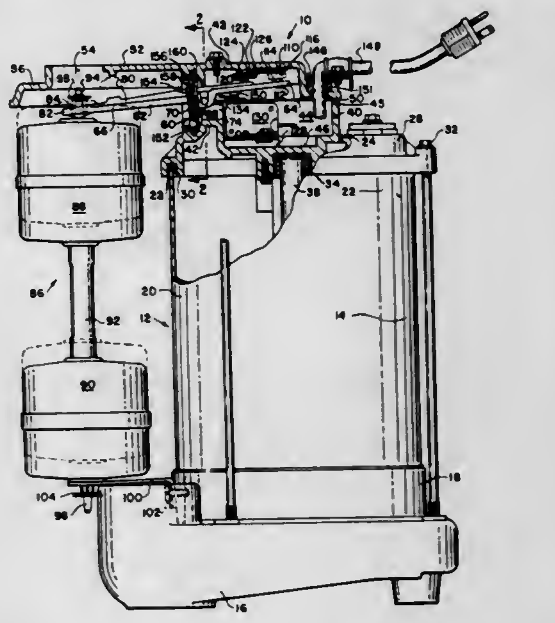
3,897,172
MOTOR CONTROL ASSEMBLY FOR SUBMERSIBLE SUMP PUMP

Malcolm S. Hall, Fort Wayne, Ind., assignor to Wayne Home Equipment Co. Inc., Fort Wayne, Ind.

Filed Apr. 2, 1973, Ser. No. 347,161

Int. Cl.² F04B *49/00*

U.S. Cl. 417—40 **16 Claims**



1. In combination with a sump pump submersible in a fluid, the pump including an electric motor having a motor casing and means coupled to one end of said motor for pumping fluid, a fluid level responsive motor control assembly comprising a motor end housing fixedly secured to and closing the end of said motor casing opposite said pumping means, a switch compartment including a peripheral wall formed integrally with said end housing and a compartment closure member secured to said wall and sealably closing said compartment, a float lever having a fulcrum pivotally coupled to said compartment adjacent said peripheral wall and having inner and outer ends extending inwardly and outwardly of said compartment, respectively, means coupled to said outer float lever end for pivoting said float lever between first and second positions in response to a fluid level, a first magnetic element coupled to said inner float lever end, a second magnetic element coupled to said closure member in vertical registry with said first magnetic element, said first and second magnetic elements being magnetically and physically engaged when said float member is adjacent said first position thereof and being disengaged when said float lever is adjacent said second position thereof, switch means for electrically connecting and disconnecting said motor to and from a source of electrical energy, said switch means having at least one operating lever and two

simultaneously operable sets of switch contacts and being operative between conductive and non-conductive conditions in response to movement of said switch lever, said switch means being fixedly mounted in said compartment with said switch lever in operative engagement with said inner end, said switch means being normally spring biased to one of said conductive and non-conductive conditions, said switch means being operable to one of said con-ductive and non-conductive conditions when said float lever has moved a distance from said first to said second positions thereof just sufficient to physically disengage said first and second magnetic elements, and to the other of said conductive and non-conductive conditions in synchronism with engagement of said first and second magnetic elements, the force required to move said lever from said first position to said second position being increased by said physically engaged magnetic elements until said magnetic elements are separated whereby said lever is maintained in said first position by magnetic field interaction of said magnetic elements and the magnetic force developed thereby until said fluid level has changed sufficiently to produce a change in the buoyant force of said means which exceeds said magnetic force.

3,897,173

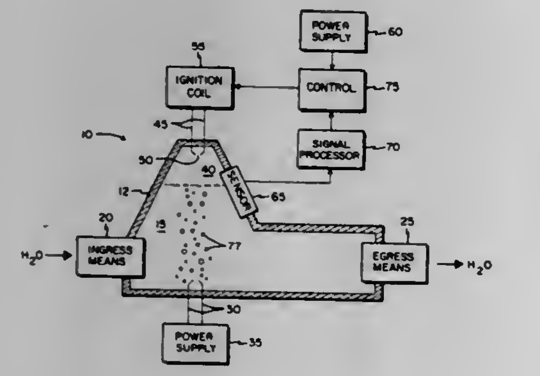
ELECTROLYSIS PUMP

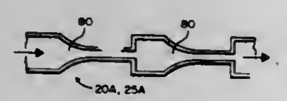
Harold Mandrolan, 2137 Los Amigos, La Canada, Calif. 91011

Filed Mar. 22, 1973, Ser. No. 343,658

Int. Cl. F04f *1/16, 7/10;* **F04b** *21/00*

U.S. Cl. 417—73 **11 Claims**





1. A pump comprising:

a substantially enclosed chamber, said chamber having ingress and egress means for a substance to be pumped, said ingress means having means to restrict egress of said substance from said chamber including

a tube communicating between the interior of said chamber and a source of said substance external to said chamber, at least a portion of said tube having progressively decreasing internal cross-sectional area along the direction from said source to said interior and said egress means having means to restrict ingress of said substance into said chamber;

a volume of water containing at least a trace amount of ionized impurity in said chamber;

alternating current means for electrolyzing said water within said chamber, whereby gaseous hydrogen and oxygen are formed from a portion of said water within said chamber; and

means for igniting the hydrogen in the presence of the oxygen, within said chamber, whereby an explosion ensues causing at least a portion of said substance within said chamber to be forcibly ejected from said chamber through said egress means, whereupon, when said explosion subsides, a partial vacuum is created within said chamber causing additional of said substance to be drawn into said chamber through said ingress means.

3,897,174

DEVICES FOR FEEDING FLUID UNDER PRESSURE TO AT LEAST TWO LOAD CIRCUITS

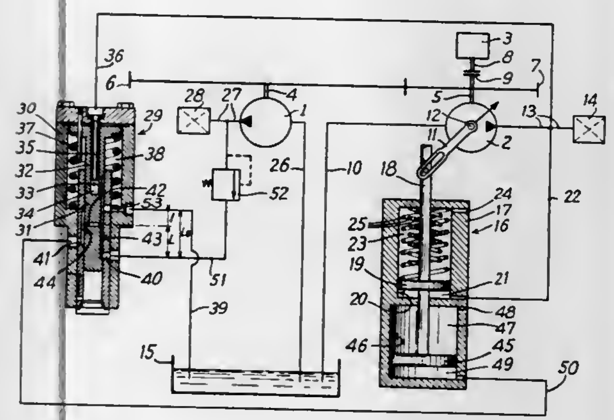
Michel F. Capelle, and Claude Pinson, both of Senlis, France, assignors to Societe Anonyme: Poclain, Oise, France

Filed Apr. 29, 1974, Ser. No. 464,840

Claims priority, application France, May 28, 1973, 73.19331

Int. Cl.^{2} F16D *31/02;* **F04B** *49/00*

U.S. Cl. 417—216 **5 Claims**



1. A device for feeding fluid under pressure to at least two load circuits, comprising:

two groups of pump means for feeding fluid to a respective one of said load circuits and each including a pump, a driving shaft and a delivery pipe, one of said groups of pump means being constant-flow and the other of said groups being variable-flow,

flow control means associated with said variable-flow group.

driving motor means having a single output shaft to which are coupled the driving shafts of said pumps,

power regulator means including a body and an element movable with respect to the body and which is coupled between the flow control means and the body of said variable-flow group of pump means, said regulator including ram means interposed between said body and said movable element of said regulator and comprising an inlet chamber,

pipe means connecting the delivery pipe from said constant-flow group of pump means to said inlet chamber, and

a valve arranged in said connecting pipe means and comprising a body, a slide movably mounted in said body, an inlet connected to said delivery pipe by said connecting pipe means, two outlets of which a first outlet is connected to a fluid tank and the second outlet is connected to said inlet chamber of said ram means by said connecting pipe means, a fluid connection for control of the position of said slide, said fluid connection being connected to the delivery pipe of said variable-flow group of pump means, and a passage between said body and said slide of said valve at least one of the dimensions of which varies as a function of the position of the said slide in said body, said inlet, said first outlet and said second outlet being in permanent communications with said passage, said second outlet communicating with said passsge at a region intermediate communication of said inlet and said first outlet with said passage, and the portion of said passage lying between the regions of communication of said inlet and said second outlet with said passage forming a variable fluid constriction.

3,897,175

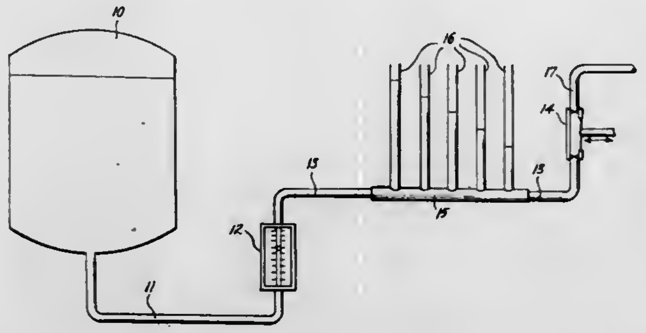
DAMPER APPARATUS

Abdullah M. Rokadia, Schaumberg, Ill., assignor to DeSoto, Inc., Des Plaines, Ill.

Filed Sept. 21, 1973, Ser. No. 399,671

Int. Cl. F04b *11/00*

U.S. Cl. 417—313 **5 Claims**



1. In combination with a liquid supply and a pulsating positive displacement pump, a conduit connected to said liquid supply at its inlet end and to the pump at its outlet end, said conduit carrying a plurality of upstanding open-ended tubes communicating with said conduit at their lower ends and extending upwardly to contain the liquid flowing in said conduit when said pump is not drawing liquid through said conduit, and a flow meter interposed in the liquid supply to said conduit.

3,897,176

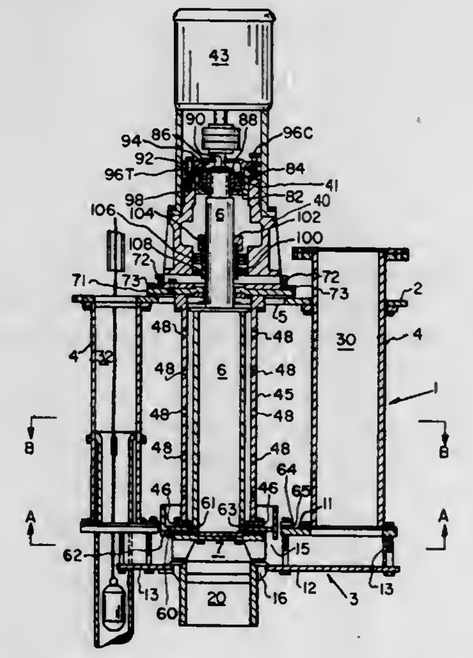
ADJUSTABLE SUMP PUMP

George B. Emeny, 575 Highland Ave., Salem, Ohio 44460

Continuation-in-part of Ser. No. 248,819, May 1, 1972, Pat. No. 3,764,237, which is a continuation-in-part of Ser. No. 213,348, Jan. 17, 1972, Pat. No. 3,737,255. This application Oct. 9, 1973, Ser. No. 404,786. The portion of the term of this patent subsequent to Oct. 9, 1991, has been disclaimed.

Int. Cl.^{2} F04B *35/04*

U.S. Cl. 417—359 **3 Claims**



1. A pump for removing liquid from a pit comprising:

means for covering at least a portion of the pit and for providing a base;

a casing defining a pumping chamber for being disposed within the pit;

means depending from the covering means for supporting the casing defining a pumping chamber within the pit; an overhung impeller shaft extending downwardly through openings in the covering means and in the top of the pumping chamber;

an impeller attached to said shaft and positionable within the pumping chamber;

a motor mounted above the covering means for turning the impeller shaft and impeller;

a protection column surrounding the impeller shaft and positioned thereabout;

plate means secured to the bottom of the protection column providing an upper wear surface for the impeller; means for sealing the column to the pumping chamber without restricting the vertical movement of the column; and

means for adjusting the vertical position of the impeller shaft and impeller relative to the protection column; and means for adjusting the position of the protection column relative to the covering means.

3,897,177

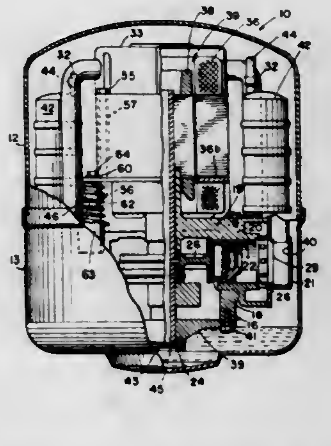
COMPRESSOR CONSTRUCTION

Sidney A. Parker, Fort Worth, Tex., assignor to Lennox Industries Inc., Marshalltown, Iowa

Continuation of Ser. No. 223,437, Feb. 4, 1972, abandoned. This application Oct. 29, 1973, Ser. No. 410,821

Int. Cl. F04b *17/00*

U.S. Cl. 417—363 **7 Claims**



1. A hermetic compressor comprising an outer housing, a body defining cylinder means, piston means disposed in said cylinder means, a drive shaft operatively connected to the piston means for moving same, a motor secured to the drive shaft for rotating same, said motor including a stator operatively affixed to the body and a rotor operatively connected to the drive shaft, the motor incorporating resilient mounting means for supporting same in the outer housing, said stator comprising a plurality of laminates secured to one another, said mounting means comprising a laminate formed integral with said stator, the plane of said laminate being above or substantially the same as the center of gravity of the body and aligning means for aligning the stator on the body disposed between the stator and the body.

3,897,178

PUMPING SYSTEM

Herbert Palloch, Schwetzingen, Baden, Germany, assignor to Frankl & Kirchner, Schwetzingen/Baden, Germany

Filed Sept. 10, 1973, Ser. No. 396,103

Claims priority, application Germany, Sept. 9, 1972, 2244275

Int. Cl.^{2} F04B *39/06*

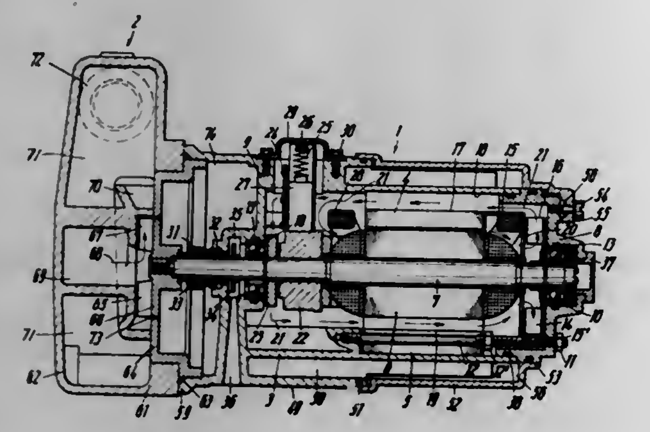
U.S. Cl. 417—368 **6 Claims**

1. In a pumping system comprising a commutator motor having a housing, a shaft, a commutator, carbon brushes and bearing end-covers at the pump side and the opposite side thereof, a pump directly driven by said motor, a cooling jacket formed at least in part by a double-walled design of said motor housing surrounding substantially the entire periphery of said motor, filling means for filling said cooling jacket with the liquid to be pumped when in use, said motor being completely sealed from said cooling jacket, and ventilator means includ-

ing a ventilator mounted on said shaft for forcing air circulation at the center of said motor, the improvements wherein:

said pump-side bearing end-cover is surrounded by said cooling jacket;

said commutator is mounted in the region of said pump-side bearing end-cover;



said motor housing has covers therein for outwardly shielding the carbon brushes of said commutator; and

said ventilator is mounted in the region within the bearing end cover which is opposite to that at the pump-side.

3,897,179
PUMPING UNIT FOR LIQUIDS

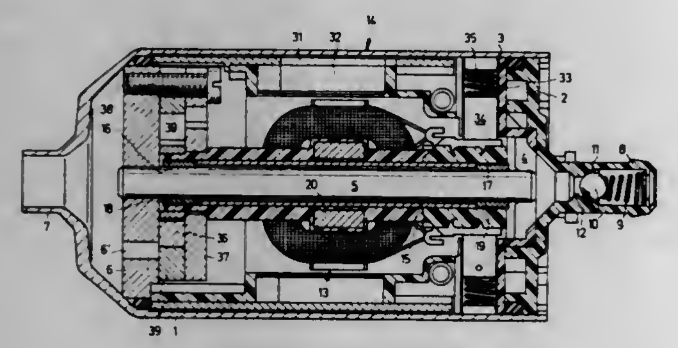
Paul Fussner, Sindelfingen, and Hermann Nusser, Asperg, both of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Jan. 11, 1974, Ser. No. 432,741

Claims priority, application Germany, Mar. 10, 1973, 2312024

Int. Cl. F04b *17/00*

U.S. Cl. 417—423 R **7 Claims**



1. In a pumping unit for liquids, particularly for liquid fuels, a combination comprising a housing; a pump in said housing; an electromotor in said housing and connected with said pump for driving the same, said electromotor comprising a stationary shaft, a sleeve surrounding said shaft and being turnable relative to the same, said sleeve having opposite axial end portions, each provided with a recess in an inner circumferential surface of said sleeve, an armature mounted on said sleeve, and a collector also mounted on said sleeve; and a pair of journals, each received in one of said recesses and journalling said sleeve on said shaft, said journals being of sintered material and being press-fitted into the respective recess and having respective inner diameters slightly smaller than the inner diameter of said sleeve so that the latter surrounds said shaft with a slight clearance.

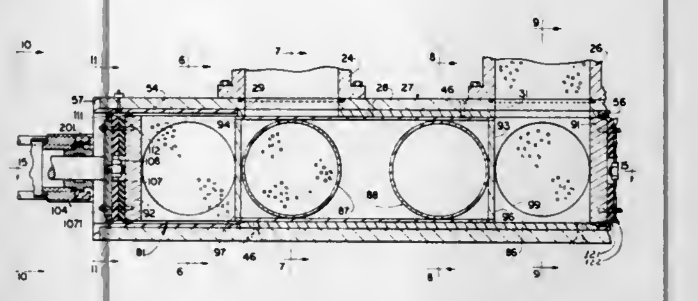
3,897,180
CONCRETE PUMPING MACHINE

Gerald H. Reinert, 6 Brightwood, Cold Spring, Ky. 40819

Continuation-in-part of Ser. No. 334,050, Feb. 20, 1973, abandoned. This application June 18, 1974, Ser. No. 480,468

Int. Cl. F04b *17/04, 35/04, 15/02*

U.S. Cl. 417—517 **4 Claims**



1. A concrete pump which comprises an elongated hollow valve housing, there being a pair of spaced upright conduits attached to an upper panel of the housing and communicating with the inside of the housing, a pair of pump cylinders attached to a side panel of the housing and communicating with the inside of the housing, and a pair of spaced discharge lines attached to an opposed side panel of the housing and in communication with the inside of the housing, each of the pump cylinders and each of the discharge lines being aligned with one of the upright conduits, a valve element reciprocably mounted inside the housing, said valve element including a pair of transversely extending tubes and a pair of guide chambers, each of said guide chambers having an upper inlet and a side opening, outer walls of the guide chambers forming end walls of the valve element, means for moving the valve element between a first position at which a first one of the guide chambers is opposite a first one of the pump cylinders and guides concrete from the upright conduit aligned with said first pump cylinder into said first pump cylinder and a first one of the tubes is opposite the second one of the pair of pump cylinders and guides concrete from said second pump cylinder into the discharge line aligned with said second pump cylinder and a second position at which the second one of the guide chambers is opposite the second pump cylinder and guides concrete from the upright conduit aligned with the second pump cylinder into the second pump cylinder and a second one of the tubes is opposite the first pump cylinder and guides concrete from the first pump cylinder into the discharge line aligned with the first pump cylinder, pump pistons in the pump cylinders, means for moving the piston in the first pump cylinder away from the housing when the valve element is in the first position to draw concrete into the first pump cylinder and toward the housing when the valve element is in the second position to pump the concrete into the discharge line associated with the first pump cylinder, means for moving the piston in the second pump cylinder away from the housing when the valve element is in the second position to draw concrete into said second pump cylinder and toward the housing when the valve element is in the first position to pump the concrete into the discharge line associated with the second pump cylinder, the means for moving the valve element including a hydraulic cylinder, means for mounting the hydraulic cylinder on the housing at an end thereof, a piston rod actuated by said hydraulic cylinder and attached to one of the end walls of the valve element for moving the valve element between the first and second positions, and seal elements mounted on the end walls of the valve element to resist passage of concrete outwardly of the end walls, there being openings in the valve housing outboard of the valve element for discharge of concrete which passes the end walls.

3,897,181
VULCANISING MOULD FOR PNEUMATIC VEHICLE TYRES

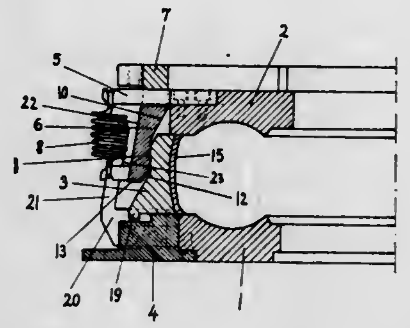
Erich Madaschefsky, Vienna, Austria, assignor to Semperit Aktiengesellschaft, Vienna, Austria

Filed Jan. 14, 1974, Ser. No. 433,143

Claims priority, application Germany, Jan. 11, 1973, 2301310

Int. Cl.² B29H *5/02, 5/08*

U.S. Cl. 425—47 **3 Claims**



1. A vulcanising mould for pneumatic vehicle tyres, comprising a first mould part, a second mould part, a plurality of peripheral segments disposed between said first and second mould parts for forming the tread of the tyre, said first mold part being positionally oriented to cooperate with said second mould part and said plurality of peripheral segments, a closing ring operatively connected to said first mould part, said closing ring including inner conical surface means for radially moving said peripheral segments, a plurality of tension springs supported by said first mould part and said closing ring, said closing ring being movable against the action of said plurality of tension springs in a direction which causes said peripheral segments to move towards one another, sliding components which are radially movable for operatively connecting the peripheral segments to the second mould part, said sliding components including means for ensuring that when the vulcanising mould is being opened the peripheral segments are moved radially outwards and when the vulcanising mould is opened the peripheral segments remain on the second mould part, said tension springs being disposed at the outside of the vulcanising mould, said first mould part and said closing ring in the open condition of the vulcanising mould and during closing of the vulcanising mould contacting one another to thus provide for direct heat transfer to said first mould part.

3,897,182
SLIP FORM APPARATUS FOR CONSTRUCTING CIRCULAR STRUCTURES

Otto Heinzle, Sonderberg 19, 6840 Gotzis (Vorarlberg), Austria

Filed Oct. 12, 1973, Ser. No. 405,880

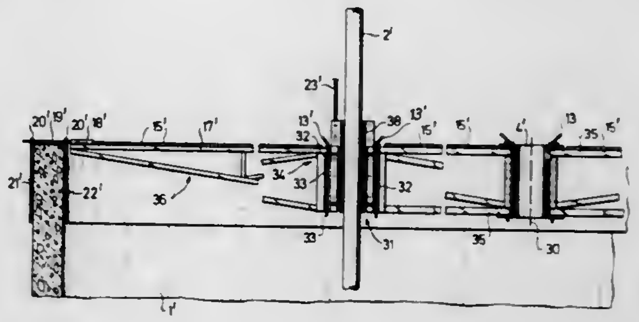
Claims priority, application Austria, Oct. 13, 1972, 8812/72

Int. Cl. B28b *1/14*

U.S. Cl. 425—63 **9 Claims**

1. A mold arrangement for pouring a concrete mixture comprising:

- a. a plurality of upright columns;
- b. a plurality of sleeve members;
- c. an annular frame,
  - 1. said sleeve members being mounted on said frame in circumferentially spaced relationship and slidably receiving said columns respectively;
- d. a plurality of elongated beam members;
- e. fastening means releasably fastening one longitudinal end portion of each beam member to said frame in a position in which the direction of elongation of each beam member is substantially horizontal and outwardly away from said frame;
- f. a mold assembly including a plurality of upright sheet members jointly constituting an outer mold wall and an inner mold wall respectively remote from and near said frame and spaced from each other in said direction;
- g. securing means releasably securing respective portions of each of said walls to the other longitudinal end portions of said beam members, the secured walls depending from said beam members and holding said other end portions in transversely spaced relationship; and
- h. means for holding said sleeve members in predetermined vertical positions on said upright columns and for thereby transmitting a portion of the weight of said frame and of said mold assembly to each of said columns.



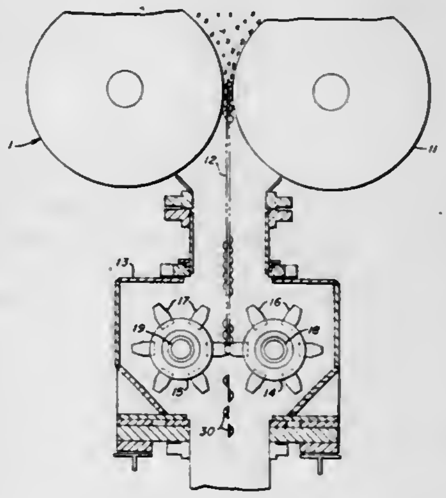
3,897,183
BRIQUETTE MOLDING APPARATUS AND BREAKER

Gottfried Hofmann, Lutzelfuh-Goldbach (BE), Switzerland, and Frank Kennedy, Mount Lebanon Twp., Allegheny County, Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Mar. 31, 1972, Ser. No. 240,085

Int. Cl. B29c *3/02*

U.S. Cl. 425—78 **4 Claims**



1. In a briquetting machine including roller presses that form sheets of briquettes, the improvement which comprises: at least two impacting devices, located adjacent to the sheet exit of said machine and arranged opposite to each other along the length of said exit,

each of said devices having one or more impact means,

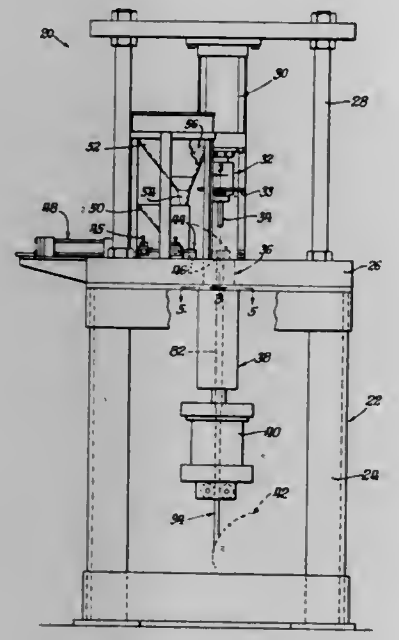
each of said means being adapted to apply impact forces at the plane of each sheet, and

movement control means to bring the impact means of the opposed devices into parallel overlapping relationship with each other at the plane of the sheet exit and spaced from each other a distance corresponding to the distance between parallel briquette pockets in the briquetting machine.

3,897,184
APPARATUS FOR MAKING BARS FROM POWERED METAL

James Woodburn, Jr., Wheaton, and Gordon Russell Lohman, Glen Ellyn, both of Ill., assignors to Amsted Industries Incorporated, Chicago, Ill.

Filed Mar. 7, 1974, Ser. No. 448,819
Int. Cl. B29c *3/00;* **B30b** *11/06, 15/22*
U.S. Cl. 425—79 2 Claims

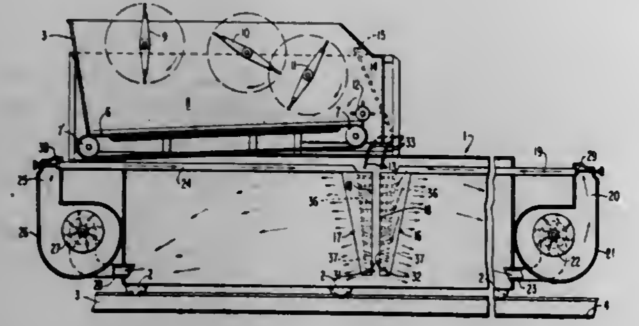


1. A press for continuously forming continuous bar comprising a die having a cavity, means for introducing a selective amount of powdered metal into the die cavity, a ram and punch reciprocable toward and from the die, lengthwise spaced limit means engaged by the ram for controlling and reversing the movement of the ram in response to engagement by a respective one of the limit means, the ram being operative on advance stroke to move the punch into the die cavity, the engagement of the punch with the powdered metal in the die cavity developing reaction pressure, and means for relocating one of said limit means and thereby adjusting the length of each advance stroke of the ram and punch in direct proportion to said reaction pressure during that stroke.

3,897,185
APPARATUS FOR SPREADING MATERIAL SERVING FOR THE MANUFACTURE OF FIBERBOARDS

Reinhardt Beyer, Springe, Germany, assignor to Bison-werke Bahre & Greten GmbH & Co. KG, Germany

Filed Nov. 7, 1973, Ser. No. 413,424
Claims priority, application Germany, Nov. 7, 1972, 2254501
Int. Cl. B29j *5/00*
U.S. Cl. 425—81 30 Claims



1. Apparatus for spreading a mixture of superfine, fine and coarser particles onto a particle carrier for subsequent pressforming into fiberboards and the like; said apparatus comprising:

particle supply means spaced vertically from said particle carrier and including means for supplying a heterogeneous mixture of superfine, fine and coarser particles to said particle carrier such that said mixture falls downwardly towards said particle carrier with a particle path centerline extending downwardly from said particle supply means to said particle carrier;

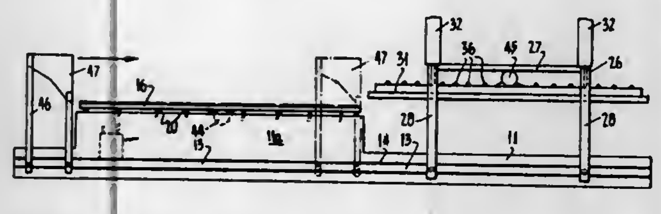
upper particle classifying means disposed between said particle supply means and said particle carrier and including a plurality of upper conduit means at each of opposite lateral sides of the path centerline, the upper conduit means at one side of the path centerline having upper outlet openings which face corresponding upper outlet openings of the upper conduit means at the other side of the path centerline, said upper outlet openings being spaced from one another in a direction transverse to said path centerline to permit passage therebetween of portions of said mixture while gas under pressure is discharged from said upper outlet openings to effect a classification of the particles with the superfine and fine particles spaced further from the path centerline than the coarser particles;

lower particle classifying means disposed between said upper particle classifying means and said particle carrier and including a plurality of lower conduit means at each of said opposite lateral sides of the path centerline, the lower conduit means at one side of the path centerline having lower outlet openings facing in one direction away from the path centerline and the lower conduit means at the other side of the path centerline having lower outlet openings facing in an opposite direction away from the path centerline, said lower outlet openings at the one side of said centerline path being spaced from the lower outlet openings at the other side of the centerline path to form a space therebetween for the passage therethrough of a portion of the particle mixture without further classification by said lower particle classifying means while other portions of the particle mixture pass outwardly of said lower outlet openings and are further classified by gas under pressure exiting from said lower outlet openings, whereby boards can be constructed with that portion of the particle mixture which is classified only by the upper classifying means forming central board sections and that portion of the particle mixture which is classified by both the upper and lower classifying means forming edge board sections.

3,897,186
APPARATUS FOR MAKING REINFORCED CEMENT PANELS

James Douglas Farfor, Brighton, Australia, assignor to Fictor Pty. Limited, Australia

Filed Jan. 17, 1974, Ser. No. 434,239
Claims priority, application Australia, Jan. 17, 1973, 1939/73; Mar. 6, 1973, 2495/73
Int. Cl. B28b *1/08*
U.S. Cl. 425—85 8 Claims

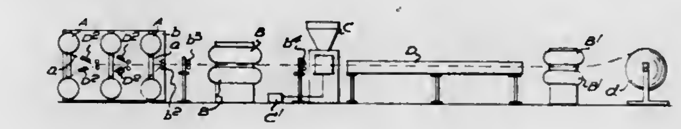


1. Apparatus for producing reinforced cement panels comprising a fixed lower mould, slurry depositing means for applying a layer of slurry to the lower mould, an upper mould having a lower surface shaped complementarily to the upper surface of the lower mould, means for moving the upper mould between one position in which it is above the lower mould and a second position in which it is remote from it, and means for applying suction through the upper mould to the lower surface thereof.

3,897,187
APPARATUS FOR THE CONTINUOUS PRODUCTION OF LAMINATED ELECTRIC CONDUCTORS

Leon Mole, Lancaster, England, assignor to Greengate Cables Limited, Manchester, England

Continuation-in-part of Ser. No. 198,979, Nov. 15, 1971, abandoned. This application Aug. 13, 1973, Ser. No. 387,628
Int. Cl. B29f *3/10*
U.S. Cl. 425—90 4 Claims

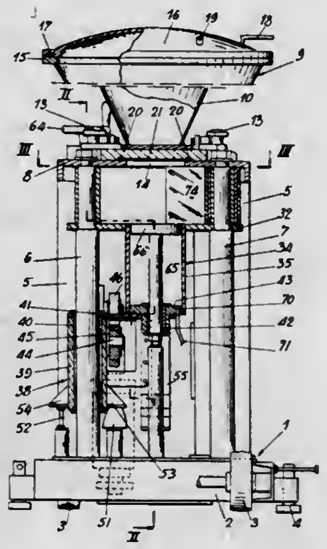


1. Apparatus for the continuous production of an insulation coated laminated metal electrical conductor assembly comprising means for continuously drawing flat metal conductor strips from a series of supply packages and assembling the strips one above the other with coextensive surfaces in electrically conductive contact, means for applying an electrically conductive lubricant to said surfaces between said strips for allowing relative movement between said strips in the assembly, means for coating the moving strip assembly by continuously extruding thereabout and therealong a surrounding continuous covering of electrically insulating material, means for setting said covering on the moving strip assembly, and means for winding the coated laminated conductor assembly into coil form.

3,897,188
VOLUMETRIC DIVIDER FOR PASTE, ESPECIALLY FOR DOUGH PASTE

Georges Aime Marchand, 16, rue Mac-Mahon, Rueil-Malmaison, Hauts de Seine, France

Filed Sept. 24, 1973, Ser. No. 399,700
Claims priority, application France, Mar. 29, 1973, 73.1147
Int. Cl.^{2} A21C *5/00*
U.S. Cl. 425—238 10 Claims

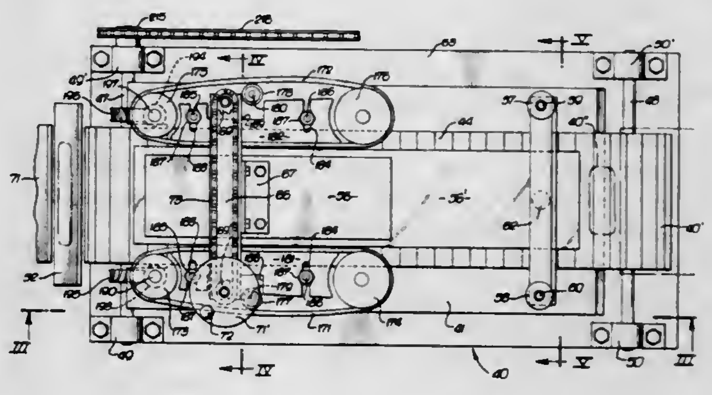


1. A machine for volumetrically dividing dough, comprising:
- a housing for the dough, said housing having an outlet;
- a shutter-cutter adjacent said outlet for controlling said outlet;
- a table supporting said housing adjacent said outlet;
- a plate spaced from and parallel to said table to form a clearing-out passage between said table and said plate;
- a mobile dividing head comprising a vertically oriented cylinder forming an alveolus for containing a predetermined volume of the dough, said cylinder being vertically movable through a hole in said plate into said clearing-out passage;
- a driving mechanism supporting said driving head and having a reciprocal vertical motion for driving said cylinder into and out of said clearing-out passage;
- a pipe for connecting said cylinder to a vacuum source;
- a free piston within said cylinder having a piston rod extending out of said cylinder;
- a fixed stop engageable with said piston rod for determining a low rest position for said piston when said cylinder is out of said clearing-out passage;
- a mobile adjustable stop coupled to said driving mechanism and engageable with said piston rod for determining the position of said piston when said cylinder is in said clearing-out passage; and
- a transfer mechanism comprising an ejector drive coupled to an ejector blade, said ejector blade being positionable within said clearing-out passage and moveable by said ejector drive, whereby a predetermined volume of dough can flow utilizing a pressure differential from the vacuum source from said housing into said alveolus when said cylinder is in said clearing-out passage and said dough can be transferred from between said clearing-out passage to a loading conveyor by said ejector blade when said cylinder is out of said clear-out passage.

3,897,189
APPARATUS FOR FORMING TOROIDS

Daniel T. Thompson, Pacific Palisades, Calif., assignor to Thompson Bagel Machine Manufacturing Corporation, Los Angeles, Calif.

Filed Jan. 10, 1974, Ser. No. 432,302
Int. Cl. A21c *3/00*
U.S. Cl. 425—324 R 21 Claims



1. In an apparatus for forming individual batches of pliant material, such as dough from a dough divider into toroids of said dough wherein said apparatus includes strip preforming and feeding means for preforming said batches into individual preformed strips of dough and feeding said preformed strips to strip transport and feed means whereby said preformed strips are received one at a time at a predetermined rate from said strip preforming and feeding means and conveyed individually to toroid forming means where said conveyed strips are formed into toroids of said dough, and drive means associated with both said toroid forming means and said strip transport and feed means for conveying said strips longitudinally to said toroid forming means at a rate coordinated with the rate of operation of said toroid forming means, the improvement which comprises:

means associated with said strip preforming and feeding means for accepting individual batches of said dough from said dough divider at a discharge location;

transport means associated with strip preforming and feeding means for transporting said batches from said discharge location to said strip transport and feed means, said transport means including a conveyor having a generally horizontal surface thereon for receiving said batches of dough;

strip preforming means associated with said transport means for preforming said batches into generally cylindrical strips of dough having a predetermined length and diameter while transporting said batches from said discharge location to said strip transport and feed means, said preforming means including a pressure plate having a generally horizontal surface spaced above the surface of said conveyor;

moving sidewall means associated with at least a portion of said transport means engaging each end of said strips being transported along said transport means for assisting in the transport of said strips therealong and eliminating drag thereon, said moving sidewall means including a pair of spaced conveyor belts disposed on each side of the upper surface of said conveyor remote from said discharge location and adjacent said strip transport and feed means, said belts having surfaces thereon extending generally normal to the surface of said conveyor;

conveyor adjusting means associated with said conveyor belts for adjusting the spacing between the surfaces thereof; and

drive means associated with both said moving sidewall means and said transport means for driving both said sidewall means and said transport means in the same direction, said drive means including means associated therewith for moving said conveyor belts at a speed generally about one-half that of the speed of said conveyor.

4. In an apparatus for forming individual batches of pliant material, such as dough from a dough divider into toroids of said dough wherein said apparatus includes strip preforming and feeding means for preforming said batches into individual preformed strips of dough and feeding said preformed strips to strip transport and feed means whereby said preformed strips are received one at a time at a predetermined rate from said strip preforming and feeding means and conveyed individually to toroid forming means where said conveyed strips are formed into toroids of said dough, and drive means associated with both said toroid forming means and said strip transport and feed means for conveying said strips individually to said toroid forming means at a rate coordinated with the rate of operation of said toroid forming means, the improvement which comprises:

means including a generally arcuate ramp associated with said strip preforming and feeding means for accepting individual batches of said dough from said dough divider at a discharge location; transport means including a rotatable wheel associated with said strip preforming and feeding means for transporting said batches from said discharge location to said strip transport and feed means; strip preforming means associated with said transport means for preforming said batches into generally cylindrical strips of dough having a predetermined length and diameter while transporting said batches from said discharge location to said strip transport and feed means, said strip preforming means including said ramp encircling a substantial portion of said wheel and forming a space between the outer periphery of said wheel and the inner peripheral surface of said ramp for receiving said individual batches of dough between the outer periphery of said wheel and the inner peripheral surface of said ramp whereby said batches of dough are preformed into strips of dough when said wheel is rotated; moving sidewalls means encircling at least a portion of said wheel independent of the rotation of said wheel engaging each end of said strips being transported along said wheel for assisting in the transport of said strips therealong and eliminating drag thereon; and

drive means associated with both said moving sidewall means and said wheel for driving both said sidewall means and said wheel in the same direction.

3,897,190

PRESS TOOL FOR PRODUCING MICROCELLULAR SHAPED PIECES OF DIMENSIONAL ACCURACY, PARTICULARLY SHOE SOLES

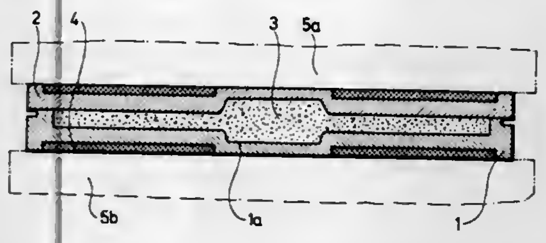
Boris Nisonovich Binzburg; Jury Alexandrovich Smetkin; Vladimir Iosifovich Alexeenko; Vsevolod Andreevich Mikhailov, all of Moscow, U.S.S.R.; Ivan Lorant, Budapest, Hungary; Gyozo Seltenreich, Dunakeszi, Hungary; Jeno Kaszel, Budapest, Hungary; Gyorgy Marton, Budapest, Hungary; Albert Balazsfal, Budapest, Hungary; Jeno Donath, Budapest, Hungary, and Erno Bolcskei, Budapest, Hungary, assignors to Bor-, Mubor- es Cipoipari Kutato Intezet, Budapest, Hungary and Vsesojuzny Nauchno Issledovatelsky Institut Plenochnykh Materialov i Iskusstvennoi Kozhi, Moscow, U.S.S.R.

Division of Ser. No. 96,738, Dec. 10, 1970, abandoned. This application Feb. 13, 1973, Ser. No. 332,089

Claims priority, application Hungary, Dec. 30, 1969, BO 1210

Int. Cl. B29c *3/00*

U.S. Cl. 425—383 **4 Claims**



1. A press mold for vulcanizing plastic materials, comprising a pair of mold parts defining between them a mold cavity, each of said mold parts having channels therethrough for the passage of a heating medium for vulcanizing the plastic material in the mold, each mold part comprising an upper plate and a lower plate, each lower plate having a plurality of said channels therein which open upwardly and are closed by the upper plate.

3,897,191

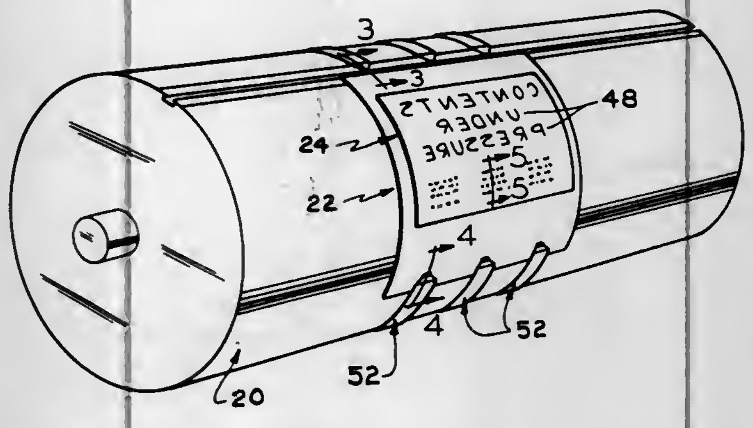
MOUNTING MEMBER FOR PRINTING PLATE AND APPARATUS OF MAKING SAME

Philip G. Saunders, and Neil M. Waterbury, both of Toledo, Ohio, assignors to Container Graphics Corporation, Toledo, Ohio

Division of Ser. No. 345,573, March 28, 1973, abandoned. This application Apr. 19, 1974, Ser. No. 462,225

Int. Cl. B29c *17/02*

U.S. Cl. 425—384 **4 Claims**



1. Apparatus for making a mounting sheet for mounting a printing plate on a printing cylinder, said mounting sheet having a structurally-integral lip, said apparatus comprising means for supporting a heat-softenable plastic sheet of a given size and shape and having at least one straight edge, an entry zone having means for receiving and positioning the edge of the sheet, at least one heating and forming zone having means for heating the edge of the sheet and for bending the edge upwardly away from the plane of the sheet and rearwardly in a direction substantially parallel to the plane of the sheet to form the structurally-integral lip, and a cooling zone having means for cooling the bent edge of the sheet while maintaining the bent edge in its bent position.

3,897,192

APPARATUS FOR MAKING MONOFILAMENTARY SLIDE-FASTENER MEMBERS

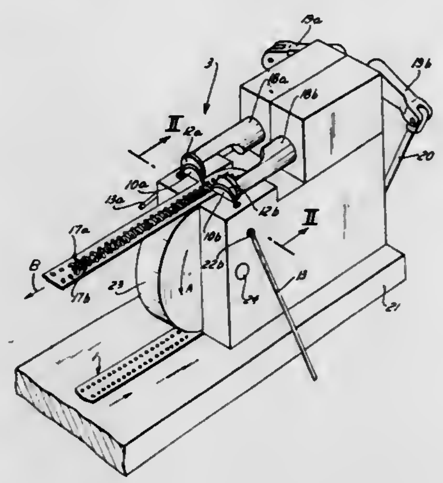
Helmut Helmberger, Locarno, Switzerland, and Karl Griessbaum, Essen, Germany, assignors to Opti-Holding AG, Glarus, Switzerland

Filed June 5, 1974, Ser. No. 476,598

Claims priority, application Germany, June 9, 1973, 2329637

Int. Cl. B29d *5/00;* **B29c** *17/02*

U.S. Cl. 425—391 **6 Claims**



1. An apparatus for making slide-fastener members, comprising:

a frame;

a carrier element mounted on said frame for unidirectional movement, said carrier element being provided with at least one row of lugs rising from a surface thereof, said lugs being spaced apart in the direction of said movement;

feed means on said frame alongside said carrier element for depositing a resinous monofilament on said surface thereof in a succession of narrow loops received between consecutive lugs, said feed means including a guide element with a ridge in a plane perpendicular to said direction of movement and a transport element in closely spaced relationship therewith for clamping said monofilament therebetween, said transport element being provided with a bulge facing said ridge for locally deforming an engaged loop-forming section of said monofilament to provide a coupling head at a free end of each loop; and drive means for reciprocating said transport element along said ridge in timed relationship with the movement of said carrier element for intermittently advancing successive loop-forming sections of said monofilament into the spaces between consecutive lugs.

3,897,193

VAPOR RECOVERY AND DISPOSAL SYSTEM

Abraham Kattan, Houston, and John E. Gwyn, Pasadena, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Sept. 27, 1973, Ser. No. 401,514

Int. Cl. F23j *15/00;* **B01d** *47/00;* **B01j** *9/00*

U.S. Cl. 431—5 **2 Claims**

1. A process for recovering and disposing of gasoline vapor from vapor-laded air expelled from a tank while filling it with gasoline, comprising:

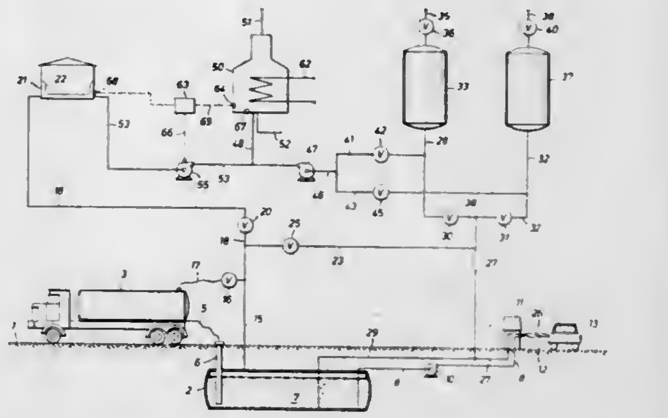
A. collecting said vapors,

B. passing at least some of said vapors through a bed of solid adsorbent capable of selectively adsorbing gasoline from the vapor-laden air,

C. passing air substantially free of gasoline vapors from the other side of said bed of adsorbent to the atmosphere,

D. maintaining a volume of gasoline vapor-rich air,

E. stopping the flow of vapor-laden air through said bed before said adsorbent becomes saturated with gasoline,



F. subsequently backwashing said bed with a backwash gas consisting essentially of air for a period long enough to desorb enough gasoline to regenerate said bed,

G. passing the gasoline-containing backwash air to a furnace wherein the gasoline contained in said backwash air is burned, and,

H. extinguishing the furnace flame when said backwash gas contains insufficient gasoline to support combustion.

3,897,194

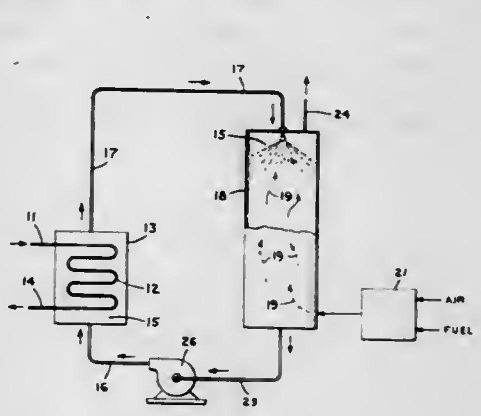
METHOD FOR VAPORIZING A SENSITIVE LIQUID

Peter von Wiesenthal, New York, N.Y., assignor to Heat Research Corporation, New York, N.Y.

Filed Apr. 18, 1974, Ser. No. 462,049

Int. Cl. F23d *11/44*

U.S. Cl. 431—11 **1 Claim**



1. A method of vaporizing liquified natural gas and comprising steps as follows:

passing the liquified natural gas through a heat exchanger in noncontact heat exchange relationship with a liquid heat transfer medium in counterflow heat exchange relationship therewith to vaporize the natural gas thereby cooling the medium,

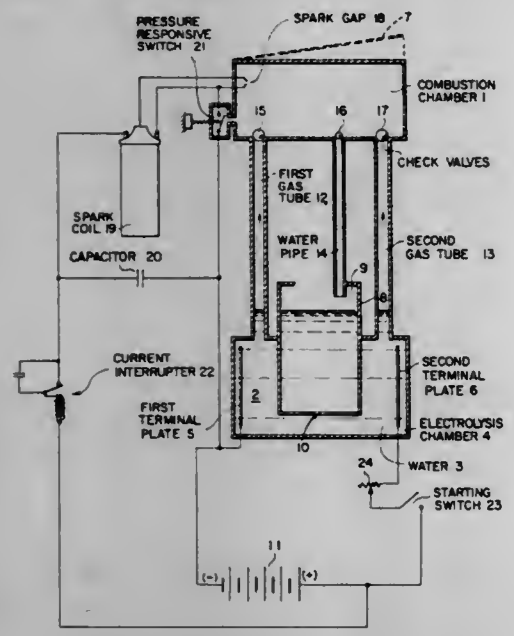
circulating the cooled medium downwardly through a tower spaced from the heat exchanger so that the cooled medium passes in direct heat exchange relationship with hot combustion gases passing upwardly therethrough,

enlarging surface area of the medium in the tower to increase the heat exchange thereto,

burning a fuel in a combustor spaced from the vessel to produce the hot combustion gases.

3,897,195
NOISE MAKING APPARATUS

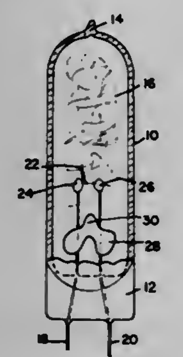
Raymond C. Finch, Clyde, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Apr. 25, 1974, Ser. No. 464,175
Int. Cl.² F23H *5/26*
U.S. Cl. 431—19 **4 Claims**



1. Noise making apparatus for protecting crops from wildlife, comprising
   a combustion chamber;
gas feeding means for supplying explosive gases to the combustion chamber;
sparking means in the combustion chamber for exploding the gases; and
spark control means for igniting the sparking means when the pressure of gas in the combustion chamber reaches a predetermined level.

3,897,196
PHOTOFLASH LAMP WITH SEALED BEAD

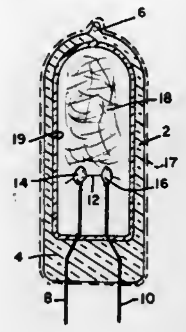
John P. Saunders, Beverly, and Burleigh H. Leach, Hamilton, both of Mass., assignors to GTE Sylvania Incorporated, Ipswich, Mass.
Filed Feb. 21, 1974, Ser. No. 444,343
Int. Cl.² F21K *5/02*
U.S. Cl. 431—95 **4 Claims**



1. A photoflash lamp comprising:
an hermetically sealed, light-transmitting envelope;
a quantity of filamentary combustible material located within said envelope;
a combustion-supporting gas in said envelope; and
an ignition mount structure disposed in said envelope in operative relationship with respect to said combustible material, said mount structure including a pair of lead-in wires sealed through one end of said envelope, a filament connected across said lead-in wires, and an insulating bead fused about said lead-in wires and located between said filament and the end of said envelope through which said wires are sealed for supporting said wires in a spaced side-by-side relation, the midportion of said insulating bead between said lead-in wires being stretched to protrude toward said filament to provide a raised barrier between locations where the lead-in wires pass through the bead, and a recessed portion immediately below the barrier on the opposite side of the bead, for preventing post-ignition short circuits between said wires.

3,897,197
NEW TRANSPARENT LOW THERMAL CONDUCTIVITY GLASS COMPOSITIONS AND LAMP ENVELOPES MADE THEREFROM

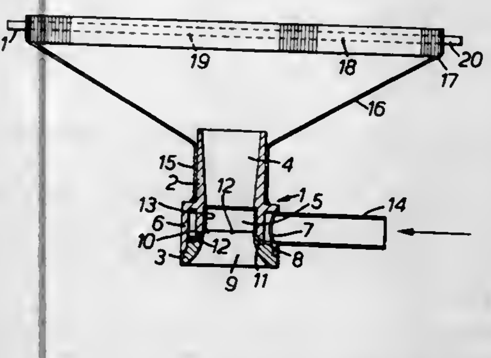
Naila Saba Jirmanus, Somerville, Mass.; Guy E. Rindone, State College, Pa., and Andre C. Bouchard, Peabody, Mass., assignors to GTE Sylvania Incorporated, Danvers, Mass.
Filed July 10, 1974, Ser. No. 487,076
Int. Cl.² F21K *5/02*
U.S. Cl. 431—95 **12 Claims**



1. A photoflash lamp comprising:
an hermetically sealed, light-transmitting envelope;
a quantity of combustible material located in said envelope;
   a combustion-supporting gas in said envelope; and
ignition means attached to said envelope and disposed in operative relationship to said combustible material;
said envelope comprising a lead borogermanate glass which is colorless and transparent and which has a thermal conductivity of less than about 19 × 10^{-4} cal/cm-sec-°C at 100°C, and a composition consisting essentially of the following constituents in about the ranges stated by weight: 20 to 72% GeO_2; 16 to 50% PbO; 10 to 30% B_2O_3; and 0 to 20% additive for modifying one or more of the following properties of said glass: the coefficient of thermal expansion, thermal conductivity and chemical durability.

3,897,198
GASEOUS FUEL BURNERS

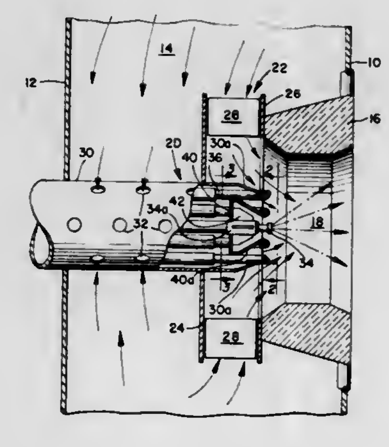
Alfred Longworth, Wembley, England, assignor to Radiation Limited, London, England
Filed Apr. 13, 1973, Ser. No. 350,780
Int. Cl. F23d *13/00*
U.S. Cl. 431—160 **9 Claims**



1. A gaseous fuel burner assembly comprising in combination:
a gaseous fuel mixture supply duct,
a gaseous fuel burner having an axis of symmetry, a downstream end in the form of a burner mouth transverse to said axis of symmetry, and an upstream end connected to said gaseous fuel mixture supply duct, and
gaseous fuel diffuser means comprising a body comprising an assembly of spaced, finned pipes extending across the mouth of said burner transversely of said axis of symmetry with the spaces between said fins constituting passageways for uncombusted fuel, said passageways constituting the sole gaseous fuel outlet for said burner, said passageways having inlet ends positioned to receive an uncombusted fuel mixture from said supply duct and outlet ends exposed to the ambient air which constitute substantially the sole flame ports at which combustion takes place, and said pipes constituting coolant passage means in heat exchange relationship with substantially all of said fuel passageways upstream of said flame ports.

3,897,199
BURNER ASSEMBLY HAVING A TERTIARY AIR NOZZLE

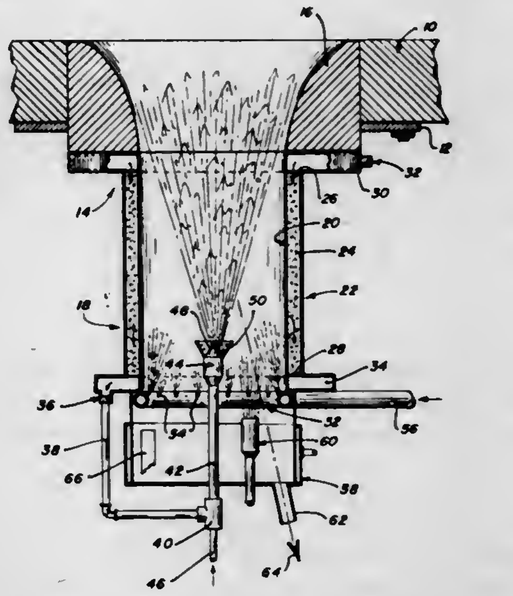
Walter P. Grozegno, Florham Park, and Norman K. Trozzi, W. Caldwell, both of N.J., assignors to Foster Wheeler Corporation, Livingston, N.J.
Filed July 5, 1974, Ser. No. 486,254
Int. Cl.² F23M *9/00*
U.S. Cl. 431—184 **9 Claims**



1. A burner assembly for mounting adjacent an opening in the wall of a furnace, comprising a collar having one end portion extending in said wall opening, another end portion located externally of said furnace, and a through opening communicating with the interior of said furnace, a sleeve disposed externally of said furnace and having an end portion cooperating with said other end portion of said collar to define a first annular flow passage communicating with said collar opening, a substantially cup-shaped insert disposed in said sleeve with the base of said insert disposed inwardly from said end portion of said sleeve and having a plurality of openings extending therethrough, the wall of said insert cooperating with said end portion of said sleeve to define a second annular flow passage communicating with said collar opening, at least one burner member disposed in said sleeve and adapted to discharge a stream of fuel into said collar opening, and windbox means surrounding said end portion of said sleeve and communicating with said first flow passage for receiving air and directing same to said first flow passage for passage to said collar opening, said sleeve having a plurality of openings extending therethrough for directing air through said second flow passage and through said openings in said base of said insert, for passage to said collar opening.

3,897,200
CYCLONIC MULTI-FUEL BURNER

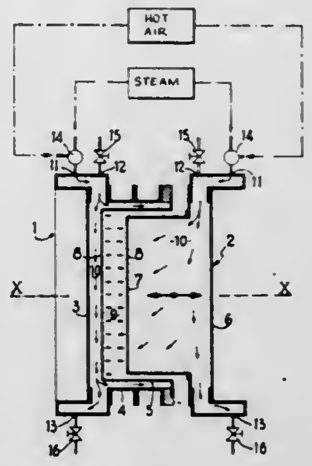
Herman T. Childree, Tyler, Tex., assignor to Howe-Baker Engineers, Inc., Tyler, Tex.
Filed Mar. 4, 1974, Ser. No. 447,613
Int. Cl.² F23D *11/44*
U.S. Cl. 431—243 **6 Claims**



1. A burner assembly comprising, in combination, inlet and outlet manifolds, an annular heat exchanger defined by inner and outer walls interposed between and in communication with said manifolds, one wall of said heat exchanger defining a combustor section whereby an atomizing medium flowing through said heat exchanger is heated by transfer of heat from said combustor section through said one wall prior to introduction to an atomizing means, atomizing means for imparting a high velocity tangential vortex to the atomizing medium to react it longitudinally and tangentially on a fuel for aerodynamically mixing the heated atomizing medium intimately with a fuel within said combustor section and to produce molecular shear in the fuel resultant in an atomized fuel having substantially micron size droplets.

3,897,201
PROCESS AND DEVICE FOR PREHEATING MOULDS

Pierre Belot, Pont-A-Mousson, and Maurice Perrain, Nancy, both of France, assignors to Pont-A-Mousson S.A., Pont-A-Mousson, France
Filed Feb. 27, 1974, Ser. No. 446,432
Claims priority, application France, Mar. 29, 1973, 73.11304
Int. Cl.² F27D *7/00, 13/00*
U.S. Cl. 432—4 **4 Claims**



1. In a process for the steam moulding of parts from expanded thermoplastic material in a mould having a mould

cavity defined by walls comprising a wall having a plurality of orifices which put the cavity in communication with a steam chamber to ensure a substantially even distribution of steam in the cavity; the improvement characterized by: preheating the walls of the cavity prior to the supply of steam to said chamber for moulding, by supplying hot air to said chamber which air enters said cavity by way of said orifices.

2. A moulding press for moulding parts from expanded thermoplastic material by putting steam in contact with said material, comprising in combination: a mould having walls defining a mould cavity, a steam chamber adjoining a wall of the mould cavity, a plurality of throughway orifices in said wall arranged substantially throughout said wall for distributing steam from said chamber in said cavity, a source of steam, a source of hot air, inlet means putting said chamber in communication with said steam source and with said hot air source, first valve means combined with said inlet means for permitting first the supply of hot air to said chamber to preheat the mould cavity walls prior to the supply of steam to said chamber and thereafter the supply of steam to said chamber, outlet means for connecting said chamber to a discharge and second valve means controlling said outlet means.

3,897,202

METHOD AND DEVICE FOR HEATING OPEN MELTING BATHS, ESPECIALLY GALVANIZING BATHS, ENAMELING BATHS AND GLASS BATHS

Werner Ackermann, Siegen-Trupbach, and Frohmut Vollhardt, Siegen-Burbach, both of Germany, assignors to SAG Siegener Aktiengesellschaft, Germany

Filed Mar. 26, 1974, Ser. No. 454,823

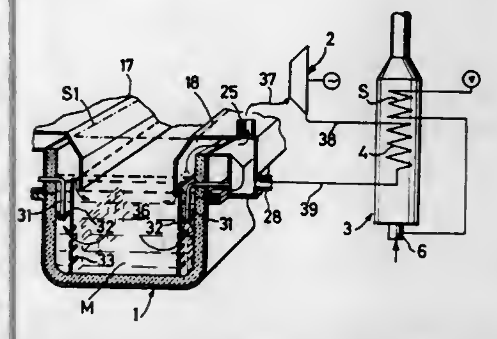
Claims priority, application Germany, Mar. 21, 1974, 2313974

Int. Cl. F27b *14/00*

U.S. Cl. 432—26 **20 Claims**

1. The method of treating an article in a heated liquid bath which comprises immersing said article in said bath in an open immersion area and heating the liquid by circulating an inert gas through a system closed to atmosphere, heating said gas and introducing said gas into said liquid below the surface spaced from said immersion area and collecting said gas passing upwardly through the surface of said liquid to continue circulation without exposure to air.

7. A device for heating open melting baths, especially enameling baths, lead coating baths, metal baths, and glass baths, which includes: container means adapted to receive a melting bath, upright partition means arranged within said container means and at least partially defining gas receiving space means adapted at the upper and lower end portions thereof to communicate with the respective adjacent container space outside said gas receiving means, first conduit means leading into the upper portion of and downwardly in said gas receiving space means for conveying inert gas into said gas receiving space means, collector means arranged above said gas receiving space means for collecting gas ascending in said gas receiving space means, compressor means arranged outside said container means and communicating with said collector means for receiving collected gas therefrom and compressing same, heat exchanger means communicating with said compressor means for receiving said inert gas therefrom, and second conduit means establishing communication between said heat exchanger means and said first conduit means.



CHEMICAL

3,897,203

CARBAZOLE DYESTUFFS

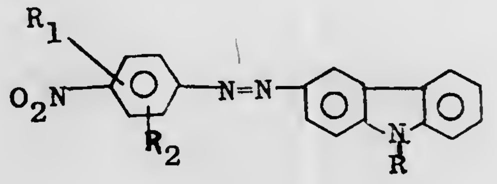
Edgar Earl Renfrew, Lock Haven, Pa., assignor to American Color & Chemical Corporation, Charlotte, N.C.

Continuation-in-part of Ser. No. 230,113, Feb. 28, 1972, abandoned. This application May 25, 1973, Ser. No. 363,843

Int. Cl. D06p *3/00*

U.S. Cl. 8—4 **3 Claims**

1. A polyester textile material dyed with a compound of the formula



wherein

each of R_1 and R_2 is independently hydrogen halogen, nitro, chloro, bromo, cyano, trifluoromethyl, lower alkoxy, lower alkylsulfonyl, chloro(lower alkyl), carbonamide, lower alkyl carbonamido, di(lower alkyl)carbonamido, sulfamyl, lower alkylsulfamyl, and di-(lower alkyl)sulfamyl;

R is alkyl of 4 to 9 carbon atoms or aralkyl of 7 to 9 carbon atoms, the aryl portion of said aralkyl being a member selected from the group consisting of phenyl, nitrophenyl, chlorophenyl, bromophenyl, cyanophenyl and sulfamylpheny.

3,897,204

METHOD FOR PRINTING TEXTILES USING A PRECOAT CONTAINING β-1,4 GLUCAN

Noriaki Mizuma, Tokyo, and Yuzo Yokota, Oi-Machi, both of Japan, assignors to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 28,144, April 13, 1970, abandoned. This application Feb. 7, 1972, Ser. No. 224,246The portion of the term of this patent subsequent to July 25, 1989, has been disclaimed.

Int. Cl. D06p *1/48*

U.S. Cl. 8—62 **3 Claims**

1. A method of printing textile fabric which comprises coating said textile fabric with an aqueous dispersion consisting essentially of finely-divided, water-insoluble organic particles at least about 90 percent by weight consisting of β-1,4 glucan and a water-soluble binder, drying said coating, printing a design on said fabric with a colored printing paste, treating the printed textile with the direct application of steam, washing the textile to remove the dried coating and drying the textile.

3,897,205

FIREPROOFING CELLULOSE TEXTILES WITH TETRAKIS (HYDROXYMETHYL) PHOSPHONIUM CHLORIDE AND ANILINE

Arlen W. Frank, Slidell, and George L. Drake, Jr., Metairie, both of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed July 6, 1973, Ser. No. 376,971

Int. Cl. D06m *15/54*

U.S. Cl. 8—116 P **1 Claim**

1. A process for imparting to a cellulosic textile self-extinguishing character, the process comprising

a. impregnating a cellulosic textile with an aqueous solution containing about 30% of tetrakis(hydroxymethyl)phosphonium chloride,

b. drying the wet impregnated cellulosic textile for about 4 minutes, at about 85°C.,

c. reacting the textile of (b) upon impregnation with an ethanolic solution containing about 60% aniline, and

d. allowing the reaction to come to completion upon air-drying the reimpregnated cellulosic textile.

3,897,206

METHOD OF PREPARING CELLULOSIC TEXTILE MATERIALS HAVING IMPROVED SOIL RELEASE AND STAIN RESISTANCE PROPERTIES

John A. Kearney, Macon, Ga., assignor to The Bibb Company, Macon, Ga.

Filed Dec. 27, 1972, Ser. No. 318,858

Int. Cl. D06m *13/00*

U.S. Cl. 8—120 **15 Claims**

1. A process for producing cellulosic textile materials having improved soil release and stain resistance properties which comprises impregnating said textile material with a solution of an ethylene-maleic anhydride copolymer or an ethylene-maleic acid copolymer in the presence of an esterification catalyst to cause a reaction between the cellulosic material and the said copolymer; drying the impregnated material at from room temperature to about 300°F., and then curing the impregnated material at a temperature of about 310° to about 410°F.

3,897,207

CARRIER COMPOSITION AND PROCESS FOR DYEING AND PRINTING

Gerhard Weckler, Sulzbach, Taunus, and Rolf Mildenberg, Mulheim (Ruhr) both of Germany, assignors to Cassella Farbwerke Mainkur AG, Germany

Filed July 19, 1973, Ser. No. 380,534

Claims priority, application Germany, July 26, 1972, 2236551

Int. Cl. D06p *5/04*

U.S. Cl. 8—173 **8 Claims**

1. A carrier composition comprising a mixture of methylnaphthalene and diphenylene oxide in a weight ratio of 1.2:1 to 4:1.

3,897,208

TEXTILE TREATING COMPOSITIONS, PROCESS OF TREATING TEXTILES, AND TEXTILE ARTICLES

Barry M. Shay, Wilmington, Del., assignor to ICI United States Inc., Wilmington, Del.

Filed June 9, 1969, Ser. No. 831,770

Int. Cl. D06m *15/54, 15/58*

U.S. Cl. 8—187 **16 Claims**

1. A textile treating composition comprising a durable press agent and an N-methylol or N,N-dimethylol carbamate of an ethylene oxide adduct selected from the group consisting of (1) an ethylene oxide adduct of a fatty acid containing from 12 to 28 carbon atoms, (2) an ethylene oxide adduct of a secondary fatty amine containing from 12 to 28 carbon atoms, (3) an ethylene oxide adduct of an ester of a fatty acid having from 12 to 8 carbon atoms and a polyol having from 2 to 6 hydroxyl groups and from 3 to 6 carbon atoms, and (4) a partial ester of a fatty acid having from 12 to 28 carbon atoms and an oxyethylene adduct of a polyol having from 2 to 6 hydroxyl groups and from 3 to 6 carbon atoms.

13. A process of treating textile material containing cotton which comprises applying to the textile material, a textile treating composition of claim 1 and an acidic curing catalyst and thereafter curing by heating the textile material to an elevated temperature.

15. An article of manufacture which comprises a textile material treated in accordance with the process of claim 13.

3,897,209
CORROSION INHIBITORS FOR METALS IN AQUEOUS SYSTEMS

Arthur Harris, Poynton; John Burrows, Congleton, and Thomas Ivor Jones, Poynton, all of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 4, 1972, Ser. No. 312,019

Claims priority, application United Kingdom, Dec. 10, 1971, 057413/71

Int. Cl. C02b *5/06;* **C23f** *11/18, 11/12*

U.S. Cl. 21—2.7 R **5 Claims**

1. A process for inhibiting the corrosive attack of an aqueous system on metallic surfaces which comprises adding to the aqueous system from 0.1 to 500 p.p.m. of a composition comprising from 2.5 to 80% by weight of a water soluble zinc compound (calculated as Zn^{++}) and 97.5 to 20% by weight of a hydrolyzed polymaleic ahydride, or of a water soluble salt of such a hydrolyzed polymaleic anhydride, the average molecular weight of the hydrolyzed polymaleic anhydride or the water soluble salt thereof being from 300 to 5000.

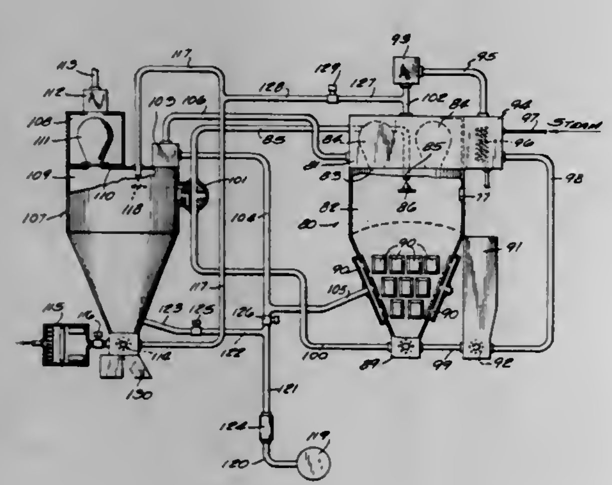
3,897,210
METHOD AND APPARATUS FOR STERILIZING PARTICULATE MATERIAL

Daniel L. Gruber, and Earl D. Pollock, both of Milwaukee, Wis., assignors to Bacfree Industries, Inc., Milwaukee, Wis.

Continuation-in-part of Ser. No. 141,139, May 7, 1971, abandoned. This application Jan. 2, 1973, Ser. No. 320,241

Int. Cl. A61l *1/00;* **A23l** *3/18, 3/34*

U.S. Cl. 21—58 **9 Claims**



1. A method for sterilizing a particulate material comprising the steps of blowing said material via a gas stream into a collector for trapping a substantial portion of the particulate material therein, blowing a sterilizing gas medium through at least a portion of the trapped particulate material to at least partially suspend the particulate material in a fluid state in said sterilizing gas medium and flushing the sterilizing gas medium around the individual particles of said particulate material in the course of blowing said sterilizing gas medium through the suspended particulate material, and pneumatically recirculating sterilizing gas medium from the top of the collector to the bottom of the collector for repeated blowing through the suspended particulate material, plus the step of selectively pneumatically recirculating sterilizing gas medium containing particulate material from the bottom of the collector to the top of the collector for repeated flushing of the particulate material by the sterilizing gas medium and, after said particulate material has been sterilized, discharging the particulate material from the collector.

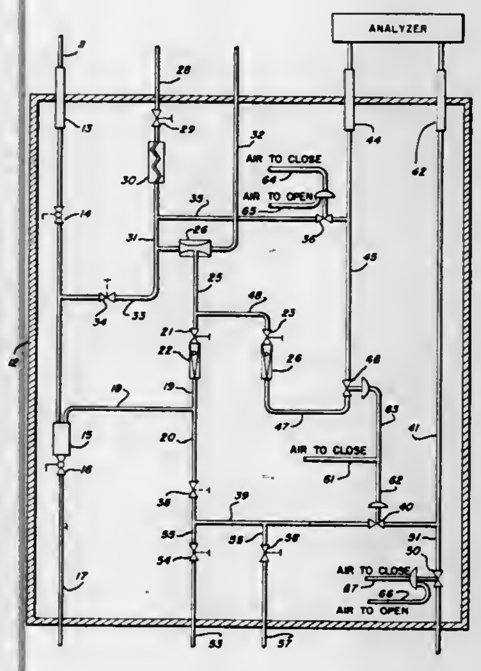
3,897,211
SAMPLE CONDITIONER

Otis E. Ririe, Jr., Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 6, 1973, Ser. No. 385,883

Int. Cl. G01n *1/22, 31/00*

U.S. Cl. 23—254 R **6 Claims**



1. Apparatus for conditioning a gaseous sample which is to be analyzed, which comprises a heated cabinet, means for introducing a gaseous sample into said cabinet, by-pass means within said cabinet for diverting a portion of said gaseous sample and exhausting it from said cabinet without analysis, sample conveying means within said cabinet for conveying a predetermined portion of said gaseous sample to analyzing means, means for achieving atmospheric equalization of the pressure within said sample conveying means, and means for purging with air said sample introducing means, said by-pass means and said sample conveying means.

3,897,212
TEST FOR SYSTEMIC LUPUS ERYTHEMATOSUS

Shalom A. Leon, Elkins Park; Bernard Shapiro, and George J. Kollmann, both of Narberth, all of Pa., assignors to Albert Einstein Medical Center of Philadelphia, Philadelphia, Pa.

Filed Jan. 30, 1973, Ser. No. 327,913

Int. Cl. G01n *33/16, 31/02*

U.S. Cl. 23—230 B **9 Claims**

1. A method for testing patients for systemic lupus erythematosus comprising the steps of taking a sample of serum from a patient to be tested, labeling a sample of native DNA with ^{125}I by introducing ^{125}I-labeled 5-iododeoxyuridine into the DNA molecule, mixing together, in the presence of a buffer, portions of said ^{125}I-labeled DNA and said serum, incubating the resulting mixture to allow complexing of the DNA with any anti-DNA antibodies present in the serum, adding to said mixture a precipitating agent for antibody/DNA complexes which precipitating agent will not precipitate non-complexed DNA, separating the mixture into supernatant and precipitate fractions, and determining the respective radioactivities of the separated fractions, a high degree of radioactivity in the precipitate fraction indicating substantial complexing of DNA with antibodies which represents a positive test for systemic lupus erythematosus.

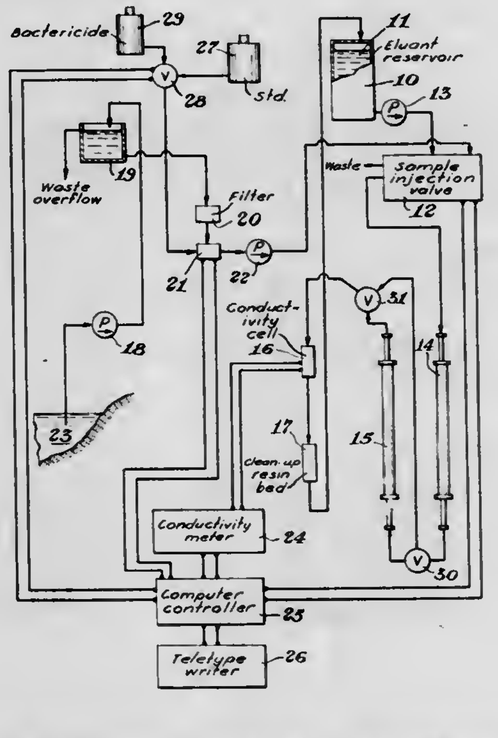
3,897,213
AUTOMATED QUANTITATIVE ANALYSIS OF IONIC SPECIES

Timothy S. Stevens, Midland, and William H. Parth, Saginaw, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 6, 1973, Ser. No. 386,259

Int. Cl. B01d *15/08;* **G01n** *27/00*

U.S. Cl. 23—253 R **18 Claims**



1. Integrated system utilizing ion exchange resin means in automated analysis of a sample solution containing at least one ionic species to be quantitatively determined, which comprises:

a reservoir for eluant water;
valve means for selecting a predetermined-sized quantity of sample solution;
hydraulic pressure means for delivery of the eluant water to the said valve means;
ion exchange resin bed means receiving eluant water and selected sample solution from the valve means;
a conductivity cell receiving the effluent from the ion exchange resin bed means;
clean up resin bed means receiving the effluent from the conductivity cell;
liquid conduit means connecting in series in a closed loop in the following sequence: the reservoir, the hydraulic pressure means, the valve means, the ion exchange resin bed means, the conductivity cell, and the clean up resin bed means;
readout means associated with the conductivity cell;
means for delivering to the said valve means, at mutually exclusive times, sample solution, and standard solution;
and a computer-controller coordinating the introductions of sample solution and of standard solution with the readout means.

3,897,214
DIAGNOSTIC DEVICE

Hans Lange, Lampertheim; Walter Rittersdorf, and Hans-Georg Rey, both of Mannheim-Waldhof, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Filed Nov. 13, 1972, Ser. No. 306,127

Claims priority, application Germany, Nov. 24, 1971, 2158124

Int. Cl. G01n *29/02, 31/22, 33/16*

U.S. Cl. 23—253 TP **17 Claims**

1. Diagnostic device for the detection of components contained in liquids, which diagnostic device comprises an absorbent carrier comprising felt or fleece preponderantly consisting of polyamide fibers, wherein said carrier is impregnated with appropriate reagents.

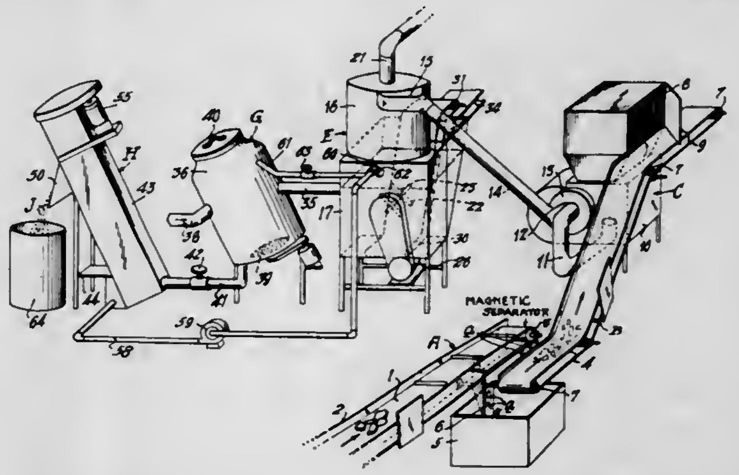
3,897,215
CONVERTING MUNICIPAL REFUSE INTO COMPOST

William Davidson, Jr., Fairfield, and Charles H. Kauffman, Newark, both of N.J., assignors to Charles H. Kauffman, Newark, N.J.

Filed Apr. 27, 1973, Ser. No. 355,059

Int. Cl. C05f *9/02;* **B03b** *7/00;* **B02c** *18/40*

U.S. Cl. 23—259.1 **3 Claims**



1. Apparatus for converting municipal refuse into compost comprising:

a separator means for removing ferrous materials from the refuse,
grinding means for reducing the refuse to finely divided particles,
means for conveying to said grinding means from said separator means the refuse thus freed of ferrous materials,
means for separating glass particles and particles of other non-ferrous materials, said means comprising a tank containing a body of liquid, and cyclonic air separator chamber having a cylindrical wall mounted on said tank above said body of liquid with the lower end of said wall extending downwardly into said body of liquid below the surface thereof so that the surface of the liquid forms the bottom wall of the chamber, said chamber including a top wall having an outlet pipe extending into the chamber, said chamber also having a tangential air inlet above the lower end of said outlet pipe,
means including a power driven centrifugal air pump having its inlet communicating with said grinding means and its outlet connected to said tangential air inlet of said cyclonic air separator chamber for conveying the particles from the grinding means to the cyclonic separator chamber under positive air pressure whereby the particles are aerated and fall by gravity on the surface of the liquid and the heavier particles sink in the body of liquid while the lighter particles are suspended in the liquid in form of a slurry, means for agitating the slurry, means for removing the heavier particles from the slurry at the bottom of said tank,
a wet pulping apparatus,
means for removing the slurry from the tank adjacent the surface of the slurry and conveying said slurry to said wet pulping apparatus in a mixture containing about ninety percent liquid which further finely divides and washes the particles and produces a homogenized wet pulpy mixture devoid of glass particles and other heavier non-ferrous particles,
a drier for dehydrating said pulpy mixture into a dehydrated mass having a moisture content of the order of 50 percent,
and means for conveying said wet pulpy mixture from said wet pulping apparatus to said drier.

3,897,216

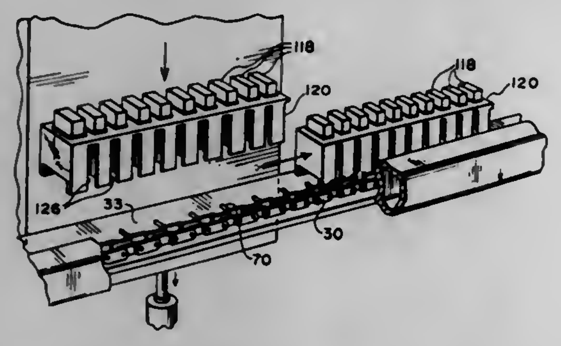
SAMPLE CUP HOLDER

Alan Richardson Jones, Miami, Fla., assignor to Coulter Chemistry, Inc., Hialeah, Fla.

Continuation-in-part of Ser. No. 195,363, Nov. 3, 1971, Pat. No. 3,791,509, and a continuation-in-part of Ser. No. 391,571, Aug. 27, 1973, abandoned, which is a division of Ser. No. 189,092, Oct. 14, 1971, Pat. No. 3,799,744. This application Oct. 15, 1973, Ser. No. 406,675

Int. Cl. G01n *1/14, 1/18, 21/24*

U.S. Cl. 23—259 **25 Claims**



1. A cup carrier comprising a block of translucent material, an opaque covering on one side of the block and the other side adapted to be illuminated, said covering having holes therein arranged in machine-readable indicia, there being a different indicium for each cup, and said covering being made of magnetizable material whereby said carrier can be easily stored in a magnetic hopper, and said carrier being adapted to be passed between a source of illumination and a photoresponsive device to enable said indicia to be read.

3,897,217

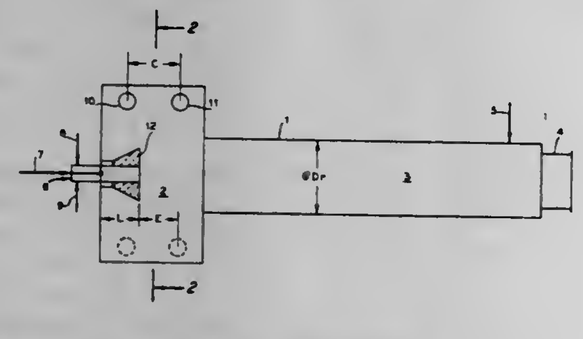
CARBON BLACK PRODUCTION PROCESS AND REACTOR

Paul J. Cheng, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 24, 1973, Ser. No. 391,476

Int. Cl. C09c *1/50;* **F23d** *13/40*

U.S. Cl. 23—259.5 **8 Claims**



1. A carbon black reactor comprising
a. a tubular enlarged mixing section;
b. a tubular reaction section in open communication and axial alignment operatively connected with said enlarged mixing section;
c. hydrocarbon feed means connected to said reactor for the axial introduction of hydrocarbon feed into said enlarged mixing section;
d. first conduit means for the introduction of hot combustion gases into said enlarged mixing section;
e. second conduit means for the introduction of hot combustion gases into said enlarged mixing section, the outlet of said second conduit means being located axially downstream of the outlet of said first conduit means;
f. a conical diffuser member positioned in said enlarged mixing section such that the smaller upstream end thereof is proximate to the locus of discharge of said hydrocarbon feed means, said diffuser member further having a tubular passageway longitudinally traversing its length along the reactor axis for passing the hydrocarbon feed through said passageway into said enlarged mixing section, said diffuser member further having a plurality of channels opening through the periphery of the smaller upstream end thereof so as to establish communication between said enlarged mixing section and said passageway and having the larger downstream end thereof terminating axially downstream of the outlet of said first conduit means; and
g. carbon black recovery means connected to the end of said reaction section.

3,897,218

POLYCONDENSATION REACTOR

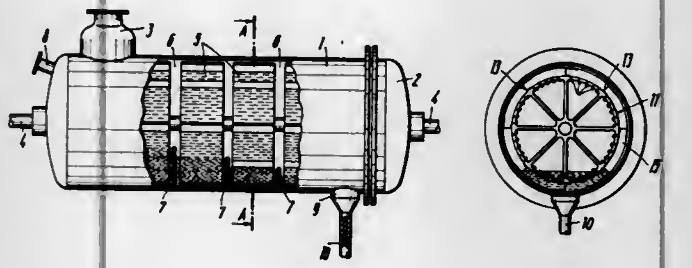
Walter Busweiler, Bischofsheim, Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed Jan. 15, 1974, Ser. No. 433,606

Claims priority, application Germany, Feb. 23, 1973, 2309027

Int. Cl. B01d *19/00;* **C08g** *35/00*

U.S. Cl. 23—285 **6 Claims**



1. Polycondensation reactor comprising shell means adapted to be heated and having at least one inlet and outlet for feed and product, respectively, rotatable inner means which is at least partly immersed into the material being reacted, said inner means including a plurality of successive rotary drum means each having an apertured shell provided with distribution tongues protruding into the drum, and with outwardly extending scoops, said rotary drums being mounted on a common, approximately horizontal shaft so as to leave a gap between adjacent drums, and partition means detachably secured to the bottom of the shell means and extending into the gaps between adjacent drums, said partition means decreasing in height toward said outlet.

3,897,219

APPARATUS FOR THE REMOVAL OF HYDROGEN SULFIDE AND MERCAPTANS FROM LIQUID AND GASEOUS STREAMS

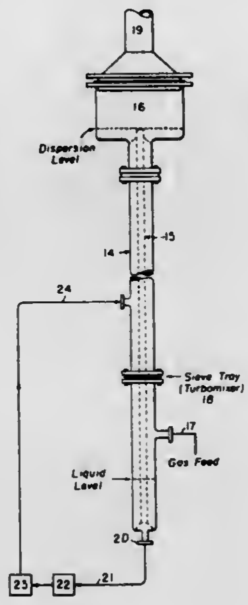
Jacques Pierre Sibeud, Princeton, and Charles David Ruff, Highland Park, both of N.J., assignors to Rhodia, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 166,894, July 28, 1971, abandoned. This application Jan. 29, 1973, Ser. No. 327,278

Int. Cl. B01j *9/16*

U.S. Cl. 23—288 A **6 Claims**

1. An apparatus for the capture of hydrogen sulfide and alkyl mercaptans in gaseous streams, and the catalytic conversion thereof to sulfur and dialkyl disulfides, respectively, comprising, in combination, a contactor defining a substantially cylindrical elongated reaction chamber; a gas feed inlet at the bottom of the reaction chamber; a liquid aqueous catalyst solution inlet at the bottom of the reaction chamber; means for forming an intimate unstable dispersion short of foam formation of gaseous oxygen, hydrogen sulfide, and alkyl mercaptans entering via the gas feed inlet in liquid aqueous catalyst solution and for passing the dispersion in turbulent flow cocurrently upwardly through the reaction chamber; and a gas separator for reception of dispersion from the reaction chamber and defining a substantially cylindrical gas separation chamber directly above the reaction chamber, coextensive therewith in a central portion and having a peripheral portion extending circumferentially about and beyond the peripheral portion of the reaction chamber, the gas separation chamber having an overall diameter larger than the diameter of the reaction chamber and exposing a relatively large surface area of dispersion to a gas layer thereabove within the gas separation chamber to facilitate breaking of the dispersion into a lower liquid layer and a separation of gas therefrom, the gas separator having in an upper portion a gas outlet for removal of the gas in the gas layer and, at or below the level of the liquid layer, a liquid outlet for liquid aqueous catalyst solution containing sulfur and dialkyl disulfides; a conduit extending axially from the gas separator chamber through the elongated reaction chamber toward the inlet end of the reaction chamber, and adapted to carry liquid catalyst solution from the gas separator chamber; and means for maintaining a liquid level within the gas separation chamber and thereby within the reaction chamber by overflow; the ratio of the diameter of the reaction chamber to the diameter of the gas separator chamber being within the range from about 1:1.2 to about 1:20, expressed in metric units, the length of the reaction chamber being within the range from about 2 feet to about 20 feet, and the diameter of the reaction chamber being within the range from about 4 inches to about 40 feet; the ratio of diameter to height of the gas separation chamber being within the range from about 60:1 to about 1:1, the height of the gas separation chamber being within the range from about 2 inches to about 10 feet, and the diameter of the gas separation chamber being within the range from about 5 inches to about 60 feet.



3,897,220

CATALYTIC REACTORS

Leslie Alcock, Bexleyheath, and James Ford, Northfleet, both of England, assignors to The British Petroleum Company, Limited, London, England

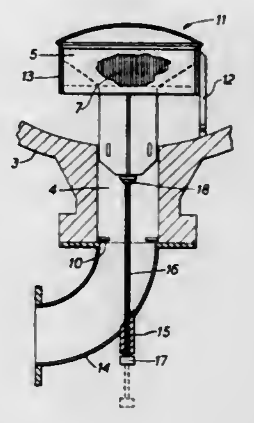
Filed Dec. 27, 1973, Ser. No. 428,753

Claims priority, application United Kingdom, Jan. 23, 1973, 3336/73

Int. Cl. B01j *9/04*

U.S. Cl. 23—288 R **3 Claims**

1. A grid system for a catalytic reactor outlet comprising cylindrical or rectangular shaped grid adapted to seal the outlet to prevent the passage of catalyst and open at at least the end thereof nearest the outlet; a shield located adjacent the grid said shield being adapted and arranged to receive said grid therein and keep the space above and adjacent the grid free of catalyst thereby to allow the grid to be moved easily; said grid having an extension extending into the outlet to position the grid in coaxial alignment with said outlet; and means located in said outlet for moving the grid from the seal position into the shield to permit the catalyst to be discharged through the outlet.



3,897,221

POROUS METAL STRUCTURE

Ival O. Salyer, Dayton, Ohio, and Robert T. Jefferson, Columbus, Ind., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

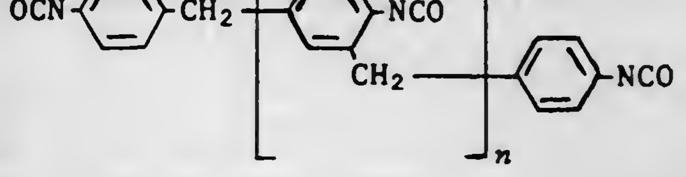
Continuation of Ser. No. 54,298, July 13, 1970, Pat. No. 3,647,721, which is a continuation-in-part of Ser. Nos. 586,923, Oct. 17, 1966, abandoned, and Ser. No. 828,647, May 28, 1969, Pat. No. 3,574,150. This application Sept. 30, 1971, Ser. No. 185,002

Int. Cl. B23p *3/00*

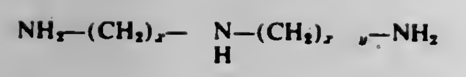
U.S. Cl. 29—191.2 **1 Claim**

1. A porous metal structure made by heating at a sufficient temperature to remove the polyurethane an open-pore polyurethane structure containing powdered metal dispersed in said polyurethane, said structure comprising coherent, roughly spherical polyurethane particles containing said powdered metal, said spherical particles sticking together in an interconnected matrix, and in which the polyurethane is the product of the reaction between

a. a mixture of polyaryl polyalkylene polyisocyanates having the formula



wherein *n* has an average value of 0.5–2.0, containing about 40–50 percent diisocyanate, the balance being tri-, tetra- and pentaisocyanates, having a functionality of about 2.1–3.5, and
b. a polyol obtained by totally oxypropylating an amine selected from the group consisting of amines having the formula $NH_2—R—NH_2$ where R is an alkylene radical containing from 2 to 6 carbon atoms and amines having the formula



$NH_2-(CH_2)_x-[\underset{H}{N}-(CH_2)_x]_y-NH_2$

where *x* is an integer of from 2 to 3, and *y* is an integer of from 1 to 3.

3,897,222
PROTECTIVE COATING FOR FERROUS METALS

Andrew Craig Hood, Wayne, Pa., assignor to Standard Pressed Steel Co., Jenkintown, Pa.

Continuation of Ser. No. 149,360, June 2, 1971, abandoned. This application Sept. 19, 1973, Ser. No. 398,578

Int. Cl. B32b *15/00;* **C23b** *5/04*

U.S. Cl. 29—195 **9 Claims**

1. The method of protecting ferrous metal to inhibit corrosion which comprises coating said ferrous metal with a layer, from about 0.1 mil to about 0.4 mil thick, of a more noble metal, and then coating said more noble metal with a sacrificial layer, at least about 0.3 mil thick, by applying thereto a composition consisting essentially of about 10 to 2000 grams of alumiunum powder, having a grain size less than 325 mesh, per liter of an aqueous solution of a combination of phosphoric acid, chromic acid, or molybdic acid, or salts of said acids, and then heat curing said composition at a temperature from 350° to 1000°F. for a time between at least 24 hours at the lowest temperature in the range specified to about 15 minutes at the highest temperature in the range specified, until said composition is water-insoluble.

3,897,223
NB JOINED TO ALUMINA WITH NI-TI EUTECTIC SEAL

David L. Purdy, and John F. Williams, both of Indiana, Pa., assignors to Arco Nuclear Company, Leechburg, Pa.

Division of Ser. No. 374,011, June 27, 1973, which is a division of Ser. No. 127,807, March 4, 1971, abandoned, which is a division of Ser. No. 624,916, March 21, 1967, Pat. No. 3,599,317. This application Oct. 17, 1974, Ser. No. 515,806

Int. Cl.^{2} B32B *15/04*

U.S. Cl. 29—195 **2 Claims**

1. A vacuum-tight assembly consisting essentially of a member of aluminum oxide and a member of niobium, a mass consisting essentially of nickel and titanium in eutectic proportions melting at about 1,125°C. contiguous to and bonded to said members, the aluminum oxide member and niobium member having thermal coefficients of expansion which closely match over a wide range of temperatures, whereby a vacuum-tight assembly is maintained at the high temperature at which generators having a radioactive heat source operate.

3,897,224
GASOLINE CONTAINING ASHLESS DISPERSANT

Roger E. Chandler, Westfield, N.J., assignor to Exxon Research and Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 657,532, Aug. 1, 1967, abandoned, which is a continuation-in-part of Ser. No. 337,187, Jan. 13, 1964, abandoned. This application Dec. 17, 1970, Ser. No. 99,321

Int. Cl. C10l *1/22*

U.S. Cl. 44—71 **3 Claims**

1. A gasoline composition having the property of reducing the formation of deposits in the carburetor of an internal combustion engine burning gasoline, which comprises gasoline to which has been added, in the amount of from about 10 to about 50 pounds per thousand barrels of said gasoline, of an amide obtained from 1 mole of an aliphatic polyamine and in the range of from 1 to 5 moles of a high molecular weight monocarboxylic acid, said acid being the product of alkylating acrylic acid with a C_2 to C_5 mono-olefin polymer of from about 600 to about 3,000 molecular weight, said aliphatic polyamine being an alkylene polyamine having the formula: $NH_2(CH_2)_n-[NH(CH_2)_n]_m-NH_2$ wherein *n* is 2 to 3 and *m* is a number from 0 to 10.

3,897,225
METHOD AND APPARATUS FOR GENERATING A GAS MIXTURE TO BE FORMED THROUGH CATALYTIC CONVERSION OF FUEL AND A GAS SERVING AS AN OXYGEN CARRIER

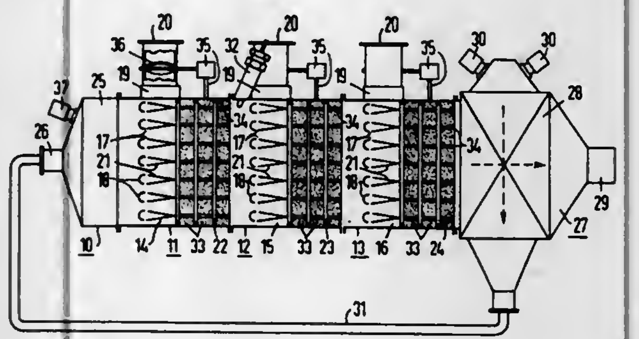
Hans-Joachim Henkel; Eugen Szabo DeBucs, both of Erlangen, and Christian Koch, Nurnbert-Grossgrundlach, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed June 21, 1973, Ser. No. 372,422

Claims priority, application Germany, July 3, 1972, 2232506

Int. Cl. C01b *2/16*

U.S. Cl. 48—107 **14 Claims**



1. A method for generating a reformed gas mixture which contains as combustible components essentially carbon monoxide, and at least one of the group consisting of hydrogen and methane from a mixture of vaporized liquid fuel and an oxygen carrier gas comprising the steps of:
   a. converting the mixture in a first catalytic reaction stage into gas and unconverted fuel;
   b. converting further amounts of the unconverted fuel from the output of said first reaction stage in at least one further reaction stage in series with said first stage to obtain reformed gas;
   c. mixing an oxygen carrier gas with the output of each reaction stage which is to be converted in a further reaction stage, said mixing being accomplished after the output leave a stage but ahead of its entry into the further reaction stage;
   d. controlling the amount of oxygen in the oxygen carrier gas in the mixture provided to each reaction stage as a function of the temperature in that reaction stage such that the amount of oxygen in the gas mixture is increased with decreasing temperature; and
   e. wherein the oxygen carrier gas mixed with the vaporized liquid fuel and converted in said first catalyst reaction stage consists of a mixture of the exhaust gas of an internal combustion engine and air with the percentages of air and exhaust gas varying between 0 and 100% and wherein the oxygen carrier gas admixed ahead of each further reaction stage is air.

6. Apparatus for catalytically converting a mixture of a vaporized liquid fuel and an oxygen carrier gas into a reformed gas which contains as combustible components essentially carbon monoxide, and at least one of the group consisting of hydrogen and methane comprising:
   a. first means comprising:
      1. a first mixing chamber; and
      2. a first catalytic reaction chamber coupled thereto and in flow communication therewith;
   b. at least one further means comprising:
      1. a further mixing chamber; and
      2. a further catalytic reaction chamber;
   c. the mixing chamber of each further means coupled to the output of the catalytic reaction chamber of a previous means and in flow communication therewith;

   d. means for vaporizing the liquid fuel;
   e. means to provide the vaporized fuel to said first mixing chamber;
   f. first means for providing a mixture of the exhaust gas of an internal combustion engine and air with the percentages of air and exhaust gas varying between 0 and 100% to said first mixing chamber and second means for providing air to said further mixing chamber;
   g. means defining an outlet coupled to the output of the furthest reaction chambers and in flow communication therewith;
   h. thermal sensing means installed in each of said reaction chambers; and
   i. means responsive to said thermal sensing means to control the supply of the mixture of exhaust gas and air respectively to each of said mixing chambers such that the amount supplied is increased with decreasing temperatures.

3,897,226
CONTROLLING THE CONCENTRATION OF IMPURITIES IN A GAS STREAM

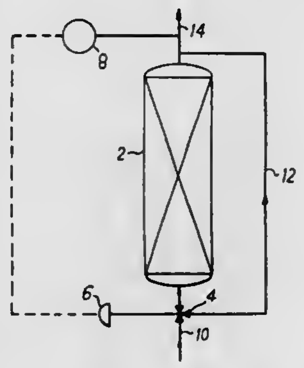
Keith Stanley Doherty, Cheadle, England, assignor to Petrocarbon Developments Limited, Manchester, England

Filed Apr. 19, 1973, Ser. No. 352,748

Claims priority, application United Kingdom, Apr. 19, 1972, 18166/72

Int. Cl.^{2} B01D *53/04*

U.S. Cl. 55—33 **19 Claims**



1. A method of upgrading an impurity-containing gas stream in which the concentration of the impurity varies with time, to provide a product stream in which the concentration of impurity substantially does not exceed a predetermined value which is between the maximum and minimum levels of concentration of impurity found in the gas stream said method comprising:
   i. sensing the level of concentration of impurity in the gas stream;
   ii. when the sensed level of concentration of impurity in the gas stream rises to said predetermined value, withdrawing at least a part of said gas stream, purifying said withdrawn part by passing said part through an adsorption zone containing adsorbent for said impurity whereby to adsorb said impurity from said withdrawn part, and thereafter re-combining the purified part with any remainder of said gas stream to form said product stream;
   iii. continuing step (ii) while the concentration of impurity in the gas stream exceeds said predetermined value;
   iv. controlling the proportion of gas stream that is withdrawn and purified in accordance with steps (ii) and (iii) so as to maintain the overall concentration of impurity in said product stream substantially at or below said predetermined value;
   v. after the concentration of the impurity in said gas stream has returned below said predetermined value, regenerating said adsorbent for subsequent re-use by withdrawing at least a part of said gas stream and passing said part through said adsorption zone whereby to desorb from said adsorbent impurity adsorbed thereby during steps (ii) and (iii);
   vi. terminating step (v) after the impurity adsorbed by said adsorbent during steps (ii) and (iii) has been substantially removed; and
   vii. repeating steps (ii) through (vi) each time the sensed concentration of impurity in the gas stream rises to said predetermined level.

3,897,227
PROCESS FOR THE REMOVAL OF CARBON DIOXIDE AND/OR HYDROGEN SULPHIDE AND OTHER ACIDIC GASES FROM GAS MIXTURES

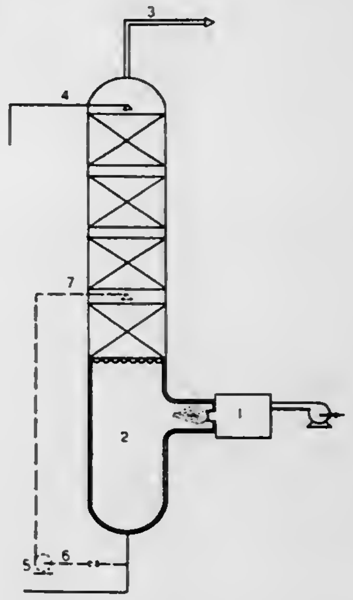
Giuseppe Giammarco, and Paolo Giammarco, both of Venice, Italy, assignors to Vetrocoke Cokapuania S.p.A., Venezia Porto Marghera, Italy

Filed Apr. 26, 1973, Ser. No. 354,729

Claims priority, application Italy, Apr. 26, 1972, 68286/72

Int. Cl. B01d *53/14*

U.S. Cl. 55—68 **5 Claims**



1. In a process for removing an acidic gas of the group of carbom dioxide and hydrogen sulphide from a gaseous mixture by absorbing the acidic gas by means of an aqueous absorbing solution in an absorption stage, transferring the fouled solution to a regeneration stage in which the absorbed acidic gas is removed from the solution, and recirculating the regenerated solution to the absorption stage, the improvement comprising regenerating the solution in the regeneration stage by burning a combustible substance in direct contact with the solution or water thereby to obtain a mixture of combustion gases and water vapour, and intimately contacting the latter mixture with the solution to be regenerated thereby to remove therefrom the absorbed acidic gas.

3,897,228
APPARATUS FOR SEPARATING SUSPENDED PARTICLES FROM A CARRIER GAS

Wolfgang Berz, Mauerkircherstrasse 13, 8 Munich 80, Germany

Filed Aug. 28, 1974, Ser. No. 501,184

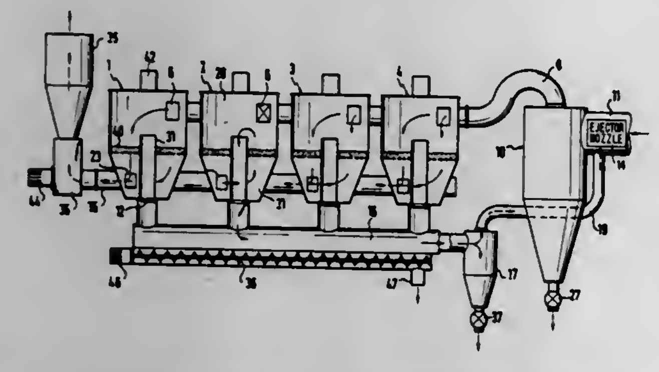
Claims priority, application Germany, Sept. 7, 1973, 2345344

Int. Cl.^{2} B01D *35/12, 50/00*

U.S. Cl. 55—273 **10 Claims**

1. Apparatus for separating suspended solid particles from a carrier gas comprising, in combination:
   a. a source of said carrier gas having said particles suspended therein;
   b. preliminary separator means for removing a portion of said particles from said gas, said separator means having an intake port communicating with said source and a discharge port;

c. a feed manifold communicating with said discharge port;
d. a plurality of filter chambers;
e. a filter medium separating an upper compartment from a lower compartment in each of said chambers, said medium being permeable to said carrier gas while retaining said particles;
f. a plurality of first valve means interposed between said feed manifold and the upper compartments of said chambers respectively and each operable for connecting the associated upper compartment with said feed manifold;
g. a purging gas manifold communicating with said intake port, a portion of said purging gas manifold being elongated in a direction having a predominantly horizontal component and being located below said upper compartment;
h. an upright pipe associated with each of said chambers, said pipe having respective orifices in the upper compartment of the associated chamber and in said portion of said purging gas manifold;
i. second valve means operable for opening and closing each of said pipes and for thereby connecting the associated chambers with said purging gas manifold;
j. operating means operatively connected to each of said first and second valve means for alternatively connecting each of said upper compartments to said feed manifold and to said purging gas manifold;
k. an outlet;
l. a clean gas manifold permanently connecting the lower compartment of each of said chambers with said outlet;



m. first conveying means for conveying said carrier gas from said discharge port sequentially through said feed manifold, through one of said chambers, when the first compartment of said one chamber is connected to said feed manifold by said first valve means, through said clean gas manifold, and through said outlet, whereby particles not removed from said carrier gas by said preliminary separator means are retained from said carrier gas by said filter medium, and the cleaned gas is released from said clean gas manifold through said outlet;
n. second conveying means for conveying said cleaned gas from said clean gas manifold sequentially through another chamber when the first compartment of said other chamber is connected to said purging gas manifold by said second valve means, through the pipe associated with said other chamber, through said purging gas manifold, and to said intake port, whereby particles previously retained on the filter medium in said other chamber are carried by the conveyed gas from said filter medium in said other chamber through said pipe into said purging gas manifold, a part of the carried particles is deposited in said portion of the purging gas manifold adjacent the orifice therein of said pipe due to the change in the direction of flow of the conveyed gas, another part of the carried particles being conveyed with the gas to said intake; and
o. third conveying means for conveying the deposited particles from said portion of the purging gas manifold outward of said purging gas manifold separately from the gas conveyed by said second conveying means.

3,897,229

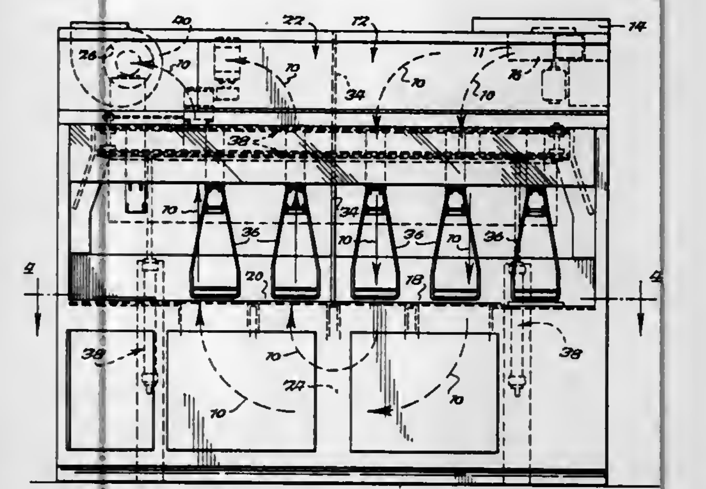
DUAL ACTION LAMINAR AIR FLOW

George J. Lada, Newport Beach, Calif., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Jan. 25, 1974, Ser. No. 436,577

Int. Cl. B01d *31/00*

U.S. Cl. 55—467 **5 Claims**



1. A multiple compartment air exhaust system comprising: first and second separated compartments;
a first air inlet located in the upper portion of the first compartment;
a first exhaust opening located in the lower portion of the first compartment;
a second air inlet located in the lower portion of the second compartment;
a conduit connecting the first exhaust opening and the second air inlet;
a second exhaust opening located in the upper portion of the second compartment; and
means connected to said first compartment for providing a positive flow of air through the first air inlet downwardly through the first compartment into the first exhaust opening, through the conduit to the second air inlet, through the second air inlet upwardly through the second compartment and through the second exhaust opening, each of said compartments being provided with an openable front portion and a working surface in its lower portion, the first exhaust opening and the second air inlet each being a grill located in the working surface along the length of and proximate to the front portion.

3,897,230

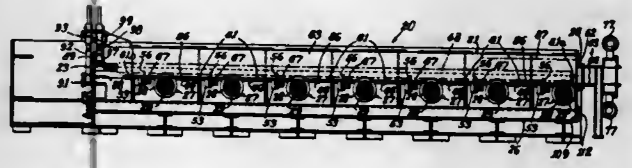
COOLING SYSTEM

Harold L. Taylor, Hebron, Ind., and John M. Marshall, South Holland, Ill., assignors to Inland Steel Company, Chicago, Ill.

Filed May 9, 1973, Ser. No. 358,480

Int. Cl. F25d *23/02*

U.S. Cl. 62—266 **14 Claims**



1. An apparatus for cooling work-pieces, comprising:
a tank adapted to contain a cooling liquid bath, said tank having an opening for introducing a work-piece into the tank beneath the bath surface and having means for removing the work-piece from the tank beneath the bath surface;

supporting means comprising a plurality of spaced parallel rollers in said tank for receiving and supporting the work-piece horizontally beneath the bath surface;
combined sealing means and cooling liquid supply means adjacent said opening and adapted to direct upper and lower cooling liquid curtains angularly and inwardly into said tank beneath the bath surface for substantially preventing liquid from flowing out of said opening while permitting the work-piece to be moved horizontally therethrough into said tank with the cooling liquid curtains impinging against the upper and lower surfaces of the work-piece; and
means providing an elongated guide wall between said rollers in spaced relation below the lower surface of the work-piece when the latter is supported on said rollers, thereby defining an elongated restricted cooling channel at the underside of the work-piece, said channel having an inlet end positioned so that the cooling liquid curtain impinging against the lower surface of the work-piece is diverted into said inlet end and flows through said channel at high velocity.

3,897,231

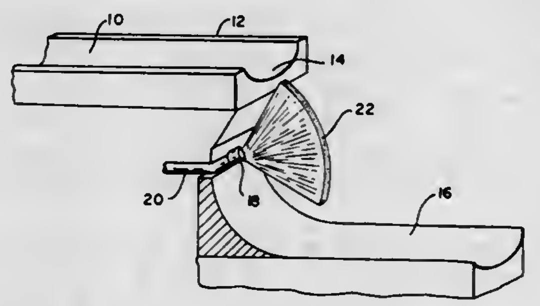
METHOD FOR CONTACTING HOT, VISCOUS, MOLTEN SLAG WITH GASEOUS REACTANTS

Michael J. Massey, Pittsburgh, and Robert W. Dunlap, Ross Township, both of Pa., assignors to Shenango Incorporated; Duquesne Slag Products Co., both of Pittsburgh, Pa. and The Standard Slag Company, Youngstown, Ohio

Filed Feb. 25, 1974, Ser. No. 445,071

Int. Cl. C03b *19/08*

U.S. Cl. 65—19 **6 Claims**



1. A method for intimately contacting hot, viscous, molten slag with a gaseous reactant which comprises:
a. causing the slag to free fall; and
b. applying a controlled amount of gaseous reactant to the slag under force and from beneath the falling slag in the form of a thin wide angle sheet having a plane aligned along the axis of the falling slag to increase the surface to volume ratio of the slag and to create new and additional concave surface area of the slag which surface area is contacted with the reactant.

3,897,232

CONTROLLED FEEDING OF BATCH TO GLASS MAKING PROCESS

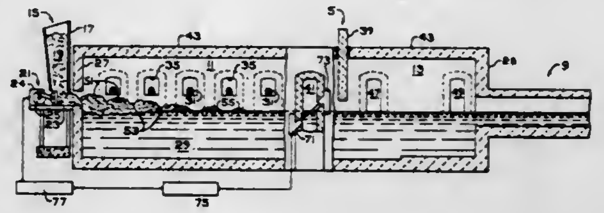
Archie L. Groves, Allison Park, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 9, 1974, Ser. No. 432,005

Int. Cl. C03b *3/00*

U.S. Cl. 65—29 **10 Claims**

1. In a method of manufacturing glass wherein glass batch materials are periodically fed onto a pool of molten glass contained in a glassmaking furnace, heat is applied to the glass batch materials to form molten glass therefrom by the combustion of fuel in a space within the glassmaking furnace extending above the glass batch materials and the pool of molten glass and molten glass is continuously withdrawn from the glassmaking furnace and cooled and formed into a glass product; the combination of steps of
a. detecting the depth of the pool of molten glass and generating a signal representative of the detected depth of molten glass;
b. maintaining a signal representative of the currently existing time between successive steps of periodically feeding glass batch materials onto the pool of molten glass;
c. generating a signal representative of a time between successive steps of periodically feeding glass batch materials onto the pool of molten glass responsive to the signal representative of the detected depth of molten glass, such generated signal representing a time sufficient to maintain the depth of the pool of molten glass substantially invariant;
d. generating a control signal responsive to both the maintained signal representative of the existing time between successive steps of periodically feeding glass batch materials onto the pool of molten glass and the generated signal representative of a time between successive steps of periodically feeding glass batch materials onto the pool of molten glass; and



e. feeding glass batch materials by pushing successive substantially equal amounts of glass batch material onto the pool of molten glass wherein the feeding is periodic with intermittent periods without feeding between pushes the periodic feeding having a frequency and the frequency of the periodic feeding is controlled responsive to the control signal to maintain the depth of the pool of molten glass substantially invariant while causing the glass batch materials that have been fed to form a blanket of batch material on the surface of the pool of molten glass, the blanket having substantially uniformly spaced peaks and depressions by maintaining the period between pushes within one percent of the previous period between pushes.

3,897,233

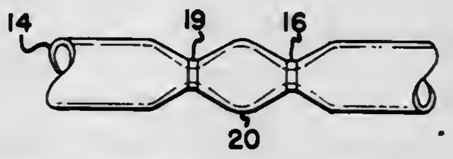
ARC TUBE FORMING PROCESS

Imre Szilagyi, Cleveland, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 14, 1974, Ser. No. 433,044

Int. Cl. C03b *23/00, 23/08*

U.S. Cl. 65—109 **6 Claims**



1. A process for forming small neck envelopes from vitreous tubing comprising the steps of:
heat-softening and necking down the vitreous tubing at two places to provide twin small necks which are short relative to their shoulders with an upstanding portion of vitreous tubing between them;
allowing the quartz to cool sufficiently to be rigid at least in the shoulders remote from said upstanding portion;
then heat-softening and stretching the upstanding portion while shrinking it down to approximately the same diameter as the twin necks in order to provide a long neck without excessive wall thickness, said stretching resulting

from mechanical application of tension to the tubing and said shrinking resulting from application of heat without use of a die;

repeating the foregoing steps to form in a similar way another long neck portion without excessive wall thickness at another place in the tubing;

and then severing the tubing at the two long neck portions in order to release a formed unit having narrow necks at both ends.

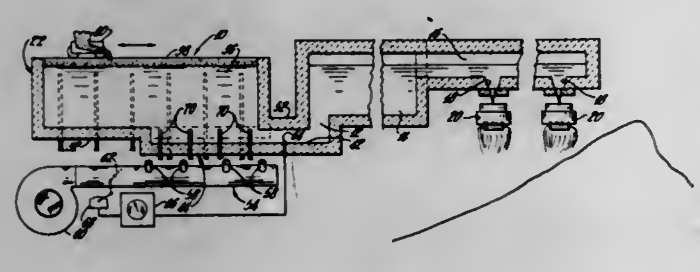
3,897,234
METHOD AND APPARATUS FOR COOLING ELECTRICALLY-HEATED MELTING FURNACE

Magnus L. Froberg, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Feb. 22, 1974, Ser. No. 445,037

Int. Cl. C03b *5/02*

U.S. Cl. 65—135 **8 Claims**



1. A furnace for melting a heat-softenable material, said furnace comprising a tank for holding molten material formed by a bottom, side walls, and end walls, means for supplying batch material over molten material in the tank, means extending into the molten material below the batch material for supplying heat to the molten material, wall means forming a cooling trough centrally located in the bottom of the tank, extending below the bottom of the tank, and extending beyond an end wall thereof to discharge molten material from the tank, said wall means being exposed at the sides as well as at the bottom of the trough to ambient conditions below the bottom of said tank to dissipate heat from molten material in said trough, and cooling means extending along said trough and effective to supply a cooling medium in heat exchange relationship with an external surface of said wall means.

6. A method of operating an electrically heated, melting furnace comprising establishing a pool of molten material, supplying batch material onto the surface of the pool to establish a layer of batch over the entire surface, heating the molten material below the batch layer, collecting molten material in a trough below the pool and extending not more than about one-half the length of the pool, directing the molten material in the trough toward a location beyond the pool, and cooling the molten material in the trough, by forcibly directing a cooling medium in heat-exchange relationship with the trough from a location outside the trough.

3,897,235
GLASS BATCH WETTING SYSTEM

Bob G. Wilson, Saugus, Calif., assignor to Dart Industries Inc., Los Angeles, Calif.

Filed May 2, 1974, Ser. No. 466,334

Int. Cl.^{2} C03B *3/00*

U.S. Cl. 65—335 **7 Claims**

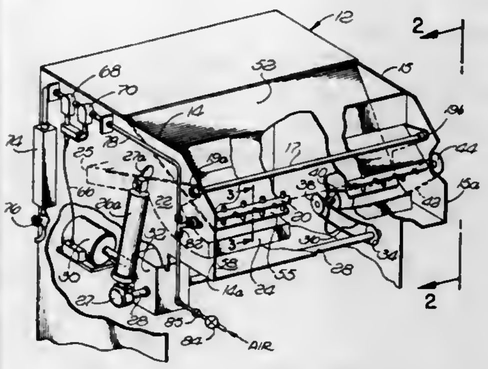
1. In a system for wetting particulate materials being charged to a glass melting furnace comprising:

a housing frame;

guide means within said housing frame for directing particulate materials to an opening in said glass furnace, said guide means including a chute having an outlet opening;

transport means for moving said particulate materials along at least a portion of said guide means from said chute outlet opening into the furnace opening;

fluid emitter means comprising a rotatable hollow shaft located within said guide means proximate said chute outlet opening to directly contact said particulate materials, said shaft including a multiplicity of fluid outlet orifices located along the length thereof;



drive means to power said transport means and cause the rotation of said hollow shaft; and,

fluid conductor means in communication with a fluid source and said fluid outlet orifices.

3,897,236
PROCESS FOR FORMING FERROUS IRON-CONTAINING PHOSPHORUS GLASSES

Gordon J. Roberts, Shaker Heights, Ohio, assignor to Ferro Corporation, Cleveland, Ohio

Filed Feb. 15, 1973, Ser. No. 332,631

Int. Cl. C05d *9/02*

U.S. Cl. 71—1 **16 Claims**

12. A process for forming a soil nutritious, ferrous iron-containing phosphorous glass comprising:

a. reacting a reactive iron oxide compound with a mixture of phosphoric acid and a chloride salt, said phosphoric acid being present in an amount which is greater than the amount of said chloride salt, to form a solidified intermediate,

b. heating said intermediate at a smelting temperature within the range of about 900°C to about 1500°C in the presence of an iron-containing reducing agent for a time to produce a ferrous iron-containing glass melt, and

c. cooling said melt to produce a ferrous iron-containing glass, said iron oxide compound, phosphoric acid, chloride salt, and iron-containing reducing agent being used in amounts to provide in said glass a composition consisting essentially in weight percent of about:

	Percent
P_2O_5	50 to 75
FeO	20 to 45
R_2O	0 to 10

in which R is K or Na, and R_2O contains no more than about 50 percent by weight of Na_2O.

3,897,237
PROCESS FOR DISPOSING OF PYROTECHNIC FLARES

Kenneth A. Musselman, Loogootee, and James E. Short, Jr., Switz City, both of Ind., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 2, 1974, Ser. No. 494,131

Int. Cl.^{2} C05C *5/02*

U.S. Cl. 71—1 **5 Claims**

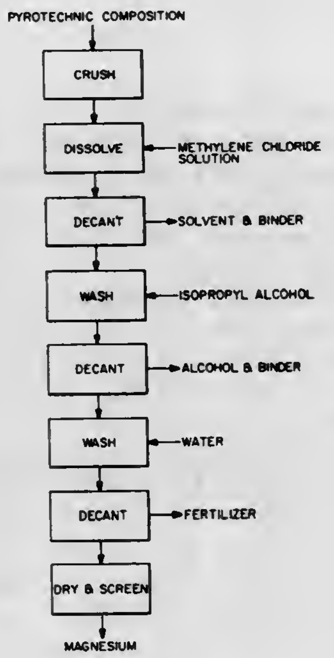
1. A process for isolating and disposing of the chemical ingredients in illuminating flares comprised of magnesium, sodium nitrate, and a binder, said process comprising,

first crushing said chemical ingredients,

then dissolving said binder in a solvent,

then decanting to remove said solvent and the dissolved binder,

then washing the remaining chemical ingredients in water to dissolve sodium nitrate,



then decanting the aqueous solution of sodium nitrate for use as a fertilizer, and

then drying and screening the remaining ingredients for use as a fuel in pyrotechnic devices.

3,897,238
METHOD OF UNIFORMLY DISTRIBUTING SUBSTANCES IN A CARRIER MATERIAL AND PULVEROUS CARRIER MATERIAL

Friedrich Bolsing, Bahnhofstr. 3, 4965 Lindhorst, and Heinrich Mencke, Diepensiepen 47, 5601 Gruiten, both of Germany

Filed Oct. 26, 1971, Ser. No. 192,333

Claims priority, application Germany, Oct. 31, 1970, 2053627

Int. Cl. A01n

U.S. Cl. 71—3 **2 Claims**

1. A method of forming a pulverulent mixture of an oily or bituminous material and the hydroxide of calcium, magnesium or aluminum, which comprises mixing said oily or bituminous material with the oxide, carbide or nitride of calcium, magnesium or aluminum, and contacting said mixture with approximately the stoichiometric amount of water required to form calcium, magnesium or aluminum hydroxide thereby to form said hydroxide, the resulting hydroxide being characterized by a large surface area and being substantially homogeneously mixed with said oily or bituminous material.

3,897,239
USE OF PENICILLIN AS RIPENER FOR SUGARCANE

Louis G. Nickell, Honolulu, Hawaii, assignor to Hawaiian Sugar Planters' Association, Honolulu, Hawaii

Filed Mar. 28, 1974, Ser. No. 455,955

Int. Cl. A01n *9/12*

U.S. Cl. 71—90 **9 Claims**

1. A process for modifying the ripening of field grown sugarcane plants so as to increase its yield of sucrose which comprises applying penicillin in a sucrose increasing amount directly to the cane plants at a time from 2 to 10 weeks prior to harvest.

3,897,240
USE OF BACITRACIN AS RIPENER FOR SUGARCANE

Louis G. Nickell, Honolulu, Hawaii, assignor to Hawaiian Sugar Planters' Association, Honolulu, Hawaii

Filed Mar. 28, 1974, Ser. No. 455,954

Int. Cl. A01n *9/12*

U.S. Cl. 71—90 **6 Claims**

1. A process for modifying the ripening of field grown sugarcane plants so as to increase its yield of sucrose which comprises applying bacitracin in a sucrose increasing amount directly to the cane plants at a time from 2 to 10 weeks prior to harvest.

3,897,241
ETHANOLAMINE/ORGANIC CARBOXYLIC ACID COMPOSITION FOR ACCELERATING FRUIT RIPENING

Shigeaki Washio, Kobe, and Yukiaki Kiguchi, Funabashi, both of Japan, assignors to Taki Fertilizer Manufacturing Co., Ltd., Japan

Filed Aug. 9, 1973, Ser. No. 387,196

Int. Cl.^{2} A01N *9/24*

U.S. Cl. 71—113 **3 Claims**

1. A method for accelerating the ripening of fruit which comprises applying to a fruit-bearing plant from 10 to 150 days prior to the expected ripening time an effective amount of a fruit ripening accelerating agent comprising an ethanolamine selected from the group consisting of monoethanolamine, diethanolamine and triethanolamine and an organic carboxylic acid selected from the group consisting of formic acid, acetic acid, oxalic acid, succinic acid, adipic acid, butyric acid, phthalic acid, maleic acid, citric acid, fumaric acid, malic acid, tartaric acid, glutaric acid, pimelic acid, malonic acid, propionic acid and valeric acid, the concentration of said ethanolamine being 10 to 1,000 p.p.m., calculated as CH_2CH_2, the mol ratio of the ethanolamine/organic carboxylic acid being 0.1 to 20, with an inert carrier for said agent.

3,897,242
USE OF 1-(3-CHLORO-4-METHYLPHENYL)-3,3-DIMETHYLUREA IN WHEAT AND BARLEY CROPS

Henry Martin Basel, assignor to Ciba-Geigy AG, Basel, Switzerland

Continuation-in-part of Ser. No. 196,790, Nov. 11, 1971, abandoned, which is a continuation-in-part of Ser. No. 797,251, Feb. 6, 1969, abandoned. This application Jan. 17, 1974, Ser. No. 434,146

Int. Cl.^{2} A01N *9/20*

U.S. Cl. 71—120 **2 Claims**

1. A method for controlling weeds in wheat and barley cultures which comprises applying to said cultures a herbicidally effective amount of 1-(3-chloro-4-methylphenyl)-3,3-dimethylurea.

3,897,243
SMELTING PROCESS AND FURNACE

Hans-Jüergen Langhammer, Bremen, Germany, assignor to Klockner-Werke AG, Duisburg, Germany

Filed Mar. 2, 1973, Ser. No. 337,736

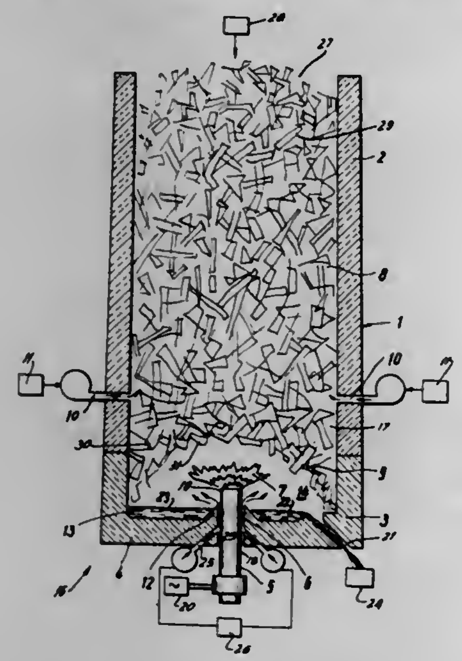
Claims priority, application Germany, Mar. 4, 1972, 2210467

Int. Cl. C22d *7/00;* **C21c** *7/00*

U.S. Cl. 75—10 V **18 Claims**

1. A process for the production of steel from scrap, comprising the steps of admitting a charge into a substantially vertically arranged zone so as to form in said zone a column of said charge which descends by gravity from an upper portion to a lower portion of said zone; melting said charge in the

region of said lower portion of said zone with an electric arc directed at the lower portion of said column; superheating the resulting molten material with said arc; and evacuating the superheated molten material from said zone substantially continuously during the melting step.



3,897,244
METHOD FOR REFINING IRON-BASE METAL

Crawford B. Murton, 1906 Brushcliff Rd., Pittsburgh, Pa. 15221

Filed June 8, 1973, Ser. No. 368,118
Int. Cl.² C21C *7/00;* **C22B** *9/10*

U.S. Cl. 75—53 **14 Claims**

1. A steel refining process for facilitating the solution of solid lime by inhibiting the formation of dicalcium silicate, comprising the steps of

a. adding to a molten body of iron-base metal a quantity of solid burnt lime and a material having high basicity and not including fluorspar and having a melting point lower than that of the solid burnt lime to provide a slag devoid of encapsulated solid bodies of burnt lime,
b. maintaining the metal molten during a first stage refining period and sustaining a slag lime-silica ratio of at least 1:1 while oxidizing a substantial amount of silicon as well as some of the carbon, and
c. maintaining the metal molten after most of the silicon has been oxidized and during a second-stage refining period and increasing the lime-silica ratio to at least 2.5:1 while reducing substantially the amount of carbon and increasing the amount of iron oxide formed.

3,897,245
LOW CARBON STEELS HAVING COLD WORKABILITY

John Savas, Brecksville, Ohio, assignor to Republic Steel Corporation, Cleveland, Ohio

Continuation of Ser. No. 29,183, April 16, 1970, abandoned. This application Nov. 24, 1972, Ser. No. 308,930
Int. Cl. C22c *37/10*

U.S. Cl. 75—124 **12 Claims**

1. A non-aluminum killed, low carbon, non-alloy steel having cold workability, consisting essentially of up to 0.5% carbon 0.05 to 0.4% manganese and 0.05 to 0.25% aluminum, phosphorus and sulfur each not over 0.030%, silicon not over 0.30%, 0 to 0.01% boron, 0 to 0.1% each of one or more elements selected from the group consisting of zirconium, molybdenum and vanadium, balance iron except for incidental impurities, not more than 25 ppm of nitrogen and 35 ppm of oxygen, substantial freedom from hard oxide inclusions, and the presence of the aforesaid aluminum substantially all in metallic state rather than appreciably in combined state that occurs after use of aluminum for killing, so that said composition and characteristics provide improved cold workability of the steel in at least one of the respects of reduced cold work hardening and of avoidance of cracking on compressive cold deformation, in comparison with low carbon, non-alloy, aluminum-killed steels.

3,897,246
NOVEL ELECTRO DEPOSITED GOLD; ELECTROLYTE SOLUTION TO OBTAIN THE SAME; METHOD FOR PRODUCING SAID GOLD; AND PRODUCTS

Richard Henry Zimmerman, Hershey, and Richard Lee Brenneman, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 208,394, Dec. 15, 1971, abandoned, which is a division of Ser. No. 807,105, March 13, 1969, abandoned. This application Aug. 13, 1973, Ser. No. 387,870
Int. Cl. C22c *5/00*

U.S. Cl. 75—165 **4 Claims**

1. An electro deposited bright, ductile gold alloy of arsenic having 0.1 to 0.9% of arsenic by weight on basis of the alloy, having a Knoop hardness of up to 260 Knoop units and a Tafel slope substantially equivalent to pure gold, the amount of gold being the balance and including trace impurities associated with said electro deposited gold alloy.

3,897,247
PROCESS FOR SELECTIVELY DEFORMING A THERMOPLASTIC LAYER

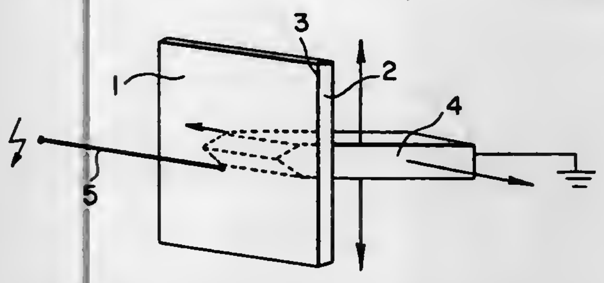
Günther Schädlich, Wiesbaden, and Roland Moraw, Naurod ub. Wiesbaden, both of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Continuation of Ser. No. 206,604, Dec. 10, 1971, abandoned. This application Sept. 5, 1973, Ser. No. 394,414

Claims priority, application Germany, Dec. 14, 1970, 2061417

Int. Cl. G03g *13/00*

U.S. Cl. 96—1.1 **8 Claims**



1. In the process for deforming only a selected area of an image on a thermoplastic layer applied to a supporting film by heating said thermoplastic,

the improvement which comprises non-selectively heating the thermoplastic layer from the front by dry thermal treatment and simultaneously contacting the supporting film in the back of the non-selected area with a material having an even surface and good heat conductivity.

3,897,248
PRODUCTION OF PHOTOCONDUCTIVE ZINC OXIDE

Kaizer Esufali Jabalpurwala, St. Lambert, and Henryk Malinowski, LaSalle, both of Canada, assignors to Zochem Limited

Filed May 2, 1973, Ser. No. 356,484

Claims priority, application United Kingdom, May 5, 1972, 21049/72

Int. Cl.² G03G *5/08*

U.S. Cl. 96—1.8 **11 Claims**

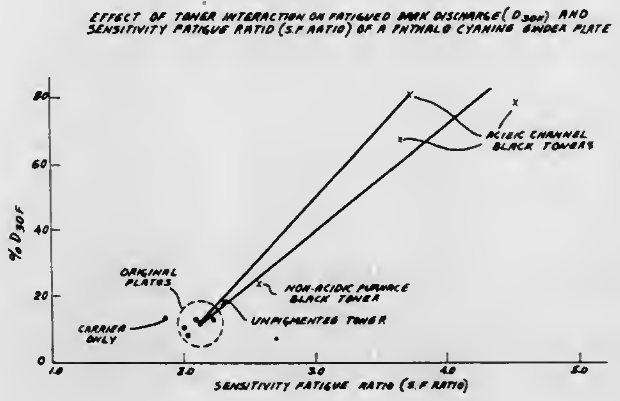
1. A process for improving the electrophotographic properties of photoconductive zinc oxide powder, comprising the steps of thoroughly blending the zinc oxide powder with a sulphurizing agent in powder, liquid or gaseous form, the sulphurizing agent being incorporated in a concentration, measured in terms of sulphur content, in the approximate range 0.005% to 0.5% by weight of zinc oxide, tempering the blend in an oxidizing atmosphere at a temperature in the approximate range 500° to 950°C. at which oxidation of the sulphurizing agent will take place, and for a period within the range 10 seconds to 3 hours, and rapidly cooling to room temperature (20°C.).

3,897,249
TONERS FOR PHTHALOCYANINE PHOTORECEPTORS

Joseph Mammino, and Gary L. Whittaker, both of Penfield, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 9, 1973, Ser. No. 349,491
Int. Cl. G03g *13/08*

U.S. Cl. 96–15 SD **11 Claims**



1. In an electrostatographic reproducing system employing a phthalocyanine photoreceptor and a dry developer comprising a carbon black toner, including the steps of charging said photoconductor, selectively exposing said photoconductor so as to form a latent electrostatic image and developing said photoconductor with said dry developer, the improvement which comprises using a carbon black toner having a pH of at least 7.0 and a carrier in said developing step.

3,897,250
METHOD AND APPARATUS FOR EXPOSING A LIGHT-SENSITIVE LAYER

Paul Weishaupt, Oberburg, Switzerland, assignor to Wagner & Cie AG, Burgdorf/ BE, Switzerland

Filed Apr. 30, 1973, Ser. No. 355,919

Claims priority, application Switzerland, May 15, 1972, 7183/72

Int. Cl. G03c *5/04*

U.S. Cl. 96—27 E **7 Claims**

1. A method of exposing a light-sensitive layer employed for the manufacture of reproductions of black-and-white or color patterns comprising the steps of:

projecting the image of a pattern onto a white or reflective support support;
viewing the projected pattern image on the support with an electronic camera having a video output signal;
storing the video output signal on a recording carrier;
optically exposing all points of a light-sensitive layer with the pattern image using broad-surface illumination which provides a major portion of the total exposure;
additionally exposing the light-sensitive layer with a projected image derived from the video output signal stored on the recording carrier which provides a small portion of the total exposure for correcting contrast or color shades or both of the pattern reproduced on the light-sensitive layer.

3,897,251
PROCESS FOR UTILIZING A PHOTOPRINTING ARTICLE AND METHOD FOR MAKING SAID ARTICLE

Harry Rodney Detrick, Laceyville, and Roland N. Harshbarger, Ulster, both of Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Division of Ser. No. 223,321, Feb. 3, 1972, Pat. No. 3,801,410. This application Sept. 13, 1973, Ser. No. 396,886
Int. Cl. G03c *5/00*

U.S. Cl. 96—38.3 **5 Claims**

1. In a process wherein a relatively thin flat metallic sheet is coated with a light sensitive material, a design is photoprinted on said light sensitive material by use of a master in contact with said coated metallic sheet and contact is established by use of vacuum printing frames and portions of said coating are rendered selectively removable by said photoprinting step and a design is thereafter etched in said sheet, and wherein a master is brought into contact with said sheet wherein said master consists essentially of:

a base of a transparent sheet having at least one essentially planar surface that describes a first plane;
a plurality of upstanding configurations of exposed photographic emulsion material, said configurations spaced in a predetermined pattern to thereby occupy designated portions of said planar surface of said base; and
a solid protective coating formed over said plurality of upstanding configurations and portions of said planar surface of said base unoccupied by said upstanding configurations of said emulsion material, said configurations and said coating thereby providing a gas escapement means when said photographic master and said flat metallic sheet are in contact.

3,897,252
PHOTOCHROMIC IMAGING UTILIZING TETRAZOLIUM COMPOUNDS

Steven Levinos, Summit, N.J., assignor to Keuffel & Esser Company, Morristown, N.J.

Filed Dec. 3, 1973, Ser. No. 421,180
Int. Cl.² G03C *5/24*

U.S. Cl. 96—48 R **6 Claims**

1. The method of forming a permanent image which comprises:

a. providing light-sensitive imaging material comprising a support and a coating thereon of a composition comprising a light-sensitive component consisting essentially of a water-soluble tetrazolium compound;
b. imagewise exposing said material to actinic light rich in ultraviolet radiation for a time sufficient to convert said tetrazolium compound in the light-exposed areas of said composition to a colored, water-insoluble formazan compound;
c. rinsing said material to remove water-soluble components from said composition; and
d. contacting at least the light-exposed areas of said material with a fixing agent comprising an oxidizer capable of yielding distinctly colored water-insoluble reduction products, thereby at least partially oxidizing said formazan compound and reducing said oxidizer to form said colored reduction products in said light-exposed areas.

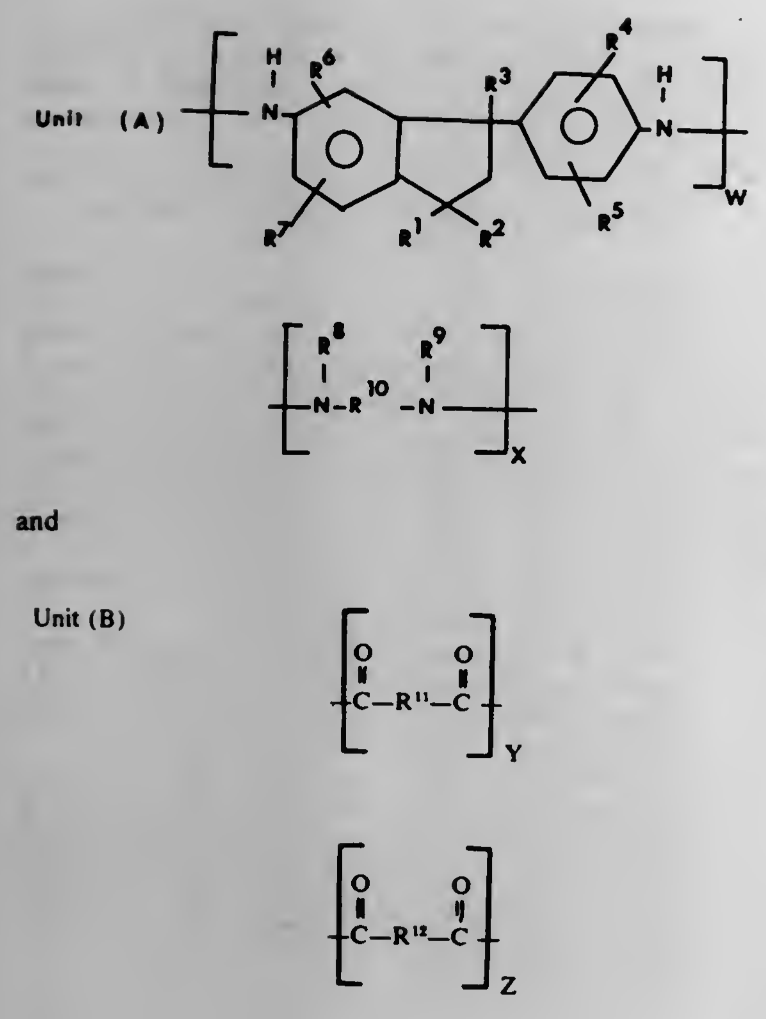
3,897,253
PHOTOGRAPHIC ELEMENTS CONTAINING HIGH TEMPERATURE-RESISTANT POLYAMIDES

John Charles Wilson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 21, 1974, Ser. No. 444,611
Int. Cl. G03c *1/78*

U.S. Cl. 96—87 R **25 Claims**

1. A silver halide containing photographic element comprising at least one layer containing a film-forming polyamide comprising repeating units having the formulas commprising:



wherein

R^1 and R^3 are independently selected from the group consisting of hydrogen and alkyl of from 1 to 6 carbon atoms; R^2 is alkyl of from 1 to 6 carbon atoms;

R^4, R^5, R^6 and R^7 are independently selected from the group consisting of hydrogen, aryl, halogen, nitro, cyano, tertiary amino or alkoxy; R^8 and R^9 are independently selected from the group consisting of hydrogen, alkyl and aryl;

R^{10}, R^{11} and R^{12} are independently selected from the group consisting of aromatic, cycloaliphatic and aliphatic groups and W is from 1 to 100 mole percent of unit (A) and X is 100—W mole percent of unit (A) and Y is from 1 to 100 mole percent of unit (B) and Z is 100—Y mole percent of unit (B).

3,897,254

SILVER HALIDE CONTAINING PYRAZOLONE MAGENTA COUPLER

Shoji Yamada; Shoichi Horii; Kiyoshi Yamashita; Kiyoshi Futaki, and Mamoru Sekido, all of Nagaokakyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

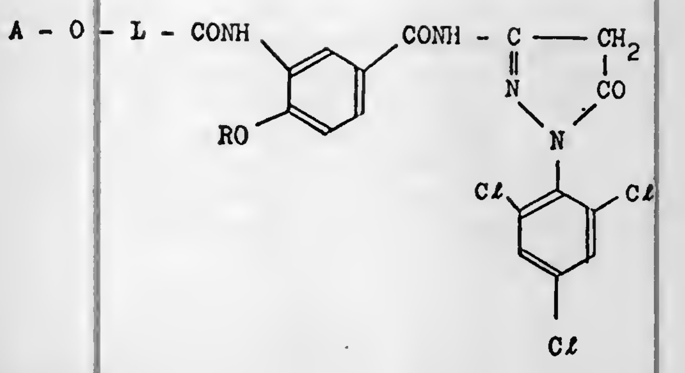
Filed May 10, 1974, Ser. No. 468,995

Claims priority, application Japan, May 11, 1973, 48-52395

Int. Cl.^{2} G03C *1/40*

U.S. Cl. 96—100 **3 Claims**

1. A silver halide photographic emulsion comprising a silver halide and a magenta coupler having the following general formula:



wherein R is an alkyl group having 4-8 carbon atoms, A is phenyl group having at least one alkyl substituent, the total number of carbon atoms in said substituents being at least 10 and L is an alkylene or alkyl substituted alkylene.

3,897,255

PHOTOIMAGING COMPOSITIONS COMPRISING COMPLEX OF PROPHYRIN-SO_2 AS SENSITIZER

Floyd B. Erickson, Webster Groves, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 190,337, Oct. 18, 1971, Pat. No. 3,801,320. This application Oct. 10, 1973, Ser. No. 405,215

Int. Cl. G03c *1/68*

U.S. Cl. 96—115 R **7 Claims**

1. A composition comprising a photochemically oxidizable polymer containing aliphatic carbon-carbon unsaturation and an adduct or complex of a porphyrin photosensitizer and sulfur dioxide.

3,897,256

REFRACTORY LINING MIXTURE FOR HOT METALLURGICAL VESSELS

Crawford B. Murton, 1906 Brushcliff Rd., Pittsburgh, Pa. 15221

Continuation-in-part of Ser. No. 320,893, Jan. 4, 1973, which is a division of Ser. No. 77,059, Oct. 1, 1970, Pat. No. 3,737,489. This application Jan. 4, 1973, Ser. No. 320,894

Int. Cl. C04b *35/14*

U.S. Cl. 106—68 **8 Claims**

1. A refractory composition suitable for application at temperatures of at least 250°F and being capable of being applied to hot vessels by projection consisting essentially of, by weight, from about ½% to about 4% of at least one of an alkali silicate selected from the group consisting of potassium silicate and sodium silicate, from about ½% to about 4% of organic material, selected from the group consisting of pitch, tar, rosin, polyvinylchloride, polyethyltetrachloride, and mixtures thereof, the organic material having melting points of from about 250° to 400°F, from about 12% to about 72% of quartzite, and from about 20% to about 80% of bonding clay.

3,897,257

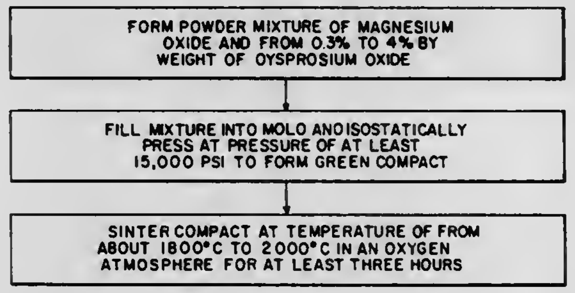
LIGHT TRANSMITTING POLYCRYSTALLINE MAGNESIA MEMBER AND METHOD OF MAKING

Tapan K. Gupta, Wilkinsburg, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 19, 1973, Ser. No. 398,899

Int. Cl. C03c *3/26*

U.S. Cl. 106—73.2 **5 Claims**


FORM POWDER MIXTURE OF MAGNESIUM OXIDE AND FROM 0.3% TO 4% BY WEIGHT OF DYSPROSIUM OXIDE
FILL MIXTURE INTO MOLD AND ISOSTATICALLY PRESS AT PRESSURE OF AT LEAST 15,000 PSI TO FORM GREEN COMPACT
SINTER COMPACT AT TEMPERATURE OF FROM ABOUT 1800°C TO 2000°C IN AN OXYGEN ATMOSPHERE FOR AT LEAST THREE HOURS

1. A radiation-transmitting polycrystalline magnesia member having from 0.3% to 4% by weight of dysprosia dispersed therein, and said member having a density which approximates the theoretical density of said magnesia plus dysprosia.

3,897,258

REFRACTORY SILICEOUS CEMENTS AND THEIR METHOD OF PRODUCTION

Liviu Walter, 11 Impasse Houssay, 92 Neuilly-sur-Seine, France

Continuation of Ser. No. 165,404, July 22, 1971, abandoned. This application Aug. 31, 1973, Ser. No. 393,574

Claims priority, application France, Aug. 4, 1970, 70.28783

Int. Cl. C04b *1/00*

U.S. Cl. 106—85 **5 Claims**

1. A refractory siliceous barium cement containing as the major constituent dibarium silicate and comprising as minor constituents monobarium silicate, monobarium aluminate, tetrabarium aluminate ferrite, calcium-barium orthosilicate and magnesium-barium orthosilicate, said constituents being present in such proportions that the cement in its clinker stage contains by weight from 75 to 82% BaO, from 14 to 17% SiO_2, less than 3.5% Al_2O_3, less than 1.5% Fe_2O_3, less than 2% CaO, less than 1% MgO and less than 1% alkalis.

3,897,259

PROCESS FOR MANUFACTURING INCOMBUSTIBLES

Shiro Nakajima, Aza-Rokutanda, Aichi-Ken, Japan

Filed Oct. 24, 1973, Ser. No. 409,299

Int. Cl.^{2} C04B *11/00*

U.S. Cl. 106—85 **3 Claims**

1. A process for manufacturing incombustibles, comprising the steps of mixing 55–25 weight % of calcium sulfite hydrate in the form of the aqueous suspension by-product from a smoke-discharging type desulfurizer using lime, with 30–55 weight % of neutral magnesium carbonate and 15–20 weight % of fibrous material, partially dehydrating the suspension by forming a wet mat of the suspension in order to make a formed sheet-like member, heating the formed member at a temperature of 85–95°C. to harden it, and finally drying the formed member.

3,897,260

NOVEL COATING COMPOSITION

Hiroshi Yaginuma, Yokohama; Takashi Suzuki, Yamato, and Atutane Kimi, Yokohama, all of Japan, assignors to Nippon Zeon Co. Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 264,466, June 20, 1972, abandoned. This application Feb. 25, 1974, Ser. No. 445,687

Int. Cl. C08f *37/18, 45/28*

U.S. Cl. 106—287 R **4 Claims**

1. A coating composition comprising 90–40 % by weight of liquid polybutadiene having at least 60 % cis-configuration and a number average molecular weight of 500–20000 and 10–60 % by weight of liquid polypentadiene prepared by polymerizing 1,3-pentadiene in a homogeneous system using a Friedel-Crafts catalyst having at least 70 % trans-configuration and a number average molecular weight of 500–20000.

3,897,261

HYDROUS OXIDE COATED TiO_2

Alvin Allen, Wilmington, Del., assignor to E. I. du Pont de Nemours & Co., Wilmington, Del.

Filed Dec. 20, 1973, Ser. No. 426,474

Int. Cl. C09c *1/36, 3/00*

U.S. Cl. 106—300 **4 Claims**

1. Process for treating pigmentary TiO_2 comprising

a. gradually adding to an aqueous slurry of said TiO_2 an alkaline solution of a soluble silicate in an amount to provide from about 1 to 4% silica, as SiO_2 and based on the weight of said TiO_2, the pH of said slurry being maintained below about 9 during silicate addition by introduction of acid thereby to precipitate the silica, the amount of said acid being insufficient to lower the pH below about 5,

b. gradually adding to the resultant slurry an alkaline solution of a soluble aluminum salt in an amount to provide from about 4 to 9% alumina, as Al_2O_3 and based on the weight of said TiO_2, the pH being maintained in the range of about 5 to 9 during aluminum salt addition by introduction of acid thereby to precipitate the alumina,

c. gradually adding to the resultant slurry an alkaline solution of a soluble silicate in an amount to provide from about 1 to 4% silica, as SiO_2 and based on the weight of said TiO_2, the pH being maintained in the range of about 5 to 9 during silicate addition by introduction of acid thereby to precipitate the silica, and

d. gradually adding to the resultant slurry an alkaline solution of a soluble aluminum salt in an amount to provide from about 4 to 9% alumina, as Al_2O_3 and based on the weight of said TiO_2, the pH being maintained in the range of about 5 to 9 during aluminum salt addition by introduction of acid thereby to precipitate the alumina.

3,897,262

SYRUP AND METHOD OF MANUFACTURING SAME

Paul O. Carlson, Hickory Corners, Mich., assignor to General Foods Corporation, White Plains, N.Y.

Filed Nov. 23, 1973, Ser. No. 418,330

Int. Cl. C13d *3/12;* C13f *1/00, 3/00*

U.S. Cl. 127—55 **3 Claims**

1. Process for preparing a table syrup which employs semi-refined sugar syrup as its principal constituent, said syrup being thickened with CMC, said process comprising preparing a concentrated, pasteurized, semi-refined sucrose syrup having a Brix of at least 68°, said syrup containing naturally occurring colloidal substances, filtering said syrup through a diatomaceous earth filter media to remove colloidally suspended mineral and organic residue contained therein, separately preparing a CMC solution from softened water having less than 5 parts per million calcium or magnesium, admixing the latter solution with the concentrated syrup to dilute the concentrate and produce an ultimate syrup having a CMC level of 0.15–0.25% by weight, and packaging the diluted syrup in a transparent container.

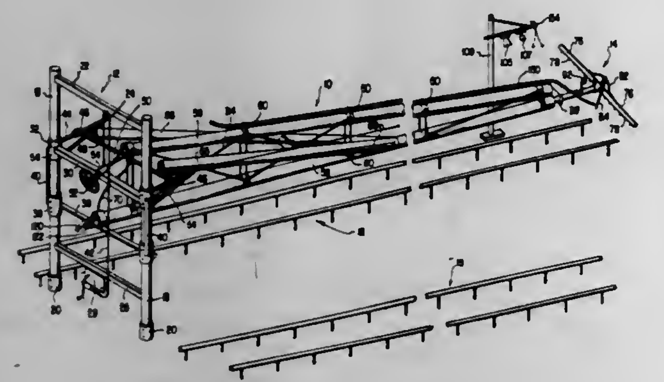
3,897,263
APPARATUS FOR WASHING AND DISINFECTING TRAILER OR VAN INTERIORS

Oliver Thurston Davis, and Norman R. Jones, both of Rt. 1, P.O. Box 22, Dunlap, Tenn. 37327

Filed Nov. 2, 1973, Ser. No. 412,467

Int. Cl. B60s *3/02;* **B08b** *3/00*

U.S. Cl. 134—45 **8 Claims**



1. An apparatus for washing and disinfecting the interiors of trailers and vans having an open and closed end, said apparatus comprising:
   a. a vertically extending mounting structure fixed at one end;
   b. a boom structure secured at one end to said mounting structure and extending in a substantially horizontal position;
   c. means secured to said mounting structure for moving said boom structure to a plurality of vertical elevations to accommodate interiors of varying heights;
   d. means secured to said mounting structure for positioning said boom structure at a plurality of angles with respect to the horizontal;
   e. outwardly biased extension means slidably positioned in the free end of said boom structure means for biasing said extension means outwardly;
   f. a source of washing fluid under pressure; and
   g. a washing head rotatably attached to said extension means and connected to said source of washing fluid, said washing head having spray forming means biased to direct said washing fluid generally downward and back toward said free end of said boom structure when said trailer is being freely backed onto and away from said boom structure and directed generally downward and away from said free end of said boom structure when said washing head is in engagement with said closed end of said trailer said outwardly biasing means of said extension means actint to return said extension means to its original position with respect to the boom structure after said rotatable washing head has disengaged the closed end of said trailer.

3,897,264
ELECTROCHEMICAL CELLS WITH INORGANIC OXYHALIDE OR THIOHALIDE SOLVENT

James J. Auborn, Groton, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Continuation-in-part of Ser. No. 305,812, Nov. 13, 1972, abandoned. This application Nov. 28, 1973, Ser. No. 419,562

Int. Cl. H01m *35/00*

U.S. Cl. 136—6 LN **21 Claims**

1. An electrochemical cell consisting essentially of an oxidizable active anode material; an active cathode material selected from the group consisting of halogens and metal halides; said active cathode material being the sole oxidant material in said cells; and an electrolytic solution between and in contact with said anode and cathode materials, said electrolytic solution consisting essentially of an inorganic solvent material and a solute dissolved therein, said inorganic solvent material selected from the group consisting of monofluorophosphoryl dichloride, monobromophosphoryl difluoride, dibromophosphoryl monofluoride, monofluorothiophosphoryl dichloride, thiophosphoryl chloride, monobromothiophosphoryl difluoride, dibromothiophosphoryl monofluoride, and mixtures thereof.

21. An electrochemical cell consisting of an oxidizable active anode material; an active cathode material selected from the group consisting of halogens and metal halides; and an electrolytic solution between and in contact with said anode and cathode materials, said electrolytic solution consisting of an inorganic solvent material and a solute dissolved therein, said inorganic solvent material selected from the group consisting of monofluorophosphoryl dichloride, monobromophosphoryl difluoride, dibromophosphoryl monofluoride, monofluorothiophosphoryl dichloride, thiophosphoryl chloride, monobromothiophosphoryl difluoride, dibromothiophosphoryl monofluoride, and mixtures thereof.

3,897,265
GAS DEPOLARIZED ELECTROCHEMICAL CELLS AND METHOD OF ASSEMBLY

Arthur M. Jaggard, Apple Valley, Minn., assignor to Gould Inc. St. Paul, Minn.

Filed Jan. 30, 1974, Ser. No. 437,924

Int. Cl. H01m *29/04;* **H01m** *1/02*

U.S. Cl. 136—86 A **24 Claims**

1. A gas depolarized electrochemical cell comprising:
   a first metal housing having a closed end and an open end, said closed end having an opening therein to allow gas to enter said first metal housing, said closed end of said first metal housing forming a first external electrical contact for said gas depolarized electrochemical cell, said first metal housing having means for fastening said first metal housing to a second metal housing;
   a second metal housing having a closed end and an open end, said second metal housing having a region therein for receiving an anode material, said closed end of said second metal housing forming a second external electrical contact for said gas depolarized electrochemical cell; said second metal housing having means for fastening to said first metal housing;
   a cathode assembly including an electrically conductive current collecting member, said current collecting member forming electrical contact with said first metal housing; a hydrophobic layer on one side of said cathode assembly and a separator on the opposite side of said cathode assembly;
   a single insulating and sealing member having an L-shaped cross section shape, said insulating and sealing member having a first surface for forming sealing contact with said first metal housing, said insulating and sealing member having a second surface for forming sealing contact with said second metal housing; said insulating member having a third surface for abutting against and extending partially along said [a] cathode assembly to thereby firmly hold said cathode assembly against said metal housing;
   anode material located in said second metal housing to form electrical contact with said second metal housing, said anode material located adjacent said separator; and an electrolyte in said gas depolarized electrochemical cell so that said second metal housing, said first metal housing, and said insulating and sealing member coact to simultaneously seal and maintain said first metal housing and said second metal housing in a leakproof electrolyte seal.

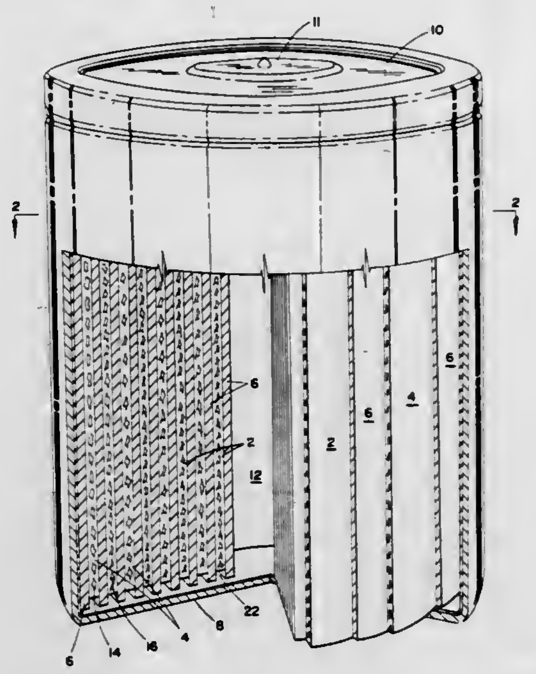
3,897,266
ALKALINE BATTERY CELL

John L. Devitt, Denver; Robert E. Stark, Littleton, and Leland M. Gillman, Denver, all of Colo., assignors to The Gates Rubber Company, Denver, Colo.

Filed Aug. 3, 1970, Ser. No. 60,432

Int. Cl. H01m *41/00*

U.S. Cl. 136—30 **2 Claims**



1. A high energy density alkaline, normally sealed rechargeable cell comprising:
   a. at least one electropositive electrode comprising nickel compound as active material;
   b. at least one electronegative active zinc-containing electrode disposed in spaced adjacent relationship to and in electrochemical communication with said positive electrode(s);
      at least said electronegative electrode consists essentially of its active material pasted on collector grid substrate(s) of compatible conducting material to form pasted rigid or non-rigid electode plate(s), said electronegative electrode made smooth by pressure molding the paste to the supporting grid substrate;
   c. an electrolyte-absorbing and retaining separator disposed between and in intimate contact with said opposite polarity electrodes, where that portion of the separator immediately adjacent the zinc-containing electrode is a material of substantially uniform microporosity and permeability within the entirety of any surface taken substantially parallel to the interface formed by the separator and zinc-containing electrode;
      said zinc-containing electrode being substantially homogeneously wetted along its interface which is substantially free of occluded voids;
   d. electrolyte absorbed and retained by said separator material to the extent that substantially no free electrolyte is present between the electrodes, but in extent sufficient to provide the homogeneous wetting of the negative electrode and sufficient to promote electrochemical conduction between the electrodes;
   e. container encapsulating and constraining said electrodes and separator material and electrolyte under firm stacking pressure to form a self-supporting integral cell; and
   f. means for withdrawing current from electrodes of opposite polarity within the cell.

2. A high energy density alkaline, normally sealed rechargeable cell comprising:
   a. at least one electropositive electrode plate;
   b. at least one electronegative active zinc-containing electrode plate disposed in spaced adjacent relationship to and in electrochemical communication with said positive electrode(s) plate;
   c. an electrolyte-absorbing and retaining separator disposed between and in intimate contact with said opposite polarity electrodes, where that portion of the separator immediately adjacent the zinc-containing electrode is a material of substantially uniform microporosity and permeability within the entirety of any surface taken substantially parallel to the interface formed by the separator and zinc-containing electrode;
      said zinc-containing electrode being substantially homogeneously wetted along its interface which is substantially free of occluded voids;
   d. electrolyte absorbed and retained by said separator material to the extent that substantially no free electrolyte is present between the electrodes, but in extent sufficient to provide the homogeneous wetting of the negative electrode plate and sufficient to promote electrochemical conduction between the electrodes;
   e. container encapsulating and constraining said electrodes and separator material and electrolyte under firm stacking pressure to form a self-supporting integral cell;
      a space being provided between a portion of the cell container and electrode plates to allow gas communication and recombination between the electrode plates;
   f. means for withdrawing current from electrodes of opposite polarity within the cell.

3,897,267
ELECTROCHEMICAL CELLS

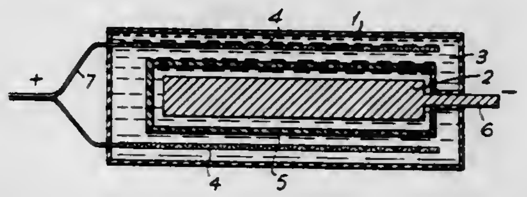
Alfred Chan Chung Tseung; Beatrice Yuck Chaan Wan, and Walter John King, all of London, England, assignors to National Research Development Corporation, London, England

Filed Oct. 19, 1970, Ser. No. 81,933

Claims priority, application United Kingdom, Oct. 20, 1969, 51401/69

Int. Cl. H01m *27/00*

U.S. Cl. 136—86 A **8 Claims**



1. A galvanic, metal/oxygen cell comprising anode and cathode components, barrier means between said components, said barrier means consisting of material which is relatively impermeable to oxygen and to larger molecules while permitting diffusion of hydroxyl ions therethrough, an electrolyte and a surrounding envelope of oxygen permeable material.

3,897,268
DRY CELL MAGAZINE

Keisuke Haraguchi, Kamifukuoka, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 22, 1974, Ser. No. 453,573

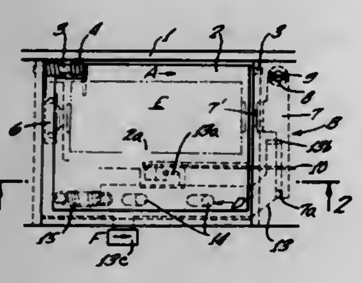
Claims priority, application Japan, Mar. 30, 1973, 48-38667

Int. Cl. H01m *1/04*

U.S. Cl. 136—173 **6 Claims**

1. A dry cell magazine comprising:
   a casing for receipt of said dry cell;
   a cover member movably mounted within said casing;
   a movable contact plate for engagement with said dry cell; and
   means for retracting said contact plate from said engagement with said dry cell and for opening said cover member, said cover member has one edge having an arresting

groove which is in contact with said retracting and opening means when said cover member is in a closed position



on said casing, said cover member being biased to pivot said one edge out of said contact with said retracting and opening means.

3,897,269

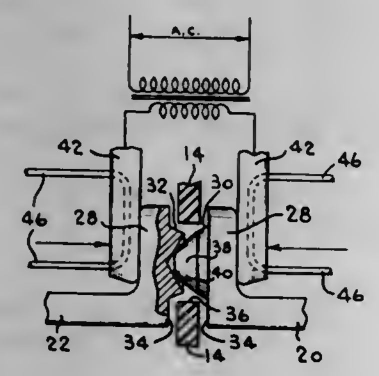
STORAGE BATTERY CONSTRUCTION AND METHOD OF MAKING SAME

Anthony Sabatino, and Daniel Orlando, both of Milwaukee, Wis., assignors to Globe-Union Inc., Milwaukee, Wis.

Filed Aug. 21, 1961, Ser. No. 132,660

Int. Cl. H01m *5/00*

U.S. Cl. 136—176 **14 Claims**



1. The method of making a storage battery comprising the steps of:

providing an open top storage battery case having a partition of insulating material which divides the case into at least two separate compartments, said partition having an opening therethrough;

providing battery elements, said elements each including a connector strap thereon having a connector lug with a sealing face thereon, each connector lug having an integral projection of lead material thereon extending from the sealing face thereon;

positioning said battery elements in each of said compartments with said projections positioned in contact with each other through the opening in said partition wall, there being an area of reduced cross section at the area of contact;

passing an electric current through said projections to soften the contact portions of said projections into a deformable mass and cause them to fuse together;

compressing said connector lugs together when said projections are in a softened state to force the sealing faces of the connector lugs into sealing engagement with opposite sides of the partition wall; and

maintaining said connector lugs under compression for a period of time sufficient to allow said softened lead material to harden to a point where said sealing faces on said lugs will be permanently maintained in sealing engagement with the partition wall.

3,897,270

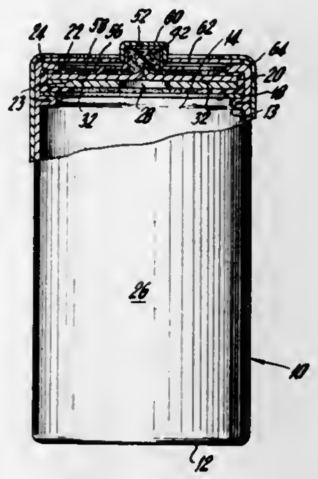
BATTERY CONSTRUCTION WITH IMPROVED TERMINAL ATTACHING STRUCTURE

Martin G. Rosansky, Monsey, N.Y., assignor to Power Conversion, Inc., Mount Vernon, N.Y.

Continuation-in-part of Ser. No. 327,937, Jan. 30, 1973, abandoned. This application Feb. 26, 1974, Ser. No. 445,887

Int. Cl.^{2} H01M *2/12*

U.S. Cl. 136—177 **6 Claims**



1. A battery comprising a casing defining a cavity, and having an open end, a high vapor pressure electro-chemical system confined within said cavity, a partition disposed across said open end, an aluminum cover also disposed across said open end and spot welded to said partitions, and outwardly protruding cold welded seam formed on said cover, an epoxy resin coating said seam, an aluminum interconnecting member welded to said cover at a plurality of locations spaced from said seam and having an upstanding portion that covers said seam and includes one or more upstanding sidewalls, and a cap fitted over said upstanding portion and engaging the sidewalls thereof to form an electrical terminal, whereby said cover is peripherally deformed at a point most distant from said spot weld to release pressure in the event that a predetermined upper pressure limit is reached, or alternatively, said cover is peripherally deformed and said/spot weld is ruptured.

3,897,271

SELF-CONTAINED STATIC POWER SYSTEM

Chang-Kyo Kim, Severna Park, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 117,370, Feb. 22, 1971, abandoned. This application Apr. 25, 1973, Ser. No. 354,616

Int. Cl.^{2} G21H *1/10;* H01L *35/00*

U.S. Cl. 136—202 **9 Claims**

1. A self-contained static electric power generating system comprising:

a self-sustaining heat source;

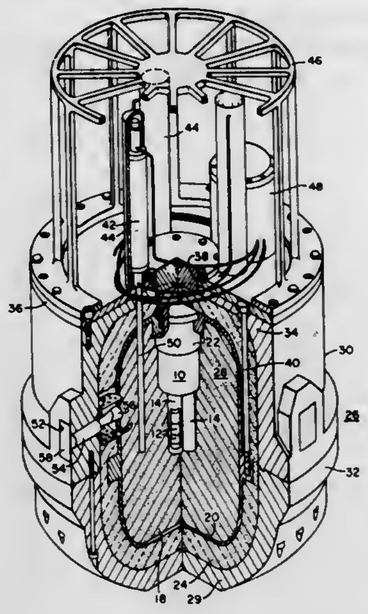
a housing completely surrounding and encapsulating said heat source;

means positioned external of said housing and responsive to the heat radiated by said heat source to generate an electrical output;

means thermally and statically coupling said heat source to a heat reservoir associated with said heat responsive means;

a hermetically sealed port formed integral with and through a wall of said housing and responsive to the heat radiated within said housing to unseal above a predetermined temperature level above the designed operating temperature of said heat source occurring as a result of a failure in operation of said thermal coupling means to transport a given designed quantity of heat from said heat source to said heat reservoir associated with said heat responsive means, to expose the interior of said housing to the exterior thereof; and

thermal insulation positioned between said housing and said heat source to reduce the amount of heat radiated through said housing to the exterior thereof, said thermal insulation fusing above the predetermined temperature level in a manner that enhances the radiation of heat from said heat source through said housing to the exterior thereof.



3,897,272

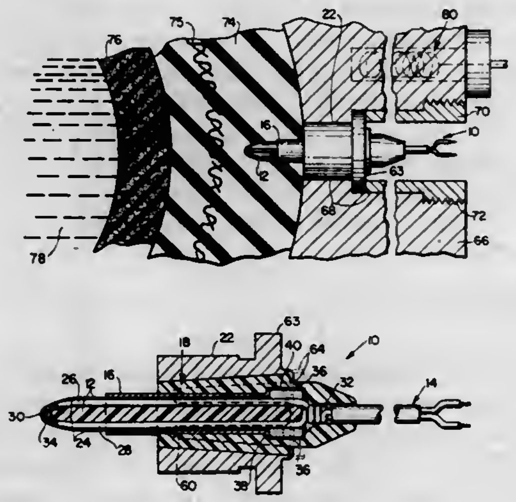
STURDY SENSING APPARATUS FOR MEASURING THE TEMPERATURE OF A HEATED RUBBER MATERIAL DURING ITS CURING PROCESS AND METHOD FOR MAKING SAME

Lewis A. Medlar, Oreland, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed July 29, 1974, Ser. No. 492,989

Int. Cl. G01k *1/14, 7/04, 11/04*

U.S. Cl. 136—230 **7 Claims**



1. A method of constructing a durable temperature sensing apparatus for accurately measuring the temperature of a rubber material in a mold, including the steps of providing a probe having the same thermal characteristics as said rubber material and comprised of a first portion extending through said mold and a second portion extending into said rubber material, forming a passageway in said probe, inserting an electrically conductive temperature sensor into said passageway so that a temperature sensing end of said sensor forms an end portion of the second portion of said probe, providing a support sleeve extending along a part of the first and second portions of said probe, forming a two part insulator about a circumferential portion of said sleeve that extends along the first portion of said probe and wedging a rigid bushing over a portion of said insulator to retain the bushing in tight engagement with said sleeve.

2. A durable temperature sensing apparatus adapted for mounting in a curing mold and into a material being heated therein to enable an accurate temperature of the material to be made without the heat of said mold affecting the temperature being sensed by said apparatus, said sensing apparatus comprising an insulating probe, said probe having a means to accommodate the positioning of an electrically conductive temperature sensing element in said probe, said electrically conductive temperature sensing element having a temperature sensing end portion positioned at an outer end surface of the probe that is insertable into said material, a rigid probe support sleeve, a first portion of said rigid sleeve being positioned about a first peripheral portion of said probe that is inserted into said material and a second portion of said sleeve being positioned about an adjacent peripheral portion of said probe that extends into said mold, two insulating housing members each positioned about said second portion of said sleeve and about the other end of said probe and sensing, element, and a bushing positioned about and in contact with said two insulating members to retain said sleeve and probe in fixed relation with respect to one another.

3,897,273

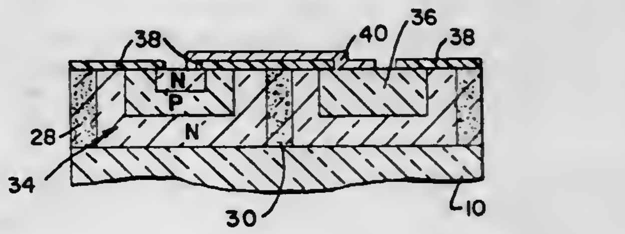
PROCESS FOR FORMING ELECTRICALLY ISOLATING HIGH RESISTIVITY REGIONS IN GaAs

Ogden J. Marsh, Woodland Hills, and Robert G. Hunsperger, Malibu, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Nov. 6, 1972, Ser. No. 304,028

Int. Cl. H01l *7/54*

U.S. Cl. 148—1.5 **13 Claims**



2. The process defined in claim 1 wherein said heavy ions are argon ions.

3,897,274

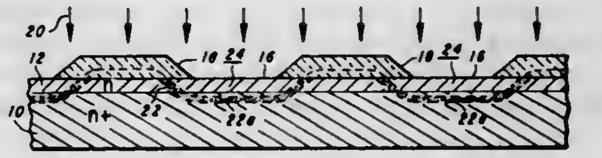
METHOD OF FABRICATING DIELECTRICALLY ISOLATED SEMICONDUCTOR STRUCTURES

Robert A. Stehlin; Richard J. Dexter; Don L. Kendall, and John M. Pankratz, all of Richardson, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 148,760, June 1, 1971, abandoned. This application Mar. 12, 1973, Ser. No. 340,484

Int. Cl. H01l *7/54*

U.S. Cl. 148—1.5 **10 Claims**



6. A method for producing a dielectrically isolated layer as set forth in claim 5, wherein said windows have bevelled walls.

3,897,275

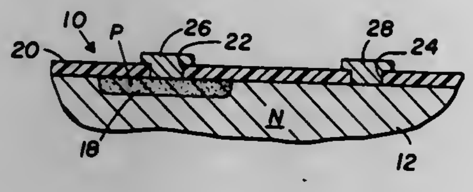
PROCESS FOR FABRICATING SCHOTTKY BARRIER PHOTOTRANSISTOR

Sebastian R. Borrelo, Richardson, and Jimmy D. Sawyer, Garland, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 833,241, May 22, 1969, abandoned, and a continuation of Ser. No. 848,126, April 25, 1969, abandoned, said Ser. No. 833,241, is a continuation of Ser. No. 626,651, Jan. 25, 1967, abandoned. This application May 11, 1973, Ser. No. 359,586

Int. Cl. H01l *7/36*

U.S. Cl. 148—1.5 **16 Claims**



1. In a process for fabricating a phototransistor, the steps comprising:

- diffusing a p-type impurity into a predetermined area of a substrate of III-V compound semiconductor material of n-type to form a p-type region in said n-type substrate such that a photosensitive diode junction is provided between the p-type region and the n-type substrate,
- removing at least a portion of the substrate in said predetermined area comprising the p-type region to remove surface oxides therefrom and to reduce the level of p-type impurity concentration by exposing the p-type region at a depth having a sufficiently low impurity concentration for subsequent formation of a rectifying contact with a metal film to be deposited thereon, and
- depositing a metal film on said exposed portion of said p-type region to produce a rectifying junction therewith.

3,897,276

METHOD OF IMPLANTING IONS OF DIFFERENT MASS NUMBERS IN SEMICONDUCTOR CRYSTALS

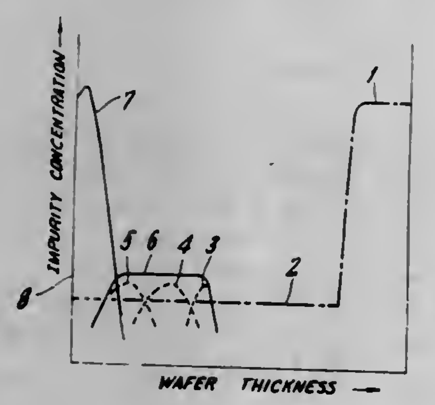
Motoki Kondo, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Filed June 20, 1973, Ser. No. 371,619

Claims priority, application Japan, June 27, 1972, 47-64785

Int. Cl.^{2} H01L *7/54*

U.S. Cl. 148—1.5 **6 Claims**



1. A method of successively implanting impurity ions in a semiconductor crystal in a plurality of implantation steps using different implantation conditions to form a region of a predetermined conductivity type over a preselected range of depths measured from one of the surfaces of said semiconductor crystal, said region having a plurality of layers including the steps of implanting impurity ions of a first relatively high mass number in the layer of said region spaced farthest from said one surface and implanting impurity ions of a second mass number lower than said first mass number in the layers of said region closer to said one surface.

3,897,277

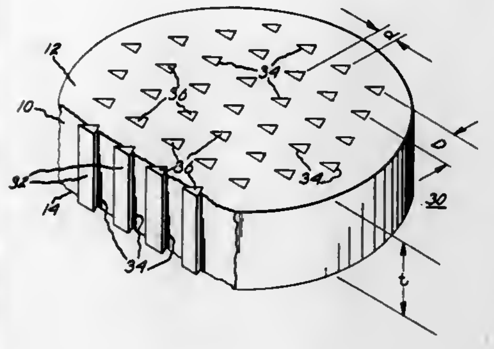
HIGH ASPECT RATIO P-N JUNCTIONS BY THE THERMAL GRADIENT ZONE MELTING TECHNIQUE

Samuel M. Blumenfeld, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 30, 1973, Ser. No. 411,151

Int. Cl. H01l *7/34*

U.S. Cl. 148—1.5 **11 Claims**



1. A process for making high aspect ratio P-N junctions comprising the process steps of:

a. depositing a layer of metal of approximately 20 micron thickness on selected surface areas of one of two major opposed surfaces of a body of single crystal semiconductor material to form an array of metal buttons thereon;
b. alloying each metal button to the surface disposed on
c. heating the body and the metal array to an elevated temperature to form a melt of the metal of each button and the semiconductor material of the body immediately adjacent thereto;
d. establishing a temperature gradient substantially perpendicular to the two opposed surfaces and substantially parallel to the vertical axis of the body, and
e. migrating each melt through the body along the temperature gradient from the one to the other of the two major opposed surfaces to form a region of recrystallized semiconductor material of the body having solid solubility of the metal therein to impart a selective type conductivity and selective resistivity thereto.

3,897,278

OXIDIZING PROCESS AND COMPOSITION FOR ALUMINUM

Bertha S. Tuttle, Harwichport, and Jekabs Ozolins, Holliston, both of Mass., assignors to J. N. Tuttle, Inc., Medford, Mass.

Continuation-in-part of Ser. No. 170,668, Aug. 10, 1971, Pat. No. 3,765,952. This application Sept. 21, 1973, Ser. No. 399,753The portion of the term of this patent subsequent to Oct. 16, 1990, has been disclaimed.

Int. Cl. C23f *5/04*

U.S. Cl. 148—6.1 **18 Claims**

13. In a process for coloring a substrate coated either with aluminum or an aluminum alloy including the step of cleaning the aluminum to the extent necessary, oxidizing the aluminum and contacting the aluminum with a colorant, the improvement comprising formation of said oxide coating by chemical means consisting of contacting the surface of said aluminum coating with an aqueous, alkaline solution of a ferricyanide salt, said solution consisting of at least 0.01 moles per liter of a ferricyanide, a pH adjustor in an amount sufficient to provide required pH and an inhibitor for aluminum to prevent darkening of the oxide coating, said aqueous alkaline solution of ferricyanide having a pH varying between about 7.5 and 13.5.

3,897,279

METHOD FOR THE PRODUCTION OF HIGH STRENGTH NOTCH TOUGH STEEL

Reginald N. Shaughnessy; Robert W. Witty, and Robert J. Ackert, all of Sault Sainte Marie, Canada, assignors to The Algoma Steel Corporation, Limited, Canada

Continuation-in-part of Ser. No. 253,897, May 16, 1972, abandoned. This application May 11, 1973, Ser. No. 359,423

Claims priority, application Canada, May 12, 1972, 147942

Int. Cl.^{2} C21D *1/02*

U.S. Cl. 148—12 F **6 Claims**

1. A method of making a high strength steel of improved notch toughness below 0°F which comprises subjecting a fully killed steel consisting essentially of the following composition by weight:

carbon	0.02	to	0.20%
manganese	0.75	to	2.0%
columbium	0.015	to	0.18%
aluminum	0.02	to	0.10%
nickel	0	to	.0 %
chromium	0	to	1.0 %
copper	0	to	1.0 %
molybdenum	0	to	0.5 %
vanadium	0	to	0.12%
zirconium	0	to	.20%
rare earth metals	0	to	.06%
balance	iron and impurities		

to heating to at least 2100°F, and subsequently rolling said steel to continuously reduce the steel, without any substantial time delays, throughout the temperature range of from 1900° to 1700°F with at least a 50 percent reduction in section at below 1800°F, said steel having a uniform fine grain of an essentially ferritic grain structure with an average grain size of finer than 9.0 as determined by ASTM No. E 112.

3,897,280

METHOD FOR MANUFACTURING A STEEL SHEET AND PRODUCT OBTAINED THEREBY

Hisashi Gondo; Hiroshi Takechi; Tsuyoshi Kawano, all of Kisarazu, and Hiroaki Masui, Kimitsu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Dec. 11, 1973, Ser. No. 423,821

Claims priority, application Japan, Dec. 23, 1972, 47-128853; Dec. 23, 1972, 47-128854

Int. Cl.^{2} C21D *9/48*

U.S. Cl. 148—12 C **14 Claims**

1. A method for manufacturing a steel sheet having an excellent press formability which comprises heating a killed steel composed of not more than 0.10% C, 0.05% to 1.0% Mn, 0.005% to 0.15% Al, at least one member of the group consisting of Ti, Nb and Zr, and the rest Fe and unavoidable impurities, the Ti%/4 + Nb%/7.8 + Zr%/7.6 being more than the C % in the steel, subjecting the same to hot rolling such that the finishing temperature is 750°C or less, and thereafter effecting a treatment for recrystallization.

3,897,281

METHOD FOR EPITAXIALLY GROWING A SEMICONDUCTOR MATERIAL ON A SUBSTRATE FROM THE LIQUID PHASE

Stephen Lee Gilbert, Newtown, Pa., and Michael Ettenberg, Freehold, N.J., assignors to RCA Corporation, New York, N.Y.

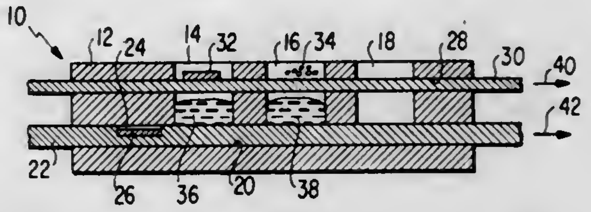
Filed Feb. 9, 1972, Ser. No. 224,758

Int. Cl.^{2} H01L *7/38*

U.S. Cl. 148—171 **8 Claims**

1. A method of depositing on a substrate an epitaxial layer of single crystalline semiconductor material comprising the steps of:

- providing in a boat the substrate, the semiconductor material, and a charge of a solvent for the semiconductor material which charge is separated from and below the semiconductor material,
- placing the boat in means for providing a controlled atmosphere and/or at a controlled temperature,
- heating the solvent to a temperature at which the solvent is molten and the semiconductor material will dissolve in the solvent,
- dropping into the molten solvent, without removing the boat from the controlled atmosphere and/or temperature means, the semiconductor material in an amount sufficient to saturate the solvent with the semiconductor material, then
- bringing a surface of the substrate into contact with the saturated molten solvent, and then
- cooling the saturated molten solvent sufficiently to deposit an epitaxial layer of the semiconductor material on the substrate.



3,897,282

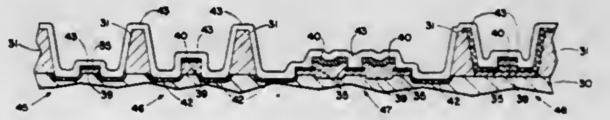
METHOD OF FORMING SILICON GATE DEVICE STRUCTURES WITH TWO OR MORE GATE LEVELS

James Judson White, Kanata, Canada, assignor to Northern Electric Company Limited, Montreal, Canada

Filed Oct. 17, 1972, Ser. No. 298,364

Int. Cl.^{2} H01L *21/20, 21/28, 29/78, 27/02*

U.S. Cl. 148—175 **20 Claims**



1. A method of producing a semiconductor device on a substrate, the device having at least two layers of polycrystalline silicon at different levels relative to the substrate, an edge of one layer at least substantially coincident with an edge of another layer, comprising:

a. forming a layer of field oxide on a surface of a single crystal substrate and defining a window of exposed substrate at a predetermined position for forming at least one device;
b. growing a layer of gate oxide on the exposed surface of said substrate in said window;
c. depositing a first layer of polycrystalline silicon on said layer of gate oxide and the exposed surface of said field oxide;
d. forming a layer to form a first masking layer on said first layer of polycrystalline silicon;
e. etching said first masking layer and said first polycrystalline silicon layer to form separated portions of said first polycrystalline silicon layer at predetermined positions;
f. thermally oxidizing the structure to form an oxide layer encompassing said portion of said first polycrystalline silicon layer, said oxide layer incorporating unmasked regions of said gate oxide layer and extending into said substrate at unmasked regions of said substrate;
g. depositing a second layer of polycrystalline silicon on said oxide layer formed in (*f*) and on the exposed surface of said field oxide;
h. forming a further layer to form a second masking layer, on said second layer of polycrystalline silicon;
i. etching sequentially said second masking layer and said second polycrystalline silicon layer and said oxide layer to form and uncover at least one portion of said second polycrystalline layer in a predetermined positioned rela-

tionship with said separated portions of said first polycrystalline silicon layer for formation of said device; to uncover at least a major part of said separate portion of said first layer of polycrystalline silicon; and to uncover said substrate at positions not masked by said field oxide layer and polycrystalline silicon layers;

j. doping unmasked portions of said polycrystalline silicon layers and simultaneously doping said substrate at said uncovered areas to form source and drain areas associated with said device as required;

k. forming a dielectric layer on each of said devices, and

l. forming electrical contact areas.

3,897,283
PLASTIC BONDED EXPLOSIVE COMPOSITION

Ethyl F. Wiebke, and Charles W. Falterman, both of China Lake, Calif., assignors to The United States of Amercia as represented by the Secretary of the Navy, Washington, D.C.

Filed May 19, 1967, Ser. No. 642,651

Int. Cl.² C06B *45/10*

U.S. Cl. 149—19.5 **3 Claims**

1. The plastic bonded explosive composition consisting essentially of

Ingredients	Percent by weight
A high explosive	83
Binder	17

said explosive being a member selected from the group consisting of cyclotetramethylenetetranitramine, cyclotrimethylenetrinitramine, and diaminotrinitrobenzene;

said binder consisting of 42.4% of a blend of the reaction products of adipic acid, maleic acid with diethylene glycol and phthalic acid, maleic acid with propylene glycol; 33.1% vinyl toluene; 2% alpha-methyl styrene; and 22.5% diallyl phthalate.

3,897,284
TAGGING EXPLOSIVES WITH ORGANIC MICROPARTICLES

Richard G. Livesay, White Bear Twp., Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 139,012, April 30, 1971, Pat. No. 3,772,200. This application Sept. 18, 1973, Ser. No. 398,569

Int. Cl. C06b *3/02*

U.S. Cl. 149—21 **17 Claims**

1. An explosive composition, comprising

A. explosive material; and

B. microparticles of a tack-free organic carrier which does not have a softening point below 60°C, which microparticles have a generally spheroidal shape with a diametrical dimension of not less than one nor more than 250 micrometers, contain tagging elements in uniform amoungs of at least 0.1 percent of the total weight, survive detonation of the explosive material and so permit retrospective identification of the explosive although it has been detonated.

3,897,285
PYROTECHNIC FORMULATION WITH FREE OXYGEN CONSUMPTION

Brian K. Hamilton, and Eugene F. Garner, both of Saugus, Calif., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Sept. 10, 1973, Ser. No. 395,480

Int. Cl. C06b *15/00*

U.S. Cl. 149—41 **11 Claims**

1. A pyrotechnic composition adapted, upon combustion, for generating a low-flame temperature, non-toxic gas, said composition prior to combustion comprising: a fuel; a metal carbonate selected from the group consisting of nickel carbonate and magnesium carbonate which acts as a coolant; and an inorganic oxidizer selected from the group consisting of a metal chlorate, a metal perchlorate, a metal nitrate, ammonium chlorate, ammonium perchlorate and ammonium nitrate.

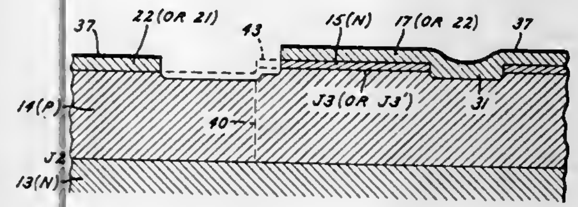
3,897,286
METHOD OF ALIGNING EDGES OF EMITTER AND ITS METALIZATION IN A SEMICONDUCTOR DEVICE

Angelo L. De Cecco, Newtown Square; Robert E. Hysell, Berwyn, and Dante E. Piccone, Philadelphia, all of Pa., assignors to General Electric Company, Philadelphia, Pa.

Filed June 21, 1974, Ser. No. 481,733

Int. Cl. H01l *7/50*

U.S. Cl. 156—11 **18 Claims**



1. In a method of making a semiconductor device including a broad area, multi-layer semiconductor wafer comprising at least a base layer having first and second laterally adjoining regions of one conductivity type and a thin emitter layer of a different conductivity type superimposed on said first region of the base layer with which it forms a rectifying junction, the improvement comprising the steps of:

a. connecting a metallic contact to the outer face of said emitter layer except for a relatively small area of said face, adjacent to at least part of the border between said first and second regions of said base layer, from which said contact is omitted to avoid short circuiting said rectifying junction in the vicinity of said border; and then

b. removing entirely the portion of said emitter layer that was disposed under said area.

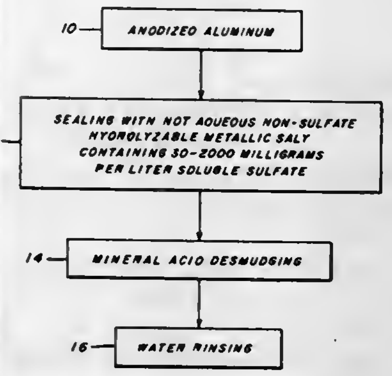
3,897,287
METHOD OF SEALING AND DESMUDGING OF ANODIZED ALUMINUM

Raymond J. Meyer, Apollo; Ford Simpson, Jr., Lower Burrell, and Michael P. Boland, North Washington Twp., Westmoreland County, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Aug. 11, 1972, Ser. No. 279,821

Int. Cl. C23c *3/00;* **C23f** *13/00*

U.S. Cl. 156—22 **8 Claims**


10
ANODIZED ALUMINUM
12
SEALING WITH HOT AQUEOUS NON-SULFATE HYDROLYZABLE METALLIC SALT CONTAINING 50-2000 MILLIGRAMS PER LITER SOLUBLE SULFATE
14
MINERAL ACID DESMUDGING
16
WATER RINSING

8. In a process for sealing and desmudging anodized aluminum, the improvement which comprises:

a. sealing said anodized aluminum in a bath consisting essentially of:

1. water,
2. at least one non-sulfate hydrolyzable metal salt selected from the group consisting of nickel acetate and cobalt acetate comprising at least about 1 g/l of said sealing bath, and
3. 375–2,000 ppm soluble sulfate selected from the group consisting of sulfuric acid, nickel sulfate, aluminum sulfate, and sodium sulfate, and

b. thereafter removing smudge formed on said anodized aluminum by said sealing by treating same with a solution consisting essentially of:

1. water, and
2. at least about 15% by weight of a mineral acid selected from the group consisting of nitric, hydrochloric, sulfuric, phosphoric, and chromic acid,

without adversely affecting the seal produced by said sealing.

3,897,288
FASTENING METHOD USING POLYMER-BASED MAGNETS

Richard E. Fayling, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 846,448, July 31, 1969, abandoned. This application June 1, 1971, Ser. No. 148,991

Int. Cl. B29e *27/00*

U.S. Cl. 156—60 **4 Claims**

1. A method for forming a long narrow adhesive bond fastening at least two magnetizable articles together comprising 1) disposing reactive adhesive material between the articles that cures to form said adhesive bond; concurrently 2) disposing a discrete flexible self-supporting polymer-based magnet in elongated strip form adjacent a substantial length of the articles and adjacent but not bonded to a substantial length of the adhesive material between the articles; 3) arranging the articles so that portions of the articles are joined to form a physical link of magnetizable material extending continuously from one pole to the opposite pole of the magnet except where interrupted by adhesive material, whereby opposite magnetic poles occur at opposite sides of the adhesive material, magnetic lines of force are concentrated through the adhesive material, and a magnetically stable arrangement is formed in which a magnetic force draws the articles toward one another to place the adhesive material under compression; and (4) removing the magnet from its position after the articles are fastened together.

3,897,289
METHOD OF FORMING WIRE WOVEN FABRIC FOR PNEUMATIC TIRES

Samuel J. Di Paola, Burton, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 69,195, Sept. 3, 1970. This application May 22, 1972, Ser. No. 255,840

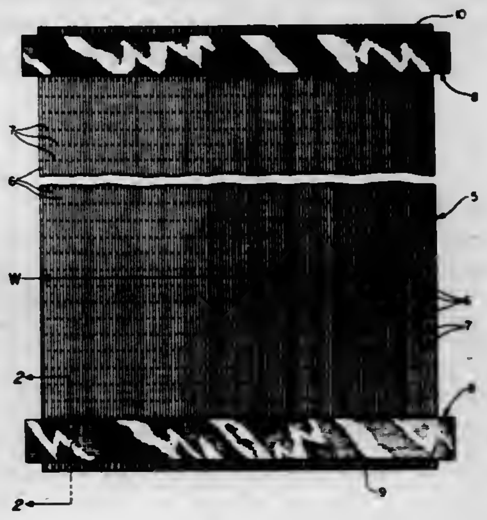
Int. Cl. D03d *47/50*

U.S. Cl. 156—88 **10 Claims**

1. A method of forming a length of tire cord fabric having parallel longitudinal sides and opposing ends, comprising:

a. plain weaving together metal warp cords composed of individual wires having a diameter greater than 0.003 inches, and textile weft threads having a denier of at least 200, such that the metal warp cords extend longitudinally of the fabric; and

b. securing at least one separate piece of stiffening material transversely across the metal warp cords adjacent each of the opposing ends of the fabric, the material composed of plain woven textile warp cords and weft threads, the pieces of stiffening material being secured to the fabric such that the textile warp cords are angularly disposed to the metal warp cords.



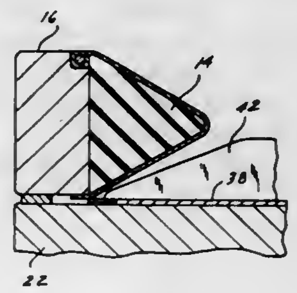
3,897,290
METHOD OF RESURFACING A BILLIARD TABLE

Herbert C. Haller, Newtonville, N.Y., assignor to Albany International Corporation, Albany, N.Y.

Filed Feb. 13, 1974, Ser. No. 442,049

Int. Cl. B32b *35/00*

U.S. Cl. 156—98 **7 Claims**



1. A method of resurfacing a billiard table of the type having a playing surface surrounded by cushions within a rail, said cushions including portions overlying said playing surface, said method comprising the steps of:

a. removing the existing fabric on the playing surface of the table;

b. pre-cutting a replacement fabric to a size corresponding to the playing surface of the table;

c. affixing one side of a double-faced adhesive tape about the periphery of the playing surface beneath the cushion so that no billiard ball can roll over the tape; and,

d. affixing the other side of said double-faced adhesive tape to the underside of said replacement fabric.

3,897,291
METHOD AND ASSEMBLY FOR MAKING A POWER TRANSMISSION BELT AND BELT MADE THEREBY

Ronald D. Hoback, and Joseph C. Geist, both of Lincoln, Nebr., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

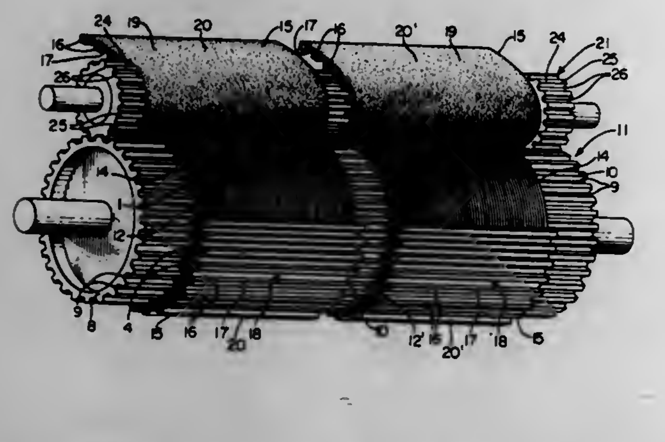
Filed Mar. 1, 1973, Ser. No. 337,056

Int. Cl. B29h *1/22*

U.S. Cl. 156—138 **11 Claims**

11. In a method of manufacturing a toothed power transmission belt including the steps of forming a first toothed belt portion by means of pressure in the absence of any appreciable degree of curing or vulcanization with said first belt portion having a fabric facing, applying said first belt portion to a generally cylindrically shaped mandrel provided with grooves extending axially thereof, the teeth of said first

toothed belt portion lying in the grooves of said mandrel, splicing the ends of said first toothed belt portion to form an endless band, maintaining said first and second portions in a generally cylindrical disposition while aligning the teeth of said second portion in a predetermined position relative to the teeth of said first portion and retaining the configuration of the teeth of said second portion relative to the teeth of said first portion; and curing the previously formed first and second portions into a molded integral belt structure having teeth on opposite surfaces thereof.



3,897,292

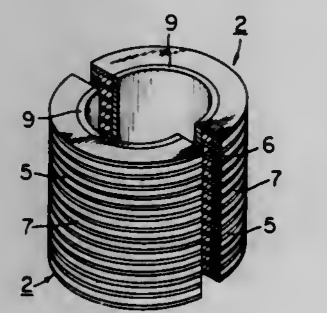
METHOD OF PRODUCING A PRINTING MAGNETIC SADDLE

Yasuo Fukuyama, Osaka, Japan, assignor to Yamauchi Rubber Industry Co., Ltd., Hirakata, Japan

Division of Ser. No. 281,642, Aug. 18, 1972, Pat. No. 3,824,926. This application June 4, 1973, Ser. No. 366,722

Int. Cl.² B32B *1/10, 5/12*; B65H *81/08*

U.S. Cl. 156—153 4 Claims



1. A method of producing a magnetic saddle for use on a printing cylinder in printing, which comprises: winding a fibrous layer impregnated with a thermosetting resin round an iron core for molding purposes; hardening said fibrous layer by heating; grinding the external surface of the hardened fibrous layer to form a non-magnetic cylinder; piling up a plurality of ring-shaped yokes having an inside diameter almost equal to the outside diameter of said cylinder by fitting said yokes on the cylinder one after another with a layer of magnets between each pair of yokes wherein said layer of magnets comprises a plurality of small block-shaped magnets circumferentially disposed at regular intervals along the sides of the adjacent pair of yokes; fitting a cylindrical outer mold having the inside diameter slightly larger than the outside diameter of said yoke on the circumference of the pile of yokes; pouring a liquid thermosetting resin into said outer mold so as to fill all the gaps between the magnets and the yokes; hardening the thus filled liquid resin by heating; removing the outer mold; and cutting the molded product along the axial direction into the prescribed number of saddles.

3,897,293

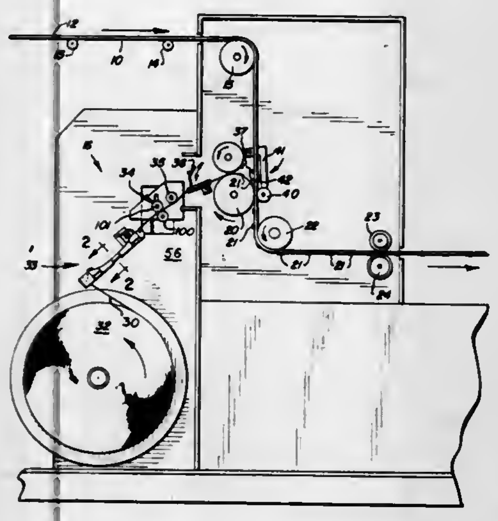
METHOD FOR APPLYING ADHESIVE TAPE TABS TO A DISPOSABLE DIAPER

Donald Babcock, Oak Lawn, Ill., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed Aug. 10, 1973, Ser. No. 387,577

Int. Cl. B32b *31/10*

U.S. Cl. 156—227 7 Claims



1. A method for providing adhesive tape tabs on a disposable diaper from a roll of a laminar assembly of a substrate material and a release sheet material held together by a layer of a tacky, pressure-sensitive adhesive which comprises: unwinding said roll and paying out said laminar assembly therefrom; separating an edge portion of said release sheet from said laminar assembly at an unwound portion thereof; folding back said separated portion of said release sheet into overlying relationship to an unseparated portion thereof to thereby expose a portion of said adhesive layer as an adhesive coating on said substrate by directing said laminar assembly along a concave support surface, providing a folding plate corresponding in curvature to said support surface and having a width generally corresponding to the width of said unseparated portion of the release sheet, positioning said plate in juxtaposition with said support surface at one side thereof above the path of said unseparated portion of the release sheet, and directing said separated portion of the release sheet about the inner edge of said plate; severing end segments of said laminar assembly; spacing said severed end segments from each other by distances corresponding to diaper lengths; and pressing said severed end segments against a moving web of water-impervious material at a marginal side portion thereof to adhere said end segments to said web by said adhesive coating on said substrate.

3,897,294

METHOD OF FORMING A PARABOLIC ANTENNA

William L. MacTurk, Claremont, Calif., assignor to General Dynamics Corporation, Pomona, Calif.

Filed May 6, 1974, Ser. No. 467,034

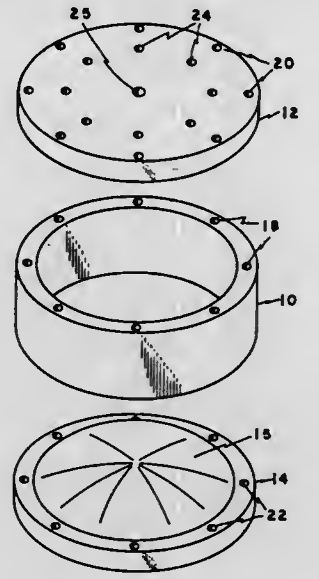
Int. Cl.² H01P *11/00*

U.S. Cl. 156—245 17 Claims

1. A method of forming a parabolic antenna comprising the steps of:

molding a concave epoxy paraboloid mold;
disposing a parabolic reflector blank over the concave epoxy paraboloid mold;
pressure forming the parabolic reflector blank into the concave epoxy paraboloid mold to form a parabolic reflector;
molding an antenna mounting plate;
forming a plastic collar for the parabolic reflector;
bonding the antenna mounting plate to the plastic collar;

assembling the parabolic reflector together with the plastic collar and mounting plate; and
inserting a plastic material between the parabolic reflector and the bonded plastic collar and mounting plate.



3,897,295

IONIZING RADIATION METHOD FOR FORMING ACRYLIC PRESSURE SENSITIVE ADHESIVES AND COATED SUBSTRATES

Rostyslaw Dowbenko, and Roger M. Christenson, both of Gibsonia, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 791,764, Jan. 16, 1969, abandoned. This application June 2, 1972, Ser. No. 259,318

Int. Cl. C09j *7/04*; B29c *27/14*; B44d *1/50*

U.S. Cl. 156—272 12 Claims

1. The method of forming a pressure-sensitive adhesive which comprises applying to a release paper a layer of an essentially solventless syrup of from about 50 percent to about 98 percent by weight of

1. a monomer selected from the class consisting of alkyl acrylates, hydroxyalkyl acrylates, alkoxyalkyl acrylates, cyanoalkyl acrylates, alkyl methacrylates, hydroxyalkyl methacrylates, alkoxyalkyl methacrylates, cyanoalkyl methacrylates, N-alkoxymethylacrylamides and N-alkoxymethylmethacrylamides, and from about 2 percent to about 50 percent by weight of
2. a polymer of the group consisting of homopolymers and copolymers of alkyl acrylates, hydroxyalkyl acrylates, alkoxyalkyl acrylates, cyanoalkyl acrylates, alkyl methacrylates, hydroxyalkyl methacrylates, alkoxyalkyl methacrylates, cyanoalkyl methacrylates, acrylamides, methacrylamides, N-alkoxymethylacrylamides, N-(substituted alkyl)acrylamides, N-(substituted alkyl) methacrylamides, alkyl acrylamides, alkyl methacrylamides, and N-alkoxymethylmethacrylamides; and subjecting the substrate and coating to a total dosage of high energy ionizing irradiation from about 2 to about 20 megarads and transferring the film from the release paper whereby a permenently tacky pressure-sensitive adhesive is formed.

3,897,296

THERMAL WELDING OF PLASTIC

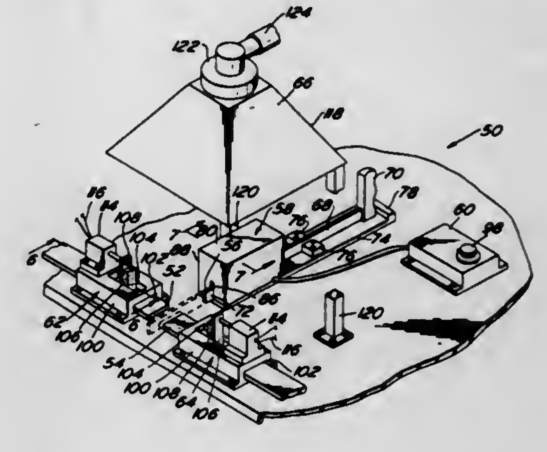
John E. Waldrum, Ambler, Pa., assignor to Amchem Products, Inc., Ambler, Pa.

Filed July 12, 1973, Ser. No. 378,767

Int. Cl. B29c *19/00*

U.S. Cl. 156—304 33 Claims

1. A method of welding two plastic body portions having oxidized surfaces together at a predetermined area of each of said surfaces, said oxidized surfaces being capable of being liquified, comprising: juxtaposing the areas of said surfaces, heating the juxtaposed surface areas to a temperature approaching the flashpoint of the plastic surfaces quickly to liquify said surface areas, without appreciably softening the plastic of the body portions contiguously underneath said areas, removing a thin layer of substantially all of the liquified surface area of each body portion to expose unoxidized surfaces therebeneath and immediately thereafter bringing said unoxidized surfaces into abutment with one another.



3,897,297

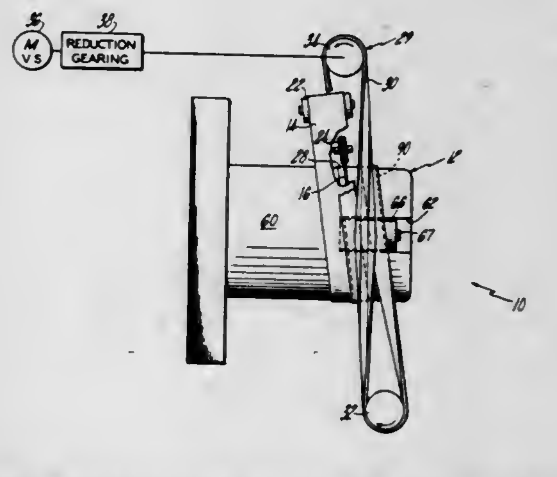
TUBULAR ARTICLE FORMING APPARATUS

Norman J. Perusse, and William E. Rejeski, both of Farmington, Conn., assignors to The Wiremold Company, West Hartford, Conn.

Filed Sept. 12, 1973, Ser. No. 396,529

Int. Cl. B31c *1/00, 5/00*

U.S. Cl. 156—428 11 Claims



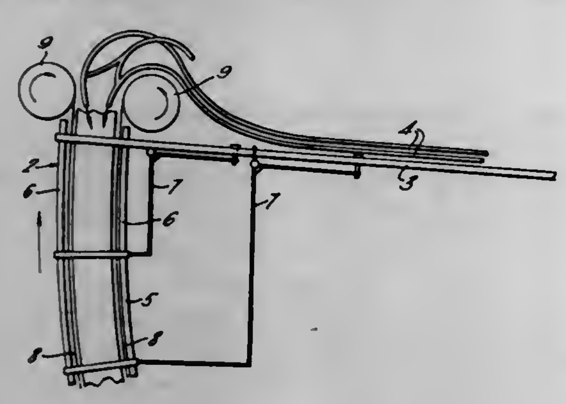
1. In a tubular article forming apparatus for forming a tubular article of elongated generally helically coiled material and having a mandrel assembly for supporting the material for forward movement along a generally helical path therearound for helically coiling the material into a tubular article, the improvement wherein the mandrel assembly comprises an internal endless support belt for internally supporting the tubular article material, a support mandrel supporting the support belt for forward generally helical movement around the support mandrel along a generally helical path from a first relatively rearward point to a second relatively forward point of the helical path of the support belt, and internal guide roll means mounted on the support mandrel radially internally of said generally helical path of said material for supporting and guiding the endless support belt for continuous movement from said forward point to said rearward point radially internally of said generally helical path of the material, the internal guide roll means and support mandrel supporting the endless belt for unimpeded continuous movement along said generally helical path of the support belt for supporting said material for forward movement along its generally helical path around the mandrel assembly; and wherein the tubular article forming apparatus comprises an external belt assembly having an

external endless belt extending generally helically around the mandrel assembly along a generally helically path thereof extending along at least part of the generally helical path of the support belt for gripping and supporting said material therebetween and carrying the material forwardly generally helically around the mandrel assembly along its generally helical path, and drive means connected for driving at least one of the endless belts for driving the material helically around the mandrel assembly.

3,897,298
APPARATUS FOR MAKING FOAM BUILDINGS

Robert Gray, The Old House, The Square, Yarmouth; Isle of Wight, England

Filed Mar. 5, 1973, Ser. No. 338,288
Int. Cl. B28b *1/32*
U.S. Cl. 156—500 **12 Claims**

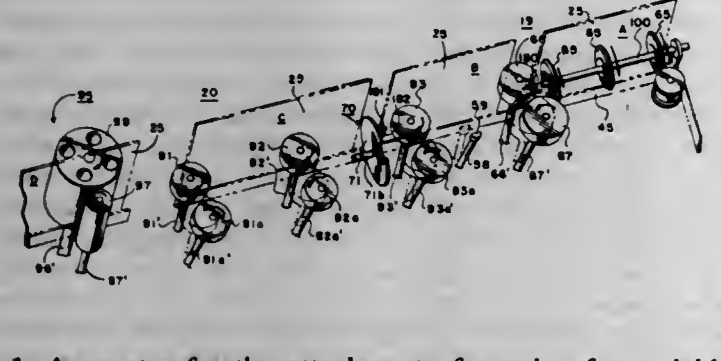


1. Apparatus for constructing a domed building of polyurethane foam, comprising support means and movable nozzle means, said movable nozzle means having an exit means, means for moving said nozzle means at a controlled rate around said support means for forming said domed building, means for passing foam forming reactants into said nozzle means, and a pair of elongate shutter means movable continuously with said nozzle means in the direction of their length and comprising inwardly facing surfaces of double curvature which conforms with and defines the thickness of the domed wall of the building, said pair of shutters being capable of articulation by articulation means within the depth of the shutters in the length of the domed wall whereby when the foam forming reactants are passed into said nozzle means and the means for moving said nozzle means moves said nozzle means and shutter means at said controlled rate a stable foam forming a wall of said building is produced.

3,897,299
ENCODABLE STRIP ATTACHMENT APPARATUS

Ronald J. Crouse, Richardson; Thomas Q. LeBrun, Dallas; Floyd E. Sill, Richardson, and Merle J. Volding, Dallas, all of Tex., assignors to Banctec, Incorporated, Dallas, Tex.

Filed Nov. 7, 1973, Ser. No. 413,599
Int. Cl. B32b *31/00*
U.S. Cl. 156—522 **49 Claims**



1. Apparatus for the attachment of a strip of encodable material to a document, said apparatus comprising:

a. first means for retaining at a supply station a continuous supply of encodable material of the type having an encodable band portion and a heat activatable adhesive bearing portion and supplying said encodable material to an alignment station,

b. second means disposed at said alignment station for initially aligning said document with said encodable material and thereafter attaching said heat activatable adhesive bearing portion with said document along at least a portion of the length of the edge of the document,

c. third means disposed at a final sealing station for effecting the sealing of said attached adhesive bearing portion to and along the entire length of the said document edge,

d. fourth means disposed between said alignment station and said final sealing station for severing said encodable material adjacent the leading and trailing edge of said document, thereby to produce an encodable strip modified document, and

e. fifth means disposed at an output station for transporting said encodable strip modified document into a stacking relationship with other encodable strip modified documents.

3,897,300
PAPER FILLED WITH A BLUSHED PARTICULATE POLYSTYRENE PIGMENT

Harry F. Kohne, Jr., Glenwood, and Frederick L. Kurrle, Laurel, both of Md., assignors to Westvaco Corporation, New York, N.Y.

Division of Ser. No. 196,199, Nov. 5, 1971, Pat. No. 3,775,353. This application Aug. 15, 1973, Ser. No. 388,369
Int. Cl.^{2} O21H *3/40*
U.S. Cl. 162—169 **1 Claim**

1. Paper comprising cellulosic fibers and a synthetic, blushed polystyrene pigment filler prepared from a polystyrene emulsion, said blushed polystyrene pigment filler consisting essentially of spherical particles having an air-containing microporous structure as a result of air-solid interfaces within the filler particles and having a particle size of from about 0.1 to 0.2 micron and a scattering coefficient of about 0.64, said blushed polystyrene pigment being capable of increasing the B&L Opacity of a sheet of paper having an opacity of about 71 without said pigment by about 8 points when said paper is provided with about 4.66% by weight of said blushed pigment.

3,897,301
RECOVERY OF PAPERMAKING SOLIDS FOR REUSE, WITH AN ACTIVE CHLORINE-BEARING CHEMICAL

Harry D. Bauman, Glen Rock, and L. Richmond Lutz, III, York, both of Pa., assignors to P. H. Glatfelter Co., Spring Grove, Pa.

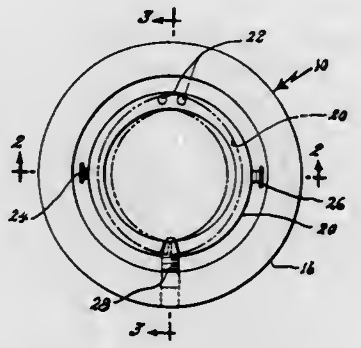
Filed Apr. 1, 1974, Ser. No. 456,770
Int. Cl.^{2} D21F *1/66*
U.S. Cl. 162—189 **4 Claims**

1. The process which comprises separating an admixture of water, long fibers, fiber-fines and inorganic fillers from the sewage of a papermaking process, partially dewatering said admixture to a water content of from about 5 percent to about 25 percent solids, and reacting said admixture at ambient temperature under gentle agitation for from about 4 hours to about 72 hours with enough active chlorine-bearing chemical to provide from about 10 to 50 grams of active chlorine per pound of solids in said admixture whereby the drainage rate of said admixture is improved.

3,897,302
MELTABLE PLUG RADIATION SWITCH

Joseph R. Klein, Bethpage, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation-in-part of Ser. No. 747,780, July 22, 1968, abandoned. This application Aug. 12, 1969, Ser. No. 851,149
Int. Cl. G21c *7/10*
U.S. Cl. 176—86 M **5 Claims**



1. A meltable plug radiation switch comprising a case, a spring in the form of an annular split ring fixedly secured to said case, a pair of contacts located adjacent said spring, said spring being biased into contact with said pair of contacts by a meltable plug, whereby melting of said plug allows said spring to move out of contact with said pair of contacts.

3,897,303
INTEGRATED PROCESS OF AMMONIA PRODUCTION AND BIOSYNTHESIS

Fred T. Sherk, and Donald O. Hitzman, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 23, 1974, Ser. No. 435,973
Int. Cl. C12b *1/00*
U.S. Cl. 195—27 **2 Claims**

1. A process which comprises subjecting methane to partial oxidation in the presence of air, removing water-soluble products of said oxidation including methanol and formaldehyde, subjecting said water-soluble oxidation products to microbial fermentation, recovering a proteinaceous cellular product from said fermentation, passing non-water soluble gaseous products of said oxidation to an ammonia synthesis operation, and recycling at least a portion of ammonia from said synthesis operation to said microbial fermentation.

3,897,304
METHOD FOR CULTIVATION OF MICROORGANISMS

Nagamasa Sassa, Hyogo; Tarou Suzuki, Tokyo; Yoshihiro Kohchi, Hyogo, and Shigeyuki Kubota, Osaka, all of Japan, assignors to Kanegafuchi Chemical Industries Co., Ltd., Osaka, Japan

Filed June 11, 1973, Ser. No. 368,788
Claims priority, application Japan, June 12, 1972, 47-58811
Int. Cl. C12b *1/00*
U.S. Cl. 195—28 R **15 Claims**

1. In a method for the aerobic cultivation of a microorganism in a culture medium containing one or more normal paraffins as the sole carbon source, the improvement comprising conducting the cultivation in the presence of one or more polyoxypropylene glycol diethers, said diethers having the formula

$$R{-}O{-}(PO)_n{-}R^1$$

wherein R and R_1 may be the same or different and each represents a saturated alcohol residue having 1 to 30 carbon atoms from a single alcohol or a mixture of different alcohols and $(PO)_n$ represents a polyoxypropylene oxide residue, said diether having an average molecular weight of from 500 to 5,000.

3,897,305
PROCESS FOR PRODUCING DEXTROSE

Thomas L. Hurst, Decatur, Ill., assignor to A. E. Staley Manufacturing Company, Decatur, Ill.

Continuation of Ser. No. 755,093, Aug. 26, 1968, abandoned. This application Dec. 17, 1973, Ser. No. 425,665
Int. Cl. C12b *1/00*
U.S. Cl. 195—31 R **20 Claims**

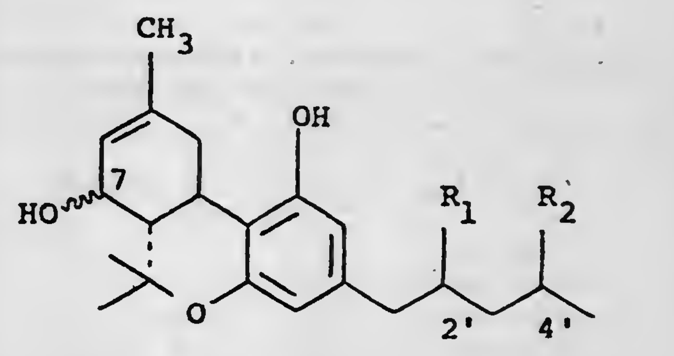
1. In a process for producing a conversion syrup of a high dextrose content by saccharifying, under acid conditions, a thinned starch hydrolyzate to dextrose with glucoamylase, the improvement which comprises saccharifying the thinned hydrolyzate to dextrose at pH between 5.0 and 6.7 in the presence of an enzyme system comprising glucoamylase and an effective amount of amylo-1,6-glucosidase to hydrolyze 1,6-glucosidic linkages of the hydrolyzate with the saccharification being conducted at a pH sufficient to inhibit the reversionary action of glucoamylase and thereby obtain improved yields of dextrose.

3,897,306
7-HYDROXY-Δ^8-TETRAHYDROCANNABINOLS AND MICROBIOLOGICAL PRODUCTION THEREOF

Hans-Jorg Vidic; Klaus Kieslich, and Karl Petzoldt, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin, Germany

Filed July 3, 1974, Ser. No. 485,640
Claims priority, application Germany, July 6, 1973, 2335136
Int. Cl. C12d *13/00*
U.S. Cl. 195—51 R **10 Claims**

1. A process for the production of Δ^8-tetrahydrocannabinols of the formula



wherein R_1 and R_2 each are hydrogen atoms or one is a hydrogen atom and the other is a hydroxy, which comprises subjecting a corresponding 7-desoxy-Δ^8-tetrahydrocannabinol to the oxygenating activity of a microorganism of the genus Streptomyces or Pellicularia.

3,897,307
STABILIZED DRY CULTURES OF LACTIC ACID-PRODUCING BACTERIA

Randolph S. Porubcan, West Allis, and Robert L. Sellars, Waukesha, both of Wis., assignors to Chr. Hansen's Laboratory, Inc., Milwaukee, Wis.

Filed Oct. 23, 1974, Ser. No. 517,371
Int. Cl. C12k *1/00*
U.S. Cl. 195—59 **17 Claims**

1. Stabilized dried culture medium solids providing a concentrate of viable harmless lactic acid-producing bacteria cells, said solids having been prepared by drying a fermented culture containing said cells together with other solids present on completion of the incubation of a culture of said cells in an aqueous nutrient-containing medium, said medium having been dried to a moisture content of below 5% by weight after the pH thereof has been adjusted to a pH favorable to the stability of said cells on drying, wherein the improvement is characterized by having present in said solids a combination

of stabilization potentiators comprising (a) an ascorbate compound selected from L-ascorbic acid and the edible water-soluble salts thereof, and (b) a second potentiator selected from the class consisting of glutamic acid, aspartic acid, and the edible water-soluble salts thereof, said potentiators having been dissolved in said fermented culture for effective contact with said cells before said drying, and in amounts for said ascorbate compound equivalent on a molar basis to 4 to 20 parts by weight L-ascorbic acid and for said second potentiator to 1.5 to 20 parts by weight of monosodium glutamate per each 100 parts of the moisture-free combined weight of said cells and said other fermentation solids.

3,897,308
IMMOBILIZED ENZYMES AND METHOD FOR PREPARATION

Norman N. Li, Edison, N.J.; Donald R. Brusca, Falls Church, Va., and Raam R. Mohan, Berkeley Heights, N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 141,367, May 7, 1971, Pat. No. 3,740,315. This application Apr. 23, 1973, Ser. No. 353,822

Claims priority, application Italy, May 2, 1972, 4999/72

Int. Cl. C07g *7/02*

U.S. Cl. 195—63 **2 Claims**

1. An immobilized enzyme comprising an aqueous solution of the enzyme emulsified in an immiscible liquid which immiscible liquid comprises a hydrocarbon or a fluorinated hydrocarbon diluent and further wherein the immiscible liquid comprises a surfactant which is from about 0.01 to 10 weight percent of said immiscible liquid, the immobilized enzyme being selected from the group consisting of phenol oxidase, nitrate reductase and urease.

3,897,309
PROCESS FOR REMOVING PYROGENIC MATERIAL FROM AQUEOUS SOLUTIONS

Roy W. Grabner, North Plainfield, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Feb. 15, 1974, Ser. No. 443,063

Int. Cl. C07g *7/028*

U.S. Cl. 195—66 A **5 Claims**

1. A process for the separation of pyrogenic material from L-asparaginase which comprises dissolving said enzyme in a buffer solution of ionic strength of from 0.1 to 0.2 m. at a pH of from 7.0 to 7.5, passing the enzyme solution through a column of diethylaminoethyl dextran gel equilibrated with said buffer solution, and eluting the L-asparaginase from the column with said buffer solution.

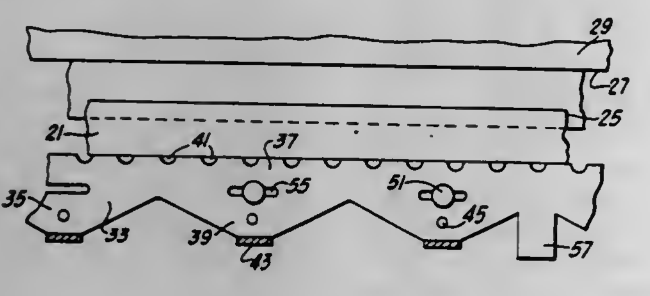
3,897,310
COKE OVEN DOOR

Linwood G. Tucker, Pittsburgh, Pa., assignor to Koppers Company Inc., Pittsburgh, Pa.

Filed Mar. 7, 1974, Ser. No. 448,960

Int. Cl.^{2} C10B *1/06, 25/06, 25/24*

U.S. Cl. 202—248 **2 Claims**



1. A coke oven door wherein the improvement comprises:

a. a door frame having a diaphragm plate and an edge member carrying a sealing strip that cooperates with a surface of a door jamb and forms a seal therewith when said door is in place;

b. a latching rack engaging said edge member and movably mounted to said door frame;

c. latching dogs resiliently mounted to said door jamb; and

d. means for linearly moving said latching rack into cooperative engagement with said latching dogs and thereby urging said sealing strip into sealing engagement with said surface of said door jamb.

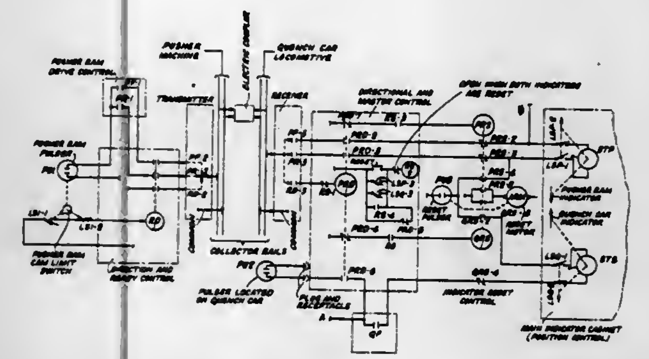
3,897,311
PUSHER RAM AND QUENCH CAR TRAVEL SYNCHRONIZATION SYSTEM

Vincent G. Krenke, Pittsburgh, Pa., assignor to Koppers Company Inc., Pittsburgh, Pa.

Filed July 20, 1973, Ser. No. 381,363

Int. Cl.^{2} C10B *35/00, 47/00*

U.S. Cl. 202—262 **6 Claims**



1. A system for synchronizing the travel of a pusher ram in a coke oven chamber with the travel of a coke quenching car receiving hot coke from the oven chamber and propelled by a locomotive relative to such oven chamber, wherein the improvement comprises:

a. switch means activated by said pusher ram as it moves toward and into an oven chamber to be pushed and closing an electrical circuit;

b. a pulse transmitter in said circuit which is activated when said switch means closes that emits pulses;

c. electrical receiver means in said locomotive that receives said emitted pulses and thereafter energizes an electrical circuit wherein there is

d. a first stepping motor that actuates said pusher ram in a step-by-step manner responsive to the received pulses and circuit energization;

e. a pulser in said quenching car that is energized by a signal emitted by said receiver;

f. a second stepping motor that is energized by said pulser and that moves said quenching car in a step-by-step manner in sequence with said pusher ram; and

g. indicator means in said locomotive that is responsive to the actuation of said stepping motors and indicates the relative positions of the pushing ram and the quenching car.

3,897,312
COKE OVEN CHARGING SYSTEM

Frank K. Armour, Flossmoor, and Robert E. Touzalin, Crete, both of Ill., assignors to Interlake, Inc., Chicago, Ill.

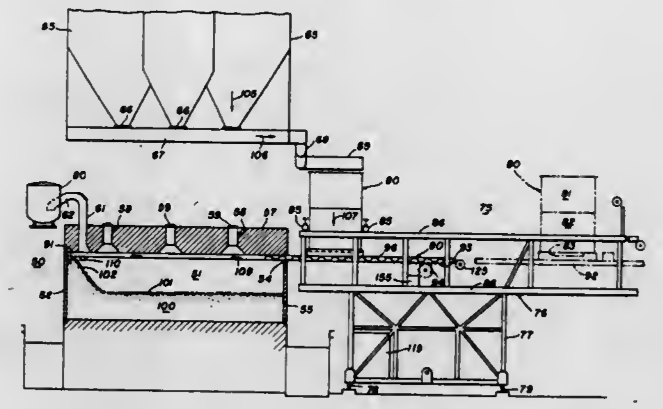
Filed Jan. 17, 1974, Ser. No. 434,234

Int. Cl. C10b *35/00*

U.S. Cl. 202—262 **3 Claims**

1. A system for charging a coke oven with coal through an opening in the pusher-side of the coke oven, said system comprising a coal charger having a delivery end movable into and out of the coke oven through the coke oven pusher-side opening, a first motor for moving said coal charger delivery end through the pusher-side opening into the coke oven between the pusher-side thereof and the coke side thereof, a

second motor for transporting coal through said coal charger from a source thereof to said delivery end, a detector on said delivery end movable into and out of the coke oven with said coal charger for continually sensing the presence of coal at a predetermined level in the coke oven, and control mechanism responsive to said detector for controlling said first motor and said second motor to coordinate the rate of delivery of coal delivered from said delivery end and the movement of said coal charger in the coke oven, whereby coal is charged to the coke oven during movement of said charger delivery end from the pusher-side of the coke oven to the coke side thereof where said delivery end remains until said detector senses coal at the predetermined level, said control mechanism responsive to sensing by said detector of coal at the predetermined level coordinating the rate of delivery of coal from said delivery end and the movement of said coal charger in the coke oven toward the pusher-side thereof to deliver to the coke oven a charge of coal having a substantially uniform and predetermined level obviating the need for leveling mechanism and reducing the quantity of effluents escaping during charging of the coke oven.



3,897,313
DUCT CONNECTING DEVICE

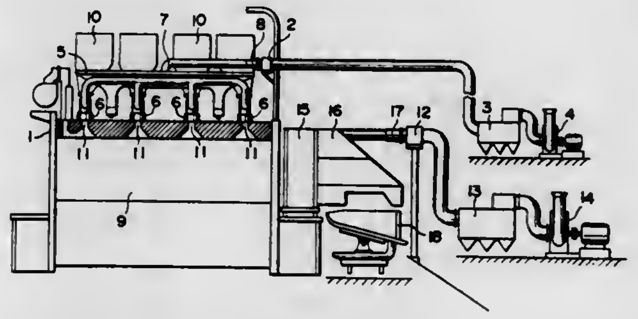
Tetsuo Ibaragi; Keishi Yamamoto, and Yasuhiko Noda, all of Wakayama, Japan, assignors to Sumikin Coke Company Limited, Wakayama, Japan

Filed Feb. 12, 1973, Ser. No. 331,446

Claims priority, application Japan, Nov. 6, 1972, 47-127780[U]; Nov. 8, 1972, 47-128650[U]; Feb. 10, 1972, 47-16885[U]

Int. Cl. C10b *31/06*

U.S. Cl. 202—263 **2 Claims**



1. A coke oven system comprising

a. an elongated coke oven battery comprising a plurality of oven chambers each having at least one coal-charging port, a charging car adapted to travel along a path parallel to said coke oven battery and to be stopped at any one of said coal-charging ports and deliver coal to one of said oven chambers,

b. a dust-collecting hood mounted on said charging car for collecting dust laden gas passing through a charging port from an oven chamber while being charged with coal,

c. a stationary duct arranged parallel with said coke oven battery, said stationary duct having a substantially horizontally disposed upper wall and communicating with a dust-removal means,

d. a plurality of connecting ports extending along said upper wall of said stationary duct, each said port corresponding to a coal-charging port in said coke oven battery and including a seal and a lid mounted on said seat, said lid comprising a magnetic material,

e. a connecting duct extending from said collecting hood above said upper wall of said stationary duct, said connecting duct being arranged to travel with said charging car and said dust-collecting hood and along the length of said upper wall of said stationary duct,

f. a downwardly facing opening in said connecting duct arranged to communicate with one of said connecting ports when said charging car is stopped at one of said coal-charging ports, and

g. electromagnet means mounted within said connecting duct and arranged, when said connecting duct opening is in communication with one of said connecting ports, to engage the lid mounted on the seat at said one connecting port, raise said lid through said downwardly facing opening in said connecting port to a position in said connecting duct permitting passage of dust laden gases from said connecting duct, through said opening and connecting port into said stationary duct, and return said lid to said seat before said charging car moves to another coal-charging port.

3,897,314
PROCESS FOR REMOVING DISTILLATION RESIDUE FROM CRUDE ISOCYANATES

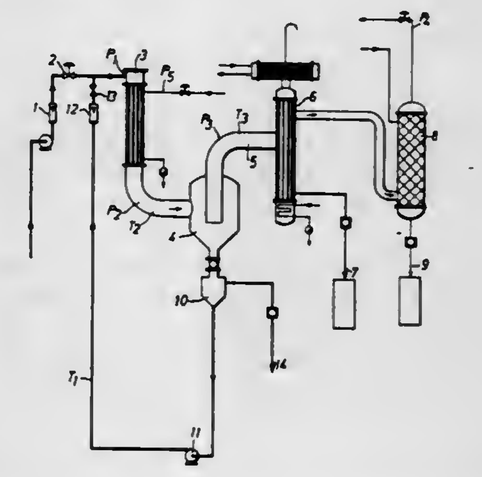
Dietrich Liebsch, Leverkusen; Dieter Becher, Leichlingen; Rudolf Kress, Cologne, and Heinz Sauer, Odenthal-Hahnenberg, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

Continuation of Ser. No. 161,817, July 12, 1971, abandoned. This application Feb. 7, 1974, Ser. No. 440,425

Claims priority, application Germany, July 18, 1970, 2035731

Int. Cl. B01d *3/00*

U.S. Cl. 203—89 **2 Claims**



1. A process for the single stage continuous separation of residue from isocyanate concentrates obtained by reacting aliphatic, cycloaliphatic, aromatic and mixed aliphatic-aromatic amines with phosgene comprising evaporating the volatile isocyanate from the concentrate in a downpipe evaporator, the pressure at outflow from said downpipe evaporator being between 0.05 to 50 mmHg, the temperature at the exit of the downpipe evaporator being between 80° to 250°C, releasing the mixture of liquid and vapor to a separator in which the same temperature and pressure conditions are maintained, separating the liquid residue from the vapor and continuously returning a portion of the liquid residue to the inlet of the downpipe evaporator while discharging the remainder of the liquid residue from the system, the quantity of the liquid residue which is returned corresponding to about 2

to about 100 times the quantity of isocyanate concentrate feed.

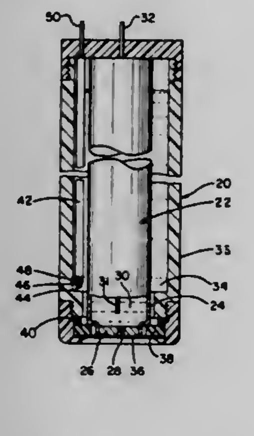
3,897,315
METHOD OF DETERMINING HYDROGEN SULFIDE

John H. Riseman, Cambridge; Martin S. Frant, Newton, and John A. Krueger, Cambridge, all of Mass., assignors to Orion Research Incorporated, Cambridge, Mass.

Division of Ser. No. 349,231, April 9, 1973. This application July 10, 1974, Ser. No. 487,187

Int. Cl.² G01N *27/46*

U.S. Cl. 204—1 T **4 Claims**



1. Method of determining the hydrogen sulfide content of a sample solution comprising the steps of:

1. diffusing the hydrogen sulfide through a membrane into a pH buffered electrolyte containing a fixed concentration of reference ions until the partial pressures of the hydrogen sulfide on both sides of the membrane are in equilibrium, said membrane being permeable to hydrogen sulfide but substantially impermeable to liquids and ionic constituents and
2. measuring the potential developed between an ion sensitive electrode having a substantially Nernstian response to the activity of sulfide ions and an ion sensitive electrode having a substantially Nernstian response to the reference ions but not responsive to sulfide ions, said electrodes being in operating contact with the electrolyte.

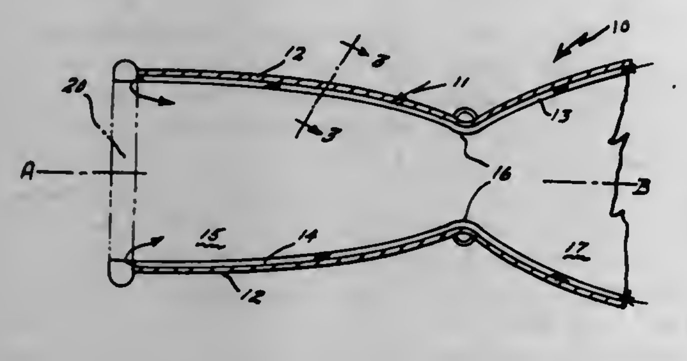
3,897,316
METHOD FOR MANUFACTURING A COMPOSITE WALL FOR A REGENERATIVELY COOLED THRUST CHAMBER OF A LIQUID PROPELLANT ROCKET ENGINE

David H. Huang, Woodland Hills, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Division of Ser. No. 254,139, May 17, 1972, Pat. No. 3,780,533. This application Oct. 5, 1973, Ser. No. 404,090

Int. Cl. C23b *7/02, 7/00*

U.S. Cl. 204—9 **1 Claim**



1. The method of manufacturing a composite wall for a regeneratively cooled thrust chamber of a liquid propellant rocket engine, with said composite wall having therein liquid propellant cooling passages of the channel type, and with said composite wall having an external surface and an internal surface, and with said thrust chamber having an external structural shell surface defined by said external surface of said composite wall, and with said thrust chamber having an internal combustion gas side surface defined by said internal surface of said composite wall, comprising the steps of:

a. forming an outer wall component of high strength lightweight alloy, with said outerwall component having an external surface and an internal surface, and with said external surface functioning as the external surface of the composite well and defining the external structural shell surface of said thrust chamber;
b. forming a middle wall component of nickel, with said middle wall component having an external surface shaped to mate with the internal surface of said outer wall component, and with said middle wall component having an internal surface;
c. mating and joining said middle wall component to said outer wall component, with the external surface of said middle wall component abutting the internal surface of said outer wall component;
d. forming a plurality of grooves in the internal surface of said middle wall component, whereby lands are formed on said internal surface between said grooves;
e. forming a replaceable inner wall component from a preformed sheet of material of high thermal conductivity and high temperature strength and ductility with said inner wall component having an external surface shaped to mate with the internal surface which said middle wall component had prior to the formation of grooves therein, and with said inner wall component having an internal surface which functions as the internal surface of the composite wall and which defines the internal combustion gas side surface of said thrust chamber;
f. and, mating and joining said inner wall component to said middle wall component, with the external surface of said inner wall component abutting the lands formed on the internal surface of said middle wall component, whereby liquid propellant coolant passages of the channel type are formed.

3,897,317
PROCESS FOR MAKING HYPERPURE GALLIUM

Mohendra S. Bawa, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed June 24, 1974, Ser. No. 482,032

Int. Cl. C22b *9/00, 41/00, 61/06*

U.S. Cl. 204—59 M **3 Claims**

1. A method for preparing hyperpure metal selected from the group consisting of gallium, germanium and indium comprising the steps of:

a. halogenating one of said metals which contains less than about 2% impurities;
b. dissolving said halogenated metal in liquid ammonia;
c. filtering undissolved solids from said solution;
d. electrolyzing said resolution of said solid material; and
e. recovering hyperpure metal from the cathode of the electrolytic cell.

3,897,318
SINGLE-COMPARTMENT ELECTROLYTIC HYDRODIMERIZATION PROCESS

William A. Heckle, and Donald L. Sadler, both of Pensacola, Fla., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 385,766, Aug. 6, 1973, abandoned, and a continuation-in-part of Ser. No. 284,372, Aug. 28, 1972, abandoned. This application Aug. 15, 1974, Ser. No. 497,800

Int. Cl.² C25B *3/10, 11/04;* **C07C** *120/00, 103/14*

U.S. Cl. 204—73 R **27 Claims**

1. A process for hydrodimerizing an olefinic compound having the formula $R_2C{=}CR\text{-}X$ wherein -X is -CN, -CONR_2 or -COOR′, R is hydrogen or R′, R′ is C_1-C_4 alkyl and at least one R directly attached to either of the two carbon atoms joined by the double bond in said formula is hydrogen which comprises electrolyzing an aqueous solution having dissolved therein at least about 0.1 percent by weight of said olefinic compound, quaternary ammonium ions in a concentration between about 10^{-5} and about 0.5 gram mol per liter and at least about 0.1% by weight of alkali metal phosphate, borate or carbonate in an undivided cell having an anode consisting essentially of carbon steel containing between about 0.02 percent about 2 percent by weight of carbon, said solution having a pH of at least about 5.

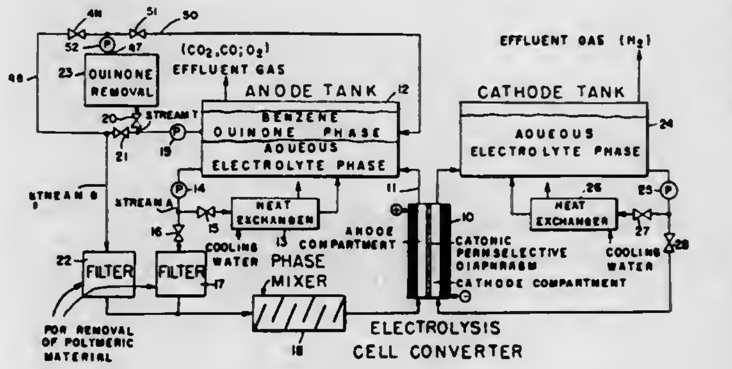
3,897,319
RECOVERY AND RECYCLE PROCESS FOR ANODIC OXIDATION OF BENZENE TO QUINONE

Fred J. Anderson, LaSalle, and Jack L. Kessler, Ottawa, both of Ill., assignors to Carus Corporation, LaSalle, Ill.

Continuation-in-part of Ser. Nos. 139,651, May 3, 1971, Pat. No. 3,758,392, and Ser. No. 203,804, Dec. 1, 1971, Pat. No. 3,758,391. This application Aug. 6, 1973, Ser. No. 385,987

Int. Cl. C07b *29/06;* **C07c** *49/64*

U.S. Cl. 204—78 **7 Claims**



1. A separation and recycle process for use with electrolysis apparatus converting benzene to quinone in anode compartments thereof, said apparatus continuously producing a dilute solution of quinone in benzene containing substantially in excess of 1 gram quinone per liter, comprising intermixing and contacting portions of said product solution with a water solution of hydroquinone containing at least 15 grams per liter of hydroquinone, said contacting being carried out with said solutions at temperatures of from 10 to 25° C., said contacting removing dissolved quinone from said product solution by reaction with said hydroquinone to form quinhydrone precipitate, said contacting being continued with formation of said quinhydrone until the resulting benzene contains less than one gram per liter of dissolved quinone, separating said resulting benzene from the remaining hydroquinone water solution and said quinhydrone precipitate, and recycling said separated benzene to said electrolysis apparatus, whereby recycled benzene is supplied to said apparatus of sufficiently low quinone content to maintain a more efficient anodic oxidation of benzene to quinone.

3,897,320
ELECTROLYTIC MANUFACTURE OF CHLORATES, USING A PLURALITY OF ELECTROLYTIC CELLS

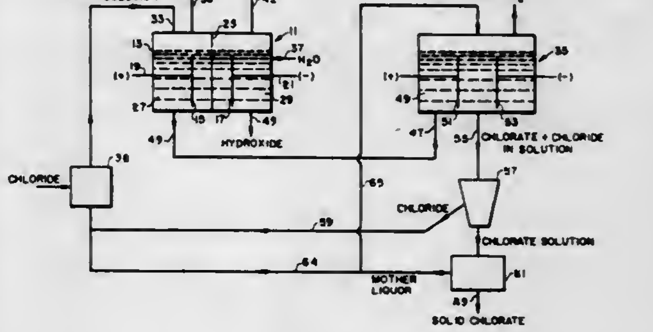
Edward H. Cook, Jr., Lewiston, N.Y., assignor to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Filed Nov. 1, 1973, Ser. No. 411,622

Int. Cl. C01b *11/26;* **C01d** *1/06;* **B01k** *3/00*

U.S. Cl. 204—95 **6 Claims**

1. A method for electrolytically producing chlorate solution, chlorine, hydrogen, and hydroxide solution which comprises electrolyzing 200 to 360 g./l. of aqueous chloride solution having a pH of about 2 to 7 in an electrolytic chlorine cell, said cell having an anode compartment and a cathode compartment, an anode, a cathode, a cation-active permselective membrane of a hydrolyzed copolymer of a perfluorinated hydrocarbon and a fluorosulfonated perfluorovinyl ether, or of a sulfostyrenated perfluorinated ethylene-propylene polymer, defining a boundary between the anode and the cathode compartments and between the anode and cathode, to produce high-purity hydroxide solution and hydrogen in the cathode compartment and to simultaneously produce chlorate solution and chlorine in the anode compartment, removing high-purity hydroxide solution and anolyte liquor containing chlorate and chloride from the chlorine cell and further electrolyzing the anolyte liquor in a chlorate cell to convert chloride therein to chlorate, while maintaining the temperatures of electrolysis in both cells at less than 105°C.



3,897,321
PROCESS FOR PREPARING M-CHLOROBENZENE SULPHONYL CHLORIDE AND M-DICHLOROBENZENE

Heinz-Ulrich Blank, Odenthal-Globusch; Karlfried Wededeyer, Cologne, both of Germany, and Josef Ebersberger, deceased, late of Bergen, Obb., Germany (by Thea Ebersberger, heiress), assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 30, 1974, Ser. No. 465,649

Claims priority, application Germany, May 24, 1973, 2326414

Int. Cl. B01j *1/10;* **C07b** *9/00;* **C07c** *143/70*

U.S. Cl. 204—158 HA **7 Claims**

1. Process for preparing m-chlorobenzene sulphonyl chloride and m-dichlorobenzene which comprises reacting benzene sulphonyl chloride with chlorine in the presence of a Friedel-Crafts catalyst at a temperature of from 20° to 180°C, and after removing said catalyst, reacting the resulting m-chlorobenzene sulphonyl chloride, to form m-dichlorobenzene.

3,897,322
RADIATION POLYMERIZATION OF OLEFINIC MONOMERS IN THE PRESENCE OF METAL CONTAINING CATALYSTS

Miroslav Marek; Ludek Toman, and Jan Pecka, all of Prague, Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

Filed July 26, 1972, Ser. No. 275,157

Claims priority, application Czechoslovakia, July 29, 1971, 5555-71

Int. Cl. C08d *1/00;* **C08f** *1/16*

U.S. Cl. 204—159.24 **4 Claims**

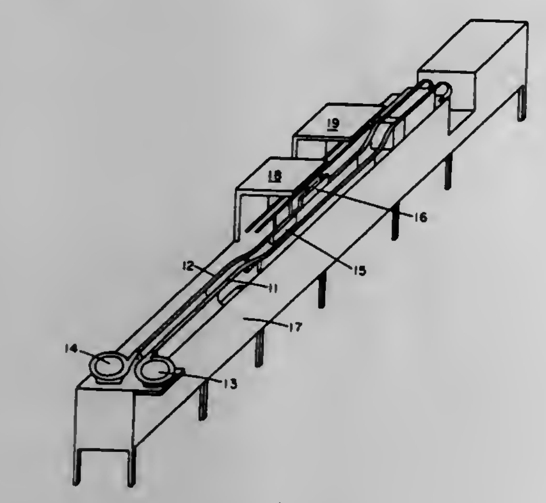
1. A method for the polymerization of isobutylene, which comprises subjecting to a source of light selected from the group consisting of ultraviolet light, visible light, and infrared light at a temperature between about 0°C. and about −140°C. an isobutylene feed selected from the group consisting of (a) essentially isobutylene and (b) essentially a mixture of isobutylene and butadiene in the presence of at least one halide catalyst selected from the group consisting of tetravalent vanadium, titanium and zirconium halides and in the presence of at least one activator for said halide catalyst selected from

the group consisting of (i) an oxide, a hydroxide, an alkoxide, and an aryloxide of a metal selected from the group consisting of (ii) the alkali metals and the alkaline earth metals, the molar ratio of said halide catalyst to said activator ranging from 10^3 to 10^{-3} part of halide catalyst to 1 part of activator.

3,897,323
APPARATUS FOR SELECTIVE PLATING

Roy Schlotthauer, Phoenix, Ariz., assignor to Motorola, Inc., Chicago, Ill.

Filed Aug. 5, 1974, Ser. No. 495,005
Int. Cl.^{2} C25D *5/02*
U.S. Cl. 204—224 R **3 Claims**

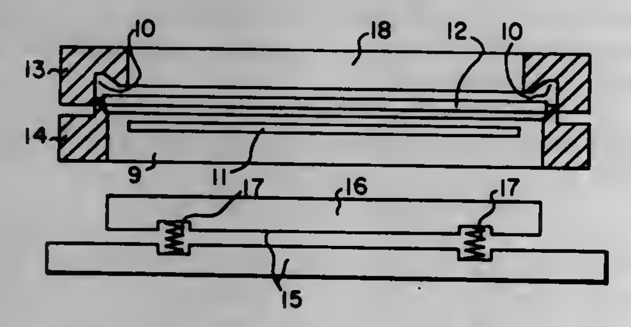


1. Apparatus for selective plating of articles having conductive portions to be plated and conductive portions extending therefrom not to be plated comprising a conveyor belt having apertures; means for feeding the articles into the apertures with the portions not to be plated extending therethrough, thereby masking those portions of the article from contact by the plating solution; means for moving the conveyor belt so that conductive liquid means establish an electrical connection to those portions of the article extending through the belt; and, plating header means for contacting the unmasked portions of the article with plating solution for a sufficient length of time to plate those portions.

3,897,324
MATERIAL DEPOSITION MASKING FOR MICROCIRCUIT STRUCTURES

Louis A. Del Monte, Minnetonka, and Robert H. Grangroth, Buffalo, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed June 25, 1973, Ser. No. 373,526
Int. Cl. C23c *15/00;* **B05c** *11/16*
U.S. Cl. 204—298 **6 Claims**



1. An apparatus for flexing a mask provided as a sheet of a mask material having said mask forced against a microcircuit structure with said apparatus to be used in depositing materials on said structure to form deposited material formations thereon, said apparatus comprising:

- a holder for holding said mask in a manner such that said mask is forced toward having a protrudent shape by said holder as held, and
- means for forcing major surface of said mask as held and said structure against one another with a selected amount of force, said major surface of said mask being one which is forced toward being convex with said mask being held as said.

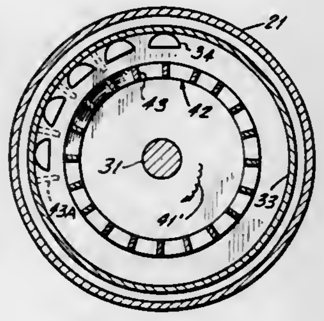
3,897,325
LOW TEMPERATURE SPUTTERING DEVICE

Shoichi Aoshima, and Tatsuo Asamaki, both of Tokyo, Japan, assignors to Nippon Electric Varian, Ltd., Tokyo, Japan

Filed Oct. 23, 1973, Ser. No. 408,822

Claims priority, application Japan, Oct. 20, 1972, 47-104402; Dec. 25, 1972, 47-200; Feb. 26, 1973, 48-22921; Apr. 6, 1973, 48-38767

Int. Cl. C23c *15/00*
U.S. Cl. 204—298 **15 Claims**

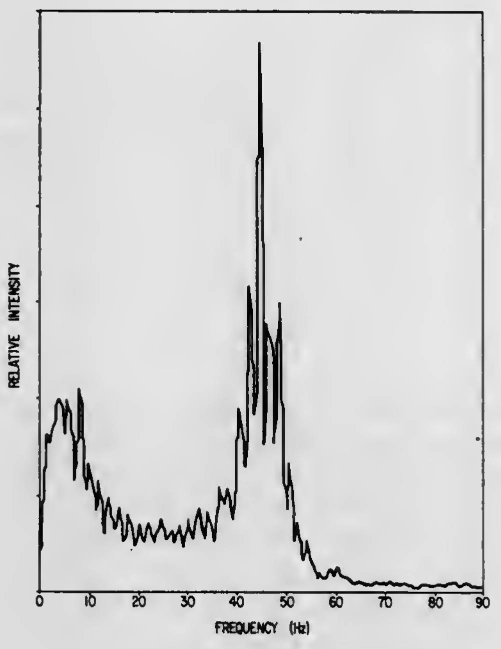


1. A device for sputtering the material of a cathode means onto an object, said device including a chamber, means for supplying a sputtering gas to said chamber, first means disposed in said chamber a spaced distance from said cathode means for holding said object and second means for providing electric fields between said first means and said cathode means to produce a gas discharge in said chamber, wherein the improvement comprises third means disposed in said chamber adjacent to said first means and fourth means for varying the paths of electrons produced during the sputtering and initially accelerated by said electric fields towards said first means, said third means comprising a plurality of thin metal plates located substantially between said cathode means and said first means for receiving a major proportion of the electrons having the paths varied by said fourth means, each of said metal plates having a width substantially in the direction of the electric field at the location of each metal plate and extending in the direction of the electric field to collect electrons deviating from their initial path of movement towards said first means.

3,897,326
PROTEIN COATED ELECTRODE

Egidijus E. Uzgiris, Schenectady, N.Y., assignor to The United States of America as represented by the Secretary of Health, Education, and Welfare, Washington, D.C.

Filed Aug. 16, 1974, Ser. No. 498,281
Int. Cl. B01k *5/00*
U.S. Cl. 204—299 **6 Claims**



1. An electrode for use in measuring electrokinetic phenomena, said eletrode comprising platinized platinum coated with bovine serum albumin.

3,897,327
HYDROCRACKING PROCESS WITH STABILIZED Y-ZEOLITE CATALYSTS

John W. Ward, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. Nos. 191,123, Oct. 20, 1971, abandoned, and Ser. No. 236,185, March 20, 1972, Pat. No. 3,781,199. This application Oct. 15, 1973, Ser. No. 406,683The portion of the term of this patent subsequent to Dec. 25, 1990, has been disclaimed.

Int. Cl. C10g *13/02*
U.S. Cl. 208—111 **16 Claims**

1. A process for the hydrocracking of a hydrocarbon feedstock to produce a lower boiling hydrocarbon product, which comprises subjecting said feedstock plus added hydrogen to hydrocracking conditions of pressure and temperature in contact with a catalyst comprising a Group VIB and/or Group VIII metal, metal oxide or metal sulfide hydrogenating component intimately dispersed in a stabilized metal-cation-deficient Y zeolite cracking base, said cracking base having been prepared by the steps of:

1. calcining an ammonium-sodium Y zeolite containing about 0.6 – 5 weight-percent of sodium as Na_2O, said calcining being carried out at a temperature between about 600°and 1650°F in contact with at least about 0.2 psi of water vapor for a sufficient time to substantially reduce the unit cell size of said zeolite and bring it to a value between about 24.40 and 24.64 A;
2. subjecting the calcined zeolite to further ammonium ion exchange under conditions adjusted to replace at least about 25 percent of its residual zeolitic sodium ions with ammonium ions and produce a final product containing less than about 1 weight-percent Na_2O;
3. consolidating the product from step (2) into granules having intimately admixed therein a finely divided hydrous oxide selected from the class consisting of alumina, silica, magnesia, titania, zirconia, thoria, beryllia, chromia, clays and mixtures thereof; and
4. calcining the granules at a temperature between about 600° and 1500°F for a time sufficient to effect substantial deammoniation, but insufficient to reduce the unit cell size of the zeolite to below about 24.40 A.

3,897,328
IRIDIUM-CONTAINING REFORMING CATALYST AND USE THEREOF

Howard Lee Mitchell, III, Baton Rouge, La., assignor to Exxon Research and Engineering Company, Linden, N.J.

Filed Oct. 29, 1973, Ser. No. 410,710
Int. Cl. C10g *35/08;* **B01j** *11/78, 11/12*
U.S. Cl. 208—139 **33 Claims**

1. A catalyst suitable for conversion of hydrocarbons comprising a composite of an acidic porous inorganic oxide support, platinum in concentration ranging from about 0.05 to about 3 percent, iridium in concentration ranging from about 0.05 to about 3 percent, palladium in concentration ranging from about 0.0001 to about 2.5 percent, and halogen in concentration ranging from about 0.1 to about 2.5 percent based on the total weight of the catalyst, the atom ratio of the platinum:iridium ranging from about 0.25:1 to about 5:1, and the atom ratio of iridium:palladium ranging from about 1:1 to about 40:1.

3,897,329
SPLIT FLOW HYDRODESULFURIZATION OF PETROLEUM FRACTION

William F. Franz, Gardiner, and Howard V. Hess, Glenham, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 26, 1973, Ser. No. 427,875
Int. Cl. C10g *23/00*
U.S. Cl. 208—210 **10 Claims**

1. A process for the conversion of a residue-containing petroleum fraction into lighter products of reduced sulfur content in which the hydrogen consumption is between 100 and 300 scfb which comprises introducing said petroleum fraction through a point of entry into a desulfurization reactor comprising a first hydrodesulfurization catalyst zone below and a second hydrodesulfurization catalyst zone above said point of entry to flow downwardly through said first catalyst zone in countercurrent flow relationship to hydrogen passing upwardly through said first catalytic zone, passing said hydrogen upwardly with volatile hydrocarbons and entrained liquids into and through said second catalyst zone and recovering said products of reduced sulfur content from the reaction effluent of said first and second catalyst zones, the temperature in said first catalyst zone being maintained between 550° and 850°F. and the temperature in said second catalyst zone being maintained between 875° and 1000°F.

3,897,330
REFUSE SORTING WITH SEPARATION OF GLASS AND METALS

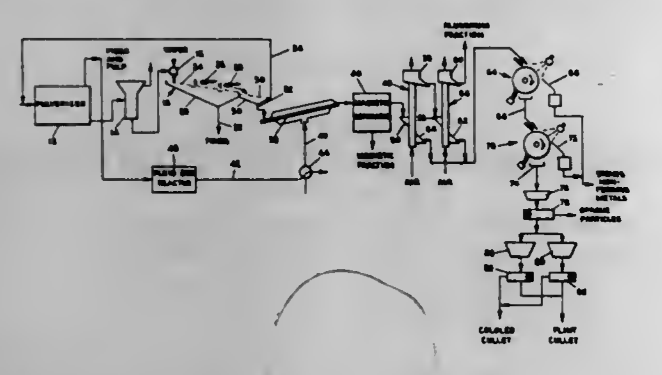
Hugh R. Rhys, Grand Rapids, Mich., assignor to Sortex Company of North America, Inc., Lowell, Mich.

Filed May 24, 1973, Ser. No. 363,578
Int. Cl. B07c *5/34*
U.S. Cl. 209—75 **13 Claims**

1. In a method of sorting refuse into its components wherein said refuse is comminuted into a particulate mass, and a glass concentrate fraction consisting substantially of glass particles and a minor portion of residual non-glass particles, including metal particles, are sorted from a substantially non-glass fraction and said glass concentrate fraction is photoelectrically sorted according to color, the improvement which comprises: passing said glass concentrate fraction through a high-tension electrostatic sorting zone prior to said photoelectric sorting

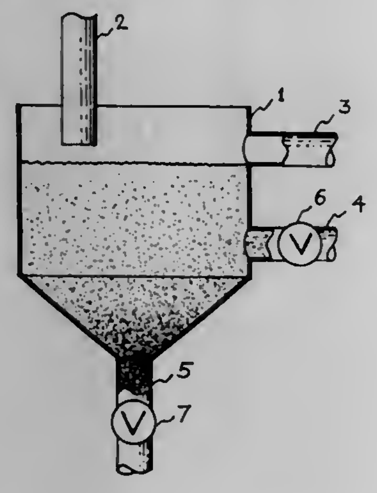
step, and in said electrostatic sorting zone, electrostatically sorting said particles according to the electrical conductivities thereof, and

recovering the less conductive glass fraction.



3,897,331
MERCURY RECOVERY

Bruce T. Smith, and Roger S. Pacheco, both of Brunswick, Ga., assignors to Allied Chemical Corporation, New York, N.Y.
Filed Oct. 10, 1974, Ser. No. 513,691
Int. Cl. B03b *3/00*
U.S. Cl. 209—10 **8 Claims**



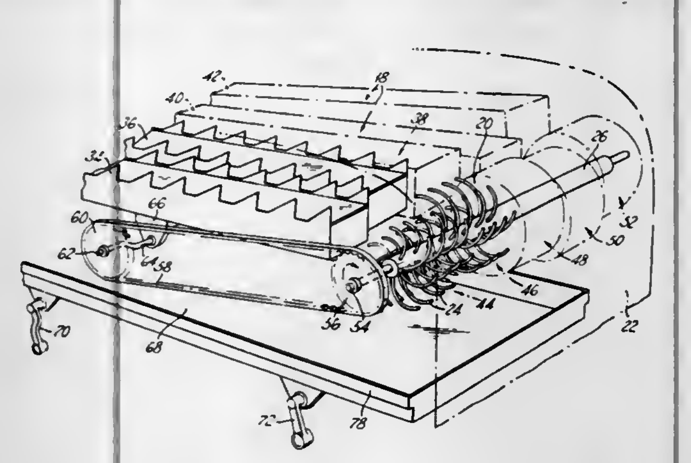
1. In the method for recovering mercury from carbonaceous filter aid used in filtration of mercury cell alkali metal hydroxide solution to remove mercury therefrom, the steps which comprise:

a. slurrying the filter aid in a liquid medium;
b. allowing the slurried filter aid to settle to form a mercury-rich filter aid slurry stratum and a supernatant mercury-lean filter aid slurry stratum; and
c. separately recovering the mercury-rich stratum.

3,897,332
GRAIN SEPARATING APPARATUS

Gilbert Delfosse, Mere, and Jose Andiano, Vanves, both of France, assignors to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles
Filed Mar. 25, 1974, Ser. No. 454,623
Claims priority, application United Kingdom, Mar. 24, 1973, 14306/73
Int. Cl.^{2} B03B *7/00;* **B07B** *1/28, 1/34;* **A01F** *12/32*
U.S. Cl. 209—12 **11 Claims**

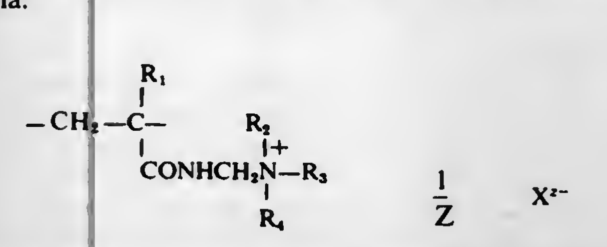
1. A grain separating apparatus including at least one oscillating sieve for separating grain from other crop material and for conveying the other crop material; a rotor rotatably mounted, for rotation about a substantially horizontal axis, in the grain separating apparatus adjacent to the oscillating sieve; at least one group of fingers attached to the rotor for conveying crop material to the rear; a plurality of sets of fingers in said one group of fingers with one or more fingers in each set of fingers and with the maximum radial distance from the axis of rotation of the rotor to a portion of a finger varying from one of the sets of fingers to another set of fingers; drive means to drive the rotor in timed relation to the oscillating sieve; attaching means for attaching each set of fingers to the rotor angularly spaced relative to the other sets of fingers to maintain a predetermined minimum distance between each set of fingers and the oscillating sieve; and collecting means to catch the grain which passes through the fingers.



3,897,333
FLOCCULATING AGENTS

John R. Field, Halifax, and Graham Smalley, Huddersfield, both of England, assignors to Allied Colloids Manufacturing Co., Ltd., Yorkshire, England
Continuation of Ser. No. 224,282, Feb. 7, 1972, abandoned. This application Mar. 28, 1974, Ser. No. 455,700
Claims priority, application United Kingdom, Feb. 24, 1971, 5347/71
Int. Cl. C02c *3/00;* **C02b** *1/20*
U.S. Cl. 210—10 **4 Claims**

1. A method in which an organic suspension selected from raw sewage sludges and sludges obtained by biological degradation is flocculated by adding to the suspension an aqueous solution of a polymer having an intrinsic viscosity of at least 0.5 when measured in 3 Molar sodium chloride and composed of recurring units of which substantially 60% or more have the formula:



$$-CH_2-\overset{\overset{R_1}{|}}{\underset{\underset{CONHCH_2\overset{\overset{R_2}{|+}}{\underset{\underset{R_4}{|}}{N}}-R_3}{|}}{C}}- \qquad \frac{1}{Z} \qquad X^{z-}$$

where R_1 is hydrogen, R_2, R_3 and R_4 are methyl, X is an anion selected from the group consisting of methyl sulfate and chloride and z is an integer, and wherein the remainder of the polymer is a nonquaternized acrylamide.

3,897,334
SINGLE BASIN AERATED SEWAGE LAGOON WITH SPRING TIME INTENSIFIED AERATION

Declan S. Murphy, Montreal, Canada, assignor to Atara Corporation, Montreal, Canada
Division of Ser. No. 64,508, Aug. 17, 1970, abandoned. This application Mar. 14, 1972, Ser. No. 234,618
Int. Cl. C02c *1/02*
U.S. Cl. 210—15 **2 Claims**

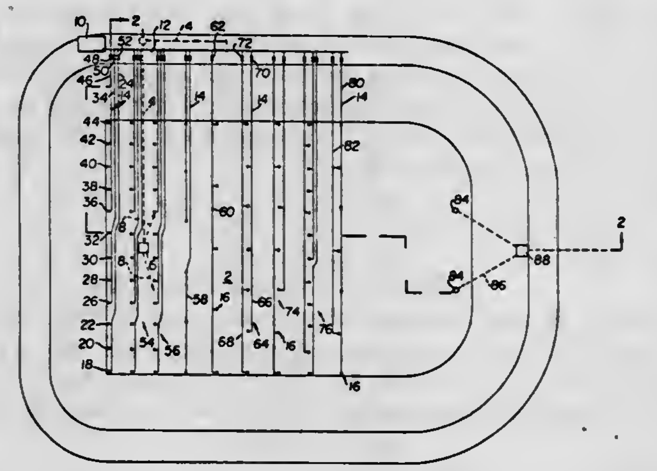
1. A method of sewage treatment comprising:

introducing raw sewage from an inlet at one end of a lagoon, passing said sewage through the lagoon in a flow path and removing the treated effluent at an outlet at the opposite end of said lagoon;

treating said sewage in a first zone of high intensity aeration provided by a first densely disposed multiple of aerators located in rows across the flow path in said lagoon adjacent the inlet;

further treating said sewage in a second zone of high intensity aeration provided by a second multiple of aerators located in rows across the flow path between said first multiple and said outlet, said second multiple of aerators being less densely disposed than said first multiple of aerators;

subjecting said sewage to a third zone of high intensity aeration provided by a third multiple of aerators located in rows across the flow path between said second multiple of aerators and said outlet, said third multiple being more densely disposed than said second multiple of aerators;



passing the treated sewage through a further zone between said third multiple of aerators and said outlet, said further zone being devoid of aerators;

supplying air to said aerators by conduits connected to each row of aerators; and

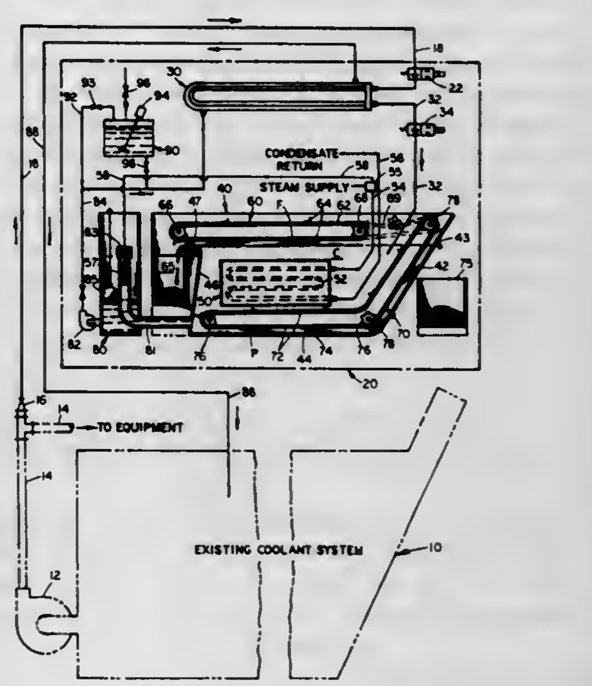
maintaining a normally gradually decreasing aeration intensity in the sewage being treated downstream from the first multiple of aerators by maintaining the air supply to said first and second multiples of aerators and controlling the air supply to said third multiple of aerators, said third multiple of aerators being capable of providing a zone of final high intensity aeration in the sewage being treated, said third multiple of aerators including a temperature control switch connected to means which close the conduits to said third multiple of aerators when the temperature in said lagoon falls below about 10°C and which open said conduits when the temperature in said lagoon rises above about 10°C.

3,897,335
LIQUID COOLANT TREATING PROCESS AND APPARATUS

Robert H. Brandt, Bowling Green, Ohio, assignor to Henry Manufacturing Co., Inc., Bowling Green, Ohio
Filed Mar. 6, 1973, Ser. No. 338,527
Int. Cl. B01d *17/04*
U.S. Cl. 210—71 **2 Claims**

1. In a process for use in a machine tool coolant system containing a circulating body of aqueous coolant emulsion containing as impurities bacteria, particulate solid contaminants and tramp oil, said tramp oil being present as a separate liquid phase entrapped in said emulsion and wetting said solid contaminants; the steps of:

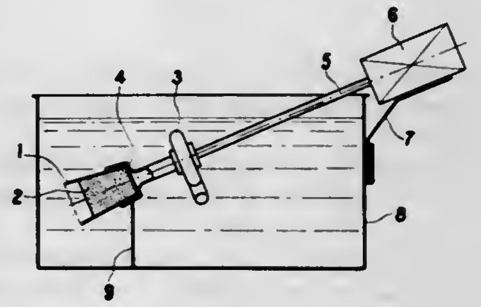
A. continuously withdrawing from about 0.01% to 1% per minute of the volume of said circulating emulsion,
B. continuously preheating the withdrawn emulsion in a heat exchange means,
C. heating said withdrawn emulsion to a temperature of from about 160° to about 200°F. while retaining at said temperature and substantially quiescent in a pool in a tank for a period of time on the order of from about 30 to about 90 minutes to, substantially simultaneously, (1) kill the bacteria in said portion, (2) release entrapped tramp oil from said emulsion, and (3) release some of said solid contaminants from the emulsion of said oil,
D. skimming the released tramp oil from the surface of said pool and removing it from said tank,



E. settling and removing the released solid contaminants from said pool and said tank, and finally
F. continuously returning the withdrawn coolant from said tank to the circulating body of emulsion through said heat exchange means thereby performing the preheating step B.

3,897,336
METHOD OF REGENERATION OF SOLDER, PARTICULARLY OF TIN-LEAD SOLDERS, AND AN APPARATUS FOR APPLICATION THE METHOD

Andrzej Bydalek, Wroclaw; Ferdynand Romankiewicz, Szewce; Jan Romer, and Edmund Tomasik, both of Wroclaw, all of Poland, assignors to Politechnika Wroclawska
Filed Jan. 11, 1974, Ser. No. 432,486
Claims priority, application Poland, Jan. 11, 1973, 160232
Int. Cl. B01d *35/18*
U.S. Cl. 210—71 **13 Claims**



1. A method for the regeneration of solder contained in a tank, said method comprising dividing the tank into two chambers by means of a partition extending upwardly in the tank to a level beneath the level of solder contained in the tank whereby the chambers are in communication with one another above the partition, immersing a filter in one chamber in the tank, connecting a pump to the filter with the outlet of the pump disposed in the other chamber such that circulation of the solder is produced in the tank through the filter and pump, and positioning the filter and pump near the surface of the solder and proximate the upper edge of the partition such that a free counter circulation is produced in the solder above

the partition which is opposite the direction of circulation of the solder through the filter and pump.

8. Apparatus for the regeneration of solder contained in a tank, said apparatus comprising a partition extending upwardly in said tank over a portion of the height thereof to divide the tank into two chambers which intercommunicate with one another above the partition, a filter disposed in one of said chambers, a pump disposed in the other of said chambers, a connecting pipe between said filter and pump forming an assembly therewith supported on said partition, drive means for said pump supported externally of said tank for producing circulation of solder in said tank from one chamber to the other through said filter and pump, the solder being contained in said tank to a level above the filter and pump to produce a free counter circulation in the solder above the partition in a direction opposite the direction of circulation of the solder through the filter and pump.

3,897,337

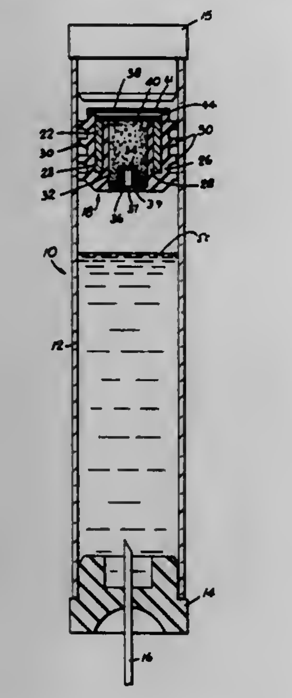
PLÅSMA SEPARATOR ASSEMBLY HAVING INTERFACE-SEEKING PISTON WITH CENTRIFUGAL VALVE

Waldemar A. Ayres, Rutherford, N.J., assignor to Becton, Dickinson and Company, East Rutherford, N.J.

Filed Feb. 27, 1974, Ser. No. 446,370. The portion of the term of this patent subsequent to July 15, 1992, has been disclaimed.

Int. Cl. B01d *21/26*

U.S. Cl. 210—136 **6 Claims**



1. A separator assembly capable of separating blood into a plasma/serum or light phase and a cellular or heavy phase comprising:

a container having at least one open end which is adapted to receive blood for subsequent separation into a light phase and a heavy phase;

a closure sealing the open end of the container, the closure being formed of a self-sealing, elastomeric material which is penetrable by a cannula through which blood to be separated is conducted into the container;

an interface-seeking piston having a specific gravity relatively greater than blood and slidably mounted in the container adjacent one end thereof and being movable downwardly in said container due to the influence of centrifugal force and having means on an outer surface for providing sealing engagement with an inner surface of the container;

a valve assembly mounted on the piston and disposed at the lower end thereof, said assembly comprises a lower resilient diaphragm mounted on the lower end of said piston and having apertures formed therein, said apertures being normally closed and adapted to open during the downward movement of the piston; an upper resilient diaphragm mounted on the upper end of said piston, having apertures formed therein, said apertures being normally closed and adapted to open during the downward movement of the piston;

a filter assembly mounted between said valve assembly and said upper diaphragm and being in fluid communication with the valve assembly, said filter assembly including a lower coarse filter having an average pore opening larger than the diameter of blood cells, disposed adjacent said valve assembly and an upper fine filter having an average pore opening smaller than the diameter of blood cells, said fine filter disposed between the upper diaphragm and said coarse filter, said filter assembly being capable of removing substantially all solid material from the separated plasma/serum phase; and

said fine filter providing piston stop means when said piston is at the plasma/serum-cellular interface whereby the cellular phase clogs the fine filter to prevent further upward flow of fluid through the fine filter so that the piston automatically stops at said interface and the upper diaphragm apertures close.

3,897,338

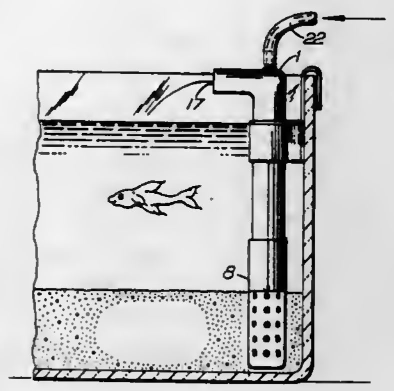
AIR CANE FILTER DEVICE

John P. Bennett, Portola Valley, and George D. Bliss, Palo Alto, both of Calif., assignors to Syntex Inc., Palo Alto, Calif.

Filed Dec. 11, 1973, Ser. No. 423,720. The portion of the term of this patent subsequent to Oct. 15, 1991, has been disclaimed.

Int. Cl.² E04H *3/20*

U.S. Cl. 210—169 **11 Claims**



1. A filtration and aeration device adapted to be positioned to an aquarium containing a body of liquid and a gravel bed, comprising in combination:

a. an elongated tubular member which is (i) closed at its lower end with a substantially planar wall substantially perpendicular to said elongated tubular member and of larger diameter than said tubular member thereby providing a base supporting means for said apparatus and (ii) open at its upper end thereby defining a chamber, said lower end adapted to be inserted into or through all or a portion of said gravel bed, said elongated tubular member being provided at its lower portion with foraminous structure comprising a plurality of passages for supplying water from the aquarium into the interior of said tubular member while restricting the flow of gravel into said interior;

b. air dispersion means for supplying dispersed air to the interior of said elongated tubular member at a point slightly above the uppermost level of said passages;

c. an air inlet tube means positioned in the interior of said elongated tubular member and entering said interior at the upper end of said elongated tubular member, for supplying air to said air dispersing means, whereby liquid is drawn from the aquarium through said gravel bed and through said passages into the interior of said elongated tubular member and aerated, and air lifted, through the interior of said elongated tubular member and discharged via said open end.

3,897,339

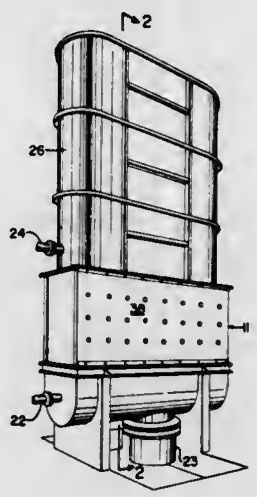
FILTER ASSEMBLY HAVING A PRECOMPACTED FILTER MEDIUM

Edward D. Arndt, Kentfield, Calif., assignor to Bohna Engineering & Research, Inc., San Francisco, Calif.

Continuation of Ser. No. 320,840, Jan. 3, 1972, abandoned, which is a continuation-in-part of Ser. No. 57,982, July 24, 1970, abandoned. This application May 24, 1974, Ser. No. 472,993

Int. Cl. B01d *25/06*

U.S. Cl. 210—283 **2 Claims**



1. A filter assembly comprising; a filter housing means, a plurality of flat filter elements extending substantially across one dimension of said filter housing means, said elements comprising confinement means including porous sheet material arranged along lateral surfaces of the elements to define a closed structure of substantially uniform thickness having a maximum of approximately 0.5 inches, a particulate filter medium having a maximum effective particle size of approximatey 0.25 millimeters and a uniformity coefficient in the approximate range of 1.0 to 2.0 and being precompacted by at least approximately 10% relative to its normal bulk density, said medium being disposed within and fully occupying said confinement means and being uniformly precompacted to provide for substantial filtration at the surfaces of said confined medium, spacer means including spaced means disposed adjacent to said confinement means and in contact with contiguous portions of said porous sheet material throughout the extent thereof, said spaced means coacting with said porous sheet material to continuously and rigidly confine said filter medium in order to maintain its precompacted condition during filter and backwash operations, said spacer means further maintaining adjacent filter elements in spaced apart relation within the filter housing to provide influent and effluent passages on opposite sides of each filter element, means for supporting the filter elements and the spacer elements within said filter housing means, an influent manifold for communicating the influent passages with a fluid inlet, an outlet manifold for communicating the effluent passages with a fluid outlet, said flat filter elements and the spacer means comprising a plurality of frame members arranged in contiguous parallel relationship to form at least a portion of said housing means, selected ones of said frame members comprising said filter elements and being U-shaped supports vertically arranged and having said porous sheet material disposed over the extent of each lateral side thereof and closing the open end of the U-shaped supports, said spacer means comprising other frame members interposed between said selected frame members and also comprising U-shaped supports, said spaced means comprising rigid flat, open grids, said other frame members defining one of said influent and effluent passages and being disposed in inverted U-shaped disposition with respect to the other frame members defining the other of said influent and effluent passages, said frame members including risers extending along the vertical height of the filter elements and being spaced apart relative to each other and the legs of the U-shaped supports, the spacer means being arranged in vertically extending spaces formed by the risers and the legs of the U-shaped supports in the other frame members, each spacer means comprising flat open grids respectively abutting the two adjacent porous sheets and ribs arranged between the grids to establish appropriate spacing and permit substantially unimpeded fluid flow through the influent and effluent passages, and plates arranged on opposite sides of and parallel with the frame members, the plates, the U-shaped members and the risers forming aligned openings for receiving tie rods to secure the frame members together as a structural unit and to assist in maintaining proper compaction and confinement of the filter elements during filter operations, the plates and the frame members forming at least a portion of a housing for containing the filter unit.

3,897,340

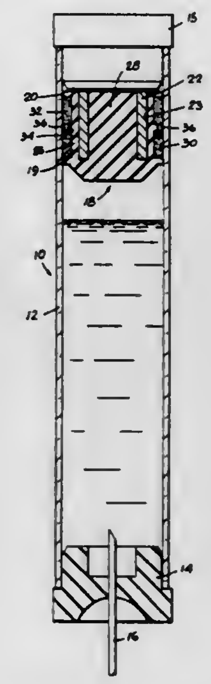
SERUM/PLASMA SEPARATOR ASSEMBLY WITH INTERFACE-SEEKING PISTON HAVING COARSE AND FINE BAND FILTERS

Waldemar A. Ayres, Rutherford, N.J., assignor to Becton, Dickinson and Company, East Rutherford, N.J.

Filed Feb. 27, 1974, Ser. No. 446,358. The portion of the term of this patent subsequent to July 15, 1992, has been disclaimed.

Int. Cl. B01d *21/26*

U.S. Cl. 210—314 **4 Claims**



1. A separator assembly capable of separating blood into a plasma/serum or light phase and a cellular or heavy phase comprising:

a container having at least one open end which is adapted to receive blood for subsequent separation into a light phase and a heavy phase;

a closure sealing the open end of the container, the closure being formed of a self-sealing, elastomeric material which is penetrable by a cannula through which blood to be separated is conducted into the container;

an interface-seeking piston having a specific gravity greater than blood and slidably mounted in the container and having means on an outer surface for providing sealing engagement with an inner surface of the container;

said means including at least two radially extending deformable seal rings mounted on the piston and disposed at the lower and upper ends thereof and a notched radially extending ring disposed between said upper and lower seal rings;

- said seal rings being capable of being deformed to open a path around said piston when said assembly is subjected to centrifugal force;
- a filter assembly mounted on said piston and positioned between said upper and lower seal rings and being in slidably sealing engagement with the inner surface of the container so that separated plasma/serum is filtered when said assembly is centrifuged;
- said filter assembly including a first filter element located adjacent to said upper seal ring and having an average pore size smaller than said heavy phase; and a second filter element located adjacent to said lower seal ring and having an average pore size greater than said heavy phase; and
- said filter assembly providing piston stop means when said piston is at the plasma/serum-cellular interface whereby the cellular phase clogs said first filter element prevent the upward flow of plasma/serum therethrough so that the piston automatically stops at said interface.

3,897,341
FILTER

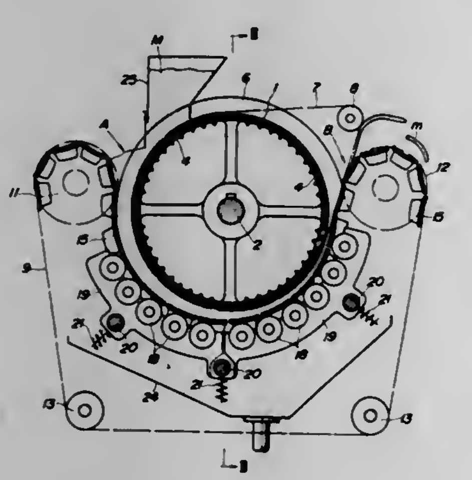
Masakatsu Ozawa, 207 Mizukami, Fujieda-shi, Shizuoka-ken, Japan

Filed Feb. 4, 1974, Ser. No. 439,242

Claims priority, application Japan, Feb. 7, 1973, 48-14759; Feb. 7, 1973, 48-14760

Int. Cl. B01d *33/02;* **B30b** *9/24*

U.S. Cl. 210—386 **4 Claims**



1. A filter comprising a rotatable drum having a plurality of perforations; a plurality of ropes encircling said drum for maintaining a substance being treated in position; a plurality of pressure rollers arranged on the periphery of said rotatable drum on supporting shafts to provide for pushing action toward said drum; a pressure belt having a plurality of perforations, said belt being formed in an endless belt and interposed between said drum and said pressure rollers; chains mounted on both sides of said pressure belt for driving said pressure belt; sealing means provided at both edges of said drum and at corresponding edges of said pressure belt; guide means mounted on the supporting shafts of the plurality of pressure rollers and so positioned that the clearance between said pressure belt and said drum is narrower at the side where the substance being treated is output than at a supply side thereof; rollers mounted on the chains and adapted to be guided into said guide means; and a means for supplying muddy substance to be treated positioned adjacent to the portion where the clearance between said drum and said pressure belt is widest the interior surface of the wall of said drum tapering outwardly from its central portion.

3,897,342
DEVICE FOR FILTERING AND/OR TREATING LIQUID OR GASEOUS MEDIA

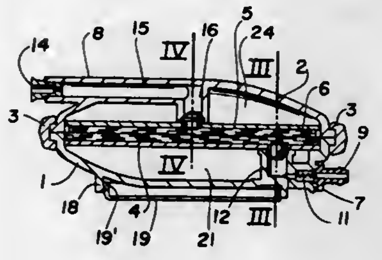
Paul Schmid, and Albert Droesch, both of Riehen, Switzerland, assignors to GHH Basel AG, Basel, Switzerland

Filed Nov. 2, 1973, Ser. No. 412,412

Claims priority, application Switzerland, Feb. 21, 1973, 2467/73

Int. Cl. B01d *27/08*

U.S. Cl. 210—445 **4 Claims**



1. In a device for treating a fluid medium, which comprises two shell-shaped housing portions, one of the housing portions having an inlet for the fluid medium to be treated, the fluid medium inlet having an end within the one housing portion, another one of the housing portions having an outlet for the treated fluid, the fluid medium outlet having an end within the other housing portion, and a fluid medium treatment insert dismountably inserted between the housing portions and disposed between the inlet and outlet ends, the improvement of

1. two supporting plates for the treatment insert,
   - a. each supporting plate being supported in the interior of a respective one of the housing portions and
   - b. each supporting plate defining a cavity for receiving a part of the treatment insert whereby the insert is held between the supporting plates,
2. two nipples extending from the treatment insert,
   - a. one nipple passing through one of the supporting plates into the inlet end and the other nipple passing through the other supporting plate into the outlet end, and
   - b. the inlet and outlet ends defining limited spaces for receiving the respective treatment insert nipples, and
3. fluid-tight sealing means in the limited spaces for sealing the inlet and outlet ends.

3,897,343
PLASMA SEPARATOR-HYDROSTATIC PRESSURE TYPE

Waldemar A. Ayres, Rutherford, N.J., assignor to Becton, Dickinson and Company, East Rutherford, N.J.

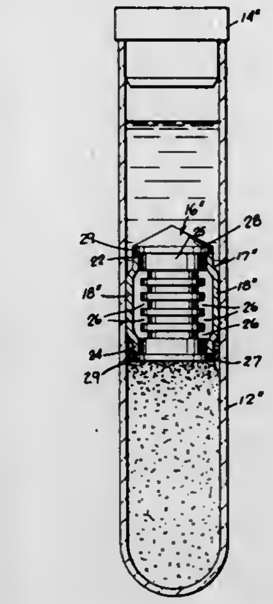
Filed Feb. 27, 1974, Ser. No. 446,383

Int. Cl. B01d *21/26*

U.S. Cl. 210—516 **5 Claims**

1. A piston adapted for use for separating the light phase of blood from the cellular or heavy phase of anti-coagulant treated blood disposed in a separator assembly including a blood collection container comprising:

- a piston having an average specific gravity heavier than the light phase of blood but lighter than the heavy phase so that when the blood is separated into its component phases the piston will migrate to the light phase-heavy phase interface; said piston comprising;
- a body portion which is generally cylindrical and has a diameter less than the internal diameter of the blood collection container; a substantially non-porous, flexible sleeve member mounted around said body portion and sealed around the top and bottom ends thereof, thereby forming an annular space therebetween, said space having a gas therein, said gas having a pressure greater than atmospheric pressure and selected so as to expand the flexible barrier means to form a liquid-tight seal when mounted within the container and said gas being compressible when subjected to increased hydrostatic force so that the flexible barrier means will move away from the inner walls of the container to break the seal and permit the piston to move toward the cellular-plasma interface when centrifuged.



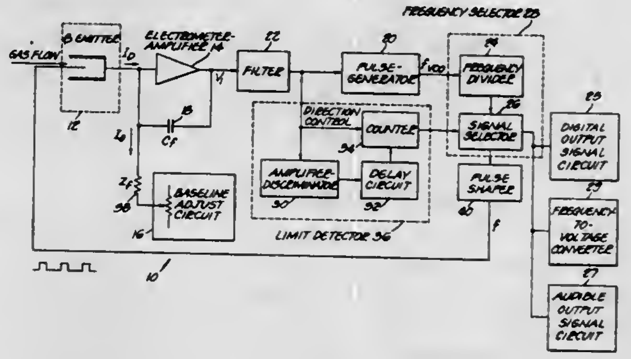
3,897,344
FREQUENCY-PROGRAMMED ELECTRON-CAPTURE DETECTOR

J. Howard Marshall, III, Pasadena, and Timothy A. Harrington, Sierra Madre, both of Calif., assignors to MDH Industries, Inc., Pasadena, Calif.

Filed July 31, 1974, Ser. No. 493,337

Int. Cl. G01n *23/12*

U.S. Cl. 250—386 **13 Claims**



1. For use in combination with an electron-capture detector, an improved pulse-generating circuit for providing an output signal having a frequency corresponding to and representative of the concentration of an electron-capturing compound, the improved circuit comprising:

- a. amplifier means coupled to the electron-capture detector for providing an output signal representative of the relative concentration of an electron-capturing compound in a sample quantity;
- b. pulse-generator means coupled to the amplifier means for providing pulses of variable frequencies which frequencies vary over a range less than the range of frequencies of the output signal of said circuit, the pulse-generator means being operable in response to the amplifier means output signal;
- c. limit detector means coupled to the amplifier means and the pulse-generator means, for generating a signal whenever the amplifier means output signal controlling the pulse-generator means is above or below the operating range of the pulse-generator means; and
- d. frequency selector means coupled to the pulse-generator means, limit detector means, and the electron-capture detector for reducing the range of pulse repetition frequencies from the pulse-generator means, the frequency selector means being operable in response to the output signal of the limit detector means,

whereby the rate of pulses applied to the electron-capture detector will maintain the amplifier means output signal within the operating range of the pulse-generator means so that a signal having a frequency proportional to and representative of the concentration of an electron-capturing compound in a sample is fed back from the pulse-generator means to the electron-capture detector.

3,897,345
HIGH STRENGTH LOW ATTENUATION COUCH TOP

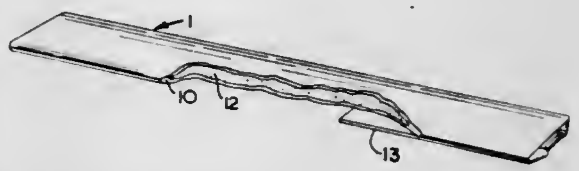
Melvin Lewis Foster, Ottawa, Canada, assignor to Atomic Energy of Canada Limited, Ottawa, Canada

Filed Sept. 18, 1973, Ser. No. 398,348

Claims priority, application Canada, July 20, 1973, 177017

Int. Cl. G03b *41/16*

U.S. Cl. 250—439 **2 Claims**



1. A diagnostic stretcher, substantially transparent to X-radiation, with an attenuation equivalent to less than 1 mm of aluminum when subject to X-rays of 90 kvp passed normal through the said stretcher, said stretcher comprising:

- i. an outer skin of carbon or graphite fibres in epoxy matrix, said skin having a configuration of a long thin and substantially flat board suitable for receiving a patient thereon and for cantilevered mounting on a stand, and
- ii. a rigid polyurethane foam core within said skin, said skin and core being bonded together.

3,897,346
FLAME RETARDANT AGENT FOR SYNTHETIC PLASTICS

Calvin Vogel, Easton, Pa., assignor to GAF Corporation, New York, N.Y.

Filed June 16, 1972, Ser. No. 263,527

Int. Cl. C09k *3/28*

U.S. Cl. 252—8.1 **9 Claims**

1. A fire retardant additive comprising a polybrominated C_2-C_6 aliphatic compound and an inorganic material selected from the group consisting of the borates-, phosphates-, sulphamates-, and oxides- of zinc, magnesium, calcium, barium, and aluminum.

3,897,347
WASHING AGENTS CONTAINING A TEXTILE SOFTENER AND PROCESS OF WASHING AND SOFTENING TEXTILES

Hans-Werner Eckert, Dusseldorf, and Hans-Jürgen Lehmann, Mettmann, both of Germany, assignors to Henkel & Cie GmbH, Dusseldorf, Germany

Filed Nov. 2, 1972, Ser. No. 303,274

Claims priority, application Germany, Nov. 22, 1971, 2157785

Int. Cl. D06m *11/00*

U.S. Cl. 252—8.75 **23 Claims**

1. A one-step process for the washing and softening of textiles which consists essentially of immersing soiled textiles in an aqueous softening washing liquor bath at temperatures of from 20° to 100°C for a time sufficient to clean and soften said textiles and recovering said cleaned and softened textiles, said aqueous, softening washing liquor bath containing

1. from 0.2 to 1.5 gm/liter of a tenside component consisting of from 20 to 100% by weight of said tenside component of anionic surface-active sulfonates and sulfates with

from 8 to 18 carbon atoms in the hydrophobic moiety, from 0 to 80% by weight of said tenside component of soaps and from 0 to 45% by weight of said tenside component of non-ionic surface-active compounds;
2. from 0.05 to 1.2 gm/liter of a softener component alkylenediamine of the formula

$$R - NH - R' - NH_2$$

wherein R is a member selected from the group consisting of alkyl having 8 to 24 carbon atoms, alkenyl having 8 to 24 carbon atoms, alkadienyl having 8 to 24 carbon atoms and R′ is alkylene having 2 to 6 carbon atoms, adducted with from 1 to 3 mols of a vicinal lower alkyleneoxide;
3. from 0.2 to 6.0 gm/liter of at least one conventional builder salt wherein sufficient alkaline-reacting builder salts are present whereby the pH of said washing liquor bath is 7 or over,

with the proviso that the amount of said tenside component is at least as large as the amount of said softener component alkylenediamine adduct.

14. A detergent composition containing textile softeners consisting essentially of:

A. from 5 to 80% by weight of a mixture of a surface-active component consisting essentially of:
  1. from 50 to 80% by weight of a tenside component consisting of from 20 to 100% by weight of said tenside component of anionic surface-active sulfonates and sulfates with from 8 to 18 carbon atoms in the hydrophobic moiety, from 0 to 80% by weight of said tenside components of soaps, at least some of said soaps having from 20 to 26 carbon atoms, and from 0 to 45% by weight of said tenside component of non-ionic surface-active compounds;
  2. from 20 to 50% by weight of a softener component alkylenediamine of the formula

$$R - NH - R' - NH_2$$

  wherein R is a member selected from the group consisting of alkyl having 8 to 24 carbon atoms, alkenyl having 8 to 24 carbon atoms, alkadienyl having 8 to 24 carbon atoms and mixtures thereof, and R′ is alkylene having 2 to 6 carbon atoms, adducted with from 1 to 3 mols of a vicinal lower alkyleneoxide;
  3. from 0 to 10% by weight of non-surface-active foam inhibitors; and
  4. from 0 to 10% by weight of foam stabilizers;

B. from 20 to 95% by weight of at least one conventional builder salt wherein sufficient alkaline-reacting builder salts are present whereby the pH of a 1% solution of said detergent composition is 7 or over and wherein the amount of alkaline to neutral-reacting builder salts is from 0.5 to 7 times the amount of said tenside component; and

C. from 0 to 40% by weight of any one of the following customary components of detergent compositions:
  a. bleaches and their stabilizers and activators,
  b. soil suspension agents, (c) optical brighteners,
  d. enzymes, (e) antimicrobial agents, and (f) water;

with the proviso that the amount of said alkoxylated alkylenediamine in said detergent compositions is from 2 to 20% by weight.

3,897,348

SURFACE TREATING COMPOSITIONS CONTAINING SURFACE ACTIVE AMMONIOAMIDATE COMPOUNDS

Ronald Edward Atkinson, Northumberland, England, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 243,089, April 11, 1972, abandoned. This application June 27, 1973, Ser. No. 374,148

Int. Cl.² D06M *13/40;* **C11D** *1/88*

U.S. Cl. 252—8.75 **11 Claims**

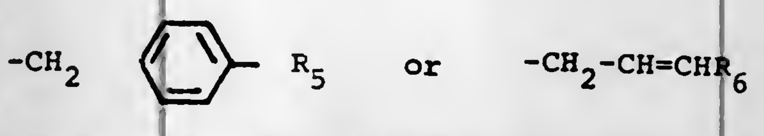
1. A surface-treating composition consisting essentially of:
a. a substituted ammoniamidate having the formula

$$R_1CO\ N^-N^+R_2\ R_3\ R_4 \qquad (I)$$

or a cationic adduct thereof having the formula

$$[R_1\ CO\ NH\ N\ R_2R_3\ R_4]^+X^- \qquad (II)$$

wherein X is an anion; R_1 is an alkyl, phenyl, or alkaryl group having 1 to 25 carbon atoms; each of R_2 and R_3 is a methyl, ethyl, hydroxyethyl or cyanoethyl group; and R_4 is either



wherein R_5 is hydrogen or alkyl of from 1 to 18 carbon atoms and R_6 is hydrogen or an alkyl group having 1 to 4 carbon atoms; at least one of R_1 and R_5 having an alkyl chain of at least 6 carbon atoms; and

b. a pH buffering compound selected from the group consisting of:
  i. the alkali metal salts and acid salts of phosphoric acid, the polyphosphoric acids, boric acid, and;
  ii. the acids and corresponding alkali metal salts of citric acid, lactic acid, glycolic acid, malic acid, tartaric acid, acetic acid, capric acid, benzoic acid, and adipic acid; or mixtures thereof in an amount sufficient to substantially maintain the pH of a solution containing component (a) at a level of from about 0.001 percent to about 0.5 percent by weight at less than, equal to , or not greater than 2 pH units above the pKa of component (a).

3,897,349

ANTI-RUST ADDITIVE COMPOSITION

Pierre Dominique Marin, Rouen, and Robert Tirtiaux, Mont Saint-Aignan, both of France, assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed May 29, 1974, Ser. No. 474,257

Claims priority, application France, May 29, 1973, 73.19388

Int. Cl. C10m *1/32, 3/26*

U.S. Cl. 252—33.3 **12 Claims**

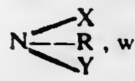
1. An anti-rust additive composition comprising:

a. at least one salt of at least one aliphatic carboxylic acid having 6 to 20 carbon atoms per molecule and at least one alkanolamine,

b. at least one salt of at least one aromatic carboxylic acid having up to 20 carbon atoms per molecule and at least one alkanolamine, the weight ratio, calculated as free acid, of aromatic acid to aliphatic acid being 0.1 : 1 to 10 : 1, and

c. at least one alkanolamine in the free state so that, in total, there are 1.5 to 3.0 equivalents of alkanolamine present per equivalent of acid;

the alkanolamines being compounds containing up to 20 carbon atoms per molecule and having the formula



$$N\begin{array}{l}\diagup X\\ - R\\ \diagdown Y\end{array}$$

, where R is a hydroxyalkyl group and X and Y are the same or different groups selected from hydrogen, alkyl and hydroxyalkyl.

11. An emulsifiable composition comprising a composition as claimed in claim 1, further containing a sodium alkylbenzene sulphonate emulsifying agent.

12. The composition of claim 11, further containing a mineral oil base having a viscosity of 10 to 200 cst at 50°C, and wherein the amount of the emulsifier is from 10 to 30 weight percent and the amount of the anti-rust additive composition is from 1 to 5 weight percent.

3,897,350

ANTI-RUST COMPOSITIONS

El-Ahmadi Ibrahim Heiba, Princeton, and Albert Lloyd Williams, Hopewell Twp., both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed May 30, 1974, Ser. No. 474,495

Int. Cl. C10m *1/40, 1/32, 1/20*

U.S. Cl. 252—33.4 **13 Claims**

1. An oil composition comprising a lubricating oil medium and, in amount sufficient to provide rust inhibiting properties thereto, (1) a naphthol selected from the group consisting of 1-naphthol, 2-naphthol and 1-nitroso-2-naphthol and (2) a metal sulfonate selected from the group consisting of neutral alkali metal sulfonate, neutral alkaline earth metal sulfonate, neutral zinc sulfonate, overbased alkali metal sulfonate, overbased alkaline earth metal sulfonate, and overbased zinc sulfonate.

5. The composition of claim 1 wherein there is also present in a detergent amount a long-chain hydrocarbyl-substituted organic condensation product having from 20 to 300 carbon atoms in the hydrocarbyl group, said product being selected from the group consisting of alkenylsuccinimides, alkenylsuccinic esters, alkyllactone amides, alkyllactam amides, and Mannich bases.

3,897,351

LUBRICANT COMPOSITIONS

Robert H. Davis, Pitman, and John W. Schick, Cherry Hill, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 4, 1973, Ser. No. 403,692

Int. Cl. C10m *1/32*

U.S. Cl. 252—34 **12 Claims**

1. A lubricant composition containing a corrosion-inhibiting amount of an alkanolamine salt of the reaction product of at least one member of the group consisting of alkyl and alkenylsuccinic anhydrides and at least one member of the group consisting of benzotriazole and tolyl triazole in a mole ratio of from 1:1 to 1:2.

3,897,352

SULFURIZED NITRATED ALKYLPHENOL SALTS AND LUBRICANT COMPOSITIONS THEREOF

Harry Chafetz, Poughkeepsie, and Rodney L. Sung, Fishkill, both of N.Y., assignors to Texaco Inc., New York, N.Y.

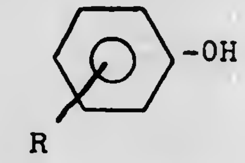
Filed Dec. 21, 1973, Ser. No. 427,154

Int. Cl. C10m *1/54*

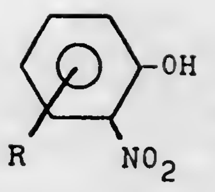
U.S. Cl. 252—42.7 **7 Claims**

1. A sulfurized Group II metal nitrated alkylphenolate having a metal ratio of between about 1 and 3, a sulfur content of between about 0.1 and 10 wt. % and a nitrogen content of between about 0.3 and 6 wt. %, comprising:

a. contacting an alkylphenol of the formula:

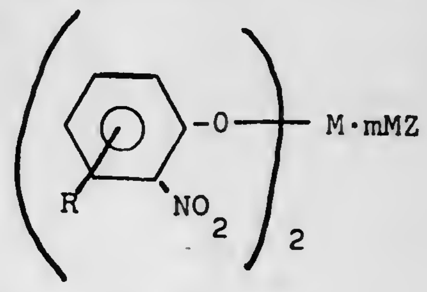


where R is an alkyl group of from 6 to 30 carbons with a nitrating agent selected from the group consisting of aqueous nitric acid, NO_2, N_2O_4, N_2O_3, N_2O_5 or mixtures of alkali or alkaline earth metal nitrates and mineral acid at a temperature between about 0° and 100°C. utilizing a mole ratio of alkylphenol to nitrating agent of between about 1:1 and 1:4 to form nitroalkylphenol characterized by the formula:



where R is as heretofore defined,

b. contacting said nitroalkylphenol with a Group II metal reagent selected from the group consisting of MO, $M(OH)_2$, and $M—O—A—OR')_2$ where M is a Group II metal, A is alkanediyl of from 1 to 6 carbons and R′ is alkyl of from 1 to 25 carbons at a temperature between about 80° and 200°C. to form a Group II metal salt characterized by the formula:



where R and M are as heretofore defined and Z is an anion selected from the group consisting of $O^=$, $—OH)_2^=$ and $—O—A—OR')_2$ where A and R′ are as heretofore defined,

c. contacting said Group II metal salt with sulfur at a temperature between about 120° and 230°C. utilizing a mole ratio of said metal salt to said sulfur of between about 1:1 and 1:10 to form said sulfurized Group II metal nitrated alkylphenolate.

3,897,353

METHOD OF PREVENTING HAZE IN OIL CONCENTRATES CONTAINING AN AMORPHOUS ETHYLENE-PROPYLENE COPOLYMER VISCOSITY INDEX IMPROVER

Abraham Morduchowitz, Monsey, and James G. Dadura, Fishkill, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 29, 1972, Ser. No. 319,567

Int. Cl. C10m *1/32*

U.S. Cl. 252—51.5 A **7 Claims**

1. A process of preventing haze in an oil additive concentrate comprising (a) a hydrocarbon solvent, (b) 0.5 to 20 wt. percent, based on solvent, of a polymeric pour depressant prepared from monomers selected from the group consisting of (1) C_4–C_{22} n-alkyl methacrylates and mixtures thereof, (2) a C_4–C_{22} n-alkyl methacrylate; mixtures thereof, and a dialkylaminoalkylmethacrylate and (3) a C_4–C_{22} n-alkyl methacrylate, mixtures thereof and a N(alkanone) acrylamide and (c) 5 to 30 wt. percent, based on solvent, of an ethylene-propylene copolymer having an amorphous structure, a number average molecular weight between about 10,000 and 100,000, a propylene content of 20 to 70 mole percent and a M_w/M_n of less than about 5 which comprises admixing the hydrocarbon solvent and the ethylene-propylene copolymer with the polymeric pour depressant, the polymeric pour depressant having a number average molecular weight of about 30,000 to 120,000.

3,897,354

COBALT-CONTAINING ACICULAR FERRIMAGNETIC IRON OXIDE OF IMPROVED REMANENCE STABILITY

Peter Woditsch, Krefeld, and Lutz Leitner, Rumeln-Kaldenhausen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 12, 1973, Ser. No. 350,568

Claims priority, application Germany, Apr. 29, 1972, 2221218

Int. Cl. C01g *49/08;* **C04b** *35/26, 35/64*

U.S. Cl. 252—62.56 **5 Claims**

1. In the production of acicular ferrimagnetic material consisting essentially of γ-iron oxide and about 0.5 to 10 atom % of cobalt including the steps of producing cobalt-containing iron oxide hydroxide, dehydrating the oxide hydroxide to oxide, reducing the oxide and re-oxidizing it into ferrimagnetic iron oxide, the improvement which comprises tempering the material in air at a temperature of about 600° to 800°C prior to reduction for a time such that the ferrimagnetic iron oxide exhibits increased remenence stability compared with untempered oxide.

3,897,355

METHOD OF MAKING PERMANENT FERRITE MAGNETS

Ronald H. Arendt, and William J. Dondalski, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 26, 1973, Ser. No. 354,878

Int. Cl.² C04B *33/32, 35/26;* **H01F** *1/11*

U.S. Cl. 252—62.58 **3 Claims**

1. In a method of making a permanent magnet from a magnetoplumbite ferrite powder having the formula $MFe_{12}O_{19}$, wherein M is selected from the group consisting of strontium and barium, including the steps of orienting the ferrite powder to align the crystals and wet pressing the powder to form a green compact, sintering the green compact at a temperature of about 1100°–1300° C. for a sufficient time to form a body having a density of at least 90% of the theoretical density and magnetizing the sintered ferrite composition, the improvement comprising homogeneously dispersing in the ferrite powder 0.5–6.0 percent by weight of a liquid phase sintering additive selected from the group consisting of the following systems:

$BaO-Al_2O_3-SiO_2$
$BaO-Al_2O_3-B_2O_3-SiO_2$
$SrO-Al_2O_3-SiO_2$
$SrO-Al_2O_3-B_2O_3-SiO_2$

3,897,356

WINDSHIELD WIPERS CONTAINING NONIONIC SURFACTANT

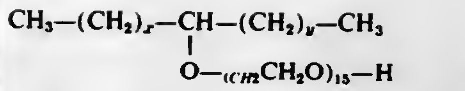
Alex Pociluyko, Glen Mills, Pa., assignor to Scott Paper Company, Philadelphia, Pa.

Filed Feb. 28, 1973, Ser. No. 336,771

Int. Cl. C11d *17/04, 1/72*

U.S. Cl. 252—91 **3 Claims**

1. A wiper for glass surfaces consisting essentially of a wet-strengthened paper sheet containing an active amount of a nonionic detergent surfactant of the following general formula:



$$CH_3-(CH_2)_x-\underset{\displaystyle O-(CH_2CH_2O)_{15}-H}{\underset{|}{CH}}-(CH_2)_y-CH_3$$

wherein *x* and *y* are integers each having a value of from 0 to 14 and the sum of *x* plus *y* is from 10 to 14.

3,897,357

BACTERIOSTATIC TOILET BOWL CLEANER COMPOSITIONS

Robert Carmello, Dumont; Barry A. Salka, Clifton, and Garland G. Corey, Milltown, all of N.J., assignors to American Home Products Corporation, New York, N.Y.

Filed Dec. 6, 1972, Ser. No. 312,767

Int. Cl. C11d *3/48*

U.S. Cl. 252—106 **10 Claims**

1. A method for preventing the growth or multiplication of *E. Coli* in toilet bowls which comprises dispensing into the water of a toilet an antibacterial liquid composition consisting essentially of:

Ingredient	% By Weight
Isopropanol	10–20
5-chloro-2-(2,4-dichlorophenoxy)phenol	0.5–6
Alkoxylated primary fatty alcohol	0.1–20
Linear alkyl aryl sulfonate salt	0.5–20
Sodium hydroxide	0–2
Water, dye, perfume	Sufficient to make up to 100%

wherein 5-chloro-2(2,4-dichlorophenoxy)phenol is present at a use dilution level in amounts of about 0.2 parts per million to less than 3.0 parts per million and wherein the alkyl chain length of the alkoxylated primary alcohol is from about 12 carbon atoms to about 18 carbon atoms.

3,897,358

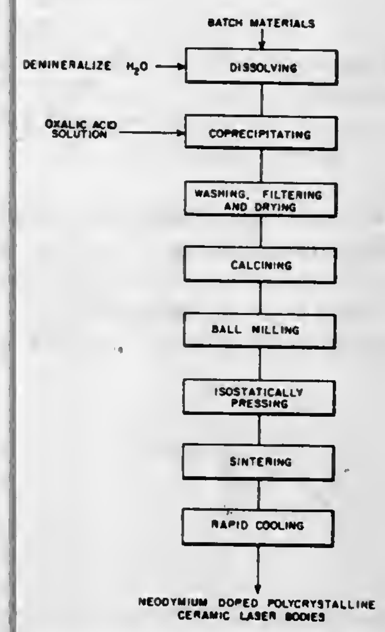
POLYCRYSTALLINE CERAMIC LASERS

Charles D. Greskovich, and Walter L. Roth, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 294,017, March 1, 1971, abandoned. This application Dec. 14, 1973, Ser. No. 424,809

Int. Cl.² C09K *11/04*

U.S. Cl. 252—301.1 R **7 Claims**



1. A method of making a ceramic laser consisting essentially in mole percent as calculated from the batch on the oxide basis of 81–97.5 percent Y_2O_3, 2–15 percent ThO_2 and 0.5–4 percent Nd_2O_3, said method comprising the steps of:

a. forming an aqueous solution consisting essentially of the water soluble salts of yttrium, thorium, and neodymium in an amount corresponding to the percent of oxides set forth above;
b. coprecipitating the cations from solution with oxalic acid to form an insoluble mixed precipitate of yttrium oxalate, thorium oxalate and neodymium oxalate;
c. recovering the oxalate precipitate;
d. calcining the precipitate to convert the oxalates to the oxides;
e. particulating the oxides in a vulcanized rubber-lined ball mill;
f. pressing the powdered oxides into a green body;
g. sintering the green body in a hydrogen atmosphere at a temperature of about 1900°–2200° C.; and
h. rapidly cooling the sintered body at a rate of 10°–80° C. per minute between the sintering temperature and 800° C. and cooling the body to room temperature to form a polycrystalline ceramic laser.

3,897,359

EUROPIUM ACTIVATED ALKALINE EARTH METAL ALUMINO SILICATE PHOSPHOR AND METHOD FOR PREPARING THE SAME

Yoshichika Kobayashi, Ibaragi; Mutsuo Masuda, Kyoto, and Masanori Takagawa, Osaka, all of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Filed June 2, 1970, Ser. No. 42,692

Claims priority, application Japan, June 11, 1969, 44-47060

Int. Cl. C09k *1/54, 1/68*

U.S. Cl. 252—301.4 F **6 Claims**

1. A phosphor which comprises a solid solution of a complex oxide of alkaline earth metal, aluminum and silicon, which contains oxides of at least one of alkaline earth metals selected from calcium, strontium and barium, aluminum and silicon, and europium as an activator, whose chemical composition is represented by the following formula:

$(Ca_x\ Sr_y\ Ba_z\ Eu_p)\ O_{x+y+z+p}\ Al_2O_3.\ 2SiO_2$

where

$0.95 \quad x+y+z+p \quad 1.05$
$0.005 \quad p \quad 0.1$

3,897,360

MANGANESE AND CERIUM ACTIVATED BARIUM CALCIUM ORTHOPHOSPHATE PHOSPHOR

Costas C. Lagos, Danvers, Mass., assignor to GTE Sylvania Incorporated, Danvers, Mass.

Filed Oct. 10, 1972, Ser. No. 296,012

Int. Cl. C09k *1/36*

U.S. Cl. 252—301.4 P **2 Claims**

1. A barium calcium orthophosphate phosphor activated by manganese and trivalent cerium, stable to fluorescent lamp processing and operation and to air firing, having the same crystalline structure as beta calcium orthophosphate and having the formula

$$Ba_aCa_b(PO_4)_2{:}Ce_cMn_d$$

wherein a is between 0.1 and 0.45 moles, c is between 0.05 and 0.25 moles, d is between .07 and .2 moles, and b has such a value that the total positive charges of Ba^{+2}, Ca^{+2}, Ce^{+3} and Mn^{+2} is between 5.85 and 6.0.

3,897,361

PROCESS FOR PRODUCING MICROCAPSULES

Keiso Saeki; Hiroharu Matsukawa, and Akio Watanabe, all of Fujimiya, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

Filed Sept. 13, 1972, Ser. No. 288,835

Claims priority, application Japan, Sept. 13, 1971, 46-71064

Int. Cl. B01j *13/02;* **B44d** *1/02, 1/44*

U.S. Cl. 252—316 **12 Claims**

1. A process for producing microcapsules of a hydrophobic oil solution comprising the sequential steps of adding at least one polyisocyanate compound, polyisothiocyanate compound, or a prepolymer thereof, to said hydrophobic oil solution in an amount sufficient to provide microcapsule walls with low porosity; preparing an emulsion of said hydrophobic oil solution in a coacervate dispersion comprising at least two hydrophilic high molecular weight compound colloids having opposite electrical charges from each other; then causing complex coacervation to form coacervate walls of said at least two colloids around droplets of said hydrophobic oil solution by adding water thereto, adjusting the pH thereof or by a combination of adding water and adjusting the pH; cooling to cause gelling of the coacervate walls and hardening said coacervate walls by a combination of adding a hardening agent to the system and adjusting the pH of the system to an alkaline condition.

3,897,362

STABILIZED SURFACTANTS AND THEIR PREPARATION

David Ross McCoy, Wappingers Falls, N.Y.

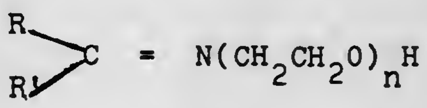
Continuation-in-part of Ser. No. 863,368, Oct. 2, 1969, abandoned. This application Oct. 24, 1972, Ser. No. 299,964

Int. Cl. B01f *17/16*

U.S. Cl. 252—357 **7 Claims**

1. A substantially water soluble or water dispersible surfactant mixture having good stability in aqueous solution in the pH range of about 5.6 to 13, consisting essentially of, as its surfactant component:

a. at least 0.1% by weight of said surfactant mixture as ethoxylated Schiff base of the structure:



wherein R and R′ are alkyl groups where each of said groups contain at least two carbon atoms, the sum of said alkyl groups totaling from 9 to 14 carbon atoms and *n* which represents the average degree of ethoxylation varies between 7 to 13, and

b. at least 0.002% by weight of the methyl alkyl ketone self-condensates obtained from the condensation of ethanolamine with ketonic dimers, said condensates having an average molecular weight of 350–450 and a nitrogen content of 3–4% by weight, the methyl alkyl ketone condensates being present in a concentration of at least 2% by weight and up to 35% by weight of the ethoxylated Schiff base condensates, the condensates being derived from the reaction of at least one methyl alkyl ketone containing 10 to 15 carbon atoms with ethanolamine, at temperatures ranging from 50°C and up, said surfactant mixture having a pH in a 1% by weight aqueous solution of about 10 to 13.

3,897,363

BLOOD CONTROL STANDARD

Allan L. Louderback, Temple City, and Anthony J. Fontana, Glendora, both of Calif., assignors to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed Aug. 10, 1973, Ser. No. 387,419

Int. Cl. C09k *3/00;* **G01n** *31/00, 33/00*

U.S. Cl. 252—408 **6 Claims**

1. The method of making a blood control standard from anticoagulant stored, defibrinated blood plasma containing elevated levels of dextrose which comprises selectively destroying dextrose in said blood plasma by aerobic fermentation with agitation utilizing 0.1 to 10 grams of a yeast in the negative acceleration phase or in the stationary phase of the yeast growth per liter of said plasma and separating particulate residue from the fermentation product.

3,897,364

PROCESS FOR THE PREPARATION OF CATALYSTS FOR THE POLYMERIZATION OF OLEFINS

Paolo Colombo, Saronno, and Marco Galliverti, Legnano, both of Italy, assignors to Societa' Italiana Resine S.I.R. S.p.A., Milan, Italy

Filed Dec. 27, 1972, Ser. No. 318,812

Claims priority, application Italy, Dec. 27, 1971, 32949/71

Int. Cl. B01j *11/84*

U.S. Cl. 252—429 C **11 Claims**

1. Process for the preparation of catalysts suitable for the production of polymers of ethylene and alpha-olefins and of copolymers of ethylene with alpha-olefins, consisting essentially of an organo-metallic compound and the product of interaction between a halogenated compound of a transition metal and a solid granular support, characterized in that at a temperature between 100 and 350°C and for a period of 10 to 30 hours, a halide transition metal in groups IVB and VB of the periodic system is caused to react with a solid granular support obtained by deposition of metallic aluminum on an alumina, silica, silico-alumina or mixtures thereof with a surface area at least greater than 10 sq.m/g and a granulometric distribution of between 10 to 150 microns, obtained a after activation at a temperature of between 350 and 900°C for a period of 2 to 25 hours, such deposition being carried out in such a way that the end product has a content of highly dispersed aluminum comprised between 0.05 and 5% by weight, the relative quantities of transition metal halide and solid support used in the reaction being so regulated that the molar ratio of transition metal halide to supported metallic aluminum is between 100 and 1000, and in that, at a temperature of 20° to 100°C the product of such reaction is brought into contact with an organometallic compound chosen from aluminum trialkyls, halides of dialkyl aluminum, or zinc dialkyls, the relative quantities of organometallic compounds and of fixed transition metal being so regulated that their molar ratios are comprised between 5 to 100.

3,897,365

HYDROTREATING CATALYST AND PROCESS THEREFOR

Irvin Ralph Feins, Westport, and Robert Murphy Yarrington, Old Greenwich, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Sept. 20, 1973, Ser. No. 399,217

Int. Cl. B01j *11/82*

U.S. Cl. 252—435 **5 Claims**

1. A process for preparing a pre-cracking hydrotreating catalyst which comprises: (I) uniformly admixing an aqueous ammonium molybdate solution with an inorganic oxide gel consisting of at least **50** weight percent alumina, up to about **50** weight percent silica, and up to a total **10** weight percent of titania, zirconia, or vanadia, said gel percentages totaling 100, the amount of ammonium molybdate solution admixed being sufficient to provide from about **5** to **15** weight percent molybdenum oxide based on the total calcined weight of molybdenum oxide and inorganic oxide gel: (II) forming the resulting mixture into a catalyst support: (III) drying and calcining the formed support; (IV) impregnating the calcined support with an aqueous orthophosphoric acid solution of a nickel source and a molybdenum source so as to provide on said support from about **1.0** to **3.5** weight percent phosphorus, from about **1** to **6** weight percent nickel oxide, and from about **10** to **20** weight percent molybdenum oxide, said percentages being based on the total calcined weight of said catalyst and the total percentage of molybdenum oxide resulting from said support and impregnation being greater than **20** weight percent and less than about **35** weight percent based on the weight of the calcined catalyst; and (V) drying and calcining the impregnated support.

3,897,366

AUTOMOTIVE EXHAUST GAS CATALYST

Harutoki Nakamura, Toyonaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Japan

Continuation of Ser. No. 163,939, July 19, 1971, Pat. No. 3,811,845. This application Nov. 5, 1973, Ser. No. 412,961

Claims priority, application Japan, July 30, 1970, 45-67146; July 30, 1970, 45-67147; May 12, 1971, 46-32076

Int. Cl. B01f *11/06*

U.S. Cl. 252—454 **3 Claims**

1. A catalyst for the treatment of automobile exhaust gas comprising

a plurality of bodies of woven mesh of glass fibers which are etched to remove alkalinity thereby forming a high silica glass,

a deposit of catalytic material selected from the group of metals, metal oxides or mixtures thereof on said fibers in which said catalytic material oxidizes carbon monoxide and hydrocarbons and reduces nitrogen oxides in automobile exhaust gas and

heat conductive metal partitions subdividing said bodies to dissipate the heat therefrom.

3,897,367

METAL OXIDE CATALYTIC COMPOSITIONS

Alan Lauder, Newark, Del., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.

Filed Oct. 10, 1973, Ser. No. 405,052

Int. Cl. B01j *11/08, 11/22*

U.S. Cl. 252—462 **7 Claims**

1. A compound having the perovskite-type ABO_3 crystal structure wherein

from about 1 to up to 20% of the B cation sites are occupied by ruthenium or platinum ions and the remainder of the B cations sites are occupied by ions consisting essentially of cobalt ions, and

the A cation sites are occupied by lanthanide ions of atomic number 57 to 71 and ions of at least one metal of Groups IA, IIA and IVA of the Periodic Table having ionic radii of about 0.9A to 1.65, and proportioned so that no more than 50% of the cobalt ions are tetravalent and the remaining cobalt ions are trivalent.

3,897,368

METHOD FOR THE PRODUCTION OF NOBLE METAL CATALYSTS

Takashi Ohara, Nishinomiya; Shoichi Ichihara, Toyonaka; Koichi Saito, Suita, and Tetsuji Ono, Amagasaki, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Osaka, Japan

Filed Nov. 29, 1973, Ser. No. 419,948

Claims priority, application Japan, Nov. 30, 1972, 47-119395; Feb. 28, 1973, 48-23133; Mar. 6, 1973, 48-25671

Int. Cl. B01j *11/08*

U.S. Cl. 252—466 PT **16 Claims**

1. In the production of noble metal catalysts in which a noble metal is supported onto a refractory porous inorganic support from an aqueous medium containing a noble metal or compound thereof, the improvement comprising

a. depositing a high concentration of said noble metal on the surface of a refractory porous support having an average particle diameter of 1.5 to 15 mm. by impregnating said support with an aqueous solution or dispersion of said noble metal or a compound thereof in the presence of a nonionic surface active agent of the poly (oxyethylene) type having an average molecular weight of at least 500, and

b. subjecting the resulting supported catalyst to activation.

3,897,369

CATALYST

Brent J. Bertus, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 242,373, April 10, 1972, Pat. No. 3,810,954. This application Dec. 3, 1973, Ser. No. 420,878

Int. Cl. B01j *11/32*

U.S. Cl. 252—469 **4 Claims**

1. A calcined solid oxidative dehydrogenation catalyst composition consisting of a metal selected from the group consisting of nickel and cobalt, in association with tungsten, tin and oxygen, characterized by the formulae

$$NiW_xSn_yO_z \text{ and } CoW_xSn_yO_z$$

respectively, wherein *x* and *y* are numbers having a value in the range of about 0.1 to about 1 and *z* is a number determined by the valence requirements of said nickel or cobalt, said tungsten and said tin components.

3,897,370

AROMA COMPOSITIONS CONTAINING CYCLOALIPHATIC CROTONYL COMPOUNDS

Erich Klein, Holzminden, Germany, assignor to Dragoco Spezialfabrik Konzentrierte Riech-und Aromastoffe Gerberding & Co. GmbH, Holzminden, Germany

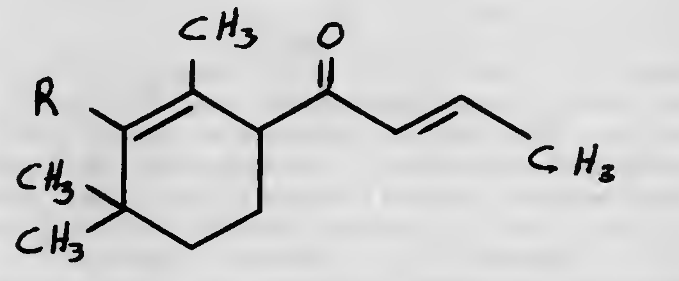
Division of Ser. No. 146,554, May 24, 1971, Pat. No. 3,822,315. This application Nov. 3, 1972, Ser. No. 303,352

Claims priority, application Germany, Apr. 26, 1971, 2120413

Int. Cl. A61k *7/00;* **C11b** *9/00*

U.S. Cl. 252—522 **3 Claims**

1. Aroma composition comprising a perfume mixture including an aroma modifying effective amount, sufficient to enrich natural perfumes or artificial aromas, of a trans isomer of a compound of the formula:



wherein R is selected from the group consisting of hydrogen and lower alkyl.

3,897,371

METHOD OF FORMING A WATER-EXTENDED ACRYLIC POLYMER

John Lewis Moilliet, Abberley, and James Ernest Ryan, Knebworth, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed June 8, 1973, Ser. No. 368,024

Claims priority, application United Kingdom, June 14, 1972, 27749/72

Int. Cl. C08f *47/08*

U.S. Cl. 260—2.5 L **9 Claims**

1. A method of forming a water-extended acrylic polymer, comprising emulsifying a mixture of 60–88% by weight of water and 40–12% by weight of a 0.5–5% by weight solution of an acrylic soluble ethyl cellulose in a water-immiscible polymerisable acrylic liquid at least 80% by weight of which is methyl methacrylate, wherein the water and the acrylic liquid respectively comprise the disperse and continuous phases of the emulsion; and polymerising the acrylic liquid while maintaining the emulsion.

3,897,372

SMOKE-FLAME RETARDANT HYDROPHILIC URETHANE AND METHOD

Clifton Leroy Kehr, Silver Spring; Robert M. Murch, Ashton, and Nelson Samuel Marans, Silver Spring, all of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Apr. 17, 1974, Ser. No. 461,675

Int. Cl.^{2} C08G *18/14, 18/10;* **C08K** *3/20, 3/38*

U.S. Cl. 260—2.5 AJ **12 Claims**

1. In a polyurethane foam composition formed by reacting a resin prepolymer and a water reactant the improvement which comprises incorporation of a smoke-flame retardant, said retardant consisting essentially of alumina hydrate having an average particle size of about 0.5 to about 120 microns and disposed in an amount of about 50 to about 400 parts by weight per 100 parts prepolymer resin to be reacted, in combination with boric acid and an equal part by weight of a melamine containing compound selected from the group consisting of melamine, melamine-formaldehyde resin, butylated-malamine resin, melamine-acrylic resin wherein said melamine containing compound is included in an amount from about 1 to about 200 parts by weight per part by weight of resin polymer reactant used for polyurethane generation.

2. The polyurethane composition of claim 1 wherein the retardant component further includes silica.

3,897,373

SELF-EXTINGUISHING THERMOPLASTIC MOLDING COMPOSITIONS

Robert Bachl, Worms, and Herbert Naarmann, Wattenheim, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

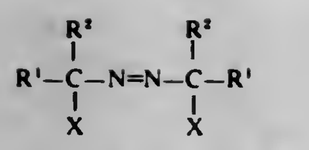
Filed Apr. 8, 1974, Ser. No. 458,525

Claims priority, application Germany, Apr. 21, 1973, 2320535; Oct. 25, 1973, 2353438

Int. Cl. C08f *47/10;* **C08j** *1/26*

U.S. Cl. 260—2.5 FP **9 Claims**

1. Self-extinguishing thermoplastic molding compositions based on styrene polymers and containing an organic bromine compound containing at least four carbon atoms and more than 40 wt % of bromine as flameproofer and from 0.01 to 5% by weight of an azo compound of the formula



$$R^1-\overset{\overset{R^2}{|}}{\underset{\underset{X}{|}}{C}}-N=N-\overset{\overset{R^2}{|}}{\underset{\underset{X}{|}}{C}}-R^1$$

where R^1 and R^2 denote aliphatic, cycloaliphatic or araliphatic radicals of from one to 12 carbon atoms and X denotes chlorine or bromine or an aliphatic, cycloaliphatic or araliphatic radical of from one to 12 carbon atoms.

3,897,374
NONSTAINING RUBBER

Masaaki Takahashi, Tokyo; Noboru Ishizawa, Hyogo, and Masazo Nishida, Osaka, all of Japan, assignors to The Toyo Rubber Industry Co., Ltd., Osaka and Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, both of, Japan, part interest to each

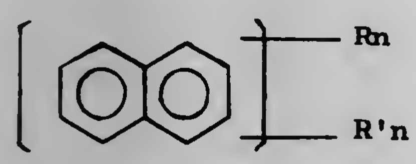
Continuation-in-part of Ser. No. 153,047, June 14, 1971, abandoned. This application Jan. 4, 1974, Ser. No. 430,852

Claims priority, application Japan, June 12, 1970, 45-51196

Int. Cl. C07c *15/24;* **C08c** *11/22*

U.S. Cl. 260—5 **11 Claims**

1. A rubber composition containing therein 5–50 parts by weight per 100 parts by weight of a rubber component, of a nonstaining aromatic hydrocarbon oil which consists essentially of polypropylnaphthalene of the general formula,



wherein R is propyl group, *n* is an integer of 2 to 4, R′ is a hydrogen atom or a methyl group and *n′* is an integer of 1 and 2, the total number of carbon atoms is the alkyl side chains being six to 13, and said oil having an aniline point of not more than 10°C and a boiling point ranging from 280° to 450°C.

3,897,375
MINERAL-PIGMENT AND BUTADIENE COPOLYMER BINDER PAPER COATING COMPOSITIONS

Akikazu Takahashi, Matsudo; Yuji Futatsugi, Chiba; Hiroo Wakayama, Funabashi, and Takamu Yao, Narashino, all of Japan, assignors to Dainippon Ink & Chemicals Inc., Tokyo, Japan

Filed Nov. 26, 1973, Ser. No. 419,059

Int. Cl. C08h *7/00*

U.S. Cl. 260—8 **4 Claims**

1. A paper coating composition comprising
1. 100 parts by weight of a mineral pigment;
2. 3 – 35 parts by weight, calculated as solids, of an aqueous solution of a pH of at least 8 wherein has been dissolved a member selected from the group consisting of an ammonium salt, an alkali salt and an amine salt of a copolymer of 20 – 70 weight % of butadiene, 20 – 80 weight % of at least one monoethylenically unsaturated carboxylic acid selected from the group consisting of acrylic acid, methacrylic acid, itaconic acid, fumaric acid, maleic acid and crotonic acid and 0 – 60 weight % of a third monomer selected from the group consisting of methyl acrylate, methyl methacrylate, ethyl acrylate, ethyl methacrylate, styrene, alpha-methylstyrene, acrylonitrile, methacrylonitrile, vinyl chloride and vinyl pyridine; and
3. 1 – 30 parts by weight, calculated as solids, of a carboxylated synthetic rubber latex.

3,897,376
ROOM TEMPERATURE VULCANIZABLE SILICONE RUBBER COMPOSITION

Warren R. Lampe, Ballston Lake, N.Y., assignor to General Electric Company, Waterford, N.Y.

Division of Ser. No. 76,265, Sept. 28, 1970, Pat. No. 3,696,090. This application Mar. 17, 1972, Ser. No. 235,822. The portion of the term of this patent subsequent to Oct. 3, 1989, has been disclaimed.

Int. Cl. C08f *21/01*

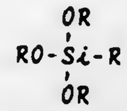
U.S. Cl. 260—18 S **6 Claims**

1. The process for obtaining silicone rubber compositions which are cured at room temperatures to the solid, elastic state comprising mixing

a. a linear high molecular weight fluid organopolysiloxane containing terminal silicon-boned hydroxy groups and having a viscosity of 3×10^6 to 2×10^8 centipoise at 25°C where the organo groups are monovalent hydrocarbon radicals with 1-100% by weight of high molecular weight diorganopolysiloxane of a low molecular weight linear fluid diorganopolysiloxane containing terminal silicon-bonded hydroxy groups and having a viscosity of 100 to 3.0×10^5 centipoise at 25°C where the organo groups represent monovalent hydrocarbon groups,

b. dispersing into the organopolysiloxane mixture 10–50 percent by weight of filler based on the weight of organopolysiloxane mixture;

c. mixing in the above mixture and alkyl silicate selected from the class consisting of (1) a monomeric organo-silicate corresponding to the general formula,



$$RO-\overset{\overset{OR}{|}}{\underset{\underset{OR}{|}}{Si}}-R'$$

where R is a radical selected from the class consisting of alkyl, haloalkyl, aryl, haloaryl, aralkyl, alkenyl, cycloalkyl, cycloalkenyl and cyanoalkyl radicals and R′ is selected from the class consisting of alkyl, haloalkyl, aryl, haloaryl, alkenyl, cycloalkyl, cycloalkenyl, cyanoalkyl, alkoxy and aryloxy radicals, and (2) a liquid partial hydrolysis product of the aforementioned organosilicate monomeric compounds and

d. dispersing into the above resulting mixture a metallic salt of an organic monocarboxylic acid in which the metal ion is selected from the class consisting of lead, tin, zirconium antimony, iron, calcium barium, cadmium, titanium, bismuth, and manganese.

3,897,377
PROCESS FOR THE MANUFACTURE OF SYNTHETIC RESINS WITH URETHANE GROUPS, WHICH ALSO CONTAIN CARBOXYL GROUPS AND CAN BE DILUTED WITH WATER

Bernhard Broecker, Hamburg, and Wolfram Plettner, Glinde, both of Germany, assignors to Reichold-Albert-Chemie Aktiengesellschaft, Hamburg, Germany

Filed Dec. 12, 1973, Ser. No. 424,111

Claims priority, application Switzerland, Dec. 14, 1972, 018260/72

Int. Cl.² C08G *22/16, 22/32, 51/24*

U.S. Cl. 260—18 TN **8 Claims**

1. Process for the manufacture of thermosetting synthetic resins with urethane groups, which contain carboxyl groups and masked isocyanate groups and can be diluted with water after neutralization with ammonia or amines, and which are manufactured by reaction of a compound (a) which contains alcoholic hydroxyl groups and carboxyl groups, with a masked isocyanate (*b*) in inert organic solvents, characterized in that as the compound (*a*) there are used copolymers of two or more vinyl monomers, individually or as mixtures thereof, which contain alcoholic hydroxyl groups and carboxyl groups, have a molecular weight of about 300 to 10,000, a hydroxyl

equivalent weight of 200 to 900 and acid numbers of about 30 to 150, based on carboxyl groups, and which must be soluble in inert polar organic solvents, only those copolymers being employed of which the carboxyl groups are not capable of significant reaction with masked isocyanate groups at temperatures of 80° to 150°C over the course of about one hour, and as the masked isocyanate (*b*) there is used a polyurethane which contains at least one masked isocyanate group and which has been obtained by reaction of a polyisocyanate with a free isocyanate group and at least one masked isocyanate and at most up to 5 masked isocyanate groups with a compound carrying alcoholic hydroxyl groups, having a molecular weight of about 120–2,000 and a hydroxyl equivalent weight of about 60–500, the compound having been chosen from the group consisting of esters of fatty acids with polyols, wherein the polyols should be at least trifunctional, and diols which carry terminal hydroxyl groups and in which 3 to 8 carbon atoms are aliphatically bonded between the hydroxyl groups, and that the components (*a*) plus (*b*) are reacted at temperatures of 80°–150°C, that the component (*a*) is employed in such amounts that the end product has acid numbers between about 30 and 120, that thee proportion of calculated isocyanate groups introduced when manufacturing the component (*b*) is between 7.5 and 20 percent by weight relative to the weight of the end product and that the end product is completely soluble in a 50 percent strength solution in ethylene glycol monobutyl ether and has a viscosity between 150 and 700 cP in this solution at 25°C and that the amount of the component (*b*) which is employed is such that the mixture of components (*a*) plus (*b*) before reaction contains 2 to 15 percent by weight of masked isocyanate groups relative to the sum of (*a*) plus (*b*).

3,897,378
BINDER RESINS FOR TRAFFIC PAINTS

John M. Scohy, Vienna, W. Va.; George E. Cremeans, Groveport, and Manfred Luttinger, Columbus, both of Ohio, assignors to Borg-Warner Corporation, Chicago, Ill.

Filed May 29, 1974, Ser. No. 474,297

Int. Cl. C09d *3/66*

U.S. Cl. 260—22 CB **6 Claims**

1. In a traffic paint formulation comprising an alkyd resin, a chlorinated paraffin plasticizer, a second binder resin, pigments, fillers and a solvent mixture, the improvement wherein said second binder resin is an alkyd compatible graft polymer comprising from about 50 to about 90% by weight of an alkylstyrene selected from the group vinyl toluene, ethylstyrene, propylstyrene, and butylstyrene, from about 0.5% to about 5% by weight of a C_1 to C_7 conjugated diene, from about 49.5% to about 10% by weight of an acrylic acid ester of a C_2–C_{10} alcohol.

3,897,379
TIME BASE ERROR CORRECTION FOR RECORDING SYSTEMS

Richard E. De Francesco, Holland, Pa.; Bernard Harris, Dobbs Ferry, N.Y., and David Hoffman, Hillsdale, N.J., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 4, 1974, Ser. No. 512,835

Int. Cl. G11b *5/43*

U.S. Cl. 360—27 **13 Claims**

1. A time base error correcting system for FM tape recorders having a reference tone on a first tape track and data signals on a second tape track comprising, in combination:

first pulse generating means for producing a series of periodic output pulses having a frequency equal to the average frequency valve of said reference tone;

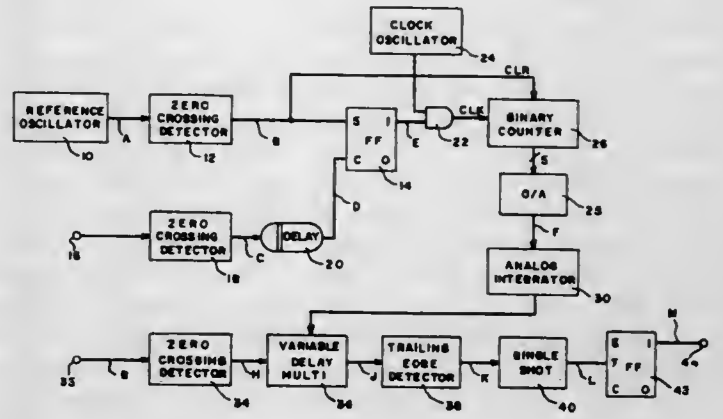
second pulse generating means adapted to receive said reference tone for producing a series of output pulses indicative of the zero crossings of said tone;

delay means connected to receive said second generating means output pulses for producing a time delayed replica output thereof;

pulse width encoding means connected to receive said first pulse generating means output signals and said delay means output for producing an output pulse having a variable width dependent upon the time separation between corresponding ones of said first pulse generating means output signals and said delay means output pulses; clocking means connected to receive said pulse width encoding means output pulse for producing a series of periodic clock pulses for the duration of said output pulse;

counting means connected to receive said first pulse generating means output pulses and said clock pulses for producing a digital count indicative of the width of said pulse width encoding means output pulse upon the receipt of individual ones of said first pulse generating means output signals;

analog transformation means connected to receive said digital count for producing a smoothed analog signal representation of said digital count;



third pulse generating means adapted to receive said data signals for producing a series of output pulses indicative of the zero crossings of said data signals;

variable delay means connected to receive said third pulse generating means output pulses and said analog signal for delaying respective ones of said third pulse generating means output pulses for a time proportional to the value of said analog signal and for providing an output representative thereof;

fourth pulse generating means connected to receive said variable delay means output for producing a series of regularly shaped output pulses indicative of the trailing edges of respective ones of said variable delay means output pulses; and

fifth pulse generating means connected to receive said fourth generating means output pulses for producing a series of output pulses having widths corresponding to the sequential time occurrence of said fourth generating means output pulses;

whereby said fifth generating means output pulses are indicative of the data signals corrected for time base error.

3,897,380
RUBBERIZED COAL TAR PITCH EMULSION

John P. Walaschek, 4250 Galt Ocean Dr., Fort Lauderdale, Fla. 33308

Continuation of Ser. No. 337,930, March 5, 1973, Pat. No. 3,835,117. This application Mar. 18, 1974, Ser. No. 451,828

Int. Cl. C08f *45/52*

U.S. Cl. 260—28.5 AS **2 Claims**

1. In rubberized coal tar emulsion coating compositions, the improvement comprising an aqueous coal tar emulsion having admixed therewith 2.5 to 15 percent by weight, of an acrylonitrile/butadiene copolymer latex based upon the copolymer content in said latex and tar content in said aqueous coal tar

emulsion, said acrylonitrile/butadiene latex having an average particle size between 400 and 1000 A, and said acrylonitrile/-butadiene copolymer containing 30–49 parts acrylonitrile and 70–51 parts butadiene, whereby said composition is characterized by a thixotropic nature.

3,897,381

PROCESS FOR PREPARATION OF THERMOSETTING RESINOUS COMPOSITIONS

Hideyoshi Tugukuni, Osaka; Masafumi Kano, Kyoto, and Yoshihisa Chikazoe, Osaka, all of Japan, assignors to Dai Nippon Toryo Co., Ltd., Osaka, Japan

Filed Oct. 17, 1973, Ser. No. 407,158

Claims priority, application Japan, Oct. 21, 1972, 47-105644

Int. Cl. C08g *22/06, 22/20*

U.S. Cl. 260—29.2 TN **10 Claims**

1. A process for the preparation of thermosetting resinous compositions which comprises homopolymerizing or copolymerizing (*b*) and α,β-ethylenically unsaturated monomer capable of releasing an isocyanate group under heating or a mixture of said α,β-ethylenically unsaturated monomer and other unsaturated monomer copolymerizable therewith in water at a temperature lower than the isocyanate-releasing temperature in the presence of (*a*) a water-soluble resin having an acid group of an acid value of 5 to 3000 neutralized with a basic substance and being free of a group capable of releasing an isocyanate group under heating, to thereby obtain an aqueous polymer dispersion, said unsaturated monomer or monomer mixture being copolymerized with the water-soluble resin when the latter has an unsaturated bond, and being homopolymerized in the case of an unsaturated monomer or copolymerized in the case of a monomer mixture when the water-soluble resin has no unsaturated bond, the content of said isocyanate groups being from 0.05 to 10% by weight based on the total non-volatile solids, at least one of said components (*a*) and (*b*) containing active hydrogen-containing groups in components (*a*) and (*b*) being within the range of from 0.3 to 0.5, and the non-volatile component weight ratio of component (*a*) to component (*b*) being within a range of from 10:90 to 95:5.

3,897,382

METHOD FOR THE ACID HYDROLYSIS OF ACRYLONITRILE CONTAINING POLYMERS, HYDROGELS AND FIBERS OF PRODUCTS PREPARED BY SAID METHOD

Vladimir Stoy; Artur Stoy; Renata Urbanova; Jaroslav Prokop, and Josef Kucera, all of Prague, Czechoslovakia, assignors to Ceskoslovenska akademie ved No. 3 Narodni, Prague, Czechoslovakia

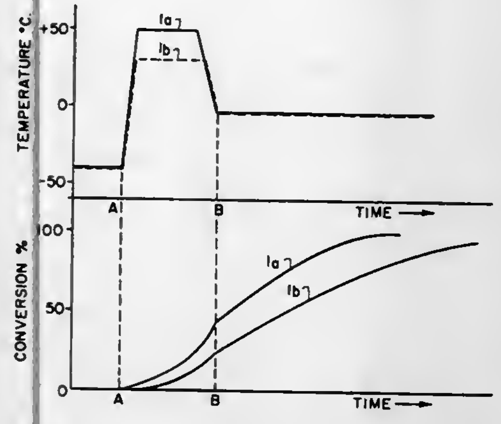
Continuation of Ser. No. 377,270, July 9, 1973, abandoned. This application Mar. 20, 1974, Ser. No. 453,080

Claims priority, application Czechoslovakia, July 14, 1972, 5011-72

Int. Cl. C08f *45/24*

U.S. Cl. 260—29.6 AN **19 Claims**

1. A method for the acid hydrolysis of acrylonitrile-containing polymers comprising hydrolyzing said polymers in the presence of about 40 to about 80% concentrated nitric acid at a temperature of about 25 to about 60°C, and cooling said acid reaction mixture to about −20° to about +30°C for a period of time sufficient to reach the desired degree of hydrolysis.



3,897,383

2,2-DIALKYLEPOXIDES AS PLASTICIZERS, STABILIZERS, OR REACTIVE DILUENTS

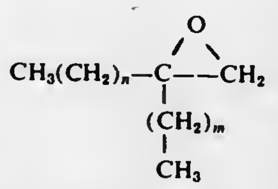
Robert Malone Gipson; Ernest Leon Yeakey, and William Jennings Pepel, all of Austin, Tex., assignors to Jefferson Chemical Company, Inc., Houston, Tex.

Division of Ser. No. 263,678, June 16, 1972, Pat. No. 3,835,166. This application Apr. 17, 1974, Ser. No. 461,550

Int. Cl. C08f *45/32, 45/58;* **C08g** *51/32*

U.S. Cl. 260—30.4 N **5 Claims**

1. A process for improving the physical characteristics of resinous polymer selected from polyureas, polyurethanes or polyvinylchloride comprising admixing therewith an epoxide compound represented by the following formula:



$$CH_3(CH_2)_n\text{—}\overset{\displaystyle O}{C}(\text{—}CH_2)\text{—}(CH_2)_m\text{—}CH_3$$

wherein *n* and *m*, individually, are integers in the range of 3 to 21 and wherein the sum of *n* and *m* is an integer in the range of 8 to 24, and wherein from about 1 to 25 parts by weight of the epoxide is employed per 100 parts by weight of resinous polymer.

3,897,384

MOULDING COMPOSITIONS CONTAINING PHOSPHOROUS, TALC, AND, OPTIONALLY, METAL CARBONATE AS FILLERS

Wolfram Busch, Massenheim-Gartenstadt; Hans Paul Gilfrich, Wiesbaden-Biebrich; Albrecht Scholz, Hochheim, and Hermann Wallhauber, Wehen, all of Germany, assignors to Hoechst Aktiengesellschaft, Wiesbaden, Germany

Continuation of Ser. No. 264,539, June 20, 1972, abandoned. This application Apr. 8, 1974, Ser. No. 458,642

Claims priority, application Germany, June 26, 1971, 2131845; July 22, 1971, 2136669

Int. Cl. C08g *51/04*

U.S. Cl. 260—40 R **13 Claims**

1. A thermosetting moulding composition comprising A) an unsaturated polyester derived from a carboxylic acid component selected from the group consisting of 1) terephthalic acid, isophthalic acid, and mixtures thereof and 2) an acid component selected from the group consisting of fumaric acid, maleic acid, and a combination thereof and from a dihydric alcohol, B) a copolymerizable monomer which is present in an amount of from 3 to 50% by weight of the polyester-monomer mixture, C) a per oxide catalyst, and D) an inorganic filler component which at least in part consists of finely divided red phosphorus in an amount of from 0.2 to 10% by weight, based on the total moulding composition and a component selected from the group consisting of a) talc, and b) a combination of talc and an alkaline earth metal carbonate in a weight ratio of from 5:1 to 20:1, said talc being present in an amount of from 10 to 70% by weight based on the total moulding composition, and A) and B) being present in an amount of at least 10% by weight based on the total moulding composition.

3,897,385

PROCESS FOR THE PREPARATION OF COMPOSITE MATERIALS HAVING HIGH IMPACT STRENGTH AND STRONG RIGIDITY AND MATERIALS SO-OBTAINED

Michel Van Russelt, Brussels; Claude Bleiman, and Jean Mercier, both of Kessel-Lo, all of Belgium, assignors to Gerdec, Paris, France

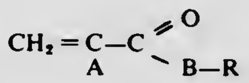
Filed July 11, 1973, Ser. No. 378,212

Claims priority, application France, July 11, 1972, 72.25032

Int. Cl. C08f *45/04*

U.S. Cl. 260—42.14 **39 Claims**

1. In a normally solid polymer composition comprising a vinyl aromatic polymer reinforced by a strengthening filler, the improvement wherein the strengthening filler comprises: a. 2–30 parts by weight per 100 parts by weight of vinyl aromatic polymer of a copolymer having a molecular weight M_r of at least 50,000 and consisting essentially of 100 molar parts of a vinyl aromatic monomer and 1–20 molar parts of an ethylenically unsaturated polar comonomer of the formula



$$CH_2=\underset{A}{C}\text{—}C{\overset{\textstyle /\!\!/ O}{\underset{\textstyle \diagdown B\text{—}R}{}}}$$

wherein A is hydrogen or alkyl of 1–6 carbon atoms, B is oxygen or —NH— and R is an organic hydrocarbon chain of 1–12 carbon atoms bearing a hydroxy or an epoxy group, said polar comonomer being directly absorbed or reacted onto the surface of

b. 5–40 parts by weight, per 100 parts by weight of the total polymer content in the reinforced composition, of a particulate phyllosilicate capable of directly absorbing or reacting with said polar comonomer.

3,897,386

TIRE TREADS

Joseph C. Sanda, Jr., Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed June 8, 1972, Ser. No. 260,870

Int. Cl. B60c *1/00;* **C08f** *45/08*

U.S. Cl. 260—42.47 **3 Claims**

1. The method of producing a polyurethane tread for a pneumatic tire which comprises producing in one step a polyurethane by heating to curing temperature (a) a polyhydroxy elastomeric polymer of the class consisting of (1) homopolymers and copolymers of conjugated dienes which contain 4 to 6 carbon atoms and (2) copolymers of such a diene and an aromatic vinyl monomer or vinyl nitrile monomer, and (b) a diisocyanate or mixture of diisocyanates, and (c) 5 to 25 parts of N,N-bis(2-hydroxypropyl)aniline per 100 parts of dihydroxy polymer and (d) sufficient reinforcing agent to make the composition serviceable as a tread; the —NCO/—OH ratio of the polymer or polymers and the diisocyanate or diisocyanates being greater than 1.15 to 5.0.

3,897,387

FIRE RETARDANT AGENT

James D. O'Shaughnessy, Gouverneur, N.Y., assignor to James D. O'Shaughnessy, Gouverneur, N.Y.

Filed May 23, 1973, Ser. No. 363,212

Int. Cl. C08c *11/04*

U.S. Cl. 260—45.7 R **17 Claims**

1. A fire retardant agent comprising a calcium or magnesium mineral borate or a calcium or magnesium metaborate and a halogen source, said halogen having an atomic weight greater than 19.

3,897,388

ANTIOXIDANT COMPRISING A HYDROXY AROMATIC COMPOUND CONTAINING SULFUR AND ORGANIC PHOSPHITE

Bernard J. Lyons, Palo Alto, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Oct. 11, 1973, Ser. No. 405,553

Int. Cl. C08f *45/58*

U.S. Cl. 260—45.8 R **6 Claims**

1. An antioxidant composition suitable for use with polymers subject to oxidative degradation, especially irradiated and fire retardant plastics, comprising a mixture of hydroxy aromatic compounds containing sulfur selected from the group consisting of oligomers of 4,4′-thiobis (6-t-butyl-m-cresol) or the reaction product of phosphorus oxychloride and 4,4′ thiobis (6-t-butyl-m-cresol) and an organic phosphite compound of the general formula $[ROP(OR')_2]_nP_x$, wherein R is selected from the group consisting of alkyl, substituted alkyl, aryl and substituted aryl and R′ is selected from the group consisting of hydrogen, alkyl, substituted alkyl, aryl and substituted aryl wherein *n* is an integer from 1 to 3 and *x* is 0 or 1.

3,897,389

FLAME RETARDANT COMPOSITIONS

Irving Touval, Edison, N.J., assignor to M&T Chemicals Inc., Greenwich, Conn.

Division of Ser. No. 869,366, Oct. 24, 1969, abandoned. This application Mar. 15, 1971, Ser. No. 124,447

Int. Cl.^{2} C08F *6/00;* **C08G** *83/00*

U.S. Cl. 260—45.75 B **8 Claims**

1. a resin composition possessing enhanced flame retardant characteristics and consisting essentially of

1. a halogen-containing material selected from the group consisting of (a) halogen-containing polymers which are in turn selected from the group consisting of homopolymers and copolymers of vinyl chloride and halogen-containing polyolefins and (b) combinations of non-halogenated polymers with an organic halogen source, said non-halogenated polymers being in turn selected from the group consisting of polyesters and polymerized ethylenically unsaturated hydrocarbons, and
2. a flame-retarding amount of sodium antimonate, the particles of which exhibit an average size of about 1.5 micron, the size of the individual particles being between about 0.1 and 8 microns.

3,897,390

POLYSILOXANE COMPOUNDS HAVING AN ADAMANTANE BASE, AND METHODS OF PRODUCTION THEREOF

Alain Maurice Groult, Annemasse, France, and Günter G. Bellmann, Geneva, Switzerland, assignors to Etat Francais, Paris Armees, France

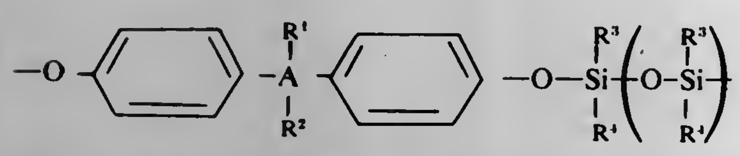
Filed May 23, 1974, Ser. No. 472,885

Claims priority, application France, May 25, 1973, 73.19024

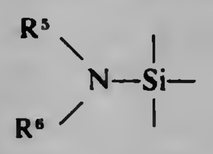
Int. Cl.^{2} C08G *77/18*

U.S. Cl. 260—46.5 R **10 Claims**

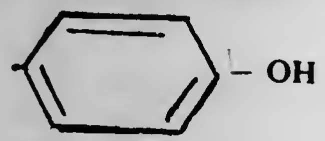
1. A polysiloxane consisting essentially of recurrent units forming a macromolecular chain having the formula



where A is adamantyl, R_3 and R_4 each is alkyl, alkenyl or aryl, R_1 and R_2 each is hydrogen, alkyl or aryl, and x is 0 or a whole number, the chain having end groups of the formulas ,321 and



and



where R_5 and R_6 each is hydrogen, akyl, or aryl.

3,897,391

PROCESS FOR PREPARING POLYCARBONATE

Donald B. G. Jaquiss, New Harmony, and Howard E. Munro, Evansville, both of Ind., assignors to General Electric Company, Pittsfield, Mass.

Continuation-in-part of Ser. No. 194,509, Nov. 1, 1971, abandoned. This application Sept. 28, 1973, Ser. No. 401,938

Int. Cl. C08g *17/13, 51/58*

U.S. Cl. 260—47 XA **7 Claims**

1. In a process for the manufacture of an improved aromatic polycarbonate by reacting a dihydric phenol with a carbonate precursor, the improvement comprising carrying out the reaction in the presence of 0.01 – 5.0 weight % of a hypophosphite selected from the group consisting of alkali earth metal hypophosphites and alkali metal hypophosphites; said weight % being based on the weight of the dihydric phenol employed in the reaction.

3,897,392

BRANCHED AROMATIC POLYCARBONATES

Heinrich Haupt; Dieter Freitag; Hugo Vernaleken, all of Krefeld; Kuno Wagner, Leverkusen-Steinbuechel, and Kurt Findeisen, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen Bayerwerk, Germany

Filed Oct. 23, 1973, Ser. No. 408,981

Claims priority, application Germany, Nov. 9, 1972, 2254918

Int. Cl. C08g *17/13*

U.S. Cl. 260—47 XA **9 Claims**

1. Thermoplastic branched polycarbonates consisting essentially of the reaction products of aromatic dihydroxy compounds and ortho-aryl esters of carbonic acid or of monocarboxylic acids or dicarboxylic acids with polycarbonate precursors wherein the ortho-aryl esters are reacted in amounts of 0.01 to 5 mol percent relative to the amount of dihydroxy compound.

3,897,393

POLYIMIDES FROM BISMALEIMIDES AND HETEROCYCLIC DISECONDARY DIAMINES

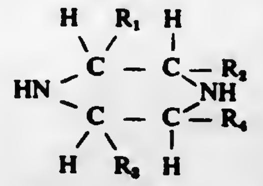
Robert T. Lu, Wilmington, Del., assignor to ICI United States Inc., Wilmington, Del.

Filed Nov. 29, 1973, Ser. No. 419,994

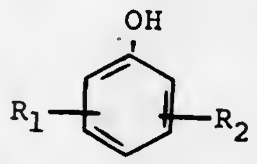
Int. Cl. C08g *20/32*

U.S. Cl. 260—47 UA **10 Claims**

1. In a process for the preparation of a polyimide polymer by reacting a bismaleimide with a difunctional heterocyclic disecondary amine characterized by the formula



wherein R_1, R_2, R_3, and R_4 are independently selected from the group consisting of hydrogen, halogen and alkyl groups containing from 1 to 4 carbon atoms, in the presence of a solvent for a sufficient time to form a polymer having recurring imide units in the polymer, wherein the reaction is carried out at a temperature from about 20°C. to about 120°C. and wherein the total concentration of bismaleimide and difunctional heterocyclic disecondary amine in the solvent is from about 1% to about 40% by weight and wherein the molar ratio of difunctional heterocyclic disecondary amine to bismaleimide is from 5 to 0.1, the improvement which comprises carrying out the polymerization reaction in the presence of at least one solvent characterized by the formula



wherein R_1 and R_2 are independently —H, halogen, or alkyl containing from 1 to 4 carbon atoms.

3,897,394

POLYBISPHENOLS

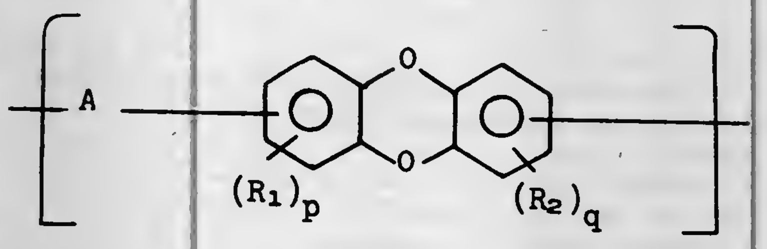
William Ross Moore, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 399,781, Sept. 21, 1973. This application July 1, 1974, Ser. No. 484,644

Int. Cl. C08g *23/00*

U.S. Cl. 260—47 R **10 Claims**

1. Polybisphenols having recurring units of the following structure,



wherein A is a divalent hydrocarbon group of 1–13 carbons, R_1 and R_2 are independently selected from hydrogen, halogen, alkoxy, or alkyl groups wherein the alkoxy or alkyl groups have 1–3 carbon atoms, *p* and *q* are 0 – 2 and the sum of *p* and *q* is 0 – 4, prepared by the oxidative coupling of bisphenols with an oxygen containing gas.

3,897,395

PROCESS FOR CHAIN-EXTENDING UNSATURATED TERMINATED POLYIMIDES AND PRODUCTS PREPARED THEREFROM

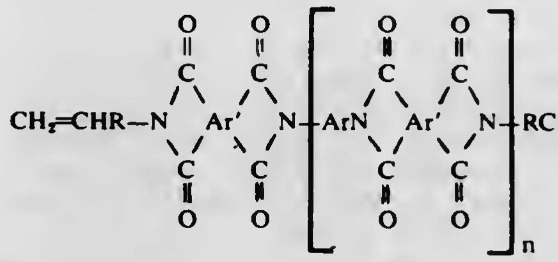
Gaetano Francis D'Alello, South Bend, Ind., assignor to University of Notre Dame du Lac, Notre Dame, Ind.

Filed May 25, 1973, Ser. No. 363,801

Int. Cl. C08g *20/32*

U.S. Cl. 260—63 N **13 Claims**

1. A polymeric chain-extending process comprising heating a polyimide said polyimide of the formula:



wherein

- Ar′ is a tetravalent aromatic organic radical, the four carbonyl groups being attached directly to separate carbon atoms and each pair of carbonyl groups being attached to adjacent carbon atoms in the Ar′ radical,
- Ar is a divalent aromatic organic radical,
- R is a hydrocarbon radical of 1 to 12 carbon atoms, and
- *n* is a positive integer of at least one.

3,897,396

WITH SUBSTITUTED BENZOIC ACID CATALYSTS ACCELERATING THE CURE OF POLYURETHANEUREAS

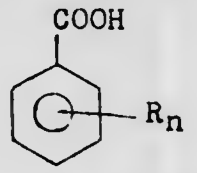
Michio Ishii; Yoji Watabe, and Yutaka Iseda, all of Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Oct. 30, 1974, Ser. No. 519,194

Int. Cl. C08g *22/34*

U.S. Cl. 260—75 NB **16 Claims**

1. A method of accelerating the cure rate of a polyurethaneurea reaction mixture, comprising forming a prepolymer by reacting an excess of an organic polyisocyanate with a hydroxyl containing compound having weight average molecular weight of 500 to 30,000 selected from the class consisting of polyether polyols, polyester polyols, and hydrocarbon polyols, mixing the resulting prepolymer with an organic polyamine curative, and an accelerating amount of a catalyst selected from the class consisting of alkyl and alkoxyl substituted benzoic acids shown by the formula



wherein R is selected from the class consisting of alkyl and alkoxyl having 1 to 4 carbon atoms, *n* is an integer of 1 to 3, and R may be similar or dissimilar when *n* is 2 or 3, and curing the polyurethaneurea reaction mixture.

3,897,397

URETHANE COATING POWDER COMPOSITIONS

Donald H. Russell, Cherry Hill, N.J., and Kurt C. Frisch, Grosse Ile, Mich., assignors to Atlantic Richfield Company, Philadelphia, Pa.

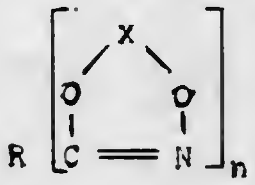
Filed Dec. 13, 1973, Ser. No. 424,487

Int. Cl.^{2} C08G *18/00*

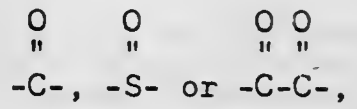
U.S. Cl. 260—77.5 R **22 Claims**

1. A shelf-stable coating powder composition having a particle size range such that most of the particles have a size of about 10 to 500 microns comprised of

A. 5 to 100 parts by weight of a cyclic nitrile compound having the structural formula



wherein X is



$$-\overset{\overset{O}{\parallel}}{C}-,\ -\overset{\overset{O}{\parallel}}{S}-\ \text{or}\ -\overset{\overset{O}{\parallel}}{C}-\overset{\overset{O}{\parallel}}{C}-,$$

R is an organic radical free from reactive hydrogens as determined by the Zerewitinoff Test and *n* is at least 2,

B. 0 to 95 parts by weight of a reactive hydrogen-containing compound selected from the group consisting of organic polyols and organic polythiols, and mixtures of these,

C. 0 to 10 parts per 100 total parts of (A) and (B) of a condensation-rearrangement catalyst.

3,897,398

FIRE RESISTANT POLYMERS PRODUCED BY REACTING PHENYL ISOTHIOCYANATE AND TRIS (HYDROXYMETHYL) PHOSPHINE

John V. Beninate, Gretna; Donald J. Daigle, New Orleans; George L. Drake, Jr., Metairie; Wilson A. Reeves, Metairie, and Darrell J. Donaldson, Metairie, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 141,352, May 7, 1971, Pat. No. 3,697,316. This application May 31, 1972, Ser. No. 258,165

Int. Cl. C08g *22/16*

U.S. Cl. 260—77.5 AQ **1 Claim**

1. The polymers produced by mixing phenyl isocyanate and tris(hydroxymethyl)phosphine in solution with dimethylformamide in mole ratios of about from 1:3 to about 3:1 and polymerizing at temperatures about from 28° to about 155°C for periods ranging about from 24 hours to about 3 minutes, the longer periods of time being used in conjunction with the lower temperatures and the shorter periods of time with the higher temperatures.

3,897,399

POLYMERIC COMPOSITIONS

Geoffrey Phillip Newton, Luton, England, assignor to Laporte Industries Limited, London, England

Filed Jan. 29, 1973, Ser. No. 327,594

Claims priority, application United Kingdom, Feb. 8, 1972, 5782/72; Feb. 8, 1972, 5783/72; Mar. 11, 1972, 11514/72; Mar. 11, 1972, 11515/72

Int. Cl. ; C08g *22/12*

U.S. Cl. 260—77.5 AN **12 Claims**

1. A process for the production of a solid rigid non-foamed polyurethane of improved impact strength, heat distortion and flexural modulus properties which comprises:

a. reacting an ϵ-caprolactone with a triol or pentaerythritol to produce a liquid adduct or molecular weight of from 200 to 600 and a viscosity of less than 6000 centipoise at 25°C and

b. reacting the adduct with a liquid di-isocyanate in the absence of a blowing agent at elevated temperatures sufficient to provide said solid rigid non-foamed polyurethane of improved impact strength, heat distortion and flexural modulus properties.

3,897,400

POLYURETHANE CURED WITH AN AROMATIC MONOSULFIDE DIAMINE

Anthony F. Finelli, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Dec. 26, 1973, Ser. No. 427,773

Int. Cl.² C08G *18/38*

U.S. Cl. 260—77.5 AM **10 Claims**

1. A cured polyurethane prepared by reacting 4,4′-diaminodiphenylsulfide with (A) a mixture of an organic polyisocyanate having an isocyanate functionality of 2 to 3 with a polymeric polyol having a hydroxyl functionality of 2 to 3 and a molecular weight in the range of about 500 to about 6000, where the ratio of isocyanato groups of said polyisocyanate to hydroxyl groups of said polymeric polyol is in the range of about 1.3/1 to about 5/1 or (B) the reaction product of said polyisocyanate and said polymeric polyol.

3,897,401

LIQUID POLYURETHANE REACTION MIXTURE

Harold R. Ringler, and David R. MacFarland, both of Logan, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 25, 1974, Ser. No. 454,048

Int. Cl.² C08G *18/24*

U.S. Cl. 260—77.5 AB **2 Claims**

1. A liquid polyurethane reaction mixture characterized by a pot life of at least 30 minutes at 75°F. but less than 16 minutes at 150°F., consisting of a mixture of a reaction product of one mol of a 700 to 2,000 molecular weight polypropylene ether diol with 2.5 to 3.5 mols of 4,4′-methylene bis-(cyclohexyl isocyanate), sufficient curative to be equivalent to 90 to 99 mol percent of the excess isocyanate in the reaction product and 0.05 to 0.25 weight percent of a catalyst of di(alkyl)tin-S,S′-bis(alkyl mercapto alkylate) where the alkyl radical contains from one to 20 carbon atoms and the alkylate radical contains from one to 20 carbon atoms and the curative is butanediol-1,4 or a liquid mixture of trimethylol propane and butanediol-1,4 or polypropylene ether diol of 800 to 1,500 molecular weight.

3,897,402

HIGH TEMPERATURE POLYIMIDES FROM 2,3-DIACYLSUCCINIC ACID DIESTER WITH DIAMINES

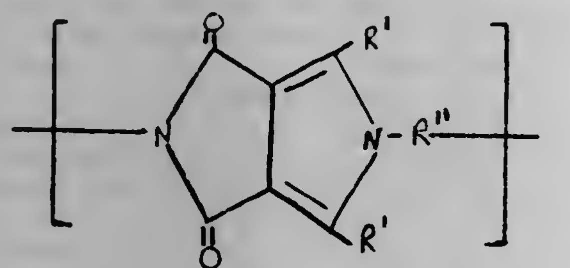
Robert W. Stackman, Morristown, N.J., and Donald W. Sargent, Schenectady, N.Y., assignors to Celanese Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 143,674, May 12, 1971, abandoned. This application Aug. 24, 1973, Ser. No. 391,396

Int. Cl. C08g *20/04*, *20/20*

U.S. Cl. 260—78 A **9 Claims**

1. A polyimide consisting esentially of recurring units of the formula:



wherein R′ is H or an alkyl substituent of between about 1 and about 10 carbons; and R″ is an arylene substituent, biarylene substituent or diarylene substituent, and the inherent viscosity of said polyimide is between about 0.15 and about 3.0 as determined with solutions of 0.1 gram of polymer/100 milliliters 97% H_2SO_4 at 25°C.

3,897,403

METHOD OF PRODUCING SYNTHETIC CIS-1,4-POLYISOPRENE RUBBER HAVING HIGH GREEN STRENGTH

Junnosuke Yamauchi; Takayuki Okamura; Shobu Minatono, and Kazuhisa Yamauchi, all of Ibaragi, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Nov. 30, 1973, Ser. No. 420,632

Claims priority, application Japan, Dec. 2, 1972, 47-120960

Int. Cl. C08d *5/02;* C08f *27/00*

U.S. Cl. 260—78.4 D **11 Claims**

1. A method of producing synthetic cis-1,4-polyisoprene rubber having an improved green strength, which comprises reacting synthetic cis-1,4-polyisoprene with maleic anhydride in, as an inert reaction medium, an aromatic hydrocarbon solvent or a saturated aliphatic hydrocarbon solvent for said polyisoprene in the presence of isoprene monomer in an amount of at least 10 moles per mole of maleic anhydride and also in thet presence of a free radical initiator in an amount which is both from 0.02 to 10 moles per mole of maleic anhydride and from 0.1 to 15 millimoles per 100 g of said polyisoprene rubber.

3,897,404

PROCESS FOR THE PRODUCTION OF COPOLYMERS CONTAINING ACRYLIC ACID AMIDES

Siegfried Korte, Leverkusen; Carlhans Süling, Odenthal-Hahnenberg, and Günter Lorenz, Dormagen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Germany

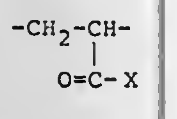
Filed Apr. 11, 1973, Ser. No. 349,970

Claims priority, application Germany, Apr. 11, 1972, 2217334; Feb. 1, 1973, 2304891

Int. Cl. C08f *15/40*, *27/06*, *27/08*

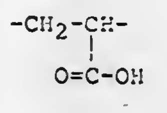
U.S. Cl. 260—79.5 NV **4 Claims**

1. A process for the production of water-soluble copolymers consisting essentially of recurring structural units corresponding to the formulae (*a*), (*b*), and (*c*)



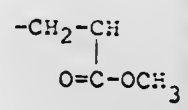
$$-CH_2-\underset{\underset{O=C-X}{|}}{CH}-$$

a)



$$-CH_2-\underset{\underset{O=C-OH}{|}}{CH}-$$

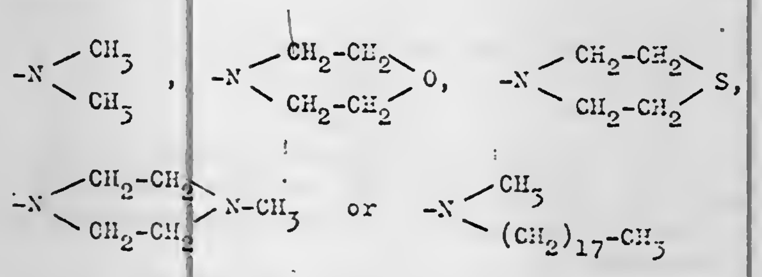
b)



$$-CH_2-\underset{\underset{O=C-OCH_3}{|}}{CH}$$

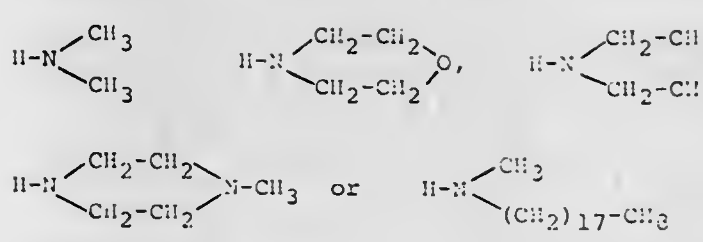
c)

wherein X is



by reacting polyacrylic acid methyl ester with an amine of the formula

the formula



in an aprotic solvent consisting essentially of dimethyl formamide, dimethylacetamide, tetramethyl urea, N,N-dimethyl methoxy-acetamide, N,N-dimethyl cyanamide, N,N-dimethyl cyanacetamide, hexamethyl phosphoric acid triamide, N-methyl pyrrolidone, N-formyl pyrrolidone or N-formyl morpholine; at a temperature from 160°C to 210°C under a pressure of 0 to 100 atm; for a period of time and under conditions to form a copolymer having an average chemical composition of

15 to 97 mol % of acrylic acid amide (*a*)
2.5 to 55 mol % of acrylic acid (*b*)
0.5 to 30 mol % of acrylic acid methyl ester (*c*)

in which the molar ratio of acrylic acid to acrylic acid methyl ester amounts to between 1:12 and 110:1.

3,897,405

EPDM POLYMERS GRAFTED WITH VULCANIZATION ACCELERATORS

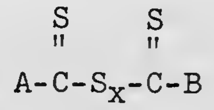
Pyong-Nae Son, Akron, and Krishna C. Baranwal, Stow, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Division of Ser. No. 320,543, Jan. 2, 1973, Pat. No. 3,821,134. This application Feb. 13, 1974, Ser. No. 442,109

Int. Cl. C08c *9/08;* C08d *9/04;* C08f *29/12*

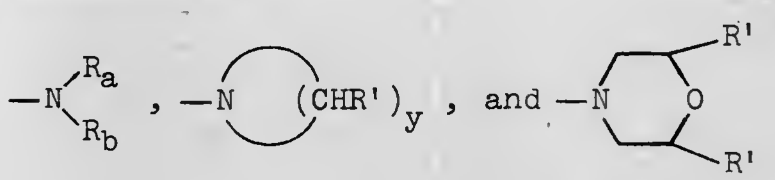
U.S. Cl. 260—79.5 NV **6 Claims**

1. An ethylene-higher α-olefin-polyene polymer having grafted thereon about 0.1 part to about 10 parts by weight per 100 parts by weight of the polymer a vulcanization accelerator selected from the group consisting of (1) thiuram sulfides of the formula

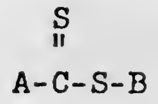


$$A-\overset{\overset{S}{\|}}{C}-S_x-\overset{\overset{S}{\|}}{C}-B$$

wherein *x* is 1 to about 6, and A and B are selected from the group consisting of

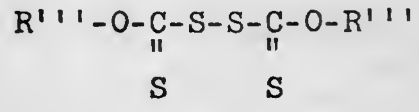


where R_a and R_b are hydrogen, alkyl radicals containing 1 to 24 carbon atoms, an aryl, alkaryl, or aralkyl radical containing 6 to 18 carbon atoms, or a cycloalkyl radical containing 3 to 8 carbon atoms in the ring, and R′ is hydrogen or an alkyl radical containing 1 to 4 carbon atoms, and *y* is 2 to 7, (2) sulfenamides of the formula $R''-S_x-A$ where *x* and A are defined as above, and R″ is selected from the group consisting of an alkyl radical containing 1 to 18 carbon atoms, an aryl, alkaryl, aralkyl radical containing 6 to 18 carbon atoms, a cycloalkyl radical containing 3 to 8 carbon atoms in the ring, a heterocyclic radical containing 3 to 8 atoms in the ring selected from carbon, oxygen, nitrogen, and sulfur wherein at least two atoms are carbon, and a thiazole ring, (3) thiocarbamyl sulfenamides of the formula



$$A-\overset{\overset{S}{\|}}{C}-S-B$$

wherein A and B are defined as above, (4) xanthogen disulfide of the formula



$$R'''-O-\underset{\underset{S}{\|}}{C}-S-S-\underset{\underset{S}{\|}}{C}-O-R'''$$

where R‴ is an alkyl radical containing 3 to 6 carbon atoms, (5) sulfide compounds selected from the group consisting of 2,2′-benzothiazyl disulfide, 2-(2,4-dinitrophenylthio)benzothiazole, 2-benzothiazyl-N,N-diethylenethiocarbamyl sulfide, 2-benzothiazyl-4-morpholinyl disulfide, 4,4′-dithiodimorpholine, and 4,4′-dithiodipiperidine, and (6) azole compounds containing a SH group selected from the group consisting of 2-mercaptobenzothiazole, N,N-diisopropyl-2-mercaptobenzothiazole sulfenamide, N,N-diethylthiocarbamyl-2-mercaptobenzothiazole, 2-mercaptobenzothiazoline, 2-mercaptobenzoimidazoline, 2-mercaptothiazoline, and 2-mercaptoimidazoline.

3,897,406

PROCESS FOR POLYMERIZING CONJUGATED DIENES

Adel Farhan Halasa, Bath, and Adolph Para, Akron, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Dec. 10, 1973, Ser. No. 423,379

Int. Cl.² C08F *236/10*, *136/06*

U.S. Cl. 260—83.7 **14 Claims**

1. A process for the hydrocarbon solution polymerization of a monomer composition containing at least 40 percent conjugated diene to produce a polymer having 25 – 45 percent of the diene in the 1,2 configuration and the remainder being predominantly of the trans-1,4 configuration and a molecular weight of about 5,000 to 500,000 comprising the steps of maintaining said monomer composition at a temperature of 30°–200° C. in intimate contact with a catalyst composition consisting essentially of:

a. a sodium allyl compound having 3–10 carbon atoms;

b. a sodium alkoxide of no more than 10 carbon atoms, and

c. an alkyl-aryl ether in which said alkyl group has 1–8 carbon atoms and said aryl group is phenyl, tolyl, xylyl or naphthyl; the concentration of said catalyst composition being 0.1–4 millimoles of catalyst per 100 grams of said monomer composition, said sodium alkoxide being present in said catalyst composition in a proportion of 0.5–2.5 moles per mole of sodium allyl compound, said ether being present in a proportion of 1–10 grams per 100 grams of monomer composition, said polymerization being conducted for a period of at least one hour, and said monomer composition consisting essentially of 40–100 percent by weight of said conjugated diene and 0–60 percent by weight of an aromatic monomer having no more than 20 carbon atoms selected from the class consisting of vinyl and isopropenyl aryl compounds and derivatives thereof in which the derivative group is an alkyl, aralkyl, cycloalkyl or chlorine attached directly to the aromatic nucleus thereof.

3,897,407
PROCESS FOR PRODUCING CRYSTALLINE PROPYLENE POLYMER

Isoo Shirai; Takeshi Suzuki, and Koichi Tonooka, all of Ichiharashi, Japan, assignors to Chisso Corporation, Osaka, Japan

Continuation-in-part of Ser. No. 160,281, July 7, 1971, abandoned. This application May 14, 1973, Ser. No. 359,839

Claims priority, application Japan, July 14, 1970, 45-61667

Int. Cl. C08f *1/42, 3/10;* **B01j** *11/84*

U.S. Cl. 260—88.2 R **5 Claims**

1. A process for producing crystalline propylene polymers which comprises contacting propylene or a mixture of propylene and another α-olefin, with a catalyst comprising

1. a size-controlled and heat-treated $TiCl_3.0.33AlCl_3$ and
2. a dialkylaluminum monohalide having the general formula of AlR_2X (wherein R is a hydrocarbon radical and X is a halogen atom) or a combination of an alkylaluminum dihalide having a general formula of $AlR'X_2$ (wherein R′ is a hydrocarbon radical and X is a halogen atom) and $Si(OC_2H_5)_4$,
3. said size-controlled and heat-treated $TiCl_3.0.33AlCl_3$ being prepared by reacting $TiCl_4$ with Al powders in a mol ratio of $TiCl_4$ to Al greater than 3:1, removing unreacted $TiCl_4$, size-controlling the resulting powders of $TiCl_3.0.33AlCl_3$ by ball-milling in a revolving or vibrating ball-mill containing the same or substantially the same size of steel or stainless steel balls having a diameter of 25 – 50 mm, at room temperature, to give size-controlled powders consisting of 50% or more of the particles of 325 meshes on and less than 50% of the particles of 325 meshes pass, and heat-treating the size-controlled powders:

a. at a temperature (T) which satisfies the conditions $100°C \leqq T \leqq 250°C.$,

b. at a pressure (P) which satisfies the conditions $0.01\ mmHg \leqq P \leqq 760\ mmHg$,

c. for a time (Q) which satisfies the condition $1\ minute \leqq Q \leqq 300\ minutes$,

and wherein the following relationship between T, P and Q is maintained:

d. $9.52 \times 10^{-3}T - 6.26 \times 10^{-5}P + 3.98 \times 10^{-4}Q \geqq 1$ and

e. $3.53 \times 10^{-3}T + 2.94 \times 10^{-4}P + 3.54 \times 10^{-4}Q \leqq 1$.

3,897,408
POLYMERISATION PROCESS

Alan Charles Sturt, Guildford, England, assignor to BP Chemicals International Limited, London, England

Filed Oct. 26, 1973, Ser. No. 409,794

Claims priority, application United Kingdom, Nov. 8, 1972, 51434/72

Int. Cl. C08f *3/30*

U.S. Cl. 260—92.8 W **11 Claims**

1. A process which comprises carrying out the following steps (a), (b), (c) and (d) in any order with agitation on a vinyl halide polymer latex:

a. contacting the latex polymer with vinyl halide monomer,

b. inactivating the emulsifying agent of the latex,

c. adding a suspension stabiliser system, and

d. adding a non-polymeric modifier,

and then subsequently removing the monomer.

3,897,409
FREEZE CONCENTRATION OF AQUEOUS SOLUTIONS OF HEAT-LABILE SUBSTANCES

Fritz Hüper, Wuppertal-Vohwinkel, and Günther Schmidt-Kastner, Wuppertal-Elberfeld, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 26, 1973, Ser. No. 327,108

Claims priority, application Germany, Feb. 1, 1972, 2204598

Int. Cl.² C07C *103/52*

U.S. Cl. 260—112.5 **13 Claims**

1. A process for the freeze concentration of a crude aqueous solution of a heat-labile substance which includes the steps of cooling a crude aqueous solution of a heat-labile substance to produce a frozen crude solution and a pre-cooled solution of said heat-labile substance, mixing said frozen crude solution and said pre-cooled solution with ice, to produce pure ice crystals and a first concentrated solution of said heat-labile substance and separating said pure ice crystals from said first concentrated solution of said heat-labile substance said heat-labile substance being capable of decomposing, at a temperature of 55°C in 1 hour to an extent of at least 10% loss by weight.

3,897,410
RAPID SETTING NON-ELASTOMERIC POLYURETHANE COMPOSITIONS PREPARED IN THE PRESENCE OF A MIXTURE OF LIQUID MODIFIERS

Franciszek Olstowski, Freeport, and Donald B. Parrish, Lake Jackson, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 366,835, June 4, 1973, which is a continuation-in-part of Ser. No. 179,149, Sept. 9, 1971, abandoned. This application Dec. 17, 1973, Ser. No. 425,411

Int. Cl. G08g *18/48*

U.S. Cl. 260—18 TN **17 Claims**

1. A non-elastomeric, non-cellular solid polymer having a density of at least about 1 gram/cc and percent elongation of less than 80 resulting from admixture of the components of a composition comprising:

A. a polyether polyol having from 3 to about 8 hydroxyl groups and a hydroxyl equivalent weight between 75 and about 230;

B. an organic polyisocyanate;

C. a liquid modifier compound having an atmospheric boiling point of at least about 150°C, with the proviso that a hydroxyl-containing halogenated alphatic compound when employed as a modifier can have an atmospheric boiling point below 150°C, and which moderates the reaction between compounds (A), (B), and (D) without substantial reaction therewith, except when a hydroxyl-containing halogenated aliphatic compound is employed it can react with the polyisocyanate, said modifier consisting of a mixture, in any proportion, of at least two members, in any combination, selected from the group consisting of

1. a fatty acid or fatty oils,
2. organic phosphates, phosphites, or phosphonates,
3. cyclic polyethers,
4. aromatic compounds free from ester groups or partially hydrogenated aromatic compounds free from ester groups,
5. halogenated aliphatic compounds,
6. cyclic sulfones,
7. organic carbonates,
8. esters of carboxylic acids
9. hydroxyl-containing polyoxyalkylene compounds having an average molecular weight of at least about 700 and
10. non-hydroxyl-containing polyoxyalkylene compounds, and

D. a non-amine containing catalyst for urethane formation, which is an organo metal compound;

wherein components (A) and (B) are present in quantities such that the NCO:OH ratio is from about 0.8:1 to about 2:1; the quantity of component (C) is from about 20 to about 50 with the proviso that when compound (B) is an NCO-containing prepolymer containing less than about 40% NCO by weight, component (C) is present in quantities of from about 10% to about 50% by weight of the combined weight of components (A), (B) and (C) with the proviso that when component (C) contains at least 0.2% of component (C-5) based on the sum of the weights of components (A), (B) and (C), the quantity of one or more of the other compounds of component (C) is between 0 and about 50% minus the quantity of component (C-5), with a further proviso that whenever component (C) contains a hydroxylcontaining halogenated aliphatic compound which either has a boiling point below about 150°C or an OH equivalent weight below about 00, then the quantity of such compound or compounds is not to exceed about 10% and preferably not more than about 5% by weight of the combined weight of components (B), (B) and (C); and component (D) is present in quantities of from about 0.2 to about 10.0 percent by weight of the combined weight of components (A), (B) and (C); and wherein said polymer can be demolded within less than 5 minutes, without the application of an external source of heat, after admixture of said composition.

3,897,411
MONOAZO PIGMENTS CONTAINING A PHENYLAMINO-QUINAZOLINE RADICAL

Rudolf Mory, Dornach, and Rolf Muller, Aesch, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

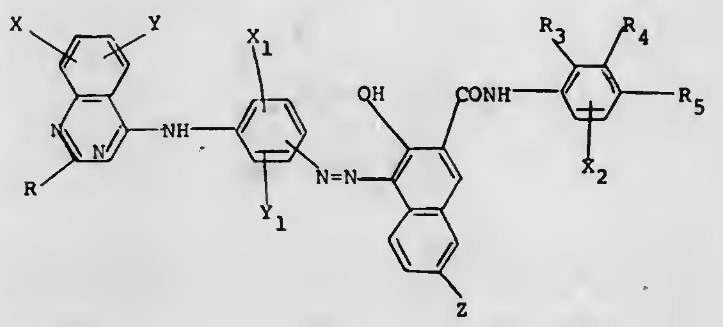
Filed Aug. 3, 1973, Ser. No. 385,617

Claims priority, application Switzerland, Aug. 17, 1972, 12197/72

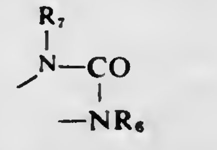
Int. Cl. C09b *29/32, 29/36;* **D06p** *1/04*

U.S. Cl. 260—154 **8 Claims**

1. A monoazo pigment of the formula



wherein R is hydrogen, lower alkyl or phenyl, X and Y are hydrogen, chloro, lower alkyl, lower alkoxy, X_1 and Y_1 are hydrogen, chloro, lower alkyl, lower alkoxy, lower alkoxy carbonyl, trifluoromethyl or cyano, R_3 and R_4 or R_4 and R_5 together form a heterocyclic ring of the formula



(VI)

wherein R_6 and R_7 is hydrogen or lower alkyl, X_2 is hydrogen, chloro, lower alkyl, lower alkoxy or nitro, and Z is hydrogen, chloro, methoxy or cyano.

3,897,412
PAROMOMYCIN ANTIBIOTIC DERIVATIVES

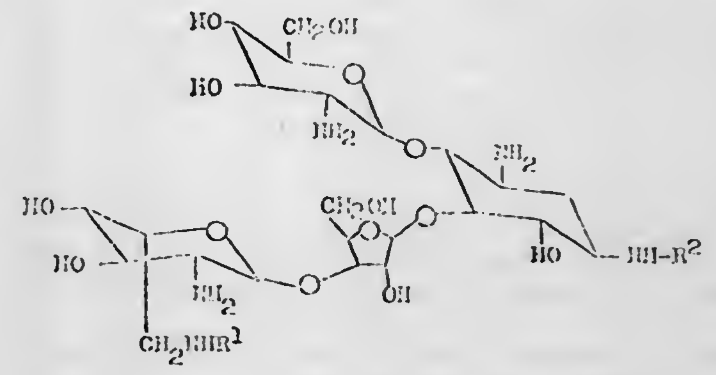
Takayuki Naito, and Susumu Nakagawa, both of Tokyo, Japan, assignors to Bristol-Myers Company, New York, N.Y.

Continuation-in-part of Ser. No. 250,389, May 4, 1972, abandoned. This application June 15, 1973, Ser. No. 370,280

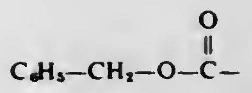
Int. Cl.² C07H *15/20*

U.S. Cl. 260—210 AB **6 Claims**

1. A compound having the formula



in which R^1 is H or



$$C_6H_5-CH_2-O-\overset{\overset{O}{\|}}{C}-$$

and R^2 is H, L-(−)-β-amino-α-hydroxypropionyl, L-(−)-δ-amino-α-hydroxyvaleryl, L-(−)-β-benzyloxycarbonylamino-α-hydroxypropionyl, or L-(−)-δ-benzyloxycarbonylamino-α-hydroxyvaleryl, wherein R^1 or R^2 must be other than H; or a nontoxic pharmaceutically acceptable acid addition salt thereof.

3,897,413

2,6-DISUBSTITUTED PURINE CYCLIC NUCLEOTIDES

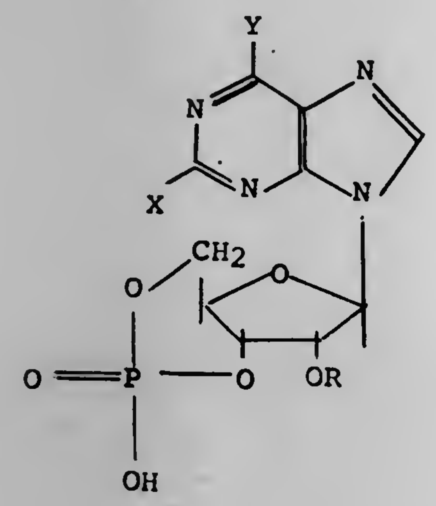
Dennis A. Shuman, Mission Viejo; Rich B. Meyer, Jr., Laguna Beach, and Roland K. Robins, Santa Ana, all of Calif., assignors to ICN Pharmaceuticals, Inc., Irvine, Calif.

Filed Nov. 22, 1971, Ser. No. 201,157

Int. Cl. C07d *51/54*

U.S. Cl. 260—211.5 R **6 Claims**

1. A compound of structure:



wherein R is hydrogen or C_1–C_{18} acyl, Y is Cl or Br, and X is Cl, F or Br.

3,897,414

METHOD OF FRACTIONATING A MIXTURE OF HIGH MOLECULAR SUBSTANCES OF DIFFERENT PHYSICAL CHARACTERISTICS

Per-Åke Albertsson, Umea, Sweden, assignor to Pharmacia Fine Chemicals AB, Uppsala, Sweden

Continuation-in-part of Ser. No. 857,854, Sept. 15, 1969, abandoned. This application Nov. 3, 1972, Ser. No. 303,439

Claims priority, application Japan, Sept. 12, 1969, 44-72066

Int. Cl. C07d *51/50*

U.S. Cl. 260—211.5 R **6 Claims**

1. In the known method for fractionating a mixture of high molecular substance selected from the group consisting of cell particles and macromolecules of different physical characteristics by contacting said mixture with two immiscible aqueous liquids, the improvement which comprises

a. providing a plurality of vertically arranged fractionating zones that includes two end fractionating zones (consisting of a top fractionating zone and a bottom fractionating zone) and at least one intermediate fractionating zone,
b. each of said fractionating zones being in communication with the next adjacent fractionating zone by virtue of a liquid-permeable, fine pore plate,
c. filling all of the fractionating zones of said column with two immiscible aqueous liquids,
d. agitating the thus introduced two immiscible aqueous liquids contained within the fractionating zones of said column,
e. discontinuing the agitation set forth in step (d) and allowing the two immiscible aqueous liquids that are present in each fractionating zone to separate into a top phase liquid and a bottom phase liquid,
f. introducing into one of the fractionating zones a mixture of high molecular weight substances selected from the group consisting of cell particles and macromolecules that have been dissolved or dispersed in one of the aforementioned two phase liquids,
g. agitating the phases in each fractionating zone,
h. thereafter allowing the phases in each fractionation zone to again separate into a top phase liquid and a bottom phase liquid,
i. introducing into one of the end fractionating zones a quantity of one of the two phase liquids large enough to cause at least some corresponding phase liquid that is already present in each fractionating zone to be displaced into the next adjacent fractionating zone, but not large enough to cause the other of said two phase liquids present in each fractionating zone to be displaced to the same next adjacent fractionating zone, and collecting from the other of said end fractionating zones approximately the same quantity of phase liquid that was introduced,
j. agitating the phases in each fractionating zone,
k. thereafter allowing the phases in each fractionation zone to separate into a top phase liquid and a bottom phase liquid,
l. repeating the sequence of steps (i) through (k) until the desired separation is reached and
m. collecting at least one fraction of separated components from the other of said end fractionating zones.

3,897,415

5-SUBSTITUTED 1,2,4-TRIAZOLE-3-CARBOXAMIDO NUCLEOSIDES AND ANALOGS THEREOF

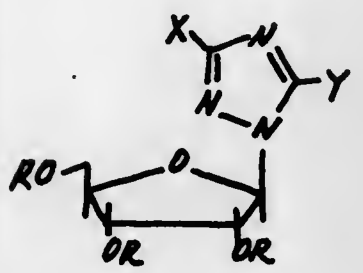
Roland K. Robins, Santa Ana, and Joseph T. Witkowski, Laguna Niguel, both of Calif., assignors to ICN Pharmaceuticals, Inc., Irvine, Calif.

Continuation-in-part of Ser. No. 240,252, March 31, 1972, Pat. No. 3,798,209, which is a continuation-in-part of Ser. No. 149,017, June 1, 1971, abandoned. This application Sept. 28, 1972, Ser. No. 292,929

Int. Cl. C07d *51/50*

U.S. Cl. 260—211.5 R **10 Claims**

1. A compound of structure



wherein R is hydrogen or C_1–C_{18} acyl and wherein X and Y differ and are selected from the group consisting of chloro-, iodo-, bromo, carboxamide, carbomethoxy, and carboethoxy groups.

3,897,416

SYNTHESIS OF 2-AMINO-5-ARYL-3H-1,4-BENZODIAZEPINES

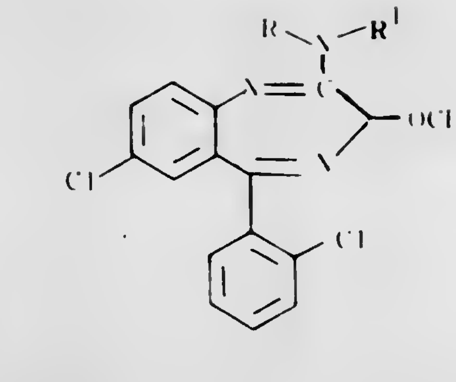
John H. Sellstedt, King of Prussia, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Nov. 28, 1972, Ser. No. 310,052

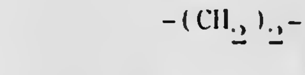
Int. Cl. C07d *53/06*

U.S. Cl. 260—239 BD **4 Claims**

1. A process for preparing a compound of the formula:

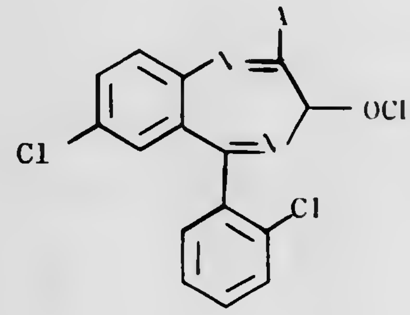


wherin R and R^1 may be the same or different and are chosen from the group consisting of hydrogen, alkyl of from 1 to 6 carbon atoms, and when taken together are $—(CH_2)_n—$ wherein n is from 3 to 7, $—(CH_2)_2—O\text{-}(CH_2)_2—$, and

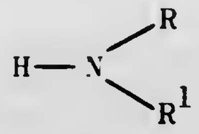


$$-(CH_2)_2-\underset{R^2}{\underset{|}{N}}-(CH_2)_2-$$

wherein R^2 is alkyl of from 1 to 6 carbon atoms; comprising reacting a compound of the formula:



wherein A is chlorine, $PO(OMe)_2$, or $PO(OEt)_2$ with an amine of the formula:



wherein R and R^1 are as defined above.

3,897,417

PROCESS FOR THE PREPARATION OF STEROIDAL SPIROLACTONES AND INTERMEDIATES

Julien Warnant, Neuilly-sur-Seine, and Jean Jolly, Fontenay-sous-Bois, both of France, assignors to Roussel Uclaf, Paris, France

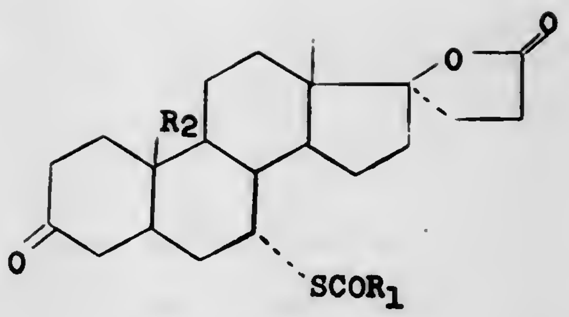
Filed Feb. 1, 1974, Ser. No. 438,601

Claims priority, application France, Feb. 6, 1973, 73.04057

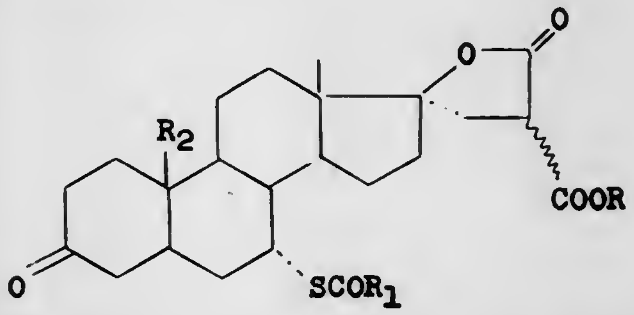
Int. Cl.² C07C *173/00*

U.S. Cl. 260—239.57 **12 Claims**

1. A process for the production of a steroidal spirolactone having the formula



wherein R_1 is a linear alkyl having from 1 to 4 carbon atoms and R_2 is a member selected from the group consisting of hydrogen and methyl comprising the steps of heating a compound having the formula



wherein R is an alkyl having 1 to 4 carbon atoms and R_1 and R_2 have the above meanings, to a temperature of from 80°C to 160°C in a neutral media and in the presence of water, and recovering said steroidal spirolactone.

3,897,418

BASIC DYESTUFFS

Hans-Peter Kuhlthau, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Germany

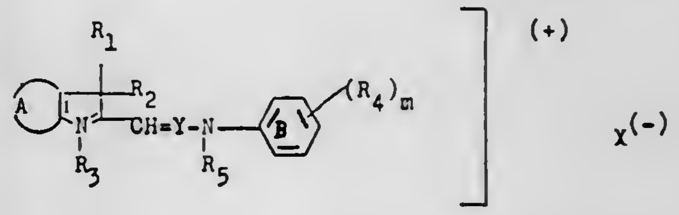
Filed Mar. 9, 1973, Ser. No. 339,889

Claims priority, application Germany, Mar. 11, 1972, 2211958

Int. Cl. C09b *23/00*

U.S. Cl. 260—240 G **14 Claims**

1. Dyestuff of the formula or mixtures of dyestuffs of the formula



wherein

A is a dibenzofuranyl radical;

R_1 and R_2 are C_1-C_6-alkyl fluoro-C_1-C_6-alkyl, chloro-C_1-C_6-alkyl, bromo-C_1-C_6-alkyl, hydroxy-C_1-C_6-alkyl, methoxy-C_1-C_6-alkyl, cyano-C_1-C_6-alkyl, acetoxy-C_1-C_6-alkyl, or aminocarbonyl-C_1-C_6-alkyl, C_2-C_6-alkenyl, chloro-C_2-C_6-alkenyl, phenylmethyl-C_2-C_6-alkenyl, phenylethyl-C_2-C_6-alkenyl, phenylpropyl-(2,2)-C_2-C_6-alkenyl, cyclohexyl-C_2-C_6-alkenyl; or, when R_1 and R_2 are joined together, cyclohexyl;

R_3 is hydrogen, C_1-C_6-alkyl fluoro-C_1-C_6-alkyl, chloro-C_1-C_6-alkyl, bromo-C_1-C_6-alkyl, hydroxy-C_1-C_6-alkyl, methoxy-C_1-C_6-alkyl, cyano-C_1-C_6-alkyl acetoxy-C_1-C_6-alkyl, or aminocarbonyl-C_1-C_6-alkyl, C_2-C_6-alkenyl, chloro-C_2-C_6-alkenyl, phenyl-C_2-C_6-alkenyl, chlorophenyl-C_2-

C_6-alkenyl, methylphenyl-C_2-C_6-alkenyl, naphthyl, phenylmethyl, phenylethyl, or phenylpropyl-(2,2);

R_4 is halo, cyano, nitro, C_1-C_4-alkyl, benzyl, phenylethyl, cyclohexyl, hydroxy, C_1-C_{12}-alkoxy, C_1-C_{12}-alkylthio, phenyloxy, phenylthio, benzyloxy, benzythio, amino, C_1-C_4-alkylamino, benzoylamino, carboxyl, (C_1-C_4-alkoxy) carbonyl, aminocarbonyl, aminosulphonyl, methylbenzyloxy, chlorobenzyloxy, naphthyloxy, N-phenylcarbamoyl, or phenyloxy substituted by C_1-C_4-alkyl, cyclohexyl, methoxy, ethoxy, acetylamino, hydroxy, nitro, or chloro, or additionally when joined to ring B naphthalene;

R_5 is hydrogen, C_1-C_6-alkyl fluoro-C_1-C_6-alkyl, chloro-C_1-C_6-alkyl, bromo-C_1-C_6-alkyl, hydroxy-C_1-C_6-alkenyl, methoxy-C_1-C_6-alkyl, cyano-C_1-C_6-alkyl, acetoxy-C_1-C_6-alkyl, aminocarbonyl-C_1-C_6-alkyl, C_2-C_6-alkenyl, chloro-C_2-C_6-alkenyl, cyclohexyl, phenylmethyl, phenylethyl, phenylpropyl-(2,2), or additionally when joined to ring B, dihydroindolyl, hexahydrocarbazolyl, tetrahydroquinolinyl, tetrahydroquinoxalinyl, dihydrobenzoxazinyl, or any of said heterocyclic radicals substituted by methyl;

Y is CH or N;

m is the number 0, 1 or 2; and

$X^{(-)}$ is an anion.

3,897,419

BASICALLY SUBSTITUTED COUMARIN DERIVATIVES

Heinz Bender, Bergen-Enkheim, Germany; Adolf Stachel, deceased, late of Frankfurt-Fechenheim, Germany; by Ingeburg Lydia Katharina Stachel, heiress, Offenbach, Germany; Rudi Beyerle, Bruchkobel, Germany; Rolf-Eberhard Nitz, Bergen-Enkheim, Germany, and Josef Scholtholt, Frankfurt, Germany, assignors to Cassella Farbwerke Mainkur AG, Frankfurt am Main-Fechenheim, Germany

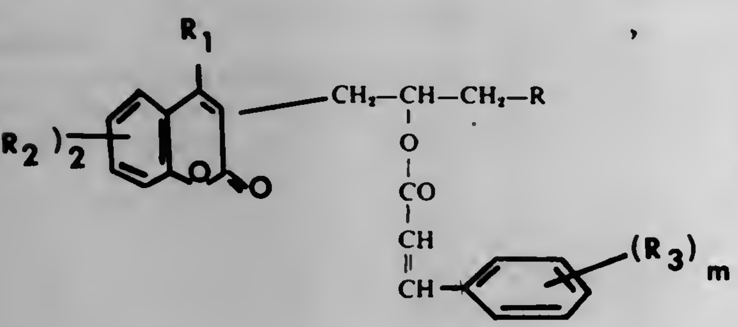
Filed Sept. 13, 1973, Ser. No. 397,145

Claims priority, application Germany, Sept. 28, 1972, 2247691

Int. Cl.² C07D ***311/12***

U.S. Cl. 260—240 J **4 Claims**

1. Basically substituted coumarin derivatives having the formula



and pharmaceutically acceptable acid addition salts thereof wherein

R represents a radical derived from the group consisting of an alkylamine, dialkylamine, alkenylamine, alkylenediamine, hydroxyalkylamine, alkoxyalkylamine, acyloxyalkylamine, alkyl- cycloalkylamine, alkylphenalkylamine alkyl-alkoxyphenalkylamine, alkyl-alkoxyphenylamine, alkylphenylamine having 2 – 10 carbon atoms, pyrrolidine, morpholine, thiomorpholine, piperidine, N-methylpiperazine, N-(β-hydroxyethyl)-piperazine, N-(γ-hydroxypropyl)-piperazine, N-(p-chloro-phenyl)-piperazine, N-(2,3,4-trimethoxy-benzyl)-piperazine, N-(3,4-dimethoxybenzyl)piperazine, N-(2,6-dimethylphenyl-carbamoylmethyl)-piperazine, N-(3,4,5-trimethoxy-phenyl-carbamoylmethyl)-piperazine and hexamethyleneimine, the radical being attached through the nitrogen atom,

R_1 represents an alkyl radical having 1 – 4 carbon atoms, or an aryl radical,

$(R_2)_2$ represents two alkoxy groups containing 1 – 4 carbon atoms, attached to the coumarin residue in the 5,7-, 6,7- or 7,8-positions,

R_3 represents an alkoxy group containing 1 – 4 carbon atoms, and m represents an integer selected from 2 and 3.

3,897,420

2-AMINOALKYL-7-SUBSTITUTED-3,3A,4,5,6,7-HEXAHYDRO-3-SUBSTITUTED-2H-PYRAZOLO[4,3-C]PYRIDINES

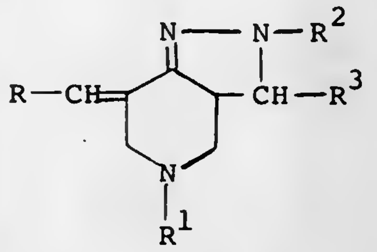
John Krapcho, Somerset, and Chester F. Turk, Kendall Park, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 374,722, June 28, 1973, abandoned. This application June 17, 1974, Ser. No. 479,928

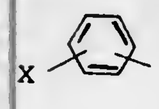
Int. Cl. C09b ***23/00, 23/04***

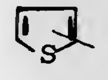
U.S. Cl. 260—240 F **6 Claims**

1. A compound of the formula

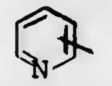


wherein R and R³ are selected from the group consisting of

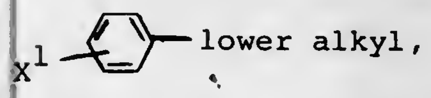




and



X and X¹ are selected from the group consisting of hydrogen, chloro, fluoro, lower alkyl, lower alkoxy and trifluoromethyl; R¹ is selected from the group consisting of hydrogen, lower alkyl,



hydroxy lower alkyl and lower alkanoyl; R² is B- lower alkyl wherein B is di-lower alkylamino, lower alkyl amino, piperidino, pyrrolidino, morpholine, N-lower alkyl piperazino and N-(2-hydroxyethyl)piperazino; and N-oxides and acid-addition salts thereof.

3,897,421

ORGANIC COMPOUNDS

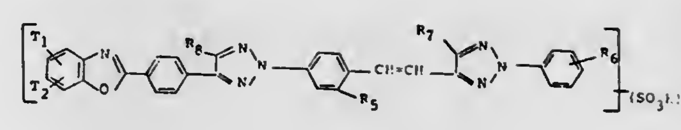
Horst Aebli, Basel; Fritz Fleck, Bottmingen, Basel-Land, and Horst Schmid, Munchenstein, Basel-Land, all of Switzerland, assignors to Sandoz Ltd., Basle, Switzerland

Continuation-in-part of Ser. No. 255,256, May 22, 1972, abandoned. This application Dec. 3, 1973, Ser. No. 420,987

Int. Cl. C07d ***85/98;*** **C09b** ***23/14***

U.S. Cl. 260—240.1 **8 Claims**

1. A compound of formula



in which

R_5 is sulpho, sulphonic amide, carboxylic amide or cyano,

R_6 is hydrogen, chlorine, alkyl of 1 to 4 carbon atoms, carboxylic amide or cyano,

R_7 is hydrogen, chlorine, methyl, hydroxymethyl, chloromethyl or acetoxymethyl,

R_8 is hydrogen, chlorine or methyl,

n is 0 or a whole number, and

either T_1 is hydrogen, chlorine, phenyl, alkyl of 1 to 8 carbon atoms, alkoxy of 1 to 4 carbon atoms, or cyano and T_2 signifies hydrogen,

or T_1 and R_2 both signify cyano.

3,897,422

[(AZIDOMETHYL)THIO]ACETYLCEPHALOSPORINS

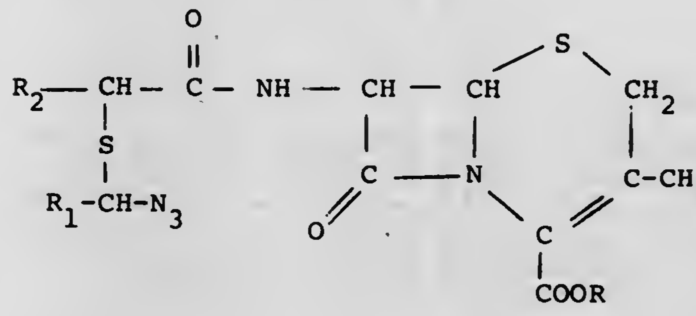
Hermann Breuer, and Uwe D. Treuner, both of Regensburg, Germany, assignors to E. R. Squibb & Sons, Inc.

Filed Mar. 5, 1973, Ser. No. 337,804

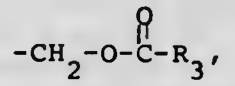
Int. Cl. C07d ***99/24***

U.S. Cl. 260—243 C **9 Claims**

1. A compound of the formula



wherein R is hydrogen, tri(lower alkyl)silyl,



$$-CH_2-O-\overset{O}{\overset{\|}{C}}-R_3,$$

alkali metal, alkaline earth metal or lower alkylamine; R_1 is hydrogen or lower alkyl; R_2 is hydrogen, lower alkyl, phenyl, thienyl, furyl or pyridyl; R_3 is lower alkyl, phenyl or phenyl-lower alkyl; and X is hydrogen, hydroxy, lower alkanoyloxy, lower alkoxy or lower alkylthio.

3,897,423

AMINO SUBSTITUTED ACYLTHIO CEPHALOSPORINS

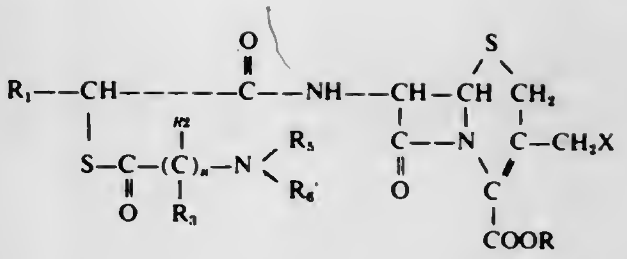
Uwe D. Treuner; Hermann Breuer, both of Regensburg, Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J. Squibb & Sons, Inc., Princeton, N.J.

Filed Mar. 5, 1973, Ser. No. 337,806

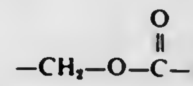
Int. Cl. C07d ***99/24***

U.S. Cl. 260—243 C **9 Claims**

1. A compound of the formula



wherein R is hydrogen, lower alkyl, phenyl-lower alkyl, tri(-lower alkyl)silyl, tri(lower alkyl)stannyl,



$$-CH_2-O-\overset{O}{\overset{\|}{C}}-R_4$$

or a salt forming ion selected from the group consisting of alkali metal, alkaline earth metal, lower alkylamine, phenyl-lower alkylamine or lower alkylpiperidine; R_1 is phenyl or R_7-phenyl; R_2 and R_3 each is hydrogen, lower alkyl or phenyl; R_4 is lower alkyl, phenyl or phenyl-lower alkyl; R_5 and R_6 each is hydrogen or lower alkyl; R_7 is halo, hydroxy, lower alkyl, lower alkoxy or carboxy; X is hydrogen, hydroxy or lower alkanoyloxy; and *n* is 1, 2 or 3.

3,897,424

PROCESS FOR 7-β-AMINO-7-α-METHOXY-CEPHALOSPORANIC ACID ESTERS AND RELATED COMPOUNDS

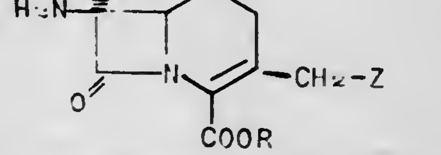
Gary A. Koppel, and William H. W. Lunn, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed July 23, 1973, Ser. No. 381,470

Int. Cl. C07d ***99/24***

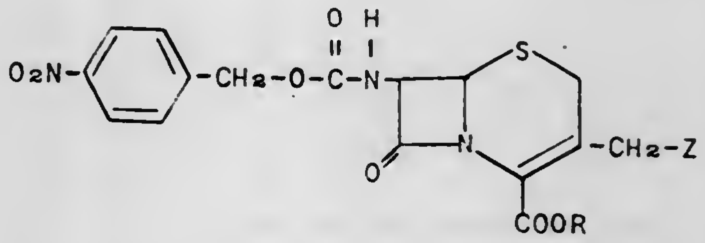
U.S. Cl. 260—243 C **7 Claims**

1. The method for preparing a 7β-amino-7α-methoxy-3-cephem ester of the formula

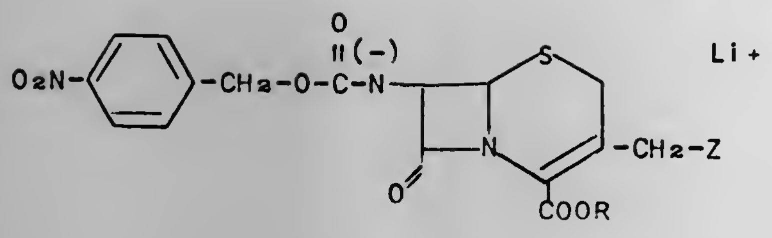


which comprises

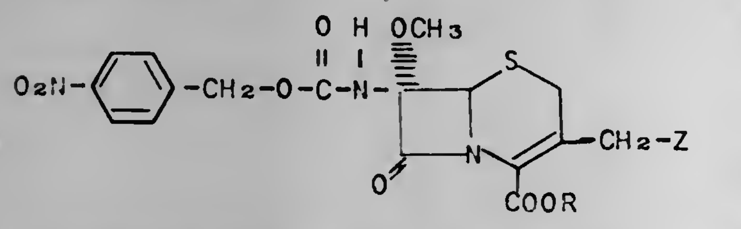
a. reacting a 7β-(p-nitrobenzyloxycarbamido)-3-cephem ester of the formula



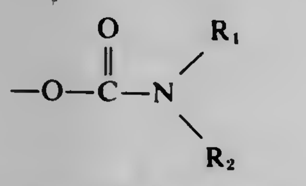
in the presence of excess methanol in an inert, anhydrous solvent at a temperature between −120° and −25°C. with methyl lithium in an amount corresponding to between 2 and 6 moles per mole of cephem ester, to form in said reaction mixture, the anionic form of the cephem ester of the formula



- b. adding to said reaction mixture between 1 and 5 moles of t-butyl hypochlorite per mole of cephem ester;
- c. acidifying said reaction mixture and recovering a 7β-(p-nitrobenzyloxycarbamido)-7α-methoxy-3-cephem ester of the formula



- d. reacting said methoxy 3-cephem ester in an inert solvent with a reducing agent selected from the group consisting of hydrogen in the presence of a palladium catalyst and an alkali or alkaline metal salt of dithionic acid at a pH between about pH 7 and pH 8, and recovering from said reduction mixture the methoxy 3-cephem ester reduction product;
- e. acidifying said methoxy 3-cephem reduction product in an acidic medium selected from the group consisting of an aqueous medium at a pH of between about pH 4 and pH 6 and an inert liquid medium containing in suspension silica gel, and recovering the 7β-amino-7α-methoxy-3-cephem ester from said acidic medium; where in the above formulae Z ie hydrogen C_2–C_4 alkanoyloxy, C_1–C_4 alkoxy, C_1–C_4 alkylthio, a carbamoyloxy group of the formula

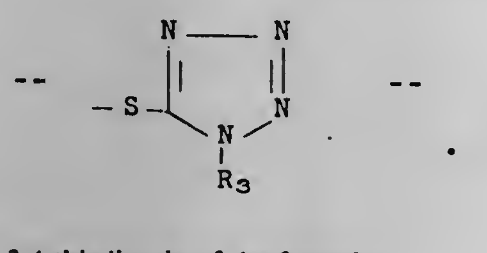


$$-O-\overset{\overset{O}{\|}}{C}-N\begin{matrix}R_1\\ R_2\end{matrix}$$

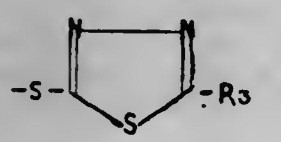
wherein

R_1 and R_2 independently are hydrogen or C_1–C_4 lower alkyl, or

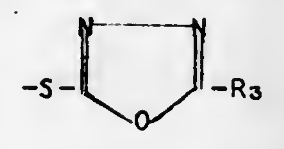
Z is a five-membered heterocyclic thio group selected from the group consisting of a 5-thiotetrazole of the formula



a 2-thio-1,3,4-thiadiazole of the formula



and a 2-thio-1,3,4-oxadiazole of the formula



wherein

R_3 is hydrogen, C_1–C_4 alkyl or phenyl;

and

R is benzyl, p-nitrobenzyl, p-methoxybenzyl, diphenylmethyl or 2,2,2-trichloroethyl.

3,897,425

3-CHLORO-TETRAHYDRO-1,3-OXAZINES OR OXAZOLIDINES

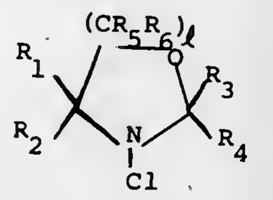
Nicolae S. Bodor, and James J. Kaminski, both of Lawrence, Kans., assignors to Interx Research Corporation, Lawrence, Kans.

Filed Apr. 1, 1974, Ser. No. 456,744

Int. Cl.² C07D ***265/06***

U.S. Cl. 260—244 R **11 Claims**

1. A 3-Chloro-tetrahydro-1,3-oxazine or oxazolidine compound of the formula:



wherein each of R_1 and R_2, which may be the same or different, represents an alkyl group of from 1 to 20 carbon atoms; wherein each of R_5 and R_6, which may be the same or different, represents a hydrogen atom or an alkyl group of from 1 to 20 carbon atoms; wherein l represents an integer of 1 or 2; and wherein each of R_3 and R_4, which may be the same or different, represents an alkyl group of from 1 to 20 carbon atoms, a $-(CH_2)_nX$ group, wherein n represents an integer of from 1 to 20 and wherein X represents a member selected from the group consisting of a dimethylamino group, a diethylamino group, a trimethylammonium group, a triethylammonium group, a dimethylammonium group, a diethylammonium group, a $-COOR_7$ group, a $-OOCR_8$ group, and a $-OR_9$ group, wherein each of R_7 through R_9, respectively, represents a member selected from the group consisting of an alkyl group of from 1 to 5 carbon atoms or a benzyl group.

3,897,426

1-(3-(AMINO ALKYL)-2-OXO-2H-1-BENZOPYRAN-7-YL)-UREAS

Karl Heinz Becker, Darmstadt; Karl-Heinz Boltze, Bensberg-Kippekausen; Hans-Dieter Dell, Cologne, and Peter-Rudolf Seidel, Porz-Wahnheide, all of Germany, assignors to Troponwerke Dinklage & Company, Cologne, Germany

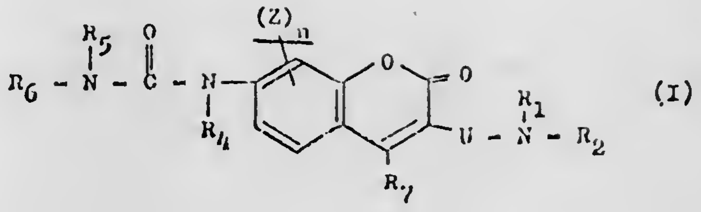
Filed July 15, 1972, Ser. No. 163,110

Claims priority, application Germany, July 17, 1970, 2035536; Feb. 20, 1971, 2108185

Int. Cl. C07d ***87/42***

U.S. Cl. 260—246 B **20 Claims**

1. A compound of the formula (I)



(I)

wherein R_1, R_2, R_5, and R_6 are hydrogen, or straight-chain or branched-chain alkyl or mono hydroxyalkyl of up to 4 carbon atoms, cyclohexyl phenyl or phenyl substituted with one of chloro, hydroxy, lower alkyl or alkoxy of 1 to 3 carbon atoms, or trifluoromethyl; at least one of the radical pairs R_1 and R_2, and R_5 and R_6, when taken together with the adjacent nitrogen atom, represent alkyleneimino of from 2 to 6 ring carbon atoms or said alkyleneimino substituted by methyl; or morpholino, methylmorpholino, piperazino, 4-phenylpiperazine, or 4-alkyl or mono hydroxyalkyl piperazino wherein the alkyl moiety has up to 5 carbon atoms;

R_4 is hydrogen, lower alkyl of up to 3 carbon atoms;

R_7 is hydrogen, lower alkyl of up to 3 carbon atoms, or phenyl;

Z is chloro or lower alkyl of up to 3 carbon atoms;

n represents a number from 0 to 2, and

U is straight-chain or branched-chain lower alkylene, or monohydroxy- alkylene, of from 2 to 5 carbon atoms;

or the pharmacologically acceptable salts thereof.

3,897,427

2-PHENYL-2,3-DIHYDRO-BENZO [b]-THIOPHENE-1,1-DIOXIDE DERIVATIVES

Friedrich Sauter, Vienne, Austria, assignor to Centre d'Etudes pour l'Industrie Pharmaceutique, Toulouse, France

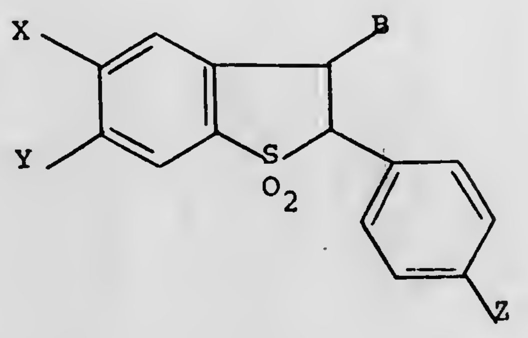
Filed Aug. 7, 1973, Ser. No. 386,387

Claims priority, application Austria, Aug. 21, 1972, 7179/72

Int. Cl.² C07D ***333/66***

U.S. Cl. 260—247.1 P **9 Claims**

1. A compound having the formula:



in which X and Y are individually selected from the group consisting of a hydrogen atom, a chlorine atom, a bromine atom and the lower alkyl groups having 1–4 carbon atoms; Z is selected from the group consisting of a hydrogen atom, a chlorine atom, a bromine atom, the lower alkyl groups having 1–4 carbon atoms and the lower alkoxy groups having 1–4 carbon atoms; and B is a member selected from pyrrolidino, piperidino, morpholino, hexamethyleneimino, piperazino and piperazino substituted at the second nitrogen atom with an alkyl group having 1–3 carbon atoms; or a pharmaceutically acceptable acid addition salt of said compound.

3,897,428

DODECENOIC ACID AMIDES

Satoshi Omura; Iwao Umezawa; Toju Hata; Minoru Shindo; Masakazu Mizoguchi; Nobuhiro Oi, and Tomoharu Uchiyama, all of Tokyo, Japan, assignors to Chugai Seiyaku Kabushiki Kaisha and The Kitasato Institute, both of Tokyo, Japan

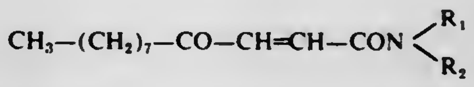
Filed Oct. 30, 1973, Ser. No. 411,024

Claims priority, application Japan, Nov. 11, 1972, 47-112581

Int. Cl. C07d ***295/18***

U.S. Cl. 260—247.7 H **21 Claims**

1. A 4-keto-2-dodecenamide represented by the formula



$$CH_3-(CH_2)_7-CO-CH{=}CH-CON\begin{matrix}R_1\\ R_2\end{matrix}$$

wherein R_1 and R_2 may be the same or different and each represents hydrogen, alkyl having 1–6 carbon atoms, allyl, cyclohexyl, benzyl or hydroxyethyl or R_1 and R_2 may, when taken together with the nitrogen atom, form pyrrolidino, piperidino or morpholino.

3,897,429

THIOL METHYLATION WITH METHYL BROMIDE

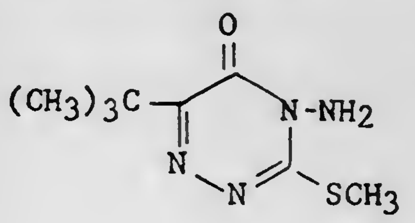
Frank R. Haglid, Wilmington, Del., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.

Continuation-in-part of Ser. No. 417,070, Nov. 19, 1973, abandoned. This application May 29, 1974, Ser. No. 474,436

Int. Cl. C07d ***55/10***

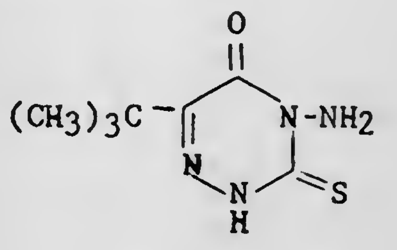
U.S. Cl. 260—248 AS **6 Claims**

1. In the process of synthesizing the compound



B

by methylating the compound



A

in the presence of a base in an aqueous medium, the improvement which comprises using methyl bromide as the methylating agent and regenerating the methyl bromide by reacting the process liquors with methanol and sulfuric acid.

3,897,430
SUBSTITUTED S-TRIAZINES AND METHOD OF USE

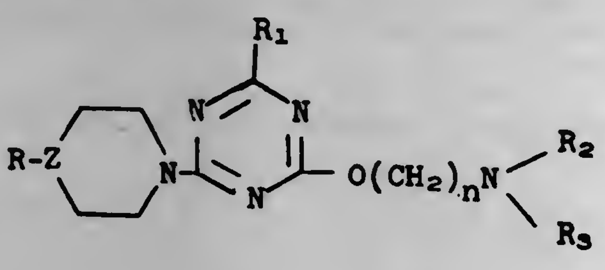
Harry Lee Lindsay; Robert Bruce Angier, and William Vincent Curran, all of Pearl River, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Sept. 24, 1973, Ser. No. 399,909

Int. Cl. C07d *55/18*

U.S. Cl. 260—249.5 **9 Claims**

1. A trisubstituted-s-triazine selected from the group consisting of those of the formula:



wherein R is hydrogen, lower alkyl, benzyl, phenyl, benzyloxycarbonyl or loweralkoxycarbonyl; R_1 is diloweralkylamino-lower alkoxy, piperidinoloweralkoxy or methylpiperazinyl; R_2 and R_3 are lower alkyl; NR_2R_3 when taken together is piperidino; Z is nitrogen or CH; *n* is 2 or 3 and pharmaceutically acceptable acid addition salts thereof.

3,897,431
2[α-ALKOXY-ARYLMETHYL]-2-IMIDAZOLINES AND-,4,5,6-TETRAHYDROPYRIMIDINES

Denis M. Bailey, East Greenbush, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

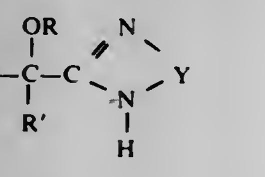
Continuation-in-part of Ser. No. 26,787, April 8, 1970, abandoned, which is a continuation-in-part of Ser. No. 726,212, May 2, 1968, Pat. No. 3,657,229. This application Apr. 13, 1973, Ser. No. 350,949

Claims priority, application United Kingdom, Apr. 24, 1969, 20118/69

Int. Cl.² C07D *239/06*

U.S. Cl. 260—251 R **21 Claims**

1. A compound having the formula



wherein

R is alkyl having from 2 to 6 carbon atoms,

R′ is hydrogen or lower-alkyl,

Y is alkylene of 3–8 carbon atoms in which 2 or 3 carbon atoms intervene between the valence linkages, and

Ar is phenyl, naphthyl, indanyl, cyclohexenyl, cyclohexyl and phenyl substituted by two halo substituents or a single substituent selected from halo, nitro, lower-alkyl or lower-alkoxy, said lower-alkoxy being at only the para-position of phenyl.

3,897,432
SUBSTITUTED BENZIMIDAZOLE DERIVATIVES

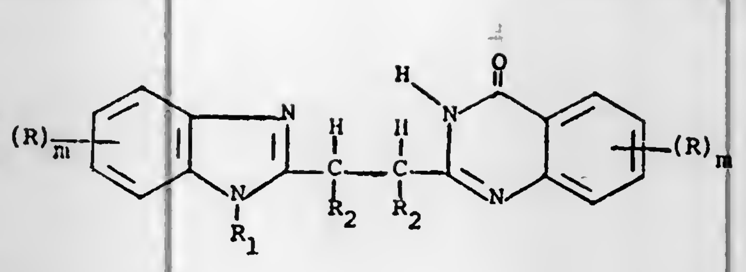
Tsung-Ying Shen, Westfield; Victor J. Grenda, Warren, and Robert F. Czaja, Scotch Plains, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 136,186, April 21, 1971, abandoned. This application Aug. 31, 1973, Ser. No. 393,383

Int. Cl. C07d *51/48*

U.S. Cl. 260—256.4 Q **3 Claims**

1. A compound having the formula:



wherein each R is hydrogen or loweralkoxy, mono haloloweralkoxy, loweralkyl, with the proviso that when *m* is 2 and R is loweralkyl, R is non-tertiary lower alkyl, or when *m* is 2 the R groups together may form a methylenedioxy group; where halo defines fluorine, Chlorine and bromine; R_1 is hydrogen or loweralkyl; each R_2 is hydrogen or hydroxyl; m is 0, 1 or 2; and the non-toxic acid addition salts thereof.

3,897,433
1,7-DIHYDRO-1,3,7-TRI-LOWER-ALKYL-2H-PYRROLO [2,3-D] PYRIMIDINE-2,4(3H)-DIONES

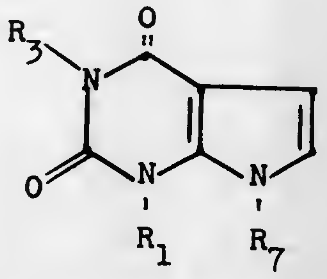
Paul E. Dupont, and George Y. Lesher, both of Schodack, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Sept. 28, 1973, Ser. No. 401,647

Int. Cl.² C07D *239/00*

U.S. Cl. 260—256.4 F **3 Claims**

1. A compound having the formula



where R_1, R_3 and R_7 each represents the same or different lower-alkyl having from one to four carbon atoms.

3,897,434
PYRAZOLO[1,5-C]QUINAZOLIN-5(6H)-ONES

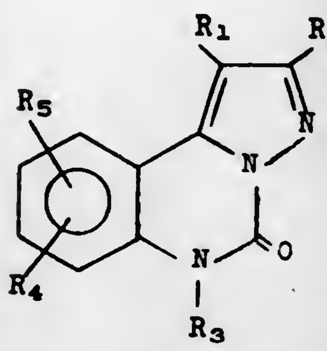
Allen S. Katner, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Apr. 12, 1974, Ser. No. 460,644

Int. Cl. C07d *51/48*

U.S. Cl. 260—256.4 Q **12 Claims**

1. A pyrazolo[1,5-c]quinazolin-5(6H)-one of the formula



wherein R_1 is a monovalent group selected from the group consisting of hydrogen, C_1–C_4 alkyl, C_1–C_3 alkoxycarbonyl, phenyl, and monosubstituted phenyl in which the substituent is fluoro, chloro, bromo, C_1–C_3alkyl, or C_1–C_3alkoxy; R_2 is a monovalent group selected from the group consisting of carboxy, C_1–C_3 alkoxycarbonyl, acetyl, benzoyl, and monosubstituted benzoyl in which the substituent is fluoro, chloro, bromo, C_1–C_3 alkyl, or C_1–C_3 alkoxy; R_3 is a monovalent group selected from the group consisting of hydrogen, methyl, benzyl, phenyl, and monosubstituted benzyl and phenyl in which the substituent is methyl, trifluoromethyl, methoxy, fluoro, chloro, bromo, or methylsulfonyl; and R_4 and R_5 are monovalent groups independently selected from the group consisting of hydrogen, methyl, methoxy, fluoro, chloro, and bromo, with the limitation that R_4 and R_5 must be different unless each of R_4 and R_5 is hydrogen.

3,897,435
N-OXIDES OF 1 -NITRO-9-DIALKYLAMINOALKYLAMINO/ACRIDINE

Andrzej Ledochowski, Gdansk, and Barbara Stefanska, Gdansk-Oliwa, both of Poland, assignors to Starogadzkie Zaklady Farmaceutyczne "Polfa", Starogard Gdanski, Poland

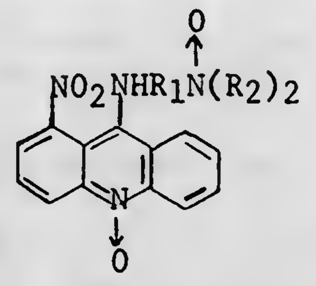
Continuation of Ser. No. 201,945, Nov. 24, 1971, abandoned, which is a division of Ser. No. 854,608, Sept. 2, 1969, Pat. No. 3,694,448. This application Oct. 4, 1973, Ser. No. 403,624

Claims priority, application Poland, Aug. 31, 1968, P128855

Int. Cl. C07d *37/24*

U.S. Cl. 260—279 A **2 Claims**

1. A compound of the formula



wherein R_1 is a straight or branched chain alkylene group having 1 to 4 carbon atoms and R_2 is a lower alkyl group having 1 to 3 carbon atoms: and pharmaceutically acceptable acid addition salts of said compound.

3,897,436
QUINOLINEACETIC ACID DERIVATIVES

Richard Goschke, Bottmingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

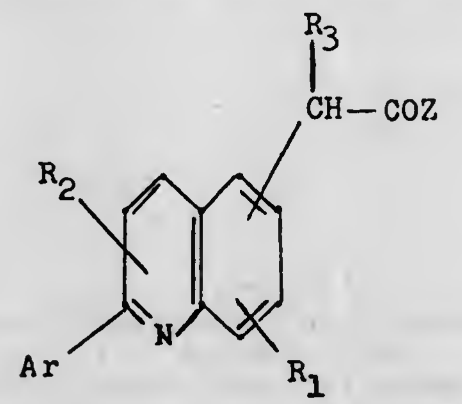
Filed Mar. 5, 1973, Ser. No. 337,998

Claims priority, application Switzerland, Mar. 10, 1972, 3549/72; Jan. 29, 1973, 1230/73

Int. Cl. C07d *33/48*

U.S. Cl. 260—283 S **16 Claims**

1. A quinolineacetic compound of the formula



(I)

wherein Ar denotes phenyl, thienyl or phenyl substituted by one or two identical members selected from lower alkyl, lower alkoxy, fluoro, chloro, bromo, trifluoromethyl, amino, di-lower alkylamino, or hydroxy, R_1 represents hydrogen, fluoro, chloro, bromo, lower alkyl, lower alkoxy or trifluoromethyl and R_2 and R_3 independently of one another denote hydrogen or lower alkyl, wherein Z is OH, NH_2, OR, NHR, NRR, or NHOH where R is lower alkyl in which "lower" defines one to seven carbon atoms, or a pharmaceutically acceptable non-toxic salt thereof.

3,897,437
CERTAIN SUBSTITUTED ANILINO-PHENYLACETIC-ACID-(2,3 OR 4-PYRIDYL)-ETHYL ESTERS AND DERIVATIVES

Georges Haas, Oberwil, and Alfred Sallmann, Bottmingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

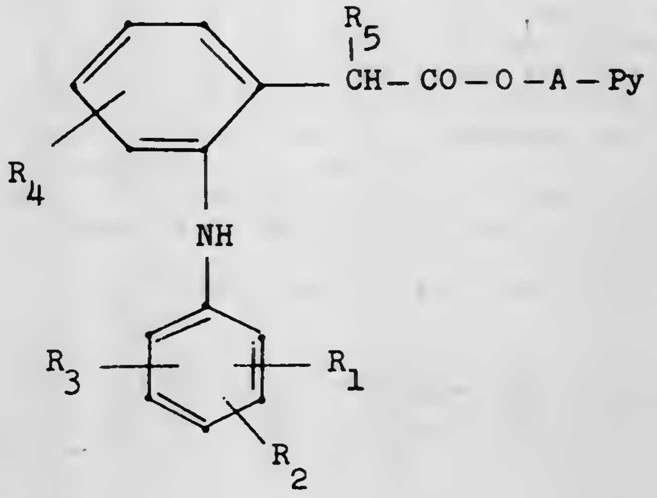
Filed Aug. 10, 1973, Ser. No. 387,405

Claims priority, application Switzerland, Aug. 16, 1972, 12128/72

Int. Cl.² C07D *31/34*

U.S. Cl. 260—295 R **14 Claims**

1. Substituted phenylacetic acid esters of the general formula I



(I)

in which R_1 represents lower alkyl, lower alkoxy, halogen up to and including atomic number 35 or trifluoromethyl, R_2 represents hydrogen or a substituent corresponding to the definition of R_1, R_3 represents hydrogen, lower alkyl, lower alkoxy, halogen up to and including atomic number 35, R_4 represents hydrogen, lower alkyl, lower alkoxy, halogen up to and including atomic number 35 or trifluoromethyl, R_5 represents hydrogen, lower alkyl or benzyl, A represents a direct bond, lower alkylene or lower alkylidene and P represents unsubstituted, lower alkyl-substituted or lower alkoxy-substituted pyridyl wherein "lower" denotes said straight-chain radicals with up to 4 carbon atoms, the N-oxide or pharmacologically tolerable acid addition salts thereof.

3,897,438
PROCESS FOR THE PRODUCTION OF N-(1,1,1-TRISUBSTITUTED)-METHYLAZOLES

Wilfried Draber, and Erik Regel, both of Wuppertal-Elberfeld, Germany, assignors to Farbenfabriken Bayer AG, Germany

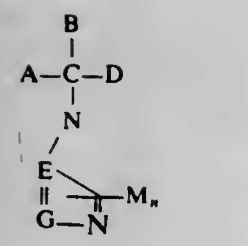
Filed Feb. 19, 1971, Ser. No. 117,161

Claims priority, application Germany, Feb. 26, 1970, 2009020

Int. Cl. C07d *31/00, 55/02*

U.S. Cl. 260—296 R **3 Claims**

1. A process for the preparation of an N-(1,1,1-tri-substituted)-methylazole of the formula:



in which

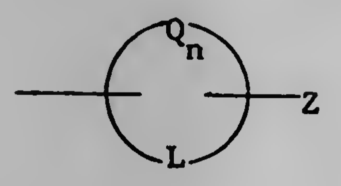
A is straight or branched chain alkyl of 1 to 8 carbon atoms, straight or branched chain alkenyl of up to 8 carbon atoms, cyclopropyl, cyclopentyl, cyclohexyl, bicyclo-heptyl or adamantyl, or

A is phenyl, naphthyl, pyridyl or imidazole each of which is unsubstituted or substituted by alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylmercapto of 1 to 4 carbon atoms, phenoxy, alkylsulphonyl of 1 to 4 carbon atoms, amino, mono-alkylamino of 1 to 4 carbon atoms, dialkylamino of 1 to 4 carbon atoms in each alkyl moiety, carboxyl, carbalkoxy of 1 to 4 carbon atoms, nitro, cyano, trifluoromethyl, halogen or hydroxyl;

B is straight or branched chain alkyl of 1 to 8 carbon atoms, straight or branched chain alkenyl of up to 8 carbon atoms, cyclopropyl, cyclopentyl, cyclohexyl, bicyclo-heptyl or adamantyl, or

B is phenyl or naphthyl each of which is unsubstituted or substituted by alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylmercapto of 1 to 4 carbon atoms, phenoxy, alkylsulphonyl of 1 to 4 carbon atoms, amino, mono-alkylamino of 1 to 4 carbon atoms, dialkylamino of 1 to 4 carbon atoms in each alkyl moiety, carboxyl, carbalkoxy of 1 to 4 carbon atoms, NO_2, CN, CF_3, halogen or hydroxyl, or

B is a 5- or 6-membered ring system of the formula:



wherein

L is oxygen, sulphur, >N-alkyl of 1 to 4 carbon atoms, >N-phenyl or CH;

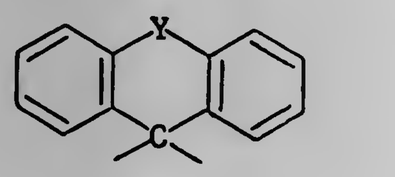
Q is nitrogen or CH;

Z is hydrogen, alkyl of 1 to 4 carbon atoms, halogen or phenyl, and

n is 1 or 2; or

A and B together with the central carbon atom are linked to form an aliphatic ring with 3–7 carbon atoms; or

A and B are linked to one another so that together with the central carbon atom to which they are linked they form a ring system of the formula:



wherein

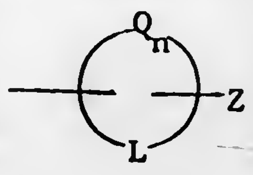
Y is a direct bond, sulphur oxygen, alkylene of 1 to 3 carbon atoms or CH=CH;

D is straight or branched chain alkyl of 1 to 8 carbon atoms, straight or branched chain alkenyl of up to 8 carbon atoms, cyclopropyl, cyclopentyl, cyclohexyl, bicyclo-heptyl or adamantyl, or

D is phenyl or naphthyl each of which is unsubstituted or substituted by alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylmercapto of 1 to 4 carbon atoms, phenoxy, alkylsulphonyl of 1 to 4 carbon atoms, amino, mono-alkylamino of 1 to 4 carbon atoms, dialkylamino of 1 to 4 carbon atoms in each alkyl moiety, carboxyl, carbalkoxy of 1 to 4 carbon atoms, nitro, cyano, trifluoromethyl, halogen or hydroxyl; or

D is alkoxy-carbonyl of 1 to 4 carbon atoms in the alkoxy moiety, alkoxy-carbonyl-alkyl of 1 to 4 carbon atoms in each of the alkoxy and alkyl moieties, or

D is a 5- or 6-membered ring system of the formula:



wherein

Q, L, Z and *n* have the same meaning as above; and in which

E is nitrogen, $-\overset{|}{\underset{|}{C}}H$ or $-\overset{|}{\underset{|}{C}}-R^1$; and

G is nitrogen, $-\overset{|}{\underset{|}{C}}H$ or $-\overset{|}{\underset{|}{C}}-R^2$;

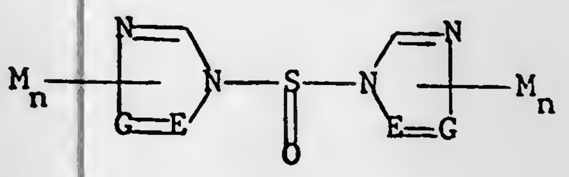
wherein

R^1 and R^2 together with the carbon atoms of E and G form a fused benzene ring;

M is hydrogen, alkyl of 1 to 4 carbon atoms, phenyl, naphthyl, or alkoxy-carbonyl of 1 to 4 carbon atoms in the alkyl moiety; and

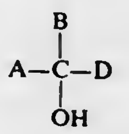
m is 1, 2 or 3,

which comprises reacting a thionyl-azolide of the formula:



in which

E, G, M and *m* have the same meaning as above, with a carbinol of the formula:



in which

A, B and D have the same meaning as above, in a dry organic solvent inert to the reaction at a temperature in the range of −20° C to +150° C.

3,897,439

CERTAIN ISOINDOLINONE PIGMENTS CONTAINING HEAVY METALS

Christoph Frey, Oberwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

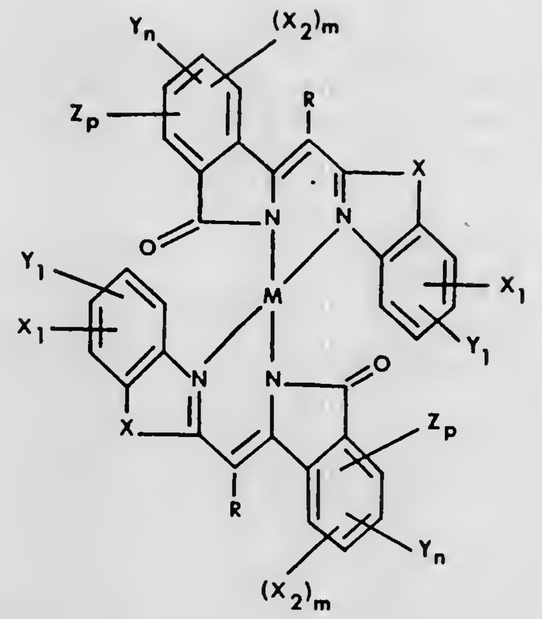
Filed Nov. 21, 1973, Ser. No. 417,849

Claims priority, application Switzerland, Dec. 4, 1972, 17625/72

Int. Cl. C07d *27/50*

U.S. Cl. 260—299 **8 Claims**

1. An isoindolinone pigment of the formula



wherein *m* denotes a polyvalent metal atom selected from the group consisting of zinc, cadmium, nickel, copper and cobalt X denotes O, S or imino, X_1 and Y_1 denote H, halogen, alkyl containing 1 to 6 carbon atoms, alkoxy containing from 1 to 6 carbon atoms; alkoxycarbonyl containing from 1 to 6 carbon atoms, alkylsulphonyl containing from 1 to 6 carbon atoms, alkylcarbamoyl containing 1 to 6 carbon atoms, nitro, carbamoyl or phenylcarbamoyl, or the radicals X_1 and Y_1 form a fused benzene ring, X_2 denotes H, Y denotes halogen and Z denotes nitro, carbamoyl or phenylcarbamoyl selected from the group consisting of para-chlorophenylcarbamoyl, phenylcarbamoyl, and para-methylphenylcarbamoyl, or a group of the formula R_1Y_2—, wherein R_1 represents H, alkyl containing from 1 to 6 carbon atoms, cycloalkyl containing 1 to 6 carbon atoms or phenyl and Y_2 represents O or S, *m* denotes 0–4, *n* denotes 0–4, *p* denotes 0–3 and the sum of *m*+*n*+*p* must be 4.

3,897,440

2-CYANO-3-NITRO-5-TRIFLUOROMETHYL PHENYL THIO PYRIDINES

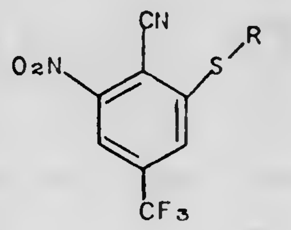
James R. Beck, Indianapolis, and Robert G. Suhr, Greenfield, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 23, 1973, Ser. No. 418,511

Int. Cl. C07d *31/50*

U.S. Cl. 260—294.8 G **4 Claims**

1. A compound of the formula



wherein

R is 2-pyridyl, 2-pyridyl-N-oxide, 4-pyridyl.

3,897,441

CERTAIN THIAZOLE-CARBOXAMIDES AND ACYLAMINO-THIAZOLES

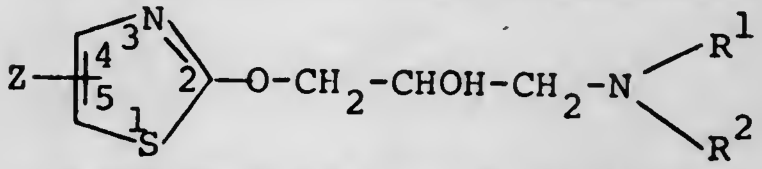
John A. Edwards, Los Altos, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 289,730, Sept. 15, 1972, Pat. No. 3,850,945, which is a continuation-in-part of Ser. Nos. 193,172, Oct. 27, 1971, abandoned, and Ser. No. 343,945, March 22, 1973, abandoned, which is a continuation-in-part of Ser. No. 289,730, Sept. 15, 1972, which is a continuation-in-art of Ser. No. 193,172, Oct. 27, 1971, abandoned. This application Mar. 14, 1974, Ser. No. 451,179

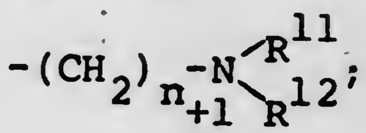
Int. Cl. C07d *91/32, 91/34*

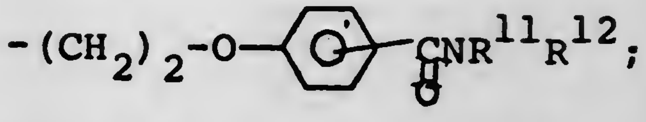
U.S. Cl. 260—302 R **50 Claims**

1. A compound selected from the group having the formula:



wherein R^1 and R^2 are independently selected from the group of hydrogen, lower alkyl, cycloalkyl having from three through seven ring atoms, lower alkenyl, phenyl, lower phenylalkyl wherein said alkyl has from one through six carbon atoms, or substituted phenyl or substituted lower phenylalkyl wherein said phenyl has one or two substituents independently selected from the group of hydroxy, lower alkyl, lower alkoxy and halo, and groups having the formulas

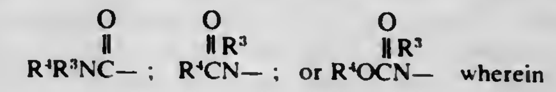




or $-(CH_2)_n$-Y′ wherein *n* is a whole integer of from one through four; R^{11} and R^{12} are independently hydrogen or lower alkyl; and Y′ is a heterocycle selected from the group of morpholino, pyrrolidinyl, piperidinyl, piperazinyl, N′-lower alkylpiperazinyl or N′-lower hydroxyalkylpiperazinyl derivatives thereof; or

R^1 and R^2 together with the nitrogen atom to which they are joined form a nitrogen heterocycle selected from the group of morpholino, pyrrolidinyl, piperidinyl, piperazinyl, N′ 1 lower alkylpiperazinyl, or N′-lower hydroxyalkylpiperazinyl;

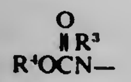
Z is a substituent on the thiazole ring at either the 4- or 5-position selected from the group having the formulas:



$$R^4R^3N\overset{\overset{O}{\|}}{C}- \;;\quad R^4\overset{\overset{O}{\|}}{C}\overset{R^3}{N}- \;;\quad \text{or } R^4O\overset{\overset{O}{\|}}{C}\overset{R^3}{N}-$$

wherein

R^3 and R^4 are independently selected from the group of hydrogen; alkyl having from one through 12 carbon atoms; cycloalkyl having from three through 12 carbon atoms; phenyl; lower phenylalkyl wherein said alkyl has from 1 through 6 carbon atoms, or substituted phenyl or substituted lower phenylalkyl wherein said phenyl has one or two substituents independently selected from the group of hydroxy, lower alkyl, lower alkoxy, or halo; terminally substituted alkyl group having from two through 12 carbon atoms having one substituted terminal carbon atom having a substituent selected from the group of hydroxy, acyloxy selected from the group consisting of benzoyloxy, phenylacetyloxy, phenylpropionyloxy, o-toluoyloxy, m-toluoloxy, p-toluoyloxy, β-cyclopentylpropionyloxy and alkanoyloxy having from two through 12 carbon atoms and alkoxy having from 1 through 6 carbon atoms; and groups having the formulas $-(CH_2)_{n+1}NR^8R^9$ or $-(CH_2)_nR^{10}$ wherein n is a whole integer of from 1 through 4, R^8 and R^9 are independently selected from the group of hydrogen and alkyl groups having from one through four carbon atoms and R^{10} is cycloalkyl having from three through eight carbon atoms; and wherein when Z is



$$R^4O\overset{O}{\overset{\|}{C}}\underset{}{\overset{R^3}{N}}-$$

then R^4 cannot be hydrogen;
and pharmaceutically acceptable salts thereof.

3,897,442

THIAZOLE CARDIOVASCULAR AGENTS

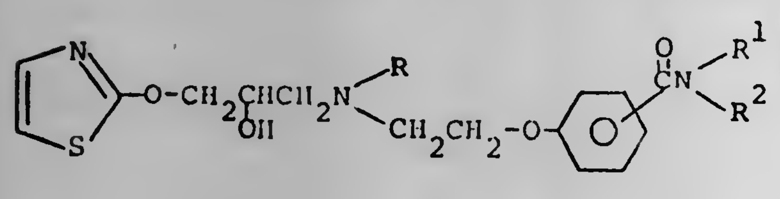
John A. Edwards, Los Altos, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Mar. 14, 1974, Ser. No. 451,195

Int. Cl. C07d *91/32*

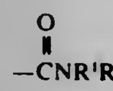
U.S. Cl. 260—302 R **14 Claims**

1. A compound selected from the group having the formula:



(I)

wherein R is hydrogen or lower alkyl having from one through six carbon atoms; R^1 and R^2 are independently selected from the group of hydrogen or alkyl having from one through ten carbon atoms; and the group



$$-\overset{O}{\overset{\|}{C}}NR^1R^2$$

can be at any position on the phenyl ring;
and pharmaceutically acceptable salts thereof.

3,897,443

PHARMACOLOGICALLY ACTIVE ANILINOBENZOTHIAZOLES

Christopher James Sharpe, Harrow Weald, England, assignor to The Boots Company Limited, Nottingham, England

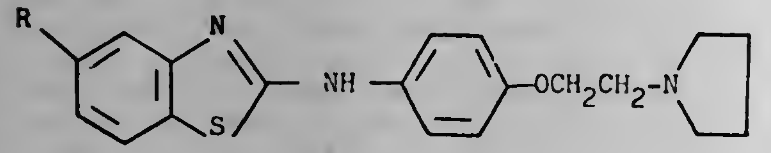
Filed Mar. 21, 1973, Ser. No. 343,565

Claims priority, application United Kingdom, Mar. 30, 1972, 15018/72

Int. Cl. C07d *99/10*

U.S. Cl. 260—305 **4 Claims**

1. A benzothiazole compound selected from the group consisting of a compound of the formula



and a pharmaceutically acceptable acid addition salt thereof, wherein R is a member selected from the group consisting of hydrogen and methoxy.

3,897,444

PHARMACOLOGICALLY ACTIVE COMPOUNDS

Graham John Durant, Welwyn Garden City; John Colin Emmett, Codicote, and Charon Robin Ganellin, Welwyn Garden City, all of England, assignors to Smith Kline & French Laboratories Ltd., Welwyn Garden City, England

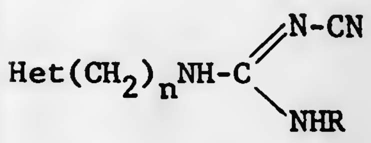
Filed Aug. 2, 1973, Ser. No. 385,027

Claims priority, application United Kingdom, Sept. 5, 1972, 41160/72; Feb. 8, 1973, 6154/73

Int. Cl. C07d *49/36*

U.S. Cl. 260—306.8 R **6 Claims**

1. A compound of the formula:



$$Het(CH_2)_nNH-C\begin{matrix}\nearrow N-CN\\ \searrow NHR\end{matrix}$$

wherein R is hydrogen or lower alkyl; n is from 3 to 5; and Het is an unsaturated heterocyclic nucleus selected from imidazole, thiazole, isothiazole, oxazole, isoxazole, pyrazole, triazole, thiadiazole, pyrimidine, pyrazine and pyridazine which nucleus is attached through a carbon atom in said nucleus adjacent to a nitrogen atom and is unsubstituted or monosubstituted by lower alkyl, trifluoromethyl, hydroxyl, halogen or amino, or a pharmaceutically acceptable acid addition salt thereof.

3,897,445

5-EPI-PENICILLINS

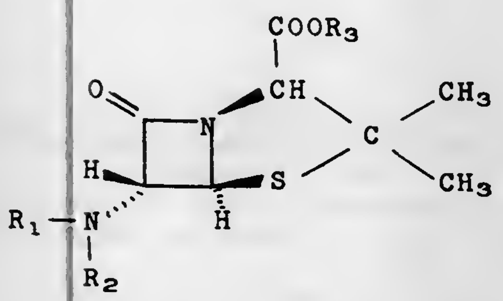
Stjepan Kukolja, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 148,129, May 28, 1971, abandoned. This application July 15, 1971, Ser. No. 165,758

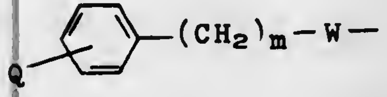
Int. Cl. C07d *99/16*

U.S. Cl. 260—306.7 C **10 Claims**

1. A 5-epi-penicillin compound of the formula

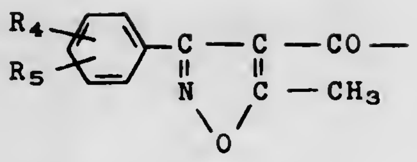


wherein R_1, taken alone, denotes an acyl group of the formula R_a-CH_2-CO-
where R_a is



Q is hydrogen, chloro, bromo, C_1 to C_3-alkyl, C_1 to C_3-alkyloxy,
nitro or cyano,
W is oxygen, or a chemical bond;
and *m* is an integer of from 0 to 2;

R_2, taken alone, is defined as R_1 above, or is



where each of R_4 and R_5 is hydrogen or a halogen (fluorine, chlorine, bromine or iodine);

or R_1 and R_2 are taken together with the nitrogen to which they are bonded to form a succinimido or phthalimido group, and R_3 is hydrogen, C_1 to C_4-alkyl, p-nitrobenzyl, p-methoxybenzyl, benzyl, benzhydryl, phthalimidomethyl, succinimidomethyl, 2,2,2-trichloroethyl, trimethylsilyl, phenacyl, or p-halophenacyl where halo denotes chlorine or bromine.

3,897,446

6-PHENYLTHIAZOLO[3,2-A][1,4]BENZODIAZEPIN-1-(2H)-ONES, AND PROCESSES

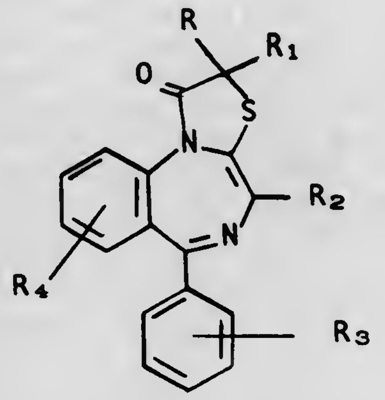
Jackson B. Hester, Jr., Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Sept. 4, 1973, Ser. No. 394,043

Int. Cl. C07d *99/10*

U.S. Cl. 260—306.7 R **11 Claims**

1. A 6-phenylthiazolo[3,2-a][1,4]benzodiazepin-1(2H)-one of the formula:



wherein R, R_1 and R_2 are each hydrogen or alkyl of 1 to 3 carbon atoms, inclusive, i.e., methyl, ethyl, propyl or isopropyl; and R_3 and R_4 are each hydrogen, alkyl, as defined above, halogen, nitro, trifluoromethyl or alkylthio in which alkyl has the meaning given, above, and the pharmaceutically acceptable acid addition salts thereof.

3,897,447

ANTHELMINTIC 1,2,4-OXADIAZOLINES

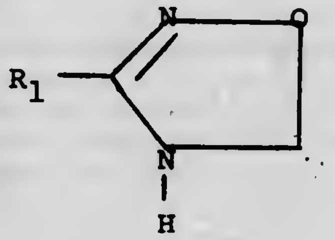
Michael H. Fisher, Bridgewater Twp., Somerville County, and Alexander R. Matzuk, Colonia, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Apr. 30, 1973, Ser. No. 355,848

Int. Cl. C07d *85/52*

U.S. Cl. 260—307 F **2 Claims**

1. A compound of the formula =



wherein R_1 is C_1 to C_4 alkyl.

3,897,448

PROCESS FOR THE MANUFACTURE OF ALKYL BENZIMIDAZOLYLCARBAMATES

Jose Moyne, Claurie, France, assignor to Rhone-Progil, Courbevoie, France

Filed Oct. 30, 1973, Ser. No. 411,023

Claims priority, application France, Nov. 30, 1972, 72.43306

Int. Cl. C07d *233/66*

U.S. Cl. 260—309.2 **3 Claims**

1. In a process for the manufacture of alkyl benzimidazolylcarbamate by first stage reaction of an alkyl chloroformate, with the alkyl having 1–4 carbons, with cyanamide or an alkali or alkaline earth metal or magnesium salt thereof in an aqueous medium at a pH between 6 and 13, and then by second stage reaction of the obtained alkylcyanocarbamate with an orthophenylenediamine substituted by H, halogen, NO_2 or alkyl of 1–4 carbons in the presence of a molar quantity of acid at at least equal to the molar quantity of diamine,

the improvement wherein the alkyl cyanocarbamate medium from said first stage reaction is first acidified and then the alkylcyanocarbamate is extracted from the aqueous acidified medium with an organic water-immiscible solvent, and then said alkylcyanocarbamate is reacted in this same solvent with the orthophenylene diamine to provide said second stage reaction.

3,897,449

N-(2-BENZIMIDAZOLYL)FLUOROALKANESULFONAMIDES

Joseph Kenneth Harrington, Edina, and Robert D. Trepka, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 150,789, June 7, 1971, Pat. No. 3,766,193, which is a continuation-in-part of Ser. No. 795,050, Jan. 29, 1969, Pat. No. 3,629,332. This application July 12, 1973, Ser. No. 378,620

Int. Cl. C07d *49/38*

U.S. Cl. 260—309.2 **4 Claims**

1. A compound of the formula

$$R_fSO_2NH-R-Ar$$

wherein R_f is fluoroalkyl of one or two carbon atoms and with at least two fluorine atoms, R is alkylene of one or two carbon atoms and Ar is 2-benzimidazolyl, or a horticulturally acceptable salt thereof.

3,897,450

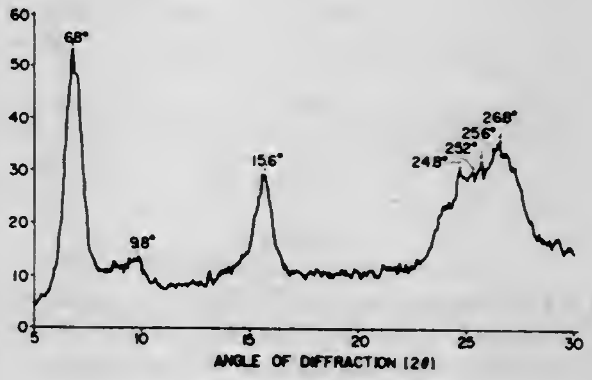
METAL PHTHALOCYANINE TYPE PIGMENT

Shojiro Horiguchi; Yoshio Abe, and Tohoru Hosoda, all of Tokyo, Japan, assignors to Dainichiseika Color & Chemicals Mfg. Co. Ltd., Tokyo, Japan

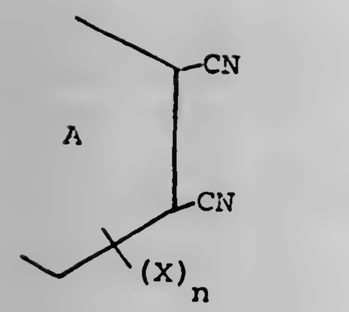
Filed Feb. 10, 1970, Ser. No. 10,204

Int. Cl. C09b *47/04*

U.S. Cl. 260—314.5 **17 Claims**



1. A method for producing a copper phthalocyanine pigment which comprises subjecting an o-dinitrile type compound having a formula of



wherein A is an aryl radical or pyridinyl radical, X is hydrogen or halogen atom, nitro, amino, sulfonic acid, carboxylic acid, alkyl, methoxy or ethoxy radical, and *n* is an integer of 1–4 when X is hydrogen or halogen atom, and *n* is an integer of 1–2 when X is nitro, amino, sulfonic acid, carboxylic acid, alkyl, methoxy or ethoxy radical and 0.25 mol or more per mole of o-dinitrile type compound of a metallic substance capable of forming a central nucleus of the phthalocyamine pigment selected from the group consisting of copper powder, cuprous oxide, cupric oxide, cuprous chloride, cupric chloride, couprous bromide, cupric bromide, copper sulfate, copper nitrate, copper phosphide, and copper acetate, to condensation reaction at a temperature ranging from 100°C to room temperature in the presence of 0.1 – 2 mols per mol of the o-dinitrile type compound of an alkaline substance selected from the group consisting of hydroxide, oxide, peroxide, and carbonate of alkali metal and of alkaline earth metal and a hydrophilic organic solvent having hydroxy radical selected from the group consisting of methanol, ethanol, propanol, isopropanol, butanol, isobutanol, secondary butanol, ethylene glycol, propylene glycol, polyethylene glycol, methyl cellosolve, ethyl cellosolve, diethylene glycol ethyl ether, phenol, o, -m-, and p-cresol.

3,897,451

SYNTHESIS OF OXINDOLES FROM ANILINES AND INTERMEDIATES THEREIN

Paul G. Gassman, Columbus, Ohio, assignor to The Ohio State University Research Foundation, Columbus, Ohio

Filed Apr. 27, 1973, Ser. No. 355,207

Int. Cl. C07d ***27/40***

U.S. Cl. 260—325 R **5 Claims**

1. A process for preparing 2-oxindoles which comprises

- a. reacting an N-haloaniline with a β-thio compound selected from the group consisting of a lower-alkyl β-thioalkanoate ester and a lower-alkyl β-thioalkanoyl acylamide in organic liquid diluent under substantially anhydrous conditions at a temperature of from about −78° C to about 10° C to form an azasulfonium salt;
- b. reacting the azasulfonium salt from step (a) with a substantially anhydrous base which will cause formation of an ylid intermediate to form an ortho-[(thioalkyl) (alkylthiocarbonyl)methyl]-aniline,
- c. heating the ortho-substituted aniline from step (b) to from about 50° C to about 150° C or acidifying the substituted aniline from step (b) to form a 3-thioalkyl-2-oxindole, and
- d. desulfurizing the 3-thioalkyl-2-oxindole from step (c) to form the 2-oxindole.

3,897,452

SUBSTITUTED 1,4-DIHYDRO(AND 1,2,3,4-TETRAHYDRO)-NAPHTHALEN-1,4-IMINES

Paul S. Anderson, Lansdale; Marcia E. Christy, Perkasie, and Gerald S. Ponticello, Lansdale, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 19, 1974, Ser. No. 498,485

Int. Cl. C07d ***27/48***

U.S. Cl. 260—326.1 **6 Claims**

1. 2-Chloro-5,6,7,8-tetrafluoro-2,9-dimethyl-1,2,3,4-naphthalen-1,4-imine and the non-toxic, pharmaceutically acceptable salts thereof.

3,897,453

DIBENZOFURAN AND DIBENZOTHIOPHENE ACETIC ACID DERIVATIVES

Joachim Gante; Werner Mehrhof, and Albrecht Wild, all of Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

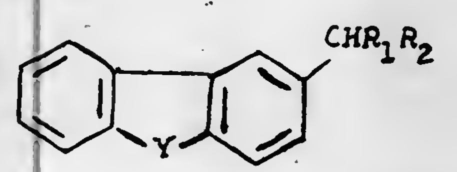
Filed May 10, 1973, Ser. No. 358,872

Claims priority, application Germany, May 13, 1972, 2223391; Dec. 16, 1972, 2261745

Int. Cl. C07d ***63/24***

U.S. Cl. 260—329.3 **27 Claims**

1. A compound of the formula



substituted in the 1-, 3-, 4-, 6-, 7-, 8-, or 9-position by R_3 wherein R_1 is $COOR_5$ in which R5 is hydrogen, alkyl of 1 to 20 carbon atoms or aminoalkyl, alkylaminoalkyl, or dialkylaminoalkyl wherein alkyl in each instance is of up to 8 carbon atoms; R_2 is H or alkyl of 1–4 carbon atoms; R_3 is H, alkyl, alkoxy, alkanoyl, monoalkylamino, dialkylamino, or alkanoylamino, each of up to 4 carbon atoms, F, Cl, Br, I, OH, NH_2, NO_2, CN, or CF_3; and Y is O or S; with the proviso that at least one of R_2 and R_3 are other than H; and the physiologically acceptable salts thereof.

3,897,454

POLYALKYLENE GLYCOL POLYALKYLENE POLYAMINE DISPERSANTS FOR LUBRICANT FLUIDS

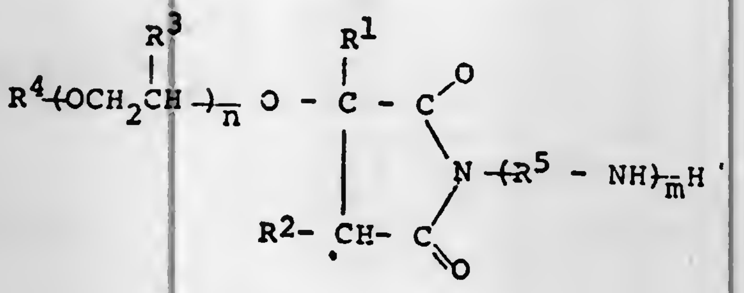
Tad L. Hankins, Fullerton, Calif., and Ting-I Wang, Cherry Hill, N.J., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 765,959, Oct. 8, 1968, abandoned. This application June 11, 1973, Ser. No. 368,678

Int. Cl.² C07D ***27/00***

U.S. Cl. 260—326.5 FM **12 Claims**

1. A compound having the following structures:



wherein each R^1 and R^2 is independently selected from the group consisting of hydrogen and monovalent hydrocarbonaceous radicals containing less than about 10 carbon atoms, each R^3 and R^4 is independently selected from the group consisting of hydrogen and alkyl containing from 1 to about 10 carbon atoms, each R^5 is independently selected from the group consisting of divalent hydrocarbonaceous radicals containing from 1 to about 3 carbon atoms, *n* is a positive integer in the range from about 1 to about 100 and m is a positive integer from about 1 to about 10.

3,897,455

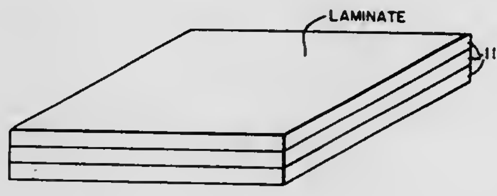
IMPREGNATING COMPOSITION COMPRISING AN EPOXY RESIN, ANHYDRIDES OF NMA AND BTDA AND GLASS-EPOXY LAMINATED THEREOF

Zal N. Sanjana, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 11, 1973, Ser. No. 423,850

Int. Cl. C08g ***30/12, 51/34***

U.S. Cl. 260—32.8 EP **7 Claims**



1. A homogeneous, stable resinous impregnating composition consisting essentially of the admixture of:

- A. a liquid mixture of;
  - a. liquid epoxy resin selected from the group consisting of diglycidyl ethers of bisphenol A, polyglycidyl ethers of a novolac and mixtures thereof,
  - b. liquid NADIC methyl anhydride, and
- B. solid benzophenone-tetracarboxylic dianhydride, wherein the anhydride equivalent weight ratio of NADIC methyl anhydride: benzophenonetetracarboxylic dianhydride is from about 0.50 to 0.90:1, to provide a homogeneous, stable dispersion of the solid dianhydride in the liquid characterized by having a pot life of over 2 days at 25°C, a curing temperature of about 170°–185°C and containing between about 98 to 100 percent undissolved benzophenone - tetracarboxylic dianhydride and wherein the total anhydride plus dianhydride content is within the range of from about 0.60 to 0.95 anhydride equivalents for each epoxy equivalent.

3,897,456

SLUDGE INHIBITOR FOR HYDROCARBON OILS

Phillip W. Brewster, Wyoming, Canada, assignor to Exxon Research and Engineering Company, Linden, N.J.

Filed Feb. 16, 1973, Ser. No. 333,047

Int. Cl. C07d ***87/54***

U.S. Cl. 260—340.2 **2 Claims**

1. The oil-soluble ester obtained by the esterification of about equal molar proportions of (a) a polyisobutenyl succinic acid or acid anhydride wherein said polyisobutenyl group contains between 40 and 250 carbon atoms with (b) a tetrahydroxyalkyl-substituted urea which is the condensation product of 1 molar proportion of urea with about 2 molar proportions of a dialkanolamine having from 1 to 6 carbon atoms in each alkanol group.

3,897,457

HALOGEN CONTAINING TRICYCLIC COMPOUNDS

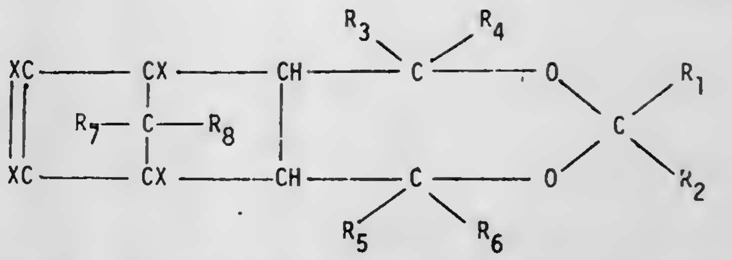
Sheldon B. Greenbaum, Livingston; Edward D. Weil, Yonkers, and Jack S. Newcomer, Wilson, all of N.Y., assignors to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Division of Ser. No. 787,245, Dec. 26, 1968, Pat. No. 3,687,831, which is a continuation-in-part of Ser. No. 589,811, Oct. 27, 1966, abandoned, which is a continuation-in-part of Ser. No. 16,965, March 23, 1960, abandoned. This application Aug. 15, 1972, Ser. No. 280,921

Int. Cl. C07d ***15/00***

U.S. Cl. 260—340.3 **2 Claims**

1. A compound having the formula



wherein X is halogen, R_1 and R_2 taken together form a cycloalkyl group of 4 to 7 carbon atoms; R_3, R_4, R_5 and R_6 are independently selected from the group consisting hydrogen, alkyl of 1 to 6 carbon atoms, alkoxylalkyl of 2 to 12 carbon atoms, cycloalkyl of 4 to 7 carbon atoms, alkenyl of 2 to 6 carbon atoms, monochloroalkenyl of 2 to 6 carbon atoms, phenyl, mono-nitrophenyl, benzyl, tolyl, and xylyl; and R_7 and R_8 are selected from the group consisting of hydrogen, halogen, alkoxy of 1 to 6 carbon atoms and alkylmercapto of 1 to 6 carbon atoms.

3,897,458

ARYLALKENYL NITRILES AND FUNCTIONAL DERIVATIVES THEREOF

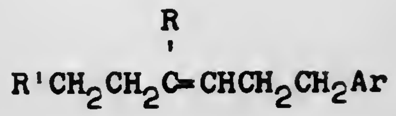
Guy D. Diana, Stephentown, and William B. Hinshaw, Jr., Sand Lake, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Jan. 17, 1973, Ser. No. 324,340

Int. Cl.² C07D ***317/06***

U.S. Cl. 260—340.5 **7 Claims**

1. A compound of the formula



$$R'CH_2CH_2\overset{R}{C}{=}CHCH_2CH_2Ar$$

wherein R is lower-alkyl of 1 to 4 carbon atoms; R′ is a member of the group consisting of N ≡ C—, HOOC—, H_2NCO—, H_2NCH_2— and Ar′$CONHCH_2$—; Ar is 3,4-methylenedioxyphenyl; and Ar′ is phenyl or phenyl substituted by 3,4-methylenedioxy or one or two monovalent substitutents selected from the group consisting of lower-alkyl of 1 to 4 carbon atoms, lower-alkoxy of 1 to 4 carbon atoms, halogen, trifluoromethyl and trifluoromethoxy.

3,897,459

5-OXO-1β-CYCLOPENTANE HEPTANOIC ACID DERIVATIVE

Chan-Hwa Kuo, South Plainfield; David Taub, Metuchen, and Norman L. Wendler, Summit, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 290,590, Sept. 20, 1972, Pat. No. 3,850,952. This application Oct. 15, 1973, Ser. No. 406,758

Int. Cl. C07c ***69/74***

U.S. Cl. 260—340.9 **4 Claims**

1. 3β-Acetoxy-2α-carboxy-5-oxo-1β-cyclopentaneheptanoic acid, 5-cyclic ethylene acetal and loweralkyl and benzyl or xylyl esters thereof.

3. 3β-Acetyl-2α-carboxy-5-oxo-1β-cyclopentaneheptanoic acid, 5-cyclic ethylene acetal and loweralkyl or benzyl or xylyl esters thereof.

3,897,460

3β-TERTIARYBUTOXY-DECAHYDRO-BENZ[E]INDENES

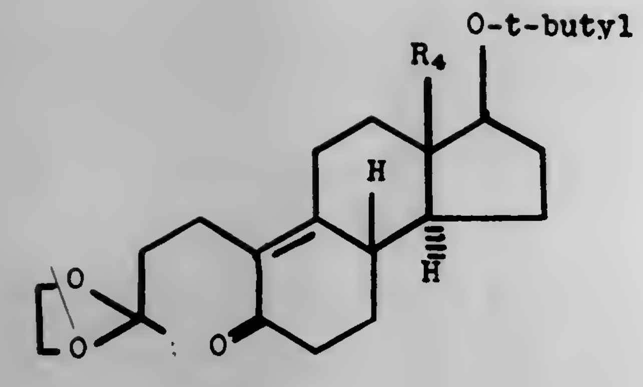
Zoltan George Hajos, Upper Montclair, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Oct. 4, 1968, Ser. No. 765,023

Int. Cl. C07d ***13/04***

U.S. Cl. 260—340.9 **3 Claims**

1. A compound of the formula



wherein R$_4$ is methyl, ethyl or propyl.

3,897,461

9-ALKOXIME DECANSIC ACID-Δ-LACTONES

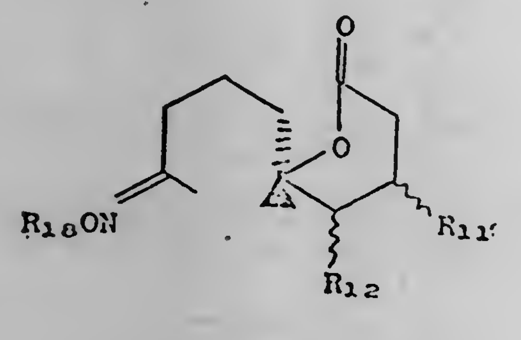
Gabriel Saucy, Essex Fells, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 57,372, July 22, 1970, Pat. No. 3,816,458, and a continuation-in-part of Ser. No. 813,693, April 4, 1969, abandoned, said Ser. No. 57,372, is a continuation-in-part of Ser. No. 679,989, Nov. 2, 1967, abandoned, which is a continuation-in-part of Ser. No. 633,730, April 26, 1967, abandoned, which is a continuation-in-part of Ser. No. 604,124, Dec. 23, 1966, abandoned, which is a continuation-n-part of Ser. No. 549,816, May 13, 1966, abandoned, continuation-in-part of Ser. No. 813,693, April 4, 1969, abandoned. This application Mar. 13, 1974, Ser. No. 450,710

Int. Cl.^{2} C07D *309/30*

U.S. Cl. 260—343.5 **1 Claim**

1. A compound of the formula



where R$_{11}$ and R$_{12}$ are each independently hydrogen and R$_{18}$ is lower alkyl.

3,897,462

2-AMINO-4 H-PYRANE

Horst Meyer; Friedrich Bossert, both of Wuppertal; Wulf Vater, Opladen, and Kurt Stoepel, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

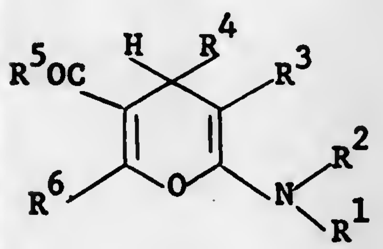
Filed July 2, 1973, Ser. No. 375,809

Claims priority, application Germany, July 19, 1972, 2235406

Int. Cl. C07d *7/14*

U.S. Cl. 260—345.8 **16 Claims**

1. A compound of the formula



wherein

R^1 and R^2 are each hydrogen;

R^3 is —COOR′ wherein R′ is lower alkyl; lower alkenyl; or lower alkynyl; R^4 is phenyl unsubstituted or substituted by 1, 2 or 3 of the same or different substituents selected from the group consisting of lower alkyl, lower alkoxy, halogen, nitro, cyano, trifluoro methyl, carb(lower alkoxy) and —SO$_n$ lower alkyl wherein *n* is 0, 1 or 2, or naphthyl; R^5 is —OR″ wherein R″ is lower alkyl, lower alkenyl, lower alkynyl, cycloalkyl of 3 to 7 carbon atoms, or lower alkyl interrupted by 1 oxygen atom; and

R^6 is lower alkyl.

3,897,463

INSECTICIDAL N-THIO-SUBSTITUTED CARBAMATES OF DIHYDROBENZOFURANOLS

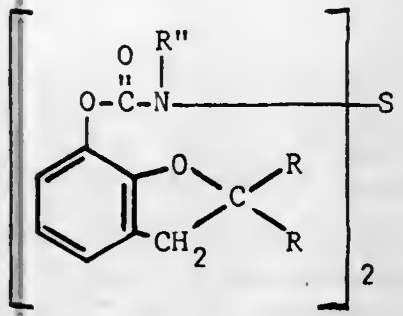
Gustave K. Kohn, Berkeley, Calif.; Melancthon S. Brown, deceased, late of Alameda, Calif., and by Gustave K. Kohn, special administrator, Berkeley, Calif.

Division of Ser. No. 317,317, Dec. 21, 1972, which is a continuation-in-part of Ser. Nos. 235,796, March 17, 1972, abandoned, and Ser. No. 235,797, March 17, 1972, abandoned, which is a continuation-in-part of Ser. No. 230,117, Feb. 28, 1972, Pat. No. 3,792,169, which is a division of Ser. No. 855,421, Sept. 4, 1969, Pat. No. 3,663,594, which is a continuation-in-part of Ser. No. 764,299, Oct. 1, 1968, abandoned, and a continuation-in-part of Ser. No. 250,908, May 8, 1972, Pat. No. 3,843,689. This application July 29, 1974, Ser. No. 490,178

Int. Cl. C07d *5/36*

U.S. Cl. 260—346.2 R **5 Claims**

1. A compound of the formula



wherein R individually is hydrogen or alkyl of one to four carbon atoms and R″ is hydrogen or alkyl of one to four carbon atoms.

3,897,464

OXIDATION OF NAPHTHALENE TO 1,4-NAPHTHOQUINONE AND PHTHALIC ANHYDRIDE

Heinz Dohm; Karl Morgenstern, both of Krefeld; Ludwig Müller, Krefeld-Bockum, and Rudolf Wiemers, Meerbusch all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 12, 1973, Ser. No. 350,569

Claims priority, application Germany, July 12, 1972, 2234306; Mar. 15, 1973, 2312838

Int. Cl. C07d *63/18, 49/66*

U.S. Cl. 260—346.4 **12 Claims**

1. In the production of 1,4-naphthoquinone along with phthalic anhydride by the catalytic gas phase oxidation of sulfur free naphthalene, the improvement which comprises maintaining in the reaction space a sulphur concentration of about 0.002 to about 0.05% by weight based on the naphthalene used.

3,897,465

ETHYL BETA-(N-METHYLFURFURYLAMINO) PROPIONATE

Morton W. Leeds, Murray Hill, and Alex J. Szur, North Plainfield, both of N.J., assignors to Airco, Inc., Montvale, N.J.

Division of Ser. No. 129,129, March 29, 1971, Pat. No. 3,760,082. This application May 7, 1973, Ser. No. 357,964

Int. Cl. C07d *5/16*

U.S. Cl. 260—347.4 **3 Claims**

1. A compound selected from the group consisting of ethyl β-(N-methylfurfurylamino) propionate and a water soluble salt of ethyl β-(N-methylfurfurylamino) propionate.

3,897,466

METHOD OF PREPARING N$^\omega$ -ACYL BASIC AMINO ACIDS

Koichi Takizawa, Yokohama, and Ryonosuke Yoshida, Kamakura, both of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Apr. 23, 1973, Ser. No. 353,634

Claims priority, application Japan, Apr. 25, 1972, 47-41912

Int. Cl. C07c *103/30*

U.S. Cl. 260—404.5 **9 Claims**

1. A method of preparing an N$^\omega$ -acyl derivative of a basic amino acid having an ω-amino group which comprises holding a salt of said basic amino acid and a carboxylic acid free from amino groups at a temperature of 100° to 250°C until water is released, and said N -acyl derivative is formed, acyl in said derivative being the acyl radical of said carboxylic acid.

3,897,467

PROCESS FOR THE PREPARATION OF α-KETOCARBOXYLIC ACIDS

Jesus Anatol, Paris, France, assignor to Sucreries du Soissonnais et Compagnie Scuriere, Paris, France

Filed Mar. 2, 1972, Ser. No. 231,381

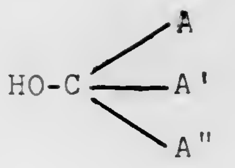
Claims priority, application France, Mar. 2, 1971, 71.07097

Int. Cl.^{2} C07D *59/33, 59/34, 65/20*

U.S. Cl. 260—406 **13 Claims**

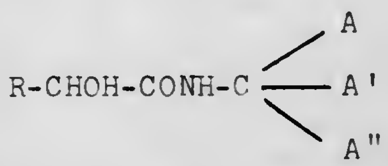
1. A process for the preparation of an α-ketocarboxylic acid of the formula: R—CO—COOH, in which R is selected from the group consisting of aliphatic, benzyl, phenyl and aralkyl radicals, which consists essentially of the successive steps of

a. condensing in acid medium a secondary or tertiary alcohol of the formula



$$\text{HO-C}\begin{cases}\text{A}\\ \text{A}'\\ \text{A}''\end{cases}$$

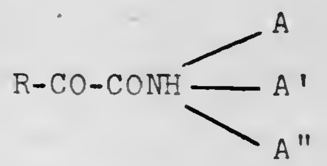
wherein A is selected from the group consisting of hydrogen, aliphatic, and aralkyl radicals, and A′ and A″ are selected from the group consisting of aliphatic and aralkyl radicals, with a 2-hydroxy nitrile of the formula R-CHOH-CN in which R has the above meanings to form the corresponding α-hydroxy carboxamide of the formula



$$\text{R-CHOH-CONH-C}\begin{cases}\text{A}\\ \text{A}'\\ \text{A}''\end{cases}$$

wherein R, A, A′ and A″ have the above meanings,

b. oxidizing said α-hydroxy carboxamide with an oxidizing agent in solution to form an α-ketocarboxamide of the formula:



$$\text{R-CO-CONH}\begin{cases}\text{A}\\ \text{A}'\\ \text{A}''\end{cases}$$

wherein A, A′, A″ and R have the same meanings as above and further wherein said oxidizing agent is selected from the group consisting of chromium trioxide, manganese dioxide and permanganates; and

c. hydrolyzing said α-ketocarboxamide in an acid medium to form said α-ketocarboxylic acid.

3,897,468

POLYBASIC ACID COMPOSITIONS OBTAINED FROM POLYMERIZED FATTY ACIDS

Harold E. Mains, and Fred O. Barrett, both of Cincinnati, Ohio, assignors to Emery Industries, Inc., Cincinnati, Ohio

Filed Feb. 15, 1974, Ser. No. 442,996

Int. Cl.^{2} C08H *3/00*

U.S. Cl. 260—407 **12 Claims**

1. A process which comprises heating a polymerized fatty acid containing 50 percent by weight or more dimer acid and less than 5 percent by weight monobasic acid with 1 to 35 percent by weight, based on the polymerized fatty acid, of free radical initiator at a temperature between about 50°C and 190°C to increase the polybasic acid content of the mixture.

3,897,469

PROCESS FOR THE PRODUCTION OF DI- AND POLYHYDROXYCARBOXYLIC ACIDS

Werner Stein, Erkrath-Unterbach, and Rainer Osberghaus, Dusseldorf-Urdenbach, both of Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany

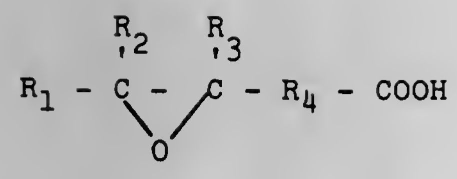
Filed Nov. 7, 1973, Ser. No. 413,653

Claims priority, application Germany, Nov. 20, 1972, 2256908

Int. Cl. C08h *17/36*

U.S. Cl. 260—413 **12 Claims**

1. In the process for the preparation of higher dihydroxycarboxylic acids and/or polyhydroxycarboxylic acids comprising hydrolyzing the corresponding epoxycarboxylic acids of the formula



$$R_1-\overset{R_2}{C}\underset{\diagdown O \diagup}{-}\overset{R_3}{C}-R_4-COOH$$

wherein R_1, R_2, and R_3 are each selected from the group consisting of hydrogen, alkyl having 1 to 20 carbon atoms and epoxyalkyl having 3 to 20 carbon atoms, and wherein R_4 is selected from the group consisting of alkylene having 1 to 21 carbon atoms and epoxyalkylene having 3 to 21 carbon atoms, with the proviso that the epoxycarboxylic acids have a total of 6 to 24 carbon atoms, with a solution of a catalyst, and recovering said acids; the improvement which comprises carry-out said hydrolysis with a catalyst consisting essentially of an aqueous solution of salts selected from the group consisting of alkali metal salts, alkaline earth salts and the mixtures thereof, an aliphatic carboxylic acid having 1 to 24 carbon atoms selected from the group consisting of alkanoic acids having 1 to 10 carbon atoms, alkanedioic acids having 3 to 24 carbon atoms, alkenedioic acids having 4 to 24 carbon atoms, a mixture of an alkanoic acid having 1 to 24 carbon atoms with at least one carboxylic acid selected from the group consisting of alkanedioic acids having 3 to 24 carbon atoms and alkenedioic acids having 4 to 24 carbon atoms, and a mixture of a polyhydroxycarboxylic acid hydrolysis product with at least one carboxylic acid selected from the group consisting of alkanedioic acids having 3 to 24 carbon atoms and alkenedioic acids having 4 to 24 carbon atoms, said polyhydroxycarboxylic acid hydrolysis product being selected from the group consisting of dihydroxymonocarboxylic acids having 6 to 24 carbon atoms produced by said hydrolysis and polyhydroxymonocarboxylic acids having 6 to 24 carbon atoms produced by said hydrolysis, at a temperature above 100°C, said carboxylic acid salts being stable under the reaction conditions and being soluble in the form of their salts.

3,897,470

PROCESS FOR PRODUCING OIL-SOLUBLE METAL SULFONATES

Roy C. Sias, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Continuation of Ser. No. 148,264, May 5, 1971, abandoned. This application May 11, 1973, Ser. No. 359,302

Int. Cl. C07f *11/00, 1/00, 7/28*

U.S. Cl. 260—429 K **12 Claims**

1. A process for producing oil-soluble sulfonates containing metal constituents, which sulfonates have a long shelf life without precipitation of the metal constituents, comprising:

a. mixing at least a stoichiometric amount of a metal halide selected from the group consisting of aluminum, chromium, iron, molybdenum, vanadium, titanium, indium, niobium, tantalum, rubidium, osmium, and mixtures thereof, with water and an oil-soluble sulfonic acid having a molecular weight in the range of about 300 to about 1000 to form a reaction mixture,

b. agitating and heating said reaction mixture to a temperature in the range of 60° to 105°C,

c. introducing into the reaction mixture an additional amount of the oil-soluble sulfonic acid in an amount of from 50 to 200 weight percent based on the oil-soluble sulfonic acid already in the reaction mixture,

d. continuing the agitation and heating of the reaction mixture to the reflux temperature of said mixture for a period of time effective to allow formation of a metal sulfonate substantially free of said halide, and

e. recovering from the reaction product of step (d) the metal sulfonate.

3,897,471

PROCESS FOR PRODUCING METHANOL

Rolf Herbert, Cologne-Marienburg, and Helmut Liebgott, Bad Homburg, both of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of Ser. No. 44,538, June 8, 1970, abandoned. This application Oct. 13, 1972, Ser. No. 297,521

Claims priority, application Germany, June 18, 1969, 1930702

Int. Cl. C07c *31/06*

U.S. Cl. 260—449.5 **6 Claims**

1. In the production of methanol by contacting a synthesis gas containing oxides of carbon and hydrogen with a catalyst at elevated temperature and pressure, the improvement which comprises employing a catalyst consisting essentially of copper and vanadium and one or both of zinc and manganese at a temperature of about 200°–300°C. and a pressure of about 20–100 kilograms per square centimeter above atmospheric pressure, the catalyst on an atomic percentage based on pure metals containing about 40–60% of copper, about 10–20% of vanadium, and about 20–50% of one or both of zinc and manganese, said catalyst having been prepared by precipitation of salts of the metals from a solution thereof followed by calcination.

3,897,472

POLYHALOGENATED POLYISOCYANATES

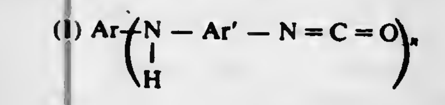
Ludovic Parvi, Pont-de-Claix, and Arsene Isard, Grenoble, both of France, assignors to Produits Chimiques Ugine Kuhlmann, Paris, France

Continuation of Ser. No. 13,844, Feb. 24, 1970, abandoned. This application Jan. 17, 1973, Ser. No. 324,351

Int. Cl. C07c *119/04*

U.S. Cl. 260—453 AR **3 Claims**

1. Isocyanates having the general formula



$$(I)\ Ar\left(\underset{H}{\underset{|}{N}}-Ar'-N=C=O\right)_n$$

wherein Ar represents a polychlorinated aromatic hydrocarbon radical selected from the group of polychlorophenyl, polychlorobiphenyl, polychloroterphenyl, and polychloroquaterphenyl or a polybrominated aromatic hydrocarbon radical selected from the group of polybromophenyl, polybromobiphenyl, polybromoterphenyl, and polybromoquaterphenyl; Ar' represents an aromatic hydrocarbon radical selected from the group of phenylene, toluylene, biphenylene, diphenylmethylene, and naphthylene, said radicals being unsubstituted or substituted with one or more chloro or bromo atoms; and *n* is equal to 2 or 3.

3,897,473

MERCAPTO AND SULFIDE CONTAINING DIENOIC THIOACID ESTERS

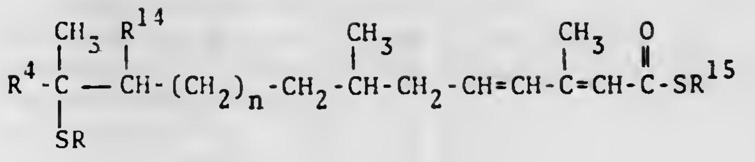
Clive A. Henrick, and John B. Siddall, both of Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Division of Ser. No. 256,605, May 24, 1972, Pat. No. 3,826,804, which is a continuation-in-part of Ser. No. 201,189, Nov. 22, 1971, abandoned, which is a continuation-in-part of Ser. No. 191,812, Oct. 22, 1971, abandoned. This application Oct. 9, 1973, Ser. No. 404,634

Int. Cl.^{2} C07C *153/01*

U.S. Cl. 260—455 R **6 Claims**

1. A compound selected from the following formula:



$$R^4-\underset{SR}{\underset{|}{\overset{CH_3}{\overset{|}{C}}}}-\overset{R^{14}}{\overset{|}{CH}}-(CH_2)_n-CH_2-\overset{CH_3}{\overset{|}{CH}}-CH_2-CH=CH-\overset{CH_3}{\overset{|}{C}}=CH-\overset{O}{\overset{\|}{C}}-SR^{15}$$

wherein,

n is zero or the positive integer one;
R is hydrogen, methyl or ethyl;
R^4 is methyl or ethyl;
R^{14} is hydrogen or methyl; and
R^{15} is lower alkyl.

3,897,474

THIOL AND DITHIOL CARBAMATE ACID ESTER DERIVATIVES OF PHENYL FORMAMIDINE

Georg Pissiotas, Lorrach, Germany, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

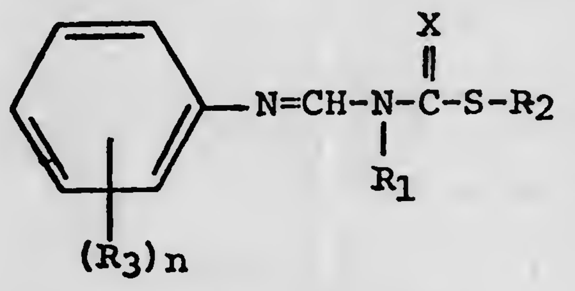
Filed Oct. 9, 1973, Ser. No. 404,467

Claims priority, application Switzerland, Oct. 12, 1972, 14964/72; July 31, 1973, 11055/73

Int. Cl.^{2} C07C *155/02, 155/04*

U.S. Cl. 260—455 A **20 Claims**

1. A compound of the formula



wherein R_1 represents hydrogen, alkyl with 1 to 4 carbon atoms, alkenyl with 3 to 4 carbon atoms, alkinyl with 3 to 5 carbon atoms or unsubstituted benzyl, R_2 represents alkyl with 1 to 4 carbon atoms, alkenyl with 3 to 4 carbon atoms, alkinyl with 3 to 5 carbon atoms, alkoxyalkyl with 1 to 4 carbon atoms in each of the moieties, alkylthioalkyl with 1 to 4 carbon atoms in each of the moieties, unsubstituted benzyl or benzyl which is substituted by one or more chlorine atoms, $(R_3)_n$ represents one or more similar or different radicals, selected from the group consisting of hydrogen, fluorine, chlorine, bromine, methyl, trifluoromethyl, methoxy, methylthio, ethyl, ethoxy, ethylthio, chloroethyl, propyl, isopropyl, n-butyl, allyloxy, cyano, nitro, dimethylamino, or methoxycarbonyl, *n* is 1 to 3 and X represents oxygen or sulphur.

3,897,475

POLYHALOBENZONITRILE ALLYL ETHERS

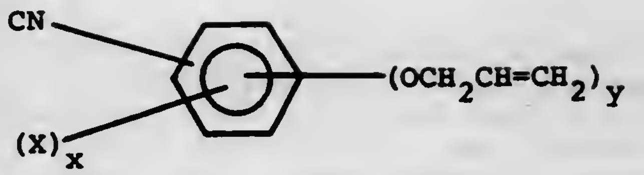
Lewis William Watts, Jr., Auston, Tex., assignor to Jefferson Chemical Company, Inc., Houston, Tex.

Filed Dec. 8, 1971, Ser. No. 206,162

Int. Cl. C07c *121/74*

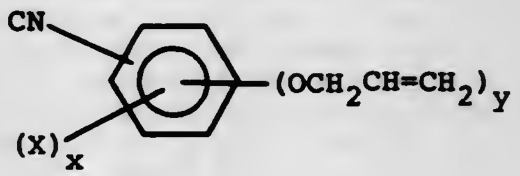
U.S. Cl. 260—465 F **6 Claims**

1. Compounds of the formula



wherein X is halogen, *x* is a number from 2 to 4, and *y* is a number from 1 to 3, provided that *x* + *y* is 5.

5. A process for preparing polyhalobenzonitrile allyl ethers of the formula



wherein X is halogen, and *x* is a number from 2 to 4, and *y* is a number from 1 to 3, provided that *x* + *y* is 5, which comprises reacting a pentahalobenzonitrile with a molar excess of allyl alcohol at a temperature of from about 20°C. to about 150°C. in the presence of a base selected from the group of alkali metal hydroxides, alkali metal hydrides and alkali metal amides, present in an amount such that there is from about 1 to about 8 moles of pentahalobenzonitrile per mole of said base.

3,897,476

SULFAMYLBENZOIC ACID DERIVATIVES

Peter Werner Feit, Gentofte, and Ole Bent Tvaermose Nielsen, Vanloss, both of Denmark, assignors to Leo Pharmaceutical Products Ltd., Ballerup, Denmark

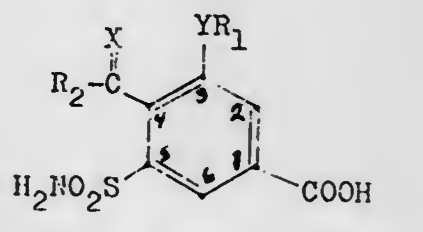
Filed Apr. 10, 1973, Ser. No. 349,826

Claims priority, application United Kingdom, Apr. 28, 1972, 19959/72; Nov. 16, 1972, 53043/72

Int. Cl. C07c *143/78*

U.S. Cl. 260—465 D **20 Claims**

1. A compound selected from the group of compounds of formulae I



I

in which

- R_1 is selected from the group consisting of straight and branched C_1–C_6 alkyl, alkenyl and alkynyl radicals; said group further consisting of methyl and ethyl radicals monosubstituted with phenyl, halophenyl, trifluoromethylphenyl, lower alkoxyphenyl;
- R_2 stands for a phenyl radical, optionally being substituted with a member selected from the group consisting of halogen, lower alkyl, hydroxy and lower alkoxy;
- Y stands for a member selected from the group consisting of —O—, —S—, and —CH_2—;
- X stands for a member selected from the group consisting of O and H_2;

and pharmaceutically acceptable, non-toxic salts of the carboxylic acid of formula I; and esters thereof with cyanomethanol, benzyl alcohol, and C_1–C_6 alcanols.

3,897,477
METHOD OF PREPARING DIAMINOMALEONITRILE

Yoshito Hamamoto; Hideo Shirakawa; Kazuhiko Aida; Yutaka Omura; Tosiaki Takagi; Kozo Nakao; Takuo Kawaguchi, and Haruo Nagai, all of Nakajyo-machi, Japan, assignors to Kyowa Gas Chemical Industry Co. Ltd., Tokyo, Japan

Filed Dec. 11, 1973, Ser. No. 423,768

Claims priority, application Japan, Dec. 19, 1972, 47-127904; Dec. 27, 1972, 48-51873; Dec. 27, 1972, 48-51973

Int. Cl. C07c *121/02*

U.S. Cl. 260—465.5 R **6 Claims**

1. A method of preparing diaminomaleonitrile which comprises polymerizing hydrogen cyanide in the presence of a compound selected from the group consisting of MeO, Me$(OH)_2$ and $Me(CN)_2$, wherein Me is an alkaline earth metal, using as solvent a member selected from the group consisting of n-methylpyrrolidone, dimethyl sulfoxide and dimethylformamide, the weight ratio of said compound to hydrogen cyanide being 0.01 – 1.00, and carrying out the reaction at a temperature ranging from room temperature to 150°C.

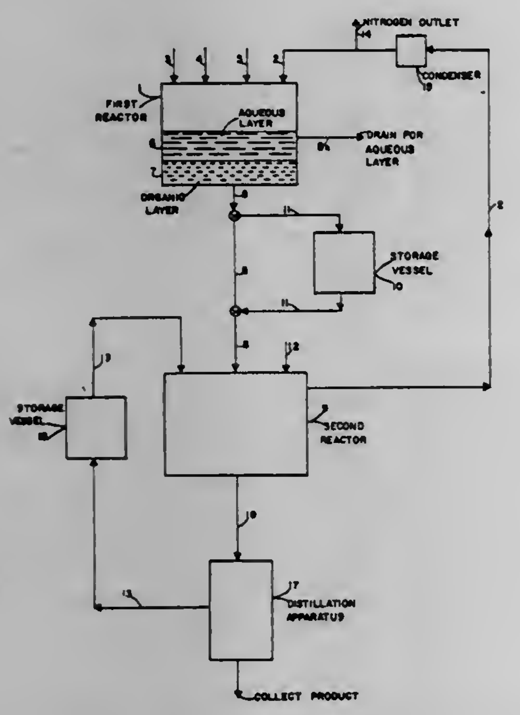
3,897,478
CONTINUOUS PROCESS FOR THE MANUFACTURE OF ALKYL CHRYSANTHEMATE ESTERS

Kyung S. Shim, and Donald J. Martin, both of Irvington, N.Y., assignors to Stauffer Chemical Company, New York, N.Y.

Filed May 21, 1970, Ser. No. 39,202

Int. Cl. C07c *67/00, 64/174*

U.S. Cl. 260—468 H **18 Claims**



1. A process for preparing C_1-C_{10} alkyl chrysanthemate esters which comprises:

a. continuously preparing in a first reaction zone a solution of a C_1-C_{10} alkyl diazoacetate in chlorinated solvent by the reaction, with agitation, of an aqueous mixture of an acid salt of a C_1C_{10} alkyl ester of glycine and an alkali metal nitrite in the presence of an effective concentration of an acid catalyst and said solvent, wherein said solvent is selected from the group consisting of C_1-C_2 chlorinated alkanes immiscible with and denser than said aqueous mixture, at a temperature less than about 20°C., said alkali metal nitrite provided in an amount from about 1 to about 40 percent molar excess with respect to said acid salt of the C_1-C_{10} alkyl ester of glycine;

b. continuously removing the solution of C_1-C_{10} alkyl diazoacetate in chlorinated solvent from the first reaction zone;

c. admixing and reacting in a second reaction zone, the solution of C_1-C_{10} alkyl diazoacetate in chlorinated solvent with a mixture containing 2,5-dimethyl-hexadiene-2,4 provided in an amount from about 10 percent to about 1000 percent molar excess with respect to said C_1-C_{10} alkyl diazoacetate and an effective amount of a copper bronze catalyst maintained at a temperature between about 50° and about 135°C., with nitrogen being evolved as a gaseous by-product whereby C_1-C_{10} alkyl chrysanthemate is produced;

d. recovering C_1-C_{10} alkyl chrysanthemate.

3,897,479
PROCESS FOR THE HALOGENATION OF ADAMANTANES

Yoshiaki Inamoto, Wakayama; Takeji Kadono, Kainan, and Naotake Takaishi, Wakayama, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

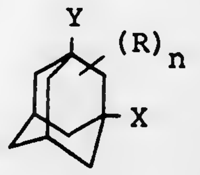
Filed Oct. 29, 1973, Ser. No. 410,508

Claims priority, application Japan, Oct. 30, 1972, 47-108602

Int. Cl. C07c *51/00, 79/12*

U.S. Cl. 260—468 G **5 Claims**

1. A method for preparing a compound of the formula



wherein

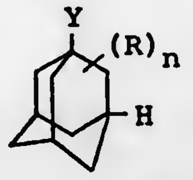
Y is H or a substituent having a Taft's polar substituent constant of not more than about +1.50,

X is chloro or bromo,

R is H or alkyl of one to 4 carbon atoms, and

n is 1 or 2,

which comprises forming a reaction mixture consisting essentially of (1) sulfuric acid having a concentration of 70 to 98 weight percent, (2) carbon tetrachloride or cyclohexane and (3) a compound of the formula



wherein Y, R and *n* are as defined above,

adding to said reaction mixture, at from 0° to 20°C, continuously or in increments over an extended period of time, (4) a compound of the formula MX, wherein X is as defined above and M is H, alkali metal, alkaline earth metal, boron or aluminum,

and simultaneously adding to said reaction mixture in increments over a period of time of at least about 10 minutes, (5) t-butanol, while vigorously stirring the reaction mixture,

the total amount of t-butanol (5) added to the reaction mixture over said time period of at least about 10 minutes being from 1 to 5 moles per 1 mole of compound (3), the amount of sulfuric acid (1) in the reaction mixture being from 10 to 80 parts by weight per one part by weight to t-butanol added to the reaction mixture, the amount of carbon tetrachloride or cyclohexane (2) in the reaction mixture being from 10 to 30 parts by weight per one part by weight of compound (3) and the amount of compound MX (4) added to the reaction mixture being from 5 to 20 moles per one mole of compound (3), the compound MX (4) being added at a rate relative to the rate of adding t-butanol, such that at least one equivalent of MX, per 1 mole of compound (3), shall have been added to the reaction mixture before completion of the addition of t-butanol (5) and the addition of compound MX (4) being continued after the addition of t-butanol (5) is completed;

and recovering the compound of the first-named formula from the reaction product.

3,897,480
N-(MERCAPTOACYL)AMINOACIDS

Itaru Mita, Ashiya; Shigeo Okumura, Takarazuke; Shigeru Yamabe, Kobe; Yoshihiko Funae, Suita, and Junzo Matumoto, Osaka, all of Japan, assignors to Santen Pharmaceutical Co. Ltd., Osaka, Japan

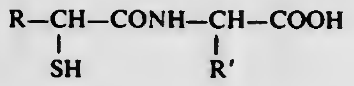
Filed Sept. 20, 1973, Ser. No. 398,934

Claims priority, application Japan, Oct. 3, 1972, 47-100491; May 11, 1973, 48-52924

Int. Cl.² C07C *149/00*

U.S. Cl. 260—470 **6 Claims**

1. A compound represented by the formula



$$R-\underset{SH}{CH}-CONH-\underset{R'}{CH}-COOH$$

wherein when R is phenyl, benzyl or p-chlorophenyl, R′ is hydrogen and when R is methyl, R′ is phenyl or benzyl.

3,897,481
N-CARBALKOXYALKYLDITHIO UREAS

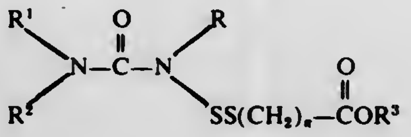
James D. Cleveland, Albany, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 250,895, May 8, 1972, Pat. No. 3,857,883. This application Nov. 30, 1973, Ser. No. 420,726

Int. Cl. C07c *149/42*

U.S. Cl. 260—470 **9 Claims**

1. A urea compound of the formula



wherein R, R^1 and R^2 individually are hydrogen, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 4 carbon atoms, mononuclear or binuclear aryl of 6 to 10 carbon atoms substituted with 1 to 4 fluoro, chloro, bromo, trifluoromethyl, trichloromethyl, nitro or alkoxy of 1 to 4 carbon atoms; R^3 is alkyl of 1 to 6 carbon atoms and *n* is 1 or 2, with the proviso that at least one R, R^1 or R^2 group is aryl.

3,897,482
NOVEL 2-(3-TRIFLUOROMETHYLANILINO)-BENZOIC ACID COMPOUNDS

Karl-Heinz Boltze, Bensberg-Kippekausen; Otfried Brendler; Hans-Dieter Dell, both of Cologne, and Haireddin Jacobi, Leichlingen, all of Germany, assignors to Troponwerke Dinklage & Company, Cologne, Germany

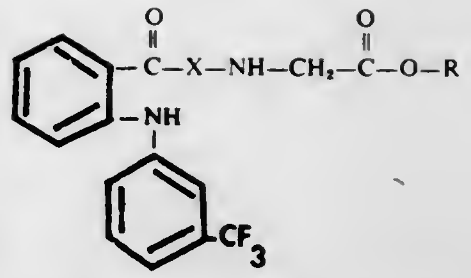
Filed Dec. 10, 1971, Ser. No. 206,923

Claims priority, application Germany, Dec. 16, 1970, 2061948

Int. Cl. C07c *103/30*

U.S. Cl. 260—472 **8 Claims**

1. Compound of the formula



wherein X is $-O-CH_2-CO-$ or a valence bond and R is hydrogen or lower alkyl of from one to four carbon atoms.

3,897,483
NOVEL
1-ACYLOXY-2-(OMEGA-CARBOALKOXYALKYL)CYCLOALK-1-ENES

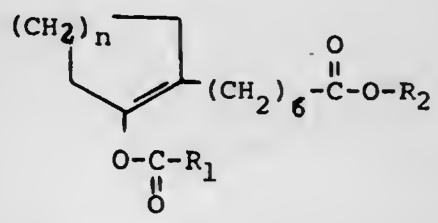
Karel Francis Bernady; Middleton Brawner Floyd, Jr., both of Suffern; John Frank Poletto, Nanuet, all of N.Y.; Robert Eugene Schaub, Upper Saddle River, and Martin Joseph Weiss, Oradell, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jan. 7, 1971, Ser. No. 104,761

Int. Cl. C07c *69/14, 69/24*

U.S. Cl. 260—488 R **3 Claims**

1. Compounds of the formula:



wherein *n* is the integer 1 or 2, R_1 is alkyl having up to 4 carbon atoms, and R_2 is alkyl having up to 4 carbon atoms.

3,897,484
MONO-ALANINE MALEATE

Soichiro Asai, Kawasaki; Hideo Tazuke, Tokyo, and Hiroo Kageyama, Kamakura, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Mar. 30, 1972, Ser. No. 239,786

Int. Cl.² C07C *101/08*

U.S. Cl. 260—501.11 **1 Claim**

1. Mono-alanine maleate.

3,897,485
CHOLINE COMPOUNDS

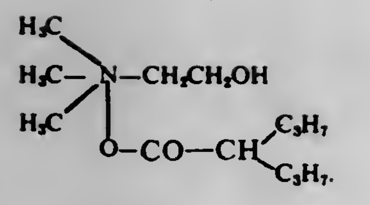
Henry Eugene Jean-Marie Meunier, Grenoble, France, assignor to Laboratoires J. Berthier, Grenoble, France

Continuation of Ser. No. 587,413, Oct. 18, 1966, abandoned. This application June 30, 1971, Ser. No. 158,549

Int. Cl. C07c *87/30*

U.S. Cl. 260—501.15 **1 Claim**

1. Choline dipropylacetate, having the formula



3,897,486
PURIFICATION OF ALIPHATIC PHOSPHONIC ACIDS

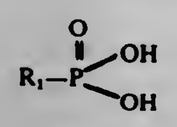
Albert M. V. Jacques, Norristown, Pa., assignor to Amchem Products, Inc., Ambler, Pa.

Filed June 28, 1974, Ser. No. 484,504

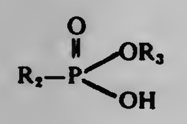
Int. Cl.^{2} C07F *9/38*

U.S. Cl. 260—502.4 R **16 Claims**

1. A process for separating an aliphatic phosphonic acid, represented by the general formula:



from an aliphatic phosphonic acid half-ester, represented by the general formula:



wherein R_1, R_2 and R_3 are each independently selected from the group consisting of alkyl, alkenyl, halo-substituted alkyl and halo-substituted alkenyl, all having from 1 to 6 carbon atoms, which comprises the step of extracting the half-ester from a first aqueous mixture containing:

a. the half-ester;
b. the phosphonic acid; and
c. a quantity of sodium sulfate; with a halo-substituted alkyl of from one to eight carbon atoms to form a second aqueous mixture containing predominantly the phosphonic acid and all of the sodium sulfate.

3,897,487
PREPARATION OF 5-FLUORO-2-METHYL-1-(P-METHYLSULFINYLBENZYLIDENE) INDENYL-3-ACETIC ACID

Howard Jones, Holmdel, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 3, 1973, Ser. No. 402,944

Int. Cl. C07c *147/00*

U.S. Cl. 260—515 A **4 Claims**

1. A process for preparing 5-fluoro-2-methyl-1-(p-methylsulfinylbenzylidene)-3-indenyl acetic acid which comprises the steps of:

a. condensing 5-fluoro-2-methylindane-1,3-dione-3,3′-o-ethylene ketal with p-methylsulfinylbenzylmagnesium halide followed by dehydration or with p-methylsulfinylbenylidenetriphenylphosphorane to form 5-fluoro-2-methyl-1-(p-methylsulfinylbenzylidene)-indane-3,3′-o-ethylene ketal;
b. hydrolyzing said indane under aqueous acidic conditions to form 5-fluoro-2-methyl-1-(p-methylsulfinylbenzylidene)-indane-3-one;
c. condensing said indane-3-one compound with a malonic acid ester in the presence of a strong base to form the diester of 5-fluoro-2-methyl-1-(p-methylsulfinylbenzylidene)-3-indenyl malonic acid;
d. hydrolyzing said diester under aqueous acidic conditions to form the the indane-3-malonic acid; and
e. decarboxylating said indane-3-malonic acid by heating.

3,897,488
CHLOROBENZENE-2,4-DISULPHONIC ACID AMIDE CARBOXYLIC ACIDS

Harald Horstmann, Wuppertal-Vohwinkel; Hartmund Wollweber, and Karl Meng, both of Wuppertal-Elberfeld, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

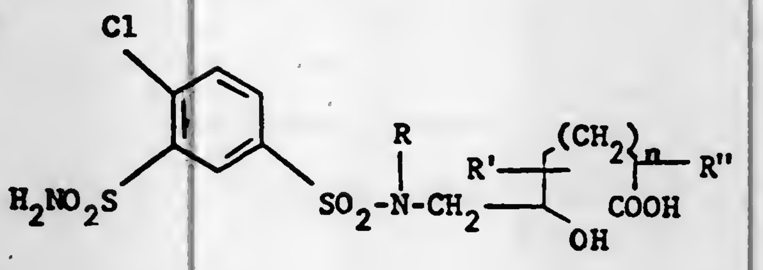
Division of Ser. No. 62,639, Aug. 10, 1970, which is a division of Ser. No. 829,123, May 29, 1969, which is a division of Ser. No. 643,822, June 6, 1967, Pat. No. 3,499,005. This application Jan. 11, 1974, Ser. No. 432,744

Claims priority, application Germany, June 16, 1966, 4948712

Int. Cl. C07c *143/40*

U.S. Cl. 260—519 **1 Claim**

1. A compound of the formula:



wherein:
R is hydrogen or methyl;
R′ is hydrogen or lower alkyl;
R″ is hydrogen or lower alkyl,
n is 0 or 1; and
pharmaceutically acceptable non-toxic salts thereof.

3,897,489
OXIDATION OF ISOBUTYLENE GLYCOL TO ALPHA HYDROXYISOBUTYRIC ACID

Ming N. Sheng, Cherry Hill, N.J., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Continuation of Ser. No. 308,201, Nov. 20, 1972, abandoned. This application Apr. 29, 1974, Ser. No. 464,881

Int. Cl.^{2} C07C *51/28, 59/04*

U.S. Cl. 260—531 R **11 Claims**

1. The method for the production of alpha-hydroxyisobutyric acid which comprises catalytically oxidizing in the presence of a supported platinum catalyst isobutylene glycol with molecular oxygen in an aqueous solution having a pH in the range of from about 2 to 7, ionizable metal compounds being absent from said solution.

3,897,490
HYDROXY ETHER CARBOXYLATES

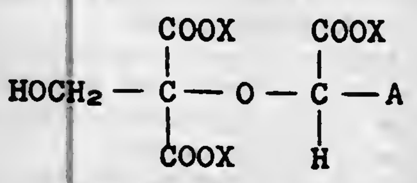
Kent P. Lannert, Freeburg, Ill., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 19, 1973, Ser. No. 426,297

Int. Cl. C07c *59/22*

U.S. Cl. 260—535 P **7 Claims**

1. Compounds represented by the formula



$$HOCH_2-\underset{COOX}{\overset{COOX}{C}}-O-\underset{H}{\overset{COOX}{C}}-A$$

wherein X is selected from the group consisting of hydrogen, alkali metal, ammonium, alkyl and alkanol ammonium wherein the alkyl group contains from 1 to 4 carbon atoms, and alkyl groups containing from 1 to 20 carbon atoms and A is selected from the group consisting of hydrogen and methyl.

3,897,491
PROCESS FOR PREPARING ALKYL OR ARYL PHOSPHORUS HALIDES AND MIXED ISOMERS THEREOF

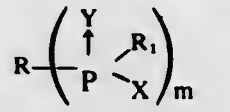
Arthur D. F. Toy, Stamford, Conn., and Eugene H. Uhing, Ridgewood, N.J., assignors to Stauffer Chemical Company, New York, N.Y.

Filed June 10, 1971, Ser. No. 151,955

Int. Cl. C07f *9/42*

U.S. Cl. 260—543 P **51 Claims**

1. A method for preparing compounds of the formula:



wherein R is a C_1 to C_{20} alkyl radical, cycloalkyl of 5–6 carbons in the ring, an aryl radical of up to 3 fused rings, and biphenyl, R_1 represents a C_1 to C_{20} alkyl radical, cycloalkyl of 5–6 carbons on the ring, an aryl radical of up to 3 fused rings, biphenyl, or a halogen of chlorine, or bromine, X is a halogen of chlorine or bromine, and Y is a chalcogen of oxygen or sulfur, and m is an integer between 1 and n, defined hereinafter, inclusive, comprising reacting, under at least an autogenous pressure at a temperature of from about 200°C. to about 450°C. an alkyl or aryl halide of the formula:

$$RX_n$$

wherein R is as defined above, and X is a halogen of chlorine, or bromine, and n is an integer and represents the number of haolgens attached to the R group, with a trivalent phosphorus compound of the formula

$$R_1P(X)_2$$

wherein R_1 and X are as defined above, in the presence of a phosphorus compound of the formula:

$$P_4Y_{10}$$

wherein Y is a chalcogen of oxygen or sulfur.

3,897,492
METHOD OF MAKING CARBAMOYL SULFOXIDE DERIVATIVES

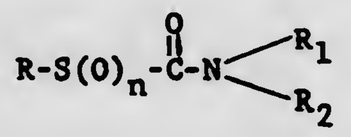
Harry Tilles, El Cerrito, and Alan A. MacDonald, Albany, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 280,393, Aug. 14, 1972, abandoned. This application June 18, 1973, Ser. No. 371,329The portion of the term of this patent subsequent to July 22, 1992, has been disclaimed.

Int. Cl.^{2} C07C *103/76, 147/14*

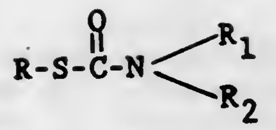
U.S. Cl. 260—551 R **2 Claims**

1. A process for manufacturing a compound having the formula:



wherein *n* is 1 or 2; R is selected from the group consisting of halophenyl, phenalkyl, substituted phenalkyl wherein said substituents are selected from halogen, alkyl having 1–6 carbon atoms and haloalkyl having 1 to 6 carbon atoms; R_1 and R_2 can be the same or different and are selected from lower alkyl having 1 to 6 carbon atoms, cyclohexyl, alkylcyclohexyl, alkenyl, alkynyl and benzyl, comprising the steps of:

a. reacting an oxidizing agent selected from peracetic acid and m-chloroperoxybenzoic acid with a thiocarbamate in the presence of an inert solvent; said thiocarbamate having the formula:



wherein said R, R_1 and R_2 have been previously defined.

b. said reaction being carried out at a temperature of between −25°C. and 65°C.;
c. said oxidizing agent being present in an amount of at least one molar equivalent.

3,897,493
META-ANILIDE UREA COMPOSITIONS AND THEIR UTILITY AS HERBICIDES

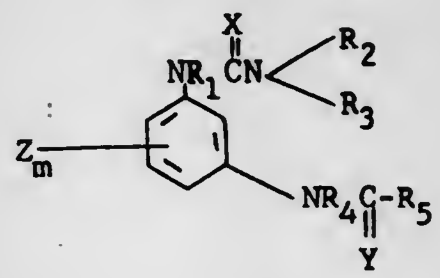
Eugene G. Teach, El Cerrito, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 180,171, Sept. 13, 1971, Pat. No. 3,816,498, which is a division of Ser. No. 23,021, March 26, 1970, Pat. No. 3,642,891, which is a continuation-in-part of Ser. No. 746,007, July 19, 1968, abandoned, which is a continuation-in-part of Ser. No. 662,573, Aug. 23, 1967, abandoned. This application Feb. 22, 1974, Ser. No. 444,630

Int. Cl. C07c *127/18, 157/08*

U.S. Cl. 260—553 A **17 Claims**

1. A compound having the formula



in which X and Y are oxygen; R_1 is hydrogen; R_2 is hydrogen or alkyl of 1 to 10 carbon atoms, R_3 is cycloalkyl having from 3 to 6 carbon atoms, inclusive, alkyl of 1 to 10 carbon atoms, or lower alkenyl of 2 to 4 carbon atoms, R_4 is hydrogen; R_5 is selected from the group hydrogen, alkyl of 1 to 10 carbon atoms, halogenated lower alkyl of 1 to 6 carbon atoms, provided that when R_1, R_2, R_3 and R_4 are hydrogen, X and Y are oxygen and *m* is 0, then R_5 is other than methyl or ethyl.

3,897,494
AMINOACID DERIVATIVES

Boris Vasilev Alexiev; Stoycho Borisov Stoev; Alexander Vasilev Spasov; Lilyana Stoilova Maneva; Emanuil Alexandrov Emanuilov, and Evgeni Victorov Golovinski, all of Sofia, Bulgaria, assignors to Institute po Biochimia pri Ban, Sofia, Bulgaria

Filed Sept. 26, 1973, Ser. No. 400,795

Claims priority, application Bulgaria, Sept. 26, 1972, 21479

Int. Cl. C07c *103/30*

U.S. Cl. 260—561 H **1 Claim**

1. L-cystine-bis-(N,N-B-Chlorethylhydrazide).

3,897,495
PERHALOGEN-2-AZAPROPENES PROCESS

Erich Klauke, Odenthal-Hahnenberg; Hans Holtschmidt, Leverkusen-Steinbuechel, and Kurt Findeisen, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 6, 1972, Ser. No. 215,907

Claims priority, application Germany, Jan. 12, 1971, 2101107

Int. Cl. C07c *119/00*

U.S. Cl. 260—566 D **5 Claims**

1. Process for preparing perflouro-2-azapropene which comprises reacting trichloromethyl isocyanide dichloride with at least the stoichiometrically necessary quantity of sodium fluoride in an organic solvent at a temperature of from 80° to 220°C.

3,897,496
N,N-DIALKYL-N-C8–C22-ALKYL)-N-3-NITRO-4-METHOXYBENZYLAMMONIUM CHLORIDES

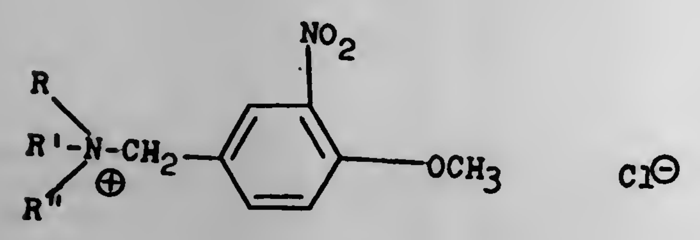
Nathan N. Crounse; Simon Bonta, and Charles J. Ploss, all of Cincinnati, Ohio, assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 77,707, Oct. 2, 1970, abandoned. This application Aug. 24, 1973, Ser. No. 391,451The portion of the term of this patent subsequent to Oct. 6, 1987, has been disclaimed.

Int. Cl. C07c *87/00*

U.S. Cl. 260—567.6 M **3 Claims**

1. A compound of the formula



wherein R is alkyl having 1 to 22 carbon atoms; R′ is lower alkyl; and R″ is higher-alkyl having 8 to 22 carbon atoms.

3,897,497
POLYAMIDE-IMIDES

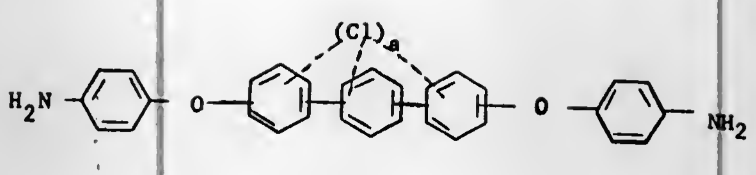
George Lewis Brode, Somerville, and James Hajime Kawakami, Piscataway, both of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 182,526, Sept. 21, 1971, Pat. No. 3,817,921, which is a continuation-in-part of Ser. No. 50,968, June 29, 1970, abandoned. This application Apr. 1, 1974, Ser. No. 456,805

Int. Cl. C07c *93/06*

U.S. Cl. 260—571 **4 Claims**

1. An amine having the formula:



wherein *a* is an integer having values of 6 to 8.

3,897,498
PRODUCTION OF M- AND P-PHENYLENEDIAMINE

Hans-Georg Zengel, Kleinwallstadt, and Manfred Bergfeld, Erlenbach, both of Germany, assignors to Akzo N. V., Arnhem, Netherlands

Filed Mar. 13, 1974, Ser. No. 450,675

Claims priority, application Germany, Mar. 19, 1973, 2313496

Int. Cl. C07c *87/58*

U.S. Cl. 260—578 **10 Claims**

1. A process for the production of m-phenylenediamine or p-phenylenediamine from the corresponding isophthalamide or terephthalamide as the initial phthalamide reactant, which process comprises:

reacting chlorine with said phthalamide reactant suspended in water in a first stage while maintaining the resulting reaction mixture over the course of the reaction in said first stage as a dilute aqueous solution of a mineral acid, the dilution being such that hydrogen chloride being formed by the chlorination reaction remains substantially completely dissolved in the reaction mixture; and

converting the resulting N,N′-dichloro-isophthalamide or N,N′-dichloro-terephthalamide of said first stage into the corresponding m-phenylenediamine or p-phenylenediamine by reaction with an aqueous solution of an alkali or alkaline earth metal hydroxide in a second stage.

3,897,499
HYDROGENATION OF CHLORONITROBENZENES USING NOBLE METAL CATALYSTS TREATED WITH A SULFOXIDE AND A HYDRAZINE

Gerhard Vollheim, Hanau; Karl-Jurgen Troger, Grossauheim, and Gerhard Lippert, Kleinostheim, all of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt Vormals Roessler, Germany

Division of Ser. No. 292,797, Sept. 27, 1972. This application Jan. 4, 1974, Ser. No. 430,773

Claims priority, application Germany, Oct. 8, 1971, 2150220

Int. Cl. C07c *85/10;* **B01j** *11/08*

U.S. Cl. 260—580 **16 Claims**

1. A process of selectively hydrogenating chloronitrobenzene or chloronitrobenzene substituted on the benzene ring with lower alkyl to chloroaminobenzene or chloroaminobenzene substituted on the ring with lower alkyl comprising hydrogenating said chloronitrobenzene or chloronitrobenzene having a lower alkyl substituent on the benzene ring using as a catalyst for said hydrogen a noble metal selected from the group consisting of platinum and palladium on activated carbon, said catalyst having been prepared by treating said noble metal on activated carbon with a sulfoxide of the formula R_1SOR_2 where R_1 and R_2 are alkyl, aralkyl or aryl and then

with a hydrazine material having the formula R_3NHNH_2 where R_3 is hydrogen, alkyl, aryl, aralkyl or alkenyl.

3,897,500
ALKYLIDENEDITHIOBISPHENOLS

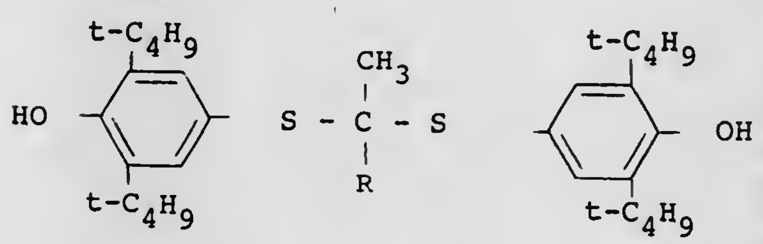
Martin B. Neuworth, Trumbull, Conn., assignor to Continental Oil Company, Ponca City, Okla.

Division of Ser. No. 206,929, Dec. 10, 1971, Pat. No. 3,786,100, which is a division of Ser. No. 835,811, June 23, 1969, abandoned, which is a continuation-in-part of Ser. Nos. 637,622, May 11, 1967, abandoned, Ser. No. 637,649, May 11, 1967, abandoned, and Ser. No. 637,650, May 11, 1967, abandoned. This application May 29, 1973, Ser. No. 367,055

Int. Cl. C07c *149/36*

U.S. Cl. 260—609 F **3 Claims**

1. A compound having the general formula



where R is an alkyl radical containing 4 or 6 carbon atoms.

3,897,501
HYDROPEROXIDES

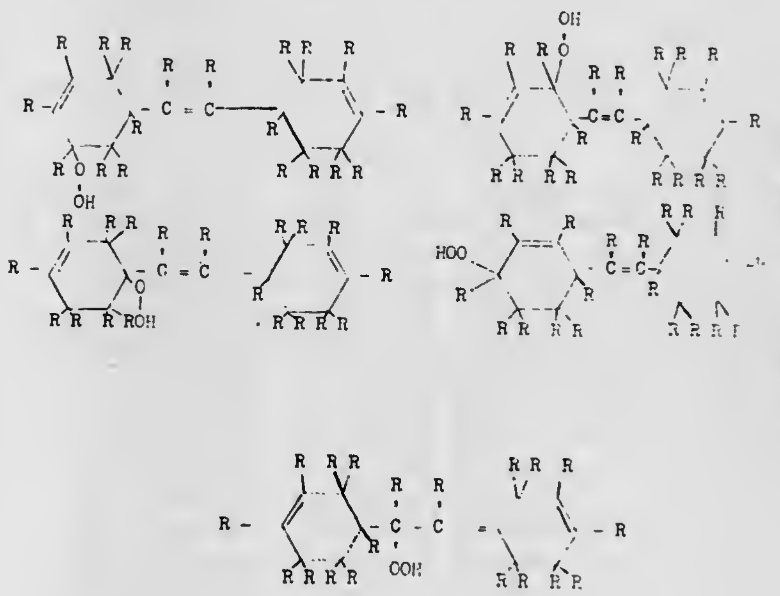
Paul W. Solomon, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 714,070, March 18, 1968, Pat. No. 3,763,240, which is a continuation-in-part of Ser. No. 509,624, Nov. 24, 1965, abandoned. This application Apr. 24, 1973, Ser. No. 354,094

Int. Cl. C07c *73/06*

U.S. Cl. 260—610 R **4 Claims**

1. Hydroperoxides characterized by the following formulas:



wherein R is selected from the group consisting of hydrogen, methyl and ethyl and wherein the total number of carbon atoms in all of said R groups does not exceed eight.

3,897,502
PROCESS FOR MAKING FLUORINATED ETHERS

James P. Russell, Berkeley Heights; Alex J. Szur, North Plainfield, and Ross C. Terrell, Plainfield, all of N.J., assignors to Airco, Inc., Montvale, N.J.

Continuation of Ser. No. 191,811, Oct. 22, 1971, abandoned. This application Aug. 23, 1973, Ser. No. 390,690

Int. Cl. C07c *41/00*

U.S. Cl. 260—614 F **12 Claims**

1. A method for partially fluorinating a polyfluoroether feedstock selected from the group consisting of dimethyl dioxalane and a standard alkane containing from 2 to about 16 carbon atoms, said polyfluoroether feedstock having at least two fluorine atoms, at least two hydrogen atoms and one or two ether oxygen atoms per molecule and having as many halogen atoms of atomic number 9 to 35 as carbon atoms in the molecule, the ratio of halogen atoms to carbon atoms in the molecule of the polyfluoroether feedstock being no more than 2:1, said method being selective toward the production of a further fluorinated polyfluoroether having at least one hydrogen atom and the same carbon skeletal structure in its molecule as said polyfluoroether feedstock, comprising contacting said polyfluoroether feedstock with a mixture of molecular fluorine and inert gas in a reaction zone under reaction conditions at which the polyfluoroether feedstock is in the liquid phase, the amount of inert gas in said mixture being sufficient to moderate the reaction so that it is controllable and the mixture contains about 5 to 75 volume percent molecular fluorine based on the total fluorine and inert gas charged to the reaction zone, the reaction temperature being in the range of about −40° to 0° C., to prepare a further fluorinated polyfluoroether product having at least one hydrogen atom and the same carbon skeleton in its molecule as said polyfluoroether feedstock.

3,897,503
GLYOXAL HEMIACETALS, THEIR PREPARATION AND USE

Richard Wessendorf, Essen-Heisingen, and Wilhelm Heitmann, Herne, both of Germany, assignors to Veba-Chemie AG, Wanne Eickel, Germany

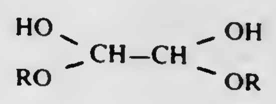
Filed Nov. 29, 1972, Ser. No. 310,491

Claims priority, application Germany, Dec. 3, 1971, 2159975

Int. Cl. C07c *43/30*

U.S. Cl. 260—615 A **5 Claims**

1. A glyoxal hemiacetal of the formula



$$\begin{matrix} HO \\ RO \end{matrix} \!>\! CH{-}CH \!<\! \begin{matrix} OH \\ OR \end{matrix}$$

wherein each R is an alkyl radical of 4 to about 36 carbon atoms.

3,897,504

NOVEL NOREREMOPHILANE DERIVATIVES

Giuliano Bozzato, Küsnacht; Mario Pesaro, Zurich; Peter Schudel, Wetzikon; Marianne Hug-Inderbitzin, Schwerzenbach, all of Switzerland, and Robert Edward Erickson, Westfield, N.J., assignors to Givaudan Corporation, Clifton, N.J.

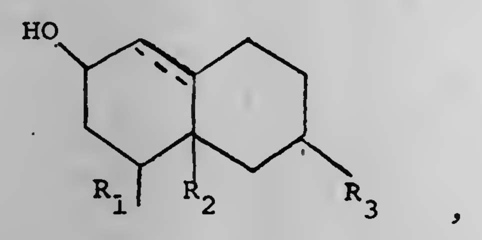
Division of Ser. No. 111,736, Feb. 1, 1971, Pat. No. 3,819,711. This application Sept. 21, 1973, Ser. No. 399,594

Claims priority, application Switzerland, Feb. 19, 1970, 2394/70

Int. Cl. C07c *35/22*

U.S. Cl. 260—617 F **3 Claims**

1. A compound of the formula



wherein R_1 and R_2 signify hydrogen or methyl, but at least one of the symbols R_1 or R_2 signifies hydrogen and R_3 is isopropyl, isopropenyl or isopropylidene and the symbol represents a C—C single bond or a C=C double bond.

3,897,505

1,1,3,4,4,4-HEXACHLORO-1,2-BUTADIENE AND ITS DIMER

David G. Walker, Baytown, and Norman L. Ruland, Conroe, both of Tex., assignors to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Filed Jan. 22, 1973, Ser. No. 325,823

Int. Cl. C07c *17/06, 21/20*

U.S. Cl. 260—648 R **19 Claims**

1. 1,1,3,4,4,4-Hexachloro-1,2-butadiene.

3,897,506

PROCESS FOR THE PRODUCTION OF FREON

Kang Yang; Gaylord G. Greenfield, both of Ponca City, Okla., and Joseph D. Henry, Jr., Morgantown, W. Va., assignors to Continental Oil Company, Ponca City, Okla.

Filed May 7, 1973, Ser. No. 357,751

Int. Cl. C07c *17/20*

U.S. Cl. 260—653.7 **3 Claims**

1. A method for the production of freons comprising, in combination, the steps of:

a. reacting aqueous fluosilicic acid with ammonia to produce ammonium fluoride and silicon dioxide,
b. recovering said ammonium fluoride and reacting it with hydrogen fluoride and sodium nitrate to produce ammonium nitrate and sodium bifluoride,
c. recovering said sodium bifluoride and reacting it with hydrogen chloride to produce hydrogen fluoride and sodium chloride, wherein a portion of said hydrogen fluoride is recycled for utilization in step (b),
d. recovering the remainder of said hydrogen fluoride and reacting it with carbontetrachloride to produce hydrogen chloride and freon, wherein said hydrogen chloride is recycled for utilization in step (c),
e. separately recovering said freon.

3,897,507

METHOD FOR PRODUCING 3,4-DICHLOROBUTENE-1

Takeshi Yamahara, Kobe; Hiroshi Kishimoto, Takatsuki; Shinji Nakamura, Ibaraki, and Takashi Deguchi, Takatsuki, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Continuation of Ser. No. 762,950, Sept. 26, 1968, abandoned. This application Feb. 3, 1972, Ser. No. 223,298

Claims priority, application Japan, Jan. 24, 1968, 43-4493

Int. Cl. C07c *21/04*

U.S. Cl. 260—654 R **2 Claims**

1. In a process for isomerizing 1,4-dichlorobutene-2 to produce 3,4-dichlorobutene-1 in the presence of a copper-containing catalyst selected from the group consisting of copper chloride, copper bromide, copper carbonate, copper thiocyanate, copper nitrate, copper actate, copper naphthenate, copper oxide and copper metal, the improvement which comprises carrying out the isomerization by heating at a temperature ranging from 90°–120°C., a mixture of said 1,4-dichlorobutene-2 and said copper-containing catalyst with a carboxylic acid amide selected from the group consisting of formamide, dimethylformamide, N-methyl-α-pyrrolidone, α-pyrrolidone, N-methyl acetamide and phthalimide, said carboxylic acid amide being present in an amount sufficient to promote the activity of the copper-containing catalyst, thus increasing the rate of isomerization, whereby the 3,4-dichlorobutene-1 is separated from the reaction mixture through distillation during the isomerization reaction and at the same time, 1,4-dichlorobutene-2 is supplied into the reaction mixture so as to keep the composition of the reaction mixture uniform, said carboxylic acid amide being present in an amount ranging from 0.5–10.0 percent by weight, based on the weight of the 1,4-dichlorobutene-2.

3,897,508

DIOLEFIN DIMERIZATION

Igor Tkatchenko, Pau, France, assignor to Union Chimique Elf-Aquitaine, Courbevoie and Institut Francais du Petrole, des Carburants et Lubrifiants, Rueil-Malmaison, both of, France

Filed Oct. 10, 1973, Ser. No. 404,889

Claims priority, application France, Oct. 10, 1972, 72.35765

Int. Cl. C07c *3/00*

U.S. Cl. 260—666 B **13 Claims**

1. A process for the dimerization of diolefins of up to 10 carbon atoms in the liquid phase comprising contacting the diolefin in solution in an inert solvent at a temperature between 20°–120° C. with a dimerization catalytic amount of up to 10 mmole percent of a catalyst which is the reaction product of an alkali metal or alkaline earth metal salt of a tricarbonyl nitrosyl ferrate anion and a metal halogen or pseudo-halogen compound or complex, wherein said alkali metal or alkaline earth metal salt is of the formula $M^1[Fe(CO)_3(NO)]_m$ in which m is 1 when M^1 is an alkali metal and m is 2 when M^1 is an alkaline earth metal, and wherein said metal halogen or pseudo-halogen compound or complex thereof is of the formula $L_pM^2X_n$ in which M^2 is a metal of Groups IA, II, III, IV, V, VIB, VIIB or VIII of the Periodic Table, X is halogen, cyanide, sulfocyanide, isocyanate, nitrate, nitrite, sulfate, acetylacetonate, or carboxylate, L is a chalcogen or pnicogen ligand, p is an integer of 0–6 and n is an integer of 1–6.

3,897,509

PREPARATION OF ALKYLIDENE BICYCLIC COMPOUNDS

Tsuneyuki Nagase; Gohu Suzukamo; Masami Fukao, and Kenichi Nishio, all of Osaka, Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

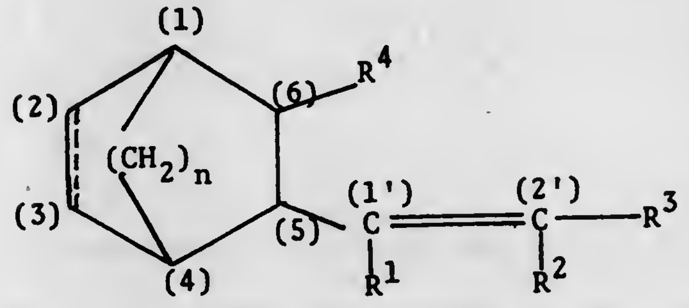
Continuation-in-part of Ser. No. 159,308, July 2, 1971, Pat. No. 3,808,152. This application Jan. 21, 1974, Ser. No. 434,996

Claims priority, application Japan, July 2, 1970, 45-58522; Aug. 18, 1970, 45-72643; June 5, 1971, 46-39701

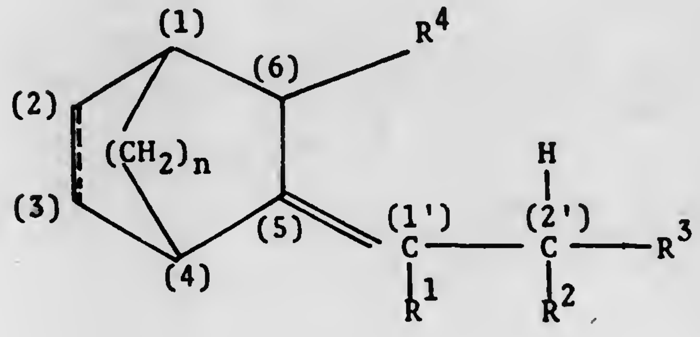
Int. Cl. C07c *5/24*

U.S. Cl. 260—666 PY **9 Claims**

1. A process for the production of alkylidene bridged ring compounds which comprises contacting an alkenyl bridged ring compound of the formula:



wherein R^1, R^2 and R^3 are each hydrogen or alkyl having 1 to 8 carbon atoms, R^4 is hydrogen or alkyl having 1 to 4 carbon atoms and n is 1 or 2 and wherein a double bond may be present at the place between the 2- and 3-positions as indicated by the dotted line, with an alkaline catalyst composition prepared by heating alumina, from 0.01 to 100% by weight of the alumina of an alkali metal hydroxide and an equimolar or less amount with respect to the alkali metal hydroxide of an alkali metal at a temperature higher than the melting point of the alkali metal, whereby the resulting catalyst composition does not contain the alkali metal as a simple substance and consequently does not ignite on exposure to air and does not generate hydrogen on admixture with water, to give an alkylidene bridged ring compound of the formula:



wherein R^1, R^2, R^3, R^4 and n are each as defined above and wherein a double bond may be present at the place between the 2- and 3- positions as indicated by the dotted line.

3,897,510

PROCESS FOR THE PRODUCTION OF 5-ALKYLIDENENORBORNENE-2

Takashi Kiyota, Yokohama, Japan, assignor to Nippon Oil Co., Ltd., Tokyo, Japan

Filed Dec. 12, 1973, Ser. No. 423,928

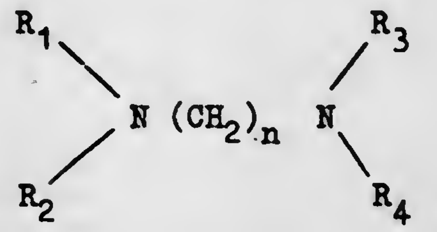
Claims priority, application Japan, Dec. 12, 1972, 47-124602

Int. Cl. C07c *13/28*

U.S. Cl. 260—666 PY **13 Claims**

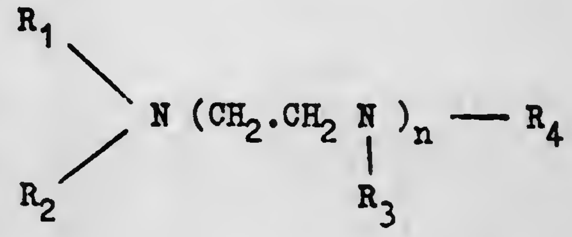
1. In a process for the production of a 5-alkylidenenorbornene-2 by the isomerisation of the corresponding 5-alkenylnorbornene-2 in the presence of a catalyst formed by combining an organo-alkali metal compound with a complexing agent selected from the group consisting of

a. substituted polymethylene diamines of the general formula :



where n is two or a greater integer, and R_1, R_2, R_3 and R_4 are alkyl, cycloalkyl or aryl radicals and may be the same or different;

b. substituted polyethylene diamines of the general formula



where n is two or a greater integer and R_1, R_2, R_3 and R_4 are alkyl, cycloalkyl or aryl radicals and may be the same or different; and

c. triethylene diamine; said process including the steps of decomposing catalyst contained in the product mixture by the addition of water, optionally containing in solution at least one substance selected from the group consisting of alkali metal hydroxides, carbonates and bicarbonates, in an amount greater than 1 mol equivalent of alkali metal compound contained in said product mixture and such that at least one alkali metal compound is present in the aqueous phase formed in a concentration greater than 5 percent by weight, and thereafter removing the catalyst decomposition products.

3,897,511

REMOVAL OF α-ACETYLENES FROM GAS STREAMS

Ludo K. Frevel, Midland, and Leonard J. Kressley, Saginaw, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 12, 1973, Ser. No. 415,457

Int. Cl. C07c *11/02*

U.S. Cl. 260—681.5 **4 Claims**

1. A method of removing alphaacetylenes from a gas stream containing the same, said gas stream consisting of one or more hydrocarbons, the inert gases helium, argon and minor proportions of CO and α-acetylenes and being substantially free of hydrogen which comprises contacting said gas stream with a supported catalyst consisting essentially of a mixture of finely divided copper metal and a minor proportion of at least one polyvalent activator metal, said activator metal being one

of the group of silver, platinum, palladium, manganese, nickel, cobalt, chromium and molybdenum, the weight of the activator metal or metals being from 1 to 20 percent of the combined weight of copper and activator, supported on gamma-alumina having a surface area of at least 10 square meters per gram and containing about 0.1 to 1.5 percent by weight of Na_2O, said supported catalyst having been oxidized and reduced before use, said contacting being carried out at between about 40° and 250°C.

3,897,512
OLEFIN DIMERIZATION PROCESS

Melvin Brown, Akron; Henry R. Menapace, Stow, and Neil A. Maly, Tallmadge, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 286,477, Sept. 5, 1972, abandoned, which is a continuation-in-part of Ser. No. 125,408, March 17, 1971, abandoned. This application Oct. 9, 1973, Ser. No. 404,559

Int. Cl. C07c *3/10*

U.S. Cl. 260—683.15 D **8 Claims**

1. The method for dimerizing α-olefins containing from 3 to 8 carbon atoms or codimerizing α-olefins containing from 3 to 8 carbon atoms with ethylene which comprises subjecting said olefins to a catalyst consisting essentially of a mixture of (1) a tungsten salt selected from the group consisting of tungsten hexahalides and tungsten oxyhalides, (2) a reducing agent selected from the group defined by the formulae

$$R_nMX_{3-n} \text{ and } Al_{1.5}MX_{1.5}$$

wherein n is 1 or 2, X is a halogen, R is an alkyl radical containing from 1 to 10 carbon atoms and M is selected from boron, aluminum, gallium and indium and (3) a ligand of the formula

$$NR'R''R'''$$

wherein R′ and R″ are selected from the group consisting of hydrogen, alkyl, cycloalkyl, aryl, alkenyl and alkaryl; R‴ is selected from the group of hydrogen, alkyl and alkenyl and R′, R″ and R‴ contain up to 20 carbon atoms and can be substituted by at least one member of the group consisting of halogen, amino, nitro, cyano, alkoxy, carboxy and carboalkoxy or R″ and R‴ join together by carbon-carbon bonds to form a heterocyclic saturated ring, in which the molar ratio of the ligand of (3) to the tungsten salt of (1) is from about 1.5/1 to about 2.5/1 and the molar ratio of the reducing agent of (2) to the tungsten salt of (1) is from about 8/1 to about 30/1.

3,897,513
PIVALOLACTONE RANDOM GRAFT COPOLYMERS

Sherman A. Sundet, Wilmington, Del., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.

Continuation-in-part of Ser. No. 166,281, July 26, 1971, abandoned. This application June 30, 1972, Ser. No. 268,056

Int. Cl. C08f *35/06, 27/12*

U.S. Cl. 260—824 R **40 Claims**

1. A thermoplastic random organic graft copolymer formed by contacting

an amorphous base polymer having thereon at least one random carboxylic group anionic site selected from the group consisting of free carboxylic sites and developable carboxylic sites

with up to 150% by weight of the polymer, of at least one α-substituted-β-propiolactone in an amount such that the ratio of the moles of β-lactone to the moles of anionic sites on the base polymer varies between 3 to 1000, and polymerizing said β-lactone to form crystallizable poyler sidechains, said sidechains having a length of between 3 to 1000 monomer units and a weight of up to 60 percent of the graft composition,

said base polymer characterized in that it is amorphous to x-rays at a temperature of 130°C or below, and has a molecular weight of about 2,000.

3,897,514
CURING HYDROXY-TERMINATED PREPOLYMER USING ANHYDRIDE/EPOXIDE CURING SYSTEM

John C. Allabashi, Cumberland, Md., assignor to Hercules Incorporated, Wilmington, Del.

Filed July 9, 1973, Ser. No. 377,859

Int. Cl. C08g *30/12*

U.S. Cl. 260—836 **10 Claims**

1. A process for curing hydroxy-terminated prepolymer comprising (a) admixing a hydroxy-terminated prepolymer having an equivalent molecular weight of from about 2,000 to about 4,000, based on hydroxyl content, and a hydroxyl functionality of from about 2.2 to about 2.6; a curing system comprising a cyclic anhydride and an epoxide, said cyclic anhydride and epoxide being mutually soluble in said hydroxy-terminated prepolymer and the equivalence ratio of said hydroxy-terminated prepolymer to cyclic anhydride to epoxide being from about 1.0 to about 0.8–1.2 to about 0.8–1.2 respectively; and a curing catalyst selected from chromium salts of aliphatic carboxylic acids containing 2–22 carbon atoms, chromium naphthenate and vanadium naphthenate; and (b) heating the resulting admixture at a temperature of at least about 30°C. until a solid cured rubber product is obtained.

3,897,515
CYCLIC O,O,S-TRIESTERS OF PHOSPHORODITHIOIC ACID

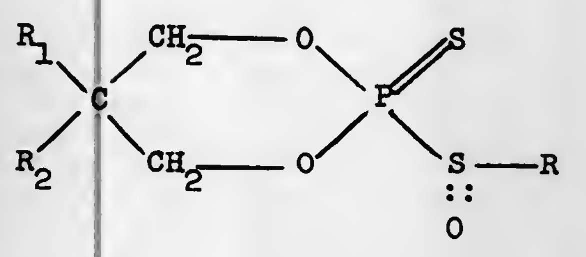
Walter Nudenberg, Newtown, Conn.; Merlin P. Harvey, Denison, Iowa, and James Urquhart Mann, Wayne, N.J., assignors to Uniroyal, Inc., New York, N.Y.

Division of Ser. No. 282,640, Aug. 21, 1972, which is a division of Ser. No. 66,870, Aug. 25, 1970, Pat. No. 3,712,878. This application July 17, 1974, Ser. No. 489,295

Int. Cl. C07d *105/04*

U.S. Cl. 260—934 **3 Claims**

1. A compound having the following formula:



wherein R_1 and R_2 are C_1 to C_5 alkyl groups which can be the same or different; the O portion represents the optional presence of an oxygen atom; and R is α-hydroxyphenethyl.

3,897,516
OXIMINO PHOSPHORUS COMPOUNDS

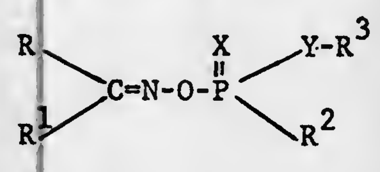
Arnold D. Gutman, Berkeley, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Apr. 6, 1970, Ser. No. 26,103

Int. Cl.² C07F *9/165;* **A01N** *9/36*

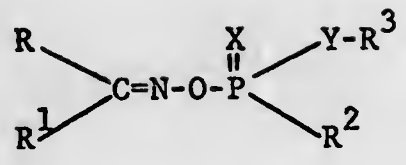
U.S. Cl. 260—940 **6 Claims**

1. A compound having the formula



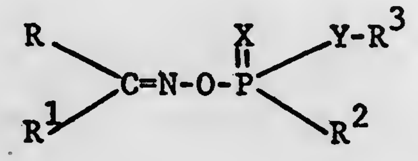
in which X is sulfur, Y is oxygen, R is alkyl having 1 to 4 carbon atoms, R^1 is methyl, R^2 is alkyl having 1 to 2 carbon atoms, and R^3 is 4-cyanophenyl.

3. A compound having the formula



in which X is sulfur, Y is oxygen, R is alkyl having 1 to 4 carbon atoms, R^1 is methyl, R^2 is alkyl having 1 to 2 carbon atoms, and R^3 is 2,4,5-trichlorophenyl

5. A compound having the formula



in which X is sulfur, Y is sulfur, R is alkyl having 1 to 4 carbon atoms, R^1 is methyl, R^2 is alkyl having 1 to 2 carbon atoms, and R^3 is phenyl.

3,897,517
(THIO)PHOSPHORYL-AND PHOSPHONYL FORMAMIDINES

Jurgen Hocker, Cologne, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

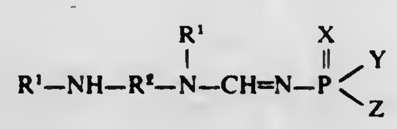
Filed Sept. 14, 1973, Ser. No. 397,552

Claims priority, application Germany, Sept. 23, 1972, 2246890

Int. Cl. A01n *9/36;* **C07f** *9/24, 9/44*

U.S. Cl. 260—941 **8 Claims**

1. A (thio)phosphoryl- or (thio)phosphonyl formamidine of the formula



$$R^1-NH-R^2-\overset{\overset{R^1}{|}}{N}-CH=N-\overset{\overset{X}{\|}}{P}\begin{matrix}\diagup Y\\ \diagdown Z\end{matrix}$$

wherein

X is O or S,

Y and Z each independently is OR or SR, or one of them is R,

R is alkyl with up to about 16 carbon atoms, cycloalkyl with about 5 to 12 carbon atoms, phenyl, isopropoxycarbonylphenyl, or phenalkyl with up to 6 carbon atoms in the alkyl group,

R^1 is alkyl with up to about 16 carbon atoms, cycloalkyl with about 5 to 12 carbon atoms, phenyl, chlorophenyl or methoxyphenyl,

R^2 is $—C_nH_{2n})—$ or $—(C_pH_{2p-2})—$ optionally substituted by C_{1-6} alkyl, chlorine, NO_2 or CN, or is cyclohexylene or phenylene,

n is 1, 2 or 3, and

p is 2 or 3.

3,897,518
α-(DIBENZYLPHOSPHONO)ACETIC ACIDS

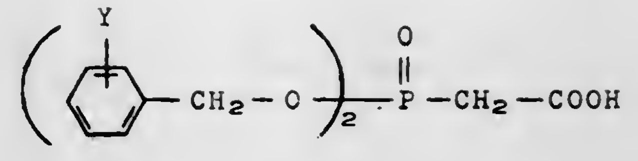
Gary A. Koppel, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Feb. 28, 1974, Ser. No. 446,868

Int. Cl.² C07C *51/00;* **C07F** *9/40*

U.S. Cl. 260—941 **2 Claims**

1. An α-phosphonoacetic acid of the formula



in which Y represents a substituent in the ortho- or paraposition and is selected from the group consisting of hydrogen, methyl, methoxy, halo, and nitro.

3,897,519
SECONDARY PHOSPHORIC ACID ESTERS

Knut Bertil Hogberg; Hans Jacob Fex, both of Helsingborg; Bo Goran Fredholm, Nyhamnslage; Torsten Rune Perklev, and Sten Gunnar Veige, both of Helsingborg, all of Sweden, assignors to Aktiebolaget Leo, Helsingborg, Sweden

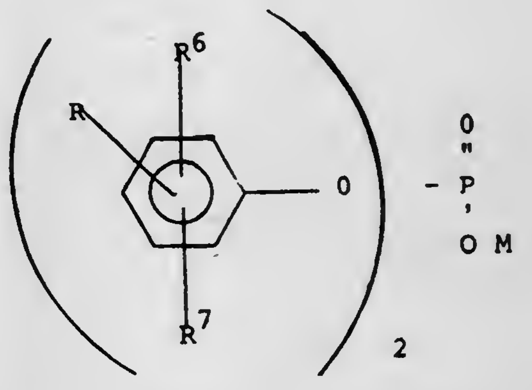
Division of Ser. No. 215,617, Jan. 5, 1972, Pat. No. 3,862,270. This application June 5, 1974, Ser. No. 476,663

Claims priority, application United Kingdom, Aug. 17, 1971, 38619/71; Nov. 10, 1971, 52303/71

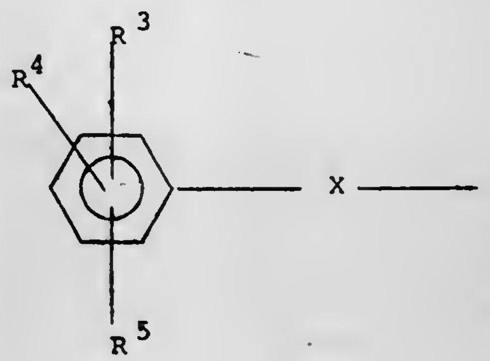
Int. Cl. C07f *9/18*

U.S. Cl. 260—942 **34 Claims**

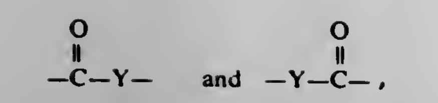
1. A symmetrical secondary phosphoric acid ester compound of the general formula



wherein R is positioned in m- or p-position relative to the phosphoric acid ester group and is



wherein X is selected from the group consisting of



$-\overset{O}{\overset{\parallel}{C}}-Y-$ and $-Y-\overset{O}{\overset{\parallel}{C}}-,$

wherein Y is a straight hydrocarbon chain having 2 or 3 carbon atoms, said chain being saturated or containing one double bond and having at most 2 substituents selected from the group consisting of lower aklyl, phenyl, phenyl substituted in p-position by lower alkyl, lower alkoxy or halogen (F, Cl, Br), benzyl and benzyl substituted in p-position by lower alkyl, lower alkoxy or halogen (F, Cl, Br); R^3, R^4, R^5, R^6, and R^7 are same or different and are selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, hydroxy, $OCOR^8$, F, Cl, Br, CF_3, NO_2, $COOR^9$, Ch_2COOR^9, OCH_2COOR^9, $CONR_2{}^8$, $CH_2CONR_2{}^8$, $OCH_2CONR_2{}^8$, NR^8COR^8, $CH_2NR_2{}^8$ and $CH_2NR^8COR^8$, wherein R_8 is selected from the group consisting of hydrogen and lower alkyl, and wherein R^9 is selected from the group consisting of hydrogen, lower alkyl and M, where M is selected from the group consisting of H, Na, K,½ Ca and aa pharmaceutically acceptable amine with the proviso that one of said substituents R^3-R^7 is selected from the group consisting of $COOR^9$, CH_2COOR^9, OCH_2COOR^9, $CONR_2{}^8$, $CH_2CONR_2{}^8$ and OCH_2CONr_28, or selected from the group consisting of $NR_2{}^8$, NR^8COR^8, $CH_2NR_2{}^8$, and $CH_2NR^8COR^8$, wherein R^8 and R^9 have the above meaning.

3,897,520

O-ALKYL-N-MONO-ALKYL-S-(AMIDOCARBONYL)-METHYL-MONOTHIOPHOSPHORIC ACID ESTER AMIDES

Claus Stolzer, Wuppertal; Ingeborg Hammann, Cologne, and Gunter Unterstenhofer, Opladen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

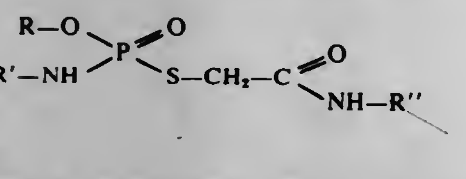
Filed June 13, 1973, Ser. No. 369,688

Claims priority, application Germany, June 27, 1972, 2231412

Int. Cl. C07f *9/24;* **A01n** *9/36*

U.S. Cl. 260—943 **6 Claims**

1. An O-alkyl-N-mono-alkyl-S-(amidocarbonyl)-methyl-monothiophosphoric acid ester amide of the formula



(I)

in which

R, R′ and R″ each independently is alkyl of 1 to 6 carbon atoms.

3,897,521

S,S-DIALKYL-O-ALKYLTHIOALKYL PHOSPHITES AND PHOSPHATES

Ernst Beriger, Neuallschwil, and Henry Martin, Basel, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

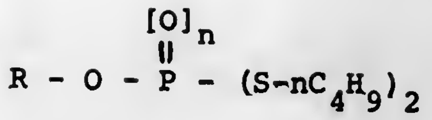
Division of Ser. No. 105,125, Jan. 8, 1971, Pat. No. 3,760,042. This application June 27, 1973, Ser. No. 374,219

Claims priority, application Switzerland, Jan. 16, 1970, 595/70

Int. Cl. C07f *9/16;* **A01n** *9/36*

U.S. Cl. 260—948 **5 Claims**

1. A compound of the formula



$R-O-\overset{[O]_n}{\overset{\parallel}{P}}-(S-nC_4H_9)_2$

in which R is alkylthioalkylene wherein the alkylthio moiety has from 1 to 3 carbon atoms and the alkylene moiety has from 2 to 4 carbon atoms, and *n* is the number 0 or 1.

3,897,522

ALKYL AND HALOALKYL N,N-DIALKYL-N-METHYLOLPHOSPHORODIAMIDATES

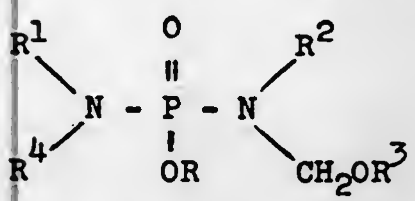
Patrick Michael Burke, Wilmington, Del., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.

Continuation-in-part of Ser. No. 261,812, June 12, 1972, abandoned. This application June 25, 1973, Ser. No. 373,144

Int. Cl. C07f *9/24;* **C08f** *45/58*

U.S. Cl. 260—953 **6 Claims**

1. Alkyl phosphorodiamidate having the formula



wherein

R is C_{1-5} alkyl having 0–3 substituents selected from chloro and bromo,

each of R^1 and R^2 when taken singly is selected from C_{1-3} alkyl and C_{1-3} chloro- or bromoalkyl,

R^3 is H, and

R^4 is H or CH_2OR^5 wherein R^5 is H,

provided that all carbon atoms alpha to the amide nitrogen and ester oxygen atoms are free of halo substituents.

3,897,523

CONTINUOUS PROCESS FOR PRODUCING DIALKYL PHOSPHOROCHLORIDOTHIONATES

Harold E. Sorstokke, New City, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 107,836, Jan. 19, 1971, abandoned, which is a continuation-in-part of Ser. No. 102,498, Dec. 29, 1970, abandoned, which is a continuation-in-part of Ser. No. 20,714, March 18, 1970, abandoned. This application Sept. 18, 1973, Ser. No. 398,366

Int. Cl. C07f *9/14*

U.S. Cl. 260—986 **8 Claims**

1. A continuous process for producing dialkyl phosphorochloridothionate which comprises:

a. continuously introducing a dialkyl phosphorothioic acid and chlorine into a first reaction mixture containing a dialkyl phosphorochloridothionate maintained at a temperature from about 40°C. to about 80°C. in a first chlorination zone wherein dialkyl phosphorothioic acid and chlorine are reacted, the amount of chlorine introduced into said first chlorination zone is between about 60 and about 93 percent of the chlorine feed to the process,

b. continuously transferring a portion of the first reaction mixture to a second chlorination zone wherein said first reaction mixture is continuously reacted with chlorine in a second reaction mixture maintained at a temperature of from about 40°C to about 80°C. the amount of chlorine introduced into said second chlorination zone is sufficient to bring the total amount of chlorine introduced into said first and second chlorination zones to between about 0.95 and about 1.5 moles of chlorine per mole of dialkyl phosphorothioic acid; and

c. recovering dialkyl phosphorochloridothionate.

3,897,524

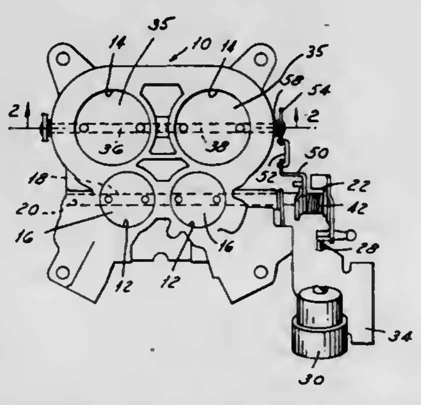
CARBURETOR SECONDARY THROTTLE SHAFT CONSTRUCTION

Richard J. Freismuth, Mt. Clemens, and Joseph F. Lopiccola, Warren, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 4, 1974, Ser. No. 430,823

Int. Cl.² F02M *11/02*

U.S. Cl. 261—23 A **8 Claims**



1. A carburetor having a pair of primary and a pair of secondary induction passages, a pair of primary and a pair of secondary throttle valves mounted for rotation in the respective passages, linkage means interconnecting the secondary throttle valves to the primary throttle valves for subsequent opening of the secondary throttle valves by the primary valves, and means mounting the secondary throttle valves on axially aligned shaft portions for an independent movement relative to each other to minimize leakage past the secondary throttle valves when closed.

3,897,525

APPARATUS FOR AERATING LIQUIDS IN A TANK HAVING WAVE ATTENUATOR

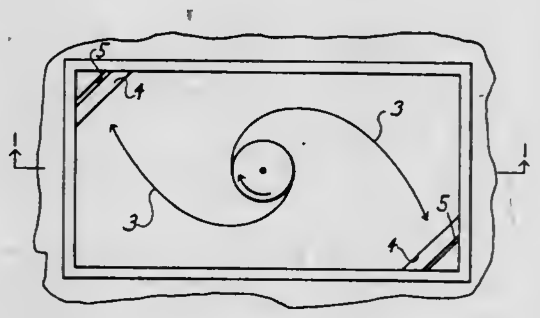
Herbert Auler, Aarbergen, Germany, assignor to Passavant-Werke Michelbacher Huette, Germany

Filed Feb. 26, 1974, Ser. No. 445,897

Claims priority, application Germany, Mar. 13, 1973, 2312476

Int. Cl.² B01F *3/04, 7/16*

U.S. Cl. 261—91 **9 Claims**



6. In apparatus for aerating liquids in a polygonal aeration tank having at least one surface aerator mounted for rotation therein which creates horizontally directed surface flow that forms into waves as the flow progresses through the tank and impinges at an angle upon the tank wall:

a. at least one substantially horizontal baffle mounted adjacent the inner wall of said tank adjacent the liquid level thereof and positioned at a point of high wave amplitude, and

b. there being at least one open flow passage through each said baffle for the circulation of liquid in an upward and a downward direction.

3,897,526

EVAPORATIVE COOLERS

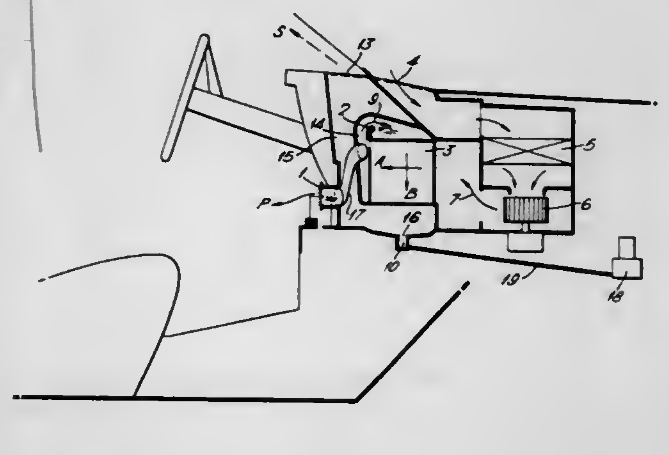
Roger Neill Morse, Caulfield; Donald Pescod, Balwyn, and John Joseph Kowalczewski, East Hawthorn, all of Australia, assignors to Commonwealth Scientific & Industrial Research Organization, Campbell, Australia

Filed June 1, 1973, Ser. No. 365,949

Claims priority, application Australia, June 2, 1972, 9205/72

Int. Cl. B01f *3/04*

U.S. Cl. 261—152 **12 Claims**



1. A method for cooling a defined space, comprising the steps of:

drawing a primary air flow through a first set of passageways formed in a heat exchanger and discharging same into the space;

separating a secondary air flow from the primary air flow after it has passed through the first set of passageways and causing the secondary air flow to pass through a second set of passageways formed in the heat exchanger and to discharge into the space in a stream which is separate from that portion of the primary air flow which is discharged directly into the space and,

supplying a liquid to the secondary air flow within the second set of passageways,

whereby the liquid is evaporated within the second set of passageways thereby to effect cooling of the secondary air flow and to effect cooling of the primary air flow by heat exchange between the respective sets of passageways,

said secondary air flow being so discharged into the space as to be directed onto or along a surface therein which radiates heat into the space whereby to effect cooling of the surface.

6. An evaporative cooling installation comprising:

a defined space to be cooled;

a heat exchanger constructed and arranged to define a first set of passageways and a second set of passageways in heat exchange relation with each other;

means to draw a primary air flow through the first set of passageways and to discharge the same into the space;

means to cause a secondary air flow to separate from the primary air flow after it has passed through the first set of passageways and to cause the secondary air flow to pass through the second set of passageways and to discharge into the space in s stream which is separate from that portion of the primary air flow which is discharged directly into the space, means to direct said secondary air flow onto or along a surface therein which radiates heat into the space whereby to effect cooling of the surface and;

means to supply a liquid to the secondary air flow within the second set of passageways;

whereby the liquid is evaporated within the second set of passageways to effect cooling of the secondary air flow and to effect cooling of the primary air flow by heat exchange between the respective sets of passageways.

3,897,527

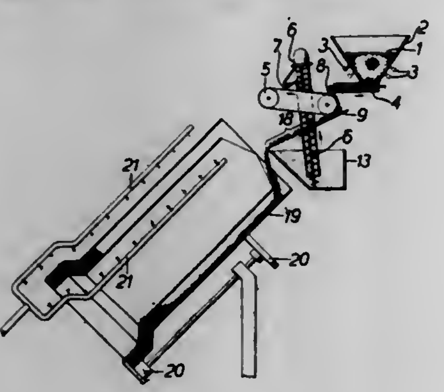
METHOD OF MANUFACTURING ARTICLES FROM HOT SOLID FILLER MATERIAL COATED WITH THERMOPLASTIC MATERIAL

Lars Ringdal, Montebelloveien 15, Oslo 3, Norway

Continuation-in-part of Ser. No. 20,622, March 18, 1970, abandoned. This application Mar. 28, 1972, Ser. No. 238,910

Int. Cl.² B29B *3/02*

U.S. Cl. 264—37 **8 Claims**



1. The method of manufacturing articles from particles of solid granular filler material and thermoplastic material, in which the particles of solid granular material are coated with thermoplastic material, the method comprising the steps of conducting particles of solid granular material adapted to store heat through a heating zone and therein heating the solid particles to be coated to a temperature substantially in excess of that required to melt the thermoplastic material in quantities sufficient to coat the solid particles with the stored heat therein, said particles of solid granular material being stable and substantially resistant to disintegration at the temperature used, conducting the resulting solid particles into a mixing zone subsequent to said heating, supplying powdered thermoplastic material to the mixing zone in a proportion sufficient to coat said solid particles, thoroughly mingling the solid particles with said proportion of powdered thermoplastic material and melting said thermoplastic material onto the surfaces of the solid particles by utilizing the stored heat of said particles to melt said thermoplastic material and thus coat the particles, passing the resulting plastic-coated solid particles directly and continuously into a mold having a shape of the article to be produced until said mold is filled, the plastic-coated solid particles as delivered into the mold being at such a temperature and containing such an amount of stored heat as a result of the heating in the heating zone as to maintain the plastic coating at a temperature such that the particles of plastic-coated solid particles stick to each other in the mold, and cooling the particles in the mold sufficiently to permit removal of the molded article from the mold.

3,897,528

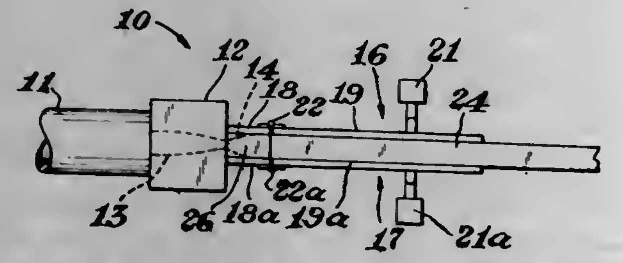
METHOD FOR THE EXTRUSION OF THERMOPLASTIC FOAM

Kyung W. Suh, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 21, 1973, Ser. No. 417,845

Int. Cl. B29d *27/00;* **B29f** *3/04*

U.S. Cl. 264—51 **4 Claims**



1. In a method for the preparation of a generally rectangular foamed synthetic resinous thermoplastic body by the extrusion of a heat plastified foamable gel through an elongate orifice into a region between a pair of spaced apart generally parallel restraining means and cooling the foam to a generally self-supporting condition which shows shallow valleys or depressions extending in the direction of extrusion due to collapsing of the foam, the improvement which comprises

restraining the foam during expansion at a location generally adjacent the die and at ends of the extrusion orifice in a curvilinear pattern, the pattern having a maximum width of from about 1.2 to about 3 times the width of the die orifice, the edge restraining means being generally divergent away from the extrusion orifice and towards the generally parallel restraining means with the further limitation that the foam at a location generally adjacent the die is restrained to provide a generally concave edge to the initially extruded foam, and subsequently

expanding the extruded gel to a desired configuration having a generally rectangular cross-section to thereby provide a foam extrude of improved density uniformity and without apparent collapse of the foam.

3,897,529

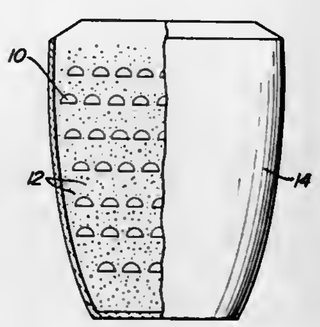
ALTERING THE APPEARANCE OF CORUNDUM CRYSTALS

Ronald R. Carr, Merrillville, and Stephen D. Nisevich, Whiting, both of Ind., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 210,140, Dec. 20, 1971, abandoned. This application Dec. 4, 1972, Ser. No. 312,132

Int. Cl. F27d *7/00*

U.S. Cl. 264—65 **5 Claims**



1. A process for altering the appearance of corundum crystals so as to produce crystals having uniform color appearance comprising the steps:

a. preparing a powder comprising a major proportion of alumina and a minor proportion of an oxide of titanium and iron oxide in an amount ranging from about 0.1 to about 1 weight percent;

b. contacting the surface of a corundum crystal having undesirable appearance characteristics with the powder of step (a); and

c. heating said crystal in contact with said powder in a reducing atmosphere at an elevated temperature within the range of about 1600° to about 1850°C. for a time sufficient to alter the appearance of said crystal so as to produce a crystal having a surface of uniform color.

3,897,530

METHOD FOR GUSSETING CONTINUOUS LENGTHS OF TUBULAR MATERIAL

Joel M. Leathers, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 27, 1972, Ser. No. 301,679

Int. Cl. B29c *17/02*

U.S. Cl. 264—89 **4 Claims**

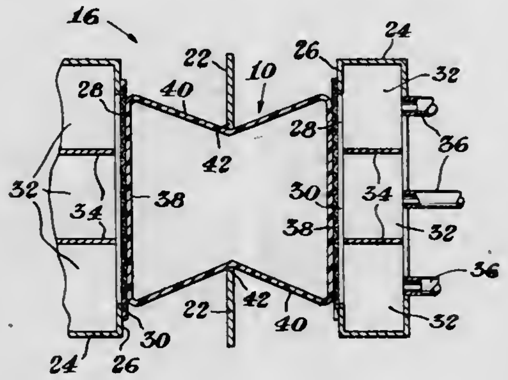
1. In the method of gusseting a flexible tube, the steps of:

i. continuously advancing the tube,

ii. selectively applying a vacuum suction to opposed exterior surface areas of the tube to open the tube,

iii. leaving a select exterior surface area of the tube free of the application of said vacuum suction

iv. maintaining a negative gauge pressure within said tube in the vicinity of said vacuum suction applying step; and



v. continuously inwardly tucking said free surface area to form a gusset structure in the tube, by means of inward collapse of said free section induced by atmospheric pressure acting cooperatively with the negative gauge pressure maintained within the tube.

3,897,531

MANUFACTURE OF COMPRESSED-POWDER BODIES

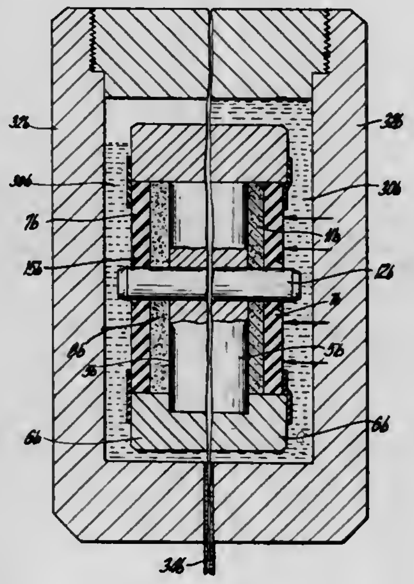
Gunter Overhoff, and Eckhard Kiefer, both of Radevormwald, Germany, assignors to Sintermetallwerk Krebsoege GmbH, Krebsoege, Germany

Filed Aug. 21, 1972, Ser. No. 282,323

Claims priority, application Germany, Sept. 9, 1971, 2145006

Int. Cl. B29j *5/00*

U.S. Cl. 264—109 **6 Claims**



1. A method for manufacturing molded articles from pressed powder material by compression within molding apparatus including a centrally located, generally cylindrical main core member consisting essentailly of solid inelastic material, an outer pressing jacket formed from elastic material surrounding said main core with a spacing therebetween forming a generally cylindrical annular molding cavity, and means including said outer pressing jacket enclosing said molding cavity, comprising:

a. positioning auxiliary core means consisting essentially of solid inelastic material to extend completely through said molding cavity transversely thereof between said pressing jacket and said main core member;

b. filling said molding cavity with moldable powder material;

c. applying fluid pressure externally of said pressing jacket to compress said powder material and bond the particles thereof into said molded article, said pressure being applied in a manner to act againt said auxiliary core means;

d. disassembling said apparatus to permit removal of both said auxiliary core means and said molded article from within said molding cavity; and

e. removing said molded article from said cavity, said article being thereby formed with a transverse aperture extending therethrough.

3,897,532

METHOD OF MANUFACTURING THIN-WALLED HOLLOW ARTICLES OF POLYTETRAFLUORETHYLENE, APPARATUS FOR PERFORMING THE METHOD AND ARTICLES MANUFACTURED BY THE METHOD

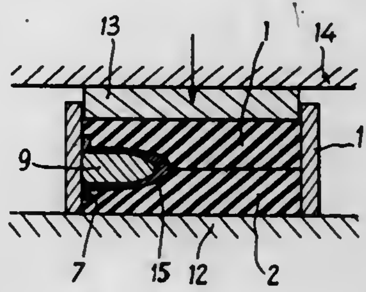
Georges H. Lyssy, Zollikon, Switzerland, assignor to S & T Steiger Engineering AG, Zurich, Switzerland

Filed Sept. 17, 1973, Ser. No. 398,078

Claims priority, application Switzerland, Sept. 18, 1972, 13632/72

Int. Cl. B29c *3/00;* **F16l** *43/00*

U.S. Cl. 264—127 **5 Claims**



1. A method of manufacturing thin-walled hollow articles of polytetrafluoroethylene, which method comprises the steps of: locating a rigid core within a mold comprising at least one female matrix made of a compressible elastic material while spacing the core from the inner walls of the mold by foraminous means by a predetermined distance,

introducing polytetrafluorethylene powder into said mold through said foraminous means to form a mass bearing against both the core and the inner wall of said matrix which substantially fills the space between said core and matrix,

compressing said compressible matrix inwardly by applying pressure thereto in a single direction while preventing peripheral expansion thereof, until said powder is formed into a predetermined article,

releasing said pressure, and

removing said article from said mold.

3,897,533

METHOD OF PRODUCING MOLDABLE REINFORCED THERMOPLASTIC MATERIAL AND ARTICLES THEREFROM

Hiroshi Hani, Fujisawa; Kazuo Hiraga, Yokohama; Masuo Tsudome, Yokohama; Hiroshi Kageyama, Yokohama; Shunichi Ito, Yokohama, and Shinji Iwai, Yokohama, all of Japan

Continuation of Ser. No. 13,840, Feb. 24, 1970, abandoned, which is a continuation-in-part of Ser. No. 647,975, June 22, 1967, abandoned. This application May 7, 1973, Ser. No. 357,530

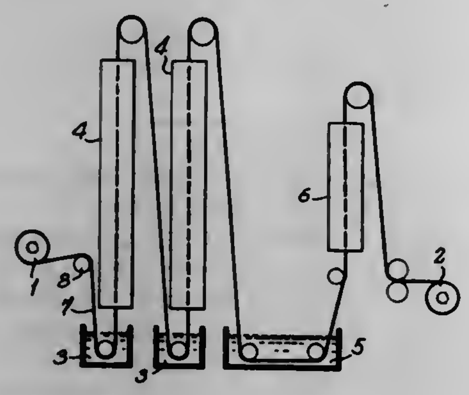
Claims priority, application Japan, June 24, 1966, 41-040692; Oct. 12, 1966, 41-066669

Int. Cl. B29d *3/02*

U.S. Cl. 264—137 **6 Claims**

1. A method of producing moldable reinforced thermoplastic sheet material from vinyl chloride polymer having poor

adhesive property to reinforcing glass fiber and to itself, which comprises impregnating a reinforcing glass fiber mat having glass fiber longer than one-half inch with an oil-in-water emulsion of vinyl chloride polymer resin particles containing an organic solvent capable of partially swelling the resin particles until the impregnated polymer content reaches to 60 to 90% by weight of the sheet material to be produced, said emulsion containing over about 30% by weight based upon the emulsion, of the polymer resin and from 5 to 30% by weight based upon the polymer, of the organic solvent, and said organic solvent being selected from hydrocarbons and halogenated hydrocarbons and drying the mat thus treated to remove water and organic solvent, thereby causing the polymer particles to coalesce firmly with one another and adhere to the glass fiber mat.



3,897,534

METHOD OF FIXING SHAFT TO HAMMER HEAD

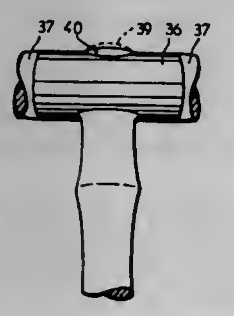
Michael Jeffery Stephens, Solihull, and Leslie Hill, Birmingham, both of England, assignors to Thor Hammer Ltd., Birmingham, England

Filed Sept. 13, 1973, Ser. No. 397,057

Claims priority, application United Kingdom, Sept. 13, 1972, 42409/72

Int. Cl. B29c *13/00*

U.S. Cl. 264—230 **3 Claims**



1. A method of fixing a shaft of plastics material in the head of a hammer of the type specified comprising providing a hammer head having a hole of waisted form extending therethrough for the reception of the end of a shaft, providing a preformed shaft of plastics material of an elastic memory type, one end portion, namely the end portion fixed in the head, of which is substantially oversize in cross-section in relation to the hole through the head, compressing said end portion in the cold to waisted form and to reduce its cross-sectional area such that the maximum cross-sectional area of said reduced end portion is only slightly greater than the minimum cross-sectional area of the hole through the hammer head, immediately following upon said operation of compression, force fitting said reduced end portion into the hole in the head by the application of force applied axially of the shaft, and allowing said compressed reduced end portion to elastically expand within the hole in the head of the hammer.

3,897,535

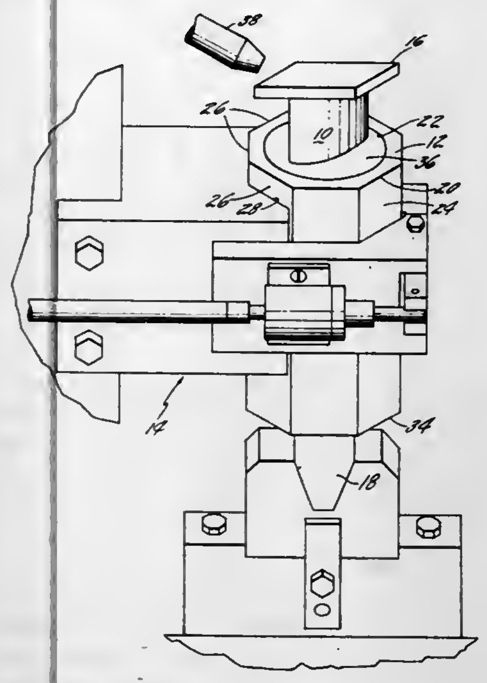
PROCESS FOR FIXTURING A WORKPIECE BY QUENCHING A LIQUID RESIN

Edward F. Lapac, West Hartford, Conn.; Joseph F. Miazga, Springfield, Mass., and Irving M. Mittleman, Glastonbury, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Aug. 29, 1973, Ser. No. 392,824

Int. Cl.² B29C *13/00, 6/04;* **B25B** *11/00*

U.S. Cl. 264—268 **9 Claims**



6. A process for securing a workpiece in a workholder wherein the workpiece is held in position by a special filler matrix which is bound together by a cold quenchable organic resin, including the steps of:

- positioning the workpiece within the workholder;
- heating the special filler to a temperature greater than the melting point of the organic resin;
- disposing the special filler within the workholder around the workpiece;
- heating to a liquid state a cold quenchable, organic resin, workholding material which has thermoplastic properties and exhibits a strength curve of the same general shape and temperature range as the curve shown in FIG. 2 of the specification;
- disposing said liquid organic resin within the workholder around the workpiece so as to fill the interstices in the special filler; and
- quenching simultaneously the workholder, workpiece and organic resin by contact with a quenching medium at a temperature of between 40° F and 73° F at least until the resin solidifies to hold the workpiece within a solid matrix comprising the special filler which is bound together by the organic resin.

3,897,536

PROCESS FOR THE MANUFACTURE OF A FRAME-WORK MEMBER OF A HOROLOGICAL DEVICE

Rodolphe Stooss, Le Landeron, Switzerland, assignor to Ebauches Electroniques S.A., Switzerland

Continuation-in-part of Ser. No. 192,080, Oct. 26, 1971, abandoned. This application Sept. 25, 1973, Ser. No. 400,625

Claims priority, application Switzerland, Dec. 11, 1970, 18344/70

Int. Cl.² B28B *1/24*

U.S. Cl. 264—328 **9 Claims**

1. A process for the manufacture of a frame-work member of a horological device comprising the steps of injection moulding said member from a synthetic material with a filling of reinforcing material while moulding at least one opening at a position which is to receive a bearing, thereafter injection moulding the inside of said opening with a synthetic bearing material presenting a low coefficient of friction using an injection mould with a bearing forming die needle positioned in said opening and an injection nozzle spaced therefrom and positioned coaxially to said needle, and moulding said bearing by impacting the injected synthetic bearing material against the end of said needle for the even distribution thereof without flexure of said needle while forming said bearing in said member.

3,897,537

BENEFICIATION OF ILMENITE ORES

Michael Robinson; Frank Clamp; David Aberdeen, and David Barry Mobbs, all of Grimsby, England, assignors to Laporte Industries Limited, London, England

Filed Apr. 4, 1972, Ser. No. 241,057

Claims priority, application United Kingdom, Apr. 5, 1971, 8809/71; Jan. 7, 1972, 911/72

Int. Cl. C22b *1/00;* **C01g** *23/04;* **C21b** *1/00*

U.S. Cl. 423—86 **18 Claims**

1. A process for beneficiating an ilmenite ore, which comprises heating the ilmenite under oxidising conditions to yield a material of which at least 20% by weight comprises pseudobrookite, reducing the oxidised material to yield a material having at least 4% of its iron content (calculated as Fe) in the ferric state, and leaching the said reduced material to yield a beneficiated titaniferous material.

3,897,538

PRODUCTION OF GALLIUM OXIDE

Harry C. Snyder, Jr., Belleville, Ill., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed May 22, 1972, Ser. No. 255,521

Int. Cl. C01g *15/00*

U.S. Cl. 423—122 **2 Claims**

1. In the process of recovering gallium oxide from an alkali metal aluminate solution containing dissolved gallium, which comprises co-precipitating alumina and part of the gallium oxide by introducing into the solution an acid capable of effecting such co-precipitation, the improvement comprising circulating the co-precipitated alumina and gallium oxide through the solution for a period of at least 15 hours, whereby additional gallium oxide is precipitated from the solution.

3,897,539

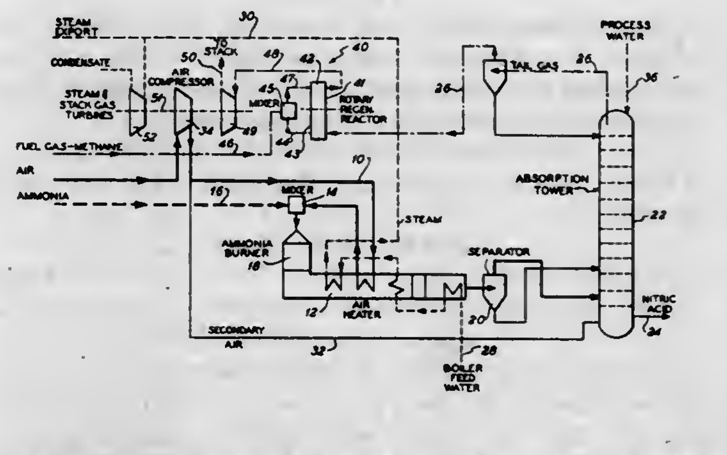
TAIL GAS NITROGEN OXIDE ABATEMENT PROCESS

Donald K. Fleming, Park Ridge, Ill., assignor to Institute of Gas Technology, Chicago, Ill.

Continuation-in-part of Ser. No. 188,895, Oct. 31, 1971, abandoned. This application July 26, 1973, Ser. No. 382,821

Int. Cl. C01b *21/00*

U.S. Cl. 423—235 **6 Claims**



1. A method for abating nitrogen oxide in a tail gas stream which includes the steps of

- delivering a tail gas waste stream containing nitrogen oxide to the obverse face of a rotating refractory wheel, said refractory wheel having communicating pathways from the obverse face to a reverse face, and divided into a preheat zone for preheating the gas stream and a reaction zone for treating the gas stream by an oxidation-reduction reaction,
- said gas stream being preheated at said preheat zone of said wheel,
- collecting said tail gas stream at the reverse face of the rotating wheel after movement through said preheat zone, said tail gas being preheated to ignition temperature,
- combining said preheated tail gas stream with a stream of reducing gas,
- moving said combined stream through the reaction zone of the wheel to reduce the nitrogen oxide in said tail gas stream at a reaction temperature which upper limit is sufficiently low to substantially reduce thermal damage to the materials used,
- the heat or reaction developed at said reaction zone moving with the wheel to the preheat zone to again preheat a delivered tail gas stream, and
- collecting an exhaust gas stream at a reduced outlet temperature after movement through said reaction zone wherein abatement of nitrogen oxide occurs.

3,897,540

METHOD OF CONTROLLING REACTION CONDITIONS IN A SULFUR DIOXIDE SCRUBBER

James H. Onnen, Louisville, Ky., assignor to American Air Filter Company, Inc., Louisville, Ky.

Filed Mar. 7, 1973, Ser. No. 338,762

Int. Cl. C01b *17/00*

U.S. Cl. 423—242 **5 Claims**

1. A continuous process for treating industrial stack gases containing sulfur dioxide comprising: contacting said industrial stack gases in the contact zone of a gas scrubbing tower with an aqueous medium containing a sulfur dioxide reactant material, said sulfur dioxide reactant material being an alkaline metal compound selected from the group consisting of calcium hydroxide, calcium carbonate, calcium bicarbonate, sodium bicarbonate, the naturally occurring materials trona and nahcolite, and combinations thereof, whereupon an initial reaction product is formed;

- passing said aqueous medium, containing principally said initial reaction product, from the gas scrubbing tower into the upstream end of a filled continuously flowing reaction tank wherein said initial reaction product is further reacted, to form a second more stable reaction product as said aqueous medium flows through said tank;
- monitoring the reaction conditions at a first location in said reaction tank and automatically adjusting the pH of the reaction conditions based upon a comparison of the information from said monitoring to a fixed standard in a pH range of from about 2 to 10;
- monitoring the reaction conditions at a second location downstream of the first in the reaction tank and automatically adjusting the pH of the reaction conditions based upon a comparison of the information from said monitoring to a second fixed standard in a pH range of from about 2 to 10;
- continuously removing a first portion of said aqueous medium containing said second reaction product from said reaction tank, removing said second reaction product for disposal and reintroducing said aqueous medium into said reaction tank; and,
- continuously recirculating a second portion of said aqueous medium from said reaction tank to said scrubbing tower.

3,897,541
PROCESS FOR PREPARING PURE CYANOGEN CHLORIDE

Zoltan Kricsfalussy, Cologne; Karlheinz Blocher, Leverkusen; Juri Pawlowski, Leverkusen; Bernhard Scherhag, Leverkusen, and Raoul Weiler, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 17, 1972, Ser. No. 307,663

Claims priority, application Germany, Nov. 23, 1971, 2157973

Int. Cl. C01b *21/18*

U.S. Cl. 423—379 **7 Claims**

1. Process for preparing pure cyanogen chloride free of water and cyanuric chloride comprising reacting gaseous hydrocyanic acid with gaseous chlorine gas in the presence of a catalyst consisting essentially of active carbon having a specific surface, measured in accordance with BET, of from 800–1,100 m^2/g at temperatures in the range from about 500°C to about 700°C to form a reaction product consisting of cyanogen chloride and hydrogen chloride and thereafter recovering said pure cyanogen chloride.

3,897,542
α-MoC SUPERCONDUCTOR FIBERS

James Economy, Eggertsville, and William D. Smith, Tonawanda, both of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 158,356, June 30, 1971, abandoned. This application Dec. 17, 1973, Ser. No. 425,460

Int. Cl. C01b *31/34*

U.S. Cl. 423—440 **12 Claims**

5. A process for producing a fiber according to claim 1, comprising subjecting a fiber having a surface consisting essentially of dimolybdenum monocarbide and a core or carbon, to a pulse of electric voltage sufficient to raise momentarily the temperature of the fiber surface to a temperature ranging from about 2,000°C to about 2,500°C.

3,897,543
PROCESS FOR MAKING CRYSTALLINE CRYOLITE OF HIGH BULK DENSITY

Karl-Heinz Hellberg, and Joachim Massonne, both of Hannover, Germany, assignors to Kali-Chemie Aktiengsellschaft, Hannover, Germany

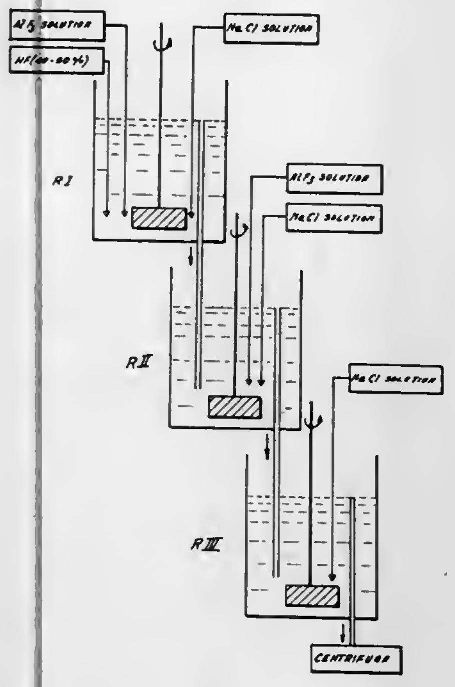
Filed May 31, 1973, Ser. No. 365,766

Claims priority, application Germany, June 6, 1972, 2227366; Sept. 9, 1972, 2244374

Int. Cl.² C01F *7/54, 7/50*

U.S. Cl. 423—465 **16 Claims**

1. A process for the production of crystalline cryolite particles having a bulk density between approximately 900 and 1,300 grams per liter which comprises reacting by slowly adding with continuous stirring to an aqueous solution of hydrofluoric acid containing at least 10 and at most 60% by weight of hydrogen fluoride, aqueous solutions of aluminum fluoride and a sodium salt of the group consisting of sodium chloride and sodium sulfate, while the temperature of the mixture is maintained between 10° and 80°C and its hydrogen-ion concentration at a value corresponding to a pH between 0 and 1.0, the solutions of aluminum fluoride and sodium salt being added simultaneously in amounts that correspond to an atomic ratio of Al:Na of about 1:3, and the total amounts of the solutions that are thus added being sufficient to react with all of the hydrogen fluoride that is present in the reaction mixture.



3,897,544
METHOD FOR PRODUCING ANHYDROUS SODIUM DITHIONITE

Shohe Maeda, Ashiya-shi; Masayuki Yasue, Nara-shi; Mitsuo Aruga, Ichihara-shi; Sizuo Saito, Toyonaka-shi, and Ikuo Yasunaga, Minoo-shi, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Filed Jan. 2, 1970, Ser. No. 451

Claims priority, application Japan, Jan. 10, 1969, 44-2244

Int. Cl. C01b *17/66*

U.S. Cl. 423—515 **13 Claims**

1. A method for producing anhydrous sodium dithionite, which comprises dissolving or suspending sodium formate or a mixture of sodium formate and a sodium compound in an aqueous solution of methanol, heating the reaction mixture to cause reflux, and feeding sulfurous anhydride into the reflux liquid whereby sulfurous anhydride being introduced into the reaction mixture wherein sulfurous anhydride is introduced as liquid SO_2, gaseous SO_2 or an SO_2-containing gas.

3,897,545
PROCESS FOR CATALYTICALLY REACTING GASES HAVING A HIGH SO_2 CONTENT USING DIFFERENT CATALYSTS

Lothar Reh, Bergen-Enkheim; Karl-Heinz Dorr, Mainz; Hugo Grimm, Frankfurt am Main, and Karel Vydra, Bad Nauheim, all of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed Mar. 21, 1973, Ser. No. 343,584

Claims priority, application Germany, Mar. 21, 1972, 2213580

Int. Cl. C01b *17/78*

U.S. Cl. 423—534 **6 Claims**

1. Process for catalytically reacting gases containing 11°–60°% SO_2 with oxygen in catalyst contacting trays to form SO_3, wherein the catalyst in the first contacting trays is different from the catalyst in the second contacting tray which comprises reacting said gases in the first contacting tray in contact with a vanadium pentoxide based catalyst and feeding the effluent gases from the first contacting tray to the second contacting tray without cooling and reacting said effluent gases therein in contact with an iron oxide based catalyst.

3,897,546
METHOD OF COOLING OR HEATING FLUIDIZED BEDS

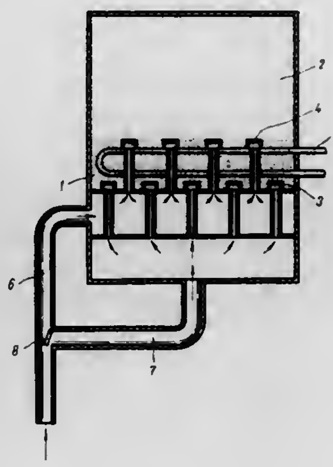
Jaroslav Beranek, Prague; Milos Kaspar, Jirkov; Vladimir Bazant, Prague, and Antonin Chladek, Jirkov, all of Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

Filed Oct. 19, 1971, Ser. No. 190,517

Claims priority, application Czechoslovakia, Oct. 22, 1970, 7115-70

Int. Cl. C22b *1/10;* **C01b** *31/20;* **C01g** *1/00*

U.S. Cl. 423—659 **6 Claims**



1. A method for adjusting and controlling the temperature in chemical reactors employing a single fluidized bed containing particles of varying size comprising the steps of

- a. separating the fluidized bed into at least two subbeds superimposed one on the other, each having different physical longitudinal particle mixes than the other;
- b. introducing a fluid media in two sectional streams to each of said subbeds, said fluid media streams extending from the bottom of said fluidized bed upwardly into their respective associated subbeds in direct contact with the particles;
- c. continuing the flow of the fluid media to said separated subbeds of the fluidized bed during the chemical reaction;
- d. locating a fluid media exchanger at least in the lowermost of said subbeds of the separated fluidized bed in indirect contact with said particles in said bed; and
- e. varying the relative rate of flow of the fluid media through each of the separated subbeds of the fluidized bed to vary the physical longitudinal particle mixing intensities in each part.

3,897,547
THIAXANTHENYL SEMICARBAZIDES AS ANTI-SECRETORY AGENTS

Stewart Sanders Adams; Bernard John Armitage; Norman William Bristow, and Bernard Vincent Heathcote, all of Nottingham, England, assignors to The Boots Company Limited, Nottingham, England

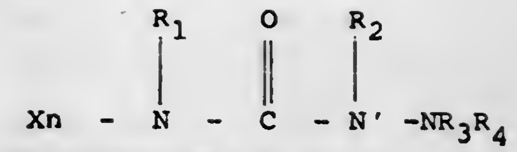
Division of Ser. No. 277,360, Aug. 2, 1972, abandoned, which is a continuation-in-part of Ser. No. 858,183, Sept. 15, 1969, Pat. No. 3,686,218, which is a continuation-in-part of Ser. No. 662,987, Aug. 23, 1967, Pat. No. 3,644,420. This application Oct. 29, 1973, Ser. No. 410,570

Claims priority, application United Kingdom, Apr. 5, 1967, 15692/67; Sept. 27, 1968, 46085/68; Sept. 2, 1966, 39384/66

Int. Cl. A61k *27/00*

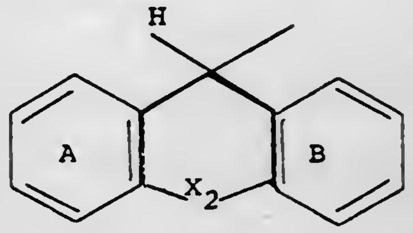
U.S. Cl. 424—16 **11 Claims**

1. A therapeutic composition which comprises as an active ingredient an anti-secretory amount of a compound of Formula I



$$Xn - \overset{\overset{\Large R_1}{|}}{N} - \overset{\overset{\Large O}{\|}}{C} - \overset{\overset{\Large R_2}{|}}{N'} - NR_3R_4 \qquad \text{I}$$

wherein Xn represents the group



in which

- X_2 is sulphur,
- the rings A and B may optionally contain substituents selected from the group consisting of halogen, lower alkyl, lower alkoxy and hydroxy;
- R_1 is hydroxy, lower alkoxy, lower alkanoyloxy, hydrogen or lower alkyl;
- R_2 is hydrogen or lower alkyl; and
- R_3 and R_4, together with the nitrogen atom to which they are attached, form a saturated 5–7 membered heterocyclic ring, optionally containing an additional hetero group selected from O and <N-lower alkyl; or a pharmaceutically acceptable acid addition salt or quaternary salt thereof, in association with a pharmaceutically acceptable excipient, said composition being suitable for oral, rectal or parenteral administration.

3,897,548
ORAL COMPOSITIONS FOR RETARDING THE FORMATION OF DENTAL PLAQUE AND METHODS OF UTILIZATION THEREOF

Simon Katz, Indianapolis, Ind., assignor to Indiana University Foundation, Bloomington, Ind.

Filed Apr. 9, 1973, Ser. No. 349,274. The portion of the term of this patent subsequent to July 19, 1989, has been disclaimed.

Int. Cl.² A61K *7/22*

U.S. Cl. 424—54 **2 Claims**

1. A method of removing dental plaque from and inhibiting the formation of dental plaque on dental enamel comprising the application thereof of a composition comprising:

- about 0.0–50% by weight of a non-toxic antibacterial agent selected from the group consisting of hexachlorophene, tribromosalicylanilide, 3, 5-dibromo-3′ trifluoromethylsalicylanilide, p-aminosalicyclic acid, and p-aminobenzoic acid; and
- 0.01–10% by weight of fumaric acid.

3,897,549
HERPES SIMPLEX TYPE 2 VIRUS VACCINE AND METHOD OF PRODUCTION AND USE

Nathan Zygraich, Brussels, and Constant Huygelen, Huldenberg, both of Belgium, assignors to Recherche et Industrie Therapeutiques, Belgium

Filed Mar. 7, 1974, Ser. No. 448,850

Claims priority, application United Kingdom, Mar. 30, 1973, 15307/73

Int. Cl. C12k *5/00, 7/00*

U.S. Cl. 424—89 **6 Claims**

1. A vaccination method broadly protective of the whole vaccinated organism against Herpes Simplex type 2, an exanthematous viral disease, consisting of administering into the upper respiratory tract, mucosa, or skin of a susceptible organism an effective dose of at least 10^3 $TCID_{50}$, protective against reinfection at warmer sites, of a temperature-sensitive and substantially non-pathogenic nitrous acid mutant strain of a Herpes Simplex type 2 virus responsible for said exanthematous viral disease, said mutant capable of multiplying at skin

temperature and in the mucosa of the upper respiratory tract but having partially or completely inhibited replication in the lower respiratory tract and in the body.

3,897,550

METHOD FOR ADMINISTERING WATER SOLUBLE DRUGS, NUTRIENTS AND OTHER SOLUTES TO A MAMMAL

Beverly L. Reynolds, Dallas, Tex., assignor to Cybersol, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 149,081, June 1, 1971, abandoned, which is a continuation-in-part of Ser. No. 885,295, Dec. 15, 1969, Pat. No. 3,676,553. This application July 21, 1972, Ser. No. 273,849The portion of the term of this patent subsequent to July 11, 1989, has been disclaimed.

Int. Cl.² A61K *27/00*

U.S. Cl. 424—93 6 Claims

1. A method for administration of solutes to a mammal wherein the solutes are mixed in an aqueous solution, characterized by the aqueous solution having an osmolality in milliosmols/liter of 170 to 460, preferably 260 to 340, more preferably 290 to 310 and most preferably 300, a pH of 7.0 and 8.8 and more preferably between 7.5 and 8.5, and most preferably 8.1 and formed of compounds having an activity coefficient in the solution of at least 0.8 at 37°C to provide concentration in milliosmols/liter of Na^+ 75–200, preferably 85–150, more preferably 127–135 and most preferably 131, of K^+ 7–25, preferably 10–20, more preferably 13–15 and most preferably 14, of Mg^{++} 3–8 and preferably 5, of $HP0_4^-$ or $S0_4^-$ or Acetate or Gluconate 3–8 and preferably 5, or $HC0_3$ 12–28, preferably 10–30, more preferably 16–20 and most preferably 18 and of Cl^- 70–195, preferably 85–185, more preferably 124–130 and most preferably 127.

3,897,551

IODOGLUCAGONS AND PROCESS FOR PROLONGING THE BIOLOGICAL ACTIVITY OF GLUCAGON

William W. Bromer, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 131,438, May 5, 1971, abandoned. This application Mar. 1, 1973, Ser. No. 337,264

Int. Cl.² C07C *103/52*

U.S. Cl. 424—177 7 Claims

1. A composition of matter comprising glucagon which has been iodinated to contain an average of from about 1 to about 5 gram atoms of non-radioactive iodine per mole of glucagon.

3,897,552

FUNGICIDAL AND BACTERICIDAL O-ALKYL-O-CYCLOHEXYL-S-ALKYL-, HALOALKYL-OR ALKENYL-PHOSPHOROTHIOLATES

Shigeo Kishino; Yasuo Yamada; Yoshio Kurahashi, and Toyohiko Kume, all of Tokyo, Japan, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

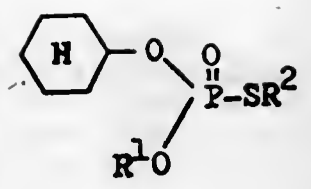
Division of Ser. No. 281,252, Aug. 16, 1972, Pat. No. 3,848,031. This application Sept. 11, 1974, Ser. No. 505,112

Claims priority, application Japan, Aug. 18, 1971, 46-62276

Int. Cl. A01n *9/36*

U.S. Cl. 424—219 11 Claims

1. A method of combating fungi and bacteria which comprises applying to such fungi, such bacteria or a habitat thereof a fungicidally or bactericidally effective amount of an organic O-alkyl-O-cyclohexylphosphorothiolate of the formula



wherein

R^1 is alkyl of one to six carbon atoms, and

R^2 is alkyl, haloalkyl or alkenyl of 1 to 6 carbon atoms; or propargyl.

3,897,553

PROCESS FOR COMBATTING PESTS USING ORGANOTIN COMPOUNDS

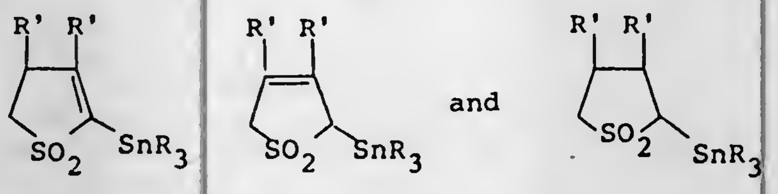
Donald J. Peterson, Springfield Twp.; James F. Ward, Fairfield Twp., and Ralph A. Damico, Colerain Twp., all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 184,225, Sept. 27, 1971, Pat. No. 3,808,264. This application Oct. 26, 1973, Ser. No. 410,057

Int. Cl.² A01N *9/00*

U.S. Cl. 424—245 2 Claims

1. A method for combatting pests selected from the group consisting of fungus, mites, insects, and bacteria comprising applying thereto a pesticidally effective amount of an organo-tin-substituted compound selected from the group consisting of compounds of the formula



wherein each R is selected from the group consisting of alkyl of from 1 to about 14 carbon atoms, phenyl, naphthyl, methoxyphenyl, p-chlorophenyl, p-tolyl, m-chlorophenyl, o-fluoro phenyl, m-nitrophenyl, α-chloronaphthyl, cyclohexyl, p-propoxyphenyl, and phenanthryl, and each R′ is selected from the group consisting of alkyl of from 1 to about 14 carbon atoms, phenyl, α-nitronaphthyl, naphthyl, p-tolyl, p-chlorophenyl, o-methoxyphenyl, p-bromophenyl, and hydrogen.

3,897,554

N-2-NITROBUTYL MORPHOLINE AND 2,2-DIBROMO-3-ITRILOPROPIONAMIDE AS A SLIME CONTROL COMPOSITION

Bernard F. Shema, Glenside; Robert H. Brink, Jr., Doylestown, and Paul Swered, Philadelphia, all of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed May 30, 1973, Ser. No. 365,386

Int. Cl.² A01N *9/22*

U.S. Cl. 424—248 8 Claims

1. A composition for the control of *Aerobacter aerogenes* in aqueous systems comprising N-2-nitrobutyl morpholine and 2-2-dibromo-3-nitrilopropionamide, wherein the weight ratio of the morpholine to the amide ranges from about 5:95 to about 95:5 respectively.

3,897,555

PHARMACEUTICAL COMPOSITIONS AND METHOD OF INHIBITING GASTRIC ACID SECRETION

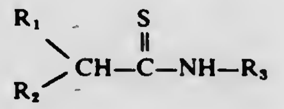
Bernard Loev, Broomall, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 255,828, May 22, 1972, Pat. No. 3,825,547. This application Apr. 12, 1974, Ser. No. 460,315

Int. Cl. A61k *27/00*

U.S. Cl. 424—263 10 Claims

1. A pharmaceutical composition having gastric acid secretion inhibitory activity, in dosage unit form, comprising a pharmaceutical carrier and a gastric acid secretion inhibiting amount of a thioamide compound of the formula:



$$\begin{matrix} R_1 \\ R_2 \end{matrix}\!\!>\!CH-\overset{\displaystyle S}{\overset{\|}{C}}-NH-R_3$$

in which:

R_1 is 2-pyridyl;

R_2 is hydrogen, lower alkyl, lower alkenyl, lower alkoxy, allyloxy, cyclopropanemethoxy, phenyl or benzyl and

R_3 is an allyl or propargyl group optionally substituted by methyl or ethyl groups, said R_3 having 3–6 carbon atoms or a pharmaceutically acceptable acid addition salt thereof.

3,897,556

SUBSTITUTE PYRIDINOL-CONTAINING COMPOSITIONS AND METHODS FOR THE TREATMENT OF COCCIDIOSIS

Yasuhiro Morisawa; Mitsuru Kataoka; Tailchiro Watanabe; Noritoshi Kitano, and Toshiaki Matsuzawa, all of Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

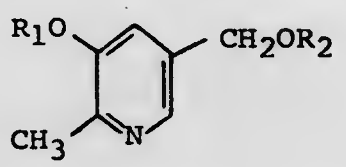
Filed Oct. 9, 1973, Ser. No. 404,641

Claims priority, application Japan, Oct. 20, 1972, 47-105090; Apr. 11, 1973, 48-41111

Int. Cl. A61k *27/00*

U.S. Cl. 424—263 24 Claims

1. A poultry feed having dispersed therein for control of poultry coccidiosis from about 0.005% to about 0.05% by weight of a compound of the formula



wherein R_1 and R_2 may be the same or different and each represents a hydrogen atom; a lower alkyl group; benzyl; a halogen-substituted benzyl group; an unsubstituted straight or branched chain alkanoyl or alkenoyl group having a total of from 2 to 18 carbon atoms or substituted with a phenoxy group or a cycloalkanoyl group having a total of from 6 to 8 carbon atoms; an unsubstituted benzoyl or naphthoyl group or substituted with from 1 to 2 lower alkyl, alkoxy, halogen, nitro, cyano, carboxy or acetylamino groups; an alkoxycarbonyl group; a benzyloxycarbonyl group; a phenoxycarbonyl group; an unsubstituted carbamoyl group or substituted on the nitrogen atom thereof with a lower alkyl group of 1 to 2 carbon atoms, a cycloalkyl group of 5 to 7 carbon atoms or chlorophenyl group; an unsubstituted thiocarbamoyl group or substituted on the nitrogen atom thereof with a lower alkyl group of 1 to 2 carbon atoms, a cycloalkyl group of 5 to 7 carbon atoms or chlorphenyl group; or a salt thereof.

3,897,557

CARBAMOYLOXYIMINO-AZOLIDINES AS INSECTICIDES

Nazim Punja, Wokingham, England, assignor to Imperial Chemical Industries Limited, London, England

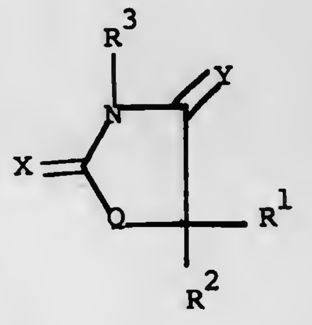
Division of Ser. No. 250,119, May 4, 1972, Pat. No. 3,843,669. This application June 10, 1974, Ser. No. 478,043

Claims priority, application United Kingdom, May 7, 1971, 13723/71

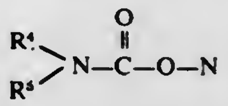
Int. Cl. A01n *9/14, 9/22, 9/28*

U.S. Cl. 424—270 6 Claims

1. An insecticidal composition comprising, as active ingredient, an insecticidally effective amount of a compound of the formula:

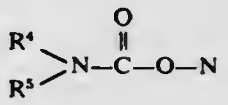


wherein Q is oxygen, sulphur, sulphoxide or sulphone; R^1 and R^2 which may be the same or different are hydrogen or alkyl containing up to four carbon atoms; R^3 is hydrogen, alkyl containing up to eight carbon atoms, allyl, benzyl, dimethylamino, methyl-thiomethyl, ethoxycarbonylmethyl, or halo-substituted pyridyl; and either (i) X is a group of the formula:



$$\begin{matrix} R^4 \\ R^5 \end{matrix}\!\!>\!N-\overset{\displaystyle O}{\overset{\|}{C}}-O-N$$

where R^4 and R^5, which may be the same or different, are hydrogen, alkyl containing up to four carbon atoms, phenyl, chlorosubstituted phenyl, acetyl, chloromethyl, methoxymethyl, ethoxymethyl or ethylthiomethyl; and Y is oxygen, sulphur or alkylimino containing up to four carbon atoms; or (ii) Y is a group of the formula:



$$\begin{matrix} R^4 \\ R^5 \end{matrix}\!\!>\!N-\overset{\displaystyle O}{\overset{\|}{C}}-O-N$$

where R^4 and R^5, which may be the same or different, are hydrogen, alkyl containing up to four carbon atoms, phenyl, chlorosubstituted phenyl, acetyl, chloromethyl, methoxymethyl, ethoxymethyl or ethylthiomethyl; and X is oxygen, sulphur or alkylimino containing up to four carbon atoms, and a pesticidal carrier.

3,897,558

HYPOLIPEMIANT AND VASODILATATORY METHODS OF USE

Michael Hardy, Maisons-Alfort, and Daniel Humbert, Paris, both of France, assignors to Roussel Uclaf, Paris, France

Filed Aug. 8, 1974, Ser. No. 495,555

Claims priority, application France, Aug. 29, 1973, 73.31183

Int. Cl.² A61K *27/00*

U.S. Cl. 424—270 2 Claims

1. A method of inducing hypolipemic and vasodilatatory activity in a warm-blooded animal comprising administering

to a warm-blooded animal a hypolipemically and vasodilatatory effective amount of 2-methylthiazole-5-methanol.

3,897,559
ANTHELMINTIC PHENYLHYDRAZONES

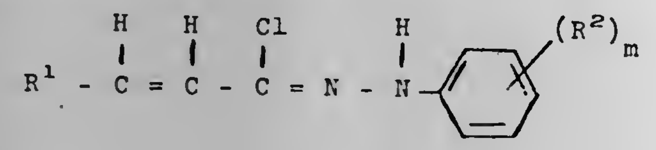
Henry Friedman, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 269,338, July 6, 1972, Pat. No. 3,824,233. This application Mar. 18, 1974, Ser. No. 452,027

Int. Cl. A61k *27/00*

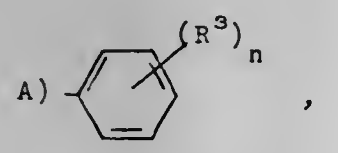
U.S. Cl. 424—275 **12 Claims**

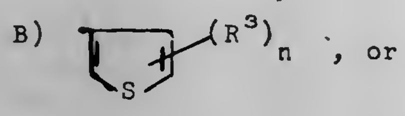
1. An anthelmintic composition which comprises a physiologically-acceptable carrier and an anthelmintically effective amount of a compound of the formula

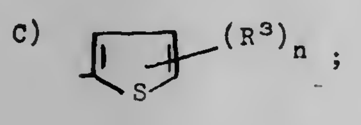


wherein

R^1 represents

A)  ,

B)  , or

C)  ;

R^2 represents
- A. C_1-C_3 alkyl,
- B. C_1-C_3 alkoxy,
- C. chloro,
- D. bromo,
- E. iodo,
- F. trifluoromethyl,
- G. cyano, or
- H. two R^2 groups attached to adjacent carbon atoms of the phenyl ring represent methylenedioxy;

R^3 represents
- A. C_1-C_3 alkyl,
- B. C_1-C_3 alkoxy,
- C. chloro,
- D. bromo,
- E. iodo,
- F. trifluoromethyl.
- G. cyano,
- H. nitro, or
- I. two R^3 groups attached to adjacent carbon atoms of the ring represent methylenedioxy; and

n and *m* independently represent 0-2.

3,897,560
PESTICIDAL METHODS EMPLOYING (ORGANOSULFONYLMETHYL) TRIHYDROCARBYLTIN COMPOUNDS

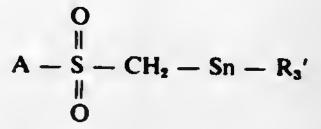
Donald J. Peterson, Springfield Twp., Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 164,941, July 21, 1971, Pat. No. 3,784,580, which is a continuation-in-part of Ser. No. 10,303, Feb. 10, 1970, abandoned. This application June 8, 1973, Ser. No. 368,141

Int. Cl. A01n *9/00*

U.S. Cl. 424—288 **7 Claims**

1. A method of combating insects comprising applying thereto an effective amount of a compound of the formula



$$A-\underset{\underset{O}{\|}}{\overset{\overset{O}{\|}}{S}}-CH_2-Sn-R_3'$$

wherein A is alkyl of from 1 to 14 carbon atoms; aryl; substituted aryl; R_2N-, where each R is alkyl of from 1 to 14 carbon atoms; and each R′ is alkyl of from 1 to 14 carbon atoms or aryl.

3,897,561
N-ALKYLTHIO-N-ALKYL ARYL CARBAMATES AS INSECTICIDES

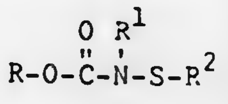
Melancthon S. Brown, deceased, late of Berkeley, Calif., and by Gustave K. Kohn, special administrator, Berkeley, Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 306,657, Nov. 15, 1972, Pat. No. 3,845,101, which is a continuation-in-part of Ser. No. 230,117, Feb. 28, 1972, Pat. No. 3,792,169, which is a division of Ser. No. 855,421, Sept. 4, 1969, Pat. No. 3,663,594, which is a continuation-in-part of Ser. No. 764,299, Oct. 1, 1968, abandoned. This application Sept. 5, 1974, Ser. No. 498,507

Int. Cl. A01n *9/12, 9/20*

U.S. Cl. 424—300 **12 Claims**

1. A method of controlling insects which comprises contacting said insects or their habitat with an insecticidally effective amount of the compound of the formula



$$R-O-\overset{O}{\overset{\|}{C}}-\overset{R^1}{\overset{|}{N}}-S-R^2$$

wherein R is phenyl or 1-naphthyl substituted with up to 3 substituents selected from the group consisting of chlorine, bromine, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 3 carbon atoms and alkylthio of 1 to 3 carbon atoms, R^1 is alkyl of 1 to 6 carbon atoms and R^2 is alkyl of 1 to 10 carbon atoms.

3,897,562
2,2-DIBROMO-3-NITRILO PROPIONAMIDE AND PENTACHLOROPHENOL AS A SLIME CONTROL COMPOSITION

Bernard F. Shema, Glenside; Robert H. Brink, Jr., Doylestown, and Paul Swered, Philadelphia, all of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed June 15, 1973, Ser. No. 370,268

Int. Cl.^{2} A01N *9/06*

U.S. Cl. 424—304 **8 Claims**

1. A composition for the control of Aerobacter aerogenes in aqueous systems comprising 2-2-dibromo-3-nitrilopropionamide and pentachlorophenol, wherein the weight ratio of the amide to the phenol ranges from about 5:95 to about 95:5 respectively.

3,897,563
ANTICOCCIDIAL COMPOSITION

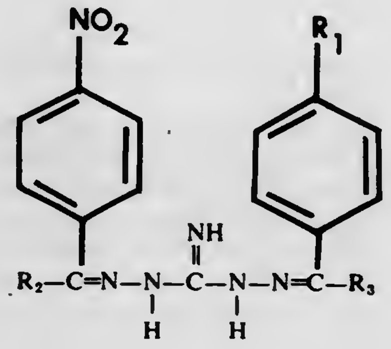
Peter Kulsa, Scotch Plains, and Frank S. Waksmunski, South River, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 237,934, March 24, 1972, Pat. No. 3,795,692. This application Dec. 3, 1973, Ser. No. 421,199

Int. Cl. H61k *27/00*

U.S. Cl. 424—326 **4 Claims**

1. An anticoccidial composition comprising a therapeutically effective amount of an active anticoccidial compound having the formula:



wherein R_1 is nitro, halogen, trifluoromethyl, trifluoromethoxy, or cyano; and R_2 and R_3 are each hydrogen or loweralkyl, and a pharmaceutically acceptable acid addition salt thereof intimately dispersed in a carrier vehicle.

3,897,564
DIHYDROXYANTHRAQUINONE FUNGICIDES

Ronald J. Sbragia, Clayton, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 6, 1973, Ser. No. 385,761

Int. Cl. A01n *9/24*

U.S. Cl. 424—331 **4 Claims**

1. A method which comprises contacting a fungal organism with a fungicidal amount of a dihydroxyanthraquinone of the group consisting of 1,4-, 1,8- and 2,5-dihydroxyanthraquinone.

3,897,565
METHOD OF FEEDING SILKWORMS AN ARTIFICIAL EXPANDED FEED

Saburo Hotta, 9 Kimiwasa-cho, 33-chome, Totsuka-ku, Yokohama-shi, Kanagawa-ken; Kiyozi Wada, 877 Kumisawa-cho, Totsuka-ku, Yokohama-shi, Kanagawa-ken, and Yosiaki Kikuchi, 1130 Futoo-cho, Kohoku-ku, Yokohama-shi, Kanagawa-ken, all, Japan

Continuation-in-part of Ser. No. 57,830, July 23, 1970, abandoned. This application Mar. 19, 1973, Ser. No. 342,552

Claims priority, application Japan, July 25, 1969, 44-58369; Mar. 10, 1970, 45-19726

Int. Cl.^{2} A23K *1/14, 1/16, 1/18*

U.S. Cl. 426—2 **18 Claims**

1. A method for raising silkworms, which comprises:

administering to silkworms a dry, expanded, foamed or porous, coagulated artificial silkworm feed composition consisting essentially of as a major proportional amount (1) pulverized dry mulberry leaf or pulverized dry castor oil plant leaf, (2) pulverized dry raw soybean, (3) dry gluten and (4) dry wheat flour or potato starch, and as a minor proportional amount, ingredients selected from the class consisting of saccharose, glucose and vitamins and minerals of nutritive elements for the growth and health of silkworms and mixtures thereof.

3,897,566
CHEWING GUMS HAVING LONGER LASTING SWEETNESS AND FLAVOR

Bernard J. Bahoshy, Mahopac, N.Y.; Charles E. Flynn, Oradill, N.J., and Gary P. Malunis, White Plains, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Dec. 6, 1973, Ser. No. 422,371

Int. Cl. A23g *3/00, 3/30*

U.S. Cl. 426—3 **7 Claims**

1. A chewing gum consisting essentially of a gum base, sweetener, flavor, and monosodium glutamate, said monosodium glutamate being fixed in gelatin and present in an amount effective to produce a longer lasting sweetness and flavor in said chewing gum.

3,897,567
NON-ADHERENT WRAPPING OF SHAPED PROTEIN FOOD PRODUCTS

Petrus Adam Inklaar, Diepenveen, Netherlands, assignor to Vasco Industries Corporation, Yonkers, N.Y.

Filed May 3, 1973, Ser. No. 356,815

Claims priority, application Netherlands, May 8, 1972, 7206173

Int. Cl. A23b *1/10;* **A23c** *19/16*

U.S. Cl. 426—8 **16 Claims**

1. A packed shaped protein-containing food product such as meat, sausage, cheese, or meat paste, comprising a shaped mass of the food product enveloped in a wrapping and having at the contacting surfaces of said wrapping and said mass a composition comprising an enzyme that is practically inactive at the pH of said mass and a pH control agent that creates in the presence of moisture a pH at which said enzyme is active, said enzyme and said pH control agent being present in quantities sufficient to inhibit adhesion of the wrapping to the food product yet so limited that the enzyme will act in only a limited surface layer of said mass in the presence of moisture.

3,897,568
PROCESS AND COMPOSITIONS FOR MANUFACTURE OF YEAST-RAISED PRODUCTS WITHOUT FERMENTATION

John A. Johnson, Manhattan, Kans., assignor to Kansas State University Research Foundation, Manhattan, Kans.

Filed Aug. 2, 1973, Ser. No. 385,167

Int. Cl. A21d *2/24*

U.S. Cl. 426—23 **18 Claims**

1. A fermentation compensator compositin for admixture with a flour yeast dough mix, said composition being in the form of a dry powder and consisting essentially of substantially completely hydrolyzed wheat gluten protein providing a mixture of the individual amino acids thereof and a mixture of food acceptable organic acid salts including a principal organic acid salt component selected from the water soluble food acceptable salts of acetic acid, lactic acid, and mixtures thereof, from 1 to 50 parts by weight of said mixture of organic acid salts being present per 100 parts of said mixture of amino acids.

9. A process for manufacturing yeast-raised baked dough products of the kind involving a standard fermentation stage for the flour yeast dough mix after preparation thereof of from 2 to 24 hours before said dough is formed into bodies of a size and shape for baking with brown crust formation, whrein the improvement comprises reducing or eliminating said fermentation stage while achieving at least as good flavor and physical properties in the baked products by the step of incorporating in said dough mix as it is prepared a hydrolyzate of wheat gluten protein composed essentially of a mixture of the individual amino acids thereof together with a mixture of food acceptable organic acids including a principal organic acid component selected from the group consisting of acetic acid, lactic acid, and mixtures thereof, said organic acids being in a form selected from said organic acids and sodium, potassium, and calcium salts thereof, said amino acid mixture being

incorporated in an amount of from 0.02 to 0.20% by weight based on the weight of the flour in said mix, and providing from 1 to 10 × 10^{-4} moles total acid per each 700 grams of said flour in said mix.

3,897,569
MALTING

Ronald Horgan, Eaglemont, Australia, assignor to Barrett Bros. & Burston & Company Proprietary Limited, Australia
Filed July 30, 1973, Ser. No. 383,729
Int. Cl.^{2} A23L *1/185*
U.S. Cl. 426—28 **5 Claims**

1. A method of malting barley and other cereal grain comprising the steps of steeping the grain with water to initiate germination of the grain, continuing germination for a period of time to produce in the grain sufficient enzymes to complete the malting process, entraining the germinated grain in water and pumping it to a germination vessel by a pump which has an outlet pressure of at least 5 pounds per square inch, maintaining the grain in the germination vessel at a temperature of between 20° and 40°C for a period of not more than 48 hours while continuously aerating the grain, and thereafter drying the resulting malted grain.

3,897,570
PREPARATION OF AN ACIDIC BEVERAGE

Tamotsu Yokotsuka, Nagareyama; Yasuo Aoyama; Tadaaki Kikuchi; Shigetaka Ishii, and Masaru Matsuura, all of Noda, Japan, assignors to Kikkoman Shoyn Co. Ltd., Tokyo, Japan
Continuation of Ser. No. 267,214, June 28, 1972, abandoned, which is a continuation of Ser. No. 114,053, Feb. 9, 1971, abandoned, which is a continuation-in-part of Ser. No. 796,544, Feb. 4, 1969, abandoned. This application Jan. 28, 1974, Ser. No. 437,320
Claims priority, application Japan, Sept. 17, 1968, 43-66562
Int. Cl.^{2} A23L *1/20, 2/00*
U.S. Cl. 426—46 **13 Claims**

1. A method for preparing an acidic beverage having a pH of less than 6.0 and capable of retaining clarity, provided that the beverage is free from other colloidal material, which comprises denaturing defatted soybeans by heating or steam cooking, subjecting the thus denatured soybeans to the enzymatic action of an acid protease at a pH of 2.5 to 6.0 at a temperature of 40° to 75°C to form soluble peptides until before the ration of formol-state nitrogen to total nitrogen in a filtrate of the resulting reaction mixture reaches 20%, separating a clear portion from the reaction mixture, and adding a beverage additive to the clear portion.

3,897,571
PROCESS FOR PRODUCING SLUSH BEVERAGE CONCENTRATE AND PRODUCT

Barry Homler, Ossining; Gerald S. Wasserman, Spring Valley, both of N.Y., and James E. Keehner, Salem, Oreg., assignors to General Foods Corporation, White Plains, N.Y.
Filed Dec. 4, 1972, Ser. No. 311,997
Int. Cl. A23l *1/00;* **A23g** *5/00*
U.S. Cl. 426—327 **14 Claims**

1. Process for producing a refrigeration-stable slushed comestible concentrate that is spoonable and stirable at 0°F which comprises partially crystallizing a saccharidal, aqueous hydrated gum-containing, viscous solution to form ice crystals having a size of 200 to 500 microns by slowly growing ice crystals after the solution is cooled to below its ice point and continuing said crystallizing process while agitating the solution to induce an overrun of 35–50% and while incorporating a gaseous phase therein until a stable tertiary phase of concentrated syrup matrix interspersed with coarse ice crystals is formed in a gaseous foam at a temperature of 15°-20°F; 75 to 90% of the water originally present in said solution being thereby converted to said ice crystals.

3,897,572
FORMED MEAT PRODUCT

Norman S. Riggs, and Felicisimo S. Sarno, both of Long Beach, Calif., assignors to Star-Kist Foods, Inc., Terminal Island, Calif.
Filed May 16, 1973, Ser. No. 360,735
Int. Cl. A23p *1/00*
U.S. Cl. 426—249 **11 Claims**

1. A method for making a simulated fat-marbled formed meat chunk comprising;

1. preparing a red meat portion by comminuting red meat and red meat by-products and admixing the same with a moisture binding agent selected from the class consisting of wheat gluten, soya protein, powdered egg and mixtures thereof in an amount from about 5 to about 50 weight percent and sufficient to absorb the natural juices of the meat released during cooking to form said red meat portion;
2. preparing a white meat portion by comminuting a a second portion of meat and meat by-products and admixing the same with a moisture binding agent selected from the class consisting of wheat gluten, soya protein, powdered egg and mixtures thereof in an amount from about 5 to about 50 weight percent and sufficient to absorb the natural juices of the meat released during cooking and about 0.5 to about 10percent by weight of a white food coloring agent to form a white meat portion;
3. forming a heterogeneous admixture of said red and white meat portions by blending a major part of said red meat portion with a minor part of said white meat portion until said red meat portion is webbed with said white meat portion;
4. extruding said heterogeneous admixture;
5. cooking said extrudate; and
6. dividing the cooked extrudate into chunks.

3,897,573
FISH PRODUCT

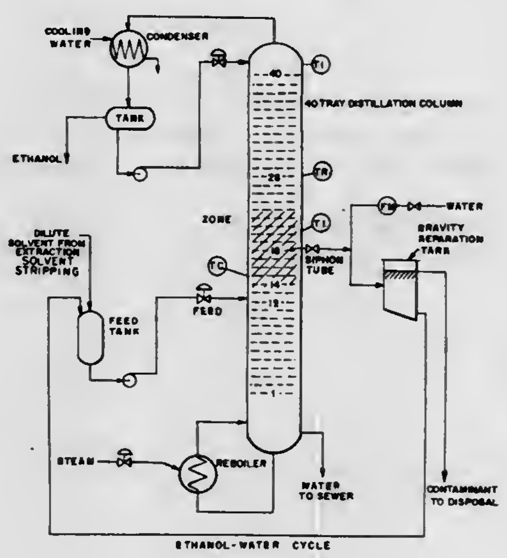
Kirsteen Ormiston Kelly, Dyce, Scotland, assignor to Lever Brothers Company, New York, N.Y.
Continuation of Ser. No. 250,336, May 4, 1972, abandoned. This application Dec. 12, 1973, Ser. No. 423,946
Claims priority, application United Kingdom, May 14, 1971, 14929/71
Int. Cl. A22c *25/00*
U.S. Cl. 426—272 **6 Claims**

1. A process for the preparation of a sliced smoked fish product, which process comprises the steps of:

a. contacting raw fillets of salmon, trout or saithe with sodium chloride to provide salted fillets containing from 3 to 20% salt expressed on a wet weight basis;
b. coating said salted fillets with from 5 to 50% by weight of a binder containing finely divided, substantially bone-free, raw salmon, trout or saithe muscle, mixed with from 1 to 10% sodium chloride and from 3 to 8% of a food grade phosphate selected from sodium tripolyphosphate and sodium pyrophosphate, both said salt and said phosphate being expressed on a wet weight basis in terms of said finely divided raw muscle;
c. freezing said binder-coated fillets under pressure to provide integral blocks of uniform weight, shape and size;
d. tempering said blocks to a temperature below 0°C;
e. cutting said tempered blocks at a temperature below 0°C into slices of from 1 to 4 mm in thickness; and
f. subjecting said slices at an initial temperature below 0°C to an atmosphere of woodsmoke.

3,897,574
PURIFICATION OF ETHANOL EXTRACTANT IN SOY PROTEIN CONCENTRATE PROCESS

Darryl W. Pass, Fort Wayne, Ind., assignor to Central Soya Company, Inc., Fort Wayne, Ind.
Filed Mar. 21, 1974, Ser. No. 453,640
Int. Cl. A23j *1/14*
U.S. Cl. 426—430 **4 Claims**



1. In the process of defatted soybean flakes to produce soy protein concentrate having a minimum of 70% protein (N × 6.25) on a moisture-free basis, the steps of contacting defatted soybean flakes with ethanol of a concentration of about to 60 to 80% ethanol to extract the soluble solids from said defatted soybean flakes and stripping aqueous ethanol from said extract,

- introducing the resultant aqueous ethanol solution into a tray-type column for rectification to provide rectified ethanol at the column top and waste water at the column bottom,
- withdrawing at least periodically a portion of said ethanol solution from a point intermediate the column height to remove malodorous contaminants from said ethanol solution, and
- recycling the rectified ethanol into contact with defatted soybean flakes and removing said waste water.

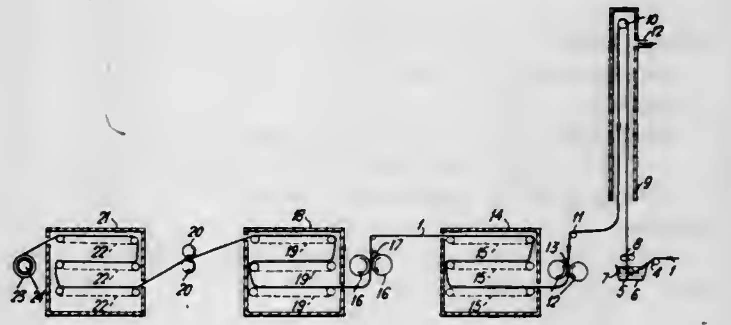
3,897,575
PREPARATION OF PHOSPHATIC ANIMAL FEEDS

Edward A. White, Glenview, Ill., assignor to International Minerals & Chemical Corporation, Libertyville, Ill.
Filed Aug. 8, 1972, Ser. No. 278,706
Int. Cl. A23l *1/10, 1/20;* **C01f** *1/00, 5/00, 11/00*
U.S. Cl. 426—511 **15 Claims**

1. In a process for producing a phosphatic animal feed material by introducing phosphate rock and steam into a reaction zone wherein a temperature above the melting point of said phosphate rock is maintained, whereby said phosphate rock melts and fluorine is evolved, the improvement which comprises introducing said phosphate rock in finely-divided form into said reaction zone wherein a residence time of from about 0.01 to about 10 seconds is maintained, maintaining continuous suspended movement of said phosphate rock in said reaction zone during and after its melting to avoid any substantial accumulation of molten phosphate, and rapidly quenching molten phosphate recovered from said reaction zone to produce a solid product having a P/F weight ratio greater than 50 with phosphate in the form of alpha-tricalcium phosphate.

3,897,576
PRODUCTION OF SHEET MATERIAL FOR USE AS GASKETS

John Geoffrey Qualtrough, Bolton, and Harry Thornley, Rochdale, both of England, assignors to TBA Industrial Products Limited, Manchester, England
Continuation of Ser. No. 185,516, Oct. 1, 1971, abandoned. This application Aug. 31, 1973, Ser. No. 393,774
Claims priority, application United Kingdom, Sept. 21, 1970, 44903/70
Int. Cl.^{2} B29C *17/02*
U.S. Cl. 427—174 **12 Claims**



1. A process for producing in indefinitely long lengths a composite sheet constituted by surface coatings of fibre-reinforced elastomer bonded to both faces of a metal core, said process comprising the steps of compounding a curable dough from fibre, elastomer, curatives, fillers and a solvent system including a volatile solvent for the elastomer and a liquid which is a non-solvent for said elastomer, pelletizing said curable dough, coating both faces of the metal core with an adhesive which is slightly soluble in the volatile solvent and then feeding said pelletized dough and metal core through a nip between two calender rolls with said dough contacting only one adhesive coated face of said core while said volatile solvent coacts with said adhesive to cause preferential adhesion of said dough to said one adhesive-coated face of the metal core to form a coating thereon and said non-solvent liquid prevents adhesion of said dough to said rolls, passing the thus coated metal core to a drying device to remove the solvent system from the coating, passing the dry, but uncured, coated metal core together with further curable dough on the uncoated side thereof through a nip between two further calender rolls to spread said further curable dough over the other adhesive coated surface of the metal core to form a second coating thereon, passing the coated metal core to a drying device to remove the solvent system from said second coating, passing the coated metal core through a further nip between two calender rolls to consolidate the coatings and enhance the bond between the coatings and the core, then passing the coated metal core into an oven to cure the elastomer.

3,897,577
DRY PARTICULATE BLEND CONTAINING BINDER/DISPERSION AID COMPONENT COMPRISING CELLULOSIC AND VINYL ACETATE AND/OR ALCOHOL MATERIALS AND METHOD OF USING THE BLEND IN A ROLL-ON TEXTURE COMPOSITION

Richard H. Hymes, 7416 W. Shore Dr., Minneapolis, Minn. 55435
Filed Apr. 19, 1974, Ser. No. 462,507
Int. Cl.^{2} B44C *1/20;* **C08L** *1/26*
U.S. Cl. 427—277 **11 Claims**

1. A dry particulate blend suitable for mixing with water to form a paste-like, roll-on wall or ceiling texture coating composition, comprising the following dry, intimately admixed particulate materials:

a. about 5 to about 20% by weight of expanded or intumesced or vitreous rock particles, said rock particles being generally within the size range of −3+40 U.S. mesh and having true or apparent density less than 0.5 gram/cm^3 and being suitable for providing a textured appearance on the surface of a coating obtained from said coating composition;

b. about 30 to 90% by weight of an inorganic pigment;

c. 1 – 7% by weight of a powdered, water dispersible vinyl acetate polymer containing 1 – 99.8% by weight vinyl alcohol units; and

d. 0.5 – 4% by weight of powdered methyl cellulose; the ratio, by weight, of vinyl acetate polymer to methyl cellulose being with the range of 4:1 to 1:3.

3,897,578

PROCESS OF PRODUCING CAPSULE-COATED SHEETS

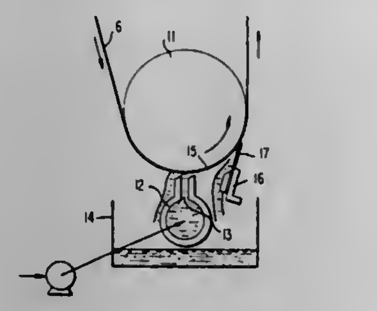
Masao Kanda, and Keiso Saeiki, both of Fujinomiya, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

Continuation of Ser. No. 203,302, Nov. 30, 1971, abandoned. This application Jan. 2, 1974, Ser. No. 430,015

Claims priority, application Japan, Nov. 30, 1970, 45-105586

Int. Cl. B44d *1/44*

U.S. Cl. 427—358 **3 Claims**



1. A process of producing a capsule-coated sheet characterized by the steps of applying an excess of a coating composition containing microcapsules and having solids content of from about 20 to about 80 weight % and a viscosity of 50 to 50,000 C.P. to a running base sheet and thereafter applying a shearing force by means of a blade or metering bar to the coating composition by directly pressing thereagainst said blade or bar to remove excess coating composition from said base sheet and spread said composition uniformly over said running base sheet, said shearing force being insufficient to break said microcapsules.

3,897,579

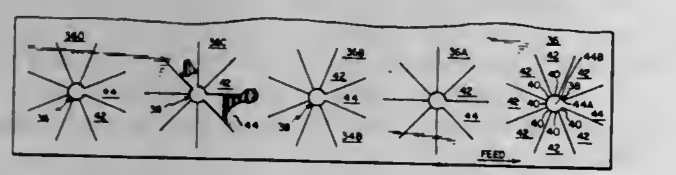
STARBURST PATTERN FOR FORMING PACKAGING LINERS AND PADS FROM SINGLE FACED CORRUGATED STOCK AND THE LIKE

David Weinstein, Baltimore, Md., assignor to Maryland Cup Corporation, Owings Mills, Md.

Filed Aug. 21, 1973, Ser. No. 389,620

Int. Cl. B32b *3/10, 3/28*

U.S. Cl. 428—13.4 **4 Claims**



1. A package liner for fragile articles, comprising:

sheet stock incised with starburst patterns predictably cut through sheet stock providing completely cut through starburst patterns without waste material, each of said starburst patterns nestably receiving said articles comprising a circular pattern of convergent rays of said sheet stock separated by substantially radially disposed slots formed through the sheet stock therebetween, all but one of said rays and the said slots defined therebetween terminating in arcuate inwardly facing edge portions, said edge portions thereby defining the major portion of the outer periphery of an arcuate port through said sheet stock at substantially the center of said starburst pattern, and one substantially keyhole shaped ray having an enlarged inner edge portion cut out of the convergent rays of the said stock conformally shaped with said arcuate port, said enlarged inner edge portion and said rays of each pattern being completely and predictably cut through with no waste material.

3,897,580

MULTIPLE-PANE BUILDING-PANEL

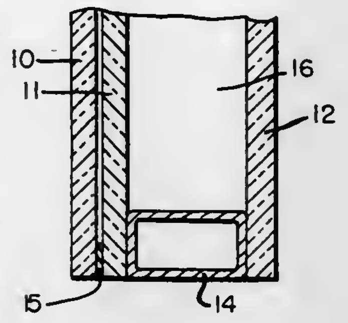
Nils Stig Percy Ingemansson, Fassbergsgatan 63, Molndal, and Jorgen Rasmus Larsen, Skolvagen 13, Kollered, both of Sweden

Filed Mar. 5, 1971, Ser. No. 121,336

Claims priority, application France, Jan. 28, 1971, 71.02883

Int. Cl.^{2} B32B *1/04*

U.S. Cl. 428—34 **4 Claims**



1. A multi-pane buliding panel comprising in combination:

a. first and second glass panes each having a thickness so as to be self-supporting in its horizontal position when supported at its edges only, said panes being disposed in essentially parallel face-to-face relationship with each other with an undivided space between said panes,

b. said first and second glass panes being held together resiliently adjacent their edges,

c. the adjacent parallel faces of said first and second glass panes being spaced less than 2 millimeters from each other by air,

d. at least one other glass pane,

e. means for spacing said at least one other glass pane in parallel face-to-face relationship with said first and second panes,

f. said at least one other glass pane being spaced from the closest face of said first and second glass panes by a distance considerably greater than 2 millimeters by air

thereby securing, without appreciably increasing the overall thickness, a heat insulating building panel having greatly improved sound-insulating properties.

3,897,581

PLYWOOD VENEER OF EDGE-BONDED WET WOOD PIECES AND METHOD OF MAKING SAME

Ryuzo Nakatsuka, Yokohama; Mituo Furuta, Sagamihara; Setsuo Suzuki, and Nobuyoshi Kawahara, both of Yokohama, all of Japan, assignors to Sumitomo Bakelite Company, Limited, Tokyo, Japan

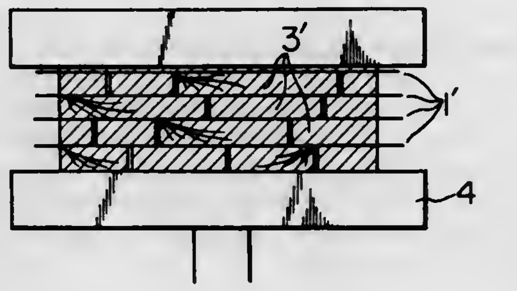
Filed Dec. 11, 1973, Ser. No. 423,707

Claims priority, application Japan, Mar. 27, 1973, 48-34073; Mar. 27, 1973, 48-34074; Mar. 27, 1973, 48-34075; Apr. 10, 1973, 48-40042; Sept. 10, 1973, 48-101232

Int. Cl.^{2} B32B *3/10, 27/40, 31/18;* **C08G** *18/02*

U.S. Cl. 428—44 **36 Claims**

1. A plywood veneer comprising a plurality of veneer strips bonded to one another by glue lines, said strips being bonded with a water-cured adhesive composition consisting essentially of a hydrophilic, polyfunctional, liquid polyisocyanate prepolymer containing substantially no active hydrogen group and having an NCO group content of 2–15% by weight and a number average molecular weight of 1,000 to 20,000.



3,897,582

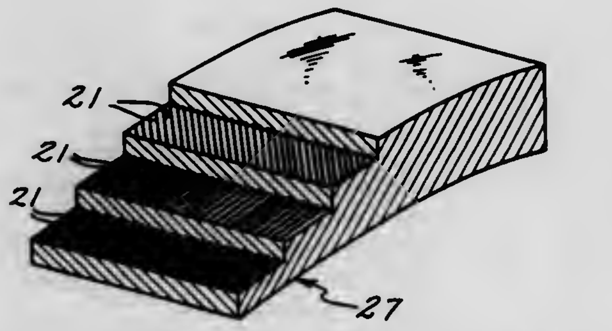
BRAKING ELEMENTS

Eugene L. Olcott, Falls Church, Va., assignor to Atlantic Research Corporation, Alexandria, Va.

Continuation-in-part of Ser. No. 65,899, Aug. 21, 1970, Pat. No. 3,738,906. This application Jan. 26, 1973, Ser. No. 327,971

Int. Cl.^{2} B32B *5/12*

U.S. Cl. 428—114 **50 Claims**



1. A frictional braking element comprising a pyrolytic graphite microcomposite comprising pyrolytic graphite crystallite layers containing embedded therein, in an amount comprising about 5% to 95% by volume of said microcomposite, codeposited, dispersed crystals of a refractory carbide selected from the group consisting of silicon, zirconium, hafnium, titanium, tantalum, and niobium carbide, and mixtures thereof, said element comprising said microcomposite being shaped in the form of a frictional braking element.

3,897,583

ADHESION OF METAL TO RUBBER

Carlos Bellamy, Distrito Federal, Mexico, assignor to Uniroyal, S.A., Distrito Federal, Mexico

Filed Nov. 8, 1973, Ser. No. 414,052

Int. Cl.^{2} B32B *15/02, 15/06;* **B60C** *9/02*

U.S. Cl. 428—256 **7 Claims**

1. A method of adhering brass plated wire reinforcement to rubber which comprises applying a solid vulcanizable rubber composition, comprising a conjugated diolefin polymer rubber, said composition containing, per 100 parts by weight of said rubber, from 0.01 to 0.2 part by weight of cobalt in the form of a cobalt salt (I), and (II) a resin-forming system comprising from 0.1 to 5 parts by weight of (A) a methylene donor which is a methylolated nitroalkane in which the hydrocarbon radical has 1 to 6 carbon atoms and from 0.1 to 5 parts by weight of (B) a resorcinol-type methylene acceptor, to the wire reinforcement to coat the same, and heating the assembly to vulcanize the rubber and to firmly adhere the wire reinforcement to the vulcanized rubber composition, the said cobalt salt (I) being a cobalt salt of an aliphatic or alicyclic carboxylic acid having from 6 to 30 carbon atoms, and the said methylene acceptor (B) being a fusible partially reacted resorcinol-alkyl aldehyde resin in which the alkyl aldehyde has from 1 to 4 carbon atoms.

3,897,584

RENDERING FIBROUS MATERIAL FLAME RETARDANT WITH CYAN AMIDE/HALOMETHYL PHOSPHONIC ACID SYSTEMS

Ronald Swidler; William A. Sanderson, both of Palo Alto, and William A. Mueller, Pasadena, all of Calif., assignors to Cotton, Incorporated, New York, N.Y.

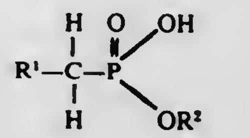
Continuation-in-part of Ser. No. 259,350, June 2, 1972, abandoned, which is a continuation of Ser. No. 153,094, June 14, 1971, abandoned, which is a continuation of Ser. No. 862,509, Sept. 30, 1969, abandoned. This application July 2, 1973, Ser. No. 375,440

Int. Cl.^{2} B06M *1/22;* **C09B** *5/18*

U.S. Cl. 428—277 **6 Claims**

1. A process for rendering cellulosic and wool fiber-containing material durably flame retardant, which process comprises the steps of:

I. contacting the material with cyanamide and at least one phosphonic acid represented by the structural formula:



wherein R^1 represents a monovalent radical selected from the group consisting of chloro and bromo; and wherein R^2 represents a monovalent radical selected from the group consisting of hydrogen and lower alkyl, to deposit on the material a flame retarding amount of the phosphonic acid with cyanamide; and subsequently

II. heating the material to fix the phosphonic acid at a pH less than 2.5 with cyanamide on the material to give an add-on of between about 1% and 30%, and

III. contacting the material with an aqueous solution of at least one water-soluble compound possessing reactive N-methylol groups and curing the material to improve the durability of the flame retardancy of the material.

3,897,585

INTEGRAL REINFORCED STRUCTURES WITH A POLYUREA ADHESIVE COMPONENT

Louis L. Wood, Potomac, Md., assignor to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 252,793, May 12, 1972. This application Aug. 28, 1972, Ser. No. 284,023

Int. Cl.^{2} C08G *71/02*

U.S. Cl. 428—395 **6 Claims**

1. In combination, a reinforcement assembly, an elastomeric structure, and an adhesive, said adhesive consisting in the uncured state essentially of a non-crosslinked polyurea prepared by reacting a first component comprising polyisocyanate selected from the group consisting of tolylene diisocyanate, triphenylmethane-4,4′4″,-triisocyanate, benzene-1,3,5-triisocyanate, toluene-2,4,6-triisocyanate, diphenyl-2,4,4′-triisocyanate, hexamethylene diisocyanate, xylylene diisocyanate, chlorophenylene diisocyanate, xylylene diisocyanate, chlorophenylene diisocyanate, diphenylmethane-4,4′-diisocyanate, naphthalene-1,5-diisocyanate, xylene-alpha, alpha′-diisothiocyanate, 3,3′-dimethyl-4,4′-biphenylene diisocyanate, 3,3′-dimethoxy-4,4′biphenylene diisocyanate, 2,2′,5′5′-tetramethyl-4,4′-biphenylene diisocyanate, 4,4′-methylenebis (phenylisocyanate)c4,4′-sulfonylbis (phenylisocyanate),4,4′-methylene di-ortho-tolylisocyanate, ethylene diisocyanate, ethylene diisothiocyanate, trimethylenediisocyanate; and a second component comprising alkylene polyamine having from about 2 to about 23 pendant

amine groups in a non-protonic carbonyl containing solvent selected from the group consisting of acetone, methyl ethyl ketone, cyclohexanone, acetaldehyde, propionaldehyde, butyraldehyde, and isocbutyraldehyde; said polyamine and said solvent being first combined for from about 2 minutes to about 24 hours at a temperature of about −5° to about 150°C.; the molar ratio of isocyanate groups in the polyisocyanate to amine groups in the polyamine being from about 1:1 to about 1:20 isocyanate to amine; said adhesive being cured by addition of water and removal of the solvent from the non-cross-linked polyurea.

3,897,586

POLYMER COATED PIGMENT PARTICLES AND A PROCESS FOR THEIR PREPARATION

James Newton Coker, Wilmington, Del., assignor to E. I. du Pont de Nemours & Co., Wilmington, Del.

Continuation of Ser. No. 61,480, Aug. 5, 1970, abandoned. This application Aug. 4, 1972, Ser. No. 277,883

Int. Cl.^{2} B32B *5/16*

U.S. Cl. 428—403 **14 Claims**

1. A process for preparing polymer-coated finely divided inorganic particles which comprises suspending finely divided hydrophilic inorganic particles selected from the group consisting of metal oxides, clay, colloidal silica, and zinc chromate in a non-aqueous liquid reaction medium selected from the group consisting of aliphatic hydrocarbons and cyclohexane without the presence of a surface-active agent, adding polymerizable ethylenically unsaturated monomer selected from the group consisting of acrylic esters, methacrylic esters, vinyl esters, vinyl halides, vinylidene halides, acrylic acid, and methacrylic acid and a free-radical initiator to the medium at a rate which approximates the rate of polymerization, and polymerizing the monomer in situ onto the particles until a polymer loading of at least about 0.5 weight percent is reached, said liquid reaction medium being a solvent for the monomer and initiator and a non-solvent for the polymer formed as a coating on the particles.

3,897,587

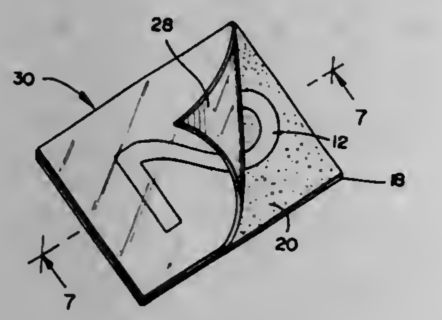
IMAGE TRANSFER SYSTEM

Donald Joseph Molner, 9 Varnum Ln., Englishtown, N.J. 07726

Continuation-in-part of Ser. No. 116,861, Feb. 19, 1971, Pat. No. 3,791,905. This application Nov. 12, 1973, Ser. No. 415,101. The portion of the term of this patent subsequent to Feb. 12, 1991, has been disclaimed.

Int. Cl.^{2} B32B *7/06*; **B44C** *1/16*; **B65D** *69/00*

U.S. Cl. 428—409 **18 Claims**



1. An image transfer system for releasing a selected image from a clay-coated image bearing surface comprising the steps of placing a flexible transparent substrate having a pressure-sensitive, adhesive-coated layer over the image with the adhesive layer in confronting relationship to the image, applying pressure to the substrate to effect intimate contact between the adhesive layer and the image, soaking the image bearing surface in a liquid in which the clay coating is soluble to thereby release the image, separating the image bearing surface from the transparent substrate with the image being transferred to the adhesive layer on the transparent substrate, removing the clay residue from the transparent substrate, contacting a soft, flexible cohesive plastic limpid overlay lamina having an exposed smooth clingable face to the image to form a pliable image carrier whereby the carrier may be releasably secured to a selected smooth supportive surface.

11. A kit constructed in accordance with claim **10** further including a plurality of transparent substrates, each of the substrates being adapted to receive an image, a plurality of lamina, and a plurality of translucent supportive surfaces whereby a plurality of image carriers may be constructed.

18. A projectionable transparency slide constructed in accordance with claim **3**.

3,897,588

PROCESS FOR THE PRODUCTION OF LAMINATES UTILIZING PRE-TREATING FOLLOWED BY IMPREGNATION

Touru Nohtomi, Tokyo, Japan, assignor to Mitsubishi Gas Chemical Co., Inc., Tokyo, Japan

Filed Feb. 9, 1973, Ser. No. 331,030

Claims priority, application Japan, Feb. 12, 1972, 47-14333

Int. Cl.^{2} B32B *17/10, 27/12, 27/38, 27/42*

U.S. Cl. 428—436 **19 Claims**

1. A process for the production of laminates comprising the steps of:

pre-treating glass-cellulose sheets composed of 20–70% by weight of cellulosic fibers and 30–80% by weight of glass fibers with at least one member selected from the group consisting of melamine resins prepared from formaldehyde and melamine in a molar ratio of from 1 to 6 in the presence of an acid catalyst, and methylol group-rich phenolic resins prepared from formaldehyde and phenol in a molar ratio of from 1.3 to 3.0 in the presence of an alkali catalyst,

impregnating the pre-treated sheets with an epoxy resin,

drying the impregnated sheets to form prepregs thereof,

arranging the prepregs for lamination,

placing on the outermost ones of the arranged prepregs a glass fabric previously treated with the epoxy resin as used in the impregnation step, and

laminating the arranged prepregs with the resin-treated glass fabric on the outermost prepregs to produce the laminate.

17. A metal-clad laminate obtained by the process of claim 2.

3,897,589

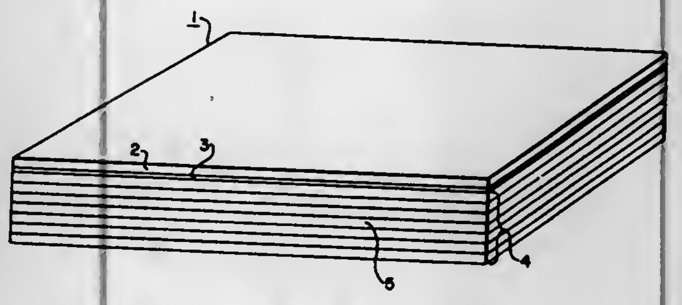
FAST CURING, WATER-RESISTANT LAMINATE MADE WITH ACCELERATED MELAMINE-ALDEHYDE RESIN AND ACCELERATED PHENOL-ALDEHYDE RESIN AND METHOD OF MAKING IT

Joseph F. Meier, Export, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 24, 1973, Ser. No. 363,774

Int. Cl.^{2} B32B *27/04, 27/42, 31/12*

U.S. Cl. 428—525 **10 Claims**



1. A method of making a laminate comprising:

1. preparing a composition which comprises:
   A. a phenol and an aldehyde in a molar ratio of about 1.15 to about 2.0;
   B. about 0.0002 to about 0.01 phr of a catalyst selected from the group consisting of water-soluble carbonates, water-soluble bicarbonates, and mixtures thereof; and
   C. About 5 to about 100 phr of a solvent for said catalyst and for the resin produced by reaction of said phenol with said aldehyde;
2. heating said composition to convert said composition to at least about 95% of theoretical solids;
3. coating sheets of a first substrate with said composition to a ratio of coated substrate to uncoated substrate of about 1.1 to about 2.5;
4. partially drying said coated substrate;
5. forming a stack of said coated substrates;
6. placing on said stack at least one sheet of a second substrate coated with an accelerated resin consisting essentially of melamine and an aldehyde and containing about 0.001 to about 2% (based on resin solids) of a free-radical generator, said resin having about the same cure time as said phenol-aldehyde resin; and
7. curing the resins in said stack at an accelerated rate by heating said stack under pressure.

3,897,590

METHOD AND APPARATUS FOR MAKING MONOCRYSTALS

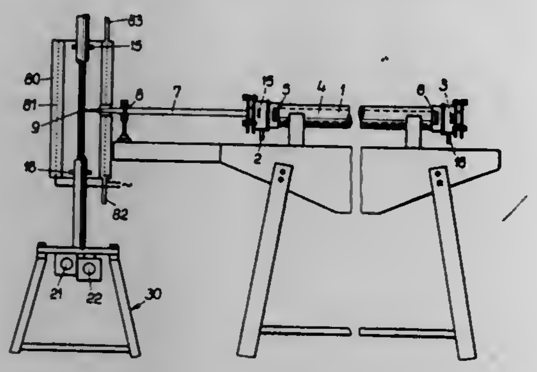
Karl Gürs, Niederhochstadt, Germany, assignor to Battelle Development Corporation, Columbus, Ohio

Continuation-in-part of Ser. No. 825,345, May 16, 1969, abandoned. This application May 3, 1972, Ser. No. 249,998

Claims priority, application Germany, May 18, 1968, 1769405

Int. Cl.^{2} B01J *17/08, 17/18;* **H01S** *3/00*

U.S. Cl. 13—1 **31 Claims**



1. In a process for the production of a dielectric monocrystal from a raw material comprising a dielectric salt of a coordinative bound metallic acid in accordance with the floating zone melt process, the improvement which comprises melting the portion of said raw material which is to comprise the floating zone melt by irradiation with a laser beam.

3,897,591

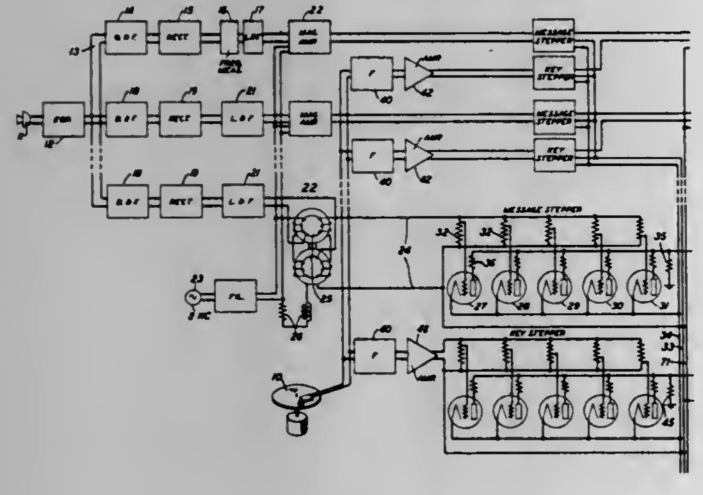
SECRET TRANSMISSION OF INTELLIGENCE

Alexis A. Lundstrom, East Orange, N.J., and Luther G. Schimpf, St. George, N.Y., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 27, 1942, Ser. No. 456,322

Int. Cl. H04l *9/00*

U.S. Cl. 179—1.5 M **13 Claims**



1. In a signal privacy system, means to convert a gradually varying signal current wave into a stepped wave, means to superpose on said stepped wave a masking current varying in magnitude in a manner unrelated to the signal to produce a stepped summation current wave for transmission, and means to eliminate short portions of the summation wave at the points where the steps occur to further conceal the signal.

3,897,592

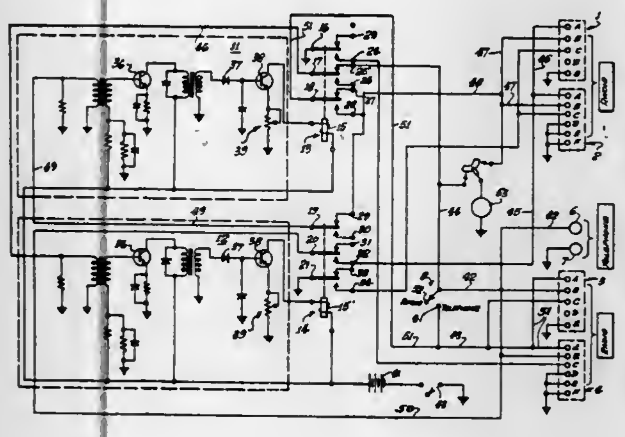
VOICE-OPERATED TRANSMIT SYSTEM

Billy E. Walker, 37195 Lombardy Ave., Barstow, Calif. 92311

Filed May 11, 1973, Ser. No. 359,291

Int. Cl.^{2} H04Q *7/00*

U.S. Cl. 179—41 A **4 Claims**



1. Control apparatus for intercommunicating remotely-located transmit-receive systems at least one of which is a radio system comprising:

a signal input and a signal output means for each of said systems, the input means applying a signal derived from a transmit-receive system to the control apparatus and the output means applying a signal derived from the control apparatus to a transmit-receive system, and

an electrical transmission system for each of said transmit-receive systems

each of said transmission systems including:

a pair of switching mechanisms each including a solenoid and a plurality of switches ganged to said solenoid, each of said ganged plurality including a normally-open and a normally-closed switch,

a pair of electrical transmission circuit, each circuit of said pair coupling signal input means of one of said systems to said signal output means of the other system, and

each of said transmission circuits including a separate one of said normally-open switches whereby each circuit is normally-open,

a pair of switch control circuits, each circuit of said pair coupling said signal input means of each one of said systems directly to a separate one of said solenoids,

each of said control circuits including a separate one of said normally-closed switches whereby the signal input energy is applied through said switches to said solenoids,

each of said switch control circuits further including means for processing said signal inputs energy into a form capable of energizing said solenoids,

whereby the signal input into either systems energizes one of said switching mechanisms to close its normally-open transmission circuit and apply the input to said signal output of the other system,

each of said ganged switching mechanisms further including a second normally-open and grounded switch electrically coupled to said signal output means of said radio system whereby said solenoid energization closes said second switch for grounding and keying the transmitter of the radio system.

3,897,593

RESISTANCE WELDING OF SHEET METAL COATED WITH LAYERS

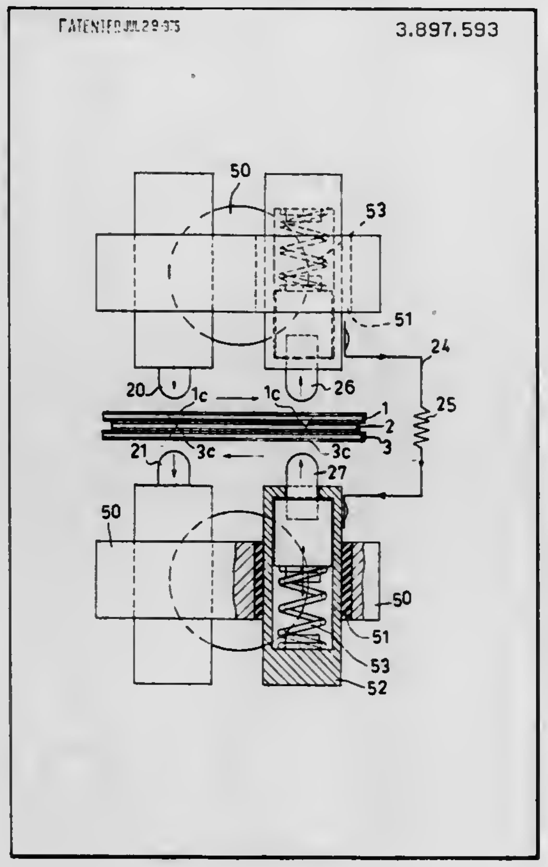
Otto Alfred Becker, 59 Robert-Koch-Strasse, 66, Saarbrucken 6, Germany

Division of Ser. No. 704,684, Feb. 12, 1968, Pat. No. 3,643,057. This application Dec. 30, 1970, Ser. No. 102,950

Claims priority, application Germany, Feb. 11, 1967, 91162; May 26, 1967, 92707; Apr. 24, 1967, 92210; Feb. 27, 1967, 91404

Int. Cl. B23k *9/28, 11/10*

U.S. Cl. 219—92 **24 Claims**



1. A device for resistance welding of insulation-coated sheet metal to at least one other coated sheet metal, said device comprising

a first main electrode and, in juxtaposition thereto, a second main electrode,

at least one first auxiliary electrode being arranged side-by-side of said first main electrode and being electrically insulated therefrom,

at least one second auxiliary electrode being arranged side-by-side of said second main electrode and being electrically insulated therefrom,

said first and second auxiliary electrodes being also in juxtaposition to each other,

means for moving at least one of said main electrodes and its adjacent auxiliary electrode toward and away from the other main and auxiliary electrodes so as to provide a space for placing

superposed insulation-coated sheet metal panels between said first and second main and auxiliary electrodes, and to establish contact between said sheet metal panels and said electrodes on moving the electrodes toward each other,

a shunt connecting the first main electrode with the second auxiliary electrode and

a shunt connecting the first auxiliary electrode with the second main electrode,

regulating resistor means provided in said shunts,

a welding current source, and

connections from said welding current source to said main electrodes.

3,897,594

HIGH PRESSURE MERCURY DISCHARGE LAMP

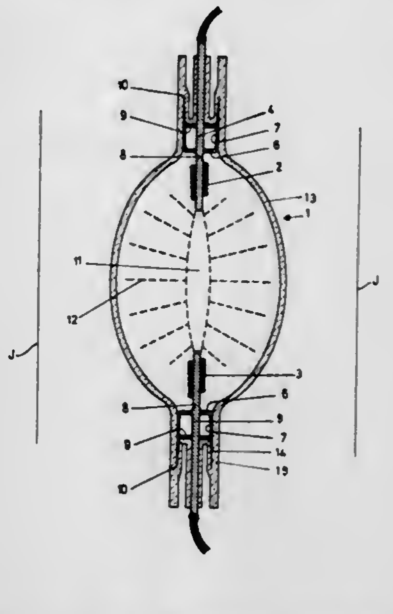
Hanns-Peter Popp, and Horst Grabner, both of Munich, Germany, assignors to Patent-Treuhand-Gesellschaft fur Eleck-trische Gluhlampen mbH, Munich, Germany

Filed Mar. 19, 1974, Ser. No. 452,639

Claims priority, application Germany, Apr. 6, 1973, 2317461

Int. Cl.^{2} H01J *17/04*

U.S. Cl. 313—214 **10 Claims**



1. An improved high pressure mercury discharge lamp having a power input in excess of 1,000 watts comprising spaced apart electrodes in a bulb of transparent material having high heat capacity and containing metal halides, the improvement comprising the combination wherein the ratio of electrode spacing to inner diameter of the bulb is between 0.05 and 1 per kilowatt of power input to the lamp, and the ratio of power input in watts to volume of the discharge arc in cubic centimeters is from 10 to 100.

3,897,595

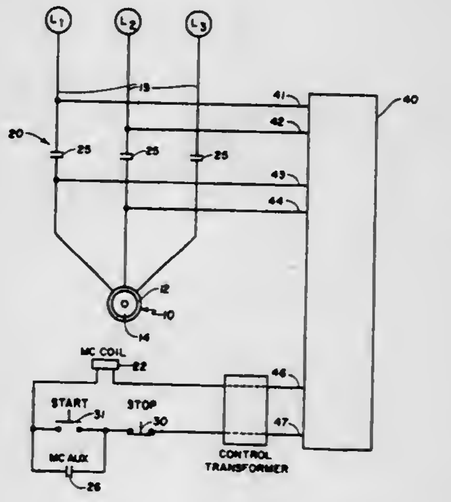
DYNAMIC MOTOR BRAKE CONTROL FOR AC MOTORS

John O. Fearno, Cologne, Minn., assignor to Helland Research and Engineering Inc., Minnetonka, Minn.

Filed Jan. 28, 1974, Ser. No. 437,400

Int. Cl. H02p *3/20*

U.S. Cl. 318—212 **13 Claims**



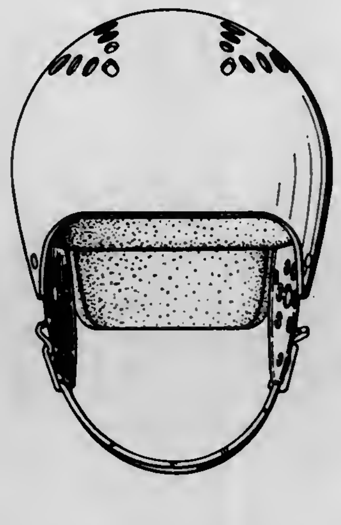
1. A control circuit for an alternating current motor having a stator winding adapted to be connected to an AC source of power for energizing the same and a power contactor for selectively connecting the stator winding to the AC source of power to operate the same comprising, a dynamic braking circuit for braking said motor from a running condition to a stop condition with disconnection by the power contactor of

the AC source of power from the stator winding, said dynamic braking circuit including a variably operated rectifying means, a braking contactor including contact means for connecting the AC source of power through the rectifying means to the stator winding to apply rectified AC current to the stator winding to brake the motor, a first control circuit inlcuding a switching means having two conditions of operation, a second control circuit connecting to the first control circuit to be controlled thereby in one condition of its operation and including a switching means having two conditions of operation, said second control circuit in one condition of operation being operative to energize the braking contactor and operate the rectifying means, aand means selectively responsive to the energization of the stator winding for controlling the first control circuit means between the two conditions of switching operation, said means responsive to the connection of the stator winding to the source of power being an optical coupling.

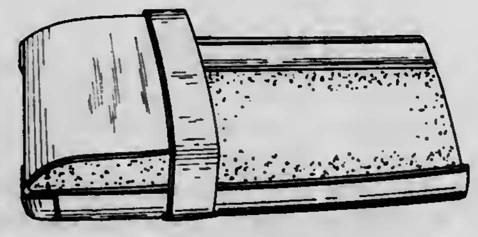
DESIGNS

JULY 29, 1975

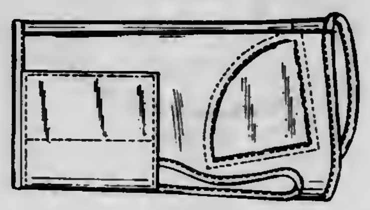
236,041
PROTECTIVE HELMET
Robert E. Conroy, Park Ridge, Ill., assignor to Servotronics, Inc., Buffalo, N.Y.
Filed June 29, 1973, Ser. No. 374,963
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—232



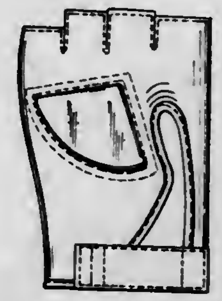
236,042
SHOE PROTECTOR
William F. Martin, 350 Stonycroft Road, Ridgewood, N.J. 07450
Filed July 16, 1973, Ser. No. 379,246
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—271



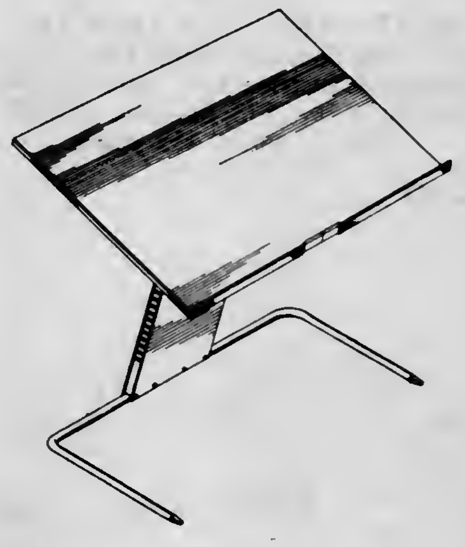
236,043
BOWLING GLOVE
Donald J. Carter, Miami, Fla., and Frank P. Esposito, Paramus, N.J., assignors to National Athletic Supply Corporation, Paramus, N.J.
Filed June 3, 1974, Ser. No. 475,834
Term of patent 14 years
Int. Cl. D2—*06*
U.S. Cl. D2—361



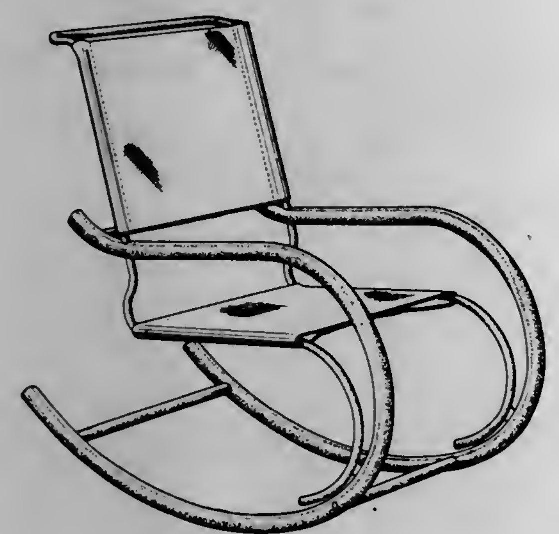
236,044
BOWLING GLOVE
Donald J. Carter, Miami, Fla., and Frank Esposito, Paramus, N.J., assignors to National Athletic Supply Corporation, Paramus, N.J.
Filed Sept. 14, 1973, Ser. No. 397,602
Term of patent 14 years
Int. Cl. D2—*06*
U.S. Cl. D2—361



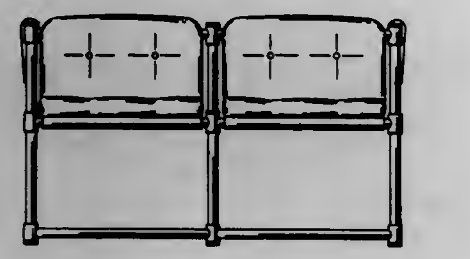
236,045
DRAFTING TABLE
Gordon D. Petrie, 11428 Snowdrop Ave., Fountain Valley, Calif. 92708
Filed Aug. 30, 1973, Ser. No. 393,078
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—27



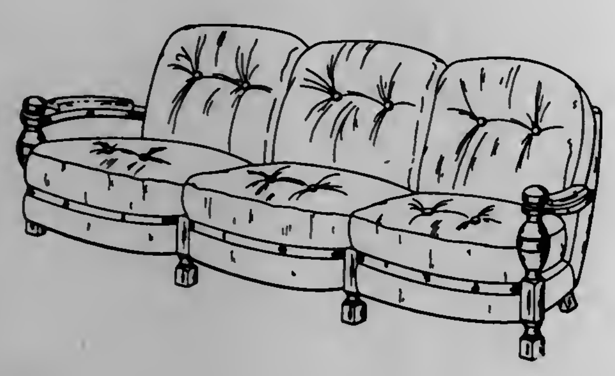
236,046
CHAIR OR SIMILAR ARTICLE
Jonathan Ginat, New York, N.Y. (% A.C.I. Industries, Inc., 38—60 Review Ave., Long Island City, N.Y. 11100)
Filed Oct. 16, 1973, Ser. No. 406,819
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—49



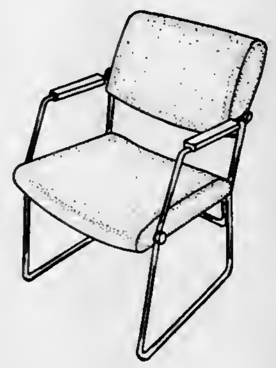
236,047
LOVE SEAT
Thomas C. Hoshall, 8300 Brookridge, Oklahoma City, Okla. 73132, and Kent W. Bouldin, Oklahoma City, Okla.; said Bouldin assignor to said Hoshall
Filed May 21, 1973, Ser. No. 361,868
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—60



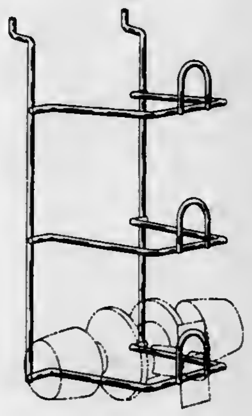
236,048
SEAT OR SIMILAR ARTICLE
Stanley P. Nash, Johnson Creek, Wis., assignor to Schweiger Industries, Inc., Jefferson, Wis.
Filed Aug. 30, 1973, Ser. No. 392,955
Term of patent 3½ years
Int. Cl. D6—*01*
U.S. Cl. D6—63



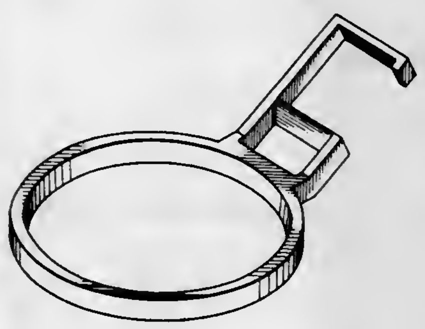
236,049
SIDE CHAIR
William H. Tacke, Wyoming, Mich., assignor to Curtis Products Ltd., Cobourg, Ontario, Canada
Filed June 11, 1973, Ser. No. 369,071
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—69



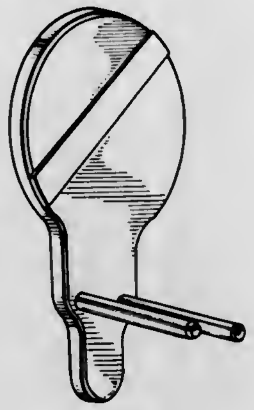
236,050
DISPLAY AND DEMONSTRATOR RACK FOR CYLINDRICAL LOCKSETS AND THE LIKE
William M. Folberth, 3535 W. 140th St., Cleveland, Ohio 44111
Filed Oct. 20, 1972, Ser. No. 299,253
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—114



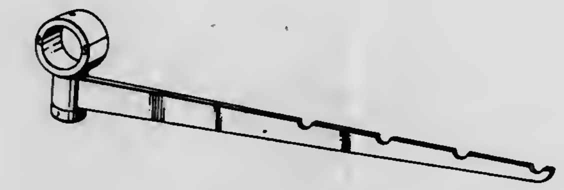
236,051
HOLDER FOR VASES AND THE LIKE
Victor E. Opincar, Sr., 7 Terrace, Lido Park, Newport Beach, Calif. 92660
Filed Nov. 29, 1973, Ser. No. 419,917
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D6—114



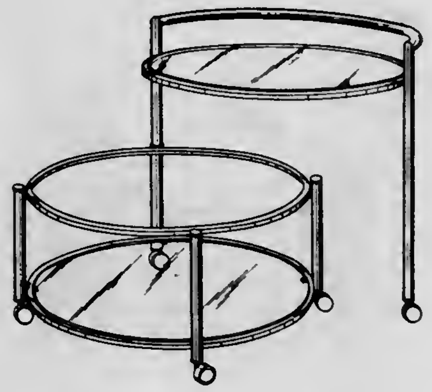
236,052
TENNIS RACQUET HOLDER OR THE LIKE
Donald C. Trieschmann, 615 Cherry St., Winnetka, Ill. 60093
Filed Nov. 21, 1973, Ser. No. 417,877
Term of patent 3½ years
Int. Cl. D6—*06*
U.S. Cl. D6—114



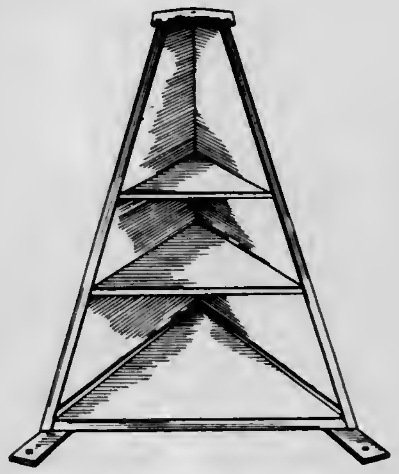
236,053
COMBINATION GARMENT DISPLAY ARM AND MOUNTING BRACKET
Stanley A. Friedberg, 7143 Woodrow Wilson Drive, Hollywood, Calif. 90028
Filed Jan. 21, 1974, Ser. No. 435,304
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D6—116



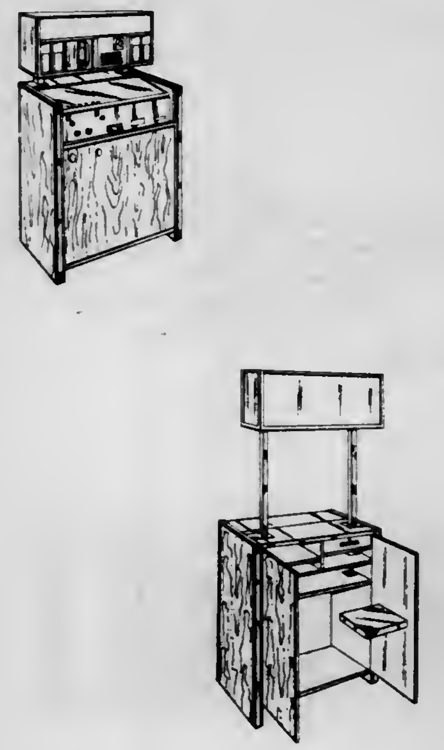
236,054
MOBILE BAR TABLE OR SIMILAR ARTICLE
Jonathan Ginat, New York, N.Y. (% A.C.I. Industries, Inc., 38—60 Review Ave., Long Island City, N.Y. 11100)
Filed Oct. 16, 1973, Ser. No. 406,820
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—144



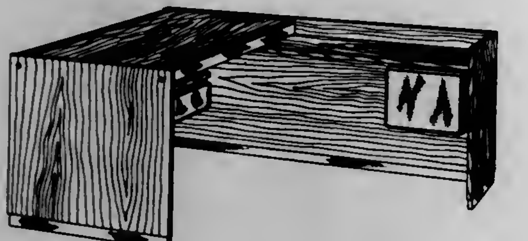
236,055
TOOL SUPPORT STAND
Derek Hogg and John Fairburn Askam, Sutton Coldfield, England, and Roger Anthony Wilson, Wrexham, Wales, assignors to Dunlop Limited, London, England
Filed Nov. 6, 1972, Ser. No. 303,841
Claims priority, application Great Britain May 11, 1972
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—145



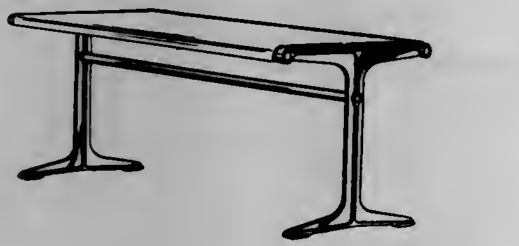
236,056
POINT-OF-PURCHASE SALES CONSOLE
Irvin M. Lemon, 321 Via Pasqual, Redondo Beach, Calif. 90277
Filed Oct. 11, 1973, Ser. No. 405,411
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—158



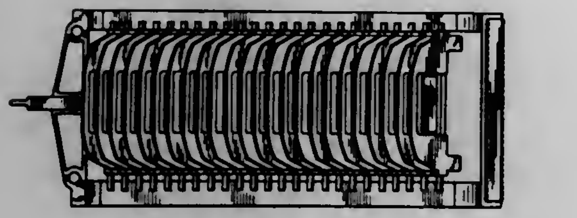
236,057
COMBINED DESK AND SIDE EXTENSION UNIT
Douglas C. Ball, Senneville, Quuebec, Canada, assignor to Massey-Ferguson Industries Limited, Toronto, Ontario, Canada
Filed Aug. 30, 1973, Ser. No. 393,257
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—159



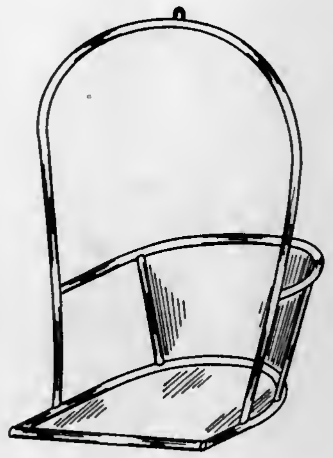
236,058
TABLE
Friso Kramer, Amsterdam, Netherlands, assignor to Wilkhahn, Wilkening & Hahne, Einbeckhausen, Germany
Filed May 8, 1973, Ser. No. 358,377
Claims priority, application Denmark Nov. 9, 1972
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177



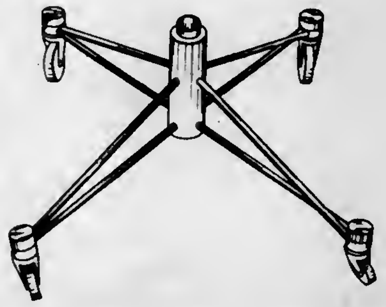
236,059
RECORD HOLDING DEVICE
Julian Gutierrez, 6233 Brookview Ave., Minneapolis, Minn. 55424
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—185



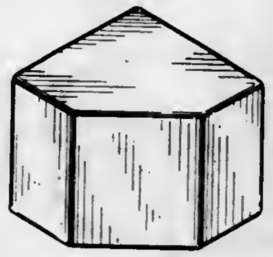
236,060
HANGING CHAIR FRAME
Phillip A. Gass, 241 S. 89th St., Omaha, Nebr. 68114
Filed Sept. 6, 1973, Ser. No. 394,919
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191



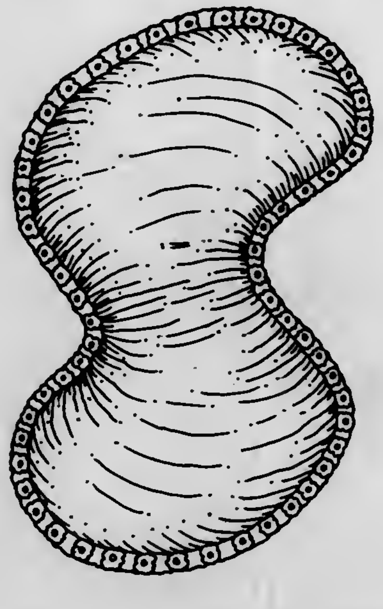
236,061
CHAIR BASE
William H. Tacke, Wyoming, Mich., assignor to Curtis Products Ltd., Cobourg, Ontario, Canada
Filed Dec. 3. 1973, Ser. No. 420,978
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—196



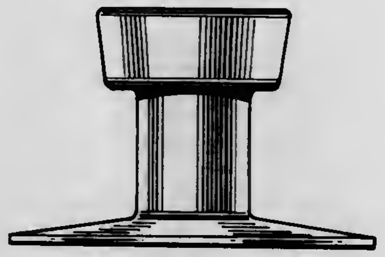
236,062
FACE PILLOW
Laura Winston, 710 S. Hobart Blvd., Apt. 206, Los Angeles, Calif. 90005
Filed June 12, 1972, Ser. No. 261,585
Term of patent 14 years
Int. Cl. D6—*09*
U.S. Cl. D6—201



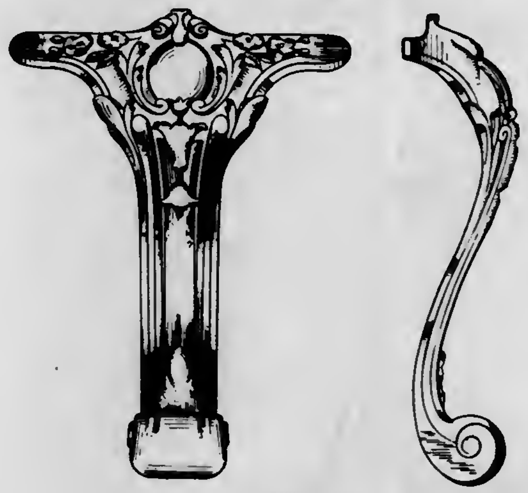
236,063
BED PILLOW
Seroun Kesh, 18982 Ardmore, Detroit, Mich. 48235
Filed May 29, 1973, Ser. No. 364,251
Term of patent 14 years
Int. Cl. D6—*09*
U.S. Cl. D6—204



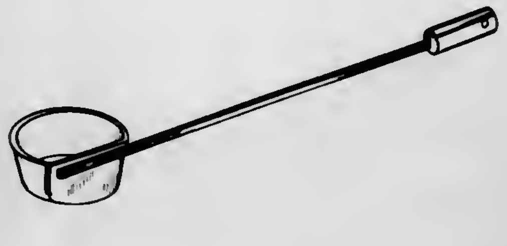
236,064
UTENSIL FACILITATING SNAIL-EATING
Paul Balbo, 76 Village Road S., Brooklyn, N.Y. 11223
Filed Sept. 26, 1973, Ser. No. 400,727
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—7



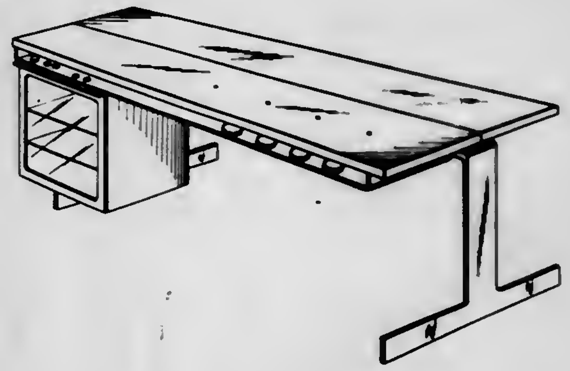
236,065
LEG FOR A SERVING UTENSIL
Robert Haber, 834 Edward St., Baldwin, N.Y. 11510
Filed June 18, 1973, Ser. No. 370,791
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—39



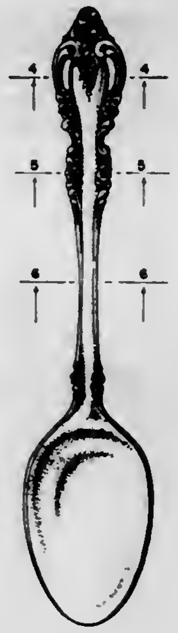
236,066
LADLE OR SIMILAR ARTICLE
Eleanore C. Best, Woodville, Wis. 54028
Filed Sept. 24, 1973, Ser. No. 400,430
Term of patent 7 years
Int. Cl. D7—*02*
U.S. Cl. D7—104



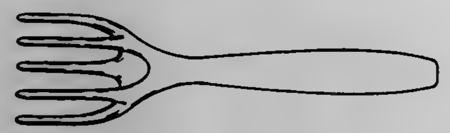
236,067
COMBINED ELECTRICAL INDUCTION HEATING TABLE TOP COOKING RANGE AND OVEN
Philip H. Peters, Jr., Washington County, and John L. Matrone, Albany County, N.Y., assignors to Environment/One Corporation, Schenectady, N.Y.
Filed Sept. 23, 1971, Ser. No. 183,289
Term of patent 14 years
Int. Cl. D7—*02*; D6—*04*
U.S. Cl. D7—111



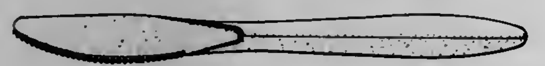
236,068
SPOON OR SIMILAR ARTICLE
Melvin A. Lea, Oneida, N.Y., assignor to General Mills, Inc., Minneapolis, Minn.
Filed Aug. 16, 1973, Ser. No. 389,096
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—137



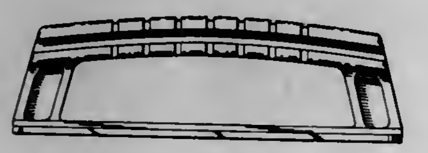
236,069
SPAGHETTI FORK
Malcolm R. Braid, 1005 Cumberland Drive,
Auburn, Ala. 36830
Filed Oct. 19, 1973, Ser. No. 408,154
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—137

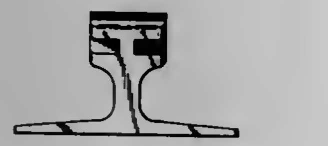


236,070
KNIFE
William A. Dart and Laurence T. Uridge, Mason, Mich.,
assignors to Dart Container Corporation, Mason, Mich.
Filed June 22, 1973, Ser. No. 372,643
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—138

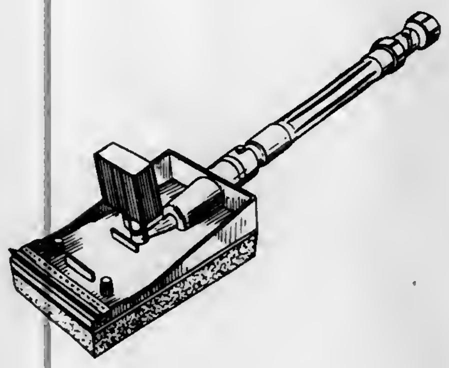


236,071
HOLDER FOR SCRUB PADS OR THE LIKE
Ronald O. Zemke, White Bear Lake, Minn.
(P.O. Box 33427, St. Paul, Minn. 55133)
Filed Jan. 18, 1974, Ser. No. 434,648
Term of patent 14 years
Int. Cl. D7—*05*; D4—*01*
U.S. Cl. D7—178

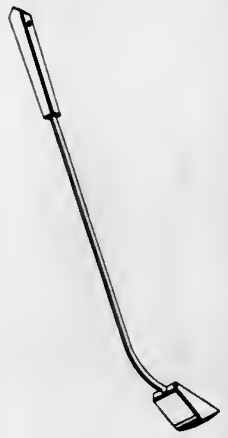




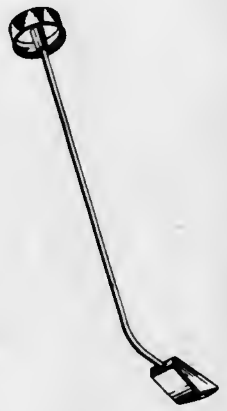
236,072
VEHICLE WASHER
Andrew Ng Fai Tsang, Block B, 9th Floor, Wah Hing Industrial Mansions, Tai Yau St., N.K.I.L. 4411, San Po Kong, Kowloon, Hong Kong
Filed Sept. 4, 1973, Ser. No. 394,145
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—179



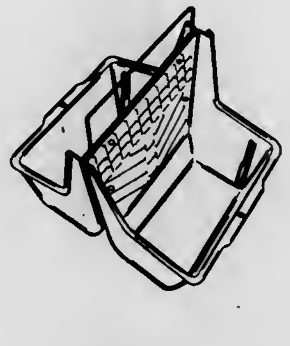
236,073
BOTTLE SCRAPER
William P. Monagle, 507 Pueblo St.,
Boise, Idaho 83702
Filed Feb. 28, 1974, Ser. No. 446,873
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—184



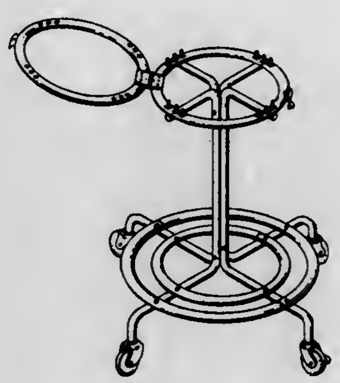
236,074
COMBINED BOTTLE SCRAPER AND CAP
William P. Monagle, 507 Pueblo St.,
Boise, Idaho 83702
Filed Feb. 28, 1974, Ser. No. 446,866
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—184



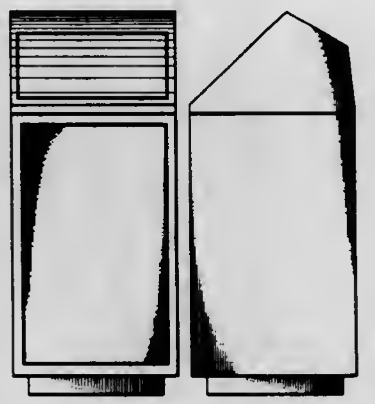
236,075
UTILITY PAIL OR THE LIKE
Henry Golden, 1571 Elmwood Ave. 14620, and Samuel R. Genca, 36 Longcroft Road 14609, both of Rochester, N.Y.
Filed Jan. 9, 1974, Ser. No. 432,085
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D7—187



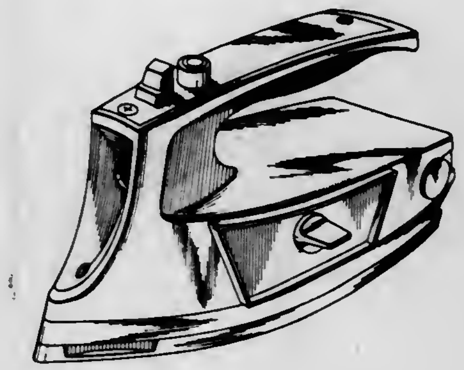
236,076
GARBAGE BAG SUPPORT AND STORAGE DEVICE
Harold J. Comeaux, 1448 Bonnabel Blvd.,
Metairie, La. 70005
Filed Sept. 7, 1973, Ser. No. 395,060
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D7—193



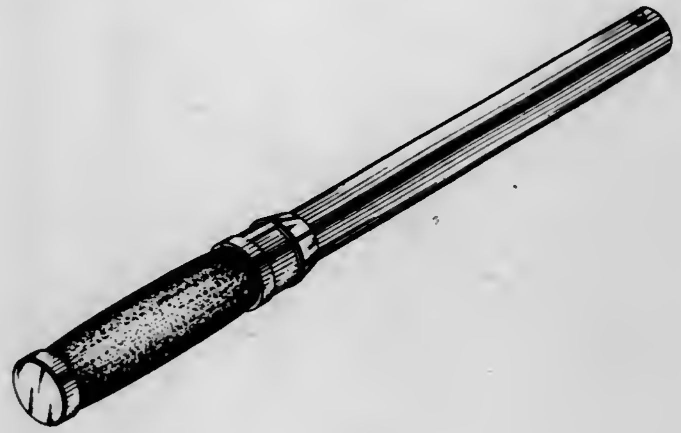
236,077
TRASH RECEPTACLE
Robert Gault, 2043 Angling Road,
Corfu, N.Y. 14036
Filed Jan. 2, 1974, Ser. No. 429,715
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D7—194



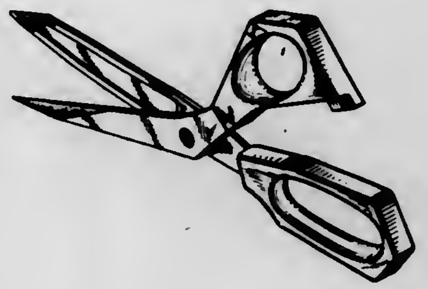
236,078
IRON OR SIMILAR ARTICLE
John C. Shalvoy, Fairfield, Conn., assignor to
General Electric Company
Filed July 10, 1974, Ser. No. 486,982
Term of patent 14 years
Int. Cl. D7—*205*
U.S. Cl. D7—203



236,079
TORQUE WRENCH LEVER
Bosko Grabovac, Mission Viejo, Calif., assignor to
Consolidated Devices, Inc., South El Monte, Calif.
Filed June 24, 1974, Ser. No. 482,332
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—24



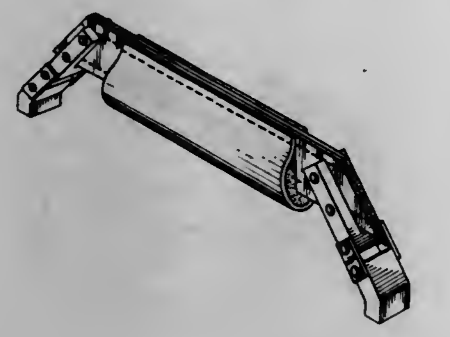
236,080
SCISSORS
Richard T. Hopcraft, Cranston, R.I., assignor to Imperial
Knife Co. Inc., Providence, R.I.
Filed Aug. 22, 1974, Ser. No. 499,518
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—57



236,081

HANDLE FOR LUGGAGE

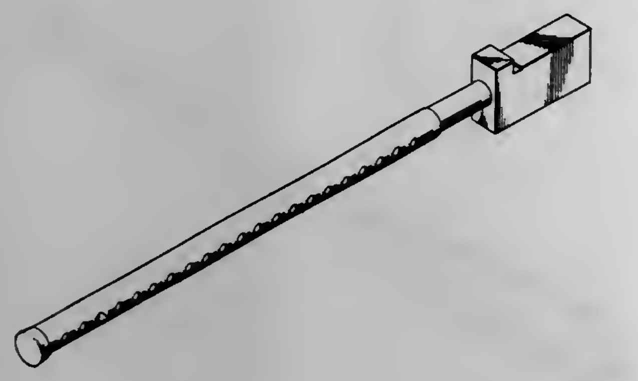
Joseph Y. Pelavin, North Bergen, N.J., assignor to Lark Luggage Corporation
Filed Mar. 1, 1974, Ser. No. 447,435
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—154



236,082

ADJUSTABLE BAR FOR BLOCKING SLIDING DOORS AND WINDOWS

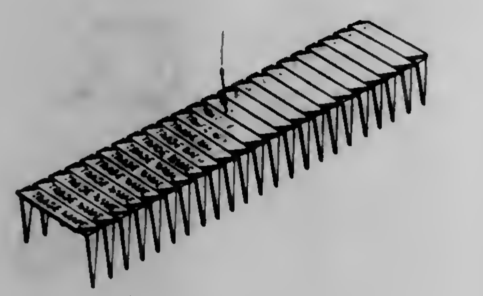
Clarence D. Williams, Los Angeles, Calif. (20227 Itasca St., Chatsworth, Calif. 91311), and Francis M. Archdekin, 2721 W. Verdugo. Burbank. Calif. 91505
Filed Dec. 10, 1973, Ser. No. 423,421
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—203



236,083

STRIP OF STAPLES

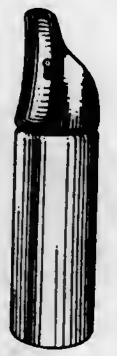
Robert E. Olson, 9014 Callaghan Road, San Antonio, Tex. 78230
Original design application May 18, 1972, Ser. No. 254,834. Divided and this application Dec. 17, 1973, Ser. No. 425,091
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—266



236,084

PRESSURIZED DISPENSING CONTAINER

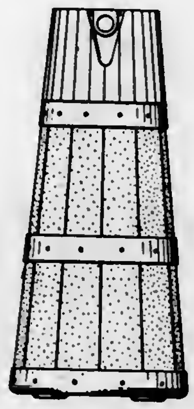
Tor Petterson, Palos Verdes Peninsula, Calif., assignor to S. C. Johnson & Son, Inc., Racine, Wis.
Filed Nov. 29, 1973, Ser. No. 420,041
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—9



236,085

DISPENSING CONTAINER FOR MARGARINE OR THE LIKE

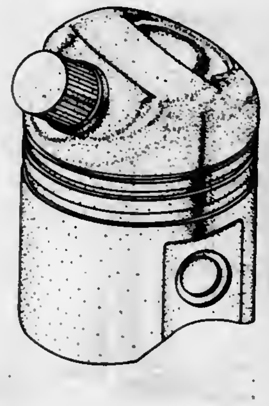
Richard L. Gannett and Jeffrey L. Ashby, Dallas, Bruce E. Welsh, Jr., and Daniel A. Leo, Richardson, and Carlton W. Howorth, Dallas, Tex., Robert E. Corba, Racine, Wis., and Robert N. Carow and James M. Beck, Chicago, Ill., assignors to Anderson, Clayton & Co., Houston, Tex.
Filed Sept. 29, 1972, Ser. No. 293,358
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—9



236,086

CONTAINER FOR LIQUIDS

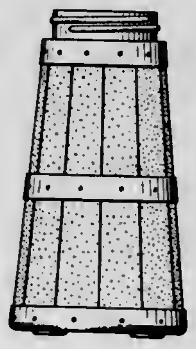
Henry D. Manley III, 13 Race St., Bloomfield, N.J. 07003
Filed May 14, 1973, Ser. No. 360,299
Term of patent 3½ years
Int. Cl. D9—*01*
U.S. Cl. D9—23



236,087

BOTTLE

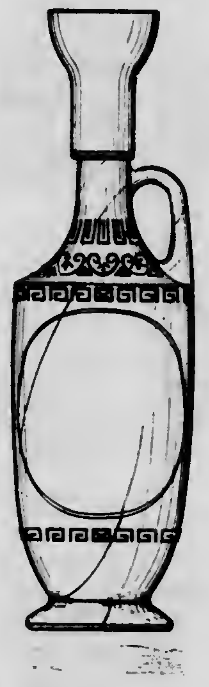
Richard L. Gannett and Jeffrey L. Ashby, Dallas, Bruce E. Welsh, Jr., and Daniel A. Leo, Richardson, and Carlton W. Howorth, Dallas, Tex., and Robert E. Cobra, Racine, Wis., assignors to Anderson, Clayton & Co., Houston, Tex.
Filed Sept. 29, 1972, Ser. No. 293,357
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D8—28



236,088

COMBINED BOTTLE AND CAP THEREFOR

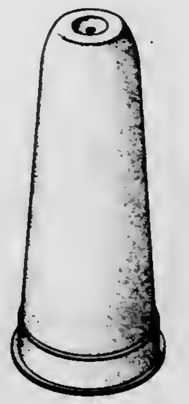
Ken Bradley, Mercer Island, Wash. 98040
Filed Jan. 27, 1972, Ser. No. 221,484
Term of patent 7 years
Int. Cl. D9—*01*
U.S. Cl. D9—51



236,089

PLASTIC PREFORM CONTAINER OR THE LIKE

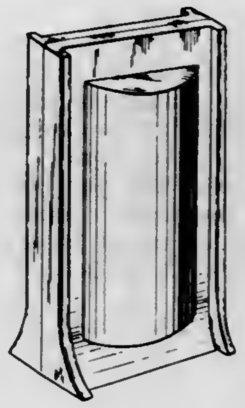
Bryant Edwards, Clarendon Hills, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Continuation-in-part of design application Ser. No. 247,914, Apr. 26, 1972. This application May 23, 1973, Ser. No. 363,283
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—171



236,090

DISPLAY CASING FOR A CONTAINER

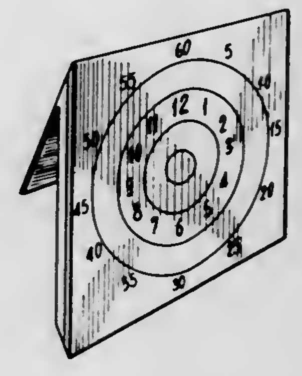
Victor Koenigsberg, Franklin Square, N.Y., assignor to Colgate-Palmolive Co., New York, N.Y.
Filed Dec. 14, 1973, Ser. No. 424,766
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—182



236,091

COMBINED CLOCK HOUSING AND DIAL FACE

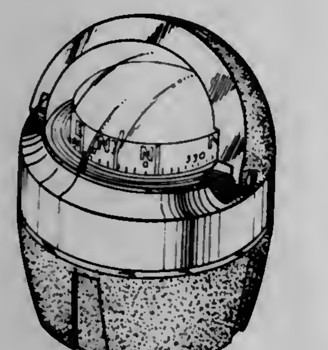
Dario D'Adda, Viale Filippetti 33, Milan, Italy
Filed Aug. 14, 1972, Ser. No. 280,283
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—26



236,092

COMPASS

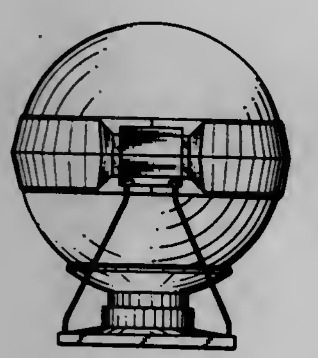
William Macowski, Caldwell, N.J., assignor to Ketcham & McDougall, Inc., Roseland, N.J.
Filed Jan. 8, 1974, Ser. No. 431,792
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—68



236,093

RADAR REFLECTOR

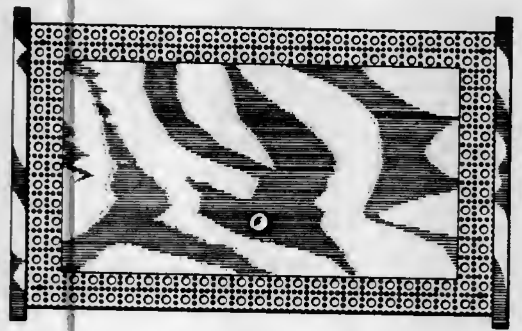
Hiroshi Ota and Isao Takiguchi, Tokyo, and Matsumi Takahashi, Kawasaki, Japan, assignors to Tokyo Keiki Company Limited, Tokyo, Japan
Filed Apr. 18, 1974, Ser. No. 462,086
Claims priority, application Japan Oct. 23, 1973
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—104



236,094

SMOKE AND GAS DETECTOR

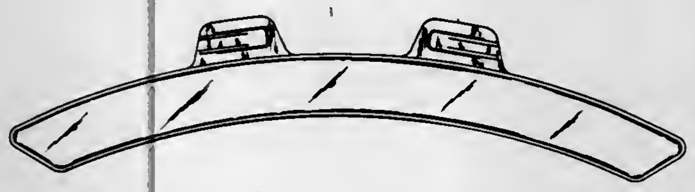
Carlton Swain Moorefield, 4935 Birch Lane, Alexandria, Va. 22308
Filed Apr. 5, 1974, Ser. No. 458,323
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—106



236,095

REFLECTOR

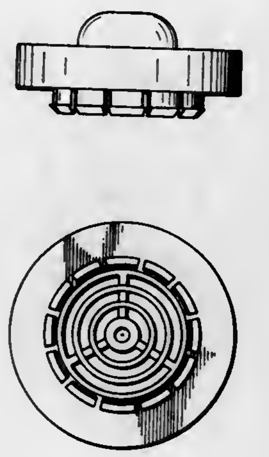
Gerald Golden, Highland Park, Ill., assignor to Beatrice Foods Co., Elgin, Ill.
Filed Aug. 7, 1974, Ser. No. 495,401
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—111



236,096

AUDIBLE ALARM

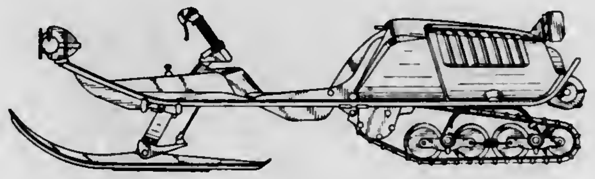
Louis P. Sweany, Carmel, Ind., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.
Filed Aug. 29, 1973, Ser. No. 392,624
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—116



236,097

SNOWMOBILE

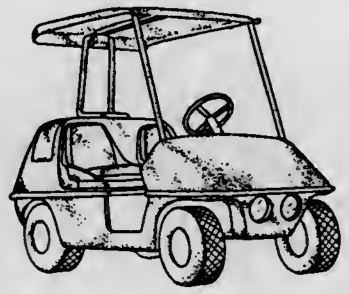
Masahiro Sato, Asaka, and Sadao Mizushima, Tokyo, Japan, assignors to Honda Gyken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 30, 1974, Ser. No. 437,954
Claims priority, application Japan Aug. 1, 1973
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D12—7



236,098

GOLF CAR

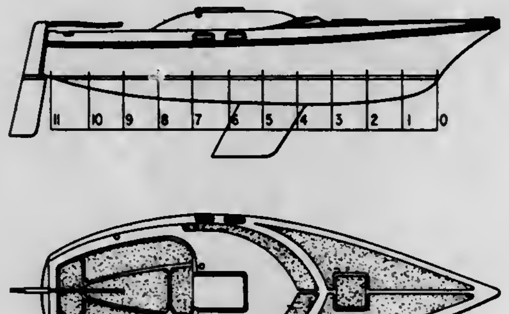
Denis E. Bedel, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Oct. 4, 1973, Ser. No. 403,596
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D12—16



236,099

SAILBOAT

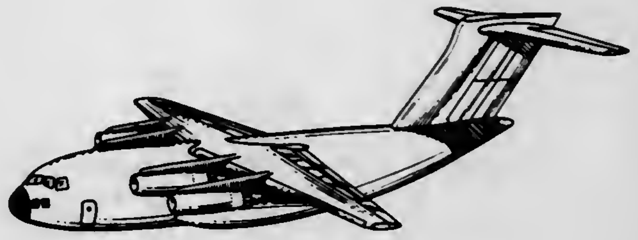
Ervin R. Heald, Los Alamitos, William D. Kelly, Mission Carlsbad, Calif. 92008
Filed Jan. 7, 1974, Ser. No. 431,163
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—64



236,100

AIRPLANE

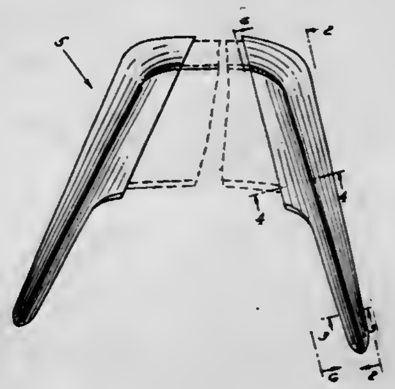
Ervin R. Heald, Los Alamitos, William D. Kelly, Mission Viejo, Harold F. Kleckner, Los Angeles, Joseph D. Van Dyke, Palos Verdes Estates, and Howell L. Walker, Lakewood, Calif., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.
Filed Apr. 3, 1974, Ser. No. 457,492
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D12—80



236,101

PAIR OF STANCHIONS FOR A WIND DEFLECTOR FOR AUTOMOTIVE VEHICLES

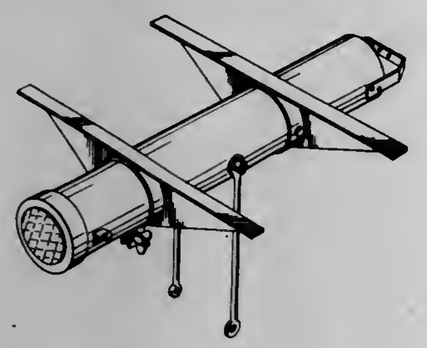
Frederick A. Helm, 9818 Grinnell, Detroit, Mich. 48213
Filed Dec. 10, 1973, Ser. No. 423,260
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—155



236,102

RACK FOR BICYCLES AND THE LIKE

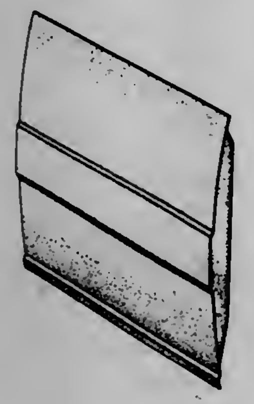
Donald L. Branscom, 1816 E. Helen St., Apt. 209,
Tucson, Ariz. 85719
Filed Mar. 11, 1974, Ser. No. 449,960
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—158



236,103

REAR VAN DOOR

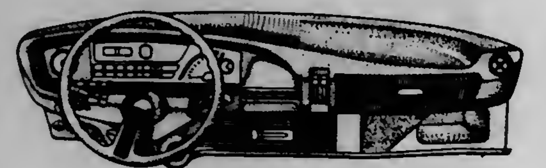
Harrison A. Field, 1201 E. Fairhaven 25,
Santa Ana, Calif. 92705
Filed Dec. 10, 1973, Ser. No. 423,163
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—196

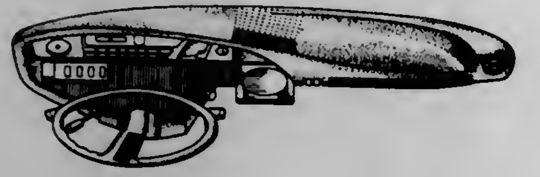


236,104

COMBINED DASHBOARD AND STEERING WHEEL FOR AN AUTOMOBILE

Jean Cadiou, 36 Rue Dailly, Saint Cloud, France
Continuation-in-part of abandoned design application Ser. No. 25,787, Nov. 2, 1970. This application Oct. 31, 1972, Ser. No. 302,547
Claims priority, application France May 6, 1970
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—192

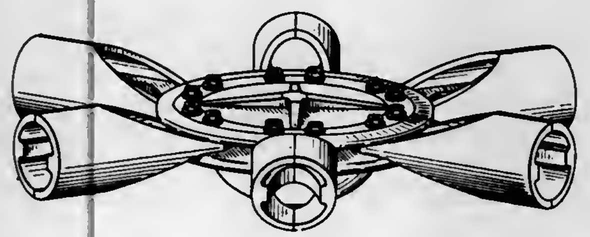




236,105

HUB

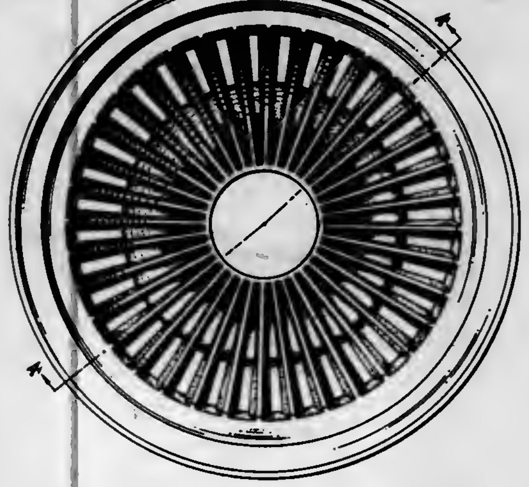
Thomas C. Howard, P.O. Box 25549,
Raleigh, N.C. 27211
Filed Dec. 17, 1973, Ser. No. 424,933
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—207



236,106

WHEEL

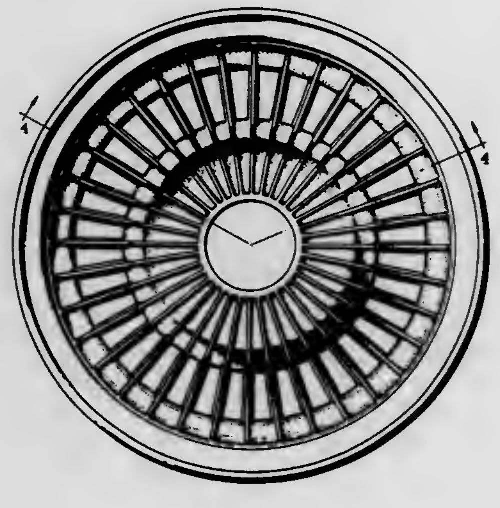
Henry James Clary, Orange, Calif.
(16427 S. Avalon Blvd., Gardena, Calif. 90248)
Filed Dec. 17, 1973, Ser. No. 425,286
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—211



236,107

AUTOMOBILE WHEEL

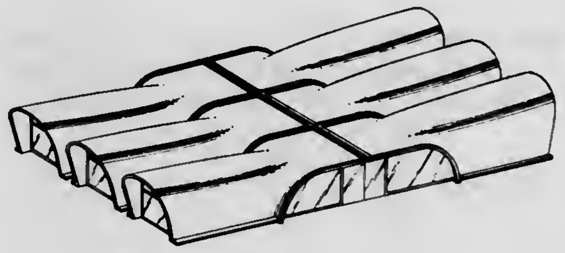
Delmer D. Scott, Encino, Calif., assignor to
Permacast Corp., Compton, Calif.
Filed June 21, 1974, Ser. No. 483,937
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—211



236,108

MODULAR BUILDING

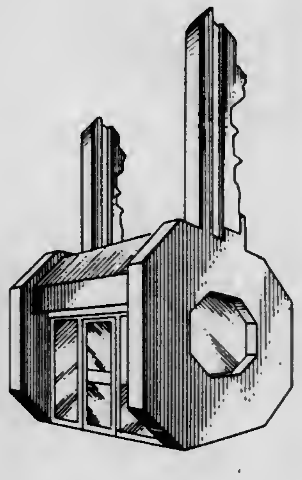
Berne A. Watkins, 76 Cambridge Road,
Glenmont, N.Y. 12077
Filed Nov. 4, 1971, Ser. No. 195,904
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 R



236,109

KEY KIOSK

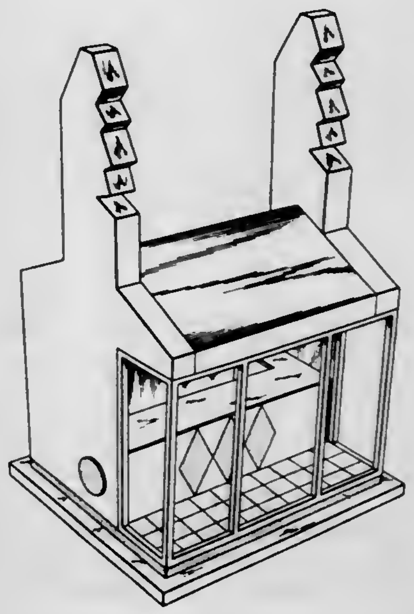
Thomas R. Moscati, McLean, Va., assignor to
Leonard Krol, Cheektowaga, N.Y.
Filed Feb. 1, 1973, Ser. No. 328,595
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 F



236,110

BUILDING

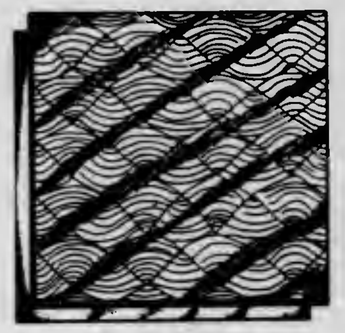
Anthony P. Moscatelli, 239 N. Queens Ave.,
Massapequa, N.Y. 11758
Filed Jan. 15, 1974, Ser. No. 433,471
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 F



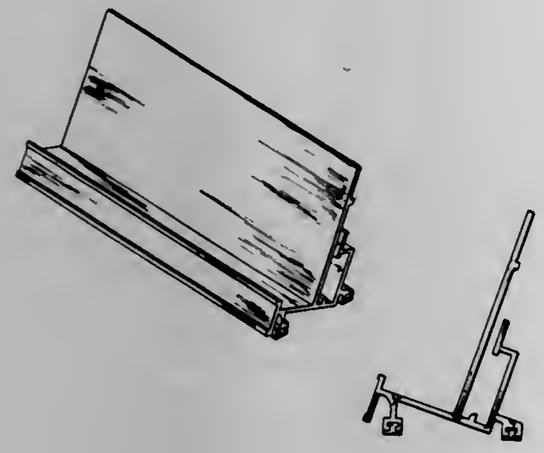
236,111

FLOOR TILE

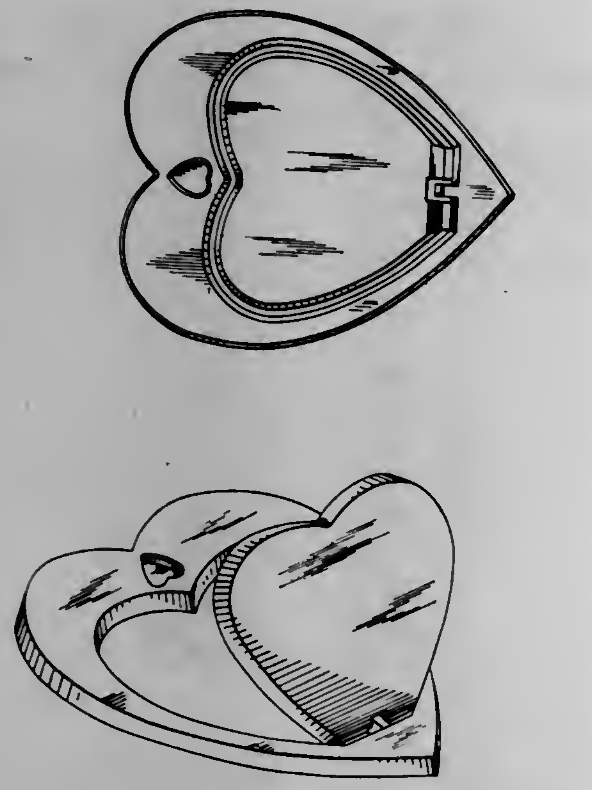
Otto Kreibaum, 3215 Lauenstein, Germany
Filed Mar. 26, 1973, Ser. No. 344,537
Claims priority, application Germany Sept. 27, 1972
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D18—2 B



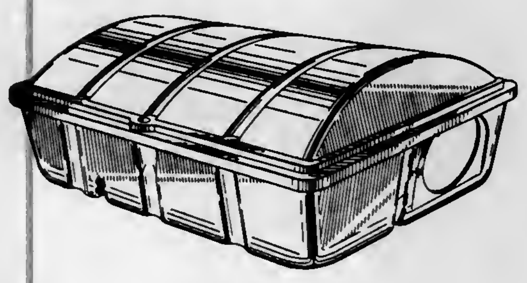
236,112
COOLING RACK FOR ADHESIVE BINDINGS
Henry N. Staats, Deerfield, Ill., assignor to General Binding Corporation, Northbrook, Ill.
Filed Nov. 26, 1973, Ser. No. 419,129
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—75



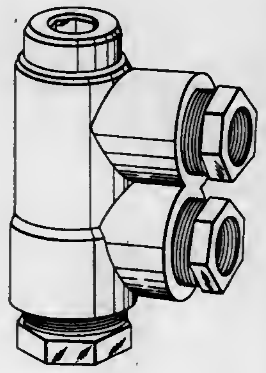
236,113
FOLDING PEN STAND
James G. Moore, Cedar Rapids, and Fay W. Oltman, Anamosa, Iowa, assignors to Souvenir, Inc., Cedar Rapids, Iowa
Filed Jan. 2, 1974, Ser. No. 429,876
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—84



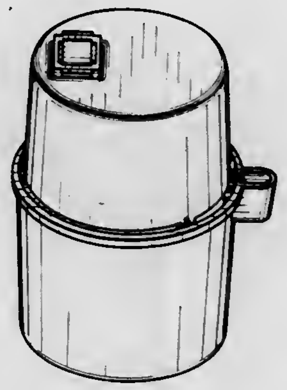
236,114
RODENT BAIT FEEDING BOX OR SIMILAR ARTICLE
Stanley Z. Baker, Cleveland Heights, Ohio, assignor to J. T. Eaton & Company, Cleveland, Ohio
Filed Jan. 21, 1974, Ser. No. 435,271
Term of patent 14 years
Int. Cl. D22—*06*
U.S. Cl. D22—18



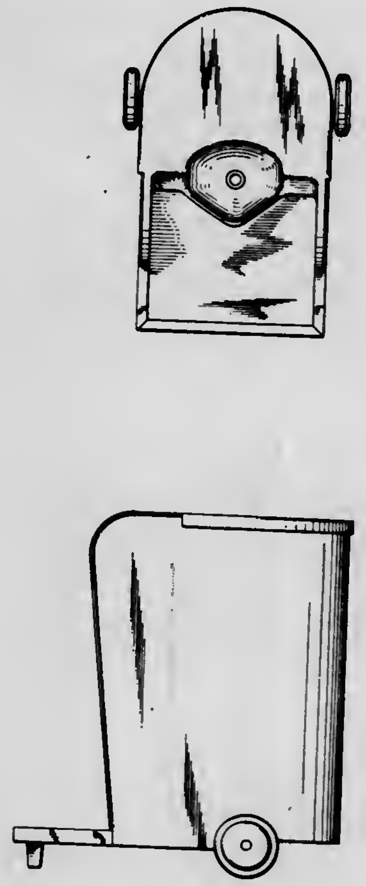
236,115
OILBURNER VALVE OR SIMILAR ARTICLE
Curt Arnold Bjorklund, Box 99, Ulricehamn, Sweden
Filed Mar. 20, 1973, Ser. No. 342,928
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—19



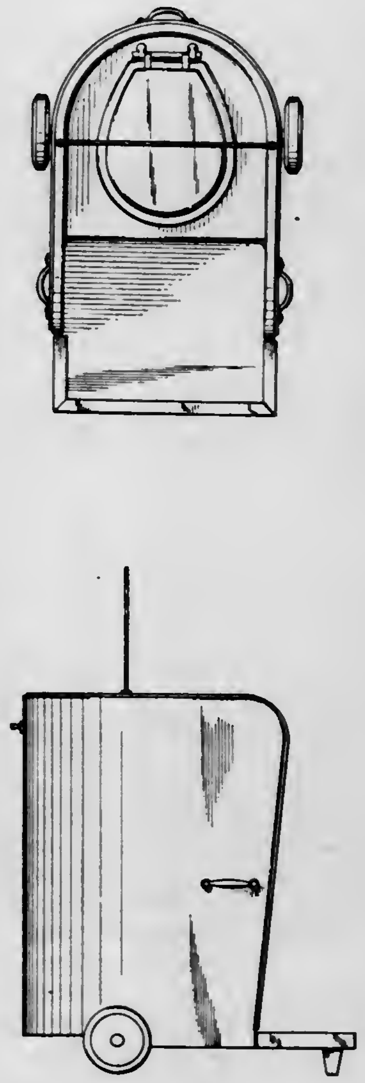
236,116
BALL COCK FLOAT
Adolf Schoepe, 1620 N. Raymond Ave., Fullerton, Calif. 92631, and Frederic E. Schmuck, 535 Century Drive, Anaheim, Calif. 92805
Filed Jan. 2, 1974, Ser. No. 429,721
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—33



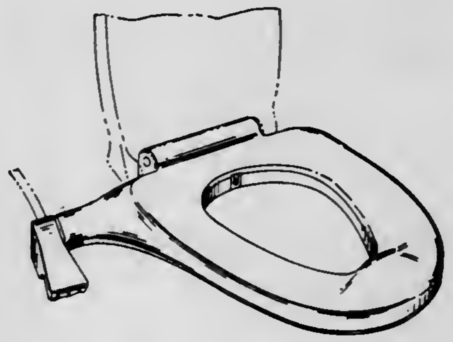
236,117
PORTABLE URINAL
Luther Elkins, 13031 Forest Drive, Bowie, Md. 20716
Filed Aug. 16, 1973, Ser. No. 388,904
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—48



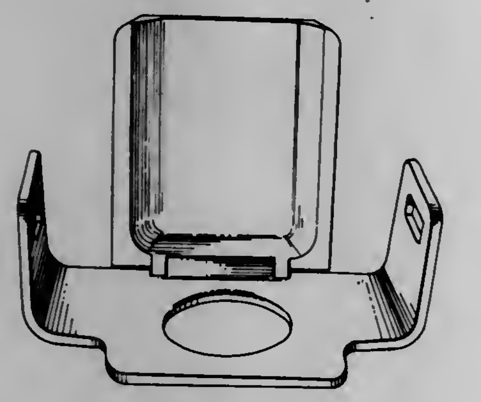
236,118
PORTABLE TOILET
Luther Elkins, 13031 Forest Drive, Bowie, Md. 20716
Filed Apr. 19, 1974, Ser. No. 462,429
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—48



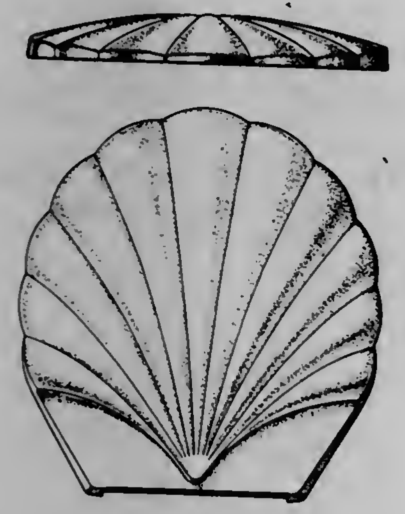
236,119
BIDET TOILET SEAT
Michael F. Slawinski, 12911 S. Parnell Ave., Chicago, Ill. 60628, and Joseph J. Cylkowski, 12412 S. Carpenter, Calumet Park, Ill. 60643
Filed Dec. 26, 1973, Ser. No. 427,566
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—71



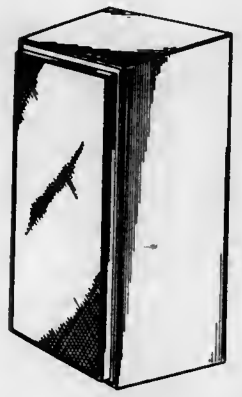
236,120
COMBINED TOILET SEAT AND COVER
Robert O'Neil, Wheaton, Ill., assignor to
Beneke Corporation, Columbus, Miss.
Filed Oct. 26, 1973, Ser. No. 409,880
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—71



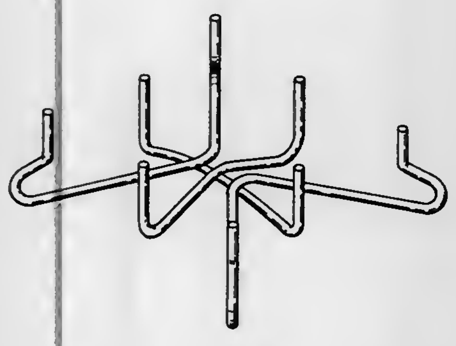
236,121
TOILET SEAT COVER
Robert O'Neil, Wheaton, Ill., assignor to
Beneke Corporation, Columbus, Miss.
Filed Oct. 26, 1973, Ser. No. 409,881
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—71



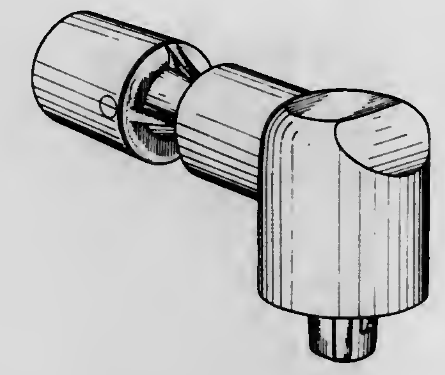
236,122
AIR FRESHENER
Jody L. Numbers, Scottsdale, Ariz., assignor to
Envair, Inc., San Antonio, Tex.
Filed Nov. 30, 1973, Ser. No. 420,622
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—150



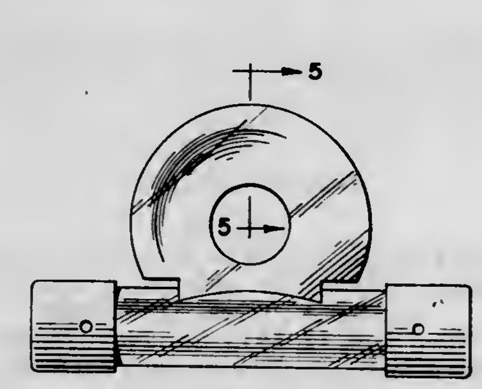
236,123
FIRING TRAY FOR DENTAL PROSTHETICS
Allan L. Brent, Dobbs Ferry, and Harvey Bocian, Jericho, N.Y., assignors to Labco Products, Inc., Jamaica, N.Y.
Filed Sept. 7, 1972, Ser. No. 286,869
Term of patent 14 years
Int. Cl. D24—*02, 99*
U.S. Cl. D24—1 R



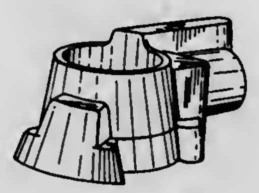
236,124
ELECTRICAL INTERFERENCE SUPPRESSOR FOR INTERNAL COMBUSTION ENGINE IGNITION SYSTEMS
Norman Alfred Jukes, Walsall, England, assignor to Joseph Lucas (Electrical) Limited, Birmingham, England
Filed Mar. 1, 1972, Ser. No. 231,092
Claims priority, application Great Britain Oct. 20, 1971
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1 A



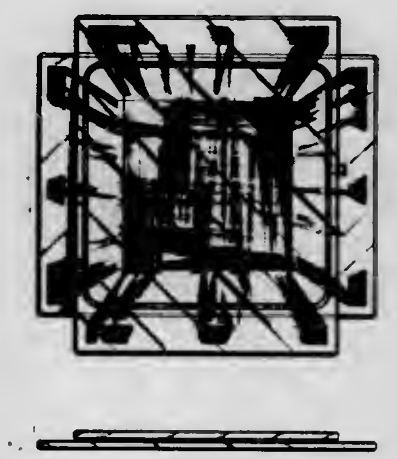
236,125
COMBINED ELECTRIC FUSE BODY AND INTEGRAL HANDLE
Gerald Wiebe, 18W 077 Williamsburg Lane,
Villa Park, Ill. 60181
Filed May 4, 1972, Ser. No. 250,482
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1 D



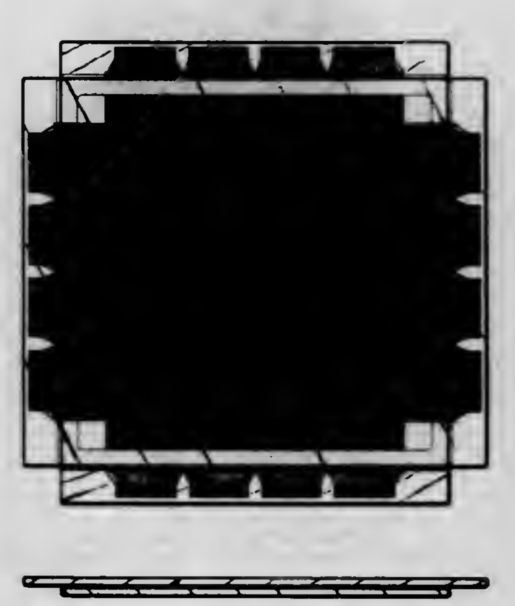
236,126
BATTERY CABLE TERMINAL
James Demetreon, 5704 Hillside Drive,
Kansas City, Mo. 64151
Filed Dec. 5, 1973, Ser. No. 421,934
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1 E



236,127
LIGHT EMITTING GAS DISCHARGE MATRIX DISPLAY PANEL
Roger E. Ernsthausen, Luckey, Ohio, assignor to
Owens-Illinois, Inc., Toledo, Ohio
Continuation-in-part of design application Ser. No. 26,650, Dec. 28, 1970, now Patent No. 231,231. This application Dec. 17, 1973, Ser. No. 425,402
Term of patent 14 years
The term of this patent subsequent to Apr. 9, 1988,
has been disclaimed
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



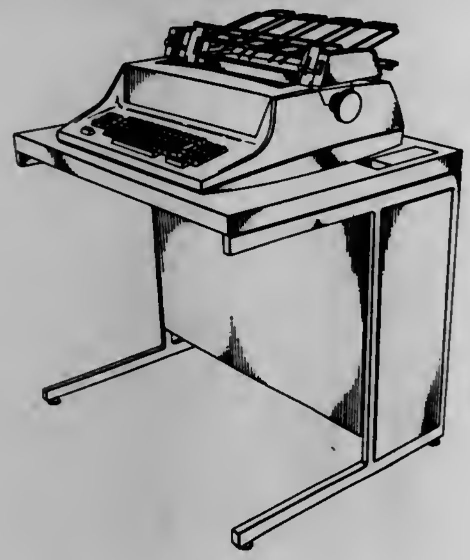
236,128
LIGHT EMITTING GAS DISCHARGE MATRIX DISPLAY PANEL
Gerald E. Wojcik and Richard A. Martel, Toledo, Ohio, Fred E. Mansur, Temperance, Mich., and Larry J. Lohmann, Centerville, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio
Continuation-in-part of design application Ser. No. 26,304, Dec. 7, 1970, now Patent No. 231,358. This applicatiion Dec. 14, 1973, Ser. No. 425,051
Term of patent 14 years
The term of this patent subsequent to Apr. 16, 1988,
has been disclaimed
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



236,129

INPUT/OUTPUT TERMINAL

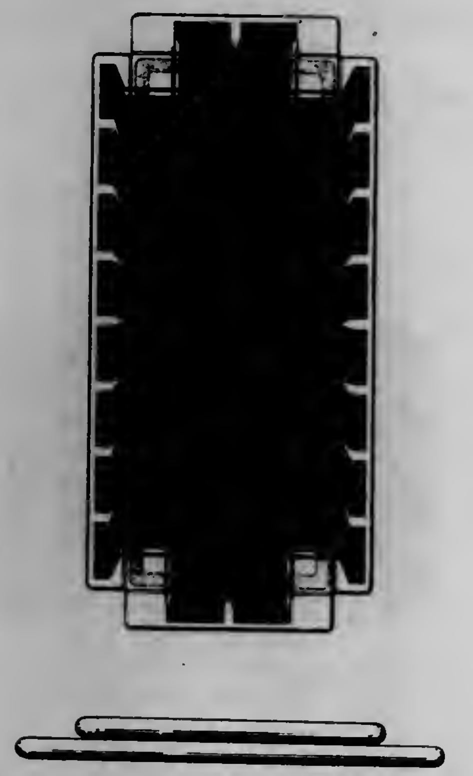
Loren D. Stirling, Pleasanton, Calif., assignor to Xerox Corporation, Stamford, Conn.
Filed Dec. 3, 1973, Ser. No. 420,827
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



236,130

LIGHT EMITTING GAS DISCHARGE MATRIX DISPLAY PANEL

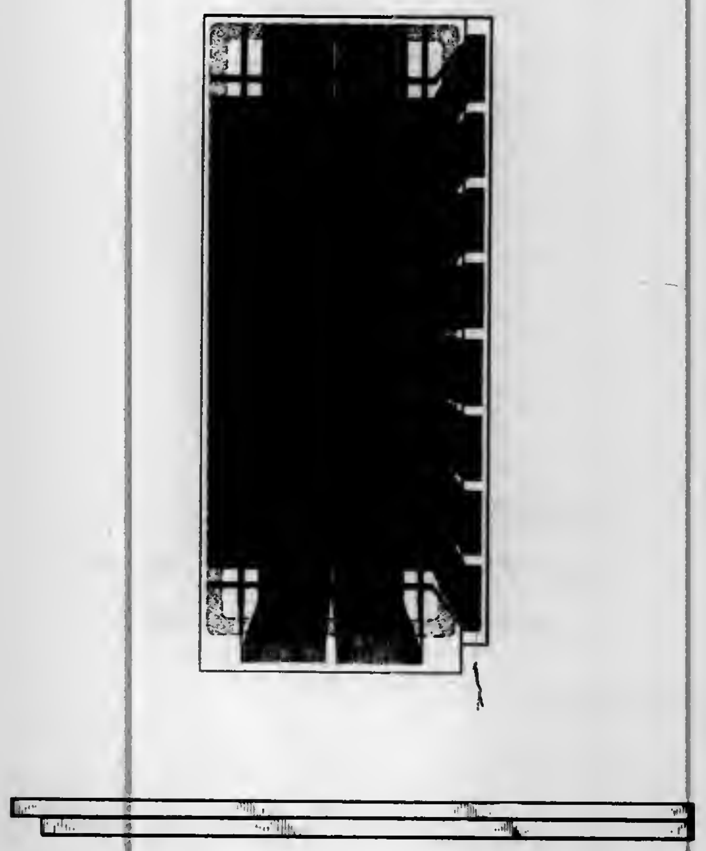
Fred E. Mansur, Temperance, Mich., and Larry J. Lohmann, Centerville, and Gerald E. Wojcik and Richard A. Martel, Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio
Continuation-in-part of design application Ser. No. 196,863, Nov. 8, 1971, now Patent No. 230,986. This application Dec. 14, 1973, Ser. No. 425,052
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



236,131

LIGHT EMITTING GAS DISCHARGE MATRIX DISPLAY PANEL

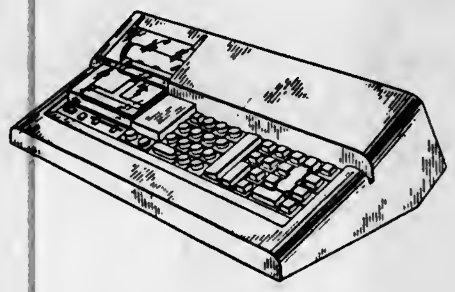
Fred E. Mansur, Temperance, Mich., and Harold J. Hoehn, Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio
Continuation-in-part of design application Ser. No. 260,688. June 7, 1972, now Patent No. 230,856. This application Dec. 17, 1973, Ser. No. 425,852
Term of patent 14 years
The term of this patent subsequent to Mar. 19, 1988, has been disclaimed
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



236,132

ELECTRONIC PRINTING CALCULATOR

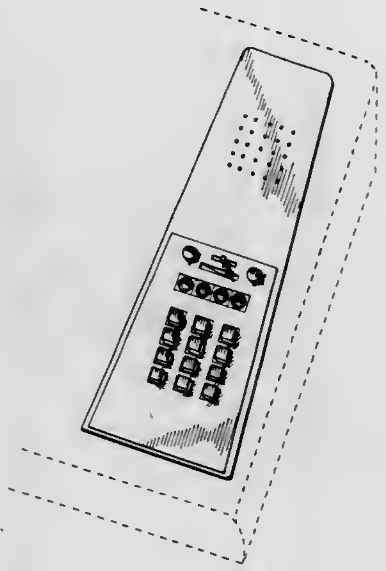
Mario Bellini, Milan, Italy, assignor to Ing. C. Olivetti & Co., S.p.A., Ivrea, Turin, Italy
Filed Sept. 12, 1973, Ser. No. 396,643
Claims priority, application Italy Mar. 16, 1973
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D26—5 C



236,133

CONTROL PANEL FOR DATA COMMUNICATION EQUIPMENT OR THE LIKE

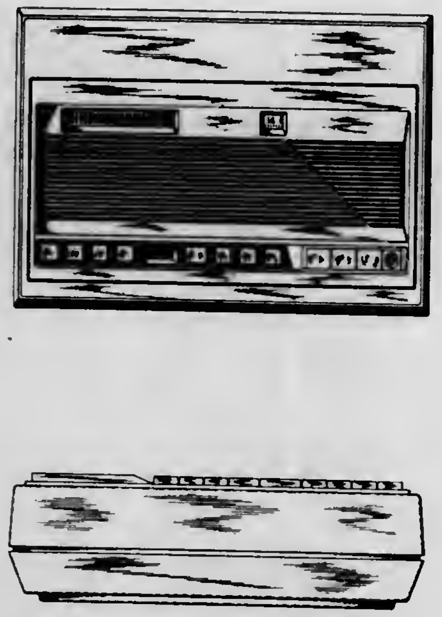
Gary M. Kaner, Dallas, Gary C. Merritt, Carrollton, and Barry W. Vaughn, Dallas, Tex., assignors to Carterfone Communications Corporation, Dallas, Tex.
Filed Mar. 8, 1974, Ser. No. 449,386
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13



236,134

TELEPHONE ANSWERING DEVICE

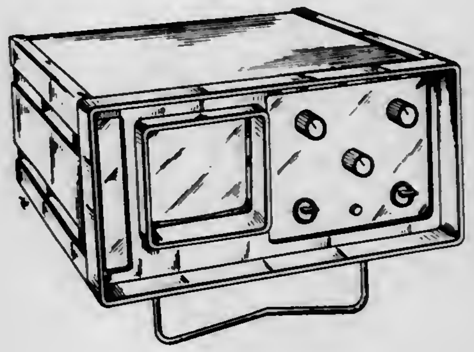
Cornelius W. Christie, Fulton, and Reynolds B. Winslow, Syracuse, N.Y., assignors to General Electric Company
Filed Dec. 12, 1974, Ser. No. 531,918
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A



236,135

SLOW SCAN TELEVISION APPARATUS OR THE LIKE

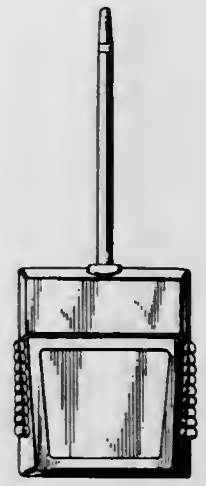
John K. Provost, Babylon, N.Y., assignor to Venus Scientific Inc., Farmingdale, N.Y.
Filed Oct. 11, 1973, Ser. No. 405,320
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 E



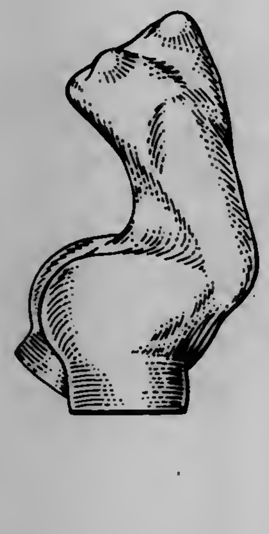
236,136

TELEVISION ANTENNA

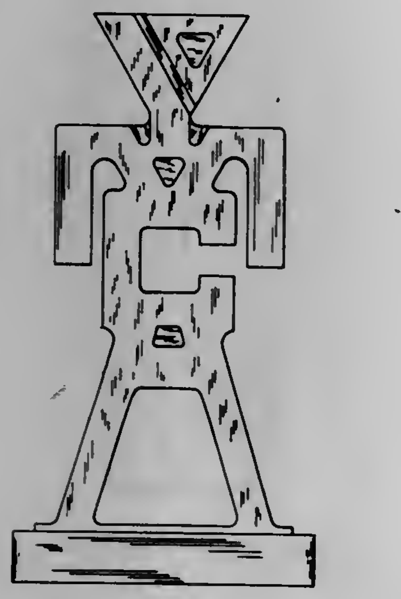
Benjamin L. Snyder, Bala Cynwyd, Pa., assignor to Snyder Manufacturing Company, Philadelphia, Pa.
Filed Aug. 15, 1973, Ser. No. 388,647
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 F



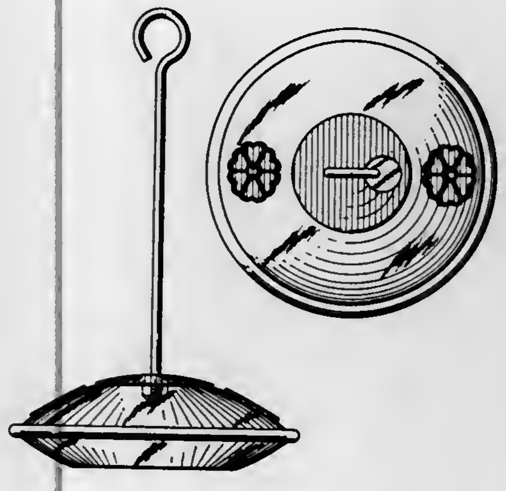
236,137
STATUETTE
Sonya Sorel Bellak, 15 Shadow Lane,
Larchmont, N.Y. 10538
Filed Aug. 9, 1973, Ser. No. 387,157
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—23 E



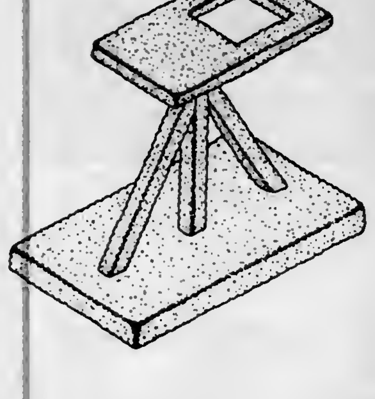
236,138
STATUE
Noel H. Smith, 204 Shamrock, Anniston, Ala. 36201
Filed Nov. 8, 1973, Ser. No. 413,763
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—23 A



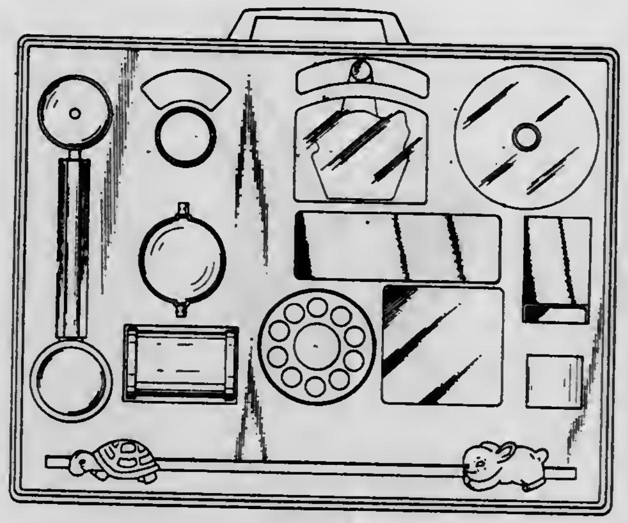
236,139
HUMMINGBIRD FEEDER
Peter Kilham, Barrington, R.I., assignor to
Droll Yankees, Inc.
Filed Aug. 6, 1973, Ser. No. 385,906
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—13



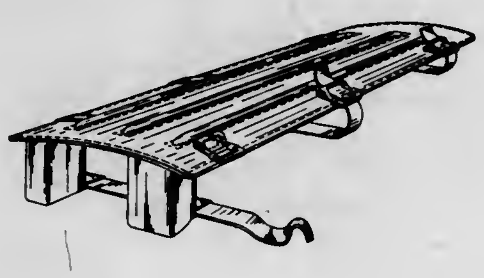
236,140
CAT PERCH AND SCRATCHING POST
William C. Whitlock, 220 12th Ave.,
Holdrege, Nebr. 68949
Filed July 13, 1973, Ser. No. 378,876
Term of patent 14 years
Int. Cl. D30—*07*
U.S. Cl. D30—42



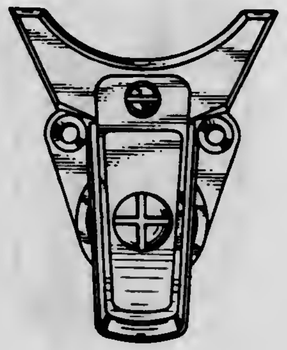
236,141
ACTIVITY TOY
Paul D. Snyder, Allentown, Pa., assignor to The
Quaker Oats Company, Chicago, Ill.
Filed Dec. 5, 1973, Ser. No. 421,772
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 A



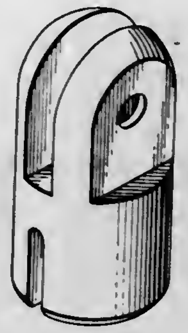
236,142
BOWLING AID
Robert E. Lewis, 2310 W. 72nd St.,
Shawnee Mission, Kans. 66208
Filed Oct. 11, 1973, Ser. No. 405,446
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 DD



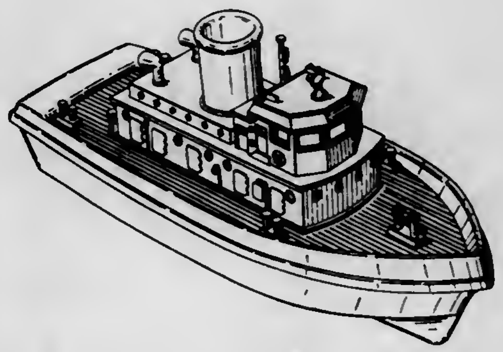
236,143
TOE FIXTURE FOR A SKI SAFETY BINDING
Michio Iizuka, Tokyo, Japan, assignor to
Hope Kabushiki Kaisha
Filed Apr. 15, 1974, Ser. No. 460,686
Claims priority, application Japan Oct. 20, 1973
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—14 D



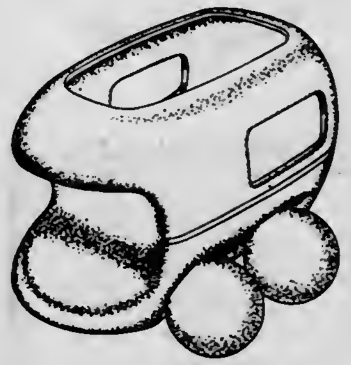
236,144
JOINT FOR A TOY FIGURE
Gotfred Kirk Christiansen, Billund, Denmark, assignor to
Interlego A.G., Zug, Switzerland
Filed Apr. 11, 1972, Ser. No. 243,122
Claims priority, application Denmark Oct. 15, 1971
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 GG



236,145
TOY BOAT
Duncan Tong, Hong Kong, assignor to
Playart Limited, Hong Kong
Filed Jan. 5, 1973, Ser. No. 321,416
Claims priority, application Great Britain July 11, 1972
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 JJ

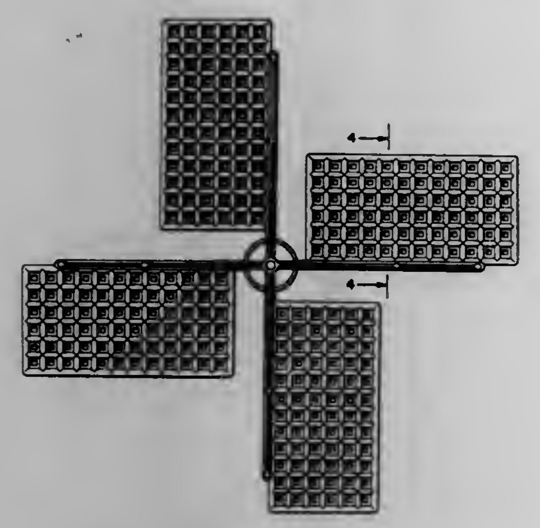


236,146
TOY VEHICLE
Philip F. Seymour, Plymouth, Minn., assignor to
Tonka Corporation, Hopkins, Minn.
Filed Dec. 28, 1973, Ser. No. 429,356
Term of patent 3½ years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



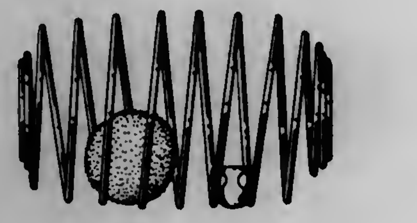
236,147
PIN WHEEL FAN

Lester V. Molenaar, Box 777, W. Highway 40,
Willmar, Minn. 56201
Filed Jan. 25, 1974, Ser. No. 436,524
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AP



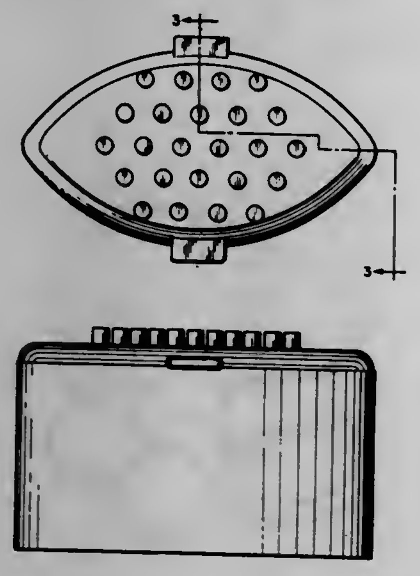
236,148
SOUNDING TOY FOR PET ANIMAL

Samuel Rosenberg, Brooklyn, N.Y., assignor to Excelsior
Pet Products, Inc., Brooklyn, N.Y.
Filed July 24, 1973, Ser. No. 382,272
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AG



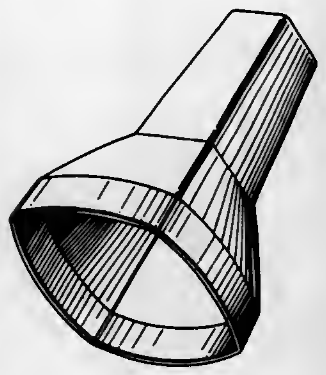
236,149
CAP FOR DRIVABLE FERTILIZER STICK

Jacob Douglas Gay, Jr., Fayette County, Ky.
(Pine Grove, Ky. 40470)
Filed July 6, 1973, Ser. No. 377,093
Term of patent 14 years
Int. Cl. D8—*01, 99*
U.S. Cl. D35—1



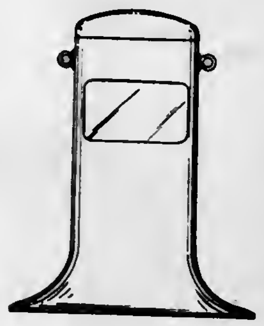
236,150
LIGHTING FIXTURE HOUSING

William M. Armstrong and Robert E. Gardyne, El Cerrito, and Wallace D. Runswick, Kensington, Calif., assignors to Inlite Corporation, Berkeley, Calif.
Filed Mar. 27, 1974, Ser. No. 455,491
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—16 D



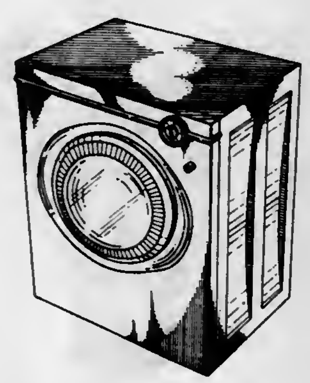
236,151
BOLLARD LIGHT FIXTURE

Marvin Paul Friedberg, New York, N.Y., assignor to
Bajer Industries Incorporated, Fairfield, N.J.
Filed June 6, 1974, Ser. No. 476,880
Term of patent 14 years
Int. Cl. D10—*06;* D26—*03*
U.S. Cl. D48—31



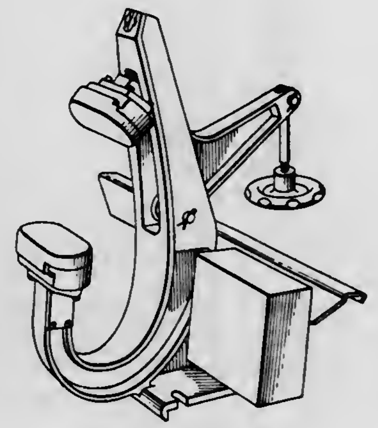
236,152
CLOTHES DRYER

Takeshi Yamamoto, Tokyo, Japan, assignor to
Hitachi, Ltd.
Filed Mar. 22, 1972, Ser. No. 237,242
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D49—1 A



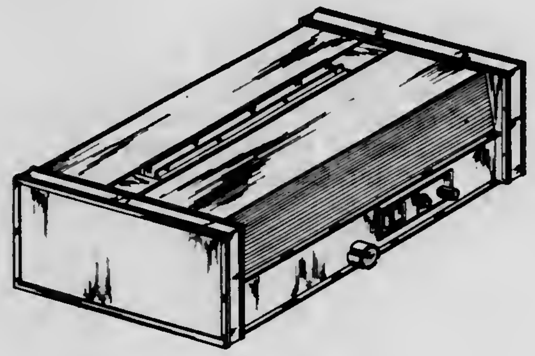
236,153
CLAMP

Derek Hogg and John Fairburn Askam, Sutton Coldfield, England, and Roger Anthony Wilson, Wrexham, Wales, assignors to Dunlop Limited
Filed Nov. 6, 1972, Ser. No. 303,800
Claims priority, application Great Britain May 11, 1972
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D54—13 A



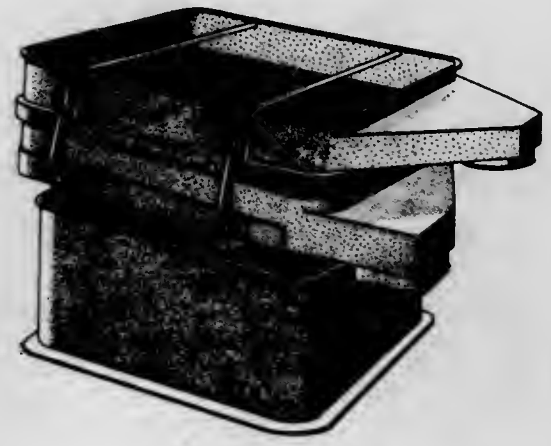
236,154
BOOKBINDING MACHINE

Henry N. Staats, Deerfield, Robert S. Quandt, Lincolnshire, and Viktor Struch, Skokie, Ill., assignors to General Binding Corporation, Northbrook, Ill.
Filed Nov. 30, 1973, Ser. No. 420,689
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1



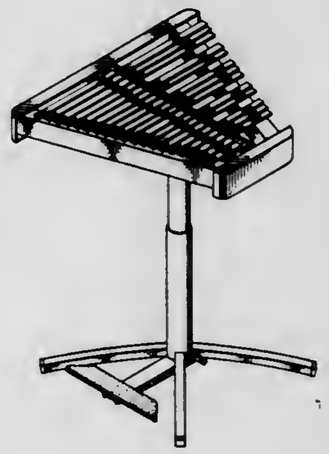
236,155
SCREENING MACHINE

William E. Lower, Cincinnati, Ohio, and Arthur C. Nolte, deceased, late of Cincinnati, Ohio, by Lorraine Nolte, executrix, Cincinnati, Ohio, assignors to Rotex, Inc., Cincinnati, Ohio
Filed Dec. 20, 1973, Ser. No. 426,544
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1 D



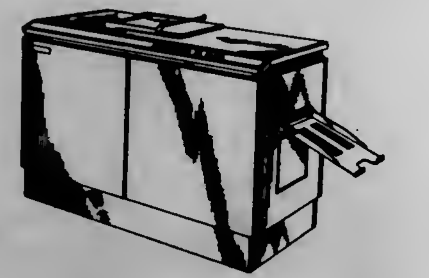
236,156
VIBRAPHONE

Clair O. Musser, 12997 Blairwood Drive,
Studio City, Calif. 91604
Filed May 29, 1973, Ser. No. 364,807
Term of patent 14 years
Int. Cl. D17—*04*
U.S. Cl. D56—1 E



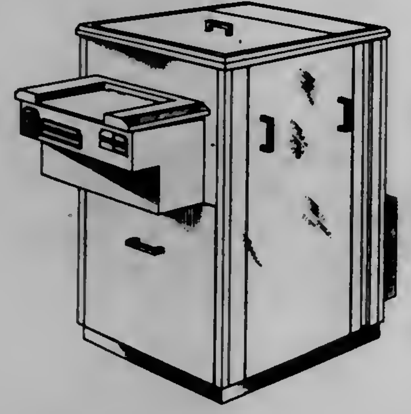
236,157
COPYING MACHINE

Motoaki Sakamoto and Hisao Uchino, Tokyo, Japan, assignors to Hitachi, Ltd.
Filed July 6, 1973, Ser. No. 377,023
Claims priority, application Japan Jan. 24, 1973
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1 Q



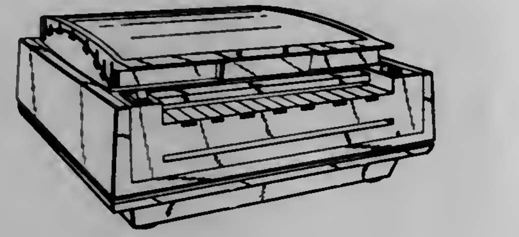
236,158
X-RAY FILM DEVELOPING MACHINE

Henry F. Hope, 3192 Huntingdon Road, Huntingdon Valley, Pa. 19006, and Stephen F. Hope, 2548 Wyandotte Road, Willow Grove, Pa. 19090
Filed Dec. 21, 1973, Ser. No. 427,350
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1 Q



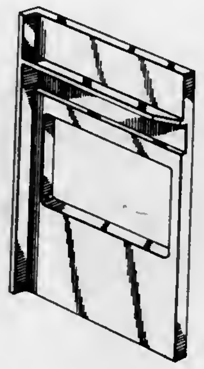
236,159
COPY MACHINE

Roger L. Larson, Roseville, Minn., and Samuel M. Highberger, Bloomfield Township, Mich., assignors to Minnesota Mining and Manufacturing Company
Filed Dec. 21, 1973, Ser. No. 427,044
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1 Q



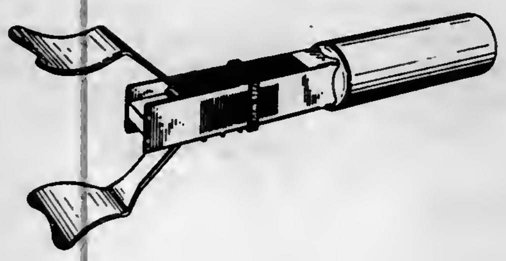
236,160
APPLICATOR FOR A MAGNETIC RECORDING CLIP FOR SLIDES OR THE LIKE

Donald L. Fischer, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company
Filed Nov. 1, 1973, Ser. No. 411,667
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D61—1 S



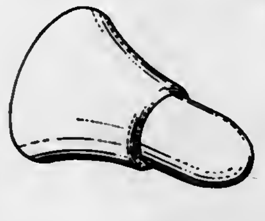
236,161
FACIAL MUSCLE EXERCISER

Ralph E. Welch, 917 Winthorne Drive, Apt. D-26, Nashville, Tenn. 37217
Filed Aug. 24, 1973, Ser. No. 391,060
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D83—1 T



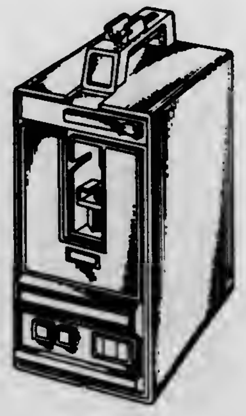
236,162
EAR PLUG

Charles Leight, 5356 W. Pico Blvd., Los Angeles, Calif. 90019
Filed Nov. 8, 1973, Ser. No. 413,913
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D83—1 R



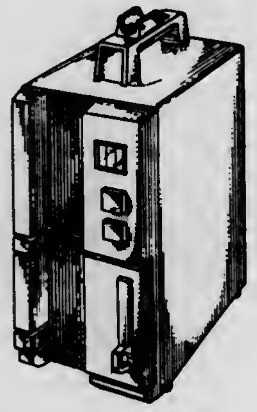
236,163
FLUID DELIVERY APPARATUS

Joseph J. Manno, La Jolla, Calif., assignor to IVAC Corporation, San Diego, Calif.
Filed Sept. 16, 1974, Ser. No. 506,615
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1 F



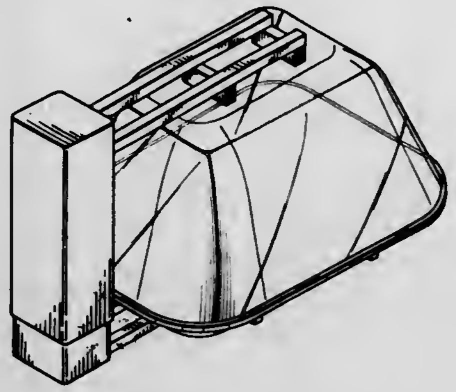
236,164
FLUID DELIVERY APPARATUS

Joseph J. Manno, La Jolla, Calif., assignor to IVAC Corporation, San Diego, Calif.
Filed Sept. 16, 1974, Ser. No. 506,618
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1 F



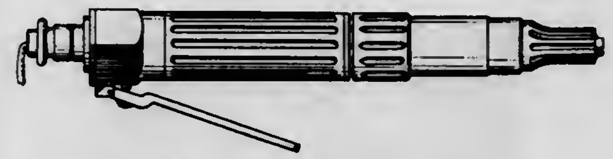
236,165
COMPREHENSIVE INFANT CARE SYSTEM

John W. Beld, O'Fallon, Warren G. Kinninger, Florissant, Robert E. N. Klohr, Fenton, and Paul A. Byrne, St. Louis, Mo., assignors to Puritan-Bennett Corporation, Kansas City, Mo.
Filed Sept. 29, 1972, Ser. No. 293,653
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D83—1 G



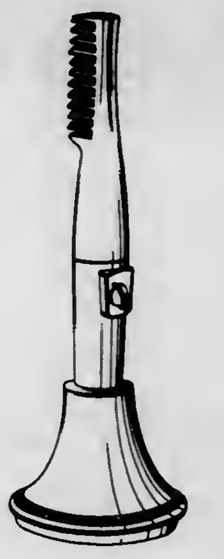
236,166
COMBINED BATTERY POWERED SURGICAL DRILL AND BATTERY CANISTER THEREFOR

Meyer Fishbein, 12020 Saltair Place, Los Angeles, Calif. 90049
Filed Feb. 19, 1974, Ser. No. 443,361
Term of patent 7 years
Int. Cl. D24—*02*
U.S. Cl. D83—12 R



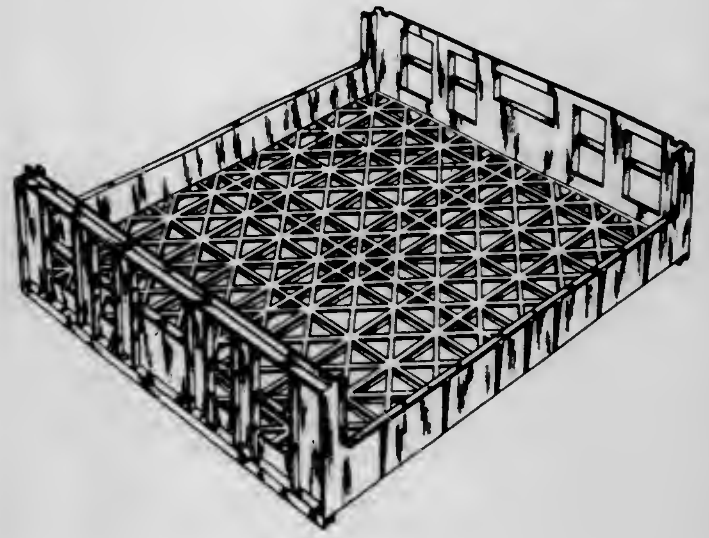
236,167
COMBINED HAIR DETANGLER AND HOLDER THEREFOR

Theodore G. Daher, Stratford, Conn., assignor to General Electric Company
Filed Oct. 1, 1973, Ser. No. 402,034
Term of patent 3½ years
Int. Cl. D28—*03*
U.S. Cl. D86—8



236,168
BAKERY TRAY OR THE LIKE

Lewis T. Johnson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed July 19, 1973, Ser. No. 380,592
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D87—1 R



236,169

CURTAIN FABRIC

Peter Eric Schroeder, Oberwil, near Bremgarten, Switzerland, assignor to Gardisette International AG, Lucerne, Switzerland

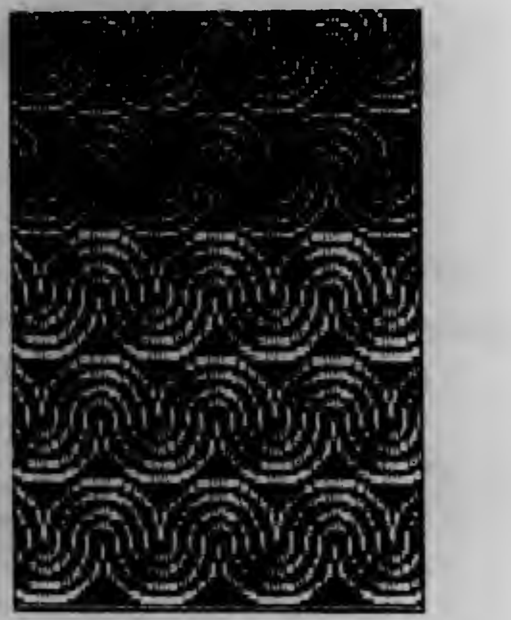
Filed Aug. 10, 1973, Ser. No. 387,465

Claims priority, application Germany Feb. 13, 1973

Term of patent 14 years

Int. Cl. D5—*05*

U.S. Cl. D92—1 PP



236,170

BEVERAGE DISPENSER OR SIMILAR ARTICLE

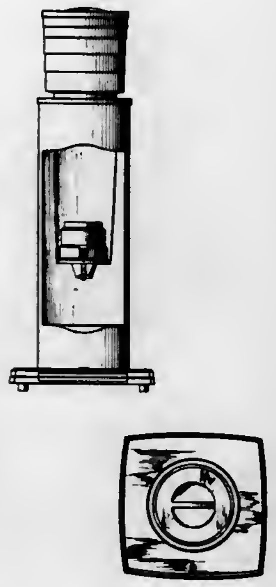
Peter Leslie Birrell, South Delta, British Columbia, Canada, assignor to The Cornelius Company, Anoka, Minn.

Filed Oct. 15, 1973, Ser. No. 406,324

Term of patent 14 years

Int. Cl. D15—*08*

U.S. Cl. D94—3 B



LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 29TH DAY OF JULY, 1975

Note.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- A. E. Staley Manufacturing Company: *See—*
  - Hurst, Thomas L., 3,897,305.
- A. I. Welders Limited: *See—*
  - Watson, Geoffrey Walter, 3,896,655.
- AB Bofors: *See—*
  - Johnsson, Stig Arthur; and Hultgren, Karl Sten Rudolf, 3,896,700.
- AB Skanska Cementgjuteriet: *See—*
  - Dahlstrom, Carl Lennart; and Ponton, Tord Richard William, 3,896,885.
- Abe, Yoshio: *See—*
  - Horiguchi, Shojiro; Abe, Yoshio; and Hosoda, Tohoru, 3,897,450.
- Abeles, Rodman. Fastener. 3,896,528, Cl. 24-153.00S.
- Aberdeen, David: *See—*
  - Robinson, Michael; Clamp, Frank; Aberdeen, David; and Mobbs, David Barry, 3,897,537.
- ACF Industries, Incorporated: *See—*
  - Wicke, Charles H., 3,896,835.
- Ackermann, Werner; and Vollhardt, Frohmut, to SAG Siegener Aktiengesellschaft. Method and device for heating open melting baths, especially galvanizing baths, enameling baths and glass baths. 3,897,202, Cl. 432-26.000.
- Ackert, Robert J.: *See—*
  - Shaughnessy, Reginald N.; Witty, Robert W.; and Ackert, Robert J., 3,897,279.
- Adamovske Strojirny Narodni podnik: *See—*
  - Muselik, Miloslav, 3,896,724.
- Adams, Ralph D. Drill feed control. 3,897,166, Cl. 408-14.000.
- Adams, Stewart Sanders; Armitage, Bernard John; Bristow, Norman William; and Heathcote, Bernard Vincent, to Boots Company Limited, The. Thiaxanthenyl semicarbazides as anti-secretory agents. 3,897,547, Cl. 424-16.000.
- Addressograph-Multigraph Corporation: *See—*
  - See, Gary G., 3,896,721.
- Aebli, Horst; Fleck, Fritz; and Schmid, Horst, to Sandoz Ltd. Organic compounds. 3,897,421, Cl. 260-240.100.
- Agfa-Gevaert AG: *See—*
  - Meeussen, Louis Achilles; Helmberger, Josef; and Staddler, Klaus, 3,897,132.
- Agnew, James Malcolm, to Coal Industry (Patents) Ltd. Mining equipment. 3,897,110, Cl. 299-45.000.
- Aida, Kazuhiko: *See—*
  - Hamamoto, Yoshito; Shirakawa, Hideo; Aida, Kazuhiko; Omura, Yutaka; Takagi, Tosiaki; Nakao, Kozo; Kawaguchi, Takuo; and Nagai, Haruo, 3,897,477.
- Air Process AG: *See—*
  - Roest, Robert Jacques; and van Ruitenburg, Pieter, 3,896,561.
- Airco, Inc.: *See—*
  - Cibulka, Anthony B., 3,896,800.
  - Leeds, Morton W.; and Szur, Alex J., 3,897,465.
  - Russell, James P.; Szur, Alex J.; and Terrell, Ross C., 3,897,502.
- Airprocess A.G.: *See—*
  - Roest, Robert Jacques; and Ruitenberg, Pieter van, 3,896,996.
- Ajinomoto Co., Inc.: *See—*
  - Asai, Soichiro; Tazuke, Hideo; and Kageyama, Hiroo, 3,897,484.
  - Takizawa, Koichi; and Yoshida, Ryonosuke, 3,897,466.
- Akai, Kazuyuki: *See—*
  - Hayashi, Yukichi; Yokoda, Yutaka; Tamura, Masayuki; Kobayashi, Shinichi; Akai, Kazuyuki; and Sakai, Seiu, 3,896,915.
- Akiyama, Hiroshi. Aspirator for removal of the contents of cystic tumors. 3,896,810, Cl. 128-276.000.
- Aktiebolaget Leo: *See—*
  - Hogberg, Knut Bertil; Fex, Hans Jacob; Fredholm, Bo Goran; Perklev, Torsten Rune; and Veige, Sten Gunnar, 3,897,519.
- Akzo N. V.: *See—*
  - Zengel, Hans-Georg; and Bergfeld, Manfred, 3,897,498.
- Aladdin Manufacturing Company: *See—*
  - Wintz, Donald E., 3,896,592.
- Albany International Corporation: *See—*
  - Haller, Herbert C., 3,897,290.
- Albert Einstein Medical Center of Philadelphia: *See—*
  - Leon, Shalom A.; Shapiro, Bernard; and Kollmann, George J., 3,897,212.
- Albertsson, Per-Ake, to Pharmacia Fine Chemicals AB. Method of fractionating a mixture of high molecular substances of different physical characteristics. 3,897,414, Cl. 260-211.50R.
- Alburger, James R. Enhanced stability water washable penetrant composition and process. 3,896,664, Cl. 73-104.000.
- Alcock, Leslie; and Ford, James, to British Petroleum Company, Limited, The. Catalytic reactors. 3,897,220, Cl. 23-288.00R.
- Ales, David Edward: *See—*
  - Holoubek, George Henry; Ales, David Edward; and Harms, Harland Elmer, 3,896,710.
- Alexeenko, Vladimir Iosifovich: *See—*
  - Binzburg, Boris Nisonovich; Smetkin, Jury Alexandrovich; Alexeenko, Vladimir Iosifovich; Mikhailov, Vsevolod Andreevich; Lorant, Ivan; Seltenreich, Gyozo; Kaszei, Jeno; Marton, Gyorgy; Balazsfai, Albert; Donath, Jeno; and Bolcskei, Erno, 3,897,190.
- Alexiev, Boris Vasilev; Stoev, Stoycho Borisov; Spasov, Alexander Vasilev; Maneva, Lilyana Stoilova; Emanuilov, Emanuil Alexandrov; and Golovinski, Evgeni Victorov, to Institute po Biochimia pri Ban. Aminoacid derivatives. 3,897,494, Cl. 260-561.00H.
- Alfred Lovgren Byggnads AB: *See—*
  - Lovgren, Anders, 3,896,558.
- Algoma Steel Corporation, Limited, The: *See—*
  - Shaughnessy, Reginald N.; Witty, Robert W.; and Ackert, Robert J., 3,897,279.
- Allabashi, John C., to Hercules Incorporated. Curing hydroxy-terminated prepolymer using anhydride/epoxide curing system. 3,897,514, Cl. 260-836.000.
- Allanter Instruments Limited: *See—*
  - Baxter, Allan, 3,896,784.
- Allen, Alvin, to du Pont de Nemours, E. I., and Company. Hydrous oxide coated TiO_2. 3,897,261, Cl. 106-300.000.
- Allied Chemical Corporation: *See—*
  - Hamilton, Brian K.; and Garner, Eugene F., 3,897,285.
  - Lada, George J., 3,897,229.
  - Lewis, Donald J., 3,897,081.
  - Smith, Bruce T.; and Pacheco, Roger S., 3,897,331.
- Allied Colloids Manufacturing Co., Ltd.: *See—*
  - Field, John R.; and Smalley, Graham, 3,897,333.
- Allmanna Svenska Elektriska Aktiebolaget: *See—*
  - Bjorklund, Anders; Frelin, Bert; and Scott, Sven, 3,896,945.
- Alper, Marshall E.: *See—*
  - Collins, Earl R.; and Alper, Marshall E., 3,896,955.
- Alter Licensing Establishment: *See—*
  - Schertenleib, Francis, 3,896,648.
- Aluminum Company of America: *See—*
  - Meyer, Raymond J.; Simpson, Ford, Jr.; and Boland, Michael P., 3,897,287.
  - Snyder, Harry C., Jr., 3,897,538.
- Alza Corporation: *See—*
  - Zaffaroni, Alejandro; and Alza Corporation, 3,896,819.
- Amchem Products, Inc.: *See—*
  - Jacques, Albert M. V., 3,897,486.
  - Waldrum, John E., 3,897,296.
- American Air Filter Company, Inc.: *See—*
  - De Weese, Daniel P.; and Brozenick, Nicholas J., 3,897,046.
  - Onnen, James H., 3,897,540.
- American Can Company: *See—*
  - Marantz, Daniel Richard, 3,896,604.
- American Color & Chemical Corporation: *See—*
  - Renfrew, Edgar Earl, 3,897,203.
- American Cyanamid Company: *See—*
  - Bernady, Karel Francis; Floyd, Middleton Brawner, Jr.; Poletto, John Frank; Schaub, Robert Eugene; and Weiss, Martin Joseph, 3,897,483.
  - Feins, Irvin Ralph; and Yarrington, Robert Murphy, 3,897,365.
  - Lindsay, Harry Lee; Angier, Robert Bruce; and Curran, William Vincent, 3,897,430.
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- Badcock, David Norman William, to Kango Electric Hammers Limited. Electric hammer. 3,896,888, Cl. 173-109.000.
- Bahlke, Allan R., to FMC Corporation. Constant weight-constant dimension coupling assembly for marine loading arms. 3,896,841, Cl. 137-271.000.
- Bahoshy, Bernard J.; Flynn, Charles E.; and Malunis, Gary P., to General Foods Corporation. Chewing gums having longer lasting sweetness and flavor. 3,897,566, Cl. 426-3.000.
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- Becker, Karl Heinz; Boltze, Karl-Heinz; Dell, Hans-Dieter; and Seidel, Peter-Rudolf, to Troponwerke Dinklage & Company. 1-(3-(amino alkyl)-2-oxo-2H-1-benzopyran-7-yl)-ureas. 3,897,426, Cl. 260-246.00B.
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- Benne, James K. Trotline lifter. 3,896,579, Cl. 43-27.400.
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- Boehringer Mannheim GmbH: *See—*
  - Lange, Hans; Rittersdorf, Walter; and Rey, Hans-Georg, 3,897,214.
- Boeing Company, The: *See—*
  - Doellner, O. Leonard, 3,897,028.
  - Harding, David G.; Schneider, John J.; and Mead, Lawrence M., Jr., 3,897,033.
- Boettcher, Walter F. H. Toy. 3,896,583, Cl. 46-47.000.
- Bohna Engineering & Research, Inc.: *See—*
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- Boiko, Georgy Alexandrovich: *See—*
  - Medovar, Boris Izrailevich; Dubinsky, Rudolf Solomonovich; Boiko, Georgy Alexandrovich; Marinsky, Georgy Sergeevich; and Egorov, Sergei Petrovich, 3,896,878.
- Boland, Michael P.: *See—*
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- Bolcskei, Erno: *See—*
  - Binzburg, Boris Nisonovich; Smetkin, Jury Alexandrovich; Alexeenko, Vladimir Iosifovich; Mikhailov, Vsevolod Andreevich; Lorant, Ivan; Seltenreich, Gyozo; Kaszei, Jeno; Marton, Gyorgy; Balazsfai, Albert; Donath, Jeno; and Bolcskei, Erno, 3,897,190.
- Bolger, Stephen R. Heat exchanger for gas turbine engines. 3,896,875, Cl. 165-86.000.
- Bolick, Fred C., Jr., to Lanier Electronic Laboratory, Inc. Tape winding apparatus. 3,897,027, Cl. 242-195.000.
- Bolsing, Friedrich; and Mencke, Heinrich. Method of uniformly distributing substances in a carrier material and pulverous carrier material. 3,897,238, Cl. 71-3.000.
- Boltze, Karl-Heinz; Brendler, Otfried; Dell, Hans-Dieter; and Jacobi, Haireddin, to Troponwerke Dinklage & Company. Novel 2-(3-trifluoromethylanilino)-benzoic acid compounds. 3,897,482, Cl. 260-472.000.
- Boltze, Karl-Heinz: *See—*
  - Becker, Karl Heinz; Boltze, Karl-Heinz; Dell, Hans-Dieter; and Seidel, Peter-Rudolf, 3,897,426.
- Bongaards, Donald J.; and Giardina, A. Robert, to Westinghouse Electric Corporation. Support system for serpentine tubes of a heat exchanger. 3,896,874, Cl. 165-82.000.
- Bonometti, Guy: *See—*
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- Bonta, Simonn: *See—*
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- Boots Company Limited, The: *See—*
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  - Sharpe, Christopher James, 3,897,443.
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  - Binzburg, Boris Nisonovich; Smetkin, Jury Alexandrovich; Alexeenko, Vladimir Iosifovich; Mikhailov, Vsevolod Andreevich; Lorant, Ivan; Seltenreich, Gyozo; Kaszei, Jeno; Marton, Gyorgy; Balazsfai, Albert; Donath, Jeno; and Bolcskei, Erno, 3,897,190.
- Borg-Warner Corporation: *See—*
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- Borovina, Anton; and Grattan, Henry E. Heat recovery system for space heating and for potable water heating. 3,896,992, Cl. 237-19.000.
- Borrelo, Sebastian R.; and Sawyer, Jimmy D., to Texas Instruments Incorporated. Process for fabricating schottky barrier phototransistor. 3,897,275, Cl. 148-1.500.
- Bosse, Frank, to Windmoller & Holscher. Process of manufacturing block bottom bags. 3,896,714, Cl. 93-35.0SB.
- Bossert, Friedrich: *See—*
  - Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, 3,897,462.
- Bouchard, Andre C.: *See—*
  - Jirmanus, Naila Saba; Rindone, Guy E.; and Bouchard, Andre C., 3,897,197.
- Boucher, Raymond W.; and Hand, Russell D., to Hedstrom Co. Foldable infant's crib. 3,896,513, Cl. 5-99.00R.
- Boucherie, Lionel P., to G. B. Boucherie, Firma. Device for the stepwise displacement of working parts for brush manufacturing machines. 3,896,678, Cl. 74-116.000.
- Bourgeois, Michel: *See—*
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- Bousquet, Gilles: *See—*
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- Bouyoucos, John V., to Hydroacoustics, Inc. Hydroacoustic apparatus. 3,896,889, Cl. 173-120.000.
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- Bozzato, Giuliano; Pesaro, Mario; Schudel, Peter; Hug-Inderbitzin, Marianne; and Erickson, Robert Edward, to Givaudan Corporation. Novel noreremophilane derivatives. 3,897,504, Cl. 260-617.00F.
- BP Chemicals International Limited: *See—*
  - Sturt, Alan Charles, 3,897,408.
- Bradatsch, Edmund: *See—*
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  - Lau, Gunther; Bradatsch, Edmund; Brandl, Hermann J.; and Niggel, Georg, 3,896,763.
- Brandt, Neill M.; Courtemanche, Richard D.; and Johnson, Bruce D., to American Optical Corporation. Vertical impact tester. 3,896,657, Cl. 73-12.000.
- Brandt, Robert H., to Henry Manufacturing Co., Inc. Liquid coolant treating process and apparatus. 3,897,335, Cl. 210-71.000.
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- Brauns, Frank; and Jones, James B., to Novatronics, Inc. Automated sewing apparatus. 3,896,749, Cl. 112-121.120.
- Breford, Glenn H., to Midway Industries, Inc. Pin box. 3,897,086, Cl. 280-438.00R.
- Brendler, Otfried: *See—*
  - Boltze, Karl-Heinz; Brendler, Otfried; Dell, Hans-Dieter; and Jacobi, Haireddin, 3,897,482.
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- Breuer, Hermann; and Treuner, Uwe D., to E. R. Squibb & Sons, Inc. [(Azidomethyl)thio]acetylcephalosporins. 3,897,422, Cl. 260-243.00C.
- Breuer, Hermann: *See—*
  - Treuner, Uwe D.; and Breuer, Hermann, 3,897,423.
- Brewster, Phillip W., to Exxon Research and Engineering Company. Sludge inhibitor for hydrocarbon oils. 3,897,456, Cl. 260-340.200.
- Bridges, William B.; Edlun, William O.; and Hill, James C., to Hughes Aircraft Company. Scanned laser imaging and ranging system. 3,897,150, Cl. 356-5.000.
- Bridgestone Tire Company Limited: *See—*
  - Ishii, Michio; Watabe, Yoji; and Iseda, Yutaka, 3,897,396.
  - Takei, Atsuo; Nagaoka, Isao; and Tsunoda, Shozo, 3,896,964.
- Briesofsky, Gunter: *See—*
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- Brink, Robert H., Jr.: *See—*
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  - Shema, Bernard F.; Brink, Robert H., Jr.; and Swered, Paul, 3,897,562.
- Brinkmeier, Friedhelm, to Windmoller & Holscher. Process and apparatus for manufacturing block bottom bags from heat-sealable material. 3,896,709, Cl. 93-35.0SB.
- Bristol-Myers Company: *See—*
  - Naito, Takayuki; and Nakagawa, Susumu, 3,897,412.
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- Brode, George Lewis; and Kawakami, James Hajime, to Union Carbide Corporation. Polyamide-imides. 3,897,497, Cl. 260-571.000.
- Broecker, Bernhard; and Plettner, Wolfram, to Reichold-Albert-Chemie Aktiengesellschaft. Process for the manufacture of synthetic resins with urethane groups, which also contain carboxyl groups and can be diluted with water. 3,897,377, Cl. 260-18.0TN.
- Bromer, William W., to Eli Lilly and Company. Iodoglucagons and process for prolonging the biological activity of glucagon. 3,897,551, Cl. 424-177.000.
- Brooks, Norman Darrell. Cutter insert spindle. 3,896,532, Cl. 29-105.00R.
- Brouwer, Charles William, to Leesona Corporation. Integrated modular fluid logic arrays displaying dynamic circuit operating conditions. 3,896,851, Cl. 137-557.000.
- Brown, John Vincent, to Fosroc A.G. Anchoring. 3,896,627, Cl. 61-45.00B.
- Brown, Melancthon S., deceased; and by Kohn, Gustave K., special administrator, to Chevron Research Company. N-alkylthio-N-alkyl aryl carbamates as insecticides. 3,897,561, Cl. 424-300.000.
- Brown, Melancthon S., deceased: *See—*
  - Kohn, Gustave K.; Brown, Melancthon S., deceased; and Kohn, Gustave K., special administrator, 3,897,463.
- Brown, Melvin; Menapace, Henry R.; and Maly, Neil A., to Goodyear Tire & Rubber Company, The. Olefin dimerization process. 3,897,512, Cl. 260-683.15D.
- Brozenick, Nicholas J.: *See—*
  - De Weese, Daniel P.; and Brozenick, Nicholas J., 3,897,046.
- Brunner, Norman E.: *See—*
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- Brunswick Corporation: *See—*
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  - Amos, Homer C., 3,896,750.
- Brusca, Donald R.: *See—*
  - Li, Norman N.; Brusca, Donald R.; and Mohan, Raam R., 3,897,308.
- Bryngdahl, Olof, to Xerox Corporation. Polarization-grating moire. 3,897,136, Cl. 350-159.000.
- Buchalter, Gilbert. Article impregnated with skin-care formulations. 3,896,807, Cl. 128-261.000.
- Buchegger, Joachim: *See—*
  - Ludszeweit, Dieter; and Buchegger, Joachim, 3,896,820.
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- Bump, David W.: *See—*
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- Burd, Samuel: *See—*
  - Fettel, Bruce E.; and Burd, Samuel, 3,896,815.
- Burke, Patrick Michael, to du Pont de Nemours, E. I., and Company. Alkyl and haloalkyl N,N-dialkyl-N-methylolphosphorodiamidates. 3,897,522, Cl. 260-953.000.
- Burrows, John: *See—*
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- Busch, Wolfram; Gilfrich, Hans Paul; Scholz, Albrecht; and Wallhauber, Hermann, to Hoechst Aktiengesellschaft. Moulding compositions containing phosphorous, talc, and, optionally, metal carbonate as fillers. 3,897,384, Cl. 260-40.00R.
- Buser, Rhoderic D.: *See—*
  - Ball, Randell D.; and Buser, Rhoderic D., 3,897,159.
- Busweiler, Walter, to Metallgesellschaft Aktiengesellschaft. Polycondensation reactor. 3,897,218, Cl. 23-285.000.
- Butler, Bryan V., to Vetco Offshore Industries, Inc. Riser pipe and guide line tensioning apparatus. 3,897,045, Cl. 254-172.000.
- Bydalek, Andrzej; Romankiewicz, Ferdynand; Romer, Jan; and Tomasik, Edmund, to Politechniko Wroclawska. Method of regeneration of solder, particularly of tin-lead solders, and an apparatus for application the method. 3,897,336, Cl. 210-71.000.
- Byerley, Wilbur M.; and Bennett, Robert R., to Westinghouse Electric Corporation. Steam generator with split flow preheater. 3,896,770, Cl. 122-32.000.
- Calderon, Alberto Alvarez. Variable camber multi-slotted flaps. 3,897,029, Cl. 244-42.0CA.
- Caldow, Douglas. Adjustable climbing apparatus. 3,897,055, Cl. 272-60.00R.
- Caldwell, Edward Neal. System for promoting plant growth. 3,896,586, Cl. 47-28.000.
- California Institute of Technology: *See—*
  - Collins, Earl R.; and Alper, Marshall E., 3,896,955.
- Camp, William S.; and Magnant, Kenneth K., to United States of America, Army. Ultrasonic measuring device. 3,896,662, Cl. 73-67.80S.
- Campagnolo, Tullio. Device for hanging clothes, such as trousers or skirts. 3,896,980, Cl. 223-95.000.
- Campbell, Frederic W.: *See—*
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- Cannon Inc.: *See—*
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- Canon Kabushiki Kaisha: *See—*
  - Kano, Ichiro, 3,897,138.
  - Suzaki, Kuniyoshi; Shigeta, Yoshihiro; and Yamanaka, Torakiyo, 3,897,026.
- Capelle, Michel F.; and Pinson, Claude, to Societe Anonyme: Poclain. Devices for feeding fluid under pressure to at least two load circuits. 3,897,174, Cl. 417-216.000.
- Capitol Reproductions, Inc.: *See—*
  - Zeunen, Barthel; Grace, Rex C.; and Dunn, Alvie R., 3,897,149.
- Carasso, Daniel, to Compagnie Gervais-Danone. Apparatus for expanding food products. 3,896,716, Cl. 99-452.000.
- Carborundum Company, The: *See—*
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  - Rine, James C., 3,896,593.
  - Sypitkowski, James R., 3,896,848.
- Carella, Richard F. Arrow holder. 3,896,782, Cl. 124-41.00A.
- Carlson, Paul O., to General Foods Corporation. Syrup and method of manufacturing same. 3,897,262, Cl. 127-55.000.
- Carmello, Robert; Salka, Barry A.; and Corey, Garland G., to American Home Products Corporation. Bacteriostatic toilet bowl cleaner compositions. 3,897,357, Cl. 252-106.000.
- Carpenter, Richard G., to Crane Co. Bearing wear detector. 3,897,116, Cl. 308-1.00A.
- Carr, Ronald R.; and Nisevich, Stephen D., to Union Carbide Corporation. Altering the appearance of corundum crystals. 3,897,529, Cl. 264-65.000.
- Carreira, Leonard M., to Xerox Corporation. Imaging system. 3,897,143, Cl. 355-3.00P.
- Carson, Howard: *See—*
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- Cartridge Actuated Devices, Inc.: *See—*
  - Sawyer, Robert H., 3,896,621.
- Caruolo, Antonio B.; and Walch, Allan P., to United Aircraft Corporation. Adjustable mounting apparatus. 3,897,139, Cl. 350-288.000.
- Carus Corporation: *See—*
  - Anderson, Fred J.; and Kessler, Jack L., 3,897,319.
- Casey, Thomas P., to J. I. Case Company. Anti-backlash attachment mounting. 3,896,884, Cl. 172-776.000.
- Cassella Farbwerke Mainkur AG: *See—*
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  - Weckler, Gerhard; and Mildenberg, Rolf, 3,897,207.
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  - Freeman, William H., 3,896,537.
  - Holmstrom, William L., 3,896,707.
  - Kraina, Jack H., 3,896,617.
  - Scholl, Rolland D., 3,896,899.
  - Vinton, David S., 3,896,894.
- Catlin, Francis D., to Hardinge Brothers, Inc. Taper turning attachment. 3,896,689, Cl. 82-17.000.
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- Centre d'Etudes pour l'Industrie Pharmaceutique: *See—*
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- Cerro, Daniel Anthony. Shell holder accessory device. 3,896,699, Cl. 86-44.000.
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  - Marek, Miroslav; Toman, Ludek; and Pecka, Jan, 3,897,322.
  - Wichterle, Otto, 3,896,806.
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- Chafetz, Harry; and Sung, Rodney L., to Texaco Inc. Sulfurized nitrated alkylphenol salts and lubricant compositions thereof. 3,897,352, Cl. 252-42.700.
- Chamlin, Matthew D.: *See—*
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- Chandler, Roger E., to Exxon Research and Engineering Company. Gasoline containing ashless dispersant. 3,897,224, Cl. 44-71.000.
- Chang, Dall Chin. Polyhedral, porous, and hollow block. 3,896,624, Cl. 61-4.000.
- Chapman, Harvey W., to Evans Products Company. Freight carrying device. 3,896,741, Cl. 105-368.00R.
- Chasson, Leon H., to Atmospheric Sciences, Incorporated. Structure for measuring the average diameter of an approximately circular cross-section of an object. 3,897,156, Cl. 356-157.000.
- Chaudoir, Charles J.; Cousins, True E.; and Nagy, Kornel, to Berryhill, Bill B.; and Torres, Carlos A., part interest to each. Pencil apparatus. 3,897,160, Cl. 401-56.000.
- Chayes, Norman Chanine; and Kochey, Edward Leslie, Jr., to Combustion Engineering, Inc. Spacer and guide assembly for vertical superheater tubes. 3,896,771, Cl. 122-510.000.
- Cheng, Paul J., to Phillips Petroleum Company. Carbon black production process and reactor. 3,897,217, Cl. 23-259.500.

Cherny, Anatoly Alexeevich; Grachev, Vladimir Alexandrovich; Kirin, Evgeny Mikhailovich; Gorelov, Nikolai Andreevich; and Boriskin, Nikolai Vasilievich. Mixer for metal superheating. 3,897,049, Cl. 266-39.000.

Chevalier, Marcel, to Etablissements M. Chapais. Automatic device for presenting bags onto a bagging machine previous to the closing of said bags. 3,896,605, Cl. 53-266.000.

Chevron Research Company: *See—*
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Christian, Anthony J. Multi purpose bedroom hanger. 3,896,937, Cl. 211-86.000.

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Cibulka, Anthony B., to Airco, Inc. Method and apparatus for triggering the inspiratory phase of a respirator. 3,896,800, Cl. 128-145.800.

Cincinnati Biomedical, Inc.: *See—*
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Clark, June G. Reproduction of the original hair. 3,896,821, Cl. 132-5.000.

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Cleveland, James D., to Chevron Research Company. N-carbalkoxyalkyldithio ureas. 3,897,481, Cl. 260-470.000.

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Clevett, Merton L., to Solar Products Corporation. Solar stove. 3,896,786, Cl. 126-270.000.

Cloud, Sidney C. Magnetic tire chain installing device. 3,896,687, Cl. 81-15.800.

Coal Industry (Patents) Ltd.: *See—*
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Cohen, Richard J., to Lawrence Peska Associates, Inc., a part interest. Bridge construction set. 3,896,582, Cl. 46-17.000.

Coker, James Newton, to du Pont de Nemours, E. I., and Company. Polymer coated pigment particles and a process for their preparation. 3,897,586, Cl. 428-403.000.

Cole, Judson C., to Continental Industries, Inc. Combination punch and valve tee fitting. 3,896,842, Cl. 137-318.000.

Coleman Company, Inc., The: *See—*
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Collin, Herbert S. Washing machine agitator brace. 3,896,930, Cl. 206-320.000.

Collins, Earl R.; and Alper, Marshall E., to California Institute of Technology. Automated multi-level vehicle parking system. 3,896,955, Cl. 214-16.1CB.

Colliver, David John; and Gibbs, Stephen Edwin, to British Secretary of State for Defence. Semiconductor device encapsulation packages and arrangements and methods of forming the same. 3,896,543, Cl. 29-580.000.

Colombo, Paolo; and Galliverti, Marco, to Societa' Italiana Resine S.I.R. S.p.A. Process for the preparation of catalysts for the polymerization of olefins. 3,897,364, Cl. 252-429.00C.

Colorflo Limited: *See—*
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Comfort, Theodore F.; Legare, Richard J.; and Rosher, Ronald, to United States of America, Navy. Propellant with polymer containing nitramine moieties as binder. 3,896,865, Cl. 149-19.400.

Commonwealth Scientific & Industrial Research Organization: *See—*
Morse, Roger Neill; Pescod, Donald; and Kowalczewski, John Joseph, 3,897,526.

Compagnie Generale des Etablissements Michelin Raison Sociale Michelin & Cie: *See—*
Massoubre, Jean Marie, 3,896,870.

Compagnie Gervais-Danone: *See—*
Carasso, Daniel, 3,896,716.

Container Corporation of America: *See—*
Vuilleumier, Ralph O., 3,896,711.

Container Graphics Corporation: *See—*
Saunders, Philip G.; and Waterbury, Neil M., 3,897,191.

Continental Can Company, Inc.: *See—*
Soja, Joseph J., 3,896,987.

Continental Industries, Inc.: *See—*
Cole, Judson C., 3,896,842.

Continental Oil Company: *See—*
Griffith, John M., 3,896,923.
Neuworth, Martin B., 3,897,500.
Sias, Roy C., 3,897,470.
Yang, Kang; Greenfield, Gaylord G.; and Henry, Joseph D., Jr., 3,897,506.

Control Data Canada, Ltd.: *See—*
Hicks, Terrence Albert, 3,897,144.

Converse, Vernon G., III; Clayton, Robert W.; and Westervelt, James T., to Scans Associates, Inc. Venturi meter. 3,896,670, Cl. 73-213.000.

Cook, Edward H., Jr., to Hooker Chemicals & Plastics Corporation. Electrolytic manufacture of chlorates, using a plurality of electrolytic cells. 3,897,320, Cl. 204-95.000.

Coplastix Limited: *See—*
McBain, Charles; and Need, Francis Richard, 3,897,043.

Corey, Garland G.: *See—*
Carmello, Robert; Salka, Barry A.; and Corey, Garland G., 3,897,357.

Cornell, Lew Wallace, to Minnesota Mining and Manufacturing Company. Tamper indicator tape. 3,896,965, Cl. 220-359.000.

Cors, John T.; and Battenberg, Virgil B. System for controlling the pitch attitude of a rocket motor boosted aircraft. 3,897,030, Cl. 244-63.000.

Cotton, Incorporated: *See—*
Swidler, Ronald; Sanderson, William A.; and Mueller, William A., 3,897,584.
Wilkes, Lambert H.; Underbrink, Gary L.; and Jones, Joseph K., 3,897,018.

Couch, Cecil; and Hix, Wayne, to Raymond Lee Organization, Inc., The, a part interest. Chalk line holder. 3,897,023, Cl. 242-100.100.

Coulter Chemistry, Inc.: *See—*
Jones, Alan Richardson, 3,897,216.

Council, Malcolm N., to Gardner-Denver Company. Mounting for drill rig mast. 3,896,887, Cl. 173-43.000.

Courtemanche, Richard D.: *See—*
Brandt, Neill M.; Courtemanche, Richard D.; and Johnson, Bruce D., 3,896,657.

Cousins, True E.: *See—*
Chaudoir, Charles J.; Cousins, True E.; and Nagy, Kornel, 3,897,160.

Couture, Gerard; and Houle, Gratien, to Wic Inc. Silo unloader. 3,896,942, Cl. 214-17.0DB.

Couture, Paul A.: *See—*
Anghinetti, Joseph R.; and Couture, Paul A., 3,896,595.

Cowan, Larry C., to Leesona Corporation. Fluid flow control elements with area dividing inserts. 3,897,041, Cl. 251-61.100.

Cramer, Kenneth R.: *See—*
Johnson, Elmer G.; and Cramer, Kenneth R., 3,896,666.

Crane Co.: *See—*
Carpenter, Richard G., 3,897,116.

Crane Packing Company: *See—*
Inka, Egons; and Shurson, Raymond O., 3,897,072.

Craven, Hull H.: *See—*
Stipp, Donald; and Craven, Hull H., 3,896,509.

Cremeans, George E.: *See—*
Scohy, John M.; Cremeans, George E.; and Luttinger, Manfred, 3,897,378.

Crewse, John L., to Cleveland Vibrator Company, The. Impactor-vibrator. 3,896,701, Cl. 91-7.000.

Crofts, John G., to Cummins Engine Company, Inc. Frangible resilient engine mounting. 3,896,739, Cl. 105-133.000.

Crossley Window Co., Inc.: *See—*
Mitchell, Henry W., 3,896,589.

Crounse, Nathan N.; Bonta, Simonn; and Ploss, Charles J., to Sterling Drug Inc. N,N-dialkyl-N-C8–C22-alkyl)-N-3-nitro-4-methoxybenzylammonium chlorides. 3,897,496, Cl. 260-567.60M.

Crouse, Ronald J.; LeBrun, Thomas Q.; Sill, Floyd E.; and Volding, Merle J., to Banctec, Incorporated. Encodable strip attachment apparatus. 3,897,299, Cl. 156-522.000.

Crowe, Talmadge L., to Baker Oil Tools, Inc. Subsurface tubing safety valve with auxiliary operating means. 3,896,876, Cl. 166-224.00A.

Cumberland Engineering Company, Inc.: *See—*
Shah, Sunil Chunilal, 3,897,016.

Cummins Engine Company, Inc.: *See—*
Crofts, John G., 3,896,739.

Cuniberti, Mario, to Owens-Illinois, Inc. Motion translating apparatus and controls therefor. 3,896,926, Cl. 198-241.000.

Curran, William Vincent: *See—*
Lindsay, Harry Lee; Angier, Robert Bruce; and Curran, William Vincent, 3,897,430.

Cuschera, Casper. Self-caulking drain. 3,896,511, Cl. 4-288.000.

Cutter, Robert C. Releasible binder. 3,897,075, Cl. 280-11.35T.

Cybersol, Inc.: *See—*
Reynolds, Beverly L., 3,897,550.

Cyphelly, Ivan Jaroslav. Hydrostatic clutch. 3,896,912, Cl. 192-61.000.

Czaja, Robert F.: *See—*
Shen, Tsung-Ying; Grenda, Victor J.; and Czaja, Robert F., 3,897,432.

Dadura, James G.: *See—*
Morduchowitz, Abraham; and Dadura, James G., 3,897,353.

Dahlstrom, Carl Lennart; and Ponton, Tord Richard William, to AB Skanska Cementgjuteriet. System for automatically aligning and/or moving in a parallel movement path a guide seating structure adapted for guiding the movement of a tool mounted thereon. 3,896,885, Cl. 173-2.000.

Dai Nippon Toryo Co., Ltd.: *See—*
Tugukuni, Hideyoshi; Kano, Masafumi; and Chikazoe, Yoshihisa, 3,897,381.

Daigle, Donald J.: *See—*
Beninate, John V.; Daigle, Donald J.; Drake, George L., Jr.; Reeves, Wilson A.; and Donaldson, Darrell J., 3,897,398.

Dainichiseika Color & Chemicals Mfg. Co. Ltd.: *See—*
Horiguchi, Shojiro; Abe, Yoshio; and Hosoda, Tohoru, 3,897,450.

Dainippon Ink & Chemicals Inc.: *See—*
Takahashi, Akikazu; Futatsugi, Yuji; Wakayama, Hiroo; and Yao, Takamu, 3,897,375.

Dale, John Robert, to U.S. Philips Corporation. Method of sealing electrical component envelopes. 3,896,542, Cl. 228-234.000.

D'Alelio, Gaetano Francis, to University of Notre Dame du Lac. Process for chain-extending unsaturated terminated polyimides and products prepared therefrom. 3,897,395, Cl. 260-63.00N.

Dalrymple, Thomas T.: *See—*
Thompson, George J.; and Dalrymple, Thomas T., 3,896,569.

Damico, Ralph A.: *See—*
Peterson, Donald J.; Ward, James F.; and Damico, Ralph A., 3,897,553.

Damoisiaux, Anthony John: *See—*
Donnelly, Robert William; Damoisiaux, Anthony John; and Evans, Raymond George, 3,897,130.

Daniello, George T. Mobile power generation device employing tropical water thermocline. 3,896,622, Cl. 60-641.000.

Daniels, James H., to Leeds & Northrup Company. Boiler-turbine control system. 3,896,623, Cl. 60-665.000.

Dart Industries Inc.: *See—*
Holoubek, George Henry; Ales, David Edward; and Harms, Harland Elmer, 3,896,710.
Wilson, Bob G., 3,897,235.

Darvishian, Arthur. Wind motor. 3,897,170, Cl. 416-119.000.

Davidson, William, Jr.; and Kauffman, Charles H., to Kauffman, Charles H. Converting municipal refuse into compost. 3,897,215, Cl. 23-259.100.

Davis, Howard G., Jr. Flying fork-type lifting member. 3,897,097, Cl. 294-67.00R.

Davis, Oliver Thurston; and Jones, Norman R. Apparatus for washing and disinfecting trailer or van interiors. 3,897,263, Cl. 134-45.000.

Davis, Robert H.; and Schick, John W., to Mobil Oil Corporation. Lubricant compositions. 3,897,351, Cl. 252-34.000.

Dawson, Boyd S., to PPG Industries, Inc. Method of handling loose glass plates. 3,896,954, Cl. 214-152.000.

Dayton-Walther Corporation: *See—*
Walther, William D.; and DeRegnaucourt, Robert A., 3,897,111.
Walther, William D.; and DeRegnaucourt, Robert A., 3,897,112.
Walther, William D.; and DeRegnaucourt, Robert A., 3,897,113.

Deason, Max W. Concrete expansion and contraction joint. 3,896,597, Cl. 52-396.000.

De Boer, Jan A., to Saval B.V. Automatic fire extinguisher for a storage tank with flammable contents. 3,896,881, Cl. 169-66.000.

DeBucs, Eugen Szabo: *See—*
Henkel, Hans-Joachim; DeBucs, Eugen Szabo; and Koch, Christian, 3,897,225.

De Cecco, Angelo L.; Hysell, Robert E.; and Piccone, Dante E., to General Electric Company. Method of aligning edges of emitter and its metalization in a semiconductor device. 3,897,286, Cl. 156-11.000.

Decker, Norman E., executor: *See—*
Willis, Henry Paul, deceased; and Decker, Norman E., executor, 3,896,893.

Deckowitz, Philip A.: *See—*
Pecoraro, Joseph K.; Deckowitz, Philip A.; and Brunner, Norman E., 3,896,871.

Deere & Company: *See—*
Frank, William Rudolph, 3,896,882.

De Francesco, Richard E.; Harris, Bernard; and Hoffman, David, to United States of America, Navy. Time base error correction for recording systems. 3,897,379, Cl. 360-27.000.

DeGeeter, Robert L.; and Schubert, George E., to Caterpillar Tractor Co. Control valve for hydraulic circuit. 3,897,115, Cl. 303-71.000.

Deguchi, Takashi: *See—*
Yamahara, Takeshi; Kishimoto, Hiroshi; Nakamura, Shinji; and Deguchi, Takashi, 3,897,507.

De Jong, Frank Cornelis, to Winkler-Den Boer, N.V. Proofing box plant. 3,896,922, Cl. 198-155.000.

DeJur-Amsco Corporation: *See—*
Ravese, Frank E., 3,897,142.

Delfosse, Gilbert; and Andiano, Jose, to Massey-Ferguson Services N.V. Grain separating apparatus. 3,897,332, Cl. 209-12.000.

Dell, Hans-Dieter: *See—*
Becker, Karl Heinz; Boltze, Karl-Heinz; Dell, Hans-Dieter; and Seidel, Peter-Rudolf, 3,897,426.
Boltze, Karl-Heinz; Brendler, Otfried; Dell, Hans-Dieter; and Jacobi, Haireddin, 3,897,482.

Del Monte, Louis A.; and Grangroth, Robert H., to Honeywell Inc. Material deposition masking for microcircuit structures. 3,897,324, Cl. 204-298.000.

Delp, Kyle I.: *See—*
Doffin, Richard L.; Delp, Kyle I.; and Delp, Vernon L., 3,896,588.

Delp, Vernon L.: *See—*
Doffin, Richard L.; Delp, Kyle I.; and Delp, Vernon L., 3,896,588.

DeRegnaucourt, Robert A.: *See—*
Walther, William D.; and DeRegnaucourt, Robert A., 3,897,111.
Walther, William D.; and DeRegnaucourt, Robert A., 3,897,112.
Walther, William D.; and DeRegnaucourt, Robert A., 3,897,113.

Design Components, Inc.: *See—*
McMurtrie, Thomas, 3,897,119.

Design Technology Corporation: *See—*
McGehee, Bobby L., 3,896,769.

DeSoto, Inc.: *See—*
Rokadia, Abdullah M., 3,897,175.

Detrick, Harry Rodney; and Harshbarger, Roland N., to GTE Sylvania Incorporated. Process for utilizing a photoprinting article and method for making said article. 3,897,251, Cl. 96-38.300.

Dettling, Ronald F.; and Nyberg, Donald G., to United States of America, Navy. Liquid fuel injector system. 3,897,008, Cl. 239-410.000.

Deutsche Gold- und Silber-Scheideanstalt Vormals Roessler: *See—*
Vollheim, Gerhard; Troger, Karl-Jurgen; and Lippert, Gerhard, 3,897,499.

Devitt, John L.; Stark, Robert E.; and Gillman, Leland M., to Gates Rubber Company, The. Alkaline battery cell. 3,897,266, Cl. 136-30.000.

De Vries, Jan Roelof Jochum Hendrik, to Industriele Onderneming Wavin N.V. Plastic block bag with a valve. 3,896,708, Cl. 93-35.00R.

De Weese, Daniel P.; and Brozenick, Nicholas J., to American Air Filter Company, Inc. Fume hood. 3,897,046, Cl. 266-16.000.

Dewey, James W.; and Eaton, Alvin C., to Atkins & Merrill, Incorporated. Truck driver training apparatus. 3,896,564, Cl. 35-11.000.

Dexter, Richard J.: *See—*
Stehlin, Robert A.; Dexter, Richard J.; Kendall, Don L.; and Pankratz, John M., 3,897,274.

Diana, Guy D.; and Hinshaw, William B., Jr., to Sterling Drug Inc. Arylalkenyl nitriles and functional derivatives thereof. 3,897,458, Cl. 260-340.500.

Di Battista, John D., to United States of America, General Counsel-Code GP. Meteroroid impact position locator air for manned space station. 3,896,758, Cl. 116-114.0AH.

Dikmen, Ned, to Neuronics, Incorporated. Alpha brain wave sensor. 3,896,790, Cl. 128-2.10B.

Dimason, Inc.: *See—*
Johnson, Gary L.; and Maki, Michael W., 3,897,037.

Di Mura, Gerardo. Access and coupling apparatus for machine coating the interior of pipes. 3,896,761, Cl. 118-317.000.

Di Paola, Samuel J., to Goodyear Tire & Rubber Company, The. Method of forming wire woven fabric for pneumatic tires. 3,897,289, Cl. 156-88.000.

Disabato, Vincent J.: *See—*
Slatkin, Martin S.; Motycka, David L.; and Disabato, Vincent J., 3,896,615.

Doan, Troy L. Bathing facility. 3,896,508, Cl. 4-149.000.

Dobbins, John P., to Rockwell International Corporation. Display device containing a liquid-crystal cell and a suspended-crystal cell arranged in series. 3,897,137, Cl. 350-160.0LC.

Dodino, Carlo. System of self-tamping pavement formed by two reciprocally penetrated sets of blocks substantially of truncated pyramid shape. 3,897,164, Cl. 404-41.000.

Doellner, O. Leonard, to Boeing Company, The. Optically linked missile. 3,897,028, Cl. 244-3.100.

Doffin, Richard L.; Delp, Kyle I.; and Delp, Vernon L. Combined gate hinge and latch. 3,896,588, Cl. 49-394.000.

Doherty, Keith Stanley, to Petrocarbon Developments Limited. Controlling the concentration of impurities in a gas stream. 3,897,226, Cl. 55-33.000.

Dohm, Heinz; Morgenstern, Karl; Muller, Ludwig; and Wiemers, Rudolf, to Bayer Aktiengesellschaft. Oxidation of naphthalene to 1,4-naphthoquinone and phthalic anhydride. 3,897,464, Cl. 260-346.400.

Donaldson, Darrell J.: *See—*

Beninate, John V.; Daigle, Donald J.; Drake, George L., Jr.; Reeves, Wilson A.; and Donaldson, Darrell J., 3,897,398.

Donath, Jeno: *See—*

Binzburg, Boris Nisonovich; Smetkin, Jury Alexandrovich; Alexeenko, Vladimir Iosifovich; Mikhailov, Vsevolod Andreevich; Lorant, Ivan; Seltenreich, Gyozo; Kaszei, Jeno; Marton, Gyorgy; Balazsfai, Albert; Donath, Jeno; and Bolcskei, Erno, 3,897,190.

Dondalski, William J.: *See—*

Arendt, Ronald H.; and Dondalski, William J., 3,897,355.

Donnelly, Robert William; Damoisiaux, Anthony John; and Evans, Raymond George, to ITT Industries, Inc. Flat cable connector. 3,897,130, Cl. 339-176.0MF.

Doolittle, John J. Article handling apparatus and method. 3,896,967, Cl. 221-95.000.

Dopke, James A.; and Brasile, Leland J., to Union Special Corporation. Pivotal guard for punch presses. 3,896,683, Cl. 74-612.000.

Dorr, Karl-Heinz: *See—*

Reh, Lothar; Dorr, Karl-Heinz; Grimm, Hugo; and Vydra, Karel, 3,897,545.

Doslik, Peter: *See—*

Gottschall, Gernot; and Doslik, Peter, 3,896,638.

Douglas, Raymond J.: *See—*

Hock, Donal D.; Douglas, Raymond J.; and Baynes, William R., 3,897,056.

Dover Corporation: *See—*

McMath, Jack A.; and Taylor, Charles W., 3,897,091.

Dow Chemical Company, The: *See—*

French, Floyd R., 3,897,004.

Frevel, Ludo K.; and Kressley, Leonard J., 3,897,511.

Leathers, Joel M., 3,897,530.

Moore, William Ross, 3,897,394.

Olstowski, Franciszek; and Parrish, Donald B., 3,897,410.

Sbragia, Ronald J., 3,897,564.

Stevens, Timothy S.; and Parth, William H., 3,897,213.

Suh, Kyung W., 3,897,528.

Dowbenko, Rostyslaw; and Christenson, Roger M., to PPG Industries, Inc. Ionizing radiation method for forming acrylic pressure sensitive adhesives and coated substrates. 3,897,295, Cl. 156-272.000.

Draber, Wilfried; and Regel, Erik, to Farbenfabriken Bayer AG. Process for the production of N-(1,1,1-trisubstituted)-methylazoles. 3,897,438, Cl. 260-296.00R.

Dragerwerk Aktiengesellschaft: *See—*

Rohling, Holmer, 3,896,837.

Dragoco Spezialfabrik Konzentrierte Riech-und Aromastoffe Gerberding & Co. GmbH: *See—*

Klein, Erich, 3,897,370.

Drake, George L., Jr.: *See—*

Beninate, John V.; Daigle, Donald J.; Drake, George L., Jr.; Reeves, Wilson A.; and Donaldson, Darrell J., 3,897,398.

Frank, Arlen W.; and Drake, George L., Jr., 3,897,205.

Droesch, Albert: *See—*

Schmid, Paul; and Droesch, Albert, 3,897,342.

Dubeta, David J.; and Papirnyk, Robert J. Staging and loading device for chair lifts. 3,896,738, Cl. 104-173.000.

Dubinsky, Rudolf Solomonovich: *See—*

Medovar, Boris Izrailevich; Dubinsky, Rudolf Solomonovich; Boiko, Georgy Alexandrovich; Marinsky, Georgy Sergeevich; and Egorov, Sergei Petrovich, 3,896,878.

Duer, Morris J., to General Motors Corporation. Non-chattering clutch for a limited slip differential mechanism. 3,896,684, Cl. 74-711.000.

Duffy, Richard J., to USM Corporation. Apparatus for making self-locking internally threaded articles. 3,896,760, Cl. 118-308.000.

Dunlap, Robert W.: *See—*

Massey, Michael J.; and Dunlap, Robert W., 3,897,231.

Dunn, Alvie R.: *See—*

Zeunen, Barthel; Grace, Rex C.; and Dunn, Alvie R., 3,897,149.

du Pont de Nemours, E. I., and Company: *See—*

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Burke, Patrick Michael, 3,897,522.

Coker, James Newton, 3,897,586.

Haglid, Frank R., 3,897,429.

Lauder, Alan, 3,897,367.

Sundet, Sherman A., 3,897,513.

Dupont, Paul E.; and Lesher, George Y., to Sterling Drug Inc. 1,7-Dihydro-1,3,7-tri-lower-alkyl-2H-pyrrolo [2,3-d] pyrimidine-2,4(3H)-diones. 3,897,433, Cl. 260-256.40F.

Duquesne Slag Products Co.: *See—*

Massey, Michael J.; and Dunlap, Robert W., 3,897,231.

Durant, Graham John; Emmett, John Colin; and Ganellin, Charon Robin, to Smith Kline & French Laboratories Ltd. Pharmacologically active compounds. 3,897,444, Cl. 260-306.80R.

Dutcher, Daniel P., to Hoerner Waldorf Corporation. Display carton for tumblers and the like. 3,896,927, Cl. 206-45.140.

Dyott, Richard Burnaby, to Post Office, The. Optical communications systems. 3,897,135, Cl. 350-96.00C.

Dzus Fastener Co. Inc.: *See—*

Aylott, John F., 3,896,698.

E. R. Squibb & Sons, Inc.: *See—*

Breuer, Hermann; and Treuner, Uwe D., 3,897,422.

Krapcho, John; and Turk, Chester F., 3,897,420.

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E-Systems, Inc.: *See—*

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Eaton Yale Ltd.: *See—*

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Ebauches Bettlach S.A.: *See—*

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Ebersberger, Josef, deceased: *See—*

Blank, Heinz-Ulrich; Wededeyer, Karlfried; and Ebersberger, Josef, deceased, 3,897,321.

Ebersberger, Thea, heiress: *See—*

Blank, Heinz-Ulrich; Wededeyer, Karlfried; and Ebersberger, Josef, deceased, 3,897,321.

Eckert, Hans-Werner; and Lehmann, Hans-Jurgen, to Henkel & Cie GmbH. Washing agents containing a textile softener and process of washing and softening textiles. 3,897,347, Cl. 252-8.750.

Economy, James; and Smith, William D., to Carborundum Company, The. α-MoC superconductor fibers. 3,897,542, Cl. 423-440.000.

Edison, Lamonte R., to General Motors Corporation. Electronic fuel injection system. 3,896,773, Cl. 123-32.0EA.

Edlun, William O.: *See—*

Bridges, William B.; Edlun, William O.; and Hill, James C., 3,897,150.

Edwards, Albert, to Baker Perkins Holding Limited. Pneumatic conveyance system for particulate material. 3,896,984, Cl. 241-5.000.

Edwards, John A., to Syntex (U.S.A.) Inc. Certain thiazolecarboxamides and acylamino-thiazoles. 3,897,441, Cl. 260-302.00R.

Edwards, John A., to Syntex (U.S.A.) Inc. Thiazole cardiovascular agents. 3,897,442, Cl. 260-302.00R.

Edwards, Michael Frederick, to GKN Sankey Limited. Methods of and apparatus for production of wheels and other articles by friction or other welding. 3,896,986, Cl. 228-2.000.

Egorov, Sergei Petrovich: *See—*

Medovar, Boris Izrailevich; Dubinsky, Rudolf Solomonovich; Boiko, Georgy Alexandrovich; Marinsky, Georgy Sergeevich; and Egorov, Sergei Petrovich, 3,896,878.

Ehlscheid, Gunter, to Winkler & Dunnebier Maschinenfabrik und Eisengiesserei KG. Apparatus for machines for the automatic production of postal envelopes. 3,896,712, Cl. 93-61.0AC.

Eich, Edmund; and Briesofsky, Gunter, to Werkzeugmaschinenfabrik Adolf Waldrich Coburg. Device for compensating carriage weight on gantry or cantilevered machine tools. 3,896,938, Cl. 212-26.000.

Ekbladh, Fred Vage Gunnar; and Steen, Sven Lennart, to Astra-Sjuco AB. Catheter for submucous administration of local anesthetics in obtaining paracervical block. 3,896,804, Cl. 128-215.000.

Electrovert Manufacturing Co. Ltd.: *See—*

Sund, William; Khouzam, George; and Tawil, Hani, 3,896,921.

Eli Lilly and Company: *See—*

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Bromer, William W., 3,897,551.

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Katner, Allen S., 3,897,434.

Koppel, Gary A.; and Lunn, William H. W., 3,897,424.

Koppel, Gary A., 3,897,518.

Kukolja, Stjepan, 3,897,445.

Ellis Corporation: *See—*

Toth, Alex, 3,896,642.

Ellis, Joseph R. Method of inserting spring-loaded ball against detent. 3,896,540, Cl. 29-468.000.

Ellis, Stafford M., to Engelhard Minerals & Chemicals Corporation. Pavement grooving machine including a cutting blade guidance system. 3,896,989, Cl. 299-39.000.

Emanuilov, Emanuil Alexandrov: *See—*

Alexiev, Boris Vasilev; Stoev, Stoycho Borisov; Spasov, Alexander Vasilev; Maneva, Lilyana Stoilova; Emanuilov, Emanuil Alexandrov; and Golovinski, Evgeni Victorov, 3,897,494.

Emeny, George B. Adjustable sump pump. 3,897,176, Cl. 417-359.000.

Emery Industries, Inc.: *See—*

Mains, Harold E.; and Barrett, Fred O., 3,897,468.

Emmett, John Colin: *See—*

Durant, Graham John; Emmett, John Colin; and Ganellin, Charon Robin, 3,897,444.

Enertron Corporation: *See—*

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Engelhard Minerals & Chemicals Corporation: *See—*

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Keith, Carl D.; and Mooney, John J., 3,896,616.

Enneking, Heinz: *See—*

Zeyns, Johannes; and Enneking, Heinz, 3,896,778.

Equitable Bag Co., Inc.: *See—*

Canno, Leonard E., 3,896,966.

Erickson, Floyd B., to Monsanto Company. Photoimaging compositions comprising complex of prophyrin-SO_2 as sensitizer. 3,897,255, Cl. 96-115.00R.

Erickson, Robert Edward: *See—*

Bozzato, Giuliano; Pesaro, Mario; Schudel, Peter; Hug-Inderbitzin, Marianne; and Erickson, Robert Edward, 3,897,504.

Erkkila, Raymond N.: *See—*

Audiffred, Sidney J.; Bump, David W.; Erkkila, Raymond N.; Johnson, Lowell E.; and Pearce, Shairyl I., 3,896,910.

Ervin, Paul R.; and Muller, George H., to Ford Motor Company. Pressure relief valve. 3,896,849, Cl. 137-525.100.

Essex International, Inc.: *See—*

Fosnough, Robert D., 3,896,544.

Turner, Jess H.; Wallace, Elmer E.; and Fiedler, Frank, Jr., 3,896,857.

Etablissements M. Chapais: *See—*

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Fagelman, Jacob. Dental instrument and clamp. 3,896,553, Cl. 32-63.000.

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Farfor, James Douglas, to Fictor Pty. Limited. Apparatus for making reinforced cement panels. 3,897,186, Cl. 425-85.000.

Farmer, William M.; and Hornkohl, James O., to United States of America, Air Force. Laser doppler velocimeter. 3,897,152, Cl. 356-28.000.

Farrar, John A., Jr., to Minnesota Mining and Manufacturing Company. Connector encapsulating device and method. 3,897,129, Cl. 339-116.00C.

Farrow, Harold Frederick, to Colorflo Limited. Multi-color printing. 3,896,722, Cl. 101-115.000.

Farrow, Harold Frederick; and Chudley, William Henry, to Colorflo Limited. Apparatus for pumping fluid through a die plate to a recessed design. 3,896,723, Cl. 101-150.000.

Fauconnet, Michel, to Ateliers des Charmilles S.A. Hydraulic machine. 3,897,167, Cl. 415-95.000.

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Fayling, Richard E., to Minnesota Mining and Manufacturing Company. Fastening method using polymer-based magnets. 3,897,288, Cl. 156-60.000.

Fearno, John O., to Helland Research and Engineering Inc. Dynamic motor brake control for AC motors. 3,897,595, Cl. 318-212.000.

Feins, Irvin Ralph; and Yarrington, Robert Murphy, to American Cyanamid Company. Hydrotreating catalyst and process therefor. 3,897,365, Cl. 252-435.000.

Feit, Peter Werner; and Nielsen, Ole Bent Tvaermose, to Leo Pharmaceutical Products Ltd. Sulfamylbenzoic acid derivatives. 3,897,476, Cl. 260-465.00D.

Feldman, Benjamin L.; and Gaby, Frederick M. Tent. 3,896,831, Cl. 135-3.00R.

Feldstein, Morris. Securing apparatus for a dropside crib. 3,896,514, Cl. 5-100.000.

Ferraro, Jack E., to Lawrence Peska Associates, Inc., a part interest. Rollable and foldable table for automobile trunk. 3,896,742, Cl. 108-44.000.

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Field, John R.; and Smalley, Graham, to Allied Colloids Manufacturing Co., Ltd. Flocculating agents. 3,897,333, Cl. 210-10.000.

Finch, Raymond C., to Raymond Lee Organization, Inc., The, a part interest. Noise making apparatus. 3,897,195, Cl. 431-19.000.

Findeisen, Kurt: *See—*

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Klauke, Erich; Holtschmidt, Hans; and Findeisen, Kurt, 3,897,495.

Finelli, Anthony F., to Goodyear Tire & Rubber Company, The. Polyurethane cured with an aromatic monosulfide diamine. 3,897,400, Cl. 260-77.5AM.

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Fischer, Artur. Hip joint prosthesis. 3,896,504, Cl. 3-1.912.

Fischer, Artur. Track-type toy. 3,896,735, Cl. 104-23.0FS.

Fisher, Michael H.; and Matzuk, Alexander R., to Merck & Co., Inc. Anthelmintic 1,2,4-oxadiazolines. 3,897,447, Cl. 260-307.00F.

Fisher, Milton W.: *See—*

Henson, Glen E.; and Fisher, Milton W., 3,896,672.

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Fleming, Donald K., to Institute of Gas Technology. Tail gas nitrogen oxide abatement process. 3,897,539, Cl. 423-235.000.

Flory, Donald M., to General Motors Corporation. Two-stage accumulator valve. 3,896,620, Cl. 60-547.000.

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Foller, Werner, to Gestra-KSB Vertriebsgesellschaft. Valve. 3,896,838, Cl. 137-195.000.

Follmer, Dan W. Non foaming lecithin emulsion cookware lubricant. 3,896,975, Cl. 222-192.000.

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Forsyth, Robert W.; and Forsyth, John P. Transportation apparatus. 3,896,946, Cl. 214-75.00G.

Forte, Robert L., to Anchor Hocking Corporation. Box for containing and displaying articles of merchandise. 3,896,928, Cl. 206-45.140.

Fosnough, Robert D., to Essex International, Inc. Method of making resilient electrical contact assembly for semiconductor devices. 3,896,544, Cl. 29-588.000.

Fosroc A.G.: *See—*

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Foster, James J.; Sittema, Richard J.; and Nelson, Russell E., to Interlake, Inc. Treatment of pickle liquor rinse water. 3,896,828, Cl. 134-57.00R.

Foster, Melvin Lewis, to Atomic Energy of Canada Limited. High strength low attenuation couch top. 3,897,345, Cl. 250-439.000.

Foster Wheeler Corporation: *See—*

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Fowler, Jackson E., to General Electric Company. Leakage control structure. 3,897,169, Cl. 415-172.00A.

Frances, Andre L.; and Brochon, Jack E. Double-sided printed circuit connection board with insertable male connector plug. 3,897,126, Cl. 339-17.0LC.

Franceschini, Augusto. Self-ballasting decoy waterfowl. 3,896,578, Cl. 43-3.000.

Frank, Arlen W.; and Drake, George L., Jr., to United States of America, Agriculture. Fireproofing cellulose textiles with tetrakis (hydroxymethyl) phosphonium chloride and aniline. 3,897,205, Cl. 8-116.00P.

Frank, William Rudolph, to Deere & Company. Implement frame. 3,896,882, Cl. 172-311.000.

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Franz, William F.; and Hess, Howard V., to Texaco Inc. Spit flow hydrodesulfurization of petroleum fraction. 3,897,329, Cl. 208-210.000.

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Freeman, William H., to Caterpillar Tractor Co. Tool for installing resilient rings on cylindrical members. 3,896,537, Cl. 29-235.000.

Freismuth, Richard J.; and Lopiccola, Joseph F., to Ford Motor Company. Carburetor secondary throttle shaft construction. 3,897,524, Cl. 261-23.00A.

Freitag, Dieter: *See—*

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French, Floyd R., to Dow Chemical Company, The. Spray nozzle bottle cap. 3,897,004, Cl. 239-318.000.

Frevel, Ludo K.; and Kressley, Leonard J., to Dow Chemical Company, The. Removal of α-acetylenes from gas streams. 3,897,511, Cl. 260-681.500.

Frey, Christoph, to Ciba-Geigy Corporation. Certain isoindolinone pigments containing heavy metals. 3,897,439, Cl. 260-299.000.

Friedman, Henry, to Eli Lilly and Company. Anthelmintic phenylhydrazones. 3,897,559, Cl. 424-275.000.

Frisch, Kurt C.: *See—*

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Froberg, Magnus L., to Owens-Corning Fiberglas Corporation. Method and apparatus for cooling electrically-heated melting furnace. 3,897,234, Cl. 65-135.000.

Fuji Photo Film Co., Ltd.: *See—*

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Fukao, Masami: *See—*

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Fukuyama, Yasuo, to Yamauchi Rubber Industry Co., Ltd. Method of producing a printing magnetic saddle. 3,897,292, Cl. 156-153.000.

Funae, Yoshihiko: *See—*

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Fussner, Paul; and Nusser, Hermann, to Robert Bosch G.m.b.H. Pumping unit for liquids. 3,897,179, Cl. 417-423.00R.

Futaki, Kiyoshi: *See—*

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Futatsugi, Yuji: *See—*

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Gabry, William. Animal trap. 3,896,581, Cl. 43-81.000.

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GAF Corporation: *See—*

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Gale, Jack D. External helix tube for installing screw-type earth anchor. 3,896,890, Cl. 175-19.000.

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Gante, Joachim; Mehrhof, Werner; and Wild, Albrecht, to Merck Patent Gesellschaft mit beschrankter Haftung. Dibenzofuran and dibenzothiophene acetic acid derivatives. 3,897,453, Cl. 260-329.300.

Gardner-Denver Company: *See—*

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Gardner, Tom. Truck body cover and mounting means therefor. 3,897,100, Cl. 296-10.000.

Garner, Eugene F.: *See—*

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Garrett, Clyde Barner; and Thayer, William Stansbury, to Koppers Company Inc. Wash-up system for flexographic printers. 3,896,730, Cl. 101-425.000.

Garrison, Harry F.; and Kiser, Billy T. Steel barrel handling appliance. 3,897,096, Cl. 294-4.000.

Garrott, William L., to Sperry Rand Corporation. Static magnetic field metal detector. 3,896,608, Cl. 56-10.200.

Gassman, Paul G., to Ohio State University Research Foundation, The. Synthesis of oxindoles from anilines and intermediates therein. 3,897,451, Cl. 260-325.00R.

Gates Rubber Company, The: *See—*

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Giambalvo, Joseph. Shelf arrangement and bracket therefor. 3,896,718, Cl. 108-108.000.

Giammarco, Giuseppe; and Giammarco, Paolo, to Vetrocoke Cokapuania S.p.A. Process for the removal of carbon dioxide and/or hydrogen sulphide and other acidic gases from gas mixtures. 3,897,227, Cl. 55-68.000.

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Gibby, Mabel K. Fabric stretcher device. 3,896,573, Cl. 38-102.500.

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Gilbert, Stephen Lee; and Ettenberg, Michael, to RCA Corporation. Method for epitaxially growing a semiconductor material on a substrate from the liquid phase. 3,897,281, Cl. 148-171.000.

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Gillman, Leland M.: *See—*

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Gipson, Robert Malone; Yeakey, Ernest Leon; and Pepel, William Jennings, to Jefferson Chemical Company, Inc. 2,2-Dialkylepoxides as plasticizers, stabilizers, or reactive diluents. 3,897,383, Cl. 260-30.40N.

Girard, Lucien, III: *See—*

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Goebl, Adolf Otto. Height-adjustable desk. 3,896,744, Cl. 108-146.000.

Goel, Pierre, to Cannon Inc. Railway inspection method and vehicle. 3,896,665, Cl. 73-146.000.

Goldner, Richard. Shoulder support for violin and viola. 3,896,694, Cl. 84-280.000.

Golinski, Stanley, to Western Electric Company, Inc. Method and apparatus for supporting substrates during bonding. 3,896,541, Cl. 228-180.000.

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Gondo, Hisashi; Takechi, Hiroshi; Kawanc, Tsuyoshi; and Masui, Hiroaki, to Nippon Steel Corporation. Method for manufacturing a steel sheet and product obtained thereby. 3,897,280, Cl. 148-12.00C.

Goodall, Charles Clifford Owen; and Amery, Edward George, to Ilford Limited. Mounting device. 3,896,719, Cl. 100-169.000.

Goodman, Donald E., to Bacardi and Company, Ltd. Method for determining the ethanol content of alcoholic beverages. 3,896,659, Cl. 73-23.100.

Goodyear Tire & Rubber Company, The: *See—*

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Gorman, DeWitt Y. Upholstery system method and apparatus. 3,896,531, Cl. 29-91.100.

Goschke, Richard, to Ciba-Geigy Corporation. Quinolineacetic acid derivatives. 3,897,436, Cl. 260-283.00S.

Gottschall, Gernot; and Doslik, Peter, to Franz Morat GmbH, Firma. Programme control devices. 3,896,638, Cl. 66-50.00R.

Gould, Francis E.: *See—*

Shepherd, Thomas H.; and Gould, Francis E., 3,896,753.

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Grabner, Roy W., to Merck & Co., Inc. Process for removing pyrogenic material from aqueous solutions. 3,897,309, Cl. 195-66.00A.

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Graham, Arthur; Makowski, Alexander G.; and Fuss, Gunter G., to Free-Flow Packaging Corporation. Free flow, interlocking packing material of low bulk density. 3,896,934, Cl. 206-523.000.

Granger, Maurice; and Lerond, Andre. Device for the simultaneous dispensing and severing of webs of wound material. 3,896,691, Cl. 83-335.000.

Grangroth, Robert H.: *See—*

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Grattan, Donald J. Variable force projector and catcher. 3,897,061, Cl. 273-96.00R.

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Gray, Bob P.; and Gray, James A. Thermoplastic waste converter. 3,897,011, Cl. 241-15.000.

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Gray, Robert. Apparatus for making foam buildings. 3,897,298, Cl. 156-500.000.

Great Lakes Carbon Corporation: *See—*

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Green, Frank D.; and Spector, George. Tire hammer. 3,896,864, Cl. 145-36.000.

Greenbaum, Sheldon B.; Weil, Edward D.; and Newcomer, Jack S., to Hooker Chemicals & Plastics Corporation. Halogen containing tricyclic compounds. 3,897,457, Cl. 260-340.300.

Greenfield, Gaylord G.: *See—*

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Insalaco, Charles J. Nursery pot having improved drainage. 3,896,587, Cl. 47-34.000.
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Ishii, Michio; Watabe, Yoji; and Iseda, Yutaka, to Bridgestone Tire Company Limited. With substituted benzoic acid catalysts accelerating the cure of polyurethaneureas. 3,897,396, Cl. 260-75.0NB.
Ishii, Shigetaka: *See—*
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Isom, William C. Electric light cart. 3,897,080, Cl. 280-47.190.
Ito, Shunichi: *See—*
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Jacques, Albert M. V., to Amchem Products, Inc. Purification of aliphatic phosphonic acids. 3,897,486, Cl. 260-502.40R.
Jaquiss, Donald B. G.; and Munro, Howard E., to General Electric Company. Process for preparing polycarbonate. 3,897,391, Cl. 260-47.0XA.
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Jennings, Ralph Earnest. Football blocking apparatus. 3,897,060, Cl. 273-55.00R.
Jensen, Niels. Audio-visual teaching machine. 3,896,563, Cl. 35-9.00A.
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Jirmanus, Naila Saba; Rindone, Guy E.; and Bouchard, Andre C., to GTE Sylvania Incorporated. New transparent low thermal conductivity glass compositions and lamp envelopes made therefrom. 3,897,197, Cl. 431-95.000.
Johansson, Tage Hjalmar, to Kockum Industri Aktiebolag. Gang saw with improved damping means. 3,896,693, Cl. 83-748.000.
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Johnson, Gary L.; and Maki, Michael W., to Dimason, Inc. Paperback book holder. 3,897,037, Cl. 248-460.000.
Johnson, John A., to Kansas State University Research Foundation. Process and compositions for manufacture of yeast-raised products without fermentation. 3,897,568, Cl. 426-23.000.
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Joiner, Thomas R., to Plan Hold Corporation. Friction binder having variable clamping forces. 3,896,526, Cl. 24-67.100.
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Jones, Howard, to Merck & Co., Inc. Preparation of 5-fluoro-2-methyl-1-(p-methylsulfinylbenzylidene) indenyl-3-acetic acid. 3,897,487, Cl. 260-515.00A.
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Kanda, Masao; and Saeiki, Keiso, to Fuji Photo Film Co., Ltd. Process of producing capsule-coated sheets. 3,897,578, Cl. 427-358.000.
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Kattan, Abraham; and Gwyn, John E., to Shell Oil Company. Vapor recovery and disposal system. 3,897,193, Cl. 431-5.000.
Katz, Simon, to Indiana University Foundation. Oral compositions for retarding the formation of dental plaque and methods of utilization thereof. 3,897,548, Cl. 424-54.000.
Katzer, Ernst, to Knorr-Bremse GmbH. Centering device for a rail brake magnet. 3,897,117, Cl. 308-3.00R.
Kauffman, Charles H.: *See—*
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Kawakami, Hideo, to Takagi Tekko Kabushiki Kaisha. Locking device for a motorcycle driver's helmet. 3,896,643, Cl. 70-59.000.
Kawakami, James Hajime: *See—*
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Kearney, John A., to Bibb Company, The. Method of preparing cellulosic textile materials having improved soil release and stain resistance properties. 3,897,206, Cl. 8-120.000.
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Keenan, Charles A.; and Cederstrand, Carl N., to Beckman Instruments, Inc. Phase and amplitude balance adjustment for a dual beam infrared gas analyzer. 3,897,153, Cl. 356-51.000.
Kehr, Clifton Leroy; Murch, Robert M.; and Marans, Nelson Samuel, to W. R. Grace & Co. Smoke-flame retardant hydrophilic urethane and method. 3,897,372, Cl. 260-2.5AJ.
Keith, Carl D.; and Mooney, John J., to Engelhard Minerals & Chemicals Corporation. Process and apparatus. 3,896,616, Cl. 60-274.000.
Keller, Harold A.; and Saunders, Robert J., to Potlatch Corporation. Orienter for wood strands. 3,896,536, Cl. 29-211.00R.
Kellett, Richard Edward, to Antler Limited. Travel cases. 3,896,909, Cl. 190-53.000.
Kelly, Charles E. Safety belt for snowmobile and motorcycle passengers. 3,896,499, Cl. 2-311.000.
Kelly, Kirsteen Ormiston, to Lever Brothers Company. Fish product. 3,897,573, Cl. 426-272.000.
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Kilmer, Earl E., to United States of America, Navy. Explosive initiator device. 3,896,731, Cl. 102-22.000.
Kim, Chang-Kyo, to Westinghouse Electric Corporation. Self-contained static power system. 3,897,271, Cl. 136-202.000.
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Kingsbury, Lyle Heath. Bridge for musical instrument. 3,896,695, Cl. 84-307.000.
Kirby, Robert Andrew; and Bayhi, Joseph Frank, to Exxon Production Research Company. High frequency seismic source using compressed air. 3,896,898, Cl. 181-120.000.
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Kishino, Shigeo; Yamada, Yasuo; Kurahashi, Yoshio; and Kume, Toyohiko, to Bayer Aktiengesellschaft. Fungicidal and bactericidal O-alkyl-O-cyclohexyl-S-alkyl-, haloalkyl-or alkenyl-phosphorothiolates. 3,897,552, Cl. 424-219.000.
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  Morisawa, Yasuhiro; Kataoka, Mitsuru; Watanabe, Taiichiro; Kitano, Noritoshi; and Matsuzawa, Toshiaki, 3,897,556.
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Kiwalle, Jozef, to Production Technology Inc. Indexing apparatus for rotary machine tool. 3,896,985, Cl. 228-2.000.
Kiyota, Takashi, to Nippon Oil Co., Ltd. Process for the production of 5-alkylidenenorbornene-2. 3,897,510, Cl. 260-666.0PY.
Klauke, Erich; Holtschmidt, Hans; and Findeisen, Kurt, to Bayer Aktiengesellschaft. Perhalogen-2-azapropenes process. 3,897,495, Cl. 260-566.00D.
Klein, Erich, to Dragoco Spezialfabrik Konzentrierte Riech-und Aromastoffe Gerberding & Co. GmbH. Aroma compositions containing cycloaliphatic crotonyl compounds. 3,897,370, Cl. 252-522.000.
Klein, Georg; Rossler, Kurt; Brockschmidt, Karl; and Rettweiler, Horst. Machine for crushing and cutting large objects. 3,897,019, Cl. 241-257.00R.
Klein, Joseph R., to United States of America, Air Force. Meltable plug radiation switch. 3,897,302, Cl. 176-86.00M.
Klockner-Werke AG: *See—*
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  Langhammer, Hans-Juergen, 3,897,243.
Knecht, Fritz, to Techmed AG, Firma. Cutter knife for the preparation of meat. 3,897,020, Cl. 241-292.100.
Knepper, William A., to United States Steel Corporation. Two-stage fluidized bed reactor with nozzle tuyeres. 3,896,560, Cl. 34-57.00R.
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Kohls, James P.; Borgman, Robert J.; and Campbell, Frederic W., to Jervis B. Webb Company. Manual control for a self-propelled vehicle. 3,896,892, Cl. 180-19.00H.

Kohn, Gustave K.; Brown, Melancthon S., deceased; and by Kohn, Gustave K., special administrator. Insecticidal N-thio-substituted carbamates of dihydrobenzofuranols. 3,897,463, Cl. 260-346.20R.

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Kohne, Harry F., Jr.; and Kurrle, Frederick L., to Westvaco Corporation. Paper filled with a blushed particulate polystyrene pigment. 3,897,300, Cl. 162-169.000.

Kokusan Denki Co., Ltd.: *See—*

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Kolb, William A., to United States Steel Corporation. Sensor probe control system. 3,896,674, Cl. 73-432.00R.

Kolb, William A.; and Sigh, Jack F., to United States Steel Corporation. Apparatus for and method of refining an iron base melt. 3,897,047, Cl. 266-35.000.

Kolenik, Steve Andrew: *See—*

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Kondo, Motoki, to Nippon Electric Company, Limited. Method of implanting ions of different mass numbers in semiconductor crystals. 3,897,276, Cl. 148-1.500.

Kondo, Tetsuya, to Kokusan Denki Co., Ltd. Breakerless ignition system for a multicylinder internal combustion engine. 3,896,780, Cl. 123-148.00E.

Konsbruck, Robert H.; and Scott, Robert T., to General Motors Corporation. Vehicle drive with clutch engagement control. 3,896,914, Cl. 192-.098.

Koppel, Gary A.; and Lunn, William H. W., to Eli Lilly and Company. Process for 7-β-amino-7-α-methoxy-cephalosporanic acid esters and related compounds. 3,897,424, Cl. 260-243.00C.

Koppel, Gary A., to Eli Lilly and Company. α-(Dibenzylphosphono)acetic acids. 3,897,518, Cl. 260-941.000.

Koppers Company Inc.: *See—*

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Korte, Siegfried; Suling, Carlhans; and Lorenz, Gunter, to Bayer Aktiengesellschaft. Process for the production of copolymers containing acrylic acid amides. 3,897,404, Cl. 260-79.5NV.

Kostenowczyk, Stanley, to Singer Company, The. Low friction means for sewing machine work clamp. 3,896,748, Cl. 112-70.000.

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Kozlowski, Edward C.; and Chamlin, Matthew D. Composite flexible, semi-rigid materials and process for making same. 3,896,991, Cl. 229-55.000.

Kraina, Jack H., to Caterpillar Tractor Co. Steering system with electrically driven secondary steering means. 3,896,617, Cl. 60-403.000.

Krapcho, John; and Turk, Chester F., to E. R. Squibb & Sons, Inc. 2-Aminoalkyl-7-substituted-3,3a,4,5,6,7-hexahydro-3-substituted-2H-pyrazolo(4,3-c)pyridines. 3,897,420, Cl. 260-240.00F.

Kreidler, Alfred, to Metall-Invent S.A. Measuring/indicating instrument. 3,896,682, Cl. 74-606.00R.

Kreissig, Ernst Florian, to Schweizerische Lokomotiv-und Maschinenfabrik. Pneumatic bogie stabilizer. 3,896,740, Cl. 105-164.000.

Krenke, Vincent G., to Koppers Company Inc. Pusher ram and quench car travel synchronization system. 3,897,311, Cl. 202-262.000.

Kress, Rudolf: *See—*

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Krohm, Reinhold; and Bahre, Karl, to Klockner-Werke AG. Long-wall mining apparatus. 3,897,108, Cl. 299-34.000.

Krueger, John A.: *See—*

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Kubota, Shigeyuki: *See—*

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Kucera, Josef: *See—*

Stoy, Vladimir; Stoy, Artur; Urbanova, Renata; Prokop, Jaroslav; and Kucera, Josef, 3,897,382.

Kucher, Robert C., to Rendell Tractor & Equipment Co., Ltd. Rotatable downwardly directed driveline. 3,896,757, Cl. 115-35.000.

Kugler Fonderie et Robinetterie S.A.: *See—*

Labarre, Claude, 3,896,836.

Kuhlthau, Hans-Peter, to Bayer Aktiengesellschaft. Basic dyestuffs. 3,897,418, Cl. 260-240.00G.

Kuhn, Jorg; and Sohm, Elmar. Multistory building with a material handling elevator apparatus having fixed and movable tracks. 3,896,941, Cl. 214-16.40A.

Kukolja, Stjepan, to Eli Lilly and Company. 5-EPI-penicillins. 3,897,445, Cl. 260-306.70C.

Kulsa, Peter; and Waksmunski, Frank S., to Merck & Co., Inc. Anticoccidial composition. 3,897,563, Cl. 424-326.000.

Kulwiec, Leonard, to Sterndent Corporation. Prosthetic article and method for manufacture. 3,896,547, Cl. 32-10.00A.

Kume, Toyohiko: *See—*

Kishino, Shigeo; Yamada, Yasuo; Kurahashi, Yoshio; and Kume, Toyohiko, 3,897,552.

Kunz, Gustav: *See—*

Leichsenring, Carl Hans; and Kunz, Gustav, 3,897,089.

Kuo, Chan-Hwa; Taub, David; and Wendler, Norman L., to Merck & Co., Inc. 5-Oxo-1β-cyclopentane heptanoic acid derivative. 3,897,459, Cl. 260-340.900.

Kurahashi, Yoshio: *See—*

Kishino, Shigeo; Yamada, Yasuo; Kurahashi, Yoshio; and Kume, Toyohiko, 3,897,552.

Kuraray Co., Ltd.: *See—*

Yamauchi, Junnosuke; Okamura, Takayuki; Minatono, Shobu; and Yamauchi, Kazuhisa, 3,897,403.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*

Takahashi, Masaaki; Ishizawa, Noboru; and Nishida, Masazo, 3,897,374.

Kurrle, Frederick L.: *See—*

Kohne, Harry F., Jr.; and Kurrle, Frederick L., 3,897,300.

Kurtz, Leonard D., to Sutures, Inc. Sutures having long-lasting biocidal properties. 3,896,812, Cl. 128-335.500.

Kurtz, Leonard D., to Sutures, Inc. Sutures having long-lasting biocidal properties. 3,896,813, Cl. 128-335.500.

Kyowa Gas Chemical Industry Co. Ltd.: *See—*

Hamamoto, Yoshito; Shirakawa, Hideo; Aida, Kazuhiko; Omura, Yutaka; Takagi, Tosiaki; Nakao, Kozo; Kawaguchi, Takuo; and Nagai, Haruo, 3,897,477.

Laauwe, Robert H. Aerosol package of product containing liquified gas. 3,896,970, Cl. 222-94.000.

Labarre, Claude, to Kugler Fonderie et Robinetterie S.A. Hot and cold water mixing device. 3,896,836, Cl. 137-98.000.

Laboratoires J. Berthier: *See—*

Meunier, Henry Eugene Jean-Marie, 3,897,485.

Lada, George J., to Allied Chemical Corporation. Dual action laminar air flow. 3,897,229, Cl. 55-467.000.

Lagos, Costas C., to GTE Sylvania Incorporated. Manganese and cerium activated barium calcium orthophosphate phosphor. 3,897,360, Cl. 252-301.40P.

Lagsdin, Andry: *See—*

MacKenzie, Robert A.; and Lagsdin, Andry, 3,897,079.

Laitram Corporation, The: *See—*

Lapeyre, James M., 3,896,522.

Lampe, Warren R., to General Electric Company. Room temperature vulcanizable silicone rubber composition. 3,897,376, Cl. 260-18.00S.

Landstingens Inkopscentral: *See—*

Von Post, Jan Ake; and Petersson, Gosta Erik Mauritz, 3,896,518.

Lange, Hans; Rittersdorf, Walter; and Rey, Hans-Georg, to Boehringer Mannheim GmbH. Diagnostic device. 3,897,214, Cl. 23-253.0TP.

Lange, Hans M., to Institut Dr. Friedrich Forster; and Th. Kieserling & Albrecht. Testing probe for non-destructive testing of material. 3,896,646, Cl. 72-14.000.

Langhammer, Hans-Juergen, to Klockner-Werke AG. Smelting process and furnace. 3,897,243, Cl. 75-10.00V.

Lanier Electronic Laboratory, Inc.: *See—*

Bolick, Fred C., Jr., 3,897,027.

Lannert, Kent P., to Monsanto Company. Hydroxy ether carboxylates. 3,897,490, Cl. 260-535.00P.

Lapac, Edward F.; Miazga, Joseph F.; and Mittleman, Irving M., to United Aircraft Corporation. Process for fixturing a workpiece by quenching a liquid resin. 3,897,535, Cl. 264-268.000.

Lapeyre, James M., to Laitram Corporation, The. Apparatus for removing meat from animal bone. 3,896,522, Cl. 17-46.000.

Laporte Industries Limited: *See—*

Newton, Geoffrey Phillip, 3,897,399.

Robinson, Michael; Clamp, Frank; Aberdeen, David; and Mobbs, David Barry, 3,897,537.

Larsen, Jorgen Rasmus: *See—*

Ingemansson, Nils Stig Percy; and Larsen, Jorgen Rasmus, 3,897,580.

Larson, Roger L., to Raygo, Inc. Dual amplitude vibration generator. 3,896,677, Cl. 74-61.000.

Lau, Gunther; Bradatsch, Edmund; Brandl, Hermann J.; and Niggel, Georg. Impregnating corrugated cardboard. 3,896,763, Cl. 118-50.000.

Lauder, Alan, to du Pont de Nemours, E. I., and Company. Metal oxide catalytic compositions. 3,897,367, Cl. 252-462.000.

Lawrence Peska Associates, Inc.: *See—*

Cohen, Richard J., 3,896,582.

Ferraro, Jack E., 3,896,742.

Lay, Robert E., Jr.: *See—* .

Martin, John T.; Lay, Robert E., Jr.; Stene, Edward L.; and Muscante, Anthony J., 3,896,767.

Leach, Burleigh H.: *See—*

Saunders, John P.; and Leach, Burleigh H., 3,897,196.

Leal-Diaz, Jaime: *See—*

Rangel-Garza, Javier; and Leal-Diaz, Jaime, 3,897,009.

Leathers, Joel M., to Dow Chemical Company, The. Method for gusseting continuous lengths of tubular material. 3,897,530, Cl. 264-89.000.

Leblanc, Conrad; and Marchi, Vitalino, to Foster Grant Co., Inc. Interchangeable lens ski goggle. 3,896,496, Cl. 2-14.00D.

Lebocey Industrie: *See—*

Palencher, Jacques, 3,896,640.

LeBrun, Thomas Q.: *See—*

Crouse, Ronald J.; LeBrun, Thomas Q.; Sill, Floyd E.; and Volding, Merle J., 3,897,299.

Lecroy, James F. Laser miss distance indicator. 3,897,151, Cl. 356-5.000.

Ledochowski, Andrzej; and Stefanska, Barbara, to Starogadzkie Zaklady Farmaceutyczne "Polfa". N-oxides of 1 -nitro-9-dialkylaminoalkylamino/acridine. 3,897,435, Cl. 260-279.00A.

Lee, Michael Adrian. Device for removing dust from a gramophone record. 3,897,069, Cl. 274-47.000.

Lee, Robert L. Jaw movement simulator. 3,896,550, Cl. 32-32.000.

Leeds, Morton W.; and Szur, Alex J., to Airco, Inc. Ethyl beta-(N-methylfurfurylamino) propionate. 3,897,465, Cl. 260-347.400.

Leeds & Northrup Company: *See—*

Daniels, James H., 3,896,623.

Leesona Corporation: *See—*

Brouwer, Charles William, 3,896,851.

Cowan, Larry C., 3,897,041.

Legare, Richard J.: *See—*

Comfort, Theodore F.; Legare, Richard J.; and Rosher, Ronald, 3,896,865.

Lehmann, Hans-Jurgen: *See—*

Eckert, Hans-Werner; and Lehmann, Hans-Jurgen, 3,897,347.

Lehwalder, Heinz E. Game board apparatus. 3,897,063, Cl. 273-131.00B.

Leichsenring, Carl Hans; and Kunz, Gustav, to Gesellschaft fur Kernforschung m.b.H. Device for the releasable connection of a dual hose system to a closed container. 3,897,089, Cl. 285-158.000.

Leitner, Lutz: *See—*

Woditsch, Peter; and Leitner, Lutz, 3,897,354.

Lelicoff, Jhon. Flying insect repellant assembly. 3,896,995, Cl. 239-36.000.

Lemaire, Gerald. Chair or the like. 3,897,102, Cl. 297-191.000.

Lennox Industries Inc.: *See—*

Parker, Sidney A., 3,897,177.

Lennox, William Murdoch, to National Research Development Corporation. Endoprosthetic bone joint devices. 3,896,502, Cl. 3-1.910.

Leo Pharmaceutical Products Ltd.: *See—*

Feit, Peter Werner; and Nielsen, Ole Bent Tvaermose, 3,897,476.

Leoben, Bernd Kos; and Kubasa, Alois, to Gebr. Boehler & Co. AG. Dredging bucket having a reinforced edge. 3,896,567, Cl. 37-141.00R.

Leon, Shalom A.; Shapiro, Bernard; and Kollmann, George J., to Albert Einstein Medical Center of Philadelphia. Test for systemic lupus erythematosus. 3,897,212, Cl. 23-230.00B.

Lerond, Andre: *See—*

Granger, Maurice; and Lerond, Andre, 3,896,691.

Le Rouax, Robert K., to Hydril Company. Blowout preventer with variable inside diameter. 3,897,038, Cl. 251-1.000.

Le Rouax, Robert K., to Hydril Company. Variable inside diameter blowout preventer. 3,897,039, Cl. 251-1.000.

Le Rouax, Robert K., to Hydril Company. Annular blowout preventer with variable inside diameter. 3,897,040, Cl. 251-1.000.

Le Rouax, Robert K., to Hydril Company. Annular blowout preventer with variable inside diameter. 3,897,071, Cl. 277-185.000.

Lesher, George Y.: *See—*

Dupont, Paul E.; and Lesher, George Y., 3,897,433.

Lever Brothers Company: *See—*

Kelly, Kirsteen Ormiston, 3,897,573.

Levin, Irving M.: *See—*

Warner, David A.; and Levin, Irving M., 3,897,133.

Levinos, Steven, to Keuffel & Esser Company. Photochromic imaging utilizing tetrazolium compounds. 3,897,252, Cl. 96-48.00R.

Lewis, Donald J., to Allied Chemical Corporation. Vehicle safety system. 3,897,081, Cl. 280-150.0AB.

Li, Norman N.; Brusca, Donald R.; and Mohan, Raam R., to Exxon Research and Engineering Company. Immobilized enzymes and method for preparation. 3,897,308, Cl. 195-63.000.

Licentia-Patent-Verwaltungs-G.m.b.H.: *See—*

Ammon, Werner, 3,896,751.

Liebgott, Helmut: *See—*

Herbert, Rolf; and Liebgott, Helmut, 3,897,471.

Liebsch, Dietrich; Becher, Dieter; Kress, Rudolf; and Sauer, Heinz, to Bayer Aktiengesellschaft. Process for removing distillation residue from crude isocyanates. 3,897,314, Cl. 203-89.000.

Ligouzat, Pierre. Devices for discharging measured amounts of a fluid material. 3,896,976, Cl. 222-228.000.

Linde Aktiengesellschaft: *See—*

Weishaupt, Josef; and Oberpriller, Jakob, 3,897,010.

Lindsay, Harry Lee; Angier, Robert Bruce; and Curran, William Vincent, to American Cyanamid Company. Substituted s-triazines and method of use. 3,897,430, Cl. 260-249.500.

Lingenfelter, Guy E.; and Haines, William M., to Gates Rubber Company, The. Power transmission belt having attached vegetation engaging elements and method. 3,896,611, Cl. 56-119.000.

Lippert, Gerhard: *See—*

Vollheim, Gerhard; Troger, Karl-Jurgen; and Lippert, Gerhard, 3,897,499.

Lippitt, Maxwell W., Jr.: *See—*

Vail, Edwin G.; Lippitt, Maxwell W., Jr.; and Seymour, Phillip D., 3,896,792.

Little, Little J.: *See—*

Hunter, Joe S.; Little, Little J.; and Bailey, Escar L., 3,896,619.

Litton Industrial Products, Inc.: *See—*

Orlomoski, Roger W., 3,896,656.

Litton Systems, Inc.: *See—*

Marbury, Fendall, 3,896,755.

Livesay, Richard G., to Minnesota Mining and Manufacturing Company. Tagging explosives with organic microparticles. 3,897,284, Cl. 149-21.000.

Locascio, Jack J., to Rapid-American Corporation. Foundation garment. 3,896,818, Cl. 128-494.000.

Lockhart, David K. Power conversion apparatus for utilizing the force of waves. 3,896,625, Cl. 61-20.000.

Loev, Bernard, to SmithKline Corporation. Pharmaceutical compositions and method of inhibiting gastric acid secretion. 3,897,555, Cl. 424-263.000.

Lohman, Gordon Russell: *See—*

Woodburn, James, Jr.; and Lohman, Gordon Russell, 3,897,184.

Longworth, Alfred, to Radiation Limited. Gaseous fuel burners. 3,897,198, Cl. 431-160.000.

Lopiccola, Joseph F.: *See—*

Freismuth, Richard J.; and Lopiccola, Joseph F., 3,897,524.

Lorant, Ivan: *See—*

Binzburg, Boris Nisonovich; Smetkin, Jury Alexandrovich; Alexeenko, Vladimir Iosifovich; Mikhailov, Vsevolod Andreevich; Lorant, Ivan; Seltenreich, Gyozo; Kaszei, Jeno; Marton, Gyorgy; Balazsfai, Albert; Donath, Jeno; and Bolcskei, Erno, 3,897,190.

Lorenz, Gunter: *See—*

Korte, Siegfried; Suling, Carlhans; and Lorenz, Gunter, 3,897,404.

Louderback, Allan L.; and Fontana, Anthony J., to Baxter Laboratories, Inc. Blood control standard. 3,897,363, Cl. 252-408.000.

Love, Gordon David, to Silverson Machines Limited. Disintegrated devices. 3,897,013, Cl. 241-46.110.

Lovgren, Anders, to Alfred Lovgren Byggnads AB. Method of controlling drying of timber in a closed room. 3,896,558, Cl. 34-13.800.

Lu, Robert T., to ICI United States Inc. Polyimides from bismaleimides and heterocyclic disecondary diamines. 3,897,393, Cl. 260-47.0UA.

Ludszeweit, Dieter; and Buchegger, Joachim, to Hauni Werke Korber & Co. KG. Apparatus for splicing webs of cigarette paper or the like. 3,896,820, Cl. 131-21.00R.

Lumenition Limited: *See—*

Ford, Eric Harold, 3,896,776.

Lundstrom, Alexis A.; and Schimpf, Luther G., to Bell Telephone Laboratories, Incorporated. Secret transmission of intelligence. 3,897,591, Cl. 179-1.50M.

Lunn, William H. W.: *See—*

Koppel, Gary A.; and Lunn, William H. W., 3,897,424.

Luossavaara-Kiirunavaara Aktiebolag: *See—*

Haglund, Mats Torbjorn, 3,897,107.

Luthi, Oscar, to Ingersoll-Rand Company. Material disintegrating-and-blowing apparatus. 3,897,014, Cl. 241-56.000.

Luthi, Thomas F.: *See—*

Pang, Steven L., 3,896,498.

Luttinger, Manfred: *See—*

Scohy, John M.; Cremeans, George E.; and Luttinger, Manfred, 3,897,378.

Lutz, Barbara M. Button shank depth guide. 3,896,555, Cl. 33-168.00R.

Lutz, L. Richmond, III: *See—*

Bauman, Harry D.; and Lutz, L. Richmond, III, 3,897,301.

Lyle, Samuel P. Overlapping swinging plate internal combustion engine. 3,896,772, Cl. 123-8.470.

Lyons, Bernard J., to Raychem Corporation. Antioxidant comprising a hydroxy aromatic compound containing sulfur and organic phosphite. 3,897,388, Cl. 260-45.80R.

Lyssy, Georges H., to S & T Steiger Engineering AG. Method of manufacturing thin-walled hollow articles of polytetrafluorethylene, apparatus for performing the method and articles manufactured by the method. 3,897,532, Cl. 264-127.000.

M&T Chemicals Inc.: *See—*

Touval, Irving, 3,897,389.

MacDonald, Alan A.: *See—*

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MacFarland, David R.: *See—*

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Mack-Wayne Plastics Company: *See—*

McIntosh, James A., 3,896,974.

MacKenzie, Robert A.; and Lagsdin, Andry. Stabilizer pad for earthmoving apparatus. 3,897,079, Cl. 280-150.500.

MacTurk, William L., to General Dynamics Corporation. Method of making a molded waveguide filter with integral tuning posts. 3,896,545, Cl. 29-600.000.

MacTurk, William L., to General Dynamics Corporation. Method of forming a parabolic antenna. 3,897,294, Cl. 156-245.000.

Madaschefsky, Erich, to Semperit Aktiengesellschaft. Vulcanising mould for pneumatic vehicle tyres. 3,897,181, Cl. 425-47.000.

Maeda, Shohe; Yasue, Masayuki; Aruga, Mitsuo; Saito, Sizuo; and Yasunaga, Ikuo, to Sumitomo Chemical Co., Ltd. Method for producing anhydrous sodium dithionite. 3,897,544, Cl. 423-515.000.

- Maehara, Kazuo: *See—*
  - Sakai, Kazuo; Iwanaga, Ken; Maehara, Kazuo; Nakajima, Tsuyoshi; Yotsuya, Koki; Ookuma, Humio; Baba, Takeo; and Yamanaka, Toshitaka, 3,896,653.
- Magnant, Kenneth K.: *See—*
  - Camp, William S.; and Magnant, Kenneth K., 3,896,662.
- Mainka, Christian M.; and Nash, George A., to Morse Boulger, Inc. Incinerator for raw sewage. 3,896,745, Cl. 110-8.00C.
- Mains, Harold E.; and Barrett, Fred O., to Emery Industries, Inc. Polybasic acid compositions obtained from polymerized fatty acids. 3,897,468, Cl. 260-407.000.
- Maki, Michael W.: *See—*
  - Johnson, Gary L.; and Maki, Michael W., 3,897,037.
- Makowski, Alexander G.: *See—*
  - Graham, Arthur; Makowski, Alexander G.; and Fuss, Gunter G., 3,896,934.
- Malan, Johannes Daniel, to Tobacco Research and Development Institute Limited. Pulping machines. 3,897,012, Cl. 241-27.000.
- Malinowski, Henryk: *See—*
  - Jabalpurwala, Kaizer Esufali; and Malinowski, Henryk, 3,897,248.
- Maloblocki, Richard E. Stub setting fixture. 3,897,050, Cl. 269-17.000.
- Malunis, Gary P.: *See—*
  - Bahoshy, Bernard J.; Flynn, Charles E.; and Malunis, Gary P., 3,897,566.
- Maly, Neil A.: *See—*
  - Brown, Melvin; Menapace, Henry R.; and Maly, Neil A., 3,897,512.
- Mammino, Joseph; and Whittaker, Gary L., to Xerox Corporation. Toners for phthalocyanine photoreceptors. 3,897,249, Cl. 96-15.00D.
- Mancini, Timothy R. Diesel injector tube body reforming tool. 3,896,654, Cl. 72-393.000.
- Mandroian, Harold. Electrolysis pump. 3,897,173, Cl. 417-73.000.
- Mandt, Mikkel G., to Houdaille Industries, Inc. Multiple jet aerator module. 3,897,000, Cl. 239-177.000.
- Maneva, Lilyana Stoilova: *See—*
  - Alexiev, Boris Vasilev; Stoev, Stoycho Borisov; Spasov, Alexander Vasilev; Maneva, Lilyana Stoilova; Emanuilov, Emanuil Alexandrov; and Golovinski, Evgeni Victorov, 3,897,494.
- Mann, James Urquhart: *See—*
  - Nudenberg, Walter; Harvey, Merlin P.; and Mann, James Urquhart, 3,897,515.
- Manning, Artie L. Cutting apparatus for cutting concrete material and the like. 3,896,783, Cl. 125-13.00R.
- Marans, Nelson Samuel: *See—*
  - Kehr, Clifton Leroy; Murch, Robert M.; and Marans, Nelson Samuel, 3,897,372.
- Marantz, Daniel Richard, to American Can Company. Double wrap packaging apparatus. 3,896,604, Cl. 53-176.000.
- Marbury, Fendall, to Litton Systems, Inc. Heave damping device for ships. 3,896,755, Cl. 114-126.000.
- Marchand, Georges Aime. Volumetric divider for paste, especially for dough paste. 3,897,188, Cl. 425-238.000.
- Marchi, Vitalino: *See—*
  - Leblanc, Conrad; and Marchi, Vitalino, 3,896,496.
- Marek, Miroslav; Toman, Ludek; and Pecka, Jan, to Ceskoslovenska akademie ved. Radiation polymerization of olefinic monomers in the presence of metal containing catalysts. 3,897,322, Cl. 204-159.240.
- Marin, Pierre Dominique; and Tirtiaux, Robert, to Exxon Research and Engineering Company. Anti-rust additive composition. 3,897,349, Cl. 252-33.300.
- Marinaccio, Lawrence F., to Mine Safety Appliances Company. Temperature compensated inductive liquid metal level indicator. 3,896,671, Cl. 73-304.00R.
- Marinsky, Georgy Sergeevich: *See—*
  - Medovar, Boris Izrailevich; Dubinsky, Rudolf Solomonovich; Boiko, Georgy Alexandrovich; Marinsky, Georgy Sergeevich; and Egorov, Sergei Petrovich, 3,896,878.
- Marion Power Shovel Company, Inc.: *See—*
  - Thompson, George J.; and Dalrymple, Thomas T., 3,896,569.
- Maroschak, Ernest J., to Plastic Tubing, Inc. Corrugated plastic pipe with integrally formed coupler. 3,897,090, Cl. 285-260.000.
- Marsh, Ogden J.; and Hunsperger, Robert G., to Hughes Aircraft Company. Process for forming electrically isolating high resistivity regions in GaAs. 3,897,273, Cl. 148-1.500.
- Marshall, J. Howard, III; and Harrington, Timothy A., to MDH Industries, Inc. Frequency-programmed electron-capture detector. 3,897,344, Cl. 250-386.000.
- Marshall, John M.: *See—*
  - Taylor, Harold L.; and Marshall, John M., 3,897,230.
- Martin, Donald J.: *See—*
  - Shim, Kyung S.; and Martin, Donald J., 3,897,478.
- Martin, Harlan W., to Favorite Manufacturing, Inc. Collapsible animal cage or the like. 3,896,766, Cl. 119-17.000.
- Martin, Henry, to Ciba-Geigy AG. Use of 1-(3-chloro-4-methylphenyl)-3,3-dimethylurea in wheat and barley crops. 3,897,242, Cl. 71-120.000.
- Martin, Henry: *See—*
  - Beriger, Ernst; and Martin, Henry, 3,897,521.
- Martin, Jean-Marie Michel. Machine for drying by contact veneers obtained by peeling or slicing wood. 3,896,559, Cl. 34-162.000.
- Martin, John T.; Lay, Robert E., Jr.; Stene, Edward L.; and Muscante, Anthony J., to United States of America, Navy. Apparatus selectively responsive to bilevel bipolar pulses. 3,896,767, Cl. 114-21.00W.
- Marton, Gyorgy: *See—*
  - Binzburg, Boris Nisonovich; Smetkin, Jury Alexandrovich; Alexeenko, Vladimir Iosifovich; Mikhailov, Vsevolod Andreevich; Lorant, Ivan; Seltenreich, Gyozo; Kaszei, Jeno; Marton, Gyorgy; Balazsfai, Albert; Donath, Jeno; and Bolcskei, Erno, 3,897,190.
- Maruoka, Hiroyuki; and Shioyama, Giichi, to Nissan Motor Company Limited. Throttle and ignition timing controlled by clutch and transmission. 3,896,913, Cl. 192-.062.
- Marvin Glass & Associates: *See—*
  - Terzian, Rouben T.; and Glass, Marvin I., 3,896,584.
- Maryland Cup Corporation: *See—*
  - Weinstein, David, 3,897,579.
- Masaki, Kenji; and Nambu, Shuya, to Nissan Motor Company Limited. Exhaust gas recirculation control device. 3,896,777, Cl. 123-119.00A.
- Maschinenfabriken Bernard Krone GmbH: *See—*
  - Overesch, Albert, 3,896,609.
- Mascret, Albert. Automatic appliance for cooking and distributing measured quantities of hot food products. 3,896,715, Cl. 99-356.000.
- Mason, Barry, to Betamite Electronic Devices. Valve controlled single needle blood processing systems. 3,896,803, Cl. 128-214.00R.
- Massey-Ferguson Services N.V.: *See—*
  - Delfosse, Gilbert; and Andiano, Jose, 3,897,332.
- Massey, Michael J.; and Dunlap, Robert W., to Shenango Incorporated; Duquesne Slag Products Co.; and Standard Slag Company, The. Method for contacting hot, viscous, molten slag with gaseous reactants. 3,897,231, Cl. 65-19.000.
- Massonne, Joachim: *See—*
  - Hellberg, Karl-Heinz; and Massonne, Joachim, 3,897,543.
- Massoubre, Jean Marie, to Compagnie Generale des Etablissements Michelin Raison Sociale Michelin & Cie. Apparatus for projecting a molten material into a cooling medium. 3,896,870, Cl. 164-281.000.
- Masuda, Mutsuo: *See—*
  - Kobayashi, Yoshickika; Masuda, Mutsuo; and Takagawa, Masanori, 3,897,359.
- Masui, Hiroaki: *See—*
  - Gondo, Hisashi; Takechi, Hiroshi; Kawanc, Tsuyoshi; and Masui, Hiroaki, 3,897,280.
- Maten, Marvin A., Jr.: *See—*
  - Glance, Patrick M.; and Maten, Marvin A., Jr., 3,897,095.
- Mato, Laszlo, to Ben Clements & Sons, Inc. Top-feeding automatic tag-attaching machine. 3,896,713, Cl. 93-88.000.
- Matsukawa, Hiroharu: *See—*
  - Saeki, Keiso; Matsukawa, Hiroharu; and Watanabe, Akio, 3,897,361.
- Matsushita Electric Industrial Co., Ltd.: *See—*
  - Ariga, Kozo, 3,896,765.
  - Nakamura, Harutoki, 3,897,366.
- Matsushita Electronics Corporation: *See—*
  - Kobayashi, Yoshickika; Masuda, Mutsuo; and Takagawa, Masanori, 3,897,359.
- Matsuura, Masaru: *See—*
  - Yokotsuka, Tamotsu; Aoyama, Yasuo; Kikuchi, Tadaaki; Ishii, Shigetaka; and Matsuura, Masaru, 3,897,570.
- Matsuzawa, Toshiaki: *See—*
  - Morisawa, Yasuhiro; Kataoka, Mitsuru; Watanabe, Taiichiro; Kitano, Noritoshi; and Matsuzawa, Toshiaki, 3,897,556.
- Mattingly, Denis Albert Edward. Apparatus for heating textile yarns and filaments. 3,896,530, Cl. 28-71.300.
- Mattler, Martin. Disposable catheter. 3,896,816, Cl. 128-349.00B.
- Matumoto, Junzo: *See—*
  - Mita, Itaru; Okumura, Shigeo; Yamabe, Shigeru; Funae, Yoshihiko; and Matumoto, Junzo, 3,897,480.
- Matzuk, Alexander R.: *See—*
  - Fisher, Michael H.; and Matzuk, Alexander R., 3,897,447.
- Maxton Manufacturing Company: *See—*
  - Shrum, William M., 3,896,906.
- Mayled, Edward C. Mailing carton. 3,896,988, Cl. 229-33.000.
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- Riggs, Norman S.; and Sarno, Felicisimo S., to Star-Kist Foods, Inc. Formed meat product. 3,897,572, Cl. 426-249.000.
- Riker Laboratories, Inc.: *See—*
  - Trancik, Ronald J., 3,896,789.
- Rindone, Guy E.: *See—*
  - Jirmanus, Naila Saba; Rindone, Guy E.; and Bouchard, Andre C., 3,897,197.
- Rine, James C., to Carborundum Company, The. Reinforced bonded abrasive cup wheel. 3,896,593, Cl. 51-209.00R.
- Ringdal, Lars. Method of manufacturing articles from hot solid filler material coated with thermoplastic material. 3,897,527, Cl. 264-37.000.
- Ringler, Harold R.; and MacFarland, David R., to Goodyear Tire & Rubber Company, The. Liquid polyurethane reaction mixture. 3,897,401, Cl. 260-77.5AB.
- Ririe, Otis E., Jr., to Phillips Petroleum Company. Sample conditioner. 3,897,211, Cl. 23-254.00R.
- Riseman, John H.; Frant, Martin S.; and Krueger, John A., to Orion Research Incorporated. Method of determining hydrogen sulfide. 3,897,315, Cl. 204-1.00T.
- Ritchie, Robert T.; and Rogers, James C., to International Business Machines Corporation. Optical scanning system. 3,897,148, Cl. 355-57.000.
- Rittersdorf, Walter: *See—*
  - Lange, Hans; Rittersdorf, Walter; and Rey, Hans-Georg, 3,897,214.
- Robar Mini-Gym, Inc.: *See—*
  - Henson, Glen E.; and Fisher, Milton W., 3,896,672.
- Robbins, Douglas R.; and Robbins, Samuel B., Jr. Safety vial and cap therefor. 3,896,958, Cl. 215-211.000.
- Robbins, Samuel B., Jr.: *See—*
  - Robbins, Douglas R.; and Robbins, Samuel B., Jr., 3,896,958.
- Robert Bosch G.m.b.H.: *See—*
  - Fussner, Paul; and Nusser, Hermann, 3,897,179.
  - Schumacher, Werner, 3,896,844.
  - Schumacher, Werner; and Mayr, Eugen, 3,896,856.
- Roberts, Gordon J., to Ferro Corporation. Process for forming ferrous iron-containing phosphorus glasses. 3,897,236, Cl. 71-1.000.
- Robins, Roland K.; and Witkowski, Joseph T., to ICN Pharmaceuticals, Inc. 5-Substituted 1,2,4-triazole-3-carboxamido nucleosides and analogs thereof. 3,897,415, Cl. 260-211.50R.
- Robins, Roland K.: *See—*
  - Shuman, Dennis A.; Meyer, Rich B., Jr.; and Robins, Roland K., 3,897,413.
- Robinson, Michael; Clamp, Frank; Aberdeen, David; and Mobbs, David Barry, to Laporte Industries Limited. Beneficiation of ilmenite ores. 3,897,537, Cl. 423-86.000.
- Robinson, Norman R. Dish machine monitoring of time, temperature, alkalinity, and pressure parameters. 3,896,827, Cl. 134-10.000.
- Rockwell International Corporation: *See—*
  - Dobbins, John P., 3,897,137.
  - Iannucci, Vincent A., 3,896,860.
- Roest, Robert Jacques; and van Ruitenburg, Pieter, to Air Process AG. Vessel for an airmixer or the like. 3,896,561, Cl. 34-57.00A.
- Roest, Robert Jacques; and Ruitenberg, Pieter van, to Airprocess A.G. Injector with holder for an air mixer or the like. 3,896,996, Cl. 239-424.000.
- Rogers, James C.: *See—*
  - Ritchie, Robert T.; and Rogers, James C., 3,897,148.

Rogers, Leo A.: *See—*

  Rogers, Leo R.; and Rogers, Leo A., 3,897,017.

Rogers, Leo R.; and Rogers, Leo A. Grinding mill. 3,897,017, Cl. 241-205.000.

Rohling, Holmer, to Dragerwerk Aktiengesellschaft. Gas mixing apparatus particularly for respirators and medical devices. 3,896,837, Cl. 137-110.000.

Rokadia, Abdullah M., to DeSoto, Inc. Damper apparatus. 3,897,175, Cl. 417-313.000.

Rollmet, Inc.: *See—*

  Stuart, James M., 3,896,649.

Romankiewicz, Ferdynand: *See—*

  Bydalek, Andrzej; Romankiewicz, Ferdynand; Romer, Jan; and Tomasik, Edmund, 3,897,336.

Romer, Jan: *See—*

  Bydalek, Andrzej; Romankiewicz, Ferdynand; Romer, Jan; and Tomasik, Edmund, 3,897,336.

Rosansky, Martin G., to Power Conversion, Inc. Battery construction with improved terminal attaching structure. 3,897,270, Cl. 136-177.000.

Roscoe, Theodore J., Jr., to Bakerdrill, Inc. Bore hole hammer drill. 3,896,886, Cl. 173-17.000.

Roseberry, Donald E.: *See—*

  Sedlar, Anthony E.; and Roseberry, Donald E., 3,896,690.

Rosenberg, David J., to Pall Corporation. Autotransfusion apparatus. 3,896,733, Cl. 128-214.00R.

Rosher, Ronald: *See—*

  Comfort, Theodore F.; Legare, Richard J.; and Rosher, Ronald, 3,896,865.

Rosselli, Alberto. Article of office furniture. 3,897,103, Cl. 312-257.00R.

Rossler, Kurt: *See—*

  Klein, Georg; Rossler, Kurt; Brockschmidt, Karl; and Rettweiler, Horst, 3,897,019.

Roth, Walter L.: *See—*

  Greskovich, Charles D.; and Roth, Walter L., 3,897,358.

Roussel Uclaf: *See—*

  Hardy, Michael; and Humbert, Daniel, 3,897,558.

  Warnant, Julien; and Jolly, Jean, 3,897,417.

Roy, Gerald L., to Kerr Glass Manufacturing Corporation. Child safety closure. 3,896,959, Cl. 215-222.000.

Roy, Joseph G. Apparatus for atomizing liquid fuels for the combustion process. 3,897,007, Cl. 239-403.000.

Royal, Thomas B., to International Paper Company. Apparatus for mounting a lid on a container. 3,896,607, Cl. 53-287.000.

Ruble, Lloyd J. Machine for sharpening disc blades. 3,896,591, Cl. 51-126.000.

Ruckdeschel, Charles Bernard, Jr., to Hercules Incorporated. Saddle lock-up for tab-less flexible printing plates. 3,896,727, Cl. 101-415.100.

Ruff, Charles David: *See—*

  Sibeud, Jacques Pierre; and Ruff, Charles David, 3,897,219.

Ruitenberg, Pieter van: *See—*

  Roest, Robert Jacques; and Ruitenberg, Pieter van, 3,896,996.

Ruland, Norman L.: *See—*

  Walker, David G.; and Ruland, Norman L., 3,897,505.

Russell, Donald H.; and Frisch, Kurt C., to Atlantic Richfield Company. Urethane coating powder compositions. 3,897,397, Cl. 260-77.50R.

Russell, James P.; Szur, Alex J.; and Terrell, Ross C., to Airco, Inc. Process for making fluorinated ethers. 3,897,502, Cl. 260-614.00F.

Russell, John R., to E-Z Floss. Dental instrument. 3,896,552, Cl. 32-34.000.

Ruzic, Hugo; Scholpp, Robert; and Vomel, Paul Gerhard, to International Standard Electric Corporation. Mechanism for sensing the thickness and diameter of coins in coin operated devices. 3,896,916, Cl. 194-102.000.

Ryan, James Ernest: *See—*

  Moilliet, John Lewis; and Ryan, James Ernest, 3,897,371.

S & T Steiger Engineering AG: *See—*

  Lyssy, Georges H., 3,897,532.

Sabatino, Anthony; and Orlando, Daniel, to Globe-Union Inc. Storage battery construction and method of making same. 3,897,269, Cl. 136-176.000.

Sabatka, Winston E., to Finishing Equipment, Inc. Apparatus for spraying and otherwise treating pieces in a vapor. 3,896,829, Cl. 134-58.00R.

Sadler, Donald L.: *See—*

  Heckle, William A.; and Sadler, Donald L., 3,897,318.

Saeiki, Keiso: *See—*

  Kanda, Masao; and Saeiki, Keiso, 3,897,578.

Saeki, Keiso; Matsukawa, Hiroharu; and Watanabe, Akio, to Fuji Photo Film Co., Ltd. Process for producing microcapsules. 3,897,361, Cl. 252-316.000.

SAG Siegener Aktiengesellschaft: *See—*

  Ackermann, Werner; and Vollhardt, Frohmut, 3,897,202.

Sahar, Raphael. Closure for collapsible tubes. 3,896,978, Cl. 222-517.000.

Saipem S.p.A.: *See—*

  Scodino, Ambrogio; and Raimondi, Adalberto, 3,897,099.

Saito, Koichi: *See—*

  Ohara, Takashi; Ichihara, Shoichi; Saito, Koichi; and Ono, Tetsuji, 3,897,368.

Saito, Sizuo: *See—*

  Maeda, Shohe; Yasue, Masayuki; Aruga, Mitsuo; Saito, Sizuo; and Yasunaga, Ikuo, 3,897,544.

Saitoh, Shigeru, to Nissan Motor Company Limited. Multi-profiled cross member. 3,896,896, Cl. 180-82.00R.

Sakai, Kazuo; Iwanaga, Ken; Maehara, Kazuo; Nakajima, Tsuyoshi; Yotsuya, Koki; Ookuma, Humio; Baba, Takeo; and Yamanaka, Toshitaka, to Nippon Steel Corporation. Method for producing differential thickness steel plate. 3,896,653, Cl. 72-365.000.

Sakai, Seiu: *See—*

  Hayashi, Yukichi; Yokoda, Yutaka; Tamura, Masayuki; Kobayashi, Shinichi; Akai, Kazuyuki; and Sakai, Seiu, 3,896,915.

Sakai, Yasuo, to Toshiba Machine Co., Ltd. Roll grinding device including chock positioning means. 3,896,594, Cl. 51-236.000.

Salka, Barry A.: *See—*

  Carmello, Robert; Salka, Barry A.; and Corey, Garland G., 3,897,357.

Sallmann, Alfred: *See—*

  Haas, Georges; and Sallmann, Alfred, 3,897,437.

Sallows, William, to Raymond Lee Organization, Inc., The, a part interest. Sprinkler device. 3,896,997, Cl. 239-102.000.

Salyer, Ival O.; and Jefferson, Robert T., to United States of America, Atomic Energy Commission. Porous metal structure. 3,897,221, Cl. 29-191.200.

Samuel, Carl A.; and Samuel, Euphemia. Support for a continuous drain unit connected with a catheter. 3,896,809, Cl. 128-275.000.

Samuel, Euphemia: *See—*

  Samuel, Carl A.; and Samuel, Euphemia, 3,896,809.

Sanda, Joseph C., Jr., to Firestone Tire & Rubber Company, The. Tire treads. 3,897,386, Cl. 260-42.470.

Sanderson, William A.: *See—*

  Swidler, Ronald; Sanderson, William A.; and Mueller, William A., 3,897,584.

Sandoz Ltd.: *See—*

  Aebli, Horst; Fleck, Fritz; and Schmid, Horst, 3,897,421.

Sanjana, Zal N., to Westinghouse Electric Corporation. Impregnating composition comprising an epoxy resin, anhydrides of NMA and BTDA and glass-epoxy laminated thereof. 3,897,455, Cl. 260-32.8EP.

Sankyo Company Limited: *See—*

  Morisawa, Yasuhiro; Kataoka, Mitsuru; Watanabe, Taiichiro; Kitano, Noritoshi; and Matsuzawa, Toshiaki, 3,897,556.

Santen Pharmaceutical Co. Ltd.: *See—*

  Mita, Itaru; Okumura, Shigeo; Yamabe, Shigeru; Funae, Yoshihiko; and Matumoto, Junzo, 3,897,480.

Sareen, Sarvajit S.; Girard, Lucien, III; and Hard, Robert A., to Kennecott Copper Corporation. Stimulation of recovery from underground deposits. 3,896,879, Cl. 166-308.000.

Sargent, Donald W.: *See—*

  Stackman, Robert W.; and Sargent, Donald W., 3,897,402.

Sarno, Felicisimo S.: *See—*

  Riggs, Norman S.; and Sarno, Felicisimo S., 3,897,572.

Sarrafian, Vahram K.: *See—*

  Wiczer, Max; Sarrafian, Vahram K.; and Popovic, Djordje R., 3,897,093.

Sassa, Nagamasa; Suzuki, Tarou; Kohchi, Yoshihiro; and Kubota, Shigeyuki, to Kanegafuchi Chemical Industries Co., Ltd. Method for cultivation of microorganisms. 3,897,304, Cl. 195-28.00R.

Sato, Yutaka, to Hitachi Medical Corporation. Doppler effect blood flow meter. 3,896,788, Cl. 128-2.05F.

Satterwhite, Charles R. Multi-wheeled excavator and conveying system. 3,896,571, Cl. 37-190.000.

Satterwhite, Charles R., to Southwest Equipment Developers, Inc. Multi-wheeled excavating and loading system. 3,897,109, Cl. 299-39.000.

Saucy, Gabriel, to Hoffmann-La Roche Inc. 9-Alkoxime decansic acid-Δ-lactones. 3,897,461, Cl. 260-343.500.

Sauer, Heinz: *See—*

  Liebsch, Dietrich; Becher, Dieter; Kress, Rudolf; and Sauer, Heinz, 3,897,314.

Saunders, John P.; and Leach, Burleigh H., to GTE Sylvania Incorporated. Photoflash lamp with sealed bead. 3,897,196, Cl. 431-95.000.

Saunders, Philip G.; and Waterbury, Neil M., to Container Graphics Corporation. Mounting member for printing plate and apparatus of making same. 3,897,191, Cl. 425-384.000.

Saunders, Robert J.: *See—*

  Keller, Harold A.; and Saunders, Robert J., 3,896,536.

Sauter, Friedrich, to Centre d'Etudes pour l'Industrie Pharmaceutique. 2-phenyl-2,3-dihydro-benzo (b) thiophene-1,1-dioxide derivatives. 3,897,427, Cl. 260-247.10P.

Saval B.V.: *See—*

  De Boer, Jan A., 3,896,881.

Savas, John, to Republic Steel Corporation. Low carbon steels having cold workability. 3,897,245, Cl. 75-124.000.

Savio, Luciano, to Officine Savio, S.p.A. Eliminate tail-ends of yarn and to pick up the end of the end of the wound yarn. 3,897,022, Cl. 242-35.60E.

Sawyer, Jimmy D.: *See—*

  Borrelo, Sebastian R.; and Sawyer, Jimmy D., 3,897,275.

Sawyer, Robert H., to Cartridge Actuated Devices, Inc. Actuating unit. 3,896,621, Cl. 60-635.000.

Saxlund A/S: *See—*

  Knutsen, Roald Willies, 3,896,943.

Sbarra, Michael A. Method and apparatus for removing fibrous particles from a conveyor belt. 3,896,924, Cl. 198-230.000.

Sbragia, Ronald J., to Dow Chemical Company, The. Dihydroxyanthraquinone fungicides. 3,897,564, Cl. 424-331.000.

Scans Associates, Inc.: *See—*

  Converse, Vernon G., III; Clayton, Robert W.; and Westervelt, James T., 3,896,670.

Scarritt, Francis M., Sr. Water economizing flush tank. 3,896,507, Cl. 4-56.000.

Schadlich, Gunther; and Moraw, Roland, to Hoechst Aktiengesellschaft. Process for selectively deforming a thermoplastic layer. 3,897,247, Cl. 96-1.100.

Schaffer, Marvin B., to R & D Associates. Multi-section projectile and means for firing the same. 3,896,732, Cl. 102-38.000.

Scharlack, Ronald S., to Kelsey-Hayes Company. Skid control system. 3,897,114, Cl. 303-21.0BE.

Schaub, Robert Eugene: *See—*

  Bernady, Karel Francis; Floyd, Middleton Brawner, Jr.; Poletto, John Frank; Schaub, Robert Eugene; and Weiss, Martin Joseph, 3,897,483.

Schempp, Eberhard G.: *See—*

  Pearce, Jai K.; Schempp, Eberhard G.; and Sieckman, Walter, 3,897,048.

Scherhag, Bernhard: *See—*

  Kricsfalussy, Zoltan; Blocher, Karlheinz; Pawlowski, Juri; Scherhag, Bernhard; and Weiler, Raoul, 3,897,541.

Schering Aktiengesellschaft: *See—*

  Vidic, Hans-Jorg; Kieslich, Klaus; and Petzoldt, Karl, 3,897,306.

Schertenleib, Francis, to Alter Licensing Establishment. Blow molding process for container of superplastic alloy. 3,896,648, Cl. 72-61.000.

Schick, John W.: *See—*

  Davis, Robert H.; and Schick, John W., 3,897,351.

Schimpf, Luther G.: *See—*

  Lundstrom, Alexis A.; and Schimpf, Luther G., 3,897,591.

Schindler, Edgar C.; and McEachron, John C., to Nelco Corporation. Electrical junction box for existing wall constructions. 3,896,960, Cl. 220-3.500.

Schisler, Robert C., to Goodyear Tire & Rubber Company, The. Linings for containers for handling corrosive chemicals and the method of preparing said containers. 3,896,963, Cl. 220-63.00R.

Schloemann-Siemag Aktiengesellschaft: *See—*

  Groos, Horst Hans; and Richardt, Urban, 3,896,652.

Schlotthauer, Roy, to Motorola, Inc. Apparatus for selective plating. 3,897,323, Cl. 204-224.00R.

Schlumberger Technology Corporation: *See—*

  Anderson, Ronald A.; and Tixier, Maurice P., 3,896,668.

Schmid, Horst: *See—*

  Aebli, Horst; Fleck, Fritz; and Schmid, Horst, 3,897,421.

Schmid, Paul; and Droesch, Albert, to GHH Basel AG. Device for filtering and/or treating liquid or gaseous media. 3,897,342, Cl. 210-445.000.

Schmidt-Kastner, Gunther: *See—*

  Huper, Fritz; and Schmidt-Kastner, Gunther, 3,897,409.

Schmidt, Manfred: *See—*

  Riegler, Ernst; and Schmidt, Manfred, 3,897,120.

  Riegler, Ernst; and Schmidt, Manfred, 3,897,121.

Schmitt, Gerhard Ludwig, to Sperry Rand Corporation. Device for controlling the locking of containers on an orbitable carrier of an article storage device. 3,897,123, Cl. 312-333.000.

Schmitt, Jack N. Roof truss machine. 3,896,717, Cl. 100-100.000.

Schneider, John J.: *See—*

  Harding, David G.; Schneider, John J.; and Mead, Lawrence M., Jr., 3,897,033.

Schneider, Winfried. Mosaic printing head with electromagnetically actuated needles with a common yoke for all electromagnets. 3,896,918, Cl. 197-1.00R.

Schocket, Stanley S. Ophthalmic fixation device. 3,897,141, Cl. 351-36.000.

Scholl, Rolland D., to Caterpillar Tractor Co. Blade stabilizer for earth working apparatus. 3,896,899, Cl. 172-4.500.

Scholpp, Robert: *See—*

  Ruzic, Hugo; Scholpp, Robert; and Vomel, Paul Gerhard, 3,896,916.

Scholtholt, Josef: *See—*

  Bender, Heinz; Stachel, Adolf, deceased; Stachel, Ingeburg Lydia Katharina, heiress; Beyerle, Rudi; Nitz, Rolf-Eberhard; and Scholtholt, Josef, 3,897,419.

Scholz, Albrecht: *See—*

  Busch, Wolfram; Gilfrich, Hans Paul; Scholz, Albrecht; and Wallhauber, Hermann, 3,897,384.

Schubert, George E.: *See—*

  DeGeeter, Robert L.; and Schubert, George E., 3,897,115.

Schudel, Peter: *See—*

  Bozzato, Giuliano; Pesaro, Mario; Schudel, Peter; Hug-Inderbitzin, Marianne; and Erickson, Robert Edward, 3,897,504.

Schuller, James J., to Pullman Incorporated. Lock arrangement for box car doors. 3,897,094, Cl. 292-283.000.

Schultz, Otto Wilhelm Oswald; Feutlinske, Hilmar; and Gentzsch, Kurt, to Hamburger Hochbahn Aktiengesellschaft. Axle arrangement for vehicles. 3,896,895, Cl. 180-75.000.

Schumacher, Werner, to Robert Bosch G.m.b.H. Fluid flow regulating apparatus. 3,896,844, Cl. 137-488.000.

Schumacher, Werner; and Mayr, Eugen, to Robert Bosch G.m.b.H. Damped consumer valve arrangement. 3,896,856, Cl. 137-625.650.

Schwartz, Georg: *See—*

  Vivien, Daniel; and Schwartz, Georg, 3,896,814.

Schwartz, Morris, to Kalart Victor Corporation. Recording and scanning mechanism for a sound slide projector. 3,897,145, Cl. 353-19.000.

Schwede, William. Color dispenser for use with pressurized cans of whipped topping. 3,896,971, Cl. 222-106.000.

Schweizer, Gottfried, to Gertsch AG. Safety ski binding having cable held sole plate. 3,897,077, Cl. 280-11.35K.

Schweizerische Lokomotiv-und Maschinenfabrik: *See—*

  Kreissig, Ernst Florian, 3,896,740.

Scodino, Ambrogio; and Raimondi, Adalberto, to Saipem S.p.A. Tong apparatus operated oleopneumatically for lifting a submerged pipeline. 3,897,099, Cl. 294-88.000.

Scohy, John M.; Cremeans, George E.; and Luttinger, Manfred, to Borg-Warner Corporation. Binder resins for traffic paints. 3,897,378, Cl. 260-22.0CB.

Scott Paper Company: *See—*

  Pociluyko, Alex, 3,897,356.

Scott, Robert T.: *See—*

  Konsbruck, Robert H.; and Scott, Robert T., 3,896,914.

Scott, Sven: *See—*

  Bjorklund, Anders; Frelin, Bert; and Scott, Sven, 3,896,945.

Scrivo, Leonard; and Vetter, Warren Charles, to Vicon Products Corporation. Fiber optics element and dental handpiece containing the same. 3,897,134, Cl. 350-96.00B.

Seaberg, David H.; and Purdy, Paul J., to J. I. Case Company. Method for positioning bucket loader. 3,896,951, Cl. 214-15[illegible].000.

Sedell, Bengt: *See—*

  Barud, Sigvard; and Sedell, Bengt, 3,896,704.

Sedlar, Anthony E.; and Roseberry, Donald E., to Wickes Corporation, The. Front releasable, quick-change tool holder for an orbiting crankshaft lathe girt. 3,896,690, Cl. 82-36.00B.

See, Gary G., to Addressograph-Multigraph Corporation. Electronic data recorder. 3,896,721, Cl. 101-45.000.

Seeley, Wayne C. Arm board. 3,896,799, Cl. 128-87.00R.

Seidel, Peter-Rudolf: *See—*

  Becker, Karl Heinz; Boltze, Karl-Heinz; Dell, Hans-Dieter; and Seidel, Peter-Rudolf, 3,897,426.

Seitzer, Walter H.; and Bradley, William S., to Sun Oil Company (Delaware). Process for drying and stabilizing coal. 3,896,557, Cl. 34-10.000.

Seiwa Me Laboratories, Inc.: *See—*

  Ono, Kazuaki, 3,896,791.

Sekido, Mamoru: *See—*

  Yamada, Shoji; Horii, Shoichi; Yamashita, Kiyoshi; Futaki, Kiyoshi; and Sekido, Mamoru, 3,897,254.

Sellars, Robert L.: *See—*

  Porubcan, Randolph S.; and Sellars, Robert L., 3,897,307.

Sellstedt, John H., to American Home Products Corporation. Synthesis of 2-amino-5-aryl-3H-1,4-benzodiazepines. 3,897,416, Cl. 260-239.0BD.

Seltenreich, Gyozo: *See—*

  Binzburg, Boris Nisonovich; Smetkin, Jury Alexandrovich; Alexeenko, Vladimir Iosifovich; Mikhailov, Vsevolod Andreevich; Lorant, Ivan; Seltenreich, Gyozo; Kaszei, Jeno; Marton, Gyorgy; Balazsfai, Albert; Donath, Jeno; and Bolcskei, Erno, 3,897,190.

Semperit Aktiengesellschaft: *See—*

  Madaschefsky, Erich, 3,897,181.

Serpolay, Roger Rene, to Etat Francais. Process for local modification of the structure of fog and clouds for triggering their precipitation and for hindering the development of hail producing clouds. 3,896,993, Cl. 239-2.00R.

Severijns, Adrianus Petrus; and Staas, Frans Adrianus, to U.S. Philips Corporation. Method for starting a ^{3}He-^{4}He dilution refrigerator. 3,896,630, Cl. 62-56.000.

Seymour, Phillip D.: *See—*

  Vail, Edwin G.; Lippitt, Maxwell W., Jr.; and Seymour, Phillip D., 3,896,792.

Shah, Mahendrakumar Bhogilal; and Grossmann, Uwe Frank, to TRW Inc. Power steering gear with relief valve on power piston. 3,896,702, Cl. 91-375.00A.

Shah, Sunil Chunilal, to Cumberland Engineering Company, Inc. Granulator with noise abatement and safety means. 3,897,016, Cl. 241-73.000.

Shape, Norman R., to Owens-Corning Fiberglas Corporation. Method of and apparatus for simultaneously packaging glass strands into individual packages. 3,897,021, Cl. 242-18.00G.

Shapiro, Bernard: *See—*

  Leon, Shalom A.; Shapiro, Bernard; and Kollmann, George J., 3,897,212.

Sharick, Paul Robert. Tent structure and suspension means. 3,896,830, Cl. 135-1.00R.

Sharpe, Christopher James, to Boots Company Limited, The. Pharmacologically active anilinobenzothiazoles. 3,897,443, Cl. 260-305.000.

Shaughnessy, Reginald N.; Witty, Robert W.; and Ackert, Robert J., to Algoma Steel Corporation, Limited, The. Method for the production of high strength notch tough steel. 3,897,279, Cl. 148-12.00F.

Shay, Barry M., to ICI United States Inc. Textile treating compositions, process of treating textiles, and textile articles. 3,897,208, Cl. 8-187.000.

Shell Oil Company: *See—*

  Kattan, Abraham; and Gwyn, John E., 3,897,193.

Shellman, Carl E., to General Motors Corporation. Transmission control for a transmission having one drive establishing device for two independent drive functions. 3,896,685, Cl. 74-867.000.

Shema, Bernard F.; Brink, Robert H., Jr.; and Swered, Paul, to Betz Laboratories, Inc. N-2-nitrobutyl morpholine and 2,2-dibromo-3-nitrilopropionamide as a slime control composition. 3,897,554, Cl. 424-248.000.

- Shema, Bernard F.; Brink, Robert H., Jr.; and Swered, Paul, to Betz Laboratories, Inc. 2,2-Dibromo-3-Nitrilo propionamide and pentachlorophenol as a slime control composition. 3,897,562, Cl. 424-304.000.
- Shen, Tsung-Ying; Grenda, Victor J.; and Czaja, Robert F., to Merck & Co., Inc. Substituted benzimidazole derivatives. 3,897,432, Cl. 260-256.40Q.
- Shenango Incorporated: *See*—
  - Massey, Michael J.; and Dunlap, Robert W., 3,897,231.
- Sheng, Ming N., to Atlantic Richfield Company. Oxidation of isobutylene glycol to alpha hydroxyisobutyric acid. 3,897,489, Cl. 260-531.00R.
- Shepherd, Thomas H.; and Gould, Francis E., to National Patent Development Corporation. Hydrophilic polymer coating for underwater structures. 3,896,753, Cl. 114-67.00R.
- Sherk, Fred T.; and Hitzman, Donald O., to Phillips Petroleum Company. Integrated process of ammonia production and biosynthesis. 3,897,303, Cl. 195-27.000.
- Shigeta, Yoshihiro: *See*—
  - Suzaki, Kuniyoshi; Shigeta, Yoshihiro; and Yamanaka, Torakiyo, 3,897,026.
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- Stuart, Charles E. Method of transferring axis-orbital plane information from a patient to a dental articulator. 3,896,551, Cl. 32-32.000.
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Warner, David A.; and Levin, Irving M. Telescopic optical system. 3,897,133, Cl. 350-55.000.

Wasco Products, Inc.: *See*—
Anghinetti, Joseph R.; and Couture, Paul A., 3,896,595.

Washio, Shigeaki; and Kiguchi, Yukiaki, to Taki Fertilizer Manufacturing Co., Ltd. Ethanolamine/organic carboxylic acid composition for accelerating fruit ripening. 3,897,241, Cl. 71-113.000.

Wasserman, Gerald S.: *See*—
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Watabe, Yoji: *See*—
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Watanabe, Akio: *See*—
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Watanabe, Hirokazu, to Yoshida Kogyo Kabushiki Kaisha. Pull tab for cam lock sliders. 3,896,538, Cl. 29-409.000.

Watanabe, Taiichiro: *See*—
Morisawa, Yasuhiro; Kataoka, Mitsuru; Watanabe, Taiichiro; Kitano, Noritoshi; and Matsuzawa, Toshiaki, 3,897,556.

Waterbury, Neil M.: *See*—
Saunders, Philip G.; and Waterbury, Neil M., 3,897,191.

Waters, Richard A. Tonal percussive musical instrument. 3,896,696, Cl. 84-403.000.

Watson, Geoffrey Walter, to A. I. Welders Limited. Apparatus for sizing and shaping ends of pipes. 3,896,655, Cl. 72-393.000.

Watts, Lewis William, Jr., to Jefferson Chemical Company, Inc. Polyhalobenzonitrile allyl ethers. 3,897,475, Cl. 260-465.00F.

Waycie, Edmund A.: *See*—
Vickers, James L.; and Waycie, Edmund A., 3,896,601.

Wayne Home Equipment Co. Inc.: *See*—
Hall, Malcolm S., 3,897,172.

Webb, Byron Kenneth: *See*—
McHugh, Carl Manning; Webb, Byron Kenneth; and Hood, Clarence Elam, Jr., 3,896,612.

Weber, Heinz, to Telesco Brophey Limited. Telescopic umbrella. 3,896,833, Cl. 135-25.00R.

Weckler, Gerhard; and Mildenberg, Rolf, to Cassella Farbwerke Mainkur AG. Carrier composition and process for dyeing and printing. 3,897,207, Cl. 8-173.000.

Wededeyer, Karlfried: *See*—
Blank, Heinz-Ulrich; Wededeyer, Karlfried; and Ebersberger, Josef, deceased, 3,897,321.

Weil, Edward D.: *See*—
Greenbaum, Sheldon B.; Weil, Edward D.; and Newcomer, Jack S., 3,897,457.

Weiler, Raoul: *See*—
Kricsfalussy, Zoltan; Blocher, Karlheinz; Pawlowski, Juri; Scherhag, Bernhard; and Weiler, Raoul, 3,897,541.

Weingarten, Charles Z., to Kendall Company, The. Multi-chamber syringe. 3,896,805, Cl. 128-218.00R.

Weinguni, Othmar, to J. Bobst & Fils S.A. Guiding system for a strip of material passing through a machine which processes the strip. 3,896,983, Cl. 226-198.000.

Weinstein, David, to Maryland Cup Corporation. Starburst pattern for forming packaging liners and pads from single faced corrugated stock and the like. 3,897,579, Cl. 428-13.400.

Weishaupt, Josef; and Oberpriller, Jakob, to Linde Aktiengesellschaft. Method of and apparatus for the milling of granular materials. 3,897,010, Cl. 241-5.000.

Weishaupt, Paul, to Wagner & Cie AG. Method and apparatus for exposing a light-sensitive layer. 3,897,250, Cl. 96-27.00E.

Weiss, Martin Joseph: *See*—
Bernady, Karel Francis; Floyd, Middleton Brawner, Jr.; Poletto, John Frank; Schaub, Robert Eugene; and Weiss, Martin Joseph, 3,897,483.

Welter, Franklin H., to Great Lakes Carbon Corporation. Cooling and de-dusting of hot particulate material particularly calcined petroleum coke. 3,896,556, Cl. 34-9.000.

Wendler, Norman L.: *See*—
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Werkzeugmaschinenfabrik Adolf Waldrich Coburg: *See*—
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Werstein, Frank A.; and Barnes, William R., to International Telephone and Telegraph Corporation. Hanger insert for steel floor deck. 3,896,599, Cl. 52-704.000.

Wessendorf, Richard; and Heitmann, Wilhelm, to Veba-Chemie AG. Glyoxal hemiacetals, their preparation and use. 3,897,503, Cl. 260-615.00A.

West Chester Chemical Company, Inc.: *See*—
Hilbush, Edward O., Jr., 3,896,897.

Western Electric Company, Inc.: *See*—
Golinski, Stanley, 3,896,541.

Westervelt, James T.: *See*—
Converse, Vernon G., III; Clayton, Robert W.; and Westervelt, James T., 3,896,670.

Westinghouse Electric Corporation: *See*—
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Westvaco Corporation: *See*—
Kohne, Harry F., Jr.; and Kurrle, Frederick L., 3,897,300.

Whatley, William J. Utility pole. 3,896,858, Cl. 138-130.000.

Wheeling-Pittsburgh Steel Corporation: *See*—
O'Konski, Theodore S., 3,896,650.

Whetstine, Donald L.: *See*—
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Whirlpool Corporation: *See*—
Morrison, John Franklin, 3,896,631.

White, Edward A., to International Minerals & Chemical Corporation. Preparation of phosphatic animal feeds. 3,897,575, Cl. 426-511.000.

White, James Judson, to Northern Electric Company Limited. Method of forming silicon gate device structures with two or more gate levels. 3,897,282, Cl. 148-175.000.

White, Thomas E.: *See*—
Pearson, Raymond H.; White, Thomas E.; and Perkins, James R., 3,896,756.

Whitehall Electronics Corporation: *See*—
Pearson, Raymond H.; White, Thomas E.; and Perkins, James R., 3,896,756.

Whittaker, Gary L.: *See*—
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Wichterle, Otto, to Ceskoslovenska akademic ved. Implant for directed infusion of biologically active substances. 3,896,806, Cl. 128-260.000.

Wicke, Charles H., to ACF Industries, Incorporated. Heat responsive safety device for gate valves. 3,896,835, Cl. 137-75.000.

Wickes Corporation, The: *See*—
Sedlar, Anthony E.; and Roseberry, Donald E., 3,896,690.

Wico Corporation: *See*—
Wiczer, Max; Sarrafian, Vahram K.; and Popovic, Djordje R., 3,897,093.

Wiczer, Max; Sarrafian, Vahram K.; and Popovic, Djordje R., to Wico Corporation. Electrical door lock. 3,897,093, Cl. 292-144.000.

Wiebke, Ethyl F.; and Falterman, Charles W., to United States of America, Navy. Plastic bonded explosive composition. 3,897,283, Cl. 149-19.500.

Wiemers, Rudolf: *See*—
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Wild, Albrecht: *See*—
Gante, Joachim; Mehrhof, Werner; and Wild, Albrecht, 3,897,453.

Wilkes, Lambert H.; Underbrink, Gary L.; and Jones, Joseph K., to Cotton, Incorporated. Method and apparatus for the continuous feeding of palletized fiber materials. 3,897,018, Cl. 241-223.000.

Williams, Albert Lloyd: *See*—
Heiba, El-Ahmadi Ibrahim; and Williams, Albert Lloyd, 3,897,350.

Williams, Bernard Leo, to American Cyanamid Company. Flexible flocked dressing. 3,896,802, Cl. 128-156.000.

Williams, John F.: *See*—
Purdy, David L.; and Williams, John F., 3,897,223.

Williams, William H., to Spray Brite. Wet and dry vacuum cleaner. 3,896,520, Cl. 15-320.000.

Williams, William O., Jr. Artificial fishing lure. 3,896,580, Cl. 43-42.310.

Willis, Henry Paul, deceased; and by Decker, Norman E., executor. Differential torque responsive axle for small vehicles. 3,896,893, Cl. 180-19.00R.

Wilson, Bob G., to Dart Industries Inc. Glass batch wetting system. 3,897,235, Cl. 65-335.000.

Wilson, John Charles, to Eastman Kodak Company. Photographic elements containing high temperature-resistant polyamides. 3,897,253, Cl. 96-87.00R.

Windmoller & Holscher: *See*—
Bosse, Frank, 3,896,714.
Brinkmeier, Friedhelm, 3,896,709.

Windsor, Robert N., to Eaton Yale Ltd. Tree harvesting apparatus. 3,896,862, Cl. 144-3.00D.

Winkler-Den Boer, N.V.: *See*—
De Jong, Frank Cornelis, 3,896,922.

Winkler & Dunnebier Maschinenfabrik und Eisengiesserei KG: *See*—
Ehlscheid, Gunter, 3,896,712.

Wintz, Donald E., to Aladdin Manufacturing Company. Apparatus for sharpening blades. 3,896,592, Cl. 51-135.00R.

Wiremold Company, The: *See*—
Perusse, Norman J.; and Rejeski, William E., 3,897,297.

Withers, Ronald L. Therapeutic apparatus. 3,896,787, Cl. 128-1.00R.

Witkowski, Joseph T.: *See*—
Robins, Roland K.; and Witkowski, Joseph T., 3,897,415.

Witty, Michael E., to Baxter Laboratories, Inc. Liquid wash injector. 3,897,002, Cl. 239-288.000.

Witty, Robert W.: *See*—
Shaughnessy, Reginald N.; Witty, Robert W.; and Ackert, Robert J., 3,897,279.

Woditsch, Peter; and Leitner, Lutz, to Bayer Aktiengesellschaft. Cobalt-containing acicular ferrimagnetic iron oxide of improved remanence stability. 3,897,354, Cl. 252-62.560.

Wohlert, Andrew M.: *See*—
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Wolf, Hugo M.: *See*—
Wolf, Leo H.; and Wolf, Hugo M., 3,896,576.

Wolf, Leo H.; and Wolf, Hugo M. Dental x-ray film and chart viewing apparatus. 3,896,576, Cl. 40-106.100.

Wolfthal, Maurice, to Stewart Stamping Corporation. Anti-friction die set. 3,897,118, Cl. 308-4.00C.

Wollweber, Hartmund: *See*—
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Wolowodiuk, Walter; and Anelli, John, to United States of America, Atomic Energy Commission. Heat exchanger with a removable tube section. 3,896,873, Cl. 165-76.000.

Wood, Louis L., to W. R. Grace & Co. Integral reinforced structures with a polyurea adhesive component. 3,897,585, Cl. 428-395.000.

Woodburn, James, Jr.; and Lohman, Gordon Russell, to Amsted Industries Incorporated. Apparatus for making bars from powered metal. 3,897,184, Cl. 425-79.000.

Worst, Joseph C., to General Electric Company. Combination lint filter and additive dispenser for automatic washer. 3,896,641, Cl. 68-17.00R.

- Wright, Andrew Charles: *See—*
  - Newstead, Charles; and Wright, Andrew Charles, 3,896,706.
- Wrue, Richard J., to Bausch & Lomb Incorporated. Method of edging a non-rigid lens. 3,896,688, Cl. 82-1.00C.
- Xerox Corporation: *See—*
  - Bryngdahl, Olof, 3,897,136.
  - Carreira, Leonard M., 3,897,143.
  - Mammino, Joseph; and Whittaker, Gary L., 3,897,249.
  - Smith, Charles E., 3,897,146.
- Yaginuma, Hiroshi; Suzuki, Takashi; and Kimi, Atutane, to Nippon Zeon Co. Ltd. Novel coating composition. 3,897,260, Cl. 106-287.00R.
- Yamabe, Shigeru: *See—*
  - Mita, Itaru; Okumura, Shigeo; Yamabe, Shigeru; Funae, Yoshihiko; and Matumoto, Junzo, 3,897,480.
- Yamada, Shoji; Horii, Shoichi; Yamashita, Kiyoshi; Futaki, Kiyoshi; and Sekido, Mamoru, to Mitsubishi Paper Mills, Ltd. Silver halide containing pyrazolone magenta coupler. 3,897,254, Cl. 96-100.000.
- Yamada, Yasuo: *See—*
  - Kishino, Shigeo; Yamada, Yasuo; Kurahashi, Yoshio; and Kume, Toyohiko, 3,897,552.
- Yamahara, Takeshi; Kishimoto, Hiroshi; Nakamura, Shinji; and Deguchi, Takashi, to Sumitomo Chemical Co., Ltd. Method for producing 3,4-dichlorobutene-1. 3,897,507, Cl. 260-654.00R.
- Yamamoto, Keishi: *See—*
  - Ibaragi, Tetsuo; Yamamoto, Keishi; and Noda, Yasuhiko, 3,897,313.
- Yamanaka, Torakiyo: *See—*
  - Suzaki, Kuniyoshi; Shigeta, Yoshihiro; and Yamanaka, Torakiyo, 3,897,026.
- Yamanaka, Toshitaka: *See—*
  - Sakai, Kazuo; Iwanaga, Ken; Maehara, Kazuo; Nakajima, Tsuyoshi; Yotsuya, Koki; Ookuma, Humio; Baba, Takeo; and Yamanaka, Toshitaka, 3,896,653.
- Yamashita, Kiyoshi: *See—*
  - Yamada, Shoji; Horii, Shoichi; Yamashita, Kiyoshi; Futaki, Kiyoshi; and Sekido, Mamoru, 3,897,254.
- Yamauchi, Junnosuke; Okamura, Takayuki; Minatono, Shobu; and Yamauchi, Kazuhisa, to Kuraray Co., Ltd. Method of producing synthetic cis-1,4-polyisoprene rubber having high green strength. 3,897,403, Cl. 260-78.40D.
- Yamauchi, Kazuhisa: *See—*
  - Yamauchi, Junnosuke; Okamura, Takayuki; Minatono, Shobu; and Yamauchi, Kazuhisa, 3,897,403.
- Yamauchi Rubber Industry Co., Ltd.: *See—*
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- Yang, Kang; Greenfield, Gaylord G.; and Henry, Joseph D., Jr., to Continental Oil Company. Process for the production of freon. 3,897,506, Cl. 260-653.700.
- Yao, Takamu: *See—*
  - Takahashi, Akikazu; Futatsugi, Yuji; Wakayama, Hiroo; and Yao, Takamu, 3,897,375.
- Yarrington, Robert Murphy: *See—*
  - Feins, Irvin Ralph; and Yarrington, Robert Murphy, 3,897,365.
- Yasue, Masayuki: *See—*
  - Maeda, Shohe; Yasue, Masayuki; Aruga, Mitsuo; Saito, Sizuo; and Yasunaga, Ikuo, 3,897,544.
- Yasunaga, Ikuo: *See—*
  - Maeda, Shohe; Yasue, Masayuki; Aruga, Mitsuo; Saito, Sizuo; and Yasunaga, Ikuo, 3,897,544.
- Yeakey, Ernest Leon: *See—*
  - Gipson, Robert Malone; Yeakey, Ernest Leon; and Pepel, William Jennings, 3,897,383.
- Yokoda, Yutaka: *See—*
  - Hayashi, Yukichi; Yokoda, Yutaka; Tamura, Masayuki; Kobayashi, Shinichi; Akai, Kazuyuki; and Sakai, Seiu, 3,896,915.
- Yokota, Tsuyoshi; Asai, Koetsu; Harada, Hisamitsu; and Kominami, Hiroshi, to Mitsubishi Heavy Industries, Ltd. Method for unloading an iron ore being in a state of a consolidated and hardened body and a grab-bucket for use in the same. 3,896,952, Cl. 214-152.000.
- Yokota, Yuzo: *See—*
  - Mizuma, Noriaki; and Yokota, Yuzo, 3,897,204.
- Yokotsuka, Tamotsu; Aoyama, Yasuo; Kikuchi, Tadaaki; Ishii, Shigetaka; and Matsuura, Masaru, to Kikkoman Shoyn Co. Ltd. Preparation of an acidic beverage. 3,897,570, Cl. 426-46.000.
- Yoshida Kogyo Kabushiki Kaisha: *See—*
  - Watanabe, Hirokazu, 3,896,538.
- Yoshida, Ryonosuke: *See—*
  - Takizawa, Koichi; and Yoshida, Ryonosuke, 3,897,466.
- Yoshida, Tsukasa, to Yoshida, Tsukasa. Device for fixedly connecting panels for use in building. 3,896,598, Cl. 52-498.000.
- Yotsuya, Koki: *See—*
  - Sakai, Kazuo; Iwanaga, Ken; Maehara, Kazuo; Nakajima, Tsuyoshi; Yotsuya, Koki; Ookuma, Humio; Baba, Takeo; and Yamanaka, Toshitaka, 3,896,653.
- Zaffaroni, Alejandro; and Alza Corporation. IUD having a replenishing drug reservoir. 3,896,819, Cl. 128-130.000.
- Zahn, Eric H. Dental model construction. 3,896,548, Cl. 32-11.000.
- Zakharzhevsky, Georgy Leonidovich. Direct-flow valve. 3,896,846, Cl. 137-512.100.
- Zehr, William J., to Protectoseal Company, The. Blowout nozzle. 3,897,003, Cl. 239-288.500.
- Zengel, Hans-Georg; and Bergfeld, Manfred, to Akzo N. V. Production of m- and p-phenylenediamine. 3,897,498, Cl. 260-578.000.
- Zeunen, Barthel; Grace, Rex C.; and Dunn, Alvie R., to Capitol Reproductions, Inc. Photographic exposure apparatus. 3,897,149, Cl. 355-97.000.
- Zeyns, Johannes; and Enneking, Heinz. Apparatus in a combustion engine including a device for continually measuring and individually distributing to a plurality of fuel injection valves the amounts of fuel appropriate to the amounts of combustion air. 3,896,778, Cl. 123-139.0AW.
- Zimmerman, Eli. Brush applicator device. 3,896,822, Cl. 132-79.00B.
- Zimmerman Equipment Co. Inc.: *See—*
  - Zimmerman, Walter H., 3,896,562.
- Zimmerman, Richard Henry; and Brenneman, Richard Lee, to AMP Incorporated. Novel electro deposited gold; electrolyte solution to obtain the same; method for producing said gold; and products. 3,897,246, Cl. 75-165.000.
- Zimmerman, Walter H., to Zimmerman Equipment Co. Inc. Grain conditioning apparatus. 3,896,562, Cl. 34-174.000.
- Zochem Limited: *See—*
  - Jabalpurwala, Kaizer Esufali; and Malinowski, Henryk, 3,897,248.
- Zoecon Corporation: *See—*
  - Henrick, Clive A.; and Siddall, John B., 3,897,473.
- Zygraich, Nathan; and Huygelen, Constant, to Recherche et Industrie Therapeutiques. Herpes simplex type 2 virus vaccine and method of production and use. 3,897,549, Cl. 424-89.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 29TH DAY OF JULY, 1975

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- A. F. Dormeyer Mfg. Co., Inc.: *See—*
  - Flentge, Robert W., Re. 28,499.
- Allied Thermal Corporation: *See—*
  - Hedrick, Warren R.; and Meurer, Henry J., Re. 28,492.
- Anthes Equipment Ltd.: *See—*
  - Weeden, Robert G., Re. 28,493.
- Aus der Au, Hans-Rudolf: *See—*
  - Kusenberg, Eugen; Hubler, Ernst; Aus der Au, Hans-Rudolf; and Ernst, Otto, Re. 28,498.
- Bowman, James L.: *See—*
  - Bresee, Heber J.; and Bowman, James L., Re. 28,500.
- Bresee, Heber J.; and Bowman, James L., to Tektronix, Inc. Low noise field effect transistor with channel having subsurface portion of high conductivity. Re. 28,500, Cl. 357-22.000.
- Ciba-Geigy AG: *See—*
  - Kusenberg, Eugen; Hubler, Ernst; Aus der Au, Hans-Rudolf; and Ernst, Otto, Re. 28,498.
- Drain-Away, Inc.: *See—*
  - Kundert, Robert L., Re. 28,491.
- Ernst, Otto: *See—*
  - Kusenberg, Eugen; Hubler, Ernst; Aus der Au, Hans-Rudolf; and Ernst, Otto, Re. 28,498.
- Fancher, Llewellyn W., to Stauffer Chemical Company. Cinnamyl carbamates. Re. 28,496, Cl. 260-482.00C.
- Flentge, Robert W., to A. F. Dormeyer Mfg. Co., Inc. Power pack. Re. 28,499, Cl. 336-92.000.
- Gasmire, Richard C., to Owens-Illinois, Inc. Method of and apparatus for making a plastic article. Re. 28,497, Cl. 264-28.000.
- Hedrick, Warren R.; and Meurer, Henry J., to Allied Thermal Corporation. Damper unit for controlling air flow. Re. 28,492, Cl. 137-316.000.
- Hubler, Ernst: *See—*
  - Kusenberg, Eugen; Hubler, Ernst; Aus der Au, Hans-Rudolf; and Ernst, Otto, Re. 28,498.
- Kundert, Robert L., to Drain-Away, Inc. Roof draining system. Re. 28,491, Cl. 137-142.000.
- Kusenberg, Eugen; Hubler, Ernst; Aus der Au, Hans-Rudolf; and Ernst, Otto, to Ciba-Geigy AG. Method of producing a thick-walled cured plastics moulding. Re. 28,498, Cl. 264-327.000.
- Langager, Bruce A., to Minnesota Mining and Manufacturing Company. Poly(hexasubstituted melamines). Re. 28,495, Cl. 260-77.50R.
- Meurer, Henry J.: *See—*
  - Hedrick, Warren R.; and Meurer, Henry J., Re. 28,492.
- Minnesota Mining and Manufacturing Company: *See—*
  - Langager, Bruce A., Re. 28,495.
- Owens-Illinois, Inc.: *See—*
  - Gasmire, Richard C., Re. 28,497.
- Rowe, Wilson S., to United States Steel Corporation. Method of processing stainless steel strips or sheets. Re. 28,494, Cl. 148-12.0EA.
- Stauffer Chemical Company: *See—*
  - Fancher, Llewellyn W., Re. 28,496.
- Tektronix, Inc.: *See—*
  - Bresee, Heber J.; and Bowman, James L., Re. 28,500.
- United States Steel Corporation: *See—*
  - Rowe, Wilson S., Re. 28,494.
- Weeden, Robert G., to Anthes Equipment Ltd. Wire wall partition. Re. 28,493, Cl. 256-65.000.

LIST OF PLANT PATENTEES

- Ball, Geo. J., Inc.: *See—*
  - Fessler, Kenneth F. 3,752.
- Brown, Andrew J., Sr., to Mikkelsens Inc. Begonia plant. 3,750, 7-29-75, Cl. 68.
- Byrum, Roy L., to Joseph H. Hill. Co. Rose plant. 3,749, 7-29-75, Cl. 18.
- Cordes, Ashur L. Black ash tree. 3,754, 7-29-75, Cl. 51.
- Fessler, Kenneth F., to Geo. J. Ball, Inc. Azalea plant. 3,752, 7-29-75, Cl. 56.
- Hill, Joseph H., Co.: *See—*
  - Byrum, Roy L. 3,749.
- Mikkelsen, James C., to Mikkelsens Inc. Begonia plant. 3,751, 7-29-75, Cl. 68.
- Mikkelsen, James C., to Mikkelsens Inc. Begonia plant. 3,753, 7-29-75, Cl. 68.
- Mikkelsens Inc.: *See—*
  - Brown, Andrew J., Sr. 3,750.
  - Mikkelsen, James C. 3,751.
  - Mikkelsen, James C. 3,753.
- Weeks, O. L. Rose plant. 3,748, 7-29-75, Cl. 20.

LIST OF DESIGN PATENTEES

- Archdekin, Francis M.: *See—*
  - Williams, Clarence D., and Archdekin. 236,082.
- Armstrong, William M., R. E. Gardyne, and W. D. Runswick, to Inlite Corp. Lighting fixture housing. 236,150, 7-29-75, Cl. D48—16.
- Ashby, Jeffrey L.: *See—*
  - Gannett, Richard L., Ashby, Welsh, Leo, Howorth, Corba, Carow, and Beck. 236,085.
- Askam, John F.: *See—*
  - Hogg, Derek, Askam, and Wilson. 236,153.
- Bajer Industries Inc.: *See—*
  - Friedberg, Marvin P. 236,151.
- Baker, Stanley Z., to J. T. Eaton & Co. Rodent bait feeding box or similar article. 236,114, 7-29-75, Cl. D22—18.
- Balbo, Paul. Utensil facilitating snail-eating. 236,064, 7-29-75, Cl. D7—7.
- Ball, Douglas C., to Massey-Ferguson Industries Limited. Combined desk and side extension unit. 236,057, 7-29-75, Cl. D6—159.
- Beatrice Foods Co.: *See—*
  - Golden, Gerald. 236,095.
- Beck, James M.: *See—*
  - Gannett, Richard L., Ashby, Welsh, Leo, Howorth, Corba, Carow, and Beck. 236,085.
- Bedel, Denis E., to Westinghouse Electric Corp. Golf car. 236,098, 7-29-75, Cl. D12—16.
- Beld, John W., W. G. Kinninger, R. E. N. Klohr, and P. A. Byrne. Comprehensive infant care system. 236,165, 7-29-75, Cl. D83—1.
- Bellak, Sonya S. Statuette. 236,137, 7-29-75, Cl. D29—23.
- Bellini, Mario, to Ing. C. Olivetti & C., S.p.A. Electronic printing calculator. 236,132, 7-29-75, Cl. D26—5.
- Beneke Corp.: *See—*
  - O'Neil, Robert. 236,120.
  - O'Neil, Robert. 236,121.
- Best, Eleanore. Ladle or similar article. 236,066, 7-29-75, Cl. D7—104.
- Birrell, Peter L., to The Cornelius Co. Beverage dispenser or similar article. 236,170, 7-29-75, Cl. D94—3.
- Bjorklund, Curt A. Oilburner valve or similar article. 236,115, 7-29-75, Cl. D23—19.
- Boclan, Harvey: *See—*

  - Brent, Allan L., and Bocian. 236,123.
- Bouldin, Kent W.: *See—*
  - Hoshall, Thomas C., and Bouldin. 236,047.
- Bradley, Ken. Combined and cap therefor. 236,088, 7–29–75, Cl. D9—51.
- Braid, Malcolm R. Spaghetti fork. 236,069, 7–29–75, Cl. D7—137.
- Branscom, Donald L. Rack for bicycles and the like. 236,102, 7–29–75, Cl. D12—158.
- Brent, Allan L., and H. Bocian, to Labco Products, Inc. Firing tray for dental prosthetics. 236,123, 7–29–75, Cl. D24—1.
- Byrne, Paul A.: *See—*
  - Kinninger, Warren G., Beld, Klohr, and Byrne. 236,165.
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254R	3,897,211
259	3,897,216
259.1	3,897,215
259.5	3,897,217
285	3,897,218
288A	3,897,219
288R	3,897,220
CLASS 24	
17B	3,896,524
21	3,896,525
67.1	3,896,526
81HS	3,896,527
153S	3,896,528
CLASS 28	
1.6	3,896,529
71.3	3,896,530
CLASS 29	
91.1	3,896,531
105R	3,896,532
191.2	3,897,221
195	3,897,222
	3,897,223
203HC	3,896,534
203B	3,896,533
206	3,896,535
211R	3,896,536
235	3,896,537
409	3,896,538
430	3,896,539
468	3,896,540
580	3,896,543
588	3,896,544
600	3,896,545
CLASS 30	
157	3,896,546
CLASS 32	
10A	3,896,547
11	3,896,548
14A	3,896,549
32	3,896,550
	3,896,551
34	3,896,552
63	3,896,553
CLASS 33	
107	3,896,554
168R	3,896,555
300	3,896,619
CLASS 34	
9	3,896,556
10	3,896,557
13.8	3,896,558
57A	3,896,561
57R	3,896,560
162	3,896,559
174	3,896,562
CLASS 35	
9A	3,896,563
11	3,896,564
28	3,896,565
CLASS 37	
56	3,896,566
87	3,896,570
141R	3,896,567
	3,896,568
141T	3,896,569
190	3,896,571
CLASS 38	
77.83	3,896,572
102.5	3,896,573
CLASS 40	
34	3,896,574
64R	3,896,575
106.1	3,896,576
301	3,896,577
CLASS 43	
3	3,896,578
27.4	3,896,579
42.31	3,896,580
81	3,896,581
CLASS 44	
71	3,897,224
CLASS 46	
17	3,896,582
47	3,896,583
118	3,896,584
CLASS 47	
9	3,896,585
28	3,896,586
34	3,896,587
CLASS 48	
107	3,897,225
CLASS 49	
394	3,896,588
425	3,896,589
488	3,896,590
CLASS 51	
126	3,896,591
135R	3,896,592
209R	3,896,593
236	3,896,594
CLASS 52	
19	3,896,595
153	3,896,596
396	3,896,597
498	3,896,598
704	3,896,599
CLASS 53	
27	3,896,600
32	3,896,601
36	3,896,602
123	3,896,603
176	3,896,604
266	3,896,605
	3,896,606
287	3,896,607
CLASS 55	
33	3,897,226
68	3,897,227
273	3,897,228
467	3,897,229
CLASS 56	
10.2	3,896,608
13.6	3,896,609
15.8	3,896,610
119	3,896,611
329	3,896,612
370	3,896,613
CLASS 58	
109	3,896,614
CLASS 60	
204	3,896,615
274	3,896,616
403	3,896,617
405	3,896,618
547	3,896,620
635	3,896,621
641	3,896,622
665	3,896,623
CLASS 61	
4	3,896,624
20	3,896,625
45B	3,896,627
45D	3,896,626
46.5	3,896,628
85	3,896,629
CLASS 62	
56	3,896,630
71	3,896,631
88	3,896,632
266	3,897,230
272	3,896,633
408	3,896,634
499	3,896,635
CLASS 65	
19	3,897,231
29	3,897,232
109	3,897,233
135	3,897,234
335	3,897,235
CLASS 66	
9B	3,896,636
	3,896,637
50R	3,896,638
	3,896,639
161	3,896,640
CLASS 68	
17R	3,896,641
210	3,896,642
CLASS 70	
59	3,896,643
149	3,896,644
	3,896,645
CLASS 71	
1	3,897,236
	3,897,237
3	3,897,238
90	3,897,239
	3,897,240
113	3,897,241
120	3,897,242
CLASS 72	
14	3,896,646
56	3,896,647
61	3,896,648
128	3,896,649
186	3,896,650
260	3,896,651
263	3,896,652
365	3,896,653
393	3,896,654
	3,896,655
469	3,896,656
CLASS 73	
12	3,896,657
17A	3,896,658
23.1	3,896,659
61.1C	3,896,661
61.4	3,896,660
67.8S	3,896,662
88E	3,896,663
104	3,896,664
146	3,896,665
147	3,896,666
151	3,896,667
152	3,896,668
160	3,896,669
213	3,896,670
304R	3,896,671
379	3,896,672
421B	3,896,673
432R	3,896,674
497	3,896,675
CLASS 74	
12	3,896,676
61	3,896,677
116	3,896,678
217B	3,896,679
489	3,896,680
526	3,896,681
606R	3,896,682
612	3,896,683
711	3,896,684
867	3,896,685
CLASS 75	
10V	3,897,243
53	3,897,244
124	3,897,245
165	3,897,246
CLASS 81	
3R	3,896,686
15.8	3,896,687
CLASS 82	
1C	3,896,688
17	3,896,689
36B	3,896,690
CLASS 83	
335	3,896,691
471.3	3,896,692
748	3,896,693
CLASS 84	
280	3,896,694
307	3,896,695
403	3,896,696
454	3,896,697
CLASS 85	
7	3,896,698
CLASS 86	
44	3,896,699
CLASS 89	
40C	3,896,700
CLASS 91	
7	3,896,701
375A	3,896,702
401	3,896,703
413	3,896,704
	3,896,705
CLASS 92	
63	3,896,706
172	3,896,707
CLASS 93	
35SB	3,896,709
	3,896,714
35R	3,896,708
36.8	3,896,710
53SD	3,896,711
61AC	3,896,712
88	3,896,713
CLASS 96	
1SD	3,897,249
1.1	3,897,247
1.8	3,897,248
27E	3,897,250
38.3	3,897,251
48R	3,897,252
87R	3,897,253
100	3,897,254
115R	3,897,255
CLASS 99	
356	3,896,715
452	3,896,716
CLASS 100	
100	3,896,717
169	3,896,719
226	3,896,720
CLASS 101	
45	3,896,721
115	3,896,722
150	3,896,723
248	3,896,724
330	3,896,725
369	3,896,726
415.1	3,896,727
	3,896,728
	3,896,729
425	3,896,730
CLASS 102	
22	3,896,731
38	3,896,732
CLASS 104	
2	3,896,734
23FS	3,896,735
88	3,896,736
130	3,896,737
173	3,896,738
CLASS 105	
133	3,896,739
164	3,896,740
368R	3,896,741
CLASS 106	
68	3,897,256
73.2	3,897,257
85	3,897,258
	3,897,259
287R	3,897,260
300	3,897,261
CLASS 108	
44	3,896,742
108	3,896,718
111	3,896,743
146	3,896,744
CLASS 110	
8C	3,896,745
104R	3,896,746
CLASS 112	
2	3,896,747
70	3,896,748
121.12	3,896,749
222	3,896,750
CLASS 114	
21W	3,896,767
23	3,896,751
66.5H	3,896,752
67R	3,896,753
74R	3,896,754
126	3,896,755
235B	3,896,756
CLASS 115	
35	3,896,757
CLASS 116	
114AH	3,896,758
124R	3,896,759
CLASS 118	
30	3,896,762
50	3,896,763
308	3,896,760
317	3,896,761
408	3,896,764
412	3,896,765
CLASS 119	
17	3,896,766
22	3,896,768
122	3,896,769
CLASS 122	
32	3,896,770
510	3,896,771
CLASS 123	
8.47	3,896,772
32EA	3,896,773
59EC	3,896,774
64	3,896,775
117R	3,896,776
119A	3,896,777
139AW	3,896,778
139E	3,896,779
148E	3,896,780
190BD	3,896,781
CLASS 124	
41A	3,896,782
CLASS 125	
13R	3,896,783
CLASS 126	
38	3,896,784
121	3,896,785
270	3,896,786
CLASS 127	
55	3,897,262
CLASS 128	
1R	3,896,787
2R	3,896,789
2.05F	3,896,788
2.05G	3,896,791
2.07	3,896,792
2.1B	3,896,790
6	3,896,793
24R	3,896,794
32	3,896,795
36	3,896,796
53	3,896,797
75	3,896,798
87R	3,896,799
130	3,896,819
145.8	3,896,800
152	3,896,801
156	3,896,802
214R	3,896,733
	3,896,803
215	3,896,804
218R	3,896,805
260	3,896,806
261	3,896,807
269	3,896,808
275	3,896,809
276	3,896,810
328	3,896,811
335.5	3,896,812
	3,896,813
	3,896,814
348	3,896,815
349B	3,896,816
419R	3,896,817
494	3,896,818
CLASS 131	
21R	3,896,820
CLASS 132	
5	3,896,821
79B	3,896,822
88.7	3,896,823
89	3,896,824
119	3,896,825
CLASS 133	
4	3,896,826
CLASS 134	
10	3,896,827
45	3,897,263
57R	3,896,828
58R	3,896,829
CLASS 135	
1R	3,896,830
3R	3,896,831
6	3,896,832
25R	3,896,833
CLASS 136	
6LN	3,897,264
	3,897,265
30	3,897,266
86A	3,897,267
173	3,897,268
176	3,897,269
177	3,897,270
202	3,897,271
230	3,897,272
CLASS 137	
75	3,896,835
98	3,896,836
110	3,896,837
142	Re.28,491
195	3,896,838
216.1	3,896,839
219	3,896,840
271	3,896,841
316	Re.28,492
318	3,896,842
486	3,896,843
488	3,896,844

493.3	3,896,845
512.1	3,896,846
512.15	3,896,847
	3,896,848
525.1	3,896,849
554	3,896,850
557	3,896,851
596.18	3,896,852
614.05	3,896,853
624.14	3,896,854
625.11	3,896,855
625.28	3,896,834
625.65	3,896,856
628	3,896,857
CLASS 138	
130	3,896,858
CLASS 139	
12	3,896,859
CLASS 140	
149	3,896,860
CLASS 144	
1E	3,896,861
3D	3,896,862
311	3,896,863
CLASS 145	
36	3,896,864
CLASS 148	
1.5	3,897,273
	3,897,274
	3,897,275
	3,897,276
	3,897,277
6.1	3,897,278
12EA	Re.28,494
12C	3,897,280
12F	3,897,279
171	3,897,281
175	3,897,282
CLASS 149	
19.4	3,896,865
19.5	3,897,283
21	3,897,284
41	3,897,285
CLASS 150	
52R	3,896,866
CLASS 151	
69	3,896,867
CLASS 152	
13	3,896,868
361DM	3,896,869
CLASS 156	
11	3,897,286
22	3,897,287
60	3,897,288
88	3,897,289
98	3,897,290
138	3,897,291
153	3,897,292
227	3,897,293
245	3,897,294
272	3,897,295
304	3,897,296
428	3,897,297
500	3,897,298
522	3,897,299
CLASS 162	
169	3,897,300
189	3,897,301
CLASS 164	
252	3,896,878
281	3,896,870
CLASS 165	
22	3,896,871
42	3,896,872
76	3,896,873
82	3,896,874
86	3,896,875
CLASS 166	
224A	3,896,876
250	3,896,877
308	3,896,879
CLASS 169	
39	3,896,880
66	3,896,881
CLASS 172	
4.5	3,896,899
311	3,896,882
707	3,896,883
776	3,896,884
CLASS 173	
2	3,896,885
17	3,896,886
43	3,896,887
109	3,896,888
120	3,896,889
CLASS 175	
19	3,896,890
CLASS 176	
86M	3,897,302

CLASS 179	
1.5M	3,897,591
41A	3,897,592
CLASS 180	
6.5	3,896,891
19H	3,896,892
19R	3,896,893
51	3,896,894
75	3,896,895
82R	3,896,896
CLASS 181	
36A	3,896,897
120	3,896,898
CLASS 182	
206	3,896,900
CLASS 184	
15R	3,896,901
88R	3,896,902
99	3,896,903
CLASS 187	
9R	3,896,904
22	3,896,905
29R	3,896,906
CLASS 188	
72.5	3,896,907
280	3,896,908
CLASS 190	
53	3,896,909
CLASS 192	
.062	3,896,913
.098	3,896,914
3.57	3,896,910
18A	3,896,911
61	3,896,912
CLASS 194	
1N	3,896,915
102	3,896,916
CLASS 195	
27	3,897,303
28R	3,897,304
31R	3,897,305
51R	3,897,306
59	3,897,307
63	3,897,308
66A	3,897,309
CLASS 197	
1R	3,896,917
	3,896,918
49	3,896,919
172	3,896,920
CLASS 198	
19	3,896,921
155	3,896,922
214	3,896,923
230	3,896,924
232	3,896,925
241	3,896,926
CLASS 202	
248	3,897,310
262	3,897,311
	3,897,312
263	3,897,313
CLASS 203	
89	3,897,314
CLASS 204	
1T	3,897,315
9	3,897,316
59M	3,897,317
73R	3,897,318
78	3,897,319
95	3,897,320
158HA	3,897,321
159.24	3,897,322
224R	3,897,323
298	3,897,324
	3,897,325
299	3,897,326
CLASS 206	
45.14	3,896,927
	3,896,928
320	3,896,930
326	3,896,931
335	3,896,932
387	3,896,929
469	3,896,933
523	3,896,934
CLASS 208	
111	3,897,327
139	3,897,328
210	3,897,329
CLASS 209	
10	3,897,331
12	3,897,332
73	3,896,935
75	3,897,330
CLASS 210	
10	3,897,333
15	3,897,334
71	3,897,335
	3,897,336

136	3,897,337
169	3,897,338
283	3,897,339
314	3,897,340
386	3,897,341
445	3,897,342
516	3,897,343
CLASS 211	
74	3,896,936
86	3,896,937
CLASS 212	
26	3,896,938
CLASS 214	
1BH	3,896,939
8.5D	3,896,940
16.1CB	3,896,955
16.4A	3,896,941
17DA	3,896,943
17DB	3,896,942
41	3,896,944
63	3,896,945
75G	3,896,946
82	3,896,947
84	3,896,948
86A	3,896,949
138R	3,896,950
152	3,896,951
	3,896,952
	3,896,953
	3,896,954
501	3,896,956
652	3,896,957
CLASS 215	
211	3,896,958
222	3,896,959
CLASS 219	
92	3,897,593
CLASS 220	
3.5	3,896,960
9LG	3,896,961
22	3,896,962
63R	3,896,963
88R	3,896,964
359	3,896,965
CLASS 221	
63	3,896,966
95	3,896,967
288	3,896,968
CLASS 222	
54	3,896,969
94	3,896,970
106	3,896,971
136	3,896,972
146HE	3,896,973
182	3,896,974
192	3,896,975
228	3,896,976
353	3,896,977
517	3,896,978
528	3,896,979
CLASS 223	
95	3,896,980
CLASS 224	
45S	3,896,981
CLASS 226	
128	3,896,982
198	3,896,983
CLASS 228	
2	3,896,985
	3,896,986
180	3,896,541
234	3,896,542
CLASS 229	
33	3,896,987
	3,896,988
40	3,896,990
55	3,896,991
CLASS 237	
19	3,896,992
CLASS 239	
2R	3,896,993
3	3,896,994
36	3,896,995
102	3,896,997
106	3,896,998
107	3,896,999
177	3,897,000
265.13	3,897,001
288	3,897,002
288.5	3,897,003
318	3,897,004
327	3,897,005
333	3,897,006
403	3,897,007
410	3,897,008
424	3,896,996
542	3,897,009
CLASS 241	
5	3,896,984
	3,897,010
15	3,897,011

27	3,897,012
46.11	3,897,013
56	3,897,014
66	3,897,015
73	3,897,016
205	3,897,017
223	3,897,018
257R	3,897,019
292.1	3,897,020
CLASS 242	
18G	3,897,021
35.6E	3,897,022
100.1	3,897,023
107.4	3,897,024
189	3,897,025
192	3,897,026
195	3,897,027
CLASS 244	
3.1	3,897,028
42CA	3,897,029
63	3,897,030
77B	3,897,031
96	3,897,032
121	3,897,033
122AD	3,897,034
CLASS 248	
217	3,897,035
399	3,897,036
460	3,897,037
CLASS 250	
386	3,897,344
439	3,897,345
CLASS 251	
1	3,897,038
	3,897,039
	3,897,040
61.1	3,897,041
77	3,897,042
328	3,897,043
CLASS 252	
8.1	3,897,346
8.75	3,897,347
	3,897,348
33.3	3,897,349
33.4	3,897,350
34	3,897,351
42.7	3,897,352
51.5A	3,897,353
62.56	3,897,354
62.58	3,897,355
91	3,897,356
106	3,897,357
301.1R	3,897,358
301.4F	3,897,359
301.4P	3,897,360
316	3,897,361
357	3,897,362
408	3,897,363
429C	3,897,364
435	3,897,365
454	3,897,366
462	3,897,367
466PT	3,897,368
469	3,897,369
522	3,897,370
CLASS 254	
45	3,897,044
172	3,897,045
CLASS 256	
65	Re.28,493
CLASS 260	
2.5AJ	3,897,372
2.5FP	3,897,373
2.5L	3,897,371
5	3,897,374
8	3,897,375
18TN	3,897,377
	3,897,410
18S	3,897,376
22CB	3,897,378
28.5AS	3,897,380
29.2TN	3,897,381
29.6AN	3,897,382
30.4N	3,897,383
32.8EP	3,897,455
40R	3,897,384
42.14	3,897,385
42.47	3,897,386
45.7R	3,897,387
45.75B	3,897,389
45.8R	3,897,388
46.5R	3,897,390
47UA	3,897,393
47XA	3,897,391
	3,897,392
47R	3,897,394
63N	3,897,395
75NB	3,897,396
77.5AB	3,897,401
77.5AM	3,897,400
77.5AN	3,897,399
77.5AQ	3,897,398
77.5R	Re.28,495

	3,897,397
78A	3,897,402
78.4D	3,897,403
79.5NV	3,897,404
	3,897,405
83.7	3,897,406
88.2R	3,897,407
92.8W	3,897,408
112.5	3,897,409
154	3,897,411
210AB	3,897,412
211.5R	3,897,413
	3,897,414
	3,897,415
239BD	3,897,416
239.57	3,897,417
240F	3,897,420
240G	3,897,418
240J	3,897,419
240.1	3,897,421
243C	3,897,422
	3,897,423
	3,897,424
244R	3,897,425
246B	3,897,426
247.1P	3,897,427
247.7H	3,897,428
248AS	3,897,429
249.5	3,897,430
251R	3,897,431
256.4F	3,897,433
256.4Q	3,897,432
	3,897,434
279A	3,897,435
283S	3,897,436
294.8G	3,897,440
295R	3,897,437
296R	3,897,438
299	3,897,439
302R	3,897,441
	3,897,442
305	3,897,443
306.7C	3,897,445
306.7R	3,897,446
306.8R	3,897,444
307F	3,897,447
309.2	3,897,448
	3,897,449
314.5	3,897,450
325R	3,897,451
326.1	3,897,452
326.5FM	3,897,454
329.3	3,897,453
340.2	3,897,456
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43	3,897,163
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48	Re.28,497
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49	3,896,697
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51	3,896,497
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54	3,896,650
	3,897,378
55	Re.28,491
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56	3,896,577

DESIGN PATENTS

1	236,069
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4	236,102
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6	236,045
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	236,053
	236,056
	236,062
	236,079
	236,082
	236,084
	236,099
	236,100
	236,103
	236,106
	236,107
	236,116
	236,129
	236,150
	236,156
	236,162
	236,163
	236,164
	236,166
9	236,078
	236,167
12	236,043
	236,044
16	236,073
	236,074
17	236,041
	236,052
	236,089
	236,095
	236,112
	236,119
	236,120
	236,121
	236,125
	236,154
18	236,096
19	236,113
20	236,142
21	236,149
22	236,076
24	236,117
	236,118
26	236,049
	236,061
	236,063
	236,070
	236,101
	236,130
27	236,059
	236,071
	236,146
	236,147
	236,160
29	236,126
	236,165
31	236,060
	236,140
34	236,081
	236,086
	236,092
36	236,046
	236,054
	236,064
	236,065
	236,068
	236,075
	236,077
	236,090
	236,108
	236,110
	236,123
	236,134
	236,135
	236,137
	236,148
	236,151
37	236,105
39	236,050
	236,114
	236,127
	236,128
	236,131
	236,155
40	236,047
	236,168
42	236,098
	236,136
	236,158
	236,159
44	236,080
	236,139
47	236,161
48	236,083
	236,085
	236,087
	236,133
51	236,094
	236,109
53	236,067
	236,088
55	236,048
	236,066

PLANT PATENTS

6	3,748
6	3,750
18	3,749
39	3,751
	3,753
41	3,752
46	3,754

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